MUSEUM NATIONAL D'HISTOIRE NATURELLE

Ecole Doctorale Sciences de la Nature et de l'Homme – ED 227

Année 2015 **N°attribué par la bibliothèque**
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THESE

Pour obtenir le grade de

DOCTEUR DU MUSEUM NATIONAL D'HISTOIRE NATURELLE

Spécialité : Paléontologie

Présentée et soutenue publiquement par

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Le 13 octobre 2015

Origine et première diversification des Mammaliaformes : apport des faunes du Trias supérieur de Lorraine, France

Volume 2

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Annexe 1 : paramètres CT-scan

Paramètres de scans utilisés par la plateforme AST-RX pour chaque spécimen.

Groupes	Spécimens	Taille de voxel (mm)	Voltage (kV)	Courant (µA)
Morganucodonta				
	SNP 28 W, SNP 29 W, SNP 62 L, SNP 65 W, SNP 68 W, SNP 79 L, SNP 81, SNP 99 L, SNP 324 W, SNP 500 W, SNP 725, SNP 736	0,00343179	60	200
	SNP 2001	0,00346665	60	280
Kuehneotheriidae				
	SNP 92, SNP 113L, SNP 172 W, SNP 756	0,00252799	60	240
	SNP 82, SNP 85, SNP 127 L, SNP 266 W	0,00277319	60	240
	SNP 27 W	0,00287170	60	240
Woutersia-Delsatia				
	SNP 32, SNP 101, SNP 119 W, SNP 517 W	0,00338870	60	240
	SNP 52 W, SNP 88 W, SNP 719, SNP 720	0,00338870	63	260
Thomasia				
	SNP 320 W, SNP 445 W, SNP 664	0,00287170	60	240
	SNP 145 W, SNP 51 W	0,00303976	60	240
	SNP 104 W, SNP 182 W, SNP 490 W, SNP 716	0,00322002	75	200
	SNP 46 W, SNP 121 W, SNP 209 W, SNP 488 W, SNP 641, SNP 662, SNP 706, SNP 711	0.00322556	75	200
	SNP 306 W, SNP 369 W, SNP 391 W	0,00328108	75	200

	SNP 35 W, SNP 66 W, SNP 199 W	0,00337449	75	200
	SNP 7 W, SNP 8 W, SNP 205 W, SNP 224 W, SNP 296 W, SNP 460 W, SNP 708	0,00340854	75	200
Theroteinus				
	SNP 78 W, SNP 487 W	0,00303976	60	240
	SNP 61 W, SNP 309 W, SNP 366 W, SNP 497 W	0,00316999	60	240
	SNP 2 Ma, SNP 226 W, SNP 722	0,00328108	75	200

Annexe 2 : Synthèse des caractères des molariformes

Liste de caractères des molariformes issu de la compilation de neuf matrices discutée dans le chapitre 9 (Etude phylogénétique des mammaliaformes mésozoïques : un état de l'art). Un code couleur est utilisé pour rappeler la matrice d'où provient chaque caratère.

Les caractères ont été séparés en fonction de l'information phylogénétique qu'ils apportent dans les matrices quand celles-ci sont réduites à l'échantillonnage taxonomique de l'étude cladistique présentée dans cette thèse (voir chapitre 10 Première étude cladistique des mammaliaformes triasiques).

Luo *et al.*, 2002 Ji *et al.*, 2006 Luo *et al.*, 2007

Luo *et al.*, 2011 Rougier *et al.*, 2012 Zheng *et al.*, 2013

Yuan *et al.*, 2013 Zhou *et al.*, 2013 Bi *et al.*, 2014

Caractère 1

39. Alignment of main cusps of the anterior lower molar (m1) (see justification on character 38 and the note below):

(0) Single longitudinal row

(1) Acute angle;

(2) Multiple longitudinal rows;

Note: an alternative treatment would be to combine characters 38 and 39, and to code *Kuehenotherium*, *Tinodon* and other obtuse−angle symmetrodonts as polymorphic (little triangulated anterior molar *versus* triangulated posterior molars) for the combined character; but this would be less preferable because it would result in the loss of systematic information that may help to resolve the highly heterogenous "obtuse−angle symmetrodonts". The combined character from 38 and 39 would have to be run as ordered in algorithms.

57. Alignment of Main Cusps of Anterior Lower Molar (m1) (n°38, énoncé different et redefinition des états, si les 2 caractères parlent de la même chose, l'esprit est sensiblement différent).

0. Single longitudinal row

1. Acute angle

2. Obtuse angle

difference car absence haramiyide et multituberculé dans la matrice

Caractère 2

38. Alignment of main cusps of the posterior lower molar(s) (m3 or more posterior if present) {Note: this character differs from character 39 based on the following justification. In *Tinodon* (Crompton and Jenkins 1967) the cusps on m1 are hardly triangulated but the posterior molar cusps are distinctively triangulated. There clearly is a gradient of increasing triangulation of molar cusps in the obtuse−angle symmetrodont *Gobiotheriodon* from Mongolia (Averianov in press); Parrington (1978: 202) noted that cusps of some anterior molars of *Kuehneotherium* are linear, but posterior lower molars cusps are triangulated; therefore molar cusp triangulation may not be applicable to all lower molars in the same taxon, especially among "obtuse−angle" symmetrodonts. Here we split these characters between m1 {character 39} and more posterior molars (m3 or more posterior, character 38) to reflect this gradient of triangulation; coding these separately may influence the placement of the taxa with the gradient}:

(0) Single longitudinal row;

(1) Obtuse angle (_95°);

(2) Acute angle (_90°);

(3) Multiple longitudinal multicuspate rows;

58. Triangulation of cusps in the posterior molars (n°38, changement de la définition mais surtout mêmes états dans un ordre différent):

(0) Absent;

(1) Multi-row and multi-cuspate;

(2) Posterior molars slightly triangulated;

(3) Posterior molars fully triangulated.

56. Alignment of Main Cusps of Posterior Lower Molars. m3 or more posterior teeth considered if present:

0. Simple longitudinal row

1. Obtuse angle (>95)

2. Acute angle (<90)

difference car absence haramiyide et multituberculé dans la matrice

Caractère 3

40. Postvallum/prevallid shearing (angle of the main trigonid shear facets):

(0) Absent;

(1) Present, weakly developed, slightly oblique;

(2) Present, strongly developed, and more transverse;

60. Postvallum/prevallid shearing (angle of the main trigonid shear facets, based on the second lower molar) (n°40, ajout état 3):

(0) Absent;

(1) Present, weakly developed, slightly oblique;

(2) Present, strongly developed and more transverse;

(3) Present, strongly developed, short and slightly oblique.

Caractère 5

42. Precise opposition of the upper and lower molars (either one−to−one, or occluding at the opposing embrasure or talonid):

(0) Absence of precise opposition of upper and lower molars;

(1) Present (either one−to−one, or occluding at the opposing embrasure or talonid);

(2) Present: one lower molar sequentially contacts more than one upper molars.

59. Precise Opposition of Upper and Lower Molars. Either one-toone, or occluding at the opposing embrasure or talonid (n°42, disparition état 2):

0. Absence of precise opposition of upper and lower molars

1. Present (either one-to-one or occluding at the opposing embrasure or talonid)

Caractère 6

43. Relationships between the cusps of the opposing upper and lower molars:

(0) Absent;

(1) Present, lower primary cusp a occludes in the groove between upper cusps A, B;

(2) Present, lower main cusp a occludes in front of upper cusp B and into the embrasure between the opposing and preceding upper teeth;

(3) Present, parts of the talonid occluding with the lingual face (or any part) of the upper molar;

(4) Lower multicuspate rows alternately occlude between the upper multicuspate rows;

64. Relationships between the cusps of the opposing upper and lower molars (n°43, ajout état 5):
(0) Absent;
(1) Present, lower primary cusp a occludes in the groove between upper cusps A, B;
(2) Present, lower main cusp a occludes in front of the upper cusp B and into the embrasure between the opposite upper tooth and the preceding upper tooth;
(3) Present, parts of the talonid occluding with the lingual face (or any part) of the upper molar;
(4) Lower multicuspate rows alternately occluding between the upper multicuspate rows;
(5) Columnar tooth without cusps and with beveled wear across the entire crown contact surface.

Caractère 7

44. Relative height of the primary cusp a (protoconid) to cusp c (metaconid) of the anterior lower molars (measured as the height ratio of a and c from the bottom of the valley between the two adjacent cusps, on m1):

(0) Posterior cusp c is less than 40% of the primary cusp a (protoconid);

(1) Posterior cusp c and primary cusp a are equal or subequal in height (c is 50–100% of a);

Caractère 8

45. Relative size/height of the anterior cusp b (paraconid) to posterior cusp c (metaconid) (based on m2):

(0) c taller than b;

(1) b taller than c;

(2) b and c are more or less equal in height.

66. Relative height and size of the base of the paraconid (cusp b) and metaconid (cusp c) (on the lower second molar) (n°45, inversion des états, ajout état 3, qui n'est qu'un cas particulier de l'état 2):

(0) Paraconid distinctively higher than the metaconid;

(1) Paraconid and metaconid nearly equal in height;

(2) Paraconid lower than metaconid;

(3) Paraconid reduced or absent.

Caractère 9

46. Elevation of the cingulid base of paraconid (cusp b) relative to the cingulid base of metaconid (cusp c) on the lower molars:

(0) Absent;

(1) Present

63. Relative Elevation of Bases of Paraconid (Cusp b) and Metaconid (Cusp c) (n°46, redéfinition des états).

0. Almost or at the same level

1. Base of the paraconid higher than base of the metaconid

2. Base of metaconid higher than base of the paraconid

Caractère 10

47. The cristid obliqua (*sensu* Fox 1975: defined as the oblique crest anterior to, and connected with, a labialmost cusp on the talonid heel, the leading edge of facet 3): presence *versus* absence and orientation (applicable only to the molar with at least a hypconid on the talonid or a distal cingulid cuspule):

(0) Absent

(1) Present, and oriented lingual of the metaconid−protoconid notch;

(2) Present, hypertrophied, and directed to posterior (distal) part of metaconid

(3) Present, short and pointed anteriorly between the metaconid−protoconid notch and the protoconid (labial of the notch);

68. Cristid obliqua (sensu Fox 1975: defined as the oblique crest anterior to, and connected with, the labial-most cusp on the talonid heel, the leading edge of facet 3): presence vs. absence and orientation (applicable only to the molar with at least a hypoconid on the talonid or a distal cingulid cuspule) (n°47, changement définition états):

(0) Absent;

(1) Present, contact closest to the middle posterior of the metaconid;

(2) Present, contact closest to the lowest point of the protocristid;

(3) Present, contact closest to the middle posterior of the protoconid.

64. Cristid Obliqua (n°47, issu division d'avec le caractère suivant).

0. Absent

1. Present

65. Cristid Obliqua Orientation (n°47, issu division d'avec le caractère précédent).

0. Oriented to or lingual to the metaconid-protoconid notch

1. Hypertrophied and directed to posterior part of the metaconid

2. Short and pointed anteriorly between the metaconidprotoconid notch and the protoconid

Caractère 11

48. Lower molar—medial and longtitudinal crest (= "pre−entocristid" or "pre−hypoconulid") on the talonid heel (only applicable to taxa with talonid or at least cusp d):

(0) Talonid (or cusp d) lacks medial and longitudinal crest;

(1) Medialmost cristid ("pre−entoconid cristid") of talonid in alignment with the metaconid or with the postmetacristid if the latter is present (the postmetacristid defined as the posterior crest of metaconid that is parallel to the lingual border of the crown), but widely separated from the latter;

(2) Medialmost cristid of talonid ("prehypoconulid" cristid, based on cusp designation of Kielan−Jaworowska et al. 1987) is hypertrophied and in alignment with the postmetacristid and abuts the latter by a V−shaped notch;

(3) “Pre−entocristid” crest is offset from the metaconid (and postmetacristid if present), and the “pre−entocristid” extends anterolingually past the base of the metaconid;

66. Lower Molar–Pre-Entocristid on Talonid Heel (n°48, disparition ex-état 2, ex-3 devient 2).

0. Talonid lacks medial and longitudinal crest

1. Pre-entoconid cristid of talonid in alignment with the metaconid or with the postmetacristid if the latter is present

2. Pre-entocristid crest is offset from the metaconid and it is lingual to the base of the metaconid

+ voir caractère 101

Caractère 12

49. Labial curvature of the primary cusp a of lower molars (at the base level) relative to the curvature of cusps b and c:

(0) Cusp a and cusps b, c have the same degree of bulging;

(1) Cusp a is far more bulging than cusps b, c (“bulging” of Mills 1971; “triangulation” of cusps on posterior molars of Kielan−Jaworowska and Dashzeveg 1998);

Supprimé dès Luo et al 2007, repris dans Rougier et al 2012

Caractère 13

50. Labial curvature of the main cusps A, B, C at the level of the cusp valley of the penultimate and ultimate upper molars (see Mills 1971: 53; Kielan−Jaworowska and Dashzeveg 1998):

(0) Cusps A, B, and C have about the same degree of curvature;

(1) Cusp A is slightly concave (or far less convex than either cusp B or cusp C);

Supprimé dès Luo et al 2007, repris dans Rougier et al 2012

Caractère 14

51. Labiolingual compression of the primary functional cusps of the lower molars (at the level of the cusp base but above the cingulid):

(0) Absent;

(1) Present.

Supprimé dès Luo et al 2007, repris dans Rougier et al 2012

Caractère 15

52. Posterior lingual cingulid of the lower molars:

(0) Absent or weak;

(1) Distinctive;

(2) Strongly developed, crenulated with distinctive cuspules (such as the kuehneocone);

Caractère 16

53. Anterior internal (mesiolingual) cingular cuspule (e) on the lower molars:

(0) Present;

(1) Absent;

71. Anterior internal (mesio-lingual) cingular cuspule (e) on the lower molars (n°53, ex-état 0 divisé en état 0, 1 et 2):

(0) Present as an anterior cuspule but not at the cingulid level;

(1) Present, at the cingulid level;

(2) Present, positioned above the cingulid level;

(3) Absent.

71. Anterior internal (mesio-lingual) cingular cuspule (e) on the lower molars (n°53, création nouvel état 3, ex-état 3 devient 4):

(0) Present as an anterior cuspule but not at the cingulid level;

(1) Present, at the cingulid level;

(2) Present, positioned above the cingulid level;

(3) hypertrophied cusp e = pseudo-hypoconulid;

(4) Absent.

Caractère 17

54. Anterior and labial (mesiolabial) cingular cuspule (f):

(0) Absent;

(1) Present;

72. Anterior and labial (mesio-buccal) cingular cuspule (f) (n°54, création nouvel état 2):

(0) Absent;

(1) Present;

(2) Hypertrophied to form pseudo-hypoconid.

Caractère 18

55. Mesial transverse cingulid above the gum:

(0) Absent,

(1) Present below the trigonid but weak and discontinuous (as individual cuspule e, or f, or both, but e and f are not connected);

(2) Present in a continuous shelf below the trigonid (with no relations to protoconid and paraconid), and without occlusal function;

(3) Cingular area present, and has occlusal contact with the upper molar

73. Mesial cingulid features above the gum (n° 55, reformulation des états):

(0) Absent;

(1) Weak and discontinuous, with individualized cuspules below the trigonid (as individual cuspule e, f, or both, but e and f are not connected);

(2) Present, in a continuous shelf below the trigonid (with no relations to the protoconid and paraconid), without occlusal function;

(3) Present, with occlusal contact to the upper molar.

73. Mesial Transverse Cingulid (n°55, disparition ex-état 1, ex-2 devient 1, ex-3 devient 2).

0. Absent

1. Present as a continuous shelf below the trigonid without occlusal function

2. Present, having occlusal contact with the upper molar

Caractère 19

56. Cingulid shelf wrapping around the anterointernal corner of the molar to extend to the lingual side of the trigonid below the paraconid:

(0) Absent;

(1) Present, weakly developed, and its lingual part without occlusal function to upper molars;

(2) Present, strongly developed, and its lingual part without occlusal function to upper molars;

(3) Present, weakly developed, and with occlusal function to the upper molar;

74. Cingulid shelf wrapping around the anterolingual corner of the molar to extend to the lingual side of the trigonid below the paraconid (n°56, redefinition des états):

(0) Absent;

(1) Present, without occlusal function to the upper molars;

(2) Present, with occlusal function to the upper molars.

(3) Absent, with occlusal function. (il y a un truc absent qui a une fonction….)

74. Cingulid shelf wrapping around the anterolingual corner of the molar to extend to the lingual side of thetrigonid below the paraconid (n°56, disparition état 3 de Luo et al 2007):

(0) Absent;

(1) Present, without occlusal function to the upper molars;

(2) Present, with occlusal function to the upper molars.

74. Cingulid Shelf Wrapping Around Anterointernal Corner of Lower Molar to Extend to Lingual Side of Trigonid Below Paraconid (n°56, redefinition des états).

0. Absent

1. Present, weakly developed restricted to the mesial aspect of the paraconid base

2. Present, strongly developed, running along most of the lingual base of the paraconid

Caractère 20

57. Postcingulid (distal transverse cingulid) on the lower molars:

(0) Absent;

(1) Present, oblique, and connected to hypoconulid,

(2) Present, horizontal above the gum level;

75. Postcingulid (distal transverse cingulid above the gum level) on the lower molars (n°57, disparition d'un état, l'ancien 2 devient 1):

(0) Absent;

(1) Present, horizontal above the gum level.

Caractère 21

58. Interlocking mechanism between two adjacent lower molars:

(0) Absent;

(1) Present, posterior cingular cuspule d (or the base of the hypoconulid) of the preceding molar fits in between cingular cuspules e and f of the succeeding molar;

(2) Present, posterior cingular cuspule d fits between cingular cuspule e and cusp b of the succeeding molar;

(3) Present, posterior cingular cuspule d of the preceding molar fits into an embayment or vertical groove of the anterior aspect of cusp b the succeeding molar (without any involvement of distinctive cingular cuspules in interlocking);

76. Interlocking mechanism between two adjacent lower molars (n° 58, ajout état 4):

(0) Absent;

(1) Present, posterior cingular cuspule d (or the base of the hypoconulid) of the preceding molar fits in between cingular cuspules e and f of the succeeding molar;

(2) Present, posterior cingular cuspule d fits between cingular cuspule e and cusp b of the succeeding molar;

(3) Present, posterior cingular cuspule d of the preceding molar fits into an embayment or vertical groove of the anterior aspect of cusp b of the succeeding molar (without any involvement of distinctive cingular cuspules in interlocking).

(4) Anterior corner of succeeding lower molar overlapping posterior corner of preceding lower molar.

86. Lower molars interlocking – presence vs. absence (issu division d'avec le suivant depuis n°58, 76, 78):

(0) Absent;

(1) Present:

87. Lower molars interlocking - types of interlocking mechanisms (issu division d'avec le précédent depuis n°58, 76, 78):

(0) Posterior cingular cuspule d (or the base of the hypoconulid) of the preceding molar fits in between cingular cuspules e and f of the succeeding molar;

(1) posterior cingular cuspule d fits between cingular cuspule e and cusp b of the succeeding molar;

(2) posterior cingular cuspule d or cingulum of the preceding molar fits into an embayment or vertical groove of the anterior aspect of the succeeding molar (without any involvement of distinctive cingular cuspules in interlocking).

(3) Anterior corner of succeeding lower molar overlapping posterior corner of preceding lower molar.

Caractère 22

59. Size ratio of the posterior lower molars:

(0) Last three postcanines forming a series of posteriorly decreasing size: penultimate molar is larger than the ultimate molar but smaller than the preceding molar (for a total of 5 molars: m3_m4_m5; for a total of 4 molars: m2_m3_m4, or for a total of 3 molars, m1_m2_m3);

(1) Penultimate molar is the largest of molars (m1_m2_m3>m4);

(2) Ultimate molar the largest;

77. Size ratio of the last three lower molars (n° 59, ajout état 3):

(0) Ultimate molar is smaller than the penultimate molar (m1≥m2≥m3; or m2≥m3≥m4; or m3≥m4≥m5; or m4≥m5≥m6);

(1) Penultimate molar is the largest of the molars (m1≤m2≤m3≥m4; or m1≤m2>m3);

(2) Ultimate molar is larger than the penultimate molar (m1≤m2≤m3);

(3) Equal size.

79. Size ratio of the last three postcanines (n°59, 77 définition des états selon Luo et al 2007, disparition reference mâchoire inférieure):

(0) Ultimate molar is smaller than the penultimate molar (m1≥m2≥m3; or m2≥m3≥m4; or m3≥m4≥m5; or m4≥m5≥m6; or p4≥m1≥m2);
(1) Penultimate molar is the largest of the molars (m1≤m2≤m3≥m4; or m1≤m2>m3);
(2) Ultimate molar is larger than the penultimate molar (m1≤m2≤m3);
(3) Equal size.

Caractère 23

60. Trigonid configuration on lower molars:

(0) Paraconid in anterolingual position and the paraconid−protoconid line forming an oblique angle to longitudinal axis of the tooth;

(1) Paraconid lingually positioned and the paraconid−protoconid line forming a more transverse triangle to the longitudinal axis of the tooth;

(2) Paraconid lingually positioned and appressed to the metaconid (“twinned”);

78. Paraconid position relative to the other cusps of the trigonid on the lower molars (based on the lower second molar) (n°60, reformulation des états, creation état 3):
(0) Paraconid in anterolingual position;
(1) Paraconid lingually positioned (within lingual 1/4 of the trigonid width);
(2) Paraconid lingually positioned and appressed to the metaconid;
(3) Paraconid reduced in the selenodont/lophodont patterns.

Caractère 24

61. Orientation of the paracristid (crest between cusps a and b) relative to the longitudinal axis of the molars (from Hu et al. 1998). (This is separated from character 60 because of different distribution of the a–b crest among mammals with non−triangulated molars):

(0) Longitudinal orientation;

(1) Oblique;

(2) Nearly transverse;

Caractère 26

63. Molar (m2) trigonid/talonid width ratio:

(0) Narrow (talonid _40% of trigonid);

(1) Wide (talonid is 40–70% of the trigonid in width);

(2) Talonid is equal or wider than trigonid;

Caractère 27

64. Lower molar hypoflexid (the labial embayment between trigonid part and the talonid or the posterior heel located between the protoconid and hypoconid above the cingulid level):

(0) Absent or shallow;

(1) Deep (but less than 50% of the talonid width);

(2) Very deep (_60% of the width of the talonid);

84. Lower molar hypoflexid (concavity anterolabial to the hypconid or cusp d) (n°64, création nouvel état 3):

(0) Absent or shallow (all "triconodont-like" teeth are coded as "0" here as long as they have cuspule d);

(1) Deep (40~50% of talonid width);

(2) Very Deep (>65%);

(3) Pseudo-hypoflexid (40% to 65% of the pseudo-talonid width).

Caractère 28

65. Morphology of the talonid (or posterior heel) of the molars:

(0) Absent;

(1) Present as an incipient heel or a cingulid, or cingular cuspule (d);

(2) Present as a heel (with at least one functional cusp);

(3) Present as a transverse “V−shaped” basin with two functional cusps;

(4) Present as a functional basin, rimmed with 3 functional cusps (if the entoconid is vestigial, there is a functional crest to define the medial rim of the basin);

85. Morphology of the talonid (or the posterior heel) of the molar (n°65, ancient état 3 devient 2, disparition ancient état 2, nouvel état 3):

(0) Absent;

(1) Present, as an incipient heel, a cingulid, or cingular cuspule (d);

(2) Present, as a transverse 'V-shaped' basin with two functional cusps;

(3) Present, as an obtuse 'V-shaped' triangle;

(4) Present, as a functional basin, rimmed with 3 functional cusps (if the entoconid is vestigial, there is a functional crest to define the medial rim of the basin).

85. Morphology of the talonid (or the posterior heel) of the molar (n°65, définition des états selon Luo et al 2007 + création état 5):

(0) Absent;

(1) Present, as an incipient heel, a cingulid, or cingular cuspule (d);

(2) Present, as a transverse 'V-shaped' basin with two functional cusps;

(3) Present, as an obtuse 'V-shaped' triangle;

(4) Present as a basin (rimmed with 3 functional cusps with at leas is a functional crest to define the medial rim of the basin if the entoconid is not already present) with wear occurs only crests but absent from the bottom of the basin (following Martin and Rauhut 2005);

(5) as a functional basin (rimmed by 3 cusps) with wear occurs inside the basin.

85. Talonid Basin (n°65, issu division d'avec le suivant).

0. Absent

1. Present

86. Morphology of Rear Portion of Molariform (n°65, issu division d'avec le précédent).

0. Single cusp (d), cingulum or absent

1. Present as an incipient heel

2. Present as a heel (with at least one functional cusp)

3. Present as a transverse V-shaped basin with two major cusps

4. Rimmed with three major cusps

Caractère 29

66. Hypoconulid (revised from Luo, Cifelli, and Kielan−Jaworowska 2001; we designate the distal cingulid cuspule d as the homolog to the hypoconulid in the teeth with linear alignment

of main cusps; we assume that the cusp to be the hypoconulid if there is only a single cusp on the talonid in the teeth with reversed triangulation):

(0) Present, but not elevated above the cingulid level;

(1) Present, elevated above the cingulid level, labially positioned;

(2) Present and larger, with occlusal contact to the upper molar (elevated above the cingulid level, lingually positioned);

86. Hypoconid (we designate the distal cingulid cuspule d as the homolog to the hypoconid in the teeth with linear alignment of the main cusps; we assume the cusp to be the hypoconid if there is only a single cusp on the talonid in the teeth with reversed triangulation) (n°66, reformulation):
(0) Present, but not elevated above the cingulid level;
(1) Present (as distal cusp d, sensu Crompton 1971), elevated above the cingulid level, labially positioned (or tilted in the lingual direction);
(2) Present (larger than cusp d, with occlusal contact to the upper molar), elevated above the cingulid level, lingually positioned.

87. Hypoconulid (=Cusp d) (n°66, disparition ex-état 2, problem sur les noms “hypoconides » et hypocolunides avec caractère suivant, voir Luo et al 2007).
0. Hypoconulid at the cingulid level
1. Hypoconulid elevated above the cingulid level

Caractère 30

67. Hypoconulid (= distal cuspule d, after Crompton 1971):

(0) Absent;

(1) Present, posterior, median and equal distant to entoconid and hypoconid;

(2) Present and placed on the lingual rim of the talonid basin;

87. Hypoconulid (if there are only two functional cusps on the talonid, we assume that the second and more lingual cusp on the talonid to be the hypoconulid, following the rationale of Kielan-Jaworowska et al. 1987) (n°67, ajout état 3, modification état 2):
(0) Absent;
(1) Present, and median (near the mid-point of the transverse talonid width);

(2) Present, and placed within the lingual 1/3 of the talonid basin;

(3) Incorporated into the crest of lophodont or selenodont conditions.

88. Hypoconid (n°67, disparition ex-état 2 et changement état 1, problem sur les noms "hypoconides » et hypocolunides avec caractère précédent, voir Luo et al 2007)..

0. Absent

1. Present

Caractère 31

68. Hypoconulid anteroposterior orientation: procumbent *versus* reclined (applicable to taxa with at least two cusps on the talonid):

(0) Cusp tip reclined and posterior wall of hypoconulid is slanted and overhanging the root;

(1) Cusp tip procumbent and the posterior wall of the cusp is vertical;

(2) Cusp tip procumbent and the posterior wall is gibbous,

88. Anterior lower molar (preferably the first, or the second if the first is not available) - hypoconulid - anteroposterior orientation: procumbent vs. reclined (applicable to the taxa with at least two cusps on the talonid) (n°68, légère reformulation du caractère):

(0) Cusp tip reclined and the posterior wall of the hypoconulid is slanted and overhanging the root;

(1) Cusp tip procumbent and the posterior wall of the cusp is vertical;

(2) Cusp tip procumbent and the posterior wall is gibbous.

89. Hypoconulid Orientation (n°68, redefinition des états).

0. Cusp tip erect or procumbent

1. Cusp tip recumbent (reclined posteriorly)

Caractère 33

70. Morphology of entoconid:

(0) Absent;

(1) Present;

(2) Present and twinned with hypoconulid;

91. Entoconid (if there are three functional cusps on the talonid, we assume that the third and the lingual-most functional cusp on the talonid is the entoconid, following the rationale given by Kielan-Jaworowska et al. 1987) (n°70, division ancient état 1 en état 1 et 2, ancient état 2 devient 3):

(0) Absent;

(1) Present, about equal distance to the hypoconulid as to the hypoconid;

(2) Present, with slight approximation to the hypoconulid (distance between the hypoconulid and entoconid noticeably shorter than between the hypoconulid and hypoconid);

(3) Present, and twinned with the hypoconulid.

90. Entoconid (n°70, modification état 1).

0. Absent

1. Present but far from hypoconulid, at least equal to one cusp Length

2. Present and twinned with hypoconulid

Caractère 34

71. Height of the entoconid as compared to other cusps of the talonid (character after Rougier et al. 1998) (applicable only to the taxa with triangulated molar cusps and a talonid or cusp d):

(0) Absent on the talonid;

(1) Lower than the hypoconulid (or even vestigial);

(2) Subequal height as the hypoconulid;

92. Height ratio of the medial side of the crown (apex of the hypoconid to the base of the labial crown) vs. the most lingual cusp on the talonid to the base of the labial crown (this character can be based either on the entoconid if the entoconid is present or the hypoconulid if the entoconid cannot be scored) (n°71, division ex-état 2 en état 2 et 3):

(0) Entoconid absent on the talonid heel;

(1) Entoconid lower than the hypoconid;

(2) Entoconid near the height of the hypoconid;

(3) Entoconid near the height of the hypoconid and linked to the hypoconid by a transverse crest.

91. Height of Entoconid Compared With Other Talonid Cusps (n°71, disparition ex-état 0, descente des autres en conséquence).

0. Lower than the hypoconulid (or even vestigial)

1. Subequal height to the hypoconulid

Caractère 35

72. Alignment of the paraconid, metaconid, and entoconid on lower molars (applicable only to taxa with triangulation of trigonid cusps and entoconid present on talonid) (Clemens 1979a):

(0) Cusps not aligned;

(1) Cusps aligned;

Caractère 36

73. Aspect ratio in occlusal view (length *versus* width) of the functional talonid basin at the cingulid level (based on m2):

(0) Longer than wide (or narrows posteriorly);

(1) Length equals width;

(2)Wider than long;

93. Aspect Radio in Occlusal View (Length vs. Width) of Functional Talonid Basin at Cingulid Level (n°73, disparition reference à m2).

0. Longer than wide

1. Length equals width

2. Wider than long

Caractère 37

74. Elevation of the talonid (measured as the height of hypoconid from the cingulid on the labial side of the crown) relative to the trigonid (measured as the height of protoconid from the cingulid) (applicable only to the teeth with reversed triangle):

(0) Hypoconulid/protoconid height ratio less than 20% (hypoconulid or cusp d is on the cingulid);

(1) Hypoconulid/protoconid height ratio between 25% and 35% (talonid cusp elevated above the cingulid level);

(2) Hypoconulid/protoconid height ratio between 40% and 50%;

(3) Hypoconulid/protoconid height ratio between 50% and 60%;

(4) Hypoconid/protoconid height ratio between 60% and 70%;

95. Elevation of the talonid (measured as the height of the hypoconid from the cingulid on the labial side of the crown) relative to the trigonid (measured as the height of protoconid from the cingulid) (applicable only to the teeth with reversed triangulation) (n°74, redefinition des états 2, 3 et 4):
(0) Hypoconid/protoconid height ratio less than 20% (hypoconid or cusp d is on the cingulid);
(1) Hypoconid/protoconid height ratio between 25% and 35% (talonid cusp elevated above the cingulid level);
(2) Hypoconid/protoconid height ratio between 40% and 60%;
(3) Hypoconid/protoconid height ratio between >60% and 80%;
(4) Equal height.

94. Elevation of Talonid (n°74, fusion ex-état 3 et 4 en état 3).
0. Hypoconulid/protoconid height ratio less than 20% (hypoconulid = cusp d)
1. Hypoconulid/protoconid height ratio between 25% and 35%
2. Hypoconulid/protoconid height ratio between 40% and 50%
3. Hypoconulid/protoconid height ratio: 50% or higher

Caractère 38

75. Width of upper molar stylar shelf (the area labial to the paracone–metacone) (Prothero 1980; as modified by Hu et al. 1997, 1998):

(0) Absent;

(1) Present and narrow;

(2) Present and broad;

(3) Present, broad, and with a hyptertrophied ectoflexus;

96. Size (labiolingual width) of the upper molar labial stylar shelf on the penultimate molar (n°75, issu division d'avec le caractère suivant):

(0) Absent;

(1) Present and narrow;

(2) Present and broad.

97. Presence vs. absence of the ectoflexus on the upper second molar (or postcanines in the middle portion of the postcanine row). Comments: justification for separating this character from the next is that only a single upper molar is known for three taxa that are otherwise crucial for assessing the timing and biogeography of the divergence of earliest-known crown therians: Murtoilestes, Atokatheridium, and Kokopellia. Nanolestes and Shuotherium are alsoonly represented by isolated upper molars. Therefore, the gradient character of the ectoflexus along the tooth row is not applicable for these taxa. Presence vs. absence of the ectoflexus alone does not exhaust the systematic distribution of the ectoflexus-related characters among taxa with isolated upper molars (n°75, issu division d'avec le caractère precedent).

(0) Absent or weakly developed;

(1) Present.

98. Ectoflexus gradient along the molar series (see the above for justification of separating presence/absence from the gradient of the ectoflexus on the upper molar(s)):

(0) Present on penultimate molar, but weakly developed or absent on the anterior molars;

(1) Present on the penultimate and preceding molars.

95. Width of Upper Molar Stylar Shelf (n°75, disparition état 3, échange position ex-états 0 et 2).

0. Present and broad

1. Present and narrow

2. Absent

133. Deep Ectoflexus on Upper Molars (fusion 75/97 et 98).

0. Present only on penultimate/ultimate molar

1. On penultimate and preceding molar

2. Strongly reduced to absent

voir caractère 62

Caractère 39

76. Morphology of labial cingulum of the upper molars:

(0) Absent or weak;

(1) Distinctive cingulum, straight;

(2) Distinctive cingulum with strong ectoflexus (but without hypertrophied stylar cusps);

(3) Wide cingulum with ectoflexus, plus individualized and hypertrophied stylar cusps;

(4) Cingulum crenulated with distinctive and even−sized multiple cuspules;

99. Morphological features on the labial cingulum or stylar shelf of the upper molars (excluding the parastyle and metastyle) (n°76, disparition ex-état 2, ex-état 3 devient état 2, creation nouvel état 3):

(0) Indistinctive;

(1) Distinctive cingulum, without cuspules;

(2) Individualized or even hypertrophied cuspules;

(3) W-pattern on stylar shelf;

(4) Cingulum crenulated with distinctive and even-sized multiple cuspules.

Caractère 40

77. Upper molars with a functional lingual protocone or pseudoprotocone that grinds against a basin on the lowers:

(0) Absent;

(1) Present;

100. Upper molar protocone (n°77, redefinition et redivision des états):

(0) Functional cusp and lingual swelling absent;

(1) Functional cusp absent, but the lingual side is more swollen than the labial side at the cingular level;

(2) Functional cusp present.

Caractère 47

83. Upper molars cuspule E (an enlarged version of E would be the metastyle, after Crompton 1971):

(0) Present;

(1) Absent;

113. Stylar cuspule “A”, the parastyle, on the upper molars (of the Bensley-Simpson system; cuspule “E” of the Crompton designation) (n°83, légère modification définition état 0):
(0) Present (at least a swelling is present);
(1) Absent.

Caractère 48

84. Upper molars interlock:

(0) Absent;

(1) Tongue−in−groove interlock;

120. Upper molar interlock (n°84, ajout état 2):
(0) Absent;
(1) Tongue-in-groove interlock;
(2) Parastylar lobe of a succeeding molar lumbricated with the metastylar region of a preceding molar.

137 (R). Upper molar interlock – presence vs. absence (issu d’une division d’avec caractère suivant depuis n°84, 120, 122):
(0) Absent;
(1) Present:
138. Anterior molar(s) - types of upper molar interlock (issu d’une division d’avec caractère précédent depuis n°84, 120, 122):
(0) Notch interlock (with cingular cusps involved or without);
(1) Tongue-in-groove interlock;
(2) Parastylar lobe of a succeeding molar lumbricated with the metastylar region of a preceding molar
139. Posterior upper molar(s) - types of upper molar interlock (issu d’une division d’avec caractère précédent depuis n°84, 120, 122):
(0) Posterior end of preceding molar lumbricating anterolabial side of ultimate upper molar
(1) Parastylar lobe of a succeeding molar lumbricated with the metastylar region of a preceding molar
(2) Tongue-in-groove interlock

Caractère 49

85. M1—number of cusps within the main functional straight cusp row (if there are multiple rows, the labial row is designated):

(0) Three main functioning cusps (or fewer) within a row;

(1) Four main functioning cusps or more;

Exclu dès Luo et al 2007

Caractère 50

86. Multi−cuspate m1—number of cusps within the main functional straight multi−cusp row (if there are multiple rows, the labial row is designated):

(0) Three main functioning cusps (or fewer) within a row;

(1) Four main functioning cusps or more;

Exclu dès Luo et al 2007

Caractère 51

87. Outline of m1:

(0) Oval−shaped;

(1) Laterally compressed;

(2) Oblong with slight labial bulge;

(3) Oblong with a strong labial bulge;

(4) Triangular or tear−drop shaped;

(5) Rectangular (or slightly rhombdoidal.

124. Outline of the lower first molar crown (in crown view) (n°87, disparition ex-état 0 et 3, décalages des restants en consequence, ajout nouvel état 4):

(0) Laterally compressed;

(1) Oblong with slight labial bulge;

(2) Triangular or teardrop shaped;

(3) Rectangular (or rhomboidal);

(4) circular.

Caractère 52

88. Aspect ratio of M1:

(0) Laterally compressed;

(1) Longer than transversely wide (oval−shaped or spindle shaped);

(2) Transversely wider than long (triangular outline);

(3) Transversly wide (dumbbell shaped);

(4) Rectangular or nearly so;

125. Aspect ratio and outline of the upper first molar (n°88, disparition ex-état 3, ajout nouvel état 4):

(0) Laterally compressed;

(1) Longer than transversely wide (oval-shaped or spindle shaped);

(2) Transversely wider than long (triangular outline);

(3) Rectangular or nearly so;

(4) circular.

Caractère 53

89. Multi−cuspate row in the upper molars: cusp height gradient within the individual longitudinal rows of cusps:

(0) Cusps in a row with more or less equaly height;

(1) Distal cusp highest, with a gradient of anteriorly descreasing height

167. Multi-rowed upper premolar/molar - cusp ratio in the labial row of multi-cusp row (n°89, inversion des états 0 et 1):

(0) Distal cusp highest, with a gradient of anteriorly decreasing height;

(1) Cusps in same row of equal height.

188 (R). Upper premolar/molar with multi-cusped rows - cusp ratio in the labial row of multi-cusp row on ultimate Upper molar (n°89, 167, états selob Luo et al 2007, 170, 175,

changement énoncé du caractère):

(0) Distal cusp highest, with a gradient of anteriorly decreasing height;

(1) Cusps in same row of equal height.

Exclu par Rougier et al 2012

Caractère 54

90. Lower molars with multicuspate rows—U−shaped ridge:

(0) U−shaped ridge (anterior crest) absent at the mesial end of lower molar with open valley−basin between longitudinal cusp rows;

(1) Presence of the U−shaped ridge (anterior crest) at mesial end of lower molar enclosing the valley−basin between longitudinal cusp rows

165. U-shaped ridge in the lower multi-rowed molars (n°90, reformulation):

(0) Absent;

(1) Present.

183 (R). U-shaped transverse ridge in the lower multi-rowed molars (n°90, 165, 168, 172, division ex-état 1 en états 1 et 2):

(0) Absent;

(1) Present, at second anterior cusp:

(2) Present, at the anterior rim.

Caractère 55

91. Multicuspate M2 with longitudinal multicuspate rows—lingual offset with M1:

(0) Upper M2 lingually offset from M1 so that the lower m2 lingual row occludes the lingual side of the M2 upper labial row;

(1) m2 labial row occludes to the labial side of the M2 labial row;

168. Alignment of multi-cuspate upper first and second molars (n°91, reformulation):

(0) Second lingually offset from the first so that the lower second molar lingual row occludes with the lingual side of the upper second labial row;

(1) Lower second molar labial row occludes with the labial side of the upper second labial row.

190 (R). Last (ultimate) upper molar - alignment of multi-cusped rows (n°91, 168, 171, 176, reformulation sans changement de fond des états):
(0) Absence of lingual offset of ultimate molar to penultimate molar - Lower ultimate molar lingual row occludes with the lingual side of the upper second lingual row.
(1) Presence of offset of ultimate molar from the penultimate molar: the lower ultimate molar lingual row occludes with the lingual side of the upper second labial row, or the labial side of the lower ultimate molar occluding with the labial side of the upper ultimate molar.

Caractère 56

92. Multicuspate lower molars: cusp height ratio within the labial longitudinal row:

(0) The first cusp (b1 by the designation of Butler 2000) is the highest so that the labial cusp row forms a series of decreasing height posteriorly;

(1) The second cusp (b2 by the designation of Jenkins et al. 1997; Butler 2000) is the highest;

166. Single-aligned and the labial row of multi-cusp or multi-rowed lower molar - Cusp ratio (n°92, inversion des états 0 et 1):
(0) Second mesial cusp (b2 of Butler 2000) highest;
(1) Mesial cusp (b1 of Butler 2000) highest.

173. Single-aligned and the buccal row of multi-cusp or multi-rowed lower molar -Cusp ratio (n°92, 166, chgt états, 169, ajout état 2):
(0) Second mesial cusp (b2 of Butler 2000) highest
(1) Mesial cusp (b1 of Butler 2000) highest;
(2) all cusps are of equal height.

166. Single-aligned and the labial row of multi-cusp or multi-rowed lower molar - Cusp ratio (n°92, états selon Luo et al 2007, ajout état 2):
(0) Second mesial cusp (b2 of Butler 2000) highest
(1) Mesial cusp (b1 of Butler 2000) highest;
(2) First mesiolingual cusp (a1 of Butler 2000) highest.

185 (R). Cusp ratio on either lingual or buccal row of multi-rowed lower molar (character states revised) (n°92, 166, 169, 173, refonte complete et élargiseement du caractère et de ses

états):

(0) All cusps are of equal height;

(1) Mesial cusp on lingual row highest;

(2) Mesial cusp on labial row (b1 of Butler 2000) highest;

(3) Second mesial cusp (b2 of Butler 2000) highest

Caractère 57

59. B1 cusp on the upper molar (applicable to molars with triangulation):

(0) Absent;

(1) Present:

Caractère 59

80. Angle of the paracristid (b-a crest) and the protocristid (a-c crest) on the lower molar:

(0) > 90o;

(1) 90o ~ 50o;

(2) < 35o.

Caractère 60

82. Anteroposterior shortening at the base of the trigonid relative to the talonid (applicable only to taxa with a talonid heel with a distal cusp d; measured at the lingual base of the lower second molar trigonid where possible):

(0) Trigonid long (extending over 3/4 of the tooth length);

(1) Swelling on the side walls of the trigonid (taxa assigned to this character state have a trigonid length ratio 45%~50%; but their morphology is different from all other states in that their side walls are convex);

(2) No shortening (trigonid 50-65% of tooth length);

(3) Some shortening (the base of trigonid < 50% of tooth length);

(4) Anteroposterior compression of trigonid (trigonid 40~45% of the tooth length).

Caractère 72

115. Stylar cuspule “B” (opposite the paracone) (based on the upper second molar if available):

(0) Vestigial to absent;

(1) Small but distinctive;

(2) Subequal to the parastyle;

(3) Large (subequal to parastyle), with an extra "B-1" cuspule in addition to "B".

Caractère 82

81. Procumbent Paraconid on Lower Molars.

0. Absent

1. Present, projected as a conical cusp beyond crown base

Caractère 85

106. Central Crest (Medianergrat) in Triangular Upper Molariforms.

0. Absent

1. Present

Caractère 86

108. Crown Length/Width Ratio Among Lower Molariforms.

0. Crown longer than wide

1. Crown length/width subequal

2. Crown wider than long

Caractère 87

109. Shape of Lingual Margin in Lower Molars.

0. Notched

1. Flat

Caractère 88

111. Crown Height Difference Between Buccal and Lingual Sides in Lower Molariforms.

0. Buccal and lingual sides of similar height

1. Buccal side much taller than lingual side

Caractère 90

126. Stylocone Relationship in Triangular Teeth.

0. Stylocone connected to paracrista or mesial to its end

1. Stylocone distal to labial ending of paracrista

2. Stylocone detached of preparacrista occupying central position on crown

Caractère 91

127. Stylocone Size in Triangular Teeth.

0. Absent

1. Small stylar cusp

2. Prominent cusp subequal or larger than paracone

Caractère 92

128. Parastylar Hook in Upper Molars.

0. Absent or poorly developed

1. Present

Caractère 93

129. Paracone Orientation.

0. Erect

1. Recumbent

2. Procumbent

Caractère 97

140. Trigon Major Axis Orientation. As indicated by the distal wall of the trigonid:

0. Labially

1. Mesially

2. Sharply distal

Caractère 98

141. Lingual Cingulum/Trigon on Paracone. Trigon and/or protocone are considered elaborations of the cingulum:

0. Absent

1. Present

Caractère 100

144. Cingula Pre- and Postcingula/Cingulid Height.

0. Absent or little differentiated

1. Close to crown base

2. Elevated reaching occlusal surface

Caractère 102

72. Posterior-most upper molar with multi-rows (score on M2 for multituberculates; posterior postcanines for taxa without differentiation of premolars vs. molars) – lingual-most functional row occluding the lingual side of lowers:

(0) Absent:

(1) Present:

Caractère 103

73. Anterior-most upper molars with multi-rows - lingual-most functional row of the upper occluding the lingual side of the lingual row of lower molar (or score on anterior-most postcanines in taxa that have no premolar and molar undifferentiation):

(0) Absent:

(1) Present:

Caractère 105

71(New). The mesial U-ridge of upper molars with multi-rows of cusps:

(0) Absent;

(1) Present;

(2) Closed by the cuspules.

Caractère 106

72(New). Cuspules and/or transverse fluting of the central basin on upper molars:

(0) Absent;

(1) Present.

Caractère 107

73(New). Position of cusp A1 on upper molars:

(0) A1 is at the same level as B1;

(1) A1 is distal to B1.

Caractère 108

74(New). M1 cusp formula (A row relative to B row):

(0) 4:4 or lower;

(1)5:4;

(2) 6:4 or higher

Caractère 109

83(New). Lower m1 with multicuspate rows- lingual row occlude into the basin of upper molar:

(0) Absent;

(1) Present.

Caractère 110

84(New). Lower m2 with multicuspate rows – the lingual cusp row occlude into the basin of upper molar:

(0) Absent;

(1) Present

Caractère 111

85(New). The distal end of lower molars with multi-rows of cusps:

(0)Absent;

(1) Closed by the ridge;

(2) Closed by the cuspules.

Caractère 112

86(New). The cuspules or ridges of the central basin on lower molars:

(0) Absent;

(1) Present.

Caractère 113

87(New). Fusiform (“spindle-shaped”) shearing valley between lingual cusp row and labial cusp row on lower molar:

(0) Absent;

(1) Present.

Caractère 114

88(New) m1 main lingual row cusp count (distribution revised):

(0) 4 or fewer;

(1) 5;

(2) 6 or more.

Caractère 115

89(New). Lower molars with pyramidal cusps (in contrast to conical cusps):

(0) absent;

(1) present.

Caractère 116

150(New). Outline of the lower second molar crown (in crown view):

(0) Laterally compressed;

(1) Oblong with slight labial bulge;

(2) Triangular or tear-drop shaped;

(3) Rectangular (or rhomboidal);

(4) circular.

Caractères non-informatifs dans ma sélection

Caractère 4

41. Development of postprotocrista on the upper molar for double rank postvallum shear (applicable to molars with reversed triangulation of molar cusps) (from Cifelli 1993b):

(0) Postprotocrista is short and does not extend labially beyond metacone;

(1) Postprotocrista is long and extends labially beyond metacone;

61. Rank of postvallum shear (on the upper second molar; applicable to molars with reversed triangulation of cusps) (increasing the ranks of postvallum shear and can be ordered) (n°41, redéfinition complète des états):

(0) Present but only by the first rank: postmetacrista;

(1) Present, with the addition of a second rank (postprotocrista below postmetacrista) but the second rank does not reach labially below the base of the metacone;
(2) Metacingulum/metaconule present, in addition to postprotocrista, but the metacingulum crest does not extend beyond the base of the metacone;
(3) Metacingulum extended beyond metacone;
(4) Metacingulum extended to the metastylar lobe;
(5) Second rank postvallum shear forming a broad shelf (as in selenodonty).

58. Development of Postprotocrista on Upper Molars for Double Rank Postvallum Shear. For molars with reversed triangulation of molar cusps (n°41):
0. Postprotocrista is short and does not extend labially beyond Metacone
1. Postprotocrista is long and extends labially beyond metacone

Caractère 25

62. Mesiolingual surface of paraconid on lower molars (applicable only to taxa with triangulation of molar cusps):

(0) Rounded:

(1) Forming a keel;

Caractère 32

69. Hypoconulid labial postcingulid (shelf) on lower molars (non−homologous with postcingulid of character 57 because of different relationship to talonid cusps; applicable to taxa with identifiable hypoconid and hypoconulid only) (Cifelli 1993b):

(0) Absent;

(1) Present as a crest descending mesiolabially from apex of hypoconulid to base of hypoconid;

Exclu par Rougier et al 2012

Caractère 41

78. Transverse width of the protocone on upper molars (applicable only to taxa with protocone present; M2 measured where possible):

(0) Narrow (distance from protocone apex to paracone apex less than 0.60 of total tooth width);

(1) Strongly transverse (distance from protocone apex to paracone apex greater than 0.60 of total tooth width);

Supprimé dès Luo et al 2007, repris dans Rougier et al 2012

Caractère 42

79. Anteroposterior development of the lingual region on the upper molars (applicable only to taxa with triangulation of molar cusps and an occluding lingual portion of the upper molar; for the taxa with conules, this is measured between the paraconule and metaconule; for those taxa without conules, this is measured as the length of the tooth labial to the base of paracone; M2 measured where possible):

(0) Narrow (anteroposterior distance medial to the paracone and metacone less than 0.30 of total tooth length);

(1) Moderate development (distance between position of conules = 0.31–0.50 of total tooth length);

(2) Long (distance between conules greater than 0.51 of total tooth length);

108. Anteroposterior width of the conular region (with or without conules) on the upper molars (applicable only to taxa with reversed triangulation and an occluding lingual portion of the upper molar; for the taxa with conules, this is measured between the paraconule and metaconule; for those taxa without conules, this is measured as the length of the tooth medial to the base of paracone; the upper second molar measured where possible) (n°79, creation état 3 et reformulation caractère):

(0) Narrow (anteroposterior distance medial to the paracone and metacone less than 0.30 of total tooth length);

(1) Moderate development (distance between position of conules = 0.31—0.50 of total tooth length);

(2) Wide (distance between conules greater than 0.51 of total tooth length);
(3) Expanded.

Caractère 44

80. Conules on the upper molars (character applicable to mammals with triangulation of molar cusps and a functional lingual cusp) (character after Rougier et al. 1998; also see discussion by Clemens and Lillegraven 1986; Cifelli 1993b):

(0) Absent;

(1) Present but weak and without cristae;

(2) Conules distinctive, with cristae;

109. Presence of the paraconule and metaconule on the upper molars (n° 80 redéfini???):
(0) Absent;
(1) Present.

Caractère 45

81. Relative height and size of the paracone (cusp B) and metacone of the upper molars (character after Rougier et al. 1998); also see discussion by Clemens and Lillegraven (1986) and Cifelli (1993a):

(0) Paracone higher and larger than metacone;

(1) Metacone is higher and larger than paracone;

104. Height and size of the paracone (cusp B) and metacone (cusp C) (based on the upper second molar if available) (n°81, redefinition des états):
(0) Paracone noticeably higher and larger at the base than metacone;
(1) Paracone slightly larger than metacone;
(2) Paracone and metacone of equal size or paracone lower than metacone.

Caractère 46

82. Centrocrista between the paracone and metacone of upper molars (applicable only to taxa with well−developed metacone and distinctive wear facets 3 and 4):

(0) Straight;

(1) V−shaped, with labially directed postparacrista and premetacrista;

103. Centrocrista Between Paracone and Metacone of Upper Molars. Consider only for tribosphenic forms (n°82, changement énoncé caractère):

0. Straight

1. V-shaped, with labially directed postparacista and premetacrista

Caractère 58

62. Postcingulum:

(0) Absent or weak;

(1) Present;

(2) Present and reaching past the metaconule;

(3) Formed by the hypoconal shelf raised to near the level of the protocone.

143. Postcingulum (n°62, redefinition des états).

0. Narrow and closely oppresed to crown, to absent

1. Developed forming a lingual cusp

Caractère 61

90. Last lower molar - hypoconulid - orientation and relative size (applicable to the taxa with at least a talonid heel; scored on the third molar for Peramus and eutherians, the fourth molar for Kielantherium and metatherians; justification for separating this character from the character of the anterior molar hypoconulids is that the ultimate molar shows different morphology and distribution, especially in taxa in which there is posteriorly decreasing size gradient, e.g. Deltatheridium):

(0) Short and erect;

(1) Tall (higher than hypoconid) and recurved.

Caractère 62

Erreur de lecture

Caractère 63

101. Degree of labial shift of the protocone (distance from the protocone apex to the lingual border vs. the total tooth width, in %) (applicable only to those taxa with reversed triangulation):

(0) Protocone present but no labial shift (10%-20%);

(1) Moderate labial shift (25%-30%);

(2) Substantial labial shift (≥ 40%).

Caractère 64

102. Morphology of the protocone (applicable only to those taxa with reversed triangulation and a lingual swelling of the upper molar):

(0) Protoconal region present but no distinct protocone;

(1) Protocone present, its apical portion anteroposteriorly compressed;

(2) Apical portion slightly expanded;

(3) Apical portion expanded;

(4) Apical portion forming an obtuse triangle with the protoconal cristae.

Caractère 65

103. Height of the protocone relative to the paracone and metacone (whichever is highest of the latter two):

(0) Protocone markedly lower (less than 70%);

(1) Protocone of intermediate height (70%~80%);

(2) Protocone near the height of paracone and metacone (within 80%).

Caractère 66

105. Metacone position relative to paracone:

(0) Metacone labial to paracone;

(1) Metacone about the same level as paracone;

(2) Metacone lingual to paracone.

Caractère 67

106. Base of the paracone and metacone (based on the upper second molar if available, applicable only to triangulated molars):

(0) Merged;

(1) Separated.

Caractère 68

110. Relative position of the paraconule and metaconule on the upper first and second molars (character adopted from Archibald et al. 2001):

(0) Paraconule and metaconule closer to the protocone;

(1) Both positioned near the midpoint of the protocone-metacone;

(2) Paraconule and metaconule labial to the midpoint.

Caractère 69

111. Internal conular cristae (conular wing):

(0) Cristae indistinctive;

(1) Cristae distinctive and wing-like.

Caractère 70

112. Parastylar groove (on upper second molar):

(0) Weak or absent;

(1) Moderately to well developed.

Caractère 71

114. Preparastyle on the upper first molar (applicable to molars with triangulation):

(0) Absent;

(1) Present.

Caractère 73

116. Stylar cuspule "C" (near the ectoflexus) on the penultimate upper molar:

(0) Absent;

(1) Present.

Caractère 74

117. Stylar cuspule "D" (opposite the metacone) on the penultimate upper molar:

(0) Absent;

(1) Present.

Caractère 75

118. Absence vs. presence and size of the stylar cuspule “E” (Bensley-Simpson designation; not the Crompton cusp E):

(0) Absent or poorly developed;

(1) Present, less developed than or subequal to stylar cuspule “D”;

(2) Present and better developed than cuspule “D”.

Caractère 76

119. Position of the stylar cuspule “E” relative to cusp “D” or “D-position”:

(0) “E” more lingual to “D” or “D-position”;

(1) “E” distal to or at same level as “D” or “D-position”.

Caractère 77

121. Size and labial extent of the metastylar lobe and parastylar lobe (based on the upper first molar if available; if not, then based on upper second):

(0) Metastylar lobe smaller than the parastylar lobe;

(1) Metastylar lobe of similar size and labial extent to the parastylar lobe;

(2) Metastylar lobe much larger than the parastylar lobe;

(3) Metastylar lobe absent.

Caractère 78

122. Salient postmetacrista on the upper molars (applicable to taxa with reversed triangulation):

(0) Absent or weakly developed;

(1) Well-developed but no longer than the metaconeprotocone distance;

(2) Hypertrophied and longer than the metacone-protocone distance.

Caractère 79

123. Selenodont molar pattern:

(0) Absent;

(1) Present.

Caractère 80

126. Carnassial shearing blades on last upper premolar and first lower molar:

(0) Absent;

(1) Present.

136. Carnassial shearing blades on posterior aspect of the ultimate upper premolar and anterior aspect of the first lower molar (n°126, 128, changement énoncé du caractère):

(0) Absent;

(1) Present.

Caractère 81

79. Paraconid Presence on Lower Molars.

0. Present

1. Absent

Caractère 83

82. Proximity Between Paraconid and Metaconid.

0. Bases widely separated

1. Bases approaching each other becoming confluent

2. Single cusp (amphyconid)

Caractère 84

98. Trigon Basin. Protocone must be present:

0. Absent

1. Present, the labial slope of the protocone determines a basin

against the lingual slope of the paracone/metacone

Caractère 89

125. Position of Stylocone in Posterior Molariforms.

0. Along buccal edge

1. Separated

Caractère 94

130. Metacone (n°41 appliqué à tous les loci).

0. Present

1. Absent

Voir caractère sur prémolaire

Caractère 95

131. Paracone-Metacone Labiolingually Aligned. Consider only in subtriangular upper teeth:

0. Absent, the metacone is labial to paracone

1. Present, the metacone is aproximately aligned mesiodistally with the paracone

Caractère 96

132. Accessory Cusps on Bucal Side of Upper Molars.

0. Absent

1. Present

Caractère 99

142. Precingulum.

0. Narrow and closely attached to crown, to absent

1. Developed forming a lingual cusp

Caractère 101

145. Prehypoconulid Crest. A crest connecting the metaconid with the hypoconulid along the lingual edge of the tooth (peut-être lié au caractère 48):

0. Absent

1. Present

voir caractère 11

Caractère 104

74. Anterior-most upper molar – lingual off-set of alignment of multi-cuspate rows to succeeding molar:

(0) Lower anterior molar lingual row occludes only with the lingual side of lingual row of the upper.

(1) Lower anterior molar lingual row occludes in the valley between the upper lingual row and the upper median row.

Annexe 3 : matrice taxons-caractères

Matrice de 38 taxons et 307 caractères analysée dans le chapitre 10 de cette thèse. Les 74 premiers caractères correspondent aux caractères des molariformes.

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Probainognathus	0	0	0	0	0	?	?	?	?	0	0	0	0	0	0
Brasilodon	0	0	0	0	0	?	?	?	?	?	?	?	0	0	0
Brasilitherium	0	0	0	0	0	0	?	?	?	0	0	0	0	0	0
Sinoconodon	0	0	0	0	0	1	?	1	0	0	{01}	{01}	0	0	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0
Dinnetherium	0	0	0	0	0	1	1	1	?	1	0	0	0	0	0
Megazostrodon	0	0	{05}	{05}	0	0	0	3	0	0	0	0	{04}	{01}	{04}
Morganucodon	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0
Brachyzostrodon	0	0	5	0	1	0	0	3	0	0	0	0	1	1	0
Paceyodon	0	0	5	0	1	1	0	3	0	0	1	1	4	1	0
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	0	0	0	0	0	1	1	0	0	1	0	{01}	0	0	0
Erythrotherium	0	0	0	0	0	1	?	?	?	0	0	0	0	0	0
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0
Bridetherium	0	0	0	0	0	1	1	2	0	1	0	0	0	0	0
Purbeckodon	0	0	{01}	0	{02}	{12}	0	2	0	{13}	0	?	0	{04}	0
Fluctuodon	0	N	0	1	1	1	1	3	0	2	0	2	0	4	1
Kuehneotherium	0	N	1	{1234}	{01}	1	2	3	0	{01}	0	0	{01}	{45}	{01}
Woutersia	0	N	1	{12}	{01}	2	2	0	2	0	0	0	0	4	0
Delsatia	0	N	2	2	0	1	0	0	0	0	0	0	0	7	0
Castorocauda	0	0	0	3	1	?	?	1	0	1	1	1	0	0	3
Haldanodon	0	0	{01}	{23}	1	1	?	0	2	1	1	2	0	{12}	{12}
Thomasia	1	0	N	0	N	N	2	2	0	N	0	0	1	N	0
Haramiyavia	1	1	N	?	N	N	?	?	?	N	0	?	2	N	1
Theroteinus	1	0	N	0	N	N	0	2	0	N	0	0	1	N	0
Arboroharamiya	1	1	N	1	N	N	?	0	1	N	0	0	?	N	?
Rugosodon	2	1	{01}	0	{01}	2	?	?	?	0	{01}	0	0	{07}	0
Sinobaatar	2	0	N	0	N	N	?	2	0	N	0	0	0	N	0
Amphilestes	1	0	0	0	0	1	?	?	?	0	0	0	0	0	0
Priacodon	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0
Shuotherium	0	N	2	2	0	1	?	0	0	1	0	0	0	7	0
Ambondro	0	N	1	2	1	2	?	0	0	1	0	?	1	5	2
Asfaltomylos	0	N	2	3	1	2	?	3	0	?	0	?	2	7	2
Zhangheotherium	0	N	?	?	?	1	?	?	?	0	0	0	?	7	?
Amphitherium	0	N	{12}	{34}	1	1	?	0	0	1	0	0	0	7	2
Dryolestes	0	N	{123}	{46}	{01}	0	?	0	0	3	0	3	{12}	{45}	3

	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Probainognathus	0	0	N	0	N	0	0	N	0	N	1	N	N	N	0
Brasilodon	0	{01}	1	1	?	0	?	?	1	?	0	N	N	N	0
Brasilitherium	0	1	1	{01}	0	0	1	?	{01}	4	1	N	N	N	0
Sinoconodon	0	0	N	{01}	2	0	0	N	0	N	1	N	N	N	?
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	0	?	?	?	?	?	0	N	?	?	1	N	N	N	0
Dinnetherium	0	3	1	1	{23}	1	1	1	1	1	1	N	N	N	1
Megazostrodon	{01}	{23}	1	1	1	0	0	N	1	0	1	N	N	N	1
Morganucodon	0	{13}	1	1	1	0	0	N	{01}	{01}	1	N	N	N	1
Brachyzostrodon	0	0	N	1	?	0	0	N	{01}	{01}	1	N	N	N	1
Paceyodon	0	1	1	1	2	0	0	N	0	N	1	N	N	N	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	N	N	N	?
Rosierodon	0	{23}	0	1	2	{01}	{01}	{01}	{01}	2	1	N	N	N	1
Erythrotherium	0	1	?	1	1	0	0	N	{01}	0	1	N	N	N	1
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	N	N	N	?
Hallautherium	0	0	N	1	0	0	0	N	0	N	1	N	N	N	?
Bridetherium	0	3	1	1	{12}	0	0	N	1	2	1	N	N	N	1
Purbeckodon	0	1	0	0	N	0	0	N	0	N	1	N	N	N	?
Fluctuodon	5	1	{01}	1	2	{01}	1	{01}	0	N	1	N	N	N	?
Kuehneotherium	{4567}	1	2	1	2	{01}	1	{01}	{01}	2	1	N	N	N	{01}
Woutersia	7	2	N	1	1	0	0	N	1	2	1	N	N	N	1
Delsatia	7	0	N	1	3	1	0	N	0	N	1	N	N	N	1
Castorocauda	6	1	?	1	1	0	1	1	1	3	1	N	N	N	1
Haldanodon	7	{01}	?	1	2	0	0	N	1	3	1	N	N	N	0
Thomasia	0	0	N	0	N	1	0	N	0	N	N	1	{12}	0	?
Haramiyavia	4	0	N	0	N	1	0	N	0	N	N	1	{12}	0	?
Theroteinus	0	0	N	0	N	1	0	N	0	N	N	1	1	0	?
Arboroharamiya	?	0	N	0	N	0	0	N	0	N	N	0	2	1	1
Rugosodon	0	0	N	0	N	1	0	N	0	N	N	?	1	1	1
Sinobaatar	0	0	N	0	N	1	0	N	0	N	N	?	0	0	1
Amphilestes	0	1	0	1	?	?	?	?	1	2	1	N	N	N	?
Priacodon	0	1	0	0	N	0	0	N	0	N	1	N	N	N	1
Shuotherium	7	1	0	1	2	1	1	2	0	N	1	N	N	N	0
Ambondro	?	?	2	1	3	1	1	?	0	N	1	N	N	N	0
Asfaltomylos	7	?	3	0	N	?	?	?	0	N	1	N	N	N	0
Zhangheotherium	7	?	N	1	2	0	0	N	0	N	1	N	N	N	0
Amphitherium	7	?	N	0	N	0	0	N	0	N	1	N	N	N	0
Dryolestes	{789}	?	N	0	N	0	0	N	0	N	1	N	N	N	0

	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Probainognathus	N	1	?	?	0	0	0	0	0	?	?	?	?	1	0
Brasilodon	N	1	?	?	0	0	{05}	0	{02}	1	?	?	?	1	0
Brasilitherium	N	?	?	2	0	0	0	0	0	?	?	?	?	1	0
Sinoconodon	?	1	0	2	0	0	0	0	0	?	1	?	?	1	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	N	1	0	N	0	0	?	?	?	1	?	?	?	1	0
Dinnetherium	0	1	1	1	0	0	0	0	0	0	?	?	?	1	0
Megazostrodon	1	1	0	1	0	0	{01}	{01}	0	1	1	3	0	1	0
Morganucodon	1	1	0	1	0	0	0	0	0	1	?	2	0	1	0
Brachyzostrodon	1	1	1	?	0	0	0	0	0	0	1	?	?	1	0
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	0	0	1	1	2	1	0	3	2	1	0
Rosierodon	{01}	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	1	1	0	3	0	0	0	0	0	1	?	?	?	1	0
Helvetiodon	?	?	?	?	0	0	1	0	1	1	1	2	0	1	0
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	1	1	0	?	0	0	0	0	0	1	1	1	0	1	0
Purbeckodon	?	?	?	?	0	0	0	0	0	1	1	2	2	1	0
Fluctuodon	?	1	0	?	0	N	1	0	1	{01}	2	2	0	1	0
Kuehneotherium	0	1	0	1	0	N	{12}	1	1	1	2	2	0	1	0
Woutersia	0	1	1	?	0	N	{12}	0	1	0	3	3	0	1	0
Delsatia	0	1	0	?	0	N	2	2	0	1	0	0	0	1	0
Castorocauda	1	1	0	1	?	?	?	?	?	?	?	?	?	?	?
Haldanodon	N	1	0	1	0	0	1	0	1	?	2	2	0	1	0
Thomasia	?	?	?	?	1	{01}	0	{01}	{02}	1	?	1	0	1	0
Haramiyavia	?	0	N	2	2	1	0	?	?	?	?	0	0	1	0
Theroteinus	?	0	N	?	2	1	0	{12}	2	0	?	0	0	1	0
Arboroharamiya	?	0	N	3	1	1	0	N	N	N	?	0	0	1	0
Rugosodon	?	1	0	3	1	{01}	0	0	0	1	1	0	0	{01}	1
Sinobaatar	?	0	N	0	2	{01}	0	0	0	1	1	1	0	1	1
Amphilestes	?	1	1	1	?	?	?	?	?	?	?	?	?	?	?
Priacodon	2	1	1	2	0	0	0	0	0	?	?	?	?	1	0
Shuotherium	N	1	1	1	0	N	2	0	1	0	?	2	0	{01}	0
Ambondro	N	1	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	N	1	?	1	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	N	1	2	1	0	N	?	?	?	0	?	?	?	1	0
Amphitherium	N	1	0	1	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	N	1	0	1	0	N	{46}	3	{02}	1	?	0	3	1	0

	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Probainognathus	?	?	?	0	0	0	0	1	N	N	N	N	0	0	N
Brasilodon	?	?	?	?	?	0	0	?	?	?	?	{01}	1	0	?
Brasilitherium	?	?	?	0	0	0	0	?	?	?	?	1	1	0	?
Sinoconodon	?	?	?	0	0	0	0	1	N	N	N	N	0	0	N
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	0	0	0	?	?	?	?	?	?	?	?	?	?	?	?
Dinnetherium	1	0	0	0	0	0	0	0	N	N	N	1	2	1	2
Megazostrodon	0	0	0	0	2	0	2	1	0	0	0	1	2	1	2
Morganucodon	0	0	0	0	0	0	0	1	{01}	0	0	{01}	2	1	?
Brachyzostrodon	0	0	0	0	0	0	0	1	0	1	0	1	2	1	2
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	0	0	0	{04}	{01}	{05}	{02}	1	1	0	2	{01}	1	1	0
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	0	0	0	0	0	0	0	1	0	N	0	1	1	1	2
Helvetiodon	0	0	0	0	1	0	0	1	{01}	2	2	2	1	1	1
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	0	0	0	0	0	0	0	1	0	1	0	0	2	1	2
Purbeckodon	1	1	0	0	0	0	0	1	0	2	2	{12}	2	1	{01}
Fluctuodon	0	1	0	0	{12}	0	1	1	{02}	1	1	{01}	1	1	2
Kuehneotherium	3	0	0	4	7	0	2	1	{02}	1	1	0	1	1	2
Woutersia	{01}	0	1	{04}	{37}	0	{01}	1	2	1	0	{01}	1	{01}	2
Delsatia	0	0	0	0	7	0	7	0	N	N	N	N	0	1	3
Castorocauda	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haldanodon	0	0	0	0	2	0	0	0	0	?	?	0	2	?	?
Thomasia	0	0	0	0	0	{04}	{01}	0	N	N	N	?	2	0	N
Haramiyavia	?	?	?	?	?	?	?	0	N	N	N	?	2	0	N
Theroteinus	0	0	0	N	N	N	N	1	3	3	N	?	2	1	2
Arboroharamiya	0	0	N	N	N	N	N	1	3	0	N	N	0	1	?
Rugosodon	0	0	0	0	0	0	0	{01}	0	0	2	0	{02}	{01}	N
Sinobaatar	0	0	0	?	?	?	?	{01}	0	0	2	0	0	{01}	2
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	0	0	0	0	0	0	0	1	?	?	?	0	1	0	N
Shuotherium	?	0	0	5	?	0	0	1	0	?	0	0	2	1	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	0	0	0	?	?	?	?	0	N	N	N	0	1	0	N
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	4	0	0	3	{89}	6	3	0	N	N	N	N	0	1	2

	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Probainognathus	0	0	N	0	N	1	1	0	N	N	N	0	?	?	0
Brasilodon	1	?	?	0	?	0	N	0	N	N	N	0	?	0	?
Brasilitherium	1	?	?	0	?	0	N	0	N	N	N	0	0	?	?
Sinoconodon	0	0	N	0	N	{01}	1	?	?	N	N	0	N	?	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	?	?	?	?	?	?	?	0	N	N	N	0	0	N	1
Dinnetherium	1	1	1	0	N	1	1	1	0	N	N	0	0	1	0
Megazostrodon	1	1	{01}	0	N	1	1	1	0	N	N	0	0	1	0
Morganucodon	?	1	1	0	N	1	1	?	?	N	N	0	0	1	0
Brachyzostrodon	1	{01}	{01}	0	N	1	1	1	0	N	N	0	1	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	N	N	?	?	?	?
Paikasigudodon	1	0	N	0	N	0	N	?	?	N	N	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	N	N	?	?	?	?
Erythrotherium	1	1	1	0	N	1	1	1	0	N	N	0	0	?	?
Helvetiodon	0	0	N	1	0	?	?	?	?	N	N	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	N	N	?	?	?	?
Bridetherium	1	1	1	0	N	1	0	1	0	N	N	0	1	?	?
Purbeckodon	0	0	N	0	N	1	1	?	?	N	N	?	?	?	?
Fluctuodon	0	0	N	0	N	1	1	?	?	N	N	0	0	?	?
Kuehneotherium	0	0	N	0	N	1	1	0	N	N	N	0	0	1	0
Woutersia	0	0	N	1	0	1	1	1	1	N	N	0	?	?	?
Delsatia	0	0	N	0	N	1	1	0	N	N	N	0	0	?	?
Castorocauda	?	?	?	?	?	?	?	?	?	?	?	?	?	?	0
Haldanodon	0	0	N	1	1	1	1	0	N	N	N	0	0	1	0
Thomasia	1	?	?	0	N	1	0	?	?	1	0	0	2	?	?
Haramiyavia	1	?	?	0	N	?	?	0	N	0	0	?	?	2	0
Theroteinus	1	?	?	1	2	1	0	?	?	1	1	0	2	?	?
Arboroharamiya	1	?	?	1	2	0	N	1	?	0	0	N	N	3	1
Rugosodon	{01}	?	?	{01}	2	1	?	1	?	?	1	1	1	3	1
Sinobaatar	{01}	?	?	{01}	2	1	?	1	?	0	0	1	1	3	1
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	1
Priacodon	0	?	?	0	N	1	1	1	?	N	N	?	?	?	1
Shuotherium	0	?	?	1	1	1	1	?	?	N	N	0	0	?	0
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	0
Zhangheotherium	0	0	N	0	N	1	1	0	N	N	N	0	0	2	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	1
Dryolestes	0	0	N	0	N	1	1	0	N	N	N	0	2	1	1

	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Probainognathus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Brasilodon	?	?	?	?	0	0	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	0	0	?	?	?	?	?	?	?	?	?
Sinoconodon	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	?	?	?	?	1	3	0	0	1	0	?	4	2	1	1
Dinnetherium	0	0	0	1	1	0	0	?	0	?	0	0	0	0	?
Megazostrodon	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Morganucodon	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	0	0	0	1	1	0	0	?	0	?	0	0	0	0	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	0	?	0	0	1	1	0	0	0	1	?	?	1	?	0
Haldanodon	0	0	0	0	1	1	0	0	0	1	0	0	1	0	0
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	1	0	0	1	1	0	?	?	0	0	0	0	2	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	1	?	2	?	1	0	0	0	0	0	1	3	2	1	1
Rugosodon	1	1	2	?	1	0	?	?	0	0	?	3	2	?	1
Sinobaatar	1	1	2	?	1	0	?	?	0	0	1	3	2	1	1
Amphilestes	1	?	1	1	?	0	?	?	0	0	1	1	2	?	?
Priacodon	1	?	1	0	1	0	?	?	0	0	1	1	2	1	?
Shuotherium	0	1	0	1	1	0	?	?	0	0	0	0	2	1	?
Ambondro	?	?	?	?	1	?	?	?	0	0	?	?	?	1	?
Asfaltomylos	0	1	2	1	1	2	1	1	0	0	0	0	2	1	?
Zhangheotherium	1	?	0	0	1	0	?	?	0	0	0	2	2	0	?
Amphitherium	1	?	1	1	1	1	1	0	0	0	0	2	2	1	?
Dryolestes	1	?	1	0	1	1	1	0	0	0	0	2	2	0	?

	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Probainognathus	1	0	0	0	0	0	0	0	0	?	0	0	?	0	0
Brasilodon	?	?	?	?	?	?	?	?	1	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	1	?	?	?	?	?	?
Sinoconodon	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	0	0	0	0	0	0	0	0	2	0	0	1	0	2	0
Dinnetherium	?	0	0	0	0	?	?	?	?	2	0	2	0	1	?
Megazostrodon	0	0	0	0	0	0	0	0	2	0	0	2	0	1	0
Morganucodon	0	0	0	0	0	0	0	0	2	{01}	0	1	0	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	0	0	0	0	?	?	?	?	0	0	1	0	0	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	0	0	0	0	0	0	0	0	2	1	0	1	0	1	0
Haldanodon	0	1	0	0	0	0	0	0	2	1	0	1	0	1	0
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	0	0	0	0	0	0	0	2	?	0	1	?	1	0
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	1	1	1	0	2	0	?	2	2	{12}	{34}	0	{12}	0
Rugosodon	0	1	0	2	1	2	1	0	2	2	2	4	0	1	0
Sinobaatar	0	1	0	2	1	2	1	0	2	2	2	4	0	1	0
Amphilestes	?	1	2	2	?	?	?	?	2	1	1	4	0	2	0
Priacodon	?	1	2	2	1	0	1	0	2	2	1	4	0	1	0
Shuotherium	?	0	0	0	?	0	?	0	?	?	?	?	?	0	0
Ambondro	?	?	?	?	?	?	0	?	?	?	?	?	?	?	?
Asfaltomylos	?	0	0	2	2	0	0	0	2	1	3	1	1	2	0
Zhangheotherium	?	1	2	2	1	0	1	?	2	1	1	4	1	0	1
Amphitherium	?	1	1	2	1	0	0	1	2	1	0	3	1	2	0
Dryolestes	?	1	1	2	1	0	0	1	2	1	1	3	1	2	0

	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Probainognathus	1	0	0	0	?	?	?	?	?	?	0	0	0	1	1
Brasilodon	?	?	1	?	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	1	?	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	0	0	1	0	?	?	?	0	1	1	0	0	0	0	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	?	0	1	0	0	0	1	0	1	0	0	0	0	0	0
Dinnetherium	0	0	1	?	?	?	?	?	0	0	0	0	0	0	0
Megazostrodon	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Morganucodon	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	0	0	1	?	?	?	?	?	0	1	0	0	0	0	0
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	0	0	1	0	0	?	0	?	?	1	0	0	0	0	?
Haldanodon	0	0	1	0	0	0	0	0	0	1	0	0	0	0	1
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	0	2	1	1	?	?	?	?	?	?	2	?	0	0	0
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	0	2	1	0	?	?	?	?	?	?	2	?	0	0	0
Rugosodon	0	2	1	0	?	?	?	0	?	?	2	?	0	?	0
Sinobaatar	0	2	1	0	?	?	?	0	?	?	2	?	0	1	0
Amphilestes	2	0	1	?	?	?	?	?	1	1	0	1	0	0	0
Priacodon	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0
Shuotherium	1	0	1	0	?	?	?	?	1	1	1	1	1	1	1
Ambondro	?	0	?	?	?	?	?	?	1	2	1	3	1	1	1
Asfaltomylos	1	0	?	?	?	?	?	?	1	1	0	1	1	?	?
Zhangheotherium	1	1	1	0	0	0	0	1	1	1	0	1	0	0	1
Amphitherium	1	1	1	0	1	1	?	0	0	0	0	0	0	0	1
Dryolestes	1	1	1	0	0	0	0	1	0	0	0	0	0	0	1

	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135
Probainognathus	?	?	?	?	0	0	0	0	0	0	0	0	?	?	?
Brasilodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	?	0	0	0	0	0	0	0	0	0	0	0	3	3	1
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	?	0	?	0	0	0	0	0	0	1	0	0	3	3	4
Dinnetherium	0	1	0	?	?	?	0	0	?	?	0	?	?	0	1
Megazostrodon	?	0	0	0	1	0	1	0	0	0	0	0	0	0	1
Morganucodon	?	0	0	0	{01}	0	{01}	0	0	0	0	0	0	0	{23}
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	0	?	?	?	?	?	?	?	?	?	?	?	?	0	0
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	0	1	0	0	?	?	1	?	?	?	0	1	?	0	0
Haldanodon	?	1	0	0	0	0	1	0	0	0	0	1	2	2	0
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	2	0	?	0	1	1	0	?	1	?	1	1	3
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	0	3	?	4	2	?	?	?	?	3	3	4
Rugosodon	?	?	2	1	2	1	4	1	1	0	2	?	0	1	4
Sinobaatar	?	?	2	1	2	0	4	2	?	?	2	?	0	2	4
Amphilestes	0	0	0	0	?	?	?	?	?	?	0	0	?	2	1
Priacodon	1	0	0	0	?	?	3	0	?	0	0	0	1	2	2
Shuotherium	?	?	0	0	?	?	?	?	?	?	?	?	?	?	3
Ambondro	0	?	?	0	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	0	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	?	0	0	0	2	0	2	1	0	0	1	0	2	2	0
Amphitherium	?	0	0	0	?	?	1	?	?	?	0	?	?	0	0
Dryolestes	?	0	0	0	1	0	1	0	0	0	0	0	1	1	0

	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150
Probainognathus	?	0	0	0	?	0	0	0	0	?	0	?	?	?	?
Brasilodon	?	?	?	?	2	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	1	?	?	?	?	?	?	?	?	?	?
Sinoconodon	1	2	2	2	0	0	0	0	0	1	1	0	0	?	?
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	4	4	3	0	0	0	1	1	0	1	?	?	?	?	?
Dinnetherium	?	?	?	?	?	?	?	1	0	1	0	?	?	?	?
Megazostrodon	1	0	0	0	0	0	1	0	0	1	2	0	0	0	0
Morganucodon	{02}	0	0	0	0	0	1	1	0	1	0	0	0	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	1	?	?	0	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	?	?	0	?	0	?	1	1	0	0	?	?	?	?	?
Haldanodon	0	0	0	0	0	0	1	1	0	0	0	?	?	?	?
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	3	?	1	0	0	?	?	?	1	2	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	4	4	?	?	0	3	?	?	1	2	?	?	?	?	?
Rugosodon	4	2	2	0	1	3	1	1	1	2	?	1	1	1	1
Sinobaatar	4	2	3	0	1	0	1	1	1	2	?	?	1	?	1
Amphilestes	?	?	0	0	0	?	?	?	?	0	?	?	?	?	?
Priacodon	2	2	1	0	0	?	1	1	0	1	1	?	?	?	?
Shuotherium	?	?	?	?	0	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	0	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	0	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	0	0	0	1	0	0	1	1	1	0	2	?	1	1	0
Amphitherium	0	?	0	0	0	?	?	?	?	?	?	?	?	?	?
Dryolestes	0	0	0	0	0	3	1	1	1	0	2	?	?	?	?

	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165
Probainognathus	?	1	0	0	0	?	0	?	0	?	?	?	?	0	?
Brasilodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	0	1	?	?	?	0	1	0	0	0	0	0	0	0	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dinnetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Megazostrodon	0	1	1	1	0	?	?	?	?	?	0	?	1	0	0
Morganucodon	0	1	1	1	?	?	?	1	?	?	0	0	1	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	?	0	0	0	0	?	?	?	?	?	?	?	?	?	?
Haldanodon	?	?	?	?	?	?	?	?	?	?	?	?	1	0	0
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	1	1	?	?	?	?	?	?	1	?	?	?
Rugosodon	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0
Sinobaatar	1	1	1	1	1	0	0	0	1	1	1	1	1	1	0
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	?	?	?	?	?	0	?	?	?	?	?	?	?	?	?
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	0	1	1	1	1	1	0	0	1	1	1	1	2	1	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180
Probainognathus	?	?	?	?	0	?	?	?	?	?	?	?	?	0	?
Brasilodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dinnetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Megazostrodon	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Morganucodon	?	0	0	0	0	0	0	0	0	0	0	0	0	1	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	?	?	?	?	?	?	?	?	0	0	0	0	1	2	0
Haldanodon	0	0	1	0	0	0	0	?	0	0	0	0	1	2	0
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rugosodon	0	1	1	1	1	1	1	0	1	0	0	?	0	0	0
Sinobaatar	0	1	1	1	1	1	1	0	1	0	0	2	0	0	0
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195
Probainognathus	?	?	0	?	?	1	0	?	?	?	0	?	?	?	0
Brasilodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	0	0	0	0	?	?	?	?	?	?	?	0	0	0	?
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	?	?	0	?	?	?	?	?	?	?	?	?	?	?	?
Dinnetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Megazostrodon	0	0	0	?	?	2	1	0	0	0	1	0	1	0	0
Morganucodon	0	0	0	0	?	2	1	0	0	0	1	0	1	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0
Haldanodon	0	0	?	0	?	?	?	?	?	?	?	0	?	0	0
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	0	?	?	0	?	?	0	0	1	?	0	?
Rugosodon	0	1	1	1	1	2	1	?	0	1	1	1	?	0	0
Sinobaatar	0	1	1	1	1	2	1	0	{01}	1	1	1	1	1	0
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	0
Priacodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	1	1	1	0	1	2	1	1	1	2	2	1	?	1	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210
Probainognathus	?	?	?	?	0	?	?	?	?	?	?	?	?	?	?
Brasilodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	0	0	?	?	?	0	?	?	?	?	?	?	?	?	?
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hadrocodium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dinnetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Megazostrodon	0	?	0	0	0	0	0	0	?	?	0	0	0	0	0
Morganucodon	0	1	0	?	0	0	0	0	?	0	0	0	0	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	0	1	0	1	0	0	0	0	?	?	0	0	0	0	0
Haldanodon	0	?	0	?	0	?	?	?	?	?	?	?	?	?	?
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	1	0	0	?	0	?	?	?	?	?	?	?	?	?
Rugosodon	1	2	0	1	1	0	1	2	1	1	1	0	0	1	2
Sinobaatar	1	2	0	1	1	0	1	2	1	1	1	0	0	1	2
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	1	2	1	0	0	1	1	0	0	0	1	3	2	0	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225
Probainognathus	?	?	?	?	?	?	?	?	?	?	?	?	0	?	?
Brasilodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	?	?	?	?	?	?	?	?	?	?	?	?	0	0	0
Adelobasileus	?	?	?	?	?	?	?	?	?	?	?	?	?	0	0
Hadrocodium	?	?	?	?	?	?	?	?	?	?	?	?	?	1	0
Dinnetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Megazostrodon	0	?	?	?	1	?	0	0	0	0	0	0	0	0	1
Morganucodon	0	0	0	0	?	?	?	?	?	?	?	?	0	0	1
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	0	0	0	0	?	0	?	0	0	0	1	1	0	?	1
Haldanodon	?	?	?	?	?	?	?	?	?	?	?	?	0	0	1
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	?	?	?	?	?	0	?	0	?	1	?	?
Rugosodon	1	1	1	1	0	1	1	1	1	1	2	1	1	?	?
Sinobaatar	1	1	1	1	0	1	1	1	1	1	2	1	1	0	1
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	?	?	?	?	?	?	?	?	?	?	?	?	0	?	?
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	1	1	1	0	1	0	0	2	0	0	2	1	1	?	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	?	1	?	?

	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
Probainognathus	0	?	?	?	?	1	0	0	0	?	?	0	0	0	0
Brasilodon	?	?	?	?	?	?	?	0	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	0	?	?	?	?	?	?	?
Sinoconodon	1	0	0	0	0	2	2	1	1	0	0	1	0	0	0
Adelobasileus	?	?	?	?	0	2	2	1	1	0	0	?	?	0	0
Hadrocodium	2	1	0	1	0	2	3	1	1	1	2	3	1	0	0
Dinnetherium	?	?	?	?	?	2	3	?	?	1	1	1	?	0	0
Megazostrodon	1	0	?	?	0	2	3	1	1	0	1	2	1	0	0
Morganucodon	1	0	{01}	{01}	0	2	3	1	1	1	1	2	1	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haldanodon	2	0	1	1	0	2	3	1	1	0	0	2	1	0	0
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rugosodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinobaatar	1	1	1	0	0	?	?	?	?	?	?	?	?	?	?
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	?	?	?	1	0	2	3	1	1	1	1	3	1	0	0
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	2	1	1	1	1	2	3	1	1	1	1	2	?	1	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255
Probainognathus	0	0	0	0	0	?	0	0	0	1	0	0	1	1	0
Brasilodon	?	?	?	?	?	?	?	0	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	1	?	?	?	?	?	?	?
Sinoconodon	0	1	1	1	1	0	1	1	0	0	0	0	0	0	0
Adelobasileus	0	1	1	1	?	?	1	1	0	0	0	1	0	0	1
Hadrocodium	0	1	1	1	1	0	1	?	1	0	1	1	0	2	1
Dinnetherium	0	?	1	1	1	?	?	?	?	?	1	1	?	2	0
Megazostrodon	0	1	1	1	1	0	1	0	0	0	1	1	?	1	0
Morganucodon	0	1	1	1	1	0	1	1	0	0	1	1	0	1	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haldanodon	0	1	1	2	1	0	1	0	?	0	1	?	?	?	?
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rugosodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinobaatar	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	0	1	1	?	1	2	1	0	?	0	1	1	1	1	0
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	1	1	1	?	1	?	1	?	?	0	?	?	1	2	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270
Probainognathus	0	0	0	?	0	0	0	0	?	0	?	0	1	0	0
Brasilodon	?	?	?	?	?	?	?	?	?	{01}	?	?	?	1	?
Brasilitherium	0	?	?	?	?	?	?	?	?	0	?	?	?	1	?
Sinoconodon	1	0	0	?	0	1	0	1	0	1	0	1	2	1	1
Adelobasileus	0	0	0	?	?	1	0	0	?	1	0	?	?	?	?
Hadrocodium	1	0	1	1	1	1	0	1	0	1	0	?	?	?	2
Dinnetherium	1	1	1	0	1	2	0	?	0	?	?	0	?	?	2
Megazostrodon	1	1	1	0	1	1	0	1	0	1	?	0	2	1	2
Morganucodon	1	1	1	0	1	1	0	1	0	1	0	0	2	1	2
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haldanodon	1	0	1	0	1	1	0	1	0	1	0	0	?	?	2
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rugosodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinobaatar	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	?	?	1	0	?	1	1	1	0	1	?	?	?	?	2
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	1	1	1	1	2	1	?	1	1	?	1	?	?	?	2
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285
Probainognathus	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Brasilodon	?	?	?	?	?	?	?	?	?	?	0	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	0	?	?	?	?
Sinoconodon	1	0	0	0	0	1	1	0	1	1	0	1	1	0	1
Adelobasileus	?	?	?	?	?	?	?	0	?	?	0	?	?	?	?
Hadrocodium	1	?	?	?	?	1	2	1	2	1	3	1	1	0	1
Dinnetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Megazostrodon	1	?	0	?	0	1	1	?	1	?	0	1	1	1	1
Morganucodon	1	0	0	0	0	1	1	0	1	1	0	1	1	1	1
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	?	?	1	1	0	1	?	?	?	?	?	?	?	?	1
Haldanodon	1	0	?	?	0	?	2	1	1	1	0	1	1	1	1
Thomasia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Rugosodon	?	1	?	?	?	?	?	?	?	?	?	?	?	?	?
Sinobaatar	1	?	?	?	?	2	?	?	?	?	?	?	?	?	?
Amphilestes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Priacodon	?	?	?	?	?	?	2	?	?	?	0	0	?	?	?
Shuotherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	1	?	?	?	1	?	?	?	?	?	?	1	?	?	1
Amphitherium	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?	1	?	1	?

	286	287	288	289	290	291	292	293	294	295	296
Probainognathus	0	0	1	0	0	0	?	0	0	0	0
Brasilodon	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	0	0	2	0	1	0	0	2	0	0	0
Adelobasileus	?	0	2	0	?	?	?	?	0	0	0
Hadrocodium	0	1	2	2	1	0	0	2	1	0	1
Dinnetherium	?	?	?	?	?	?	?	2	?	?	?
Megazostrodon	0	?	2	0	1	0	0	2	0	0	0
Morganucodon	0	0	2	0	1	0	0	2	0	0	0
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	0	?	2	?	?	0	?	2	?	?	?
Haldanodon	0	0	2	0	1	0	0	2	1	0	0
Thomasia	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	0	?	?	?	?	?	?	2	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	?	?	?	?	?	?	?	?
Rugosodon	?	?	?	?	?	?	?	?	?	?	?
Sinobaatar	?	?	?	?	?	?	?	?	?	?	?
Amphilestes	1	?	?	?	?	?	?	?	?	?	?
Priacodon	1	?	?	{12}	?	1	2	2	1	0	?
Shuotherium	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	0	?	?	2	?	?	1	2	?	2	?
Amphitherium	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	0	?	?	?	?	?	?	?	?	?	?

	297	298	299	300	301	302	303	304	305	306	307
Probainognathus	0	0	0	0	?	0	0	0	1	0	1
Brasilodon	?	?	?	?	?	?	?	?	?	?	?
Brasilitherium	?	?	?	?	?	?	?	?	?	?	?
Sinoconodon	0	0	0	1	0	1	0	0	1	0	2
Adelobasileus	1	1	0	?	?	?	0	?	?	?	?
Hadrocodium	2	1	1	0	1	?	2	1	2	1	3
Dinnetherium	?	?	?	?	?	?	?	?	?	?	?
Megazostrodon	1	?	0	?	?	?	0	?	?	?	?
Morganucodon	1	1	0	1	1	1	0	0	1	1	2
Brachyzostrodon	?	?	?	?	?	?	?	?	?	?	?
Paceyodon	?	?	?	?	?	?	?	?	?	?	?
Paikasigudodon	?	?	?	?	?	?	?	?	?	?	?
Rosierodon	?	?	?	?	?	?	?	?	?	?	?
Erythrotherium	?	?	?	?	?	?	?	?	?	?	?
Helvetiodon	?	?	?	?	?	?	?	?	?	?	?
Hallautherium	?	?	?	?	?	?	?	?	?	?	?
Bridetherium	?	?	?	?	?	?	?	?	?	?	?
Purbeckodon	?	?	?	?	?	?	?	?	?	?	?
Fluctuodon	?	?	?	?	?	?	?	?	?	?	?
Kuehneotherium	?	?	?	?	?	?	?	?	?	?	?
Woutersia	?	?	?	?	?	?	?	?	?	?	?
Delsatia	?	?	?	?	?	?	?	?	?	?	?
Castorocauda	1	?	?	1	1	?	?	?	?	?	?
Haldanodon	1	1	1	1	1	0	0	?	2	?	?
Thomasia	?	?	?	?	?	?	?	?	?	?	?
Haramiyavia	?	?	?	?	?	?	?	?	?	?	?
Theroteinus	?	?	?	?	?	?	?	?	?	?	?
Arboroharamiya	?	?	?	?	?	?	?	?	?	?	?
Rugosodon	?	?	?	?	?	?	?	?	?	?	?
Sinobaatar	?	?	?	?	?	?	?	?	?	?	?
Amphilestes	?	?	?	?	?	?	?	?	?	?	?
Priacodon	?	?	?	?	?	?	1	?	?	?	?
Shuotherium	?	?	?	?	?	?	?	?	?	?	?
Ambondro	?	?	?	?	?	?	?	?	?	?	?
Asfaltomylos	?	?	?	?	?	?	?	?	?	?	?
Zhangheotherium	?	?	?	?	?	?	?	?	?	?	?
Amphitherium	?	?	?	?	?	?	?	?	?	?	?
Dryolestes	?	?	?	?	?	?	?	?	?	?	?

ANNEXE 4 : Résultats des analyses

Buffer des huit analyses cladistiques développées dans la discussion du chapitre 10, accompagnés des descriptions des caractères sur le consensus strict dans les modes d'optimisation ACCTRAN et DELTRAN (voir l'annexe 7) pour une synthèse partielle de ces résultats).

--Matrice "molaire" avec "Base" et caractères non-ordonnés

----*Buffer de l'analyse*

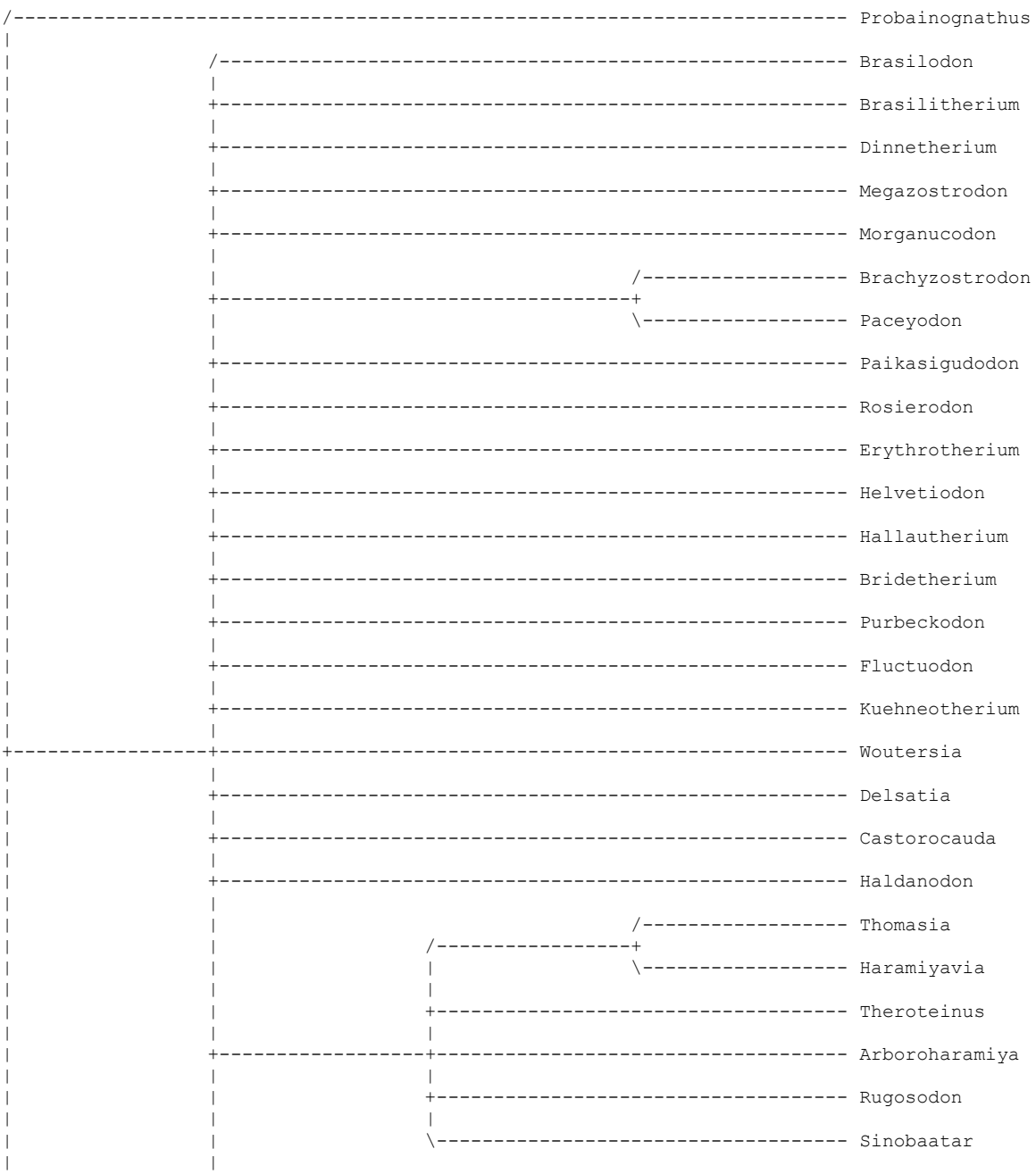
```
Data matrix has 37 taxa, 74 characters
Valid character-state symbols: 0123456789
Missing data identified by '?'
"Equate" macros in effect:
   N ==> ?

Heuristic search settings:
  Optimality criterion = parsimony
    Character-status summary:
      Of 74 total characters:
        All characters are of type 'unord'
        All characters have equal weight
        2 characters are constant
        8 variable characters are parsimony-uninformative
        Number of parsimony-informative characters = 64
    Multistate taxa interpreted as uncertainty
  Starting tree(s) obtained via stepwise addition
  Addition sequence: random
    Number of replicates = 100
    Starting seed = 764225821
  Number of trees held at each step during stepwise addition = 1
  Branch-swapping algorithm: tree-bisection-reconnection (TBR)
  Steepest descent option not in effect
  Initial 'MaxTrees' setting = 45800 (will be auto-increased by 100)
  Branches collapsed (creating polytomies) if maximum branch length is zero
  'MulTrees' option in effect
  Topological constraints not enforced
  Trees are unrooted

Heuristic search completed
   Total number of rearrangements tried = 1.3018e+10
   Score of best tree(s) found = 279
   Number of trees retained = 1673
   Time used = 05:46:03.8

Tree-island profile:
                    First      Last                     First   Times
Island      Size     tree      tree        Score    replicate     hit
-------------------------------------------------------------------
     1        99        1        99          279            3       7
     2       137      100       236          279           11       1
     3        93      237       329          279           15       1
     4        59      330       388          279           27       1
     5        56      389       444          279           31       1
     6        53      445       497          279           44       1
     7       129      498       626          279           46       1
     8        48      627       674          279           47       1
     9       102      675       776          279           55       1
    10        83      777       859          279           70       1
```

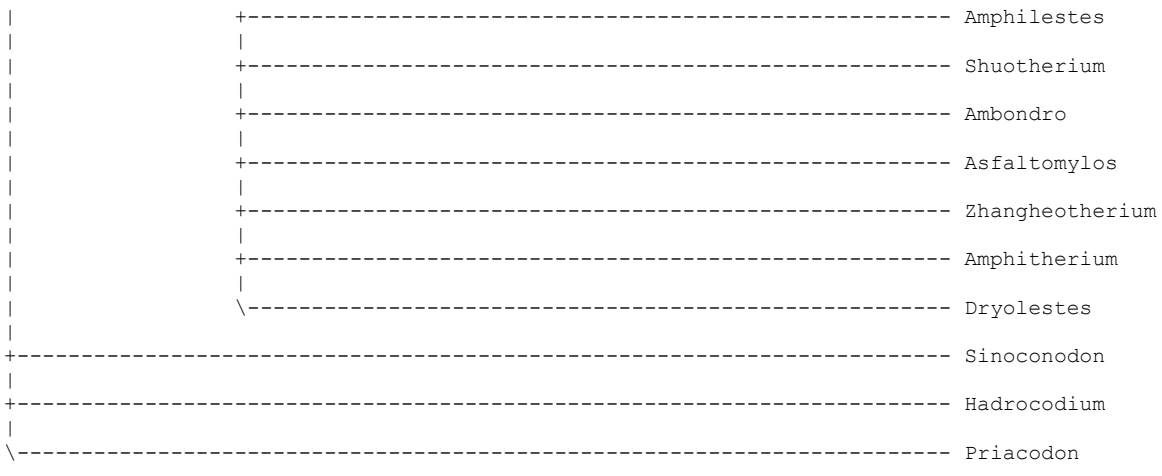
11	43	860	902	279	77	1
12	38	903	940	279	78	1
13	36	941	976	279	88	1
14	612	977	1588	279	90	1
15	80	1589	1668	279	91	1
16	5	1669	1673	279	93	1
17	40712	-	-	280	59	1
18	40441	-	-	280	96	1
19	27956	-	-	280	4	1
20	27837	-	-	280	9	1
21	27495	-	-	280	68	1
22	27446	-	-	280	83	1
23	27150	-	-	280	94	1
24	8301	-	-	280	26	1
25	8127	-	-	280	48	1
26	8114	-	-	280	1	1
27	8077	-	-	280	51	1
28	8047	-	-	280	65	1
29	7939	-	-	280	81	1
30	7779	-	-	280	99	1
31	7763	-	-	280	10	1
32	7574	-	-	280	34	1
33	7448	-	-	280	63	1
34	7380	-	-	280	86	1
35	7372	-	-	280	89	1
36	6741	-	-	280	16	1
37	6669	-	-	280	43	1
38	6610	-	-	280	45	1
39	6562	-	-	280	12	1
40	6489	-	-	280	37	1
41	6277	-	-	280	73	1
42	6248	-	-	280	97	1
43	5999	-	-	280	21	1
44	5956	-	-	280	38	1
45	5945	-	-	280	36	1
46	3736	-	-	280	22	1
47	3562	-	-	280	50	1
48	3507	-	-	280	74	1
49	3493	-	-	280	58	1
50	3102	-	-	280	32	1
51	2327	-	-	280	75	1
52	2156	-	-	280	95	1
53	1320	-	-	280	23	1
54	1278	-	-	280	41	1
55	902	-	-	280	49	1
56	703	-	-	280	14	1
57	684	-	-	280	17	1
58	681	-	-	280	30	1
59	650	-	-	280	61	1
60	639	-	-	280	72	1
61	633	-	-	280	85	1
62	628	-	-	280	82	1
63	285	-	-	280	2	1
64	249	-	-	280	54	1
65	246	-	-	280	69	1
66	140	-	-	280	62	2*
67	123	-	-	280	87	1
68	121	-	-	280	35	2*
69	120	-	-	280	64	1
70	94	-	-	280	52	1
71	60	-	-	280	29	1
72	49	-	-	280	19	1
73	36002	-	-	281	79	1
74	23012	-	-	281	28	1
75	6759	-	-	281	100	1
76	2031	-	-	281	20	1
77	1593	-	-	281	8	1
78	1040	-	-	281	57	1

79	717	-	-	281	76	1
80	276	-	-	281	40	1
81	228	-	-	281	5	1
82	224	-	-	281	7	1
83	152	-	-	281	6	1
84	133	-	-	281	67	1
85	100	-	-	281	42	2*
86	72	-	-	281	92	1
87	30	-	-	281	56	1
88	24	-	-	281	24	1
89	371	-	-	282	39	1
90	197	-	-	282	60	1
91	114	-	-	282	25	1

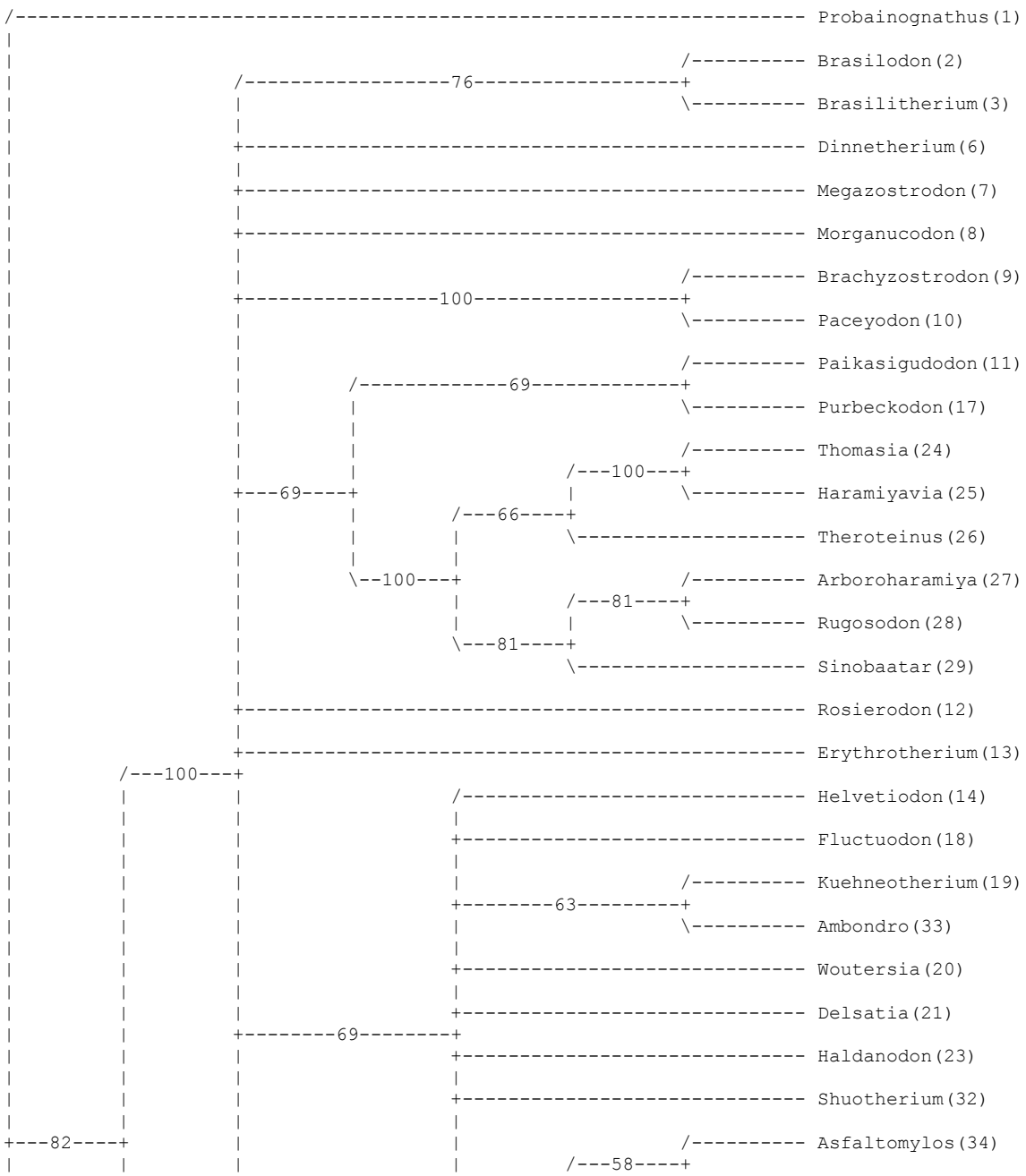
Note(s):
    * Multiple hits on islands of unsaved trees may in fact represent different islands

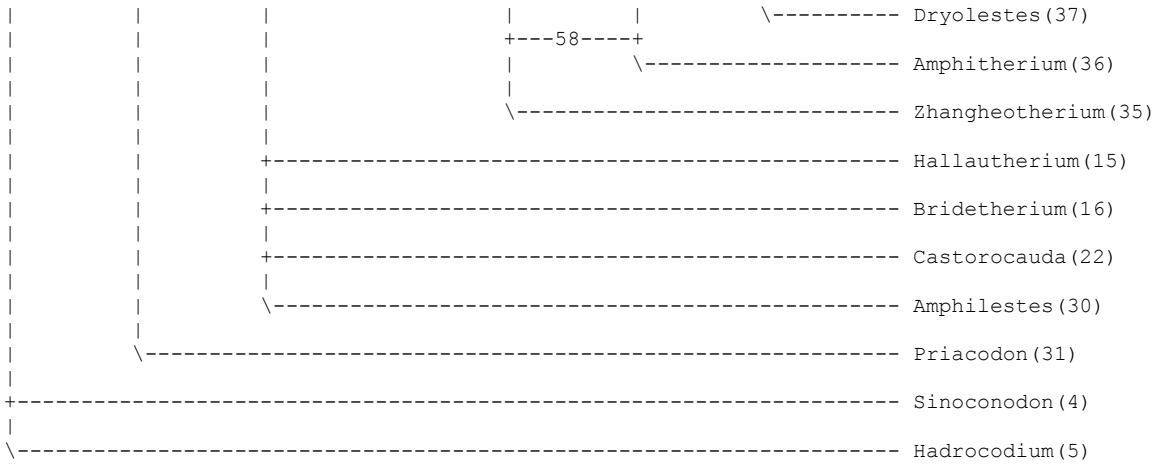
Strict consensus of 1673 trees:





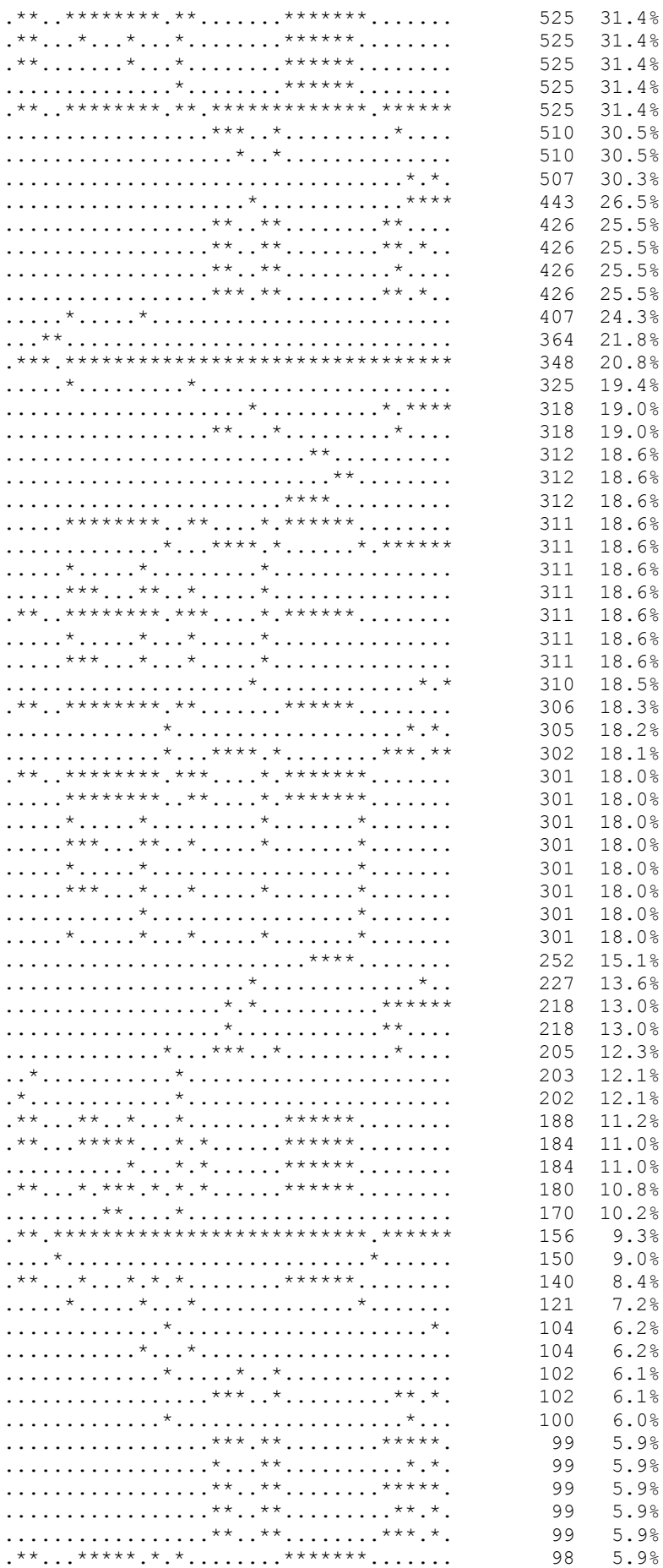
50% Majority-rule consensus of 1673 trees





Bipartitions found in one or more trees and frequency of occurrence:

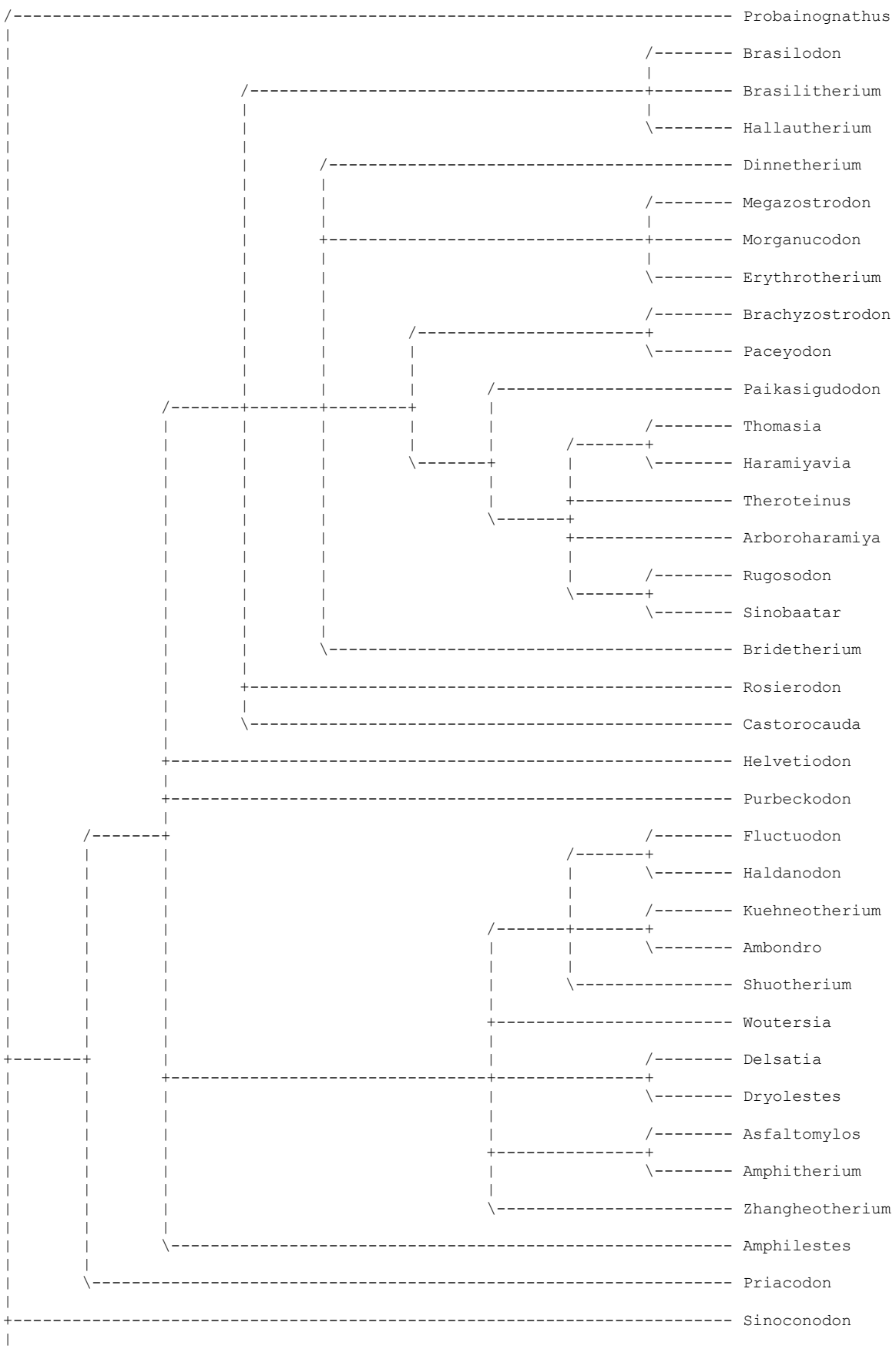
```
         1         2         3      3
12345678901234567890123456789012345678      Freq      %
-----------------------------------------------------------
.........................******.........      1673 100.0%
.........**.............................      1673 100.0%
.**..************************.******      1673 100.0%
.........................**.............      1673 100.0%
.**..********************************      1367  81.7%
.............................**.........      1361  81.4%
.............................***........      1361  81.4%
.**.....................................      1268  75.8%
...........*.....*.....................      1148  68.6%
...........*.....*......******.........      1148  68.6%
..............*...****.*.........******      1148  68.6%
............................***.............      1109  66.3%
....................*..............*....      1061  63.4%
.....................................*.**       962  57.5%
.....................................*..*       962  57.5%
.**.*********************************       810  48.4%
........***.....*......******.........       794  47.5%
......................*.............*.**       735  43.9%
......................*..............*        711  42.5%
..............*.....*..................       638  38.1%
..............*...***..*........***.*.       612  36.6%
......**...............................       612  36.6%
..................**....................       612  36.6%
.**............*.......................       612  36.6%
..............*...***..*.........**.*.       612  36.6%
..................**..............*....       612  36.6%
.**...*****.*.*.*.......******.........       536  32.0%
........***...*.*.......******.........       536  32.0%
.**...*****.*.***.......******.........       536  32.0%
..................*.....*...............       536  32.0%
............*.*...****.*.........******       536  32.0%
.**...*.***...*.*.......******.........       536  32.0%
.**.....***...*.*.......******.........       536  32.0%
.**..************************..******       536  32.0%
.**...*****.*.***....*.******.........       536  32.0%
..................**.*.*.........******       536  32.0%
.**..******.*.***....*.******.........       536  32.0%
.**...**..*.*.*.........******.........       525  31.4%
.**...*****.*.*.........******.........       525  31.4%
.**.......*............................       525  31.4%
.....*.....*...*.......................       525  31.4%
..................******.........******       525  31.4%
..................*...**................       525  31.4%
........................**................       525  31.4%
..............*..*.....................       525  31.4%
```



525	31.4%
525	31.4%
525	31.4%
525	31.4%
525	31.4%
510	30.5%
510	30.5%
507	30.3%
443	26.5%
426	25.5%
426	25.5%
426	25.5%
426	25.5%
407	24.3%
364	21.8%
348	20.8%
325	19.4%
318	19.0%
318	19.0%
312	18.6%
312	18.6%
312	18.6%
311	18.6%
311	18.6%
311	18.6%
311	18.6%
311	18.6%
311	18.6%
311	18.6%
310	18.5%
306	18.3%
305	18.2%
302	18.1%
301	18.0%
301	18.0%
301	18.0%
301	18.0%
301	18.0%
301	18.0%
301	18.0%
301	18.0%
252	15.1%
227	13.6%
218	13.0%
218	13.0%
205	12.3%
203	12.1%
202	12.1%
188	11.2%
184	11.0%
184	11.0%
180	10.8%
170	10.2%
156	9.3%
150	9.0%
140	8.4%
121	7.2%
104	6.2%
104	6.2%
102	6.1%
102	6.1%
100	6.0%
99	5.9%
99	5.9%
99	5.9%
99	5.9%
99	5.9%
98	5.9%

```
.............................*..*..        93   5.6%
```

Adams consensus of 1673 trees:



```
\----------------------------------------------------------------- Hadrocodium
```

----Optimisation des caractères sur l'arbre de consensus en ACCTRAN

```
Tree length = 415
Consistency index (CI) = 0.349
Homoplasy index (HI) = 0.651
CI excluding uninformative characters = 0.341
HI excluding uninformative characters = 0.659
Retention index (RI) = 0.161
Rescaled consistency index (RC) = 0.056
f value = 1705
f-ratio = 0.4194
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)

          /------------------------------------------------- Probainognathus
          |                  /------------------------------ Brasilodon
          |                  +------------------------------ Brasilitherium
          |                  +------------------------------ Dinnetherium
          |                  +------------------------------ Megazostrodon
          |                  +------------------------------ Morganucodon
          |                  |                   /---------- Brachyzostrodon
          |                  +------------------38---------- Paceyodon
          |                  +------------------------------ Paikasigudodon
          |                  +------------------------------ Rosierodon
          |                  +------------------------------ Erythrotherium
          |                  +------------------------------ Helvetiodon
          |                  +------------------------------ Hallautherium
          |                  +------------------------------ Bridetherium
---------43                  +------------------------------ Purbeckodon
          |                  +------------------------------ Fluctuodon
          |                  +------------------------------ Kuehneotherium
          |         /-------41------------------------------ Woutersia
          |         |        +------------------------------ Delsatia
          |         |        +------------------------------ Castorocauda
          |         |        +------------------------------ Haldanodon
          |         |        |                   /---------- Thomasia
          |         |        |         /--------39---------- Haramiyavia
          |         |        |         +-------------------- Theroteinus
          |         |        +--------40-------------------- Arboroharamiya
          |         |        |         +-------------------- Rugosodon
          |         |        |         \-------------------- Sinobaatar
          \--------42        +------------------------------ Amphilestes
                    |        +------------------------------ Shuotherium
                    |        +------------------------------ Ambondro
                    |        +------------------------------ Asfaltomylos
                    |        +------------------------------ Zhangheotherium
                    |        +------------------------------ Amphitherium
                    |        \------------------------------ Dryolestes
                    +--------------------------------------- Sinoconodon
                    +--------------------------------------- Hadrocodium
                    \--------------------------------------- Priacodon

Possible character-state assignments to internal nodes

                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
----------------------------------------------------------------------------
38               005011030000010011120010011101110100000?1201000000001010011
                             1           1       1                       12
                             4           2
39               10000102000000000102101021110110021100011001000000000002020
                      22     1                    32
                             2
```

```
40              1000010200000000010210102111011003110001100100000000001002001
                     2                              2                        2
41              0000010000000000111200102111011101000001120100000000001010011
                                                                             2
42              0000011100000000000200102111 0?1102000001120100000000001010000
                               11           2                            1
43              0000011100000000000200102111 0?1102000001120100000000001010000
                               11           2                            1
```

Possible character-state assignments to internal nodes (continued)

```
                666666666677777
Node            012345678901234
--------------------------------
38              2?010011?000001
                     1       1
39              21010210?000012
                              23
40              2101?2101000013
                              2
41              200100110000001
                     1
42              200100110000001
                     1
43              200100110000001
                     1
```

Reconstructed states for internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node            1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
38              0050110300001100111200100111011111000000120100000000001010121
39              1000022200001000010210102111011002110001100100000000000002020
40              1000020200000000010210102111011003110001100100000000001002001
41              0000010000000000111200102111011101000001120100000000001010011
42              0000011100000000100200102111011102000001120100000000001010010
43              0000011100000000000200102111001102000001120100000000001010000
```

Reconstructed states for internal nodes (continued)

```
                666666666677777
Node            012345678901234
--------------------------------
38              210100111000011
39              210102100000022
40              210112101000013
41              200100110000001
42              200100110000001
43              200100110000001
```

Character change lists:

Character	CI	Steps	Changes
1	0.500	1	node_41 0 ==> 1 node_40
		1	node_40 1 ==> 2 Rugosodon
		1	node_40 1 ==> 2 Sinobaatar
		1	node_41 0 ==> 1 Amphilestes
2	0.333	1	node_39 0 ==> 1 Haramiyavia
		1	node_40 0 ==> 1 Arboroharamiya
		1	node_40 0 ==> 1 Rugosodon
3	0.333	1	node_41 0 ==> 5 node_38
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 2 Delsatia
		1	node_41 0 ==> 2 Shuotherium
		1	node_41 0 ==> 1 Ambondro

		1	node_41 0 ==> 2 Asfaltomylos
		1	node_41 0 ==> 12 Amphitherium
		1	node_41 0 ==> 123 Dryolestes
4	0.333	1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1234 Kuehneotherium
		1	node_41 0 ==> 12 Woutersia
		1	node_41 0 ==> 2 Delsatia
		1	node_41 0 ==> 3 Castorocauda
		1	node_41 0 ==> 23 Haldanodon
		1	node_40 0 ==> 1 Arboroharamiya
		1	node_41 0 ==> 2 Shuotherium
		1	node_41 0 ==> 2 Ambondro
		1	node_41 0 ==> 3 Asfaltomylos
		1	node_41 0 ==> 34 Amphitherium
		1	node_41 0 ==> 46 Dryolestes
5	0.143	1	node_41 0 ==> 1 node_38
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 ==> 1 Ambondro
		1	node_41 0 ==> 1 Asfaltomylos
		1	node_41 0 ==> 1 Amphitherium
6	0.222	1	node_41 1 ==> 0 Brasilitherium
		1	node_41 1 ==> 0 Megazostrodon
		1	node_38 1 ==> 0 Brachyzostrodon
		1	node_41 1 ==> 0 Hallautherium
		1	node_41 1 ==> 2 Woutersia
		1	node_41 1 --> 2 node_40
		1	node_41 1 ==> 2 Ambondro
		1	node_41 1 ==> 2 Asfaltomylos
		1	node_41 1 ==> 0 Dryolestes
7	0.250	1	node_42 1 ==> 0 node_41
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Rosierodon
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 2 Kuehneotherium
		1	node_41 0 ==> 2 Woutersia
		1	node_40 0 --> 2 node_39
8	0.214	1	node_42 1 ==> 0 node_41
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 3 Megazostrodon
		1	node_41 0 ==> 2 Morganucodon
		1	node_41 0 ==> 3 node_38
		1	node_41 0 ==> 2 Hallautherium
		1	node_41 0 ==> 2 Bridetherium
		1	node_41 0 ==> 2 Purbeckodon
		1	node_41 0 ==> 3 Fluctuodon
		1	node_41 0 ==> 3 Kuehneotherium
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 2 node_40
		1	node_40 2 ==> 0 Arboroharamiya
		1	node_41 0 ==> 3 Asfaltomylos
9	0.667	1	node_41 0 ==> 2 Woutersia
		1	node_41 0 ==> 2 Haldanodon
		1	node_40 0 ==> 1 Arboroharamiya
10	0.273	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Rosierodon
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 13 Purbeckodon
		1	node_41 0 ==> 2 Fluctuodon
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 ==> 1 Shuotherium
		1	node_41 0 ==> 1 Ambondro
		1	node_41 0 ==> 1 Amphitherium
		1	node_41 0 ==> 3 Dryolestes
11	0.333	1	node_38 0 ==> 1 Paceyodon

		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Haldanodon
12	0.600	1	node_38 0 ==> 1 Paceyodon
		1	node_41 0 ==> 2 Fluctuodon
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 2 Haldanodon
		1	node_41 0 ==> 3 Dryolestes
13	0.375	1	node_41 0 --> 1 node_38
		1	node_38 1 --> 4 Paceyodon
		1	node_40 0 --> 1 node_39
		1	node_39 1 --> 2 Haramiyavia
		1	node_40 0 ==> 1 Theroteinus
		1	node_41 0 ==> 1 Ambondro
		1	node_41 0 ==> 2 Asfaltomylos
		1	node_41 0 ==> 12 Dryolestes
14	0.333	1	node_41 0 ==> 1 node_38
		1	node_41 0 ==> 4 Fluctuodon
		1	node_41 0 ==> 45 Kuehneotherium
		1	node_41 0 ==> 4 Woutersia
		1	node_41 0 ==> 7 Delsatia
		1	node_41 0 ==> 12 Haldanodon
		1	node_41 0 ==> 7 Shuotherium
		1	node_41 0 ==> 5 Ambondro
		1	node_41 0 ==> 7 Asfaltomylos
		1	node_41 0 ==> 7 Zhangheotherium
		1	node_41 0 ==> 7 Amphitherium
		1	node_41 0 ==> 45 Dryolestes
15	0.375	1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 3 Castorocauda
		1	node_41 0 ==> 12 Haldanodon
		1	node_39 0 ==> 1 Haramiyavia
		1	node_41 0 ==> 2 Ambondro
		1	node_41 0 ==> 2 Asfaltomylos
		1	node_41 0 ==> 2 Amphitherium
		1	node_41 0 ==> 3 Dryolestes
16	0.333	1	node_41 0 ==> 5 Fluctuodon
		1	node_41 0 ==> 4567 Kuehneotherium
		1	node_41 0 ==> 7 Woutersia
		1	node_41 0 ==> 7 Delsatia
		1	node_41 0 ==> 6 Castorocauda
		1	node_41 0 ==> 7 Haldanodon
		1	node_39 0 ==> 4 Haramiyavia
		1	node_41 0 ==> 7 Shuotherium
		1	node_41 0 ==> 7 Asfaltomylos
		1	node_41 0 ==> 7 Zhangheotherium
		1	node_41 0 ==> 7 Amphitherium
		1	node_41 0 ==> 789 Dryolestes
17	0.273	1	node_43 0 --> 1 node_42
		1	node_41 1 ==> 3 Dinnetherium
		1	node_41 1 ==> 23 Megazostrodon
		1	node_38 1 ==> 0 Brachyzostrodon
		1	node_41 1 ==> 23 Rosierodon
		1	node_41 1 ==> 0 Hallautherium
		1	node_41 1 ==> 3 Bridetherium
		1	node_41 1 ==> 2 Woutersia
		1	node_41 1 ==> 0 Delsatia
		1	node_41 1 ==> 0 node_40
		1	node_42 1 --> 0 Sinoconodon
18	0.375	1	node_42 0 --> 1 node_41
		1	node_41 1 ==> 0 Rosierodon
		1	node_41 1 ==> 0 Purbeckodon
		1	node_41 1 ==> 2 Kuehneotherium
		1	node_41 1 ==> 0 Amphilestes
		1	node_41 1 ==> 0 Shuotherium
		1	node_41 1 ==> 2 Ambondro
		1	node_41 1 ==> 3 Asfaltomylos
19	0.167	1	node_42 0 ==> 1 node_41
		1	node_41 1 ==> 0 Purbeckodon

		1	node_41 1 ==> 0 node_40
		1	node_41 1 ==> 0 Asfaltomylos
		1	node_41 1 ==> 0 Amphitherium
		1	node_41 1 ==> 0 Dryolestes
20	0.333	1	node_41 2 ==> 0 Brasilitherium
		1	node_41 2 ==> 1 Megazostrodon
		1	node_41 2 ==> 1 Morganucodon
		1	node_41 2 ==> 1 Erythrotherium
		1	node_41 2 ==> 0 Hallautherium
		1	node_41 2 ==> 1 Woutersia
		1	node_41 2 ==> 3 Delsatia
		1	node_41 2 ==> 1 Castorocauda
		1	node_41 2 ==> 3 Ambondro
21	0.167	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Delsatia
		1	node_41 0 ==> 1 node_40
		1	node_40 1 ==> 0 Arboroharamiya
		1	node_41 0 ==> 1 Shuotherium
		1	node_41 0 ==> 1 Ambondro
22	0.143	1	node_41 0 ==> 1 Brasilitherium
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Shuotherium
		1	node_41 0 ==> 1 Ambondro
23	1.000	1	node_41 1 ==> 2 Shuotherium
24	0.125	1	node_41 0 ==> 1 Brasilodon
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 ==> 1 Amphilestes
25	0.500	1	node_41 2 ==> 4 Brasilitherium
		1	node_41 2 ==> 1 Dinnetherium
		1	node_41 2 ==> 0 Megazostrodon
		1	node_41 2 ==> 01 Morganucodon
		1	node_41 2 --> 0 node_38
		1	node_41 2 ==> 0 Erythrotherium
		1	node_41 2 ==> 3 Castorocauda
		1	node_41 2 ==> 3 Haldanodon
26	1.000	1	node_41 1 ==> 0 Brasilodon
27	1.000	1	node_40 1 ==> 0 Arboroharamiya
28	1.000	1	node_40 1 ==> 2 Arboroharamiya
		1	node_40 1 ==> 0 Sinobaatar
29	0.500	1	node_40 0 ==> 1 Arboroharamiya
		1	node_40 0 ==> 1 Rugosodon
30	0.091	1	node_43 0 --> 1 node_42
		1	node_41 1 ==> 0 Brasilodon
		1	node_41 1 ==> 0 Brasilitherium
		1	node_41 1 ==> 0 Haldanodon
		1	node_41 1 ==> 0 Shuotherium
		1	node_41 1 ==> 0 Ambondro
		1	node_41 1 ==> 0 Asfaltomylos
		1	node_41 1 ==> 0 Zhangheotherium
		1	node_41 1 ==> 0 Amphitherium
		1	node_41 1 ==> 0 Dryolestes
		1	node_42 1 --> 0 Hadrocodium
31	0.400	1	node_41 1 ==> 0 Dinnetherium
		1	node_41 1 ==> 0 Kuehneotherium
		1	node_41 1 ==> 0 Woutersia
		1	node_41 1 ==> 0 Delsatia
		1	node_42 1 --> 2 Priacodon
32	0.500	1	node_41 1 ==> 0 node_40
		1	node_40 0 ==> 1 Rugosodon
33	0.286	1	node_41 0 ==> 1 Dinnetherium

		1	node_41 0 --> 1 node_38
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 Amphilestes
		1	node_41 0 ==> 1 Shuotherium
		1	node_41 0 ==> 2 Zhangheotherium
		1	node_42 0 ==> 1 Priacodon
34	0.500	1	node_42 2 ==> 1 node_41
		1	node_41 1 ==> 2 Brasilitherium
		1	node_41 1 ==> 3 Erythrotherium
		1	node_41 1 ==> 3 node_40
		1	node_40 3 --> 2 node_39
		1	node_40 3 ==> 0 Sinobaatar
35	0.500	1	node_41 0 ==> 1 node_40
		1	node_39 1 --> 2 Haramiyavia
		1	node_40 1 --> 2 Theroteinus
		1	node_40 1 --> 2 Sinobaatar
36	1.000	1	node_41 0 ==> 1 node_40
37	0.333	1	node_41 0 ==> 1 Paikasigudodon
		1	node_41 0 ==> 1 Helvetiodon
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 12 Kuehneotherium
		1	node_41 0 ==> 12 Woutersia
		1	node_41 0 ==> 2 Delsatia
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 ==> 2 Shuotherium
		1	node_41 0 ==> 46 Dryolestes
38	0.600	1	node_41 0 ==> 1 Paikasigudodon
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 2 Delsatia
		1	node_40 0 ==> 12 Theroteinus
		1	node_41 0 ==> 3 Dryolestes
39	0.250	1	node_41 0 ==> 2 Paikasigudodon
		1	node_41 0 ==> 1 Helvetiodon
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 Haldanodon
		1	node_40 0 ==> 2 Theroteinus
		1	node_41 0 ==> 1 Shuotherium
40	0.167	1	node_41 1 ==> 0 Dinnetherium
		1	node_41 1 --> 0 node_38
		1	node_41 1 ==> 0 Woutersia
		1	node_40 1 ==> 0 Theroteinus
		1	node_41 1 ==> 0 Shuotherium
		1	node_41 1 ==> 0 Zhangheotherium
41	0.500	1	node_41 1 ==> 0 Paikasigudodon
		1	node_41 1 ==> 2 Fluctuodon
		1	node_41 1 ==> 2 Kuehneotherium
		1	node_41 1 ==> 3 Woutersia
		1	node_41 1 ==> 0 Delsatia
		1	node_41 1 ==> 2 Haldanodon
42	0.333	1	node_41 2 ==> 3 Megazostrodon
		1	node_41 2 ==> 3 Paikasigudodon
		1	node_41 2 ==> 1 Bridetherium
		1	node_41 2 ==> 3 Woutersia
		1	node_41 2 ==> 0 Delsatia
		1	node_41 2 ==> 0 node_40
		1	node_39 0 ==> 1 Thomasia
		1	node_40 0 ==> 1 Sinobaatar
		1	node_41 2 ==> 0 Dryolestes
43	0.667	1	node_41 0 ==> 2 Paikasigudodon
		1	node_41 0 ==> 2 Purbeckodon
		1	node_41 0 ==> 3 Dryolestes
45	0.500	1	node_40 0 ==> 1 Rugosodon
		1	node_40 0 ==> 1 Sinobaatar
46	0.750	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Purbeckodon
		1	node_41 0 ==> 3 Kuehneotherium

		1	node_41 0 ==> 4 Dryolestes
47	0.500	1	node_41 0 ==> 1 Purbeckodon
		1	node_41 0 ==> 1 Fluctuodon
48	1.000	1	node_41 0 ==> 1 Woutersia
49	1.000	1	node_41 0 ==> 4 Kuehneotherium
		1	node_41 0 ==> 5 Shuotherium
		1	node_41 0 ==> 3 Dryolestes
50	0.500	1	node_41 0 ==> 2 Megazostrodon
		1	node_41 0 ==> 1 Helvetiodon
		1	node_41 0 ==> 12 Fluctuodon
		1	node_41 0 ==> 7 Kuehneotherium
		1	node_41 0 ==> 37 Woutersia
		1	node_41 0 ==> 7 Delsatia
		1	node_41 0 ==> 2 Haldanodon
		1	node_41 0 ==> 89 Dryolestes
51	1.000	1	node_41 0 ==> 6 Dryolestes
52	0.800	1	node_41 0 ==> 2 Megazostrodon
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 2 Kuehneotherium
		1	node_41 0 ==> 7 Delsatia
		1	node_41 0 ==> 3 Dryolestes
53	0.167	1	node_41 1 ==> 0 Dinnetherium
		1	node_41 1 ==> 0 Delsatia
		1	node_41 1 ==> 0 Haldanodon
		1	node_40 1 ==> 0 node_39
		1	node_41 1 ==> 0 Zhangheotherium
		1	node_41 1 ==> 0 Dryolestes
54	0.750	1	node_41 0 ==> 1 Paikasigudodon
		1	node_41 0 ==> 2 Woutersia
		1	node_40 0 ==> 3 Theroteinus
		1	node_40 0 ==> 3 Arboroharamiya
55	0.429	1	node_41 1 ==> 0 Megazostrodon
		1	node_41 1 ==> 0 Morganucodon
		1	node_41 1 ==> 0 Paikasigudodon
		1	node_41 1 ==> 2 Helvetiodon
		1	node_41 1 ==> 2 Purbeckodon
		1	node_41 1 ==> 0 node_40
		1	node_40 0 ==> 3 Theroteinus
56	0.333	1	node_41 0 ==> 2 Paikasigudodon
		1	node_41 0 ==> 2 Helvetiodon
		1	node_41 0 ==> 2 Purbeckodon
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 2 node_40
57	0.286	1	node_41 0 ==> 1 Brasilitherium
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_41 0 --> 1 node_38
		1	node_41 0 ==> 1 Erythrotherium
		1	node_41 0 ==> 2 Helvetiodon
		1	node_41 0 ==> 12 Purbeckodon
58	0.133	1	node_43 0 --> 1 node_42
		1	node_41 1 --> 2 Dinnetherium
		1	node_41 1 --> 2 Megazostrodon
		1	node_41 1 --> 2 Morganucodon
		1	node_41 1 --> 2 node_38
		1	node_41 1 --> 2 Bridetherium
		1	node_41 1 --> 2 Purbeckodon
		1	node_41 1 ==> 0 Delsatia
		1	node_41 1 --> 2 Haldanodon
		1	node_41 1 --> 0 node_40
		1	node_40 0 --> 2 node_39
		1	node_40 0 --> 2 Theroteinus
		1	node_41 1 --> 2 Shuotherium
		1	node_41 1 ==> 0 Dryolestes
		1	node_42 1 --> 0 Sinoconodon
59	0.200	1	node_42 0 ==> 1 node_41
		1	node_41 1 ==> 0 Brasilodon

		1	node_41 1 ==> 0 Brasilitherium
		1	node_40 1 ==> 0 node_39
		1	node_41 1 ==> 0 Zhangheotherium
60	0.750	1	node_41 2 ==> 0 Paikasigudodon
		1	node_41 2 ==> 1 Helvetiodon
		1	node_41 2 ==> 01 Purbeckodon
		1	node_41 2 ==> 3 Delsatia
61	0.111	1	node_41 0 ==> 1 Brasilodon
		1	node_41 0 ==> 1 Brasilitherium
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_41 0 --> 1 node_38
		1	node_41 0 ==> 1 Paikasigudodon
		1	node_41 0 ==> 1 Erythrotherium
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 node_40
62	0.200	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_41 0 ==> 1 Morganucodon
		1	node_41 0 ==> 1 Erythrotherium
		1	node_41 0 ==> 1 Bridetherium
64	0.167	1	node_41 0 ==> 1 Helvetiodon
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 --> 1 node_40
		1	node_40 1 --> 0 node_39
		1	node_41 0 ==> 1 Shuotherium
65	0.667	1	node_41 0 --> 1 Haldanodon
		1	node_41 0 ==> 2 node_40
		1	node_41 0 --> 1 Shuotherium
66	0.250	1	node_41 1 ==> 0 Brasilodon
		1	node_41 1 ==> 0 Brasilitherium
		1	node_41 1 ==> 0 Paikasigudodon
		1	node_40 1 ==> 0 Arboroharamiya
67	0.500	1	node_41 1 ==> 0 Bridetherium
		1	node_41 1 ==> 0 node_40
68	0.111	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_41 0 --> 1 node_38
		1	node_41 0 ==> 1 Erythrotherium
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 node_40
		1	node_40 1 --> 0 node_39
		1	node_42 0 ==> 1 Priacodon
69	1.000	1	node_41 0 ==> 1 Woutersia
70	0.500	1	node_39 0 ==> 1 Thomasia
		1	node_40 0 ==> 1 Theroteinus
71	0.500	1	node_40 0 ==> 1 Theroteinus
		1	node_40 0 ==> 1 Rugosodon
72	0.500	1	node_40 0 ==> 1 Rugosodon
		1	node_40 0 ==> 1 Sinobaatar
73	0.333	1	node_41 0 --> 1 node_38
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 node_40
		1	node_40 1 --> 2 node_39
		1	node_40 1 --> 2 Theroteinus
		1	node_41 0 ==> 2 Dryolestes
74	0.750	1	node_41 1 ==> 0 Brasilodon
		1	node_41 1 ==> 3 node_40
		1	node_40 3 --> 2 node_39
		1	node_41 1 ==> 2 Zhangheotherium

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_43 --> node_42	17	1	0.273	0 --> 1

	30	1	0.091	0 --> 1
	58	1	0.133	0 --> 1
node_42 --> node_41	7	1	0.250	1 ==> 0
	8	1	0.214	1 ==> 0
	18	1	0.375	0 --> 1
	19	1	0.167	0 ==> 1
	34	1	0.500	2 ==> 1
	59	1	0.200	0 ==> 1
node_41 --> Brasilodon	24	1	0.125	0 ==> 1
	26	1	1.000	1 ==> 0
	30	1	0.091	1 ==> 0
	59	1	0.200	1 ==> 0
	61	1	0.111	0 ==> 1
	66	1	0.250	1 ==> 0
	74	1	0.750	1 ==> 0
node_41 --> Brasilitherium	6	1	0.222	1 ==> 0
	20	1	0.333	2 ==> 0
	22	1	0.143	0 ==> 1
	25	1	0.500	2 ==> 4
	30	1	0.091	1 ==> 0
	34	1	0.500	1 ==> 2
	57	1	0.286	0 ==> 1
	59	1	0.200	1 ==> 0
	61	1	0.111	0 ==> 1
	66	1	0.250	1 ==> 0
node_41 --> Dinnetherium	7	1	0.250	0 ==> 1
	8	1	0.214	0 ==> 1
	10	1	0.273	0 ==> 1
	17	1	0.273	1 ==> 3
	21	1	0.167	0 ==> 1
	22	1	0.143	0 ==> 1
	24	1	0.125	0 ==> 1
	25	1	0.500	2 ==> 1
	31	1	0.400	1 ==> 0
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.167	1 ==> 0
	57	1	0.286	0 ==> 1
	58	1	0.133	1 --> 2
	61	1	0.111	0 ==> 1
	62	1	0.200	0 ==> 1
	68	1	0.111	0 ==> 1
node_41 --> Megazostrodon	6	1	0.222	1 ==> 0
	8	1	0.214	0 ==> 3
	17	1	0.273	1 ==> 23
	20	1	0.333	2 ==> 1
	24	1	0.125	0 ==> 1
	25	1	0.500	2 ==> 0
	42	1	0.333	2 ==> 3
	50	1	0.500	0 ==> 2
	52	1	0.800	0 ==> 2
	55	1	0.429	1 ==> 0
	57	1	0.286	0 ==> 1
	58	1	0.133	1 --> 2
	61	1	0.111	0 ==> 1
	62	1	0.200	0 ==> 1
	68	1	0.111	0 ==> 1
node_41 --> Morganucodon	8	1	0.214	0 ==> 2
	20	1	0.333	2 ==> 1
	25	1	0.500	2 ==> 01
	55	1	0.429	1 ==> 0
	58	1	0.133	1 --> 2
	62	1	0.200	0 ==> 1
node_41 --> node_38	3	1	0.333	0 ==> 5
	5	1	0.143	0 ==> 1
	8	1	0.214	0 ==> 3
	13	1	0.375	0 --> 1

	14	1	0.333	0 ==> 1
	25	1	0.500	2 --> 0
	33	1	0.286	0 --> 1
	40	1	0.167	1 --> 0
	57	1	0.286	0 --> 1
	58	1	0.133	1 --> 2
	61	1	0.111	0 --> 1
	68	1	0.111	0 --> 1
	73	1	0.333	0 --> 1
node_38 --> Brachyzostrodon	6	1	0.222	1 ==> 0
	17	1	0.273	1 ==> 0
node_38 --> Paceyodon	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 1
	13	1	0.375	1 --> 4
node_41 --> Paikasigudodon	37	1	0.333	0 ==> 1
	38	1	0.600	0 ==> 1
	39	1	0.250	0 ==> 2
	41	1	0.500	1 ==> 0
	42	1	0.333	2 ==> 3
	43	1	0.667	0 ==> 2
	54	1	0.750	0 ==> 1
	55	1	0.429	1 ==> 0
	56	1	0.333	0 ==> 2
	60	1	0.750	2 ==> 0
	61	1	0.111	0 ==> 1
	66	1	0.250	1 ==> 0
node_41 --> Rosierodon	7	1	0.250	0 ==> 1
	10	1	0.273	0 ==> 1
	17	1	0.273	1 ==> 23
	18	1	0.375	1 ==> 0
node_41 --> Erythrotherium	20	1	0.333	2 ==> 1
	25	1	0.500	2 ==> 0
	34	1	0.500	1 ==> 3
	57	1	0.286	0 ==> 1
	61	1	0.111	0 ==> 1
	62	1	0.200	0 ==> 1
	68	1	0.111	0 ==> 1
node_41 --> Helvetiodon	37	1	0.333	0 ==> 1
	39	1	0.250	0 ==> 1
	50	1	0.500	0 ==> 1
	55	1	0.429	1 ==> 2
	56	1	0.333	0 ==> 2
	57	1	0.286	0 ==> 2
	60	1	0.750	2 ==> 1
	64	1	0.167	0 ==> 1
node_41 --> Hallautherium	6	1	0.222	1 ==> 0
	8	1	0.214	0 ==> 2
	17	1	0.273	1 ==> 0
	20	1	0.333	2 ==> 0
node_41 --> Bridetherium	7	1	0.250	0 ==> 1
	8	1	0.214	0 ==> 2
	10	1	0.273	0 ==> 1
	17	1	0.273	1 ==> 3
	24	1	0.125	0 ==> 1
	42	1	0.333	2 ==> 1
	58	1	0.133	1 --> 2
	61	1	0.111	0 ==> 1
	62	1	0.200	0 ==> 1
	67	1	0.500	1 ==> 0
	68	1	0.111	0 ==> 1
	73	1	0.333	0 ==> 1
node_41 --> Purbeckodon	8	1	0.214	0 ==> 2
	10	1	0.273	0 ==> 13
	18	1	0.375	1 ==> 0
	19	1	0.167	1 ==> 0
	43	1	0.667	0 ==> 2
	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1

	55	1	0.429 1 ==> 2
	56	1	0.333 0 ==> 2
	57	1	0.286 0 ==> 12
	58	1	0.133 1 --> 2
	60	1	0.750 2 ==> 01
node_41 --> Fluctuodon	4	1	0.333 0 ==> 1
	5	1	0.143 0 ==> 1
	7	1	0.250 0 ==> 1
	8	1	0.214 0 ==> 3
	10	1	0.273 0 ==> 2
	12	1	0.600 0 ==> 2
	14	1	0.333 0 ==> 4
	15	1	0.375 0 ==> 1
	16	1	0.333 0 ==> 5
	22	1	0.143 0 ==> 1
	37	1	0.333 0 ==> 1
	39	1	0.250 0 ==> 1
	41	1	0.500 1 ==> 2
	47	1	0.500 0 ==> 1
	50	1	0.500 0 ==> 12
	52	1	0.800 0 ==> 1
	56	1	0.333 0 ==> 1
node_41 --> Kuehneotherium	3	1	0.333 0 ==> 1
	4	1	0.333 0 ==> 1234
	7	1	0.250 0 ==> 2
	8	1	0.214 0 ==> 3
	14	1	0.333 0 ==> 45
	16	1	0.333 0 ==> 4567
	18	1	0.375 1 ==> 2
	22	1	0.143 0 ==> 1
	31	1	0.400 1 ==> 0
	37	1	0.333 0 ==> 12
	38	1	0.600 0 ==> 1
	39	1	0.250 0 ==> 1
	41	1	0.500 1 ==> 2
	46	1	0.750 0 ==> 3
	49	1	1.000 0 ==> 4
	50	1	0.500 0 ==> 7
	52	1	0.800 0 ==> 2
	56	1	0.333 0 ==> 1
node_41 --> Woutersia	3	1	0.333 0 ==> 1
	4	1	0.333 0 ==> 12
	6	1	0.222 1 ==> 2
	7	1	0.250 0 ==> 2
	9	1	0.667 0 ==> 2
	14	1	0.333 0 ==> 4
	16	1	0.333 0 ==> 7
	17	1	0.273 1 ==> 2
	20	1	0.333 2 ==> 1
	24	1	0.125 0 ==> 1
	31	1	0.400 1 ==> 0
	33	1	0.286 0 ==> 1
	37	1	0.333 0 ==> 12
	39	1	0.250 0 ==> 1
	40	1	0.167 1 ==> 0
	41	1	0.500 1 ==> 3
	42	1	0.333 2 ==> 3
	48	1	1.000 0 ==> 1
	50	1	0.500 0 ==> 37
	54	1	0.750 0 ==> 2
	64	1	0.167 0 ==> 1
	68	1	0.111 0 ==> 1
	69	1	1.000 0 ==> 1
node_41 --> Delsatia	3	1	0.333 0 ==> 2
	4	1	0.333 0 ==> 2
	14	1	0.333 0 ==> 7
	16	1	0.333 0 ==> 7
	17	1	0.273 1 ==> 0

	20	1	0.333 2 ==> 3
	21	1	0.167 0 ==> 1
	31	1	0.400 1 ==> 0
	37	1	0.333 0 ==> 2
	38	1	0.600 0 ==> 2
	41	1	0.500 1 ==> 0
	42	1	0.333 2 ==> 0
	50	1	0.500 0 ==> 7
	52	1	0.800 0 ==> 7
	53	1	0.167 1 ==> 0
	58	1	0.133 1 ==> 0
	60	1	0.750 2 ==> 3
node_41 --> Castorocauda	4	1	0.333 0 ==> 3
	5	1	0.143 0 ==> 1
	8	1	0.214 0 ==> 1
	10	1	0.273 0 ==> 1
	11	1	0.333 0 ==> 1
	12	1	0.600 0 ==> 1
	15	1	0.375 0 ==> 3
	16	1	0.333 0 ==> 6
	20	1	0.333 2 ==> 1
	22	1	0.143 0 ==> 1
	24	1	0.125 0 ==> 1
	25	1	0.500 2 ==> 3
node_41 --> Haldanodon	4	1	0.333 0 ==> 23
	5	1	0.143 0 ==> 1
	9	1	0.667 0 ==> 2
	10	1	0.273 0 ==> 1
	11	1	0.333 0 ==> 1
	12	1	0.600 0 ==> 2
	14	1	0.333 0 ==> 12
	15	1	0.375 0 ==> 12
	16	1	0.333 0 ==> 7
	24	1	0.125 0 ==> 1
	25	1	0.500 2 ==> 3
	30	1	0.091 1 ==> 0
	37	1	0.333 0 ==> 1
	39	1	0.250 0 ==> 1
	41	1	0.500 1 ==> 2
	50	1	0.500 0 ==> 2
	53	1	0.167 1 ==> 0
	58	1	0.133 1 --> 2
	64	1	0.167 0 ==> 1
	65	1	0.667 0 --> 1
node_41 --> node_40	1	1	0.500 0 ==> 1
	6	1	0.222 1 --> 2
	8	1	0.214 0 ==> 2
	17	1	0.273 1 ==> 0
	19	1	0.167 1 ==> 0
	21	1	0.167 0 ==> 1
	32	1	0.500 1 ==> 0
	34	1	0.500 1 ==> 3
	35	1	0.500 0 ==> 1
	36	1	1.000 0 ==> 1
	42	1	0.333 2 ==> 0
	55	1	0.429 1 ==> 0
	56	1	0.333 0 ==> 2
	58	1	0.133 1 --> 0
	61	1	0.111 0 ==> 1
	64	1	0.167 0 --> 1
	65	1	0.667 0 ==> 2
	67	1	0.500 1 ==> 0
	68	1	0.111 0 ==> 1
	73	1	0.333 0 ==> 1
	74	1	0.750 1 ==> 3
node_40 --> node_39	7	1	0.250 0 --> 2
	13	1	0.375 0 --> 1
	34	1	0.500 3 --> 2

	53	1	0.167	1 ==> 0
	58	1	0.133	0 --> 2
	59	1	0.200	1 ==> 0
	64	1	0.167	1 --> 0
	68	1	0.111	1 --> 0
	73	1	0.333	1 --> 2
	74	1	0.750	3 --> 2
node_39 --> Thomasia	42	1	0.333	0 ==> 1
	70	1	0.500	0 ==> 1
node_39 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	0.375	1 --> 2
	15	1	0.375	0 ==> 1
	16	1	0.333	0 ==> 4
	35	1	0.500	1 --> 2
node_40 --> Theroteinus	13	1	0.375	0 ==> 1
	35	1	0.500	1 --> 2
	38	1	0.600	0 ==> 12
	39	1	0.250	0 ==> 2
	40	1	0.167	1 ==> 0
	54	1	0.750	0 ==> 3
	55	1	0.429	0 ==> 3
	58	1	0.133	0 --> 2
	70	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	73	1	0.333	1 --> 2
node_40 --> Arboroharamiya	2	1	0.333	0 ==> 1
	4	1	0.333	0 ==> 1
	8	1	0.214	2 ==> 0
	9	1	0.667	0 ==> 1
	21	1	0.167	1 ==> 0
	27	1	1.000	1 ==> 0
	28	1	1.000	1 ==> 2
	29	1	0.500	0 ==> 1
	54	1	0.750	0 ==> 3
	66	1	0.250	1 ==> 0
node_40 --> Rugosodon	1	1	0.500	1 ==> 2
	2	1	0.333	0 ==> 1
	29	1	0.500	0 ==> 1
	32	1	0.500	0 ==> 1
	45	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	72	1	0.500	0 ==> 1
node_40 --> Sinobaatar	1	1	0.500	1 ==> 2
	28	1	1.000	1 ==> 0
	34	1	0.500	3 ==> 0
	35	1	0.500	1 --> 2
	42	1	0.333	0 ==> 1
	45	1	0.500	0 ==> 1
	72	1	0.500	0 ==> 1
node_41 --> Amphilestes	1	1	0.500	0 ==> 1
	18	1	0.375	1 ==> 0
	24	1	0.125	0 ==> 1
	33	1	0.286	0 ==> 1
node_41 --> Shuotherium	3	1	0.333	0 ==> 2
	4	1	0.333	0 ==> 2
	10	1	0.273	0 ==> 1
	14	1	0.333	0 ==> 7
	16	1	0.333	0 ==> 7
	18	1	0.375	1 ==> 0
	21	1	0.167	0 ==> 1
	22	1	0.143	0 ==> 1
	23	1	1.000	1 ==> 2
	30	1	0.091	1 ==> 0
	33	1	0.286	0 ==> 1
	37	1	0.333	0 ==> 2
	39	1	0.250	0 ==> 1
	40	1	0.167	1 ==> 0
	49	1	1.000	0 ==> 5

	58	1	0.133 1 --> 2
	64	1	0.167 0 ==> 1
	65	1	0.667 0 --> 1
node_41 --> Ambondro	3	1	0.333 0 ==> 1
	4	1	0.333 0 ==> 2
	5	1	0.143 0 ==> 1
	6	1	0.222 1 ==> 2
	10	1	0.273 0 ==> 1
	13	1	0.375 0 ==> 1
	14	1	0.333 0 ==> 5
	15	1	0.375 0 ==> 2
	18	1	0.375 1 ==> 2
	20	1	0.333 2 ==> 3
	21	1	0.167 0 ==> 1
	22	1	0.143 0 ==> 1
	30	1	0.091 1 ==> 0
node_41 --> Asfaltomylos	3	1	0.333 0 ==> 2
	4	1	0.333 0 ==> 3
	5	1	0.143 0 ==> 1
	6	1	0.222 1 ==> 2
	8	1	0.214 0 ==> 3
	13	1	0.375 0 ==> 2
	14	1	0.333 0 ==> 7
	15	1	0.375 0 ==> 2
	16	1	0.333 0 ==> 7
	18	1	0.375 1 ==> 3
	19	1	0.167 1 ==> 0
	30	1	0.091 1 ==> 0
node_41 --> Zhangheotherium	14	1	0.333 0 ==> 7
	16	1	0.333 0 ==> 7
	30	1	0.091 1 ==> 0
	33	1	0.286 0 ==> 2
	40	1	0.167 1 ==> 0
	53	1	0.167 1 ==> 0
	59	1	0.200 1 ==> 0
	74	1	0.750 1 ==> 2
node_41 --> Amphitherium	3	1	0.333 0 ==> 12
	4	1	0.333 0 ==> 34
	5	1	0.143 0 ==> 1
	10	1	0.273 0 ==> 1
	14	1	0.333 0 ==> 7
	15	1	0.375 0 ==> 2
	16	1	0.333 0 ==> 7
	19	1	0.167 1 ==> 0
	30	1	0.091 1 ==> 0
node_41 --> Dryolestes	3	1	0.333 0 ==> 123
	4	1	0.333 0 ==> 46
	6	1	0.222 1 ==> 0
	10	1	0.273 0 ==> 3
	12	1	0.600 0 ==> 3
	13	1	0.375 0 ==> 12
	14	1	0.333 0 ==> 45
	15	1	0.375 0 ==> 3
	16	1	0.333 0 ==> 789
	19	1	0.167 1 ==> 0
	30	1	0.091 1 ==> 0
	37	1	0.333 0 ==> 46
	38	1	0.600 0 ==> 3
	42	1	0.333 2 ==> 0
	43	1	0.667 0 ==> 3
	46	1	0.750 0 ==> 4
	49	1	1.000 0 ==> 3
	50	1	0.500 0 ==> 89
	51	1	1.000 0 ==> 6
	52	1	0.800 0 ==> 3
	53	1	0.167 1 ==> 0
	58	1	0.133 1 ==> 0
	73	1	0.333 0 ==> 2

node_42 --> Sinoconodon	17	1	0.273	1 --> 0	
	58	1	0.133	1 --> 0	
node_42 --> Hadrocodium	30	1	0.091	1 --> 0	
node_42 --> Priacodon	31	1	0.400	1 --> 2	
	33	1	0.286	0 ==> 1	
	68	1	0.111	0 ==> 1	

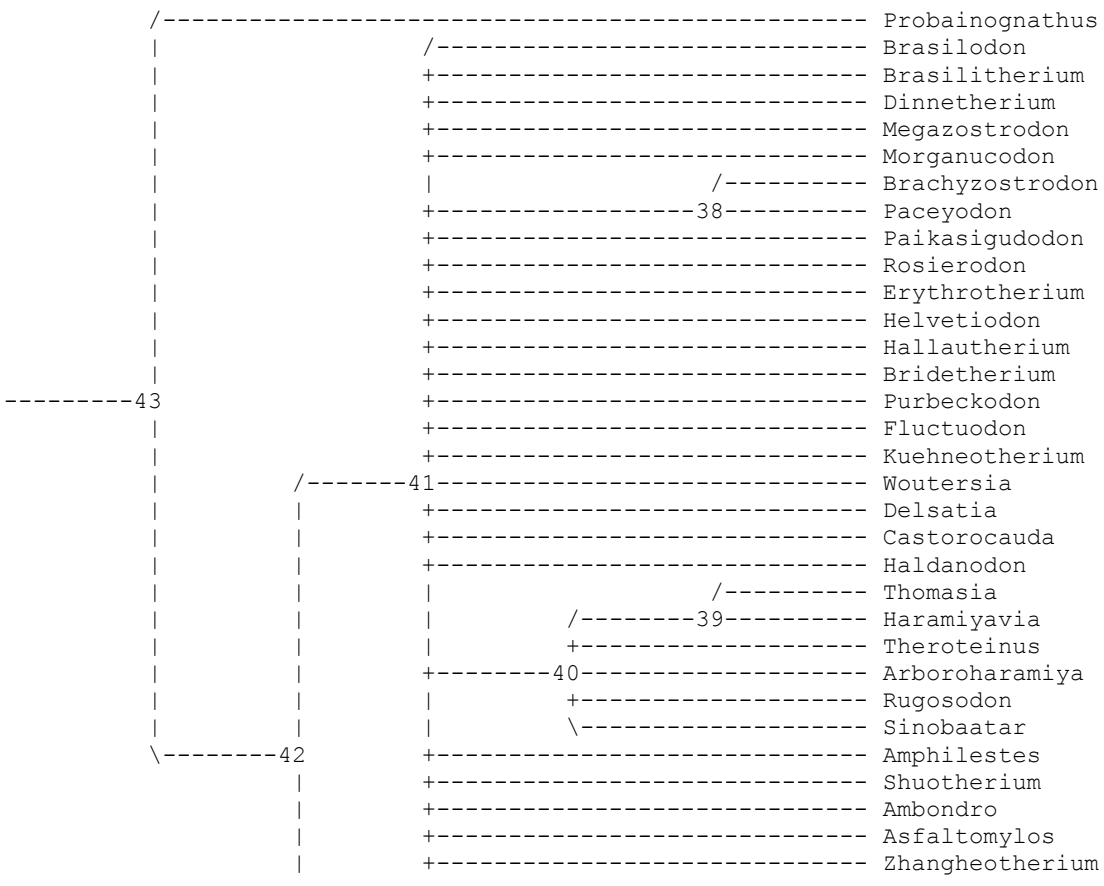
Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	4	7	0.500	0.500	0.600	0.300
2	1	3	3	0.333	0.667	0.000	0.000
3	3	9	10	0.333	0.667	0.143	0.048
4	4	12	12	0.333	0.667	0.000	0.000
5	1	7	8	0.143	0.857	0.143	0.020
6	2	9	9	0.222	0.778	0.000	0.000
7	2	8	9	0.250	0.750	0.143	0.036
8	3	14	18	0.214	0.786	0.267	0.057
9	2	3	3	0.667	0.333	0.000	0.000
10	3	11	11	0.273	0.727	0.000	0.000
11	1	3	3	0.333	0.667	0.000	0.000
12	3	5	5	0.600	0.400	0.000	0.000
13	3	8	8	0.375	0.625	0.000	0.000
14	4	12	13	0.333	0.667	0.111	0.037
15	3	8	8	0.375	0.625	0.000	0.000
16	4	12	12	0.333	0.667	0.000	0.000
17	3	11	16	0.273	0.727	0.385	0.105
18	3	8	8	0.375	0.625	0.000	0.000
19	1	6	12	0.167	0.833	0.545	0.091
20	3	9	9	0.333	0.667	0.000	0.000
21	1	6	9	0.167	0.833	0.375	0.062
22	1	7	7	0.143	0.857	0.000	0.000
23	1	1	1	1.000	0.000	0/0	0/0
24	1	8	8	0.125	0.875	0.000	0.000
25	4	8	8	0.500	0.500	0.000	0.000
26	1	1	1	1.000	0.000	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	11	11	0.091	0.909	0.000	0.000
31	2	5	5	0.400	0.600	0.000	0.000
32	1	2	4	0.500	0.500	0.667	0.333
33	2	7	7	0.286	0.714	0.000	0.000
34	3	6	8	0.500	0.500	0.400	0.200
35	2	4	6	0.500	0.500	0.500	0.250
36	1	1	3	1.000	0.000	1.000	1.000
37	3	9	9	0.333	0.667	0.000	0.000
38	3	5	5	0.600	0.400	0.000	0.000
39	2	8	8	0.250	0.750	0.000	0.000
40	1	6	6	0.167	0.833	0.000	0.000
41	3	6	6	0.500	0.500	0.000	0.000
42	3	9	12	0.333	0.667	0.333	0.111
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	2	2	0.500	0.500	0.000	0.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	3	3	3	1.000	0.000	0/0	0/0
50	4	8	8	0.500	0.500	0.000	0.000
51	1	1	1	1.000	0.000	0/0	0/0
52	4	5	5	0.800	0.200	0.000	0.000
53	1	6	7	0.167	0.833	0.167	0.028
54	3	4	4	0.750	0.250	0.000	0.000
55	3	7	8	0.429	0.571	0.200	0.086
56	2	6	7	0.333	0.667	0.200	0.067

57	2	7	7	0.286	0.714	0.000	0.000
58	2	15	16	0.133	0.867	0.071	0.010
59	1	5	8	0.200	0.800	0.429	0.086
60	3	4	4	0.750	0.250	0.000	0.000
61	1	9	12	0.111	0.889	0.273	0.030
62	1	5	5	0.200	0.800	0.000	0.000
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	6	6	0.167	0.833	0.000	0.000
65	2	3	4	0.667	0.333	0.500	0.333
66	1	4	4	0.250	0.750	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	9	10	0.111	0.889	0.111	0.012
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	2	2	0.500	0.500	0.000	0.000
73	2	6	7	0.333	0.667	0.200	0.067
74	3	4	6	0.750	0.250	0.667	0.500

----Optimisation des caractères sur l'arbre de consensus en DELTRAN

```
Tree length = 415
Consistency index (CI) = 0.349
Homoplasy index (HI) = 0.651
CI excluding uninformative characters = 0.341
HI excluding uninformative characters = 0.659
Retention index (RI) = 0.161
Rescaled consistency index (RC) = 0.056
f value = 1501
f-ratio = 0.3711
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```



```
                    |        +------------------------------ Amphitherium
                    |        \------------------------------ Dryolestes
                    +---------------------------------------- Sinoconodon
                    +---------------------------------------- Hadrocodium
                    \---------------------------------------- Priacodon
```

Possible character-state assignments to internal nodes

```
                         1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
38                00501103000001001112001001110111010000?1201000000001010011
                             1           1       1                         12
                             4           2
39                10000102000000000102101021110110021100011001000000000002020
                       22    1                    32
                             2
40                10000102000000000102101021110110031100011001000000001002001
                        2                           2                        2
41                00000100000000001112001021110111010000011201000000001010011
                                                                             2
42                00000111000000000002001021110?110200000112010000000001010000
                               11           2                               1
43                00000111000000000002001021110?110200000112010000000001010000
                               11           2                               1
```

Possible character-state assignments to internal nodes (continued)

```
                  666666666677777
Node              012345678901234
---------------------------------
38                2?010011?000001
                       1       1
39                21010210?000012
                                23
40                2101?2101000013
                                 2
41                200100110000001
                       1
42                200100110000001
                       1
43                200100110000001
                       1
```

Reconstructed states for internal nodes

```
                         1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
38                00501103000001001112001021110111010000011201000000001010011
39                10000102000000000102101021110110031100011001000000000002020
40                10000102000000000102101021110110031100011001000000001002001
41                00000100000000001112001021110111010000011201000000001010011
42                00000111000000000002001021110011020000011201000000001010000
43                00000111000000000002001021110011020000011201000000001010000
```

Reconstructed states for internal nodes (continued)

```
                  666666666677777
Node              012345678901234
---------------------------------
38                200100110000001
39                210102101000013
40                210102101000013
41                200100110000001
42                200100110000001
43                200100110000001
```

Character change lists:

Character	CI	Steps	Changes
1	0.500	1	node_41 0 ==> 1 node_40
		1	node_40 1 ==> 2 Rugosodon
		1	node_40 1 ==> 2 Sinobaatar
		1	node_41 0 ==> 1 Amphilestes
2	0.333	1	node_39 0 ==> 1 Haramiyavia
		1	node_40 0 ==> 1 Arboroharamiya
		1	node_40 0 ==> 1 Rugosodon
3	0.333	1	node_41 0 ==> 5 node_38
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 2 Delsatia
		1	node_41 0 ==> 2 Shuotherium
		1	node_41 0 ==> 1 Ambondro
		1	node_41 0 ==> 2 Asfaltomylos
		1	node_41 0 ==> 12 Amphitherium
		1	node_41 0 ==> 123 Dryolestes
4	0.333	1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1234 Kuehneotherium
		1	node_41 0 ==> 12 Woutersia
		1	node_41 0 ==> 2 Delsatia
		1	node_41 0 ==> 3 Castorocauda
		1	node_41 0 ==> 23 Haldanodon
		1	node_40 0 ==> 1 Arboroharamiya
		1	node_41 0 ==> 2 Shuotherium
		1	node_41 0 ==> 2 Ambondro
		1	node_41 0 ==> 3 Asfaltomylos
		1	node_41 0 ==> 34 Amphitherium
		1	node_41 0 ==> 46 Dryolestes
5	0.143	1	node_41 0 ==> 1 node_38
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 ==> 1 Ambondro
		1	node_41 0 ==> 1 Asfaltomylos
		1	node_41 0 ==> 1 Amphitherium
6	0.222	1	node_41 1 ==> 0 Brasilitherium
		1	node_41 1 ==> 0 Megazostrodon
		1	node_38 1 ==> 0 Brachyzostrodon
		1	node_41 1 ==> 0 Hallautherium
		1	node_41 1 ==> 2 Woutersia
		1	node_40 1 --> 2 Rugosodon
		1	node_41 1 ==> 2 Ambondro
		1	node_41 1 ==> 2 Asfaltomylos
		1	node_41 1 ==> 0 Dryolestes
7	0.250	1	node_42 1 ==> 0 node_41
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Rosierodon
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 2 Kuehneotherium
		1	node_41 0 ==> 2 Woutersia
		1	node_39 0 --> 2 Thomasia
8	0.214	1	node_42 1 ==> 0 node_41
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 3 Megazostrodon
		1	node_41 0 ==> 2 Morganucodon
		1	node_41 0 ==> 3 node_38
		1	node_41 0 ==> 2 Hallautherium
		1	node_41 0 ==> 2 Bridetherium
		1	node_41 0 ==> 2 Purbeckodon
		1	node_41 0 ==> 3 Fluctuodon
		1	node_41 0 ==> 3 Kuehneotherium
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 2 node_40

		1	node_40 2 ==> 0 Arboroharamiya
		1	node_41 0 ==> 3 Asfaltomylos
9	0.667	1	node_41 0 ==> 2 Woutersia
		1	node_41 0 ==> 2 Haldanodon
		1	node_40 0 ==> 1 Arboroharamiya
10	0.273	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Rosierodon
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 13 Purbeckodon
		1	node_41 0 ==> 2 Fluctuodon
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 ==> 1 Shuotherium
		1	node_41 0 ==> 1 Ambondro
		1	node_41 0 ==> 1 Amphitherium
		1	node_41 0 ==> 3 Dryolestes
11	0.333	1	node_38 0 ==> 1 Paceyodon
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Haldanodon
12	0.600	1	node_38 0 ==> 1 Paceyodon
		1	node_41 0 ==> 2 Fluctuodon
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 2 Haldanodon
		1	node_41 0 ==> 3 Dryolestes
13	0.375	1	node_38 0 --> 1 Brachyzostrodon
		1	node_38 0 --> 4 Paceyodon
		1	node_39 0 --> 1 Thomasia
		1	node_39 0 --> 2 Haramiyavia
		1	node_40 0 ==> 1 Theroteinus
		1	node_41 0 ==> 1 Ambondro
		1	node_41 0 ==> 2 Asfaltomylos
		1	node_41 0 ==> 12 Dryolestes
14	0.333	1	node_41 0 ==> 1 node_38
		1	node_41 0 ==> 4 Fluctuodon
		1	node_41 0 ==> 45 Kuehneotherium
		1	node_41 0 ==> 4 Woutersia
		1	node_41 0 ==> 7 Delsatia
		1	node_41 0 ==> 12 Haldanodon
		1	node_41 0 ==> 7 Shuotherium
		1	node_41 0 ==> 5 Ambondro
		1	node_41 0 ==> 7 Asfaltomylos
		1	node_41 0 ==> 7 Zhangheotherium
		1	node_41 0 ==> 7 Amphitherium
		1	node_41 0 ==> 45 Dryolestes
15	0.375	1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 3 Castorocauda
		1	node_41 0 ==> 12 Haldanodon
		1	node_39 0 ==> 1 Haramiyavia
		1	node_41 0 ==> 2 Ambondro
		1	node_41 0 ==> 2 Asfaltomylos
		1	node_41 0 ==> 2 Amphitherium
		1	node_41 0 ==> 3 Dryolestes
16	0.333	1	node_41 0 ==> 5 Fluctuodon
		1	node_41 0 ==> 4567 Kuehneotherium
		1	node_41 0 ==> 7 Woutersia
		1	node_41 0 ==> 7 Delsatia
		1	node_41 0 ==> 6 Castorocauda
		1	node_41 0 ==> 7 Haldanodon
		1	node_39 0 ==> 4 Haramiyavia
		1	node_41 0 ==> 7 Shuotherium
		1	node_41 0 ==> 7 Asfaltomylos
		1	node_41 0 ==> 7 Zhangheotherium
		1	node_41 0 ==> 7 Amphitherium
		1	node_41 0 ==> 789 Dryolestes
17	0.273	1	node_42 0 --> 1 node_41
		1	node_41 1 ==> 3 Dinnetherium
		1	node_41 1 ==> 23 Megazostrodon
		1	node_38 1 ==> 0 Brachyzostrodon

		1	node_41 1 ==> 23 Rosierodon
		1	node_41 1 ==> 0 Hallautherium
		1	node_41 1 ==> 3 Bridetherium
		1	node_41 1 ==> 2 Woutersia
		1	node_41 1 ==> 0 Delsatia
		1	node_41 1 ==> 0 node_40
		1	node_42 0 --> 1 Priacodon
18	0.375	1	node_42 0 --> 1 node_41
		1	node_41 1 ==> 0 Rosierodon
		1	node_41 1 ==> 0 Purbeckodon
		1	node_41 1 ==> 2 Kuehneotherium
		1	node_41 1 ==> 0 Amphilestes
		1	node_41 1 ==> 0 Shuotherium
		1	node_41 1 ==> 2 Ambondro
		1	node_41 1 ==> 3 Asfaltomylos
19	0.167	1	node_42 0 ==> 1 node_41
		1	node_41 1 ==> 0 Purbeckodon
		1	node_41 1 ==> 0 node_40
		1	node_41 1 ==> 0 Asfaltomylos
		1	node_41 1 ==> 0 Amphitherium
		1	node_41 1 ==> 0 Dryolestes
20	0.333	1	node_41 2 ==> 0 Brasilitherium
		1	node_41 2 ==> 1 Megazostrodon
		1	node_41 2 ==> 1 Morganucodon
		1	node_41 2 ==> 1 Erythrotherium
		1	node_41 2 ==> 0 Hallautherium
		1	node_41 2 ==> 1 Woutersia
		1	node_41 2 ==> 3 Delsatia
		1	node_41 2 ==> 1 Castorocauda
		1	node_41 2 ==> 3 Ambondro
21	0.167	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Delsatia
		1	node_41 0 ==> 1 node_40
		1	node_40 1 ==> 0 Arboroharamiya
		1	node_41 0 ==> 1 Shuotherium
		1	node_41 0 ==> 1 Ambondro
22	0.143	1	node_41 0 ==> 1 Brasilitherium
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Shuotherium
		1	node_41 0 ==> 1 Ambondro
23	1.000	1	node_41 1 ==> 2 Shuotherium
24	0.125	1	node_41 0 ==> 1 Brasilodon
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 Castorocauda
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 ==> 1 Amphilestes
25	0.500	1	node_41 2 ==> 4 Brasilitherium
		1	node_41 2 ==> 1 Dinnetherium
		1	node_41 2 ==> 0 Megazostrodon
		1	node_41 2 ==> 01 Morganucodon
		1	node_38 2 --> 01 Brachyzostrodon
		1	node_41 2 ==> 0 Erythrotherium
		1	node_41 2 ==> 3 Castorocauda
		1	node_41 2 ==> 3 Haldanodon
26	1.000	1	node_41 1 ==> 0 Brasilodon
27	1.000	1	node_40 1 ==> 0 Arboroharamiya
28	1.000	1	node_40 1 ==> 2 Arboroharamiya
		1	node_40 1 ==> 0 Sinobaatar
29	0.500	1	node_40 0 ==> 1 Arboroharamiya
		1	node_40 0 ==> 1 Rugosodon
30	0.091	1	node_42 0 --> 1 node_41
		1	node_41 1 ==> 0 Brasilodon

		1	node_41 1 ==> 0 Brasilitherium
		1	node_41 1 ==> 0 Haldanodon
		1	node_41 1 ==> 0 Shuotherium
		1	node_41 1 ==> 0 Ambondro
		1	node_41 1 ==> 0 Asfaltomylos
		1	node_41 1 ==> 0 Zhangheotherium
		1	node_41 1 ==> 0 Amphitherium
		1	node_41 1 ==> 0 Dryolestes
		1	node_42 0 --> 1 Priacodon
31	0.400	1	node_41 1 ==> 0 Dinnetherium
		1	node_41 1 ==> 0 Kuehneotherium
		1	node_41 1 ==> 0 Woutersia
		1	node_41 1 ==> 0 Delsatia
		1	node_42 1 --> 2 Priacodon
32	0.500	1	node_41 1 ==> 0 node_40
		1	node_40 0 ==> 1 Rugosodon
33	0.286	1	node_41 0 ==> 1 Dinnetherium
		1	node_38 0 --> 1 Brachyzostrodon
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 Amphilestes
		1	node_41 0 ==> 1 Shuotherium
		1	node_41 0 ==> 2 Zhangheotherium
		1	node_42 0 ==> 1 Priacodon
34	0.500	1	node_42 2 ==> 1 node_41
		1	node_41 1 ==> 2 Brasilitherium
		1	node_41 1 ==> 3 Erythrotherium
		1	node_41 1 ==> 3 node_40
		1	node_39 3 --> 2 Haramiyavia
		1	node_40 3 ==> 0 Sinobaatar
35	0.500	1	node_41 0 ==> 1 node_40
		1	node_39 1 --> 2 Haramiyavia
		1	node_40 1 --> 2 Theroteinus
		1	node_40 1 --> 2 Sinobaatar
36	1.000	1	node_41 0 ==> 1 node_40
37	0.333	1	node_41 0 ==> 1 Paikasigudodon
		1	node_41 0 ==> 1 Helvetiodon
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 12 Kuehneotherium
		1	node_41 0 ==> 12 Woutersia
		1	node_41 0 ==> 2 Delsatia
		1	node_41 0 ==> 1 Haldanodon
		1	node_41 0 ==> 2 Shuotherium
		1	node_41 0 ==> 46 Dryolestes
38	0.600	1	node_41 0 ==> 1 Paikasigudodon
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 2 Delsatia
		1	node_40 0 ==> 12 Theroteinus
		1	node_41 0 ==> 3 Dryolestes
39	0.250	1	node_41 0 ==> 2 Paikasigudodon
		1	node_41 0 ==> 1 Helvetiodon
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 Haldanodon
		1	node_40 0 ==> 2 Theroteinus
		1	node_41 0 ==> 1 Shuotherium
40	0.167	1	node_41 1 ==> 0 Dinnetherium
		1	node_38 1 --> 0 Brachyzostrodon
		1	node_41 1 ==> 0 Woutersia
		1	node_40 1 ==> 0 Theroteinus
		1	node_41 1 ==> 0 Shuotherium
		1	node_41 1 ==> 0 Zhangheotherium
41	0.500	1	node_41 1 ==> 0 Paikasigudodon
		1	node_41 1 ==> 2 Fluctuodon
		1	node_41 1 ==> 2 Kuehneotherium
		1	node_41 1 ==> 3 Woutersia
		1	node_41 1 ==> 0 Delsatia
		1	node_41 1 ==> 2 Haldanodon

42	0.333	1	node_41 2 ==> 3 Megazostrodon
		1	node_41 2 ==> 3 Paikasigudodon
		1	node_41 2 ==> 1 Bridetherium
		1	node_41 2 ==> 3 Woutersia
		1	node_41 2 ==> 0 Delsatia
		1	node_41 2 ==> 0 node_40
		1	node_39 0 ==> 1 Thomasia
		1	node_40 0 ==> 1 Sinobaatar
		1	node_41 2 ==> 0 Dryolestes
43	0.667	1	node_41 0 ==> 2 Paikasigudodon
		1	node_41 0 ==> 2 Purbeckodon
		1	node_41 0 ==> 3 Dryolestes
45	0.500	1	node_40 0 ==> 1 Rugosodon
		1	node_40 0 ==> 1 Sinobaatar
46	0.750	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Purbeckodon
		1	node_41 0 ==> 3 Kuehneotherium
		1	node_41 0 ==> 4 Dryolestes
47	0.500	1	node_41 0 ==> 1 Purbeckodon
		1	node_41 0 ==> 1 Fluctuodon
48	1.000	1	node_41 0 ==> 1 Woutersia
49	1.000	1	node_41 0 ==> 4 Kuehneotherium
		1	node_41 0 ==> 5 Shuotherium
		1	node_41 0 ==> 3 Dryolestes
50	0.500	1	node_41 0 ==> 2 Megazostrodon
		1	node_41 0 ==> 1 Helvetiodon
		1	node_41 0 ==> 12 Fluctuodon
		1	node_41 0 ==> 7 Kuehneotherium
		1	node_41 0 ==> 37 Woutersia
		1	node_41 0 ==> 7 Delsatia
		1	node_41 0 ==> 2 Haldanodon
		1	node_41 0 ==> 89 Dryolestes
51	1.000	1	node_41 0 ==> 6 Dryolestes
52	0.800	1	node_41 0 ==> 2 Megazostrodon
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 2 Kuehneotherium
		1	node_41 0 ==> 7 Delsatia
		1	node_41 0 ==> 3 Dryolestes
53	0.167	1	node_41 1 ==> 0 Dinnetherium
		1	node_41 1 ==> 0 Delsatia
		1	node_41 1 ==> 0 Haldanodon
		1	node_40 1 ==> 0 node_39
		1	node_41 1 ==> 0 Zhangheotherium
		1	node_41 1 ==> 0 Dryolestes
54	0.750	1	node_41 0 ==> 1 Paikasigudodon
		1	node_41 0 ==> 2 Woutersia
		1	node_40 0 ==> 3 Theroteinus
		1	node_40 0 ==> 3 Arboroharamiya
55	0.429	1	node_41 1 ==> 0 Megazostrodon
		1	node_41 1 ==> 0 Morganucodon
		1	node_41 1 ==> 0 Paikasigudodon
		1	node_41 1 ==> 2 Helvetiodon
		1	node_41 1 ==> 2 Purbeckodon
		1	node_41 1 ==> 0 node_40
		1	node_40 0 ==> 3 Theroteinus
56	0.333	1	node_41 0 ==> 2 Paikasigudodon
		1	node_41 0 ==> 2 Helvetiodon
		1	node_41 0 ==> 2 Purbeckodon
		1	node_41 0 ==> 1 Fluctuodon
		1	node_41 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 2 node_40
57	0.286	1	node_41 0 ==> 1 Brasilitherium
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_38 0 --> 1 Brachyzostrodon
		1	node_41 0 ==> 1 Erythrotherium
		1	node_41 0 ==> 2 Helvetiodon
		1	node_41 0 ==> 12 Purbeckodon

58	0.133	1	node_42 0 --> 1 node_41
		1	node_41 1 --> 2 Dinnetherium
		1	node_41 1 --> 2 Megazostrodon
		1	node_41 1 --> 2 Morganucodon
		1	node_38 1 --> 2 Brachyzostrodon
		1	node_41 1 --> 2 Bridetherium
		1	node_41 1 --> 2 Purbeckodon
		1	node_41 1 ==> 0 Delsatia
		1	node_41 1 --> 2 Haldanodon
		1	node_41 1 --> 0 node_40
		1	node_40 0 --> 2 node_39
		1	node_40 0 --> 2 Theroteinus
		1	node_41 1 --> 2 Shuotherium
		1	node_41 1 ==> 0 Dryolestes
		1	node_42 0 --> 1 Priacodon
59	0.200	1	node_42 0 ==> 1 node_41
		1	node_41 1 ==> 0 Brasilodon
		1	node_41 1 ==> 0 Brasilitherium
		1	node_40 1 ==> 0 node_39
		1	node_41 1 ==> 0 Zhangheotherium
60	0.750	1	node_41 2 ==> 0 Paikasigudodon
		1	node_41 2 ==> 1 Helvetiodon
		1	node_41 2 ==> 01 Purbeckodon
		1	node_41 2 ==> 3 Delsatia
61	0.111	1	node_41 0 ==> 1 Brasilodon
		1	node_41 0 ==> 1 Brasilitherium
		1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_38 0 --> 1 Brachyzostrodon
		1	node_41 0 ==> 1 Paikasigudodon
		1	node_41 0 ==> 1 Erythrotherium
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 node_40
62	0.200	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_41 0 ==> 1 Morganucodon
		1	node_41 0 ==> 1 Erythrotherium
		1	node_41 0 ==> 1 Bridetherium
64	0.167	1	node_41 0 ==> 1 Helvetiodon
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 Haldanodon
		1	node_40 0 --> 1 Theroteinus
		1	node_40 0 --> 1 Arboroharamiya
		1	node_41 0 ==> 1 Shuotherium
65	0.667	1	node_41 0 --> 1 Haldanodon
		1	node_41 0 ==> 2 node_40
		1	node_41 0 --> 1 Shuotherium
66	0.250	1	node_41 1 ==> 0 Brasilodon
		1	node_41 1 ==> 0 Brasilitherium
		1	node_41 1 ==> 0 Paikasigudodon
		1	node_40 1 ==> 0 Arboroharamiya
67	0.500	1	node_41 1 ==> 0 Bridetherium
		1	node_41 1 ==> 0 node_40
68	0.111	1	node_41 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Megazostrodon
		1	node_38 0 --> 1 Brachyzostrodon
		1	node_41 0 ==> 1 Erythrotherium
		1	node_41 0 ==> 1 Bridetherium
		1	node_41 0 ==> 1 Woutersia
		1	node_41 0 ==> 1 node_40
		1	node_39 1 --> 0 Haramiyavia
		1	node_42 0 ==> 1 Priacodon
69	1.000	1	node_41 0 ==> 1 Woutersia
70	0.500	1	node_39 0 ==> 1 Thomasia
		1	node_40 0 ==> 1 Theroteinus
71	0.500	1	node_40 0 ==> 1 Theroteinus
		1	node_40 0 ==> 1 Rugosodon
72	0.500	1	node_40 0 ==> 1 Rugosodon

```
                          1           node_40 0 ==> 1 Sinobaatar
 73             0.333     1           node_38 0 --> 1 Brachyzostrodon
                          1           node_41 0 ==> 1 Bridetherium
                          1           node_41 0 ==> 1 node_40
                          1           node_39 1 --> 2 Thomasia
                          1           node_40 1 --> 2 Theroteinus
                          1           node_41 0 ==> 2 Dryolestes
 74             0.750     1           node_41 1 ==> 0 Brasilodon
                          1           node_41 1 ==> 3 node_40
                          1           node_39 3 --> 2 Haramiyavia
                          1           node_41 1 ==> 2 Zhangheotherium
```

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_42 --> node_41	7	1	0.250	1 ==> 0
	8	1	0.214	1 ==> 0
	17	1	0.273	0 --> 1
	18	1	0.375	0 --> 1
	19	1	0.167	0 ==> 1
	30	1	0.091	0 --> 1
	34	1	0.500	2 ==> 1
	58	1	0.133	0 --> 1
	59	1	0.200	0 ==> 1
node_41 --> Brasilodon	24	1	0.125	0 ==> 1
	26	1	1.000	1 ==> 0
	30	1	0.091	1 ==> 0
	59	1	0.200	1 ==> 0
	61	1	0.111	0 ==> 1
	66	1	0.250	1 ==> 0
	74	1	0.750	1 ==> 0
node_41 --> Brasilitherium	6	1	0.222	1 ==> 0
	20	1	0.333	2 ==> 0
	22	1	0.143	0 ==> 1
	25	1	0.500	2 ==> 4
	30	1	0.091	1 ==> 0
	34	1	0.500	1 ==> 2
	57	1	0.286	0 ==> 1
	59	1	0.200	1 ==> 0
	61	1	0.111	0 ==> 1
	66	1	0.250	1 ==> 0
node_41 --> Dinnetherium	7	1	0.250	0 ==> 1
	8	1	0.214	0 ==> 1
	10	1	0.273	0 ==> 1
	17	1	0.273	1 ==> 3
	21	1	0.167	0 ==> 1
	22	1	0.143	0 ==> 1
	24	1	0.125	0 ==> 1
	25	1	0.500	2 ==> 1
	31	1	0.400	1 ==> 0
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.167	1 ==> 0
	57	1	0.286	0 ==> 1
	58	1	0.133	1 --> 2
	61	1	0.111	0 ==> 1
	62	1	0.200	0 ==> 1
	68	1	0.111	0 ==> 1
node_41 --> Megazostrodon	6	1	0.222	1 ==> 0
	8	1	0.214	0 ==> 3
	17	1	0.273	1 ==> 23
	20	1	0.333	2 ==> 1
	24	1	0.125	0 ==> 1
	25	1	0.500	2 ==> 0
	42	1	0.333	2 ==> 3
	50	1	0.500	0 ==> 2

	52	1	0.800	0 ==> 2
	55	1	0.429	1 ==> 0
	57	1	0.286	0 ==> 1
	58	1	0.133	1 --> 2
	61	1	0.111	0 ==> 1
	62	1	0.200	0 ==> 1
	68	1	0.111	0 ==> 1
node_41 --> Morganucodon	8	1	0.214	0 ==> 2
	20	1	0.333	2 ==> 1
	25	1	0.500	2 ==> 01
	55	1	0.429	1 ==> 0
	58	1	0.133	1 --> 2
	62	1	0.200	0 ==> 1
node_41 --> node_38	3	1	0.333	0 ==> 5
	5	1	0.143	0 ==> 1
	8	1	0.214	0 ==> 3
	14	1	0.333	0 ==> 1
node_38 --> Brachyzostrodon	6	1	0.222	1 ==> 0
	13	1	0.375	0 --> 1
	17	1	0.273	1 ==> 0
	25	1	0.500	2 --> 01
	33	1	0.286	0 --> 1
	40	1	0.167	1 --> 0
	57	1	0.286	0 --> 1
	58	1	0.133	1 --> 2
	61	1	0.111	0 --> 1
	68	1	0.111	0 --> 1
	73	1	0.333	0 --> 1
node_38 --> Paceyodon	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 1
	13	1	0.375	0 --> 4
node_41 --> Paikasigudodon	37	1	0.333	0 ==> 1
	38	1	0.600	0 ==> 1
	39	1	0.250	0 ==> 2
	41	1	0.500	1 ==> 0
	42	1	0.333	2 ==> 3
	43	1	0.667	0 ==> 2
	54	1	0.750	0 ==> 1
	55	1	0.429	1 ==> 0
	56	1	0.333	0 ==> 2
	60	1	0.750	2 ==> 0
	61	1	0.111	0 ==> 1
	66	1	0.250	1 ==> 0
node_41 --> Rosierodon	7	1	0.250	0 ==> 1
	10	1	0.273	0 ==> 1
	17	1	0.273	1 ==> 23
	18	1	0.375	1 ==> 0
node_41 --> Erythrotherium	20	1	0.333	2 ==> 1
	25	1	0.500	2 ==> 0
	34	1	0.500	1 ==> 3
	57	1	0.286	0 ==> 1
	61	1	0.111	0 ==> 1
	62	1	0.200	0 ==> 1
	68	1	0.111	0 ==> 1
node_41 --> Helvetiodon	37	1	0.333	0 ==> 1
	39	1	0.250	0 ==> 1
	50	1	0.500	0 ==> 1
	55	1	0.429	1 ==> 2
	56	1	0.333	0 ==> 2
	57	1	0.286	0 ==> 2
	60	1	0.750	2 ==> 1
	64	1	0.167	0 ==> 1
node_41 --> Hallautherium	6	1	0.222	1 ==> 0
	8	1	0.214	0 ==> 2
	17	1	0.273	1 ==> 0
	20	1	0.333	2 ==> 0
node_41 --> Bridetherium	7	1	0.250	0 ==> 1
	8	1	0.214	0 ==> 2

	10	1	0.273 0 ==> 1
	17	1	0.273 1 ==> 3
	24	1	0.125 0 ==> 1
	42	1	0.333 2 ==> 1
	58	1	0.133 1 --> 2
	61	1	0.111 0 ==> 1
	62	1	0.200 0 ==> 1
	67	1	0.500 1 ==> 0
	68	1	0.111 0 ==> 1
	73	1	0.333 0 ==> 1
node_41 --> Purbeckodon	8	1	0.214 0 ==> 2
	10	1	0.273 0 ==> 13
	18	1	0.375 1 ==> 0
	19	1	0.167 1 ==> 0
	43	1	0.667 0 ==> 2
	46	1	0.750 0 ==> 1
	47	1	0.500 0 ==> 1
	55	1	0.429 1 ==> 2
	56	1	0.333 0 ==> 2
	57	1	0.286 0 ==> 12
	58	1	0.133 1 --> 2
	60	1	0.750 2 ==> 01
node_41 --> Fluctuodon	4	1	0.333 0 ==> 1
	5	1	0.143 0 ==> 1
	7	1	0.250 0 ==> 1
	8	1	0.214 0 ==> 3
	10	1	0.273 0 ==> 2
	12	1	0.600 0 ==> 2
	14	1	0.333 0 ==> 4
	15	1	0.375 0 ==> 1
	16	1	0.333 0 ==> 5
	22	1	0.143 0 ==> 1
	37	1	0.333 0 ==> 1
	39	1	0.250 0 ==> 1
	41	1	0.500 1 ==> 2
	47	1	0.500 0 ==> 1
	50	1	0.500 0 ==> 12
	52	1	0.800 0 ==> 1
	56	1	0.333 0 ==> 1
node_41 --> Kuehneotherium	3	1	0.333 0 ==> 1
	4	1	0.333 0 ==> 1234
	7	1	0.250 0 ==> 2
	8	1	0.214 0 ==> 3
	14	1	0.333 0 ==> 45
	16	1	0.333 0 ==> 4567
	18	1	0.375 1 ==> 2
	22	1	0.143 0 ==> 1
	31	1	0.400 1 ==> 0
	37	1	0.333 0 ==> 12
	38	1	0.600 0 ==> 1
	39	1	0.250 0 ==> 1
	41	1	0.500 1 ==> 2
	46	1	0.750 0 ==> 3
	49	1	1.000 0 ==> 4
	50	1	0.500 0 ==> 7
	52	1	0.800 0 ==> 2
	56	1	0.333 0 ==> 1
node_41 --> Woutersia	3	1	0.333 0 ==> 1
	4	1	0.333 0 ==> 12
	6	1	0.222 1 ==> 2
	7	1	0.250 0 ==> 2
	9	1	0.667 0 ==> 2
	14	1	0.333 0 ==> 4
	16	1	0.333 0 ==> 7
	17	1	0.273 1 ==> 2
	20	1	0.333 2 ==> 1
	24	1	0.125 0 ==> 1
	31	1	0.400 1 ==> 0

	33	1	0.286	0 ==> 1
	37	1	0.333	0 ==> 12
	39	1	0.250	0 ==> 1
	40	1	0.167	1 ==> 0
	41	1	0.500	1 ==> 3
	42	1	0.333	2 ==> 3
	48	1	1.000	0 ==> 1
	50	1	0.500	0 ==> 37
	54	1	0.750	0 ==> 2
	64	1	0.167	0 ==> 1
	68	1	0.111	0 ==> 1
	69	1	1.000	0 ==> 1
node_41 --> Delsatia	3	1	0.333	0 ==> 2
	4	1	0.333	0 ==> 2
	14	1	0.333	0 ==> 7
	16	1	0.333	0 ==> 7
	17	1	0.273	1 ==> 0
	20	1	0.333	2 ==> 3
	21	1	0.167	0 ==> 1
	31	1	0.400	1 ==> 0
	37	1	0.333	0 ==> 2
	38	1	0.600	0 ==> 2
	41	1	0.500	1 ==> 0
	42	1	0.333	2 ==> 0
	50	1	0.500	0 ==> 7
	52	1	0.800	0 ==> 7
	53	1	0.167	1 ==> 0
	58	1	0.133	1 ==> 0
	60	1	0.750	2 ==> 3
node_41 --> Castorocauda	4	1	0.333	0 ==> 3
	5	1	0.143	0 ==> 1
	8	1	0.214	0 ==> 1
	10	1	0.273	0 ==> 1
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 1
	15	1	0.375	0 ==> 3
	16	1	0.333	0 ==> 6
	20	1	0.333	2 ==> 1
	22	1	0.143	0 ==> 1
	24	1	0.125	0 ==> 1
	25	1	0.500	2 ==> 3
node_41 --> Haldanodon	4	1	0.333	0 ==> 23
	5	1	0.143	0 ==> 1
	9	1	0.667	0 ==> 2
	10	1	0.273	0 ==> 1
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 2
	14	1	0.333	0 ==> 12
	15	1	0.375	0 ==> 12
	16	1	0.333	0 ==> 7
	24	1	0.125	0 ==> 1
	25	1	0.500	2 ==> 3
	30	1	0.091	1 ==> 0
	37	1	0.333	0 ==> 1
	39	1	0.250	0 ==> 1
	41	1	0.500	1 ==> 2
	50	1	0.500	0 ==> 2
	53	1	0.167	1 ==> 0
	58	1	0.133	1 --> 2
	64	1	0.167	0 ==> 1
	65	1	0.667	0 --> 1
node_41 --> node_40	1	1	0.500	0 ==> 1
	8	1	0.214	0 ==> 2
	17	1	0.273	1 ==> 0
	19	1	0.167	1 ==> 0
	21	1	0.167	0 ==> 1
	32	1	0.500	1 ==> 0
	34	1	0.500	1 ==> 3

	35	1	0.500	0 ==> 1
	36	1	1.000	0 ==> 1
	42	1	0.333	2 ==> 0
	55	1	0.429	1 ==> 0
	56	1	0.333	0 ==> 2
	58	1	0.133	1 --> 0
	61	1	0.111	0 ==> 1
	65	1	0.667	0 ==> 2
	67	1	0.500	1 ==> 0
	68	1	0.111	0 ==> 1
	73	1	0.333	0 ==> 1
	74	1	0.750	1 ==> 3
node_40 --> node_39	53	1	0.167	1 ==> 0
	58	1	0.133	0 --> 2
	59	1	0.200	1 ==> 0
node_39 --> Thomasia	7	1	0.250	0 --> 2
	13	1	0.375	0 --> 1
	42	1	0.333	0 ==> 1
	70	1	0.500	0 ==> 1
	73	1	0.333	1 --> 2
node_39 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	0.375	0 --> 2
	15	1	0.375	0 ==> 1
	16	1	0.333	0 ==> 4
	34	1	0.500	3 --> 2
	35	1	0.500	1 --> 2
	68	1	0.111	1 --> 0
	74	1	0.750	3 --> 2
node_40 --> Theroteinus	13	1	0.375	0 ==> 1
	35	1	0.500	1 --> 2
	38	1	0.600	0 ==> 12
	39	1	0.250	0 ==> 2
	40	1	0.167	1 ==> 0
	54	1	0.750	0 ==> 3
	55	1	0.429	0 ==> 3
	58	1	0.133	0 --> 2
	64	1	0.167	0 --> 1
	70	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	73	1	0.333	1 --> 2
node_40 --> Arboroharamiya	2	1	0.333	0 ==> 1
	4	1	0.333	0 ==> 1
	8	1	0.214	2 ==> 0
	9	1	0.667	0 ==> 1
	21	1	0.167	1 ==> 0
	27	1	1.000	1 ==> 0
	28	1	1.000	1 ==> 2
	29	1	0.500	0 ==> 1
	54	1	0.750	0 ==> 3
	64	1	0.167	0 --> 1
	66	1	0.250	1 ==> 0
node_40 --> Rugosodon	1	1	0.500	1 ==> 2
	2	1	0.333	0 ==> 1
	6	1	0.222	1 --> 2
	29	1	0.500	0 ==> 1
	32	1	0.500	0 ==> 1
	45	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	72	1	0.500	0 ==> 1
node_40 --> Sinobaatar	1	1	0.500	1 ==> 2
	28	1	1.000	1 ==> 0
	34	1	0.500	3 ==> 0
	35	1	0.500	1 --> 2
	42	1	0.333	0 ==> 1
	45	1	0.500	0 ==> 1
	72	1	0.500	0 ==> 1
node_41 --> Amphilestes	1	1	0.500	0 ==> 1
	18	1	0.375	1 ==> 0

```
                              24                1  0.125 0 ==> 1
                              33                1  0.286 0 ==> 1
node_41 --> Shuotherium       3                 1  0.333 0 ==> 2
                              4                 1  0.333 0 ==> 2
                              10                1  0.273 0 ==> 1
                              14                1  0.333 0 ==> 7
                              16                1  0.333 0 ==> 7
                              18                1  0.375 1 ==> 0
                              21                1  0.167 0 ==> 1
                              22                1  0.143 0 ==> 1
                              23                1  1.000 1 ==> 2
                              30                1  0.091 1 ==> 0
                              33                1  0.286 0 ==> 1
                              37                1  0.333 0 ==> 2
                              39                1  0.250 0 ==> 1
                              40                1  0.167 1 ==> 0
                              49                1  1.000 0 ==> 5
                              58                1  0.133 1 --> 2
                              64                1  0.167 0 ==> 1
                              65                1  0.667 0 --> 1
node_41 --> Ambondro          3                 1  0.333 0 ==> 1
                              4                 1  0.333 0 ==> 2
                              5                 1  0.143 0 ==> 1
                              6                 1  0.222 1 ==> 2
                              10                1  0.273 0 ==> 1
                              13                1  0.375 0 ==> 1
                              14                1  0.333 0 ==> 5
                              15                1  0.375 0 ==> 2
                              18                1  0.375 1 ==> 2
                              20                1  0.333 2 ==> 3
                              21                1  0.167 0 ==> 1
                              22                1  0.143 0 ==> 1
                              30                1  0.091 1 ==> 0
node_41 --> Asfaltomylos      3                 1  0.333 0 ==> 2
                              4                 1  0.333 0 ==> 3
                              5                 1  0.143 0 ==> 1
                              6                 1  0.222 1 ==> 2
                              8                 1  0.214 0 ==> 3
                              13                1  0.375 0 ==> 2
                              14                1  0.333 0 ==> 7
                              15                1  0.375 0 ==> 2
                              16                1  0.333 0 ==> 7
                              18                1  0.375 1 ==> 3
                              19                1  0.167 1 ==> 0
                              30                1  0.091 1 ==> 0
node_41 --> Zhangheotherium   14                1  0.333 0 ==> 7
                              16                1  0.333 0 ==> 7
                              30                1  0.091 1 ==> 0
                              33                1  0.286 0 ==> 2
                              40                1  0.167 1 ==> 0
                              53                1  0.167 1 ==> 0
                              59                1  0.200 1 ==> 0
                              74                1  0.750 1 ==> 2
node_41 --> Amphitherium      3                 1  0.333 0 ==> 12
                              4                 1  0.333 0 ==> 34
                              5                 1  0.143 0 ==> 1
                              10                1  0.273 0 ==> 1
                              14                1  0.333 0 ==> 7
                              15                1  0.375 0 ==> 2
                              16                1  0.333 0 ==> 7
                              19                1  0.167 1 ==> 0
                              30                1  0.091 1 ==> 0
node_41 --> Dryolestes        3                 1  0.333 0 ==> 123
                              4                 1  0.333 0 ==> 46
                              6                 1  0.222 1 ==> 0
                              10                1  0.273 0 ==> 3
                              12                1  0.600 0 ==> 3
                              13                1  0.375 0 ==> 12
```

	14	1	0.333	0 ==> 45
	15	1	0.375	0 ==> 3
	16	1	0.333	0 ==> 789
	19	1	0.167	1 ==> 0
	30	1	0.091	1 ==> 0
	37	1	0.333	0 ==> 46
	38	1	0.600	0 ==> 3
	42	1	0.333	2 ==> 0
	43	1	0.667	0 ==> 3
	46	1	0.750	0 ==> 4
	49	1	1.000	0 ==> 3
	50	1	0.500	0 ==> 89
	51	1	1.000	0 ==> 6
	52	1	0.800	0 ==> 3
	53	1	0.167	1 ==> 0
	58	1	0.133	1 ==> 0
	73	1	0.333	0 ==> 2
node_42 --> Priacodon	17	1	0.273	0 --> 1
	30	1	0.091	0 --> 1
	31	1	0.400	1 --> 2
	33	1	0.286	0 ==> 1
	58	1	0.133	0 --> 1
	68	1	0.111	0 ==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	4	7	0.500	0.500	0.600	0.300
2	1	3	3	0.333	0.667	0.000	0.000
3	3	9	10	0.333	0.667	0.143	0.048
4	4	12	12	0.333	0.667	0.000	0.000
5	1	7	8	0.143	0.857	0.143	0.020
6	2	9	9	0.222	0.778	0.000	0.000
7	2	8	9	0.250	0.750	0.143	0.036
8	3	14	18	0.214	0.786	0.267	0.057
9	2	3	3	0.667	0.333	0.000	0.000
10	3	11	11	0.273	0.727	0.000	0.000
11	1	3	3	0.333	0.667	0.000	0.000
12	3	5	5	0.600	0.400	0.000	0.000
13	3	8	8	0.375	0.625	0.000	0.000
14	4	12	13	0.333	0.667	0.111	0.037
15	3	8	8	0.375	0.625	0.000	0.000
16	4	12	12	0.333	0.667	0.000	0.000
17	3	11	16	0.273	0.727	0.385	0.105
18	3	8	8	0.375	0.625	0.000	0.000
19	1	6	12	0.167	0.833	0.545	0.091
20	3	9	9	0.333	0.667	0.000	0.000
21	1	6	9	0.167	0.833	0.375	0.062
22	1	7	7	0.143	0.857	0.000	0.000
23	1	1	1	1.000	0.000	0/0	0/0
24	1	8	8	0.125	0.875	0.000	0.000
25	4	8	8	0.500	0.500	0.000	0.000
26	1	1	1	1.000	0.000	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	11	11	0.091	0.909	0.000	0.000
31	2	5	5	0.400	0.600	0.000	0.000
32	1	2	4	0.500	0.500	0.667	0.333
33	2	7	7	0.286	0.714	0.000	0.000
34	3	6	8	0.500	0.500	0.400	0.200
35	2	4	6	0.500	0.500	0.500	0.250
36	1	1	3	1.000	0.000	1.000	1.000
37	3	9	9	0.333	0.667	0.000	0.000
38	3	5	5	0.600	0.400	0.000	0.000
39	2	8	8	0.250	0.750	0.000	0.000

```
 40                   1        6        6     0.167   0.833   0.000   0.000
 41                   3        6        6     0.500   0.500   0.000   0.000
 42                   3        9       12     0.333   0.667   0.333   0.111
 43                   2        3        3     0.667   0.333   0.000   0.000
 44                 n/a        0        0       0/0     0/0     0/0     0/0
 45                   1        2        2     0.500   0.500   0.000   0.000
 46                   3        4        4     0.750   0.250   0.000   0.000
 47                   1        2        2     0.500   0.500   0.000   0.000
 48                   1        1        1     1.000   0.000     0/0     0/0
 49                   3        3        3     1.000   0.000     0/0     0/0
 50                   4        8        8     0.500   0.500   0.000   0.000
 51                   1        1        1     1.000   0.000     0/0     0/0
 52                   4        5        5     0.800   0.200   0.000   0.000
 53                   1        6        7     0.167   0.833   0.167   0.028
 54                   3        4        4     0.750   0.250   0.000   0.000
 55                   3        7        8     0.429   0.571   0.200   0.086
 56                   2        6        7     0.333   0.667   0.200   0.067
 57                   2        7        7     0.286   0.714   0.000   0.000
 58                   2       15       16     0.133   0.867   0.071   0.010
 59                   1        5        8     0.200   0.800   0.429   0.086
 60                   3        4        4     0.750   0.250   0.000   0.000
 61                   1        9       12     0.111   0.889   0.273   0.030
 62                   1        5        5     0.200   0.800   0.000   0.000
 63                 n/a        0        0       0/0     0/0     0/0     0/0
 64                   1        6        6     0.167   0.833   0.000   0.000
 65                   2        3        4     0.667   0.333   0.500   0.333
 66                   1        4        4     0.250   0.750   0.000   0.000
 67                   1        2        3     0.500   0.500   0.500   0.250
 68                   1        9       10     0.111   0.889   0.111   0.012
 69                   1        1        1     1.000   0.000     0/0     0/0
 70                   1        2        2     0.500   0.500   0.000   0.000
 71                   1        2        2     0.500   0.500   0.000   0.000
 72                   1        2        2     0.500   0.500   0.000   0.000
 73                   2        6        7     0.333   0.667   0.200   0.067
 74                   3        4        6     0.750   0.250   0.667   0.500
```

--Matrice "molaire" avec "*Sinoconodon*" et caractères non-ordonnés

----*Buffer de l'analyse*

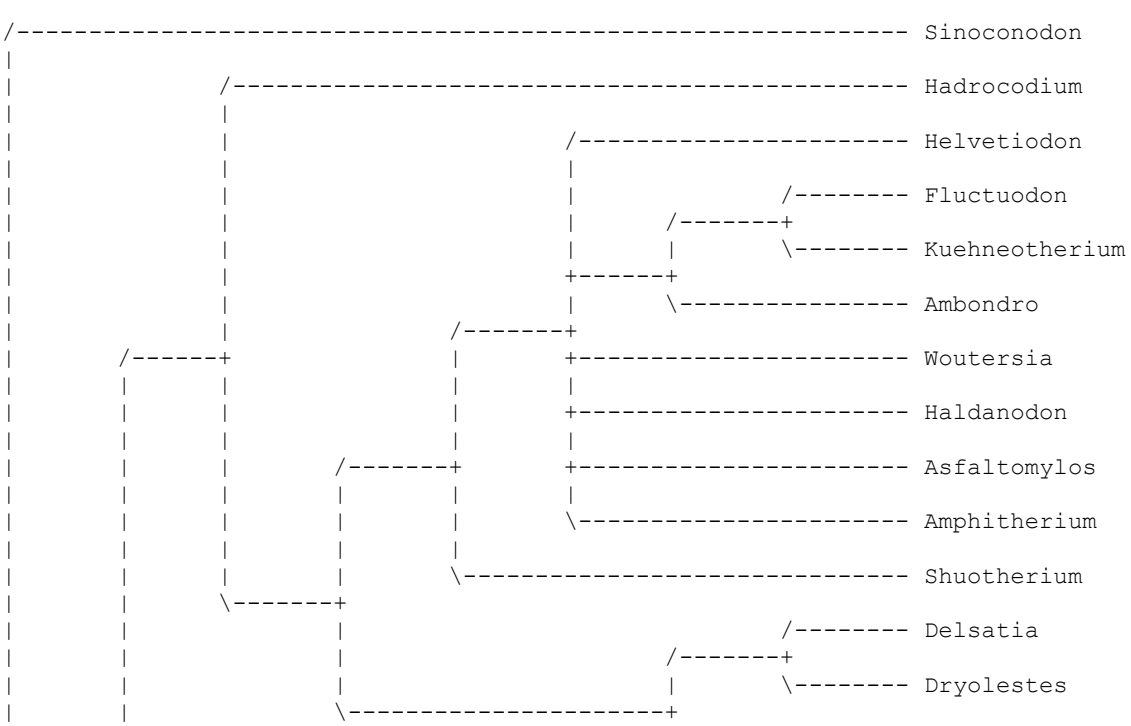
```
Data matrix has 34 taxa, 74 characters
Valid character-state symbols: 0123456789
Missing data identified by '?'
"Equate" macros in effect:
   N ==> ?

Heuristic search settings:
  Optimality criterion = parsimony
    Character-status summary:
      Of 74 total characters:
        All characters are of type 'unord'
        All characters have equal weight
        3 characters are constant
        7 variable characters are parsimony-uninformative
        Number of parsimony-informative characters = 64
    Multistate taxa interpreted as uncertainty
  Starting tree(s) obtained via stepwise addition
  Addition sequence: random
    Number of replicates = 100
    Starting seed = 921190029
  Number of trees held at each step during stepwise addition = 1
  Branch-swapping algorithm: tree-bisection-reconnection (TBR)
```

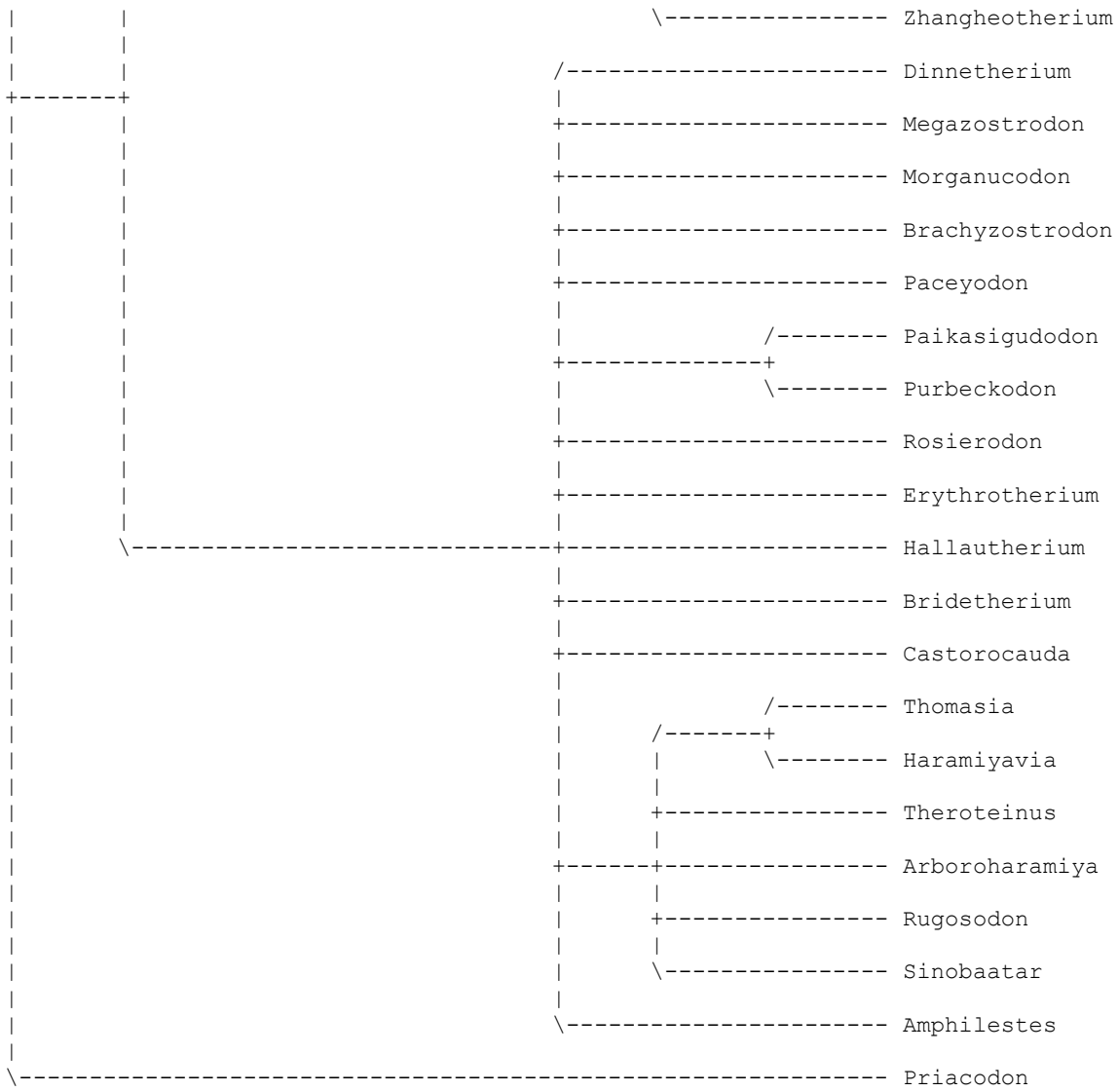
```
  Steepest descent option not in effect
  Initial 'MaxTrees' setting = 100 (will be auto-increased by 100)
  Branches collapsed (creating polytomies) if maximum branch length is zero
  'MulTrees' option in effect
  Topological constraints not enforced
  Trees are unrooted

Heuristic search completed
   Total number of rearrangements tried = 7.7349e+009
   Score of best tree(s) found = 269
   Number of trees retained = 1734
   Time used = 01:14:14.3

Tree-island profile:
                     First      Last                      First   Times
Island      Size      tree      tree        Score    replicate     hit
-------------------------------------------------------------------------
     1       398         1       398          269            5       7
     2       454       399       852          269           53       1
     3        24       853       876          269           60       1
     4       284       877      1160          269           71       1
     5       194      1161      1354          269           81       1
     6       144      1355      1498          269           85       1
     7       123      1499      1621          269           88       1
     8       113      1622      1734          269           94       1
     9     11024         -         -          270           46       1
    10     11019         -         -          270           45       1
    11     11016         -         -          270           49       1
    12     11012         -         -          270           41       1
    13     10997         -         -          270           30       2*
    14     10918         -         -          270           34       1
    15     10895         -         -          270           26       1
    16     10865         -         -          270           48       1
    17     10788         -         -          270           15       1
    18     10758         -         -          270           65       1
    19     10755         -         -          270           42       1
    20     10657         -         -          270           35       1
    21     10633         -         -          270           54       1
    22     10595         -         -          270           70       1
    23     10577         -         -          270           84       1
    24     10564         -         -          270           58       1
    25     10504         -         -          270           80       1
    26     10475         -         -          270           98       1
    27     10409         -         -          270           96       1
    28     10402         -         -          270           52       1
    29     10400         -         -          270           61       1
    30     10375         -         -          270           72       1
    31     10365         -         -          270           63       1
    32     10363         -         -          270           90       1
    33     10316         -         -          270            1       2*
    34     10274         -         -          270           27       1
    35     10268         -         -          270           74       1
    36     10266         -         -          270           75       1
    37     10236         -         -          270           76       1
    38     10234         -         -          270           87       1
    39     10229         -         -          270           64       1
    40      3626         -         -          270           39       1
    41      3606         -         -          270           29       1
    42      3376         -         -          270           66       1
    43      3108         -         -          270           99       1
    44      1075         -         -          270           11       1
    45      1068         -         -          270           12       1
    46      1042         -         -          270           20       1
    47      1008         -         -          270           25       1
    48       992         -         -          270           14       1
    49       967         -         -          270           18       1
    50       921         -         -          270           59       1
    51       872         -         -          270           79       1
```

52	656	-	-	270	21	1
53	469	-	-	270	17	1
54	455	-	-	270	50	1
55	453	-	-	270	19	1
56	450	-	-	270	31	1
57	275	-	-	270	55	1
58	255	-	-	270	4	1
59	222	-	-	270	10	1
60	197	-	-	270	100	1
61	176	-	-	270	23	1
62	81	-	-	270	78	1
63	35	-	-	270	7	1
64	31	-	-	270	67	2*
65	30	-	-	270	24	4*
66	17	-	-	270	9	1
67	12	-	-	270	44	1
68	0	-	-	270	16	2*
69	1579	-	-	271	97	1
70	1111	-	-	271	47	1
71	996	-	-	271	57	1
72	432	-	-	271	69	1
73	415	-	-	271	13	1
74	331	-	-	271	93	1
75	244	-	-	271	86	1
76	243	-	-	271	82	1
77	103	-	-	271	68	1
78	102	-	-	271	89	1
79	75	-	-	271	51	1
80	65	-	-	271	77	1
81	62	-	-	271	56	1
82	57	-	-	271	6	1
83	50	-	-	271	40	1
84	38	-	-	271	22	2*
85	17017	-	-	272	28	1
86	82	-	-	272	3	1

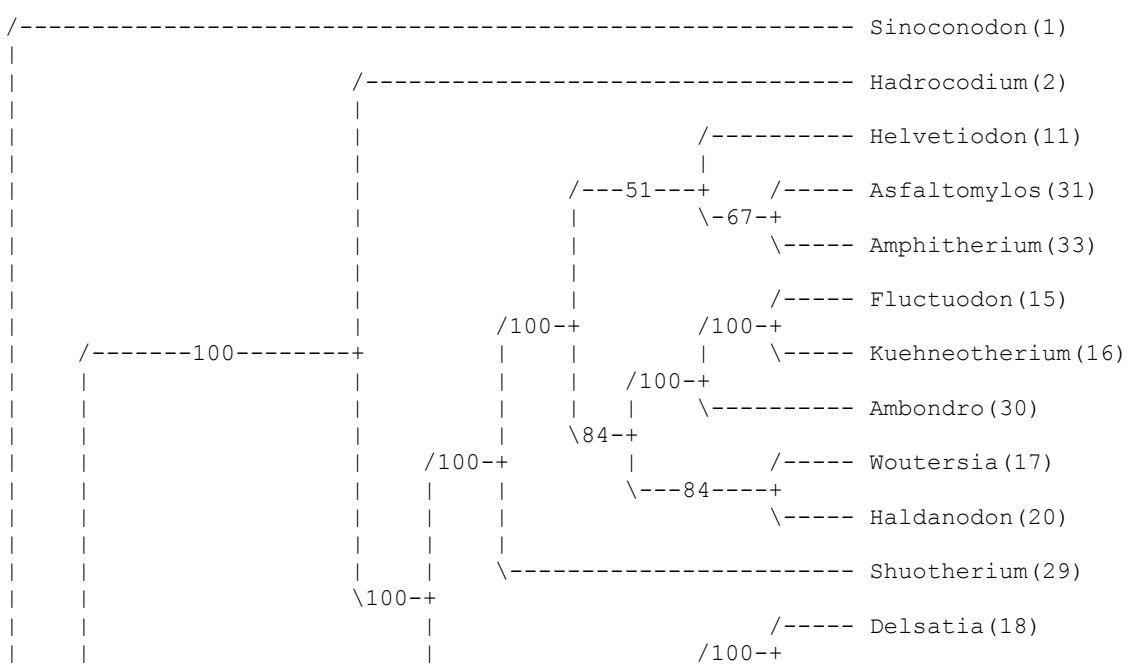
Note(s):
    * Multiple hits on islands of unsaved trees may in fact represent different
      islands

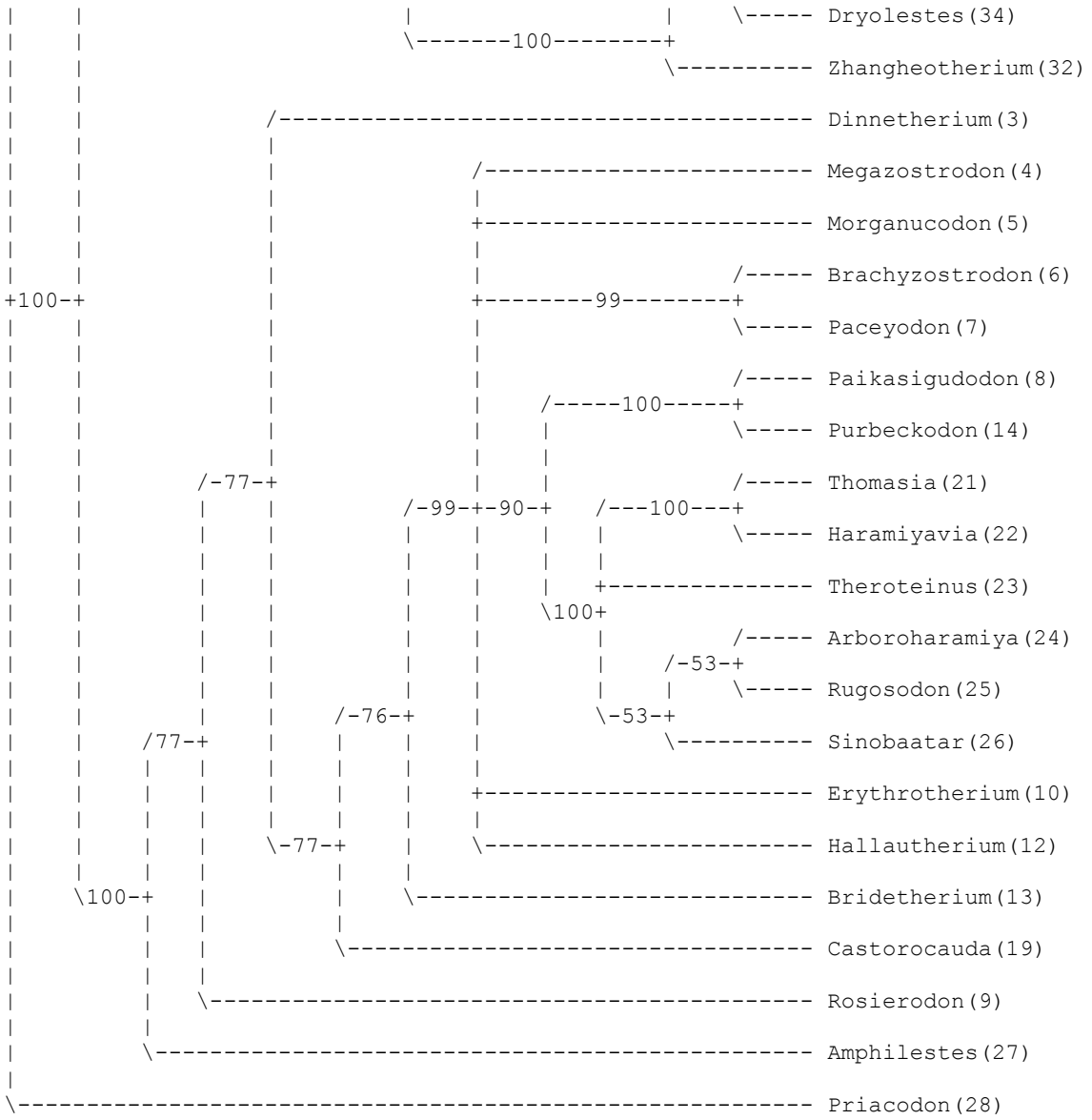
Strict consensus of 1734 trees:





50% Majority-rule consensus of 1734 trees





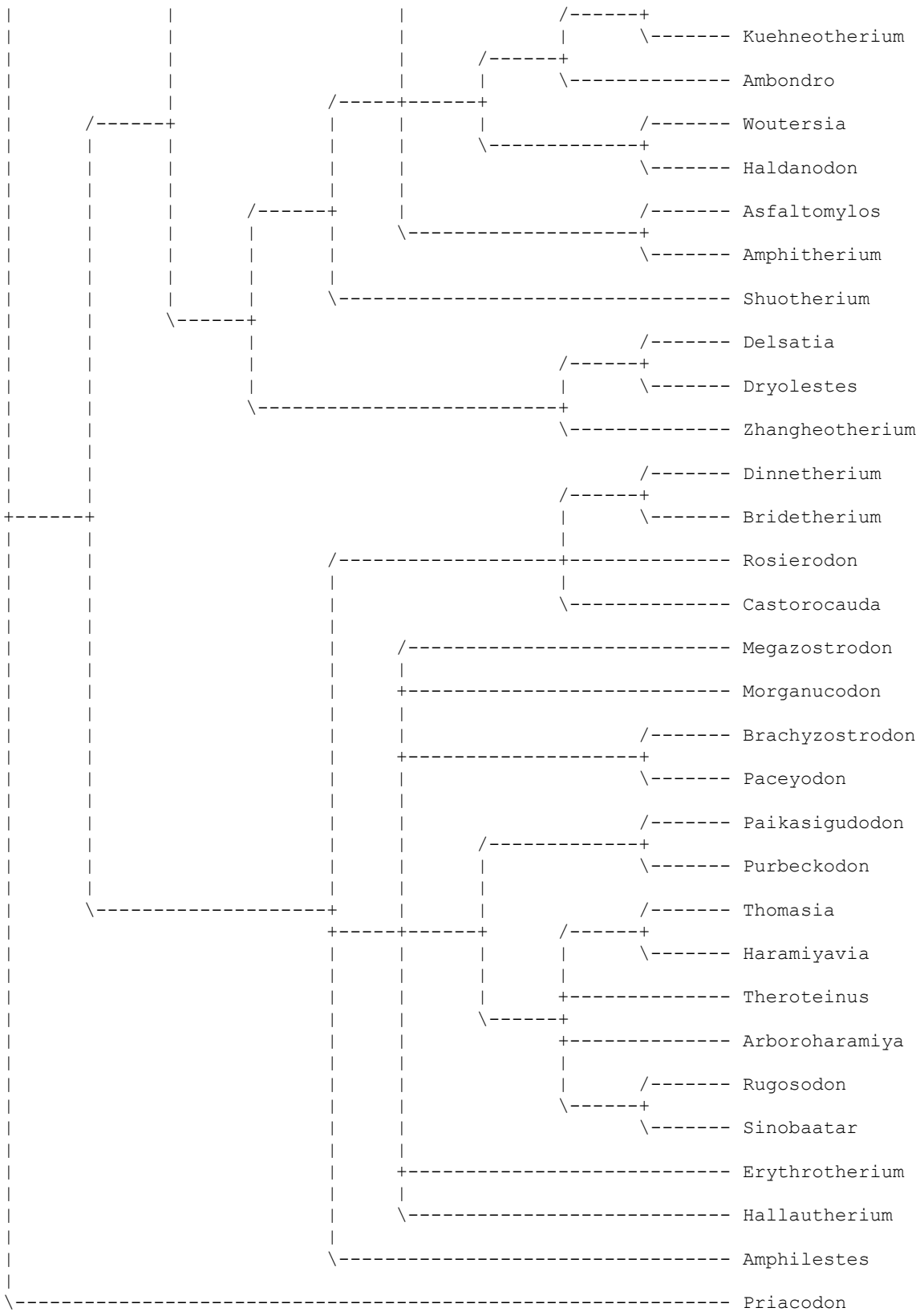
Bipartitions found in one or more trees and frequency of occurrence:

```
         1         2         3   3
12345678901234567890123456789012345      Freq      %
-----------------------------------------------------
.*************************.******      1734 100.0%
.*........*...****.*........******      1734 100.0%
..........*...****.*........******      1734 100.0%
..........*...***..*........***.*.      1734 100.0%
..........*...***..*.........**.*.      1734 100.0%
..********.***....*.*******.......      1734 100.0%
.......*.....*.....................      1734 100.0%
...............**.............*....      1734 100.0%
...............**...................      1734 100.0%
......................******........      1734 100.0%
......................**............      1734 100.0%
..................*.............*.*      1734 100.0%
..................*..............*      1734 100.0%
...*****.*.*.*......******........      1710  98.6%
.....**.............................      1710  98.6%
.......*.....*......******........      1560  90.0%
...............***..*.........*....      1456  84.0%
.................*..*..............      1456  84.0%
...*****.*.***....*.******........      1336  77.0%
```

```
..********.***....*.******........      1336  77.0%
..******.*.***....*.******........      1336  77.0%
...*****.*.***......******........      1312  75.7%
................................*.*.      1157  66.7%
.........................***........       916  52.8%
.........................**.........       916  52.8%
..........*....................*.*.       878  50.6%
.....***...*.*......******........       839  48.4%
.......................**..........       818  47.2%
.........................**........       818  47.2%
......................****..........       818  47.2%
......................***...........       791  45.6%
.....***.*.*.*......******........       774  44.6%
.....***.....*......******........       719  41.5%
..........*...***..*.........*....       591  34.1%
.......*...*.*......******........       465  26.8%
..*.....*...*.....*...............       398  23.0%
..*.....*...*.....*.......*.......       398  23.0%
...*.***.*.*.*......******........       389  22.4%
...**..*.*.*.*......******........       359  20.7%
...*.***...*.*......******........       349  20.1%
.....***.*...*......******........       315  18.2%
...**.............................       305  17.6%
....****.*.*.*......******........       305  17.6%
..........*....................*...       297  17.1%
..........*.....................*.       280  16.1%
..........*.....*.................       278  16.0%
..........*.....*..*..............       278  16.0%
.......*.*...*......******........       274  15.8%
..............***..*.........**.*.       265  15.3%
....*..*.*.*.*......******........       246  14.2%
.....**....*......................       237  13.7%
...*.......*......................       230  13.3%
..*...............*...............       207  11.9%
..*.........*.....*...............       207  11.9%
.........*.*......................       197  11.4%
..*.....*...*.....................       191  11.0%
..*.........*.....................       191  11.0%
..........*........******........       174  10.0%
.......*.*.*.*......******........       163   9.4%
......................****........       125   7.2%
....*....*........................       123   7.1%
...*****...*.*......******........       106   6.1%
...**......*......................        88   5.1%
....*..*.*...*......******........        79   4.6%
....****.*...*......******........        74   4.3%
...*.**...........................        39   2.2%
...****....*......................        39   2.2%
...*.**....*......................        39   2.2%
...*...*.*.*.*......******........        36   2.1%
...*****.*.*.*....*.******........        24   1.4%
...*.***.*.*.*....*.******........        24   1.4%
.....*.*...*.*......******........        24   1.4%
......*...........*...............        24   1.4%
...*.*.*...*.*......******........        12   0.7%
......*..*.........*..............        12   0.7%
.....***.*.*.*....*.******........        12   0.7%
.....*.*.*.*.*......******........        12   0.7%
```

Adams consensus of 1734 trees:

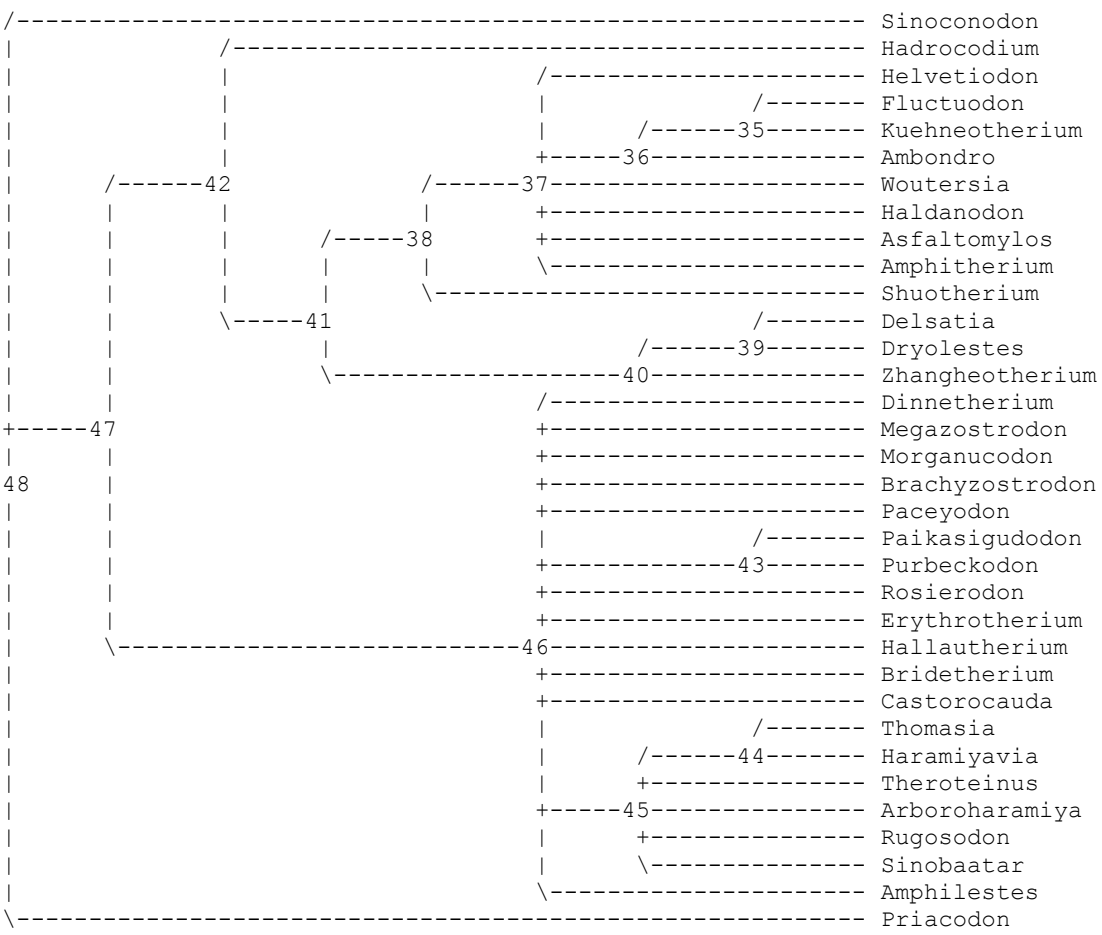
```
/------------------------------------------------------------- Sinoconodon
|
|             /------------------------------------------------ Hadrocodium
|             |
|             |                   /----------------------------- Helvetiodon
|             |                   |
|             |                   |                    /------- Fluctuodon
```



----Optimisation des caractères sur l'arbre de consensus en ACCTRAN

```
Tree length = 311
Consistency index (CI) = 0.457
```

```
Homoplasy index (HI) = 0.543
CI excluding uninformative characters = 0.450
HI excluding uninformative characters = 0.550
Retention index (RI) = 0.433
Rescaled consistency index (RC) = 0.198
f value = 1860
f-ratio = 0.4836
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```



Possible character-state assignments to internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
35                00111113010004151012?110211100010100101122010000070010110 11
                     2  2      5 7 2                                      1
                                                                         2
36                00121110010004251012?110211100010100101112010000070010100 11
                        2      5 7 2                       2          1   1
                               7                                      2
37                00121110010007271012001021110001010010111201000007001010011
                        2          2                       2
                                   3
38                002201?00100070710120010011100010100201102010000070010000 11
                                     2               1             1
                                                     2
39                002201?00000070700120010011100010100200100010000070000000 01
                               1  3    2            2  1          3  1
                                                    3  2          7
40                002201?00000070700120010011100010100200100010000070000000 11
                               1       2            2  12         3  1
                                                    3  2          7
```

```
41               002201?00000070710120010011100010100200102010000070010000011
                                         2               1             1
                                                         2
42               0000010100000000010120010011100?1010000010201000000000100001 1
                       1                 2           2   1        7    1
                                                         2
43               000001020000000010?1001?0111011101000000112210000000001002121
                          1       1 2    2
                          3
44               1000010200000000010110100111011002110001100100000000000002020
                      22     1      2    2        32
                             2
45               1000010200000000010110100111011003110001100100000000001002021
                      2             2    2         2
46               0000010200000000011110 01?01110111010000011201000000000100012 1
                                    2    2
47               000001010000000001012001001110 1?1010000011201000000000100001 1
                       1                 2                             1
48               000001010000000010?20010011101?10200000112010000000001000010
                       1                 2                             1
```

Possible character-state assignments to internal nodes (continued)

```
                 666666666677777
Node             012345678901234
--------------------------------
35               200100110?00001
                      1
36               2001?0110?00001
                      1
37               200110110?00001
                      1
38               20011?110?00001
39               20010?110?00001
40               20010?110?00001
41               20010?110?00001
42               20010?110?00001
43               01010?111000001
44               21110210?000012
                              23
45               2111?2101000013
                              2
46               21110?111000001
47               20010?111?00001
48               20010?111?00001
```

Reconstructed states for internal nodes

```
                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
----------------------------------------------------------------------------
35               00111123010004151212111021110001010010112201000007011011011
36               00121120010004251212111021110001010010112201000007011011011
37               00121120010007271212001021110001010010112201000007001010011
38               00220120010007071012001021110001010020112201000007001010011
39               00220100000007070013001021110001010022010001000007030010001
40               00220100000007070012001021110001010022010001000007030010011
41               00220100000007071012001021110001010020010201000007001010011
42               00000101000000001012001021110001010020010201000007001010011
43               00000102010000001001001001110111010000011221000000001002121
44               10000222000010000101101001110110021100011001000000000002020
45               10000202000000000101101001110110031100011001000000001002021
46               00000102000000000111100110111011101000001120100000000100012 1
47               00000101000000000101200100111010101000001120100000000100001 1
48               00000101000000000100200100111010102000001120100000000100001 0
```

Reconstructed states for internal nodes (continued)

```
                666666666677777
Node            012345678901234
--------------------------------
35              200100110100001
36              200100110100001
37              200110110100001
38              200110110100001
39              200100110100001
40              200100110100001
41              200100110100001
42              200100110100001
43              010102111000001
44              211102100000022
45              211112101000013
46              211102111000001
47              200100111000001
48              200100111000001

Character change lists:

 Character         CI     Steps                  Changes

 1               0.500      1           node_46 0 ==> 1 node_45
                            1           node_45 1 ==> 2 Rugosodon
                            1           node_45 1 ==> 2 Sinobaatar
                            1           node_46 0 ==> 1 Amphilestes
 2               0.333      1           node_44 0 ==> 1 Haramiyavia
                            1           node_45 0 ==> 1 Arboroharamiya
                            1           node_45 0 ==> 1 Rugosodon
 3               0.500      1           node_42 0 ==> 2 node_41
                            1           node_38 2 ==> 1 node_37
                            1           node_35 1 ==> 0 Fluctuodon
                            1           node_37 1 ==> 2 Asfaltomylos
                            1           node_46 0 ==> 5 Brachyzostrodon
                            1           node_46 0 ==> 5 Paceyodon
 4               0.571      1           node_42 0 ==> 2 node_41
                            1           node_36 2 --> 1 node_35
                            1           node_37 2 ==> 3 Asfaltomylos
                            1           node_37 2 ==> 34 Amphitherium
                            1           node_39 2 ==> 46 Dryolestes
                            1           node_46 0 ==> 3 Castorocauda
                            1           node_45 0 ==> 1 Arboroharamiya
 5               0.250      1           node_38 0 ==> 1 node_37
                            1           node_46 0 ==> 1 Brachyzostrodon
                            1           node_46 0 ==> 1 Paceyodon
                            1           node_46 0 ==> 1 Castorocauda
 6               0.250      1           node_36 1 ==> 2 Ambondro
                            1           node_37 1 ==> 2 Woutersia
                            1           node_37 1 ==> 2 Asfaltomylos
                            1           node_39 1 ==> 0 Dryolestes
                            1           node_46 1 ==> 0 Megazostrodon
                            1           node_46 1 ==> 0 Brachyzostrodon
                            1           node_46 1 ==> 0 Hallautherium
                            1           node_46 1 --> 2 node_45
 7               0.250      1           node_42 0 --> 1 Hadrocodium
                            1           node_41 0 --> 2 node_38
                            1           node_35 2 --> 1 Fluctuodon
                            1           node_46 0 ==> 1 Dinnetherium
                            1           node_46 0 ==> 1 Rosierodon
                            1           node_46 0 ==> 1 Bridetherium
                            1           node_45 0 --> 2 node_44
                            1           node_48 0 --> 1 Priacodon
 8               0.273      1           node_42 1 ==> 0 node_41
                            1           node_36 0 ==> 3 node_35
                            1           node_37 0 ==> 3 Asfaltomylos
                            1           node_47 1 ==> 2 node_46
                            1           node_46 2 ==> 1 Dinnetherium
                            1           node_46 2 ==> 3 Megazostrodon
```

		1	node_46 2 ==> 3 Brachyzostrodon
		1	node_46 2 ==> 3 Paceyodon
		1	node_46 2 ==> 0 Rosierodon
		1	node_46 2 ==> 1 Castorocauda
		1	node_45 2 ==> 0 Arboroharamiya
9	0.667	1	node_37 0 ==> 2 Woutersia
		1	node_37 0 ==> 2 Haldanodon
		1	node_45 0 ==> 1 Arboroharamiya
10	0.333	1	node_41 0 ==> 1 node_38
		1	node_35 1 ==> 2 Fluctuodon
		1	node_37 1 ==> 0 Woutersia
		1	node_39 0 ==> 3 Dryolestes
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 --> 1 node_43
		1	node_46 0 ==> 1 Rosierodon
		1	node_46 0 ==> 1 Bridetherium
		1	node_46 0 ==> 1 Castorocauda
11	0.333	1	node_37 0 ==> 1 Haldanodon
		1	node_46 0 ==> 1 Paceyodon
		1	node_46 0 ==> 1 Castorocauda
12	0.600	1	node_35 0 ==> 2 Fluctuodon
		1	node_37 0 ==> 2 Haldanodon
		1	node_39 0 ==> 3 Dryolestes
		1	node_46 0 ==> 1 Paceyodon
		1	node_46 0 ==> 1 Castorocauda
13	0.375	1	node_36 0 ==> 1 Ambondro
		1	node_37 0 ==> 2 Asfaltomylos
		1	node_39 0 ==> 12 Dryolestes
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_46 0 ==> 4 Paceyodon
		1	node_45 0 --> 1 node_44
		1	node_44 1 --> 2 Haramiyavia
		1	node_45 0 ==> 1 Theroteinus
14	0.500	1	node_42 0 ==> 7 node_41
		1	node_37 7 --> 4 node_36
		1	node_36 4 --> 5 Ambondro
		1	node_37 7 ==> 4 Woutersia
		1	node_37 7 ==> 12 Haldanodon
		1	node_39 7 ==> 45 Dryolestes
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_46 0 ==> 1 Paceyodon
15	0.500	1	node_38 0 ==> 2 node_37
		1	node_36 2 ==> 1 node_35
		1	node_37 2 ==> 0 Woutersia
		1	node_39 0 ==> 3 Dryolestes
		1	node_46 0 ==> 3 Castorocauda
		1	node_44 0 ==> 1 Haramiyavia
16	1.000	1	node_42 0 ==> 7 node_41
		1	node_37 7 --> 5 node_36
		1	node_46 0 ==> 6 Castorocauda
		1	node_44 0 ==> 4 Haramiyavia
17	0.300	1	node_48 1 ==> 0 Sinoconodon
		1	node_37 1 ==> 2 Woutersia
		1	node_41 1 --> 0 node_40
		1	node_46 1 ==> 3 Dinnetherium
		1	node_46 1 ==> 23 Megazostrodon
		1	node_46 1 ==> 0 Brachyzostrodon
		1	node_46 1 ==> 23 Rosierodon
		1	node_46 1 ==> 0 Hallautherium
		1	node_46 1 ==> 3 Bridetherium
		1	node_46 1 ==> 0 node_45
18	0.429	1	node_38 0 --> 2 node_37
		1	node_35 2 --> 01 Fluctuodon
		1	node_37 2 --> 3 Asfaltomylos
		1	node_47 0 ==> 1 node_46
		1	node_46 1 --> 0 node_43
		1	node_46 1 ==> 0 Rosierodon
		1	node_46 1 ==> 0 Amphilestes

19	0.167	1	node_48 0 --> 1 node_47
		1	node_37 1 ==> 0 Asfaltomylos
		1	node_37 1 ==> 0 Amphitherium
		1	node_39 1 ==> 0 Dryolestes
		1	node_46 1 --> 0 node_43
		1	node_46 1 ==> 0 node_45
20	0.375	1	node_36 2 ==> 3 Ambondro
		1	node_37 2 ==> 1 Woutersia
		1	node_40 2 --> 3 node_39
		1	node_47 2 --> 1 node_46
		1	node_46 1 --> 23 Dinnetherium
		1	node_46 1 --> 2 Paceyodon
		1	node_46 1 --> 2 Rosierodon
		1	node_46 1 ==> 0 Hallautherium
21	0.167	1	node_37 0 --> 1 node_36
		1	node_38 0 ==> 1 Shuotherium
		1	node_39 0 ==> 1 Delsatia
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 ==> 1 node_45
		1	node_45 1 ==> 0 Arboroharamiya
22	0.250	1	node_37 0 ==> 1 node_36
		1	node_38 0 ==> 1 Shuotherium
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 ==> 1 Castorocauda
23	1.000	1	node_38 1 ==> 2 Shuotherium
24	0.143	1	node_37 0 ==> 1 Woutersia
		1	node_37 0 ==> 1 Haldanodon
		1	node_47 0 --> 1 node_46
		1	node_46 1 --> 0 Paceyodon
		1	node_46 1 --> 0 node_43
		1	node_46 1 --> 0 Hallautherium
		1	node_46 1 --> 0 node_45
25	0.429	1	node_47 0 --> 2 node_42
		1	node_37 2 ==> 3 Haldanodon
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 --> 2 Rosierodon
		1	node_46 0 --> 2 Bridetherium
		1	node_46 0 ==> 3 Castorocauda
		1	node_46 0 --> 2 Amphilestes
27	1.000	1	node_45 1 ==> 0 Arboroharamiya
28	1.000	1	node_45 1 ==> 2 Arboroharamiya
		1	node_45 1 ==> 0 Sinobaatar
29	0.500	1	node_45 0 ==> 1 Arboroharamiya
		1	node_45 0 ==> 1 Rugosodon
30	0.333	1	node_47 1 ==> 0 node_42
		1	node_37 0 ==> 1 Woutersia
		1	node_39 0 ==> 1 Delsatia
31	0.667	1	node_47 0 --> 1 node_46
		1	node_46 1 ==> 0 Dinnetherium
		1	node_48 0 --> 2 Priacodon
32	0.500	1	node_46 1 ==> 0 node_45
		1	node_45 0 ==> 1 Rugosodon
33	0.286	1	node_37 0 ==> 1 Woutersia
		1	node_38 0 ==> 1 Shuotherium
		1	node_40 0 ==> 2 Zhangheotherium
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_46 0 ==> 1 Amphilestes
		1	node_48 0 ==> 1 Priacodon
34	0.600	1	node_48 2 ==> 1 node_47
		1	node_46 1 ==> 3 Erythrotherium
		1	node_46 1 ==> 3 node_45
		1	node_45 3 --> 2 node_44
		1	node_45 3 ==> 0 Sinobaatar
35	0.500	1	node_46 0 ==> 1 node_45
		1	node_44 1 --> 2 Haramiyavia
		1	node_45 1 --> 2 Theroteinus
		1	node_45 1 --> 2 Sinobaatar

36	1.000	1	node_46 0 ==> 1 node_45
37	0.750	1	node_47 0 --> 2 node_42
		1	node_38 2 ==> 1 node_37
		1	node_39 2 ==> 46 Dryolestes
		1	node_43 0 ==> 1 Paikasigudodon
38	0.600	1	node_35 0 ==> 1 Kuehneotherium
		1	node_41 0 --> 2 node_40
		1	node_39 2 --> 3 Dryolestes
		1	node_43 0 ==> 1 Paikasigudodon
		1	node_45 0 ==> 12 Theroteinus
39	0.667	1	node_41 0 ==> 1 node_38
		1	node_43 0 ==> 2 Paikasigudodon
		1	node_45 0 ==> 2 Theroteinus
40	0.167	1	node_37 1 ==> 0 Woutersia
		1	node_38 1 ==> 0 Shuotherium
		1	node_40 1 ==> 0 Zhangheotherium
		1	node_46 1 ==> 0 Dinnetherium
		1	node_46 1 ==> 0 Brachyzostrodon
		1	node_45 1 ==> 0 Theroteinus
41	0.600	1	node_47 1 --> 0 node_42
		1	node_41 0 --> 2 node_38
		1	node_37 2 --> 1 Helvetiodon
		1	node_37 2 ==> 3 Woutersia
		1	node_43 1 ==> 0 Paikasigudodon
42	0.375	1	node_37 2 ==> 3 Woutersia
		1	node_41 2 --> 0 node_40
		1	node_46 2 ==> 3 Megazostrodon
		1	node_43 2 ==> 3 Paikasigudodon
		1	node_46 2 ==> 1 Bridetherium
		1	node_46 2 ==> 0 node_45
		1	node_44 0 ==> 1 Thomasia
		1	node_45 0 ==> 1 Sinobaatar
43	1.000	1	node_39 0 ==> 3 Dryolestes
		1	node_46 0 ==> 2 node_43
45	0.500	1	node_45 0 ==> 1 Rugosodon
		1	node_45 0 ==> 1 Sinobaatar
46	0.750	1	node_35 0 ==> 3 Kuehneotherium
		1	node_39 0 ==> 4 Dryolestes
		1	node_46 0 ==> 1 Dinnetherium
		1	node_43 0 ==> 1 Purbeckodon
47	0.500	1	node_35 0 ==> 1 Fluctuodon
		1	node_43 0 ==> 1 Purbeckodon
48	1.000	1	node_37 0 ==> 1 Woutersia
49	1.000	1	node_35 0 ==> 4 Kuehneotherium
		1	node_38 0 ==> 5 Shuotherium
		1	node_39 0 ==> 3 Dryolestes
50	0.667	1	node_47 0 --> 7 node_42
		1	node_37 7 ==> 1 Helvetiodon
		1	node_35 7 ==> 12 Fluctuodon
		1	node_37 7 ==> 2 Haldanodon
		1	node_39 7 ==> 89 Dryolestes
		1	node_46 0 ==> 2 Megazostrodon
51	1.000	1	node_39 0 ==> 6 Dryolestes
52	0.800	1	node_37 0 --> 1 node_36
		1	node_35 1 --> 2 Kuehneotherium
		1	node_41 0 --> 3 node_40
		1	node_39 3 --> 7 Delsatia
		1	node_46 0 ==> 2 Megazostrodon
53	0.250	1	node_37 1 ==> 0 Haldanodon
		1	node_41 1 ==> 0 node_40
		1	node_46 1 ==> 0 Dinnetherium
		1	node_45 1 ==> 0 node_44
54	0.750	1	node_37 0 ==> 2 Woutersia
		1	node_43 0 ==> 1 Paikasigudodon
		1	node_45 0 ==> 3 Theroteinus
		1	node_45 0 ==> 3 Arboroharamiya
55	0.500	1	node_47 0 --> 1 node_42
		1	node_37 1 ==> 2 Helvetiodon

		1	node_46 0 ==> 1	Brachyzostrodon
		1	node_43 0 ==> 2	Purbeckodon
		1	node_46 0 ==> 1	Bridetherium
		1	node_45 0 ==> 3	Theroteinus
56	0.500	1	node_37 0 ==> 2	Helvetiodon
		1	node_37 0 --> 1	node_36
		1	node_46 0 ==> 2	node_43
		1	node_46 0 ==> 2	node_45
57	0.500	1	node_37 0 ==> 2	Helvetiodon
		1	node_47 0 ==> 1	node_46
		1	node_46 1 ==> 0	Bridetherium
		1	node_46 1 ==> 0	node_45
58	0.222	1	node_48 1 ==> 0	Sinoconodon
		1	node_37 1 ==> 2	Haldanodon
		1	node_38 1 ==> 2	Shuotherium
		1	node_40 1 ==> 0	node_39
		1	node_47 1 ==> 2	node_46
		1	node_43 2 ==> 1	Paikasigudodon
		1	node_46 2 ==> 1	Erythrotherium
		1	node_45 2 ==> 0	Arboroharamiya
		1	node_45 2 ==> 0	Sinobaatar
59	0.333	1	node_48 0 ==> 1	node_47
		1	node_40 1 ==> 0	Zhangheotherium
		1	node_45 1 ==> 0	node_44
60	1.000	1	node_37 2 ==> 1	Helvetiodon
		1	node_39 2 ==> 3	Delsatia
		1	node_46 2 ==> 0	node_43
61	0.500	1	node_47 0 ==> 1	node_46
		1	node_43 1 ==> 0	Purbeckodon
62	0.500	1	node_47 0 ==> 1	node_46
		1	node_46 1 ==> 0	node_43
64	0.250	1	node_41 0 ==> 1	node_38
		1	node_37 1 --> 0	node_36
		1	node_46 0 --> 1	node_45
		1	node_45 1 --> 0	node_44
65	0.667	1	node_37 0 --> 1	Haldanodon
		1	node_38 0 --> 1	Shuotherium
		1	node_47 0 --> 2	node_46
66	0.500	1	node_43 1 ==> 0	Paikasigudodon
		1	node_45 1 ==> 0	Arboroharamiya
67	0.500	1	node_46 1 ==> 0	Bridetherium
		1	node_46 1 ==> 0	node_45
68	0.333	1	node_47 1 ==> 0	node_42
		1	node_37 0 ==> 1	Woutersia
		1	node_45 1 --> 0	node_44
69	1.000	1	node_47 0 --> 1	node_42
70	0.500	1	node_44 0 ==> 1	Thomasia
		1	node_45 0 ==> 1	Theroteinus
71	0.500	1	node_45 0 ==> 1	Theroteinus
		1	node_45 0 ==> 1	Rugosodon
72	0.500	1	node_45 0 ==> 1	Rugosodon
		1	node_45 0 ==> 1	Sinobaatar
73	0.333	1	node_39 0 ==> 2	Dryolestes
		1	node_46 0 ==> 1	Brachyzostrodon
		1	node_46 0 ==> 1	Bridetherium
		1	node_46 0 ==> 1	node_45
		1	node_45 1 --> 2	node_44
		1	node_45 1 --> 2	Theroteinus
74	0.667	1	node_40 1 ==> 2	Zhangheotherium
		1	node_46 1 ==> 3	node_45
		1	node_45 3 --> 2	node_44

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_48 --> Sinoconodon	17	1	0.300	1 ==> 0
	58	1	0.222	1 ==> 0

node_48 --> node_47	19	1	0.167	0 --> 1
	34	1	0.600	2 ==> 1
	59	1	0.333	0 ==> 1
node_47 --> node_42	25	1	0.429	0 --> 2
	30	1	0.333	1 ==> 0
	37	1	0.750	0 --> 2
	41	1	0.600	1 --> 0
	50	1	0.667	0 --> 7
	55	1	0.500	0 --> 1
	68	1	0.333	1 ==> 0
	69	1	1.000	0 --> 1
node_42 --> Hadrocodium	7	1	0.250	0 --> 1
node_42 --> node_41	3	1	0.500	0 ==> 2
	4	1	0.571	0 ==> 2
	8	1	0.273	1 ==> 0
	14	1	0.500	0 ==> 7
	16	1	1.000	0 ==> 7
node_41 --> node_38	7	1	0.250	0 --> 2
	10	1	0.333	0 ==> 1
	39	1	0.667	0 ==> 1
	41	1	0.600	0 --> 2
	64	1	0.250	0 ==> 1
node_38 --> node_37	3	1	0.500	2 ==> 1
	5	1	0.250	0 ==> 1
	15	1	0.500	0 ==> 2
	18	1	0.429	0 --> 2
	37	1	0.750	2 ==> 1
node_37 --> Helvetiodon	41	1	0.600	2 --> 1
	50	1	0.667	7 ==> 1
	55	1	0.500	1 ==> 2
	56	1	0.500	0 ==> 2
	57	1	0.500	0 ==> 2
	60	1	1.000	2 ==> 1
node_37 --> node_36	14	1	0.500	7 --> 4
	16	1	1.000	7 --> 5
	21	1	0.167	0 --> 1
	22	1	0.250	0 ==> 1
	52	1	0.800	0 --> 1
	56	1	0.500	0 --> 1
	64	1	0.250	1 --> 0
node_36 --> node_35	4	1	0.571	2 --> 1
	8	1	0.273	0 ==> 3
	15	1	0.500	2 ==> 1
node_35 --> Fluctuodon	3	1	0.500	1 ==> 0
	7	1	0.250	2 --> 1
	10	1	0.333	1 ==> 2
	12	1	0.600	0 ==> 2
	18	1	0.429	2 --> 01
	47	1	0.500	0 ==> 1
	50	1	0.667	7 ==> 12
node_35 --> Kuehneotherium	38	1	0.600	0 ==> 1
	46	1	0.750	0 ==> 3
	49	1	1.000	0 ==> 4
	52	1	0.800	1 --> 2
node_36 --> Ambondro	6	1	0.250	1 ==> 2
	13	1	0.375	0 ==> 1
	14	1	0.500	4 --> 5
	20	1	0.375	2 ==> 3
node_37 --> Woutersia	6	1	0.250	1 ==> 2
	9	1	0.667	0 ==> 2
	10	1	0.333	1 ==> 0
	14	1	0.500	7 ==> 4
	15	1	0.500	2 ==> 0
	17	1	0.300	1 ==> 2
	20	1	0.375	2 ==> 1
	24	1	0.143	0 ==> 1
	30	1	0.333	0 ==> 1
	33	1	0.286	0 ==> 1

	40	1	0.167	1 ==> 0
	41	1	0.600	2 ==> 3
	42	1	0.375	2 ==> 3
	48	1	1.000	0 ==> 1
	54	1	0.750	0 ==> 2
	68	1	0.333	0 ==> 1
node_37 --> Haldanodon	9	1	0.667	0 ==> 2
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 2
	14	1	0.500	7 ==> 12
	24	1	0.143	0 ==> 1
	25	1	0.429	2 ==> 3
	50	1	0.667	7 ==> 2
	53	1	0.250	1 ==> 0
	58	1	0.222	1 ==> 2
	65	1	0.667	0 --> 1
node_37 --> Asfaltomylos	3	1	0.500	1 ==> 2
	4	1	0.571	2 ==> 3
	6	1	0.250	1 ==> 2
	8	1	0.273	0 ==> 3
	13	1	0.375	0 ==> 2
	18	1	0.429	2 --> 3
	19	1	0.167	1 ==> 0
node_37 --> Amphitherium	4	1	0.571	2 ==> 34
	19	1	0.167	1 ==> 0
node_38 --> Shuotherium	21	1	0.167	0 ==> 1
	22	1	0.250	0 ==> 1
	23	1	1.000	1 ==> 2
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	49	1	1.000	0 ==> 5
	58	1	0.222	1 ==> 2
	65	1	0.667	0 --> 1
node_41 --> node_40	17	1	0.300	1 --> 0
	38	1	0.600	0 --> 2
	42	1	0.375	2 --> 0
	52	1	0.800	0 --> 3
	53	1	0.250	1 ==> 0
node_40 --> node_39	20	1	0.375	2 --> 3
	58	1	0.222	1 ==> 0
node_39 --> Delsatia	21	1	0.167	0 ==> 1
	30	1	0.333	0 ==> 1
	52	1	0.800	3 --> 7
	60	1	1.000	2 ==> 3
node_39 --> Dryolestes	4	1	0.571	2 ==> 46
	6	1	0.250	1 ==> 0
	10	1	0.333	0 ==> 3
	12	1	0.600	0 ==> 3
	13	1	0.375	0 ==> 12
	14	1	0.500	7 ==> 45
	15	1	0.500	0 ==> 3
	19	1	0.167	1 ==> 0
	37	1	0.750	2 ==> 46
	38	1	0.600	2 --> 3
	43	1	1.000	0 ==> 3
	46	1	0.750	0 ==> 4
	49	1	1.000	0 ==> 3
	50	1	0.667	7 ==> 89
	51	1	1.000	0 ==> 6
	73	1	0.333	0 ==> 2
node_40 --> Zhangheotherium	33	1	0.286	0 ==> 2
	40	1	0.167	1 ==> 0
	59	1	0.333	1 ==> 0
	74	1	0.667	1 ==> 2
node_47 --> node_46	8	1	0.273	1 ==> 2
	18	1	0.429	0 ==> 1
	20	1	0.375	2 --> 1
	24	1	0.143	0 --> 1

	31	1	0.667	0 --> 1
	57	1	0.500	0 ==> 1
	58	1	0.222	1 ==> 2
	61	1	0.500	0 ==> 1
	62	1	0.500	0 ==> 1
	65	1	0.667	0 --> 2
node_46 --> Dinnetherium	7	1	0.250	0 ==> 1
	8	1	0.273	2 ==> 1
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 3
	20	1	0.375	1 --> 23
	21	1	0.167	0 ==> 1
	22	1	0.250	0 ==> 1
	25	1	0.429	0 ==> 1
	31	1	0.667	1 ==> 0
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
node_46 --> Megazostrodon	6	1	0.250	1 ==> 0
	8	1	0.273	2 ==> 3
	17	1	0.300	1 ==> 23
	42	1	0.375	2 ==> 3
	50	1	0.667	0 ==> 2
	52	1	0.800	0 ==> 2
node_46 --> Brachyzostrodon	3	1	0.500	0 ==> 5
	5	1	0.250	0 ==> 1
	6	1	0.250	1 ==> 0
	8	1	0.273	2 ==> 3
	13	1	0.375	0 ==> 1
	14	1	0.500	0 ==> 1
	17	1	0.300	1 ==> 0
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	55	1	0.500	0 ==> 1
	73	1	0.333	0 ==> 1
node_46 --> Paceyodon	3	1	0.500	0 ==> 5
	5	1	0.250	0 ==> 1
	8	1	0.273	2 ==> 3
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 1
	13	1	0.375	0 ==> 4
	14	1	0.500	0 ==> 1
	20	1	0.375	1 --> 2
	24	1	0.143	1 --> 0
node_46 --> node_43	10	1	0.333	0 --> 1
	18	1	0.429	1 --> 0
	19	1	0.167	1 --> 0
	24	1	0.143	1 --> 0
	43	1	1.000	0 ==> 2
	56	1	0.500	0 ==> 2
	60	1	1.000	2 ==> 0
	62	1	0.500	1 ==> 0
node_43 --> Paikasigudodon	37	1	0.750	0 ==> 1
	38	1	0.600	0 ==> 1
	39	1	0.667	0 ==> 2
	41	1	0.600	1 ==> 0
	42	1	0.375	2 ==> 3
	54	1	0.750	0 ==> 1
	58	1	0.222	2 ==> 1
	66	1	0.500	1 ==> 0
node_43 --> Purbeckodon	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1
	55	1	0.500	0 ==> 2
	61	1	0.500	1 ==> 0
node_46 --> Rosierodon	7	1	0.250	0 ==> 1
	8	1	0.273	2 ==> 0
	10	1	0.333	0 ==> 1

	17	1	0.300	1 ==> 23
	18	1	0.429	1 ==> 0
	20	1	0.375	1 --> 2
	25	1	0.429	0 --> 2
node_46 --> Erythrotherium	34	1	0.600	1 ==> 3
	58	1	0.222	2 ==> 1
node_46 --> Hallautherium	6	1	0.250	1 ==> 0
	17	1	0.300	1 ==> 0
	20	1	0.375	1 ==> 0
	24	1	0.143	1 --> 0
node_46 --> Bridetherium	7	1	0.250	0 ==> 1
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 3
	25	1	0.429	0 --> 2
	42	1	0.375	2 ==> 1
	55	1	0.500	0 ==> 1
	57	1	0.500	1 ==> 0
	67	1	0.500	1 ==> 0
	73	1	0.333	0 ==> 1
node_46 --> Castorocauda	4	1	0.571	0 ==> 3
	5	1	0.250	0 ==> 1
	8	1	0.273	2 ==> 1
	10	1	0.333	0 ==> 1
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 1
	15	1	0.500	0 ==> 3
	16	1	1.000	0 ==> 6
	22	1	0.250	0 ==> 1
	25	1	0.429	0 ==> 3
node_46 --> node_45	1	1	0.500	0 ==> 1
	6	1	0.250	1 --> 2
	17	1	0.300	1 ==> 0
	19	1	0.167	1 ==> 0
	21	1	0.167	0 ==> 1
	24	1	0.143	1 --> 0
	32	1	0.500	1 ==> 0
	34	1	0.600	1 ==> 3
	35	1	0.500	0 ==> 1
	36	1	1.000	0 ==> 1
	42	1	0.375	2 ==> 0
	56	1	0.500	0 ==> 2
	57	1	0.500	1 ==> 0
	64	1	0.250	0 --> 1
	67	1	0.500	1 ==> 0
	73	1	0.333	0 ==> 1
	74	1	0.667	1 ==> 3
node_45 --> node_44	7	1	0.250	0 --> 2
	13	1	0.375	0 --> 1
	34	1	0.600	3 --> 2
	53	1	0.250	1 ==> 0
	59	1	0.333	1 ==> 0
	64	1	0.250	1 --> 0
	68	1	0.333	1 --> 0
	73	1	0.333	1 --> 2
	74	1	0.667	3 --> 2
node_44 --> Thomasia	42	1	0.375	0 ==> 1
	70	1	0.500	0 ==> 1
node_44 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	0.375	1 --> 2
	15	1	0.500	0 ==> 1
	16	1	1.000	0 ==> 4
	35	1	0.500	1 --> 2
node_45 --> Theroteinus	13	1	0.375	0 ==> 1
	35	1	0.500	1 --> 2
	38	1	0.600	0 ==> 12
	39	1	0.667	0 ==> 2
	40	1	0.167	1 ==> 0
	54	1	0.750	0 ==> 3

	55	1	0.500	0 ==> 3
	70	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	73	1	0.333	1 --> 2
node_45 --> Arboroharamiya	2	1	0.333	0 ==> 1
	4	1	0.571	0 ==> 1
	8	1	0.273	2 ==> 0
	9	1	0.667	0 ==> 1
	21	1	0.167	1 ==> 0
	27	1	1.000	1 ==> 0
	28	1	1.000	1 ==> 2
	29	1	0.500	0 ==> 1
	54	1	0.750	0 ==> 3
	58	1	0.222	2 ==> 0
	66	1	0.500	1 ==> 0
node_45 --> Rugosodon	1	1	0.500	1 ==> 2
	2	1	0.333	0 ==> 1
	29	1	0.500	0 ==> 1
	32	1	0.500	0 ==> 1
	45	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	72	1	0.500	0 ==> 1
node_45 --> Sinobaatar	1	1	0.500	1 ==> 2
	28	1	1.000	1 ==> 0
	34	1	0.600	3 ==> 0
	35	1	0.500	1 --> 2
	42	1	0.375	0 ==> 1
	45	1	0.500	0 ==> 1
	58	1	0.222	2 ==> 0
	72	1	0.500	0 ==> 1
node_46 --> Amphilestes	1	1	0.500	0 ==> 1
	18	1	0.429	1 ==> 0
	25	1	0.429	0 --> 2
	33	1	0.286	0 ==> 1
node_48 --> Priacodon	7	1	0.250	0 --> 1
	31	1	0.667	0 --> 2
	33	1	0.286	0 ==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	4	7	0.500	0.500	0.600	0.300
2	1	3	3	0.333	0.667	0.000	0.000
3	3	6	10	0.500	0.500	0.571	0.286
4	4	7	12	0.571	0.429	0.625	0.357
5	1	4	8	0.250	0.750	0.571	0.143
6	2	8	8	0.250	0.750	0.000	0.000
7	2	8	9	0.250	0.750	0.143	0.036
8	3	11	18	0.273	0.727	0.467	0.127
9	2	3	3	0.667	0.333	0.000	0.000
10	3	9	11	0.333	0.667	0.250	0.083
11	1	3	3	0.333	0.667	0.000	0.000
12	3	5	5	0.600	0.400	0.000	0.000
13	3	8	8	0.375	0.625	0.000	0.000
14	4	8	13	0.500	0.500	0.556	0.278
15	3	6	8	0.500	0.500	0.400	0.200
16	4	4	12	1.000	0.000	1.000	1.000
17	3	10	15	0.300	0.700	0.417	0.125
18	3	7	8	0.429	0.571	0.200	0.086
19	1	6	11	0.167	0.833	0.500	0.083
20	3	8	8	0.375	0.625	0.000	0.000
21	1	6	9	0.167	0.833	0.375	0.062
22	1	4	6	0.250	0.750	0.400	0.100
23	1	1	1	1.000	0.000	0/0	0/0
24	1	7	7	0.143	0.857	0.000	0.000
25	3	7	7	0.429	0.571	0.000	0.000

26	n/a	0	0	0/0	0/0	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	3	8	0.333	0.667	0.714	0.238
31	2	3	5	0.667	0.333	0.667	0.444
32	1	2	4	0.500	0.500	0.667	0.333
33	2	7	7	0.286	0.714	0.000	0.000
34	3	5	7	0.600	0.400	0.500	0.300
35	2	4	6	0.500	0.500	0.500	0.250
36	1	1	3	1.000	0.000	1.000	1.000
37	3	4	9	0.750	0.250	0.833	0.625
38	3	5	5	0.600	0.400	0.000	0.000
39	2	3	8	0.667	0.333	0.833	0.556
40	1	6	6	0.167	0.833	0.000	0.000
41	3	5	6	0.600	0.400	0.333	0.200
42	3	8	12	0.375	0.625	0.444	0.167
43	2	2	3	1.000	0.000	1.000	1.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	2	2	0.500	0.500	0.000	0.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	3	3	3	1.000	0.000	0/0	0/0
50	4	6	8	0.667	0.333	0.500	0.333
51	1	1	1	1.000	0.000	0/0	0/0
52	4	5	5	0.800	0.200	0.000	0.000
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	6	8	0.500	0.500	0.400	0.200
56	2	4	7	0.500	0.500	0.600	0.300
57	2	4	6	0.500	0.500	0.500	0.250
58	2	9	13	0.222	0.778	0.364	0.081
59	1	3	5	0.333	0.667	0.500	0.167
60	3	3	4	1.000	0.000	1.000	1.000
61	1	2	10	0.500	0.500	0.889	0.444
62	1	2	5	0.500	0.500	0.750	0.375
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	4	6	0.250	0.750	0.400	0.100
65	2	3	4	0.667	0.333	0.500	0.333
66	1	2	2	0.500	0.500	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	3	7	0.333	0.667	0.667	0.222
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	2	2	0.500	0.500	0.000	0.000
73	2	6	7	0.333	0.667	0.200	0.067
74	2	3	5	0.667	0.333	0.667	0.444

----Optimisation des caractères sur l'arbre de consensus en DELTRAN

```
Tree length = 311
Consistency index (CI) = 0.457
Homoplasy index (HI) = 0.543
CI excluding uninformative characters = 0.450
HI excluding uninformative characters = 0.550
Retention index (RI) = 0.433
Rescaled consistency index (RC) = 0.198
f value = 1127
f-ratio = 0.3127
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)

/---------------------------------------------------------- Sinoconodon
```

```
|              /-------------------------------------------- Hadrocodium
|              |                     /---------------------- Helvetiodon
|              |                     |              /------- Fluctuodon
|              |                     |      /------35------- Kuehneotherium
|              |                     +-----36--------------- Ambondro
|      /------42             /------37---------------------- Woutersia
|      |       |             |       +---------------------- Haldanodon
|      |       |      /-----38       +---------------------- Asfaltomylos
|      |       |      |      |       \---------------------- Amphitherium
|      |       |      |      \------------------------------ Shuotherium
|      |       \-----41                             /------- Delsatia
|      |              |                     /------39------- Dryolestes
|      |              \--------------------40--------------- Zhangheotherium
|      |                             /---------------------- Dinnetherium
+-----47                             +---------------------- Megazostrodon
|      |                             +---------------------- Morganucodon
48     |                             +---------------------- Brachyzostrodon
|      |                             +---------------------- Paceyodon
|      |                             |              /------- Paikasigudodon
|      |                             +-------------43------- Purbeckodon
|      |                             +---------------------- Rosierodon
|      |                             +---------------------- Erythrotherium
|      \----------------------------46---------------------- Hallautherium
|                                    +---------------------- Bridetherium
|                                    +---------------------- Castorocauda
|                                    |              /------- Thomasia
|                                    |      /------44------- Haramiyavia
|                                    |      +--------------- Theroteinus
|                                    +-----45--------------- Arboroharamiya
|                                    |      +--------------- Rugosodon
|                                    |      \--------------- Sinobaatar
|                                    \---------------------- Amphilestes
\----------------------------------------------------------- Priacodon

Possible character-state assignments to internal nodes

                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
----------------------------------------------------------------------------
35               00111113010004151012?110211100010100101122010000070010110111
                    2  2      5 7 2                                 1
                                                                    2
36               0012111001000425101 2?11021110001010010111201000007001010011
                       2      5 7 2                      2          1   1
                              7                                     2
37               00121110010007271012001021110001010010111201000007001010011
                       2          2                      2
                                  3
38               002201?001000707101200100111000101002011020100000700100001 1
                                         2               1             1
                                                         2
39               002201?000000707001200100111000101002001000100000700000000 1
                                 1  3    2            2  1          3  1
                                                      3  2          7
40               002201?0000007070012001001110001010020010001000007000000011
                                 1       2            2  12         3  1
                                                      3  2          7
41               002201?0000007071012001001110001010020010201000007001000011
                                         2               1             1
                                                         2
42               00000101000000000101200100111 00?10100000102010000000001000011
                       1                 2           2   1        7    1
                                                         2
43               0000010200000000010?1001?01110111010000011221000000001002121
                          1       1 2    2
                          3
44               10000102000000000101101001110110021100011001000000000002020
                      22     1      2    2        32
```

```
                          2
45                1000010200000000010110100111011003110001100100000001002021
                       2              2    2          2
46                0000010200000000111100?01110111010000011201000000001000121
                                  2    2
47                0000010100000000101200100111101?10100000112010000000001000011
                        1                  2                                 1
48                000001010000000010?200100111101?10200000112010000000001000010
                        1                  2                                 1

Possible character-state assignments to internal nodes (continued)

                  666666666677777
Node              012345678901234
---------------------------------
35                20010011O?00001
                       1
36                2001?0110?00001
                       1
37                200110110?00001
                       1
38                20011?110?00001
39                20010?110?00001
40                20010?110?00001
41                20010?110?00001
42                20010?110?00001
43                01010?111000001
44                21110210?000012
                               23
45                2111?2101000013
                                2
46                21110?111000001
47                20010?111?00001
48                20010?111?00001

Reconstructed states for internal nodes

                          1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-----------------------------------------------------------------------------
35                0012112301000417101201102111000101001011220100000700101101 1
36                0012112001000727101201102111000101001011120100000700101001 1
37                0012112001000727101200102111000101001011120100000700101001 1
38                0022010001000707101200100111000101002011120100000700100001 1
39                0022010000000707101200100111000101002001100100000700000000 1
40                0022010000000707101200100111000101002001120100000700000001 1
41                0022010000000707101200100111000101002001120100000700100001 1
42                0000010100000000101200100111000101000001120100000000100001 1
43                0000010200000000111200100111011101000001122100000000100212 1
44                1000010200000000010210100111011003110001100100000000002020
45                1000010200000000010210100111011003110001100100000000001002021
46                0000010200000000111200100111011101000001120100000000001000121
47                0000010100000000101200100111010101000001120100000000001000011
48                0000010100000000100200100111010102000001120100000000001000010

Reconstructed states for internal nodes (continued)

                  666666666677777
Node              012345678901234
---------------------------------
35                200100110000001
36                200110110000001
37                200110110000001
38                200110110000001
39                200100110000001
40                200100110000001
41                200100110000001
42                200100110000001
```

```
43              0101001111000001
44              2111021010000013
45              2111021010000013
46              2111001110000001
47              2001001110000001
48              2001001110000001

Character change lists:

 Character         CI     Steps                Changes

 1               0.500      1          node_46 0 ==> 1 node_45
                            1          node_45 1 ==> 2 Rugosodon
                            1          node_45 1 ==> 2 Sinobaatar
                            1          node_46 0 ==> 1 Amphilestes
 2               0.333      1          node_44 0 ==> 1 Haramiyavia
                            1          node_45 0 ==> 1 Arboroharamiya
                            1          node_45 0 ==> 1 Rugosodon
 3               0.500      1          node_42 0 ==> 2 node_41
                            1          node_38 2 ==> 1 node_37
                            1          node_35 1 ==> 0 Fluctuodon
                            1          node_37 1 ==> 2 Asfaltomylos
                            1          node_46 0 ==> 5 Brachyzostrodon
                            1          node_46 0 ==> 5 Paceyodon
 4               0.571      1          node_42 0 ==> 2 node_41
                            1          node_35 2 --> 1 Fluctuodon
                            1          node_37 2 ==> 3 Asfaltomylos
                            1          node_37 2 ==> 34 Amphitherium
                            1          node_39 2 ==> 46 Dryolestes
                            1          node_46 0 ==> 3 Castorocauda
                            1          node_45 0 ==> 1 Arboroharamiya
 5               0.250      1          node_38 0 ==> 1 node_37
                            1          node_46 0 ==> 1 Brachyzostrodon
                            1          node_46 0 ==> 1 Paceyodon
                            1          node_46 0 ==> 1 Castorocauda
 6               0.250      1          node_36 1 ==> 2 Ambondro
                            1          node_37 1 ==> 2 Woutersia
                            1          node_37 1 ==> 2 Asfaltomylos
                            1          node_39 1 ==> 0 Dryolestes
                            1          node_46 1 ==> 0 Megazostrodon
                            1          node_46 1 ==> 0 Brachyzostrodon
                            1          node_46 1 ==> 0 Hallautherium
                            1          node_45 1 --> 2 Rugosodon
 7               0.250      1          node_42 0 --> 1 Hadrocodium
                            1          node_38 0 --> 2 node_37
                            1          node_35 2 --> 1 Fluctuodon
                            1          node_46 0 ==> 1 Dinnetherium
                            1          node_46 0 ==> 1 Rosierodon
                            1          node_46 0 ==> 1 Bridetherium
                            1          node_44 0 --> 2 Thomasia
                            1          node_48 0 --> 1 Priacodon
 8               0.273      1          node_42 1 ==> 0 node_41
                            1          node_36 0 ==> 3 node_35
                            1          node_37 0 ==> 3 Asfaltomylos
                            1          node_47 1 ==> 2 node_46
                            1          node_46 2 ==> 1 Dinnetherium
                            1          node_46 2 ==> 3 Megazostrodon
                            1          node_46 2 ==> 3 Brachyzostrodon
                            1          node_46 2 ==> 3 Paceyodon
                            1          node_46 2 ==> 0 Rosierodon
                            1          node_46 2 ==> 1 Castorocauda
                            1          node_45 2 ==> 0 Arboroharamiya
 9               0.667      1          node_37 0 ==> 2 Woutersia
                            1          node_37 0 ==> 2 Haldanodon
                            1          node_45 0 ==> 1 Arboroharamiya
 10              0.333      1          node_41 0 ==> 1 node_38
                            1          node_35 1 ==> 2 Fluctuodon
                            1          node_37 1 ==> 0 Woutersia
```

		1	node_39 0 ==> 3 Dryolestes
		1	node_46 0 ==> 1 Dinnetherium
		1	node_43 0 --> 13 Purbeckodon
		1	node_46 0 ==> 1 Rosierodon
		1	node_46 0 ==> 1 Bridetherium
		1	node_46 0 ==> 1 Castorocauda
11	0.333	1	node_37 0 ==> 1 Haldanodon
		1	node_46 0 ==> 1 Paceyodon
		1	node_46 0 ==> 1 Castorocauda
12	0.600	1	node_35 0 ==> 2 Fluctuodon
		1	node_37 0 ==> 2 Haldanodon
		1	node_39 0 ==> 3 Dryolestes
		1	node_46 0 ==> 1 Paceyodon
		1	node_46 0 ==> 1 Castorocauda
13	0.375	1	node_36 0 ==> 1 Ambondro
		1	node_37 0 ==> 2 Asfaltomylos
		1	node_39 0 ==> 12 Dryolestes
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_46 0 ==> 4 Paceyodon
		1	node_44 0 --> 1 Thomasia
		1	node_44 0 --> 2 Haramiyavia
		1	node_45 0 ==> 1 Theroteinus
14	0.500	1	node_42 0 ==> 7 node_41
		1	node_36 7 --> 4 node_35
		1	node_36 7 --> 5 Ambondro
		1	node_37 7 ==> 4 Woutersia
		1	node_37 7 ==> 12 Haldanodon
		1	node_39 7 ==> 45 Dryolestes
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_46 0 ==> 1 Paceyodon
15	0.500	1	node_38 0 ==> 2 node_37
		1	node_36 2 ==> 1 node_35
		1	node_37 2 ==> 0 Woutersia
		1	node_39 0 ==> 3 Dryolestes
		1	node_46 0 ==> 3 Castorocauda
		1	node_44 0 ==> 1 Haramiyavia
16	1.000	1	node_42 0 ==> 7 node_41
		1	node_35 7 --> 5 Fluctuodon
		1	node_46 0 ==> 6 Castorocauda
		1	node_44 0 ==> 4 Haramiyavia
17	0.300	1	node_48 1 ==> 0 Sinoconodon
		1	node_37 1 ==> 2 Woutersia
		1	node_39 1 --> 0 Delsatia
		1	node_46 1 ==> 3 Dinnetherium
		1	node_46 1 ==> 23 Megazostrodon
		1	node_46 1 ==> 0 Brachyzostrodon
		1	node_46 1 ==> 23 Rosierodon
		1	node_46 1 ==> 0 Hallautherium
		1	node_46 1 ==> 3 Bridetherium
		1	node_46 1 ==> 0 node_45
18	0.429	1	node_35 0 --> 2 Kuehneotherium
		1	node_36 0 --> 2 Ambondro
		1	node_37 0 --> 3 Asfaltomylos
		1	node_47 0 ==> 1 node_46
		1	node_43 1 --> 0 Purbeckodon
		1	node_46 1 ==> 0 Rosierodon
		1	node_46 1 ==> 0 Amphilestes
19	0.167	1	node_48 0 --> 1 node_47
		1	node_37 1 ==> 0 Asfaltomylos
		1	node_37 1 ==> 0 Amphitherium
		1	node_39 1 ==> 0 Dryolestes
		1	node_43 1 --> 0 Purbeckodon
		1	node_46 1 ==> 0 node_45
20	0.375	1	node_36 2 ==> 3 Ambondro
		1	node_37 2 ==> 1 Woutersia
		1	node_39 2 --> 3 Delsatia
		1	node_46 2 --> 1 Megazostrodon
		1	node_46 2 --> 1 Morganucodon

		1	node_46 2 --> 1 Erythrotherium
		1	node_46 2 ==> 0 Hallautherium
		1	node_46 2 --> 1 Castorocauda
21	0.167	1	node_36 0 --> 1 Ambondro
		1	node_38 0 ==> 1 Shuotherium
		1	node_39 0 ==> 1 Delsatia
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 ==> 1 node_45
		1	node_45 1 ==> 0 Arboroharamiya
22	0.250	1	node_37 0 ==> 1 node_36
		1	node_38 0 ==> 1 Shuotherium
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 ==> 1 Castorocauda
23	1.000	1	node_38 1 ==> 2 Shuotherium
24	0.143	1	node_37 0 ==> 1 Woutersia
		1	node_37 0 ==> 1 Haldanodon
		1	node_46 0 --> 1 Dinnetherium
		1	node_46 0 --> 1 Megazostrodon
		1	node_46 0 --> 1 Bridetherium
		1	node_46 0 --> 1 Castorocauda
		1	node_46 0 --> 1 Amphilestes
25	0.429	1	node_38 0 --> 2 node_37
		1	node_37 2 ==> 3 Haldanodon
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 --> 2 Rosierodon
		1	node_46 0 --> 2 Bridetherium
		1	node_46 0 ==> 3 Castorocauda
		1	node_46 0 --> 2 Amphilestes
27	1.000	1	node_45 1 ==> 0 Arboroharamiya
28	1.000	1	node_45 1 ==> 2 Arboroharamiya
		1	node_45 1 ==> 0 Sinobaatar
29	0.500	1	node_45 0 ==> 1 Arboroharamiya
		1	node_45 0 ==> 1 Rugosodon
30	0.333	1	node_47 1 ==> 0 node_42
		1	node_37 0 ==> 1 Woutersia
		1	node_39 0 ==> 1 Delsatia
31	0.667	1	node_47 0 --> 1 node_46
		1	node_46 1 ==> 0 Dinnetherium
		1	node_48 0 --> 2 Priacodon
32	0.500	1	node_46 1 ==> 0 node_45
		1	node_45 0 ==> 1 Rugosodon
33	0.286	1	node_37 0 ==> 1 Woutersia
		1	node_38 0 ==> 1 Shuotherium
		1	node_40 0 ==> 2 Zhangheotherium
		1	node_46 0 ==> 1 Dinnetherium
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_46 0 ==> 1 Amphilestes
		1	node_48 0 ==> 1 Priacodon
34	0.600	1	node_48 2 ==> 1 node_47
		1	node_46 1 ==> 3 Erythrotherium
		1	node_46 1 ==> 3 node_45
		1	node_44 3 --> 2 Haramiyavia
		1	node_45 3 ==> 0 Sinobaatar
35	0.500	1	node_46 0 ==> 1 node_45
		1	node_44 1 --> 2 Haramiyavia
		1	node_45 1 --> 2 Theroteinus
		1	node_45 1 --> 2 Sinobaatar
36	1.000	1	node_46 0 ==> 1 node_45
37	0.750	1	node_42 0 --> 2 node_41
		1	node_38 2 ==> 1 node_37
		1	node_39 2 ==> 46 Dryolestes
		1	node_43 0 ==> 1 Paikasigudodon
38	0.600	1	node_35 0 ==> 1 Kuehneotherium
		1	node_39 0 --> 2 Delsatia
		1	node_39 0 --> 3 Dryolestes
		1	node_43 0 ==> 1 Paikasigudodon
		1	node_45 0 ==> 12 Theroteinus
39	0.667	1	node_41 0 ==> 1 node_38

		1	node_43 0 ==> 2 Paikasigudodon
		1	node_45 0 ==> 2 Theroteinus
40	0.167	1	node_37 1 ==> 0 Woutersia
		1	node_38 1 ==> 0 Shuotherium
		1	node_40 1 ==> 0 Zhangheotherium
		1	node_46 1 ==> 0 Dinnetherium
		1	node_46 1 ==> 0 Brachyzostrodon
		1	node_45 1 ==> 0 Theroteinus
41	0.600	1	node_36 1 --> 2 node_35
		1	node_37 1 ==> 3 Woutersia
		1	node_37 1 --> 2 Haldanodon
		1	node_39 1 --> 0 Delsatia
		1	node_43 1 ==> 0 Paikasigudodon
42	0.375	1	node_37 2 ==> 3 Woutersia
		1	node_40 2 --> 0 node_39
		1	node_46 2 ==> 3 Megazostrodon
		1	node_43 2 ==> 3 Paikasigudodon
		1	node_46 2 ==> 1 Bridetherium
		1	node_46 2 ==> 0 node_45
		1	node_44 0 ==> 1 Thomasia
		1	node_45 0 ==> 1 Sinobaatar
43	1.000	1	node_39 0 ==> 3 Dryolestes
		1	node_46 0 ==> 2 node_43
45	0.500	1	node_45 0 ==> 1 Rugosodon
		1	node_45 0 ==> 1 Sinobaatar
46	0.750	1	node_35 0 ==> 3 Kuehneotherium
		1	node_39 0 ==> 4 Dryolestes
		1	node_46 0 ==> 1 Dinnetherium
		1	node_43 0 ==> 1 Purbeckodon
47	0.500	1	node_35 0 ==> 1 Fluctuodon
		1	node_43 0 ==> 1 Purbeckodon
48	1.000	1	node_37 0 ==> 1 Woutersia
49	1.000	1	node_35 0 ==> 4 Kuehneotherium
		1	node_38 0 ==> 5 Shuotherium
		1	node_39 0 ==> 3 Dryolestes
50	0.667	1	node_42 0 --> 7 node_41
		1	node_37 7 ==> 1 Helvetiodon
		1	node_35 7 ==> 12 Fluctuodon
		1	node_37 7 ==> 2 Haldanodon
		1	node_39 7 ==> 89 Dryolestes
		1	node_46 0 ==> 2 Megazostrodon
51	1.000	1	node_39 0 ==> 6 Dryolestes
52	0.800	1	node_35 0 --> 1 Fluctuodon
		1	node_35 0 --> 2 Kuehneotherium
		1	node_39 0 --> 7 Delsatia
		1	node_39 0 --> 3 Dryolestes
		1	node_46 0 ==> 2 Megazostrodon
53	0.250	1	node_37 1 ==> 0 Haldanodon
		1	node_41 1 ==> 0 node_40
		1	node_46 1 ==> 0 Dinnetherium
		1	node_45 1 ==> 0 node_44
54	0.750	1	node_37 0 ==> 2 Woutersia
		1	node_43 0 ==> 1 Paikasigudodon
		1	node_45 0 ==> 3 Theroteinus
		1	node_45 0 ==> 3 Arboroharamiya
55	0.500	1	node_38 0 --> 1 node_37
		1	node_37 1 ==> 2 Helvetiodon
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_43 0 ==> 2 Purbeckodon
		1	node_46 0 ==> 1 Bridetherium
		1	node_45 0 ==> 3 Theroteinus
56	0.500	1	node_37 0 ==> 2 Helvetiodon
		1	node_36 0 --> 1 node_35
		1	node_46 0 ==> 2 node_43
		1	node_46 0 ==> 2 node_45
57	0.500	1	node_37 0 ==> 2 Helvetiodon
		1	node_47 0 ==> 1 node_46
		1	node_46 1 ==> 0 Bridetherium

		1	node_46 1 ==> 0 node_45
58	0.222	1	node_48 1 ==> 0 Sinoconodon
		1	node_37 1 ==> 2 Haldanodon
		1	node_38 1 ==> 2 Shuotherium
		1	node_40 1 ==> 0 node_39
		1	node_47 1 ==> 2 node_46
		1	node_43 2 ==> 1 Paikasigudodon
		1	node_46 2 ==> 1 Erythrotherium
		1	node_45 2 ==> 0 Arboroharamiya
		1	node_45 2 ==> 0 Sinobaatar
59	0.333	1	node_48 0 ==> 1 node_47
		1	node_40 1 ==> 0 Zhangheotherium
		1	node_45 1 ==> 0 node_44
60	1.000	1	node_37 2 ==> 1 Helvetiodon
		1	node_39 2 ==> 3 Delsatia
		1	node_46 2 ==> 0 node_43
61	0.500	1	node_47 0 ==> 1 node_46
		1	node_43 1 ==> 0 Purbeckodon
62	0.500	1	node_47 0 ==> 1 node_46
		1	node_46 1 ==> 0 node_43
64	0.250	1	node_41 0 ==> 1 node_38
		1	node_36 1 --> 0 node_35
		1	node_45 0 --> 1 Theroteinus
		1	node_45 0 --> 1 Arboroharamiya
65	0.667	1	node_37 0 --> 1 Haldanodon
		1	node_38 0 --> 1 Shuotherium
		1	node_46 0 --> 2 node_45
66	0.500	1	node_43 1 ==> 0 Paikasigudodon
		1	node_45 1 ==> 0 Arboroharamiya
67	0.500	1	node_46 1 ==> 0 Bridetherium
		1	node_46 1 ==> 0 node_45
68	0.333	1	node_47 1 ==> 0 node_42
		1	node_37 0 ==> 1 Woutersia
		1	node_44 1 --> 0 Haramiyavia
69	1.000	1	node_37 0 --> 1 Woutersia
70	0.500	1	node_44 0 ==> 1 Thomasia
		1	node_45 0 ==> 1 Theroteinus
71	0.500	1	node_45 0 ==> 1 Theroteinus
		1	node_45 0 ==> 1 Rugosodon
72	0.500	1	node_45 0 ==> 1 Rugosodon
		1	node_45 0 ==> 1 Sinobaatar
73	0.333	1	node_39 0 ==> 2 Dryolestes
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_46 0 ==> 1 Bridetherium
		1	node_46 0 ==> 1 node_45
		1	node_44 1 --> 2 Thomasia
		1	node_45 1 --> 2 Theroteinus
74	0.667	1	node_40 1 ==> 2 Zhangheotherium
		1	node_46 1 ==> 3 node_45
		1	node_44 3 --> 2 Haramiyavia

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_48 --> Sinoconodon	17	1	0.300	1 ==> 0
	58	1	0.222	1 ==> 0
node_48 --> node_47	19	1	0.167	0 --> 1
	34	1	0.600	2 ==> 1
	59	1	0.333	0 ==> 1
node_47 --> node_42	30	1	0.333	1 ==> 0
	68	1	0.333	1 ==> 0
node_42 --> Hadrocodium	7	1	0.250	0 --> 1
node_42 --> node_41	3	1	0.500	0 ==> 2
	4	1	0.571	0 ==> 2
	8	1	0.273	1 ==> 0
	14	1	0.500	0 ==> 7
	16	1	1.000	0 ==> 7

	37	1	0.750	0 --> 2
	50	1	0.667	0 --> 7
node_41 --> node_38	10	1	0.333	0 ==> 1
	39	1	0.667	0 ==> 1
	64	1	0.250	0 ==> 1
node_38 --> node_37	3	1	0.500	2 ==> 1
	5	1	0.250	0 ==> 1
	7	1	0.250	0 --> 2
	15	1	0.500	0 ==> 2
	25	1	0.429	0 --> 2
	37	1	0.750	2 ==> 1
	55	1	0.500	0 --> 1
node_37 --> Helvetiodon	50	1	0.667	7 ==> 1
	55	1	0.500	1 ==> 2
	56	1	0.500	0 ==> 2
	57	1	0.500	0 ==> 2
	60	1	1.000	2 ==> 1
node_37 --> node_36	22	1	0.250	0 ==> 1
node_36 --> node_35	8	1	0.273	0 ==> 3
	14	1	0.500	7 --> 4
	15	1	0.500	2 ==> 1
	41	1	0.600	1 --> 2
	56	1	0.500	0 --> 1
	64	1	0.250	1 --> 0
node_35 --> Fluctuodon	3	1	0.500	1 ==> 0
	4	1	0.571	2 --> 1
	7	1	0.250	2 --> 1
	10	1	0.333	1 ==> 2
	12	1	0.600	0 ==> 2
	16	1	1.000	7 --> 5
	47	1	0.500	0 ==> 1
	50	1	0.667	7 ==> 12
	52	1	0.800	0 --> 1
node_35 --> Kuehneotherium	18	1	0.429	0 --> 2
	38	1	0.600	0 ==> 1
	46	1	0.750	0 ==> 3
	49	1	1.000	0 ==> 4
	52	1	0.800	0 --> 2
node_36 --> Ambondro	6	1	0.250	1 ==> 2
	13	1	0.375	0 ==> 1
	14	1	0.500	7 --> 5
	18	1	0.429	0 --> 2
	20	1	0.375	2 ==> 3
	21	1	0.167	0 --> 1
node_37 --> Woutersia	6	1	0.250	1 ==> 2
	9	1	0.667	0 ==> 2
	10	1	0.333	1 ==> 0
	14	1	0.500	7 ==> 4
	15	1	0.500	2 ==> 0
	17	1	0.300	1 ==> 2
	20	1	0.375	2 ==> 1
	24	1	0.143	0 ==> 1
	30	1	0.333	0 ==> 1
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	41	1	0.600	1 ==> 3
	42	1	0.375	2 ==> 3
	48	1	1.000	0 ==> 1
	54	1	0.750	0 ==> 2
	68	1	0.333	0 ==> 1
	69	1	1.000	0 --> 1
node_37 --> Haldanodon	9	1	0.667	0 ==> 2
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 2
	14	1	0.500	7 ==> 12
	24	1	0.143	0 ==> 1
	25	1	0.429	2 ==> 3
	41	1	0.600	1 --> 2

	50	1	0.667	7 ==> 2
	53	1	0.250	1 ==> 0
	58	1	0.222	1 ==> 2
	65	1	0.667	0 --> 1
node_37 --> Asfaltomylos	3	1	0.500	1 ==> 2
	4	1	0.571	2 ==> 3
	6	1	0.250	1 ==> 2
	8	1	0.273	0 ==> 3
	13	1	0.375	0 ==> 2
	18	1	0.429	0 --> 3
	19	1	0.167	1 ==> 0
node_37 --> Amphitherium	4	1	0.571	2 ==> 34
	19	1	0.167	1 ==> 0
node_38 --> Shuotherium	21	1	0.167	0 ==> 1
	22	1	0.250	0 ==> 1
	23	1	1.000	1 ==> 2
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	49	1	1.000	0 ==> 5
	58	1	0.222	1 ==> 2
	65	1	0.667	0 --> 1
node_41 --> node_40	53	1	0.250	1 ==> 0
node_40 --> node_39	42	1	0.375	2 --> 0
	58	1	0.222	1 ==> 0
node_39 --> Delsatia	17	1	0.300	1 --> 0
	20	1	0.375	2 --> 3
	21	1	0.167	0 ==> 1
	30	1	0.333	0 ==> 1
	38	1	0.600	0 --> 2
	41	1	0.600	1 --> 0
	52	1	0.800	0 --> 7
	60	1	1.000	2 ==> 3
node_39 --> Dryolestes	4	1	0.571	2 ==> 46
	6	1	0.250	1 ==> 0
	10	1	0.333	0 ==> 3
	12	1	0.600	0 ==> 3
	13	1	0.375	0 ==> 12
	14	1	0.500	7 ==> 45
	15	1	0.500	0 ==> 3
	19	1	0.167	1 ==> 0
	37	1	0.750	2 ==> 46
	38	1	0.600	0 --> 3
	43	1	1.000	0 ==> 3
	46	1	0.750	0 ==> 4
	49	1	1.000	0 ==> 3
	50	1	0.667	7 ==> 89
	51	1	1.000	0 ==> 6
	52	1	0.800	0 --> 3
	73	1	0.333	0 ==> 2
node_40 --> Zhangheotherium	33	1	0.286	0 ==> 2
	40	1	0.167	1 ==> 0
	59	1	0.333	1 ==> 0
	74	1	0.667	1 ==> 2
node_47 --> node_46	8	1	0.273	1 ==> 2
	18	1	0.429	0 ==> 1
	31	1	0.667	0 --> 1
	57	1	0.500	0 ==> 1
	58	1	0.222	1 ==> 2
	61	1	0.500	0 ==> 1
	62	1	0.500	0 ==> 1
node_46 --> Dinnetherium	7	1	0.250	0 ==> 1
	8	1	0.273	2 ==> 1
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 3
	21	1	0.167	0 ==> 1
	22	1	0.250	0 ==> 1
	24	1	0.143	0 --> 1
	25	1	0.429	0 ==> 1

	31	1	0.667	1 ==> 0
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
node_46 --> Megazostrodon	6	1	0.250	1 ==> 0
	8	1	0.273	2 ==> 3
	17	1	0.300	1 ==> 23
	20	1	0.375	2 --> 1
	24	1	0.143	0 --> 1
	42	1	0.375	2 ==> 3
	50	1	0.667	0 ==> 2
	52	1	0.800	0 ==> 2
node_46 --> Morganucodon	20	1	0.375	2 --> 1
node_46 --> Brachyzostrodon	3	1	0.500	0 ==> 5
	5	1	0.250	0 ==> 1
	6	1	0.250	1 ==> 0
	8	1	0.273	2 ==> 3
	13	1	0.375	0 ==> 1
	14	1	0.500	0 ==> 1
	17	1	0.300	1 ==> 0
	33	1	0.286	0 ==> 1
	40	1	0.167	1 ==> 0
	55	1	0.500	0 ==> 1
	73	1	0.333	0 ==> 1
node_46 --> Paceyodon	3	1	0.500	0 ==> 5
	5	1	0.250	0 ==> 1
	8	1	0.273	2 ==> 3
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 1
	13	1	0.375	0 ==> 4
	14	1	0.500	0 ==> 1
node_46 --> node_43	43	1	1.000	0 ==> 2
	56	1	0.500	0 ==> 2
	60	1	1.000	2 ==> 0
	62	1	0.500	1 ==> 0
node_43 --> Paikasigudodon	37	1	0.750	0 ==> 1
	38	1	0.600	0 ==> 1
	39	1	0.667	0 ==> 2
	41	1	0.600	1 ==> 0
	42	1	0.375	2 ==> 3
	54	1	0.750	0 ==> 1
	58	1	0.222	2 ==> 1
	66	1	0.500	1 ==> 0
node_43 --> Purbeckodon	10	1	0.333	0 --> 13
	18	1	0.429	1 --> 0
	19	1	0.167	1 --> 0
	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1
	55	1	0.500	0 ==> 2
	61	1	0.500	1 ==> 0
node_46 --> Rosierodon	7	1	0.250	0 ==> 1
	8	1	0.273	2 ==> 0
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 23
	18	1	0.429	1 ==> 0
	25	1	0.429	0 --> 2
node_46 --> Erythrotherium	20	1	0.375	2 --> 1
	34	1	0.600	1 ==> 3
	58	1	0.222	2 ==> 1
node_46 --> Hallautherium	6	1	0.250	1 ==> 0
	17	1	0.300	1 ==> 0
	20	1	0.375	2 ==> 0
node_46 --> Bridetherium	7	1	0.250	0 ==> 1
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 3
	24	1	0.143	0 --> 1
	25	1	0.429	0 --> 2

	42	1	0.375 2 ==> 1
	55	1	0.500 0 ==> 1
	57	1	0.500 1 ==> 0
	67	1	0.500 1 ==> 0
	73	1	0.333 0 ==> 1
node_46 --> Castorocauda	4	1	0.571 0 ==> 3
	5	1	0.250 0 ==> 1
	8	1	0.273 2 ==> 1
	10	1	0.333 0 ==> 1
	11	1	0.333 0 ==> 1
	12	1	0.600 0 ==> 1
	15	1	0.500 0 ==> 3
	16	1	1.000 0 ==> 6
	20	1	0.375 2 --> 1
	22	1	0.250 0 ==> 1
	24	1	0.143 0 --> 1
	25	1	0.429 0 ==> 3
node_46 --> node_45	1	1	0.500 0 ==> 1
	17	1	0.300 1 ==> 0
	19	1	0.167 1 ==> 0
	21	1	0.167 0 ==> 1
	32	1	0.500 1 ==> 0
	34	1	0.600 1 ==> 3
	35	1	0.500 0 ==> 1
	36	1	1.000 0 ==> 1
	42	1	0.375 2 ==> 0
	56	1	0.500 0 ==> 2
	57	1	0.500 1 ==> 0
	65	1	0.667 0 --> 2
	67	1	0.500 1 ==> 0
	73	1	0.333 0 ==> 1
	74	1	0.667 1 ==> 3
node_45 --> node_44	53	1	0.250 1 ==> 0
	59	1	0.333 1 ==> 0
node_44 --> Thomasia	7	1	0.250 0 --> 2
	13	1	0.375 0 --> 1
	42	1	0.375 0 ==> 1
	70	1	0.500 0 ==> 1
	73	1	0.333 1 --> 2
node_44 --> Haramiyavia	2	1	0.333 0 ==> 1
	13	1	0.375 0 --> 2
	15	1	0.500 0 ==> 1
	16	1	1.000 0 ==> 4
	34	1	0.600 3 --> 2
	35	1	0.500 1 --> 2
	68	1	0.333 1 --> 0
	74	1	0.667 3 --> 2
node_45 --> Theroteinus	13	1	0.375 0 ==> 1
	35	1	0.500 1 --> 2
	38	1	0.600 0 ==> 12
	39	1	0.667 0 ==> 2
	40	1	0.167 1 ==> 0
	54	1	0.750 0 ==> 3
	55	1	0.500 0 ==> 3
	64	1	0.250 0 --> 1
	70	1	0.500 0 ==> 1
	71	1	0.500 0 ==> 1
	73	1	0.333 1 --> 2
node_45 --> Arboroharamiya	2	1	0.333 0 ==> 1
	4	1	0.571 0 ==> 1
	8	1	0.273 2 ==> 0
	9	1	0.667 0 ==> 1
	21	1	0.167 1 ==> 0
	27	1	1.000 1 ==> 0
	28	1	1.000 1 ==> 2
	29	1	0.500 0 ==> 1
	54	1	0.750 0 ==> 3
	58	1	0.222 2 ==> 0

	64	1	0.250	0	--> 1
	66	1	0.500	1	==> 0
node_45 --> Rugosodon	1	1	0.500	1	==> 2
	2	1	0.333	0	==> 1
	6	1	0.250	1	--> 2
	29	1	0.500	0	==> 1
	32	1	0.500	0	==> 1
	45	1	0.500	0	==> 1
	71	1	0.500	0	==> 1
	72	1	0.500	0	==> 1
node_45 --> Sinobaatar	1	1	0.500	1	==> 2
	28	1	1.000	1	==> 0
	34	1	0.600	3	==> 0
	35	1	0.500	1	--> 2
	42	1	0.375	0	==> 1
	45	1	0.500	0	==> 1
	58	1	0.222	2	==> 0
	72	1	0.500	0	==> 1
node_46 --> Amphilestes	1	1	0.500	0	==> 1
	18	1	0.429	1	==> 0
	24	1	0.143	0	--> 1
	25	1	0.429	0	--> 2
	33	1	0.286	0	==> 1
node_48 --> Priacodon	7	1	0.250	0	--> 1
	31	1	0.667	0	--> 2
	33	1	0.286	0	==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	4	7	0.500	0.500	0.600	0.300
2	1	3	3	0.333	0.667	0.000	0.000
3	3	6	10	0.500	0.500	0.571	0.286
4	4	7	12	0.571	0.429	0.625	0.357
5	1	4	8	0.250	0.750	0.571	0.143
6	2	8	8	0.250	0.750	0.000	0.000
7	2	8	9	0.250	0.750	0.143	0.036
8	3	11	18	0.273	0.727	0.467	0.127
9	2	3	3	0.667	0.333	0.000	0.000
10	3	9	11	0.333	0.667	0.250	0.083
11	1	3	3	0.333	0.667	0.000	0.000
12	3	5	5	0.600	0.400	0.000	0.000
13	3	8	8	0.375	0.625	0.000	0.000
14	4	8	13	0.500	0.500	0.556	0.278
15	3	6	8	0.500	0.500	0.400	0.200
16	4	4	12	1.000	0.000	1.000	1.000
17	3	10	15	0.300	0.700	0.417	0.125
18	3	7	8	0.429	0.571	0.200	0.086
19	1	6	11	0.167	0.833	0.500	0.083
20	3	8	8	0.375	0.625	0.000	0.000
21	1	6	9	0.167	0.833	0.375	0.062
22	1	4	6	0.250	0.750	0.400	0.100
23	1	1	1	1.000	0.000	0/0	0/0
24	1	7	7	0.143	0.857	0.000	0.000
25	3	7	7	0.429	0.571	0.000	0.000
26	n/a	0	0	0/0	0/0	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	3	8	0.333	0.667	0.714	0.238
31	2	3	5	0.667	0.333	0.667	0.444
32	1	2	4	0.500	0.500	0.667	0.333
33	2	7	7	0.286	0.714	0.000	0.000
34	3	5	7	0.600	0.400	0.500	0.300
35	2	4	6	0.500	0.500	0.500	0.250
36	1	1	3	1.000	0.000	1.000	1.000

37	3	4	9	0.750	0.250	0.833	0.625
38	3	5	5	0.600	0.400	0.000	0.000
39	2	3	8	0.667	0.333	0.833	0.556
40	1	6	6	0.167	0.833	0.000	0.000
41	3	5	6	0.600	0.400	0.333	0.200
42	3	8	12	0.375	0.625	0.444	0.167
43	2	2	3	1.000	0.000	1.000	1.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	2	2	0.500	0.500	0.000	0.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	3	3	3	1.000	0.000	0/0	0/0
50	4	6	8	0.667	0.333	0.500	0.333
51	1	1	1	1.000	0.000	0/0	0/0
52	4	5	5	0.800	0.200	0.000	0.000
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	6	8	0.500	0.500	0.400	0.200
56	2	4	7	0.500	0.500	0.600	0.300
57	2	4	6	0.500	0.500	0.500	0.250
58	2	9	13	0.222	0.778	0.364	0.081
59	1	3	5	0.333	0.667	0.500	0.167
60	3	3	4	1.000	0.000	1.000	1.000
61	1	2	10	0.500	0.500	0.889	0.444
62	1	2	5	0.500	0.500	0.750	0.375
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	4	6	0.250	0.750	0.400	0.100
65	2	3	4	0.667	0.333	0.500	0.333
66	1	2	2	0.500	0.500	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	3	7	0.333	0.667	0.667	0.222
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	2	2	0.500	0.500	0.000	0.000
73	2	6	7	0.333	0.667	0.200	0.067
74	2	3	5	0.667	0.333	0.667	0.444

--Matrice "totale" avec "Base" et caractères non-ordonnés

----*Buffer de l'analyse*

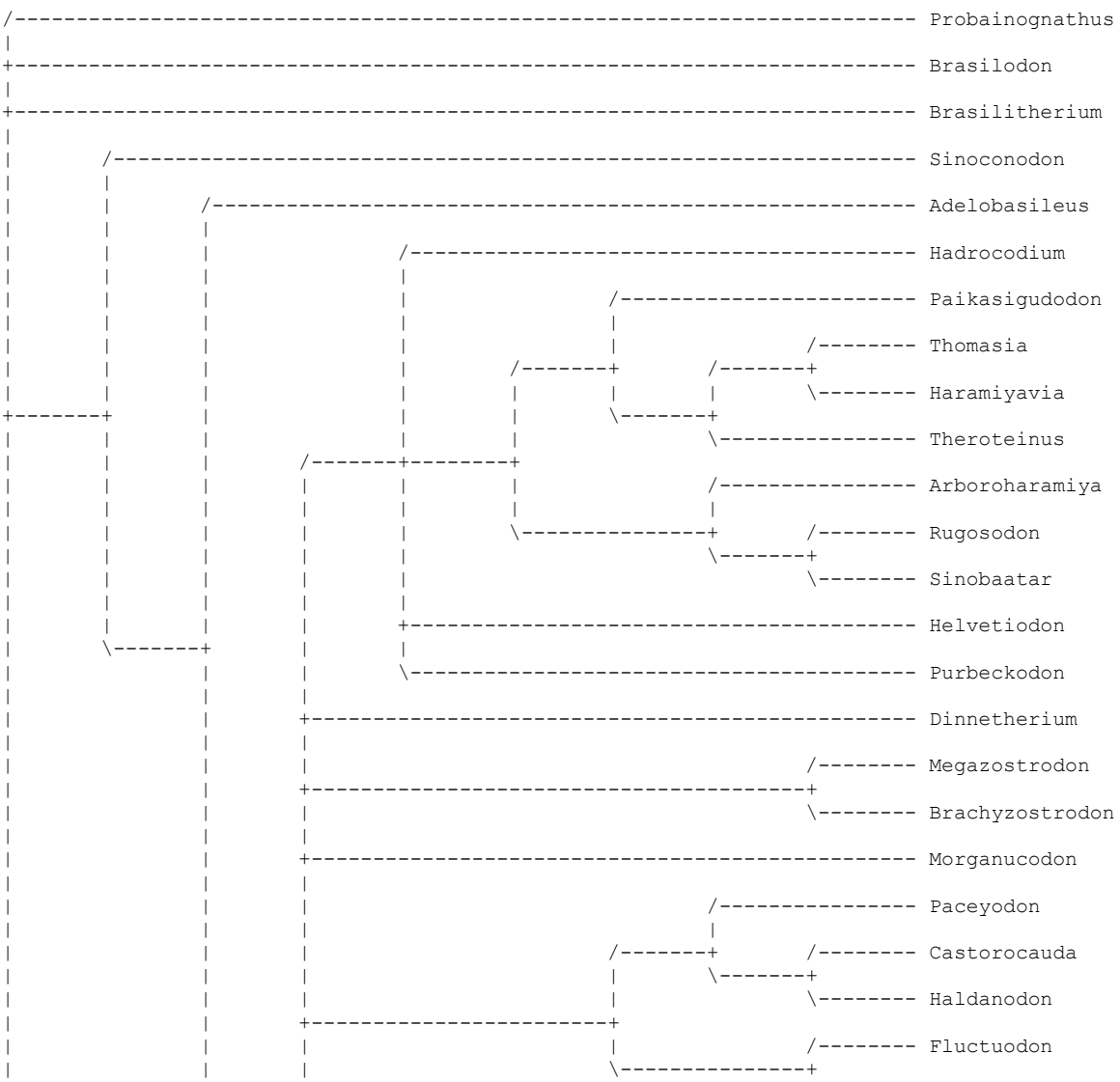
```
Data matrix has 38 taxa, 307 characters
Valid character-state symbols: 0123456789
Missing data identified by '?'
"Equate" macros in effect:
   N ==> ?

Heuristic search settings:
  Optimality criterion = parsimony
    Character-status summary:
      Of 307 total characters:
        All characters are of type 'unord'
        All characters have equal weight
        2 characters are constant
        93 variable characters are parsimony-uninformative
        Number of parsimony-informative characters = 212
    Multistate taxa interpreted as uncertainty
  Starting tree(s) obtained via stepwise addition
  Addition sequence: random
    Number of replicates = 100
    Starting seed = 1167668320
```

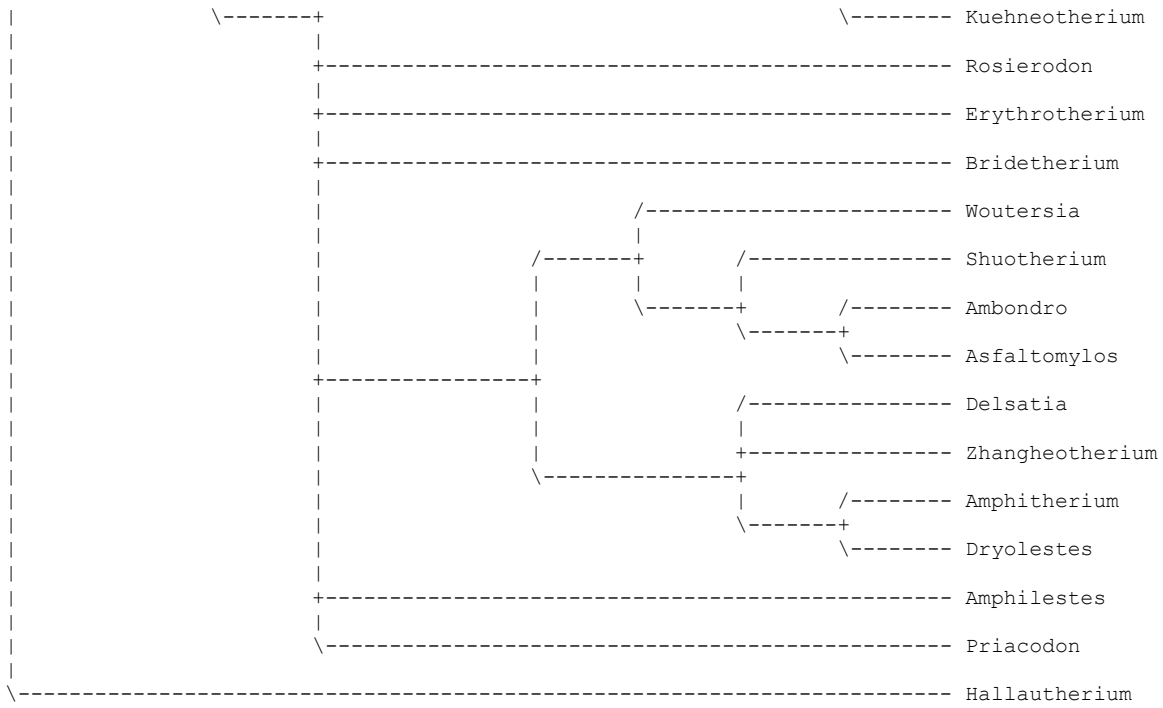
```
  Number of trees held at each step during stepwise addition = 1
  Branch-swapping algorithm: tree-bisection-reconnection (TBR)
  Steepest descent option not in effect
  Initial 'MaxTrees' setting = 100 (will be auto-increased by 100)
  Branches collapsed (creating polytomies) if maximum branch length is zero
  'MulTrees' option in effect
 Topological constraints not enforced
  Trees are unrooted

Heuristic search completed
   Total number of rearrangements tried = 1.3169e+10
   Score of best tree(s) found = 728
   Number of trees retained = 312
   Time used = 18:41:05.2

Tree-island profile:
                     First      Last                      First   Times
Island      Size      tree      tree        Score    replicate     hit
-------------------------------------------------------------------------
     1       312         1       312          728            2      27
     2      2939         -         -          729            7       1
     3      2917         -         -          729           98       1
     4      2907         -         -          729           86       1
     5      2900         -         -          729           54       1
     6      2897         -         -          729           49       1
     7      2891         -         -          729           40       1
     8      2890         -         -          729           65       2*
     9      2887         -         -          729           79       1
    10      2884         -         -          729           45       1
    11      2876         -         -          729           27       1
    12      2870         -         -          729           74       1
    13      2868         -         -          729           88       1
    14      2683         -         -          729           58       1
    15      2643         -         -          729           84       1
    16      2491         -         -          729           85       1
    17      2481         -         -          729           50       1
    18      2284         -         -          729           76       1
    19      2278         -         -          729           90       1
    20      2149         -         -          729           80       1
    21      2148         -         -          729            9       1
    22       317         -         -          729            6       1
    23       261         -         -          729           82       1
    24         2         -         -          729           89       1
    25     21048         -         -          730           23       1
    26     21046         -         -          730           13       1
    27     21045         -         -          730           99       1
    28     21039         -         -          730           25       1
    29     21034         -         -          730           38       1
    30     21030         -         -          730           12       1
    31     21029         -         -          730           29       1
    32     21026         -         -          730           32       1
    33     21023         -         -          730           64       1
    34     21022         -         -          730           87       1
    35     21016         -         -          730           43       1
    36     21007         -         -          730           42       1
    37     20970         -         -          730           91       1
    38     20531         -         -          730           92       1
    39     20408         -         -          730           31       1
    40      9924         -         -          730           66       1
    41      5695         -         -          730           78       1
    42      5589         -         -          730           47       1
    43      5199         -         -          730            1       1
    44       132         -         -          730            8       1
    45       131         -         -          730           39       1
    46       129         -         -          730           34       1
    47       128         -         -          730           75       1
    48        25         -         -          730           21       1
    49        14         -         -          730           15       1
```

50	0	-	-	730	33	2*
51	39986	-	-	731	10	1
52	39940	-	-	731	51	1
53	39878	-	-	731	60	1
54	39322	-	-	731	93	1
55	39295	-	-	731	71	1
56	39274	-	-	731	24	1
57	39267	-	-	731	16	1
58	39250	-	-	731	61	1
59	1706	-	-	731	55	1
60	465	-	-	731	52	1
61	464	-	-	731	77	1
62	194	-	-	731	69	1
63	151	-	-	731	59	2*
64	143	-	-	731	28	1
65	62	-	-	731	22	2*
66	2828	-	-	732	95	1
67	173	-	-	732	18	2*
68	29	-	-	732	96	1
69	177	-	-	736	5	1

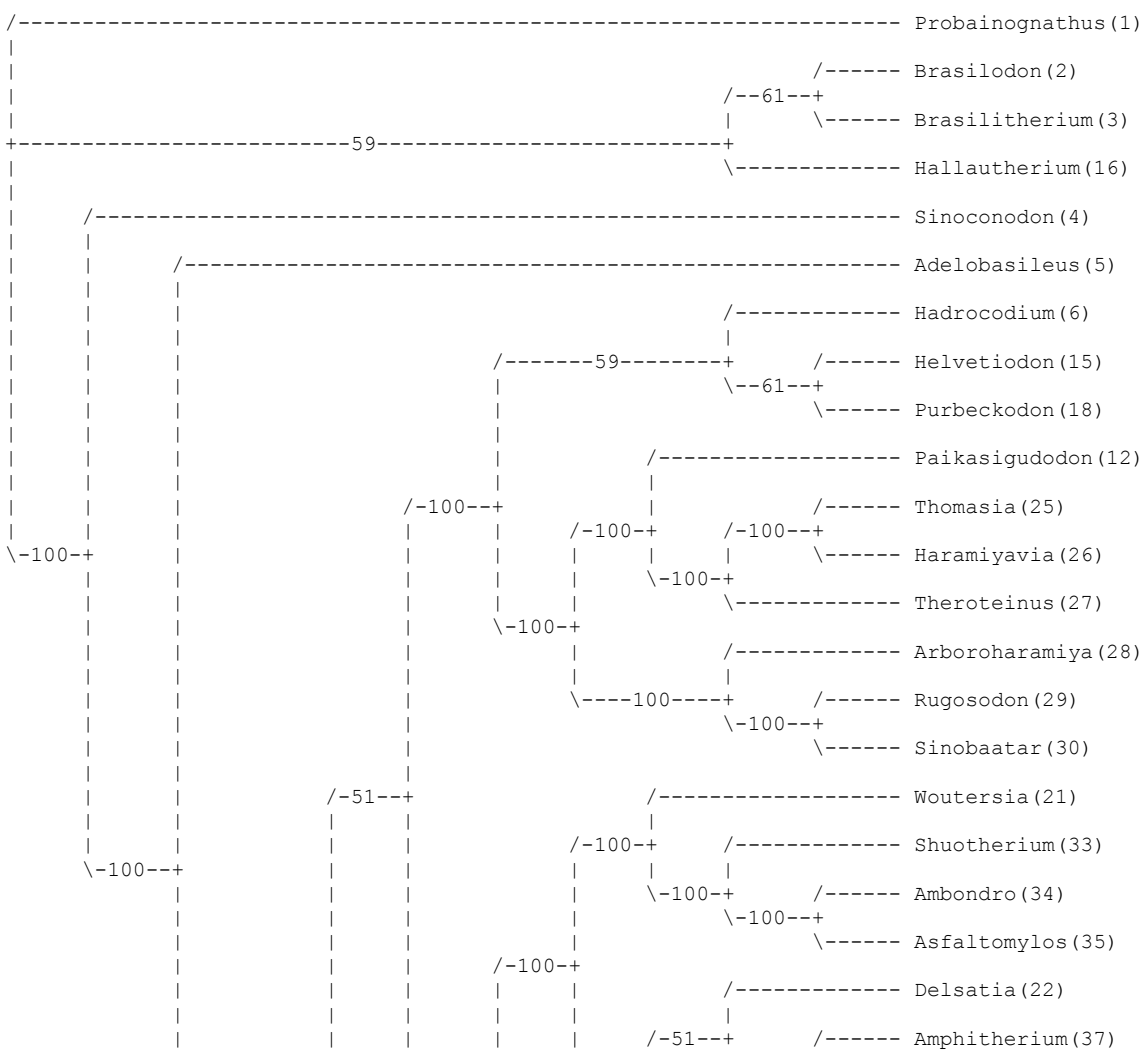
Note(s):
    * Multiple hits on islands of unsaved trees may in fact represent different islands

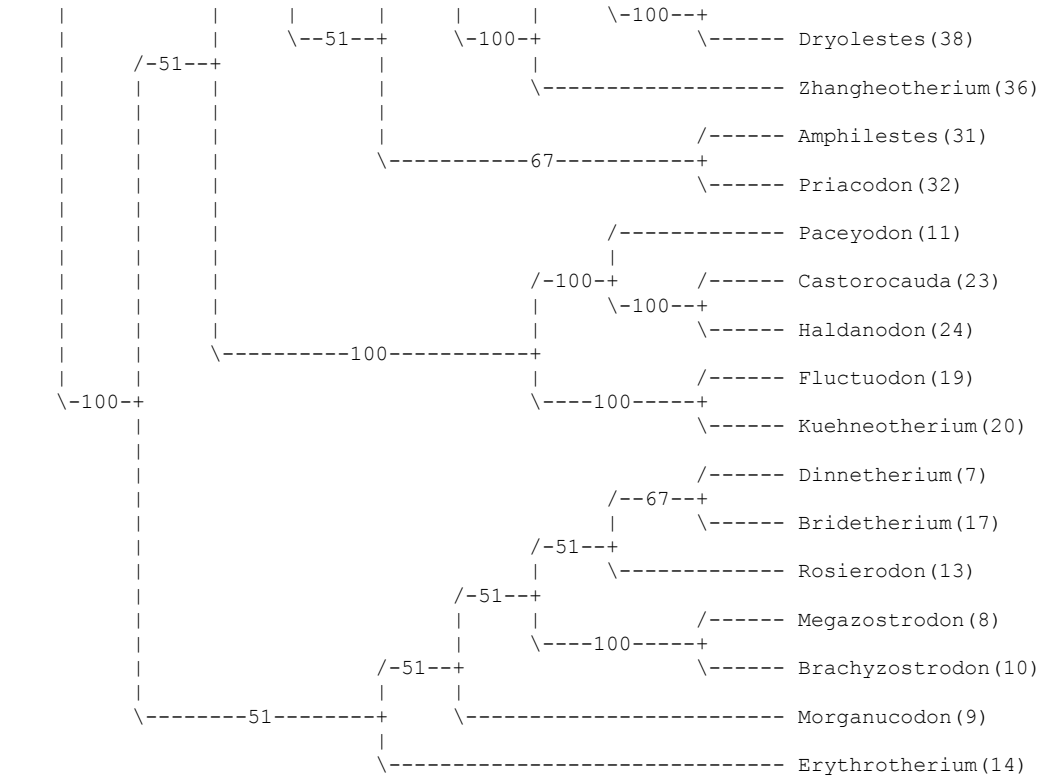
Strict consensus of 312 trees:





50% Majority-rule consensus of 312 trees



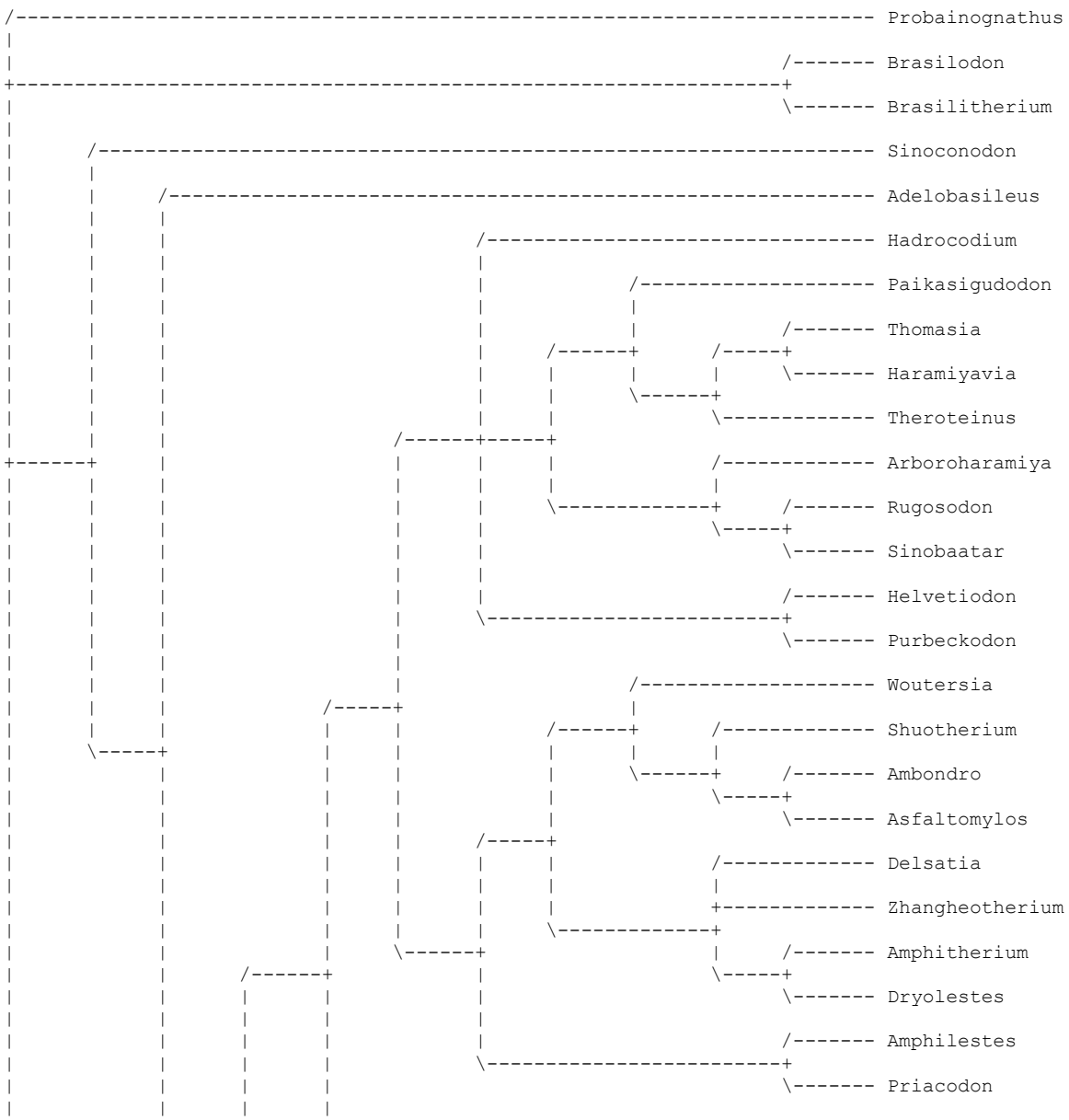


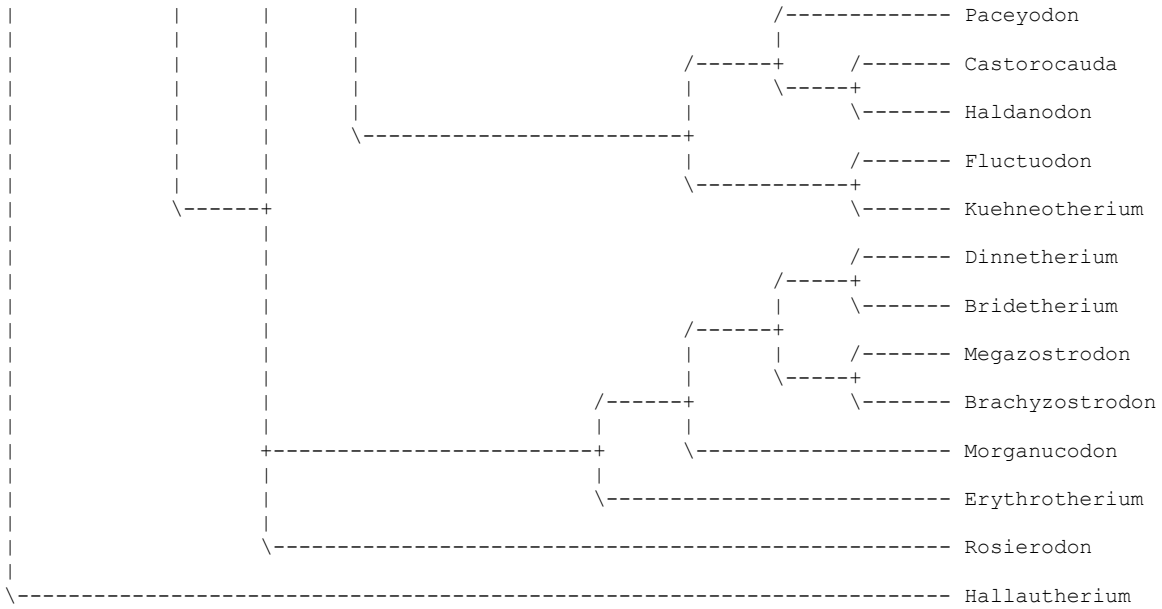
Bipartitions found in one or more trees and frequency of occurrence:

```
         1         2         3       3
12345678901234567890123456789012345678      Freq      %
-----------------------------------------------------------
...........................***........       312 100.0%
............................**........       312 100.0%
...***********.**********************       312 100.0%
....**********.**********************       312 100.0%
.....*********.**********************       312 100.0%
.....................*...........***...       312 100.0%
..................................***...       312 100.0%
.....*.....*..*..*......******.........       312 100.0%
.....................*.............***       312 100.0%
...........*.............******........       312 100.0%
...........*............***............       312 100.0%
.......................***.............       312 100.0%
.......................**..............       312 100.0%
..........*...........**...............       312 100.0%
.....................**...............       312 100.0%
...................**.................       312 100.0%
.....................................**...       312 100.0%
.....................**..........******       312 100.0%
.....................................**        312 100.0%
.......*.*.............................       312 100.0%
..........*.......**..**...............       312 100.0%
..............................**.......       210  67.3%
......*.........*......................       209  67.0%
.**....................................       191  61.2%
..............*..*......................       189  60.6%
.....*........*..*......................       185  59.3%
.**............*........................       183  58.7%
.....*....**..*..**********************       160  51.3%
.....................*..............**       160  51.3%
.....*.....*..*..*..**..***************       160  51.3%
.....................**........********       160  51.3%
......****..*...*......................       160  51.3%
......**.*..*...*......................       160  51.3%
......*.....*...*......................       160  51.3%
```

```
......****..**..*.....................       160  51.3%
...........*.......**........********       152  48.7%
......**.*......*.....................       152  48.7%
...........*..................**......       152  48.7%
......****......*.....................       152  48.7%
.....................................***       152  48.7%
.....*....***.*..**********************       152  48.7%
.....*.....**.*..*..**..***************       152  48.7%
......****...*..*.....................       152  48.7%
...**********************************        66  21.2%
.....*.....*............******........        66  21.2%
.**************.**********************        63  20.2%
.....*...........*.....................        62  19.9%
..*.............*.....................        61  19.6%
...........*..*..*......******........        61  19.6%
.....*........*.......................        61  19.6%
.*.............*.......................        60  19.2%
............*...*.......................        52  16.7%
............*..................*.......        52  16.7%
......*.....*.........................        51  16.3%
............*...................*......        50  16.0%
```

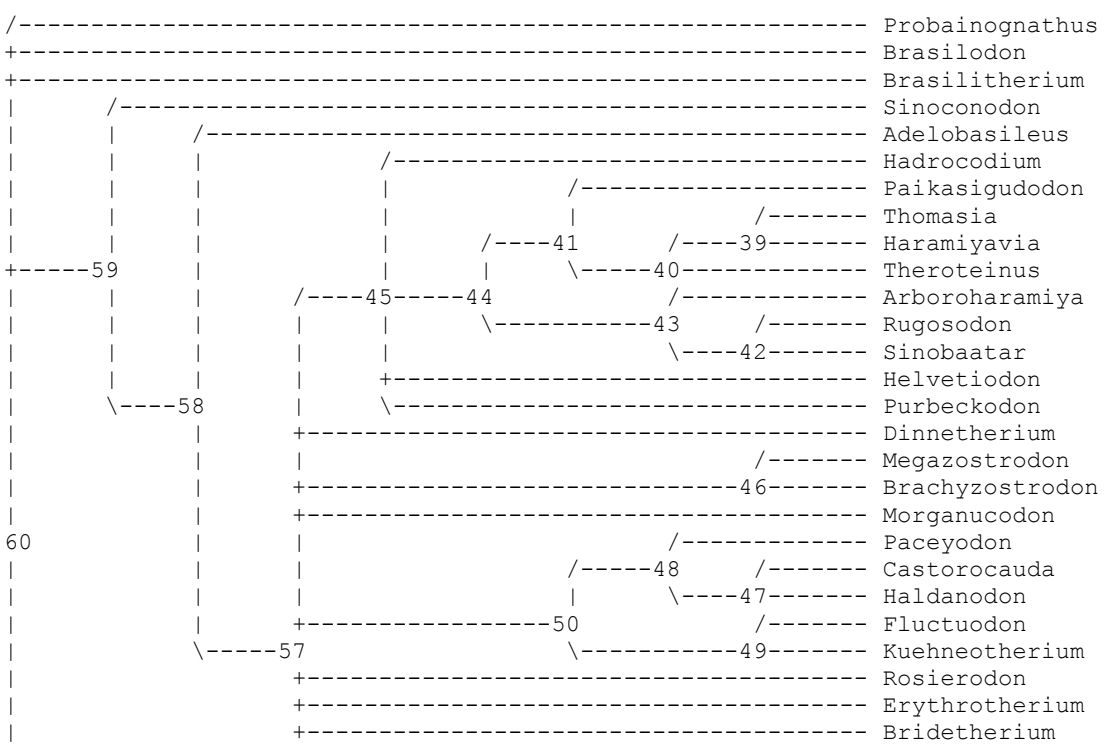
Adams consensus of 312 trees:

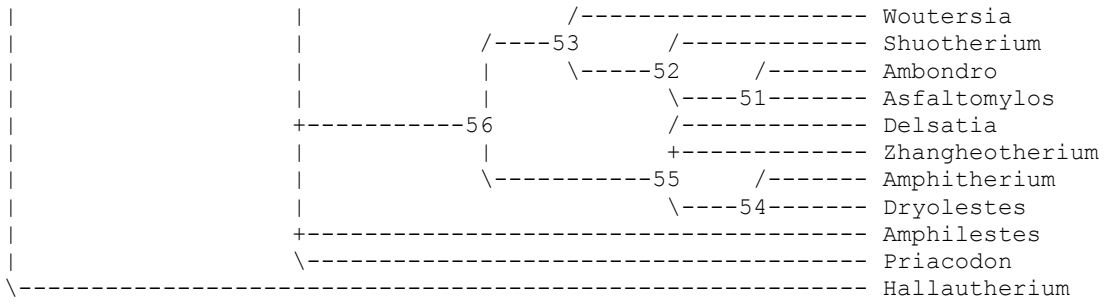




----Optimisation des caractères sur l'arbre de consensus en ACCTRAN

```
Tree length = 826
Consistency index (CI) = 0.545
Homoplasy index (HI) = 0.455
CI excluding uninformative characters = 0.483
HI excluding uninformative characters = 0.517
Retention index (RI) = 0.469
Rescaled consistency index (RC) = 0.255
f value = 9954
f-ratio = 0.2266
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```





Possible character-state assignments to internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node                123456789012345678901234567890123456789012345678901234567890123456789
-------------------------------------------------------------------------------------------
39                  10000102000010000002101021110110012101210001000000000002020
                         22          1               2      1            13 1
                                                     3                   3
40                  10000102000010000002101021110110012101210001000000001002021
                         2           1               2      1            13 1
                                                     3                   3
41                  10000102000000000002?01021?1?110010?012100010000000001002021
                         2      1    1               2      1            1  1
                                                     3                   3
42                  2?000102000000000002101021?1?110031?000110011000000001002001
                         2           1
43                  1?000102000000000002?01021?1?110031?000110010000000001002001
                         2           1                                       3  1
44                  10000102000000000002?01021?1?110010?000110010000000001002021
                         2           1               2                   3  1
                                                     3
45                  00000102000000001002001021?1?111010000011201000000001022?21
                                     1               2
                                                     3
46                  00000003000000000?111001?01?1?111010000011201000000001010121
                      5          1     2                      3
47                  00031100011100001112001131?1?111010010112201000020 0?010021
                           1     116                                          1
                           3      27
                                  3
48                  00001103001100001112001021?1?111010010112201000020 0?010021
                                  11         3                              1
49                  000111?300000405111201102 1?1?101010010112201000002001011011
                                   1               1                   1
                                                                       2
50                  00001103000000001112001021?1?111010010112201000002001010021
                                  11                                        1
                                  4
51                  00221200010007271?12111021?1?001110020100201000007001010021
                          2     1      3  2                1       5
                                  2                        3
52                  00220100010007071?12111021?1?001110020100201000007001010021
                               22               2                1       5
                                                                 3
53                  00220100000007071?12001021?1??011100201002010000070010100 21
                               22               2                1
                                                                 3
54                  00240100000007070?02001021?1?00101002001000100000700001000 1
                                1    1    2 1     2             42  1 3  4  3863
                                     3    3                     63  3        9 7
55                  00220100000007070?12001021?1??01010020010001000007000010001
                                     1     2              2  1          3
                                                          3  3          7
56                  00220100000007071?12001021?1??01010020010201000007001010021
                                           2                1
                                                            3
```

```
57               00000102000000001112001021?1?111010000011201000000001010021
                                                                         1
58               00000102000000000112001021?1??110100000112010000000010100??
                                 1       4        2                      1
59               00000102000000000112001021?1??110200000112010000000010100?0
                                         4                               1
60               00000002000000000110001021?1?011020000011201000000001010000
                                         4                               11

Possible character-state assignments to internal nodes (continued)

                                                         1111111111111111111
                 66666666667777777777888888888899999999990000000000111111111
Node             01234567890123456789012345678901234567890123456789012345678
----------------------------------------------------------------------------
39               21010210?0?0021?100110000002110000000002?01010021?00?0?0200
                               2                                        1
                               3
40               21010210?0?0021?100110000002110000000002?01010021?00?0?0200
                               2                                        1
                               3
41               2101021??0?00?1?100110000002110000000002?01010021?00?0?0200
                               2                                        1
                               3
42               2101?21?10001131112110000013211010212102224010021000?0?0200
                                                                        1
43               2101?21?1000??311?2110000013211010?02002224010021000?0?0200
                                                                        1
44               2101021??0?00?1?100110000002110000000002?01010021000?0?0200
                               2                                        1
                               3
45               1?010?11?0?0001??00110000002110000000002?01010001000?0?0000
                 2             2                                        1
                               3
46               2111001110?000100001?00000000000000000020010100010000000000
                      1                                  1 2            1
47               2001?01100?000100000110001001000000000021010100010000001000
                      1
48               2001?01100?00010000?10000?000000000000021010100010000001000
                      1               1      1
49               2001001100?00010000110000?000000000000020010000010000001000
                      1                                  1   1
50               2001001100?00010000110000?000000000000021010100010000001000
                      1
51               200110111??000100101101?00002100000?00021011001010000?11011
                      1            2  2            2      1  2           1
                                                          3
52               200110111??000100101101?00002100000?00021011001010000?11011
                      1                            2      1  2           1
                                                          3
53               200110111??000100?01101?00002?00000?00021011001010000??100?
                      1                            2      1  2           11
                                                          3
54               200100110??000111?1?111000022000112100121031201110000?00000
                      1       2                           1
55               200100110??000111?0?1010000220001?2100?21011001110000??1000
                      1                                   13 2            1
                                                           4
56               200100111??000100?01101000002000000?00021011001010000??1000
                      1                            2      1  2            1
                                                          3
57               2?11001110?000100001100000000000000000021010100010000001000
                      1
58               2??100?1?0?00000000??000000000000000000110100000100000?1000
                      1        1                        2    1
59               2?0100?1?0?0000000000000000000000000000110100000100000?1000
                      1        1
60               2?0100?100?00000000000000000000?00000001100000001000001000
```

```
                     1        1                            1   1

Possible character-state assignments to internal nodes (continued)

                 1111111111111111111111111111111111111111111111111111111111111111
                 1222222222233333333334444444445555555555666666666677777777
Node             9012345678901234567890123456789012345678901234567890123456
-------------------------------------------------------------------------------
39               000020001?00?00133410O?1112O?????111?00011??1?00??????0?000
                       2       1344 3                                       2
                       3       3
40               000020001?00?00133410O?1112O?????111?00011??1?00??????0?000
                       2       1344 3                                       2
                       3       3
41               000020001?00?00133410O?1112O?????111?00011??1?00??????0?000
                       2       1344 3                                       2
                       3       3
42               ?000212041?020014423O1?1112O?1?1111110001111110011111101000
                          2     2                                            2
                                3
43               000020041?0?00144430O?1112O?????11110011?11?00??????0?000
                       2  2    13                                           2
                       3       3
44               000020001?00?00144430O?1112O?????111?00011??1?00??????0?000
                       2       13                                           2
                       3       3
45               0000?000100000004443000110I0?????111?00011??1?00??????0?000
                                11                                           2
                                33
46               000000001000O0?01000001?01000?00111000011O?10000?000000000
                       1          1         2
47               0?0100001000O1?000000001100000?00???0000110?10000?000000000
48               0?0?000010000??000000001100000?00???0000110?10000?000000000
                                        1
49               000?000010000??000000001100000?00???0000110?10000?000000000
                                        1
50               000?000010000??000000001100000?00???0000110?10000?000000000
                                        1
51               110000001000O0?00000000l1?000??00111??0011??1?????????????0
                       1         1         12               2             1
                       2         3
52               110000001000O0?00000000l1?000??00111??0011??1?????????????0
                       1         1         12               2             1
                       2         3
53               ?100000010000O?00000000l1?000??00111??0011??1?????????????0
                       1         1         12               2             1
                       2         3
54               010000001000O0?0000000?111020??00111??0011??1?????????????0
                       1                                    2             1
                       2
55               010000001000O0?00000000111020??00111??0011??1?????????????0
                       1                                    2             1
                       2
56               010000001000O0?00000000l1?000??00111??0011??1?????????????0
                       1         1         12               2             1
                       2         3
57               000000001000O0?01000000110I000?00111000011O?10000?000000000
58               000000000000O0?01000000??01000?001??0000??0?00000?000000000
                         1       3 1                                  1
59               000000000000O0?010000000001000?001??00000?0?00000?000000000
                                 3 1                                  1
60               ??000000000O0?010000?00001000?001??00000?0?00000?000000000
                                 3 1                                  1

Possible character-state assignments to internal nodes (continued)

                 1111111111111111111112222222222222222222222222222222222222
                 7788888888889999999999000000000011111111112222222223333333
```

```
Node             89012345678901234567890123456789012345678901234567890123456
----------------------------------------------------------------------------
39               0000??01210000?100?100?0?????00?0???????00?01?01111?0231111
                  1           1                  2       1  2              2
40               0000??01210000?100?100?0?????00?0???????00?01?01111?0231111
                  1           1                  2       1  2              2
41               0000??01210000?100?100?0?????00?0???????00?01?01111?0231111
                  1           1                  2       1  2              2
42               0000111121001111001201101211100121111011111211101111?0231111
                                                                           2
43               0000??01210000110 0?100?0?????00?0???????00?01101111?0231111
                  1           1                  2       1  2              2
44               0000??01210000?100?100?0?????00?0???????00?01?01111?0231111
                  1           1                  2       1  2              2
45               0000?001210000?100?100?0?????00?0???????00?01?011110231111
                  1           1                  2       1  2              2
46               0000000121000001000100000?0000000??0100000?00110110231 1?1
                  1           1                             2
47               1200000??100000?00010?0000?0000000??0100000?10011011023 11?0
                              1                                  2         1
48               ??00000??100000?00010?0000?0000000??0100000?10011011023 11?0
                              1                                  2         1
49               ??00000??100000?00010?0000?0000000??0100000?10011011023 11?0
                              1                                  2         1
50               ??00000??100000?00010?0000?0000000??0100000?10011011023 11?0
                              1                                  2         1
51               ?0????0121??0??1???1?00??0?0???00???01000000 1?011?11?231111
                  1          2      2            1       2  2    2
52               ?0????0121??0??1???1?00??0?0???00???010000001?011?11?231111
                  1          2      2            1       2  2    2
53               ?0????0121??0??1???1?00??0?0???00???010000001?011?11?231111
                  1          2      2            1       2  2    2
54               ?0????0121??0??1???1?00??0?0???00???0100000011011?11?231111
                  1          2      2            1       2  2    2
55               ?0????0121??0??1???1?00??0?0???00???0100000011011?11?231111
                  1          2      2            1       2  2    2
56               ?0????0121??0??1???1?00??0?0???00???010000001?011?11?231111
                  1          2      2            1       2  2    2
57               00000001210000010001000000?0000000??01000000100110110231111
                  1           1                             2
58               00000001??00000?0000000000?0000000??0100000010001 0??0221100
                  1           1     1                       2
59               00000001??00000?0000000000?0000000??010000001000 10??0221100
                  1           1     1                       2
60               00000001??00000?0000000000?0000000??010000001000 00??0?00?00
                  1           1     1                       2    1     2
```

Possible character-state assignments to internal nodes (continued)

```
                 22222222222222222222222222222222222222222222222222222222222
                 33344444444445555555555666666666677777777778888888888999999
Node             78901234567890123456789012345678901234567890123456789012345
----------------------------------------------------------------------------
39               21000111010?01101?1?1?110101002121?000?1?11?11?10?20100 2?0
                 3                2                      2 2         2
40               21000111010?01101?1?1?110101002121?000?1?11?11?10?201002?0
                 3                2                      2 2         2
41               21000111010?01101?1?1?110101002121?000?1?11?11?10?201002?0
                 3                2                      2 2         2
42               21000111010?01101?1?1?110101002121?000?1?11?11?10?201002?0
                 3                2                      2 2         2
43               21000111010?01101?1?1?110101002121?000?1?11?11?10?201002?0
                 3                2                      2 2         2
44               21000111010?01101?1?1?110101002121?000?1?11?11?10?201002?0
                 3                2                      2 2         2
45               21000111010?01101?1?1?110101002121?00011?11?11?10?201002?0
                 3                2                      2 2         2
46               21000111010001101011101101010021210000 11?11011110020100 2?0
```

```
                          2                       2
47              2100011110100011010l?10110101002121O??011?11011110020100200
                      2         2                 2
48              2100011110100011010l?10110101002121O??011?11011110020100200
                      2         2                 2
49              2100011110100011010l?10110101002121O??011?11011110020100200
                      2         2                 2
50              2100011110100011010l?10110101002121O??011?11011110020100200
                      2         2                 2
51              21???111101000110?1?111?1101?1?02121000?11?11011110020100200
                          2     2                 2           2  1
52              21???111101000110?1?111?1101?1?02121000?11?11011110020100200
                          2     2                 2           2  1
53              21???111101000110?1?111?1101?1?02121000?11?11011110020100200
                          2     2                 2           2  1
54              21???111101000110?1?111?1101?1?02121000?11?11011110020100200
                          2     2                 2           2  1
55              21???111101000110?1?111?1101?1?02121000?11?11011110020100200
                          2     2                 2           2  1
56              21???111101000110?1?111?1101?1?02121000?11?11011110020100200
                          2     2                 2           2  1
57              2100011110100011010111011010100212100001l?11011110020100200
                          2                       2
58              0?000111101?0001000?000010?010021?100001?011011?10020100200
                1               1     1
                2
59              0000011110l?0000000?000010?010021?100001?011011010020100200
                1               1
                2
60              00000??0?0??0?00?000000000?0000?1??00001?00?0??0?00?0?00?00
                1      1        1      1                 1
                2

Possible character-state assignments to internal nodes (continued)

                222233333333
                999900000000
Node            678901234567
------------------------------
39              ?11??1?0??12
                 2     2   3
40              ?11??1?0??12
                 2     2   3
41              ?11??1?0??12
                 2     2   3
42              ?11??1?0??12
                 2     2   3
43              ?11??1?0??12
                 2     2   3
44              ?11??1?0??12
                 2     2   3
45              ?11??1?0??12
                 2     2   3
46              011011?00?12
47              011?11?00?12
48              011?11?00?12
49              011?11?00?12
50              011?11?00?12
51              011011?00?12
52              011011?00?12
53              011011?00?12
54              011011?00?12
55              011011?00?12
56              011011?00?12
57              011011?00?12
58              01101??00??2
59              00001??00102
60              0000???00101
```

Reconstructed states for internal nodes

```
                         1111111111222222222233333333334444444444555555555
Node             1234567890123456789012345678901234567890123456789012345678
-----------------------------------------------------------------------------
39               1000022200001000000210210211011002210121000100000000332020
40               1000020200001000000210210211011002210121000100000000332021
41               1000020200001000000210210211011002010121000100000000302021
42               2100020200000000000210210211111003110001100110000000001002001
43               1100020200000000000210210211111003110001100100000000001302001
44               1000020200000000000210210101100201000110010000000001302021
45               0000010200000000100200102101011102000001120100000000001022221
46               0050000300000100011100110101011101000001130100000000001010121
47               0003110001110116111200113101011101001011220100000200001102l
48               0000110300110110111200103101011101001011220100000200001102l
49               0001111300000415111201102101010101001011220100000201101101l
50               0000110300000110111200102101011101001011220100000200101102l
51               0022122001001727121311202101000111002010320100005700101002l
52               0022022001000707101211202101000111002010320100005700101002l
53               0022022000000707101200202101000111002010320100000700101002l
54               0024110001000727000200202101000101004301003104003863001000l
55               0022010000000707001200202101000101002201000100000703001000l
56               0022010000000707101200202101000101002001020100000700101002l
57               0000010200000000111200102101011101000001120100000000101002l
58               0000010200000000111200102101011101000001120100000000101002l
59               0000010200000000011200102101011102000001120100000000101000
60               0000000200000000011000102101001102000001120100000000101000
```

Reconstructed states for internal nodes (continued)

```
                                                                 1111111111111111111
                 6666666666777777777788888888889999999999000000000001111111111
Node             0123456789012345678901234567890123456789012345678901234567890123456789
-----------------------------------------------------------------------------------------
39               2101021000100220100110000000211000000002201010021100101020l
40               2101021000100220100110000000211000000002201010021100101020l
41               2101021000100220100110000000211000000002201010021100101020l
42               2101121010001131112110000013211010212102224010021000101020l
43               2101121010001131112110000013211010102002224010021000101020l
44               2101021000000121100110000000211000000002201010021000101020l
45               1001001100000021100110000000211000000002001010001000101000l
46               2111001110000010000100000000000000000002002010001000000000l
47               2001111100000010000011000100100000000002101010001000000100l
48               2001111100000010000011000100100000000002101010001000000100l
49               2001011100000010000110000100000000000002001000001000000100l
50               2001011100000010000110000100000000000002101010001000000100l
51               2001111111000010012112110000210000220002131120101000011111l
52               2001111111000010010110110000210000220002131100101000011111l
53               2001101111000010010110110000210000220002131100101000011111l
54               2001001101000211111011100002200011210012113120111000010000l
55               2001001101000011110010100002200011210012113100111000011010l
56               2001001111000010010110100000200000210002111100101000011010l
57               2011001110000010000110000000000000000002101010001000000100l
58               2011001110000010000110000000000000000002101010001000000100l
59               2001001110000010000000000000000000000001101000001000000100l
60               2001000100000000000000000000000000000001100000001000000100l
```

Reconstructed states for internal nodes (continued)

```
                 1111111111111111111111111111111111111111111111111111111111111
                 1222222222233333333334444444445555555555666666666677777777
Node             9012345678901234567890123456789012345678901234567890123456789
-----------------------------------------------------------------------------------
39               0000202011001011334100311120111111111000111111001111110100l
40               0000202011001011334100311120111111111000111111001111110100l
41               0000202011001011334100311120111111111000111111001111110100l
```

```
42                10002120421020014423013111201111111110001111110011111101002
43                00002020421020314443003111201111111110001111110011111101002
44                00002020110010314443003111201111111110001111110011111101002
45                00002000100000314443000110101111111110001111110011111101002
46                00000010100000001100000100120000011100001101100000000000000
47                01010000100001200000000110000000000000000110110000010000000
48                01010000100001200000000110000000000000000110110000010000000
49                00010000100001200000000110000000000000000110110000010000000
50                00010000100001200000000110000000000000000110110000010000000
51                11000010100000103000000111020110011111001111211111111111111
52                11000010100000103000000111020110011111001111211111111111111
53                11000010100000103000000111020110011111001111211111111111111
54                01000010100000100000003111020110011111001111211111111111111
55                01000010100000100000000111020110011111001111211111111111111
56                01000010100000100000000111020110011111001111211111111111111
57                00000000100000001000000110100000011100001101100001000000000
58                00000000100000001000000110100000011100001101100001000000000
59                00000000000000001000000000100000011100000000000000000000000
60                00000000000000001000000000100000010000000000000000000000000

Reconstructed states for internal nodes (continued)

                  11111111111111111111122222222222222222222222222222222222
                  77888888888899999999990000000001111111111222222222233333333
Node              89012345678901234567890123456789012345678901234567890123456
--------------------------------------------------------------------------------
39                00001101210001110011001012111001211110111010110111100231112
40                00001101210001110011001012111001211110111010110111100231112
41                00001101210001110011001012111001211110111010110111100231112
42                00001111210011110012011012111001211110111112110111100231112
43                00001101210001110011001012111001211110111010110111100231112
44                00001101210001110011001012111001211110111010110111100231112
45                00001001210001110011001012111001211110111010110111110231112
46                01000001210001010001000000000000000000100000000110110231101
47                12000000110000000001010000000000000000100000110012011231100
48                12000000110000000001010000000000000000100000110012011231100
49                12000000110000000001010000000000000000100000110012011231100
50                12000000110000000001010000000000000000100000110012011231100
51                10111101211122111112100110001320111101002002110121111231111
52                10111101211122111112100110001320111101002002110121111231111
53                10111101211122111112100110001320111101002002110121111231111
54                10111101211122111112100110001320111101002002110121111231111
55                10111101211122111112100110001320111101002002110121111231111
56                10111101211122111112100110001320111101002002110121111231111
57                01000001210001010001000000000000000000100000100110110231111
58                01000001210001010001000000000000000000100000100010110221100
59                01000001210001000000000000000000000000100000100010000221100
60                00000001100000000000000000000000000000100000010000000100000

Reconstructed states for internal nodes (continued)

                  22222222222222222222222222222222222222222222222222222222222
                  33344444444445555555555666666666677777777778888888888999999
Node              78901234567890123456789012345678901234567890123456789012345
--------------------------------------------------------------------------------
39                31000111101010110211011110101002121100022121311010122100210
40                31000111101010110211011110101002121100022121311010122100210
41                31000111101010110211011110101002121100022121311010122100210
42                31000111101010110211011110101002121100022121311010122100210
43                31000111101010110211011110101002121100022121311010122100210
44                31000111101010110211011110101002121100022121311010122100210
45                31000111101010110211011110101002121100012121311010122100210
46                21000111101000110101110110101002121000011111011110020100200
47                21000112101000110101010110101002121011012111011110020100210
48                21000112101000110101010110101002121011012111011110020100210
49                21000112101000110101010110101002121011012111011110020100210
50                21000112101000110101010110101002121011012111011110020100210
51                21111111101000111211111210111102121000112111011110022101212
```

```
52              211111111010001112111112101111021210001121110111110022101212
53              211111111010001112111112101111021210001121110111110022101212
54              211111111010001112111112101111021210001121110111110022101212
55              211111111010001112111112101111021210001121110111110022101212
56              211111111010001112111112101111021210001121110111110022101212
57              210001111010001101011101101010021210000121110111110020100210
58              210001111011000100010001101010021210000120110111110020100200
59              100001111011000000010000101010021110000110110110100201002000
60              000000000000000000000000000000011000000100000000000100000000
```

Reconstructed states for internal nodes (continued)

```
                222233333333
                999900000000
Node            678901234567
----------------------------
39              121101121213
40              121101121213
41              121101121213
42              121101121213
43              121101121213
44              121101121213
45              121101121213
46              011011100212
47              011111000212
48              011111000212
49              011111000212
50              011111000212
51              011011100212
52              011011100212
53              011011100212
54              011011100212
55              011011100212
56              011011100212
57              011011100212
58              011011100212
59              000010100102
60              000000000101
```

Character change lists:

Character	CI	Steps	Changes
1	0.667	1	node_45 0 ==> 1 node_44
		1	node_43 1 ==> 2 node_42
		1	node_57 0 ==> 1 Amphilestes
2	0.333	1	node_39 0 ==> 1 Haramiyavia
		1	node_44 0 --> 1 node_43
		1	node_42 1 --> 0 Sinobaatar
3	0.500	1	node_57 0 --> 5 node_46
		1	node_48 0 ==> 5 Paceyodon
		1	node_49 0 ==> 1 Kuehneotherium
		1	node_57 0 ==> 2 node_56
		1	node_53 2 ==> 1 Woutersia
		1	node_51 2 ==> 1 Ambondro
4	0.667	1	node_43 0 ==> 1 Arboroharamiya
		1	node_48 0 ==> 3 node_47
		1	node_50 0 ==> 1 node_49
		1	node_57 0 ==> 2 node_56
		1	node_51 2 ==> 3 Asfaltomylos
		1	node_55 2 ==> 4 node_54
5	0.250	1	node_46 0 ==> 1 Brachyzostrodon
		1	node_57 0 ==> 1 node_50
		1	node_52 0 ==> 1 node_51
		1	node_55 0 --> 1 node_54
6	0.333	1	node_60 0 ==> 1 node_59
		1	node_45 1 --> 2 node_44
		1	node_57 1 ==> 0 node_46

		1	node_56 1 --> 2 node_53
		1	node_52 2 --> 1 Shuotherium
		1	node_54 1 ==> 0 Dryolestes
7	0.222	1	node_45 0 ==> 1 Hadrocodium
		1	node_40 0 --> 2 node_39
		1	node_57 0 ==> 1 Dinnetherium
		1	node_50 0 --> 1 node_49
		1	node_49 1 --> 2 Kuehneotherium
		1	node_57 0 ==> 1 Rosierodon
		1	node_57 0 ==> 1 Bridetherium
		1	node_56 0 --> 2 node_53
		1	node_57 0 ==> 1 Priacodon
8	0.250	1	node_59 2 ==> 1 Sinoconodon
		1	node_45 2 ==> 1 Hadrocodium
		1	node_43 2 ==> 0 Arboroharamiya
		1	node_57 2 ==> 1 Dinnetherium
		1	node_57 2 ==> 3 node_46
		1	node_57 2 ==> 3 node_50
		1	node_48 3 --> 0 node_47
		1	node_47 0 --> 1 Castorocauda
		1	node_57 2 ==> 0 Rosierodon
		1	node_57 2 ==> 0 node_56
		1	node_51 0 ==> 3 Asfaltomylos
		1	node_57 2 ==> 1 Priacodon
9	0.667	1	node_43 0 ==> 1 Arboroharamiya
		1	node_47 0 ==> 2 Haldanodon
		1	node_53 0 ==> 2 Woutersia
10	0.333	1	node_45 0 ==> 13 Purbeckodon
		1	node_57 0 ==> 1 Dinnetherium
		1	node_48 0 ==> 1 node_47
		1	node_49 0 ==> 2 Fluctuodon
		1	node_57 0 ==> 1 Rosierodon
		1	node_57 0 ==> 1 Bridetherium
		1	node_53 0 ==> 1 node_52
		1	node_55 0 --> 1 node_54
		1	node_54 1 --> 3 Dryolestes
11	1.000	1	node_50 0 ==> 1 node_48
12	0.750	1	node_50 0 ==> 1 node_48
		1	node_47 1 ==> 2 Haldanodon
		1	node_49 0 ==> 2 Fluctuodon
		1	node_54 0 ==> 3 Dryolestes
13	0.429	1	node_44 0 --> 1 node_41
		1	node_39 1 ==> 2 Haramiyavia
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_48 0 ==> 4 Paceyodon
		1	node_52 0 --> 1 node_51
		1	node_51 1 --> 2 Asfaltomylos
		1	node_54 0 ==> 12 Dryolestes
14	0.500	1	node_57 0 --> 1 node_46
		1	node_57 0 --> 1 node_50
		1	node_47 1 --> 0 Castorocauda
		1	node_50 1 --> 4 node_49
		1	node_57 0 ==> 7 node_56
		1	node_53 7 ==> 4 Woutersia
		1	node_51 7 ==> 5 Ambondro
		1	node_54 7 ==> 45 Dryolestes
15	0.429	1	node_39 0 ==> 1 Haramiyavia
		1	node_57 0 --> 1 node_50
		1	node_48 1 --> 0 Paceyodon
		1	node_47 1 --> 3 Castorocauda
		1	node_52 0 ==> 2 node_51
		1	node_55 0 --> 2 node_54
		1	node_54 2 --> 3 Dryolestes
16	0.800	1	node_39 0 ==> 4 Haramiyavia
		1	node_48 0 --> 6 node_47
		1	node_47 6 --> 7 Haldanodon
		1	node_50 0 ==> 5 node_49
		1	node_57 0 ==> 7 node_56

17	0.300	1	node_60 0 ==> 1 Brasilitherium
		1	node_59 0 --> 1 node_58
		1	node_45 1 ==> 0 node_44
		1	node_57 1 ==> 3 Dinnetherium
		1	node_57 1 --> 0 node_46
		1	node_46 0 --> 23 Megazostrodon
		1	node_57 1 ==> 23 Rosierodon
		1	node_57 1 ==> 3 Bridetherium
		1	node_53 1 ==> 2 Woutersia
		1	node_56 1 --> 0 node_55
18	0.375	1	node_57 1 --> 0 node_45
		1	node_49 1 ==> 2 Kuehneotherium
		1	node_57 1 ==> 0 Rosierodon
		1	node_57 1 --> 0 node_56
		1	node_52 0 --> 2 node_51
		1	node_51 2 --> 3 Asfaltomylos
		1	node_57 1 ==> 0 Amphilestes
		1	node_57 1 ==> 0 Priacodon
19	0.200	1	node_60 1 ==> 0 Probainognathus
		1	node_57 1 ==> 0 node_45
		1	node_51 1 ==> 0 Asfaltomylos
		1	node_55 1 ==> 0 node_54
		1	node_57 1 ==> 0 Priacodon
20	0.375	1	node_60 0 ==> 2 node_59
		1	node_57 2 --> 1 node_46
		1	node_57 2 ==> 1 Morganucodon
		1	node_47 2 ==> 1 Castorocauda
		1	node_57 2 ==> 1 Erythrotherium
		1	node_53 2 ==> 1 Woutersia
		1	node_52 2 --> 3 node_51
		1	node_55 2 ==> 3 Delsatia
21	0.200	1	node_45 0 --> 1 node_44
		1	node_43 1 --> 0 Arboroharamiya
		1	node_57 0 ==> 1 Dinnetherium
		1	node_53 0 ==> 1 node_52
		1	node_55 0 ==> 1 Delsatia
22	0.200	1	node_60 0 ==> 1 Brasilitherium
		1	node_57 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 node_49
		1	node_53 0 ==> 1 node_52
23	1.000	1	node_57 1 --> 2 node_56
24	0.143	1	node_60 0 ==> 1 Brasilodon
		1	node_57 0 ==> 1 Dinnetherium
		1	node_57 0 --> 1 node_46
		1	node_48 0 ==> 1 node_47
		1	node_57 0 ==> 1 Bridetherium
		1	node_53 0 ==> 1 Woutersia
		1	node_57 0 ==> 1 Amphilestes
25	0.667	1	node_60 2 --> 4 Brasilitherium
		1	node_57 2 ==> 1 Dinnetherium
		1	node_57 2 ==> 0 node_46
		1	node_57 2 ==> 01 Morganucodon
		1	node_50 2 --> 3 node_48
		1	node_57 2 ==> 0 Erythrotherium
26	1.000	1	node_60 1 ==> 0 Brasilodon
27	1.000	1	node_44 0 --> 1 node_41
28	1.000	1	node_43 1 ==> 2 Arboroharamiya
		1	node_42 1 ==> 0 Sinobaatar
29	0.500	1	node_44 0 --> 1 node_43
		1	node_42 1 --> 0 Sinobaatar
30	0.167	1	node_60 0 --> 1 node_59
		1	node_45 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 0 Haldanodon
		1	node_57 1 --> 0 node_56
		1	node_53 0 --> 1 Woutersia
		1	node_55 0 --> 1 Delsatia
31	0.500	1	node_57 1 ==> 0 Dinnetherium

		1	node_50 1 --> 0 node_49
		1	node_57 1 ==> 0 node_56
		1	node_57 1 ==> 2 Priacodon
32	0.500	1	node_45 1 ==> 0 node_44
		1	node_42 0 ==> 1 Rugosodon
33	0.333	1	node_57 0 ==> 1 Dinnetherium
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_56 0 ==> 1 node_53
		1	node_55 0 ==> 2 Zhangheotherium
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
34	0.500	1	node_59 2 --> 1 node_58
		1	node_57 1 --> 2 node_45
		1	node_44 2 --> 3 node_43
		1	node_42 3 ==> 0 Sinobaatar
		1	node_57 1 ==> 3 Erythrotherium
		1	node_57 1 ==> 2 Priacodon
35	0.500	1	node_41 0 ==> 2 node_40
		1	node_39 2 ==> 1 Thomasia
		1	node_44 0 ==> 1 node_43
		1	node_42 1 ==> 2 Sinobaatar
36	0.500	1	node_45 0 --> 1 node_44
		1	node_41 1 --> 0 Paikasigudodon
37	0.600	1	node_41 0 ==> 1 Paikasigudodon
		1	node_45 0 ==> 1 Helvetiodon
		1	node_57 0 ==> 1 node_50
		1	node_57 0 ==> 2 node_56
		1	node_55 2 --> 4 node_54
38	0.750	1	node_44 0 ==> 1 node_41
		1	node_49 0 ==> 1 Kuehneotherium
		1	node_56 0 --> 2 node_55
		1	node_55 2 --> 3 node_54
39	0.500	1	node_44 0 ==> 2 node_41
		1	node_45 0 ==> 1 Helvetiodon
		1	node_57 0 ==> 1 node_50
		1	node_56 0 ==> 1 node_53
40	0.200	1	node_40 1 ==> 0 Theroteinus
		1	node_57 1 ==> 0 Dinnetherium
		1	node_46 1 ==> 0 Brachyzostrodon
		1	node_56 1 ==> 0 node_53
		1	node_55 1 ==> 0 Zhangheotherium
41	0.750	1	node_44 1 --> 0 node_41
		1	node_57 1 ==> 2 node_50
		1	node_57 1 --> 0 node_56
		1	node_56 0 --> 3 node_53
42	0.375	1	node_45 2 ==> 0 node_44
		1	node_41 0 ==> 3 Paikasigudodon
		1	node_39 0 ==> 1 Thomasia
		1	node_42 0 ==> 1 Sinobaatar
		1	node_57 2 --> 3 node_46
		1	node_57 2 ==> 1 Bridetherium
		1	node_53 2 ==> 3 Woutersia
		1	node_56 2 ==> 0 node_55
43	0.667	1	node_41 0 ==> 2 Paikasigudodon
		1	node_45 0 ==> 2 Purbeckodon
		1	node_55 0 --> 3 node_54
45	1.000	1	node_43 0 ==> 1 node_42
46	0.750	1	node_45 0 ==> 1 Purbeckodon
		1	node_57 0 ==> 1 Dinnetherium
		1	node_49 0 ==> 3 Kuehneotherium
		1	node_55 0 --> 4 node_54
47	0.500	1	node_45 0 ==> 1 Purbeckodon
		1	node_49 0 ==> 1 Fluctuodon
48	1.000	1	node_53 0 ==> 1 Woutersia
49	1.000	1	node_49 0 ==> 4 Kuehneotherium
		1	node_53 0 --> 5 node_52
		1	node_55 0 --> 3 node_54
50	0.667	1	node_45 0 ==> 1 Helvetiodon

		1	node_46 0 ==> 2 Megazostrodon
		1	node_57 0 ==> 2 node_50
		1	node_49 2 ==> 7 Kuehneotherium
		1	node_57 0 ==> 7 node_56
		1	node_55 7 --> 8 node_54
51	1.000	1	node_55 0 --> 6 node_54
52	0.800	1	node_46 0 ==> 2 Megazostrodon
		1	node_50 0 --> 1 node_49
		1	node_49 1 --> 2 Kuehneotherium
		1	node_56 0 --> 3 node_55
		1	node_55 3 --> 7 Delsatia
53	0.250	1	node_40 1 ==> 0 node_39
		1	node_57 1 ==> 0 Dinnetherium
		1	node_50 1 --> 0 node_48
		1	node_56 1 ==> 0 node_55
54	0.750	1	node_45 0 --> 3 node_44
		1	node_41 3 --> 1 Paikasigudodon
		1	node_43 3 --> 0 node_42
		1	node_53 0 ==> 2 Woutersia
55	0.600	1	node_57 1 ==> 2 node_45
		1	node_45 2 ==> 0 node_44
		1	node_41 0 --> 3 node_40
		1	node_46 1 ==> 0 Megazostrodon
		1	node_57 1 ==> 0 Morganucodon
56	1.000	1	node_57 0 ==> 2 node_45
		1	node_57 0 --> 1 node_50
57	0.333	1	node_60 0 --> 1 Brasilitherium
		1	node_57 0 --> 2 node_45
		1	node_45 2 --> 0 node_44
		1	node_57 0 --> 1 Dinnetherium
		1	node_57 0 --> 1 node_46
		1	node_57 0 --> 1 Erythrotherium
58	0.167	1	node_60 0 --> 1 Brasilodon
		1	node_60 0 --> 1 Brasilitherium
		1	node_59 0 --> 2 node_58
		1	node_41 2 ==> 1 Paikasigudodon
		1	node_44 2 ==> 0 node_43
		1	node_45 2 ==> 1 Helvetiodon
		1	node_50 2 ==> 1 node_49
		1	node_57 2 ==> 1 Erythrotherium
		1	node_53 2 ==> 1 Woutersia
		1	node_56 2 ==> 0 node_55
		1	node_55 0 ==> 1 Zhangheotherium
		1	node_57 2 ==> 1 Priacodon
59	0.250	1	node_59 0 --> 1 node_58
		1	node_40 1 ==> 0 node_39
		1	node_55 1 ==> 0 Zhangheotherium
		1	node_57 1 ==> 0 Priacodon
60	0.750	1	node_57 2 --> 1 node_45
		1	node_45 1 --> 2 node_44
		1	node_41 2 ==> 0 Paikasigudodon
		1	node_55 2 ==> 3 Delsatia
61	0.143	1	node_60 0 --> 1 Brasilodon
		1	node_60 0 --> 1 Brasilitherium
		1	node_45 0 --> 1 node_44
		1	node_57 0 --> 1 Dinnetherium
		1	node_57 0 --> 1 node_46
		1	node_57 0 --> 1 Erythrotherium
		1	node_57 0 --> 1 Bridetherium
62	0.250	1	node_59 0 --> 1 node_58
		1	node_57 1 ==> 0 node_45
		1	node_57 1 ==> 0 node_50
		1	node_57 1 ==> 0 node_56
64	0.200	1	node_40 0 ==> 1 Theroteinus
		1	node_44 0 --> 1 node_43
		1	node_45 0 ==> 1 Helvetiodon
		1	node_50 0 --> 1 node_48
		1	node_56 0 ==> 1 node_53

65	0.667	1	node_45 0 --> 2 node_44
		1	node_57 0 --> 1 node_50
		1	node_53 0 --> 1 node_52
66	0.250	1	node_60 0 --> 1 Probainognathus
		1	node_60 0 --> 1 node_59
		1	node_41 1 ==> 0 Paikasigudodon
		1	node_43 1 ==> 0 Arboroharamiya
67	0.500	1	node_45 1 --> 0 node_44
		1	node_57 1 ==> 0 Bridetherium
68	0.200	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 0 node_45
		1	node_44 0 --> 1 node_43
		1	node_57 1 ==> 0 node_50
		1	node_56 1 ==> 0 node_55
69	1.000	1	node_57 0 --> 1 node_56
70	0.500	1	node_44 0 --> 1 node_41
		1	node_39 1 --> 0 Haramiyavia
71	0.500	1	node_40 0 ==> 1 Theroteinus
		1	node_42 0 ==> 1 Rugosodon
72	1.000	1	node_44 0 --> 1 node_43
73	0.400	1	node_45 0 --> 1 node_44
		1	node_44 1 --> 2 node_41
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_57 0 ==> 1 Bridetherium
		1	node_55 0 --> 2 node_54
74	0.750	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 2 node_45
		1	node_44 2 --> 3 node_43
		1	node_55 1 ==> 2 Zhangheotherium
75	0.200	1	node_57 0 --> 1 node_45
		1	node_44 1 --> 0 node_41
		1	node_56 0 ==> 1 node_55
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
76	0.250	1	node_57 0 --> 1 node_45
		1	node_56 0 ==> 1 node_55
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
77	0.500	1	node_44 0 --> 1 node_43
		1	node_57 0 --> 1 node_56
78	0.400	1	node_44 0 ==> 2 node_43
		1	node_52 0 --> 2 node_51
		1	node_55 0 ==> 1 node_54
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
79	0.200	1	node_59 0 --> 1 node_58
		1	node_50 1 --> 0 node_48
		1	node_56 1 --> 0 node_55
		1	node_54 0 --> 1 Amphitherium
		1	node_57 1 ==> 0 Priacodon
80	0.333	1	node_59 0 --> 1 node_58
		1	node_57 1 --> 0 node_46
		1	node_57 1 ==> 0 Morganucodon
81	0.500	1	node_59 0 ==> 1 Sinoconodon
		1	node_45 0 ==> 3 Hadrocodium
		1	node_57 0 ==> 1 Morganucodon
		1	node_50 0 --> 1 node_48
		1	node_52 0 --> 2 node_51
		1	node_55 0 ==> 1 node_54
82	1.000	1	node_57 0 ==> 1 node_56
83	1.000	1	node_56 0 --> 1 node_53
84	1.000	1	node_45 0 ==> 1 Hadrocodium
85	1.000	1	node_57 0 --> 1 node_50
86	0.333	1	node_44 0 ==> 1 node_43
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
87	0.800	1	node_45 0 ==> 4 Hadrocodium
		1	node_44 0 ==> 3 node_43

		1	node_56 0 ==> 2 node_55
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
88	0.400	1	node_57 0 ==> 2 node_45
		1	node_50 0 --> 1 node_48
		1	node_57 0 ==> 2 node_56
		1	node_57 0 ==> 2 Amphilestes
		1	node_57 0 ==> 2 Priacodon
89	0.250	1	node_57 0 ==> 1 node_45
		1	node_56 0 --> 1 node_53
		1	node_54 0 ==> 1 Amphitherium
		1	node_57 0 ==> 1 Priacodon
90	1.000	1	node_57 0 ==> 1 node_45
91	1.000	1	node_60 0 --> 1 Probainognathus
92	0.200	1	node_44 0 ==> 1 node_43
		1	node_47 0 ==> 1 Haldanodon
		1	node_56 0 ==> 1 node_55
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
93	0.400	1	node_43 0 ==> 1 Arboroharamiya
		1	node_56 0 --> 1 node_55
		1	node_55 1 --> 2 Zhangheotherium
		1	node_57 0 ==> 2 Amphilestes
		1	node_57 0 ==> 2 Priacodon
94	0.333	1	node_44 0 --> 1 node_43
		1	node_43 1 --> 2 node_42
		1	node_57 0 --> 2 node_56
		1	node_52 2 --> 0 Shuotherium
		1	node_57 0 ==> 2 Amphilestes
		1	node_57 0 ==> 2 Priacodon
95	0.500	1	node_43 0 ==> 1 node_42
		1	node_57 0 --> 1 node_56
		1	node_56 1 --> 2 node_53
		1	node_57 0 ==> 1 Priacodon
96	1.000	1	node_44 0 ==> 2 node_43
97	0.333	1	node_43 0 ==> 1 node_42
		1	node_55 0 ==> 1 Zhangheotherium
		1	node_57 0 ==> 1 Priacodon
98	1.000	1	node_56 0 --> 1 node_55
99	1.000	1	node_60 1 ==> 0 Probainognathus
		1	node_59 1 --> 2 node_58
100	0.333	1	node_57 1 --> 0 node_45
		1	node_45 0 --> 2 node_44
		1	node_57 1 ==> 2 Dinnetherium
		1	node_57 1 --> 0 node_46
		1	node_50 1 --> 0 node_49
		1	node_57 1 ==> 2 Priacodon
101	0.500	1	node_44 0 ==> 2 node_43
		1	node_57 0 --> 1 node_56
		1	node_56 1 --> 3 node_53
		1	node_54 1 --> 0 Amphitherium
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
102	0.500	1	node_60 0 --> 1 node_59
		1	node_44 1 ==> 4 node_43
		1	node_57 1 ==> 2 Dinnetherium
		1	node_57 1 --> 2 node_46
		1	node_56 1 --> 3 node_55
		1	node_55 3 --> 4 Zhangheotherium
		1	node_57 1 ==> 4 Amphilestes
		1	node_57 1 ==> 4 Priacodon
103	1.000	1	node_57 0 ==> 1 node_56
104	0.250	1	node_59 0 --> 1 node_58
		1	node_45 1 ==> 2 Hadrocodium
		1	node_57 1 ==> 0 Morganucodon
		1	node_50 1 --> 0 node_49
		1	node_57 1 ==> 0 node_56
		1	node_52 0 --> 2 node_51

		1	node_55 0 --> 2 node_54
		1	node_57 1 ==> 2 Amphilestes
105	1.000	1	node_55 0 ==> 1 Zhangheotherium
106	0.667	1	node_60 0 --> 1 Probainognathus
		1	node_57 0 ==> 1 node_56
		1	node_57 0 ==> 2 Amphilestes
107	1.000	1	node_45 0 ==> 2 node_44
		1	node_56 0 ==> 1 node_55
108	1.000	1	node_60 1 ==> 0 Probainognathus
109	1.000	1	node_44 0 --> 1 node_41
110	1.000	1	node_54 0 ==> 1 Amphitherium
111	1.000	1	node_54 0 ==> 1 Amphitherium
112	1.000	1	node_57 0 --> 1 node_45
113	0.500	1	node_57 0 --> 1 node_56
		1	node_54 1 --> 0 Amphitherium
114	0.200	1	node_59 0 --> 1 Sinoconodon
		1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
		1	node_55 1 --> 0 node_54
		1	node_57 0 ==> 1 Amphilestes
115	0.333	1	node_57 1 --> 0 node_45
		1	node_57 1 ==> 0 Dinnetherium
		1	node_57 1 --> 0 node_46
		1	node_51 1 ==> 2 Ambondro
		1	node_55 1 ==> 0 node_54
		1	node_57 1 ==> 0 Priacodon
116	0.667	1	node_45 0 ==> 2 node_44
		1	node_56 0 --> 1 node_53
		1	node_51 1 --> 0 Asfaltomylos
117	0.400	1	node_57 0 --> 1 node_56
		1	node_51 1 ==> 3 Ambondro
		1	node_55 1 --> 0 node_54
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
118	1.000	1	node_56 0 --> 1 node_53
119	0.250	1	node_60 0 --> 1 Probainognathus
		1	node_43 0 --> 1 node_42
		1	node_56 0 --> 1 node_53
		1	node_57 0 ==> 1 Priacodon
120	0.333	1	node_60 0 --> 1 Probainognathus
		1	node_50 0 --> 1 node_48
		1	node_57 0 ==> 1 node_56
121	1.000	1	node_57 0 ==> 1 Priacodon
122	0.500	1	node_57 0 ==> 1 Dinnetherium
		1	node_57 0 --> 1 node_50
123	1.000	1	node_57 0 --> 2 node_45
124	1.000	1	node_43 0 ==> 1 node_42
125	0.600	1	node_45 0 --> 2 node_44
		1	node_43 2 --> 3 Arboroharamiya
		1	node_57 0 --> 1 node_46
		1	node_57 0 --> 1 node_56
		1	node_55 1 --> 2 Zhangheotherium
126	1.000	1	node_42 0 ==> 1 Rugosodon
127	0.667	1	node_59 0 --> 1 node_58
		1	node_45 1 ==> 0 Hadrocodium
		1	node_44 1 ==> 4 node_43
		1	node_57 1 ==> 0 Dinnetherium
		1	node_55 1 ==> 2 Zhangheotherium
		1	node_57 1 ==> 3 Priacodon
128	0.500	1	node_45 0 --> 1 node_44
		1	node_44 1 --> 2 node_43
		1	node_42 2 --> 1 Rugosodon
		1	node_55 0 ==> 1 Zhangheotherium
129	1.000	1	node_44 0 --> 1 node_43
130	1.000	1	node_45 0 ==> 1 Hadrocodium
131	0.667	1	node_45 0 --> 1 node_44
		1	node_44 1 --> 2 node_43
		1	node_55 0 ==> 1 Zhangheotherium

132	1.000	1	node_57 0 --> 1 node_50
133	0.375	1	node_59 0 --> 3 Sinoconodon
		1	node_57 0 --> 3 node_45
		1	node_44 3 --> 1 node_41
		1	node_43 3 --> 0 node_42
		1	node_57 0 --> 2 node_50
		1	node_57 0 --> 1 node_56
		1	node_55 1 --> 2 Zhangheotherium
		1	node_57 0 --> 1 Priacodon
134	0.300	1	node_59 0 --> 3 Sinoconodon
		1	node_57 0 --> 1 node_45
		1	node_45 1 --> 3 Hadrocodium
		1	node_43 1 --> 3 Arboroharamiya
		1	node_42 1 --> 2 Sinobaatar
		1	node_47 0 ==> 2 Haldanodon
		1	node_55 0 ==> 2 Zhangheotherium
		1	node_54 0 ==> 1 Dryolestes
		1	node_57 0 ==> 2 Amphilestes
		1	node_57 0 ==> 2 Priacodon
135	0.571	1	node_57 1 ==> 4 node_45
		1	node_44 4 --> 3 node_41
		1	node_57 1 ==> 23 Morganucodon
		1	node_57 1 ==> 0 node_50
		1	node_57 1 --> 0 node_56
		1	node_56 0 --> 3 node_53
		1	node_57 1 ==> 2 Priacodon
136	0.800	1	node_59 0 --> 1 Sinoconodon
		1	node_57 0 ==> 4 node_45
		1	node_44 4 --> 3 node_41
		1	node_57 0 --> 1 node_46
		1	node_57 0 ==> 2 Priacodon
137	0.500	1	node_59 0 ==> 2 Sinoconodon
		1	node_57 0 ==> 4 node_45
		1	node_43 4 ==> 2 node_42
		1	node_57 0 ==> 2 Priacodon
138	0.600	1	node_59 0 ==> 2 Sinoconodon
		1	node_57 0 ==> 3 node_45
		1	node_44 3 --> 1 node_41
		1	node_42 3 ==> 2 Rugosodon
		1	node_57 0 ==> 1 Priacodon
139	1.000	1	node_59 0 ==> 2 Sinoconodon
		1	node_55 0 ==> 1 Zhangheotherium
140	0.667	1	node_60 0 --> 2 Brasilodon
		1	node_60 0 --> 1 Brasilitherium
		1	node_43 0 ==> 1 node_42
141	0.333	1	node_45 0 --> 3 node_44
		1	node_42 3 --> 0 Sinobaatar
		1	node_55 0 --> 3 node_54
142	1.000	1	node_59 0 --> 1 node_58
143	0.500	1	node_59 0 --> 1 node_58
		1	node_57 1 --> 0 node_46
144	0.500	1	node_45 0 ==> 1 node_44
		1	node_57 0 --> 1 node_56
145	0.500	1	node_45 1 ==> 2 node_44
		1	node_57 1 --> 0 node_50
		1	node_57 1 --> 0 node_56
		1	node_57 1 ==> 0 Amphilestes
146	0.500	1	node_59 0 ==> 1 Sinoconodon
		1	node_57 0 --> 2 node_46
		1	node_57 0 --> 2 node_56
		1	node_57 0 ==> 1 Priacodon
147	1.000	1	node_57 0 --> 1 node_45
148	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
149	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
150	1.000	1	node_57 0 --> 1 node_45
151	1.000	1	node_57 0 --> 1 node_45

152	1.000	1	node_57 1 --> 0 node_50
153	0.500	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 0 node_50
154	0.500	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 0 node_50
155	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
156	1.000	1	node_57 0 --> 1 node_56
157	1.000	1	node_59 0 ==> 1 Sinoconodon
158	1.000	1	node_57 0 ==> 1 Morganucodon
159	1.000	1	node_59 0 --> 1 node_58
160	1.000	1	node_59 0 --> 1 node_58
161	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
162	0.500	1	node_59 0 --> 1 node_58
		1	node_57 1 --> 0 Morganucodon
163	1.000	1	node_59 0 --> 1 node_58
		1	node_57 1 --> 2 node_56
164	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
165	1.000	1	node_57 0 --> 1 node_56
166	1.000	1	node_57 0 --> 1 node_56
167	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
168	0.333	1	node_59 0 --> 1 node_58
		1	node_57 1 --> 0 node_46
		1	node_57 1 --> 0 Morganucodon
169	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
170	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
171	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
172	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
173	1.000	1	node_57 0 --> 1 node_56
174	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
175	1.000	1	node_57 0 --> 1 node_56
176	1.000	1	node_57 0 --> 1 node_56
177	1.000	1	node_57 0 --> 2 node_45
		1	node_57 0 --> 1 node_56
178	0.500	1	node_57 0 --> 1 node_50
		1	node_57 0 --> 1 node_56
179	0.500	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 0 node_45
		1	node_57 1 --> 2 node_50
		1	node_57 1 --> 0 node_56
180	1.000	1	node_57 0 --> 1 node_56
181	1.000	1	node_57 0 --> 1 node_56
182	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
183	0.500	1	node_45 0 --> 1 node_44
		1	node_57 0 --> 1 node_56
184	1.000	1	node_43 0 ==> 1 node_42
185	1.000	1	node_57 1 --> 0 node_50
186	0.500	1	node_60 1 --> 2 node_59
		1	node_57 2 --> 1 node_50
187	0.500	1	node_60 0 --> 1 node_59
		1	node_43 1 ==> 0 Arboroharamiya
188	1.000	1	node_57 0 --> 1 node_56
189	1.000	1	node_57 0 --> 1 node_56
190	1.000	1	node_43 0 ==> 1 node_42
		1	node_57 0 --> 2 node_56
191	0.500	1	node_60 0 --> 1 node_59
		1	node_43 1 --> 0 Arboroharamiya
		1	node_57 1 --> 0 node_50
		1	node_57 1 --> 2 node_56

192	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
193	0.500	1	node_59 0 --> 1 node_58
		1	node_57 1 --> 0 node_50
194	0.500	1	node_42 0 ==> 1 Sinobaatar
		1	node_57 0 --> 1 node_56
195	1.000	1	node_57 0 --> 1 node_56
196	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
197	0.667	1	node_59 0 --> 1 node_58
		1	node_43 1 ==> 2 node_42
		1	node_57 1 --> 2 node_56
198	1.000	1	node_57 0 --> 1 node_56
199	0.500	1	node_43 0 ==> 1 node_42
		1	node_57 0 --> 1 node_50
200	1.000	1	node_57 0 --> 1 node_45
201	1.000	1	node_57 0 --> 1 node_56
202	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
203	1.000	1	node_57 0 --> 2 node_45
204	1.000	1	node_57 0 --> 1 node_45
205	1.000	1	node_57 0 --> 1 node_45
206	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
207	1.000	1	node_57 0 --> 3 node_56
208	1.000	1	node_57 0 --> 2 node_56
209	1.000	1	node_57 0 --> 1 node_45
210	1.000	1	node_57 0 --> 2 node_45
		1	node_57 0 --> 1 node_56
211	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
212	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
213	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
214	1.000	1	node_57 0 --> 1 node_45
215	1.000	1	node_57 1 --> 0 node_45
216	1.000	1	node_57 0 --> 1 node_45
217	1.000	1	node_57 0 --> 1 node_45
218	1.000	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 2 node_56
219	1.000	1	node_43 0 ==> 1 node_42
220	1.000	1	node_57 0 --> 1 node_45
221	0.667	1	node_43 0 --> 2 node_42
		1	node_57 0 --> 1 node_50
		1	node_57 0 --> 2 node_56
222	1.000	1	node_57 1 --> 0 node_46
223	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
224	1.000	1	node_45 0 ==> 1 Hadrocodium
225	0.500	1	node_58 0 ==> 1 node_57
		1	node_45 1 ==> 0 Hadrocodium
226	0.500	1	node_60 0 --> 1 node_59
		1	node_45 1 ==> 2 Hadrocodium
		1	node_57 1 --> 2 node_50
		1	node_57 1 --> 2 node_56
227	0.500	1	node_57 0 ==> 1 node_45
		1	node_57 0 --> 1 node_56
228	0.500	1	node_59 0 --> 1 node_58
		1	node_45 1 ==> 0 Hadrocodium
229	0.500	1	node_59 0 --> 1 node_58
		1	node_45 1 --> 0 node_44
230	1.000	1	node_57 0 --> 1 node_56
231	1.000	1	node_60 1 --> 2 node_59
232	1.000	1	node_60 0 --> 2 node_59
		1	node_58 2 ==> 3 node_57
233	1.000	1	node_60 0 ==> 1 node_59
234	1.000	1	node_60 0 --> 1 node_59

235	0.333	1	node_58 0 ==> 1 node_57
		1	node_57 1 --> 0 node_46
		1	node_57 1 --> 0 node_50
236	0.667	1	node_58 0 ==> 1 node_57
		1	node_57 1 --> 2 node_45
		1	node_57 1 --> 0 node_50
237	0.600	1	node_60 0 --> 1 node_59
		1	node_59 1 --> 2 node_58
		1	node_57 2 --> 3 node_45
		1	node_57 2 ==> 1 Dinnetherium
		1	node_57 2 ==> 3 Priacodon
238	1.000	1	node_59 0 --> 1 node_58
239	1.000	1	node_57 0 --> 1 node_56
240	1.000	1	node_57 0 --> 1 node_56
241	1.000	1	node_57 0 --> 1 node_56
242	1.000	1	node_60 0 --> 1 node_59
243	1.000	1	node_60 0 --> 1 node_59
244	1.000	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 2 node_50
245	1.000	1	node_60 0 --> 1 node_59
246	1.000	1	node_57 0 ==> 2 Priacodon
247	1.000	1	node_60 0 --> 1 node_59
248	0.250	1	node_60 0 --> 1 Brasilitherium
		1	node_60 0 --> 1 node_59
		1	node_58 1 --> 0 node_57
		1	node_57 0 ==> 1 Morganucodon
249	1.000	1	node_57 0 --> 1 node_45
250	1.000	1	node_60 0 --> 1 Probainognathus
251	1.000	1	node_58 0 ==> 1 node_57
252	1.000	1	node_59 0 ==> 1 node_58
253	0.333	1	node_60 0 --> 1 Probainognathus
		1	node_57 0 --> 1 node_56
		1	node_57 0 ==> 1 Priacodon
254	0.400	1	node_60 0 --> 1 Probainognathus
		1	node_58 0 --> 1 node_57
		1	node_57 1 --> 2 node_45
		1	node_57 1 --> 2 Dinnetherium
		1	node_57 1 --> 2 node_56
255	0.333	1	node_58 0 ==> 1 Adelobasileus
		1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
256	0.500	1	node_60 0 --> 1 node_59
		1	node_58 1 --> 0 Adelobasileus
257	0.333	1	node_58 0 ==> 1 node_57
		1	node_57 1 --> 0 node_45
		1	node_57 1 --> 0 node_50
258	1.000	1	node_58 0 ==> 1 node_57
259	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_56
260	1.000	1	node_59 0 --> 1 node_58
		1	node_57 1 --> 2 node_56
261	1.000	1	node_60 0 --> 1 node_59
		1	node_57 1 ==> 2 Dinnetherium
262	1.000	1	node_57 0 ==> 1 Priacodon
263	0.500	1	node_60 0 --> 1 node_59
		1	node_58 1 --> 0 Adelobasileus
264	1.000	1	node_57 0 --> 1 node_56
265	1.000	1	node_60 0 ==> 1 node_59
266	1.000	1	node_57 0 --> 1 node_56
267	1.000	1	node_59 0 ==> 1 Sinoconodon
268	1.000	1	node_60 1 --> 2 node_59
269	1.000	1	node_60 1 ==> 0 Probainognathus
270	1.000	1	node_60 0 --> 1 node_59
		1	node_59 1 --> 2 node_58
271	1.000	1	node_60 0 --> 1 node_59
272	1.000	1	node_57 0 --> 1 node_45
273	1.000	1	node_57 0 --> 1 node_50
274	1.000	1	node_57 0 --> 1 node_50

275	1.000	1	node_57 0 --> 1 node_56
276	1.000	1	node_45 1 --> 2 node_44
277	0.500	1	node_60 0 --> 1 node_59
		1	node_59 1 --> 2 node_58
		1	node_57 2 --> 1 node_46
		1	node_57 2 --> 1 Morganucodon
278	0.500	1	node_58 0 --> 1 node_57
		1	node_57 1 --> 0 Morganucodon
279	1.000	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 2 node_45
280	1.000	1	node_60 0 --> 1 node_59
281	1.000	1	node_57 0 --> 3 node_45
282	0.500	1	node_60 0 --> 1 node_59
		1	node_57 1 ==> 0 Priacodon
283	1.000	1	node_60 0 --> 1 node_59
284	0.500	1	node_59 0 --> 1 node_58
		1	node_57 1 --> 0 node_45
285	1.000	1	node_60 0 --> 1 node_59
286	0.500	1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
287	1.000	1	node_57 0 --> 1 node_45
288	1.000	1	node_60 1 --> 2 node_59
289	0.333	1	node_57 0 --> 2 node_45
		1	node_57 0 --> 2 node_56
		1	node_57 0 ==> 12 Priacodon
290	1.000	1	node_60 0 --> 1 node_59
291	1.000	1	node_57 0 ==> 1 Priacodon
292	1.000	1	node_57 0 --> 1 node_56
		1	node_57 0 ==> 2 Priacodon
293	1.000	1	node_60 0 --> 2 node_59
294	0.333	1	node_58 0 --> 1 node_57
		1	node_57 1 --> 0 node_46
		1	node_57 1 --> 0 Morganucodon
295	1.000	1	node_57 0 --> 2 node_56
296	1.000	1	node_57 0 --> 1 node_45
297	1.000	1	node_59 0 ==> 1 node_58
		1	node_57 1 --> 2 node_45
298	1.000	1	node_59 0 ==> 1 node_58
299	0.500	1	node_57 0 --> 1 node_45
		1	node_57 0 --> 1 node_50
300	0.500	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 0 node_45
301	1.000	1	node_59 0 --> 1 node_58
302	0.500	1	node_60 0 --> 1 node_59
		1	node_57 1 --> 0 node_50
303	1.000	1	node_57 0 --> 2 node_45
		1	node_57 0 ==> 1 Priacodon
304	1.000	1	node_57 0 --> 1 node_45
305	0.500	1	node_59 1 --> 2 node_58
		1	node_57 2 --> 1 Morganucodon
306	1.000	1	node_59 0 --> 1 node_58
307	1.000	1	node_60 1 --> 2 node_59
		1	node_57 2 --> 3 node_45

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_60 --> Probainognathus	19	1	0.200	1 ==> 0
	66	1	0.250	0 --> 1
	91	1	1.000	0 --> 1
	99	1	1.000	1 ==> 0
	106	1	0.667	0 --> 1
	108	1	1.000	1 ==> 0
	119	1	0.250	0 --> 1
	120	1	0.333	0 --> 1
	250	1	1.000	0 --> 1
	253	1	0.333	0 --> 1

	254	1	0.400	0	-->	1
	269	1	1.000	1	==>	0
node_60 --> Brasilodon	24	1	0.143	0	==>	1
	26	1	1.000	1	==>	0
	58	1	0.167	0	-->	1
	61	1	0.143	0	-->	1
	140	1	0.667	0	-->	2
node_60 --> Brasilitherium	17	1	0.300	0	==>	1
	22	1	0.200	0	==>	1
	25	1	0.667	2	-->	4
	57	1	0.333	0	-->	1
	58	1	0.167	0	-->	1
	61	1	0.143	0	-->	1
	140	1	0.667	0	-->	1
	248	1	0.250	0	-->	1
node_60 --> node_59	6	1	0.333	0	==>	1
	20	1	0.375	0	==>	2
	30	1	0.167	0	-->	1
	66	1	0.250	0	-->	1
	68	1	0.200	0	-->	1
	74	1	0.750	0	-->	1
	102	1	0.500	0	-->	1
	153	1	0.500	0	-->	1
	154	1	0.500	0	-->	1
	179	1	0.500	0	-->	1
	186	1	0.500	1	-->	2
	187	1	0.500	0	-->	1
	191	1	0.500	0	-->	1
	226	1	0.500	0	-->	1
	231	1	1.000	1	-->	2
	232	1	1.000	0	-->	2
	233	1	1.000	0	==>	1
	234	1	1.000	0	-->	1
	237	1	0.600	0	-->	1
	242	1	1.000	0	-->	1
	243	1	1.000	0	-->	1
	244	1	1.000	0	-->	1
	245	1	1.000	0	-->	1
	247	1	1.000	0	-->	1
	248	1	0.250	0	-->	1
	256	1	0.500	0	-->	1
	261	1	1.000	0	-->	1
	263	1	0.500	0	-->	1
	265	1	1.000	0	==>	1
	268	1	1.000	1	-->	2
	270	1	1.000	0	-->	1
	271	1	1.000	0	-->	1
	277	1	0.500	0	-->	1
	279	1	1.000	0	-->	1
	280	1	1.000	0	-->	1
	282	1	0.500	0	-->	1
	283	1	1.000	0	-->	1
	285	1	1.000	0	-->	1
	288	1	1.000	1	-->	2
	290	1	1.000	0	-->	1
	293	1	1.000	0	-->	2
	300	1	0.500	0	-->	1
	302	1	0.500	0	-->	1
	307	1	1.000	1	-->	2
node_59 --> Sinoconodon	8	1	0.250	2	==>	1
	81	1	0.500	0	==>	1
	114	1	0.200	0	-->	1
	133	1	0.375	0	-->	3
	134	1	0.300	0	-->	3
	136	1	0.800	0	-->	1
	137	1	0.500	0	==>	2
	138	1	0.600	0	==>	2
	139	1	1.000	0	==>	2

	146	1	0.500 0 ==> 1
	157	1	1.000 0 ==> 1
	267	1	1.000 0 ==> 1
node_59 --> node_58	17	1	0.300 0 --> 1
	34	1	0.500 2 --> 1
	58	1	0.167 0 --> 2
	59	1	0.250 0 --> 1
	62	1	0.250 0 --> 1
	79	1	0.200 0 --> 1
	80	1	0.333 0 --> 1
	99	1	1.000 1 --> 2
	104	1	0.250 0 --> 1
	127	1	0.667 0 --> 1
	142	1	1.000 0 --> 1
	143	1	0.500 0 --> 1
	159	1	1.000 0 --> 1
	160	1	1.000 0 --> 1
	162	1	0.500 0 --> 1
	163	1	1.000 0 --> 1
	168	1	0.333 0 --> 1
	193	1	0.500 0 --> 1
	197	1	0.667 0 --> 1
	228	1	0.500 0 --> 1
	229	1	0.500 0 --> 1
	237	1	0.600 1 --> 2
	238	1	1.000 0 --> 1
	252	1	1.000 0 ==> 1
	260	1	1.000 0 --> 1
	270	1	1.000 1 --> 2
	277	1	0.500 1 --> 2
	284	1	0.500 0 --> 1
	297	1	1.000 0 ==> 1
	298	1	1.000 0 ==> 1
	301	1	1.000 0 --> 1
	305	1	0.500 1 --> 2
	306	1	1.000 0 --> 1
node_58 --> Adelobasileus	255	1	0.333 0 ==> 1
	256	1	0.500 1 --> 0
	263	1	0.500 1 --> 0
node_58 --> node_57	225	1	0.500 0 ==> 1
	232	1	1.000 2 ==> 3
	235	1	0.333 0 ==> 1
	236	1	0.667 0 ==> 1
	248	1	0.250 1 --> 0
	251	1	1.000 0 ==> 1
	254	1	0.400 0 --> 1
	257	1	0.333 0 ==> 1
	258	1	1.000 0 ==> 1
	278	1	0.500 0 --> 1
	294	1	0.333 0 --> 1
node_57 --> node_45	18	1	0.375 1 --> 0
	19	1	0.200 1 ==> 0
	34	1	0.500 1 --> 2
	55	1	0.600 1 ==> 2
	56	1	1.000 0 ==> 2
	57	1	0.333 0 --> 2
	60	1	0.750 2 --> 1
	62	1	0.250 1 ==> 0
	68	1	0.200 1 --> 0
	74	1	0.750 1 --> 2
	75	1	0.200 0 --> 1
	76	1	0.250 0 --> 1
	88	1	0.400 0 ==> 2
	89	1	0.250 0 ==> 1
	90	1	1.000 0 ==> 1
	100	1	0.333 1 --> 0
	112	1	1.000 0 --> 1
	114	1	0.200 0 --> 1

	115	1	0.333	1 --> 0
	123	1	1.000	0 --> 2
	133	1	0.375	0 --> 3
	134	1	0.300	0 --> 1
	135	1	0.571	1 ==> 4
	136	1	0.800	0 ==> 4
	137	1	0.500	0 ==> 4
	138	1	0.600	0 ==> 3
	147	1	1.000	0 --> 1
	148	1	0.500	0 --> 1
	149	1	0.500	0 --> 1
	150	1	1.000	0 --> 1
	151	1	1.000	0 --> 1
	155	1	0.500	0 --> 1
	161	1	0.500	0 --> 1
	164	1	0.500	0 --> 1
	167	1	0.500	0 --> 1
	169	1	0.500	0 --> 1
	170	1	0.500	0 --> 1
	171	1	0.500	0 --> 1
	172	1	0.500	0 --> 1
	174	1	0.500	0 --> 1
	177	1	1.000	0 --> 2
	179	1	0.500	1 --> 0
	182	1	0.500	0 --> 1
	192	1	0.500	0 --> 1
	196	1	0.500	0 --> 1
	200	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	203	1	1.000	0 --> 2
	204	1	1.000	0 --> 1
	205	1	1.000	0 --> 1
	206	1	0.500	0 --> 1
	209	1	1.000	0 --> 1
	210	1	1.000	0 --> 2
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	214	1	1.000	0 --> 1
	215	1	1.000	1 --> 0
	216	1	1.000	0 --> 1
	217	1	1.000	0 --> 1
	218	1	1.000	0 --> 1
	220	1	1.000	0 --> 1
	223	1	0.500	0 --> 1
	227	1	0.500	0 ==> 1
	236	1	0.667	1 --> 2
	237	1	0.600	2 --> 3
	249	1	1.000	0 --> 1
	254	1	0.400	1 --> 2
	255	1	0.333	0 --> 1
	257	1	0.333	1 --> 0
	259	1	0.500	0 --> 1
	272	1	1.000	0 --> 1
	279	1	1.000	1 --> 2
	281	1	1.000	0 --> 3
	284	1	0.500	1 --> 0
	287	1	1.000	0 --> 1
	289	1	0.333	0 --> 2
	296	1	1.000	0 --> 1
	297	1	1.000	1 --> 2
	299	1	0.500	0 --> 1
	300	1	0.500	1 --> 0
	303	1	1.000	0 --> 2
	304	1	1.000	0 --> 1
	307	1	1.000	2 --> 3
node_45 --> Hadrocodium	7	1	0.222	0 ==> 1
	8	1	0.250	2 ==> 1

	30	1	0.167	1 ==> 0
	81	1	0.500	0 ==> 3
	84	1	1.000	0 ==> 1
	87	1	0.800	0 ==> 4
	104	1	0.250	1 ==> 2
	127	1	0.667	1 ==> 0
	130	1	1.000	0 ==> 1
	134	1	0.300	1 --> 3
	224	1	1.000	0 ==> 1
	225	1	0.500	1 ==> 0
	226	1	0.500	1 ==> 2
	228	1	0.500	1 ==> 0
node_45 --> node_44	1	1	0.667	0 ==> 1
	6	1	0.333	1 --> 2
	17	1	0.300	1 ==> 0
	21	1	0.200	0 --> 1
	32	1	0.500	1 ==> 0
	36	1	0.500	0 --> 1
	42	1	0.375	2 ==> 0
	54	1	0.750	0 --> 3
	55	1	0.600	2 ==> 0
	57	1	0.333	2 --> 0
	60	1	0.750	1 --> 2
	61	1	0.143	0 --> 1
	65	1	0.667	0 --> 2
	67	1	0.500	1 --> 0
	73	1	0.400	0 --> 1
	100	1	0.333	0 --> 2
	107	1	1.000	0 ==> 2
	116	1	0.667	0 ==> 2
	125	1	0.600	0 --> 2
	128	1	0.500	0 --> 1
	131	1	0.667	0 --> 1
	141	1	0.333	0 --> 3
	144	1	0.500	0 ==> 1
	145	1	0.500	1 ==> 2
	183	1	0.500	0 --> 1
	229	1	0.500	1 --> 0
	276	1	1.000	1 --> 2
node_44 --> node_41	13	1	0.429	0 --> 1
	27	1	1.000	0 --> 1
	38	1	0.750	0 ==> 1
	39	1	0.500	0 ==> 2
	41	1	0.750	1 --> 0
	70	1	0.500	0 --> 1
	73	1	0.400	1 --> 2
	75	1	0.200	1 --> 0
	109	1	1.000	0 --> 1
	133	1	0.375	3 --> 1
	135	1	0.571	4 --> 3
	136	1	0.800	4 --> 3
	138	1	0.600	3 --> 1
node_41 --> Paikasigudodon	36	1	0.500	1 --> 0
	37	1	0.600	0 ==> 1
	42	1	0.375	0 ==> 3
	43	1	0.667	0 ==> 2
	54	1	0.750	3 --> 1
	58	1	0.167	2 ==> 1
	60	1	0.750	2 ==> 0
	66	1	0.250	1 ==> 0
node_41 --> node_40	35	1	0.500	0 ==> 2
	55	1	0.600	0 --> 3
node_40 --> node_39	7	1	0.222	0 --> 2
	53	1	0.250	1 ==> 0
	59	1	0.250	1 ==> 0
node_39 --> Thomasia	35	1	0.500	2 ==> 1
	42	1	0.375	0 ==> 1
node_39 --> Haramiyavia	2	1	0.333	0 ==> 1

	13	1	0.429	1 ==> 2
	15	1	0.429	0 ==> 1
	16	1	0.800	0 ==> 4
	70	1	0.500	1 --> 0
node_40 --> Theroteinus	40	1	0.200	1 ==> 0
	64	1	0.200	0 ==> 1
	71	1	0.500	0 ==> 1
node_44 --> node_43	2	1	0.333	0 --> 1
	29	1	0.500	0 --> 1
	34	1	0.500	2 --> 3
	35	1	0.500	0 ==> 1
	58	1	0.167	2 ==> 0
	64	1	0.200	0 --> 1
	68	1	0.200	0 --> 1
	72	1	1.000	0 --> 1
	74	1	0.750	2 --> 3
	77	1	0.500	0 --> 1
	78	1	0.400	0 ==> 2
	86	1	0.333	0 ==> 1
	87	1	0.800	0 ==> 3
	92	1	0.200	0 ==> 1
	94	1	0.333	0 --> 1
	96	1	1.000	0 ==> 2
	101	1	0.500	0 ==> 2
	102	1	0.500	1 ==> 4
	127	1	0.667	1 ==> 4
	128	1	0.500	1 --> 2
	129	1	1.000	0 --> 1
	131	1	0.667	1 --> 2
node_43 --> Arboroharamiya	4	1	0.667	0 ==> 1
	8	1	0.250	2 ==> 0
	9	1	0.667	0 ==> 1
	21	1	0.200	1 --> 0
	28	1	1.000	1 ==> 2
	66	1	0.250	1 ==> 0
	93	1	0.400	0 ==> 1
	125	1	0.600	2 --> 3
	134	1	0.300	1 --> 3
	187	1	0.500	1 ==> 0
	191	1	0.500	1 --> 0
node_43 --> node_42	1	1	0.667	1 ==> 2
	45	1	1.000	0 ==> 1
	54	1	0.750	3 --> 0
	94	1	0.333	1 --> 2
	95	1	0.500	0 ==> 1
	97	1	0.333	0 ==> 1
	119	1	0.250	0 --> 1
	124	1	1.000	0 ==> 1
	133	1	0.375	3 --> 0
	137	1	0.500	4 ==> 2
	140	1	0.667	0 ==> 1
	184	1	1.000	0 ==> 1
	190	1	1.000	0 ==> 1
	197	1	0.667	1 ==> 2
	199	1	0.500	0 ==> 1
	219	1	1.000	0 ==> 1
	221	1	0.667	0 --> 2
node_42 --> Rugosodon	32	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	126	1	1.000	0 ==> 1
	128	1	0.500	2 --> 1
	138	1	0.600	3 ==> 2
node_42 --> Sinobaatar	2	1	0.333	1 --> 0
	28	1	1.000	1 ==> 0
	29	1	0.500	1 --> 0
	34	1	0.500	3 ==> 0
	35	1	0.500	1 ==> 2
	42	1	0.375	0 ==> 1

	134	1	0.300	1 --> 2
	141	1	0.333	3 --> 0
	194	1	0.500	0 ==> 1
node_45 --> Helvetiodon	37	1	0.600	0 ==> 1
	39	1	0.500	0 ==> 1
	50	1	0.667	0 ==> 1
	58	1	0.167	2 ==> 1
	64	1	0.200	0 ==> 1
node_45 --> Purbeckodon	10	1	0.333	0 ==> 13
	43	1	0.667	0 ==> 2
	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1
node_57 --> Dinnetherium	7	1	0.222	0 ==> 1
	8	1	0.250	2 ==> 1
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 3
	21	1	0.200	0 ==> 1
	22	1	0.200	0 ==> 1
	24	1	0.143	0 ==> 1
	25	1	0.667	2 ==> 1
	31	1	0.500	1 ==> 0
	33	1	0.333	0 ==> 1
	40	1	0.200	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
	57	1	0.333	0 --> 1
	61	1	0.143	0 --> 1
	100	1	0.333	1 ==> 2
	102	1	0.500	1 ==> 2
	115	1	0.333	1 ==> 0
	122	1	0.500	0 ==> 1
	127	1	0.667	1 ==> 0
	237	1	0.600	2 ==> 1
	254	1	0.400	1 --> 2
	261	1	1.000	1 ==> 2
node_57 --> node_46	3	1	0.500	0 --> 5
	6	1	0.333	1 ==> 0
	8	1	0.250	2 ==> 3
	14	1	0.500	0 --> 1
	17	1	0.300	1 --> 0
	20	1	0.375	2 --> 1
	24	1	0.143	0 --> 1
	25	1	0.667	2 ==> 0
	42	1	0.375	2 --> 3
	57	1	0.333	0 --> 1
	61	1	0.143	0 --> 1
	80	1	0.333	1 --> 0
	100	1	0.333	1 --> 0
	102	1	0.500	1 --> 2
	115	1	0.333	1 --> 0
	125	1	0.600	0 --> 1
	136	1	0.800	0 --> 1
	143	1	0.500	1 --> 0
	146	1	0.500	0 --> 2
	168	1	0.333	1 --> 0
	222	1	1.000	1 --> 0
	235	1	0.333	1 --> 0
	277	1	0.500	2 --> 1
	294	1	0.333	1 --> 0
node_46 --> Megazostrodon	17	1	0.300	0 --> 23
	50	1	0.667	0 ==> 2
	52	1	0.800	0 ==> 2
	55	1	0.600	1 ==> 0
node_46 --> Brachyzostrodon	5	1	0.250	0 ==> 1
	13	1	0.429	0 ==> 1
	33	1	0.333	0 ==> 1
	40	1	0.200	1 ==> 0
	73	1	0.400	0 ==> 1

node_57 --> Morganucodon	20	1	0.375	2 ==> 1
	25	1	0.667	2 ==> 01
	55	1	0.600	1 ==> 0
	80	1	0.333	1 ==> 0
	81	1	0.500	0 ==> 1
	104	1	0.250	1 ==> 0
	135	1	0.571	1 ==> 23
	158	1	1.000	0 ==> 1
	162	1	0.500	1 --> 0
	168	1	0.333	1 --> 0
	248	1	0.250	0 ==> 1
	277	1	0.500	2 --> 1
	278	1	0.500	1 --> 0
	294	1	0.333	1 --> 0
	305	1	0.500	2 --> 1
node_57 --> node_50	5	1	0.250	0 ==> 1
	8	1	0.250	2 ==> 3
	14	1	0.500	0 --> 1
	15	1	0.429	0 --> 1
	37	1	0.600	0 ==> 1
	39	1	0.500	0 ==> 1
	41	1	0.750	1 ==> 2
	50	1	0.667	0 ==> 2
	56	1	1.000	0 --> 1
	62	1	0.250	1 ==> 0
	65	1	0.667	0 --> 1
	68	1	0.200	1 ==> 0
	85	1	1.000	0 --> 1
	122	1	0.500	0 --> 1
	132	1	1.000	0 --> 1
	133	1	0.375	0 --> 2
	135	1	0.571	1 ==> 0
	145	1	0.500	1 --> 0
	152	1	1.000	1 --> 0
	153	1	0.500	1 --> 0
	154	1	0.500	1 --> 0
	178	1	0.500	0 --> 1
	179	1	0.500	1 --> 2
	185	1	1.000	1 --> 0
	186	1	0.500	2 --> 1
	191	1	0.500	1 --> 0
	193	1	0.500	1 --> 0
	199	1	0.500	0 --> 1
	221	1	0.667	0 --> 1
	226	1	0.500	1 --> 2
	235	1	0.333	1 --> 0
	236	1	0.667	1 --> 0
	244	1	1.000	1 --> 2
	257	1	0.333	1 --> 0
	273	1	1.000	0 --> 1
	274	1	1.000	0 --> 1
	299	1	0.500	0 --> 1
	302	1	0.500	1 --> 0
node_50 --> node_48	11	1	1.000	0 ==> 1
	12	1	0.750	0 ==> 1
	25	1	0.667	2 --> 3
	53	1	0.250	1 --> 0
	64	1	0.200	0 --> 1
	79	1	0.200	1 --> 0
	81	1	0.500	0 --> 1
	88	1	0.400	0 --> 1
	120	1	0.333	0 --> 1
node_48 --> Paceyodon	3	1	0.500	0 ==> 5
	13	1	0.429	0 ==> 4
	15	1	0.429	1 --> 0
node_48 --> node_47	4	1	0.667	0 ==> 3
	8	1	0.250	3 --> 0
	10	1	0.333	0 ==> 1

	16	1	0.800	0 --> 6
	24	1	0.143	0 ==> 1
node_47 --> Castorocauda	8	1	0.250	0 --> 1
	14	1	0.500	1 --> 0
	15	1	0.429	1 --> 3
	20	1	0.375	2 ==> 1
	22	1	0.200	0 ==> 1
node_47 --> Haldanodon	9	1	0.667	0 ==> 2
	12	1	0.750	1 ==> 2
	16	1	0.800	6 --> 7
	30	1	0.167	1 ==> 0
	92	1	0.200	0 ==> 1
	134	1	0.300	0 ==> 2
node_50 --> node_49	4	1	0.667	0 ==> 1
	7	1	0.222	0 --> 1
	14	1	0.500	1 --> 4
	16	1	0.800	0 ==> 5
	22	1	0.200	0 ==> 1
	31	1	0.500	1 --> 0
	52	1	0.800	0 --> 1
	58	1	0.167	2 ==> 1
	100	1	0.333	1 --> 0
	104	1	0.250	1 --> 0
node_49 --> Fluctuodon	10	1	0.333	0 ==> 2
	12	1	0.750	0 ==> 2
	47	1	0.500	0 ==> 1
node_49 --> Kuehneotherium	3	1	0.500	0 ==> 1
	7	1	0.222	1 --> 2
	18	1	0.375	1 ==> 2
	38	1	0.750	0 ==> 1
	46	1	0.750	0 ==> 3
	49	1	1.000	0 ==> 4
	50	1	0.667	2 ==> 7
	52	1	0.800	1 --> 2
node_57 --> Rosierodon	7	1	0.222	0 ==> 1
	8	1	0.250	2 ==> 0
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 23
	18	1	0.375	1 ==> 0
node_57 --> Erythrotherium	20	1	0.375	2 ==> 1
	25	1	0.667	2 ==> 0
	34	1	0.500	1 ==> 3
	57	1	0.333	0 --> 1
	58	1	0.167	2 ==> 1
	61	1	0.143	0 --> 1
node_57 --> Bridetherium	7	1	0.222	0 ==> 1
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 3
	24	1	0.143	0 ==> 1
	42	1	0.375	2 ==> 1
	61	1	0.143	0 --> 1
	67	1	0.500	1 ==> 0
	73	1	0.400	0 ==> 1
node_57 --> node_56	3	1	0.500	0 ==> 2
	4	1	0.667	0 ==> 2
	8	1	0.250	2 ==> 0
	14	1	0.500	0 ==> 7
	16	1	0.800	0 ==> 7
	18	1	0.375	1 --> 0
	23	1	1.000	1 --> 2
	30	1	0.167	1 --> 0
	31	1	0.500	1 ==> 0
	37	1	0.600	0 ==> 2
	41	1	0.750	1 --> 0
	50	1	0.667	0 ==> 7
	62	1	0.250	1 ==> 0
	69	1	1.000	0 --> 1
	77	1	0.500	0 --> 1

```
82                1  1.000 0 ==> 1
88                1  0.400 0 ==> 2
94                1  0.333 0 --> 2
95                1  0.500 0 --> 1
101               1  0.500 0 --> 1
103               1  1.000 0 ==> 1
104               1  0.250 1 ==> 0
106               1  0.667 0 ==> 1
113               1  0.500 0 --> 1
114               1  0.200 0 --> 1
117               1  0.400 0 --> 1
120               1  0.333 0 ==> 1
125               1  0.600 0 --> 1
133               1  0.375 0 --> 1
135               1  0.571 1 --> 0
144               1  0.500 0 --> 1
145               1  0.500 1 --> 0
146               1  0.500 0 --> 2
148               1  0.500 0 --> 1
149               1  0.500 0 --> 1
155               1  0.500 0 --> 1
156               1  1.000 0 --> 1
161               1  0.500 0 --> 1
163               1  1.000 1 --> 2
164               1  0.500 0 --> 1
165               1  1.000 0 --> 1
166               1  1.000 0 --> 1
167               1  0.500 0 --> 1
169               1  0.500 0 --> 1
170               1  0.500 0 --> 1
171               1  0.500 0 --> 1
172               1  0.500 0 --> 1
173               1  1.000 0 --> 1
174               1  0.500 0 --> 1
175               1  1.000 0 --> 1
176               1  1.000 0 --> 1
177               1  1.000 0 --> 1
178               1  0.500 0 --> 1
179               1  0.500 1 --> 0
180               1  1.000 0 --> 1
181               1  1.000 0 --> 1
182               1  0.500 0 --> 1
183               1  0.500 0 --> 1
188               1  1.000 0 --> 1
189               1  1.000 0 --> 1
190               1  1.000 0 --> 2
191               1  0.500 1 --> 2
192               1  0.500 0 --> 1
194               1  0.500 0 --> 1
195               1  1.000 0 --> 1
196               1  0.500 0 --> 1
197               1  0.667 1 --> 2
198               1  1.000 0 --> 1
201               1  1.000 0 --> 1
202               1  0.500 0 --> 1
206               1  0.500 0 --> 1
207               1  1.000 0 --> 3
208               1  1.000 0 --> 2
210               1  1.000 0 --> 1
211               1  0.500 0 --> 1
212               1  0.500 0 --> 1
213               1  0.500 0 --> 1
218               1  1.000 0 --> 2
221               1  0.667 0 --> 2
223               1  0.500 0 --> 1
226               1  0.500 1 --> 2
227               1  0.500 0 --> 1
230               1  1.000 0 --> 1
```

	239	1	1.000	0 --> 1
	240	1	1.000	0 --> 1
	241	1	1.000	0 --> 1
	253	1	0.333	0 --> 1
	254	1	0.400	1 --> 2
	255	1	0.333	0 --> 1
	259	1	0.500	0 --> 1
	260	1	1.000	1 --> 2
	264	1	1.000	0 --> 1
	266	1	1.000	0 --> 1
	275	1	1.000	0 --> 1
	289	1	0.333	0 --> 2
	292	1	1.000	0 --> 1
	295	1	1.000	0 --> 2
node_56 --> node_53	6	1	0.333	1 --> 2
	7	1	0.222	0 --> 2
	33	1	0.333	0 ==> 1
	39	1	0.500	0 ==> 1
	40	1	0.200	1 ==> 0
	41	1	0.750	0 --> 3
	64	1	0.200	0 ==> 1
	83	1	1.000	0 --> 1
	89	1	0.250	0 --> 1
	95	1	0.500	1 --> 2
	101	1	0.500	1 --> 3
	116	1	0.667	0 --> 1
	118	1	1.000	0 --> 1
	119	1	0.250	0 --> 1
	135	1	0.571	0 --> 3
node_53 --> Woutersia	3	1	0.500	2 ==> 1
	9	1	0.667	0 ==> 2
	14	1	0.500	7 ==> 4
	17	1	0.300	1 ==> 2
	20	1	0.375	2 ==> 1
	24	1	0.143	0 ==> 1
	30	1	0.167	0 --> 1
	42	1	0.375	2 ==> 3
	48	1	1.000	0 ==> 1
	54	1	0.750	0 ==> 2
	58	1	0.167	2 ==> 1
node_53 --> node_52	10	1	0.333	0 ==> 1
	21	1	0.200	0 ==> 1
	22	1	0.200	0 ==> 1
	49	1	1.000	0 --> 5
	65	1	0.667	0 --> 1
node_52 --> Shuotherium	6	1	0.333	2 --> 1
	94	1	0.333	2 --> 0
node_52 --> node_51	5	1	0.250	0 ==> 1
	13	1	0.429	0 --> 1
	15	1	0.429	0 ==> 2
	18	1	0.375	0 --> 2
	20	1	0.375	2 --> 3
	78	1	0.400	0 --> 2
	81	1	0.500	0 --> 2
	104	1	0.250	0 --> 2
node_51 --> Ambondro	3	1	0.500	2 ==> 1
	14	1	0.500	7 ==> 5
	115	1	0.333	1 ==> 2
	117	1	0.400	1 ==> 3
node_51 --> Asfaltomylos	4	1	0.667	2 ==> 3
	8	1	0.250	0 ==> 3
	13	1	0.429	1 --> 2
	18	1	0.375	2 --> 3
	19	1	0.200	1 ==> 0
	116	1	0.667	1 --> 0
node_56 --> node_55	17	1	0.300	1 --> 0
	38	1	0.750	0 --> 2
	42	1	0.375	2 ==> 0

	52	1	0.800	0 --> 3
	53	1	0.250	1 ==> 0
	58	1	0.167	2 ==> 0
	68	1	0.200	1 ==> 0
	75	1	0.200	0 ==> 1
	76	1	0.250	0 ==> 1
	79	1	0.200	1 --> 0
	87	1	0.800	0 ==> 2
	92	1	0.200	0 ==> 1
	93	1	0.400	0 --> 1
	98	1	1.000	0 --> 1
	102	1	0.500	1 --> 3
	107	1	1.000	0 ==> 1
node_55 --> Delsatia	20	1	0.375	2 ==> 3
	21	1	0.200	0 ==> 1
	30	1	0.167	0 --> 1
	52	1	0.800	3 --> 7
	60	1	0.750	2 ==> 3
node_55 --> Zhangheotherium	33	1	0.333	0 ==> 2
	40	1	0.200	1 ==> 0
	58	1	0.167	0 ==> 1
	59	1	0.250	1 ==> 0
	74	1	0.750	1 ==> 2
	93	1	0.400	1 --> 2
	97	1	0.333	0 ==> 1
	102	1	0.500	3 --> 4
	105	1	1.000	0 ==> 1
	125	1	0.600	1 --> 2
	127	1	0.667	1 ==> 2
	128	1	0.500	0 ==> 1
	131	1	0.667	0 ==> 1
	133	1	0.375	1 --> 2
	134	1	0.300	0 ==> 2
	139	1	1.000	0 ==> 1
node_55 --> node_54	4	1	0.667	2 ==> 4
	5	1	0.250	0 --> 1
	10	1	0.333	0 --> 1
	15	1	0.429	0 --> 2
	19	1	0.200	1 ==> 0
	37	1	0.600	2 --> 4
	38	1	0.750	2 --> 3
	43	1	0.667	0 --> 3
	46	1	0.750	0 --> 4
	49	1	1.000	0 --> 3
	50	1	0.667	7 --> 8
	51	1	1.000	0 --> 6
	73	1	0.400	0 --> 2
	78	1	0.400	0 ==> 1
	81	1	0.500	0 ==> 1
	104	1	0.250	0 --> 2
	114	1	0.200	1 --> 0
	115	1	0.333	1 ==> 0
	117	1	0.400	1 --> 0
	141	1	0.333	0 --> 3
node_54 --> Amphitherium	79	1	0.200	0 --> 1
	89	1	0.250	0 ==> 1
	101	1	0.500	1 --> 0
	110	1	1.000	0 ==> 1
	111	1	1.000	0 ==> 1
	113	1	0.500	1 --> 0
node_54 --> Dryolestes	6	1	0.333	1 ==> 0
	10	1	0.333	1 --> 3
	12	1	0.750	0 ==> 3
	13	1	0.429	0 ==> 12
	14	1	0.500	7 ==> 45
	15	1	0.429	2 --> 3
	134	1	0.300	0 ==> 1
node_57 --> Amphilestes	1	1	0.667	0 ==> 1

	18	1	0.375 1 ==> 0
	24	1	0.143 0 ==> 1
	33	1	0.333 0 ==> 1
	75	1	0.200 0 ==> 1
	76	1	0.250 0 ==> 1
	78	1	0.400 0 ==> 1
	86	1	0.333 0 ==> 1
	87	1	0.800 0 ==> 1
	88	1	0.400 0 ==> 2
	92	1	0.200 0 ==> 1
	93	1	0.400 0 ==> 2
	94	1	0.333 0 ==> 2
	101	1	0.500 0 ==> 1
	102	1	0.500 1 ==> 4
	104	1	0.250 1 ==> 2
	106	1	0.667 0 ==> 2
	114	1	0.200 0 ==> 1
	117	1	0.400 0 ==> 1
	134	1	0.300 0 ==> 2
	145	1	0.500 1 ==> 0
	286	1	0.500 0 ==> 1
node_57 --> Priacodon	7	1	0.222 0 ==> 1
	8	1	0.250 2 ==> 1
	18	1	0.375 1 ==> 0
	19	1	0.200 1 ==> 0
	31	1	0.500 1 ==> 2
	33	1	0.333 0 ==> 1
	34	1	0.500 1 ==> 2
	58	1	0.167 2 ==> 1
	59	1	0.250 1 ==> 0
	75	1	0.200 0 ==> 1
	76	1	0.250 0 ==> 1
	78	1	0.400 0 ==> 1
	79	1	0.200 1 ==> 0
	86	1	0.333 0 ==> 1
	87	1	0.800 0 ==> 1
	88	1	0.400 0 ==> 2
	89	1	0.250 0 ==> 1
	92	1	0.200 0 ==> 1
	93	1	0.400 0 ==> 2
	94	1	0.333 0 ==> 2
	95	1	0.500 0 ==> 1
	97	1	0.333 0 ==> 1
	100	1	0.333 1 ==> 2
	101	1	0.500 0 ==> 1
	102	1	0.500 1 ==> 4
	115	1	0.333 1 ==> 0
	117	1	0.400 0 ==> 1
	119	1	0.250 0 ==> 1
	121	1	1.000 0 ==> 1
	127	1	0.667 1 ==> 3
	133	1	0.375 0 --> 1
	134	1	0.300 0 ==> 2
	135	1	0.571 1 ==> 2
	136	1	0.800 0 ==> 2
	137	1	0.500 0 ==> 2
	138	1	0.600 0 ==> 1
	146	1	0.500 0 ==> 1
	237	1	0.600 2 ==> 3
	246	1	1.000 0 ==> 2
	253	1	0.333 0 ==> 1
	262	1	1.000 0 ==> 1
	282	1	0.500 1 ==> 0
	286	1	0.500 0 ==> 1
	289	1	0.333 0 ==> 12
	291	1	1.000 0 ==> 1
	292	1	1.000 0 ==> 2
	303	1	1.000 0 ==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	3	6	10	0.500	0.500	0.571	0.286
4	4	6	12	0.667	0.333	0.750	0.500
5	1	4	8	0.250	0.750	0.571	0.143
6	2	6	9	0.333	0.667	0.429	0.143
7	2	9	9	0.222	0.778	0.000	0.000
8	3	12	18	0.250	0.750	0.400	0.100
9	2	3	3	0.667	0.333	0.000	0.000
10	3	9	11	0.333	0.667	0.250	0.083
11	1	1	3	1.000	0.000	1.000	1.000
12	3	4	5	0.750	0.250	0.500	0.375
13	3	7	8	0.429	0.571	0.200	0.086
14	4	8	13	0.500	0.500	0.556	0.278
15	3	7	8	0.429	0.571	0.200	0.086
16	4	5	12	0.800	0.200	0.875	0.700
17	3	10	16	0.300	0.700	0.462	0.138
18	3	8	8	0.375	0.625	0.000	0.000
19	1	5	12	0.200	0.800	0.636	0.127
20	3	8	9	0.375	0.625	0.167	0.062
21	1	5	9	0.200	0.800	0.500	0.100
22	1	5	7	0.200	0.800	0.333	0.067
23	1	1	1	1.000	0.000	0/0	0/0
24	1	7	8	0.143	0.857	0.143	0.020
25	4	6	8	0.667	0.333	0.500	0.333
26	1	1	1	1.000	0.000	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	6	11	0.167	0.833	0.500	0.083
31	2	4	5	0.500	0.500	0.333	0.167
32	1	2	4	0.500	0.500	0.667	0.333
33	2	6	7	0.333	0.667	0.200	0.067
34	3	6	8	0.500	0.500	0.400	0.200
35	2	4	6	0.500	0.500	0.500	0.250
36	1	2	3	0.500	0.500	0.500	0.250
37	3	5	9	0.600	0.400	0.667	0.400
38	3	4	5	0.750	0.250	0.500	0.375
39	2	4	8	0.500	0.500	0.667	0.333
40	1	5	6	0.200	0.800	0.200	0.040
41	3	4	6	0.750	0.250	0.667	0.500
42	3	8	12	0.375	0.625	0.444	0.167
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	3	3	3	1.000	0.000	0/0	0/0
50	4	6	8	0.667	0.333	0.500	0.333
51	1	1	1	1.000	0.000	0/0	0/0
52	4	5	5	0.800	0.200	0.000	0.000
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	5	8	0.600	0.400	0.600	0.360
56	2	2	7	1.000	0.000	1.000	1.000
57	2	6	7	0.333	0.667	0.200	0.067
58	2	12	16	0.167	0.833	0.286	0.048
59	1	4	8	0.250	0.750	0.571	0.143
60	3	4	4	0.750	0.250	0.000	0.000
61	1	7	12	0.143	0.857	0.455	0.065
62	1	4	5	0.250	0.750	0.250	0.062

63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	5	6	0.200	0.800	0.200	0.040
65	2	3	4	0.667	0.333	0.500	0.333
66	1	4	4	0.250	0.750	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	5	10	0.200	0.800	0.556	0.111
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	3	4	6	0.750	0.250	0.667	0.500
75	1	5	9	0.200	0.800	0.500	0.100
76	1	4	9	0.250	0.750	0.625	0.156
77	1	2	4	0.500	0.500	0.667	0.333
78	2	5	8	0.400	0.600	0.500	0.200
79	1	5	7	0.200	0.800	0.333	0.067
80	1	3	6	0.333	0.667	0.600	0.200
81	3	6	8	0.500	0.500	0.400	0.200
82	1	1	3	1.000	0.000	1.000	1.000
83	1	1	1	1.000	0.000	0/0	0/0
84	1	1	1	1.000	0.000	0/0	0/0
85	1	1	2	1.000	0.000	1.000	1.000
86	1	3	4	0.333	0.667	0.333	0.111
87	4	5	9	0.800	0.200	0.800	0.640
88	2	5	8	0.400	0.600	0.500	0.200
89	1	4	8	0.250	0.750	0.571	0.143
90	1	1	4	1.000	0.000	1.000	1.000
91	1	1	1	1.000	0.000	0/0	0/0
92	1	5	9	0.200	0.800	0.500	0.100
93	2	5	6	0.400	0.600	0.250	0.100
94	2	6	9	0.333	0.667	0.429	0.143
95	2	4	7	0.500	0.500	0.600	0.300
96	1	1	3	1.000	0.000	1.000	1.000
97	1	3	4	0.333	0.667	0.333	0.111
98	1	1	2	1.000	0.000	1.000	1.000
99	2	2	4	1.000	0.000	1.000	1.000
100	2	6	8	0.333	0.667	0.333	0.111
101	3	6	8	0.500	0.500	0.400	0.200
102	4	8	11	0.500	0.500	0.429	0.214
103	1	1	4	1.000	0.000	1.000	1.000
104	2	8	11	0.250	0.750	0.333	0.083
105	1	1	1	1.000	0.000	0/0	0/0
106	2	3	7	0.667	0.333	0.800	0.533
107	2	2	7	1.000	0.000	1.000	1.000
108	1	1	1	1.000	0.000	0/0	0/0
109	1	1	1	1.000	0.000	0/0	0/0
110	1	1	1	1.000	0.000	0/0	0/0
111	1	1	1	1.000	0.000	0/0	0/0
112	1	1	1	1.000	0.000	0/0	0/0
113	1	2	2	0.500	0.500	0.000	0.000
114	1	5	7	0.200	0.800	0.333	0.067
115	2	6	7	0.333	0.667	0.200	0.067
116	2	3	6	0.667	0.333	0.750	0.500
117	2	5	6	0.400	0.600	0.250	0.100
118	1	1	3	1.000	0.000	1.000	1.000
119	1	4	5	0.250	0.750	0.250	0.062
120	1	3	7	0.333	0.667	0.667	0.222
121	1	1	1	1.000	0.000	0/0	0/0
122	1	2	3	0.500	0.500	0.500	0.250
123	1	1	3	1.000	0.000	1.000	1.000
124	1	1	2	1.000	0.000	1.000	1.000
125	3	5	6	0.600	0.400	0.333	0.200
126	1	1	1	1.000	0.000	0/0	0/0
127	4	6	9	0.667	0.333	0.600	0.400
128	2	4	5	0.500	0.500	0.333	0.167
129	1	1	1	1.000	0.000	0/0	0/0
130	1	1	1	1.000	0.000	0/0	0/0

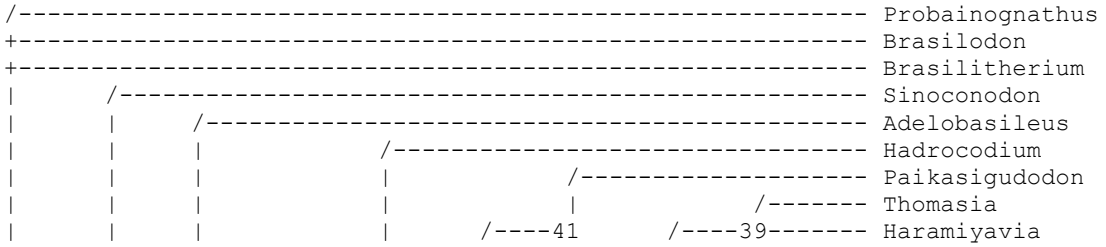
131	2	3	4	0.667	0.333	0.500	0.333
132	1	1	2	1.000	0.000	1.000	1.000
133	3	8	8	0.375	0.625	0.000	0.000
134	3	10	11	0.300	0.700	0.125	0.038
135	4	7	12	0.571	0.429	0.625	0.357
136	4	5	8	0.800	0.200	0.750	0.600
137	2	4	6	0.500	0.500	0.500	0.250
138	3	5	6	0.600	0.400	0.333	0.200
139	2	2	2	1.000	0.000	0/0	0/0
140	2	3	4	0.667	0.333	0.500	0.333
141	1	3	3	0.333	0.667	0.000	0.000
142	1	1	2	1.000	0.000	1.000	1.000
143	1	2	3	0.500	0.500	0.500	0.250
144	1	2	6	0.500	0.500	0.800	0.400
145	2	4	9	0.500	0.500	0.714	0.357
146	2	4	5	0.500	0.500	0.333	0.167
147	1	1	1	1.000	0.000	0/0	0/0
148	1	2	3	0.500	0.500	0.500	0.250
149	1	2	2	0.500	0.500	0.000	0.000
150	1	1	2	1.000	0.000	1.000	1.000
151	1	1	2	1.000	0.000	1.000	1.000
152	1	1	1	1.000	0.000	0/0	0/0
153	1	2	2	0.500	0.500	0.000	0.000
154	1	2	2	0.500	0.500	0.000	0.000
155	1	2	3	0.500	0.500	0.500	0.250
156	1	1	1	1.000	0.000	0/0	0/0
157	1	1	1	1.000	0.000	0/0	0/0
158	1	1	1	1.000	0.000	0/0	0/0
159	1	1	2	1.000	0.000	1.000	1.000
160	1	1	1	1.000	0.000	0/0	0/0
161	1	2	3	0.500	0.500	0.500	0.250
162	1	2	2	0.500	0.500	0.000	0.000
163	2	2	2	1.000	0.000	0/0	0/0
164	1	2	3	0.500	0.500	0.500	0.250
165	1	1	1	1.000	0.000	0/0	0/0
166	1	1	1	1.000	0.000	0/0	0/0
167	1	2	3	0.500	0.500	0.500	0.250
168	1	3	3	0.333	0.667	0.000	0.000
169	1	2	3	0.500	0.500	0.500	0.250
170	1	2	3	0.500	0.500	0.500	0.250
171	1	2	3	0.500	0.500	0.500	0.250
172	1	2	3	0.500	0.500	0.500	0.250
173	1	1	1	1.000	0.000	0/0	0/0
174	1	2	3	0.500	0.500	0.500	0.250
175	1	1	1	1.000	0.000	0/0	0/0
176	1	1	1	1.000	0.000	0/0	0/0
177	2	2	2	1.000	0.000	0/0	0/0
178	1	2	3	0.500	0.500	0.500	0.250
179	2	4	5	0.500	0.500	0.333	0.167
180	1	1	1	1.000	0.000	0/0	0/0
181	1	1	1	1.000	0.000	0/0	0/0
182	1	2	3	0.500	0.500	0.500	0.250
183	1	2	3	0.500	0.500	0.500	0.250
184	1	1	2	1.000	0.000	1.000	1.000
185	1	1	1	1.000	0.000	0/0	0/0
186	1	2	2	0.500	0.500	0.000	0.000
187	1	2	2	0.500	0.500	0.000	0.000
188	1	1	1	1.000	0.000	0/0	0/0
189	1	1	1	1.000	0.000	0/0	0/0
190	2	2	3	1.000	0.000	1.000	1.000
191	2	4	4	0.500	0.500	0.000	0.000
192	1	2	4	0.500	0.500	0.667	0.333
193	1	2	2	0.500	0.500	0.000	0.000
194	1	2	2	0.500	0.500	0.000	0.000
195	1	1	1	1.000	0.000	0/0	0/0
196	1	2	3	0.500	0.500	0.500	0.250
197	2	3	4	0.667	0.333	0.500	0.333
198	1	1	1	1.000	0.000	0/0	0/0

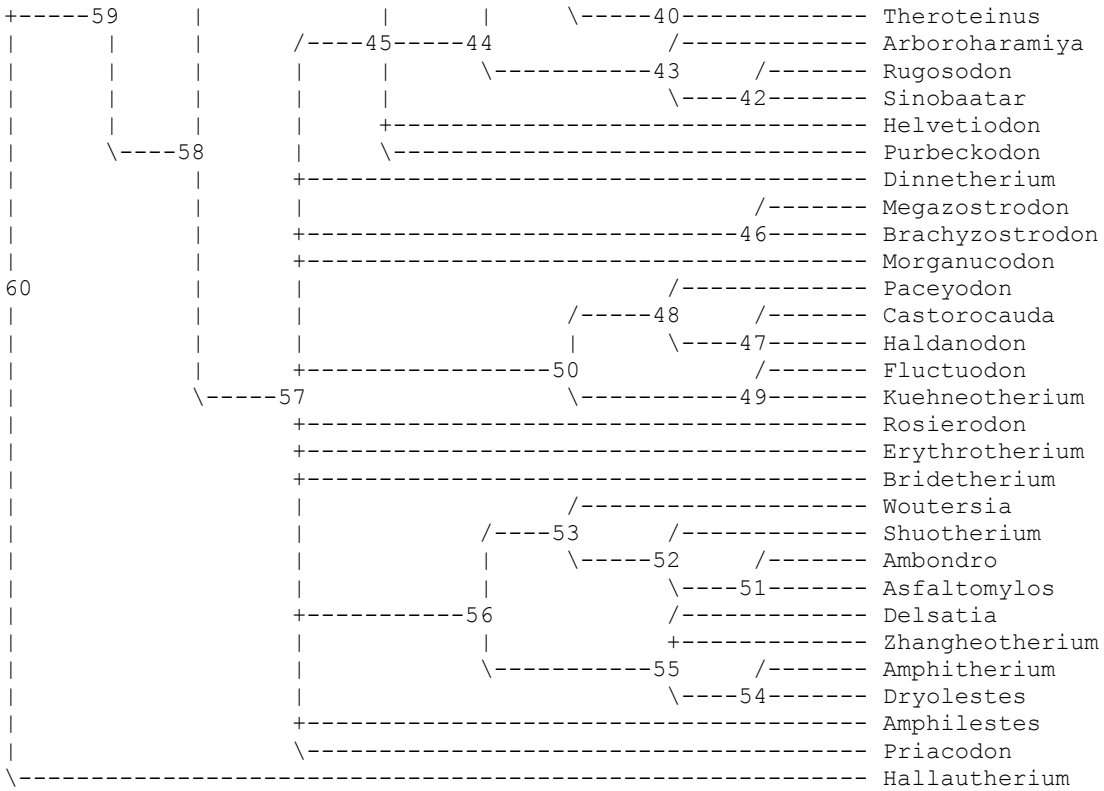
199	1	2	3	0.500	0.500	0.500	0.250
200	1	1	2	1.000	0.000	1.000	1.000
201	1	1	1	1.000	0.000	0/0	0/0
202	1	2	3	0.500	0.500	0.500	0.250
203	1	1	2	1.000	0.000	1.000	1.000
204	1	1	1	1.000	0.000	0/0	0/0
205	1	1	2	1.000	0.000	1.000	1.000
206	1	2	3	0.500	0.500	0.500	0.250
207	1	1	1	1.000	0.000	0/0	0/0
208	1	1	1	1.000	0.000	0/0	0/0
209	1	1	2	1.000	0.000	1.000	1.000
210	2	2	3	1.000	0.000	1.000	1.000
211	1	2	3	0.500	0.500	0.500	0.250
212	1	2	2	0.500	0.500	0.000	0.000
213	1	2	2	0.500	0.500	0.000	0.000
214	1	1	2	1.000	0.000	1.000	1.000
215	1	1	2	1.000	0.000	1.000	1.000
216	1	1	2	1.000	0.000	1.000	1.000
217	1	1	2	1.000	0.000	1.000	1.000
218	2	2	3	1.000	0.000	1.000	1.000
219	1	1	2	1.000	0.000	1.000	1.000
220	1	1	2	1.000	0.000	1.000	1.000
221	2	3	3	0.667	0.333	0.000	0.000
222	1	1	1	1.000	0.000	0/0	0/0
223	1	2	5	0.500	0.500	0.750	0.375
224	1	1	1	1.000	0.000	0/0	0/0
225	1	2	3	0.500	0.500	0.500	0.250
226	2	4	4	0.500	0.500	0.000	0.000
227	1	2	3	0.500	0.500	0.500	0.250
228	1	2	2	0.500	0.500	0.000	0.000
229	1	2	2	0.500	0.500	0.000	0.000
230	1	1	1	1.000	0.000	0/0	0/0
231	1	1	1	1.000	0.000	0/0	0/0
232	2	2	3	1.000	0.000	1.000	1.000
233	1	1	3	1.000	0.000	1.000	1.000
234	1	1	1	1.000	0.000	0/0	0/0
235	1	3	4	0.333	0.667	0.333	0.111
236	2	3	4	0.667	0.333	0.500	0.333
237	3	5	5	0.600	0.400	0.000	0.000
238	1	1	2	1.000	0.000	1.000	1.000
239	1	1	1	1.000	0.000	0/0	0/0
240	1	1	1	1.000	0.000	0/0	0/0
241	1	1	1	1.000	0.000	0/0	0/0
242	1	1	1	1.000	0.000	0/0	0/0
243	1	1	1	1.000	0.000	0/0	0/0
244	2	2	2	1.000	0.000	0/0	0/0
245	1	1	1	1.000	0.000	0/0	0/0
246	1	1	1	1.000	0.000	0/0	0/0
247	1	1	1	1.000	0.000	0/0	0/0
248	1	4	4	0.250	0.750	0.000	0.000
249	1	1	1	1.000	0.000	0/0	0/0
250	1	1	1	1.000	0.000	0/0	0/0
251	1	1	3	1.000	0.000	1.000	1.000
252	1	1	2	1.000	0.000	1.000	1.000
253	1	3	3	0.333	0.667	0.000	0.000
254	2	5	5	0.400	0.600	0.000	0.000
255	1	3	3	0.333	0.667	0.000	0.000
256	1	2	3	0.500	0.500	0.500	0.250
257	1	3	4	0.333	0.667	0.333	0.111
258	1	1	3	1.000	0.000	1.000	1.000
259	1	2	2	0.500	0.500	0.000	0.000
260	2	2	3	1.000	0.000	1.000	1.000
261	2	2	2	1.000	0.000	0/0	0/0
262	1	1	1	1.000	0.000	0/0	0/0
263	1	2	2	0.500	0.500	0.000	0.000
264	1	1	1	1.000	0.000	0/0	0/0
265	1	1	2	1.000	0.000	1.000	1.000
266	1	1	1	1.000	0.000	0/0	0/0

267	1	1	1	1.000	0.000	0/0	0/0
268	1	1	1	1.000	0.000	0/0	0/0
269	1	1	1	1.000	0.000	0/0	0/0
270	2	2	2	1.000	0.000	0/0	0/0
271	1	1	1	1.000	0.000	0/0	0/0
272	1	1	1	1.000	0.000	0/0	0/0
273	1	1	1	1.000	0.000	0/0	0/0
274	1	1	1	1.000	0.000	0/0	0/0
275	1	1	1	1.000	0.000	0/0	0/0
276	1	1	1	1.000	0.000	0/0	0/0
277	2	4	4	0.500	0.500	0.000	0.000
278	1	2	2	0.500	0.500	0.000	0.000
279	2	2	2	1.000	0.000	0/0	0/0
280	1	1	1	1.000	0.000	0/0	0/0
281	1	1	1	1.000	0.000	0/0	0/0
282	1	2	2	0.500	0.500	0.000	0.000
283	1	1	1	1.000	0.000	0/0	0/0
284	1	2	3	0.500	0.500	0.500	0.250
285	1	1	1	1.000	0.000	0/0	0/0
286	1	2	2	0.500	0.500	0.000	0.000
287	1	1	1	1.000	0.000	0/0	0/0
288	1	1	1	1.000	0.000	0/0	0/0
289	1	3	3	0.333	0.667	0.000	0.000
290	1	1	1	1.000	0.000	0/0	0/0
291	1	1	1	1.000	0.000	0/0	0/0
292	2	2	2	1.000	0.000	0/0	0/0
293	1	1	1	1.000	0.000	0/0	0/0
294	1	3	3	0.333	0.667	0.000	0.000
295	1	1	1	1.000	0.000	0/0	0/0
296	1	1	1	1.000	0.000	0/0	0/0
297	2	2	3	1.000	0.000	1.000	1.000
298	1	1	2	1.000	0.000	1.000	1.000
299	1	2	2	0.500	0.500	0.000	0.000
300	1	2	2	0.500	0.500	0.000	0.000
301	1	1	1	1.000	0.000	0/0	0/0
302	1	2	2	0.500	0.500	0.000	0.000
303	2	2	2	1.000	0.000	0/0	0/0
304	1	1	1	1.000	0.000	0/0	0/0
305	1	2	2	0.500	0.500	0.000	0.000
306	1	1	2	1.000	0.000	1.000	1.000
307	2	2	2	1.000	0.000	0/0	0/0

----Optimisation des caractères sur l'arbre de consensus en DELTRAN

```
Tree length = 826
Consistency index (CI) = 0.545
Homoplasy index (HI) = 0.455
CI excluding uninformative characters = 0.483
HI excluding uninformative characters = 0.517
Retention index (RI) = 0.469
Rescaled consistency index (RC) = 0.255
f value = 3341
f-ratio = 0.1387
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```





Possible character-state assignments to internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
39                1000010200001000000210102111011001210121000100000000002020
                       22          1               2      1            13 1
                                                   3                   3
40                1000010200001000000210102111011001210121000100000000001002021
                       2           1               2      1            13 1
                                                   3                   3
41                1000010200000000000?01021?1?110010?012100010000000001002021
                       2      1    1               2      1            1  1
                                                   3                   3
42                2?000102000000000002101021?1?110031?000110011000000001002001
                       2           1
43                1?000102000000000002?01021?1?110031?000110010000000001002001
                       2           1                                       3  1
44                1000010200000000000?01021?1?110010?000110010000000001002021
                       2           1               2                   3  1
                                                   3
45                0000010200000000100200102?1?111010000011201000000000102?21
                                      1            2
                                                   3
46                0000000300000000?111001?01?1?111010000011201000000001010121
                    5          1     2                      3
47                0003110001110000111200113 1?1?111010010112201000002 00?010021
                             1     116                                      1
                             3      27
                                    3
48                0000110300110000111200102 1?1?111010010112201000002 00?010021
                                   11         3                             1
49                000111?3000004051112011021?1?101010010112201000002001011011
                                    1              1                   1
                                                                       2
50                0000110300000000111200102 1?1?111010010112201000002001010021
                                   11                                       1
                                   4
```

```
51              00221200010007271?12111021?1?00111002010020100000 7001010021
                      2     1      3  2                 1       5
                            2                          3
52              00220100010007071?12111021?1?00111002010020100000 7001010021
                     22               2                 1       5
                                                        3
53              00220100000007071?12001021?1??01110020100201000007001010021
                     22               2                 1
                                                        3
54              00240100000007070?02001021?1?00101002001000100000 7000010001
                    1    1    2 1     2             42  1 3  4  3863
                         3    3                       63  3        9 7
55              00220100000007070?12001021?1??01010020010001000007000010001
                              1     2                 2  1          3
                                                      3  3          7
56              00220100000007071?12001021?1??01010020010201000007001010021
                                    2                 1
                                                      3
57              00000102000000001112001021?1?11101000001120100000000 1010021
                                                                           1
58              00000102000000000112001021?1??11010000011201000000000 10100??
                              1       4        2                           1
59              00000102000000000112001021?1??11020000011201000000000 10100?0
                                      4                                    1
60              00000002000000000110001021?1?01102000001120100000000 1010000
                                      4                                   11

Possible character-state assignments to internal nodes (continued)

                                                                  11111111111111111111
                666666666677777777778888888888999999999900000000001111111111
Node            012345678901234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------------
39              21010210?0?0021?1001100000002110000000002?01010021?00?0?0200
                              2                                              1
                              3
40              21010210?0?0021?1001100000002110000000002?01010021?00?0?0200
                              2                                              1
                              3
41              2101021??0?00?1?1001100000002110000000002?01010021?00?0?0200
                              2                                              1
                              3
42              2101?21?1000113111211000001321101021210222401002100 0?0?0200
                                                                             1
43              2101?21?1000??311?21100000132110 10?020022240100210 00?0?0200
                                                                             1
44              2101021??0?00?1?1001100000002110000000002?0101002100 0?0?0200
                              2                                              1
                              3
45              1?010?11?0?0001??001100000002110000000002?0101000100 0?0?0000
                2             2                                              1
                              3
46              21110011 10?000100001?000000000000000000020010100010000000000
                     1                                        1 2            1
47              2001?01100?000100000110001001000000000021010100010000001000
                     1
48              2001?01100?00010000?10000?000000000000021010100010000001000
                     1               1      1
49              20010011 00?000100001 10000?000000000000020010000010000001000
                     1                                        1   1
50              20010011 00?000100001 10000?000000000000021010100010000001000
                     1
51              20011011 1??000100101101?00002100000?000210110010100 00?11011
                     1            2  2            2      1  2           1
                                                          3
52              20011011 1??000100101101?00002100000?000210110010100 00?11011
                     1                               2      1  2           1
                                                             3
```

```
53              200110111??000100?01101?00002?00000?0002101100101000??100?
                     1                            2      1  2           11
                                                         3
54              200100110??000111?1?11100002200011210012103120111000?00000
                     1       2                           1
55              200100110??000111?0?10100002200012100?2101100111000??1000
                     1                                  13 2            1
                                                         4
56              200100111??000100?01101000002000000?0002101100101000??1000
                     1                            2      1  2            1
                                                         3
57              2?1100111O?0001000011000000000000000000210101000100000001000
                     1
58              2??100?1?0?00000000??000000000000000000011010000010000?1000
                     1        1                        2    1
59              2?0100?1?0?000000000000000000000000000011010000010000?1000
                     1        1
60              2?0100?100?00000000000000000000?000000011000000010000?1000
                     1        1                          1   1

Possible character-state assignments to internal nodes (continued)

                111111111111111111111111111111111111111111111111111111111111
                122222222223333333333444444444455555555556666666666777777777
Node            901234567890123456789012345678901234567890123456789012345678
------------------------------------------------------------------------------
39              000020001?00?00133410O?11120?????111?00011??1?00??????0?000
                      2       1344 3                                       2
                      3       3
40              000020001?00?00133410O?11120?????111?00011??1?00??????0?000
                      2       1344 3                                       2
                      3       3
41              000020001?00?00133410O?11120?????111?00011??1?00??????0?000
                      2       1344 3                                       2
                      3       3
42              ?00021204I?0200144230I?11120?1?1111110001111110011111101000
                         2     2                                           2
                               3
43              000020004I?0?00144430O?11120?????11110001I?11?00??????0?000
                      2  2    13                                           2
                      3       3
44              000020001?00?00144430O?11120?????111?00011??1?00??????0?000
                      2       13                                           2
                      3       3
45              0000?000100000004443000110I0?????111?00011??1?00??????0?000
                              11                                           2
                              33
46              000000001000O0?0100000O1?0100O?00111000011O?10000?000000000
                      1          1         2
47              0?0100001000O1?00000000110000O?00???0000110?10000?000000000
48              0?0?000010000??00000000110000O?00???0000110?10000?000000000
                                       1
49              000?000010000??00000000110000O?00???0000110?10000?000000000
                                       1
50              000?000010000??00000000110000O?00???0000110?10000?000000000
                                       1
51              1100000010000O?00000000I1?000??00111??0011??1?????????????0
                      1         1         12               2             1
                      2         3
52              1100000010000O?00000000I1?000??00111??0011??1?????????????0
                      1         1         12               2             1
                      2         3
53              ?100000010000O?00000000I1?000??00111??0011??1?????????????0
                      1         1         12               2             1
                      2         3
54              0100000010000O?0000000?111020??00111??0011??1?????????????0
                      1                                    2             1
                      2
```

```
55              0100000010000?000000001110?0??00111??0011??1?????????????0
                      1                                   2             1
                      2
56              0100000010000?000000001?000??00111??0011??1?????????????0
                      1         1         12              2             1
                      2         3
57              0000000010000?0100000011010??0011100001?0?10000?000000000
58              0000000000000?0100000??01000?001??0000??0?00000?000000000
                        1     3 1                         1
59              0000000000000?0100000000010??0?001??00000?0?00000?000000000
                      3 1                                 1
60              ??000000000000?010000?00001000?001??00000?0?00000?000000000
                      3 1                                 1

Possible character-state assignments to internal nodes (continued)

                111111111111111111111222222222222222222222222222222222222
                778888888888999999999900000000011111111122222222223333333
Node            890123456789012345678901234567890123456789012345678901234
-------------------------------------------------------------------------------
39              0000??0121000?100?100?0??????00?0????????00?01?01111?0231111
                 1          1                  2       1  2             2
40              0000??0121000?100?100?0??????00?0????????00?01?01111?0231111
                 1          1                  2       1  2             2
41              0000??0121000?100?100?0??????00?0????????00?01?01111?0231111
                 1          1                  2       1  2             2
42              0000111121001111001201101211100121111011111211011110231111
                                                                          2
43              0000??01210001100?100?0??????00?0????????00?01101111?0231111
                 1          1                  2       1  2             2
44              0000??0121000?100?100?0??????00?0????????00?01?01111?0231111
                 1          1                  2       1  2             2
45              0000?00121000?100?100?0??????00?0????????00?01?0111110231111
                 1          1                  2       1  2             2
46              0000000121000001000100000?0000000??0100000?00110110231?1
                 1          1                              2
47              1200000??100000?00010?0000?0000000??0100000?100110110231?0
                           1                                       2     1
48              ??00000??100000?00010?0000?0000000??0100000?100110110231?0
                           1                                       2     1
49              ??00000??100000?00010?0000?0000000??0100000?100110110231?0
                           1                                       2     1
50              ??00000??100000?00010?0000?0000000??0100000?100110110231?0
                           1                                       2     1
51              ?0????0121??0??1???1?00??0?0???00???01000000?1?011?11?231111
                 1          2      2            1       2  2    2
52              ?0????0121??0??1???1?00??0?0???00???01000000?1?011?11?231111
                 1          2      2            1       2  2    2
53              ?0????0121??0??1???1?00??0?0???00???01000000?1?011?11?231111
                 1          2      2            1       2  2    2
54              ?0????0121??0??1???1?00??0?0???00???010000001101?11?231111
                 1          2      2            1       2  2    2
55              ?0????0121??0??1???1?00??0?0???00???010000001101?11?231111
                 1          2      2            1       2  2    2
56              ?0????0121??0??1???1?00??0?0???00???01000000?1?011?11?231111
                 1          2      2            1       2  2    2
57              0000000121000001000100000?0000000??0100000010011011023111?
                 1          1                              2
58              00000001??00000?000000000?0000000??0100000100010??0221100
                 1          1     1                        2
59              00000001??00000?000000000?0000000??0100000100010??0221100
                 1          1     1                        2
60              00000001??00000?000000000?0000000??0100000100000??0?00?00
                 1          1     1                  2     1     2

Possible character-state assignments to internal nodes (continued)

                222222222222222222222222222222222222222222222222222222222
```

```
                333444444444455555555556666666666777777777788888888889999999
Node            789012345678901234567890123456789012345678901234567890123456789012345
-------------------------------------------------------------------------------------
39              210001111010?01101?1?1?1101010021?1?000?1?11?11?10?20100?2?0
                3               2                       2 2         2
40              210001111010?01101?1?1?1101010021?1?000?1?11?11?10?20100?2?0
                3               2                       2 2         2
41              210001111010?01101?1?1?1101010021?1?000?1?11?11?10?20100?2?0
                3               2                       2 2         2
42              210001111010?01101?1?1?1101010021?1?000?1?11?11?10?20100?2?0
                3               2                       2 2         2
43              210001111010?01101?1?1?1101010021?1?000?1?11?11?10?20100?2?0
                3               2                       2 2         2
44              210001111010?01101?1?1?1101010021?1?000?1?11?11?10?20100?2?0
                3               2                       2 2         2
45              210001111010?01101?1?1?1101010021?1?00011?11?11?10?20100?2?0
                3               2                       2 2         2
46              210001111010001101011101101010021210000?11?1101111002010?2?0
                                2                       2
47              210001111010001101?1?1101010021210??011?1101111002010?2?0
                       2        2                       2
48              210001111010001101?1?1101010021210??011?1101111002010?2?0
                       2        2                       2
49              210001111010001101?1?1101010021210??011?1101111002010?2?0
                       2        2                       2
50              210001111010001101?1?1101010021210??011?1101111002010?2?0
                       2        2                       2
51              21???1111010001?1?111?1101?1?0212100?11?1101111002010??
                                2    2                  2           2  1
52              21???1111010001?1?111?1101?1?0212100?11?1101111002010??
                                2    2                  2           2  1
53              21???1111010001?1?111?1101?1?0212100?11?1101111002010??
                                2    2                  2           2  1
54              21???1111010001?1?111?1101?1?0212100?11?1101111002010??
                                2    2                  2           2  1
55              21???1111010001?1?111?1101?1?0212100?11?1101111002010??
                                2    2                  2           2  1
56              21???1111010001?1?111?1101?1?0212100?11?1101111002010??
                                2    2                  2           2  1
57              210001111010001101011101101010021210000?11?1101111002010?2?0
                                2                       2
58              0?000111101?0001000?000010?010021?100001?011011?10020100200
                1               1    1
                2
59              0000011110?0000000?000010?010021?100001?011011010020100200
                1               1
                2
60              00000??0?0??0?00?000000000?0000?1??00001?00?0??0?00?0?00?00
                1      1        1      1                1
                2

Possible character-state assignments to internal nodes (continued)

                222233333333
                999900000000
Node            678901234567
------------------------------
39              ?11??1?0??12
                 2     2   3
40              ?11??1?0??12
                 2     2   3
41              ?11??1?0??12
                 2     2   3
42              ?11??1?0??12
                 2     2   3
43              ?11??1?0??12
                 2     2   3
44              ?11??1?0??12
```

```
                 2     2   3
45               ?11??1?0??12
                 2     2   3
46               011011?00?12
47               011?11?00?12
48               011?11?00?12
49               011?11?00?12
50               011?11?00?12
51               011011?00?12
52               011011?00?12
53               011011?00?12
54               011011?00?12
55               011011?00?12
56               011011?00?12
57               011011?00?12
58               01101??00??2
59               00001??00102
60               0000???00101
                           2
```

Reconstructed states for internal nodes

```
                         1111111111222222222233333333334444444444555555555
Node             1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
39               1000010200001000010210102111011001210121100100000000002020
40               1000010200001000010210102111011001210121100100000001002021
41               1000010200000000010200102101011001000121100100000001002021
42               2000010200000000010210102101011003100001100110000001002001
43               1000010200000000010200102101011003100001100100000001002001
44               1000010200000000010200102101011001000001100100000001002021
45               0000010200000000110200102101011101000001120100000001022021
46               0000000300000000111200100101011101000001120100000001010121
47               0003110301110000111200113101011101001011220100000201010021
48               0000110300110000111200102101011101001011220100000201010021
49               0001110300000405111201102101011101001011220100000201011011
50               0000110300000000111200102101011101001011220100000201010021
51               0022120001000727111211102101000111002010120100000701010021
52               0022010001000707111211102101000111002010120100000701010021
53               0022010000000707111200102101010111002010120100000701010021
54               0024010000000707110200102101000101002001100100000700010001
55               0022010000000707111200102101010101002001100100000700010001
56               0022010000000707111200102101010101002001120100000701010021
57               0000010200000000111200102101011101000001120100000001010021
58               0000010200000000011200102101001102000001120100000001010000
59               0000010200000000011200102101001102000001120100000001010000
60               0000000200000000011000102101001102000001120100000001010000
```

Reconstructed states for internal nodes (continued)

```
                                                          1111111111111111111
                 6666666666777777777788888888889999999999000000000011111111111
Node             0123456789012345678901234567890123456789012345678901234567890
-------------------------------------------------------------------------------
39               2101021010000210100110000000211000000000210101002100000012000
40               2101021010000210100110000000211000000000210101002100000012000
41               2101021110000010100110000000211000000000210101002100000012000
42               2101021110001131111211000001321101021210222401002100000012000
43               2101021110000031102110000013211010002002224010021000000120000
44               2101021110000010100110000000211000000000210101002100000012000
45               2001001110000010000110000000211000000000210101000100000010000
46               2111001110000010000110000000000000000000210101000100000010000
47               2001001100000010000011000100100000000000210101000100000010000
48               2001001100000010000110000000000000000000210101000100000010000
49               2001001100000010000110000000000000000000210101000100000010000
50               2001001100000010000110000000000000000000210101000100000010000
51               2001101110000010010110100000210000000000210110010100000011011
52               2001101110000010010110100000210000000000210110010100000011011
```

```
53              2001101110000010000110100000200000000002101100101000000100
54              2001001100000011101111100002200011210012103120111000000000
55              2001001100000011100110100002200010210002101100111000000100
56              2001001110000010000110100000200000000002101100101000000100
57              2011001110000010000110000000000000000002101010001000000100
58              2001000100000000000000000000000000000001101000001000000100
59              2001000100000000000000000000000000000001101000001000000100
60              2001000100000000000000000000000000000001100000001000000100

Reconstructed states for internal nodes (continued)

                1111111111111111111111111111111111111111111111111111111111
                1222222222233333333334444444445555555555666666666677777777
Node            9012345678901234567890123456789012345678901234567890123456
-----------------------------------------------------------------------------
39              0000200010000001444300011120000001110000110010000000000000
40              0000200010000001444300011120000001110000110010000000000000
41              0000200010000001444300011120000001110000110010000000000000
42              0000212042002001442301011120010111111000111111001111110100
43              0000200042000001444300011120000001111000110110000000000000
44              0000200010000001444300011120000001110000110010000000000000
45              0000000010000000444300011010000001110000110010000000000000
46              0000000010000000100000011010000001110000110010000000000000
47              0001000010000100000000011000000001110000110010000000000000
48              0000000010000000000000011010000001110000110010000000000000
49              0000000010000000000000011010000001110000110010000000000000
50              0000000010000000000000011010000001110000110010000000000000
51              1100000010000000100000011010000001110000110010000000000000
52              1100000010000000100000011010000001110000110010000000000000
53              0100000010000000100000011010000001110000110010000000000000
54              0100000010000000000000011102000001110000110010000000000000
55              0100000010000000000000011102000001110000110010000000000000
56              0100000010000000100000011010000001110000110010000000000000
57              0000000010000000100000011010000001110000110010000000000000
58              0000000000000000100000000010000001000000000000000000000000
59              0000000000000000100000000010000001000000000000000000000000
60              0000000000000000100000000010000001000000000000000000000000

Reconstructed states for internal nodes (continued)

                1111111111111111111112222222222222222222222222222222222222
                7788888888889999999990000000001111111111222222222233333333
Node            8901234567890123456789012345678901234567890123456789012345
-----------------------------------------------------------------------------
39              0000000121000001000100000000000000000100000010011111102311111
40              0000000121000001000100000000000000000100000010011111102311111
41              0000000121000001000100000000000000000100000010011111102311111
42              0000111121001111001201101211100121111011111211011111102311111
43              0000000121000011000100000000000000000100000011011111102311111
44              0000000121000001000100000000000000000100000010011111102311111
45              0000000121000001000100000000000000000100000010011111102311111
46              0000000121000001000100000000000000000100000010011011102311111
47              1200000121000001000100000000000000000100000010011011102311111
48              0000000121000001000100000000000000000100000010011011102311111
49              0000000121000001000100000000000000000100000010011011102311111
50              0000000121000001000100000000000000000100000010011011102311111
51              0000000121000001000100000000000000000100000010011011102311111
52              0000000121000001000100000000000000000100000010011011102311111
53              0000000121000001000100000000000000000100000010011011102311111
54              0000000121000001000100000000000000000100000011011011102311111
55              0000000121000001000100000000000000000100000011011011102311111
56              0000000121000001000100000000000000000100000010011011102311111
57              0000000121000001000100000000000000000100000010011011102311111
58              0000000110000000000000000000000000000100000010001000221100
59              0000000110000000000000000000000000000100000010001000221100
60              0000000110000000000000000000000000000100000010000000100000

Reconstructed states for internal nodes (continued)
```

```
                222222222222222222222222222222222222222222222222222222222222
                333444444444455555555556666666666777777777788888888889999999
Node            789012345678901234567890123456789012345678901234567890123456
-------------------------------------------------------------------------------
39              210001111010001101011101101010021210000120110111100201002000
40              210001111010001101011101101010021210000120110111100201002000
41              210001111010001101011101101010021210000120110111100201002000
42              210001111010001101011101101010021210000120110111100201002000
43              210001111010001101011101101010021210000120110111100201002000
44              210001111010001101011101101010021210000120110111100201002000
45              210001111010001101011101101010021210000120110111100201002000
46              210001111010001101011101101010021210000120110111100201002000
47              210001111010001101011101101010021210000120110111100201002000
48              210001111010001101011101101010021210000120110111100201002000
49              210001111010001101011101101010021210000120110111100201002000
50              210001111010001101011101101010021210000120110111100201002000
51              210001111010001101011101101010021210000120110111100201002000
52              210001111010001101011101101010021210000120110111100201002000
53              210001111010001101011101101010021210000120110111100201002000
54              210001111010001101011101101010021210000120110111100201002000
55              210001111010001101011101101010021210000120110111100201002000
56              210001111010001101011101101010021210000120110111100201002000
57              210001111010001101011101101010021210000120110111100201002000
58              000001111010000100000000100010021010000100110110100201002000
59              000001111010000000000000100010021010000100110110100201002000
60              000000000000000000000000000000011000000100000000000100000000

Reconstructed states for internal nodes (continued)

                222233333333
                999900000000
Node            678901234567
------------------------------
39              011011000112
40              011011000112
41              011011000112
42              011011000112
43              011011000112
44              011011000112
45              011011000112
46              011011000112
47              011011000112
48              011011000112
49              011011000112
50              011011000112
51              011011000112
52              011011000112
53              011011000112
54              011011000112
55              011011000112
56              011011000112
57              011011000112
58              011010000102
59              000010000102
60              000000000101

Character change lists:

 Character         CI     Steps                  Changes

 1               0.667      1           node_45 0 ==> 1 node_44
                            1           node_43 1 ==> 2 node_42
                            1           node_57 0 ==> 1 Amphilestes
 2               0.333      1           node_39 0 ==> 1 Haramiyavia
                            1           node_43 0 --> 1 Arboroharamiya
                            1           node_42 0 --> 1 Rugosodon
 3               0.500      1           node_46 0 --> 5 Brachyzostrodon
```

		1	node_48 0 ==> 5 Paceyodon
		1	node_49 0 ==> 1 Kuehneotherium
		1	node_57 0 ==> 2 node_56
		1	node_53 2 ==> 1 Woutersia
		1	node_51 2 ==> 1 Ambondro
4	0.667	1	node_43 0 ==> 1 Arboroharamiya
		1	node_48 0 ==> 3 node_47
		1	node_50 0 ==> 1 node_49
		1	node_57 0 ==> 2 node_56
		1	node_51 2 ==> 3 Asfaltomylos
		1	node_55 2 ==> 4 node_54
5	0.250	1	node_46 0 ==> 1 Brachyzostrodon
		1	node_57 0 ==> 1 node_50
		1	node_52 0 ==> 1 node_51
		1	node_54 0 --> 1 Amphitherium
6	0.333	1	node_60 0 ==> 1 node_59
		1	node_42 1 --> 2 Rugosodon
		1	node_57 1 ==> 0 node_46
		1	node_53 1 --> 2 Woutersia
		1	node_52 1 --> 2 node_51
		1	node_54 1 ==> 0 Dryolestes
7	0.222	1	node_45 0 ==> 1 Hadrocodium
		1	node_39 0 --> 2 Thomasia
		1	node_57 0 ==> 1 Dinnetherium
		1	node_49 0 --> 1 Fluctuodon
		1	node_49 0 --> 2 Kuehneotherium
		1	node_57 0 ==> 1 Rosierodon
		1	node_57 0 ==> 1 Bridetherium
		1	node_53 0 --> 2 Woutersia
		1	node_57 0 ==> 1 Priacodon
8	0.250	1	node_59 2 ==> 1 Sinoconodon
		1	node_45 2 ==> 1 Hadrocodium
		1	node_43 2 ==> 0 Arboroharamiya
		1	node_57 2 ==> 1 Dinnetherium
		1	node_57 2 ==> 3 node_46
		1	node_57 2 ==> 3 node_50
		1	node_47 3 --> 1 Castorocauda
		1	node_47 3 --> 0 Haldanodon
		1	node_57 2 ==> 0 Rosierodon
		1	node_57 2 ==> 0 node_56
		1	node_51 0 ==> 3 Asfaltomylos
		1	node_57 2 ==> 1 Priacodon
9	0.667	1	node_43 0 ==> 1 Arboroharamiya
		1	node_47 0 ==> 2 Haldanodon
		1	node_53 0 ==> 2 Woutersia
10	0.333	1	node_45 0 ==> 13 Purbeckodon
		1	node_57 0 ==> 1 Dinnetherium
		1	node_48 0 ==> 1 node_47
		1	node_49 0 ==> 2 Fluctuodon
		1	node_57 0 ==> 1 Rosierodon
		1	node_57 0 ==> 1 Bridetherium
		1	node_53 0 ==> 1 node_52
		1	node_54 0 --> 1 Amphitherium
		1	node_54 0 --> 3 Dryolestes
11	1.000	1	node_50 0 ==> 1 node_48
12	0.750	1	node_50 0 ==> 1 node_48
		1	node_47 1 ==> 2 Haldanodon
		1	node_49 0 ==> 2 Fluctuodon
		1	node_54 0 ==> 3 Dryolestes
13	0.429	1	node_41 0 --> 1 node_40
		1	node_39 1 ==> 2 Haramiyavia
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_48 0 ==> 4 Paceyodon
		1	node_51 0 --> 1 Ambondro
		1	node_51 0 --> 2 Asfaltomylos
		1	node_54 0 ==> 12 Dryolestes
14	0.500	1	node_46 0 --> 1 Brachyzostrodon
		1	node_48 0 --> 1 Paceyodon

		1	node_47 0 --> 12 Haldanodon
		1	node_50 0 --> 4 node_49
		1	node_57 0 ==> 7 node_56
		1	node_53 7 ==> 4 Woutersia
		1	node_51 7 ==> 5 Ambondro
		1	node_54 7 ==> 45 Dryolestes
15	0.429	1	node_39 0 ==> 1 Haramiyavia
		1	node_47 0 --> 3 Castorocauda
		1	node_47 0 --> 12 Haldanodon
		1	node_49 0 --> 1 Fluctuodon
		1	node_52 0 ==> 2 node_51
		1	node_54 0 --> 2 Amphitherium
		1	node_54 0 --> 3 Dryolestes
16	0.800	1	node_39 0 ==> 4 Haramiyavia
		1	node_47 0 --> 6 Castorocauda
		1	node_47 0 --> 7 Haldanodon
		1	node_50 0 ==> 5 node_49
		1	node_57 0 ==> 7 node_56
17	0.300	1	node_60 0 ==> 1 Brasilitherium
		1	node_58 0 --> 1 node_57
		1	node_45 1 ==> 0 node_44
		1	node_57 1 ==> 3 Dinnetherium
		1	node_46 1 --> 23 Megazostrodon
		1	node_46 1 --> 0 Brachyzostrodon
		1	node_57 1 ==> 23 Rosierodon
		1	node_57 1 ==> 3 Bridetherium
		1	node_53 1 ==> 2 Woutersia
		1	node_55 1 --> 0 Delsatia
18	0.375	1	node_45 1 --> 0 Purbeckodon
		1	node_49 1 ==> 2 Kuehneotherium
		1	node_57 1 ==> 0 Rosierodon
		1	node_52 1 --> 0 Shuotherium
		1	node_51 1 --> 2 Ambondro
		1	node_51 1 --> 3 Asfaltomylos
		1	node_57 1 ==> 0 Amphilestes
		1	node_57 1 ==> 0 Priacodon
19	0.200	1	node_60 1 ==> 0 Probainognathus
		1	node_57 1 ==> 0 node_45
		1	node_51 1 ==> 0 Asfaltomylos
		1	node_55 1 ==> 0 node_54
		1	node_57 1 ==> 0 Priacodon
20	0.375	1	node_60 0 ==> 2 node_59
		1	node_46 2 --> 1 Megazostrodon
		1	node_57 2 ==> 1 Morganucodon
		1	node_47 2 ==> 1 Castorocauda
		1	node_57 2 ==> 1 Erythrotherium
		1	node_53 2 ==> 1 Woutersia
		1	node_51 2 --> 3 Ambondro
		1	node_55 2 ==> 3 Delsatia
21	0.200	1	node_41 0 --> 1 node_40
		1	node_43 0 --> 1 node_42
		1	node_57 0 ==> 1 Dinnetherium
		1	node_53 0 ==> 1 node_52
		1	node_55 0 ==> 1 Delsatia
22	0.200	1	node_60 0 ==> 1 Brasilitherium
		1	node_57 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 node_49
		1	node_53 0 ==> 1 node_52
23	1.000	1	node_52 1 --> 2 Shuotherium
24	0.143	1	node_60 0 ==> 1 Brasilodon
		1	node_57 0 ==> 1 Dinnetherium
		1	node_46 0 --> 1 Megazostrodon
		1	node_48 0 ==> 1 node_47
		1	node_57 0 ==> 1 Bridetherium
		1	node_53 0 ==> 1 Woutersia
		1	node_57 0 ==> 1 Amphilestes
25	0.667	1	node_60 2 --> 4 Brasilitherium

		1	node_57 2 ==> 1 Dinnetherium
		1	node_57 2 ==> 0 node_46
		1	node_57 2 ==> 01 Morganucodon
		1	node_48 2 --> 3 node_47
		1	node_57 2 ==> 0 Erythrotherium
26	1.000	1	node_60 1 ==> 0 Brasilodon
27	1.000	1	node_41 0 --> 1 node_40
28	1.000	1	node_43 1 ==> 2 Arboroharamiya
		1	node_42 1 ==> 0 Sinobaatar
29	0.500	1	node_43 0 --> 1 Arboroharamiya
		1	node_42 0 --> 1 Rugosodon
30	0.167	1	node_58 0 --> 1 node_57
		1	node_45 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 0 Haldanodon
		1	node_53 1 --> 0 node_52
		1	node_55 1 --> 0 Zhangheotherium
		1	node_55 1 --> 0 node_54
31	0.500	1	node_57 1 ==> 0 Dinnetherium
		1	node_49 1 --> 0 Kuehneotherium
		1	node_57 1 ==> 0 node_56
		1	node_57 1 ==> 2 Priacodon
32	0.500	1	node_45 1 ==> 0 node_44
		1	node_42 0 ==> 1 Rugosodon
33	0.333	1	node_57 0 ==> 1 Dinnetherium
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_56 0 ==> 1 node_53
		1	node_55 0 ==> 2 Zhangheotherium
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
34	0.500	1	node_58 2 --> 1 node_57
		1	node_39 1 --> 2 Haramiyavia
		1	node_44 1 --> 3 node_43
		1	node_42 3 ==> 0 Sinobaatar
		1	node_57 1 ==> 3 Erythrotherium
		1	node_57 1 ==> 2 Priacodon
35	0.500	1	node_41 0 ==> 2 node_40
		1	node_39 2 ==> 1 Thomasia
		1	node_44 0 ==> 1 node_43
		1	node_42 1 ==> 2 Sinobaatar
36	0.500	1	node_41 0 --> 1 node_40
		1	node_43 0 --> 1 Arboroharamiya
37	0.600	1	node_41 0 ==> 1 Paikasigudodon
		1	node_45 0 ==> 1 Helvetiodon
		1	node_57 0 ==> 1 node_50
		1	node_57 0 ==> 2 node_56
		1	node_54 2 --> 46 Dryolestes
38	0.750	1	node_44 0 ==> 1 node_41
		1	node_49 0 ==> 1 Kuehneotherium
		1	node_55 0 --> 2 Delsatia
		1	node_54 0 --> 3 Dryolestes
39	0.500	1	node_44 0 ==> 2 node_41
		1	node_45 0 ==> 1 Helvetiodon
		1	node_57 0 ==> 1 node_50
		1	node_56 0 ==> 1 node_53
40	0.200	1	node_40 1 ==> 0 Theroteinus
		1	node_57 1 ==> 0 Dinnetherium
		1	node_46 1 ==> 0 Brachyzostrodon
		1	node_56 1 ==> 0 node_53
		1	node_55 1 ==> 0 Zhangheotherium
41	0.750	1	node_41 1 --> 0 Paikasigudodon
		1	node_57 1 ==> 2 node_50
		1	node_53 1 --> 3 Woutersia
		1	node_55 1 --> 0 Delsatia
42	0.375	1	node_45 2 ==> 0 node_44
		1	node_41 0 ==> 3 Paikasigudodon
		1	node_39 0 ==> 1 Thomasia
		1	node_42 0 ==> 1 Sinobaatar
		1	node_46 2 --> 3 Megazostrodon

		1	node_57 2 ==> 1 Bridetherium
		1	node_53 2 ==> 3 Woutersia
		1	node_56 2 ==> 0 node_55
43	0.667	1	node_41 0 ==> 2 Paikasigudodon
		1	node_45 0 ==> 2 Purbeckodon
		1	node_54 0 --> 3 Dryolestes
45	1.000	1	node_43 0 ==> 1 node_42
46	0.750	1	node_45 0 ==> 1 Purbeckodon
		1	node_57 0 ==> 1 Dinnetherium
		1	node_49 0 ==> 3 Kuehneotherium
		1	node_54 0 --> 4 Dryolestes
47	0.500	1	node_45 0 ==> 1 Purbeckodon
		1	node_49 0 ==> 1 Fluctuodon
48	1.000	1	node_53 0 ==> 1 Woutersia
49	1.000	1	node_49 0 ==> 4 Kuehneotherium
		1	node_52 0 --> 5 Shuotherium
		1	node_54 0 --> 3 Dryolestes
50	0.667	1	node_45 0 ==> 1 Helvetiodon
		1	node_46 0 ==> 2 Megazostrodon
		1	node_57 0 ==> 2 node_50
		1	node_49 2 ==> 7 Kuehneotherium
		1	node_57 0 ==> 7 node_56
		1	node_54 7 --> 89 Dryolestes
51	1.000	1	node_54 0 --> 6 Dryolestes
52	0.800	1	node_46 0 ==> 2 Megazostrodon
		1	node_49 0 --> 1 Fluctuodon
		1	node_49 0 --> 2 Kuehneotherium
		1	node_55 0 --> 7 Delsatia
		1	node_54 0 --> 3 Dryolestes
53	0.250	1	node_40 1 ==> 0 node_39
		1	node_57 1 ==> 0 Dinnetherium
		1	node_47 1 --> 0 Haldanodon
		1	node_56 1 ==> 0 node_55
54	0.750	1	node_41 0 --> 1 Paikasigudodon
		1	node_40 0 --> 3 Theroteinus
		1	node_43 0 --> 3 Arboroharamiya
		1	node_53 0 ==> 2 Woutersia
55	0.600	1	node_57 1 ==> 2 node_45
		1	node_45 2 ==> 0 node_44
		1	node_40 0 --> 3 Theroteinus
		1	node_46 1 ==> 0 Megazostrodon
		1	node_57 1 ==> 0 Morganucodon
56	1.000	1	node_57 0 ==> 2 node_45
		1	node_50 0 --> 1 node_49
57	0.333	1	node_60 0 --> 1 Brasilitherium
		1	node_45 0 --> 2 Helvetiodon
		1	node_45 0 --> 12 Purbeckodon
		1	node_57 0 --> 1 Dinnetherium
		1	node_57 0 --> 1 node_46
		1	node_57 0 --> 1 Erythrotherium
58	0.167	1	node_60 0 --> 1 Brasilodon
		1	node_60 0 --> 1 Brasilitherium
		1	node_58 0 --> 2 node_57
		1	node_41 2 ==> 1 Paikasigudodon
		1	node_44 2 ==> 0 node_43
		1	node_45 2 ==> 1 Helvetiodon
		1	node_50 2 ==> 1 node_49
		1	node_57 2 ==> 1 Erythrotherium
		1	node_53 2 ==> 1 Woutersia
		1	node_56 2 ==> 0 node_55
		1	node_55 0 ==> 1 Zhangheotherium
		1	node_57 2 ==> 1 Priacodon
59	0.250	1	node_58 0 --> 1 node_57
		1	node_40 1 ==> 0 node_39
		1	node_55 1 ==> 0 Zhangheotherium
		1	node_57 1 ==> 0 Priacodon
60	0.750	1	node_41 2 ==> 0 Paikasigudodon
		1	node_45 2 --> 1 Helvetiodon

		1	node_45 2 --> 01 Purbeckodon
		1	node_55 2 ==> 3 Delsatia
61	0.143	1	node_60 0 --> 1 Brasilodon
		1	node_60 0 --> 1 Brasilitherium
		1	node_45 0 --> 1 node_44
		1	node_57 0 --> 1 Dinnetherium
		1	node_57 0 --> 1 node_46
		1	node_57 0 --> 1 Erythrotherium
		1	node_57 0 --> 1 Bridetherium
62	0.250	1	node_58 0 --> 1 node_57
		1	node_57 1 ==> 0 node_45
		1	node_57 1 ==> 0 node_50
		1	node_57 1 ==> 0 node_56
64	0.200	1	node_40 0 ==> 1 Theroteinus
		1	node_43 0 --> 1 Arboroharamiya
		1	node_45 0 ==> 1 Helvetiodon
		1	node_47 0 --> 1 Haldanodon
		1	node_56 0 ==> 1 node_53
65	0.667	1	node_45 0 --> 2 node_44
		1	node_47 0 --> 1 Haldanodon
		1	node_52 0 --> 1 Shuotherium
66	0.250	1	node_60 0 --> 1 Probainognathus
		1	node_58 0 --> 1 node_57
		1	node_41 1 ==> 0 Paikasigudodon
		1	node_43 1 ==> 0 Arboroharamiya
67	0.500	1	node_41 1 --> 0 node_40
		1	node_57 1 ==> 0 Bridetherium
68	0.200	1	node_58 0 --> 1 node_57
		1	node_45 1 --> 0 Hadrocodium
		1	node_39 1 --> 0 Haramiyavia
		1	node_57 1 ==> 0 node_50
		1	node_56 1 ==> 0 node_55
69	1.000	1	node_53 0 --> 1 Woutersia
70	0.500	1	node_39 0 --> 1 Thomasia
		1	node_40 0 --> 1 Theroteinus
71	0.500	1	node_40 0 ==> 1 Theroteinus
		1	node_42 0 ==> 1 Rugosodon
72	1.000	1	node_43 0 --> 1 node_42
73	0.400	1	node_41 0 --> 2 node_40
		1	node_43 0 --> 1 node_42
		1	node_46 0 ==> 1 Brachyzostrodon
		1	node_57 0 ==> 1 Bridetherium
		1	node_54 0 --> 2 Dryolestes
74	0.750	1	node_58 0 --> 1 node_57
		1	node_39 1 --> 2 Haramiyavia
		1	node_44 1 --> 3 node_43
		1	node_55 1 ==> 2 Zhangheotherium
75	0.200	1	node_45 0 --> 1 Hadrocodium
		1	node_44 0 --> 1 node_43
		1	node_56 0 ==> 1 node_55
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
76	0.250	1	node_45 0 --> 1 node_44
		1	node_56 0 ==> 1 node_55
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
77	0.500	1	node_43 0 --> 1 node_42
		1	node_53 0 --> 1 node_52
78	0.400	1	node_44 0 ==> 2 node_43
		1	node_51 0 --> 2 Asfaltomylos
		1	node_55 0 ==> 1 node_54
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
79	0.200	1	node_58 0 --> 1 node_57
		1	node_48 1 --> 0 node_47
		1	node_55 1 --> 0 Zhangheotherium
		1	node_54 1 --> 0 Dryolestes
		1	node_57 1 ==> 0 Priacodon

80	0.333	1	node_58 0 --> 1 node_57
		1	node_46 1 --> 0 Megazostrodon
		1	node_57 1 ==> 0 Morganucodon
81	0.500	1	node_59 0 ==> 1 Sinoconodon
		1	node_45 0 ==> 3 Hadrocodium
		1	node_57 0 ==> 1 Morganucodon
		1	node_48 0 --> 1 node_47
		1	node_51 0 --> 2 Asfaltomylos
		1	node_55 0 ==> 1 node_54
82	1.000	1	node_57 0 ==> 1 node_56
83	1.000	1	node_51 0 --> 1 Asfaltomylos
84	1.000	1	node_45 0 ==> 1 Hadrocodium
85	1.000	1	node_48 0 --> 1 node_47
86	0.333	1	node_44 0 ==> 1 node_43
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
87	0.800	1	node_45 0 ==> 4 Hadrocodium
		1	node_44 0 ==> 3 node_43
		1	node_56 0 ==> 2 node_55
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
88	0.400	1	node_57 0 ==> 2 node_45
		1	node_48 0 --> 1 node_47
		1	node_57 0 ==> 2 node_56
		1	node_57 0 ==> 2 Amphilestes
		1	node_57 0 ==> 2 Priacodon
89	0.250	1	node_57 0 ==> 1 node_45
		1	node_53 0 --> 1 node_52
		1	node_54 0 ==> 1 Amphitherium
		1	node_57 0 ==> 1 Priacodon
90	1.000	1	node_57 0 ==> 1 node_45
91	1.000	1	node_60 0 --> 1 Probainognathus
92	0.200	1	node_44 0 ==> 1 node_43
		1	node_47 0 ==> 1 Haldanodon
		1	node_56 0 ==> 1 node_55
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
93	0.400	1	node_43 0 ==> 1 Arboroharamiya
		1	node_55 0 --> 2 Zhangheotherium
		1	node_55 0 --> 1 node_54
		1	node_57 0 ==> 2 Amphilestes
		1	node_57 0 ==> 2 Priacodon
94	0.333	1	node_43 0 --> 1 Arboroharamiya
		1	node_43 0 --> 2 node_42
		1	node_51 0 --> 2 Asfaltomylos
		1	node_56 0 --> 2 node_55
		1	node_57 0 ==> 2 Amphilestes
		1	node_57 0 ==> 2 Priacodon
95	0.500	1	node_43 0 ==> 1 node_42
		1	node_51 0 --> 2 Asfaltomylos
		1	node_56 0 --> 1 node_55
		1	node_57 0 ==> 1 Priacodon
96	1.000	1	node_44 0 ==> 2 node_43
97	0.333	1	node_43 0 ==> 1 node_42
		1	node_55 0 ==> 1 Zhangheotherium
		1	node_57 0 ==> 1 Priacodon
98	1.000	1	node_55 0 --> 1 node_54
99	1.000	1	node_60 1 ==> 0 Probainognathus
		1	node_58 1 --> 2 node_57
100	0.333	1	node_45 1 --> 0 Hadrocodium
		1	node_44 1 --> 2 node_43
		1	node_57 1 ==> 2 Dinnetherium
		1	node_46 1 --> 0 Megazostrodon
		1	node_49 1 --> 0 Kuehneotherium
		1	node_57 1 ==> 2 Priacodon
101	0.500	1	node_44 0 ==> 2 node_43
		1	node_51 0 --> 3 Asfaltomylos
		1	node_55 0 --> 1 Zhangheotherium

		1	node_54 0 --> 1 Dryolestes
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
102	0.500	1	node_60 0 --> 1 node_59
		1	node_44 1 ==> 4 node_43
		1	node_57 1 ==> 2 Dinnetherium
		1	node_46 1 --> 2 Megazostrodon
		1	node_55 1 --> 4 Zhangheotherium
		1	node_55 1 --> 3 node_54
		1	node_57 1 ==> 4 Amphilestes
		1	node_57 1 ==> 4 Priacodon
103	1.000	1	node_57 0 ==> 1 node_56
104	0.250	1	node_58 0 --> 1 node_57
		1	node_45 1 ==> 2 Hadrocodium
		1	node_57 1 ==> 0 Morganucodon
		1	node_49 1 --> 0 Kuehneotherium
		1	node_57 1 ==> 0 node_56
		1	node_51 0 --> 2 Asfaltomylos
		1	node_55 0 --> 2 node_54
		1	node_57 1 ==> 2 Amphilestes
105	1.000	1	node_55 0 ==> 1 Zhangheotherium
106	0.667	1	node_60 0 --> 1 Probainognathus
		1	node_57 0 ==> 1 node_56
		1	node_57 0 ==> 2 Amphilestes
107	1.000	1	node_45 0 ==> 2 node_44
		1	node_56 0 ==> 1 node_55
108	1.000	1	node_60 1 ==> 0 Probainognathus
109	1.000	1	node_39 0 --> 1 Haramiyavia
110	1.000	1	node_54 0 ==> 1 Amphitherium
111	1.000	1	node_54 0 ==> 1 Amphitherium
112	1.000	1	node_45 0 --> 1 Hadrocodium
113	0.500	1	node_55 0 --> 1 Zhangheotherium
		1	node_54 0 --> 1 Dryolestes
114	0.200	1	node_59 0 --> 1 Sinoconodon
		1	node_45 0 --> 1 Hadrocodium
		1	node_53 0 --> 1 node_52
		1	node_55 0 --> 1 Zhangheotherium
		1	node_57 0 ==> 1 Amphilestes
115	0.333	1	node_45 1 --> 0 Hadrocodium
		1	node_57 1 ==> 0 Dinnetherium
		1	node_46 1 --> 0 Megazostrodon
		1	node_51 1 ==> 2 Ambondro
		1	node_55 1 ==> 0 node_54
		1	node_57 1 ==> 0 Priacodon
116	0.667	1	node_45 0 ==> 2 node_44
		1	node_52 0 --> 1 Shuotherium
		1	node_51 0 --> 1 Ambondro
117	0.400	1	node_53 0 --> 1 node_52
		1	node_51 1 ==> 3 Ambondro
		1	node_55 0 --> 1 Zhangheotherium
		1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
118	1.000	1	node_53 0 --> 1 node_52
119	0.250	1	node_60 0 --> 1 Probainognathus
		1	node_42 0 --> 1 Sinobaatar
		1	node_53 0 --> 1 node_52
		1	node_57 0 ==> 1 Priacodon
120	0.333	1	node_60 0 --> 1 Probainognathus
		1	node_47 0 --> 1 Haldanodon
		1	node_57 0 ==> 1 node_56
121	1.000	1	node_57 0 ==> 1 Priacodon
122	0.500	1	node_57 0 ==> 1 Dinnetherium
		1	node_48 0 --> 1 node_47
123	1.000	1	node_45 0 --> 2 node_44
124	1.000	1	node_43 0 ==> 1 node_42
125	0.600	1	node_43 0 --> 3 Arboroharamiya
		1	node_43 0 --> 2 node_42
		1	node_46 0 --> 1 Megazostrodon

		1	node_55 0 --> 2 Zhangheotherium
		1	node_54 0 --> 1 Dryolestes
126	1.000	1	node_42 0 ==> 1 Rugosodon
127	0.667	1	node_58 0 --> 1 node_57
		1	node_45 1 ==> 0 Hadrocodium
		1	node_44 1 ==> 4 node_43
		1	node_57 1 ==> 0 Dinnetherium
		1	node_55 1 ==> 2 Zhangheotherium
		1	node_57 1 ==> 3 Priacodon
128	0.500	1	node_39 0 --> 1 Haramiyavia
		1	node_44 0 --> 2 node_43
		1	node_42 2 --> 1 Rugosodon
		1	node_55 0 ==> 1 Zhangheotherium
129	1.000	1	node_42 0 --> 1 Rugosodon
130	1.000	1	node_45 0 ==> 1 Hadrocodium
131	0.667	1	node_39 0 --> 1 Haramiyavia
		1	node_43 0 --> 2 node_42
		1	node_55 0 ==> 1 Zhangheotherium
132	1.000	1	node_48 0 --> 1 node_47
133	0.375	1	node_59 0 --> 3 Sinoconodon
		1	node_45 0 --> 3 Hadrocodium
		1	node_39 0 --> 1 Haramiyavia
		1	node_43 0 --> 3 Arboroharamiya
		1	node_47 0 --> 2 Haldanodon
		1	node_55 0 --> 2 Zhangheotherium
		1	node_54 0 --> 1 Dryolestes
		1	node_57 0 --> 1 Priacodon
134	0.300	1	node_59 0 --> 3 Sinoconodon
		1	node_45 0 --> 3 Hadrocodium
		1	node_45 0 --> 1 node_44
		1	node_43 1 --> 3 Arboroharamiya
		1	node_42 1 --> 2 Sinobaatar
		1	node_47 0 ==> 2 Haldanodon
		1	node_55 0 ==> 2 Zhangheotherium
		1	node_54 0 ==> 1 Dryolestes
		1	node_57 0 ==> 2 Amphilestes
		1	node_57 0 ==> 2 Priacodon
135	0.571	1	node_57 1 ==> 4 node_45
		1	node_39 4 --> 3 Haramiyavia
		1	node_57 1 ==> 23 Morganucodon
		1	node_57 1 ==> 0 node_50
		1	node_52 1 --> 3 Shuotherium
		1	node_56 1 --> 0 node_55
		1	node_57 1 ==> 2 Priacodon
136	0.800	1	node_59 0 --> 1 Sinoconodon
		1	node_57 0 ==> 4 node_45
		1	node_39 4 --> 3 Haramiyavia
		1	node_46 0 --> 1 Megazostrodon
		1	node_57 0 ==> 2 Priacodon
137	0.500	1	node_59 0 ==> 2 Sinoconodon
		1	node_57 0 ==> 4 node_45
		1	node_43 4 ==> 2 node_42
		1	node_57 0 ==> 2 Priacodon
138	0.600	1	node_59 0 ==> 2 Sinoconodon
		1	node_57 0 ==> 3 node_45
		1	node_39 3 --> 1 Haramiyavia
		1	node_42 3 ==> 2 Rugosodon
		1	node_57 0 ==> 1 Priacodon
139	1.000	1	node_59 0 ==> 2 Sinoconodon
		1	node_55 0 ==> 1 Zhangheotherium
140	0.667	1	node_60 0 --> 2 Brasilodon
		1	node_60 0 --> 1 Brasilitherium
		1	node_43 0 ==> 1 node_42
141	0.333	1	node_43 0 --> 3 Arboroharamiya
		1	node_42 0 --> 3 Rugosodon
		1	node_54 0 --> 3 Dryolestes
142	1.000	1	node_58 0 --> 1 node_57
143	0.500	1	node_58 0 --> 1 node_57

```
                        1           node_46 1 --> 0 Megazostrodon
144             0.500   1           node_45 0 ==> 1 node_44
                        1           node_56 0 --> 1 node_55
145             0.500   1           node_45 1 ==> 2 node_44
                        1           node_48 1 --> 0 node_47
                        1           node_56 1 --> 0 node_55
                        1           node_57 1 ==> 0 Amphilestes
146             0.500   1           node_59 0 ==> 1 Sinoconodon
                        1           node_46 0 --> 2 Megazostrodon
                        1           node_56 0 --> 2 node_55
                        1           node_57 0 ==> 1 Priacodon
147             1.000   1           node_42 0 --> 1 Rugosodon
148             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
149             0.500   1           node_42 0 --> 1 Rugosodon
                        1           node_55 0 --> 1 Zhangheotherium
150             1.000   1           node_43 0 --> 1 node_42
151             1.000   1           node_43 0 --> 1 node_42
152             1.000   1           node_47 1 --> 0 Castorocauda
153             0.500   1           node_58 0 --> 1 node_57
                        1           node_47 1 --> 0 Castorocauda
154             0.500   1           node_58 0 --> 1 node_57
                        1           node_47 1 --> 0 Castorocauda
155             0.500   1           node_44 0 --> 1 node_43
                        1           node_55 0 --> 1 Zhangheotherium
156             1.000   1           node_55 0 --> 1 Zhangheotherium
157             1.000   1           node_59 0 ==> 1 Sinoconodon
158             1.000   1           node_57 0 ==> 1 Morganucodon
159             1.000   1           node_58 0 --> 1 node_57
160             1.000   1           node_58 0 --> 1 node_57
161             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
162             0.500   1           node_44 0 --> 1 node_43
                        1           node_55 0 --> 1 Zhangheotherium
163             1.000   1           node_58 0 --> 1 node_57
                        1           node_55 1 --> 2 Zhangheotherium
164             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
165             1.000   1           node_55 0 --> 1 Zhangheotherium
166             1.000   1           node_55 0 --> 1 Zhangheotherium
167             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
168             0.333   1           node_43 0 --> 1 node_42
                        1           node_47 0 --> 1 Haldanodon
                        1           node_55 0 --> 1 Zhangheotherium
169             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
170             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
171             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
172             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
173             1.000   1           node_55 0 --> 1 Zhangheotherium
174             0.500   1           node_43 0 --> 1 node_42
                        1           node_55 0 --> 1 Zhangheotherium
175             1.000   1           node_55 0 --> 1 Zhangheotherium
176             1.000   1           node_55 0 --> 1 Zhangheotherium
177             1.000   1           node_42 0 --> 2 Sinobaatar
                        1           node_55 0 --> 1 Zhangheotherium
178             0.500   1           node_48 0 --> 1 node_47
                        1           node_55 0 --> 1 Zhangheotherium
179             0.500   1           node_59 0 --> 1 Sinoconodon
                        1           node_46 0 --> 1 Megazostrodon
                        1           node_57 0 --> 1 Morganucodon
                        1           node_48 0 --> 2 node_47
180             1.000   1           node_55 0 --> 1 Zhangheotherium
181             1.000   1           node_55 0 --> 1 Zhangheotherium
```

182	0.500	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 1 Zhangheotherium
183	0.500	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 1 Zhangheotherium
184	1.000	1	node_43 0 ==> 1 node_42
185	1.000	1	node_47 1 --> 0 Castorocauda
186	0.500	1	node_58 1 --> 2 node_57
		1	node_47 2 --> 1 Castorocauda
187	0.500	1	node_58 0 --> 1 node_57
		1	node_43 1 ==> 0 Arboroharamiya
188	1.000	1	node_55 0 --> 1 Zhangheotherium
189	1.000	1	node_55 0 --> 1 Zhangheotherium
190	1.000	1	node_43 0 ==> 1 node_42
		1	node_55 0 --> 2 Zhangheotherium
191	0.500	1	node_43 0 --> 1 node_42
		1	node_46 0 --> 1 Megazostrodon
		1	node_57 0 --> 1 Morganucodon
		1	node_55 0 --> 2 Zhangheotherium
192	0.500	1	node_44 0 --> 1 node_43
		1	node_55 0 --> 1 Zhangheotherium
193	0.500	1	node_58 0 --> 1 node_57
		1	node_47 1 --> 0 Castorocauda
194	0.500	1	node_42 0 ==> 1 Sinobaatar
		1	node_55 0 --> 1 Zhangheotherium
195	1.000	1	node_55 0 --> 1 Zhangheotherium
196	0.500	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 1 Zhangheotherium
197	0.667	1	node_58 0 --> 1 node_57
		1	node_43 1 ==> 2 node_42
		1	node_55 1 --> 2 Zhangheotherium
198	1.000	1	node_55 0 --> 1 Zhangheotherium
199	0.500	1	node_43 0 ==> 1 node_42
		1	node_47 0 --> 1 Castorocauda
200	1.000	1	node_43 0 --> 1 node_42
201	1.000	1	node_55 0 --> 1 Zhangheotherium
202	0.500	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 1 Zhangheotherium
203	1.000	1	node_43 0 --> 2 node_42
204	1.000	1	node_43 0 --> 1 node_42
205	1.000	1	node_43 0 --> 1 node_42
206	0.500	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 1 Zhangheotherium
207	1.000	1	node_55 0 --> 3 Zhangheotherium
208	1.000	1	node_55 0 --> 2 Zhangheotherium
209	1.000	1	node_43 0 --> 1 node_42
210	1.000	1	node_43 0 --> 2 node_42
		1	node_55 0 --> 1 Zhangheotherium
211	0.500	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 1 Zhangheotherium
212	0.500	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 1 Zhangheotherium
213	0.500	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 1 Zhangheotherium
214	1.000	1	node_43 0 --> 1 node_42
215	1.000	1	node_43 1 --> 0 node_42
216	1.000	1	node_43 0 --> 1 node_42
217	1.000	1	node_43 0 --> 1 node_42
218	1.000	1	node_43 0 --> 1 node_42
		1	node_55 0 --> 2 Zhangheotherium
219	1.000	1	node_43 0 ==> 1 node_42
220	1.000	1	node_43 0 --> 1 node_42
221	0.667	1	node_43 0 --> 2 node_42
		1	node_47 0 --> 1 Castorocauda
		1	node_55 0 --> 2 Zhangheotherium
222	1.000	1	node_46 1 --> 0 Megazostrodon
223	0.500	1	node_44 0 --> 1 node_43
		1	node_56 0 --> 1 node_55
224	1.000	1	node_45 0 ==> 1 Hadrocodium

225	0.500	1	node_58 0 ==> 1 node_57
		1	node_45 1 ==> 0 Hadrocodium
226	0.500	1	node_60 0 --> 1 node_59
		1	node_45 1 ==> 2 Hadrocodium
		1	node_47 1 --> 2 Haldanodon
		1	node_55 1 --> 2 Zhangheotherium
227	0.500	1	node_57 0 ==> 1 node_45
		1	node_55 0 --> 1 Zhangheotherium
228	0.500	1	node_58 0 --> 1 node_57
		1	node_45 1 ==> 0 Hadrocodium
229	0.500	1	node_58 0 --> 1 node_57
		1	node_42 1 --> 0 Sinobaatar
230	1.000	1	node_55 0 --> 1 Zhangheotherium
231	1.000	1	node_60 1 --> 2 node_59
232	1.000	1	node_60 0 --> 2 node_59
		1	node_58 2 ==> 3 node_57
233	1.000	1	node_60 0 ==> 1 node_59
234	1.000	1	node_60 0 --> 1 node_59
235	0.333	1	node_58 0 ==> 1 node_57
		1	node_46 1 --> 0 Megazostrodon
		1	node_47 1 --> 0 Haldanodon
236	0.667	1	node_58 0 ==> 1 node_57
		1	node_45 1 --> 2 Hadrocodium
		1	node_47 1 --> 0 Haldanodon
237	0.600	1	node_59 0 --> 1 Sinoconodon
		1	node_58 0 --> 2 node_57
		1	node_45 2 --> 3 Hadrocodium
		1	node_57 2 ==> 1 Dinnetherium
		1	node_57 2 ==> 3 Priacodon
238	1.000	1	node_58 0 --> 1 node_57
239	1.000	1	node_55 0 --> 1 Zhangheotherium
240	1.000	1	node_55 0 --> 1 Zhangheotherium
241	1.000	1	node_55 0 --> 1 Zhangheotherium
242	1.000	1	node_60 0 --> 1 node_59
243	1.000	1	node_60 0 --> 1 node_59
244	1.000	1	node_60 0 --> 1 node_59
		1	node_47 1 --> 2 Haldanodon
245	1.000	1	node_60 0 --> 1 node_59
246	1.000	1	node_57 0 ==> 2 Priacodon
247	1.000	1	node_60 0 --> 1 node_59
248	0.250	1	node_60 0 --> 1 Brasilitherium
		1	node_59 0 --> 1 Sinoconodon
		1	node_58 0 --> 1 Adelobasileus
		1	node_57 0 ==> 1 Morganucodon
249	1.000	1	node_45 0 --> 1 Hadrocodium
250	1.000	1	node_60 0 --> 1 Probainognathus
251	1.000	1	node_58 0 ==> 1 node_57
252	1.000	1	node_59 0 ==> 1 node_58
253	0.333	1	node_60 0 --> 1 Probainognathus
		1	node_55 0 --> 1 Zhangheotherium
		1	node_57 0 ==> 1 Priacodon
254	0.400	1	node_60 0 --> 1 Probainognathus
		1	node_58 0 --> 1 node_57
		1	node_45 1 --> 2 Hadrocodium
		1	node_57 1 --> 2 Dinnetherium
		1	node_55 1 --> 2 Zhangheotherium
255	0.333	1	node_58 0 ==> 1 Adelobasileus
		1	node_45 0 --> 1 Hadrocodium
		1	node_55 0 --> 1 Zhangheotherium
256	0.500	1	node_59 0 --> 1 Sinoconodon
		1	node_58 0 --> 1 node_57
257	0.333	1	node_58 0 ==> 1 node_57
		1	node_45 1 --> 0 Hadrocodium
		1	node_47 1 --> 0 Haldanodon
258	1.000	1	node_58 0 ==> 1 node_57
259	0.500	1	node_45 0 --> 1 Hadrocodium
		1	node_55 0 --> 1 Zhangheotherium
260	1.000	1	node_58 0 --> 1 node_57

		1	node_55 1 --> 2 Zhangheotherium
261	1.000	1	node_60 0 --> 1 node_59
		1	node_57 1 ==> 2 Dinnetherium
262	1.000	1	node_57 0 ==> 1 Priacodon
263	0.500	1	node_59 0 --> 1 Sinoconodon
		1	node_58 0 --> 1 node_57
264	1.000	1	node_55 0 --> 1 Zhangheotherium
265	1.000	1	node_60 0 ==> 1 node_59
266	1.000	1	node_55 0 --> 1 Zhangheotherium
267	1.000	1	node_59 0 ==> 1 Sinoconodon
268	1.000	1	node_60 1 --> 2 node_59
269	1.000	1	node_60 1 ==> 0 Probainognathus
270	1.000	1	node_59 0 --> 1 Sinoconodon
		1	node_58 0 --> 2 node_57
271	1.000	1	node_60 0 --> 1 node_59
272	1.000	1	node_42 0 --> 1 Rugosodon
273	1.000	1	node_47 0 --> 1 Castorocauda
274	1.000	1	node_47 0 --> 1 Castorocauda
275	1.000	1	node_55 0 --> 1 Zhangheotherium
276	1.000	1	node_42 1 --> 2 Sinobaatar
277	0.500	1	node_59 0 --> 1 Sinoconodon
		1	node_58 0 --> 2 node_57
		1	node_46 2 --> 1 Megazostrodon
		1	node_57 2 --> 1 Morganucodon
278	0.500	1	node_45 0 --> 1 Hadrocodium
		1	node_47 0 --> 1 Haldanodon
279	1.000	1	node_60 0 --> 1 node_59
		1	node_45 1 --> 2 Hadrocodium
280	1.000	1	node_60 0 --> 1 node_59
281	1.000	1	node_45 0 --> 3 Hadrocodium
282	0.500	1	node_60 0 --> 1 node_59
		1	node_57 1 ==> 0 Priacodon
283	1.000	1	node_60 0 --> 1 node_59
284	0.500	1	node_58 0 --> 1 node_57
		1	node_45 1 --> 0 Hadrocodium
285	1.000	1	node_60 0 --> 1 node_59
286	0.500	1	node_57 0 ==> 1 Amphilestes
		1	node_57 0 ==> 1 Priacodon
287	1.000	1	node_45 0 --> 1 Hadrocodium
288	1.000	1	node_60 1 --> 2 node_59
289	0.333	1	node_45 0 --> 2 Hadrocodium
		1	node_55 0 --> 2 Zhangheotherium
		1	node_57 0 ==> 12 Priacodon
290	1.000	1	node_60 0 --> 1 node_59
291	1.000	1	node_57 0 ==> 1 Priacodon
292	1.000	1	node_55 0 --> 1 Zhangheotherium
		1	node_57 0 ==> 2 Priacodon
293	1.000	1	node_60 0 --> 2 node_59
294	0.333	1	node_45 0 --> 1 Hadrocodium
		1	node_47 0 --> 1 Haldanodon
		1	node_57 0 --> 1 Priacodon
295	1.000	1	node_55 0 --> 2 Zhangheotherium
296	1.000	1	node_45 0 --> 1 Hadrocodium
297	1.000	1	node_59 0 ==> 1 node_58
		1	node_45 1 --> 2 Hadrocodium
298	1.000	1	node_59 0 ==> 1 node_58
299	0.500	1	node_45 0 --> 1 Hadrocodium
		1	node_47 0 --> 1 Haldanodon
300	0.500	1	node_60 0 --> 1 node_59
		1	node_45 1 --> 0 Hadrocodium
301	1.000	1	node_58 0 --> 1 node_57
302	0.500	1	node_59 0 --> 1 Sinoconodon
		1	node_57 0 --> 1 Morganucodon
303	1.000	1	node_45 0 --> 2 Hadrocodium
		1	node_57 0 ==> 1 Priacodon
304	1.000	1	node_45 0 --> 1 Hadrocodium
305	0.500	1	node_45 1 --> 2 Hadrocodium
		1	node_47 1 --> 2 Haldanodon

```
 306             1.000      1           node_58 0 --> 1 node_57
 307             1.000      1           node_60 1 --> 2 node_59
                            1           node_45 2 --> 3 Hadrocodium
```

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_60 --> Probainognathus	19	1	0.200	1 ==> 0
	66	1	0.250	0 --> 1
	91	1	1.000	0 --> 1
	99	1	1.000	1 ==> 0
	106	1	0.667	0 --> 1
	108	1	1.000	1 ==> 0
	119	1	0.250	0 --> 1
	120	1	0.333	0 --> 1
	250	1	1.000	0 --> 1
	253	1	0.333	0 --> 1
	254	1	0.400	0 --> 1
	269	1	1.000	1 ==> 0
node_60 --> Brasilodon	24	1	0.143	0 ==> 1
	26	1	1.000	1 ==> 0
	58	1	0.167	0 --> 1
	61	1	0.143	0 --> 1
	140	1	0.667	0 --> 2
node_60 --> Brasilitherium	17	1	0.300	0 ==> 1
	22	1	0.200	0 ==> 1
	25	1	0.667	2 --> 4
	57	1	0.333	0 --> 1
	58	1	0.167	0 --> 1
	61	1	0.143	0 --> 1
	140	1	0.667	0 --> 1
	248	1	0.250	0 --> 1
node_60 --> node_59	6	1	0.333	0 ==> 1
	20	1	0.375	0 ==> 2
	102	1	0.500	0 --> 1
	226	1	0.500	0 --> 1
	231	1	1.000	1 --> 2
	232	1	1.000	0 --> 2
	233	1	1.000	0 ==> 1
	234	1	1.000	0 --> 1
	242	1	1.000	0 --> 1
	243	1	1.000	0 --> 1
	244	1	1.000	0 --> 1
	245	1	1.000	0 --> 1
	247	1	1.000	0 --> 1
	261	1	1.000	0 --> 1
	265	1	1.000	0 ==> 1
	268	1	1.000	1 --> 2
	271	1	1.000	0 --> 1
	279	1	1.000	0 --> 1
	280	1	1.000	0 --> 1
	282	1	0.500	0 --> 1
	283	1	1.000	0 --> 1
	285	1	1.000	0 --> 1
	288	1	1.000	1 --> 2
	290	1	1.000	0 --> 1
	293	1	1.000	0 --> 2
	300	1	0.500	0 --> 1
	307	1	1.000	1 --> 2
node_59 --> Sinoconodon	8	1	0.250	2 ==> 1
	81	1	0.500	0 ==> 1
	114	1	0.200	0 --> 1
	133	1	0.375	0 --> 3
	134	1	0.300	0 --> 3
	136	1	0.800	0 --> 1
	137	1	0.500	0 ==> 2
	138	1	0.600	0 ==> 2

	139	1	1.000	0 ==> 2
	146	1	0.500	0 ==> 1
	157	1	1.000	0 ==> 1
	179	1	0.500	0 --> 1
	237	1	0.600	0 --> 1
	248	1	0.250	0 --> 1
	256	1	0.500	0 --> 1
	263	1	0.500	0 --> 1
	267	1	1.000	0 ==> 1
	270	1	1.000	0 --> 1
	277	1	0.500	0 --> 1
	302	1	0.500	0 --> 1
node_59 --> node_58	252	1	1.000	0 ==> 1
	297	1	1.000	0 ==> 1
	298	1	1.000	0 ==> 1
node_58 --> Adelobasileus	248	1	0.250	0 --> 1
	255	1	0.333	0 ==> 1
node_58 --> node_57	17	1	0.300	0 --> 1
	30	1	0.167	0 --> 1
	34	1	0.500	2 --> 1
	58	1	0.167	0 --> 2
	59	1	0.250	0 --> 1
	62	1	0.250	0 --> 1
	66	1	0.250	0 --> 1
	68	1	0.200	0 --> 1
	74	1	0.750	0 --> 1
	79	1	0.200	0 --> 1
	80	1	0.333	0 --> 1
	99	1	1.000	1 --> 2
	104	1	0.250	0 --> 1
	127	1	0.667	0 --> 1
	142	1	1.000	0 --> 1
	143	1	0.500	0 --> 1
	153	1	0.500	0 --> 1
	154	1	0.500	0 --> 1
	159	1	1.000	0 --> 1
	160	1	1.000	0 --> 1
	163	1	1.000	0 --> 1
	186	1	0.500	1 --> 2
	187	1	0.500	0 --> 1
	193	1	0.500	0 --> 1
	197	1	0.667	0 --> 1
	225	1	0.500	0 ==> 1
	228	1	0.500	0 --> 1
	229	1	0.500	0 --> 1
	232	1	1.000	2 ==> 3
	235	1	0.333	0 ==> 1
	236	1	0.667	0 ==> 1
	237	1	0.600	0 --> 2
	238	1	1.000	0 --> 1
	251	1	1.000	0 ==> 1
	254	1	0.400	0 --> 1
	256	1	0.500	0 --> 1
	257	1	0.333	0 ==> 1
	258	1	1.000	0 ==> 1
	260	1	1.000	0 --> 1
	263	1	0.500	0 --> 1
	270	1	1.000	0 --> 2
	277	1	0.500	0 --> 2
	284	1	0.500	0 --> 1
	301	1	1.000	0 --> 1
	306	1	1.000	0 --> 1
node_57 --> node_45	19	1	0.200	1 ==> 0
	55	1	0.600	1 ==> 2
	56	1	1.000	0 ==> 2
	62	1	0.250	1 ==> 0
	88	1	0.400	0 ==> 2
	89	1	0.250	0 ==> 1

	90	1	1.000	0 ==> 1
	135	1	0.571	1 ==> 4
	136	1	0.800	0 ==> 4
	137	1	0.500	0 ==> 4
	138	1	0.600	0 ==> 3
	227	1	0.500	0 ==> 1
node_45 --> Hadrocodium	7	1	0.222	0 ==> 1
	8	1	0.250	2 ==> 1
	30	1	0.167	1 ==> 0
	68	1	0.200	1 --> 0
	75	1	0.200	0 --> 1
	81	1	0.500	0 ==> 3
	84	1	1.000	0 ==> 1
	87	1	0.800	0 ==> 4
	100	1	0.333	1 --> 0
	104	1	0.250	1 ==> 2
	112	1	1.000	0 --> 1
	114	1	0.200	0 --> 1
	115	1	0.333	1 --> 0
	127	1	0.667	1 ==> 0
	130	1	1.000	0 ==> 1
	133	1	0.375	0 --> 3
	134	1	0.300	0 --> 3
	224	1	1.000	0 ==> 1
	225	1	0.500	1 ==> 0
	226	1	0.500	1 ==> 2
	228	1	0.500	1 ==> 0
	236	1	0.667	1 --> 2
	237	1	0.600	2 --> 3
	249	1	1.000	0 --> 1
	254	1	0.400	1 --> 2
	255	1	0.333	0 --> 1
	257	1	0.333	1 --> 0
	259	1	0.500	0 --> 1
	278	1	0.500	0 --> 1
	279	1	1.000	1 --> 2
	281	1	1.000	0 --> 3
	284	1	0.500	1 --> 0
	287	1	1.000	0 --> 1
	289	1	0.333	0 --> 2
	294	1	0.333	0 --> 1
	296	1	1.000	0 --> 1
	297	1	1.000	1 --> 2
	299	1	0.500	0 --> 1
	300	1	0.500	1 --> 0
	303	1	1.000	0 --> 2
	304	1	1.000	0 --> 1
	305	1	0.500	1 --> 2
	307	1	1.000	2 --> 3
node_45 --> node_44	1	1	0.667	0 ==> 1
	17	1	0.300	1 ==> 0
	32	1	0.500	1 ==> 0
	42	1	0.375	2 ==> 0
	55	1	0.600	2 ==> 0
	61	1	0.143	0 --> 1
	65	1	0.667	0 --> 2
	76	1	0.250	0 --> 1
	107	1	1.000	0 ==> 2
	116	1	0.667	0 ==> 2
	123	1	1.000	0 --> 2
	134	1	0.300	0 --> 1
	144	1	0.500	0 ==> 1
	145	1	0.500	1 ==> 2
node_44 --> node_41	38	1	0.750	0 ==> 1
	39	1	0.500	0 ==> 2
node_41 --> Paikasigudodon	37	1	0.600	0 ==> 1
	41	1	0.750	1 --> 0
	42	1	0.375	0 ==> 3

	43	1	0.667	0 ==> 2
	54	1	0.750	0 --> 1
	58	1	0.167	2 ==> 1
	60	1	0.750	2 ==> 0
	66	1	0.250	1 ==> 0
node_41 --> node_40	13	1	0.429	0 --> 1
	21	1	0.200	0 --> 1
	27	1	1.000	0 --> 1
	35	1	0.500	0 ==> 2
	36	1	0.500	0 --> 1
	67	1	0.500	1 --> 0
	73	1	0.400	0 --> 2
node_40 --> node_39	53	1	0.250	1 ==> 0
	59	1	0.250	1 ==> 0
node_39 --> Thomasia	7	1	0.222	0 --> 2
	35	1	0.500	2 ==> 1
	42	1	0.375	0 ==> 1
	70	1	0.500	0 --> 1
node_39 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	0.429	1 ==> 2
	15	1	0.429	0 ==> 1
	16	1	0.800	0 ==> 4
	34	1	0.500	1 --> 2
	68	1	0.200	1 --> 0
	74	1	0.750	1 --> 2
	109	1	1.000	0 --> 1
	128	1	0.500	0 --> 1
	131	1	0.667	0 --> 1
	133	1	0.375	0 --> 1
	135	1	0.571	4 --> 3
	136	1	0.800	4 --> 3
	138	1	0.600	3 --> 1
node_40 --> Theroteinus	40	1	0.200	1 ==> 0
	54	1	0.750	0 --> 3
	55	1	0.600	0 --> 3
	64	1	0.200	0 ==> 1
	70	1	0.500	0 --> 1
	71	1	0.500	0 ==> 1
node_44 --> node_43	34	1	0.500	1 --> 3
	35	1	0.500	0 ==> 1
	58	1	0.167	2 ==> 0
	74	1	0.750	1 --> 3
	75	1	0.200	0 --> 1
	78	1	0.400	0 ==> 2
	86	1	0.333	0 ==> 1
	87	1	0.800	0 ==> 3
	92	1	0.200	0 ==> 1
	96	1	1.000	0 ==> 2
	100	1	0.333	1 --> 2
	101	1	0.500	0 ==> 2
	102	1	0.500	1 ==> 4
	127	1	0.667	1 ==> 4
	128	1	0.500	0 --> 2
	155	1	0.500	0 --> 1
	162	1	0.500	0 --> 1
	192	1	0.500	0 --> 1
	223	1	0.500	0 --> 1
node_43 --> Arboroharamiya	2	1	0.333	0 --> 1
	4	1	0.667	0 ==> 1
	8	1	0.250	2 ==> 0
	9	1	0.667	0 ==> 1
	28	1	1.000	1 ==> 2
	29	1	0.500	0 --> 1
	36	1	0.500	0 --> 1
	54	1	0.750	0 --> 3
	64	1	0.200	0 --> 1
	66	1	0.250	1 ==> 0
	93	1	0.400	0 ==> 1

	94	1	0.333	0 --> 1
	125	1	0.600	0 --> 3
	133	1	0.375	0 --> 3
	134	1	0.300	1 --> 3
	141	1	0.333	0 --> 3
	187	1	0.500	1 ==> 0
node_43 --> node_42	1	1	0.667	1 ==> 2
	21	1	0.200	0 --> 1
	45	1	1.000	0 ==> 1
	72	1	1.000	0 --> 1
	73	1	0.400	0 --> 1
	77	1	0.500	0 --> 1
	94	1	0.333	0 --> 2
	95	1	0.500	0 ==> 1
	97	1	0.333	0 ==> 1
	124	1	1.000	0 ==> 1
	125	1	0.600	0 --> 2
	131	1	0.667	0 --> 2
	137	1	0.500	4 ==> 2
	140	1	0.667	0 ==> 1
	148	1	0.500	0 --> 1
	150	1	1.000	0 --> 1
	151	1	1.000	0 --> 1
	161	1	0.500	0 --> 1
	164	1	0.500	0 --> 1
	167	1	0.500	0 --> 1
	168	1	0.333	0 --> 1
	169	1	0.500	0 --> 1
	170	1	0.500	0 --> 1
	171	1	0.500	0 --> 1
	172	1	0.500	0 --> 1
	174	1	0.500	0 --> 1
	182	1	0.500	0 --> 1
	183	1	0.500	0 --> 1
	184	1	1.000	0 ==> 1
	190	1	1.000	0 ==> 1
	191	1	0.500	0 --> 1
	196	1	0.500	0 --> 1
	197	1	0.667	1 ==> 2
	199	1	0.500	0 ==> 1
	200	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	203	1	1.000	0 --> 2
	204	1	1.000	0 --> 1
	205	1	1.000	0 --> 1
	206	1	0.500	0 --> 1
	209	1	1.000	0 --> 1
	210	1	1.000	0 --> 2
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	214	1	1.000	0 --> 1
	215	1	1.000	1 --> 0
	216	1	1.000	0 --> 1
	217	1	1.000	0 --> 1
	218	1	1.000	0 --> 1
	219	1	1.000	0 ==> 1
	220	1	1.000	0 --> 1
	221	1	0.667	0 --> 2
node_42 --> Rugosodon	2	1	0.333	0 --> 1
	6	1	0.333	1 --> 2
	29	1	0.500	0 --> 1
	32	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	126	1	1.000	0 ==> 1
	128	1	0.500	2 --> 1
	129	1	1.000	0 --> 1
	138	1	0.600	3 ==> 2

	141	1	0.333	0 --> 3
	147	1	1.000	0 --> 1
	149	1	0.500	0 --> 1
	272	1	1.000	0 --> 1
node_42 --> Sinobaatar	28	1	1.000	1 ==> 0
	34	1	0.500	3 ==> 0
	35	1	0.500	1 ==> 2
	42	1	0.375	0 ==> 1
	119	1	0.250	0 --> 1
	134	1	0.300	1 --> 2
	177	1	1.000	0 --> 2
	194	1	0.500	0 ==> 1
	229	1	0.500	1 --> 0
	276	1	1.000	1 --> 2
node_45 --> Helvetiodon	37	1	0.600	0 ==> 1
	39	1	0.500	0 ==> 1
	50	1	0.667	0 ==> 1
	57	1	0.333	0 --> 2
	58	1	0.167	2 ==> 1
	60	1	0.750	2 --> 1
	64	1	0.200	0 ==> 1
node_45 --> Purbeckodon	10	1	0.333	0 ==> 13
	18	1	0.375	1 --> 0
	43	1	0.667	0 ==> 2
	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1
	57	1	0.333	0 --> 12
	60	1	0.750	2 --> 01
node_57 --> Dinnetherium	7	1	0.222	0 ==> 1
	8	1	0.250	2 ==> 1
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 3
	21	1	0.200	0 ==> 1
	22	1	0.200	0 ==> 1
	24	1	0.143	0 ==> 1
	25	1	0.667	2 ==> 1
	31	1	0.500	1 ==> 0
	33	1	0.333	0 ==> 1
	40	1	0.200	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
	57	1	0.333	0 --> 1
	61	1	0.143	0 --> 1
	100	1	0.333	1 ==> 2
	102	1	0.500	1 ==> 2
	115	1	0.333	1 ==> 0
	122	1	0.500	0 ==> 1
	127	1	0.667	1 ==> 0
	237	1	0.600	2 ==> 1
	254	1	0.400	1 --> 2
	261	1	1.000	1 ==> 2
node_57 --> node_46	6	1	0.333	1 ==> 0
	8	1	0.250	2 ==> 3
	25	1	0.667	2 ==> 0
	57	1	0.333	0 --> 1
	61	1	0.143	0 --> 1
node_46 --> Megazostrodon	17	1	0.300	1 --> 23
	20	1	0.375	2 --> 1
	24	1	0.143	0 --> 1
	42	1	0.375	2 --> 3
	50	1	0.667	0 ==> 2
	52	1	0.800	0 ==> 2
	55	1	0.600	1 ==> 0
	80	1	0.333	1 --> 0
	100	1	0.333	1 --> 0
	102	1	0.500	1 --> 2
	115	1	0.333	1 --> 0
	125	1	0.600	0 --> 1

	136	1	0.800	0 --> 1
	143	1	0.500	1 --> 0
	146	1	0.500	0 --> 2
	179	1	0.500	0 --> 1
	191	1	0.500	0 --> 1
	222	1	1.000	1 --> 0
	235	1	0.333	1 --> 0
	277	1	0.500	2 --> 1
node_46 --> Brachyzostrodon	3	1	0.500	0 --> 5
	5	1	0.250	0 ==> 1
	13	1	0.429	0 ==> 1
	14	1	0.500	0 --> 1
	17	1	0.300	1 --> 0
	33	1	0.333	0 ==> 1
	40	1	0.200	1 ==> 0
	73	1	0.400	0 ==> 1
node_57 --> Morganucodon	20	1	0.375	2 ==> 1
	25	1	0.667	2 ==> 01
	55	1	0.600	1 ==> 0
	80	1	0.333	1 ==> 0
	81	1	0.500	0 ==> 1
	104	1	0.250	1 ==> 0
	135	1	0.571	1 ==> 23
	158	1	1.000	0 ==> 1
	179	1	0.500	0 --> 1
	191	1	0.500	0 --> 1
	248	1	0.250	0 ==> 1
	277	1	0.500	2 --> 1
	302	1	0.500	0 --> 1
node_57 --> node_50	5	1	0.250	0 ==> 1
	8	1	0.250	2 ==> 3
	37	1	0.600	0 ==> 1
	39	1	0.500	0 ==> 1
	41	1	0.750	1 ==> 2
	50	1	0.667	0 ==> 2
	62	1	0.250	1 ==> 0
	68	1	0.200	1 ==> 0
	135	1	0.571	1 ==> 0
node_50 --> node_48	11	1	1.000	0 ==> 1
	12	1	0.750	0 ==> 1
node_48 --> Paceyodon	3	1	0.500	0 ==> 5
	13	1	0.429	0 ==> 4
	14	1	0.500	0 --> 1
node_48 --> node_47	4	1	0.667	0 ==> 3
	10	1	0.333	0 ==> 1
	24	1	0.143	0 ==> 1
	25	1	0.667	2 --> 3
	79	1	0.200	1 --> 0
	81	1	0.500	0 --> 1
	85	1	1.000	0 --> 1
	88	1	0.400	0 --> 1
	122	1	0.500	0 --> 1
	132	1	1.000	0 --> 1
	145	1	0.500	1 --> 0
	178	1	0.500	0 --> 1
	179	1	0.500	0 --> 2
node_47 --> Castorocauda	8	1	0.250	3 --> 1
	15	1	0.429	0 --> 3
	16	1	0.800	0 --> 6
	20	1	0.375	2 ==> 1
	22	1	0.200	0 ==> 1
	152	1	1.000	1 --> 0
	153	1	0.500	1 --> 0
	154	1	0.500	1 --> 0
	185	1	1.000	1 --> 0
	186	1	0.500	2 --> 1
	193	1	0.500	1 --> 0
	199	1	0.500	0 --> 1

	221	1	0.667	0 --> 1
	273	1	1.000	0 --> 1
	274	1	1.000	0 --> 1
node_47 --> Haldanodon	8	1	0.250	3 --> 0
	9	1	0.667	0 ==> 2
	12	1	0.750	1 ==> 2
	14	1	0.500	0 --> 12
	15	1	0.429	0 --> 12
	16	1	0.800	0 --> 7
	30	1	0.167	1 ==> 0
	53	1	0.250	1 --> 0
	64	1	0.200	0 --> 1
	65	1	0.667	0 --> 1
	92	1	0.200	0 ==> 1
	120	1	0.333	0 --> 1
	133	1	0.375	0 --> 2
	134	1	0.300	0 ==> 2
	168	1	0.333	0 --> 1
	226	1	0.500	1 --> 2
	235	1	0.333	1 --> 0
	236	1	0.667	1 --> 0
	244	1	1.000	1 --> 2
	257	1	0.333	1 --> 0
	278	1	0.500	0 --> 1
	294	1	0.333	0 --> 1
	299	1	0.500	0 --> 1
	305	1	0.500	1 --> 2
node_50 --> node_49	4	1	0.667	0 ==> 1
	14	1	0.500	0 --> 4
	16	1	0.800	0 ==> 5
	22	1	0.200	0 ==> 1
	56	1	1.000	0 --> 1
	58	1	0.167	2 ==> 1
node_49 --> Fluctuodon	7	1	0.222	0 --> 1
	10	1	0.333	0 ==> 2
	12	1	0.750	0 ==> 2
	15	1	0.429	0 --> 1
	47	1	0.500	0 ==> 1
	52	1	0.800	0 --> 1
node_49 --> Kuehneotherium	3	1	0.500	0 ==> 1
	7	1	0.222	0 --> 2
	18	1	0.375	1 ==> 2
	31	1	0.500	1 --> 0
	38	1	0.750	0 ==> 1
	46	1	0.750	0 ==> 3
	49	1	1.000	0 ==> 4
	50	1	0.667	2 ==> 7
	52	1	0.800	0 --> 2
	100	1	0.333	1 --> 0
	104	1	0.250	1 --> 0
node_57 --> Rosierodon	7	1	0.222	0 ==> 1
	8	1	0.250	2 ==> 0
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 23
	18	1	0.375	1 ==> 0
node_57 --> Erythrotherium	20	1	0.375	2 ==> 1
	25	1	0.667	2 ==> 0
	34	1	0.500	1 ==> 3
	57	1	0.333	0 --> 1
	58	1	0.167	2 ==> 1
	61	1	0.143	0 --> 1
node_57 --> Bridetherium	7	1	0.222	0 ==> 1
	10	1	0.333	0 ==> 1
	17	1	0.300	1 ==> 3
	24	1	0.143	0 ==> 1
	42	1	0.375	2 ==> 1
	61	1	0.143	0 --> 1
	67	1	0.500	1 ==> 0

	73	1	0.400	0 ==> 1
node_57 --> node_56	3	1	0.500	0 ==> 2
	4	1	0.667	0 ==> 2
	8	1	0.250	2 ==> 0
	14	1	0.500	0 ==> 7
	16	1	0.800	0 ==> 7
	31	1	0.500	1 ==> 0
	37	1	0.600	0 ==> 2
	50	1	0.667	0 ==> 7
	62	1	0.250	1 ==> 0
	82	1	1.000	0 ==> 1
	88	1	0.400	0 ==> 2
	103	1	1.000	0 ==> 1
	104	1	0.250	1 ==> 0
	106	1	0.667	0 ==> 1
	120	1	0.333	0 ==> 1
node_56 --> node_53	33	1	0.333	0 ==> 1
	39	1	0.500	0 ==> 1
	40	1	0.200	1 ==> 0
	64	1	0.200	0 ==> 1
node_53 --> Woutersia	3	1	0.500	2 ==> 1
	6	1	0.333	1 --> 2
	7	1	0.222	0 --> 2
	9	1	0.667	0 ==> 2
	14	1	0.500	7 ==> 4
	17	1	0.300	1 ==> 2
	20	1	0.375	2 ==> 1
	24	1	0.143	0 ==> 1
	41	1	0.750	1 --> 3
	42	1	0.375	2 ==> 3
	48	1	1.000	0 ==> 1
	54	1	0.750	0 ==> 2
	58	1	0.167	2 ==> 1
	69	1	1.000	0 --> 1
node_53 --> node_52	10	1	0.333	0 ==> 1
	21	1	0.200	0 ==> 1
	22	1	0.200	0 ==> 1
	30	1	0.167	1 --> 0
	77	1	0.500	0 --> 1
	89	1	0.250	0 --> 1
	114	1	0.200	0 --> 1
	117	1	0.400	0 --> 1
	118	1	1.000	0 --> 1
	119	1	0.250	0 --> 1
node_52 --> Shuotherium	18	1	0.375	1 --> 0
	23	1	1.000	1 --> 2
	49	1	1.000	0 --> 5
	65	1	0.667	0 --> 1
	116	1	0.667	0 --> 1
	135	1	0.571	1 --> 3
node_52 --> node_51	5	1	0.250	0 ==> 1
	6	1	0.333	1 --> 2
	15	1	0.429	0 ==> 2
node_51 --> Ambondro	3	1	0.500	2 ==> 1
	13	1	0.429	0 --> 1
	14	1	0.500	7 ==> 5
	18	1	0.375	1 --> 2
	20	1	0.375	2 --> 3
	115	1	0.333	1 ==> 2
	116	1	0.667	0 --> 1
	117	1	0.400	1 ==> 3
node_51 --> Asfaltomylos	4	1	0.667	2 ==> 3
	8	1	0.250	0 ==> 3
	13	1	0.429	0 --> 2
	18	1	0.375	1 --> 3
	19	1	0.200	1 ==> 0
	78	1	0.400	0 --> 2
	81	1	0.500	0 --> 2

	83	1	1.000	0 --> 1
	94	1	0.333	0 --> 2
	95	1	0.500	0 --> 2
	101	1	0.500	0 --> 3
	104	1	0.250	0 --> 2
node_56 --> node_55	42	1	0.375	2 ==> 0
	53	1	0.250	1 ==> 0
	58	1	0.167	2 ==> 0
	68	1	0.200	1 ==> 0
	75	1	0.200	0 ==> 1
	76	1	0.250	0 ==> 1
	87	1	0.800	0 ==> 2
	92	1	0.200	0 ==> 1
	94	1	0.333	0 --> 2
	95	1	0.500	0 --> 1
	107	1	1.000	0 ==> 1
	135	1	0.571	1 --> 0
	144	1	0.500	0 --> 1
	145	1	0.500	1 --> 0
	146	1	0.500	0 --> 2
	223	1	0.500	0 --> 1
node_55 --> Delsatia	17	1	0.300	1 --> 0
	20	1	0.375	2 ==> 3
	21	1	0.200	0 ==> 1
	38	1	0.750	0 --> 2
	41	1	0.750	1 --> 0
	52	1	0.800	0 --> 7
	60	1	0.750	2 ==> 3
node_55 --> Zhangheotherium	30	1	0.167	1 --> 0
	33	1	0.333	0 ==> 2
	40	1	0.200	1 ==> 0
	58	1	0.167	0 ==> 1
	59	1	0.250	1 ==> 0
	74	1	0.750	1 ==> 2
	79	1	0.200	1 --> 0
	93	1	0.400	0 --> 2
	97	1	0.333	0 ==> 1
	101	1	0.500	0 --> 1
	102	1	0.500	1 --> 4
	105	1	1.000	0 ==> 1
	113	1	0.500	0 --> 1
	114	1	0.200	0 --> 1
	117	1	0.400	0 --> 1
	125	1	0.600	0 --> 2
	127	1	0.667	1 ==> 2
	128	1	0.500	0 ==> 1
	131	1	0.667	0 ==> 1
	133	1	0.375	0 --> 2
	134	1	0.300	0 ==> 2
	139	1	1.000	0 ==> 1
	148	1	0.500	0 --> 1
	149	1	0.500	0 --> 1
	155	1	0.500	0 --> 1
	156	1	1.000	0 --> 1
	161	1	0.500	0 --> 1
	162	1	0.500	0 --> 1
	163	1	1.000	1 --> 2
	164	1	0.500	0 --> 1
	165	1	1.000	0 --> 1
	166	1	1.000	0 --> 1
	167	1	0.500	0 --> 1
	168	1	0.333	0 --> 1
	169	1	0.500	0 --> 1
	170	1	0.500	0 --> 1
	171	1	0.500	0 --> 1
	172	1	0.500	0 --> 1
	173	1	1.000	0 --> 1
	174	1	0.500	0 --> 1

	175	1	1.000	0 --> 1
	176	1	1.000	0 --> 1
	177	1	1.000	0 --> 1
	178	1	0.500	0 --> 1
	180	1	1.000	0 --> 1
	181	1	1.000	0 --> 1
	182	1	0.500	0 --> 1
	183	1	0.500	0 --> 1
	188	1	1.000	0 --> 1
	189	1	1.000	0 --> 1
	190	1	1.000	0 --> 2
	191	1	0.500	0 --> 2
	192	1	0.500	0 --> 1
	194	1	0.500	0 --> 1
	195	1	1.000	0 --> 1
	196	1	0.500	0 --> 1
	197	1	0.667	1 --> 2
	198	1	1.000	0 --> 1
	201	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	206	1	0.500	0 --> 1
	207	1	1.000	0 --> 3
	208	1	1.000	0 --> 2
	210	1	1.000	0 --> 1
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	218	1	1.000	0 --> 2
	221	1	0.667	0 --> 2
	226	1	0.500	1 --> 2
	227	1	0.500	0 --> 1
	230	1	1.000	0 --> 1
	239	1	1.000	0 --> 1
	240	1	1.000	0 --> 1
	241	1	1.000	0 --> 1
	253	1	0.333	0 --> 1
	254	1	0.400	1 --> 2
	255	1	0.333	0 --> 1
	259	1	0.500	0 --> 1
	260	1	1.000	1 --> 2
	264	1	1.000	0 --> 1
	266	1	1.000	0 --> 1
	275	1	1.000	0 --> 1
	289	1	0.333	0 --> 2
	292	1	1.000	0 --> 1
	295	1	1.000	0 --> 2
node_55 --> node_54	4	1	0.667	2 ==> 4
	19	1	0.200	1 ==> 0
	30	1	0.167	1 --> 0
	78	1	0.400	0 ==> 1
	81	1	0.500	0 ==> 1
	93	1	0.400	0 --> 1
	98	1	1.000	0 --> 1
	102	1	0.500	1 --> 3
	104	1	0.250	0 --> 2
	115	1	0.333	1 ==> 0
node_54 --> Amphitherium	5	1	0.250	0 --> 1
	10	1	0.333	0 --> 1
	15	1	0.429	0 --> 2
	89	1	0.250	0 ==> 1
	110	1	1.000	0 ==> 1
	111	1	1.000	0 ==> 1
node_54 --> Dryolestes	6	1	0.333	1 ==> 0
	10	1	0.333	0 --> 3
	12	1	0.750	0 ==> 3
	13	1	0.429	0 ==> 12
	14	1	0.500	7 ==> 45
	15	1	0.429	0 --> 3

	37	1	0.600	2 --> 46
	38	1	0.750	0 --> 3
	43	1	0.667	0 --> 3
	46	1	0.750	0 --> 4
	49	1	1.000	0 --> 3
	50	1	0.667	7 --> 89
	51	1	1.000	0 --> 6
	52	1	0.800	0 --> 3
	73	1	0.400	0 --> 2
	79	1	0.200	1 --> 0
	101	1	0.500	0 --> 1
	113	1	0.500	0 --> 1
	125	1	0.600	0 --> 1
	133	1	0.375	0 --> 1
	134	1	0.300	0 ==> 1
	141	1	0.333	0 --> 3
node_57 --> Amphilestes	1	1	0.667	0 ==> 1
	18	1	0.375	1 ==> 0
	24	1	0.143	0 ==> 1
	33	1	0.333	0 ==> 1
	75	1	0.200	0 ==> 1
	76	1	0.250	0 ==> 1
	78	1	0.400	0 ==> 1
	86	1	0.333	0 ==> 1
	87	1	0.800	0 ==> 1
	88	1	0.400	0 ==> 2
	92	1	0.200	0 ==> 1
	93	1	0.400	0 ==> 2
	94	1	0.333	0 ==> 2
	101	1	0.500	0 ==> 1
	102	1	0.500	1 ==> 4
	104	1	0.250	1 ==> 2
	106	1	0.667	0 ==> 2
	114	1	0.200	0 ==> 1
	117	1	0.400	0 ==> 1
	134	1	0.300	0 ==> 2
	145	1	0.500	1 ==> 0
	286	1	0.500	0 ==> 1
node_57 --> Priacodon	7	1	0.222	0 ==> 1
	8	1	0.250	2 ==> 1
	18	1	0.375	1 ==> 0
	19	1	0.200	1 ==> 0
	31	1	0.500	1 ==> 2
	33	1	0.333	0 ==> 1
	34	1	0.500	1 ==> 2
	58	1	0.167	2 ==> 1
	59	1	0.250	1 ==> 0
	75	1	0.200	0 ==> 1
	76	1	0.250	0 ==> 1
	78	1	0.400	0 ==> 1
	79	1	0.200	1 ==> 0
	86	1	0.333	0 ==> 1
	87	1	0.800	0 ==> 1
	88	1	0.400	0 ==> 2
	89	1	0.250	0 ==> 1
	92	1	0.200	0 ==> 1
	93	1	0.400	0 ==> 2
	94	1	0.333	0 ==> 2
	95	1	0.500	0 ==> 1
	97	1	0.333	0 ==> 1
	100	1	0.333	1 ==> 2
	101	1	0.500	0 ==> 1
	102	1	0.500	1 ==> 4
	115	1	0.333	1 ==> 0
	117	1	0.400	0 ==> 1
	119	1	0.250	0 ==> 1
	121	1	1.000	0 ==> 1
	127	1	0.667	1 ==> 3

133	1	0.375	0	--> 1
134	1	0.300	0	==> 2
135	1	0.571	1	==> 2
136	1	0.800	0	==> 2
137	1	0.500	0	==> 2
138	1	0.600	0	==> 1
146	1	0.500	0	==> 1
237	1	0.600	2	==> 3
246	1	1.000	0	==> 2
253	1	0.333	0	==> 1
262	1	1.000	0	==> 1
282	1	0.500	1	==> 0
286	1	0.500	0	==> 1
289	1	0.333	0	==> 12
291	1	1.000	0	==> 1
292	1	1.000	0	==> 2
294	1	0.333	0	--> 1
303	1	1.000	0	==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	3	6	10	0.500	0.500	0.571	0.286
4	4	6	12	0.667	0.333	0.750	0.500
5	1	4	8	0.250	0.750	0.571	0.143
6	2	6	9	0.333	0.667	0.429	0.143
7	2	9	9	0.222	0.778	0.000	0.000
8	3	12	18	0.250	0.750	0.400	0.100
9	2	3	3	0.667	0.333	0.000	0.000
10	3	9	11	0.333	0.667	0.250	0.083
11	1	1	3	1.000	0.000	1.000	1.000
12	3	4	5	0.750	0.250	0.500	0.375
13	3	7	8	0.429	0.571	0.200	0.086
14	4	8	13	0.500	0.500	0.556	0.278
15	3	7	8	0.429	0.571	0.200	0.086
16	4	5	12	0.800	0.200	0.875	0.700
17	3	10	16	0.300	0.700	0.462	0.138
18	3	8	8	0.375	0.625	0.000	0.000
19	1	5	12	0.200	0.800	0.636	0.127
20	3	8	9	0.375	0.625	0.167	0.062
21	1	5	9	0.200	0.800	0.500	0.100
22	1	5	7	0.200	0.800	0.333	0.067
23	1	1	1	1.000	0.000	0/0	0/0
24	1	7	8	0.143	0.857	0.143	0.020
25	4	6	8	0.667	0.333	0.500	0.333
26	1	1	1	1.000	0.000	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	6	11	0.167	0.833	0.500	0.083
31	2	4	5	0.500	0.500	0.333	0.167
32	1	2	4	0.500	0.500	0.667	0.333
33	2	6	7	0.333	0.667	0.200	0.067
34	3	6	8	0.500	0.500	0.400	0.200
35	2	4	6	0.500	0.500	0.500	0.250
36	1	2	3	0.500	0.500	0.500	0.250
37	3	5	9	0.600	0.400	0.667	0.400
38	3	4	5	0.750	0.250	0.500	0.375
39	2	4	8	0.500	0.500	0.667	0.333
40	1	5	6	0.200	0.800	0.200	0.040
41	3	4	6	0.750	0.250	0.667	0.500
42	3	8	12	0.375	0.625	0.444	0.167
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0

45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	3	3	3	1.000	0.000	0/0	0/0
50	4	6	8	0.667	0.333	0.500	0.333
51	1	1	1	1.000	0.000	0/0	0/0
52	4	5	5	0.800	0.200	0.000	0.000
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	5	8	0.600	0.400	0.600	0.360
56	2	2	7	1.000	0.000	1.000	1.000
57	2	6	7	0.333	0.667	0.200	0.067
58	2	12	16	0.167	0.833	0.286	0.048
59	1	4	8	0.250	0.750	0.571	0.143
60	3	4	4	0.750	0.250	0.000	0.000
61	1	7	12	0.143	0.857	0.455	0.065
62	1	4	5	0.250	0.750	0.250	0.062
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	5	6	0.200	0.800	0.200	0.040
65	2	3	4	0.667	0.333	0.500	0.333
66	1	4	4	0.250	0.750	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	5	10	0.200	0.800	0.556	0.111
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	3	4	6	0.750	0.250	0.667	0.500
75	1	5	9	0.200	0.800	0.500	0.100
76	1	4	9	0.250	0.750	0.625	0.156
77	1	2	4	0.500	0.500	0.667	0.333
78	2	5	8	0.400	0.600	0.500	0.200
79	1	5	7	0.200	0.800	0.333	0.067
80	1	3	6	0.333	0.667	0.600	0.200
81	3	6	8	0.500	0.500	0.400	0.200
82	1	1	3	1.000	0.000	1.000	1.000
83	1	1	1	1.000	0.000	0/0	0/0
84	1	1	1	1.000	0.000	0/0	0/0
85	1	1	2	1.000	0.000	1.000	1.000
86	1	3	4	0.333	0.667	0.333	0.111
87	4	5	9	0.800	0.200	0.800	0.640
88	2	5	8	0.400	0.600	0.500	0.200
89	1	4	8	0.250	0.750	0.571	0.143
90	1	1	4	1.000	0.000	1.000	1.000
91	1	1	1	1.000	0.000	0/0	0/0
92	1	5	9	0.200	0.800	0.500	0.100
93	2	5	6	0.400	0.600	0.250	0.100
94	2	6	9	0.333	0.667	0.429	0.143
95	2	4	7	0.500	0.500	0.600	0.300
96	1	1	3	1.000	0.000	1.000	1.000
97	1	3	4	0.333	0.667	0.333	0.111
98	1	1	2	1.000	0.000	1.000	1.000
99	2	2	4	1.000	0.000	1.000	1.000
100	2	6	8	0.333	0.667	0.333	0.111
101	3	6	8	0.500	0.500	0.400	0.200
102	4	8	11	0.500	0.500	0.429	0.214
103	1	1	4	1.000	0.000	1.000	1.000
104	2	8	11	0.250	0.750	0.333	0.083
105	1	1	1	1.000	0.000	0/0	0/0
106	2	3	7	0.667	0.333	0.800	0.533
107	2	2	7	1.000	0.000	1.000	1.000
108	1	1	1	1.000	0.000	0/0	0/0
109	1	1	1	1.000	0.000	0/0	0/0
110	1	1	1	1.000	0.000	0/0	0/0
111	1	1	1	1.000	0.000	0/0	0/0
112	1	1	1	1.000	0.000	0/0	0/0

113	1	2	2	0.500	0.500	0.000	0.000
114	1	5	7	0.200	0.800	0.333	0.067
115	2	6	7	0.333	0.667	0.200	0.067
116	2	3	6	0.667	0.333	0.750	0.500
117	2	5	6	0.400	0.600	0.250	0.100
118	1	1	3	1.000	0.000	1.000	1.000
119	1	4	5	0.250	0.750	0.250	0.062
120	1	3	7	0.333	0.667	0.667	0.222
121	1	1	1	1.000	0.000	0/0	0/0
122	1	2	3	0.500	0.500	0.500	0.250
123	1	1	3	1.000	0.000	1.000	1.000
124	1	1	2	1.000	0.000	1.000	1.000
125	3	5	6	0.600	0.400	0.333	0.200
126	1	1	1	1.000	0.000	0/0	0/0
127	4	6	9	0.667	0.333	0.600	0.400
128	2	4	5	0.500	0.500	0.333	0.167
129	1	1	1	1.000	0.000	0/0	0/0
130	1	1	1	1.000	0.000	0/0	0/0
131	2	3	4	0.667	0.333	0.500	0.333
132	1	1	2	1.000	0.000	1.000	1.000
133	3	8	8	0.375	0.625	0.000	0.000
134	3	10	11	0.300	0.700	0.125	0.038
135	4	7	12	0.571	0.429	0.625	0.357
136	4	5	8	0.800	0.200	0.750	0.600
137	2	4	6	0.500	0.500	0.500	0.250
138	3	5	6	0.600	0.400	0.333	0.200
139	2	2	2	1.000	0.000	0/0	0/0
140	2	3	4	0.667	0.333	0.500	0.333
141	1	3	3	0.333	0.667	0.000	0.000
142	1	1	2	1.000	0.000	1.000	1.000
143	1	2	3	0.500	0.500	0.500	0.250
144	1	2	6	0.500	0.500	0.800	0.400
145	2	4	9	0.500	0.500	0.714	0.357
146	2	4	5	0.500	0.500	0.333	0.167
147	1	1	1	1.000	0.000	0/0	0/0
148	1	2	3	0.500	0.500	0.500	0.250
149	1	2	2	0.500	0.500	0.000	0.000
150	1	1	2	1.000	0.000	1.000	1.000
151	1	1	2	1.000	0.000	1.000	1.000
152	1	1	1	1.000	0.000	0/0	0/0
153	1	2	2	0.500	0.500	0.000	0.000
154	1	2	2	0.500	0.500	0.000	0.000
155	1	2	3	0.500	0.500	0.500	0.250
156	1	1	1	1.000	0.000	0/0	0/0
157	1	1	1	1.000	0.000	0/0	0/0
158	1	1	1	1.000	0.000	0/0	0/0
159	1	1	2	1.000	0.000	1.000	1.000
160	1	1	1	1.000	0.000	0/0	0/0
161	1	2	3	0.500	0.500	0.500	0.250
162	1	2	2	0.500	0.500	0.000	0.000
163	2	2	2	1.000	0.000	0/0	0/0
164	1	2	3	0.500	0.500	0.500	0.250
165	1	1	1	1.000	0.000	0/0	0/0
166	1	1	1	1.000	0.000	0/0	0/0
167	1	2	3	0.500	0.500	0.500	0.250
168	1	3	3	0.333	0.667	0.000	0.000
169	1	2	3	0.500	0.500	0.500	0.250
170	1	2	3	0.500	0.500	0.500	0.250
171	1	2	3	0.500	0.500	0.500	0.250
172	1	2	3	0.500	0.500	0.500	0.250
173	1	1	1	1.000	0.000	0/0	0/0
174	1	2	3	0.500	0.500	0.500	0.250
175	1	1	1	1.000	0.000	0/0	0/0
176	1	1	1	1.000	0.000	0/0	0/0
177	2	2	2	1.000	0.000	0/0	0/0
178	1	2	3	0.500	0.500	0.500	0.250
179	2	4	5	0.500	0.500	0.333	0.167
180	1	1	1	1.000	0.000	0/0	0/0

181	1	1	1	1.000	0.000	0/0	0/0
182	1	2	3	0.500	0.500	0.500	0.250
183	1	2	3	0.500	0.500	0.500	0.250
184	1	1	2	1.000	0.000	1.000	1.000
185	1	1	1	1.000	0.000	0/0	0/0
186	1	2	2	0.500	0.500	0.000	0.000
187	1	2	2	0.500	0.500	0.000	0.000
188	1	1	1	1.000	0.000	0/0	0/0
189	1	1	1	1.000	0.000	0/0	0/0
190	2	2	3	1.000	0.000	1.000	1.000
191	2	4	4	0.500	0.500	0.000	0.000
192	1	2	4	0.500	0.500	0.667	0.333
193	1	2	2	0.500	0.500	0.000	0.000
194	1	2	2	0.500	0.500	0.000	0.000
195	1	1	1	1.000	0.000	0/0	0/0
196	1	2	3	0.500	0.500	0.500	0.250
197	2	3	4	0.667	0.333	0.500	0.333
198	1	1	1	1.000	0.000	0/0	0/0
199	1	2	3	0.500	0.500	0.500	0.250
200	1	1	2	1.000	0.000	1.000	1.000
201	1	1	1	1.000	0.000	0/0	0/0
202	1	2	3	0.500	0.500	0.500	0.250
203	1	1	2	1.000	0.000	1.000	1.000
204	1	1	1	1.000	0.000	0/0	0/0
205	1	1	2	1.000	0.000	1.000	1.000
206	1	2	3	0.500	0.500	0.500	0.250
207	1	1	1	1.000	0.000	0/0	0/0
208	1	1	1	1.000	0.000	0/0	0/0
209	1	1	2	1.000	0.000	1.000	1.000
210	2	2	3	1.000	0.000	1.000	1.000
211	1	2	3	0.500	0.500	0.500	0.250
212	1	2	2	0.500	0.500	0.000	0.000
213	1	2	2	0.500	0.500	0.000	0.000
214	1	1	2	1.000	0.000	1.000	1.000
215	1	1	2	1.000	0.000	1.000	1.000
216	1	1	2	1.000	0.000	1.000	1.000
217	1	1	2	1.000	0.000	1.000	1.000
218	2	2	3	1.000	0.000	1.000	1.000
219	1	1	2	1.000	0.000	1.000	1.000
220	1	1	2	1.000	0.000	1.000	1.000
221	2	3	3	0.667	0.333	0.000	0.000
222	1	1	1	1.000	0.000	0/0	0/0
223	1	2	5	0.500	0.500	0.750	0.375
224	1	1	1	1.000	0.000	0/0	0/0
225	1	2	3	0.500	0.500	0.500	0.250
226	2	4	4	0.500	0.500	0.000	0.000
227	1	2	3	0.500	0.500	0.500	0.250
228	1	2	2	0.500	0.500	0.000	0.000
229	1	2	2	0.500	0.500	0.000	0.000
230	1	1	1	1.000	0.000	0/0	0/0
231	1	1	1	1.000	0.000	0/0	0/0
232	2	2	3	1.000	0.000	1.000	1.000
233	1	1	3	1.000	0.000	1.000	1.000
234	1	1	1	1.000	0.000	0/0	0/0
235	1	3	4	0.333	0.667	0.333	0.111
236	2	3	4	0.667	0.333	0.500	0.333
237	3	5	5	0.600	0.400	0.000	0.000
238	1	1	2	1.000	0.000	1.000	1.000
239	1	1	1	1.000	0.000	0/0	0/0
240	1	1	1	1.000	0.000	0/0	0/0
241	1	1	1	1.000	0.000	0/0	0/0
242	1	1	1	1.000	0.000	0/0	0/0
243	1	1	1	1.000	0.000	0/0	0/0
244	2	2	2	1.000	0.000	0/0	0/0
245	1	1	1	1.000	0.000	0/0	0/0
246	1	1	1	1.000	0.000	0/0	0/0
247	1	1	1	1.000	0.000	0/0	0/0
248	1	4	4	0.250	0.750	0.000	0.000

249	1	1	1	1.000	0.000	0/0	0/0
250	1	1	1	1.000	0.000	0/0	0/0
251	1	1	3	1.000	0.000	1.000	1.000
252	1	1	2	1.000	0.000	1.000	1.000
253	1	3	3	0.333	0.667	0.000	0.000
254	2	5	5	0.400	0.600	0.000	0.000
255	1	3	3	0.333	0.667	0.000	0.000
256	1	2	3	0.500	0.500	0.500	0.250
257	1	3	4	0.333	0.667	0.333	0.111
258	1	1	3	1.000	0.000	1.000	1.000
259	1	2	2	0.500	0.500	0.000	0.000
260	2	2	3	1.000	0.000	1.000	1.000
261	2	2	2	1.000	0.000	0/0	0/0
262	1	1	1	1.000	0.000	0/0	0/0
263	1	2	2	0.500	0.500	0.000	0.000
264	1	1	1	1.000	0.000	0/0	0/0
265	1	1	2	1.000	0.000	1.000	1.000
266	1	1	1	1.000	0.000	0/0	0/0
267	1	1	1	1.000	0.000	0/0	0/0
268	1	1	1	1.000	0.000	0/0	0/0
269	1	1	1	1.000	0.000	0/0	0/0
270	2	2	2	1.000	0.000	0/0	0/0
271	1	1	1	1.000	0.000	0/0	0/0
272	1	1	1	1.000	0.000	0/0	0/0
273	1	1	1	1.000	0.000	0/0	0/0
274	1	1	1	1.000	0.000	0/0	0/0
275	1	1	1	1.000	0.000	0/0	0/0
276	1	1	1	1.000	0.000	0/0	0/0
277	2	4	4	0.500	0.500	0.000	0.000
278	1	2	2	0.500	0.500	0.000	0.000
279	2	2	2	1.000	0.000	0/0	0/0
280	1	1	1	1.000	0.000	0/0	0/0
281	1	1	1	1.000	0.000	0/0	0/0
282	1	2	2	0.500	0.500	0.000	0.000
283	1	1	1	1.000	0.000	0/0	0/0
284	1	2	3	0.500	0.500	0.500	0.250
285	1	1	1	1.000	0.000	0/0	0/0
286	1	2	2	0.500	0.500	0.000	0.000
287	1	1	1	1.000	0.000	0/0	0/0
288	1	1	1	1.000	0.000	0/0	0/0
289	1	3	3	0.333	0.667	0.000	0.000
290	1	1	1	1.000	0.000	0/0	0/0
291	1	1	1	1.000	0.000	0/0	0/0
292	2	2	2	1.000	0.000	0/0	0/0
293	1	1	1	1.000	0.000	0/0	0/0
294	1	3	3	0.333	0.667	0.000	0.000
295	1	1	1	1.000	0.000	0/0	0/0
296	1	1	1	1.000	0.000	0/0	0/0
297	2	2	3	1.000	0.000	1.000	1.000
298	1	1	2	1.000	0.000	1.000	1.000
299	1	2	2	0.500	0.500	0.000	0.000
300	1	2	2	0.500	0.500	0.000	0.000
301	1	1	1	1.000	0.000	0/0	0/0
302	1	2	2	0.500	0.500	0.000	0.000
303	2	2	2	1.000	0.000	0/0	0/0
304	1	1	1	1.000	0.000	0/0	0/0
305	1	2	2	0.500	0.500	0.000	0.000
306	1	1	2	1.000	0.000	1.000	1.000
307	2	2	2	1.000	0.000	0/0	0/0

--Matrice "totale" avec "*Sinoconodon*" et caractères non-ordonnés

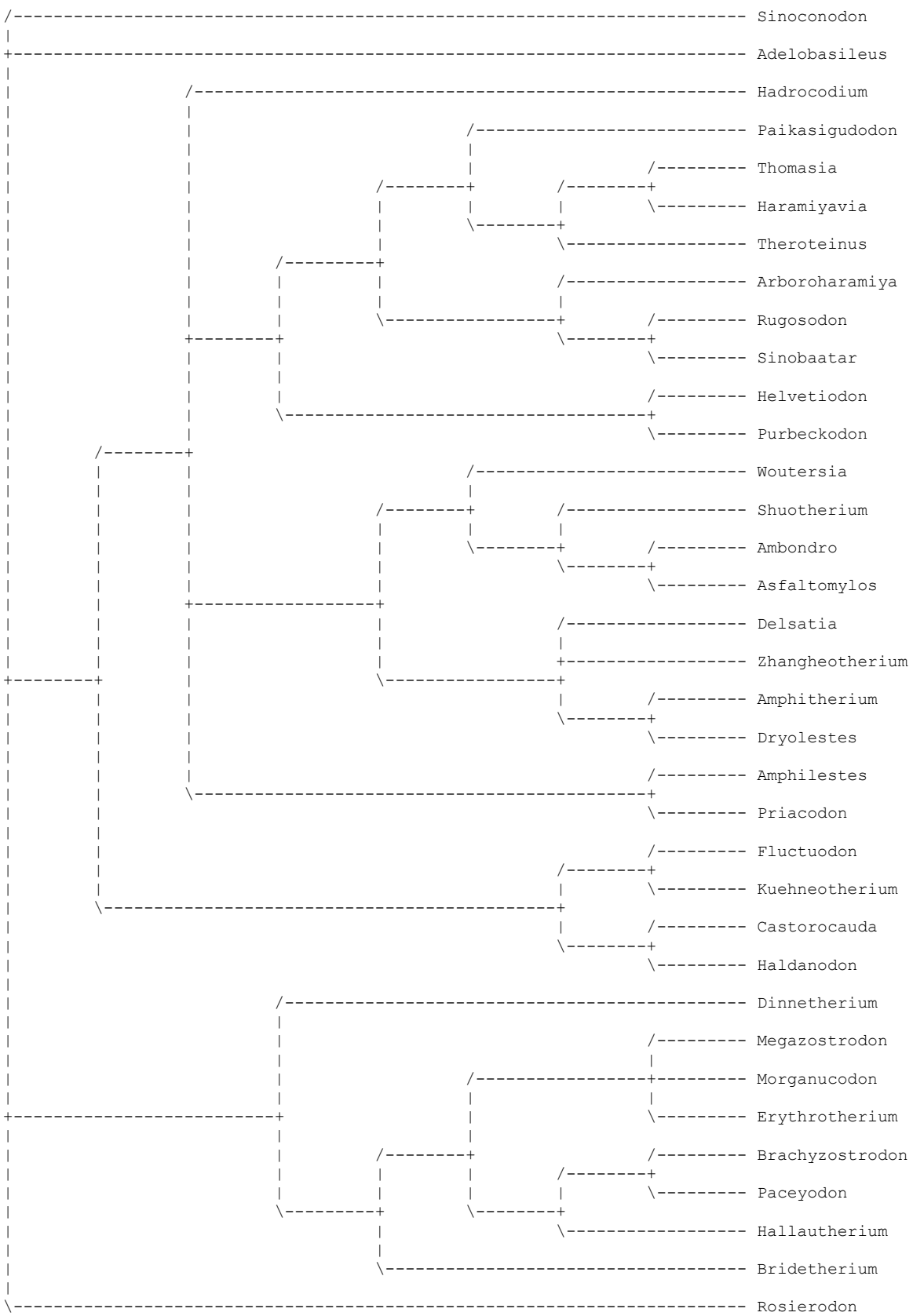
----*Buffer de l'analyse*

```
Data matrix has 35 taxa, 307 characters
Valid character-state symbols: 0123456789
Missing data identified by '?'
"Equate" macros in effect:
   N ==> ?

Heuristic search settings:
  Optimality criterion = parsimony
    Character-status summary:
      Of 307 total characters:
        All characters are of type 'unord'
        All characters have equal weight
        23 characters are constant
        92 variable characters are parsimony-uninformative
        Number of parsimony-informative characters = 192
    Multistate taxa interpreted as uncertainty
  Starting tree(s) obtained via stepwise addition
  Addition sequence: random
    Number of replicates = 100
    Starting seed = 1722950885
  Number of trees held at each step during stepwise addition = 1
  Branch-swapping algorithm: tree-bisection-reconnection (TBR)
  Steepest descent option not in effect
  Initial 'MaxTrees' setting = 40300 (will be auto-increased by 100)
  Branches collapsed (creating polytomies) if maximum branch length is zero
  'MulTrees' option in effect
  Topological constraints not enforced
  Trees are unrooted

Heuristic search completed
   Total number of rearrangements tried = 576072873
   Score of best tree(s) found = 666
   Number of trees retained = 835
   Time used = 02:37:57.2

Tree-island profile:
                    First      Last                     First   Times
Island      Size     tree      tree        Score    replicate     hit
-------------------------------------------------------------------
     1        63        1        63          666            1       5
     2        47       64       110          666            2       2
     3        49      111       159          666            4       3
     4        35      160       194          666            5       1
     5        27      195       221          666            7       2
     6        31      222       252          666           16       1
     7        30      253       282          666           18       1
     8        18      283       300          666           19       1
     9         1      301       301          666           20       1
    10        26      302       327          666           21       1
    11        29      328       356          666           22       1
    12        26      357       382          666           23       1
    13        26      383       408          666           24       1
    14         7      409       415          666           26       1
    15        25      416       440          666           30       1
    16        25      441       465          666           33       1
    17        26      466       491          666           34       1
    18        25      492       516          666           36       1
    19         1      517       517          666           37       1
    20         9      518       526          666           38       1
    21         2      527       528          666           39       1
    22         1      529       529          666           40       1
    23        10      530       539          666           41       1
    24        15      540       554          666           42       1
    25        23      555       577          666           43       1
```

26	17	578	594	666	44	1
27	21	595	615	666	45	1
28	1	616	616	666	47	1
29	5	617	621	666	48	1
30	4	622	625	666	49	1
31	19	626	644	666	50	1
32	1	645	645	666	51	1
33	15	646	660	666	52	1
34	8	661	668	666	53	1
35	9	669	677	666	54	1
36	20	678	697	666	56	1
37	14	698	711	666	58	2
38	11	712	722	666	59	1
39	1	723	723	666	60	1
40	12	724	735	666	61	1
41	11	736	746	666	62	1
42	1	747	747	666	64	1
43	12	748	759	666	67	1
44	3	760	762	666	68	1
45	7	763	769	666	71	1
46	3	770	772	666	74	1
47	6	773	778	666	76	1
48	4	779	782	666	78	1
49	2	783	784	666	80	1
50	2	785	786	666	81	1
51	6	787	792	666	82	1
52	1	793	793	666	84	1
53	4	794	797	666	85	1
54	1	798	798	666	86	1
55	4	799	802	666	87	1
56	1	803	803	666	88	1
57	5	804	808	666	89	1
58	5	809	813	666	91	1
59	1	814	814	666	92	1
60	1	815	815	666	93	1
61	4	816	819	666	94	1
62	1	820	820	666	95	1
63	6	821	826	666	96	1
64	3	827	829	666	97	1
65	3	830	832	666	99	1
66	3	833	835	666	100	1
67	320	-	-	667	6	1
68	318	-	-	667	17	1
69	299	-	-	667	25	1
70	298	-	-	667	31	1
71	289	-	-	667	57	1
72	286	-	-	667	69	1
73	257	-	-	667	9	1
74	1723	-	-	668	32	1
75	1618	-	-	668	65	1
76	12	-	-	668	70	1
77	864	-	-	669	3	1
78	753	-	-	669	35	1
79	692	-	-	669	66	1
80	686	-	-	669	73	1
81	677	-	-	669	90	1
82	578	-	-	669	29	1
83	566	-	-	669	27	1
84	453	-	-	669	15	1
85	84	-	-	669	11	1
86	12	-	-	669	46	4*
87	1	-	-	673	28	1
88	147	-	-	674	75	1

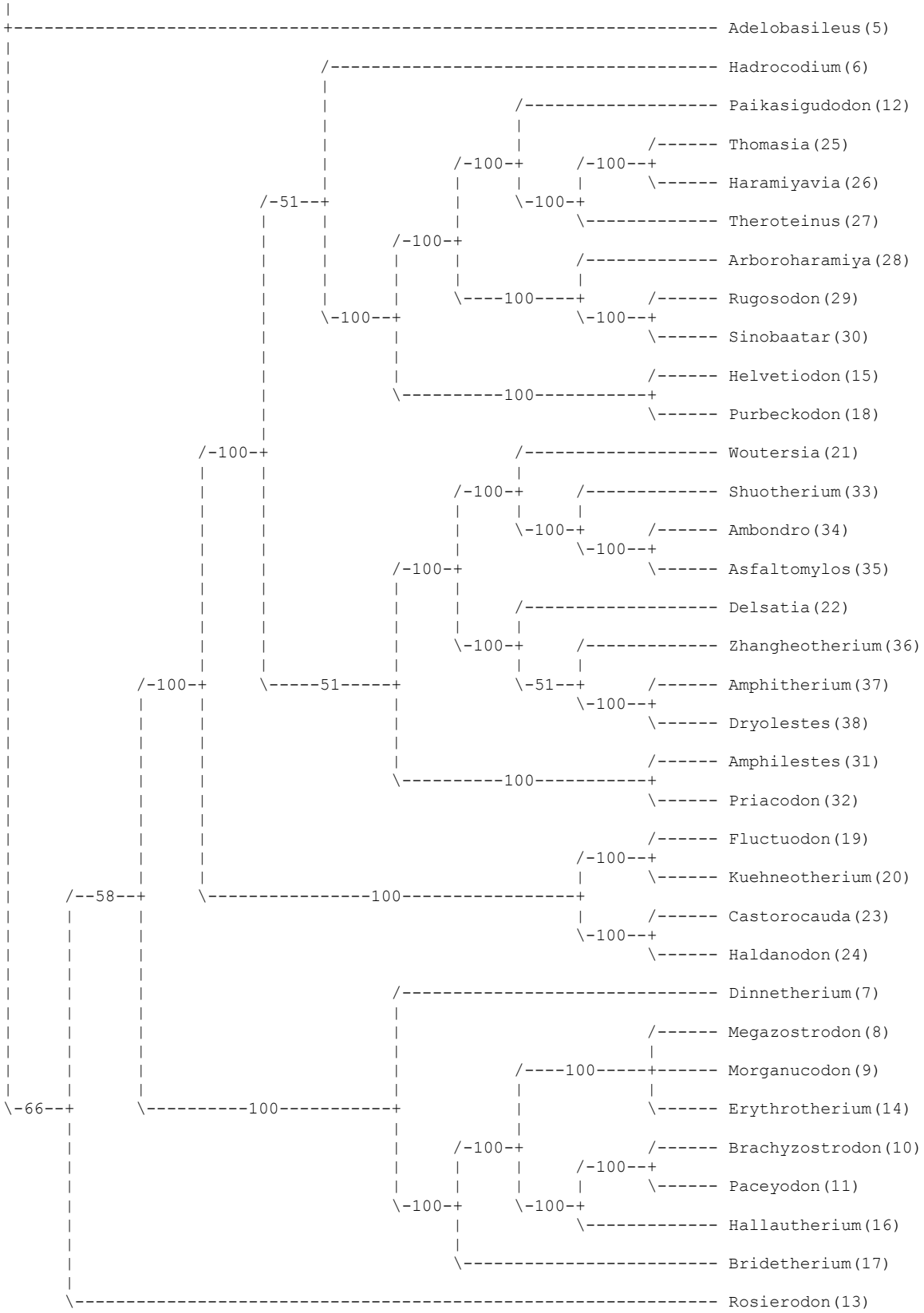
Note(s):
    * Multiple hits on islands of unsaved trees may in fact represent different islands

Strict consensus of 835 trees:



50% Majority-rule consensus of 835 trees

/---------- Sinoconodon(4)

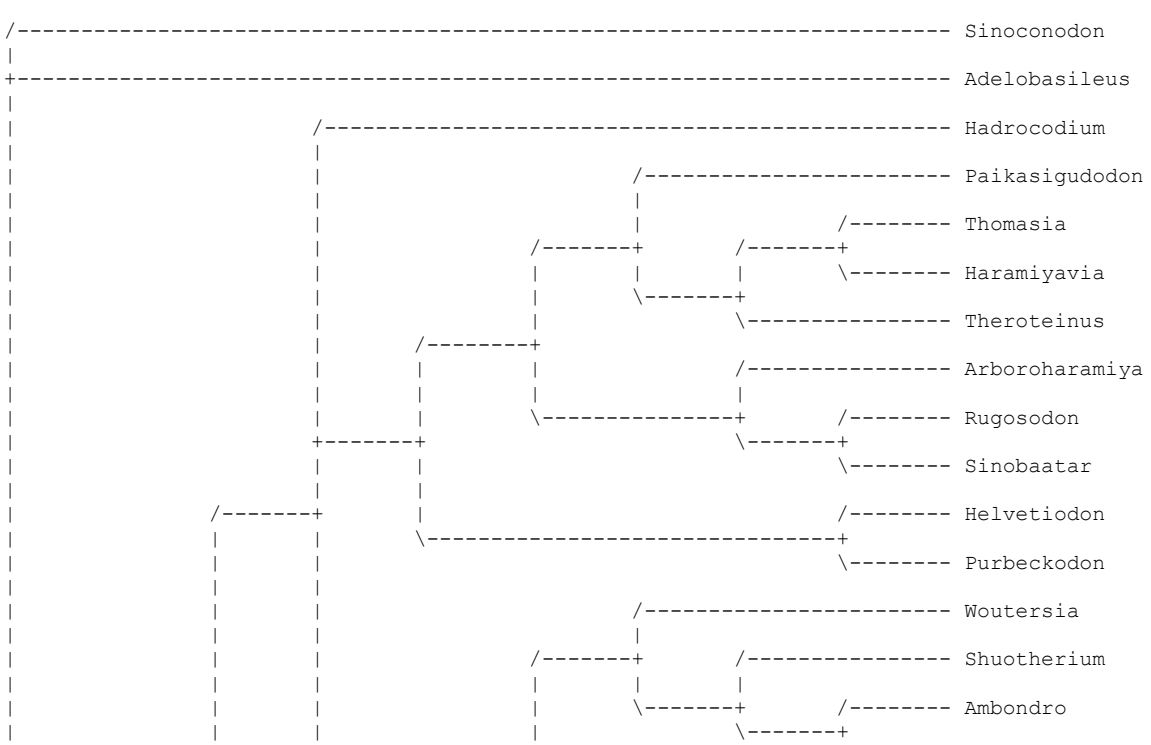


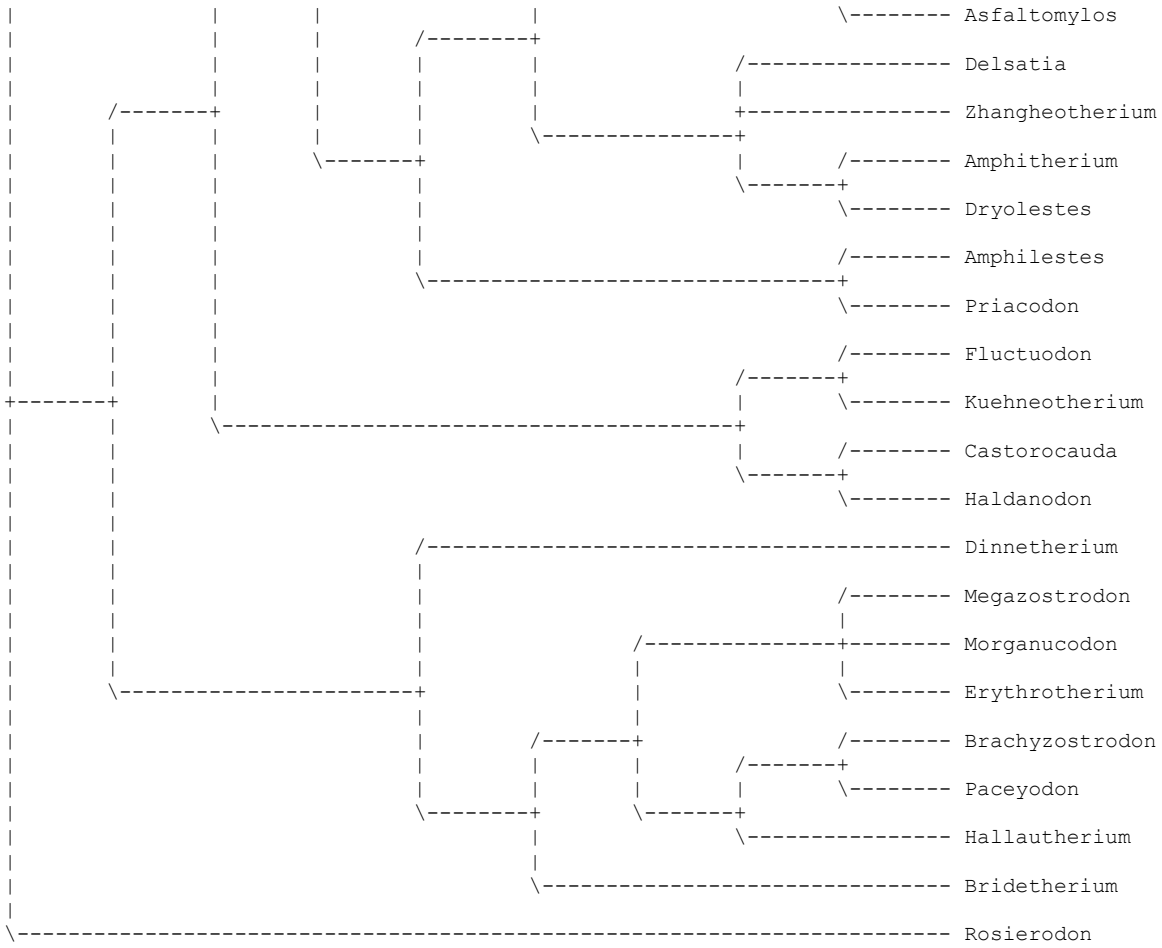
Bipartitions found in one or more trees and frequency of occurrence:

```
      11111111112222222222333333333
456789012345678901234567890123456678      Freq      %
-----------------------------------------------------
..................**..........******       835 100.0%
..*.....*..*..*********************       835 100.0%
```

```
..*.....*..*..*..**..**************       835 100.0%
................................**...       835 100.0%
........*..*..*......******........       835 100.0%
........*............******........       835 100.0%
........*............***............       835 100.0%
......................***............       835 100.0%
......................**.............       835 100.0%
........................***........       835 100.0%
........................**.........       835 100.0%
............*..*.....................       835 100.0%
...*****..*.**.......................       835 100.0%
....****..*.**.......................       835 100.0%
..................*............***...       835 100.0%
..............................***...       835 100.0%
............................**......       835 100.0%
..................*.............***       835 100.0%
......**.............................       835 100.0%
.................................**          835 100.0%
....**....*.........................       835 100.0%
...............**..**...............       835 100.0%
...............**...................       835 100.0%
.....................**.............       835 100.0%
......**....*.......................       835 100.0%
....****..*.*.......................       835 100.0%
..*********************************       552  66.1%
..*******.*************************       483  57.8%
..................**........********       430  51.5%
..*.....*..*..*......******........       430  51.5%
................................***         422  50.5%
..................*..............**       413  49.5%
........*..*..*..**..******..******       405  48.5%
........*..*..*..**..**************       405  48.5%
....*.....*.........................       322  38.6%
.....*....*.........................       263  31.5%
....**..............................       250  29.9%
..*.....**.*..**********************       217  26.0%
.********.*************************       152  18.2%
...*****.**.**......................       135  16.2%
.*.......*..........................       131  15.7%
```

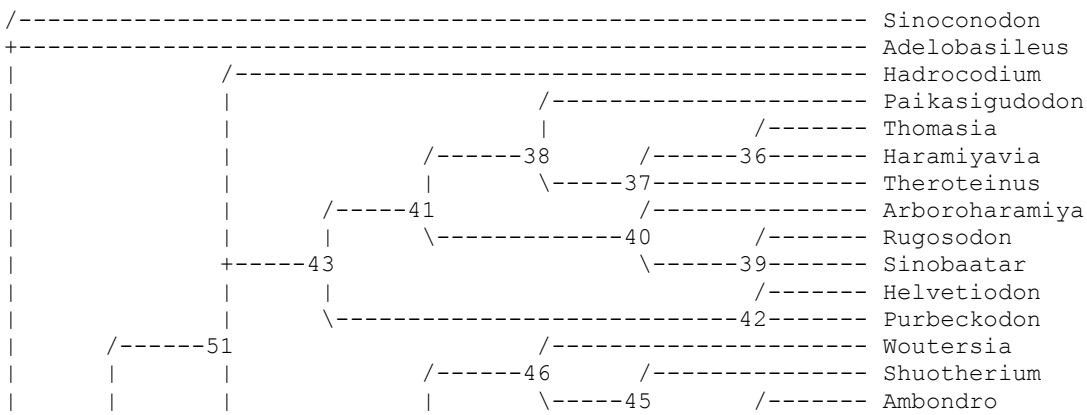
Adams consensus of 835 trees:

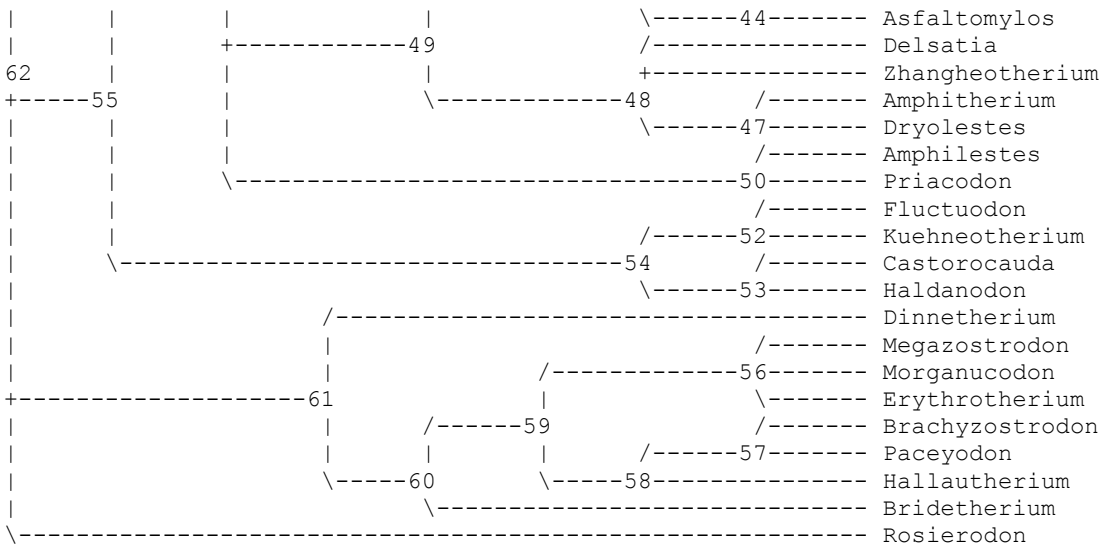




----*Optimisation des caractères sur l'arbre de consensus en ACCTRAN*

```
Tree length = 682
Consistency index (CI) = 0.609
Homoplasy index (HI) = 0.391
CI excluding uninformative characters = 0.545
HI excluding uninformative characters = 0.455
Retention index (RI) = 0.584
Rescaled consistency index (RC) = 0.355
f value = 6634
f-ratio = 0.1790
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```





Possible character-state assignments to internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node                123456789012345678901234567890123456789012345678901234567890123456789
-------------------------------------------------------------------------------------------
36                  10000102000010000002101021110100012101210001000000000002020
                         22               2          2      1            13
                                                     3                   3
37                  10000102000010000002101021110100012101210001000000001002021
                         2                2          2      1            13
                                                     3                   3
38                  10000102000000000002?01021?1?100010?012100010000000001002011
                         2      1         2          2      1            1   2
                                                     3                   3
39                  2?000102000000000002101021?1?100031?000110011000000001002001
                         2                2
40                  1?000102000000000002?01021?1?100031?000110010000000001002001
                         2                2                                3
41                  10000102000000000002?01021?1?100010?000110010000000001002011
                         2                2          2                     3   2
                                                     3
42                  00000102000000001002001021?1?10?010000011201000000001022211
                         2   1            2          2                         2
                             3                       3
43                  00000102000000001002001021?1?10?010000011201000000001002011
                         2                2          2                      1  2
                                                     3                      2
44                  002212?00100072710121110021?1?00111002010020100000700101001 1
                               1    2 3  2                1       5        2
                               2    3                     3
45                  002201?00100070710121110021?1?00111002010020100000700101001 1
                         2                2                1       5        2
                                                           3
46                  002201?00000070710120010021?1??01110020100201000007001010011
                         2                2                1                2
                                                           3
47                  002401?00000070700020010021?1?00101002001000100000700001000 1
                        1    1    2 1     2             42  1 3  4  3863     1
                             3    3                     63  3        9 7
48                  002201?00000070700120010021?1??01010020010001000007000010001
                               1     2              2  1          3     1
                                                    3  3          7
49                  002201?00000070710120010021?1??01010020010201000007001010011
                                     2                1                2
                                                      3
50                  00000111000000001012001021?1?10111000001120100000000101001?
                                     2       2                           2
```

```
51              000001110000000010120010 21?1?10101000001120100000000010100 11
                                         2                                  2
52              000111130100041510120110 21?1?10101001011220100000200 1010 11
                   3       2   6                                    1
                               7                                    2
53              000311110110001010120?1131?1?10101001011220100000200?010011
                           1   5             1                        1 2
                           2   6
                               7
54              000011110100001010120?1021?1?10101001011220100000200 1010 11
                   1       2   5                                    1 2
                   3           6
                               7
55              000001110100000010120010 21?1?10101000001120100000000010100 11
                                                                          2
56              000001020000000031110011 01?1?11101000001120100000000010001 21
57              005010030000010001120010 01?1?11101000002120100000000010101 21
                     1      1                   1
                              4
58              000000020000000001120010 01?1?11101000002120100000000010101 21
                     1                         1
59              000001020000000031120011 01?1?11101000001120100000000010101 21
60              000001120100000031120011 21?1?11101000001120100000000010100 21
                                                                            1
61              000001110100000031120011 21?1?10101000001120100000000010100 21
                                                                            1
62              000001110100000030120010 21?1?10101000001120100000000010100?1
                                                                            1

Possible character-state assignments to internal nodes (continued)

                                                                 1111111111111111111
                666666666677777777778888888888999999999900000000001111111111
Node            012345678901234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------------
36              21010210???002??1?011000000021100000000210101002 1?000011200
                                                  2     2                 1
37              21010210???002??1?011000000021100000000210101002 1?000011200
                                                  2     2                 1
38              2101021????00???1?011000000021100000000210101002 1?000011200
                                                  2     2                 1
39              2101?21?1?00113111211000001321101021210222401002100000112 00
                                                                          1 1
40              2101?21?1?00??311?21100000132110 10?020022240100210000011200
                                                                          1
41              2101021????00??11?011000000021100000000210101002100000112 00
                                                  2     2                 1
42              10010?11???00??11?011000000021100000000210101000100000110 00
                                                  2     2   2  2        21
43              20010?11???00??11?011000000021100000000210101000100000110 00
                                                  2     2   2  2        21
44              20011011???000100101101?00002110000?000210110010100 00?11011
                     1        2   2  2            2      1  2           1
                                                          3
45              20011011???000100101101?00002110000?000210110010100 00?11011
                     1        2                   2      1  2           1
                                                          3
46              20011011???0001???01101?00002110000?000210110010100 00?1100?
                     1        2                   2      1  2           11
                                                          3
47              20010011 0??000111?1?1111000022?10112100121031201110000?00000
                     1       22                          1
48              20010011 0??000111?0?1010000022?101?2100?2101100111000 0?11000
                     1        2                          13 2           1
                                                          4
49              20010011???000111?011010000021100 00?000210110010100 00?11000
                     1        2                   2      1  2           1
                                                          3
```

```
50               20010011???000111?1110000011211012200?021140100010000011010
                      1        2                    1        2
51               20010011???000111?01100000002110000000021010100010000011000
                      1        2                   2         2            1
52               200100110??00010000110000?00000000000002001000001000000 1000
                      1                                  1   1
53               2001?0110??00010000011000100100000000002101010001000000 1000
                      1
54               200100110??00010000110000?00000000000002101000001000000 1000
                      1                                      1
55               20010011???00010000110000000000000000002101000001000000?1000
                      1                                      1
56               2111001110?00010000100000000000000000002001000001000000 0000
                      1                                  1 2 1          1
57               2111001110?000100001?0000000000000000002?010000010000000000
                      1       1                            2 1          1
58               2111001110?000100001?0000000000000000002?010000010000000000
                      1       1                            2 1          1
59               2111001110?000100001?0000000000000000002?010000010000000000
                      1       1                            2 1          1
60               2111001110?000100001?0000000000000000002?010000010000000000
                      1       1                            2 1          1
61               2111001110?000100001?0000000000000000002?010000010000000000
                      1                                    2 1          1
62               20010011???000100001?000000000000000000210100000100000?1000
                      1                                      1

Possible character-state assignments to internal nodes (continued)

                 11111111111111111111111111111111111111111111111111111111111
                 12222222222333333333344444444445555555555666666666677777777
Node             90123456789012345678901234567890123456789012345678901234567
----------------------------------------------------------------------------
36               000020001?00?01100??00?1112??11??1111000111111001111110100?
                       2       3213
                       3         34
                                 4
37               000020001?00?01100??00?1112??11??1111000111111001111110100?
                       2       3213
                       3         34
                                 4
38               000020001?00?01100??00?1112??11??1111000111111001111110100?
                       2       3213
                       3         34
                                 4
39               ?000212041?02001442?01?1112??111111110001111110011111 0100?
                          2     2
40               0000200041?0?00144??00?1112??11??1111000111111001111110100?
                       2  2    12
                       3       3
41               000020001?00?01100??00?1112??11??1111000111111001111110100?
                       2       3213
                       3         34
                                 4
42               0000?0001?00?01000??00?11????11??1111000111111001111110100?
                       2       3113
                       3        234
                                 4
43               0000?0001?00?01000??00?11????11??1111000111111001111110100?
                       2       3113
                       3        234
                                 4
44               1100000001000001000?000011?0??11001111?0011111??111111?1???
                       1       2114        1                 2
                       2       323
                                 4
45               1100000001000001000?000011?0??11001111?0011111??111111?1???
                       1       2114        1                 2
```

```
                      2       323
                                4
46                ?10000001000001000?000011?0??1100111?00111111??111111?1???
                      1       2114        1                 2
                      2       323
                                4
47                0100000010000010000000?11102?1100111?00111111??111111?1???
                      1       21                            2
                      2       32
48                01000000100000100000000111102?1100111?00111111??111111?1???
                      1       21                            2
                      2       32
49                0100000010000001000?000011?0??1100111?00111111??111111?1???
                      1       2114        1                 2
                      2       323
                                4
50                00000000100000120?0?00001100??1100111100011111100111111010 0?
                      2 3     3  2        1
                                4
51                0000000010000001000?00001100??1100111100011111100111111010 0?
                      2       3114        1
                               23
                                4
52                000?000010000??000000000110 00???00???00?0????100001000000000
                                12       1
                                4
53                0?0100001000 1?000000000110 00???00???00?0????100001000000000
                                12
                                4
54                000?000010000??000000000110 00???00???00?0????100001000000000
                                12       1
                                4
55                0000000010000 0?000000000110 00???0011100?0????100001000000000
                               112       11
                               34
                                4
56                0000000000000000100000011010000001110 0????00100000000000000
                      1 1       1
57                0000000000000 0?0100000011010 00?0011100????00100000000000000
                      1 1       12
58                0000000000000 0?0100000011010 00?0011100????00100000000000000
                      1 1       12
59                0000000000000 0?0100000011010 00?0011100????00100000000000000
                      1 1       12
60                0000000000000 0?0100000011010 00?0011100????00100000000000000
                      1 1       12
61                0000000000000 0?0100000011010 00?0011100????00100000000000000
                      1 1       12
62                0000000000000 0?0100000011010 00?0011100?0??00100000000000000
                        1       12        1

Possible character-state assignments to internal nodes (continued)

                  1111111111111111111112222222222222222222222222222222222222
                  7788888888889999999999000000000011111111112222222223333333
Node              8901234567890123456789012345678901234567890123456789012345
-------------------------------------------------------------------------------
36                ?0001?01210000 1?001100?01???100??111?????0?01?01?11?0231111
                             1     2                        2
37                ?0001?01210000 1?001100?01???100??111?????0?01?01?11?0231111
                             1     2                        2
38                ?0001?01210000 1?001100?01???100??111?????0?01?01?11?0231111
                             1     2                        2
39                0000111121001 11?00120110121110012111101111121101?11?0231111
40                ?0001?01210000 1?001100?01???100??111?????0?01101?11?0231111
                             1     2                        2
41                ?0001?01210000 1?001100?01???100??111?????0?01?01?11?0231111
                             1     2                        2
```

```
42              ?0001?012100001?001100?01???100??111?????0?01?01?11?0231111
                          1     2                         2
43              ?0001?012100001?001100?01???100??111?????0?01?01?11?0231111
                          1     2                         2
44              ?0??1?0121??0?1???11?00?10?01??0?1110100?0001?012111?231111
                          2     2                         2
45              ?0??1?0121??0?1???11?00?10?01??0?1110100?0001?012111?231111
                          2     2                         2
46              ?0??1?0121??0?1???11?00?10?01??0?1110100?0001?012111?231111
                          2     2                         2
47              ?0??1?0121??0?1???11?00?10?01??0?1110100?00011012111?231111
                          2     2                         2
48              ?0??1?0121??0?1???11?00?10?01??0?1110100?00011012111?231111
                          2     2                         2
49              ?0??1?0121??0?1???11?00?10?01??0?1110100?0001?012111?231111
                          2     2                         2
50              ?0001?012100001?00110000010?01000?1110100?0001?0121110231111
                          1     2                         2
51              ?0001?012100001?00110000010?01000?1110100?0001?0121110231111
                          1     2                         2
52              ??00000??100000?00010?0000?000000000010000?100120110231100
                          1
53              1200000??100000?00010?0000?000000000010000?100120110231100
                          1
54              ??00000??100000?00010?0000?000000000010000?100120110231100
                          1
55              ??00000?2100000?00010000000?000000000010000?100120110231100
                          1
56              0100000?2100010100010000000?000000000010000??00110??02311?1
57              0100000?2100000?00010000000?000000000010000??00?10??02311?1
                          1
58              0100000?2100000?00010000000?000000000010000??00?10??02311?1
                          1
59              0100000?2100000?00010000000?000000000010000??00?10??02311?1
                          1
60              0100000?2100000?00010000000?000000000010000??00?10??02311?1
                          1
61              0100000?2100000?00010000000?000000000010000??00?10??02311?1
                          1
62              0100000?2100000?00010000000?000000000010000??00?10??02?1100
                          1

Possible character-state assignments to internal nodes (continued)

                222222222222222222222222222222222222222222222222222222222222
                333444444444455555555556666666666777777777788888888889999999
Node            789012345678901234567890123456789012345678901234567890123456
-----------------------------------------------------------------------------
36              2100011110l0?011?2?101?110101002121?????21?1011110?22100210
                3
37              2100011110l0?011?2?101?110101002121?????21?1011110?22100210
                3
38              2100011110l0?011?2?101?110101002121?????21?1011110?22100210
                3
39              2100011110l0?011?2?101?110101002121?????21?1011110?22100210
                3
40              2100011110l0?011?2?101?110101002121?????21?1011110?22100210
                3
41              2100011110l0?011?2?101?110101002121?????21?1011110?22100210
                3
42              2100011110l0?011?2?101?110101002121?????21?1011110?22100210
                3
43              2100011110l0?011?2?101?110101002121?????21?1011110?22100210
                3
44              21???1111010?011?2?1?1?1101?1?02121????121?1011110?22100210?
                3                       2                                 1
45              21???1111010?011?2?1?1?1101?1?02121????121?1011110?22100210?
                3                       2                                 1
```

```
46              21???1111010?011?2?1?1?1101?1?02121????121?1011110?22100021?
                3                       2                                 1
47              21???1111010?011?2?1?1?1101?1?02121????121?1011110?22100021?
                3                       2                                 1
48              21???1111010?011?2?1?1?1101?1?02121????121?1011110?22100021?
                3                       2                                 1
49              21???1111010?011?2?1?1?1101?1?02121????121?1011110?22100021?
                3                       2                                 1
50              210001111?10?011?1?101?11?10100212l????121?10?1111?221?0210
                3                   2                                     2
51              2100011110l0?011?2?101?110101002121????121?1011110?22100210
                3
52              ?100011?1010?011?0?10101101010021210??012111011110020100210
                                    2
53              ?100011?1010?011?0?10101101010021210??012111011110020100210
                                    2
54              ?100011?1010?011?0?10101101010021210??012111011110020100210
                                    2
55              ?10001111010?011?0?10101101010021210??012111011110020100210
                                    2
56              2100011110110011010111011010100212100001101101111002010020 0
57              1100011110110011?0?11101101010021210000110110111100201002002
                2
58              1100011110110011?0?11101101010021210000110110111100201002002
                2
59              1100011110110011?0?11101101010021210000110110111100201002002
                2
60              1100011110110011?0?11101101010021210000110110111100201002002
                2
61              1100011110110011?0?11101101010021210000110110111100201002002
                2
62              110001111011l00?100?10?011010100212100001101101111002010020 0
                2               2
```

Possible character-state assignments to internal nodes (continued)

```
                222233333333
                999900000000
Node            678901234567
------------------------------
36              ?111?1???21?
                 2
37              ?111?1???21?
                 2
38              ?111?1???21?
                 2
39              ?111?1???21?
                 2
40              ?111?1???21?
                 2
41              ?111?1???21?
                 2
42              ?111?1???21?
                 2
43              ?111?1???21?
                 2
44              ?111?1???21?
                 2
45              ?111?1???21?
                 2
46              ?111?1???21?
                 2
47              ?111?1???21?
                 2
48              ?111?1???21?
                 2
49              ?111?1???21?
                 2
```

```
50                ?111?1???21?
                   2
51                ?111?1???21?
                   2
52                011111?0?21?
53                011111?0?21?
54                011111?0?21?
55                011111?0?21?
56                011011100112
57                011011100112
58                011011100112
59                011011100112
60                011011100112
61                011011100112
62                011011100112
```

Reconstructed states for internal nodes

```
                          1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
36                1000022200001000000210202111010002210121000100000000332020
37                1000020200001000000210202111010002210121000100000000332021
38                1000020200001000000210202111010002010121000100000000302011
39                2100020200000000000210202101110003110001100110000000002001
40                1100020200000000000210202101110003110001100100000000302001
41                1000020200000000000210202101010002010001100100000000302011
42                0000020201000000100200202101010002000001120100000000022211
43                0000020200000000100200202101010002000001120100000000002011
44                0022122001001727121311202101000111002010320100005700101002 1
45                0022022001000707101211202101000111002010320100005700101002 1
46                0022022000000707101200202101000111002010320100000700101001 1
47                0024110001000727000200202101000101004301003104003863001000 1
48                0022010000000707001200202101000101002201000100000703001000 1
49                0022010000000707101200202101000101002001020100000700101001 1
50                0000011100000000101200202101012111000001120100000000101001 0
51                0000011100000000101200202101010101000001120100000000101001 1
52                0001111301020415101201102101010101010011220100000201101101 1
53                0003111101120016101201113101011101001011220100000200001102 1
54                0001111101020015101201102101010101001011220100000200101101 1
55                0000011101000000101200102101010101000001120100000000101001 1
56                0000010200000000311100110101011101000001120100000000100012 1
57                0050100300001100011200100101011111000000120100000000101012 1
58                0000000200000000011200100101011111000000120100000000101012 1
59                0000010200000000311200110101011101000001120100000000101012 1
60                0000011201000000311200112101011101000001120100000000101012 1
61                0000011101000000311200112101010101000001120100000000101012 1
62                0000011101000000301200102101010101000001120100000000101000 1
```

Reconstructed states for internal nodes (continued)

```
                                                          1111111111111111111
                  6666666666777777777788888888889999999999000000000011111111 1
Node              0123456789012345678901234567890123456789012345678901234567 8
-------------------------------------------------------------------------------
36                2101021001100220100110000000211000000000220101002110000112 0
37                2101021001100220100110000000211000000000220101002110000112 1
38                2101021001100220100110000000211000000000220101002110000112 1
39                2101121011001131112110000013211010212102224010021000001121 0
40                2101121011001131112110000013211010202002224010021000001121 0
41                2101021001000121110110000000211000200002201010021000001121 0
42                1001001101000121110110000000211000200002201010021000001121 0
43                2001001101000121110110000000211000200002201010021000001121 0
44                2001111111000020012112110000211000220002131120101000011111 1
45                2001111111000020010110110000211000220002131120101000011111 1
46                2001101111000020010110110000211000220002131120101000011111 1
47                2001001101000211111011100002201011210012113120111000010000 0
48                2001001101000021110010100002201011210012113120111000011010 0
```

```
49              2001001101000021110110100000211000210002111120101000011101O
50              2001001111000021111110000011211012210102114020001000001101O
51              2001001101000021110110000000211000200002101020001000001101O
52              2001011101000010000110000100000000000002001000001000000100O
53              2001111101000010000011000100100000000002101010001000000100O
54              2001011101000010000110000100000000000002101000001000000100O
55              2001001101000010000110000000000000000002101000001000000100O
56              2111001110000010000100000000000000000002002010001000000000O
57              2111001110000110000100000000000000000002002010001000000000O
58              2111001110000110000100000000000000000002002010001000000000O
59              2111001110000110000100000000000000000002002010001000000000O
60              2111001110000110000100000000000000000002002010001000000000O
61              2111001110000010000100000000000000000002002010001000000000O
62              2001001100000010000100000000000000000002101000001000000100O

Reconstructed states for internal nodes (continued)

                1111111111111111111111111111111111111111111111111111111111
                1222222222233333333334444444445555555555666666666677777777
Node            9012345678901234567890123456789012345678901234567890123456
-----------------------------------------------------------------------------
36              0000202011001011332100311121111111110001111110011111101002
37              0000202011001011332100311121111111110001111110011111101002
38              0000202011001011332100311121111111110001111110011111101002
39              1000212042102001442201311121111111110001111110011111101002
40              0000202042102001442200311121111111110001111110011111101002
41              0000202011001011342100311121111111110001111110011111101002
42              0000202011001011342100311121111111110001111110011111101002
43              0000202011001011342100311121111111110001111110011111101002
44              1100002010000011300000011102110011111001111211111111111111
45              1100002010000011300000011102110011111001111211111111111111
46              1100002010000011300000011102110011111001111211111111111111
47              0100001010000011000000311102110011111001111211111111111111
48              0100002010000011000000011102110011111001111211111111111111
49              0100002010000011300000011102110011111001111211111111111111
50              0000002030000012122000011001111001111000111111001111101001
51              0000002010000011342000011001111001111000111111001111101001
52              0001000010000120000000011000111000000000111110000010000000O
53              0101000010000120000000011000111000000000111110000010000000O
54              0001000010000120000000011000111000000000111110000010000000O
55              0000000010000010000000011000111001110000111110000010000000O
56              0000001010000000100000011010000001110001000010000000000000O
57              0000001010000000100000011010000001110001000010000000000000O
58              0000001010000000100000011010000001110001000010000000000000O
59              0000001010000000100000011010000001110001000010000000000000O
60              0000001010000000100000011010000001110001000010000000000000O
61              0000001000000000100000011010000001110001000010000000000000O
62              0000000000000000100000011010000001110000000010000000000000O

Reconstructed states for internal nodes (continued)

                1111111111111111111112222222222222222222222222222222222222
                7788888888889999999990000000000111111111122222222223333333
Node            8901234567890123456789012345678901234567890123456789012345
-----------------------------------------------------------------------------
36              0000110121000011001200101211100121111011101211011100231111
37              0000110121000011001200101211100121111011101211011100231111
38              0000110121000011001200101211100121111011101211011100231111
39              0000111121001111001201101211100121111011111211011100231111
40              0000110121000011001200101211100121111011101211011100231111
41              0000110121000011001200101211100121111011101211011100231111
42              0000110121000011001200101211100121111011101211011100231111
43              0000110121000011001200101211100121111011101211011100231111
44              1011110121112211111210011000132011110100200211012111231111
45              1011110121112211111210011000132011110100200211012111231111
46              1011110121112211111210011000132011110100200211012111231111
47              1011110121112211111210011000132011110100200211012111231111
48              1011110121112211111210011000132011110100200211012111231111
```

```
49              1011110121112211111210011000132011110100200211012111123111
50              1000110121000011001200001000100011110100100210012111023111
51              1000110121000011001200001000100011110100100211012111023111
52              1200000011000000000101000000000000000010000011001201102311
53              1200000011000000000101000000000000000010000011001201102311
54              1200000011000000000101000000000000000010000011001201102311
55              1000000021000000000100000000000000000010000011001201102311
56              0100000021000101000100000000000000000100000000011000023111
57              0100000021000101000100000000000000000100000000011000023111
58              0100000021000101000100000000000000000100000000011000023111
59              0100000021000101000100000000000000000100000000011000023111
60              0100000021000101000100000000000000000100000000011000023111
61              0100000021000101000100000000000000000100000000011000023111
62              0100000021000000000100000000000000000100000000010000221100

Reconstructed states for internal nodes (continued)

                2222222222222222222222222222222222222222222222222222222222
                3334444444444555555555566666666667777777777888888888999999
Node            7890123456789012345678901234567890123456789012345678901234
-----------------------------------------------------------------------------
36              3100011110101011121101111010100212111112212101111012210021
37              3100011110101011121101111010100212111112212101111012210021
38              3100011110101011121101111010100212111112212101111012210021
39              3100011110101011121101111010100212111112212101111012210021
40              3100011110101011121101111010100212111112212101111012210021
41              3100011110101011121101111010100212111112212101111012210021
42              3100011110101011121101111010100212111112212101111012210021
43              3100011110101011121101111010100212111112212101111012210021
44              2111111110101011121111121011110212111111212101111012210121
45              2111111110101011121111121011110212111111212101111012210121
46              2111111110101011121111121011110212111111212101111012210121
47              2111111110101011121111121011110212111111212101111012210121
48              2111111110101011121111121011110212111111212101111012210121
49              2111111110101011121111121011110212111111212101111012210121
50              3100011112101011110101011110100212111111212100111112211210
51              3100011110101011121101111010100212111111212101111012210021
52              2100011210101011121101011010100212101101211101111002010021
53              2100011210101011121101011010100212101101211101111002010021
54              2100011210101011121101011010100212101101211101111002010021
55              2100011110101011121101011010100212101101211101111002010021
56              2100011110110011010111011010100212100001101101111002010020
57              2100011110110011010111011010100212100001101101111002010020
58              2100011110110011010111011010100212100001101101111002010020
59              2100011110110011010111011010100212100001101101111002010020
60              2100011110110011010111011010100212100001101101111002010020
61              1100011110110011010111011010100212100001101101111002010020
62              1100011110110001000100011010100212100001101101111002010020

Reconstructed states for internal nodes (continued)

                222233333333
                999900000000
Node            678901234567
------------------------------
36              121101011213
37              121101011213
38              121101011213
39              121101011213
40              121101011213
41              121101011213
42              121101011213
43              121101011213
44              121101011213
45              121101011213
46              121101011213
47              121101011213
48              121101011213
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49              121101011213
50              121101011213
51              121101011213
52              011111001213
53              011111001213
54              011111001213
55              011111001213
56              011011100112
57              011011100112
58              011011100112
59              011011100112
60              011011100112
61              011011100112
62              011011100112

Character change lists:

 Character         CI     Steps                 Changes

 1               0.667      1           node_43 0 ==> 1 node_41
                            1           node_40 1 ==> 2 node_39
                            1           node_50 0 ==> 1 Amphilestes
 2               0.333      1           node_36 0 ==> 1 Haramiyavia
                            1           node_41 0 --> 1 node_40
                            1           node_39 1 --> 0 Sinobaatar
 3               0.600      1           node_51 0 ==> 2 node_49
                            1           node_46 2 ==> 1 Woutersia
                            1           node_44 2 ==> 1 Ambondro
                            1           node_52 0 ==> 1 Kuehneotherium
                            1           node_58 0 ==> 5 node_57
 4               0.667      1           node_40 0 ==> 1 Arboroharamiya
                            1           node_51 0 ==> 2 node_49
                            1           node_44 2 ==> 3 Asfaltomylos
                            1           node_48 2 ==> 4 node_47
                            1           node_55 0 --> 1 node_54
                            1           node_54 1 --> 3 node_53
 5               0.250      1           node_45 0 ==> 1 node_44
                            1           node_48 0 --> 1 node_47
                            1           node_55 0 ==> 1 node_54
                            1           node_58 0 ==> 1 node_57
 6               0.286      1           node_51 1 --> 2 node_43
                            1           node_49 1 --> 2 node_46
                            1           node_45 2 --> 1 Shuotherium
                            1           node_47 1 ==> 0 Dryolestes
                            1           node_56 1 ==> 0 Megazostrodon
                            1           node_59 1 --> 0 node_58
                            1           node_57 0 --> 1 Paceyodon
 7               0.333      1           node_51 1 ==> 0 node_43
                            1           node_37 0 --> 2 node_36
                            1           node_51 1 --> 0 node_49
                            1           node_49 0 --> 2 node_46
                            1           node_52 1 ==> 2 Kuehneotherium
                            1           node_60 1 ==> 0 node_59
 8               0.300      1           node_51 1 ==> 2 node_43
                            1           node_40 2 ==> 0 Arboroharamiya
                            1           node_51 1 ==> 0 node_49
                            1           node_44 0 ==> 3 Asfaltomylos
                            1           node_54 1 ==> 3 node_52
                            1           node_53 1 ==> 0 Haldanodon
                            1           node_61 1 ==> 2 node_60
                            1           node_56 2 ==> 3 Megazostrodon
                            1           node_58 2 ==> 3 node_57
                            1           node_62 1 ==> 0 Rosierodon
 9               0.667      1           node_40 0 ==> 1 Arboroharamiya
                            1           node_46 0 ==> 2 Woutersia
                            1           node_53 0 ==> 2 Haldanodon
 10              0.375      1           node_62 1 ==> 0 Sinoconodon
                            1           node_55 1 ==> 0 node_51
```

		1	node_43 0 --> 1 node_42
		1	node_46 0 ==> 1 node_45
		1	node_48 0 --> 1 node_47
		1	node_47 1 --> 3 Dryolestes
		1	node_52 1 ==> 2 Fluctuodon
		1	node_60 1 ==> 0 node_59
11	0.500	1	node_54 0 ==> 1 node_53
		1	node_57 0 ==> 1 Paceyodon
12	0.600	1	node_47 0 ==> 3 Dryolestes
		1	node_55 0 --> 2 node_54
		1	node_52 2 --> 0 Kuehneotherium
		1	node_53 2 --> 1 Castorocauda
		1	node_57 0 ==> 1 Paceyodon
13	0.429	1	node_41 0 --> 1 node_38
		1	node_36 1 ==> 2 Haramiyavia
		1	node_45 0 --> 1 node_44
		1	node_44 1 --> 2 Asfaltomylos
		1	node_47 0 ==> 12 Dryolestes
		1	node_58 0 --> 1 node_57
		1	node_57 1 --> 4 Paceyodon
14	0.571	1	node_51 0 ==> 7 node_49
		1	node_46 7 ==> 4 Woutersia
		1	node_44 7 ==> 5 Ambondro
		1	node_47 7 ==> 45 Dryolestes
		1	node_54 0 ==> 4 node_52
		1	node_53 0 ==> 12 Haldanodon
		1	node_58 0 ==> 1 node_57
15	0.500	1	node_36 0 ==> 1 Haramiyavia
		1	node_45 0 ==> 2 node_44
		1	node_48 0 --> 2 node_47
		1	node_47 2 --> 3 Dryolestes
		1	node_55 0 ==> 1 node_54
		1	node_53 1 ==> 3 Castorocauda
16	0.800	1	node_36 0 ==> 4 Haramiyavia
		1	node_51 0 ==> 7 node_49
		1	node_55 0 --> 5 node_54
		1	node_54 5 --> 6 node_53
		1	node_53 6 --> 7 Haldanodon
17	0.375	1	node_62 3 ==> 0 Sinoconodon
		1	node_62 3 ==> 1 node_55
		1	node_43 1 ==> 0 node_41
		1	node_46 1 ==> 2 Woutersia
		1	node_49 1 --> 0 node_48
		1	node_56 3 ==> 1 Erythrotherium
		1	node_59 3 ==> 0 node_58
		1	node_57 0 ==> 1 Paceyodon
18	0.750	1	node_45 0 --> 2 node_44
		1	node_44 2 --> 3 Asfaltomylos
		1	node_52 0 ==> 2 Kuehneotherium
		1	node_62 0 ==> 1 node_61
19	0.250	1	node_51 1 ==> 0 node_43
		1	node_44 1 ==> 0 Asfaltomylos
		1	node_48 1 ==> 0 node_47
		1	node_50 1 ==> 0 Priacodon
20	0.500	1	node_46 2 ==> 1 Woutersia
		1	node_45 2 --> 3 node_44
		1	node_48 2 ==> 3 Delsatia
		1	node_53 2 ==> 1 Castorocauda
		1	node_59 2 ==> 1 node_56
		1	node_58 2 ==> 0 Hallautherium
21	0.200	1	node_43 0 --> 1 node_41
		1	node_40 1 --> 0 Arboroharamiya
		1	node_46 0 ==> 1 node_45
		1	node_48 0 ==> 1 Delsatia
		1	node_61 0 ==> 1 Dinnetherium
22	0.250	1	node_46 0 ==> 1 node_45
		1	node_55 0 --> 1 node_54
		1	node_53 1 --> 0 Haldanodon

		1	node_61 0 ==> 1 Dinnetherium
23	1.000	1	node_55 1 --> 2 node_51
24	0.200	1	node_46 0 ==> 1 Woutersia
		1	node_50 0 ==> 1 Amphilestes
		1	node_54 0 ==> 1 node_53
		1	node_62 0 ==> 1 node_61
		1	node_59 1 ==> 0 node_58
25	1.000	1	node_54 2 ==> 3 node_53
		1	node_61 2 ==> 1 Dinnetherium
		1	node_60 2 ==> 0 node_59
27	1.000	1	node_41 0 --> 1 node_38
28	1.000	1	node_40 1 ==> 2 Arboroharamiya
		1	node_39 1 ==> 0 Sinobaatar
29	0.500	1	node_41 0 --> 1 node_40
		1	node_39 1 --> 0 Sinobaatar
30	0.200	1	node_51 1 ==> 0 Hadrocodium
		1	node_51 1 --> 0 node_49
		1	node_46 0 --> 1 Woutersia
		1	node_48 0 --> 1 Delsatia
		1	node_53 1 ==> 0 Haldanodon
31	0.667	1	node_51 0 --> 2 node_50
		1	node_54 0 --> 1 node_53
		1	node_61 0 ==> 1 node_60
32	0.500	1	node_51 1 --> 0 node_43
		1	node_39 0 ==> 1 Rugosodon
33	0.400	1	node_49 0 ==> 1 node_46
		1	node_48 0 ==> 2 Zhangheotherium
		1	node_51 0 ==> 1 node_50
		1	node_61 0 ==> 1 Dinnetherium
		1	node_59 0 --> 1 node_58
34	0.500	1	node_62 1 ==> 2 Sinoconodon
		1	node_51 1 --> 2 node_43
		1	node_41 2 --> 3 node_40
		1	node_39 3 ==> 0 Sinobaatar
		1	node_50 1 ==> 2 Priacodon
		1	node_56 1 ==> 3 Erythrotherium
35	0.500	1	node_38 0 ==> 2 node_37
		1	node_36 2 ==> 1 Thomasia
		1	node_41 0 ==> 1 node_40
		1	node_39 1 ==> 2 Sinobaatar
36	0.500	1	node_43 0 --> 1 node_41
		1	node_38 1 --> 0 Paikasigudodon
37	0.600	1	node_38 0 ==> 1 Paikasigudodon
		1	node_42 0 ==> 1 Helvetiodon
		1	node_51 0 ==> 2 node_49
		1	node_48 2 --> 4 node_47
		1	node_55 0 ==> 1 node_54
38	0.750	1	node_41 0 ==> 1 node_38
		1	node_49 0 --> 2 node_48
		1	node_48 2 --> 3 node_47
		1	node_52 0 ==> 1 Kuehneotherium
39	0.500	1	node_41 0 ==> 2 node_38
		1	node_42 0 ==> 1 Helvetiodon
		1	node_49 0 ==> 1 node_46
		1	node_55 0 ==> 1 node_54
40	0.200	1	node_37 1 ==> 0 Theroteinus
		1	node_49 1 ==> 0 node_46
		1	node_48 1 ==> 0 Zhangheotherium
		1	node_61 1 ==> 0 Dinnetherium
		1	node_59 1 --> 0 node_58
41	0.750	1	node_41 1 --> 0 node_38
		1	node_51 1 --> 0 node_49
		1	node_49 0 --> 3 node_46
		1	node_55 1 ==> 2 node_54
42	0.375	1	node_43 2 ==> 0 node_41
		1	node_38 0 ==> 3 Paikasigudodon
		1	node_36 0 ==> 1 Thomasia
		1	node_39 0 ==> 1 Sinobaatar

		1	node_46 2 ==> 3 Woutersia
		1	node_49 2 ==> 0 node_48
		1	node_56 2 ==> 3 Megazostrodon
		1	node_60 2 ==> 1 Bridetherium
43	0.667	1	node_38 0 ==> 2 Paikasigudodon
		1	node_42 0 ==> 2 Purbeckodon
		1	node_48 0 --> 3 node_47
45	1.000	1	node_40 0 ==> 1 node_39
46	0.750	1	node_42 0 ==> 1 Purbeckodon
		1	node_48 0 --> 4 node_47
		1	node_52 0 ==> 3 Kuehneotherium
		1	node_61 0 ==> 1 Dinnetherium
47	0.500	1	node_42 0 ==> 1 Purbeckodon
		1	node_52 0 ==> 1 Fluctuodon
48	1.000	1	node_46 0 ==> 1 Woutersia
49	1.000	1	node_46 0 --> 5 node_45
		1	node_48 0 --> 3 node_47
		1	node_52 0 ==> 4 Kuehneotherium
50	0.667	1	node_42 0 ==> 1 Helvetiodon
		1	node_51 0 ==> 7 node_49
		1	node_48 7 --> 8 node_47
		1	node_55 0 ==> 2 node_54
		1	node_52 2 ==> 7 Kuehneotherium
		1	node_56 0 ==> 2 Megazostrodon
51	1.000	1	node_48 0 --> 6 node_47
52	0.800	1	node_49 0 --> 3 node_48
		1	node_48 3 --> 7 Delsatia
		1	node_54 0 --> 1 node_52
		1	node_52 1 --> 2 Kuehneotherium
		1	node_56 0 ==> 2 Megazostrodon
53	0.250	1	node_37 1 ==> 0 node_36
		1	node_49 1 ==> 0 node_48
		1	node_54 1 --> 0 node_53
		1	node_61 1 ==> 0 Dinnetherium
54	0.750	1	node_43 0 --> 3 node_41
		1	node_38 3 --> 1 Paikasigudodon
		1	node_40 3 --> 0 node_39
		1	node_46 0 ==> 2 Woutersia
55	0.750	1	node_51 1 --> 0 node_43
		1	node_38 0 --> 3 node_37
		1	node_43 0 --> 2 node_42
		1	node_59 1 ==> 0 node_56
56	1.000	1	node_51 0 ==> 2 node_43
		1	node_55 0 --> 1 node_54
57	0.667	1	node_43 0 ==> 2 node_42
		1	node_62 0 --> 1 node_61
		1	node_60 1 --> 0 Bridetherium
58	0.200	1	node_62 0 --> 1 node_55
		1	node_38 1 --> 2 node_37
		1	node_41 1 ==> 0 node_40
		1	node_42 1 --> 2 Purbeckodon
		1	node_46 1 --> 2 node_45
		1	node_49 1 --> 0 node_48
		1	node_48 0 --> 1 Zhangheotherium
		1	node_54 1 --> 2 node_53
		1	node_62 0 --> 2 node_61
		1	node_56 2 ==> 1 Erythrotherium
59	0.250	1	node_62 1 ==> 0 Sinoconodon
		1	node_37 1 ==> 0 node_36
		1	node_48 1 ==> 0 Zhangheotherium
		1	node_51 1 --> 0 node_50
60	1.000	1	node_38 2 ==> 0 Paikasigudodon
		1	node_43 2 ==> 1 node_42
		1	node_48 2 ==> 3 Delsatia
61	0.500	1	node_43 0 ==> 1 node_41
		1	node_62 0 ==> 1 node_61
62	1.000	1	node_62 0 ==> 1 node_61
64	0.200	1	node_37 0 ==> 1 Theroteinus

		1	node_41 0 --> 1 node_40
		1	node_42 0 ==> 1 Helvetiodon
		1	node_49 0 ==> 1 node_46
		1	node_54 0 --> 1 node_53
65	0.667	1	node_43 0 --> 2 node_41
		1	node_46 0 --> 1 node_45
		1	node_55 0 --> 1 node_54
66	0.500	1	node_38 1 ==> 0 Paikasigudodon
		1	node_40 1 ==> 0 Arboroharamiya
67	0.500	1	node_43 1 --> 0 node_41
		1	node_60 1 ==> 0 Bridetherium
68	0.250	1	node_41 0 --> 1 node_40
		1	node_49 0 --> 1 node_46
		1	node_51 0 --> 1 node_50
		1	node_62 0 --> 1 node_61
69	1.000	1	node_62 0 --> 1 node_55
70	0.500	1	node_41 0 --> 1 node_38
		1	node_36 1 --> 0 Haramiyavia
71	0.500	1	node_37 0 ==> 1 Theroteinus
		1	node_39 0 ==> 1 Rugosodon
72	1.000	1	node_41 0 --> 1 node_40
73	0.400	1	node_51 0 --> 1 node_43
		1	node_41 1 --> 2 node_38
		1	node_48 0 --> 2 node_47
		1	node_61 0 --> 1 node_60
		1	node_59 1 --> 0 node_56
74	0.667	1	node_55 1 --> 2 node_51
		1	node_41 2 --> 3 node_40
		1	node_48 2 --> 1 node_47
75	0.333	1	node_55 0 ==> 1 node_51
		1	node_41 1 --> 0 node_38
		1	node_49 1 --> 0 node_46
76	0.500	1	node_55 0 ==> 1 node_51
		1	node_49 1 --> 0 node_46
77	0.500	1	node_55 0 --> 1 node_51
		1	node_41 1 --> 0 node_38
78	0.500	1	node_41 0 ==> 2 node_40
		1	node_45 0 --> 2 node_44
		1	node_48 0 ==> 1 node_47
		1	node_51 0 ==> 1 node_50
79	0.200	1	node_62 1 ==> 0 Sinoconodon
		1	node_49 1 --> 0 node_48
		1	node_47 0 --> 1 Amphitherium
		1	node_50 1 ==> 0 Priacodon
		1	node_54 1 ==> 0 node_53
80	0.500	1	node_62 0 --> 1 node_55
		1	node_61 0 --> 1 Dinnetherium
81	0.500	1	node_62 0 ==> 1 Sinoconodon
		1	node_51 0 ==> 3 Hadrocodium
		1	node_45 0 --> 2 node_44
		1	node_48 0 ==> 1 node_47
		1	node_54 0 ==> 1 node_53
		1	node_56 0 ==> 1 Morganucodon
82	1.000	1	node_51 0 ==> 1 node_49
83	1.000	1	node_49 0 --> 1 node_46
84	1.000	1	node_51 0 ==> 1 Hadrocodium
85	1.000	1	node_55 0 --> 1 node_54
86	0.500	1	node_41 0 ==> 1 node_40
		1	node_51 0 ==> 1 node_50
87	1.000	1	node_51 0 ==> 4 Hadrocodium
		1	node_41 0 ==> 3 node_40
		1	node_49 0 ==> 2 node_48
		1	node_51 0 ==> 1 node_50
88	1.000	1	node_55 0 ==> 2 node_51
		1	node_54 0 ==> 1 node_53
89	0.333	1	node_55 0 ==> 1 node_51
		1	node_49 1 --> 0 node_48
		1	node_47 0 --> 1 Amphitherium

90	1.000	1	node_55 0 ==> 1 node_51
92	0.250	1	node_41 0 ==> 1 node_40
		1	node_49 0 ==> 1 node_48
		1	node_51 0 ==> 1 node_50
		1	node_53 0 ==> 1 Haldanodon
93	0.500	1	node_40 0 ==> 1 Arboroharamiya
		1	node_49 0 --> 1 node_48
		1	node_48 1 --> 2 Zhangheotherium
		1	node_51 0 ==> 2 node_50
94	0.400	1	node_55 0 --> 2 node_51
		1	node_51 2 --> 0 Hadrocodium
		1	node_41 2 --> 0 node_38
		1	node_40 2 --> 1 Arboroharamiya
		1	node_45 2 --> 0 Shuotherium
95	0.500	1	node_40 0 ==> 1 node_39
		1	node_51 0 --> 1 node_49
		1	node_49 1 --> 2 node_46
		1	node_51 0 --> 1 node_50
96	1.000	1	node_41 0 ==> 2 node_40
97	0.333	1	node_40 0 ==> 1 node_39
		1	node_48 0 ==> 1 Zhangheotherium
		1	node_51 0 --> 1 node_50
98	1.000	1	node_49 0 --> 1 node_48
99	1.000	1	node_62 2 ==> 1 Sinoconodon
100	0.333	1	node_51 1 ==> 0 Hadrocodium
		1	node_51 1 --> 2 node_43
		1	node_50 1 ==> 2 Priacodon
		1	node_54 1 --> 0 node_52
		1	node_62 1 --> 0 node_61
		1	node_61 0 --> 2 Dinnetherium
101	0.600	1	node_41 0 ==> 2 node_40
		1	node_51 0 --> 1 node_49
		1	node_49 1 --> 3 node_46
		1	node_47 1 --> 0 Amphitherium
		1	node_51 0 ==> 1 node_50
102	0.500	1	node_41 1 ==> 4 node_40
		1	node_49 1 --> 3 node_48
		1	node_48 3 --> 4 Zhangheotherium
		1	node_51 1 ==> 4 node_50
		1	node_62 1 --> 2 node_61
		1	node_56 2 --> 1 Morganucodon
103	1.000	1	node_51 0 ==> 1 node_49
104	0.250	1	node_55 0 --> 2 node_51
		1	node_51 2 --> 1 node_43
		1	node_45 2 --> 0 Shuotherium
		1	node_48 2 --> 0 Zhangheotherium
		1	node_50 2 --> 1 Priacodon
		1	node_54 0 --> 1 node_53
		1	node_62 0 --> 1 node_61
		1	node_56 1 --> 0 Morganucodon
105	1.000	1	node_48 0 ==> 1 Zhangheotherium
106	1.000	1	node_51 0 ==> 1 node_49
		1	node_50 0 ==> 2 Amphilestes
107	1.000	1	node_51 0 --> 2 node_43
		1	node_49 0 ==> 1 node_48
109	1.000	1	node_41 0 --> 1 node_38
110	1.000	1	node_47 0 ==> 1 Amphitherium
111	1.000	1	node_47 0 ==> 1 Amphitherium
112	1.000	1	node_51 0 ==> 1 Hadrocodium
113	0.500	1	node_51 0 --> 1 node_49
		1	node_47 1 --> 0 Amphitherium
114	0.250	1	node_62 0 --> 1 Sinoconodon
		1	node_55 0 --> 1 node_51
		1	node_48 1 ==> 0 node_47
		1	node_50 1 ==> 0 Priacodon
115	0.333	1	node_51 1 ==> 0 Hadrocodium
		1	node_44 1 ==> 2 Ambondro
		1	node_48 1 ==> 0 node_47

		1	node_50 1 ==> 0 Priacodon
		1	node_62 1 --> 0 node_61
		1	node_56 0 --> 1 Morganucodon
116	0.667	1	node_51 0 --> 2 node_43
		1	node_49 0 --> 1 node_46
		1	node_44 1 --> 0 Asfaltomylos
117	0.500	1	node_55 0 --> 1 node_51
		1	node_51 1 --> 0 Hadrocodium
		1	node_44 1 ==> 3 Ambondro
		1	node_48 1 --> 0 node_47
118	1.000	1	node_49 0 --> 1 node_46
119	0.333	1	node_40 0 --> 1 node_39
		1	node_49 0 --> 1 node_46
		1	node_50 0 ==> 1 Priacodon
120	0.500	1	node_51 0 ==> 1 node_49
		1	node_54 0 --> 1 node_53
121	1.000	1	node_50 0 ==> 1 Priacodon
122	0.500	1	node_55 0 --> 1 node_54
		1	node_61 0 ==> 1 Dinnetherium
123	1.000	1	node_51 0 --> 2 node_43
124	1.000	1	node_40 0 ==> 1 node_39
125	0.600	1	node_55 0 --> 2 node_51
		1	node_51 2 --> 0 Hadrocodium
		1	node_40 2 --> 3 Arboroharamiya
		1	node_48 2 --> 1 node_47
		1	node_62 0 --> 1 node_61
126	1.000	1	node_39 0 ==> 1 Rugosodon
127	0.667	1	node_62 0 --> 1 node_55
		1	node_51 1 ==> 0 Hadrocodium
		1	node_41 1 ==> 4 node_40
		1	node_48 1 ==> 2 Zhangheotherium
		1	node_51 1 --> 3 node_50
		1	node_61 0 --> 1 node_60
128	0.500	1	node_51 0 --> 1 node_43
		1	node_41 1 --> 2 node_40
		1	node_39 2 --> 1 Rugosodon
		1	node_48 0 ==> 1 Zhangheotherium
129	1.000	1	node_41 0 --> 1 node_40
130	1.000	1	node_51 0 ==> 1 Hadrocodium
131	0.667	1	node_51 0 --> 1 node_43
		1	node_41 1 --> 2 node_40
		1	node_48 0 ==> 1 Zhangheotherium
132	1.000	1	node_55 0 --> 1 node_54
133	0.429	1	node_62 0 --> 3 Sinoconodon
		1	node_62 0 --> 1 node_55
		1	node_51 1 --> 3 Hadrocodium
		1	node_41 1 --> 0 node_40
		1	node_40 0 --> 3 Arboroharamiya
		1	node_48 1 --> 2 Zhangheotherium
		1	node_55 1 --> 2 node_54
134	0.333	1	node_62 0 ==> 3 Sinoconodon
		1	node_55 0 --> 1 node_51
		1	node_51 1 ==> 3 Hadrocodium
		1	node_40 1 ==> 3 Arboroharamiya
		1	node_39 1 --> 2 Sinobaatar
		1	node_48 1 --> 2 Zhangheotherium
		1	node_47 1 --> 0 Amphitherium
		1	node_51 1 --> 2 node_50
		1	node_53 0 ==> 2 Haldanodon
135	0.500	1	node_62 1 --> 0 node_55
		1	node_55 0 --> 3 node_51
		1	node_51 3 --> 4 Hadrocodium
		1	node_41 3 --> 4 node_40
		1	node_49 3 --> 0 node_48
		1	node_51 3 --> 1 node_50
		1	node_50 1 --> 2 Priacodon
		1	node_56 1 ==> 23 Morganucodon
136	0.667	1	node_62 0 --> 1 Sinoconodon

		1	node_55 0 --> 4 node_51
		1	node_41 4 --> 3 node_38
		1	node_51 4 --> 0 node_49
		1	node_51 4 --> 2 node_50
		1	node_56 0 --> 1 Megazostrodon
137	0.400	1	node_62 0 --> 2 Sinoconodon
		1	node_55 0 --> 2 node_51
		1	node_51 2 --> 4 Hadrocodium
		1	node_40 2 --> 4 Arboroharamiya
		1	node_51 2 --> 0 node_49
138	0.500	1	node_62 0 ==> 2 Sinoconodon
		1	node_51 0 ==> 3 Hadrocodium
		1	node_51 0 --> 1 node_43
		1	node_41 1 --> 2 node_40
		1	node_39 2 --> 3 Sinobaatar
		1	node_50 0 ==> 1 Priacodon
139	1.000	1	node_62 0 ==> 2 Sinoconodon
		1	node_48 0 ==> 1 Zhangheotherium
140	1.000	1	node_40 0 ==> 1 node_39
141	0.333	1	node_51 0 --> 3 node_43
		1	node_39 3 --> 0 Sinobaatar
		1	node_48 0 --> 3 node_47
142	1.000	1	node_62 1 ==> 0 Sinoconodon
143	0.500	1	node_62 1 ==> 0 Sinoconodon
		1	node_56 1 ==> 0 Megazostrodon
144	0.500	1	node_51 0 --> 1 node_43
		1	node_51 0 --> 1 node_49
145	0.500	1	node_62 1 --> 0 node_55
		1	node_51 0 --> 1 Hadrocodium
		1	node_51 0 --> 2 node_43
		1	node_50 0 --> 1 Priacodon
146	0.500	1	node_62 0 --> 1 Sinoconodon
		1	node_55 0 --> 1 node_51
		1	node_51 1 --> 2 node_49
		1	node_56 0 ==> 2 Megazostrodon
147	1.000	1	node_62 0 --> 1 node_55
148	1.000	1	node_62 0 --> 1 node_55
149	1.000	1	node_62 0 --> 1 node_55
150	1.000	1	node_51 0 --> 1 node_43
151	1.000	1	node_51 0 --> 1 node_43
152	1.000	1	node_55 1 --> 0 node_54
153	1.000	1	node_55 1 --> 0 node_54
154	1.000	1	node_55 1 --> 0 node_54
155	1.000	1	node_55 0 ==> 1 node_51
156	1.000	1	node_51 0 --> 1 node_49
157	1.000	1	node_62 0 --> 1 Sinoconodon
158	1.000	1	node_62 0 --> 1 node_61
159	1.000	1	node_62 0 --> 1 node_55
160	1.000	1	node_62 0 --> 1 node_55
161	1.000	1	node_62 0 --> 1 node_55
162	1.000	1	node_62 0 --> 1 node_55
163	1.000	1	node_62 1 ==> 0 Sinoconodon
		1	node_51 1 --> 2 node_49
164	1.000	1	node_55 0 ==> 1 node_51
165	1.000	1	node_51 0 --> 1 node_49
166	1.000	1	node_51 0 --> 1 node_49
167	1.000	1	node_55 0 ==> 1 node_51
168	1.000	1	node_62 0 ==> 1 node_55
169	1.000	1	node_55 0 ==> 1 node_51
170	1.000	1	node_55 0 ==> 1 node_51
171	1.000	1	node_55 0 ==> 1 node_51
172	1.000	1	node_55 0 ==> 1 node_51
173	1.000	1	node_51 0 --> 1 node_49
174	1.000	1	node_55 0 ==> 1 node_51
175	1.000	1	node_51 0 --> 1 node_49
176	1.000	1	node_51 0 --> 1 node_49
177	1.000	1	node_55 0 --> 1 node_51
		1	node_51 1 --> 2 node_43

178	0.500	1	node_62 0 --> 1 node_55
		1	node_51 1 --> 0 node_43
179	1.000	1	node_62 1 --> 0 node_55
		1	node_55 0 --> 2 node_54
180	1.000	1	node_51 0 --> 1 node_49
181	1.000	1	node_51 0 --> 1 node_49
182	1.000	1	node_55 0 ==> 1 node_51
183	0.500	1	node_55 0 --> 1 node_51
		1	node_51 1 --> 0 Hadrocodium
184	1.000	1	node_40 0 ==> 1 node_39
185	1.000	1	node_55 0 --> 1 node_51
186	1.000	1	node_55 2 --> 1 node_54
187	1.000	1	node_40 1 ==> 0 Arboroharamiya
188	1.000	1	node_51 0 --> 1 node_49
189	1.000	1	node_51 0 --> 1 node_49
190	1.000	1	node_40 0 ==> 1 node_39
		1	node_51 0 --> 2 node_49
191	0.667	1	node_40 0 --> 1 node_39
		1	node_51 0 --> 2 node_49
		1	node_62 0 --> 1 node_61
192	1.000	1	node_55 0 ==> 1 node_51
193	0.500	1	node_55 0 --> 1 node_51
		1	node_62 0 --> 1 node_61
194	0.500	1	node_39 0 ==> 1 Sinobaatar
		1	node_51 0 --> 1 node_49
195	1.000	1	node_51 0 --> 1 node_49
196	1.000	1	node_55 0 ==> 1 node_51
197	0.667	1	node_62 1 ==> 0 Sinoconodon
		1	node_55 1 --> 2 node_51
		1	node_40 2 --> 1 Arboroharamiya
198	1.000	1	node_51 0 --> 1 node_49
199	0.500	1	node_40 0 ==> 1 node_39
		1	node_55 0 --> 1 node_54
200	1.000	1	node_51 0 --> 1 node_43
201	1.000	1	node_51 0 --> 1 node_49
202	1.000	1	node_55 0 ==> 1 node_51
203	1.000	1	node_51 0 --> 2 node_43
204	1.000	1	node_51 0 --> 1 node_43
205	1.000	1	node_51 0 --> 1 node_43
206	1.000	1	node_55 0 ==> 1 node_51
207	1.000	1	node_51 0 --> 3 node_49
208	1.000	1	node_51 0 --> 2 node_49
209	1.000	1	node_51 0 --> 1 node_43
210	1.000	1	node_55 0 --> 1 node_51
		1	node_51 1 --> 2 node_43
211	1.000	1	node_55 0 ==> 1 node_51
212	1.000	1	node_55 0 ==> 1 node_51
213	1.000	1	node_55 0 ==> 1 node_51
214	1.000	1	node_51 0 --> 1 node_43
215	1.000	1	node_51 1 --> 0 node_43
216	1.000	1	node_51 0 --> 1 node_43
217	1.000	1	node_51 0 --> 1 node_43
218	1.000	1	node_55 0 --> 1 node_51
		1	node_51 1 --> 2 node_49
219	1.000	1	node_40 0 ==> 1 node_39
220	1.000	1	node_51 0 --> 1 node_43
221	0.667	1	node_62 0 --> 1 node_55
		1	node_55 1 --> 2 node_51
		1	node_40 2 --> 0 Arboroharamiya
222	1.000	1	node_62 0 --> 1 node_55
223	0.500	1	node_55 0 --> 1 node_51
		1	node_51 1 --> 0 node_50
224	1.000	1	node_51 0 ==> 1 Hadrocodium
225	0.333	1	node_62 0 --> 1 node_55
		1	node_51 1 ==> 0 Hadrocodium
		1	node_62 0 --> 1 node_61
226	0.500	1	node_62 1 ==> 2 node_55
		1	node_51 2 --> 1 node_43

227	1.000	1	node_55 0 ==> 1 node_51
228	0.500	1	node_62 0 --> 1 node_55
		1	node_51 1 ==> 0 Hadrocodium
229	0.500	1	node_62 0 --> 1 node_55
		1	node_51 1 --> 0 node_43
230	1.000	1	node_51 0 --> 1 node_49
232	0.500	1	node_62 2 --> 3 node_55
		1	node_62 2 --> 3 node_61
235	0.333	1	node_55 0 ==> 1 node_51
		1	node_62 0 --> 1 node_61
		1	node_56 1 --> 0 Megazostrodon
236	0.667	1	node_55 0 ==> 1 node_51
		1	node_51 1 ==> 2 Hadrocodium
		1	node_62 0 ==> 1 node_61
237	0.500	1	node_62 1 --> 2 node_55
		1	node_55 2 --> 3 node_51
		1	node_51 3 --> 2 node_49
		1	node_61 1 --> 2 node_60
238	1.000	1	node_62 1 ==> 0 Sinoconodon
239	1.000	1	node_51 0 --> 1 node_49
240	1.000	1	node_51 0 --> 1 node_49
241	1.000	1	node_51 0 --> 1 node_49
244	1.000	1	node_55 1 --> 2 node_54
246	1.000	1	node_51 0 --> 2 node_50
248	0.500	1	node_62 1 ==> 0 node_55
		1	node_56 1 ==> 0 Megazostrodon
249	1.000	1	node_62 0 --> 1 node_55
251	0.500	1	node_62 0 --> 1 node_55
		1	node_62 0 --> 1 node_61
252	1.000	1	node_62 1 ==> 0 Sinoconodon
253	0.500	1	node_62 0 --> 1 node_55
		1	node_51 1 --> 0 Hadrocodium
254	0.500	1	node_62 0 --> 2 node_55
		1	node_51 2 --> 1 node_50
		1	node_62 0 --> 1 node_61
		1	node_61 1 --> 2 Dinnetherium
255	0.333	1	node_62 0 --> 1 Adelobasileus
		1	node_62 0 --> 1 node_55
		1	node_51 1 --> 0 node_50
256	1.000	1	node_62 1 ==> 0 Adelobasileus
257	0.500	1	node_51 0 --> 1 node_49
		1	node_62 0 ==> 1 node_61
258	0.500	1	node_62 0 --> 1 node_55
		1	node_62 0 --> 1 node_61
259	0.500	1	node_55 0 --> 1 node_51
		1	node_51 1 --> 0 node_50
260	1.000	1	node_62 1 ==> 0 Sinoconodon
		1	node_51 1 --> 2 node_49
261	1.000	1	node_61 1 ==> 2 Dinnetherium
262	1.000	1	node_51 0 --> 1 node_50
263	1.000	1	node_62 1 ==> 0 Adelobasileus
264	1.000	1	node_51 0 --> 1 node_49
266	1.000	1	node_51 0 --> 1 node_49
267	1.000	1	node_62 0 ==> 1 Sinoconodon
270	1.000	1	node_62 2 ==> 1 Sinoconodon
272	1.000	1	node_55 0 --> 1 node_51
273	1.000	1	node_62 0 --> 1 node_55
274	1.000	1	node_62 0 --> 1 node_55
275	1.000	1	node_55 0 --> 1 node_51
276	1.000	1	node_51 1 --> 2 node_43
277	1.000	1	node_62 1 ==> 2 node_55
278	1.000	1	node_62 0 ==> 1 node_55
279	1.000	1	node_55 1 --> 2 node_51
281	1.000	1	node_51 0 ==> 3 Hadrocodium
282	1.000	1	node_51 1 --> 0 node_50
284	0.500	1	node_62 1 ==> 0 Sinoconodon
		1	node_51 1 ==> 0 Hadrocodium
286	1.000	1	node_51 0 ==> 1 node_50

287	1.000	1	node_55 0 --> 1 node_51
289	1.000	1	node_55 0 ==> 2 node_51
291	1.000	1	node_51 0 --> 1 node_50
292	1.000	1	node_51 0 --> 1 node_49
		1	node_51 0 --> 2 node_50
294	1.000	1	node_62 0 ==> 1 node_55
295	1.000	1	node_51 0 --> 2 node_49
296	1.000	1	node_55 0 --> 1 node_51
297	1.000	1	node_62 1 ==> 0 Sinoconodon
		1	node_55 1 --> 2 node_51
298	1.000	1	node_62 1 ==> 0 Sinoconodon
299	1.000	1	node_62 0 ==> 1 node_55
300	1.000	1	node_55 1 --> 0 node_51
301	1.000	1	node_62 1 ==> 0 Sinoconodon
302	1.000	1	node_62 1 --> 0 node_55
303	1.000	1	node_55 0 --> 1 node_51
		1	node_51 1 --> 2 Hadrocodium
304	1.000	1	node_62 0 --> 1 node_55
305	1.000	1	node_62 1 ==> 2 node_55
306	1.000	1	node_62 1 ==> 0 Sinoconodon
307	1.000	1	node_62 2 --> 3 node_55

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_62 --> Sinoconodon	10	1	0.375	1 ==> 0
	17	1	0.375	3 ==> 0
	34	1	0.500	1 ==> 2
	59	1	0.250	1 ==> 0
	79	1	0.200	1 ==> 0
	81	1	0.500	0 ==> 1
	99	1	1.000	2 ==> 1
	114	1	0.250	0 --> 1
	133	1	0.429	0 --> 3
	134	1	0.333	0 ==> 3
	136	1	0.667	0 --> 1
	137	1	0.400	0 --> 2
	138	1	0.500	0 ==> 2
	139	1	1.000	0 ==> 2
	142	1	1.000	1 ==> 0
	143	1	0.500	1 ==> 0
	146	1	0.500	0 --> 1
	157	1	1.000	0 --> 1
	163	1	1.000	1 ==> 0
	197	1	0.667	1 ==> 0
	238	1	1.000	1 ==> 0
	252	1	1.000	1 ==> 0
	260	1	1.000	1 ==> 0
	267	1	1.000	0 ==> 1
	270	1	1.000	2 ==> 1
	284	1	0.500	1 ==> 0
	297	1	1.000	1 ==> 0
	298	1	1.000	1 ==> 0
	301	1	1.000	1 ==> 0
	306	1	1.000	1 ==> 0
node_62 --> Adelobasileus	255	1	0.333	0 --> 1
	256	1	1.000	1 ==> 0
	263	1	1.000	1 ==> 0
node_62 --> node_55	17	1	0.375	3 ==> 1
	58	1	0.200	0 --> 1
	69	1	1.000	0 --> 1
	80	1	0.500	0 --> 1
	127	1	0.667	0 --> 1
	133	1	0.429	0 --> 1
	135	1	0.500	1 --> 0
	145	1	0.500	1 --> 0
	147	1	1.000	0 --> 1

	148	1	1.000	0 --> 1
	149	1	1.000	0 --> 1
	159	1	1.000	0 --> 1
	160	1	1.000	0 --> 1
	161	1	1.000	0 --> 1
	162	1	1.000	0 --> 1
	168	1	1.000	0 ==> 1
	178	1	0.500	0 --> 1
	179	1	1.000	1 --> 0
	221	1	0.667	0 --> 1
	222	1	1.000	0 --> 1
	225	1	0.333	0 --> 1
	226	1	0.500	1 ==> 2
	228	1	0.500	0 --> 1
	229	1	0.500	0 --> 1
	232	1	0.500	2 --> 3
	237	1	0.500	1 --> 2
	248	1	0.500	1 ==> 0
	249	1	1.000	0 --> 1
	251	1	0.500	0 --> 1
	253	1	0.500	0 --> 1
	254	1	0.500	0 --> 2
	255	1	0.333	0 --> 1
	258	1	0.500	0 --> 1
	273	1	1.000	0 --> 1
	274	1	1.000	0 --> 1
	277	1	1.000	1 ==> 2
	278	1	1.000	0 ==> 1
	294	1	1.000	0 ==> 1
	299	1	1.000	0 ==> 1
	302	1	1.000	1 --> 0
	304	1	1.000	0 --> 1
	305	1	1.000	1 ==> 2
	307	1	1.000	2 --> 3
node_55 --> node_51	10	1	0.375	1 ==> 0
	23	1	1.000	1 --> 2
	74	1	0.667	1 --> 2
	75	1	0.333	0 ==> 1
	76	1	0.500	0 ==> 1
	77	1	0.500	0 --> 1
	88	1	1.000	0 ==> 2
	89	1	0.333	0 ==> 1
	90	1	1.000	0 ==> 1
	94	1	0.400	0 --> 2
	104	1	0.250	0 --> 2
	114	1	0.250	0 --> 1
	117	1	0.500	0 --> 1
	125	1	0.600	0 --> 2
	134	1	0.333	0 --> 1
	135	1	0.500	0 --> 3
	136	1	0.667	0 --> 4
	137	1	0.400	0 --> 2
	146	1	0.500	0 --> 1
	155	1	1.000	0 ==> 1
	164	1	1.000	0 ==> 1
	167	1	1.000	0 ==> 1
	169	1	1.000	0 ==> 1
	170	1	1.000	0 ==> 1
	171	1	1.000	0 ==> 1
	172	1	1.000	0 ==> 1
	174	1	1.000	0 ==> 1
	177	1	1.000	0 --> 1
	182	1	1.000	0 ==> 1
	183	1	0.500	0 --> 1
	185	1	1.000	0 --> 1
	192	1	1.000	0 ==> 1
	193	1	0.500	0 --> 1
	196	1	1.000	0 ==> 1

	197	1	0.667	1 --> 2
	202	1	1.000	0 ==> 1
	206	1	1.000	0 ==> 1
	210	1	1.000	0 --> 1
	211	1	1.000	0 ==> 1
	212	1	1.000	0 ==> 1
	213	1	1.000	0 ==> 1
	218	1	1.000	0 --> 1
	221	1	0.667	1 --> 2
	223	1	0.500	0 --> 1
	227	1	1.000	0 ==> 1
	235	1	0.333	0 ==> 1
	236	1	0.667	0 ==> 1
	237	1	0.500	2 --> 3
	259	1	0.500	0 --> 1
	272	1	1.000	0 --> 1
	275	1	1.000	0 --> 1
	279	1	1.000	1 --> 2
	287	1	1.000	0 --> 1
	289	1	1.000	0 ==> 2
	296	1	1.000	0 --> 1
	297	1	1.000	1 --> 2
	300	1	1.000	1 --> 0
	303	1	1.000	0 --> 1
node_51 --> Hadrocodium	30	1	0.200	1 ==> 0
	81	1	0.500	0 ==> 3
	84	1	1.000	0 ==> 1
	87	1	1.000	0 ==> 4
	94	1	0.400	2 --> 0
	100	1	0.333	1 ==> 0
	112	1	1.000	0 ==> 1
	115	1	0.333	1 ==> 0
	117	1	0.500	1 --> 0
	125	1	0.600	2 --> 0
	127	1	0.667	1 ==> 0
	130	1	1.000	0 ==> 1
	133	1	0.429	1 --> 3
	134	1	0.333	1 ==> 3
	135	1	0.500	3 --> 4
	137	1	0.400	2 --> 4
	138	1	0.500	0 ==> 3
	145	1	0.500	0 --> 1
	183	1	0.500	1 --> 0
	224	1	1.000	0 ==> 1
	225	1	0.333	1 ==> 0
	228	1	0.500	1 ==> 0
	236	1	0.667	1 ==> 2
	253	1	0.500	1 --> 0
	281	1	1.000	0 ==> 3
	284	1	0.500	1 ==> 0
	303	1	1.000	1 --> 2
node_51 --> node_43	6	1	0.286	1 --> 2
	7	1	0.333	1 ==> 0
	8	1	0.300	1 ==> 2
	19	1	0.250	1 ==> 0
	32	1	0.500	1 --> 0
	34	1	0.500	1 --> 2
	55	1	0.750	1 --> 0
	56	1	1.000	0 ==> 2
	73	1	0.400	0 --> 1
	100	1	0.333	1 --> 2
	104	1	0.250	2 --> 1
	107	1	1.000	0 --> 2
	116	1	0.667	0 --> 2
	123	1	1.000	0 --> 2
	128	1	0.500	0 --> 1
	131	1	0.667	0 --> 1
	138	1	0.500	0 --> 1

	141	1	0.333	0 --> 3
	144	1	0.500	0 --> 1
	145	1	0.500	0 --> 2
	150	1	1.000	0 --> 1
	151	1	1.000	0 --> 1
	177	1	1.000	1 --> 2
	178	1	0.500	1 --> 0
	200	1	1.000	0 --> 1
	203	1	1.000	0 --> 2
	204	1	1.000	0 --> 1
	205	1	1.000	0 --> 1
	209	1	1.000	0 --> 1
	210	1	1.000	1 --> 2
	214	1	1.000	0 --> 1
	215	1	1.000	1 --> 0
	216	1	1.000	0 --> 1
	217	1	1.000	0 --> 1
	220	1	1.000	0 --> 1
	226	1	0.500	2 --> 1
	229	1	0.500	1 --> 0
	276	1	1.000	1 --> 2
node_43 --> node_41	1	1	0.667	0 ==> 1
	17	1	0.375	1 ==> 0
	21	1	0.200	0 --> 1
	36	1	0.500	0 --> 1
	42	1	0.375	2 ==> 0
	54	1	0.750	0 --> 3
	61	1	0.500	0 ==> 1
	65	1	0.667	0 --> 2
	67	1	0.500	1 --> 0
node_41 --> node_38	13	1	0.429	0 --> 1
	27	1	1.000	0 --> 1
	38	1	0.750	0 ==> 1
	39	1	0.500	0 ==> 2
	41	1	0.750	1 --> 0
	70	1	0.500	0 --> 1
	73	1	0.400	1 --> 2
	75	1	0.333	1 --> 0
	77	1	0.500	1 --> 0
	94	1	0.400	2 --> 0
	109	1	1.000	0 --> 1
	136	1	0.667	4 --> 3
node_38 --> Paikasigudodon	36	1	0.500	1 --> 0
	37	1	0.600	0 ==> 1
	42	1	0.375	0 ==> 3
	43	1	0.667	0 ==> 2
	54	1	0.750	3 --> 1
	60	1	1.000	2 ==> 0
	66	1	0.500	1 ==> 0
node_38 --> node_37	35	1	0.500	0 ==> 2
	55	1	0.750	0 --> 3
	58	1	0.200	1 --> 2
node_37 --> node_36	7	1	0.333	0 --> 2
	53	1	0.250	1 ==> 0
	59	1	0.250	1 ==> 0
node_36 --> Thomasia	35	1	0.500	2 ==> 1
	42	1	0.375	0 ==> 1
node_36 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	0.429	1 ==> 2
	15	1	0.500	0 ==> 1
	16	1	0.800	0 ==> 4
	70	1	0.500	1 --> 0
node_37 --> Theroteinus	40	1	0.200	1 ==> 0
	64	1	0.200	0 ==> 1
	71	1	0.500	0 ==> 1
node_41 --> node_40	2	1	0.333	0 --> 1
	29	1	0.500	0 --> 1
	34	1	0.500	2 --> 3

	35	1	0.500	0 ==> 1
	58	1	0.200	1 ==> 0
	64	1	0.200	0 --> 1
	68	1	0.250	0 --> 1
	72	1	1.000	0 --> 1
	74	1	0.667	2 --> 3
	78	1	0.500	0 ==> 2
	86	1	0.500	0 ==> 1
	87	1	1.000	0 ==> 3
	92	1	0.250	0 ==> 1
	96	1	1.000	0 ==> 2
	101	1	0.600	0 ==> 2
	102	1	0.500	1 ==> 4
	127	1	0.667	1 ==> 4
	128	1	0.500	1 --> 2
	129	1	1.000	0 --> 1
	131	1	0.667	1 --> 2
	133	1	0.429	1 --> 0
	135	1	0.500	3 --> 4
	138	1	0.500	1 --> 2
node_40 --> Arboroharamiya	4	1	0.667	0 ==> 1
	8	1	0.300	2 ==> 0
	9	1	0.667	0 ==> 1
	21	1	0.200	1 --> 0
	28	1	1.000	1 ==> 2
	66	1	0.500	1 ==> 0
	93	1	0.500	0 ==> 1
	94	1	0.400	2 --> 1
	125	1	0.600	2 --> 3
	133	1	0.429	0 --> 3
	134	1	0.333	1 ==> 3
	137	1	0.400	2 --> 4
	187	1	1.000	1 ==> 0
	197	1	0.667	2 --> 1
	221	1	0.667	2 --> 0
node_40 --> node_39	1	1	0.667	1 ==> 2
	45	1	1.000	0 ==> 1
	54	1	0.750	3 --> 0
	95	1	0.500	0 ==> 1
	97	1	0.333	0 ==> 1
	119	1	0.333	0 --> 1
	124	1	1.000	0 ==> 1
	140	1	1.000	0 ==> 1
	184	1	1.000	0 ==> 1
	190	1	1.000	0 ==> 1
	191	1	0.667	0 --> 1
	199	1	0.500	0 ==> 1
	219	1	1.000	0 ==> 1
node_39 --> Rugosodon	32	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	126	1	1.000	0 ==> 1
	128	1	0.500	2 --> 1
node_39 --> Sinobaatar	2	1	0.333	1 --> 0
	28	1	1.000	1 ==> 0
	29	1	0.500	1 --> 0
	34	1	0.500	3 ==> 0
	35	1	0.500	1 ==> 2
	42	1	0.375	0 ==> 1
	134	1	0.333	1 --> 2
	138	1	0.500	2 --> 3
	141	1	0.333	3 --> 0
	194	1	0.500	0 ==> 1
node_43 --> node_42	10	1	0.375	0 --> 1
	55	1	0.750	0 --> 2
	57	1	0.667	0 ==> 2
	60	1	1.000	2 ==> 1
node_42 --> Helvetiodon	37	1	0.600	0 ==> 1
	39	1	0.500	0 ==> 1

	50	1	0.667	0 ==> 1
	64	1	0.200	0 ==> 1
node_42 --> Purbeckodon	43	1	0.667	0 ==> 2
	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1
	58	1	0.200	1 --> 2
node_51 --> node_49	3	1	0.600	0 ==> 2
	4	1	0.667	0 ==> 2
	7	1	0.333	1 --> 0
	8	1	0.300	1 ==> 0
	14	1	0.571	0 ==> 7
	16	1	0.800	0 ==> 7
	30	1	0.200	1 --> 0
	37	1	0.600	0 ==> 2
	41	1	0.750	1 --> 0
	50	1	0.667	0 ==> 7
	82	1	1.000	0 ==> 1
	95	1	0.500	0 --> 1
	101	1	0.600	0 --> 1
	103	1	1.000	0 ==> 1
	106	1	1.000	0 ==> 1
	113	1	0.500	0 --> 1
	120	1	0.500	0 ==> 1
	136	1	0.667	4 --> 0
	137	1	0.400	2 --> 0
	144	1	0.500	0 --> 1
	146	1	0.500	1 --> 2
	156	1	1.000	0 --> 1
	163	1	1.000	1 --> 2
	165	1	1.000	0 --> 1
	166	1	1.000	0 --> 1
	173	1	1.000	0 --> 1
	175	1	1.000	0 --> 1
	176	1	1.000	0 --> 1
	180	1	1.000	0 --> 1
	181	1	1.000	0 --> 1
	188	1	1.000	0 --> 1
	189	1	1.000	0 --> 1
	190	1	1.000	0 --> 2
	191	1	0.667	0 --> 2
	194	1	0.500	0 --> 1
	195	1	1.000	0 --> 1
	198	1	1.000	0 --> 1
	201	1	1.000	0 --> 1
	207	1	1.000	0 --> 3
	208	1	1.000	0 --> 2
	218	1	1.000	1 --> 2
	230	1	1.000	0 --> 1
	237	1	0.500	3 --> 2
	239	1	1.000	0 --> 1
	240	1	1.000	0 --> 1
	241	1	1.000	0 --> 1
	257	1	0.500	0 --> 1
	260	1	1.000	1 --> 2
	264	1	1.000	0 --> 1
	266	1	1.000	0 --> 1
	292	1	1.000	0 --> 1
	295	1	1.000	0 --> 2
node_49 --> node_46	6	1	0.286	1 --> 2
	7	1	0.333	0 --> 2
	33	1	0.400	0 ==> 1
	39	1	0.500	0 ==> 1
	40	1	0.200	1 ==> 0
	41	1	0.750	0 --> 3
	64	1	0.200	0 ==> 1
	68	1	0.250	0 --> 1
	75	1	0.333	1 --> 0
	76	1	0.500	1 --> 0

	83	1	1.000	0 --> 1
	95	1	0.500	1 --> 2
	101	1	0.600	1 --> 3
	116	1	0.667	0 --> 1
	118	1	1.000	0 --> 1
	119	1	0.333	0 --> 1
node_46 --> Woutersia	3	1	0.600	2 ==> 1
	9	1	0.667	0 ==> 2
	14	1	0.571	7 ==> 4
	17	1	0.375	1 ==> 2
	20	1	0.500	2 ==> 1
	24	1	0.200	0 ==> 1
	30	1	0.200	0 --> 1
	42	1	0.375	2 ==> 3
	48	1	1.000	0 ==> 1
	54	1	0.750	0 ==> 2
node_46 --> node_45	10	1	0.375	0 ==> 1
	21	1	0.200	0 ==> 1
	22	1	0.250	0 ==> 1
	49	1	1.000	0 --> 5
	58	1	0.200	1 --> 2
	65	1	0.667	0 --> 1
node_45 --> Shuotherium	6	1	0.286	2 --> 1
	94	1	0.400	2 --> 0
	104	1	0.250	2 --> 0
node_45 --> node_44	5	1	0.250	0 ==> 1
	13	1	0.429	0 --> 1
	15	1	0.500	0 ==> 2
	18	1	0.750	0 --> 2
	20	1	0.500	2 --> 3
	78	1	0.500	0 --> 2
	81	1	0.500	0 --> 2
node_44 --> Ambondro	3	1	0.600	2 ==> 1
	14	1	0.571	7 ==> 5
	115	1	0.333	1 ==> 2
	117	1	0.500	1 ==> 3
node_44 --> Asfaltomylos	4	1	0.667	2 ==> 3
	8	1	0.300	0 ==> 3
	13	1	0.429	1 --> 2
	18	1	0.750	2 --> 3
	19	1	0.250	1 ==> 0
	116	1	0.667	1 --> 0
node_49 --> node_48	17	1	0.375	1 --> 0
	38	1	0.750	0 --> 2
	42	1	0.375	2 ==> 0
	52	1	0.800	0 --> 3
	53	1	0.250	1 ==> 0
	58	1	0.200	1 --> 0
	79	1	0.200	1 --> 0
	87	1	1.000	0 ==> 2
	89	1	0.333	1 --> 0
	92	1	0.250	0 ==> 1
	93	1	0.500	0 --> 1
	98	1	1.000	0 --> 1
	102	1	0.500	1 --> 3
	107	1	1.000	0 ==> 1
	135	1	0.500	3 --> 0
node_48 --> Delsatia	20	1	0.500	2 ==> 3
	21	1	0.200	0 ==> 1
	30	1	0.200	0 --> 1
	52	1	0.800	3 --> 7
	60	1	1.000	2 ==> 3
node_48 --> Zhangheotherium	33	1	0.400	0 ==> 2
	40	1	0.200	1 ==> 0
	58	1	0.200	0 --> 1
	59	1	0.250	1 ==> 0
	93	1	0.500	1 --> 2
	97	1	0.333	0 ==> 1

	102	1	0.500	3 --> 4
	104	1	0.250	2 --> 0
	105	1	1.000	0 ==> 1
	127	1	0.667	1 ==> 2
	128	1	0.500	0 ==> 1
	131	1	0.667	0 ==> 1
	133	1	0.429	1 --> 2
	134	1	0.333	1 --> 2
	139	1	1.000	0 ==> 1
node_48 --> node_47	4	1	0.667	2 ==> 4
	5	1	0.250	0 --> 1
	10	1	0.375	0 --> 1
	15	1	0.500	0 --> 2
	19	1	0.250	1 ==> 0
	37	1	0.600	2 --> 4
	38	1	0.750	2 --> 3
	43	1	0.667	0 --> 3
	46	1	0.750	0 --> 4
	49	1	1.000	0 --> 3
	50	1	0.667	7 --> 8
	51	1	1.000	0 --> 6
	73	1	0.400	0 --> 2
	74	1	0.667	2 --> 1
	78	1	0.500	0 ==> 1
	81	1	0.500	0 ==> 1
	114	1	0.250	1 ==> 0
	115	1	0.333	1 ==> 0
	117	1	0.500	1 --> 0
	125	1	0.600	2 --> 1
	141	1	0.333	0 --> 3
node_47 --> Amphitherium	79	1	0.200	0 --> 1
	89	1	0.333	0 --> 1
	101	1	0.600	1 --> 0
	110	1	1.000	0 ==> 1
	111	1	1.000	0 ==> 1
	113	1	0.500	1 --> 0
	134	1	0.333	1 --> 0
node_47 --> Dryolestes	6	1	0.286	1 ==> 0
	10	1	0.375	1 --> 3
	12	1	0.600	0 ==> 3
	13	1	0.429	0 ==> 12
	14	1	0.571	7 ==> 45
	15	1	0.500	2 --> 3
node_51 --> node_50	31	1	0.667	0 --> 2
	33	1	0.400	0 ==> 1
	59	1	0.250	1 --> 0
	68	1	0.250	0 --> 1
	78	1	0.500	0 ==> 1
	86	1	0.500	0 ==> 1
	87	1	1.000	0 ==> 1
	92	1	0.250	0 ==> 1
	93	1	0.500	0 ==> 2
	95	1	0.500	0 --> 1
	97	1	0.333	0 --> 1
	101	1	0.600	0 ==> 1
	102	1	0.500	1 ==> 4
	127	1	0.667	1 --> 3
	134	1	0.333	1 --> 2
	135	1	0.500	3 --> 1
	136	1	0.667	4 --> 2
	223	1	0.500	1 --> 0
	246	1	1.000	0 --> 2
	254	1	0.500	2 --> 1
	255	1	0.333	1 --> 0
	259	1	0.500	1 --> 0
	262	1	1.000	0 --> 1
	282	1	1.000	1 --> 0
	286	1	1.000	0 ==> 1

	291	1	1.000	0	-->	1
	292	1	1.000	0	-->	2
node_50 --> Amphilestes	1	1	0.667	0	==>	1
	24	1	0.200	0	==>	1
	106	1	1.000	0	==>	2
node_50 --> Priacodon	19	1	0.250	1	==>	0
	34	1	0.500	1	==>	2
	79	1	0.200	1	==>	0
	100	1	0.333	1	==>	2
	104	1	0.250	2	-->	1
	114	1	0.250	1	==>	0
	115	1	0.333	1	==>	0
	119	1	0.333	0	==>	1
	121	1	1.000	0	==>	1
	135	1	0.500	1	-->	2
	138	1	0.500	0	==>	1
	145	1	0.500	0	-->	1
node_55 --> node_54	4	1	0.667	0	-->	1
	5	1	0.250	0	==>	1
	12	1	0.600	0	-->	2
	15	1	0.500	0	==>	1
	16	1	0.800	0	-->	5
	22	1	0.250	0	-->	1
	37	1	0.600	0	==>	1
	39	1	0.500	0	==>	1
	41	1	0.750	1	==>	2
	50	1	0.667	0	==>	2
	56	1	1.000	0	-->	1
	65	1	0.667	0	-->	1
	85	1	1.000	0	-->	1
	122	1	0.500	0	-->	1
	132	1	1.000	0	-->	1
	133	1	0.429	1	-->	2
	152	1	1.000	1	-->	0
	153	1	1.000	1	-->	0
	154	1	1.000	1	-->	0
	179	1	1.000	0	-->	2
	186	1	1.000	2	-->	1
	199	1	0.500	0	-->	1
	244	1	1.000	1	-->	2
node_54 --> node_52	8	1	0.300	1	==>	3
	14	1	0.571	0	==>	4
	52	1	0.800	0	-->	1
	100	1	0.333	1	-->	0
node_52 --> Fluctuodon	10	1	0.375	1	==>	2
	47	1	0.500	0	==>	1
node_52 --> Kuehneotherium	3	1	0.600	0	==>	1
	7	1	0.333	1	==>	2
	12	1	0.600	2	-->	0
	18	1	0.750	0	==>	2
	38	1	0.750	0	==>	1
	46	1	0.750	0	==>	3
	49	1	1.000	0	==>	4
	50	1	0.667	2	==>	7
	52	1	0.800	1	-->	2
node_54 --> node_53	4	1	0.667	1	-->	3
	11	1	0.500	0	==>	1
	16	1	0.800	5	-->	6
	24	1	0.200	0	==>	1
	25	1	1.000	2	==>	3
	31	1	0.667	0	-->	1
	53	1	0.250	1	-->	0
	58	1	0.200	1	-->	2
	64	1	0.200	0	-->	1
	79	1	0.200	1	==>	0
	81	1	0.500	0	==>	1
	88	1	1.000	0	==>	1
	104	1	0.250	0	-->	1

	120	1	0.500	0 --> 1
node_53 --> Castorocauda	12	1	0.600	2 --> 1
	15	1	0.500	1 ==> 3
	20	1	0.500	2 ==> 1
node_53 --> Haldanodon	8	1	0.300	1 ==> 0
	9	1	0.667	0 ==> 2
	14	1	0.571	0 ==> 12
	16	1	0.800	6 --> 7
	22	1	0.250	1 --> 0
	30	1	0.200	1 ==> 0
	92	1	0.250	0 ==> 1
	134	1	0.333	0 ==> 2
node_62 --> node_61	18	1	0.750	0 ==> 1
	24	1	0.200	0 ==> 1
	57	1	0.667	0 --> 1
	58	1	0.200	0 --> 2
	61	1	0.500	0 ==> 1
	62	1	1.000	0 ==> 1
	68	1	0.250	0 --> 1
	100	1	0.333	1 --> 0
	102	1	0.500	1 --> 2
	104	1	0.250	0 --> 1
	115	1	0.333	1 --> 0
	125	1	0.600	0 --> 1
	158	1	1.000	0 --> 1
	191	1	0.667	0 --> 1
	193	1	0.500	0 --> 1
	225	1	0.333	0 --> 1
	232	1	0.500	2 --> 3
	235	1	0.333	0 --> 1
	236	1	0.667	0 ==> 1
	251	1	0.500	0 --> 1
	254	1	0.500	0 --> 1
	257	1	0.500	0 ==> 1
	258	1	0.500	0 --> 1
node_61 --> Dinnetherium	21	1	0.200	0 ==> 1
	22	1	0.250	0 ==> 1
	25	1	1.000	2 ==> 1
	33	1	0.400	0 ==> 1
	40	1	0.200	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
	80	1	0.500	0 --> 1
	100	1	0.333	0 --> 2
	122	1	0.500	0 ==> 1
	254	1	0.500	1 --> 2
	261	1	1.000	1 ==> 2
node_61 --> node_60	8	1	0.300	1 ==> 2
	31	1	0.667	0 ==> 1
	73	1	0.400	0 --> 1
	127	1	0.667	0 --> 1
	237	1	0.500	1 --> 2
node_60 --> node_59	7	1	0.333	1 ==> 0
	10	1	0.375	1 ==> 0
	25	1	1.000	2 ==> 0
node_59 --> node_56	20	1	0.500	2 ==> 1
	55	1	0.750	1 ==> 0
	73	1	0.400	1 --> 0
node_56 --> Megazostrodon	6	1	0.286	1 ==> 0
	8	1	0.300	2 ==> 3
	42	1	0.375	2 ==> 3
	50	1	0.667	0 ==> 2
	52	1	0.800	0 ==> 2
	136	1	0.667	0 --> 1
	143	1	0.500	1 ==> 0
	146	1	0.500	0 ==> 2
	235	1	0.333	1 --> 0
	248	1	0.500	1 ==> 0

node_56 --> Morganucodon	81	1	0.500	0 ==> 1
	102	1	0.500	2 --> 1
	104	1	0.250	1 --> 0
	115	1	0.333	0 --> 1
	135	1	0.500	1 ==> 23
node_56 --> Erythrotherium	17	1	0.375	3 ==> 1
	34	1	0.500	1 ==> 3
	58	1	0.200	2 ==> 1
node_59 --> node_58	6	1	0.286	1 --> 0
	17	1	0.375	3 ==> 0
	24	1	0.200	1 ==> 0
	33	1	0.400	0 --> 1
	40	1	0.200	1 --> 0
node_58 --> node_57	3	1	0.600	0 ==> 5
	5	1	0.250	0 ==> 1
	8	1	0.300	2 ==> 3
	13	1	0.429	0 --> 1
	14	1	0.571	0 ==> 1
node_57 --> Paceyodon	6	1	0.286	0 --> 1
	11	1	0.500	0 ==> 1
	12	1	0.600	0 ==> 1
	13	1	0.429	1 --> 4
	17	1	0.375	0 ==> 1
node_58 --> Hallautherium	20	1	0.500	2 ==> 0
node_60 --> Bridetherium	42	1	0.375	2 ==> 1
	57	1	0.667	1 --> 0
	67	1	0.500	1 ==> 0
node_62 --> Rosierodon	8	1	0.300	1 ==> 0

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	3	5	10	0.600	0.400	0.714	0.429
4	4	6	12	0.667	0.333	0.750	0.500
5	1	4	8	0.250	0.750	0.571	0.143
6	2	7	8	0.286	0.714	0.167	0.048
7	2	6	9	0.333	0.667	0.429	0.143
8	3	10	18	0.300	0.700	0.533	0.160
9	2	3	3	0.667	0.333	0.000	0.000
10	3	8	11	0.375	0.625	0.375	0.141
11	1	2	3	0.500	0.500	0.500	0.250
12	3	5	5	0.600	0.400	0.000	0.000
13	3	7	8	0.429	0.571	0.200	0.086
14	4	7	13	0.571	0.429	0.667	0.381
15	3	6	8	0.500	0.500	0.400	0.200
16	4	5	12	0.800	0.200	0.875	0.700
17	3	8	15	0.375	0.625	0.583	0.219
18	3	4	8	0.750	0.250	0.800	0.600
19	1	4	11	0.250	0.750	0.700	0.175
20	3	6	8	0.500	0.500	0.400	0.200
21	1	5	9	0.200	0.800	0.500	0.100
22	1	4	6	0.250	0.750	0.400	0.100
23	1	1	1	1.000	0.000	0/0	0/0
24	1	5	7	0.200	0.800	0.333	0.067
25	3	3	7	1.000	0.000	1.000	1.000
26	n/a	0	0	0/0	0/0	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	5	8	0.200	0.800	0.429	0.086
31	2	3	5	0.667	0.333	0.667	0.444
32	1	2	4	0.500	0.500	0.667	0.333
33	2	5	7	0.400	0.600	0.400	0.160
34	3	6	7	0.500	0.500	0.250	0.125

35	2	4	6	0.500	0.500	0.500	0.250
36	1	2	3	0.500	0.500	0.500	0.250
37	3	5	9	0.600	0.400	0.667	0.400
38	3	4	5	0.750	0.250	0.500	0.375
39	2	4	8	0.500	0.500	0.667	0.333
40	1	5	6	0.200	0.800	0.200	0.040
41	3	4	6	0.750	0.250	0.667	0.500
42	3	8	12	0.375	0.625	0.444	0.167
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	3	3	3	1.000	0.000	0/0	0/0
50	4	6	8	0.667	0.333	0.500	0.333
51	1	1	1	1.000	0.000	0/0	0/0
52	4	5	5	0.800	0.200	0.000	0.000
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	4	8	0.750	0.250	0.800	0.600
56	2	2	7	1.000	0.000	1.000	1.000
57	2	3	6	0.667	0.333	0.750	0.500
58	2	10	13	0.200	0.800	0.273	0.055
59	1	4	5	0.250	0.750	0.250	0.062
60	3	3	4	1.000	0.000	1.000	1.000
61	1	2	10	0.500	0.500	0.889	0.444
62	1	1	5	1.000	0.000	1.000	1.000
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	5	6	0.200	0.800	0.200	0.040
65	2	3	4	0.667	0.333	0.500	0.333
66	1	2	2	0.500	0.500	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	4	7	0.250	0.750	0.500	0.125
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	2	3	5	0.667	0.333	0.667	0.444
75	1	3	9	0.333	0.667	0.750	0.250
76	1	2	9	0.500	0.500	0.875	0.438
77	1	2	4	0.500	0.500	0.667	0.333
78	2	4	8	0.500	0.500	0.667	0.333
79	1	5	6	0.200	0.800	0.200	0.040
80	1	2	3	0.500	0.500	0.500	0.250
81	3	6	8	0.500	0.500	0.400	0.200
82	1	1	3	1.000	0.000	1.000	1.000
83	1	1	1	1.000	0.000	0/0	0/0
84	1	1	1	1.000	0.000	0/0	0/0
85	1	1	2	1.000	0.000	1.000	1.000
86	1	2	4	0.500	0.500	0.667	0.333
87	4	4	9	1.000	0.000	1.000	1.000
88	2	2	7	1.000	0.000	1.000	1.000
89	1	3	8	0.333	0.667	0.714	0.238
90	1	1	4	1.000	0.000	1.000	1.000
91	n/a	0	0	0/0	0/0	0/0	0/0
92	1	4	9	0.250	0.750	0.625	0.156
93	2	4	6	0.500	0.500	0.500	0.250
94	2	5	9	0.400	0.600	0.571	0.229
95	2	4	7	0.500	0.500	0.600	0.300
96	1	1	3	1.000	0.000	1.000	1.000
97	1	3	4	0.333	0.667	0.333	0.111
98	1	1	2	1.000	0.000	1.000	1.000
99	1	1	1	1.000	0.000	0/0	0/0
100	2	6	8	0.333	0.667	0.333	0.111
101	3	5	8	0.600	0.400	0.600	0.360
102	3	6	10	0.500	0.500	0.571	0.286

103	1	1	4	1.000	0.000	1.000	1.000
104	2	8	10	0.250	0.750	0.250	0.062
105	1	1	1	1.000	0.000	0/0	0/0
106	2	2	6	1.000	0.000	1.000	1.000
107	2	2	7	1.000	0.000	1.000	1.000
108	n/a	0	0	0/0	0/0	0/0	0/0
109	1	1	1	1.000	0.000	0/0	0/0
110	1	1	1	1.000	0.000	0/0	0/0
111	1	1	1	1.000	0.000	0/0	0/0
112	1	1	1	1.000	0.000	0/0	0/0
113	1	2	2	0.500	0.500	0.000	0.000
114	1	4	7	0.250	0.750	0.500	0.125
115	2	6	7	0.333	0.667	0.200	0.067
116	2	3	6	0.667	0.333	0.750	0.500
117	2	4	6	0.500	0.500	0.500	0.250
118	1	1	3	1.000	0.000	1.000	1.000
119	1	3	4	0.333	0.667	0.333	0.111
120	1	2	6	0.500	0.500	0.800	0.400
121	1	1	1	1.000	0.000	0/0	0/0
122	1	2	3	0.500	0.500	0.500	0.250
123	1	1	3	1.000	0.000	1.000	1.000
124	1	1	2	1.000	0.000	1.000	1.000
125	3	5	6	0.600	0.400	0.333	0.200
126	1	1	1	1.000	0.000	0/0	0/0
127	4	6	8	0.667	0.333	0.500	0.333
128	2	4	5	0.500	0.500	0.333	0.167
129	1	1	1	1.000	0.000	0/0	0/0
130	1	1	1	1.000	0.000	0/0	0/0
131	2	3	4	0.667	0.333	0.500	0.333
132	1	1	2	1.000	0.000	1.000	1.000
133	3	7	8	0.429	0.571	0.200	0.086
134	3	9	11	0.333	0.667	0.250	0.083
135	4	8	12	0.500	0.500	0.500	0.250
136	4	6	8	0.667	0.333	0.500	0.333
137	2	5	6	0.400	0.600	0.250	0.100
138	3	6	6	0.500	0.500	0.000	0.000
139	2	2	2	1.000	0.000	0/0	0/0
140	1	1	2	1.000	0.000	1.000	1.000
141	1	3	3	0.333	0.667	0.000	0.000
142	1	1	1	1.000	0.000	0/0	0/0
143	1	2	2	0.500	0.500	0.000	0.000
144	1	2	6	0.500	0.500	0.800	0.400
145	2	4	9	0.500	0.500	0.714	0.357
146	2	4	5	0.500	0.500	0.333	0.167
147	1	1	1	1.000	0.000	0/0	0/0
148	1	1	3	1.000	0.000	1.000	1.000
149	1	1	2	1.000	0.000	1.000	1.000
150	1	1	2	1.000	0.000	1.000	1.000
151	1	1	2	1.000	0.000	1.000	1.000
152	1	1	1	1.000	0.000	0/0	0/0
153	1	1	1	1.000	0.000	0/0	0/0
154	1	1	1	1.000	0.000	0/0	0/0
155	1	1	2	1.000	0.000	1.000	1.000
156	1	1	1	1.000	0.000	0/0	0/0
157	1	1	1	1.000	0.000	0/0	0/0
158	1	1	1	1.000	0.000	0/0	0/0
159	1	1	1	1.000	0.000	0/0	0/0
160	1	1	1	1.000	0.000	0/0	0/0
161	1	1	3	1.000	0.000	1.000	1.000
162	1	1	2	1.000	0.000	1.000	1.000
163	2	2	2	1.000	0.000	0/0	0/0
164	1	1	3	1.000	0.000	1.000	1.000
165	1	1	1	1.000	0.000	0/0	0/0
166	1	1	1	1.000	0.000	0/0	0/0
167	1	1	3	1.000	0.000	1.000	1.000
168	1	1	3	1.000	0.000	1.000	1.000
169	1	1	3	1.000	0.000	1.000	1.000
170	1	1	3	1.000	0.000	1.000	1.000

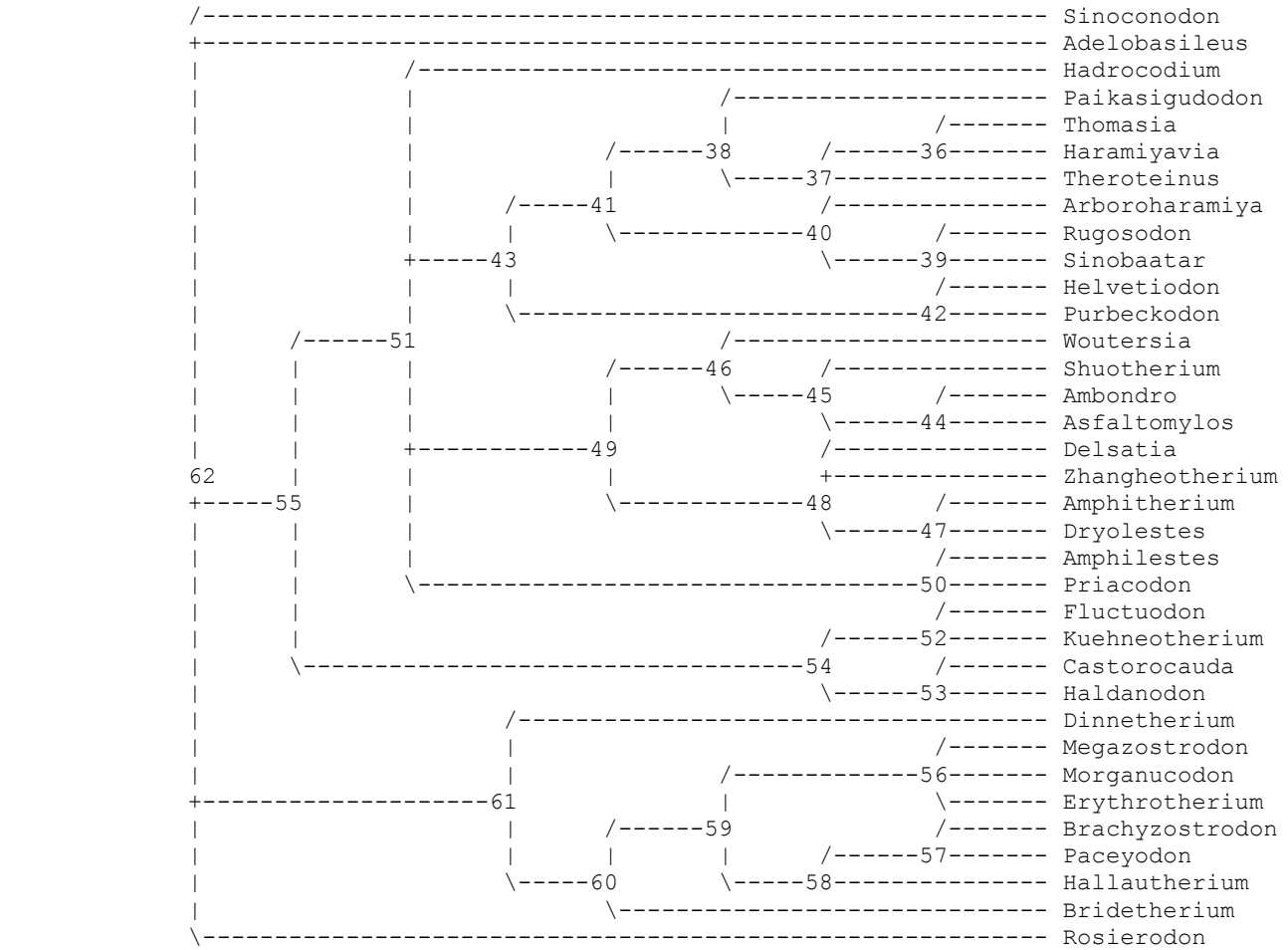
171	1	1	3	1.000	0.000	1.000	1.000
172	1	1	3	1.000	0.000	1.000	1.000
173	1	1	1	1.000	0.000	0/0	0/0
174	1	1	3	1.000	0.000	1.000	1.000
175	1	1	1	1.000	0.000	0/0	0/0
176	1	1	1	1.000	0.000	0/0	0/0
177	2	2	2	1.000	0.000	0/0	0/0
178	1	2	3	0.500	0.500	0.500	0.250
179	2	2	5	1.000	0.000	1.000	1.000
180	1	1	1	1.000	0.000	0/0	0/0
181	1	1	1	1.000	0.000	0/0	0/0
182	1	1	3	1.000	0.000	1.000	1.000
183	1	2	3	0.500	0.500	0.500	0.250
184	1	1	2	1.000	0.000	1.000	1.000
185	1	1	1	1.000	0.000	0/0	0/0
186	1	1	1	1.000	0.000	0/0	0/0
187	1	1	1	1.000	0.000	0/0	0/0
188	1	1	1	1.000	0.000	0/0	0/0
189	1	1	1	1.000	0.000	0/0	0/0
190	2	2	3	1.000	0.000	1.000	1.000
191	2	3	3	0.667	0.333	0.000	0.000
192	1	1	4	1.000	0.000	1.000	1.000
193	1	2	2	0.500	0.500	0.000	0.000
194	1	2	2	0.500	0.500	0.000	0.000
195	1	1	1	1.000	0.000	0/0	0/0
196	1	1	3	1.000	0.000	1.000	1.000
197	2	3	4	0.667	0.333	0.500	0.333
198	1	1	1	1.000	0.000	0/0	0/0
199	1	2	3	0.500	0.500	0.500	0.250
200	1	1	2	1.000	0.000	1.000	1.000
201	1	1	1	1.000	0.000	0/0	0/0
202	1	1	3	1.000	0.000	1.000	1.000
203	1	1	2	1.000	0.000	1.000	1.000
204	1	1	1	1.000	0.000	0/0	0/0
205	1	1	2	1.000	0.000	1.000	1.000
206	1	1	3	1.000	0.000	1.000	1.000
207	1	1	1	1.000	0.000	0/0	0/0
208	1	1	1	1.000	0.000	0/0	0/0
209	1	1	2	1.000	0.000	1.000	1.000
210	2	2	3	1.000	0.000	1.000	1.000
211	1	1	3	1.000	0.000	1.000	1.000
212	1	1	2	1.000	0.000	1.000	1.000
213	1	1	2	1.000	0.000	1.000	1.000
214	1	1	2	1.000	0.000	1.000	1.000
215	1	1	2	1.000	0.000	1.000	1.000
216	1	1	2	1.000	0.000	1.000	1.000
217	1	1	2	1.000	0.000	1.000	1.000
218	2	2	3	1.000	0.000	1.000	1.000
219	1	1	2	1.000	0.000	1.000	1.000
220	1	1	2	1.000	0.000	1.000	1.000
221	2	3	3	0.667	0.333	0.000	0.000
222	1	1	1	1.000	0.000	0/0	0/0
223	1	2	5	0.500	0.500	0.750	0.375
224	1	1	1	1.000	0.000	0/0	0/0
225	1	3	3	0.333	0.667	0.000	0.000
226	1	2	3	0.500	0.500	0.500	0.250
227	1	1	3	1.000	0.000	1.000	1.000
228	1	2	2	0.500	0.500	0.000	0.000
229	1	2	2	0.500	0.500	0.000	0.000
230	1	1	1	1.000	0.000	0/0	0/0
231	n/a	0	0	0/0	0/0	0/0	0/0
232	1	2	2	0.500	0.500	0.000	0.000
233	n/a	0	0	0/0	0/0	0/0	0/0
234	n/a	0	0	0/0	0/0	0/0	0/0
235	1	3	4	0.333	0.667	0.333	0.111
236	2	3	4	0.667	0.333	0.500	0.333
237	2	4	4	0.500	0.500	0.000	0.000
238	1	1	1	1.000	0.000	0/0	0/0

239	1	1	1	1.000	0.000	0/0	0/0
240	1	1	1	1.000	0.000	0/0	0/0
241	1	1	1	1.000	0.000	0/0	0/0
242	n/a	0	0	0/0	0/0	0/0	0/0
243	n/a	0	0	0/0	0/0	0/0	0/0
244	1	1	1	1.000	0.000	0/0	0/0
245	n/a	0	0	0/0	0/0	0/0	0/0
246	1	1	1	1.000	0.000	0/0	0/0
247	n/a	0	0	0/0	0/0	0/0	0/0
248	1	2	3	0.500	0.500	0.500	0.250
249	1	1	1	1.000	0.000	0/0	0/0
250	n/a	0	0	0/0	0/0	0/0	0/0
251	1	2	2	0.500	0.500	0.000	0.000
252	1	1	1	1.000	0.000	0/0	0/0
253	1	2	2	0.500	0.500	0.000	0.000
254	2	4	5	0.500	0.500	0.333	0.167
255	1	3	3	0.333	0.667	0.000	0.000
256	1	1	1	1.000	0.000	0/0	0/0
257	1	2	4	0.500	0.500	0.667	0.333
258	1	2	2	0.500	0.500	0.000	0.000
259	1	2	2	0.500	0.500	0.000	0.000
260	2	2	2	1.000	0.000	0/0	0/0
261	1	1	1	1.000	0.000	0/0	0/0
262	1	1	1	1.000	0.000	0/0	0/0
263	1	1	1	1.000	0.000	0/0	0/0
264	1	1	1	1.000	0.000	0/0	0/0
265	n/a	0	0	0/0	0/0	0/0	0/0
266	1	1	1	1.000	0.000	0/0	0/0
267	1	1	1	1.000	0.000	0/0	0/0
268	n/a	0	0	0/0	0/0	0/0	0/0
269	n/a	0	0	0/0	0/0	0/0	0/0
270	1	1	1	1.000	0.000	0/0	0/0
271	n/a	0	0	0/0	0/0	0/0	0/0
272	1	1	1	1.000	0.000	0/0	0/0
273	1	1	1	1.000	0.000	0/0	0/0
274	1	1	1	1.000	0.000	0/0	0/0
275	1	1	1	1.000	0.000	0/0	0/0
276	1	1	1	1.000	0.000	0/0	0/0
277	1	1	3	1.000	0.000	1.000	1.000
278	1	1	2	1.000	0.000	1.000	1.000
279	1	1	1	1.000	0.000	0/0	0/0
280	n/a	0	0	0/0	0/0	0/0	0/0
281	1	1	1	1.000	0.000	0/0	0/0
282	1	1	1	1.000	0.000	0/0	0/0
283	n/a	0	0	0/0	0/0	0/0	0/0
284	1	2	2	0.500	0.500	0.000	0.000
285	n/a	0	0	0/0	0/0	0/0	0/0
286	1	1	2	1.000	0.000	1.000	1.000
287	1	1	1	1.000	0.000	0/0	0/0
288	n/a	0	0	0/0	0/0	0/0	0/0
289	1	1	3	1.000	0.000	1.000	1.000
290	n/a	0	0	0/0	0/0	0/0	0/0
291	1	1	1	1.000	0.000	0/0	0/0
292	2	2	2	1.000	0.000	0/0	0/0
293	n/a	0	0	0/0	0/0	0/0	0/0
294	1	1	3	1.000	0.000	1.000	1.000
295	1	1	1	1.000	0.000	0/0	0/0
296	1	1	1	1.000	0.000	0/0	0/0
297	2	2	2	1.000	0.000	0/0	0/0
298	1	1	1	1.000	0.000	0/0	0/0
299	1	1	2	1.000	0.000	1.000	1.000
300	1	1	1	1.000	0.000	0/0	0/0
301	1	1	1	1.000	0.000	0/0	0/0
302	1	1	1	1.000	0.000	0/0	0/0
303	2	2	2	1.000	0.000	0/0	0/0
304	1	1	1	1.000	0.000	0/0	0/0
305	1	1	2	1.000	0.000	1.000	1.000
306	1	1	1	1.000	0.000	0/0	0/0

```
 307                 1        1        1     1.000   0.000     0/0     0/0
```

----Optimisation des caractères sur l'arbre de consensus en DELTRAN

```
Tree length = 682
Consistency index (CI) = 0.609
Homoplasy index (HI) = 0.391
CI excluding uninformative characters = 0.545
HI excluding uninformative characters = 0.455
Retention index (RI) = 0.584
Rescaled consistency index (RC) = 0.355
f value = 3505
f-ratio = 0.1459
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```




```
Possible character-state assignments to internal nodes

                        1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
36                1000010200001000000210102111010001210121000100000000002020
                       22               2          2      1            13
                                                   3                   3
37                1000010200001000000210102111010001210121000100000000001002021
                       2                2          2      1            13
                                                   3                   3
38                1000010200000000000?01021?1?100010?012100010000000001002011
                       2      1         2          2      1            1   2
```

```
                                                  3                   3
39               2?00010200000000000002101021?1?100031?00011001100000001002001
                      2                2
40               1?000102000000000002?01021?1?100031?00011001000000001002001
                      2                2                              3
41               10000102000000000002?01021?1?100010?00011001000000001002011
                      2                2          2                   3   2
                                                  3
42               00000102000000001002001021?1?10?010000011201000000001022211
                      2   1            2          2                       2
                          3                       3
43               00000102000000001002001021?1?10?010000011201000000001002011
                      2                2          2                    1  2
                                                  3                    2
44               002212?0010007271012111021?1?001110020100201000007001010011
                             1    2 3  2                 1       5        2
                             2    3                      3
45               002201?0010007071012111021?1?001110020100201000007001010011
                      2                2                 1       5        2
                                                         3
46               002201?0000007071012001021?1??01110020100201000007001010011
                      2                2                 1                2
                                                         3
47               002401?0000007070002001021?1?001010020010001000007000010001
                     1    1    2 1     2             42  1 3  4  3863     1
                          3    3                     63  3        9 7
48               002201?0000007070012001021?1??01010020010001000007000010001
                                 1     2               2 1          3     1
                                                       3 3          7
49               002201?0000007071012001021?1??01010020010201000007001010011
                                       2                 1                2
                                                         3
50               0000011100000000101200102 1?1?101110000011201000000001010 01?
                                       2       2                          2
51               00000111000000001012001021?1?101010000011201000000001010011
                                       2                                  2
52               00011113010004151012011021?1?101010010112201000002001011011
                    3       2   6                                   1
                                7                                   2
53               000311110110001010120?1131?1?101010010112201000002 00?010011
                            1   5              1                        1 2
                            2   6
                                7
54               000011110100001010120?1021?1?101010010112201000002001010011
                    1       2   5                                       1 2
                    3           6
                                7
55               00000111010000001012001021?1?101010000011201000000001010011
                                                                          2
56               00000102000000003111001101?1?111010000011201000000001000121
57               00501003000001000112001001?1?1110100000?1201000000001010121
                      1      1                   1
                             4
58               00000002000000000112001001?1?1110100000?1201000000001010121
                      1                          1
59               00000102000000003112001101?1?111010000011201000000001010121
60               00000112010000003112001121?1?111010000011201000000001010021
                                                                         1
61               00000111010000003112001121?1?101010000011201000000001010021
                                                                         1
62               00000111010000003012001021?1?10101000001120100000000010100?1
                                                                         1
```

Possible character-state assignments to internal nodes (continued)

```
                                                         1111111111111111111
                 66666666667777777777888888888899999999990000000000111111111
Node             01234567890123456789012345678901234567890123456789012345678
```

```
--------------------------------------------------------------------------------
36              21010210???002??1?01100000002110000000021010100 21?000011200
                                                 2     2                 1
37              21010210???002??1?01100000002110000000021010100 21?000011200
                                                 2     2                 1
38              2101021????00???1?01100000002110000000021010100 21?000011200
                                                 2     2                 1
39              2101?21?1?00113111211000001321101021210222401002100000011200
                                                                           1
40              2101?21?1?00??311?2110000013211010?020022240100210000011200
                                                                           1
41              2101021????00??11?01100000002110000000021010100210000011200
                                                 2     2                 1
42              10010?11???00??11?01100000002110000000021010100010000011000
                                                 2     2   2  2         21
43              20010?11???00??11?01100000002110000000021010100010000011000
                                                 2     2   2  2         21
44              20011011???000100101101?00002110000?000210110010100 0?11011
                     1        2   2  2            2      1  2            1
                                                          3
45              20011011???000100101101?00002110000?000210110010100 0?11011
                     1        2                   2      1  2            1
                                                          3
46              20011011???0001???01101?00002110000?000210110010100 0?1100?
                     1        2                   2      1  2           11
                                                          3
47              20010011??000111?1?11100002 2?10112100121031201110000?00000
                     1       22                          1
48              20010011??000111?0?10100002 2?101?2100?2101100111000 0?11000
                     1        2                         13 2            1
                                                         4
49              20010011???000111?01101000002110000?000210110010100 0?11000
                     1        2                   2      1  2            1
                                                          3
50              20010011???000111?11100000112110122 00?02114010001000001101 0
                     1        2                    1        2
51              20010011???000111?01100000002110000000021010100010000011000
                     1        2                   2         2            1
52              20010011??000100001100 00?00000000000020010000010000001000
                     1                                 1   1
53              2001?0110??000100000110001001000000000021010100010000001000
                     1
54              20010011??000100001100 00?00000000000021010000010000001000
                     1                                       1
55              20010011???000100001100000000000000000021010000010000 0?1000
                     1                                       1
56              21110011 10?000100001000000000000000000020010000010000000000
                     1                                 1 2 1          1
57              21110011 10?00010000 1?00000000000000000002?01000001000000000 0
                     1       1                          2 1          1
58              21110011 10?00010000 1?00000000000000000002?01000001000000000 0
                     1       1                          2 1          1
59              21110011 10?00010000 1?00000000000000000002?01000001000000000 0
                     1       1                          2 1          1
60              21110011 10?00010000 1?00000000000000000002?01000001000000000 0
                     1       1                          2 1          1
61              21110011 10?00010000 1?00000000000000000002?01000001000000000 0
                     1                                  2 1          1
62              20010011???000100001?00000000000000000002101000010000 0?1000
                     1                                    1

Possible character-state assignments to internal nodes (continued)

                111111111111111111111111111111111111111111111111111111111111
                122222222223333333333444444444455555555556666666666777777777
Node            901234567890123456789012345678901234567890123456789012345678
--------------------------------------------------------------------------------
36              00002000 1?00?01100??00?1112??11??11110001111110011111101 00?
```

```
                  2       3213
                  3         34
                            4
37          00002000l?00?01100??00?1112??11??1111000111111001111110100?
                  2       3213
                  3         34
                            4
38          00002000l?00?01100??00?1112??11??1111000111111001111110100?
                  2       3213
                  3         34
                            4
39          ?0002120 1?0200144 2?01?1112??1111111100011111100111111 0100?
                    2     2
40          00002000 1?0?00144??00?1112??11??1111000111111001111110100?
                  2  2    12
                  3       3
41          00002000l?00?01100??00?1112??11??1111000111111001111110100?
                  2       3213
                  3         34
                            4
42          0000?000l?00?01000??00?11????11??1111000111111001111110100?
                  2       3113
                  3        234
                            4
43          0000?000l?00?01000??00?11????11??1111000111111001111110100?
                  2       3113
                  3        234
                            4
44          1100000010000010000?000011?0??1100l111?00111111??111111?1???
                  1       2114        1               2
                  2       323
                            4
45          1100000010000010000?000011?0??1100l111?00111111??111111?1???
                  1       2114        1               2
                  2       323
                            4
46          ?100000010000010000?000011?0??1100l111?00111111??111111?1???
                  1       2114        1               2
                  2       323
                            4
47          0100000010000010000000?11102?1100l111?00111111??111111?1???
                  1       21                          2
                  2       32
48          01000000100000100000000011102?1100l111?00111111??111111?1???
                  1       21                          2
                  2       32
49          0100000010000010000?000011?0??1100l111?00111111??111111?1???
                  1       2114        1               2
                  2       323
                            4
50          0000000010000012?0?00001100??1100111100011111100111111 0100?
                  2 3     3  2        1
                            4
51          0000000010000010000?00001100??1100111100011111100111111 0100?
                  2       3114        1
                           23
                            4
52          000?000010000??000000000110000???00???00?0????100001000000000
                           12       1
                            4
53          0?0100001000 1?000000000110000???00???00?0????100001000000000
                           12
                            4
54          000?000010000??000000000110000???00???00?0????100001000000000
                           12       1
                            4
55          0000000010000?000000000110000???0011100?0????100001000000000
                           112      11
```

```
                                34
                                4
56              00000000000000001000000110100000011100????00100000000000000
                      1 1        1
57              00000000000000?0100000011010000?0011100????00100000000000000
                      1 1        12
58              00000000000000?0100000011010000?0011100????00100000000000000
                      1 1        12
59              00000000000000?0100000011010000?0011100????00100000000000000
                      1 1        12
60              00000000000000?0100000011010000?0011100????00100000000000000
                      1 1        12
61              00000000000000?0100000011010000?0011100????00100000000000000
                      1 1        12
62              00000000000000?0100000011010000?0011100?0??00100000000000000
                        1        12        1

Possible character-state assignments to internal nodes (continued)

                111111111111111111111222222222222222222222222222222222222
                778888888888999999999900000000011111111112222222223333333
Node            890123456789012345678901234567890123456789012345678901234567
-------------------------------------------------------------------------------
36              ?0001?012100001?001100?01???100??111?????0?01?01?11?0231111
                          1     2                         2
37              ?0001?012100001?001100?01???100??111?????0?01?01?11?0231111
                          1     2                         2
38              ?0001?012100001?001100?01???100??111?????0?01?01?11?0231111
                          1     2                         2
39              0000111121001l1?0012011012111001211110111112110l?11?0231111
40              ?0001?012100001?001100?01???100??111?????0?01101?11?0231111
                          1     2                         2
41              ?0001?012100001?001100?01???100??111?????0?01?01?11?0231111
                          1     2                         2
42              ?0001?012100001?001100?01???100??111?????0?01?01?11?0231111
                          1     2                         2
43              ?0001?012100001?001100?01???100??111?????0?01?01?11?0231111
                          1     2                         2
44              ?0??1?0121??0?1???11?00?10?01??0?1110100?0001?012111?231111
                          2     2                         2
45              ?0??1?0121??0?1???11?00?10?01??0?1110100?0001?012111?231111
                          2     2                         2
46              ?0??1?0121??0?1???11?00?10?01??0?1110100?0001?012111?231111
                          2     2                         2
47              ?0??1?0121??0?1???11?00?10?01??0?1110100?00011012111?231111
                          2     2                         2
48              ?0??1?0121??0?1???11?00?10?01??0?1110100?00011012111?231111
                          2     2                         2
49              ?0??1?0121??0?1???11?00?10?01??0?1110100?0001?012111?231111
                          2     2                         2
50              ?0001?012100001?00110000l0?01000?1110100?0001?0121110231111
                          1     2                         2
51              ?0001?012100001?00110000l0?01000?1110100?0001?0121110231111
                          1     2                         2
52              ??00000??100000?00010?0000?000000000010000?100120110231100
                          1
53              1200000??100000?00010?0000?000000000010000?100120110231100
                          1
54              ??00000??100000?00010?0000?000000000010000?100120110231100
                          1
55              ??00000?2100000?0001000000?000000000010000?100120110231100
                          1
56              0100000?2100010100010000000?000000000010000??00110??02311?1
57              0100000?2100000?0001000000?000000000010000??00?10??02311?1
                          1
58              0100000?2100000?0001000000?000000000010000??00?10??02311?1
                          1
59              0100000?2100000?0001000000?000000000010000??00?10??02311?1
```

```
                          1
60              0100000?2100000?0001000000?0000000000100000??00?10??02311?1
                          1
61              0100000?2100000?0001000000?0000000000100000??00?10??02311?1
                          1
62              0100000?2100000?0001000000?0000000000100000??00?10??02?1100
                          1

Possible character-state assignments to internal nodes (continued)

                222222222222222222222222222222222222222222222222222222222222
                333444444444455555555556666666666777777777788888888889999999
Node            789012345678901234567890123456789012345678901234567890123456
-------------------------------------------------------------------------------
36              2100011110l0?011?2?101?11010100212l??????21?1011110?22100210
                3
37              2100011110l0?011?2?101?11010100212l??????21?1011110?22100210
                3
38              2100011110l0?011?2?101?11010100212l??????21?1011110?22100210
                3
39              2100011110l0?011?2?101?11010100212l??????21?1011110?22100210
                3
40              2100011110l0?011?2?101?11010100212l??????21?1011110?22100210
                3
41              2100011110l0?011?2?101?11010100212l??????21?1011110?22100210
                3
42              2100011110l0?011?2?101?11010100212l??????21?1011110?22100210
                3
43              2100011110l0?011?2?101?11010100212l??????21?1011110?22100210
                3
44              21???1110l0?011?2?1?1?1101?1?02121????121?1011110?2210021?
                3                   2                                   1
45              21???1110l0?011?2?1?1?1101?1?02121????121?1011110?2210021?
                3                   2                                   1
46              21???1110l0?011?2?1?1?1101?1?02121????121?1011110?2210021?
                3                   2                                   1
47              21???1110l0?011?2?1?1?1101?1?02121????121?1011110?2210021?
                3                   2                                   1
48              21???1110l0?011?2?1?1?1101?1?02121????121?1011110?2210021?
                3                   2                                   1
49              21???1110l0?011?2?1?1?1101?1?02121????121?1011110?2210021?
                3                   2                                   1
50              2100011l1?10?011?1?101?11?10100212l????121?10?1111?221?0210
                3                   2                                   2
51              2100011110l0?011?2?101?11010100212l????121?1011110?22100210
                3
52              ?100011?1010?011?0?10101101010021210??0121110111100201002l0
                                    2
53              ?100011?1010?011?0?10101101010021210??0121110111100201002l0
                                    2
54              ?100011?1010?011?0?10101101010021210??0121110111100201002l0
                                    2
55              ?1000111l010?011?0?10101101010021210??0121110111100201002l0
                                    2
56              2100011110110011010111011010100212l0000110110111100201002l0
57              1100011110110011?0?11101101010021210000110110111100201002l0
                2
58              1100011110110011?0?11101101010021210000110110111100201002l0
                2
59              1100011110110011?0?11101101010021210000110110111100201002l0
                2
60              1100011110110011?0?11101101010021210000110110111100201002l0
                2
61              1100011110110011?0?11101101010021210000110110111100201002l0
                2
62              1100011110110?100?10?0110101002121000011011011100201002l0
                2               2
```

Possible character-state assignments to internal nodes (continued)

```
                222233333333
                999900000000
Node            678901234567
-----------------------------
36              ?111?1???21?
                 2
37              ?111?1???21?
                 2
38              ?111?1???21?
                 2
39              ?111?1???21?
                 2
40              ?111?1???21?
                 2
41              ?111?1???21?
                 2
42              ?111?1???21?
                 2
43              ?111?1???21?
                 2
44              ?111?1???21?
                 2
45              ?111?1???21?
                 2
46              ?111?1???21?
                 2
47              ?111?1???21?
                 2
48              ?111?1???21?
                 2
49              ?111?1???21?
                 2
50              ?111?1???21?
                 2
51              ?111?1???21?
                 2
52              011111?0?21?
53              011111?0?21?
54              011111?0?21?
55              011111?0?21?
56              011011100112
57              011011100112
58              011011100112
59              011011100112
60              011011100112
61              011011100112
62              011011100112
```

Reconstructed states for internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node            12345678901234567890123456789012345678901234567890123456789
-----------------------------------------------------------------------------
36              1000010200001000000210102111010001210121100100000000002020
37              1000010200001000000210102111010001210121100100000000001002021
38              1000010200000000000200102101010001000121100100000000001002011
39              2000010200000000000210102101010003100001100110000000001002001
40              1000010200000000000200102101010003100001100100000000001002001
41              1000010200000000000200102101010001000001100100000000001002011
42              0000010200000000100200102101010101000001120100000000001022211
43              0000010200000000100200102101010101000001120100000000001012011
44              0022121001000727101211102101000111002010120100000700101001 1
45              0022011001000707101211102101000111002010120100000700101001 1
46              0022011000000707101200102101010111002010120100000700101001 1
47              0024011000000707100200102101000101002001100100000700000100 11
48              0022011000000707101200102101010101002001100100000700000100 11
```

```
49              0022011000000707101200102101010101002001120100000700101001 1
50              0000011100000000101200102101010111000001120100000000101001 1
51              0000011100000000101200102101010101000001120100000000101001 1
52              0001111301000415101201102101010101001011220100000200101101 1
53              0003111101100010101200113101010101001011220100000200101001 1
54              0000111101000010101200102101010101001011220100000200101001 1
55              0000011101000000101200102101010101000001120100000000101001 1
56              0000010200000000311100110101011101000001120100000000100012 1
57              0050110300000100011200100101011101000001120100000000101012 1
58              0000010200000000011200100101011101000001120100000000101012 1
59              0000010200000000311200110101011101000001120100000000101012 1
60              0000011201000000311200112101011101000001120100000000101002 1
61              0000011101000000311200112101010101000001120100000000101002 1
62              0000011101000000301200102101010101000001120100000000101000 1

Reconstructed states for internal nodes (continued)

                                                                1111111111111111111
                666666666677777777778888888888999999999900000000001111111111
Node            012345678901234567890123456789012345678901234567890123456789 0
-------------------------------------------------------------------------------
36              210102100000021110011000000021100000000210101002100000112000
37              210102100000021110011000000021100000000210101002100000112000
38              210102110000001110011000000021100000000210101002100000112000
39              210102111000113111211000001321110210212022401002100000112000
40              210102111000003110211000001321101000200222401002100000112000
41              210102110000001110011000000021100000000210101002100000112000
42              100100110000001110011000000021100000000210102000100000110000
43              200100110000001110011000000021100000000210102000100000110000
44              200110110000001001011010000021100000000210112010100000110110
45              200110110000001001011010000021100000000210112010100000110110
46              200110110000001110011010000021100000000210112010100000110000
47              200100110000001110111110000221101121001210312011100000000000
48              200100110000001110011010000221101021000210112011100000110000
49              200100110000001110011010000021100000000210112010100000110000
50              200100110000001110111000001121101220000211402000100000110100
51              200100110000001110011000000021100000000210102000100000110000
52              200100110000001000011000000000000000000210100000100000010000
53              200100110000001000001100010010000000000210101000100000010000
54              200100110000001000011000000000000000000210100000100000010000
55              200100110000001000011000000000000000000210100000100000010000
56              211100111000001000010000000000000000000210100000100000010000
57              211100111000001000010000000000000000000210100000100000010000
58              211100111000001000010000000000000000000210100000100000010000
59              211100111000001000010000000000000000000210100000100000010000
60              211100111000001000010000000000000000000210100000100000010000
61              211100111000001000010000000000000000000210100000100000010000
62              200100110000001000010000000000000000000210100000100000010000

Reconstructed states for internal nodes (continued)

                111111111111111111111111111111111111111111111111111111111111
                122222222233333333334444444445555555555666666666677777777
Node            901234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
36              000020001000001110000001112001100111100011111100111111010000
37              000020001000001110000001112001100111100011111100111111010000
38              000020001000001110000001112001100111100011111100111111010000
39              000021204200200144200101112001111111100011111100111111010000
40              000020004200001144000001112001100111100011111100111111010000
41              000020001000001110000001112001100111100011111100111111010000
42              000000001000001010000001101001100111100011111100111111010000
43              000000001000001010000001101001100111100011111100111111010000
44              110000001000001010000001101001100111100011111100111111010000
45              110000001000001010000001101001100111100011111100111111010000
46              010000001000001010000001101001100111100011111100111111010000
47              010000001000001000000001110201100111100011111100111111010000
48              010000001000001000000001110201100111100011111100111111010000
```

```
49              0100000010000010100000011010011001111000111111001111110100
50              0000000010000012100000011010011001111000111111001111110100
51              0000000010000010100000011010011001111000111111001111110100
52              0000000010000000000000011010000011100000000100001000000000
53              0001000010000100000000011000000001110000000010000100000000
54              0000000010000000000000011010000011100000000100001000000000
55              0000000010000001000000110100000011100000000100001000000000
56              0000000000000001000000110100000011100000000100000000000000
57              0000000000000001000000110100000011100000000100000000000000
58              0000000000000001000000110100000011100000000100000000000000
59              0000000000000001000000110100000011100000000100000000000000
60              0000000000000001000000110100000011100000000100000000000000
61              0000000000000001000000110100000011100000000100000000000000
62              0000000000000001000000110100000011100000000100000000000000

Reconstructed states for internal nodes (continued)

                1111111111111111111112222222222222222222222222222222222222
                7788888888889999999990000000000111111111122222222223333333
Node            8901234567890123456789012345678901234567890123456789012345
----------------------------------------------------------------------------
36              0000100121000010001100001000100001110100000010012111023111
37              0000100121000010001100001000100001110100000010012111023111
38              0000100121000010001100001000100001110100000010012111023111
39              0000111121001110001201110211100121111011111211012111023111
40              0000100121000010001100001000100001110100000011012111023111
41              0000100121000010001100001000100001110100000010012111023111
42              0000100121000010001100001000100001110100000010012111023111
43              0000100121000010001100001000100001110100000010012111023111
44              0000100121000010001100001000100001110100000010012111023111
45              0000100121000010001100001000100001110100000010012111023111
46              0000100121000010001100001000100001110100000010012111023111
47              0000100121000010001100001000100001110100000011012111023111
48              0000100121000010001100001000100001110100000011012111023111
49              0000100121000010001100001000100001110100000010012111023111
50              0000100121000010001100001000100001110100000010012111023111
51              0000100121000010001100001000100001110100000010012111023111
52              0100000021000000000100000000000000000010000001001201102311 00
53              1200000021000000000100000000000000000010000001001201102311 00
54              0100000021000000000100000000000000000010000001001201102311 00
55              0100000021000000000100000000000000000010000001001201102311 00
56              0100000021000101000100000000000000000010000000011000023110 1
57              0100000021000000000100000000000000000010000000001000023110 1
58              0100000021000000000100000000000000000010000000001000023110 1
59              0100000021000000000100000000000000000010000000001000023110 1
60              0100000021000000000100000000000000000010000000001000023110 1
61              0100000021000000000100000000000000000010000000001000023110 1
62              0100000021000000000100000000000000000010000000001000022110 0

Reconstructed states for internal nodes (continued)

                2222222222222222222222222222222222222222222222222222222222
                3334444444444555555555566666666667777777777888888888899999
Node            7890123456789012345678901234567890123456789012345678901234
----------------------------------------------------------------------------
36              3100011110100011020101011010100212100001211101111002210021 0
37              3100011110100011020101011010100212100001211101111002210021 0
38              3100011110100011020101011010100212100001211101111002210021 0
39              3100011110100011020101011010100212100001211101111002210021 0
40              3100011110100011020101011010100212100001211101111002210021 0
41              3100011110100011020101011010100212100001211101111002210021 0
42              3100011110100011020101011010100212100001211101111002210021 0
43              3100011110100011020101011010100212100001211101111002210021 0
44              3100011110100011020101011010100212100001211101111002210021 0
45              3100011110100011020101011010100212100001211101111002210021 0
46              3100011110100011020101011010100212100001211101111002210021 0
47              3100011110100011020101011010100212100001211101111002210021 0
48              3100011110100011020101011010100212100001211101111002210021 0
```

```
49                310001111010001102010101101010021210000121110111110022100210
50                310001111010001102010101101010021210000121110111111022100210
51                310001111010001102010101101010021210000121110111110022100210
52                110001111010001100010101101010021210000121110111110020100210
53                110001111010001100010101101010021210000121110111110020100210
54                110001111010001100010101101010021210000121110111110020100210
55                110001111010001100010101101010021210000121110111110020100210
56                210001111011001101011101101010021210000110110111110020100200
57                110001111011001100011101101010021210000110110111110020100200
58                110001111011001100011101101010021210000110110111110020100200
59                110001111011001100011101101010021210000110110111110020100200
60                110001111011001100011101101010021210000110110111110020100200
61                110001111011001100011101101010021210000110110111110020100200
62                110001111011000100010001101010021210000110110111110020100200

Reconstructed states for internal nodes (continued)

                  222233333333
                  999900000000
Node              678901234567
------------------------------
36                011111100212
37                011111100212
38                011111100212
39                011111100212
40                011111100212
41                011111100212
42                011111100212
43                011111100212
44                011111100212
45                011111100212
46                011111100212
47                011111100212
48                011111100212
49                011111100212
50                011111100212
51                011111100212
52                011111100212
53                011111100212
54                011111100212
55                011111100212
56                011011100112
57                011011100112
58                011011100112
59                011011100112
60                011011100112
61                011011100112
62                011011100112

Character change lists:

 Character         CI     Steps                  Changes

 1                 0.667      1           node_43 0 ==> 1 node_41
                              1           node_40 1 ==> 2 node_39
                              1           node_50 0 ==> 1 Amphilestes
 2                 0.333      1           node_36 0 ==> 1 Haramiyavia
                              1           node_40 0 --> 1 Arboroharamiya
                              1           node_39 0 --> 1 Rugosodon
 3                 0.600      1           node_51 0 ==> 2 node_49
                              1           node_46 2 ==> 1 Woutersia
                              1           node_44 2 ==> 1 Ambondro
                              1           node_52 0 ==> 1 Kuehneotherium
                              1           node_58 0 ==> 5 node_57
 4                 0.667      1           node_40 0 ==> 1 Arboroharamiya
                              1           node_51 0 ==> 2 node_49
                              1           node_44 2 ==> 3 Asfaltomylos
                              1           node_48 2 ==> 4 node_47
```

		1	node_54 0 --> 1 node_52
		1	node_54 0 --> 3 node_53
5	0.250	1	node_45 0 ==> 1 node_44
		1	node_47 0 --> 1 Amphitherium
		1	node_55 0 ==> 1 node_54
		1	node_58 0 ==> 1 node_57
6	0.286	1	node_39 1 --> 2 Rugosodon
		1	node_46 1 --> 2 Woutersia
		1	node_45 1 --> 2 node_44
		1	node_47 1 ==> 0 Dryolestes
		1	node_56 1 ==> 0 Megazostrodon
		1	node_57 1 --> 0 Brachyzostrodon
		1	node_58 1 --> 0 Hallautherium
7	0.333	1	node_51 1 ==> 0 node_43
		1	node_36 0 --> 2 Thomasia
		1	node_46 1 --> 2 Woutersia
		1	node_48 1 --> 0 Delsatia
		1	node_52 1 ==> 2 Kuehneotherium
		1	node_60 1 ==> 0 node_59
8	0.300	1	node_51 1 ==> 2 node_43
		1	node_40 2 ==> 0 Arboroharamiya
		1	node_51 1 ==> 0 node_49
		1	node_44 0 ==> 3 Asfaltomylos
		1	node_54 1 ==> 3 node_52
		1	node_53 1 ==> 0 Haldanodon
		1	node_61 1 ==> 2 node_60
		1	node_56 2 ==> 3 Megazostrodon
		1	node_58 2 ==> 3 node_57
		1	node_62 1 ==> 0 Rosierodon
9	0.667	1	node_40 0 ==> 1 Arboroharamiya
		1	node_46 0 ==> 2 Woutersia
		1	node_53 0 ==> 2 Haldanodon
10	0.375	1	node_62 1 ==> 0 Sinoconodon
		1	node_55 1 ==> 0 node_51
		1	node_42 0 --> 13 Purbeckodon
		1	node_46 0 ==> 1 node_45
		1	node_47 0 --> 1 Amphitherium
		1	node_47 0 --> 3 Dryolestes
		1	node_52 1 ==> 2 Fluctuodon
		1	node_60 1 ==> 0 node_59
11	0.500	1	node_54 0 ==> 1 node_53
		1	node_57 0 ==> 1 Paceyodon
12	0.600	1	node_47 0 ==> 3 Dryolestes
		1	node_52 0 --> 2 Fluctuodon
		1	node_53 0 --> 1 Castorocauda
		1	node_53 0 --> 2 Haldanodon
		1	node_57 0 ==> 1 Paceyodon
13	0.429	1	node_38 0 --> 1 node_37
		1	node_36 1 ==> 2 Haramiyavia
		1	node_44 0 --> 1 Ambondro
		1	node_44 0 --> 2 Asfaltomylos
		1	node_47 0 ==> 12 Dryolestes
		1	node_57 0 --> 1 Brachyzostrodon
		1	node_57 0 --> 4 Paceyodon
14	0.571	1	node_51 0 ==> 7 node_49
		1	node_46 7 ==> 4 Woutersia
		1	node_44 7 ==> 5 Ambondro
		1	node_47 7 ==> 45 Dryolestes
		1	node_54 0 ==> 4 node_52
		1	node_53 0 ==> 12 Haldanodon
		1	node_58 0 ==> 1 node_57
15	0.500	1	node_36 0 ==> 1 Haramiyavia
		1	node_45 0 ==> 2 node_44
		1	node_47 0 --> 2 Amphitherium
		1	node_47 0 --> 3 Dryolestes
		1	node_55 0 ==> 1 node_54
		1	node_53 1 ==> 3 Castorocauda
16	0.800	1	node_36 0 ==> 4 Haramiyavia

		1	node_51 0 ==> 7 node_49
		1	node_54 0 --> 5 node_52
		1	node_53 0 --> 6 Castorocauda
		1	node_53 0 --> 7 Haldanodon
17	0.375	1	node_62 3 ==> 0 Sinoconodon
		1	node_62 3 ==> 1 node_55
		1	node_43 1 ==> 0 node_41
		1	node_46 1 ==> 2 Woutersia
		1	node_48 1 --> 0 Delsatia
		1	node_56 3 ==> 1 Erythrotherium
		1	node_59 3 ==> 0 node_58
		1	node_57 0 ==> 1 Paceyodon
18	0.750	1	node_44 0 --> 2 Ambondro
		1	node_44 0 --> 3 Asfaltomylos
		1	node_52 0 ==> 2 Kuehneotherium
		1	node_62 0 ==> 1 node_61
19	0.250	1	node_51 1 ==> 0 node_43
		1	node_44 1 ==> 0 Asfaltomylos
		1	node_48 1 ==> 0 node_47
		1	node_50 1 ==> 0 Priacodon
20	0.500	1	node_46 2 ==> 1 Woutersia
		1	node_44 2 --> 3 Ambondro
		1	node_48 2 ==> 3 Delsatia
		1	node_53 2 ==> 1 Castorocauda
		1	node_59 2 ==> 1 node_56
		1	node_58 2 ==> 0 Hallautherium
21	0.200	1	node_38 0 --> 1 node_37
		1	node_40 0 --> 1 node_39
		1	node_46 0 ==> 1 node_45
		1	node_48 0 ==> 1 Delsatia
		1	node_61 0 ==> 1 Dinnetherium
22	0.250	1	node_46 0 ==> 1 node_45
		1	node_54 0 --> 1 node_52
		1	node_53 0 --> 1 Castorocauda
		1	node_61 0 ==> 1 Dinnetherium
23	1.000	1	node_45 1 --> 2 Shuotherium
24	0.200	1	node_46 0 ==> 1 Woutersia
		1	node_50 0 ==> 1 Amphilestes
		1	node_54 0 ==> 1 node_53
		1	node_62 0 ==> 1 node_61
		1	node_59 1 ==> 0 node_58
25	1.000	1	node_54 2 ==> 3 node_53
		1	node_61 2 ==> 1 Dinnetherium
		1	node_60 2 ==> 0 node_59
27	1.000	1	node_38 0 --> 1 node_37
28	1.000	1	node_40 1 ==> 2 Arboroharamiya
		1	node_39 1 ==> 0 Sinobaatar
29	0.500	1	node_40 0 --> 1 Arboroharamiya
		1	node_39 0 --> 1 Rugosodon
30	0.200	1	node_51 1 ==> 0 Hadrocodium
		1	node_46 1 --> 0 node_45
		1	node_48 1 --> 0 Zhangheotherium
		1	node_48 1 --> 0 node_47
		1	node_53 1 ==> 0 Haldanodon
31	0.667	1	node_50 0 --> 2 Priacodon
		1	node_53 0 --> 1 Castorocauda
		1	node_61 0 ==> 1 node_60
32	0.500	1	node_43 1 --> 0 node_41
		1	node_39 0 ==> 1 Rugosodon
33	0.400	1	node_49 0 ==> 1 node_46
		1	node_48 0 ==> 2 Zhangheotherium
		1	node_51 0 ==> 1 node_50
		1	node_61 0 ==> 1 Dinnetherium
		1	node_57 0 --> 1 Brachyzostrodon
34	0.500	1	node_62 1 ==> 2 Sinoconodon
		1	node_36 1 --> 2 Haramiyavia
		1	node_41 1 --> 3 node_40
		1	node_39 3 ==> 0 Sinobaatar

		1	node_50 1 ==> 2 Priacodon
		1	node_56 1 ==> 3 Erythrotherium
35	0.500	1	node_38 0 ==> 2 node_37
		1	node_36 2 ==> 1 Thomasia
		1	node_41 0 ==> 1 node_40
		1	node_39 1 ==> 2 Sinobaatar
36	0.500	1	node_38 0 --> 1 node_37
		1	node_40 0 --> 1 Arboroharamiya
37	0.600	1	node_38 0 ==> 1 Paikasigudodon
		1	node_42 0 ==> 1 Helvetiodon
		1	node_51 0 ==> 2 node_49
		1	node_47 2 --> 46 Dryolestes
		1	node_55 0 ==> 1 node_54
38	0.750	1	node_41 0 ==> 1 node_38
		1	node_48 0 --> 2 Delsatia
		1	node_47 0 --> 3 Dryolestes
		1	node_52 0 ==> 1 Kuehneotherium
39	0.500	1	node_41 0 ==> 2 node_38
		1	node_42 0 ==> 1 Helvetiodon
		1	node_49 0 ==> 1 node_46
		1	node_55 0 ==> 1 node_54
40	0.200	1	node_37 1 ==> 0 Theroteinus
		1	node_49 1 ==> 0 node_46
		1	node_48 1 ==> 0 Zhangheotherium
		1	node_61 1 ==> 0 Dinnetherium
		1	node_57 1 --> 0 Brachyzostrodon
41	0.750	1	node_38 1 --> 0 Paikasigudodon
		1	node_46 1 --> 3 Woutersia
		1	node_48 1 --> 0 Delsatia
		1	node_55 1 ==> 2 node_54
42	0.375	1	node_43 2 ==> 0 node_41
		1	node_38 0 ==> 3 Paikasigudodon
		1	node_36 0 ==> 1 Thomasia
		1	node_39 0 ==> 1 Sinobaatar
		1	node_46 2 ==> 3 Woutersia
		1	node_49 2 ==> 0 node_48
		1	node_56 2 ==> 3 Megazostrodon
		1	node_60 2 ==> 1 Bridetherium
43	0.667	1	node_38 0 ==> 2 Paikasigudodon
		1	node_42 0 ==> 2 Purbeckodon
		1	node_47 0 --> 3 Dryolestes
45	1.000	1	node_40 0 ==> 1 node_39
46	0.750	1	node_42 0 ==> 1 Purbeckodon
		1	node_47 0 --> 4 Dryolestes
		1	node_52 0 ==> 3 Kuehneotherium
		1	node_61 0 ==> 1 Dinnetherium
47	0.500	1	node_42 0 ==> 1 Purbeckodon
		1	node_52 0 ==> 1 Fluctuodon
48	1.000	1	node_46 0 ==> 1 Woutersia
49	1.000	1	node_45 0 --> 5 Shuotherium
		1	node_47 0 --> 3 Dryolestes
		1	node_52 0 ==> 4 Kuehneotherium
50	0.667	1	node_42 0 ==> 1 Helvetiodon
		1	node_51 0 ==> 7 node_49
		1	node_47 7 --> 89 Dryolestes
		1	node_55 0 ==> 2 node_54
		1	node_52 2 ==> 7 Kuehneotherium
		1	node_56 0 ==> 2 Megazostrodon
51	1.000	1	node_47 0 --> 6 Dryolestes
52	0.800	1	node_48 0 --> 7 Delsatia
		1	node_47 0 --> 3 Dryolestes
		1	node_52 0 --> 1 Fluctuodon
		1	node_52 0 --> 2 Kuehneotherium
		1	node_56 0 ==> 2 Megazostrodon
53	0.250	1	node_37 1 ==> 0 node_36
		1	node_49 1 ==> 0 node_48
		1	node_53 1 --> 0 Haldanodon
		1	node_61 1 ==> 0 Dinnetherium

54	0.750	1	node_38 0 --> 1 Paikasigudodon
		1	node_37 0 --> 3 Theroteinus
		1	node_40 0 --> 3 Arboroharamiya
		1	node_46 0 ==> 2 Woutersia
55	0.750	1	node_43 1 --> 0 node_41
		1	node_37 0 --> 3 Theroteinus
		1	node_43 1 --> 2 node_42
		1	node_59 1 ==> 0 node_56
56	1.000	1	node_51 0 ==> 2 node_43
		1	node_54 0 --> 1 node_52
57	0.667	1	node_43 0 ==> 2 node_42
		1	node_61 0 --> 1 Dinnetherium
		1	node_60 0 --> 1 node_59
58	0.200	1	node_62 0 --> 1 node_55
		1	node_38 1 --> 2 node_37
		1	node_41 1 ==> 0 node_40
		1	node_42 1 --> 2 Purbeckodon
		1	node_45 1 --> 2 Shuotherium
		1	node_48 1 --> 0 Delsatia
		1	node_47 1 --> 0 Dryolestes
		1	node_53 1 --> 2 Haldanodon
		1	node_62 0 --> 2 node_61
		1	node_56 2 ==> 1 Erythrotherium
59	0.250	1	node_62 1 ==> 0 Sinoconodon
		1	node_37 1 ==> 0 node_36
		1	node_48 1 ==> 0 Zhangheotherium
		1	node_50 1 --> 0 Priacodon
60	1.000	1	node_38 2 ==> 0 Paikasigudodon
		1	node_43 2 ==> 1 node_42
		1	node_48 2 ==> 3 Delsatia
61	0.500	1	node_43 0 ==> 1 node_41
		1	node_62 0 ==> 1 node_61
62	1.000	1	node_62 0 ==> 1 node_61
64	0.200	1	node_37 0 ==> 1 Theroteinus
		1	node_40 0 --> 1 Arboroharamiya
		1	node_42 0 ==> 1 Helvetiodon
		1	node_49 0 ==> 1 node_46
		1	node_53 0 --> 1 Haldanodon
65	0.667	1	node_43 0 --> 2 node_41
		1	node_45 0 --> 1 Shuotherium
		1	node_53 0 --> 1 Haldanodon
66	0.500	1	node_38 1 ==> 0 Paikasigudodon
		1	node_40 1 ==> 0 Arboroharamiya
67	0.500	1	node_38 1 --> 0 node_37
		1	node_60 1 ==> 0 Bridetherium
68	0.250	1	node_41 0 --> 1 node_40
		1	node_46 0 --> 1 Woutersia
		1	node_50 0 --> 1 Priacodon
		1	node_62 0 --> 1 node_61
69	1.000	1	node_46 0 --> 1 Woutersia
70	0.500	1	node_36 0 --> 1 Thomasia
		1	node_37 0 --> 1 Theroteinus
71	0.500	1	node_37 0 ==> 1 Theroteinus
		1	node_39 0 ==> 1 Rugosodon
72	1.000	1	node_40 0 --> 1 node_39
73	0.400	1	node_38 0 --> 2 node_37
		1	node_40 0 --> 1 node_39
		1	node_47 0 --> 2 Dryolestes
		1	node_57 0 --> 1 Brachyzostrodon
		1	node_60 0 --> 1 Bridetherium
74	0.667	1	node_36 1 --> 2 Haramiyavia
		1	node_41 1 --> 3 node_40
		1	node_48 1 --> 2 Zhangheotherium
75	0.333	1	node_55 0 ==> 1 node_51
		1	node_36 1 --> 0 Haramiyavia
		1	node_46 1 --> 0 node_45
76	0.500	1	node_55 0 ==> 1 node_51
		1	node_46 1 --> 0 node_45

77	0.500	1	node_40 0 --> 1 node_39
		1	node_46 0 --> 1 node_45
78	0.500	1	node_41 0 ==> 2 node_40
		1	node_44 0 --> 2 Asfaltomylos
		1	node_48 0 ==> 1 node_47
		1	node_51 0 ==> 1 node_50
79	0.200	1	node_62 1 ==> 0 Sinoconodon
		1	node_48 1 --> 0 Zhangheotherium
		1	node_47 1 --> 0 Dryolestes
		1	node_50 1 ==> 0 Priacodon
		1	node_54 1 ==> 0 node_53
80	0.500	1	node_62 0 --> 1 node_55
		1	node_61 0 --> 1 Dinnetherium
81	0.500	1	node_62 0 ==> 1 Sinoconodon
		1	node_51 0 ==> 3 Hadrocodium
		1	node_44 0 --> 2 Asfaltomylos
		1	node_48 0 ==> 1 node_47
		1	node_54 0 ==> 1 node_53
		1	node_56 0 ==> 1 Morganucodon
82	1.000	1	node_51 0 ==> 1 node_49
83	1.000	1	node_44 0 --> 1 Asfaltomylos
84	1.000	1	node_51 0 ==> 1 Hadrocodium
85	1.000	1	node_54 0 --> 1 node_53
86	0.500	1	node_41 0 ==> 1 node_40
		1	node_51 0 ==> 1 node_50
87	1.000	1	node_51 0 ==> 4 Hadrocodium
		1	node_41 0 ==> 3 node_40
		1	node_49 0 ==> 2 node_48
		1	node_51 0 ==> 1 node_50
88	1.000	1	node_55 0 ==> 2 node_51
		1	node_54 0 ==> 1 node_53
89	0.333	1	node_55 0 ==> 1 node_51
		1	node_48 1 --> 0 Zhangheotherium
		1	node_47 1 --> 0 Dryolestes
90	1.000	1	node_55 0 ==> 1 node_51
92	0.250	1	node_41 0 ==> 1 node_40
		1	node_49 0 ==> 1 node_48
		1	node_51 0 ==> 1 node_50
		1	node_53 0 ==> 1 Haldanodon
93	0.500	1	node_40 0 ==> 1 Arboroharamiya
		1	node_48 0 --> 2 Zhangheotherium
		1	node_48 0 --> 1 node_47
		1	node_51 0 ==> 2 node_50
94	0.400	1	node_40 0 --> 1 Arboroharamiya
		1	node_40 0 --> 2 node_39
		1	node_44 0 --> 2 Asfaltomylos
		1	node_49 0 --> 2 node_48
		1	node_51 0 --> 2 node_50
95	0.500	1	node_40 0 ==> 1 node_39
		1	node_44 0 --> 2 Asfaltomylos
		1	node_49 0 --> 1 node_48
		1	node_50 0 --> 1 Priacodon
96	1.000	1	node_41 0 ==> 2 node_40
97	0.333	1	node_40 0 ==> 1 node_39
		1	node_48 0 ==> 1 Zhangheotherium
		1	node_50 0 --> 1 Priacodon
98	1.000	1	node_48 0 --> 1 node_47
99	1.000	1	node_62 2 ==> 1 Sinoconodon
100	0.333	1	node_51 1 ==> 0 Hadrocodium
		1	node_41 1 --> 2 node_40
		1	node_50 1 ==> 2 Priacodon
		1	node_52 1 --> 0 Kuehneotherium
		1	node_61 1 --> 2 Dinnetherium
		1	node_56 1 --> 0 Megazostrodon
101	0.600	1	node_41 0 ==> 2 node_40
		1	node_44 0 --> 3 Asfaltomylos
		1	node_48 0 --> 1 Zhangheotherium
		1	node_47 0 --> 1 Dryolestes

		1	node_51 0 ==> 1 node_50
102	0.500	1	node_41 1 ==> 4 node_40
		1	node_48 1 --> 4 Zhangheotherium
		1	node_48 1 --> 3 node_47
		1	node_51 1 ==> 4 node_50
		1	node_61 1 --> 2 Dinnetherium
		1	node_56 1 --> 2 Megazostrodon
103	1.000	1	node_51 0 ==> 1 node_49
104	0.250	1	node_55 0 --> 2 node_51
		1	node_43 2 --> 1 node_41
		1	node_45 2 --> 0 Shuotherium
		1	node_48 2 --> 0 Zhangheotherium
		1	node_50 2 --> 1 Priacodon
		1	node_54 0 --> 1 node_53
		1	node_61 0 --> 1 Dinnetherium
		1	node_56 0 --> 1 Megazostrodon
105	1.000	1	node_48 0 ==> 1 Zhangheotherium
106	1.000	1	node_51 0 ==> 1 node_49
		1	node_50 0 ==> 2 Amphilestes
107	1.000	1	node_43 0 --> 2 node_41
		1	node_49 0 ==> 1 node_48
109	1.000	1	node_36 0 --> 1 Haramiyavia
110	1.000	1	node_47 0 ==> 1 Amphitherium
111	1.000	1	node_47 0 ==> 1 Amphitherium
112	1.000	1	node_51 0 ==> 1 Hadrocodium
113	0.500	1	node_48 0 --> 1 Zhangheotherium
		1	node_47 0 --> 1 Dryolestes
114	0.250	1	node_62 0 --> 1 Sinoconodon
		1	node_55 0 --> 1 node_51
		1	node_48 1 ==> 0 node_47
		1	node_50 1 ==> 0 Priacodon
115	0.333	1	node_51 1 ==> 0 Hadrocodium
		1	node_44 1 ==> 2 Ambondro
		1	node_48 1 ==> 0 node_47
		1	node_50 1 ==> 0 Priacodon
		1	node_61 1 --> 0 Dinnetherium
		1	node_56 1 --> 0 Megazostrodon
116	0.667	1	node_43 0 --> 2 node_41
		1	node_45 0 --> 1 Shuotherium
		1	node_44 0 --> 1 Ambondro
117	0.500	1	node_46 0 --> 1 node_45
		1	node_44 1 ==> 3 Ambondro
		1	node_48 0 --> 1 Zhangheotherium
		1	node_51 0 --> 1 node_50
118	1.000	1	node_46 0 --> 1 node_45
119	0.333	1	node_39 0 --> 1 Sinobaatar
		1	node_46 0 --> 1 node_45
		1	node_50 0 ==> 1 Priacodon
120	0.500	1	node_51 0 ==> 1 node_49
		1	node_53 0 --> 1 Haldanodon
121	1.000	1	node_50 0 ==> 1 Priacodon
122	0.500	1	node_54 0 --> 1 node_53
		1	node_61 0 ==> 1 Dinnetherium
123	1.000	1	node_43 0 --> 2 node_41
124	1.000	1	node_40 0 ==> 1 node_39
125	0.600	1	node_40 0 --> 3 Arboroharamiya
		1	node_40 0 --> 2 node_39
		1	node_48 0 --> 2 Zhangheotherium
		1	node_47 0 --> 1 Dryolestes
		1	node_56 0 --> 1 Megazostrodon
126	1.000	1	node_39 0 ==> 1 Rugosodon
127	0.667	1	node_62 0 --> 1 node_55
		1	node_51 1 ==> 0 Hadrocodium
		1	node_41 1 ==> 4 node_40
		1	node_48 1 ==> 2 Zhangheotherium
		1	node_50 1 --> 3 Priacodon
		1	node_56 0 --> 1 Megazostrodon
128	0.500	1	node_36 0 --> 1 Haramiyavia

		1	node_41 0 --> 2 node_40
		1	node_39 2 --> 1 Rugosodon
		1	node_48 0 ==> 1 Zhangheotherium
129	1.000	1	node_39 0 --> 1 Rugosodon
130	1.000	1	node_51 0 ==> 1 Hadrocodium
131	0.667	1	node_36 0 --> 1 Haramiyavia
		1	node_40 0 --> 2 node_39
		1	node_48 0 ==> 1 Zhangheotherium
132	1.000	1	node_54 0 --> 1 node_53
133	0.429	1	node_62 0 --> 3 Sinoconodon
		1	node_55 0 --> 1 node_51
		1	node_51 1 --> 3 Hadrocodium
		1	node_40 1 --> 3 Arboroharamiya
		1	node_40 1 --> 0 node_39
		1	node_48 1 --> 2 Zhangheotherium
		1	node_53 0 --> 2 Haldanodon
134	0.333	1	node_62 0 ==> 3 Sinoconodon
		1	node_51 0 ==> 3 Hadrocodium
		1	node_43 0 --> 1 node_41
		1	node_40 1 ==> 3 Arboroharamiya
		1	node_39 1 --> 2 Sinobaatar
		1	node_48 0 --> 2 Zhangheotherium
		1	node_47 0 --> 1 Dryolestes
		1	node_51 0 --> 2 node_50
		1	node_53 0 ==> 2 Haldanodon
135	0.500	1	node_51 1 --> 4 Hadrocodium
		1	node_36 1 --> 3 Haramiyavia
		1	node_41 1 --> 4 node_40
		1	node_45 1 --> 3 Shuotherium
		1	node_49 1 --> 0 node_48
		1	node_50 1 --> 2 Priacodon
		1	node_55 1 --> 0 node_54
		1	node_56 1 ==> 23 Morganucodon
136	0.667	1	node_62 0 --> 1 Sinoconodon
		1	node_51 0 --> 4 Hadrocodium
		1	node_36 0 --> 3 Haramiyavia
		1	node_41 0 --> 4 node_40
		1	node_50 0 --> 2 Priacodon
		1	node_56 0 --> 1 Megazostrodon
137	0.400	1	node_62 0 --> 2 Sinoconodon
		1	node_51 0 --> 4 Hadrocodium
		1	node_40 0 --> 4 Arboroharamiya
		1	node_40 0 --> 2 node_39
		1	node_50 0 --> 2 Priacodon
138	0.500	1	node_62 0 ==> 2 Sinoconodon
		1	node_51 0 ==> 3 Hadrocodium
		1	node_36 0 --> 1 Haramiyavia
		1	node_39 0 --> 2 Rugosodon
		1	node_39 0 --> 3 Sinobaatar
		1	node_50 0 ==> 1 Priacodon
139	1.000	1	node_62 0 ==> 2 Sinoconodon
		1	node_48 0 ==> 1 Zhangheotherium
140	1.000	1	node_40 0 ==> 1 node_39
141	0.333	1	node_40 0 --> 3 Arboroharamiya
		1	node_39 0 --> 3 Rugosodon
		1	node_47 0 --> 3 Dryolestes
142	1.000	1	node_62 1 ==> 0 Sinoconodon
143	0.500	1	node_62 1 ==> 0 Sinoconodon
		1	node_56 1 ==> 0 Megazostrodon
144	0.500	1	node_43 0 --> 1 node_41
		1	node_49 0 --> 1 node_48
145	0.500	1	node_43 1 --> 2 node_41
		1	node_49 1 --> 0 node_48
		1	node_50 1 --> 0 Amphilestes
		1	node_54 1 --> 0 node_53
146	0.500	1	node_62 0 --> 1 Sinoconodon
		1	node_49 0 --> 2 node_48
		1	node_50 0 --> 1 Priacodon

		1	node_56 0 ==> 2 Megazostrodon
147	1.000	1	node_39 0 --> 1 Rugosodon
148	1.000	1	node_55 0 --> 1 node_51
149	1.000	1	node_55 0 --> 1 node_51
150	1.000	1	node_40 0 --> 1 node_39
151	1.000	1	node_40 0 --> 1 node_39
152	1.000	1	node_53 1 --> 0 Castorocauda
153	1.000	1	node_53 1 --> 0 Castorocauda
154	1.000	1	node_53 1 --> 0 Castorocauda
155	1.000	1	node_55 0 ==> 1 node_51
156	1.000	1	node_48 0 --> 1 Zhangheotherium
157	1.000	1	node_62 0 --> 1 Sinoconodon
158	1.000	1	node_56 0 --> 1 Morganucodon
159	1.000	1	node_55 0 --> 1 node_51
160	1.000	1	node_55 0 --> 1 node_51
161	1.000	1	node_55 0 --> 1 node_51
162	1.000	1	node_55 0 --> 1 node_51
163	1.000	1	node_62 1 ==> 0 Sinoconodon
		1	node_48 1 --> 2 Zhangheotherium
164	1.000	1	node_55 0 ==> 1 node_51
165	1.000	1	node_48 0 --> 1 Zhangheotherium
166	1.000	1	node_48 0 --> 1 Zhangheotherium
167	1.000	1	node_55 0 ==> 1 node_51
168	1.000	1	node_62 0 ==> 1 node_55
169	1.000	1	node_55 0 ==> 1 node_51
170	1.000	1	node_55 0 ==> 1 node_51
171	1.000	1	node_55 0 ==> 1 node_51
172	1.000	1	node_55 0 ==> 1 node_51
173	1.000	1	node_48 0 --> 1 Zhangheotherium
174	1.000	1	node_55 0 ==> 1 node_51
175	1.000	1	node_48 0 --> 1 Zhangheotherium
176	1.000	1	node_48 0 --> 1 Zhangheotherium
177	1.000	1	node_39 0 --> 2 Sinobaatar
		1	node_48 0 --> 1 Zhangheotherium
178	0.500	1	node_48 0 --> 1 Zhangheotherium
		1	node_54 0 --> 1 node_53
179	1.000	1	node_55 1 --> 0 node_51
		1	node_54 1 --> 2 node_53
180	1.000	1	node_48 0 --> 1 Zhangheotherium
181	1.000	1	node_48 0 --> 1 Zhangheotherium
182	1.000	1	node_55 0 ==> 1 node_51
183	0.500	1	node_40 0 --> 1 node_39
		1	node_48 0 --> 1 Zhangheotherium
184	1.000	1	node_40 0 ==> 1 node_39
185	1.000	1	node_55 0 --> 1 node_51
186	1.000	1	node_53 2 --> 1 Castorocauda
187	1.000	1	node_40 1 ==> 0 Arboroharamiya
188	1.000	1	node_48 0 --> 1 Zhangheotherium
189	1.000	1	node_48 0 --> 1 Zhangheotherium
190	1.000	1	node_40 0 ==> 1 node_39
		1	node_48 0 --> 2 Zhangheotherium
191	0.667	1	node_40 0 --> 1 node_39
		1	node_48 0 --> 2 Zhangheotherium
		1	node_59 0 --> 1 node_56
192	1.000	1	node_55 0 ==> 1 node_51
193	0.500	1	node_39 0 --> 1 Sinobaatar
		1	node_59 0 --> 1 node_56
194	0.500	1	node_39 0 ==> 1 Sinobaatar
		1	node_48 0 --> 1 Zhangheotherium
195	1.000	1	node_48 0 --> 1 Zhangheotherium
196	1.000	1	node_55 0 ==> 1 node_51
197	0.667	1	node_62 1 ==> 0 Sinoconodon
		1	node_40 1 --> 2 node_39
		1	node_48 1 --> 2 Zhangheotherium
198	1.000	1	node_48 0 --> 1 Zhangheotherium
199	0.500	1	node_40 0 ==> 1 node_39
		1	node_53 0 --> 1 Castorocauda
200	1.000	1	node_40 0 --> 1 node_39

201	1.000	1	node_48 0 --> 1 Zhangheotherium
202	1.000	1	node_55 0 ==> 1 node_51
203	1.000	1	node_40 0 --> 2 node_39
204	1.000	1	node_40 0 --> 1 node_39
205	1.000	1	node_40 0 --> 1 node_39
206	1.000	1	node_55 0 ==> 1 node_51
207	1.000	1	node_48 0 --> 3 Zhangheotherium
208	1.000	1	node_48 0 --> 2 Zhangheotherium
209	1.000	1	node_40 0 --> 1 node_39
210	1.000	1	node_40 0 --> 2 node_39
		1	node_48 0 --> 1 Zhangheotherium
211	1.000	1	node_55 0 ==> 1 node_51
212	1.000	1	node_55 0 ==> 1 node_51
213	1.000	1	node_55 0 ==> 1 node_51
214	1.000	1	node_40 0 --> 1 node_39
215	1.000	1	node_40 1 --> 0 node_39
216	1.000	1	node_40 0 --> 1 node_39
217	1.000	1	node_40 0 --> 1 node_39
218	1.000	1	node_40 0 --> 1 node_39
		1	node_48 0 --> 2 Zhangheotherium
219	1.000	1	node_40 0 ==> 1 node_39
220	1.000	1	node_40 0 --> 1 node_39
221	0.667	1	node_40 0 --> 2 node_39
		1	node_48 0 --> 2 Zhangheotherium
		1	node_53 0 --> 1 Castorocauda
222	1.000	1	node_62 0 --> 1 node_55
223	0.500	1	node_41 0 --> 1 node_40
		1	node_49 0 --> 1 node_48
224	1.000	1	node_51 0 ==> 1 Hadrocodium
225	0.333	1	node_62 0 --> 1 node_55
		1	node_51 1 ==> 0 Hadrocodium
		1	node_59 0 --> 1 node_56
226	0.500	1	node_62 1 ==> 2 node_55
		1	node_39 2 --> 1 Sinobaatar
227	1.000	1	node_55 0 ==> 1 node_51
228	0.500	1	node_62 0 --> 1 node_55
		1	node_51 1 ==> 0 Hadrocodium
229	0.500	1	node_62 0 --> 1 node_55
		1	node_39 1 --> 0 Sinobaatar
230	1.000	1	node_48 0 --> 1 Zhangheotherium
232	0.500	1	node_62 2 --> 3 node_55
		1	node_62 2 --> 3 node_61
235	0.333	1	node_55 0 ==> 1 node_51
		1	node_61 0 --> 1 Dinnetherium
		1	node_56 0 --> 1 Morganucodon
236	0.667	1	node_55 0 ==> 1 node_51
		1	node_51 1 ==> 2 Hadrocodium
		1	node_62 0 ==> 1 node_61
237	0.500	1	node_55 1 --> 3 node_51
		1	node_48 3 --> 2 Zhangheotherium
		1	node_53 1 --> 2 Haldanodon
		1	node_59 1 --> 2 node_56
238	1.000	1	node_62 1 ==> 0 Sinoconodon
239	1.000	1	node_48 0 --> 1 Zhangheotherium
240	1.000	1	node_48 0 --> 1 Zhangheotherium
241	1.000	1	node_48 0 --> 1 Zhangheotherium
244	1.000	1	node_53 1 --> 2 Haldanodon
246	1.000	1	node_50 0 --> 2 Priacodon
248	0.500	1	node_62 1 ==> 0 node_55
		1	node_56 1 ==> 0 Megazostrodon
249	1.000	1	node_51 0 --> 1 Hadrocodium
251	0.500	1	node_62 0 --> 1 node_55
		1	node_62 0 --> 1 node_61
252	1.000	1	node_62 1 ==> 0 Sinoconodon
253	0.500	1	node_48 0 --> 1 Zhangheotherium
		1	node_50 0 --> 1 Priacodon
254	0.500	1	node_55 0 --> 2 node_51
		1	node_50 2 --> 1 Priacodon

		1	node_61 0 --> 2	Dinnetherium
		1	node_59 0 --> 1	node_56
255	0.333	1	node_62 0 --> 1	Adelobasileus
		1	node_51 0 --> 1	Hadrocodium
		1	node_48 0 --> 1	Zhangheotherium
256	1.000	1	node_62 1 ==> 0	Adelobasileus
257	0.500	1	node_48 0 --> 1	Zhangheotherium
		1	node_62 0 ==> 1	node_61
258	0.500	1	node_62 0 --> 1	node_55
		1	node_62 0 --> 1	node_61
259	0.500	1	node_51 0 --> 1	Hadrocodium
		1	node_48 0 --> 1	Zhangheotherium
260	1.000	1	node_62 1 ==> 0	Sinoconodon
		1	node_48 1 --> 2	Zhangheotherium
261	1.000	1	node_61 1 ==> 2	Dinnetherium
262	1.000	1	node_50 0 --> 1	Priacodon
263	1.000	1	node_62 1 ==> 0	Adelobasileus
264	1.000	1	node_48 0 --> 1	Zhangheotherium
266	1.000	1	node_48 0 --> 1	Zhangheotherium
267	1.000	1	node_62 0 ==> 1	Sinoconodon
270	1.000	1	node_62 2 ==> 1	Sinoconodon
272	1.000	1	node_39 0 --> 1	Rugosodon
273	1.000	1	node_53 0 --> 1	Castorocauda
274	1.000	1	node_53 0 --> 1	Castorocauda
275	1.000	1	node_48 0 --> 1	Zhangheotherium
276	1.000	1	node_39 1 --> 2	Sinobaatar
277	1.000	1	node_62 1 ==> 2	node_55
278	1.000	1	node_62 0 ==> 1	node_55
279	1.000	1	node_51 1 --> 2	Hadrocodium
281	1.000	1	node_51 0 ==> 3	Hadrocodium
282	1.000	1	node_50 1 --> 0	Priacodon
284	0.500	1	node_62 1 ==> 0	Sinoconodon
		1	node_51 1 ==> 0	Hadrocodium
286	1.000	1	node_51 0 ==> 1	node_50
287	1.000	1	node_51 0 --> 1	Hadrocodium
289	1.000	1	node_55 0 ==> 2	node_51
291	1.000	1	node_50 0 --> 1	Priacodon
292	1.000	1	node_48 0 --> 1	Zhangheotherium
		1	node_50 0 --> 2	Priacodon
294	1.000	1	node_62 0 ==> 1	node_55
295	1.000	1	node_48 0 --> 2	Zhangheotherium
296	1.000	1	node_51 0 --> 1	Hadrocodium
297	1.000	1	node_62 1 ==> 0	Sinoconodon
		1	node_51 1 --> 2	Hadrocodium
298	1.000	1	node_62 1 ==> 0	Sinoconodon
299	1.000	1	node_62 0 ==> 1	node_55
300	1.000	1	node_51 1 --> 0	Hadrocodium
301	1.000	1	node_62 1 ==> 0	Sinoconodon
302	1.000	1	node_53 1 --> 0	Haldanodon
303	1.000	1	node_51 0 --> 2	Hadrocodium
		1	node_50 0 --> 1	Priacodon
304	1.000	1	node_51 0 --> 1	Hadrocodium
305	1.000	1	node_62 1 ==> 2	node_55
306	1.000	1	node_62 1 ==> 0	Sinoconodon
307	1.000	1	node_51 2 --> 3	Hadrocodium

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_62 --> Sinoconodon	10	1	0.375	1 ==> 0
	17	1	0.375	3 ==> 0
	34	1	0.500	1 ==> 2
	59	1	0.250	1 ==> 0
	79	1	0.200	1 ==> 0
	81	1	0.500	0 ==> 1
	99	1	1.000	2 ==> 1
	114	1	0.250	0 --> 1

	133	1	0.429	0	-->	3
	134	1	0.333	0	==>	3
	136	1	0.667	0	-->	1
	137	1	0.400	0	-->	2
	138	1	0.500	0	==>	2
	139	1	1.000	0	==>	2
	142	1	1.000	1	==>	0
	143	1	0.500	1	==>	0
	146	1	0.500	0	-->	1
	157	1	1.000	0	-->	1
	163	1	1.000	1	==>	0
	197	1	0.667	1	==>	0
	238	1	1.000	1	==>	0
	252	1	1.000	1	==>	0
	260	1	1.000	1	==>	0
	267	1	1.000	0	==>	1
	270	1	1.000	2	==>	1
	284	1	0.500	1	==>	0
	297	1	1.000	1	==>	0
	298	1	1.000	1	==>	0
	301	1	1.000	1	==>	0
	306	1	1.000	1	==>	0
node_62 --> Adelobasileus	255	1	0.333	0	-->	1
	256	1	1.000	1	==>	0
	263	1	1.000	1	==>	0
node_62 --> node_55	17	1	0.375	3	==>	1
	58	1	0.200	0	-->	1
	80	1	0.500	0	-->	1
	127	1	0.667	0	-->	1
	168	1	1.000	0	==>	1
	222	1	1.000	0	-->	1
	225	1	0.333	0	-->	1
	226	1	0.500	1	==>	2
	228	1	0.500	0	-->	1
	229	1	0.500	0	-->	1
	232	1	0.500	2	-->	3
	248	1	0.500	1	==>	0
	251	1	0.500	0	-->	1
	258	1	0.500	0	-->	1
	277	1	1.000	1	==>	2
	278	1	1.000	0	==>	1
	294	1	1.000	0	==>	1
	299	1	1.000	0	==>	1
	305	1	1.000	1	==>	2
node_55 --> node_51	10	1	0.375	1	==>	0
	75	1	0.333	0	==>	1
	76	1	0.500	0	==>	1
	88	1	1.000	0	==>	2
	89	1	0.333	0	==>	1
	90	1	1.000	0	==>	1
	104	1	0.250	0	-->	2
	114	1	0.250	0	-->	1
	133	1	0.429	0	-->	1
	148	1	1.000	0	-->	1
	149	1	1.000	0	-->	1
	155	1	1.000	0	==>	1
	159	1	1.000	0	-->	1
	160	1	1.000	0	-->	1
	161	1	1.000	0	-->	1
	162	1	1.000	0	-->	1
	164	1	1.000	0	==>	1
	167	1	1.000	0	==>	1
	169	1	1.000	0	==>	1
	170	1	1.000	0	==>	1
	171	1	1.000	0	==>	1
	172	1	1.000	0	==>	1
	174	1	1.000	0	==>	1
	179	1	1.000	1	-->	0

	182	1	1.000	0 ==> 1
	185	1	1.000	0 --> 1
	192	1	1.000	0 ==> 1
	196	1	1.000	0 ==> 1
	202	1	1.000	0 ==> 1
	206	1	1.000	0 ==> 1
	211	1	1.000	0 ==> 1
	212	1	1.000	0 ==> 1
	213	1	1.000	0 ==> 1
	227	1	1.000	0 ==> 1
	235	1	0.333	0 ==> 1
	236	1	0.667	0 ==> 1
	237	1	0.500	1 --> 3
	254	1	0.500	0 --> 2
	289	1	1.000	0 ==> 2
node_51 --> Hadrocodium	30	1	0.200	1 ==> 0
	81	1	0.500	0 ==> 3
	84	1	1.000	0 ==> 1
	87	1	1.000	0 ==> 4
	100	1	0.333	1 ==> 0
	112	1	1.000	0 ==> 1
	115	1	0.333	1 ==> 0
	127	1	0.667	1 ==> 0
	130	1	1.000	0 ==> 1
	133	1	0.429	1 --> 3
	134	1	0.333	0 ==> 3
	135	1	0.500	1 --> 4
	136	1	0.667	0 --> 4
	137	1	0.400	0 --> 4
	138	1	0.500	0 ==> 3
	224	1	1.000	0 ==> 1
	225	1	0.333	1 ==> 0
	228	1	0.500	1 ==> 0
	236	1	0.667	1 ==> 2
	249	1	1.000	0 --> 1
	255	1	0.333	0 --> 1
	259	1	0.500	0 --> 1
	279	1	1.000	1 --> 2
	281	1	1.000	0 ==> 3
	284	1	0.500	1 ==> 0
	287	1	1.000	0 --> 1
	296	1	1.000	0 --> 1
	297	1	1.000	1 --> 2
	300	1	1.000	1 --> 0
	303	1	1.000	0 --> 2
	304	1	1.000	0 --> 1
	307	1	1.000	2 --> 3
node_51 --> node_43	7	1	0.333	1 ==> 0
	8	1	0.300	1 ==> 2
	19	1	0.250	1 ==> 0
	56	1	1.000	0 ==> 2
node_43 --> node_41	1	1	0.667	0 ==> 1
	17	1	0.375	1 ==> 0
	32	1	0.500	1 --> 0
	42	1	0.375	2 ==> 0
	55	1	0.750	1 --> 0
	61	1	0.500	0 ==> 1
	65	1	0.667	0 --> 2
	104	1	0.250	2 --> 1
	107	1	1.000	0 --> 2
	116	1	0.667	0 --> 2
	123	1	1.000	0 --> 2
	134	1	0.333	0 --> 1
	144	1	0.500	0 --> 1
	145	1	0.500	1 --> 2
node_41 --> node_38	38	1	0.750	0 ==> 1
	39	1	0.500	0 ==> 2
node_38 --> Paikasigudodon	37	1	0.600	0 ==> 1

	41	1	0.750	1 --> 0
	42	1	0.375	0 ==> 3
	43	1	0.667	0 ==> 2
	54	1	0.750	0 --> 1
	60	1	1.000	2 ==> 0
	66	1	0.500	1 ==> 0
node_38 --> node_37	13	1	0.429	0 --> 1
	21	1	0.200	0 --> 1
	27	1	1.000	0 --> 1
	35	1	0.500	0 ==> 2
	36	1	0.500	0 --> 1
	58	1	0.200	1 --> 2
	67	1	0.500	1 --> 0
	73	1	0.400	0 --> 2
node_37 --> node_36	53	1	0.250	1 ==> 0
	59	1	0.250	1 ==> 0
node_36 --> Thomasia	7	1	0.333	0 --> 2
	35	1	0.500	2 ==> 1
	42	1	0.375	0 ==> 1
	70	1	0.500	0 --> 1
node_36 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	0.429	1 ==> 2
	15	1	0.500	0 ==> 1
	16	1	0.800	0 ==> 4
	34	1	0.500	1 --> 2
	74	1	0.667	1 --> 2
	75	1	0.333	1 --> 0
	109	1	1.000	0 --> 1
	128	1	0.500	0 --> 1
	131	1	0.667	0 --> 1
	135	1	0.500	1 --> 3
	136	1	0.667	0 --> 3
	138	1	0.500	0 --> 1
node_37 --> Theroteinus	40	1	0.200	1 ==> 0
	54	1	0.750	0 --> 3
	55	1	0.750	0 --> 3
	64	1	0.200	0 ==> 1
	70	1	0.500	0 --> 1
	71	1	0.500	0 ==> 1
node_41 --> node_40	34	1	0.500	1 --> 3
	35	1	0.500	0 ==> 1
	58	1	0.200	1 ==> 0
	68	1	0.250	0 --> 1
	74	1	0.667	1 --> 3
	78	1	0.500	0 ==> 2
	86	1	0.500	0 ==> 1
	87	1	1.000	0 ==> 3
	92	1	0.250	0 ==> 1
	96	1	1.000	0 ==> 2
	100	1	0.333	1 --> 2
	101	1	0.600	0 ==> 2
	102	1	0.500	1 ==> 4
	127	1	0.667	1 ==> 4
	128	1	0.500	0 --> 2
	135	1	0.500	1 --> 4
	136	1	0.667	0 --> 4
	223	1	0.500	0 --> 1
node_40 --> Arboroharamiya	2	1	0.333	0 --> 1
	4	1	0.667	0 ==> 1
	8	1	0.300	2 ==> 0
	9	1	0.667	0 ==> 1
	28	1	1.000	1 ==> 2
	29	1	0.500	0 --> 1
	36	1	0.500	0 --> 1
	54	1	0.750	0 --> 3
	64	1	0.200	0 --> 1
	66	1	0.500	1 ==> 0
	93	1	0.500	0 ==> 1

	94	1	0.400	0 --> 1
	125	1	0.600	0 --> 3
	133	1	0.429	1 --> 3
	134	1	0.333	1 ==> 3
	137	1	0.400	0 --> 4
	141	1	0.333	0 --> 3
	187	1	1.000	1 ==> 0
node_40 --> node_39	1	1	0.667	1 ==> 2
	21	1	0.200	0 --> 1
	45	1	1.000	0 ==> 1
	72	1	1.000	0 --> 1
	73	1	0.400	0 --> 1
	77	1	0.500	0 --> 1
	94	1	0.400	0 --> 2
	95	1	0.500	0 ==> 1
	97	1	0.333	0 ==> 1
	124	1	1.000	0 ==> 1
	125	1	0.600	0 --> 2
	131	1	0.667	0 --> 2
	133	1	0.429	1 --> 0
	137	1	0.400	0 --> 2
	140	1	1.000	0 ==> 1
	150	1	1.000	0 --> 1
	151	1	1.000	0 --> 1
	183	1	0.500	0 --> 1
	184	1	1.000	0 ==> 1
	190	1	1.000	0 ==> 1
	191	1	0.667	0 --> 1
	197	1	0.667	1 --> 2
	199	1	0.500	0 ==> 1
	200	1	1.000	0 --> 1
	203	1	1.000	0 --> 2
	204	1	1.000	0 --> 1
	205	1	1.000	0 --> 1
	209	1	1.000	0 --> 1
	210	1	1.000	0 --> 2
	214	1	1.000	0 --> 1
	215	1	1.000	1 --> 0
	216	1	1.000	0 --> 1
	217	1	1.000	0 --> 1
	218	1	1.000	0 --> 1
	219	1	1.000	0 ==> 1
	220	1	1.000	0 --> 1
	221	1	0.667	0 --> 2
node_39 --> Rugosodon	2	1	0.333	0 --> 1
	6	1	0.286	1 --> 2
	29	1	0.500	0 --> 1
	32	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	126	1	1.000	0 ==> 1
	128	1	0.500	2 --> 1
	129	1	1.000	0 --> 1
	138	1	0.500	0 --> 2
	141	1	0.333	0 --> 3
	147	1	1.000	0 --> 1
	272	1	1.000	0 --> 1
node_39 --> Sinobaatar	28	1	1.000	1 ==> 0
	34	1	0.500	3 ==> 0
	35	1	0.500	1 ==> 2
	42	1	0.375	0 ==> 1
	119	1	0.333	0 --> 1
	134	1	0.333	1 --> 2
	138	1	0.500	0 --> 3
	177	1	1.000	0 --> 2
	193	1	0.500	0 --> 1
	194	1	0.500	0 ==> 1
	226	1	0.500	2 --> 1
	229	1	0.500	1 --> 0

	276	1	1.000	1 --> 2
node_43 --> node_42	55	1	0.750	1 --> 2
	57	1	0.667	0 ==> 2
	60	1	1.000	2 ==> 1
node_42 --> Helvetiodon	37	1	0.600	0 ==> 1
	39	1	0.500	0 ==> 1
	50	1	0.667	0 ==> 1
	64	1	0.200	0 ==> 1
node_42 --> Purbeckodon	10	1	0.375	0 --> 13
	43	1	0.667	0 ==> 2
	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1
	58	1	0.200	1 --> 2
node_51 --> node_49	3	1	0.600	0 ==> 2
	4	1	0.667	0 ==> 2
	8	1	0.300	1 ==> 0
	14	1	0.571	0 ==> 7
	16	1	0.800	0 ==> 7
	37	1	0.600	0 ==> 2
	50	1	0.667	0 ==> 7
	82	1	1.000	0 ==> 1
	103	1	1.000	0 ==> 1
	106	1	1.000	0 ==> 1
	120	1	0.500	0 ==> 1
node_49 --> node_46	33	1	0.400	0 ==> 1
	39	1	0.500	0 ==> 1
	40	1	0.200	1 ==> 0
	64	1	0.200	0 ==> 1
node_46 --> Woutersia	3	1	0.600	2 ==> 1
	6	1	0.286	1 --> 2
	7	1	0.333	1 --> 2
	9	1	0.667	0 ==> 2
	14	1	0.571	7 ==> 4
	17	1	0.375	1 ==> 2
	20	1	0.500	2 ==> 1
	24	1	0.200	0 ==> 1
	41	1	0.750	1 --> 3
	42	1	0.375	2 ==> 3
	48	1	1.000	0 ==> 1
	54	1	0.750	0 ==> 2
	68	1	0.250	0 --> 1
	69	1	1.000	0 --> 1
node_46 --> node_45	10	1	0.375	0 ==> 1
	21	1	0.200	0 ==> 1
	22	1	0.250	0 ==> 1
	30	1	0.200	1 --> 0
	75	1	0.333	1 --> 0
	76	1	0.500	1 --> 0
	77	1	0.500	0 --> 1
	117	1	0.500	0 --> 1
	118	1	1.000	0 --> 1
	119	1	0.333	0 --> 1
node_45 --> Shuotherium	23	1	1.000	1 --> 2
	49	1	1.000	0 --> 5
	58	1	0.200	1 --> 2
	65	1	0.667	0 --> 1
	104	1	0.250	2 --> 0
	116	1	0.667	0 --> 1
	135	1	0.500	1 --> 3
node_45 --> node_44	5	1	0.250	0 ==> 1
	6	1	0.286	1 --> 2
	15	1	0.500	0 ==> 2
node_44 --> Ambondro	3	1	0.600	2 ==> 1
	13	1	0.429	0 --> 1
	14	1	0.571	7 ==> 5
	18	1	0.750	0 --> 2
	20	1	0.500	2 --> 3
	115	1	0.333	1 ==> 2

	116	1	0.667	0 --> 1
	117	1	0.500	1 ==> 3
node_44 --> Asfaltomylos	4	1	0.667	2 ==> 3
	8	1	0.300	0 ==> 3
	13	1	0.429	0 --> 2
	18	1	0.750	0 --> 3
	19	1	0.250	1 ==> 0
	78	1	0.500	0 --> 2
	81	1	0.500	0 --> 2
	83	1	1.000	0 --> 1
	94	1	0.400	0 --> 2
	95	1	0.500	0 --> 2
	101	1	0.600	0 --> 3
node_49 --> node_48	42	1	0.375	2 ==> 0
	53	1	0.250	1 ==> 0
	87	1	1.000	0 ==> 2
	92	1	0.250	0 ==> 1
	94	1	0.400	0 --> 2
	95	1	0.500	0 --> 1
	107	1	1.000	0 ==> 1
	135	1	0.500	1 --> 0
	144	1	0.500	0 --> 1
	145	1	0.500	1 --> 0
	146	1	0.500	0 --> 2
	223	1	0.500	0 --> 1
node_48 --> Delsatia	7	1	0.333	1 --> 0
	17	1	0.375	1 --> 0
	20	1	0.500	2 ==> 3
	21	1	0.200	0 ==> 1
	38	1	0.750	0 --> 2
	41	1	0.750	1 --> 0
	52	1	0.800	0 --> 7
	58	1	0.200	1 --> 0
	60	1	1.000	2 ==> 3
node_48 --> Zhangheotherium	30	1	0.200	1 --> 0
	33	1	0.400	0 ==> 2
	40	1	0.200	1 ==> 0
	59	1	0.250	1 ==> 0
	74	1	0.667	1 --> 2
	79	1	0.200	1 --> 0
	89	1	0.333	1 --> 0
	93	1	0.500	0 --> 2
	97	1	0.333	0 ==> 1
	101	1	0.600	0 --> 1
	102	1	0.500	1 --> 4
	104	1	0.250	2 --> 0
	105	1	1.000	0 ==> 1
	113	1	0.500	0 --> 1
	117	1	0.500	0 --> 1
	125	1	0.600	0 --> 2
	127	1	0.667	1 ==> 2
	128	1	0.500	0 ==> 1
	131	1	0.667	0 ==> 1
	133	1	0.429	1 --> 2
	134	1	0.333	0 --> 2
	139	1	1.000	0 ==> 1
	156	1	1.000	0 --> 1
	163	1	1.000	1 --> 2
	165	1	1.000	0 --> 1
	166	1	1.000	0 --> 1
	173	1	1.000	0 --> 1
	175	1	1.000	0 --> 1
	176	1	1.000	0 --> 1
	177	1	1.000	0 --> 1
	178	1	0.500	0 --> 1
	180	1	1.000	0 --> 1
	181	1	1.000	0 --> 1
	183	1	0.500	0 --> 1

	188	1	1.000	0 --> 1
	189	1	1.000	0 --> 1
	190	1	1.000	0 --> 2
	191	1	0.667	0 --> 2
	194	1	0.500	0 --> 1
	195	1	1.000	0 --> 1
	197	1	0.667	1 --> 2
	198	1	1.000	0 --> 1
	201	1	1.000	0 --> 1
	207	1	1.000	0 --> 3
	208	1	1.000	0 --> 2
	210	1	1.000	0 --> 1
	218	1	1.000	0 --> 2
	221	1	0.667	0 --> 2
	230	1	1.000	0 --> 1
	237	1	0.500	3 --> 2
	239	1	1.000	0 --> 1
	240	1	1.000	0 --> 1
	241	1	1.000	0 --> 1
	253	1	0.500	0 --> 1
	255	1	0.333	0 --> 1
	257	1	0.500	0 --> 1
	259	1	0.500	0 --> 1
	260	1	1.000	1 --> 2
	264	1	1.000	0 --> 1
	266	1	1.000	0 --> 1
	275	1	1.000	0 --> 1
	292	1	1.000	0 --> 1
	295	1	1.000	0 --> 2
node_48 --> node_47	4	1	0.667	2 ==> 4
	19	1	0.250	1 ==> 0
	30	1	0.200	1 --> 0
	78	1	0.500	0 ==> 1
	81	1	0.500	0 ==> 1
	93	1	0.500	0 --> 1
	98	1	1.000	0 --> 1
	102	1	0.500	1 --> 3
	114	1	0.250	1 ==> 0
	115	1	0.333	1 ==> 0
node_47 --> Amphitherium	5	1	0.250	0 --> 1
	10	1	0.375	0 --> 1
	15	1	0.500	0 --> 2
	110	1	1.000	0 ==> 1
	111	1	1.000	0 ==> 1
node_47 --> Dryolestes	6	1	0.286	1 ==> 0
	10	1	0.375	0 --> 3
	12	1	0.600	0 ==> 3
	13	1	0.429	0 ==> 12
	14	1	0.571	7 ==> 45
	15	1	0.500	0 --> 3
	37	1	0.600	2 --> 46
	38	1	0.750	0 --> 3
	43	1	0.667	0 --> 3
	46	1	0.750	0 --> 4
	49	1	1.000	0 --> 3
	50	1	0.667	7 --> 89
	51	1	1.000	0 --> 6
	52	1	0.800	0 --> 3
	58	1	0.200	1 --> 0
	73	1	0.400	0 --> 2
	79	1	0.200	1 --> 0
	89	1	0.333	1 --> 0
	101	1	0.600	0 --> 1
	113	1	0.500	0 --> 1
	125	1	0.600	0 --> 1
	134	1	0.333	0 --> 1
	141	1	0.333	0 --> 3
node_51 --> node_50	33	1	0.400	0 ==> 1

	78	1	0.500	0	==>	1
	86	1	0.500	0	==>	1
	87	1	1.000	0	==>	1
	92	1	0.250	0	==>	1
	93	1	0.500	0	==>	2
	94	1	0.400	0	-->	2
	101	1	0.600	0	==>	1
	102	1	0.500	1	==>	4
	117	1	0.500	0	-->	1
	134	1	0.333	0	-->	2
	286	1	1.000	0	==>	1
node_50 --> Amphilestes	1	1	0.667	0	==>	1
	24	1	0.200	0	==>	1
	106	1	1.000	0	==>	2
	145	1	0.500	1	-->	0
node_50 --> Priacodon	19	1	0.250	1	==>	0
	31	1	0.667	0	-->	2
	34	1	0.500	1	==>	2
	59	1	0.250	1	-->	0
	68	1	0.250	0	-->	1
	79	1	0.200	1	==>	0
	95	1	0.500	0	-->	1
	97	1	0.333	0	-->	1
	100	1	0.333	1	==>	2
	104	1	0.250	2	-->	1
	114	1	0.250	1	==>	0
	115	1	0.333	1	==>	0
	119	1	0.333	0	==>	1
	121	1	1.000	0	==>	1
	127	1	0.667	1	-->	3
	135	1	0.500	1	-->	2
	136	1	0.667	0	-->	2
	137	1	0.400	0	-->	2
	138	1	0.500	0	==>	1
	146	1	0.500	0	-->	1
	246	1	1.000	0	-->	2
	253	1	0.500	0	-->	1
	254	1	0.500	2	-->	1
	262	1	1.000	0	-->	1
	282	1	1.000	1	-->	0
	291	1	1.000	0	-->	1
	292	1	1.000	0	-->	2
	303	1	1.000	0	-->	1
node_55 --> node_54	5	1	0.250	0	==>	1
	15	1	0.500	0	==>	1
	37	1	0.600	0	==>	1
	39	1	0.500	0	==>	1
	41	1	0.750	1	==>	2
	50	1	0.667	0	==>	2
	135	1	0.500	1	-->	0
node_54 --> node_52	4	1	0.667	0	-->	1
	8	1	0.300	1	==>	3
	14	1	0.571	0	==>	4
	16	1	0.800	0	-->	5
	22	1	0.250	0	-->	1
	56	1	1.000	0	-->	1
node_52 --> Fluctuodon	10	1	0.375	1	==>	2
	12	1	0.600	0	-->	2
	47	1	0.500	0	==>	1
	52	1	0.800	0	-->	1
node_52 --> Kuehneotherium	3	1	0.600	0	==>	1
	7	1	0.333	1	==>	2
	18	1	0.750	0	==>	2
	38	1	0.750	0	==>	1
	46	1	0.750	0	==>	3
	49	1	1.000	0	==>	4
	50	1	0.667	2	==>	7
	52	1	0.800	0	-->	2

	100	1	0.333	1 --> 0
node_54 --> node_53	4	1	0.667	0 --> 3
	11	1	0.500	0 ==> 1
	24	1	0.200	0 ==> 1
	25	1	1.000	2 ==> 3
	79	1	0.200	1 ==> 0
	81	1	0.500	0 ==> 1
	85	1	1.000	0 --> 1
	88	1	1.000	0 ==> 1
	104	1	0.250	0 --> 1
	122	1	0.500	0 --> 1
	132	1	1.000	0 --> 1
	145	1	0.500	1 --> 0
	178	1	0.500	0 --> 1
	179	1	1.000	1 --> 2
node_53 --> Castorocauda	12	1	0.600	0 --> 1
	15	1	0.500	1 ==> 3
	16	1	0.800	0 --> 6
	20	1	0.500	2 ==> 1
	22	1	0.250	0 --> 1
	31	1	0.667	0 --> 1
	152	1	1.000	1 --> 0
	153	1	1.000	1 --> 0
	154	1	1.000	1 --> 0
	186	1	1.000	2 --> 1
	199	1	0.500	0 --> 1
	221	1	0.667	0 --> 1
	273	1	1.000	0 --> 1
	274	1	1.000	0 --> 1
node_53 --> Haldanodon	8	1	0.300	1 ==> 0
	9	1	0.667	0 ==> 2
	12	1	0.600	0 --> 2
	14	1	0.571	0 ==> 12
	16	1	0.800	0 --> 7
	30	1	0.200	1 ==> 0
	53	1	0.250	1 --> 0
	58	1	0.200	1 --> 2
	64	1	0.200	0 --> 1
	65	1	0.667	0 --> 1
	92	1	0.250	0 ==> 1
	120	1	0.500	0 --> 1
	133	1	0.429	0 --> 2
	134	1	0.333	0 ==> 2
	237	1	0.500	1 --> 2
	244	1	1.000	1 --> 2
	302	1	1.000	1 --> 0
node_62 --> node_61	18	1	0.750	0 ==> 1
	24	1	0.200	0 ==> 1
	58	1	0.200	0 --> 2
	61	1	0.500	0 ==> 1
	62	1	1.000	0 ==> 1
	68	1	0.250	0 --> 1
	232	1	0.500	2 --> 3
	236	1	0.667	0 ==> 1
	251	1	0.500	0 --> 1
	257	1	0.500	0 ==> 1
	258	1	0.500	0 --> 1
node_61 --> Dinnetherium	21	1	0.200	0 ==> 1
	22	1	0.250	0 ==> 1
	25	1	1.000	2 ==> 1
	33	1	0.400	0 ==> 1
	40	1	0.200	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
	57	1	0.667	0 --> 1
	80	1	0.500	0 --> 1
	100	1	0.333	1 --> 2
	102	1	0.500	1 --> 2

```
                                    104              1  0.250 0 --> 1
                                    115              1  0.333 1 --> 0
                                    122              1  0.500 0 ==> 1
                                    235              1  0.333 0 --> 1
                                    254              1  0.500 0 --> 2
                                    261              1  1.000 1 ==> 2
          node_61 --> node_60       8                1  0.300 1 ==> 2
                                    31               1  0.667 0 ==> 1
          node_60 --> node_59       7                1  0.333 1 ==> 0
                                    10               1  0.375 1 ==> 0
                                    25               1  1.000 2 ==> 0
                                    57               1  0.667 0 --> 1
          node_59 --> node_56       20               1  0.500 2 ==> 1
                                    55               1  0.750 1 ==> 0
                                    191              1  0.667 0 --> 1
                                    193              1  0.500 0 --> 1
                                    225              1  0.333 0 --> 1
                                    237              1  0.500 1 --> 2
                                    254              1  0.500 0 --> 1
          node_56 --> Megazostrodon 6                1  0.286 1 ==> 0
                                    8                1  0.300 2 ==> 3
                                    42               1  0.375 2 ==> 3
                                    50               1  0.667 0 ==> 2
                                    52               1  0.800 0 ==> 2
                                    100              1  0.333 1 --> 0
                                    102              1  0.500 1 --> 2
                                    104              1  0.250 0 --> 1
                                    115              1  0.333 1 --> 0
                                    125              1  0.600 0 --> 1
                                    127              1  0.667 0 --> 1
                                    136              1  0.667 0 --> 1
                                    143              1  0.500 1 ==> 0
                                    146              1  0.500 0 ==> 2
                                    248              1  0.500 1 ==> 0
          node_56 --> Morganucodon  81               1  0.500 0 ==> 1
                                    135              1  0.500 1 ==> 23
                                    158              1  1.000 0 --> 1
                                    235              1  0.333 0 --> 1
          node_56 --> Erythrotherium 17              1  0.375 3 ==> 1
                                    34               1  0.500 1 ==> 3
                                    58               1  0.200 2 ==> 1
          node_59 --> node_58       17               1  0.375 3 ==> 0
                                    24               1  0.200 1 ==> 0
          node_58 --> node_57       3                1  0.600 0 ==> 5
                                    5                1  0.250 0 ==> 1
                                    8                1  0.300 2 ==> 3
                                    14               1  0.571 0 ==> 1
          node_57 --> Brachyzostrodon 6              1  0.286 1 --> 0
                                    13               1  0.429 0 --> 1
                                    33               1  0.400 0 --> 1
                                    40               1  0.200 1 --> 0
                                    73               1  0.400 0 --> 1
          node_57 --> Paceyodon     11               1  0.500 0 ==> 1
                                    12               1  0.600 0 ==> 1
                                    13               1  0.429 0 --> 4
                                    17               1  0.375 0 ==> 1
          node_58 --> Hallautherium 6                1  0.286 1 --> 0
                                    20               1  0.500 2 ==> 0
          node_60 --> Bridetherium  42               1  0.375 2 ==> 1
                                    67               1  0.500 1 ==> 0
                                    73               1  0.400 0 --> 1
          node_62 --> Rosierodon    8                1  0.300 1 ==> 0

Character diagnostics:

                Minimum     Tree  Maximum
Character         Steps    Steps    Steps        CI      HI      RI      RC
```

1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	3	5	10	0.600	0.400	0.714	0.429
4	4	6	12	0.667	0.333	0.750	0.500
5	1	4	8	0.250	0.750	0.571	0.143
6	2	7	8	0.286	0.714	0.167	0.048
7	2	6	9	0.333	0.667	0.429	0.143
8	3	10	18	0.300	0.700	0.533	0.160
9	2	3	3	0.667	0.333	0.000	0.000
10	3	8	11	0.375	0.625	0.375	0.141
11	1	2	3	0.500	0.500	0.500	0.250
12	3	5	5	0.600	0.400	0.000	0.000
13	3	7	8	0.429	0.571	0.200	0.086
14	4	7	13	0.571	0.429	0.667	0.381
15	3	6	8	0.500	0.500	0.400	0.200
16	4	5	12	0.800	0.200	0.875	0.700
17	3	8	15	0.375	0.625	0.583	0.219
18	3	4	8	0.750	0.250	0.800	0.600
19	1	4	11	0.250	0.750	0.700	0.175
20	3	6	8	0.500	0.500	0.400	0.200
21	1	5	9	0.200	0.800	0.500	0.100
22	1	4	6	0.250	0.750	0.400	0.100
23	1	1	1	1.000	0.000	0/0	0/0
24	1	5	7	0.200	0.800	0.333	0.067
25	3	3	7	1.000	0.000	1.000	1.000
26	n/a	0	0	0/0	0/0	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	5	8	0.200	0.800	0.429	0.086
31	2	3	5	0.667	0.333	0.667	0.444
32	1	2	4	0.500	0.500	0.667	0.333
33	2	5	7	0.400	0.600	0.400	0.160
34	3	6	7	0.500	0.500	0.250	0.125
35	2	4	6	0.500	0.500	0.500	0.250
36	1	2	3	0.500	0.500	0.500	0.250
37	3	5	9	0.600	0.400	0.667	0.400
38	3	4	5	0.750	0.250	0.500	0.375
39	2	4	8	0.500	0.500	0.667	0.333
40	1	5	6	0.200	0.800	0.200	0.040
41	3	4	6	0.750	0.250	0.667	0.500
42	3	8	12	0.375	0.625	0.444	0.167
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	3	3	3	1.000	0.000	0/0	0/0
50	4	6	8	0.667	0.333	0.500	0.333
51	1	1	1	1.000	0.000	0/0	0/0
52	4	5	5	0.800	0.200	0.000	0.000
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	4	8	0.750	0.250	0.800	0.600
56	2	2	7	1.000	0.000	1.000	1.000
57	2	3	6	0.667	0.333	0.750	0.500
58	2	10	13	0.200	0.800	0.273	0.055
59	1	4	5	0.250	0.750	0.250	0.062
60	3	3	4	1.000	0.000	1.000	1.000
61	1	2	10	0.500	0.500	0.889	0.444
62	1	1	5	1.000	0.000	1.000	1.000
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	5	6	0.200	0.800	0.200	0.040
65	2	3	4	0.667	0.333	0.500	0.333
66	1	2	2	0.500	0.500	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	4	7	0.250	0.750	0.500	0.125

69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	2	3	5	0.667	0.333	0.667	0.444
75	1	3	9	0.333	0.667	0.750	0.250
76	1	2	9	0.500	0.500	0.875	0.438
77	1	2	4	0.500	0.500	0.667	0.333
78	2	4	8	0.500	0.500	0.667	0.333
79	1	5	6	0.200	0.800	0.200	0.040
80	1	2	3	0.500	0.500	0.500	0.250
81	3	6	8	0.500	0.500	0.400	0.200
82	1	1	3	1.000	0.000	1.000	1.000
83	1	1	1	1.000	0.000	0/0	0/0
84	1	1	1	1.000	0.000	0/0	0/0
85	1	1	2	1.000	0.000	1.000	1.000
86	1	2	4	0.500	0.500	0.667	0.333
87	4	4	9	1.000	0.000	1.000	1.000
88	2	2	7	1.000	0.000	1.000	1.000
89	1	3	8	0.333	0.667	0.714	0.238
90	1	1	4	1.000	0.000	1.000	1.000
91	n/a	0	0	0/0	0/0	0/0	0/0
92	1	4	9	0.250	0.750	0.625	0.156
93	2	4	6	0.500	0.500	0.500	0.250
94	2	5	9	0.400	0.600	0.571	0.229
95	2	4	7	0.500	0.500	0.600	0.300
96	1	1	3	1.000	0.000	1.000	1.000
97	1	3	4	0.333	0.667	0.333	0.111
98	1	1	2	1.000	0.000	1.000	1.000
99	1	1	1	1.000	0.000	0/0	0/0
100	2	6	8	0.333	0.667	0.333	0.111
101	3	5	8	0.600	0.400	0.600	0.360
102	3	6	10	0.500	0.500	0.571	0.286
103	1	1	4	1.000	0.000	1.000	1.000
104	2	8	10	0.250	0.750	0.250	0.062
105	1	1	1	1.000	0.000	0/0	0/0
106	2	2	6	1.000	0.000	1.000	1.000
107	2	2	7	1.000	0.000	1.000	1.000
108	n/a	0	0	0/0	0/0	0/0	0/0
109	1	1	1	1.000	0.000	0/0	0/0
110	1	1	1	1.000	0.000	0/0	0/0
111	1	1	1	1.000	0.000	0/0	0/0
112	1	1	1	1.000	0.000	0/0	0/0
113	1	2	2	0.500	0.500	0.000	0.000
114	1	4	7	0.250	0.750	0.500	0.125
115	2	6	7	0.333	0.667	0.200	0.067
116	2	3	6	0.667	0.333	0.750	0.500
117	2	4	6	0.500	0.500	0.500	0.250
118	1	1	3	1.000	0.000	1.000	1.000
119	1	3	4	0.333	0.667	0.333	0.111
120	1	2	6	0.500	0.500	0.800	0.400
121	1	1	1	1.000	0.000	0/0	0/0
122	1	2	3	0.500	0.500	0.500	0.250
123	1	1	3	1.000	0.000	1.000	1.000
124	1	1	2	1.000	0.000	1.000	1.000
125	3	5	6	0.600	0.400	0.333	0.200
126	1	1	1	1.000	0.000	0/0	0/0
127	4	6	8	0.667	0.333	0.500	0.333
128	2	4	5	0.500	0.500	0.333	0.167
129	1	1	1	1.000	0.000	0/0	0/0
130	1	1	1	1.000	0.000	0/0	0/0
131	2	3	4	0.667	0.333	0.500	0.333
132	1	1	2	1.000	0.000	1.000	1.000
133	3	7	8	0.429	0.571	0.200	0.086
134	3	9	11	0.333	0.667	0.250	0.083
135	4	8	12	0.500	0.500	0.500	0.250
136	4	6	8	0.667	0.333	0.500	0.333

137	2	5	6	0.400	0.600	0.250	0.100
138	3	6	6	0.500	0.500	0.000	0.000
139	2	2	2	1.000	0.000	0/0	0/0
140	1	1	2	1.000	0.000	1.000	1.000
141	1	3	3	0.333	0.667	0.000	0.000
142	1	1	1	1.000	0.000	0/0	0/0
143	1	2	2	0.500	0.500	0.000	0.000
144	1	2	6	0.500	0.500	0.800	0.400
145	2	4	9	0.500	0.500	0.714	0.357
146	2	4	5	0.500	0.500	0.333	0.167
147	1	1	1	1.000	0.000	0/0	0/0
148	1	1	3	1.000	0.000	1.000	1.000
149	1	1	2	1.000	0.000	1.000	1.000
150	1	1	2	1.000	0.000	1.000	1.000
151	1	1	2	1.000	0.000	1.000	1.000
152	1	1	1	1.000	0.000	0/0	0/0
153	1	1	1	1.000	0.000	0/0	0/0
154	1	1	1	1.000	0.000	0/0	0/0
155	1	1	2	1.000	0.000	1.000	1.000
156	1	1	1	1.000	0.000	0/0	0/0
157	1	1	1	1.000	0.000	0/0	0/0
158	1	1	1	1.000	0.000	0/0	0/0
159	1	1	1	1.000	0.000	0/0	0/0
160	1	1	1	1.000	0.000	0/0	0/0
161	1	1	3	1.000	0.000	1.000	1.000
162	1	1	2	1.000	0.000	1.000	1.000
163	2	2	2	1.000	0.000	0/0	0/0
164	1	1	3	1.000	0.000	1.000	1.000
165	1	1	1	1.000	0.000	0/0	0/0
166	1	1	1	1.000	0.000	0/0	0/0
167	1	1	3	1.000	0.000	1.000	1.000
168	1	1	3	1.000	0.000	1.000	1.000
169	1	1	3	1.000	0.000	1.000	1.000
170	1	1	3	1.000	0.000	1.000	1.000
171	1	1	3	1.000	0.000	1.000	1.000
172	1	1	3	1.000	0.000	1.000	1.000
173	1	1	1	1.000	0.000	0/0	0/0
174	1	1	3	1.000	0.000	1.000	1.000
175	1	1	1	1.000	0.000	0/0	0/0
176	1	1	1	1.000	0.000	0/0	0/0
177	2	2	2	1.000	0.000	0/0	0/0
178	1	2	3	0.500	0.500	0.500	0.250
179	2	2	5	1.000	0.000	1.000	1.000
180	1	1	1	1.000	0.000	0/0	0/0
181	1	1	1	1.000	0.000	0/0	0/0
182	1	1	3	1.000	0.000	1.000	1.000
183	1	2	3	0.500	0.500	0.500	0.250
184	1	1	2	1.000	0.000	1.000	1.000
185	1	1	1	1.000	0.000	0/0	0/0
186	1	1	1	1.000	0.000	0/0	0/0
187	1	1	1	1.000	0.000	0/0	0/0
188	1	1	1	1.000	0.000	0/0	0/0
189	1	1	1	1.000	0.000	0/0	0/0
190	2	2	3	1.000	0.000	1.000	1.000
191	2	3	3	0.667	0.333	0.000	0.000
192	1	1	4	1.000	0.000	1.000	1.000
193	1	2	2	0.500	0.500	0.000	0.000
194	1	2	2	0.500	0.500	0.000	0.000
195	1	1	1	1.000	0.000	0/0	0/0
196	1	1	3	1.000	0.000	1.000	1.000
197	2	3	4	0.667	0.333	0.500	0.333
198	1	1	1	1.000	0.000	0/0	0/0
199	1	2	3	0.500	0.500	0.500	0.250
200	1	1	2	1.000	0.000	1.000	1.000
201	1	1	1	1.000	0.000	0/0	0/0
202	1	1	3	1.000	0.000	1.000	1.000
203	1	1	2	1.000	0.000	1.000	1.000
204	1	1	1	1.000	0.000	0/0	0/0

205	1	1	2	1.000	0.000	1.000	1.000
206	1	1	3	1.000	0.000	1.000	1.000
207	1	1	1	1.000	0.000	0/0	0/0
208	1	1	1	1.000	0.000	0/0	0/0
209	1	1	2	1.000	0.000	1.000	1.000
210	2	2	3	1.000	0.000	1.000	1.000
211	1	1	3	1.000	0.000	1.000	1.000
212	1	1	2	1.000	0.000	1.000	1.000
213	1	1	2	1.000	0.000	1.000	1.000
214	1	1	2	1.000	0.000	1.000	1.000
215	1	1	2	1.000	0.000	1.000	1.000
216	1	1	2	1.000	0.000	1.000	1.000
217	1	1	2	1.000	0.000	1.000	1.000
218	2	2	3	1.000	0.000	1.000	1.000
219	1	1	2	1.000	0.000	1.000	1.000
220	1	1	2	1.000	0.000	1.000	1.000
221	2	3	3	0.667	0.333	0.000	0.000
222	1	1	1	1.000	0.000	0/0	0/0
223	1	2	5	0.500	0.500	0.750	0.375
224	1	1	1	1.000	0.000	0/0	0/0
225	1	3	3	0.333	0.667	0.000	0.000
226	1	2	3	0.500	0.500	0.500	0.250
227	1	1	3	1.000	0.000	1.000	1.000
228	1	2	2	0.500	0.500	0.000	0.000
229	1	2	2	0.500	0.500	0.000	0.000
230	1	1	1	1.000	0.000	0/0	0/0
231	n/a	0	0	0/0	0/0	0/0	0/0
232	1	2	2	0.500	0.500	0.000	0.000
233	n/a	0	0	0/0	0/0	0/0	0/0
234	n/a	0	0	0/0	0/0	0/0	0/0
235	1	3	4	0.333	0.667	0.333	0.111
236	2	3	4	0.667	0.333	0.500	0.333
237	2	4	4	0.500	0.500	0.000	0.000
238	1	1	1	1.000	0.000	0/0	0/0
239	1	1	1	1.000	0.000	0/0	0/0
240	1	1	1	1.000	0.000	0/0	0/0
241	1	1	1	1.000	0.000	0/0	0/0
242	n/a	0	0	0/0	0/0	0/0	0/0
243	n/a	0	0	0/0	0/0	0/0	0/0
244	1	1	1	1.000	0.000	0/0	0/0
245	n/a	0	0	0/0	0/0	0/0	0/0
246	1	1	1	1.000	0.000	0/0	0/0
247	n/a	0	0	0/0	0/0	0/0	0/0
248	1	2	3	0.500	0.500	0.500	0.250
249	1	1	1	1.000	0.000	0/0	0/0
250	n/a	0	0	0/0	0/0	0/0	0/0
251	1	2	2	0.500	0.500	0.000	0.000
252	1	1	1	1.000	0.000	0/0	0/0
253	1	2	2	0.500	0.500	0.000	0.000
254	2	4	5	0.500	0.500	0.333	0.167
255	1	3	3	0.333	0.667	0.000	0.000
256	1	1	1	1.000	0.000	0/0	0/0
257	1	2	4	0.500	0.500	0.667	0.333
258	1	2	2	0.500	0.500	0.000	0.000
259	1	2	2	0.500	0.500	0.000	0.000
260	2	2	2	1.000	0.000	0/0	0/0
261	1	1	1	1.000	0.000	0/0	0/0
262	1	1	1	1.000	0.000	0/0	0/0
263	1	1	1	1.000	0.000	0/0	0/0
264	1	1	1	1.000	0.000	0/0	0/0
265	n/a	0	0	0/0	0/0	0/0	0/0
266	1	1	1	1.000	0.000	0/0	0/0
267	1	1	1	1.000	0.000	0/0	0/0
268	n/a	0	0	0/0	0/0	0/0	0/0
269	n/a	0	0	0/0	0/0	0/0	0/0
270	1	1	1	1.000	0.000	0/0	0/0
271	n/a	0	0	0/0	0/0	0/0	0/0
272	1	1	1	1.000	0.000	0/0	0/0

273	1	1	1	1.000	0.000	0/0	0/0
274	1	1	1	1.000	0.000	0/0	0/0
275	1	1	1	1.000	0.000	0/0	0/0
276	1	1	1	1.000	0.000	0/0	0/0
277	1	1	3	1.000	0.000	1.000	1.000
278	1	1	2	1.000	0.000	1.000	1.000
279	1	1	1	1.000	0.000	0/0	0/0
280	n/a	0	0	0/0	0/0	0/0	0/0
281	1	1	1	1.000	0.000	0/0	0/0
282	1	1	1	1.000	0.000	0/0	0/0
283	n/a	0	0	0/0	0/0	0/0	0/0
284	1	2	2	0.500	0.500	0.000	0.000
285	n/a	0	0	0/0	0/0	0/0	0/0
286	1	1	2	1.000	0.000	1.000	1.000
287	1	1	1	1.000	0.000	0/0	0/0
288	n/a	0	0	0/0	0/0	0/0	0/0
289	1	1	3	1.000	0.000	1.000	1.000
290	n/a	0	0	0/0	0/0	0/0	0/0
291	1	1	1	1.000	0.000	0/0	0/0
292	2	2	2	1.000	0.000	0/0	0/0
293	n/a	0	0	0/0	0/0	0/0	0/0
294	1	1	3	1.000	0.000	1.000	1.000
295	1	1	1	1.000	0.000	0/0	0/0
296	1	1	1	1.000	0.000	0/0	0/0
297	2	2	2	1.000	0.000	0/0	0/0
298	1	1	1	1.000	0.000	0/0	0/0
299	1	1	2	1.000	0.000	1.000	1.000
300	1	1	1	1.000	0.000	0/0	0/0
301	1	1	1	1.000	0.000	0/0	0/0
302	1	1	1	1.000	0.000	0/0	0/0
303	2	2	2	1.000	0.000	0/0	0/0
304	1	1	1	1.000	0.000	0/0	0/0
305	1	1	2	1.000	0.000	1.000	1.000
306	1	1	1	1.000	0.000	0/0	0/0
307	1	1	1	1.000	0.000	0/0	0/0

--Matrice "molaire" avec "Base" et caractères ordonnés

----*Buffer de l'analyse*

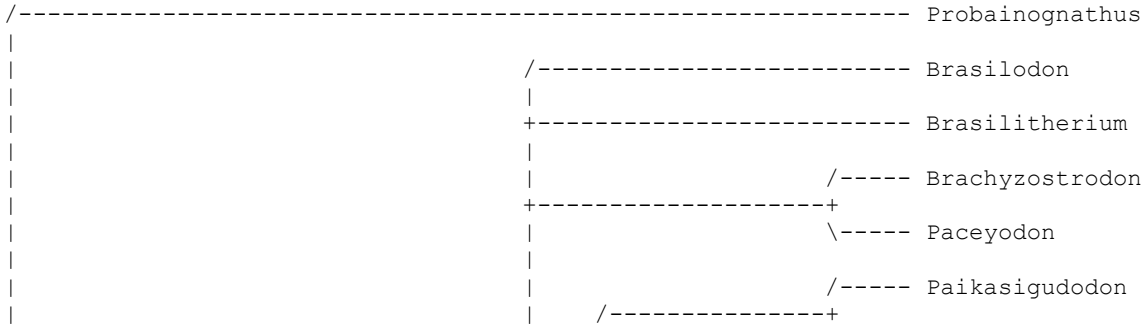
```
Data matrix has 37 taxa, 74 characters
Valid character-state symbols: 0123456789
Missing data identified by '?'
"Equate" macros in effect:
   N ==> ?

Heuristic search settings:
  Optimality criterion = parsimony
    Character-status summary:
      Of 74 total characters:
        56 characters are of type 'unord'
        2 characters are of user-defined type "a"
        2 characters are of user-defined type "b"
        2 characters are of user-defined type "c"
        4 characters are of user-defined type "d"
        1 character is of user-defined type "e"
        2 characters are of user-defined type "f"
        2 characters are of user-defined type "g"
        1 character is of user-defined type "h"
        1 character is of user-defined type "i"
        1 character is of user-defined type "j"
        All characters have equal weight
        2 characters are constant
```

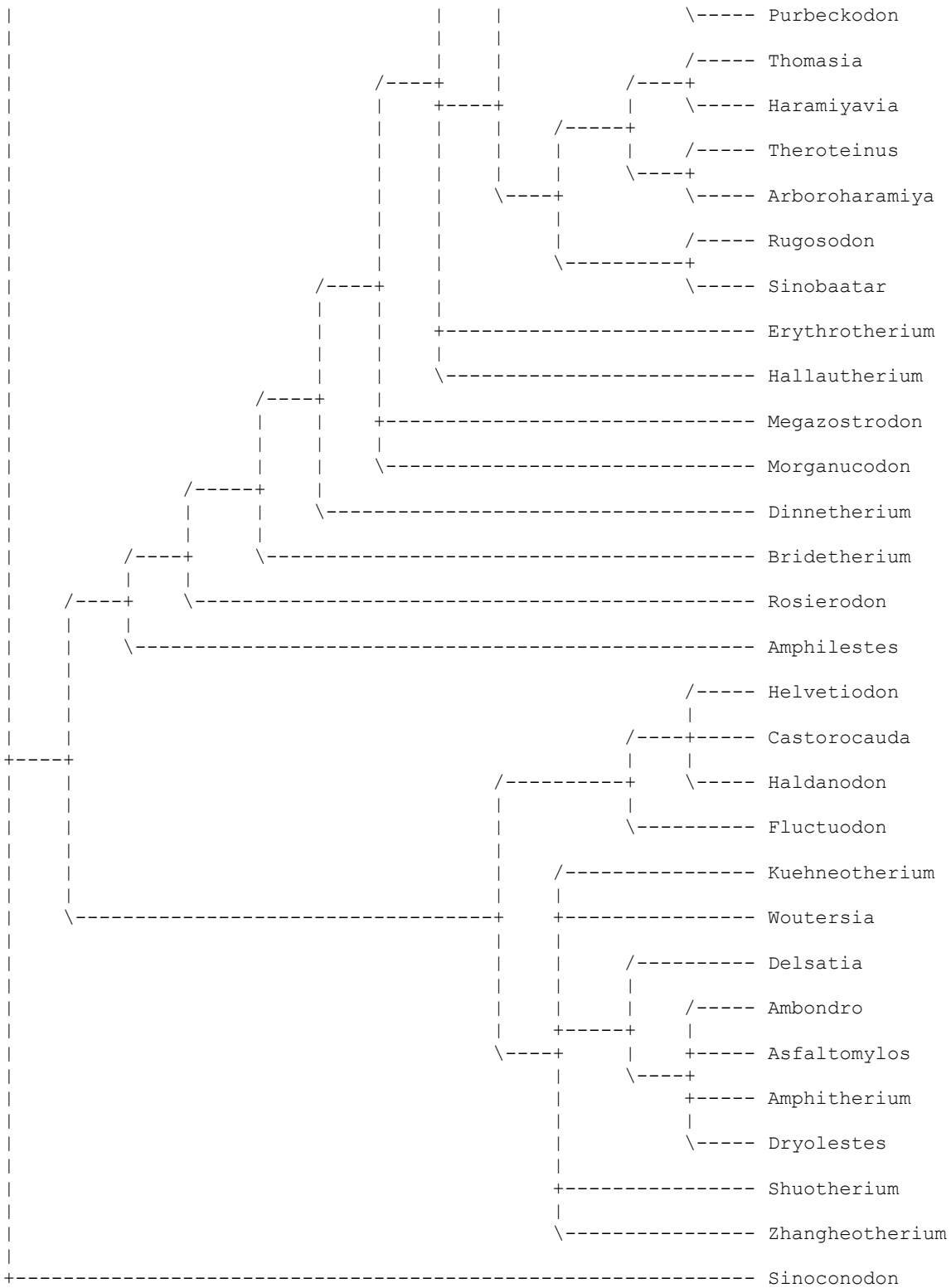
```
        7 variable characters are parsimony-uninformative
        Number of parsimony-informative characters = 65
    Multistate taxa interpreted as uncertainty
  Starting tree(s) obtained via stepwise addition
  Addition sequence: random
    Number of replicates = 100
    Starting seed = 827519542
  Number of trees held at each step during stepwise addition = 1
  Branch-swapping algorithm: tree-bisection-reconnection (TBR)
  Steepest descent option not in effect
  Initial 'MaxTrees' setting = 100 (will be auto-increased by 100)
  Branches collapsed (creating polytomies) if maximum branch length is zero
  'MulTrees' option in effect
  Topological constraints not enforced
  Trees are unrooted

Heuristic search completed
   Total number of rearrangements tried = 9.9152e+009
   Score of best tree(s) found = 307
   Number of trees retained = 654
   Time used = 05:10:24.2

Tree-island profile:
                    First      Last                      First   Times
Island      Size     tree      tree        Score     replicate     hit
-------------------------------------------------------------------------
     1       461        1       461          307             1       5
     2         7      462       468          307             7       1
     3         1      469       469          307             8       1
     4        48      470       517          307             9       1
     5         1      518       518          307            12       1
     6         6      519       524          307            18       1
     7        44      525       568          307            19       1
     8         1      569       569          307            20       1
     9         3      570       572          307            21       1
    10         3      573       575          307            23       1
    11         1      576       576          307            26       1
    12         5      577       581          307            27       1
    13         5      582       586          307            30       1
    14         1      587       587          307            31       1
    15         5      588       592          307            34       1
    16        16      593       608          307            35       1
    17         3      609       611          307            40       1
    18         1      612       612          307            43       1
    19         5      613       617          307            44       1
    20         1      618       618          307            49       1
    21         1      619       619          307            51       1
    22         1      620       620          307            52       1
    23        10      621       630          307            54       1
    24         2      631       632          307            56       1
    25         1      633       633          307            58       1
    26         2      634       635          307            59       1
    27         2      636       637          307            61       1
    28         3      638       640          307            62       1
    29         1      641       641          307            65       1
    30         1      642       642          307            68       1
    31         2      643       644          307            73       1
    32         1      645       645          307            74       1
    33         1      646       646          307            75       1
    34         3      647       649          307            81       1
    35         1      650       650          307            82       1
    36         1      651       651          307            86       1
    37         1      652       652          307            87       1
    38         1      653       653          307            91       1
    39         1      654       654          307            94       1
    40     15723        -         -          308             3       1
    41     15704        -         -          308            11       1
    42     15696        -         -          308             6       1
```

43	15692	-	-	308	10	1
44	15665	-	-	308	50	1
45	15654	-	-	308	24	2*
46	15645	-	-	308	32	1
47	15634	-	-	308	53	2*
48	15633	-	-	308	76	2*
49	15632	-	-	308	42	1
50	15629	-	-	308	60	1
51	15626	-	-	308	63	1
52	15623	-	-	308	37	1
53	15619	-	-	308	66	1
54	15614	-	-	308	96	1
55	15613	-	-	308	89	1
56	15607	-	-	308	84	1
57	15604	-	-	308	99	1
58	15601	-	-	308	98	1
59	15582	-	-	308	97	1
60	15536	-	-	308	25	1
61	15490	-	-	308	38	1
62	650	-	-	308	4	1
63	615	-	-	308	13	1
64	594	-	-	308	5	1
65	585	-	-	308	15	1
66	573	-	-	308	72	1
67	568	-	-	308	93	1
68	558	-	-	308	16	1
69	526	-	-	308	39	1
70	513	-	-	308	77	1
71	509	-	-	308	83	1
72	503	-	-	308	100	1
73	449	-	-	308	17	1
74	147	-	-	308	2	1
75	136	-	-	308	47	1
76	129	-	-	308	33	1
77	92	-	-	308	14	1
78	90	-	-	308	22	1
79	88	-	-	308	85	1
80	86	-	-	308	69	1
81	85	-	-	308	46	2*
82	77	-	-	308	36	1
83	76	-	-	308	67	1
84	75	-	-	308	28	1
85	4400	-	-	309	29	1
86	4365	-	-	309	64	2*
87	4358	-	-	309	92	1
88	4235	-	-	309	79	1
89	104	-	-	311	41	1
90	76	-	-	311	71	1
91	5326	-	-	312	88	1

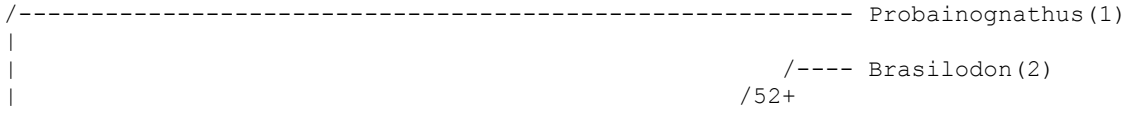
Note(s):
    * Multiple hits on islands of unsaved trees may in fact represent different
      islands

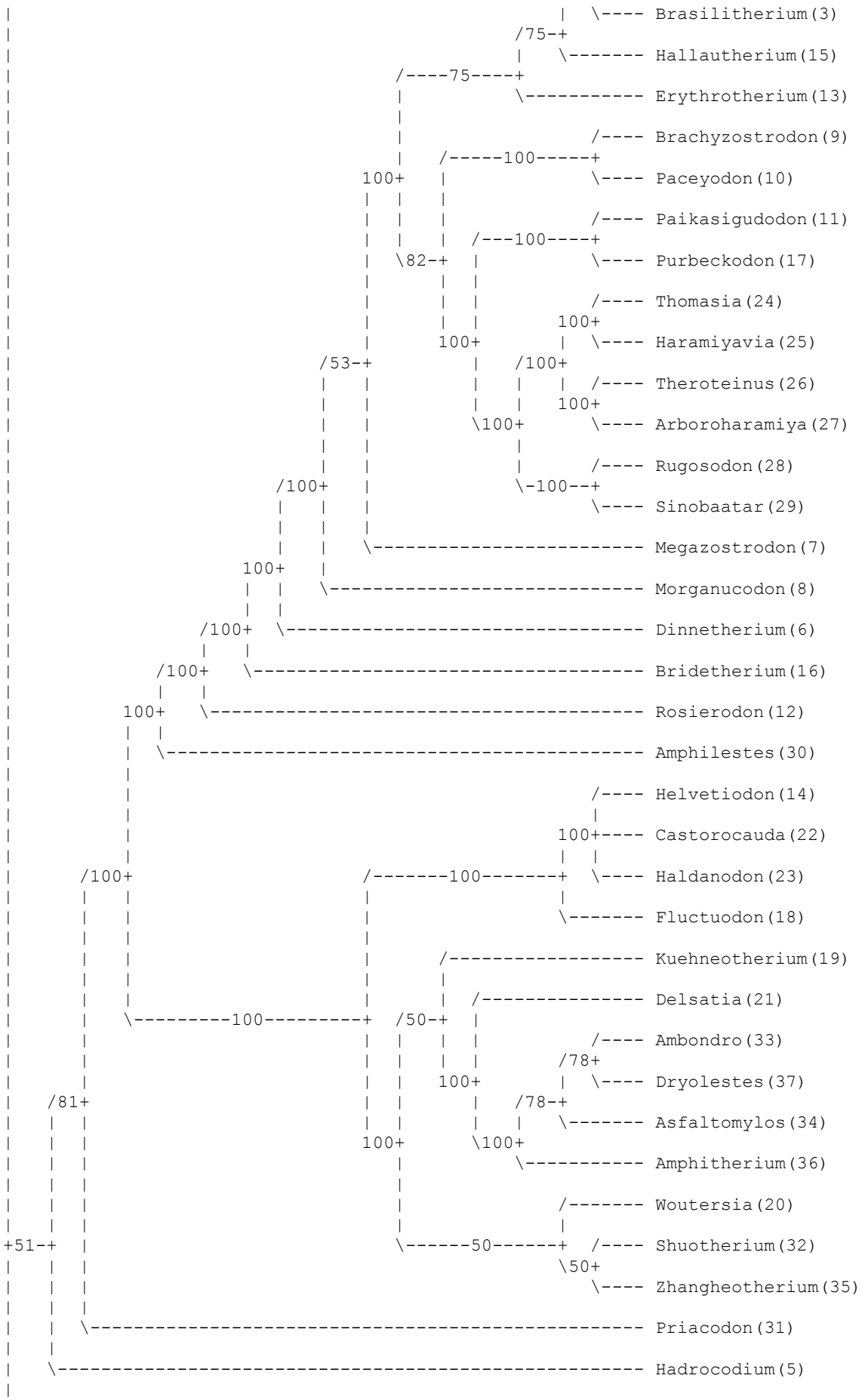
Strict consensus of 654 trees:





50% Majority-rule consensus of 654 trees




Brasilitherium(3)
Hallautherium(15)
Erythrotherium(13)
Brachyzostrodon(9)
Paceyodon(10)
Paikasigudodon(11)
Purbeckodon(17)
Thomasia(24)
Haramiyavia(25)
Theroteinus(26)
Arboroharamiya(27)
Rugosodon(28)
Sinobaatar(29)
Megazostrodon(7)
Morganucodon(8)
Dinnetherium(6)
Bridetherium(16)
Rosierodon(12)
Amphilestes(30)
Helvetiodon(14)
Castorocauda(22)
Haldanodon(23)
Fluctuodon(18)
Kuehneotherium(19)
Delsatia(21)
Ambondro(33)
Dryolestes(37)
Asfaltomylos(34)
Amphitherium(36)
Woutersia(20)
Shuotherium(32)
Zhangheotherium(35)
Priacodon(31)
Hadrocodium(5)

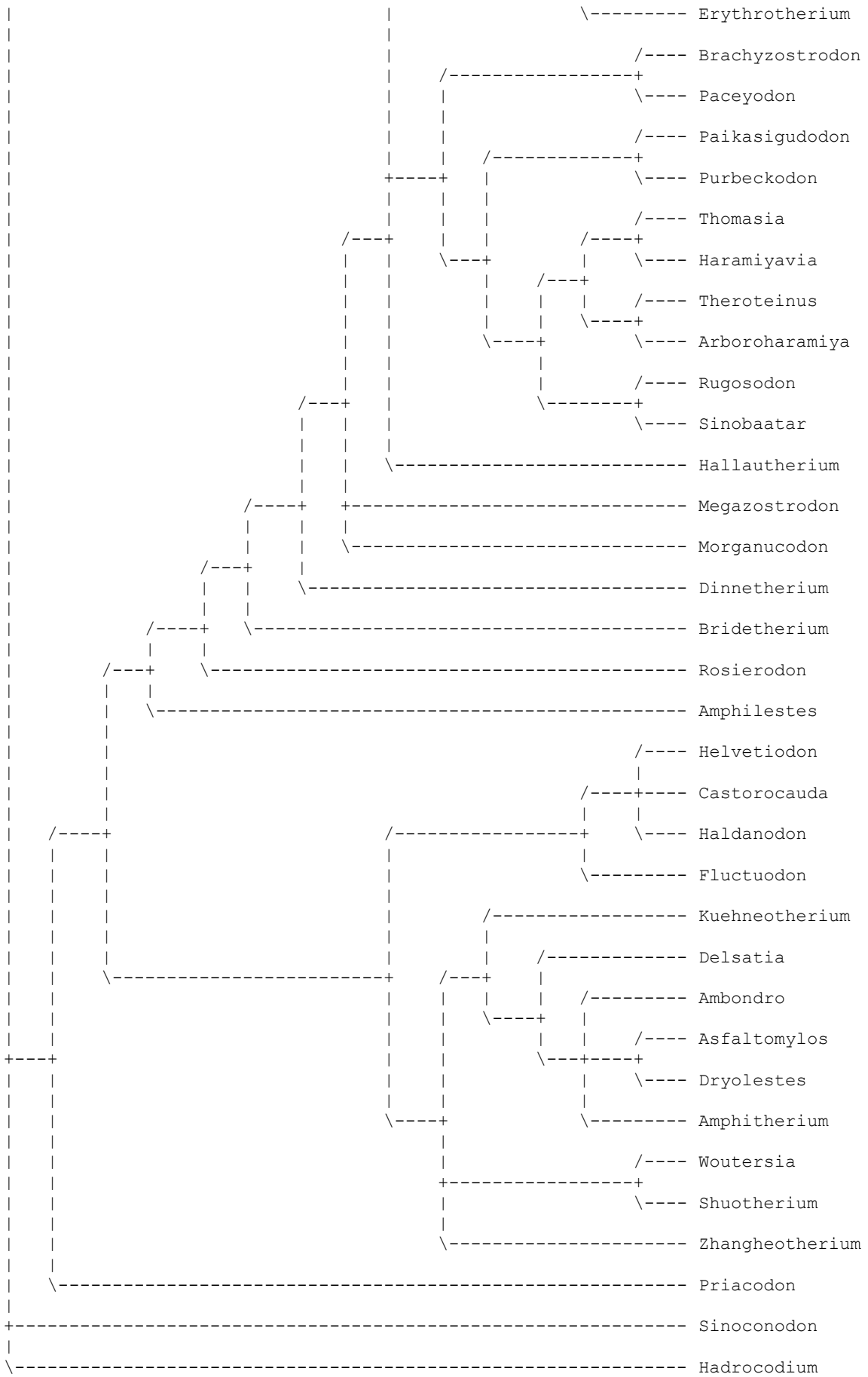
```
\---------------------------------------------------------- Sinoconodon(4)
```

Bipartitions found in one or more trees and frequency of occurrence:

```
         1         2         3      3
12345678901234567890123456789012345678      Freq      %
-----------------------------------------------------------
...................***..........******       654 100.0%
........**.............................       654 100.0%
.**..************************.******       654 100.0%
.**..********.***......*******.......       654 100.0%
.**..********.***......******........       654 100.0%
.**..******.*.***......******........       654 100.0%
.**..******.*.*.*......******........       654 100.0%
.**...*****.*.*.*......******........       654 100.0%
.............................**........       654 100.0%
.**.....***.*.*.*......******........       654 100.0%
.............*...*...**..............       654 100.0%
.............*.......**..............       654 100.0%
..........*.....*.....................       654 100.0%
........................******........       654 100.0%
........................****..........       654 100.0%
..........*.....*......******........       654 100.0%
........................**............       654 100.0%
....................*............**.**       654 100.0%
.............*...******........******       654 100.0%
.......................**.............       654 100.0%
..................................**.**       654 100.0%
........***.....*......******........       534  81.7%
.**..*********************************       529  80.9%
..................................*...*       507  77.5%
..................................**..*       507  77.5%
.**...........*.......................       488  74.6%
.**.........*.*.......................       488  74.6%
.**...*.***.*.*.*......******........       349  53.4%
.**...................................       339  51.8%
.**.**********************************       335  51.2%
.................*.*............**.**       328  50.2%
..................................*..*..       328  50.2%
....................*............*..*..       328  50.2%
....................*............*****       326  49.8%
....................*............*.....       326  49.8%
..................*.*............*****       326  49.8%
.............*........*...............       243  37.2%
.....................**...............       217  33.2%
.............*.......*................       194  29.7%
.***.**********************************       171  26.1%
.*............*.......................       171  26.1%
........***...*.*......******........       166  25.4%
.**.........*.........................       166  25.4%
......**..............................       166  25.4%
..................................*.**       147  22.5%
..................................*.*.       147  22.5%
..*...........*.......................       144  22.0%
.**....****.*.*.*......******........       139  21.3%
..........*...*.*......******........        65   9.9%
....*............................*.....        63   9.6%
.**.************************.******        62   9.5%
........**....*.......................        55   8.4%
```

Adams consensus of 654 trees:

```
/------------------------------------------------------------- Probainognathus
|
|                                                        /---- Brasilodon
|                                                   /----+
|                                                   |    \---- Brasilitherium
|                                  /----------------+
```


Erythrotherium
Brachyzostrodon
Paceyodon
Paikasigudodon
Purbeckodon
Thomasia
Haramiyavia
Theroteinus
Arboroharamiya
Rugosodon
Sinobaatar
Hallautherium
Megazostrodon
Morganucodon
Dinnetherium
Bridetherium
Rosierodon
Amphilestes
Helvetiodon
Castorocauda
Haldanodon
Fluctuodon
Kuehneotherium
Delsatia
Ambondro
Asfaltomylos
Dryolestes
Amphitherium
Woutersia
Shuotherium
Zhangheotherium
Priacodon
Sinoconodon
Hadrocodium

----Optimisation des caractères sur l'arbre de consensus en ACCTRAN

```
Tree length = 332
Consistency index (CI) = 0.417
Homoplasy index (HI) = 0.583
CI excluding uninformative characters = 0.407
HI excluding uninformative characters = 0.593
Retention index (RI) = 0.469
Rescaled consistency index (RC) = 0.196
   (above indices do not include stepmatrix characters)
f value = 2796
f-ratio = 0.5857
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)

/----------------------------------------------------------- Probainognathus
|                                 /------------------------- Brasilodon
|                                 +------------------------- Brasilitherium
|                                 |                   /----- Brachyzostrodon
|                                 +------------------38----- Paceyodon
|                                 |                   /----- Paikasigudodon
|                                 |    /-------------39----- Purbeckodon
|                                 |    |              /----- Thomasia
|                            /---46    |         /---40----- Haramiyavia
|                            |    +---45    /---42    /----- Theroteinus
|                            |    |    |    |    \---41----- Arboroharamiya
|                            |    |    \---44         /----- Rugosodon
|                        /--47    |         \--------43----- Sinobaatar
|                        |   |    +------------------------- Erythrotherium
|                        |   |    \------------------------- Hallautherium
|                   /---48   +------------------------------ Megazostrodon
|                   |    |   \------------------------------ Morganucodon
|              /---49    \---------------------------------- Dinnetherium
59        /---50    \--------------------------------------- Bridetherium
|    /---51    \-------------------------------------------- Rosierodon
|    |    \------------------------------------------------- Amphilestes
|    |                                                /----- Helvetiodon
|    |                                           /---52----- Castorocauda
+---58                                 /--------53    \----- Haldanodon
|    |                                 |         \---------- Fluctuodon
|    |                                 |    /--------------- Kuehneotherium
|    \--------------------------------57    +--------------- Woutersia
|                                      |    |    /---------- Delsatia
|                                      |    |    |    /----- Ambondro
|                                      \---56---55    +----- Asfaltomylos
|                                           |    \---54----- Amphitherium
|                                           |         \----- Dryolestes
|                                           +--------------- Shuotherium
|                                           \--------------- Zhangheotherium
+----------------------------------------------------------- Sinoconodon
+----------------------------------------------------------- Hadrocodium
\----------------------------------------------------------- Priacodon

Possible character-state assignments to internal nodes

                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
----------------------------------------------------------------------------
38               00501003000001001111001001110111030000?120100000000100011
                      1             2            1                     1  2
39               000001020000000010010010011101?103000001122100000000100211
                      2   1       1                                       2
                          3
40               10000102000010000001101001110110021100011001000000000002020
                      22          1               3   12              3  1
```

```
41              10000102000010000001101001110110031100?1001000000001302001
                     2           1                   12                 12
42              10000102000010000001101001110110031100011001000000001002001
                     2           1                   12               3  12
43              20000102000000000001101001110?1?031?000110011000000001002001
                     2           1                                       2
44              ?000010200000000000110100111011?031?000110010000000010020?1
                     2           1                                       1
45              00000102000000001001001001110?1?030000011201000000001002111
                     2           1                                       2
46              00000002000000001111001001110111030000011201000000001000111
                     1                                                   2
47              00000002000000003111001101110111010000011201000000001000121
                     1
48              00000112010000003112001111110111010000011201000000001000121
                                                                         1
49              00000112010000003112001121110111010000011201000000001010021
50              00000110010000003012001121110111010000011201000000001010?1
51              00000110000000001012001121110?1101000001120100000000101?0?1
52              00021110011200161012?113111001101001011220100000100101?011
                   3          2                                        2
53              00011110000200151012?102111001101001011220100000100101?011
                   2     1   4 6        3                          1
                         2
54              00131100010015270003001021110001010022010001000007?30010001
                  2  22      7  12                  43  2 3  4  38
                               3
55              00120100000005070013001021110001010022010001000007030010001
                  2   2      7  12                      2
                               3
56              00120120000005071012001021110001010020?2201000007001010011
                               7   2                              4  1
57              00010110000000051012001021110011010010112201000000001010011
                   2         4 6                                   1
58              00000110000000001012001021110011010000011201000000001010?1
59              00000111000000000002001021110011020000011201000000001010000
                                1             2                         1
```

Possible character-state assignments to internal nodes (continued)

```
                666666666677777
Node            012345678901234
--------------------------------
38              21110?111000000
                           11
                            3
39              01010?1110000?0
                1           1
                            3
40              21?10210?000022
                            3
41              21?112101000023
42              21?102101000023
43              21?1021?1000113
44              21?1021?10000?3
45              21?10?1110000?0
                            1
                            3
46              21110?111000000
                            1
                            3
47              21110?111000001
48              21110?111000001
49              21110?111000001
50              2??10?11??00001
51              2??10?11??00001
52              100110110?00001
                2    1
```

```
53                20010011O?00001
                       1
54                20010011O?00001
                       1       2
55                20010011O?00001
                       1
56                20010011O?00001
                       1
57                20010011O?00001
                       1
58                20010?11O?00001
59                20010?11O?00001

Reconstructed states for internal nodes

                          1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
38                00501003000001001112001001110111130000001201000000001010121
39                00000202010000001001001001110110030000011221000000001002121
40                10000222000010000001101001110110021101211001000000000302020
41                10000202000010000001101001110110031101201001000000001302021
42                10000202000010000001101001110110031101211001000000001302021
43                20000202000000000001101001110110031100011001100000001002001
44                10000202000000000001101001110110031100011001000000001002021
45                00000202000000001001001001110110030000011201000000001002121
46                00000002000000001111001001110111030000011201000000001000111
47                00000002000000003111001101110111010000011201000000001000121
48                00000112010000003112001111110111010000011201000000001000121
49                00000112010000003112001121110111010000011201000000001010021
50                00000110010000003012001121110111010000011201000000001010021
51                00000110000000001012001121110111010000011201000000001010021
52                00031110011200261012011131110011010010112201000001001022011
53                00021110010204161012011031110011010010112201000001011011011
54                00231200010017270203001021110001010043010031040038630010001
55                00220100000007070213001021110001010022010001000007030010001
56                00120120000007071212001021110001010020102201000047011010011
57                00020110000004061012001021110011010010112201000000011010011
58                00000110000000001012001021110011010000011201000000001010011
59                00000111000000000002001021110011020000011201000000001010000

Reconstructed states for internal nodes (continued)

                  666666666677777
Node              012345678901234
---------------------------------
38                211102111000010
39                010102111000013
40                210102100000022
41                210112101000023
42                210102101000023
43                210102101000113
44                210102101000013
45                210102111000013
46                211102111000000
47                211102111000001
48                211102111000001
49                211102111000001
50                211102111000001
51                211102111000001
52                100110110100001
53                200100110100001
54                200100110100021
55                200100110100001
56                200100110100001
57                200100110100001
58                200100110000001
59                200100110000001
```

Character change lists:

Character	CI	Steps	Changes
1	0.667	1	node_45 0 --> 1 node_44
		1	node_44 1 --> 2 node_43
		1	node_51 0 ==> 1 Amphilestes
2	0.333	1	node_40 0 ==> 1 Haramiyavia
		1	node_41 0 ==> 1 Arboroharamiya
		1	node_43 0 ==> 1 Rugosodon
3	n/a	1	node_46 0 ==> 5 node_38
		1	node_57 0 ==> 1 node_56
		1	node_56 1 --> 2 node_55
		1	node_54 2 --> 1 Ambondro
		1	node_56 1 ==> 2 Shuotherium
4	n/a	1	node_41 0 ==> 1 Arboroharamiya
		2	node_58 0 ==> 2 node_57
		1	node_53 2 --> 3 node_52
		1	node_53 2 --> 1 Fluctuodon
		1	node_55 2 ==> 3 node_54
		1	node_54 3 ==> 2 Ambondro
		1	node_54 3 ==> 46 Dryolestes
5	n/a	1	node_46 0 ==> 1 node_38
		1	node_57 0 ==> 1 node_53
		1	node_55 0 ==> 1 node_54
6	0.222	1	node_48 1 --> 0 node_47
		1	node_38 0 --> 1 Paceyodon
		1	node_46 0 --> 2 node_45
		1	node_46 0 --> 1 Erythrotherium
		1	node_47 0 --> 1 Morganucodon
		1	node_56 1 ==> 2 Woutersia
		1	node_55 1 --> 2 node_54
		1	node_54 2 --> 1 Amphitherium
		1	node_54 2 ==> 0 Dryolestes
7	0.500	1	node_48 1 ==> 0 node_47
		1	node_42 0 --> 2 node_40
		1	node_57 1 ==> 2 node_56
		1	node_56 2 --> 0 node_55
8	0.300	1	node_59 1 ==> 0 node_58
		1	node_50 0 ==> 2 node_49
		1	node_46 2 ==> 3 node_38
		1	node_41 2 ==> 0 Arboroharamiya
		1	node_47 2 ==> 3 Megazostrodon
		1	node_48 2 ==> 1 Dinnetherium
		1	node_52 0 ==> 1 Castorocauda
		1	node_53 0 ==> 3 Fluctuodon
		1	node_56 0 ==> 3 Kuehneotherium
		1	node_54 0 ==> 3 Asfaltomylos
9	0.667	1	node_41 0 ==> 1 Arboroharamiya
		1	node_52 0 ==> 2 Haldanodon
		1	node_56 0 ==> 2 Woutersia
10	0.375	1	node_51 0 ==> 1 node_50
		1	node_48 1 ==> 0 node_47
		1	node_45 0 --> 1 node_39
		1	node_57 0 --> 1 node_53
		1	node_53 1 --> 2 Fluctuodon
		1	node_55 0 ==> 1 node_54
		1	node_54 1 ==> 3 Dryolestes
		1	node_56 0 ==> 1 Shuotherium
11	0.500	1	node_38 0 ==> 1 Paceyodon
		1	node_53 0 ==> 1 node_52
12	0.750	1	node_38 0 ==> 1 Paceyodon
		1	node_57 0 ==> 2 node_53
		1	node_52 2 ==> 1 Castorocauda
		1	node_54 0 ==> 3 Dryolestes
13	n/a	1	node_38 0 ==> 1 Brachyzostrodon
		1	node_38 0 ==> 4 Paceyodon

		1	node_44 0 ==> 1 node_42
		1	node_40 1 ==> 2 Haramiyavia
		1	node_55 0 ==> 1 node_54
		1	node_54 1 ==> 2 Asfaltomylos
		1	node_54 1 ==> 0 Amphitherium
14	n/a	1	node_46 0 ==> 1 node_38
		1	node_58 0 --> 4 node_57
		1	node_53 4 --> 0 node_52
		1	node_52 0 ==> 12 Haldanodon
		3	node_57 4 ==> 7 node_56
		2	node_56 7 --> 45 Kuehneotherium
		3	node_56 7 ==> 4 Woutersia
		2	node_54 7 --> 5 Ambondro
		2	node_54 7 --> 45 Dryolestes
15	n/a	1	node_40 0 ==> 1 Haramiyavia
		1	node_57 0 ==> 1 node_53
		1	node_53 1 --> 2 node_52
		1	node_52 2 ==> 3 Castorocauda
		2	node_55 0 ==> 2 node_54
		1	node_54 2 ==> 3 Dryolestes
16	n/a	1	node_40 0 ==> 4 Haramiyavia
		3	node_58 0 ==> 6 node_57
		1	node_52 6 ==> 7 Haldanodon
		1	node_53 6 --> 5 Fluctuodon
		1	node_57 6 ==> 7 node_56
17	0.333	1	node_59 0 --> 1 node_58
		1	node_51 1 ==> 3 node_50
		1	node_47 3 ==> 1 node_46
		1	node_38 1 ==> 0 Brachyzostrodon
		1	node_45 1 ==> 0 node_44
		1	node_46 1 ==> 0 Hallautherium
		1	node_56 1 ==> 2 Woutersia
		1	node_56 1 --> 0 node_55
		1	node_59 0 --> 1 Priacodon
18	0.600	1	node_50 0 ==> 1 node_49
		1	node_46 1 --> 0 node_45
		1	node_57 0 --> 2 node_56
		1	node_54 2 --> 3 Asfaltomylos
		1	node_56 2 --> 0 Shuotherium
19	0.250	1	node_59 0 ==> 1 node_58
		1	node_46 1 ==> 0 node_45
		1	node_55 1 ==> 0 node_54
		1	node_54 0 ==> 1 Ambondro
20	n/a	1	node_48 2 ==> 1 node_47
		1	node_46 1 ==> 0 Brasilitherium
		1	node_46 1 --> 2 node_38
		1	node_46 1 ==> 0 Hallautherium
		1	node_52 2 ==> 1 Castorocauda
		1	node_56 2 ==> 1 Woutersia
		1	node_56 2 ==> 3 node_55
21	0.167	1	node_45 0 ==> 1 node_44
		1	node_41 1 ==> 0 Arboroharamiya
		1	node_48 0 ==> 1 Dinnetherium
		1	node_55 0 ==> 1 Delsatia
		1	node_54 0 ==> 1 Ambondro
		1	node_56 0 ==> 1 Shuotherium
22	0.143	1	node_46 0 ==> 1 Brasilitherium
		1	node_48 0 ==> 1 Dinnetherium
		1	node_57 0 --> 1 node_53
		1	node_52 1 --> 0 Haldanodon
		1	node_56 0 ==> 1 Kuehneotherium
		1	node_54 0 ==> 1 Ambondro
		1	node_56 0 ==> 1 Shuotherium
23	1.000	1	node_56 1 ==> 2 Shuotherium
24	0.200	1	node_58 0 ==> 1 node_51
		1	node_47 1 ==> 0 node_46
		1	node_46 0 ==> 1 Brasilodon
		1	node_53 0 ==> 1 node_52

		1	node_56 0 ==> 1 Woutersia
25	n/a	1	node_49 2 ==> 1 node_48
		1	node_48 1 ==> 0 node_47
		1	node_46 0 ==> 4 Brasilitherium
		1	node_57 2 --> 3 node_53
26	1.000	1	node_46 1 ==> 0 Brasilodon
27	1.000	1	node_41 1 ==> 0 Arboroharamiya
28	1.000	1	node_41 1 ==> 2 Arboroharamiya
		1	node_43 1 ==> 0 Sinobaatar
29	0.500	1	node_41 0 ==> 1 Arboroharamiya
		1	node_43 0 ==> 1 Rugosodon
30	0.143	1	node_58 0 --> 1 node_51
		1	node_46 1 ==> 0 Brasilodon
		1	node_46 1 ==> 0 Brasilitherium
		1	node_52 0 ==> 1 Castorocauda
		1	node_56 0 ==> 1 Woutersia
		1	node_55 0 ==> 1 Delsatia
		1	node_59 0 ==> 1 Priacodon
31	0.667	1	node_48 1 ==> 0 Dinnetherium
		1	node_57 1 ==> 0 node_56
		1	node_59 1 --> 2 Priacodon
32	0.500	1	node_46 1 --> 0 node_45
		1	node_43 0 --> 1 Rugosodon
33	0.286	1	node_46 0 --> 1 node_38
		1	node_48 0 ==> 1 Dinnetherium
		1	node_51 0 ==> 1 Amphilestes
		1	node_56 0 ==> 1 Woutersia
		1	node_56 0 ==> 1 Shuotherium
		1	node_56 0 ==> 2 Zhangheotherium
		1	node_59 0 ==> 1 Priacodon
34	0.600	1	node_59 2 ==> 1 node_58
		1	node_47 1 ==> 3 node_46
		1	node_46 3 ==> 2 Brasilitherium
		1	node_42 3 --> 2 node_40
		1	node_43 3 ==> 0 Sinobaatar
35	n/a	1	node_45 0 ==> 1 node_44
		1	node_40 1 ==> 2 Haramiyavia
		1	node_41 1 ==> 2 Theroteinus
		1	node_43 1 ==> 2 Sinobaatar
36	1.000	1	node_45 0 --> 1 node_44
37	n/a	1	node_39 0 ==> 1 Paikasigudodon
		1	node_58 0 ==> 1 node_57
		1	node_57 1 ==> 2 node_56
		2	node_55 2 --> 4 node_54
38	n/a	1	node_39 0 ==> 1 Paikasigudodon
		1	node_44 0 --> 1 node_42
		1	node_56 0 ==> 1 Kuehneotherium
		2	node_56 0 ==> 2 node_55
		1	node_55 2 --> 3 node_54
39	n/a	1	node_39 0 ==> 2 Paikasigudodon
		1	node_44 0 --> 2 node_42
		1	node_58 0 ==> 1 node_57
		1	node_56 1 ==> 0 node_55
40	0.167	1	node_46 1 --> 0 node_38
		1	node_42 1 --> 0 node_41
		1	node_48 1 ==> 0 Dinnetherium
		1	node_57 1 --> 0 node_56
		1	node_56 0 --> 1 Kuehneotherium
		1	node_56 0 --> 1 node_55
41	0.600	1	node_39 1 ==> 0 Paikasigudodon
		1	node_58 1 ==> 2 node_57
		1	node_52 2 ==> 1 Helvetiodon
		1	node_56 2 ==> 3 Woutersia
		1	node_56 2 --> 0 node_55
42	0.375	1	node_39 2 ==> 3 Paikasigudodon
		1	node_45 2 ==> 0 node_44
		1	node_40 0 ==> 1 Thomasia
		1	node_43 0 ==> 1 Sinobaatar

		1	node_47 2 ==> 3 Megazostrodon
		1	node_49 2 ==> 1 Bridetherium
		1	node_56 2 ==> 3 Woutersia
		1	node_56 2 ==> 0 node_55
43	1.000	1	node_45 0 ==> 2 node_39
		1	node_55 0 --> 3 node_54
45	1.000	1	node_44 0 ==> 1 node_43
46	0.750	1	node_39 0 ==> 1 Purbeckodon
		1	node_48 0 ==> 1 Dinnetherium
		1	node_56 0 ==> 3 Kuehneotherium
		1	node_55 0 --> 4 node_54
47	0.500	1	node_39 0 ==> 1 Purbeckodon
		1	node_53 0 ==> 1 Fluctuodon
48	1.000	1	node_56 0 ==> 1 Woutersia
49	n/a	1	node_57 0 --> 4 node_56
		1	node_56 4 --> 0 node_55
		3	node_55 0 --> 3 node_54
		1	node_56 4 ==> 5 Shuotherium
50	n/a	2	node_47 0 ==> 2 Megazostrodon
		1	node_57 0 ==> 1 node_53
		1	node_52 1 ==> 2 Haldanodon
		4	node_57 0 ==> 7 node_56
		1	node_55 7 --> 8 node_54
51	n/a	3	node_55 0 --> 6 node_54
52	n/a	2	node_47 0 ==> 2 Megazostrodon
		1	node_58 0 --> 1 node_57
		1	node_53 1 --> 0 node_52
		1	node_56 1 ==> 2 Kuehneotherium
		2	node_56 1 ==> 3 node_55
		1	node_55 3 ==> 7 Delsatia
		1	node_56 1 --> 0 Shuotherium
53	0.200	1	node_42 1 ==> 0 node_40
		1	node_48 1 ==> 0 Dinnetherium
		1	node_52 1 ==> 0 Haldanodon
		1	node_56 1 ==> 0 node_55
		1	node_56 1 ==> 0 Zhangheotherium
54	1.000	1	node_39 0 ==> 1 Paikasigudodon
		1	node_44 0 --> 3 node_42
		1	node_56 0 ==> 2 Woutersia
55	0.600	1	node_49 1 --> 0 node_48
		1	node_46 0 --> 1 node_38
		1	node_39 0 ==> 2 Purbeckodon
		1	node_41 0 ==> 3 Theroteinus
		1	node_53 1 --> 2 node_52
56	0.500	1	node_46 0 ==> 2 node_45
		1	node_57 0 --> 1 node_53
		1	node_53 1 --> 2 node_52
		1	node_56 0 ==> 1 Kuehneotherium
57	0.667	1	node_49 0 ==> 1 node_48
		1	node_45 1 --> 0 node_44
		1	node_52 0 ==> 2 Helvetiodon
58	0.167	1	node_59 0 --> 1 node_58
		1	node_58 1 --> 2 node_51
		1	node_47 2 --> 1 node_46
		1	node_46 1 --> 2 node_38
		1	node_46 1 --> 2 node_45
		1	node_39 2 --> 1 Paikasigudodon
		1	node_41 2 --> 0 Arboroharamiya
		1	node_44 2 --> 0 node_43
		1	node_52 1 ==> 2 Haldanodon
		1	node_56 1 ==> 0 node_55
		1	node_56 1 ==> 2 Shuotherium
		1	node_59 0 --> 1 Priacodon
59	0.200	1	node_59 0 ==> 1 node_58
		1	node_46 1 ==> 0 Brasilodon
		1	node_46 1 ==> 0 Brasilitherium
		1	node_42 1 ==> 0 node_40
		1	node_56 1 ==> 0 Zhangheotherium

60	n/a	2	node_45 2 ==> 0 node_39
		1	node_53 2 --> 1 node_52
		1	node_55 2 ==> 3 Delsatia
61	0.500	1	node_58 0 --> 1 node_51
		1	node_39 1 ==> 0 Purbeckodon
62	0.500	1	node_58 0 --> 1 node_51
		1	node_46 1 --> 0 node_45
64	0.250	1	node_42 0 ==> 1 node_41
		1	node_53 0 ==> 1 node_52
		1	node_56 0 ==> 1 Woutersia
		1	node_56 0 ==> 1 Shuotherium
65	0.667	1	node_58 0 --> 2 node_51
		1	node_52 0 --> 1 Haldanodon
		1	node_56 0 --> 1 Shuotherium
66	0.250	1	node_46 1 ==> 0 Brasilodon
		1	node_46 1 ==> 0 Brasilitherium
		1	node_39 1 ==> 0 Paikasigudodon
		1	node_41 1 ==> 0 Arboroharamiya
67	0.500	1	node_45 1 --> 0 node_44
		1	node_49 1 ==> 0 Bridetherium
68	0.167	1	node_58 0 --> 1 node_51
		1	node_46 1 ==> 0 Brasilodon
		1	node_46 1 ==> 0 Brasilitherium
		1	node_42 1 --> 0 node_40
		1	node_56 0 ==> 1 Woutersia
		1	node_59 0 ==> 1 Priacodon
69	1.000	1	node_58 0 --> 1 node_57
70	0.500	1	node_40 0 ==> 1 Thomasia
		1	node_41 0 ==> 1 Theroteinus
71	0.500	1	node_41 0 ==> 1 Theroteinus
		1	node_43 0 ==> 1 Rugosodon
72	1.000	1	node_44 0 ==> 1 node_43
73	0.400	1	node_46 0 --> 1 node_38
		1	node_46 0 --> 1 node_45
		1	node_44 1 --> 2 node_42
		1	node_49 0 ==> 1 Bridetherium
		1	node_55 0 --> 2 node_54
74	0.750	1	node_47 1 --> 0 node_46
		1	node_46 0 --> 3 node_45
		1	node_42 3 --> 2 node_40
		1	node_56 1 ==> 2 Zhangheotherium

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_59 --> node_58	8	1	0.300	1 ==> 0
	17	1	0.333	0 --> 1
	19	1	0.250	0 ==> 1
	34	1	0.600	2 ==> 1
	58	1	0.167	0 --> 1
	59	1	0.200	0 ==> 1
node_58 --> node_51	24	1	0.200	0 ==> 1
	30	1	0.143	0 --> 1
	58	1	0.167	1 --> 2
	61	1	0.500	0 --> 1
	62	1	0.500	0 --> 1
	65	1	0.667	0 --> 2
	68	1	0.167	0 --> 1
node_51 --> node_50	10	1	0.375	0 ==> 1
	17	1	0.333	1 ==> 3
node_50 --> node_49	8	1	0.300	0 ==> 2
	18	1	0.600	0 ==> 1
node_49 --> node_48	25	1	n/a	2 ==> 1
	55	1	0.600	1 --> 0
	57	1	0.667	0 ==> 1
node_48 --> node_47	6	1	0.222	1 --> 0
	7	1	0.500	1 ==> 0

	10	1	0.375	1 ==> 0
	20	1	n/a	2 ==> 1
	25	1	n/a	1 ==> 0
node_47 --> node_46	17	1	0.333	3 ==> 1
	24	1	0.200	1 ==> 0
	34	1	0.600	1 ==> 3
	58	1	0.167	2 --> 1
	74	1	0.750	1 --> 0
node_46 --> Brasilodon	24	1	0.200	0 ==> 1
	26	1	1.000	1 ==> 0
	30	1	0.143	1 ==> 0
	59	1	0.200	1 ==> 0
	66	1	0.250	1 ==> 0
	68	1	0.167	1 ==> 0
node_46 --> Brasilitherium	20	1	n/a	1 ==> 0
	22	1	0.143	0 ==> 1
	25	1	n/a	0 ==> 4
	30	1	0.143	1 ==> 0
	34	1	0.600	3 ==> 2
	59	1	0.200	1 ==> 0
	66	1	0.250	1 ==> 0
	68	1	0.167	1 ==> 0
node_46 --> node_38	3	1	n/a	0 ==> 5
	5	1	n/a	0 ==> 1
	8	1	0.300	2 ==> 3
	14	1	n/a	0 ==> 1
	20	1	n/a	1 --> 2
	33	1	0.286	0 --> 1
	40	1	0.167	1 --> 0
	55	1	0.600	0 --> 1
	58	1	0.167	1 --> 2
	73	1	0.400	0 --> 1
node_38 --> Brachyzostrodon	13	1	n/a	0 ==> 1
	17	1	0.333	1 ==> 0
node_38 --> Paceyodon	6	1	0.222	0 --> 1
	11	1	0.500	0 ==> 1
	12	1	0.750	0 ==> 1
	13	1	n/a	0 ==> 4
node_46 --> node_45	6	1	0.222	0 --> 2
	18	1	0.600	1 --> 0
	19	1	0.250	1 ==> 0
	32	1	0.500	1 --> 0
	56	1	0.500	0 ==> 2
	58	1	0.167	1 --> 2
	62	1	0.500	1 --> 0
	73	1	0.400	0 --> 1
	74	1	0.750	0 --> 3
node_45 --> node_39	10	1	0.375	0 --> 1
	43	1	1.000	0 ==> 2
	60	2	n/a	2 ==> 0
node_39 --> Paikasigudodon	37	1	n/a	0 ==> 1
	38	1	n/a	0 ==> 1
	39	1	n/a	0 ==> 2
	41	1	0.600	1 ==> 0
	42	1	0.375	2 ==> 3
	54	1	1.000	0 ==> 1
	58	1	0.167	2 --> 1
	66	1	0.250	1 ==> 0
node_39 --> Purbeckodon	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1
	55	1	0.600	0 ==> 2
	61	1	0.500	1 ==> 0
node_45 --> node_44	1	1	0.667	0 --> 1
	17	1	0.333	1 ==> 0
	21	1	0.167	0 ==> 1
	35	1	n/a	0 ==> 1
	36	1	1.000	0 --> 1
	42	1	0.375	2 ==> 0

	57	1	0.667	1	--> 0
	67	1	0.500	1	--> 0
node_44 --> node_42	13	1	n/a	0	==> 1
	38	1	n/a	0	--> 1
	39	1	n/a	0	--> 2
	54	1	1.000	0	--> 3
	73	1	0.400	1	--> 2
node_42 --> node_40	7	1	0.500	0	--> 2
	34	1	0.600	3	--> 2
	53	1	0.200	1	==> 0
	59	1	0.200	1	==> 0
	68	1	0.167	1	--> 0
	74	1	0.750	3	--> 2
node_40 --> Thomasia	42	1	0.375	0	==> 1
	70	1	0.500	0	==> 1
node_40 --> Haramiyavia	2	1	0.333	0	==> 1
	13	1	n/a	1	==> 2
	15	1	n/a	0	==> 1
	16	1	n/a	0	==> 4
	35	1	n/a	1	==> 2
node_42 --> node_41	40	1	0.167	1	--> 0
	64	1	0.250	0	==> 1
node_41 --> Theroteinus	35	1	n/a	1	==> 2
	55	1	0.600	0	==> 3
	70	1	0.500	0	==> 1
	71	1	0.500	0	==> 1
node_41 --> Arboroharamiya	2	1	0.333	0	==> 1
	4	1	n/a	0	==> 1
	8	1	0.300	2	==> 0
	9	1	0.667	0	==> 1
	21	1	0.167	1	==> 0
	27	1	1.000	1	==> 0
	28	1	1.000	1	==> 2
	29	1	0.500	0	==> 1
	58	1	0.167	2	--> 0
	66	1	0.250	1	==> 0
node_44 --> node_43	1	1	0.667	1	--> 2
	45	1	1.000	0	==> 1
	58	1	0.167	2	--> 0
	72	1	1.000	0	==> 1
node_43 --> Rugosodon	2	1	0.333	0	==> 1
	29	1	0.500	0	==> 1
	32	1	0.500	0	--> 1
	71	1	0.500	0	==> 1
node_43 --> Sinobaatar	28	1	1.000	1	==> 0
	34	1	0.600	3	==> 0
	35	1	n/a	1	==> 2
	42	1	0.375	0	==> 1
node_46 --> Erythrotherium	6	1	0.222	0	--> 1
node_46 --> Hallautherium	17	1	0.333	1	==> 0
	20	1	n/a	1	==> 0
node_47 --> Megazostrodon	8	1	0.300	2	==> 3
	42	1	0.375	2	==> 3
	50	2	n/a	0	==> 2
	52	2	n/a	0	==> 2
node_47 --> Morganucodon	6	1	0.222	0	--> 1
node_48 --> Dinnetherium	8	1	0.300	2	==> 1
	21	1	0.167	0	==> 1
	22	1	0.143	0	==> 1
	31	1	0.667	1	==> 0
	33	1	0.286	0	==> 1
	40	1	0.167	1	==> 0
	46	1	0.750	0	==> 1
	53	1	0.200	1	==> 0
node_49 --> Bridetherium	42	1	0.375	2	==> 1
	67	1	0.500	1	==> 0
	73	1	0.400	0	==> 1
node_51 --> Amphilestes	1	1	0.667	0	==> 1

	33	1	0.286	0 ==> 1
node_58 --> node_57	4	2	n/a	0 ==> 2
	14	1	n/a	0 --> 4
	16	3	n/a	0 ==> 6
	37	1	n/a	0 ==> 1
	39	1	n/a	0 ==> 1
	41	1	0.600	1 ==> 2
	52	1	n/a	0 --> 1
	69	1	1.000	0 --> 1
node_57 --> node_53	5	1	n/a	0 ==> 1
	10	1	0.375	0 --> 1
	12	1	0.750	0 ==> 2
	15	1	n/a	0 ==> 1
	22	1	0.143	0 --> 1
	25	1	n/a	2 --> 3
	50	1	n/a	0 ==> 1
	56	1	0.500	0 --> 1
node_53 --> node_52	4	1	n/a	2 --> 3
	11	1	0.500	0 ==> 1
	14	1	n/a	4 --> 0
	15	1	n/a	1 --> 2
	24	1	0.200	0 ==> 1
	52	1	n/a	1 --> 0
	55	1	0.600	1 --> 2
	56	1	0.500	1 --> 2
	60	1	n/a	2 --> 1
	64	1	0.250	0 ==> 1
node_52 --> Helvetiodon	41	1	0.600	2 ==> 1
	57	1	0.667	0 ==> 2
node_52 --> Castorocauda	8	1	0.300	0 ==> 1
	12	1	0.750	2 ==> 1
	15	1	n/a	2 ==> 3
	20	1	n/a	2 ==> 1
	30	1	0.143	0 ==> 1
node_52 --> Haldanodon	9	1	0.667	0 ==> 2
	14	1	n/a	0 ==> 12
	16	1	n/a	6 ==> 7
	22	1	0.143	1 --> 0
	50	1	n/a	1 ==> 2
	53	1	0.200	1 ==> 0
	58	1	0.167	1 ==> 2
	65	1	0.667	0 --> 1
node_53 --> Fluctuodon	4	1	n/a	2 --> 1
	8	1	0.300	0 ==> 3
	10	1	0.375	1 --> 2
	16	1	n/a	6 --> 5
	47	1	0.500	0 ==> 1
node_57 --> node_56	3	1	n/a	0 ==> 1
	7	1	0.500	1 ==> 2
	14	3	n/a	4 ==> 7
	16	1	n/a	6 ==> 7
	18	1	0.600	0 --> 2
	31	1	0.667	1 ==> 0
	37	1	n/a	1 ==> 2
	40	1	0.167	1 --> 0
	49	1	n/a	0 --> 4
	50	4	n/a	0 ==> 7
node_56 --> Kuehneotherium	8	1	0.300	0 ==> 3
	14	2	n/a	7 --> 45
	22	1	0.143	0 ==> 1
	38	1	n/a	0 ==> 1
	40	1	0.167	0 --> 1
	46	1	0.750	0 ==> 3
	52	1	n/a	1 ==> 2
	56	1	0.500	0 ==> 1
node_56 --> Woutersia	6	1	0.222	1 ==> 2
	9	1	0.667	0 ==> 2
	14	3	n/a	7 ==> 4

	17	1	0.333	1 ==> 2
	20	1	n/a	2 ==> 1
	24	1	0.200	0 ==> 1
	30	1	0.143	0 ==> 1
	33	1	0.286	0 ==> 1
	41	1	0.600	2 ==> 3
	42	1	0.375	2 ==> 3
	48	1	1.000	0 ==> 1
	54	1	1.000	0 ==> 2
	64	1	0.250	0 ==> 1
	68	1	0.167	0 ==> 1
node_56 --> node_55	3	1	n/a	1 --> 2
	7	1	0.500	2 --> 0
	17	1	0.333	1 --> 0
	20	1	n/a	2 ==> 3
	38	2	n/a	0 ==> 2
	39	1	n/a	1 ==> 0
	40	1	0.167	0 --> 1
	41	1	0.600	2 --> 0
	42	1	0.375	2 ==> 0
	49	1	n/a	4 --> 0
	52	2	n/a	1 ==> 3
	53	1	0.200	1 ==> 0
	58	1	0.167	1 ==> 0
node_55 --> Delsatia	21	1	0.167	0 ==> 1
	30	1	0.143	0 ==> 1
	52	1	n/a	3 ==> 7
	60	1	n/a	2 ==> 3
node_55 --> node_54	4	1	n/a	2 ==> 3
	5	1	n/a	0 ==> 1
	6	1	0.222	1 --> 2
	10	1	0.375	0 ==> 1
	13	1	n/a	0 ==> 1
	15	2	n/a	0 ==> 2
	19	1	0.250	1 ==> 0
	37	2	n/a	2 --> 4
	38	1	n/a	2 --> 3
	43	1	1.000	0 --> 3
	46	1	0.750	0 --> 4
	49	3	n/a	0 --> 3
	50	1	n/a	7 --> 8
	51	3	n/a	0 --> 6
	73	1	0.400	0 --> 2
node_54 --> Ambondro	3	1	n/a	2 --> 1
	4	1	n/a	3 ==> 2
	14	2	n/a	7 --> 5
	19	1	0.250	0 ==> 1
	21	1	0.167	0 ==> 1
	22	1	0.143	0 ==> 1
node_54 --> Asfaltomylos	8	1	0.300	0 ==> 3
	13	1	n/a	1 ==> 2
	18	1	0.600	2 --> 3
node_54 --> Amphitherium	6	1	0.222	2 --> 1
	13	1	n/a	1 ==> 0
node_54 --> Dryolestes	4	1	n/a	3 ==> 46
	6	1	0.222	2 ==> 0
	10	1	0.375	1 ==> 3
	12	1	0.750	0 ==> 3
	14	2	n/a	7 --> 45
	15	1	n/a	2 ==> 3
node_56 --> Shuotherium	3	1	n/a	1 ==> 2
	10	1	0.375	0 ==> 1
	18	1	0.600	2 --> 0
	21	1	0.167	0 ==> 1
	22	1	0.143	0 ==> 1
	23	1	1.000	1 ==> 2
	33	1	0.286	0 ==> 1
	49	1	n/a	4 ==> 5

	52	1	n/a	1	-->	0
	58	1	0.167	1	==>	2
	64	1	0.250	0	==>	1
	65	1	0.667	0	-->	1
node_56 --> Zhangheotherium	33	1	0.286	0	==>	2
	53	1	0.200	1	==>	0
	59	1	0.200	1	==>	0
	74	1	0.750	1	==>	2
node_59 --> Priacodon	17	1	0.333	0	-->	1
	30	1	0.143	0	==>	1
	31	1	0.667	1	-->	2
	33	1	0.286	0	==>	1
	58	1	0.167	0	-->	1
	68	1	0.167	0	==>	1

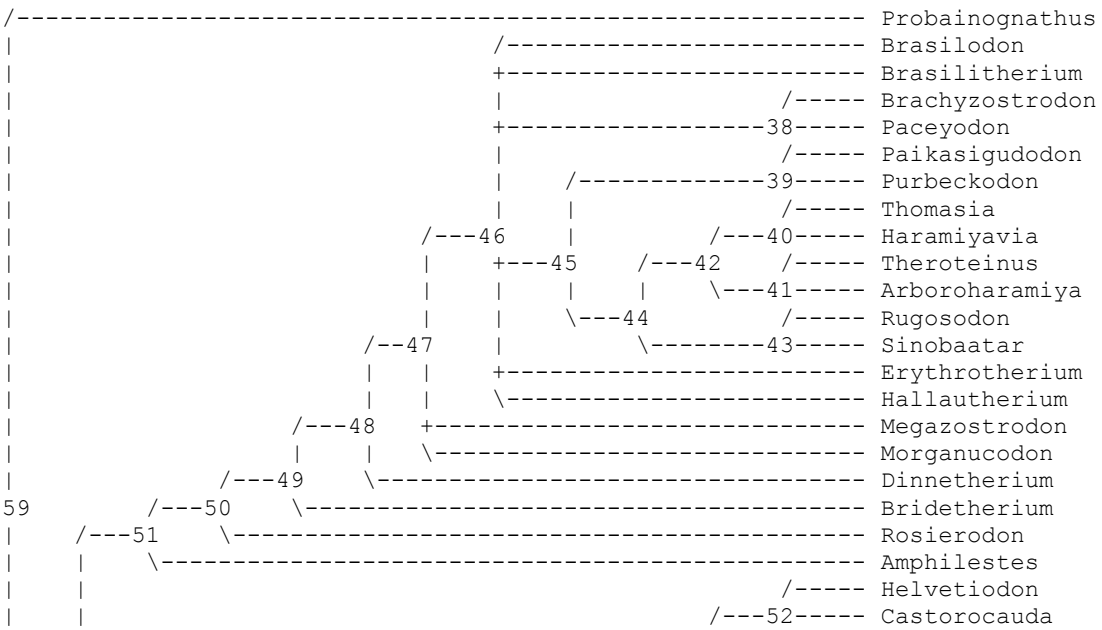
Character diagnostics:

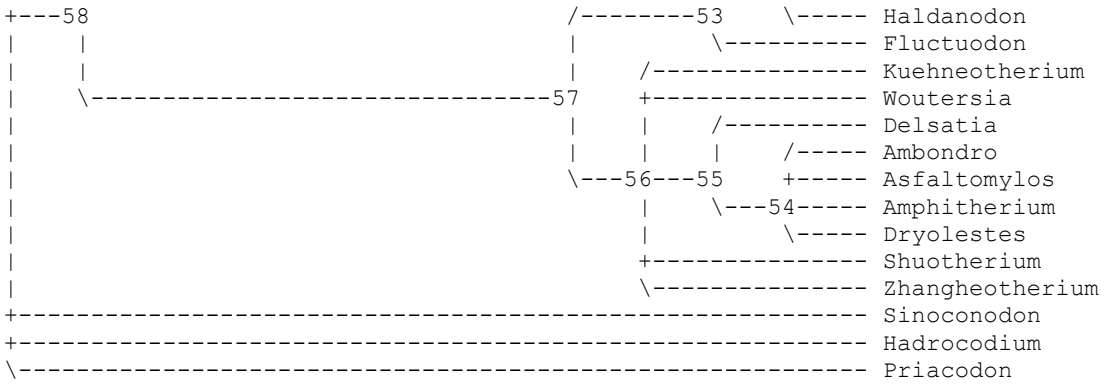
Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	n/a	5	13	n/a	n/a	n/a	n/a
4	n/a	8	25	n/a	n/a	n/a	n/a
5	n/a	3	8	n/a	n/a	n/a	n/a
6	2	9	9	0.222	0.778	0.000	0.000
7	2	4	9	0.500	0.500	0.714	0.357
8	3	10	18	0.300	0.700	0.533	0.160
9	2	3	3	0.667	0.333	0.000	0.000
10	3	8	11	0.375	0.625	0.375	0.141
11	1	2	3	0.500	0.500	0.500	0.250
12	3	4	5	0.750	0.250	0.500	0.375
13	n/a	7	10	n/a	n/a	n/a	n/a
14	n/a	16	29	n/a	n/a	n/a	n/a
15	n/a	7	15	n/a	n/a	n/a	n/a
16	n/a	7	39	n/a	n/a	n/a	n/a
17	3	9	16	0.333	0.667	0.538	0.179
18	3	5	8	0.600	0.400	0.600	0.360
19	1	4	12	0.250	0.750	0.727	0.182
20	n/a	7	11	n/a	n/a	n/a	n/a
21	1	6	9	0.167	0.833	0.375	0.062
22	1	7	7	0.143	0.857	0.000	0.000
23	1	1	1	1.000	0.000	0/0	0/0
24	1	5	8	0.200	0.800	0.429	0.086
25	n/a	4	12	n/a	n/a	n/a	n/a
26	1	1	1	1.000	0.000	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	7	11	0.143	0.857	0.400	0.057
31	2	3	5	0.667	0.333	0.667	0.444
32	1	2	4	0.500	0.500	0.667	0.333
33	2	7	7	0.286	0.714	0.000	0.000
34	3	5	8	0.600	0.400	0.600	0.360
35	n/a	4	9	n/a	n/a	n/a	n/a
36	1	1	3	1.000	0.000	1.000	1.000
37	n/a	5	14	n/a	n/a	n/a	n/a
38	n/a	6	8	n/a	n/a	n/a	n/a
39	n/a	4	8	n/a	n/a	n/a	n/a
40	1	6	6	0.167	0.833	0.000	0.000
41	3	5	6	0.600	0.400	0.333	0.200
42	3	8	12	0.375	0.625	0.444	0.167
43	2	2	3	1.000	0.000	1.000	1.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0

49	n/a	6	6	n/a	n/a	n/a	n/a
50	n/a	9	22	n/a	n/a	n/a	n/a
51	n/a	3	3	n/a	n/a	n/a	n/a
52	n/a	9	12	n/a	n/a	n/a	n/a
53	1	5	7	0.200	0.800	0.333	0.067
54	3	3	4	1.000	0.000	1.000	1.000
55	3	5	8	0.600	0.400	0.600	0.360
56	2	4	7	0.500	0.500	0.600	0.300
57	2	3	7	0.667	0.333	0.800	0.533
58	2	12	16	0.167	0.833	0.286	0.048
59	1	5	8	0.200	0.800	0.429	0.086
60	n/a	4	5	n/a	n/a	n/a	n/a
61	1	2	12	0.500	0.500	0.909	0.455
62	1	2	5	0.500	0.500	0.750	0.375
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	4	6	0.250	0.750	0.400	0.100
65	2	3	4	0.667	0.333	0.500	0.333
66	1	4	4	0.250	0.750	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	6	10	0.167	0.833	0.444	0.074
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	3	4	6	0.750	0.250	0.667	0.500

----Optimisation des caractères sur l'arbre de consensus en DELTRAN

```
Tree length = 332
Consistency index (CI) = 0.417
Homoplasy index (HI) = 0.583
CI excluding uninformative characters = 0.407
HI excluding uninformative characters = 0.593
Retention index (RI) = 0.469
Rescaled consistency index (RC) = 0.196
   (above indices do not include stepmatrix characters)
f value = 2022
f-ratio = 0.4625
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```





Possible character-state assignments to internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node                123456789012345678901234567890123456789012345678901234567890123456789
-------------------------------------------------------------------------------------------
38                  00501003000001001111001001110111030000?1201000000001000111
                         1             2            1                       1  2
39                  00000102000000001001001001110?1?03000001122100000000100?111
                         2   1       1                                       2
                             3
40                  10000102000010000001101001110110021100011001000000000002020
                         22          1               3   12              3  1
41                  10000102000010000001101001110110031100?1001000000001302001
                         2           1                   12                  12
42                  10000102000010000001101001110110031100011001000000001002001
                         2           1                   12              3  12
43                  20000102000000000001101001110?1?031?000110011000000001002001
                         2           1                                       2
44                  ?000010200000000000110100111011?031?000110010000000010020?1
                         2           1                                       1
45                  00000102000000001001001001110?1?03000001120100000000100?111
                         2           1                                       2
46                  00000002000000001111001001110111030000011201000000001000111
                         1                                                   2
47                  00000002000000003111001101110111010000011201000000001000121
                         1
48                  00000112010000003112001111110111010000011201000000001000121
                                                                             1
49                  00000112010000003112001121110111010000011201000000001010021
50                  00000110010000003012001121110111010000011201000000001010?1
51                  00000110000000001012001121110?11010000011201000000001010?1
52                  00021110011200161012?113111001101001011220100000100101?011
                       3          2                                        2
53                  00011110000200151012?102111001101001011220100000100101?011
                       2     1   4 6        3                         1
                             2
54                  00131100010015270003001021110001010022010001000007?30010001
                      2  22      7  12                  43  2 3  4  38
                                 3
55                  00120100000005070013001021110001010022010001000007030010001
                      2   2      7  12                      2
                                 3
56                  00120120000005071012001021110001010020?2201000007001010011
                                7   2                                  4  1
57                  00010110000000051012001021110011010010112201000000001010011
                       2         4 6                                     1
58                  00000110000000001012001021110011010000011201000000001010?1
59                  00000111000000000002001021110011020000011201000000001010000
                                1            2                          1
```

Possible character-state assignments to internal nodes (continued)

```
                    666666666677777
```

```
Node             012345678901234
---------------------------------
38               21110?111000000
                             11
                              3
39               01010?1110000?0
                 1             1
                               3
40               21?10210?000022
                               3
41               21?112101000023
42               21?102101000023
43               21?1021?1000113
44               21?1021?1000?3
45               21?10?111000?0
                               1
                               3
46               21110?111000000
                               1
                               3
47               21110?111000001
48               21110?111000001
49               21110?111000001
50               2??10?11??00001
51               2??10?11??00001
52               100110110?00001
                 2    1
53               200100110?00001
                      1
54               200100110?00001
                      1       2
55               200100110?00001
                      1
56               200100110?00001
                      1
57               200100110?00001
                      1
58               20010?110?00001
59               20010?110?00001

Reconstructed states for internal nodes

                          1111111111222222222233333333334444444444555555555
Node             1234567890123456789012345678901234567890123456789012345678
-----------------------------------------------------------------------------
38               0050110300000100111100100111011103000001120100000000001000121
39               0000010200000000011010010011101110300000112210000000001002121
40               1000010200001000001011010011101100311000110010000000000002120
41               1000010200001000001011010011101100311000110010000000001302121
42               1000010200001000001011010011101100311000110010000000001002121
43               2000010200000000001011010011101110310000110011000000001002021
44               0000010200000000001011010011101110310000110010000000001002121
45               0000010200000000011010010011101110300000112010000000001002121
46               0000010200000000011110010011101110300000112010000000001000121
47               0000010200000000311100110111011101000001120100000000001000121
48               0000011201000000311200111111011101000001120100000000001010121
49               0000011201000000311200112111011101000001120100000000001010021
50               0000011001000000301200112111011101000001120100000000001010001
51               0000011000000000101200112111001101000001120100000000001010001
52               0002111001120016101200113111001101001011220100000001001010011
53               0001111000020015101200102111001101001011220100000001001010011
54               0013112001001527100300102111000101002201200100000703001000 1
55               0012012000000507101300102111000101002201200100000703001000 1
56               0012012000000507101200102111000101002011220100000700101001 1
57               0001011000000005101200102111001101001011220100000000101001 1
58               0000011000000000101200102111001101000001120100000000101000 1
59               0000011100000000000200102111001102000001120100000000101000 0
```

Reconstructed states for internal nodes (continued)

Node	666666666677777 012345678901234
38	211100111000001
39	110100111000001
40	211102101000023
41	211112101000023
42	211102101000023
43	211102111000113
44	211102111000003
45	211100111000001
46	211100111000001
47	211100111000001
48	211100111000001
49	211100111000001
50	200100110000001
51	200100110000001
52	200110110000001
53	200100110000001
54	200100110000001
55	200100110000001
56	200100110000001
57	200100110000001
58	200100110000001
59	200100110000001

Character change lists:

Character	CI	Steps	Changes
1	0.667	1	node_44 0 --> 1 node_42
		1	node_44 0 --> 2 node_43
		1	node_51 0 ==> 1 Amphilestes
2	0.333	1	node_40 0 ==> 1 Haramiyavia
		1	node_41 0 ==> 1 Arboroharamiya
		1	node_43 0 ==> 1 Rugosodon
3	n/a	1	node_46 0 ==> 5 node_38
		1	node_57 0 ==> 1 node_56
		1	node_55 1 --> 2 Delsatia
		1	node_54 1 --> 2 Asfaltomylos
		1	node_56 1 ==> 2 Shuotherium
4	n/a	1	node_41 0 ==> 1 Arboroharamiya
		1	node_58 0 ==> 1 node_57
		1	node_53 1 --> 2 node_52
		1	node_52 2 --> 3 Castorocauda
		1	node_57 1 --> 2 node_56
		1	node_55 2 ==> 3 node_54
		1	node_54 3 ==> 2 Ambondro
		1	node_54 3 ==> 46 Dryolestes
5	n/a	1	node_46 0 ==> 1 node_38
		1	node_57 0 ==> 1 node_53
		1	node_55 0 ==> 1 node_54
6	0.222	1	node_46 1 --> 0 Brasilitherium
		1	node_38 1 --> 0 Brachyzostrodon
		1	node_43 1 --> 2 Rugosodon
		1	node_46 1 --> 0 Hallautherium
		1	node_47 1 --> 0 Megazostrodon
		1	node_56 1 ==> 2 Woutersia
		1	node_54 1 --> 2 Ambondro
		1	node_54 1 --> 2 Asfaltomylos
		1	node_54 1 ==> 0 Dryolestes
7	0.500	1	node_48 1 ==> 0 node_47
		1	node_40 0 --> 2 Thomasia
		1	node_57 1 ==> 2 node_56
		1	node_55 2 --> 0 Delsatia
8	0.300	1	node_59 1 ==> 0 node_58

		1	node_50 0 ==> 2 node_49
		1	node_46 2 ==> 3 node_38
		1	node_41 2 ==> 0 Arboroharamiya
		1	node_47 2 ==> 3 Megazostrodon
		1	node_48 2 ==> 1 Dinnetherium
		1	node_52 0 ==> 1 Castorocauda
		1	node_53 0 ==> 3 Fluctuodon
		1	node_56 0 ==> 3 Kuehneotherium
		1	node_54 0 ==> 3 Asfaltomylos
9	0.667	1	node_41 0 ==> 1 Arboroharamiya
		1	node_52 0 ==> 2 Haldanodon
		1	node_56 0 ==> 2 Woutersia
10	0.375	1	node_51 0 ==> 1 node_50
		1	node_48 1 ==> 0 node_47
		1	node_39 0 --> 13 Purbeckodon
		1	node_53 0 --> 1 node_52
		1	node_53 0 --> 2 Fluctuodon
		1	node_55 0 ==> 1 node_54
		1	node_54 1 ==> 3 Dryolestes
		1	node_56 0 ==> 1 Shuotherium
11	0.500	1	node_38 0 ==> 1 Paceyodon
		1	node_53 0 ==> 1 node_52
12	0.750	1	node_38 0 ==> 1 Paceyodon
		1	node_57 0 ==> 2 node_53
		1	node_52 2 ==> 1 Castorocauda
		1	node_54 0 ==> 3 Dryolestes
13	n/a	1	node_38 0 ==> 1 Brachyzostrodon
		1	node_38 0 ==> 4 Paceyodon
		1	node_44 0 ==> 1 node_42
		1	node_40 1 ==> 2 Haramiyavia
		1	node_55 0 ==> 1 node_54
		1	node_54 1 ==> 2 Asfaltomylos
		1	node_54 1 ==> 0 Amphitherium
14	n/a	1	node_46 0 ==> 1 node_38
		1	node_52 0 ==> 12 Haldanodon
		1	node_53 0 --> 4 Fluctuodon
		2	node_57 0 ==> 5 node_56
		1	node_56 5 ==> 4 Woutersia
		2	node_55 5 --> 7 Delsatia
		2	node_54 5 --> 7 Asfaltomylos
		2	node_54 5 --> 7 Amphitherium
		2	node_56 5 --> 7 Shuotherium
		2	node_56 5 --> 7 Zhangheotherium
15	n/a	1	node_40 0 ==> 1 Haramiyavia
		1	node_57 0 ==> 1 node_53
		2	node_52 1 ==> 3 Castorocauda
		2	node_55 0 ==> 2 node_54
		1	node_54 2 ==> 3 Dryolestes
16	n/a	1	node_40 0 ==> 4 Haramiyavia
		2	node_58 0 ==> 5 node_57
		1	node_53 5 --> 6 node_52
		1	node_52 6 ==> 7 Haldanodon
		2	node_57 5 ==> 7 node_56
17	0.333	1	node_59 0 --> 1 node_58
		1	node_51 1 ==> 3 node_50
		1	node_47 3 ==> 1 node_46
		1	node_38 1 ==> 0 Brachyzostrodon
		1	node_45 1 ==> 0 node_44
		1	node_46 1 ==> 0 Hallautherium
		1	node_56 1 ==> 2 Woutersia
		1	node_55 1 --> 0 Delsatia
		1	node_59 0 --> 1 Priacodon
18	0.600	1	node_50 0 ==> 1 node_49
		1	node_39 1 --> 0 Purbeckodon
		1	node_56 0 --> 2 Kuehneotherium
		1	node_54 0 --> 2 Ambondro
		1	node_54 0 --> 3 Asfaltomylos
19	0.250	1	node_59 0 ==> 1 node_58

		1	node_46 1 ==> 0 node_45
		1	node_55 1 ==> 0 node_54
		1	node_54 0 ==> 1 Ambondro
20	n/a	1	node_48 2 ==> 1 node_47
		1	node_46 1 ==> 0 Brasilitherium
		1	node_38 1 --> 2 Paceyodon
		1	node_46 1 ==> 0 Hallautherium
		1	node_52 2 ==> 1 Castorocauda
		1	node_56 2 ==> 1 Woutersia
		1	node_56 2 ==> 3 node_55
21	0.167	1	node_45 0 ==> 1 node_44
		1	node_41 1 ==> 0 Arboroharamiya
		1	node_48 0 ==> 1 Dinnetherium
		1	node_55 0 ==> 1 Delsatia
		1	node_54 0 ==> 1 Ambondro
		1	node_56 0 ==> 1 Shuotherium
22	0.143	1	node_46 0 ==> 1 Brasilitherium
		1	node_48 0 ==> 1 Dinnetherium
		1	node_52 0 --> 1 Castorocauda
		1	node_53 0 --> 1 Fluctuodon
		1	node_56 0 ==> 1 Kuehneotherium
		1	node_54 0 ==> 1 Ambondro
		1	node_56 0 ==> 1 Shuotherium
23	1.000	1	node_56 1 ==> 2 Shuotherium
24	0.200	1	node_58 0 ==> 1 node_51
		1	node_47 1 ==> 0 node_46
		1	node_46 0 ==> 1 Brasilodon
		1	node_53 0 ==> 1 node_52
		1	node_56 0 ==> 1 Woutersia
25	n/a	1	node_49 2 ==> 1 node_48
		1	node_48 1 ==> 0 node_47
		1	node_46 0 ==> 4 Brasilitherium
		1	node_53 2 --> 3 node_52
26	1.000	1	node_46 1 ==> 0 Brasilodon
27	1.000	1	node_41 1 ==> 0 Arboroharamiya
28	1.000	1	node_41 1 ==> 2 Arboroharamiya
		1	node_43 1 ==> 0 Sinobaatar
29	0.500	1	node_41 0 ==> 1 Arboroharamiya
		1	node_43 0 ==> 1 Rugosodon
30	0.143	1	node_51 0 --> 1 node_50
		1	node_46 1 ==> 0 Brasilodon
		1	node_46 1 ==> 0 Brasilitherium
		1	node_52 0 ==> 1 Castorocauda
		1	node_56 0 ==> 1 Woutersia
		1	node_55 0 ==> 1 Delsatia
		1	node_59 0 ==> 1 Priacodon
31	0.667	1	node_48 1 ==> 0 Dinnetherium
		1	node_57 1 ==> 0 node_56
		1	node_59 1 --> 2 Priacodon
32	0.500	1	node_44 1 --> 0 node_42
		1	node_43 1 --> 0 Sinobaatar
33	0.286	1	node_38 0 --> 1 Brachyzostrodon
		1	node_48 0 ==> 1 Dinnetherium
		1	node_51 0 ==> 1 Amphilestes
		1	node_56 0 ==> 1 Woutersia
		1	node_56 0 ==> 1 Shuotherium
		1	node_56 0 ==> 2 Zhangheotherium
		1	node_59 0 ==> 1 Priacodon
34	0.600	1	node_59 2 ==> 1 node_58
		1	node_47 1 ==> 3 node_46
		1	node_46 3 ==> 2 Brasilitherium
		1	node_40 3 --> 2 Haramiyavia
		1	node_43 3 ==> 0 Sinobaatar
35	n/a	1	node_45 0 ==> 1 node_44
		1	node_40 1 ==> 2 Haramiyavia
		1	node_41 1 ==> 2 Theroteinus
		1	node_43 1 ==> 2 Sinobaatar
36	1.000	1	node_44 0 --> 1 node_42

37	n/a	1	node_39 0 ==> 1 Paikasigudodon
		1	node_58 0 ==> 1 node_57
		1	node_57 1 ==> 2 node_56
		2	node_54 2 --> 46 Dryolestes
38	n/a	1	node_39 0 ==> 1 Paikasigudodon
		1	node_41 0 --> 12 Theroteinus
		1	node_56 0 ==> 1 Kuehneotherium
		2	node_56 0 ==> 2 node_55
		1	node_54 2 --> 3 Dryolestes
39	n/a	1	node_39 0 ==> 2 Paikasigudodon
		1	node_41 0 --> 2 Theroteinus
		1	node_58 0 ==> 1 node_57
		1	node_56 1 ==> 0 node_55
40	0.167	1	node_38 1 --> 0 Brachyzostrodon
		1	node_41 1 --> 0 Theroteinus
		1	node_48 1 ==> 0 Dinnetherium
		1	node_56 1 --> 0 Woutersia
		1	node_56 1 --> 0 Shuotherium
		1	node_56 1 --> 0 Zhangheotherium
41	0.600	1	node_39 1 ==> 0 Paikasigudodon
		1	node_58 1 ==> 2 node_57
		1	node_52 2 ==> 1 Helvetiodon
		1	node_56 2 ==> 3 Woutersia
		1	node_55 2 --> 0 Delsatia
42	0.375	1	node_39 2 ==> 3 Paikasigudodon
		1	node_45 2 ==> 0 node_44
		1	node_40 0 ==> 1 Thomasia
		1	node_43 0 ==> 1 Sinobaatar
		1	node_47 2 ==> 3 Megazostrodon
		1	node_49 2 ==> 1 Bridetherium
		1	node_56 2 ==> 3 Woutersia
		1	node_56 2 ==> 0 node_55
43	1.000	1	node_45 0 ==> 2 node_39
		1	node_54 0 --> 3 Dryolestes
45	1.000	1	node_44 0 ==> 1 node_43
46	0.750	1	node_39 0 ==> 1 Purbeckodon
		1	node_48 0 ==> 1 Dinnetherium
		1	node_56 0 ==> 3 Kuehneotherium
		1	node_54 0 --> 4 Dryolestes
47	0.500	1	node_39 0 ==> 1 Purbeckodon
		1	node_53 0 ==> 1 Fluctuodon
48	1.000	1	node_56 0 ==> 1 Woutersia
49	n/a	1	node_56 0 --> 4 Kuehneotherium
		3	node_54 0 --> 3 Dryolestes
		2	node_56 0 ==> 5 Shuotherium
50	n/a	2	node_47 0 ==> 2 Megazostrodon
		1	node_57 0 ==> 1 node_53
		1	node_52 1 ==> 2 Haldanodon
		4	node_57 0 ==> 7 node_56
		1	node_54 7 --> 89 Dryolestes
51	n/a	3	node_54 0 --> 6 Dryolestes
52	n/a	2	node_47 0 ==> 2 Megazostrodon
		1	node_53 0 --> 1 Fluctuodon
		2	node_56 0 ==> 2 Kuehneotherium
		3	node_56 0 ==> 3 node_55
		1	node_55 3 ==> 7 Delsatia
53	0.200	1	node_42 1 ==> 0 node_40
		1	node_48 1 ==> 0 Dinnetherium
		1	node_52 1 ==> 0 Haldanodon
		1	node_56 1 ==> 0 node_55
		1	node_56 1 ==> 0 Zhangheotherium
54	1.000	1	node_39 0 ==> 1 Paikasigudodon
		1	node_42 0 --> 3 node_41
		1	node_56 0 ==> 2 Woutersia
55	0.600	1	node_48 1 --> 0 node_47
		1	node_38 0 --> 1 Brachyzostrodon
		1	node_39 0 ==> 2 Purbeckodon
		1	node_41 0 ==> 3 Theroteinus

		1	node_52 1 --> 2 Helvetiodon
56	0.500	1	node_46 0 ==> 2 node_45
		1	node_52 0 --> 2 Helvetiodon
		1	node_53 0 --> 1 Fluctuodon
		1	node_56 0 ==> 1 Kuehneotherium
57	0.667	1	node_49 0 ==> 1 node_48
		1	node_44 1 --> 0 node_43
		1	node_52 0 ==> 2 Helvetiodon
58	0.167	1	node_50 0 --> 2 node_49
		1	node_46 2 --> 1 Brasilodon
		1	node_46 2 --> 1 Brasilitherium
		1	node_39 2 --> 1 Paikasigudodon
		1	node_41 2 --> 0 Arboroharamiya
		1	node_43 2 --> 0 Sinobaatar
		1	node_46 2 --> 1 Erythrotherium
		1	node_58 0 --> 1 node_57
		1	node_52 1 ==> 2 Haldanodon
		1	node_56 1 ==> 0 node_55
		1	node_56 1 ==> 2 Shuotherium
		1	node_59 0 --> 1 Priacodon
59	0.200	1	node_59 0 ==> 1 node_58
		1	node_46 1 ==> 0 Brasilodon
		1	node_46 1 ==> 0 Brasilitherium
		1	node_42 1 ==> 0 node_40
		1	node_56 1 ==> 0 Zhangheotherium
60	n/a	1	node_45 2 ==> 1 node_39
		1	node_39 1 --> 0 Paikasigudodon
		1	node_52 2 --> 1 Helvetiodon
		1	node_55 2 ==> 3 Delsatia
61	0.500	1	node_50 0 --> 1 node_49
		1	node_39 1 ==> 0 Purbeckodon
62	0.500	1	node_50 0 --> 1 node_49
		1	node_45 1 --> 0 node_39
64	0.250	1	node_42 0 ==> 1 node_41
		1	node_53 0 ==> 1 node_52
		1	node_56 0 ==> 1 Woutersia
		1	node_56 0 ==> 1 Shuotherium
65	0.667	1	node_45 0 --> 2 node_44
		1	node_52 0 --> 1 Haldanodon
		1	node_56 0 --> 1 Shuotherium
66	0.250	1	node_46 1 ==> 0 Brasilodon
		1	node_46 1 ==> 0 Brasilitherium
		1	node_39 1 ==> 0 Paikasigudodon
		1	node_41 1 ==> 0 Arboroharamiya
67	0.500	1	node_44 1 --> 0 node_42
		1	node_49 1 ==> 0 Bridetherium
68	0.167	1	node_50 0 --> 1 node_49
		1	node_46 1 ==> 0 Brasilodon
		1	node_46 1 ==> 0 Brasilitherium
		1	node_40 1 --> 0 Haramiyavia
		1	node_56 0 ==> 1 Woutersia
		1	node_59 0 ==> 1 Priacodon
69	1.000	1	node_56 0 --> 1 Woutersia
70	0.500	1	node_40 0 ==> 1 Thomasia
		1	node_41 0 ==> 1 Theroteinus
71	0.500	1	node_41 0 ==> 1 Theroteinus
		1	node_43 0 ==> 1 Rugosodon
72	1.000	1	node_44 0 ==> 1 node_43
73	0.400	1	node_38 0 --> 1 Brachyzostrodon
		1	node_44 0 --> 2 node_42
		1	node_44 0 --> 1 node_43
		1	node_49 0 ==> 1 Bridetherium
		1	node_54 0 --> 2 Dryolestes
74	0.750	1	node_46 1 --> 0 Brasilodon
		1	node_45 1 --> 3 node_44
		1	node_40 3 --> 2 Haramiyavia
		1	node_56 1 ==> 2 Zhangheotherium

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_59 --> node_58	8	1	0.300	1 ==> 0
	17	1	0.333	0 --> 1
	19	1	0.250	0 ==> 1
	34	1	0.600	2 ==> 1
	59	1	0.200	0 ==> 1
node_58 --> node_51	24	1	0.200	0 ==> 1
node_51 --> node_50	10	1	0.375	0 ==> 1
	17	1	0.333	1 ==> 3
	30	1	0.143	0 --> 1
node_50 --> node_49	8	1	0.300	0 ==> 2
	18	1	0.600	0 ==> 1
	58	1	0.167	0 --> 2
	61	1	0.500	0 --> 1
	62	1	0.500	0 --> 1
	68	1	0.167	0 --> 1
node_49 --> node_48	25	1	n/a	2 ==> 1
	57	1	0.667	0 ==> 1
node_48 --> node_47	7	1	0.500	1 ==> 0
	10	1	0.375	1 ==> 0
	20	1	n/a	2 ==> 1
	25	1	n/a	1 ==> 0
	55	1	0.600	1 --> 0
node_47 --> node_46	17	1	0.333	3 ==> 1
	24	1	0.200	1 ==> 0
	34	1	0.600	1 ==> 3
node_46 --> Brasilodon	24	1	0.200	0 ==> 1
	26	1	1.000	1 ==> 0
	30	1	0.143	1 ==> 0
	58	1	0.167	2 --> 1
	59	1	0.200	1 ==> 0
	66	1	0.250	1 ==> 0
	68	1	0.167	1 ==> 0
	74	1	0.750	1 --> 0
node_46 --> Brasilitherium	6	1	0.222	1 --> 0
	20	1	n/a	1 ==> 0
	22	1	0.143	0 ==> 1
	25	1	n/a	0 ==> 4
	30	1	0.143	1 ==> 0
	34	1	0.600	3 ==> 2
	58	1	0.167	2 --> 1
	59	1	0.200	1 ==> 0
	66	1	0.250	1 ==> 0
	68	1	0.167	1 ==> 0
node_46 --> node_38	3	1	n/a	0 ==> 5
	5	1	n/a	0 ==> 1
	8	1	0.300	2 ==> 3
	14	1	n/a	0 ==> 1
node_38 --> Brachyzostrodon	6	1	0.222	1 --> 0
	13	1	n/a	0 ==> 1
	17	1	0.333	1 ==> 0
	33	1	0.286	0 --> 1
	40	1	0.167	1 --> 0
	55	1	0.600	0 --> 1
	73	1	0.400	0 --> 1
node_38 --> Paceyodon	11	1	0.500	0 ==> 1
	12	1	0.750	0 ==> 1
	13	1	n/a	0 ==> 4
	20	1	n/a	1 --> 2
node_46 --> node_45	19	1	0.250	1 ==> 0
	56	1	0.500	0 ==> 2
node_45 --> node_39	43	1	1.000	0 ==> 2
	60	1	n/a	2 ==> 1
	62	1	0.500	1 --> 0
node_39 --> Paikasigudodon	37	1	n/a	0 ==> 1

	38	1	n/a	0	==>	1
	39	1	n/a	0	==>	2
	41	1	0.600	1	==>	0
	42	1	0.375	2	==>	3
	54	1	1.000	0	==>	1
	58	1	0.167	2	-->	1
	60	1	n/a	1	-->	0
	66	1	0.250	1	==>	0
node_39 --> Purbeckodon	10	1	0.375	0	-->	13
	18	1	0.600	1	-->	0
	46	1	0.750	0	==>	1
	47	1	0.500	0	==>	1
	55	1	0.600	0	==>	2
	61	1	0.500	1	==>	0
node_45 --> node_44	17	1	0.333	1	==>	0
	21	1	0.167	0	==>	1
	35	1	n/a	0	==>	1
	42	1	0.375	2	==>	0
	65	1	0.667	0	-->	2
	74	1	0.750	1	-->	3
node_44 --> node_42	1	1	0.667	0	-->	1
	13	1	n/a	0	==>	1
	32	1	0.500	1	-->	0
	36	1	1.000	0	-->	1
	67	1	0.500	1	-->	0
	73	1	0.400	0	-->	2
node_42 --> node_40	53	1	0.200	1	==>	0
	59	1	0.200	1	==>	0
node_40 --> Thomasia	7	1	0.500	0	-->	2
	42	1	0.375	0	==>	1
	70	1	0.500	0	==>	1
node_40 --> Haramiyavia	2	1	0.333	0	==>	1
	13	1	n/a	1	==>	2
	15	1	n/a	0	==>	1
	16	1	n/a	0	==>	4
	34	1	0.600	3	-->	2
	35	1	n/a	1	==>	2
	68	1	0.167	1	-->	0
	74	1	0.750	3	-->	2
node_42 --> node_41	54	1	1.000	0	-->	3
	64	1	0.250	0	==>	1
node_41 --> Theroteinus	35	1	n/a	1	==>	2
	38	1	n/a	0	-->	12
	39	1	n/a	0	-->	2
	40	1	0.167	1	-->	0
	55	1	0.600	0	==>	3
	70	1	0.500	0	==>	1
	71	1	0.500	0	==>	1
node_41 --> Arboroharamiya	2	1	0.333	0	==>	1
	4	1	n/a	0	==>	1
	8	1	0.300	2	==>	0
	9	1	0.667	0	==>	1
	21	1	0.167	1	==>	0
	27	1	1.000	1	==>	0
	28	1	1.000	1	==>	2
	29	1	0.500	0	==>	1
	58	1	0.167	2	-->	0
	66	1	0.250	1	==>	0
node_44 --> node_43	1	1	0.667	0	-->	2
	45	1	1.000	0	==>	1
	57	1	0.667	1	-->	0
	72	1	1.000	0	==>	1
	73	1	0.400	0	-->	1
node_43 --> Rugosodon	2	1	0.333	0	==>	1
	6	1	0.222	1	-->	2
	29	1	0.500	0	==>	1
	71	1	0.500	0	==>	1
node_43 --> Sinobaatar	28	1	1.000	1	==>	0

	32	1	0.500	1	-->	0
	34	1	0.600	3	==>	0
	35	1	n/a	1	==>	2
	42	1	0.375	0	==>	1
	58	1	0.167	2	-->	0
node_46 --> Erythrotherium	58	1	0.167	2	-->	1
node_46 --> Hallautherium	6	1	0.222	1	-->	0
	17	1	0.333	1	==>	0
	20	1	n/a	1	==>	0
node_47 --> Megazostrodon	6	1	0.222	1	-->	0
	8	1	0.300	2	==>	3
	42	1	0.375	2	==>	3
	50	2	n/a	0	==>	2
	52	2	n/a	0	==>	2
node_48 --> Dinnetherium	8	1	0.300	2	==>	1
	21	1	0.167	0	==>	1
	22	1	0.143	0	==>	1
	31	1	0.667	1	==>	0
	33	1	0.286	0	==>	1
	40	1	0.167	1	==>	0
	46	1	0.750	0	==>	1
	53	1	0.200	1	==>	0
node_49 --> Bridetherium	42	1	0.375	2	==>	1
	67	1	0.500	1	==>	0
	73	1	0.400	0	==>	1
node_51 --> Amphilestes	1	1	0.667	0	==>	1
	33	1	0.286	0	==>	1
node_58 --> node_57	4	1	n/a	0	==>	1
	16	2	n/a	0	==>	5
	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	41	1	0.600	1	==>	2
	58	1	0.167	0	-->	1
node_57 --> node_53	5	1	n/a	0	==>	1
	12	1	0.750	0	==>	2
	15	1	n/a	0	==>	1
	50	1	n/a	0	==>	1
node_53 --> node_52	4	1	n/a	1	-->	2
	10	1	0.375	0	-->	1
	11	1	0.500	0	==>	1
	16	1	n/a	5	-->	6
	24	1	0.200	0	==>	1
	25	1	n/a	2	-->	3
	64	1	0.250	0	==>	1
node_52 --> Helvetiodon	41	1	0.600	2	==>	1
	55	1	0.600	1	-->	2
	56	1	0.500	0	-->	2
	57	1	0.667	0	==>	2
	60	1	n/a	2	-->	1
node_52 --> Castorocauda	4	1	n/a	2	-->	3
	8	1	0.300	0	==>	1
	12	1	0.750	2	==>	1
	15	2	n/a	1	==>	3
	20	1	n/a	2	==>	1
	22	1	0.143	0	-->	1
	30	1	0.143	0	==>	1
node_52 --> Haldanodon	9	1	0.667	0	==>	2
	14	1	n/a	0	==>	12
	16	1	n/a	6	==>	7
	50	1	n/a	1	==>	2
	53	1	0.200	1	==>	0
	58	1	0.167	1	==>	2
	65	1	0.667	0	-->	1
node_53 --> Fluctuodon	8	1	0.300	0	==>	3
	10	1	0.375	0	-->	2
	14	1	n/a	0	-->	4
	22	1	0.143	0	-->	1
	47	1	0.500	0	==>	1

	52	1	n/a	0	-->	1
	56	1	0.500	0	-->	1
node_57 --> node_56	3	1	n/a	0	==>	1
	4	1	n/a	1	-->	2
	7	1	0.500	1	==>	2
	14	2	n/a	0	==>	5
	16	2	n/a	5	==>	7
	31	1	0.667	1	==>	0
	37	1	n/a	1	==>	2
	50	4	n/a	0	==>	7
node_56 --> Kuehneotherium	8	1	0.300	0	==>	3
	18	1	0.600	0	-->	2
	22	1	0.143	0	==>	1
	38	1	n/a	0	==>	1
	46	1	0.750	0	==>	3
	49	1	n/a	0	-->	4
	52	2	n/a	0	==>	2
	56	1	0.500	0	==>	1
node_56 --> Woutersia	6	1	0.222	1	==>	2
	9	1	0.667	0	==>	2
	14	1	n/a	5	==>	4
	17	1	0.333	1	==>	2
	20	1	n/a	2	==>	1
	24	1	0.200	0	==>	1
	30	1	0.143	0	==>	1
	33	1	0.286	0	==>	1
	40	1	0.167	1	-->	0
	41	1	0.600	2	==>	3
	42	1	0.375	2	==>	3
	48	1	1.000	0	==>	1
	54	1	1.000	0	==>	2
	64	1	0.250	0	==>	1
	68	1	0.167	0	==>	1
	69	1	1.000	0	-->	1
node_56 --> node_55	20	1	n/a	2	==>	3
	38	2	n/a	0	==>	2
	39	1	n/a	1	==>	0
	42	1	0.375	2	==>	0
	52	3	n/a	0	==>	3
	53	1	0.200	1	==>	0
	58	1	0.167	1	==>	0
node_55 --> Delsatia	3	1	n/a	1	-->	2
	7	1	0.500	2	-->	0
	14	2	n/a	5	-->	7
	17	1	0.333	1	-->	0
	21	1	0.167	0	==>	1
	30	1	0.143	0	==>	1
	41	1	0.600	2	-->	0
	52	1	n/a	3	==>	7
	60	1	n/a	2	==>	3
node_55 --> node_54	4	1	n/a	2	==>	3
	5	1	n/a	0	==>	1
	10	1	0.375	0	==>	1
	13	1	n/a	0	==>	1
	15	2	n/a	0	==>	2
	19	1	0.250	1	==>	0
node_54 --> Ambondro	4	1	n/a	3	==>	2
	6	1	0.222	1	-->	2
	18	1	0.600	0	-->	2
	19	1	0.250	0	==>	1
	21	1	0.167	0	==>	1
	22	1	0.143	0	==>	1
node_54 --> Asfaltomylos	3	1	n/a	1	-->	2
	6	1	0.222	1	-->	2
	8	1	0.300	0	==>	3
	13	1	n/a	1	==>	2
	14	2	n/a	5	-->	7
	18	1	0.600	0	-->	3

node_54 --> Amphitherium	13	1	n/a	1	==>	0
	14	2	n/a	5	-->	7
node_54 --> Dryolestes	4	1	n/a	3	==>	46
	6	1	0.222	1	==>	0
	10	1	0.375	1	==>	3
	12	1	0.750	0	==>	3
	15	1	n/a	2	==>	3
	37	2	n/a	2	-->	46
	38	1	n/a	2	-->	3
	43	1	1.000	0	-->	3
	46	1	0.750	0	-->	4
	49	3	n/a	0	-->	3
	50	1	n/a	7	-->	89
	51	3	n/a	0	-->	6
	73	1	0.400	0	-->	2
node_56 --> Shuotherium	3	1	n/a	1	==>	2
	10	1	0.375	0	==>	1
	14	2	n/a	5	-->	7
	21	1	0.167	0	==>	1
	22	1	0.143	0	==>	1
	23	1	1.000	1	==>	2
	33	1	0.286	0	==>	1
	40	1	0.167	1	-->	0
	49	2	n/a	0	==>	5
	58	1	0.167	1	==>	2
	64	1	0.250	0	==>	1
	65	1	0.667	0	-->	1
node_56 --> Zhangheotherium	14	2	n/a	5	-->	7
	33	1	0.286	0	==>	2
	40	1	0.167	1	-->	0
	53	1	0.200	1	==>	0
	59	1	0.200	1	==>	0
	74	1	0.750	1	==>	2
node_59 --> Priacodon	17	1	0.333	0	-->	1
	30	1	0.143	0	==>	1
	31	1	0.667	1	-->	2
	33	1	0.286	0	==>	1
	58	1	0.167	0	-->	1
	68	1	0.167	0	==>	1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	n/a	5	13	n/a	n/a	n/a	n/a
4	n/a	8	25	n/a	n/a	n/a	n/a
5	n/a	3	8	n/a	n/a	n/a	n/a
6	2	9	9	0.222	0.778	0.000	0.000
7	2	4	9	0.500	0.500	0.714	0.357
8	3	10	18	0.300	0.700	0.533	0.160
9	2	3	3	0.667	0.333	0.000	0.000
10	3	8	11	0.375	0.625	0.375	0.141
11	1	2	3	0.500	0.500	0.500	0.250
12	3	4	5	0.750	0.250	0.500	0.375
13	n/a	7	10	n/a	n/a	n/a	n/a
14	n/a	16	29	n/a	n/a	n/a	n/a
15	n/a	7	15	n/a	n/a	n/a	n/a
16	n/a	7	39	n/a	n/a	n/a	n/a
17	3	9	16	0.333	0.667	0.538	0.179
18	3	5	8	0.600	0.400	0.600	0.360
19	1	4	12	0.250	0.750	0.727	0.182
20	n/a	7	11	n/a	n/a	n/a	n/a
21	1	6	9	0.167	0.833	0.375	0.062
22	1	7	7	0.143	0.857	0.000	0.000
23	1	1	1	1.000	0.000	0/0	0/0

24	1	5	8	0.200	0.800	0.429	0.086
25	n/a	4	12	n/a	n/a	n/a	n/a
26	1	1	1	1.000	0.000	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	7	11	0.143	0.857	0.400	0.057
31	2	3	5	0.667	0.333	0.667	0.444
32	1	2	4	0.500	0.500	0.667	0.333
33	2	7	7	0.286	0.714	0.000	0.000
34	3	5	8	0.600	0.400	0.600	0.360
35	n/a	4	9	n/a	n/a	n/a	n/a
36	1	1	3	1.000	0.000	1.000	1.000
37	n/a	5	14	n/a	n/a	n/a	n/a
38	n/a	6	8	n/a	n/a	n/a	n/a
39	n/a	4	8	n/a	n/a	n/a	n/a
40	1	6	6	0.167	0.833	0.000	0.000
41	3	5	6	0.600	0.400	0.333	0.200
42	3	8	12	0.375	0.625	0.444	0.167
43	2	2	3	1.000	0.000	1.000	1.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	n/a	6	6	n/a	n/a	n/a	n/a
50	n/a	9	22	n/a	n/a	n/a	n/a
51	n/a	3	3	n/a	n/a	n/a	n/a
52	n/a	9	12	n/a	n/a	n/a	n/a
53	1	5	7	0.200	0.800	0.333	0.067
54	3	3	4	1.000	0.000	1.000	1.000
55	3	5	8	0.600	0.400	0.600	0.360
56	2	4	7	0.500	0.500	0.600	0.300
57	2	3	7	0.667	0.333	0.800	0.533
58	2	12	16	0.167	0.833	0.286	0.048
59	1	5	8	0.200	0.800	0.429	0.086
60	n/a	4	5	n/a	n/a	n/a	n/a
61	1	2	12	0.500	0.500	0.909	0.455
62	1	2	5	0.500	0.500	0.750	0.375
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	4	6	0.250	0.750	0.400	0.100
65	2	3	4	0.667	0.333	0.500	0.333
66	1	4	4	0.250	0.750	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	6	10	0.167	0.833	0.444	0.074
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	3	4	6	0.750	0.250	0.667	0.500

--Matrice "molaire" avec "*Sinoconodon*" et caractères ordonnés

----*Buffer de l'analyse*

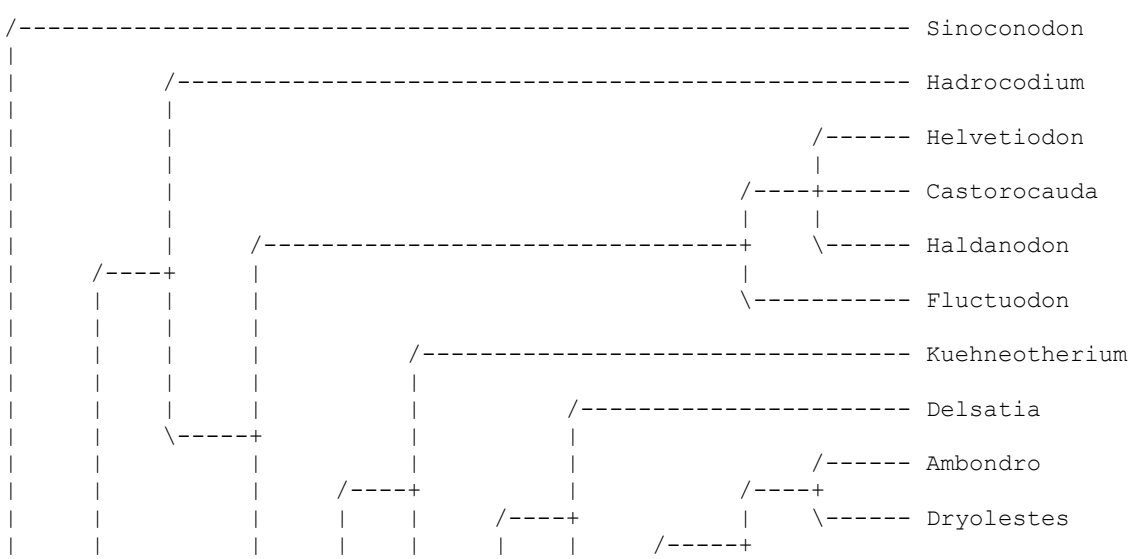
```
Data matrix has 34 taxa, 74 characters
Valid character-state symbols: 0123456789
Missing data identified by '?'
"Equate" macros in effect:
   N ==> ?

Heuristic search settings:
```

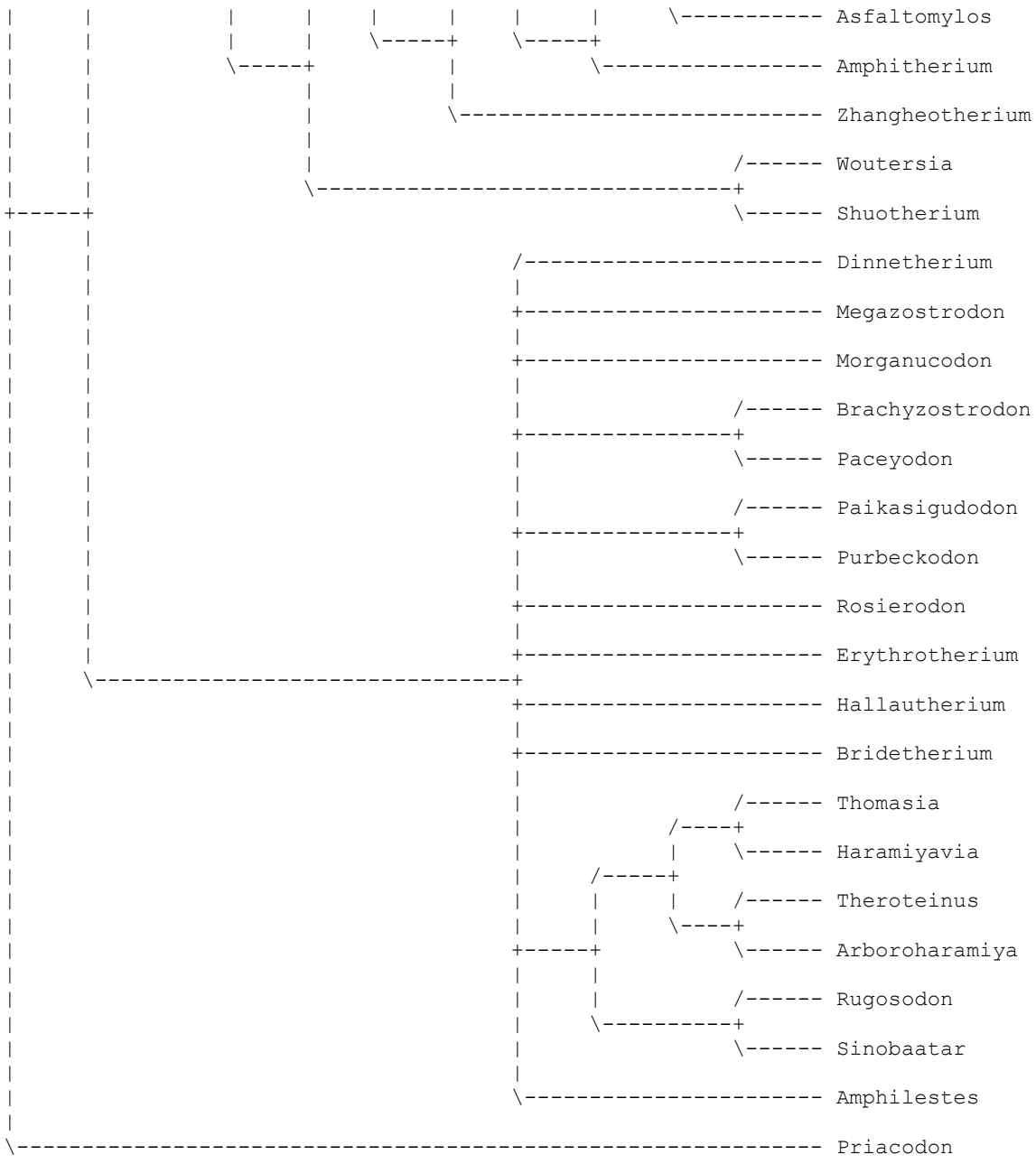
```
  Optimality criterion = parsimony
    Character-status summary:
      Of 74 total characters:
        56 characters are of type 'unord'
        2 characters are of user-defined type "a"
        2 characters are of user-defined type "b"
        2 characters are of user-defined type "c"
        4 characters are of user-defined type "d"
        1 character is of user-defined type "e"
        2 characters are of user-defined type "f"
        2 characters are of user-defined type "g"
        1 character is of user-defined type "h"
        1 character is of user-defined type "i"
        1 character is of user-defined type "j"
        All characters have equal weight
        3 characters are constant
        6 variable characters are parsimony-uninformative
        Number of parsimony-informative characters = 65
    Multistate taxa interpreted as uncertainty
  Starting tree(s) obtained via stepwise addition
  Addition sequence: random
    Number of replicates = 100
    Starting seed = 1761146851
  Number of trees held at each step during stepwise addition = 1
  Branch-swapping algorithm: tree-bisection-reconnection (TBR)
  Steepest descent option not in effect
  Initial 'MaxTrees' setting = 100 (will be auto-increased by 100)
  Branches collapsed (creating polytomies) if maximum branch length is zero
  'MulTrees' option in effect
  Topological constraints not enforced
  Trees are unrooted


Heuristic search completed
   Total number of rearrangements tried = 1743981023
   Score of best tree(s) found = 296
   Number of trees retained = 413
   Time used = 00:58:55.0

Tree-island profile:
                    First      Last                     First   Times
Island      Size     tree      tree        Score    replicate     hit
-------------------------------------------------------------------
     1       237        1       237          296            1      20
     2        27      238       264          296            2       1
     3        19      265       283          296            4       1
     4         1      284       284          296            5       1
     5         1      285       285          296            6       1
     6         1      286       286          296            7       1
     7         1      287       287          296            8       1
     8         8      288       295          296            9       1
     9         1      296       296          296           10       1
    10         1      297       297          296           11       1
    11         1      298       298          296           12       1
    12         1      299       299          296           13       1
    13        17      300       316          296           14       1
    14         1      317       317          296           15       1
    15         2      318       319          296           16       1
    16         1      320       320          296           17       1
    17         4      321       324          296           19       1
    18         1      325       325          296           20       1
    19         3      326       328          296           21       1
    20         4      329       332          296           22       1
    21         1      333       333          296           23       1
    22        11      334       344          296           24       1
    23         2      345       346          296           25       6
    24         1      347       347          296           26       1
    25         5      348       352          296           28       1
```

26	1	353	353	296	29	1
27	2	354	355	296	30	1
28	8	356	363	296	31	1
29	1	364	364	296	32	1
30	1	365	365	296	33	1
31	1	366	366	296	39	1
32	1	367	367	296	40	1
33	1	368	368	296	42	10
34	2	369	370	296	43	1
35	1	371	371	296	45	1
36	1	372	372	296	50	1
37	3	373	375	296	51	1
38	1	376	376	296	52	1
39	1	377	377	296	53	1
40	1	378	378	296	57	1
41	2	379	380	296	60	1
42	2	381	382	296	63	1
43	1	383	383	296	65	1
44	3	384	386	296	67	1
45	3	387	389	296	68	1
46	3	390	392	296	71	1
47	1	393	393	296	72	1
48	2	394	395	296	73	1
49	2	396	397	296	74	1
50	1	398	398	296	77	1
51	2	399	400	296	78	1
52	2	401	402	296	83	1
53	2	403	404	296	84	1
54	1	405	405	296	91	1
55	1	406	406	296	93	1
56	1	407	407	296	94	1
57	1	408	408	296	95	1
58	3	409	411	296	96	1
59	1	412	412	296	97	1
60	1	413	413	296	100	1
61	999	-	-	298	18	1
62	978	-	-	298	34	2*
63	971	-	-	298	36	1
64	970	-	-	298	44	1
65	683	-	-	301	79	1
66	30	-	-	302	76	1

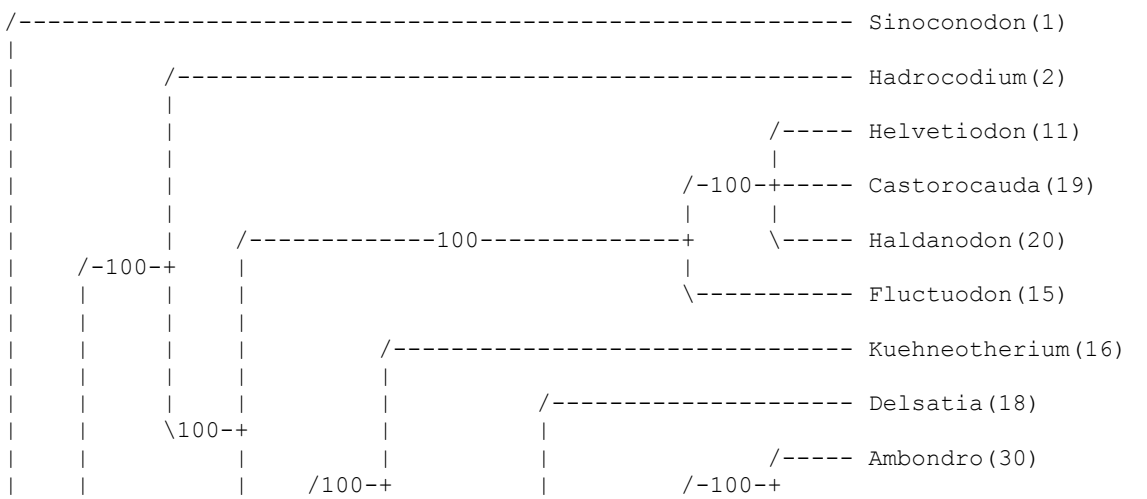
Note(s):
    * Multiple hits on islands of unsaved trees may in fact represent different islands

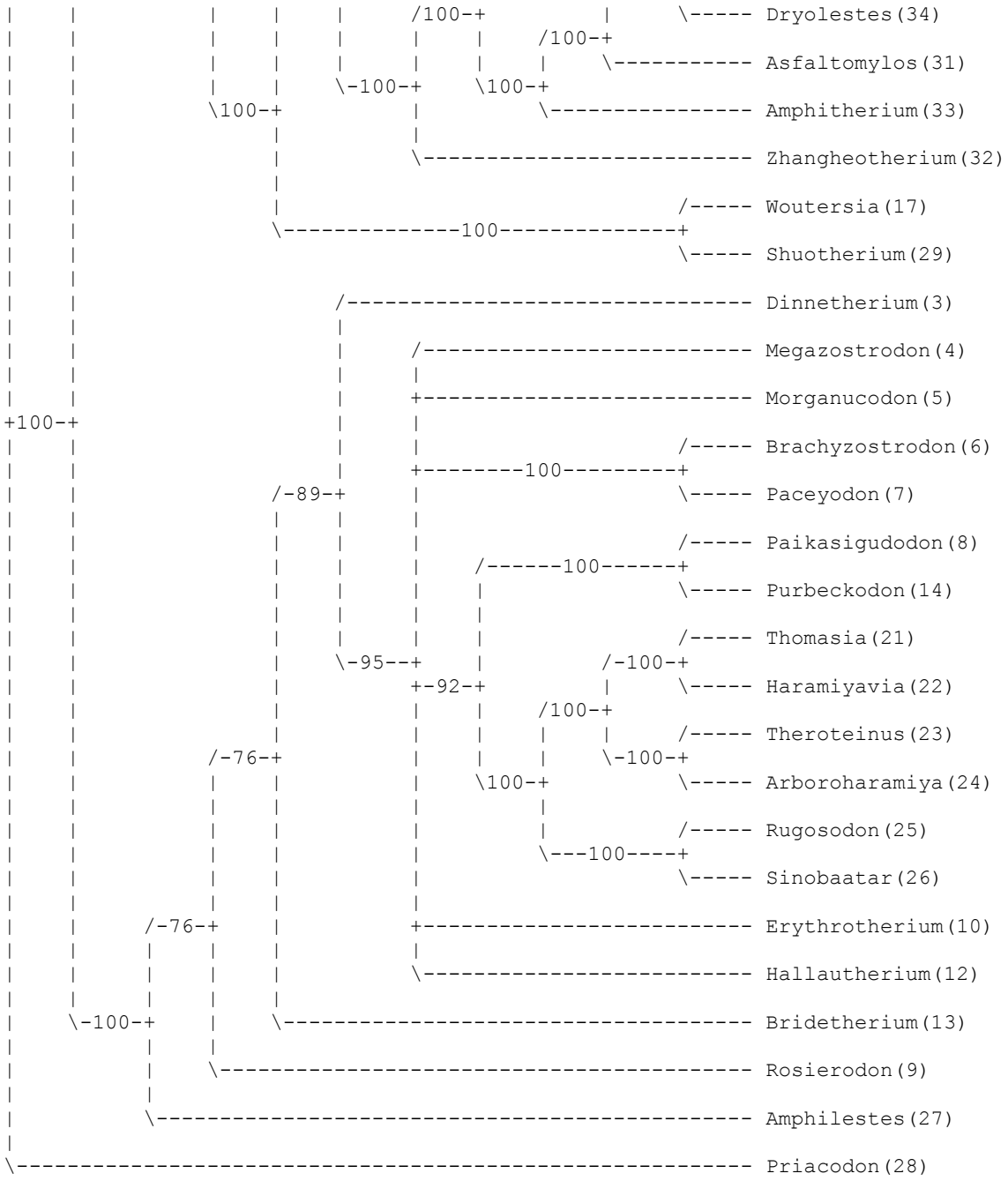
Strict consensus of 413 trees:





50% Majority-rule consensus of 413 trees



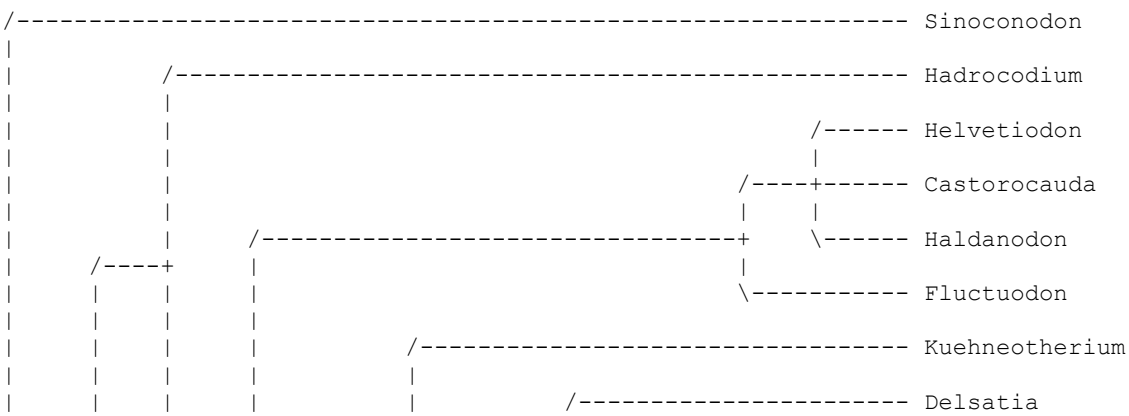


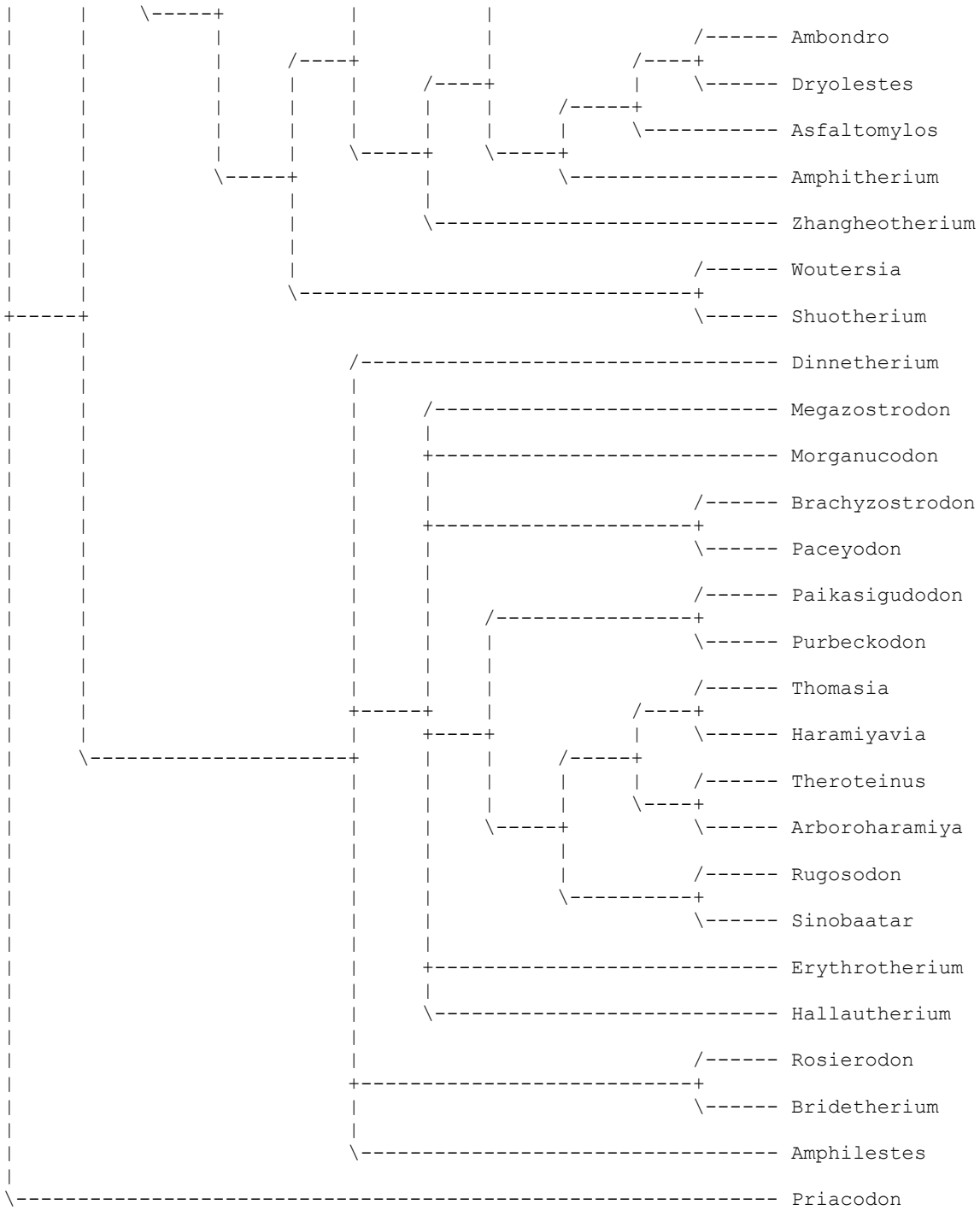
Bipartitions found in one or more trees and frequency of occurrence:

```
         1         2         3   3
12345678901234567890123456789012345      Freq      %
-----------------------------------------------------
.*************************.******       413 100.0%
.*........*...******........******       413 100.0%
..........*...******........******       413 100.0%
..........*...*...**.............       413 100.0%
..........*.......**.............       413 100.0%
..................*...........**.**       413 100.0%
................***...........******       413 100.0%
................*.*...........*****       413 100.0%
..................*...........*****       413 100.0%
................*...........*.....       413 100.0%
............................**.**       413 100.0%
............................**..*       413 100.0%
............................*...*       413 100.0%
```

```
.....**.........................       413 100.0%
..********.***......*******.....       413 100.0%
.......................**.......       413 100.0%
.........................**.....       413 100.0%
.....................******.....       413 100.0%
.....................****.......       413 100.0%
.....................**.........       413 100.0%
.......*.....*...................       413 100.0%
...*****.*.*.*......******.....       393  95.2%
.......*.....*......******.....       382  92.5%
..******.*.*.*......******.....       369  89.3%
..********.***......******.....       312  75.5%
..******.*.***......******.....       312  75.5%
..................**.............       181  43.8%
.....***...*.*......******.....       157  38.0%
...**..*.*.*.*......******.....       150  36.3%
.....***.*.*.*......******.....       123  29.8%
..........*.......*.............       120  29.1%
....*..*.*.*.*......******.....       117  28.3%
.......*.*...*......******.....       115  27.8%
..........*........*.............       112  27.1%
.....***.....*......******.....       111  26.9%
.......*...*.*......******.....       109  26.4%
...*.......*....................        88  21.3%
.......*.*.*.*......******.....        83  20.1%
....****.*.*.*......******.....        76  18.4%
...*.***...*.*......******.....        70  16.9%
...**...........................        68  16.5%
...*.***.*.*.*......******.....        65  15.7%
........*...*...................        57  13.8%
.....**....*....................        57  13.8%
.....***.*...*......******.....        48  11.6%
.........*.*....................        46  11.1%
..*.........*...................        44  10.7%
..*.....*...*.............*.....        44  10.7%
..*.....*...*...................        44  10.7%
..******.*.*.*......*******.....        37   9.0%
...........*........******.....        31   7.5%
....*..*.*...*......******.....        30   7.3%
...**......*....................        28   6.8%
....*....*......................        27   6.5%
...*...*.*.*.*......******.....        24   5.8%
........*...*.............*.....        20   4.8%
..*..**.........................        20   4.8%
...*****...*.*......******.....        15   3.6%
....****.*...*......******.....         9   2.2%
....*......*....................         5   1.2%
...****....*....................         4   1.0%
...*.**....*....................         4   1.0%
...*.**.........................         4   1.0%
```

Adams consensus of 413 trees:





----Optimisation des caractères sur l'arbre de consensus en ACCTRAN

```
Tree length = 318
Consistency index (CI) = 0.428
Homoplasy index (HI) = 0.572
CI excluding uninformative characters = 0.420
HI excluding uninformative characters = 0.580
Retention index (RI) = 0.449
Rescaled consistency index (RC) = 0.192
   (above indices do not include stepmatrix characters)
f value = 1635
f-ratio = 0.4113
```

```
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)

/----------------------------------------------------------- Sinoconodon
|          /------------------------------------------------ Hadrocodium
|          |                                          /----- Helvetiodon
|          |                                    /----35----- Castorocauda
|          |    /------------------------------36     \----- Haldanodon
|    /----46    |                               \----------- Fluctuodon
|    |     |    |          /-------------------------------- Kuehneotherium
|    |     |    |          |          /--------------------- Delsatia
|    |     \---45          |          |               /----- Ambondro
|    |          |    /----42    /----40         /----37----- Dryolestes
|    |          |    |     |    |     |    /---38----------- Asfaltomylos
|    |          |    |     \---41     \---39---------------- Amphitherium
|    |          \---44          \--------------------------- Zhangheotherium
|    |               |                                /----- Woutersia
|    |               \-------------------------------43----- Shuotherium
+---55                                /--------------------- Dinnetherium
|    |                                +--------------------- Megazostrodon
56   |                                +--------------------- Morganucodon
|    |                                |               /----- Brachyzostrodon
|    |                                +--------------47----- Paceyodon
|    |                                |               /----- Paikasigudodon
|    |                                +--------------48----- Purbeckodon
|    |                                +--------------------- Rosierodon
|    |                                +--------------------- Erythrotherium
|    \-------------------------------54--------------------- Hallautherium
|                                     +--------------------- Bridetherium
|                                     |               /----- Thomasia
|                                     |         /----49----- Haramiyavia
|                                     |    /---51     /----- Theroteinus
|                                     |    |    \----50----- Arboroharamiya
|                                     +---53          /----- Rugosodon
|                                     |    \---------52----- Sinobaatar
|                                     \--------------------- Amphilestes
\----------------------------------------------------------- Priacodon

Possible character-state assignments to internal nodes

                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
----------------------------------------------------------------------------
35               000211100112001610120?113111001101001011220100000100101?011
                    3   1      2                                       2
36               000111100002001510120?102111001101001011220100000100101?011
                    2   1 1   4 6        3
                          2
37               00131200010015270203001021110001010022010001000007?30010001
                   2   2    3    1                   43  2 3  4  38     1
38               00131200010017270203001021110001010022010001000007?30010001
                   2   2    3    1                   43  2 3  4  38     1
39               00131100010007270203001021110001010022010001000007?30010001
                   2   2         1                   43  2 3  4  38     1
40               00120100000007070213001021110001010022010001000007030010001
                   2   2         1                       2              1
41               00120100000007070212001021110001010021010001000007020010011
                   2   2         1                    21 22      4  3   1
42               001201200000040712120?1021110001010021112201000007021010011
                              5                                  4      1
43               001201200000040710120?1021110001110020102201000007001010011
                              5        2                 3       4
44               001201200000040710120?1021110001010020112201000007001010011
                              5                                  4      1
45               000101100000000510120?1021110011010010112201000000001010011
                    2   1     4 6                                       1
46               00000111000000001012001011110011010000011201000000001000011
                                         2           1 1 2             11
```

```
47               00501103000001001111001011110111010000?1201000000001000121
                                    2            1                    1
48               00000102000000010?1001011110111010000011221000000001002121
                          1       1 2
                          3
49               10000102000010000101101011110110021100011001000000000000020
                      22            2            3   12               3 21
50               1000010200001000010110101111011003110001?1001000000001300021
                      2             2                12                 21
51               10000102000010000101101011110110031100011001000000001000021
                      2             2                12               3 21
52               2000010200000000101101011110111?031?0001100110000000010020001
                      2             2                                     2
53               ?000010200000000101101011110111?031?00011001000000001000021
                      2             2                                   21
54               00000102000000001111001011110111010000011201000000001000121
                                    2
55               00000111000000000101200101111011101000001120100000000100011
                                         2                             11
56               000001110000000010?2001011110111020000011201000000001000010
                                         2     2                       11

Possible character-state assignments to internal nodes (continued)

                 666666666677777
Node             012345678901234
--------------------------------
35               100110110?00001
                 2    1
36               200100110?00001
                      1
37               200100110?00001
                      1       2
38               200100110?00001
                      1       2
39               200100110?00001
                      1       2
40               200100110?00001
                      1
41               200100110?00001
                      1
42               200100110?00001
                      1
43               20011011??00001
                      1
44               200100110?00001
                      1
45               200100110?00001
                      1
46               20010?110?00001
47               21110?111000001
                              1
48               01010?111000001
                 1
49               21110210?000022
                               3
50               211112101000023
51               211102101000023
52               2111021?1000113
53               2111021?10000?3
54               21110?111000001
55               20010?111?00001
56               20010?111?00001

Reconstructed states for internal nodes

                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
```

```
-------------------------------------------------------------------------------
35                0003111001120026101201113111001101001011220100000100102201 1
36                0002111001020416101201103111001101001011220100000100101101 1
37                0013120001031527020300102111000101004301003104003863001100 1
38                0023120001031727020300102111000101004301003104003863001100 1
39                0023110001000727020300102111000101004301003104003863001100 1
40                0022010000000707021300102111000101002201000100000703001100 1
41                0022010000000707021200102111000101002201000100000703001101 1
42                0012012000000507121201102111000101002111220100004702101101 1
43                0012012000000507101201202111000111002010320100004700101001 1
44                0012012000000507101201102111000101002011220100004700101101 1
45                0002011000000406101201102111001101001011220100000000101101 1
46                0000011100000000101200102111001101001011220100000000101101 1
47                0050110300000100111200101111011111100000012010000000001010121
48                0000010201000000100100101111011101000001122100000000100212 1
49                1000022200001000001011010111101100211012110010000000003020 20
50                1000020200001000001011010111101100311012010010000000001302021
51                1000020200001000001011010111101100311012110010000000001302021
52                2000020200000000001011010111101100311000110011000000001002001
53                1000020200000000001011010111101100311000110010000000001002021
54                0000010200000000111100101111011101000001120100000000001000121
55                0000011100000000101200101111011101000001120100000000001000011
56                0000011100000000100200101111011102000001120100000000001000010

Reconstructed states for internal nodes (continued)

                  666666666677777
Node              012345678901234
---------------------------------
35                100110110100001
36                200100110100001
37                200100110100021
38                200100110100021
39                200100110100021
40                200100110100001
41                200100110100001
42                200100110100001
43                200110111100001
44                200100110100001
45                200100110100001
46                200100110100001
47                211102111000011
48                010102111000001
49                211102100000022
50                211112101000023
51                211102101000023
52                211102101000113
53                211102101000013
54                211102111000001
55                200100111000001
56                200100111000001

Character change lists:

 Character          CI      Steps                  Changes

 1                 0.667       1           node_54 0 --> 1 node_53
                               1           node_53 1 --> 2 node_52
                               1           node_54 0 ==> 1 Amphilestes
 2                 0.333       1           node_49 0 ==> 1 Haramiyavia
                               1           node_50 0 ==> 1 Arboroharamiya
                               1           node_52 0 ==> 1 Rugosodon
 3                  n/a        1           node_45 0 ==> 1 node_44
                               1           node_42 1 --> 2 node_41
                               1           node_38 2 --> 1 node_37
                               1           node_43 1 ==> 2 Shuotherium
                               1           node_54 0 ==> 5 node_47
 4                  n/a        2           node_46 0 ==> 2 node_45
```

		1	node_36 2 --> 3 node_35
		1	node_36 2 --> 1 Fluctuodon
		1	node_40 2 ==> 3 node_39
		1	node_37 3 ==> 2 Ambondro
		1	node_37 3 ==> 46 Dryolestes
		1	node_50 0 ==> 1 Arboroharamiya
5	n/a	1	node_45 0 ==> 1 node_36
		1	node_40 0 ==> 1 node_39
		1	node_54 0 ==> 1 node_47
6	0.286	1	node_39 1 ==> 2 node_38
		1	node_37 2 ==> 0 Dryolestes
		1	node_43 1 ==> 2 Woutersia
		1	node_54 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_54 1 ==> 0 Hallautherium
		1	node_54 1 --> 2 node_53
7	0.286	1	node_45 1 ==> 2 node_44
		1	node_42 2 --> 0 node_41
		1	node_55 1 ==> 0 node_54
		1	node_54 0 ==> 1 Dinnetherium
		1	node_54 0 ==> 1 Rosierodon
		1	node_54 0 ==> 1 Bridetherium
		1	node_51 0 --> 2 node_49
8	0.273	1	node_46 1 --> 0 node_45
		1	node_35 0 --> 1 Castorocauda
		1	node_36 0 ==> 3 Fluctuodon
		1	node_42 0 ==> 3 Kuehneotherium
		1	node_38 0 ==> 3 Asfaltomylos
		1	node_55 1 ==> 2 node_54
		1	node_54 2 ==> 1 Dinnetherium
		1	node_54 2 ==> 3 Megazostrodon
		1	node_54 2 ==> 3 node_47
		1	node_54 2 ==> 0 Rosierodon
		1	node_50 2 ==> 0 Arboroharamiya
9	0.667	1	node_35 0 ==> 2 Haldanodon
		1	node_43 0 ==> 2 Woutersia
		1	node_50 0 ==> 1 Arboroharamiya
10	0.333	1	node_45 0 --> 1 node_36
		1	node_36 1 --> 2 Fluctuodon
		1	node_40 0 ==> 1 node_39
		1	node_37 1 ==> 3 Dryolestes
		1	node_43 0 ==> 1 Shuotherium
		1	node_54 0 ==> 1 Dinnetherium
		1	node_54 0 --> 1 node_48
		1	node_54 0 ==> 1 Rosierodon
		1	node_54 0 ==> 1 Bridetherium
11	0.500	1	node_36 0 ==> 1 node_35
		1	node_47 0 ==> 1 Paceyodon
12	0.750	1	node_45 0 ==> 2 node_36
		1	node_35 2 ==> 1 Castorocauda
		1	node_39 0 --> 3 node_38
		1	node_47 0 ==> 1 Paceyodon
13	n/a	1	node_39 0 ==> 1 node_38
		1	node_38 1 ==> 2 Asfaltomylos
		1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 4 Paceyodon
		1	node_53 0 ==> 1 node_51
		1	node_49 1 ==> 2 Haramiyavia
14	n/a	1	node_46 0 --> 4 node_45
		1	node_36 4 --> 0 node_35
		1	node_35 0 ==> 12 Haldanodon
		1	node_45 4 --> 5 node_44
		2	node_42 5 ==> 7 node_41
		2	node_38 7 ==> 5 node_37
		1	node_43 5 --> 4 Woutersia
		2	node_43 5 ==> 7 Shuotherium
		1	node_54 0 ==> 1 node_47
15	n/a	1	node_45 0 ==> 1 node_36

		1	node_36 1 --> 2 node_35
		1	node_35 2 ==> 3 Castorocauda
		2	node_40 0 ==> 2 node_39
		1	node_37 2 ==> 3 Dryolestes
		1	node_49 0 ==> 1 Haramiyavia
16	n/a	3	node_46 0 ==> 6 node_45
		1	node_35 6 ==> 7 Haldanodon
		1	node_36 6 --> 5 Fluctuodon
		1	node_45 6 ==> 7 node_44
		1	node_49 0 ==> 4 Haramiyavia
17	0.300	1	node_56 1 ==> 0 Sinoconodon
		1	node_42 1 --> 0 node_41
		1	node_43 1 ==> 2 Woutersia
		1	node_54 1 ==> 3 Dinnetherium
		1	node_54 1 ==> 23 Megazostrodon
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_54 1 ==> 23 Rosierodon
		1	node_54 1 ==> 0 Hallautherium
		1	node_54 1 ==> 3 Bridetherium
		1	node_54 1 ==> 0 node_53
18	0.500	1	node_44 0 ==> 2 node_42
		1	node_38 2 ==> 3 Asfaltomylos
		1	node_55 0 ==> 1 node_54
		1	node_54 1 --> 0 node_48
		1	node_54 1 ==> 0 Rosierodon
		1	node_54 1 ==> 0 Amphilestes
19	0.200	1	node_56 0 --> 1 node_55
		1	node_40 1 ==> 0 node_39
		1	node_37 0 ==> 1 Ambondro
		1	node_54 1 --> 0 node_48
		1	node_54 1 ==> 0 node_53
20	n/a	1	node_35 2 ==> 1 Castorocauda
		1	node_41 2 ==> 3 node_40
		1	node_43 2 ==> 1 Woutersia
		1	node_55 2 --> 1 node_54
		1	node_54 1 --> 23 Dinnetherium
		1	node_54 1 --> 2 node_47
		1	node_54 1 --> 2 Rosierodon
		1	node_54 1 ==> 0 Hallautherium
21	0.167	1	node_40 0 ==> 1 Delsatia
		1	node_37 0 ==> 1 Ambondro
		1	node_43 0 ==> 1 Shuotherium
		1	node_54 0 ==> 1 Dinnetherium
		1	node_54 0 ==> 1 node_53
		1	node_50 1 ==> 0 Arboroharamiya
22	0.167	1	node_46 0 --> 1 node_45
		1	node_35 1 --> 0 Haldanodon
		1	node_42 1 --> 0 node_41
		1	node_37 0 ==> 1 Ambondro
		1	node_43 1 --> 0 Woutersia
		1	node_54 0 ==> 1 Dinnetherium
23	1.000	1	node_44 1 --> 2 node_43
24	0.167	1	node_36 0 ==> 1 node_35
		1	node_43 0 ==> 1 Woutersia
		1	node_54 0 ==> 1 Dinnetherium
		1	node_54 0 ==> 1 Megazostrodon
		1	node_54 0 ==> 1 Bridetherium
		1	node_54 0 ==> 1 Amphilestes
25	n/a	1	node_55 1 --> 2 node_46
		1	node_45 2 --> 3 node_36
		1	node_54 1 ==> 0 Megazostrodon
		1	node_54 1 ==> 2 Rosierodon
		1	node_54 1 ==> 0 Erythrotherium
		1	node_54 1 ==> 2 Bridetherium
		1	node_54 1 ==> 2 Amphilestes
27	1.000	1	node_50 1 ==> 0 Arboroharamiya
28	1.000	1	node_50 1 ==> 2 Arboroharamiya
		1	node_52 1 ==> 0 Sinobaatar

29	0.500	1	node_50 0 ==> 1 Arboroharamiya
		1	node_52 0 ==> 1 Rugosodon
30	0.250	1	node_55 1 ==> 0 node_46
		1	node_35 0 ==> 1 Castorocauda
		1	node_40 0 ==> 1 Delsatia
		1	node_43 0 ==> 1 Woutersia
31	0.667	1	node_45 1 ==> 0 node_44
		1	node_54 1 ==> 0 Dinnetherium
		1	node_56 1 --> 2 Priacodon
32	0.500	1	node_54 1 --> 0 node_53
		1	node_52 0 --> 1 Rugosodon
33	0.333	1	node_41 0 ==> 2 Zhangheotherium
		1	node_44 0 ==> 1 node_43
		1	node_54 0 ==> 1 Dinnetherium
		1	node_54 0 --> 1 node_47
		1	node_54 0 ==> 1 Amphilestes
		1	node_56 0 ==> 1 Priacodon
34	0.600	1	node_56 2 ==> 1 node_55
		1	node_54 1 ==> 3 Erythrotherium
		1	node_54 1 ==> 3 node_53
		1	node_51 3 --> 2 node_49
		1	node_52 3 ==> 0 Sinobaatar
35	n/a	1	node_54 0 ==> 1 node_53
		1	node_49 1 ==> 2 Haramiyavia
		1	node_50 1 ==> 2 Theroteinus
		1	node_52 1 ==> 2 Sinobaatar
36	1.000	1	node_54 0 --> 1 node_53
37	n/a	1	node_55 0 --> 1 node_46
		1	node_45 1 ==> 2 node_44
		2	node_40 2 --> 4 node_39
		1	node_48 0 ==> 1 Paikasigudodon
38	n/a	1	node_44 0 ==> 1 node_42
		1	node_42 1 --> 2 node_41
		1	node_40 2 --> 3 node_39
		1	node_48 0 ==> 1 Paikasigudodon
		1	node_53 0 --> 1 node_51
39	n/a	1	node_55 0 --> 1 node_46
		1	node_42 1 --> 0 node_41
		1	node_48 0 ==> 2 Paikasigudodon
		1	node_53 0 --> 2 node_51
40	0.200	1	node_41 1 ==> 0 Zhangheotherium
		1	node_44 1 ==> 0 node_43
		1	node_54 1 ==> 0 Dinnetherium
		1	node_54 1 --> 0 node_47
		1	node_51 1 --> 0 node_50
41	0.600	1	node_55 1 --> 2 node_46
		1	node_35 2 ==> 1 Helvetiodon
		1	node_42 2 --> 0 node_41
		1	node_44 2 --> 3 node_43
		1	node_48 1 ==> 0 Paikasigudodon
42	0.375	1	node_42 2 --> 0 node_41
		1	node_43 2 ==> 3 Woutersia
		1	node_54 2 ==> 3 Megazostrodon
		1	node_48 2 ==> 3 Paikasigudodon
		1	node_54 2 ==> 1 Bridetherium
		1	node_54 2 ==> 0 node_53
		1	node_49 0 ==> 1 Thomasia
		1	node_52 0 ==> 1 Sinobaatar
43	1.000	1	node_40 0 --> 3 node_39
		1	node_54 0 ==> 2 node_48
45	1.000	1	node_53 0 ==> 1 node_52
46	0.750	1	node_42 0 ==> 3 Kuehneotherium
		1	node_40 0 --> 4 node_39
		1	node_54 0 ==> 1 Dinnetherium
		1	node_48 0 ==> 1 Purbeckodon
47	0.500	1	node_36 0 ==> 1 Fluctuodon
		1	node_48 0 ==> 1 Purbeckodon
48	1.000	1	node_43 0 ==> 1 Woutersia

49	n/a	1	node_45 0 --> 4 node_44
		1	node_42 4 --> 0 node_41
		3	node_40 0 --> 3 node_39
		1	node_43 4 ==> 5 Shuotherium
50	n/a	1	node_45 0 ==> 1 node_36
		1	node_35 1 ==> 2 Haldanodon
		4	node_45 0 ==> 7 node_44
		1	node_40 7 --> 8 node_39
		2	node_54 0 ==> 2 Megazostrodon
51	n/a	3	node_40 0 --> 6 node_39
52	n/a	1	node_36 0 ==> 1 Fluctuodon
		2	node_44 0 ==> 2 node_42
		1	node_42 2 --> 3 node_41
		1	node_40 3 ==> 7 Delsatia
		2	node_54 0 ==> 2 Megazostrodon
53	0.250	1	node_35 1 ==> 0 Haldanodon
		1	node_42 1 ==> 0 node_41
		1	node_54 1 ==> 0 Dinnetherium
		1	node_51 1 ==> 0 node_49
54	1.000	1	node_43 0 ==> 2 Woutersia
		1	node_48 0 ==> 1 Paikasigudodon
		1	node_53 0 --> 3 node_51
55	0.500	1	node_55 0 --> 1 node_46
		1	node_36 1 --> 2 node_35
		1	node_54 0 --> 1 node_47
		1	node_48 0 ==> 2 Purbeckodon
		1	node_54 0 ==> 1 Bridetherium
		1	node_50 0 ==> 3 Theroteinus
56	0.400	1	node_55 0 --> 1 node_46
		1	node_36 1 --> 2 node_35
		1	node_44 1 --> 0 node_43
		1	node_54 0 ==> 2 node_48
		1	node_54 0 --> 2 node_53
57	0.500	1	node_35 0 ==> 2 Helvetiodon
		1	node_55 0 ==> 1 node_54
		1	node_54 1 ==> 0 Bridetherium
		1	node_54 1 --> 0 node_53
58	0.222	1	node_56 1 ==> 0 Sinoconodon
		1	node_35 1 ==> 2 Haldanodon
		1	node_41 1 ==> 0 node_40
		1	node_43 1 ==> 2 Shuotherium
		1	node_55 1 ==> 2 node_54
		1	node_48 2 ==> 1 Paikasigudodon
		1	node_54 2 ==> 1 Erythrotherium
		1	node_50 2 ==> 0 Arboroharamiya
		1	node_53 2 --> 0 node_52
59	0.333	1	node_56 0 ==> 1 node_55
		1	node_41 1 ==> 0 Zhangheotherium
		1	node_51 1 ==> 0 node_49
60	n/a	1	node_36 2 --> 1 node_35
		1	node_40 2 ==> 3 Delsatia
		2	node_54 2 ==> 0 node_48
61	0.500	1	node_55 0 ==> 1 node_54
		1	node_48 1 ==> 0 Purbeckodon
62	0.500	1	node_55 0 ==> 1 node_54
		1	node_54 1 ==> 0 node_48
64	0.333	1	node_36 0 ==> 1 node_35
		1	node_44 0 ==> 1 node_43
		1	node_51 0 ==> 1 node_50
65	0.667	1	node_35 0 --> 1 Haldanodon
		1	node_43 0 --> 1 Shuotherium
		1	node_55 0 --> 2 node_54
66	0.500	1	node_48 1 ==> 0 Paikasigudodon
		1	node_50 1 ==> 0 Arboroharamiya
67	0.500	1	node_54 1 ==> 0 Bridetherium
		1	node_54 1 --> 0 node_53
68	0.333	1	node_55 1 ==> 0 node_46
		1	node_44 0 --> 1 node_43

		1	node_51 1 --> 0 node_49
69	1.000	1	node_55 0 --> 1 node_46
70	0.500	1	node_49 0 ==> 1 Thomasia
		1	node_50 0 ==> 1 Theroteinus
71	0.500	1	node_50 0 ==> 1 Theroteinus
		1	node_52 0 ==> 1 Rugosodon
72	1.000	1	node_53 0 ==> 1 node_52
73	0.400	1	node_40 0 --> 2 node_39
		1	node_54 0 --> 1 node_47
		1	node_54 0 ==> 1 Bridetherium
		1	node_54 0 --> 1 node_53
		1	node_53 1 --> 2 node_51
74	0.667	1	node_41 1 ==> 2 Zhangheotherium
		1	node_54 1 ==> 3 node_53
		1	node_51 3 --> 2 node_49

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_56 --> Sinoconodon	17	1	0.300	1 ==> 0
	58	1	0.222	1 ==> 0
node_56 --> node_55	19	1	0.200	0 --> 1
	34	1	0.600	2 ==> 1
	59	1	0.333	0 ==> 1
node_55 --> node_46	25	1	n/a	1 --> 2
	30	1	0.250	1 ==> 0
	37	1	n/a	0 --> 1
	39	1	n/a	0 --> 1
	41	1	0.600	1 --> 2
	55	1	0.500	0 --> 1
	56	1	0.400	0 --> 1
	68	1	0.333	1 ==> 0
	69	1	1.000	0 --> 1
node_46 --> node_45	4	2	n/a	0 ==> 2
	8	1	0.273	1 --> 0
	14	1	n/a	0 --> 4
	16	3	n/a	0 ==> 6
	22	1	0.167	0 --> 1
node_45 --> node_36	5	1	n/a	0 ==> 1
	10	1	0.333	0 --> 1
	12	1	0.750	0 ==> 2
	15	1	n/a	0 ==> 1
	25	1	n/a	2 --> 3
	50	1	n/a	0 ==> 1
node_36 --> node_35	4	1	n/a	2 --> 3
	11	1	0.500	0 ==> 1
	14	1	n/a	4 --> 0
	15	1	n/a	1 --> 2
	24	1	0.167	0 ==> 1
	55	1	0.500	1 --> 2
	56	1	0.400	1 --> 2
	60	1	n/a	2 --> 1
	64	1	0.333	0 ==> 1
node_35 --> Helvetiodon	41	1	0.600	2 ==> 1
	57	1	0.500	0 ==> 2
node_35 --> Castorocauda	8	1	0.273	0 --> 1
	12	1	0.750	2 ==> 1
	15	1	n/a	2 ==> 3
	20	1	n/a	2 ==> 1
	30	1	0.250	0 ==> 1
node_35 --> Haldanodon	9	1	0.667	0 ==> 2
	14	1	n/a	0 ==> 12
	16	1	n/a	6 ==> 7
	22	1	0.167	1 --> 0
	50	1	n/a	1 ==> 2
	53	1	0.250	1 ==> 0
	58	1	0.222	1 ==> 2

	65	1	0.667	0	--> 1
node_36 --> Fluctuodon	4	1	n/a	2	--> 1
	8	1	0.273	0	==> 3
	10	1	0.333	1	--> 2
	16	1	n/a	6	--> 5
	47	1	0.500	0	==> 1
	52	1	n/a	0	==> 1
node_45 --> node_44	3	1	n/a	0	==> 1
	7	1	0.286	1	==> 2
	14	1	n/a	4	--> 5
	16	1	n/a	6	==> 7
	31	1	0.667	1	==> 0
	37	1	n/a	1	==> 2
	49	1	n/a	0	--> 4
	50	4	n/a	0	==> 7
node_44 --> node_42	18	1	0.500	0	==> 2
	38	1	n/a	0	==> 1
	52	2	n/a	0	==> 2
node_42 --> Kuehneotherium	8	1	0.273	0	==> 3
	46	1	0.750	0	==> 3
node_42 --> node_41	3	1	n/a	1	--> 2
	7	1	0.286	2	--> 0
	14	2	n/a	5	==> 7
	17	1	0.300	1	--> 0
	22	1	0.167	1	--> 0
	38	1	n/a	1	--> 2
	39	1	n/a	1	--> 0
	41	1	0.600	2	--> 0
	42	1	0.375	2	--> 0
	49	1	n/a	4	--> 0
	52	1	n/a	2	--> 3
	53	1	0.250	1	==> 0
node_41 --> node_40	20	1	n/a	2	==> 3
	58	1	0.222	1	==> 0
node_40 --> Delsatia	21	1	0.167	0	==> 1
	30	1	0.250	0	==> 1
	52	1	n/a	3	==> 7
	60	1	n/a	2	==> 3
node_40 --> node_39	4	1	n/a	2	==> 3
	5	1	n/a	0	==> 1
	10	1	0.333	0	==> 1
	15	2	n/a	0	==> 2
	19	1	0.200	1	==> 0
	37	2	n/a	2	--> 4
	38	1	n/a	2	--> 3
	43	1	1.000	0	--> 3
	46	1	0.750	0	--> 4
	49	3	n/a	0	--> 3
	50	1	n/a	7	--> 8
	51	3	n/a	0	--> 6
	73	1	0.400	0	--> 2
node_39 --> node_38	6	1	0.286	1	==> 2
	12	1	0.750	0	--> 3
	13	1	n/a	0	==> 1
node_38 --> node_37	3	1	n/a	2	--> 1
	14	2	n/a	7	==> 5
node_37 --> Ambondro	4	1	n/a	3	==> 2
	19	1	0.200	0	==> 1
	21	1	0.167	0	==> 1
	22	1	0.167	0	==> 1
node_37 --> Dryolestes	4	1	n/a	3	==> 46
	6	1	0.286	2	==> 0
	10	1	0.333	1	==> 3
	15	1	n/a	2	==> 3
node_38 --> Asfaltomylos	8	1	0.273	0	==> 3
	13	1	n/a	1	==> 2
	18	1	0.500	2	==> 3
node_41 --> Zhangheotherium	33	1	0.333	0	==> 2

	40	1	0.200	1	==>	0
	59	1	0.333	1	==>	0
	74	1	0.667	1	==>	2
node_44 --> node_43	23	1	1.000	1	-->	2
	33	1	0.333	0	==>	1
	40	1	0.200	1	==>	0
	41	1	0.600	2	-->	3
	56	1	0.400	1	-->	0
	64	1	0.333	0	==>	1
	68	1	0.333	0	-->	1
node_43 --> Woutersia	6	1	0.286	1	==>	2
	9	1	0.667	0	==>	2
	14	1	n/a	5	-->	4
	17	1	0.300	1	==>	2
	20	1	n/a	2	==>	1
	22	1	0.167	1	-->	0
	24	1	0.167	0	==>	1
	30	1	0.250	0	==>	1
	42	1	0.375	2	==>	3
	48	1	1.000	0	==>	1
	54	1	1.000	0	==>	2
node_43 --> Shuotherium	3	1	n/a	1	==>	2
	10	1	0.333	0	==>	1
	14	2	n/a	5	==>	7
	21	1	0.167	0	==>	1
	49	1	n/a	4	==>	5
	58	1	0.222	1	==>	2
	65	1	0.667	0	-->	1
node_55 --> node_54	7	1	0.286	1	==>	0
	8	1	0.273	1	==>	2
	18	1	0.500	0	==>	1
	20	1	n/a	2	-->	1
	57	1	0.500	0	==>	1
	58	1	0.222	1	==>	2
	61	1	0.500	0	==>	1
	62	1	0.500	0	==>	1
	65	1	0.667	0	-->	2
node_54 --> Dinnetherium	7	1	0.286	0	==>	1
	8	1	0.273	2	==>	1
	10	1	0.333	0	==>	1
	17	1	0.300	1	==>	3
	20	1	n/a	1	-->	23
	21	1	0.167	0	==>	1
	22	1	0.167	0	==>	1
	24	1	0.167	0	==>	1
	31	1	0.667	1	==>	0
	33	1	0.333	0	==>	1
	40	1	0.200	1	==>	0
	46	1	0.750	0	==>	1
	53	1	0.250	1	==>	0
node_54 --> Megazostrodon	6	1	0.286	1	==>	0
	8	1	0.273	2	==>	3
	17	1	0.300	1	==>	23
	24	1	0.167	0	==>	1
	25	1	n/a	1	==>	0
	42	1	0.375	2	==>	3
	50	2	n/a	0	==>	2
	52	2	n/a	0	==>	2
node_54 --> node_47	3	1	n/a	0	==>	5
	5	1	n/a	0	==>	1
	8	1	0.273	2	==>	3
	14	1	n/a	0	==>	1
	20	1	n/a	1	-->	2
	33	1	0.333	0	-->	1
	40	1	0.200	1	-->	0
	55	1	0.500	0	-->	1
	73	1	0.400	0	-->	1
node_47 --> Brachyzostrodon	6	1	0.286	1	==>	0

	13	1	n/a	0	==>	1
	17	1	0.300	1	==>	0
node_47 --> Paceyodon	11	1	0.500	0	==>	1
	12	1	0.750	0	==>	1
	13	1	n/a	0	==>	4
node_54 --> node_48	10	1	0.333	0	-->	1
	18	1	0.500	1	-->	0
	19	1	0.200	1	-->	0
	43	1	1.000	0	==>	2
	56	1	0.400	0	==>	2
	60	2	n/a	2	==>	0
	62	1	0.500	1	==>	0
node_48 --> Paikasigudodon	37	1	n/a	0	==>	1
	38	1	n/a	0	==>	1
	39	1	n/a	0	==>	2
	41	1	0.600	1	==>	0
	42	1	0.375	2	==>	3
	54	1	1.000	0	==>	1
	58	1	0.222	2	==>	1
	66	1	0.500	1	==>	0
node_48 --> Purbeckodon	46	1	0.750	0	==>	1
	47	1	0.500	0	==>	1
	55	1	0.500	0	==>	2
	61	1	0.500	1	==>	0
node_54 --> Rosierodon	7	1	0.286	0	==>	1
	8	1	0.273	2	==>	0
	10	1	0.333	0	==>	1
	17	1	0.300	1	==>	23
	18	1	0.500	1	==>	0
	20	1	n/a	1	-->	2
	25	1	n/a	1	==>	2
node_54 --> Erythrotherium	25	1	n/a	1	==>	0
	34	1	0.600	1	==>	3
	58	1	0.222	2	==>	1
node_54 --> Hallautherium	6	1	0.286	1	==>	0
	17	1	0.300	1	==>	0
	20	1	n/a	1	==>	0
node_54 --> Bridetherium	7	1	0.286	0	==>	1
	10	1	0.333	0	==>	1
	17	1	0.300	1	==>	3
	24	1	0.167	0	==>	1
	25	1	n/a	1	==>	2
	42	1	0.375	2	==>	1
	55	1	0.500	0	==>	1
	57	1	0.500	1	==>	0
	67	1	0.500	1	==>	0
	73	1	0.400	0	==>	1
node_54 --> node_53	1	1	0.667	0	-->	1
	6	1	0.286	1	-->	2
	17	1	0.300	1	==>	0
	19	1	0.200	1	==>	0
	21	1	0.167	0	==>	1
	32	1	0.500	1	-->	0
	34	1	0.600	1	==>	3
	35	1	n/a	0	==>	1
	36	1	1.000	0	-->	1
	42	1	0.375	2	==>	0
	56	1	0.400	0	-->	2
	57	1	0.500	1	-->	0
	67	1	0.500	1	-->	0
	73	1	0.400	0	-->	1
	74	1	0.667	1	==>	3
node_53 --> node_51	13	1	n/a	0	==>	1
	38	1	n/a	0	-->	1
	39	1	n/a	0	-->	2
	54	1	1.000	0	-->	3
	73	1	0.400	1	-->	2
node_51 --> node_49	7	1	0.286	0	-->	2

	34	1	0.600	3	--> 2
	53	1	0.250	1	==> 0
	59	1	0.333	1	==> 0
	68	1	0.333	1	--> 0
	74	1	0.667	3	--> 2
node_49 --> Thomasia	42	1	0.375	0	==> 1
	70	1	0.500	0	==> 1
node_49 --> Haramiyavia	2	1	0.333	0	==> 1
	13	1	n/a	1	==> 2
	15	1	n/a	0	==> 1
	16	1	n/a	0	==> 4
	35	1	n/a	1	==> 2
node_51 --> node_50	40	1	0.200	1	--> 0
	64	1	0.333	0	==> 1
node_50 --> Theroteinus	35	1	n/a	1	==> 2
	55	1	0.500	0	==> 3
	70	1	0.500	0	==> 1
	71	1	0.500	0	==> 1
node_50 --> Arboroharamiya	2	1	0.333	0	==> 1
	4	1	n/a	0	==> 1
	8	1	0.273	2	==> 0
	9	1	0.667	0	==> 1
	21	1	0.167	1	==> 0
	27	1	1.000	1	==> 0
	28	1	1.000	1	==> 2
	29	1	0.500	0	==> 1
	58	1	0.222	2	==> 0
	66	1	0.500	1	==> 0
node_53 --> node_52	1	1	0.667	1	--> 2
	45	1	1.000	0	==> 1
	58	1	0.222	2	--> 0
	72	1	1.000	0	==> 1
node_52 --> Rugosodon	2	1	0.333	0	==> 1
	29	1	0.500	0	==> 1
	32	1	0.500	0	--> 1
	71	1	0.500	0	==> 1
node_52 --> Sinobaatar	28	1	1.000	1	==> 0
	34	1	0.600	3	==> 0
	35	1	n/a	1	==> 2
	42	1	0.375	0	==> 1
node_54 --> Amphilestes	1	1	0.667	0	==> 1
	18	1	0.500	1	==> 0
	24	1	0.167	0	==> 1
	25	1	n/a	1	==> 2
	33	1	0.333	0	==> 1
node_56 --> Priacodon	31	1	0.667	1	--> 2
	33	1	0.333	0	==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	n/a	5	13	n/a	n/a	n/a	n/a
4	n/a	8	25	n/a	n/a	n/a	n/a
5	n/a	3	8	n/a	n/a	n/a	n/a
6	2	7	8	0.286	0.714	0.167	0.048
7	2	7	9	0.286	0.714	0.286	0.082
8	3	11	18	0.273	0.727	0.467	0.127
9	2	3	3	0.667	0.333	0.000	0.000
10	3	9	11	0.333	0.667	0.250	0.083
11	1	2	3	0.500	0.500	0.500	0.250
12	3	4	5	0.750	0.250	0.500	0.375
13	n/a	6	10	n/a	n/a	n/a	n/a
14	n/a	12	29	n/a	n/a	n/a	n/a
15	n/a	7	15	n/a	n/a	n/a	n/a

16	n/a	7	39	n/a	n/a	n/a	n/a
17	3	10	15	0.300	0.700	0.417	0.125
18	3	6	8	0.500	0.500	0.400	0.200
19	1	5	11	0.200	0.800	0.600	0.120
20	n/a	8	9	n/a	n/a	n/a	n/a
21	1	6	9	0.167	0.833	0.375	0.062
22	1	6	6	0.167	0.833	0.000	0.000
23	1	1	1	1.000	0.000	0/0	0/0
24	1	6	7	0.167	0.833	0.167	0.028
25	n/a	7	9	n/a	n/a	n/a	n/a
26	n/a	0	0	0/0	0/0	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	4	8	0.250	0.750	0.571	0.143
31	2	3	5	0.667	0.333	0.667	0.444
32	1	2	4	0.500	0.500	0.667	0.333
33	2	6	7	0.333	0.667	0.200	0.067
34	3	5	7	0.600	0.400	0.500	0.300
35	n/a	4	9	n/a	n/a	n/a	n/a
36	1	1	3	1.000	0.000	1.000	1.000
37	n/a	5	14	n/a	n/a	n/a	n/a
38	n/a	5	8	n/a	n/a	n/a	n/a
39	n/a	4	8	n/a	n/a	n/a	n/a
40	1	5	6	0.200	0.800	0.200	0.040
41	3	5	6	0.600	0.400	0.333	0.200
42	3	8	12	0.375	0.625	0.444	0.167
43	2	2	3	1.000	0.000	1.000	1.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	n/a	6	6	n/a	n/a	n/a	n/a
50	n/a	9	22	n/a	n/a	n/a	n/a
51	n/a	3	3	n/a	n/a	n/a	n/a
52	n/a	7	12	n/a	n/a	n/a	n/a
53	1	4	7	0.250	0.750	0.500	0.125
54	3	3	4	1.000	0.000	1.000	1.000
55	3	6	8	0.500	0.500	0.400	0.200
56	2	5	7	0.400	0.600	0.400	0.160
57	2	4	6	0.500	0.500	0.500	0.250
58	2	9	13	0.222	0.778	0.364	0.081
59	1	3	5	0.333	0.667	0.500	0.167
60	n/a	4	5	n/a	n/a	n/a	n/a
61	1	2	10	0.500	0.500	0.889	0.444
62	1	2	5	0.500	0.500	0.750	0.375
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	3	6	0.333	0.667	0.600	0.200
65	2	3	4	0.667	0.333	0.500	0.333
66	1	2	2	0.500	0.500	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	3	7	0.333	0.667	0.667	0.222
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	2	3	5	0.667	0.333	0.667	0.444

----Optimisation des caractères sur l'arbre de consensus en DELTRAN

```
Tree length = 318
Consistency index (CI) = 0.428
Homoplasy index (HI) = 0.572
```

```
CI excluding uninformative characters = 0.420
HI excluding uninformative characters = 0.580
Retention index (RI) = 0.449
Rescaled consistency index (RC) = 0.192
   (above indices do not include stepmatrix characters)
f value = 1073
f-ratio = 0.2967
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)

/----------------------------------------------------------- Sinoconodon
|          /------------------------------------------------ Hadrocodium
|          |                                          /----- Helvetiodon
|          |                                    /----35----- Castorocauda
|          |    /------------------------------36     \----- Haldanodon
|    /----46    |                               \----------- Fluctuodon
|    |     |    |          /-------------------------------- Kuehneotherium
|    |     |    |          |          /--------------------- Delsatia
|    |     \---45          |          |               /----- Ambondro
|    |          |    /----42    /----40         /----37----- Dryolestes
|    |          |    |     |    |     |    /---38----------- Asfaltomylos
|    |          |    |     \---41     \---39---------------- Amphitherium
|    |          \---44          \--------------------------- Zhangheotherium
|    |               |                                /----- Woutersia
|    |               \-------------------------------43----- Shuotherium
+---55                                /--------------------- Dinnetherium
|    |                                +--------------------- Megazostrodon
56   |                                +--------------------- Morganucodon
|    |                                |               /----- Brachyzostrodon
|    |                                +--------------47----- Paceyodon
|    |                                |               /----- Paikasigudodon
|    |                                +--------------48----- Purbeckodon
|    |                                +--------------------- Rosierodon
|    |                                +--------------------- Erythrotherium
|    \-------------------------------54--------------------- Hallautherium
|                                     +--------------------- Bridetherium
|                                     |               /----- Thomasia
|                                     |         /----49----- Haramiyavia
|                                     |    /---51     /----- Theroteinus
|                                     |    |    \----50----- Arboroharamiya
|                                     +---53          /----- Rugosodon
|                                     |    \---------52----- Sinobaatar
|                                     \--------------------- Amphilestes
\----------------------------------------------------------- Priacodon

Possible character-state assignments to internal nodes

                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
----------------------------------------------------------------------------
35               000211100112001610120?113111001101001011220100000100101?011
                    3   1      2                                       2
36               000111100002001510120?102111001101001011220100000100101?011
                    2   1 1   4 6        3
                          2
37               00131200010015270203001021110001010022010001000007?30010001
                   2   2    3    1                   43  2 3  4  38     1
38               00131200010017270203001021110001010022010001000007?30010001
                   2   2    3    1                   43  2 3  4  38     1
39               00131100010007270203001021110001010022010001000007?30010001
                   2   2         1                   43  2 3  4  38     1
40               001201000000070702130010211100010100220100010000007030010001
                   2   2         1                       2              1
41               001201000000070702120010211100010100210100010000007020010011
                   2   2         1                    21 22      4  3   1
42               00120120000004071212 0?1021110001010021112201000007021010011
                              5                                  4      1
43               0012012000000407101 20?1021110001110020102201000007001010011
```

```
                              5        2                  3       4
44               001201200000040710120?10211100010100201122010000007001010011
                              5                                   4      1
45               000101100000000051012 0?1021110011010010112201000000001010011
                    2   1     4 6                                        1
46               000001110000000001012001011110011010000011201000000000 1000011
                                         2            1 1 2             11
47               005011030000010011110010111101110100000?1201000000000 1000121
                                    2             1                     1
48               00000102000000000010?10010111101110100000112210000000001002121
                          1       1 2
                          3
49               10000102000010000101101011110110021100011001000000000000000020
                      22            2              3   12              3 21
50               1000010200001000010110101111011003110 00?10010000000001300021
                      2             2                  12                21
51               10000102000010000101101011110110031100011001000000000 1000021
                      2             2                  12              3 21
52               200001020000000000101101011110 11?031?00011001100000000 1002001
                      2             2                                      2
53               ?0000102000000000010110101111011?031?0001100100000000001000021
                      2             2                                    21
54               00000102000000000111100101111011101000001120100000000 01000121
                                    2
55               00000111000000000101200101111011101000001120100000000 01000011
                                         2                              11
56               00000111000000000010?20010111101110200000112010000000001000010
                                         2      2                       11
```

Possible character-state assignments to internal nodes (continued)

```
                 666666666677777
Node             012345678901234
--------------------------------
35               100110110?00001
                 2    1
36               200100110?00001
                      1
37               200100110?00001
                      1       2
38               200100110?00001
                      1       2
39               200100110?00001
                      1       2
40               200100110?00001
                      1
41               200100110?00001
                      1
42               200100110?00001
                      1
43               20011011??00001
                      1
44               200100110?00001
                      1
45               200100110?00001
                      1
46               20010?110?00001
47               21110?111000001
                              1
48               01010?111000001
                 1
49               21110210?000022
                               3
50               211112101000023
51               211102101000023
52               2111021?1000113
53               2111021?10000?3
54               21110?111000001
```

```
55                20010?111?00001
56                20010?111?00001

Reconstructed states for internal nodes

                          1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
35                0002111101120016101200113111001101001011220100000100101001 1
36                0001111100020015101200102111001101001011220100000100101001 1
37                0013122001001527120300102111000101002201200100000703001000 1
38                0013122001001727120300102111000101002201200100000703001000 1
39                0013112001000727120300102111000101002201200100000703001000 1
40                0012012000000707121300102111000101002201200100000703001000 1
41                0012012000000707121200102111000101002111220100000702001001 1
42                0012012000000407121200102111000101002111220100000702101001 1
43                0012012000000407101200102111000111002010220100000700101001 1
44                0012012000000407101200102111000101002011220100000700101001 1
45                0001011100000005101200102111001101001011220100000000101001 1
46                0000011100000000101200101111001101000001120100000000100001 1
47                0050110300000100111200101111011101000001120100000000100012 1
48                0000010200000000111200101111011101000001122100000000100212 1
49                1000010200001000010210101111011003110001100100000000000012 0
50                1000010200001000010210101111011003110001100100000000130012 1
51                1000010200001000010210101111011003110001100100000000100012 1
52                2000010200000000010210101111011103100001100110000000100202 1
53                0000010200000000010210101111011103100001100100000000100012 1
54                0000010200000000111200101111011101000001120100000000100012 1
55                0000011100000000101200101111011101000001120100000000100001 1
56                0000011100000000100200101111011102000001120100000000100001 0

Reconstructed states for internal nodes (continued)

                  666666666677777
Node              012345678901234
---------------------------------
35                200110110000001
36                200100110000001
37                200100110000001
38                200100110000001
39                200100110000001
40                200100110000001
41                200100110000001
42                200100110000001
43                200110110000001
44                200100110000001
45                200100110000001
46                200100110000001
47                211100111000001
48                110100111000001
49                211102101000023
50                211112101000023
51                211102101000023
52                211102111000113
53                211102111000003
54                211100111000001
55                200100111000001
56                200100111000001

Character change lists:

 Character         CI     Steps                 Changes

 1                 0.667      1          node_53 0 --> 1 node_51
                              1          node_53 0 --> 2 node_52
                              1          node_54 0 ==> 1 Amphilestes
 2                 0.333      1          node_49 0 ==> 1 Haramiyavia
                              1          node_50 0 ==> 1 Arboroharamiya
```

		1	node_52 0 ==> 1 Rugosodon
3	n/a	1	node_45 0 ==> 1 node_44
		1	node_40 1 --> 2 Delsatia
		1	node_38 1 --> 2 Asfaltomylos
		1	node_43 1 ==> 2 Shuotherium
		1	node_54 0 ==> 5 node_47
4	n/a	1	node_46 0 ==> 1 node_45
		1	node_36 1 --> 2 node_35
		1	node_35 2 --> 3 Castorocauda
		1	node_45 1 --> 2 node_44
		1	node_40 2 ==> 3 node_39
		1	node_37 3 ==> 2 Ambondro
		1	node_37 3 ==> 46 Dryolestes
		1	node_50 0 ==> 1 Arboroharamiya
5	n/a	1	node_45 0 ==> 1 node_36
		1	node_40 0 ==> 1 node_39
		1	node_54 0 ==> 1 node_47
6	0.286	1	node_39 1 ==> 2 node_38
		1	node_37 2 ==> 0 Dryolestes
		1	node_43 1 ==> 2 Woutersia
		1	node_54 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_54 1 ==> 0 Hallautherium
		1	node_52 1 --> 2 Rugosodon
7	0.286	1	node_45 1 ==> 2 node_44
		1	node_40 2 --> 0 Delsatia
		1	node_55 1 ==> 0 node_54
		1	node_54 0 ==> 1 Dinnetherium
		1	node_54 0 ==> 1 Rosierodon
		1	node_54 0 ==> 1 Bridetherium
		1	node_49 0 --> 2 Thomasia
8	0.273	1	node_35 1 --> 0 Haldanodon
		1	node_36 1 ==> 3 Fluctuodon
		1	node_45 1 --> 0 node_44
		1	node_42 0 ==> 3 Kuehneotherium
		1	node_38 0 ==> 3 Asfaltomylos
		1	node_55 1 ==> 2 node_54
		1	node_54 2 ==> 1 Dinnetherium
		1	node_54 2 ==> 3 Megazostrodon
		1	node_54 2 ==> 3 node_47
		1	node_54 2 ==> 0 Rosierodon
		1	node_50 2 ==> 0 Arboroharamiya
9	0.667	1	node_35 0 ==> 2 Haldanodon
		1	node_43 0 ==> 2 Woutersia
		1	node_50 0 ==> 1 Arboroharamiya
10	0.333	1	node_36 0 --> 1 node_35
		1	node_36 0 --> 2 Fluctuodon
		1	node_40 0 ==> 1 node_39
		1	node_37 1 ==> 3 Dryolestes
		1	node_43 0 ==> 1 Shuotherium
		1	node_54 0 ==> 1 Dinnetherium
		1	node_48 0 --> 13 Purbeckodon
		1	node_54 0 ==> 1 Rosierodon
		1	node_54 0 ==> 1 Bridetherium
11	0.500	1	node_36 0 ==> 1 node_35
		1	node_47 0 ==> 1 Paceyodon
12	0.750	1	node_45 0 ==> 2 node_36
		1	node_35 2 ==> 1 Castorocauda
		1	node_37 0 --> 3 Dryolestes
		1	node_47 0 ==> 1 Paceyodon
13	n/a	1	node_39 0 ==> 1 node_38
		1	node_38 1 ==> 2 Asfaltomylos
		1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 4 Paceyodon
		1	node_53 0 ==> 1 node_51
		1	node_49 1 ==> 2 Haramiyavia
14	n/a	1	node_35 0 ==> 12 Haldanodon
		1	node_36 0 --> 4 Fluctuodon

		1	node_45 0 --> 4 node_44
		3	node_42 4 ==> 7 node_41
		2	node_38 7 ==> 5 node_37
		3	node_43 4 ==> 7 Shuotherium
		1	node_54 0 ==> 1 node_47
15	n/a	1	node_45 0 ==> 1 node_36
		2	node_35 1 ==> 3 Castorocauda
		2	node_40 0 ==> 2 node_39
		1	node_37 2 ==> 3 Dryolestes
		1	node_49 0 ==> 1 Haramiyavia
16	n/a	2	node_46 0 ==> 5 node_45
		1	node_36 5 --> 6 node_35
		1	node_35 6 ==> 7 Haldanodon
		2	node_45 5 ==> 7 node_44
		1	node_49 0 ==> 4 Haramiyavia
17	0.300	1	node_56 1 ==> 0 Sinoconodon
		1	node_40 1 --> 0 Delsatia
		1	node_43 1 ==> 2 Woutersia
		1	node_54 1 ==> 3 Dinnetherium
		1	node_54 1 ==> 23 Megazostrodon
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_54 1 ==> 23 Rosierodon
		1	node_54 1 ==> 0 Hallautherium
		1	node_54 1 ==> 3 Bridetherium
		1	node_54 1 ==> 0 node_53
18	0.500	1	node_44 0 ==> 2 node_42
		1	node_38 2 ==> 3 Asfaltomylos
		1	node_55 0 ==> 1 node_54
		1	node_48 1 --> 0 Purbeckodon
		1	node_54 1 ==> 0 Rosierodon
		1	node_54 1 ==> 0 Amphilestes
19	0.200	1	node_56 0 --> 1 node_55
		1	node_40 1 ==> 0 node_39
		1	node_37 0 ==> 1 Ambondro
		1	node_48 1 --> 0 Purbeckodon
		1	node_54 1 ==> 0 node_53
20	n/a	1	node_35 2 ==> 1 Castorocauda
		1	node_41 2 ==> 3 node_40
		1	node_43 2 ==> 1 Woutersia
		1	node_54 2 --> 1 Megazostrodon
		1	node_54 2 --> 1 Morganucodon
		1	node_54 2 --> 1 Erythrotherium
		2	node_54 2 ==> 0 Hallautherium
21	0.167	1	node_40 0 ==> 1 Delsatia
		1	node_37 0 ==> 1 Ambondro
		1	node_43 0 ==> 1 Shuotherium
		1	node_54 0 ==> 1 Dinnetherium
		1	node_54 0 ==> 1 node_53
		1	node_50 1 ==> 0 Arboroharamiya
22	0.167	1	node_35 0 --> 1 Castorocauda
		1	node_36 0 --> 1 Fluctuodon
		1	node_42 0 --> 1 Kuehneotherium
		1	node_37 0 ==> 1 Ambondro
		1	node_43 0 --> 1 Shuotherium
		1	node_54 0 ==> 1 Dinnetherium
23	1.000	1	node_43 1 --> 2 Shuotherium
24	0.167	1	node_36 0 ==> 1 node_35
		1	node_43 0 ==> 1 Woutersia
		1	node_54 0 ==> 1 Dinnetherium
		1	node_54 0 ==> 1 Megazostrodon
		1	node_54 0 ==> 1 Bridetherium
		1	node_54 0 ==> 1 Amphilestes
25	n/a	1	node_46 1 --> 2 node_45
		1	node_36 2 --> 3 node_35
		1	node_54 1 ==> 0 Megazostrodon
		1	node_54 1 ==> 2 Rosierodon
		1	node_54 1 ==> 0 Erythrotherium
		1	node_54 1 ==> 2 Bridetherium

		1	node_54 1 ==> 2 Amphilestes
27	1.000	1	node_50 1 ==> 0 Arboroharamiya
28	1.000	1	node_50 1 ==> 2 Arboroharamiya
		1	node_52 1 ==> 0 Sinobaatar
29	0.500	1	node_50 0 ==> 1 Arboroharamiya
		1	node_52 0 ==> 1 Rugosodon
30	0.250	1	node_55 1 ==> 0 node_46
		1	node_35 0 ==> 1 Castorocauda
		1	node_40 0 ==> 1 Delsatia
		1	node_43 0 ==> 1 Woutersia
31	0.667	1	node_45 1 ==> 0 node_44
		1	node_54 1 ==> 0 Dinnetherium
		1	node_56 1 --> 2 Priacodon
32	0.500	1	node_53 1 --> 0 node_51
		1	node_52 1 --> 0 Sinobaatar
33	0.333	1	node_41 0 ==> 2 Zhangheotherium
		1	node_44 0 ==> 1 node_43
		1	node_54 0 ==> 1 Dinnetherium
		1	node_47 0 --> 1 Brachyzostrodon
		1	node_54 0 ==> 1 Amphilestes
		1	node_56 0 ==> 1 Priacodon
34	0.600	1	node_56 2 ==> 1 node_55
		1	node_54 1 ==> 3 Erythrotherium
		1	node_54 1 ==> 3 node_53
		1	node_49 3 --> 2 Haramiyavia
		1	node_52 3 ==> 0 Sinobaatar
35	n/a	1	node_54 0 ==> 1 node_53
		1	node_49 1 ==> 2 Haramiyavia
		1	node_50 1 ==> 2 Theroteinus
		1	node_52 1 ==> 2 Sinobaatar
36	1.000	1	node_53 0 --> 1 node_51
37	n/a	1	node_46 0 --> 1 node_45
		1	node_45 1 ==> 2 node_44
		2	node_37 2 --> 46 Dryolestes
		1	node_48 0 ==> 1 Paikasigudodon
38	n/a	1	node_44 0 ==> 1 node_42
		1	node_41 1 --> 2 node_40
		1	node_37 2 --> 3 Dryolestes
		1	node_48 0 ==> 1 Paikasigudodon
		1	node_50 0 --> 12 Theroteinus
39	n/a	1	node_46 0 --> 1 node_45
		1	node_41 1 --> 0 node_40
		1	node_48 0 ==> 2 Paikasigudodon
		1	node_50 0 --> 2 Theroteinus
40	0.200	1	node_41 1 ==> 0 Zhangheotherium
		1	node_44 1 ==> 0 node_43
		1	node_54 1 ==> 0 Dinnetherium
		1	node_47 1 --> 0 Brachyzostrodon
		1	node_50 1 --> 0 Theroteinus
41	0.600	1	node_46 1 --> 2 node_45
		1	node_35 2 ==> 1 Helvetiodon
		1	node_40 2 --> 0 Delsatia
		1	node_43 2 --> 3 Woutersia
		1	node_48 1 ==> 0 Paikasigudodon
42	0.375	1	node_41 2 --> 0 node_40
		1	node_43 2 ==> 3 Woutersia
		1	node_54 2 ==> 3 Megazostrodon
		1	node_48 2 ==> 3 Paikasigudodon
		1	node_54 2 ==> 1 Bridetherium
		1	node_54 2 ==> 0 node_53
		1	node_49 0 ==> 1 Thomasia
		1	node_52 0 ==> 1 Sinobaatar
43	1.000	1	node_37 0 --> 3 Dryolestes
		1	node_54 0 ==> 2 node_48
45	1.000	1	node_53 0 ==> 1 node_52
46	0.750	1	node_42 0 ==> 3 Kuehneotherium
		1	node_37 0 --> 4 Dryolestes
		1	node_54 0 ==> 1 Dinnetherium

		1	node_48 0 ==> 1 Purbeckodon
47	0.500	1	node_36 0 ==> 1 Fluctuodon
		1	node_48 0 ==> 1 Purbeckodon
48	1.000	1	node_43 0 ==> 1 Woutersia
49	n/a	1	node_42 0 --> 4 Kuehneotherium
		3	node_37 0 --> 3 Dryolestes
		2	node_43 0 ==> 5 Shuotherium
50	n/a	1	node_45 0 ==> 1 node_36
		1	node_35 1 ==> 2 Haldanodon
		4	node_45 0 ==> 7 node_44
		1	node_37 7 --> 89 Dryolestes
		2	node_54 0 ==> 2 Megazostrodon
51	n/a	3	node_37 0 --> 6 Dryolestes
52	n/a	1	node_36 0 ==> 1 Fluctuodon
		2	node_44 0 ==> 2 node_42
		1	node_41 2 --> 3 node_40
		1	node_40 3 ==> 7 Delsatia
		2	node_54 0 ==> 2 Megazostrodon
53	0.250	1	node_35 1 ==> 0 Haldanodon
		1	node_42 1 ==> 0 node_41
		1	node_54 1 ==> 0 Dinnetherium
		1	node_51 1 ==> 0 node_49
54	1.000	1	node_43 0 ==> 2 Woutersia
		1	node_48 0 ==> 1 Paikasigudodon
		1	node_51 0 --> 3 node_50
55	0.500	1	node_46 0 --> 1 node_45
		1	node_35 1 --> 2 Helvetiodon
		1	node_47 0 --> 1 Brachyzostrodon
		1	node_48 0 ==> 2 Purbeckodon
		1	node_54 0 ==> 1 Bridetherium
		1	node_50 0 ==> 3 Theroteinus
56	0.400	1	node_35 0 --> 2 Helvetiodon
		1	node_36 0 --> 1 Fluctuodon
		1	node_42 0 --> 1 Kuehneotherium
		1	node_54 0 ==> 2 node_48
		1	node_53 0 --> 2 node_52
57	0.500	1	node_35 0 ==> 2 Helvetiodon
		1	node_55 0 ==> 1 node_54
		1	node_54 1 ==> 0 Bridetherium
		1	node_53 1 --> 0 node_52
58	0.222	1	node_56 1 ==> 0 Sinoconodon
		1	node_35 1 ==> 2 Haldanodon
		1	node_41 1 ==> 0 node_40
		1	node_43 1 ==> 2 Shuotherium
		1	node_55 1 ==> 2 node_54
		1	node_48 2 ==> 1 Paikasigudodon
		1	node_54 2 ==> 1 Erythrotherium
		1	node_50 2 ==> 0 Arboroharamiya
		1	node_52 2 --> 0 Sinobaatar
59	0.333	1	node_56 0 ==> 1 node_55
		1	node_41 1 ==> 0 Zhangheotherium
		1	node_51 1 ==> 0 node_49
60	n/a	1	node_35 2 --> 1 Helvetiodon
		1	node_40 2 ==> 3 Delsatia
		1	node_54 2 ==> 1 node_48
		1	node_48 1 --> 0 Paikasigudodon
61	0.500	1	node_55 0 ==> 1 node_54
		1	node_48 1 ==> 0 Purbeckodon
62	0.500	1	node_55 0 ==> 1 node_54
		1	node_54 1 ==> 0 node_48
64	0.333	1	node_36 0 ==> 1 node_35
		1	node_44 0 ==> 1 node_43
		1	node_51 0 ==> 1 node_50
65	0.667	1	node_35 0 --> 1 Haldanodon
		1	node_43 0 --> 1 Shuotherium
		1	node_54 0 --> 2 node_53
66	0.500	1	node_48 1 ==> 0 Paikasigudodon
		1	node_50 1 ==> 0 Arboroharamiya

67	0.500	1	node_54 1 ==> 0 Bridetherium
		1	node_53 1 --> 0 node_51
68	0.333	1	node_55 1 ==> 0 node_46
		1	node_43 0 --> 1 Woutersia
		1	node_49 1 --> 0 Haramiyavia
69	1.000	1	node_43 0 --> 1 Woutersia
70	0.500	1	node_49 0 ==> 1 Thomasia
		1	node_50 0 ==> 1 Theroteinus
71	0.500	1	node_50 0 ==> 1 Theroteinus
		1	node_52 0 ==> 1 Rugosodon
72	1.000	1	node_53 0 ==> 1 node_52
73	0.400	1	node_37 0 --> 2 Dryolestes
		1	node_47 0 --> 1 Brachyzostrodon
		1	node_54 0 ==> 1 Bridetherium
		1	node_53 0 --> 2 node_51
		1	node_53 0 --> 1 node_52
74	0.667	1	node_41 1 ==> 2 Zhangheotherium
		1	node_54 1 ==> 3 node_53
		1	node_49 3 --> 2 Haramiyavia

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_56 --> Sinoconodon	17	1	0.300	1 ==> 0
	58	1	0.222	1 ==> 0
node_56 --> node_55	19	1	0.200	0 --> 1
	34	1	0.600	2 ==> 1
	59	1	0.333	0 ==> 1
node_55 --> node_46	30	1	0.250	1 ==> 0
	68	1	0.333	1 ==> 0
node_46 --> node_45	4	1	n/a	0 ==> 1
	16	2	n/a	0 ==> 5
	25	1	n/a	1 --> 2
	37	1	n/a	0 --> 1
	39	1	n/a	0 --> 1
	41	1	0.600	1 --> 2
	55	1	0.500	0 --> 1
node_45 --> node_36	5	1	n/a	0 ==> 1
	12	1	0.750	0 ==> 2
	15	1	n/a	0 ==> 1
	50	1	n/a	0 ==> 1
node_36 --> node_35	4	1	n/a	1 --> 2
	10	1	0.333	0 --> 1
	11	1	0.500	0 ==> 1
	16	1	n/a	5 --> 6
	24	1	0.167	0 ==> 1
	25	1	n/a	2 --> 3
	64	1	0.333	0 ==> 1
node_35 --> Helvetiodon	41	1	0.600	2 ==> 1
	55	1	0.500	1 --> 2
	56	1	0.400	0 --> 2
	57	1	0.500	0 ==> 2
	60	1	n/a	2 --> 1
node_35 --> Castorocauda	4	1	n/a	2 --> 3
	12	1	0.750	2 ==> 1
	15	2	n/a	1 ==> 3
	20	1	n/a	2 ==> 1
	22	1	0.167	0 --> 1
	30	1	0.250	0 ==> 1
node_35 --> Haldanodon	8	1	0.273	1 --> 0
	9	1	0.667	0 ==> 2
	14	1	n/a	0 ==> 12
	16	1	n/a	6 ==> 7
	50	1	n/a	1 ==> 2
	53	1	0.250	1 ==> 0
	58	1	0.222	1 ==> 2
	65	1	0.667	0 --> 1

node_36 --> Fluctuodon	8	1	0.273	1	==>	3
	10	1	0.333	0	-->	2
	14	1	n/a	0	-->	4
	22	1	0.167	0	-->	1
	47	1	0.500	0	==>	1
	52	1	n/a	0	==>	1
	56	1	0.400	0	-->	1
node_45 --> node_44	3	1	n/a	0	==>	1
	4	1	n/a	1	-->	2
	7	1	0.286	1	==>	2
	8	1	0.273	1	-->	0
	14	1	n/a	0	-->	4
	16	2	n/a	5	==>	7
	31	1	0.667	1	==>	0
	37	1	n/a	1	==>	2
	50	4	n/a	0	==>	7
node_44 --> node_42	18	1	0.500	0	==>	2
	38	1	n/a	0	==>	1
	52	2	n/a	0	==>	2
node_42 --> Kuehneotherium	8	1	0.273	0	==>	3
	22	1	0.167	0	-->	1
	46	1	0.750	0	==>	3
	49	1	n/a	0	-->	4
	56	1	0.400	0	-->	1
node_42 --> node_41	14	3	n/a	4	==>	7
	53	1	0.250	1	==>	0
node_41 --> node_40	20	1	n/a	2	==>	3
	38	1	n/a	1	-->	2
	39	1	n/a	1	-->	0
	42	1	0.375	2	-->	0
	52	1	n/a	2	-->	3
	58	1	0.222	1	==>	0
node_40 --> Delsatia	3	1	n/a	1	-->	2
	7	1	0.286	2	-->	0
	17	1	0.300	1	-->	0
	21	1	0.167	0	==>	1
	30	1	0.250	0	==>	1
	41	1	0.600	2	-->	0
	52	1	n/a	3	==>	7
	60	1	n/a	2	==>	3
node_40 --> node_39	4	1	n/a	2	==>	3
	5	1	n/a	0	==>	1
	10	1	0.333	0	==>	1
	15	2	n/a	0	==>	2
	19	1	0.200	1	==>	0
node_39 --> node_38	6	1	0.286	1	==>	2
	13	1	n/a	0	==>	1
node_38 --> node_37	14	2	n/a	7	==>	5
node_37 --> Ambondro	4	1	n/a	3	==>	2
	19	1	0.200	0	==>	1
	21	1	0.167	0	==>	1
	22	1	0.167	0	==>	1
node_37 --> Dryolestes	4	1	n/a	3	==>	46
	6	1	0.286	2	==>	0
	10	1	0.333	1	==>	3
	12	1	0.750	0	-->	3
	15	1	n/a	2	==>	3
	37	2	n/a	2	-->	46
	38	1	n/a	2	-->	3
	43	1	1.000	0	-->	3
	46	1	0.750	0	-->	4
	49	3	n/a	0	-->	3
	50	1	n/a	7	-->	89
	51	3	n/a	0	-->	6
	73	1	0.400	0	-->	2
node_38 --> Asfaltomylos	3	1	n/a	1	-->	2
	8	1	0.273	0	==>	3
	13	1	n/a	1	==>	2

		18	1	0.500	2	==> 3
node_41 --> Zhangheotherium		33	1	0.333	0	==> 2
		40	1	0.200	1	==> 0
		59	1	0.333	1	==> 0
		74	1	0.667	1	==> 2
node_44 --> node_43		33	1	0.333	0	==> 1
		40	1	0.200	1	==> 0
		64	1	0.333	0	==> 1
node_43 --> Woutersia		6	1	0.286	1	==> 2
		9	1	0.667	0	==> 2
		17	1	0.300	1	==> 2
		20	1	n/a	2	==> 1
		24	1	0.167	0	==> 1
		30	1	0.250	0	==> 1
		41	1	0.600	2	--> 3
		42	1	0.375	2	==> 3
		48	1	1.000	0	==> 1
		54	1	1.000	0	==> 2
		68	1	0.333	0	--> 1
		69	1	1.000	0	--> 1
node_43 --> Shuotherium		3	1	n/a	1	==> 2
		10	1	0.333	0	==> 1
		14	3	n/a	4	==> 7
		21	1	0.167	0	==> 1
		22	1	0.167	0	--> 1
		23	1	1.000	1	--> 2
		49	2	n/a	0	==> 5
		58	1	0.222	1	==> 2
		65	1	0.667	0	--> 1
node_55 --> node_54		7	1	0.286	1	==> 0
		8	1	0.273	1	==> 2
		18	1	0.500	0	==> 1
		57	1	0.500	0	==> 1
		58	1	0.222	1	==> 2
		61	1	0.500	0	==> 1
		62	1	0.500	0	==> 1
node_54 --> Dinnetherium		7	1	0.286	0	==> 1
		8	1	0.273	2	==> 1
		10	1	0.333	0	==> 1
		17	1	0.300	1	==> 3
		21	1	0.167	0	==> 1
		22	1	0.167	0	==> 1
		24	1	0.167	0	==> 1
		31	1	0.667	1	==> 0
		33	1	0.333	0	==> 1
		40	1	0.200	1	==> 0
		46	1	0.750	0	==> 1
		53	1	0.250	1	==> 0
node_54 --> Megazostrodon		6	1	0.286	1	==> 0
		8	1	0.273	2	==> 3
		17	1	0.300	1	==> 23
		20	1	n/a	2	--> 1
		24	1	0.167	0	==> 1
		25	1	n/a	1	==> 0
		42	1	0.375	2	==> 3
		50	2	n/a	0	==> 2
		52	2	n/a	0	==> 2
node_54 --> Morganucodon		20	1	n/a	2	--> 1
node_54 --> node_47		3	1	n/a	0	==> 5
		5	1	n/a	0	==> 1
		8	1	0.273	2	==> 3
		14	1	n/a	0	==> 1
node_47 --> Brachyzostrodon		6	1	0.286	1	==> 0
		13	1	n/a	0	==> 1
		17	1	0.300	1	==> 0
		33	1	0.333	0	--> 1
		40	1	0.200	1	--> 0
		55	1	0.500	0	--> 1

	73	1	0.400	0	-->	1
node_47 --> Paceyodon	11	1	0.500	0	==>	1
	12	1	0.750	0	==>	1
	13	1	n/a	0	==>	4
node_54 --> node_48	43	1	1.000	0	==>	2
	56	1	0.400	0	==>	2
	60	1	n/a	2	==>	1
	62	1	0.500	1	==>	0
node_48 --> Paikasigudodon	37	1	n/a	0	==>	1
	38	1	n/a	0	==>	1
	39	1	n/a	0	==>	2
	41	1	0.600	1	==>	0
	42	1	0.375	2	==>	3
	54	1	1.000	0	==>	1
	58	1	0.222	2	==>	1
	60	1	n/a	1	-->	0
	66	1	0.500	1	==>	0
node_48 --> Purbeckodon	10	1	0.333	0	-->	13
	18	1	0.500	1	-->	0
	19	1	0.200	1	-->	0
	46	1	0.750	0	==>	1
	47	1	0.500	0	==>	1
	55	1	0.500	0	==>	2
	61	1	0.500	1	==>	0
node_54 --> Rosierodon	7	1	0.286	0	==>	1
	8	1	0.273	2	==>	0
	10	1	0.333	0	==>	1
	17	1	0.300	1	==>	23
	18	1	0.500	1	==>	0
	25	1	n/a	1	==>	2
node_54 --> Erythrotherium	20	1	n/a	2	-->	1
	25	1	n/a	1	==>	0
	34	1	0.600	1	==>	3
	58	1	0.222	2	==>	1
node_54 --> Hallautherium	6	1	0.286	1	==>	0
	17	1	0.300	1	==>	0
	20	2	n/a	2	==>	0
node_54 --> Bridetherium	7	1	0.286	0	==>	1
	10	1	0.333	0	==>	1
	17	1	0.300	1	==>	3
	24	1	0.167	0	==>	1
	25	1	n/a	1	==>	2
	42	1	0.375	2	==>	1
	55	1	0.500	0	==>	1
	57	1	0.500	1	==>	0
	67	1	0.500	1	==>	0
	73	1	0.400	0	==>	1
node_54 --> node_53	17	1	0.300	1	==>	0
	19	1	0.200	1	==>	0
	21	1	0.167	0	==>	1
	34	1	0.600	1	==>	3
	35	1	n/a	0	==>	1
	42	1	0.375	2	==>	0
	65	1	0.667	0	-->	2
	74	1	0.667	1	==>	3
node_53 --> node_51	1	1	0.667	0	-->	1
	13	1	n/a	0	==>	1
	32	1	0.500	1	-->	0
	36	1	1.000	0	-->	1
	67	1	0.500	1	-->	0
	73	1	0.400	0	-->	2
node_51 --> node_49	53	1	0.250	1	==>	0
	59	1	0.333	1	==>	0
node_49 --> Thomasia	7	1	0.286	0	-->	2
	42	1	0.375	0	==>	1
	70	1	0.500	0	==>	1
node_49 --> Haramiyavia	2	1	0.333	0	==>	1
	13	1	n/a	1	==>	2

		15	1	n/a	0	==> 1
		16	1	n/a	0	==> 4
		34	1	0.600	3	--> 2
		35	1	n/a	1	==> 2
		68	1	0.333	1	--> 0
		74	1	0.667	3	--> 2
	node_51 --> node_50	54	1	1.000	0	--> 3
		64	1	0.333	0	==> 1
	node_50 --> Theroteinus	35	1	n/a	1	==> 2
		38	1	n/a	0	--> 12
		39	1	n/a	0	--> 2
		40	1	0.200	1	--> 0
		55	1	0.500	0	==> 3
		70	1	0.500	0	==> 1
		71	1	0.500	0	==> 1
	node_50 --> Arboroharamiya	2	1	0.333	0	==> 1
		4	1	n/a	0	==> 1
		8	1	0.273	2	==> 0
		9	1	0.667	0	==> 1
		21	1	0.167	1	==> 0
		27	1	1.000	1	==> 0
		28	1	1.000	1	==> 2
		29	1	0.500	0	==> 1
		58	1	0.222	2	==> 0
		66	1	0.500	1	==> 0
	node_53 --> node_52	1	1	0.667	0	--> 2
		45	1	1.000	0	==> 1
		56	1	0.400	0	--> 2
		57	1	0.500	1	--> 0
		72	1	1.000	0	==> 1
		73	1	0.400	0	--> 1
	node_52 --> Rugosodon	2	1	0.333	0	==> 1
		6	1	0.286	1	--> 2
		29	1	0.500	0	==> 1
		71	1	0.500	0	==> 1
	node_52 --> Sinobaatar	28	1	1.000	1	==> 0
		32	1	0.500	1	--> 0
		34	1	0.600	3	==> 0
		35	1	n/a	1	==> 2
		42	1	0.375	0	==> 1
		58	1	0.222	2	--> 0
	node_54 --> Amphilestes	1	1	0.667	0	==> 1
		18	1	0.500	1	==> 0
		24	1	0.167	0	==> 1
		25	1	n/a	1	==> 2
		33	1	0.333	0	==> 1
	node_56 --> Priacodon	31	1	0.667	1	--> 2
		33	1	0.333	0	==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	n/a	5	13	n/a	n/a	n/a	n/a
4	n/a	8	25	n/a	n/a	n/a	n/a
5	n/a	3	8	n/a	n/a	n/a	n/a
6	2	7	8	0.286	0.714	0.167	0.048
7	2	7	9	0.286	0.714	0.286	0.082
8	3	11	18	0.273	0.727	0.467	0.127
9	2	3	3	0.667	0.333	0.000	0.000
10	3	9	11	0.333	0.667	0.250	0.083
11	1	2	3	0.500	0.500	0.500	0.250
12	3	4	5	0.750	0.250	0.500	0.375
13	n/a	6	10	n/a	n/a	n/a	n/a
14	n/a	12	29	n/a	n/a	n/a	n/a

15	n/a	7	15	n/a	n/a	n/a	n/a
16	n/a	7	39	n/a	n/a	n/a	n/a
17	3	10	15	0.300	0.700	0.417	0.125
18	3	6	8	0.500	0.500	0.400	0.200
19	1	5	11	0.200	0.800	0.600	0.120
20	n/a	8	9	n/a	n/a	n/a	n/a
21	1	6	9	0.167	0.833	0.375	0.062
22	1	6	6	0.167	0.833	0.000	0.000
23	1	1	1	1.000	0.000	0/0	0/0
24	1	6	7	0.167	0.833	0.167	0.028
25	n/a	7	9	n/a	n/a	n/a	n/a
26	n/a	0	0	0/0	0/0	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	4	8	0.250	0.750	0.571	0.143
31	2	3	5	0.667	0.333	0.667	0.444
32	1	2	4	0.500	0.500	0.667	0.333
33	2	6	7	0.333	0.667	0.200	0.067
34	3	5	7	0.600	0.400	0.500	0.300
35	n/a	4	9	n/a	n/a	n/a	n/a
36	1	1	3	1.000	0.000	1.000	1.000
37	n/a	5	14	n/a	n/a	n/a	n/a
38	n/a	5	8	n/a	n/a	n/a	n/a
39	n/a	4	8	n/a	n/a	n/a	n/a
40	1	5	6	0.200	0.800	0.200	0.040
41	3	5	6	0.600	0.400	0.333	0.200
42	3	8	12	0.375	0.625	0.444	0.167
43	2	2	3	1.000	0.000	1.000	1.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	n/a	6	6	n/a	n/a	n/a	n/a
50	n/a	9	22	n/a	n/a	n/a	n/a
51	n/a	3	3	n/a	n/a	n/a	n/a
52	n/a	7	12	n/a	n/a	n/a	n/a
53	1	4	7	0.250	0.750	0.500	0.125
54	3	3	4	1.000	0.000	1.000	1.000
55	3	6	8	0.500	0.500	0.400	0.200
56	2	5	7	0.400	0.600	0.400	0.160
57	2	4	6	0.500	0.500	0.500	0.250
58	2	9	13	0.222	0.778	0.364	0.081
59	1	3	5	0.333	0.667	0.500	0.167
60	n/a	4	5	n/a	n/a	n/a	n/a
61	1	2	10	0.500	0.500	0.889	0.444
62	1	2	5	0.500	0.500	0.750	0.375
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	3	6	0.333	0.667	0.600	0.200
65	2	3	4	0.667	0.333	0.500	0.333
66	1	2	2	0.500	0.500	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	3	7	0.333	0.667	0.667	0.222
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	2	3	5	0.667	0.333	0.667	0.444

--Matrice "totale" avec "Base" et caractères ordonnés

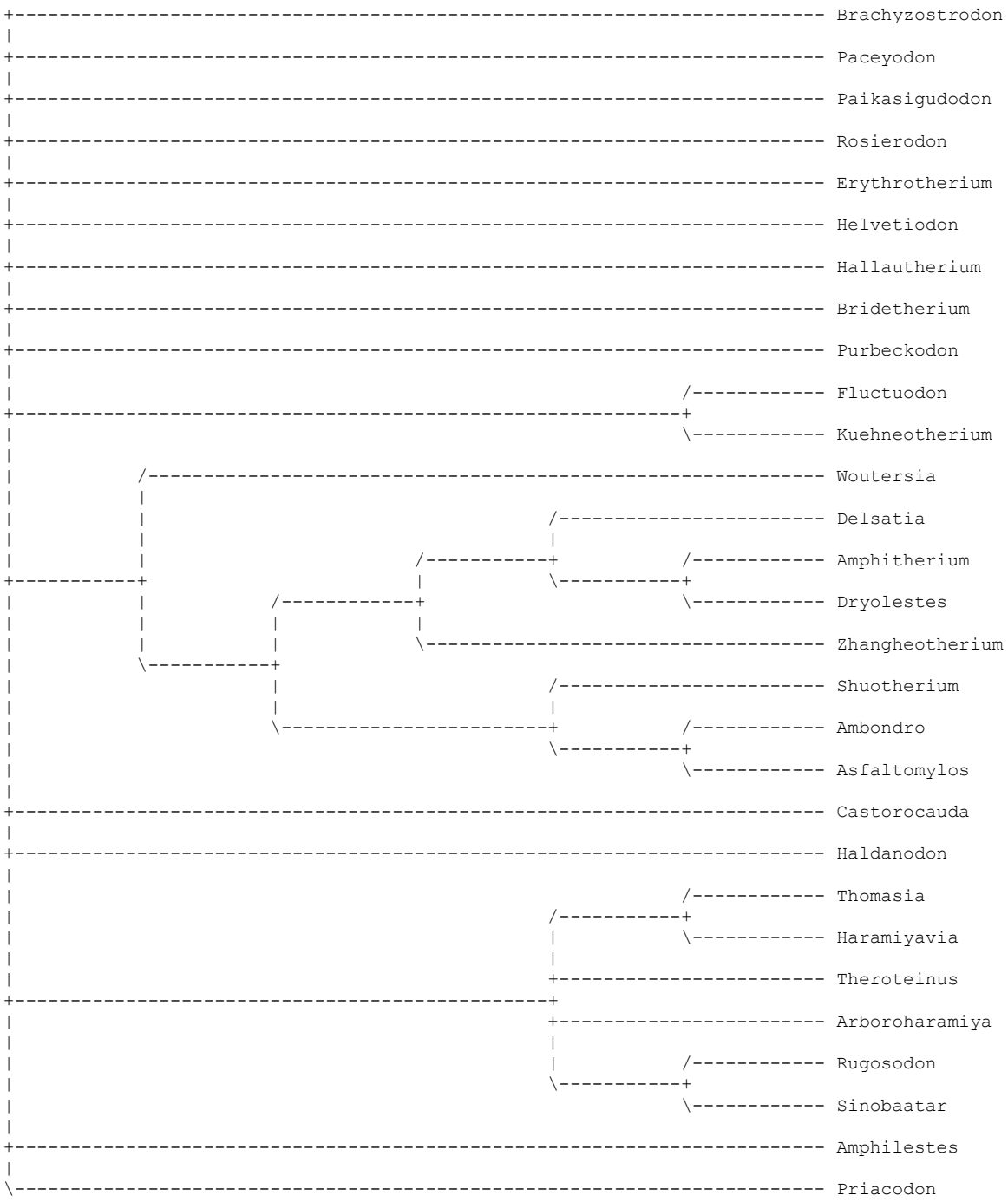
----*Buffer de l'analyse*

```
Data matrix has 38 taxa, 307 characters
Valid character-state symbols: 0123456789
Missing data identified by '?'
"Equate" macros in effect:
   N ==> ?

Heuristic search settings:
  Optimality criterion = parsimony
    Character-status summary:
      Of 307 total characters:
        289 characters are of type 'unord'
        2 characters are of user-defined type "a"
        2 characters are of user-defined type "b"
        2 characters are of user-defined type "c"
        4 characters are of user-defined type "d"
        1 character is of user-defined type "e"
        2 characters are of user-defined type "f"
        2 characters are of user-defined type "g"
        1 character is of user-defined type "h"
        1 character is of user-defined type "i"
        1 character is of user-defined type "j"
        All characters have equal weight
        2 characters are constant
        92 variable characters are parsimony-uninformative
        Number of parsimony-informative characters = 213
    Multistate taxa interpreted as uncertainty
  Starting tree(s) obtained via stepwise addition
  Addition sequence: random
    Number of replicates = 100
    Starting seed = 1250900324
  Number of trees held at each step during stepwise addition = 1
  Branch-swapping algorithm: tree-bisection-reconnection (TBR)
  Steepest descent option not in effect
  Initial 'MaxTrees' setting = 100 (will be auto-increased by 100)
  Branches collapsed (creating polytomies) if maximum branch length is zero
  'MulTrees' option in effect
  Topological constraints not enforced
  Trees are unrooted

Heuristic search completed
   Total number of rearrangements tried = 1.6036e+010
   Score of best tree(s) found = 767
   Number of trees retained = 12700
   Time used = 11:55:27.0

Tree-island profile:
                     First      Last                     First   Times
Island      Size      tree      tree        Score    replicate     hit
-------------------------------------------------------------------------
     1      1648         1      1648          767            2       9
     2      1451      1649      3099          767           17       1
     3       535      3100      3634          767           21       2
     4         4      3635      3638          767           26       1
     5       118      3639      3756          767           40       1
     6      8819      3757     12575          767           45       4
     7       125     12576     12700          767           75       1
     8     16913         -         -          768            8       1
     9     16895         -         -          768            4       1
    10     16435         -         -          768           24       1
    11     16420         -         -          768           39       1
    12     16417         -         -          768           42       1
    13     16365         -         -          768           41       1
    14     16347         -         -          768           48       8*
    15       718         -         -          768           14       1
```

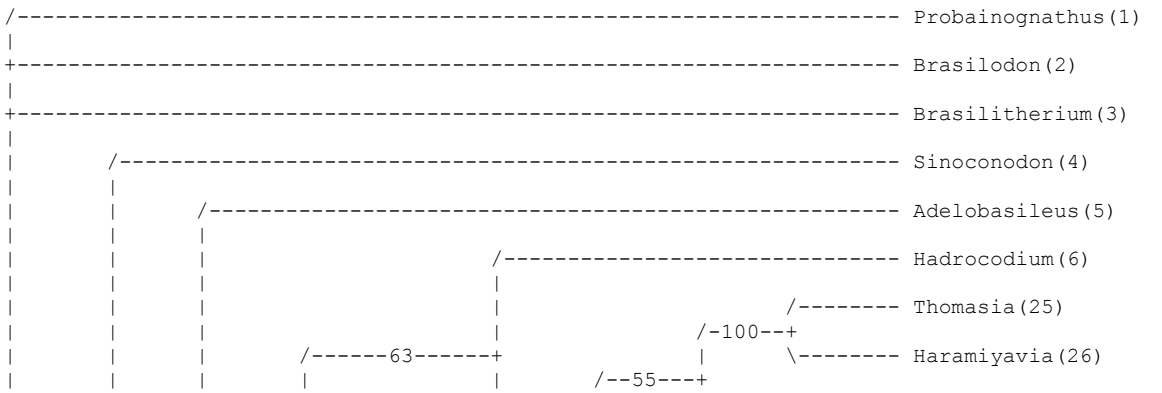
16	706	-	-	768	16	1
17	590	-	-	768	32	2*
18	585	-	-	768	57	2*
19	518	-	-	768	7	1
20	393	-	-	768	44	1
21	390	-	-	768	66	1
22	252	-	-	768	97	1
23	29451	-	-	769	10	1
24	29191	-	-	769	15	1
25	29030	-	-	769	20	1
26	28987	-	-	769	38	1
27	28977	-	-	769	28	1
28	28964	-	-	769	34	1
29	28905	-	-	769	58	5*
30	28901	-	-	769	29	1
31	11490	-	-	769	83	1
32	540	-	-	769	94	1
33	368	-	-	769	19	1
34	318	-	-	769	35	1
35	315	-	-	769	78	1
36	240	-	-	770	56	1
37	105	-	-	770	92	1
38	90	-	-	770	53	1
39	2900	-	-	771	30	1
40	1134	-	-	771	71	1
41	885	-	-	772	5	1
42	864	-	-	772	9	1
43	737	-	-	772	23	1
44	735	-	-	772	27	1
45	726	-	-	772	46	4*
46	725	-	-	772	25	1
47	6650	-	-	773	18	1
48	6618	-	-	773	22	1
49	6534	-	-	773	49	7*
50	12372	-	-	774	36	1
51	12370	-	-	774	33	1
52	12285	-	-	774	67	2*
53	618	-	-	774	37	1
54	610	-	-	774	65	5*
55	446	-	-	774	3	1
56	385	-	-	774	6	1
57	375	-	-	774	11	1
58	285	-	-	774	1	2*
59	234	-	-	774	13	1
60	1100	-	-	775	86	1

Note(s):
    * Multiple hits on islands of unsaved trees may in fact represent different islands

Strict consensus of 12700 trees:



50% Majority-rule consensus of 12700 trees

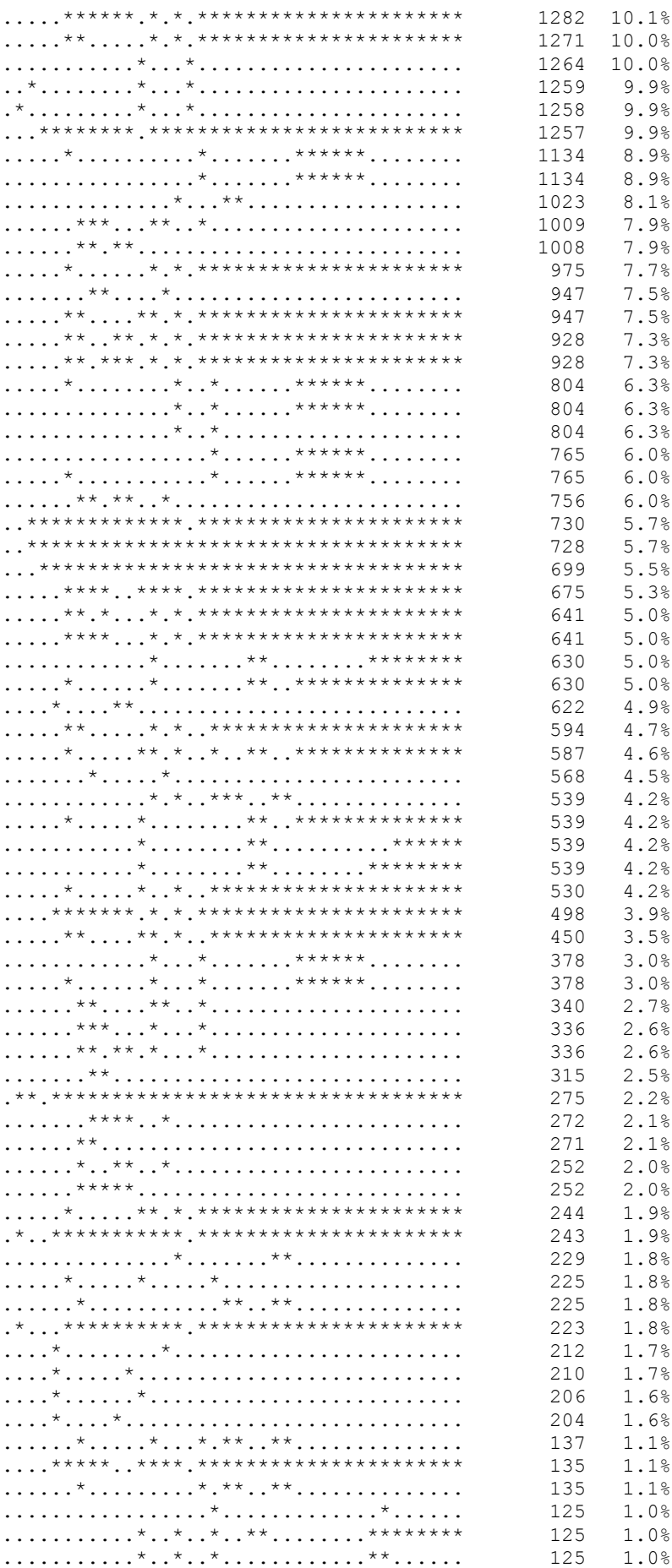


```
|       |      |       |              |       |       \--------------- Theroteinus(27)
|       |      |       |              |       |
|       |      |       |              \--100--+       /--------------- Arboroharamiya(28)
|       |      |       |                      |       |
|       |      |       |                      \--78---+      /-------- Rugosodon(29)
|       |      |       |                              \-100--+
|       |      |       |                                     \-------- Sinobaatar(30)
+--69---+      |       |
|       |      |       |                                     /-------- Dinnetherium(7)
|       |      |       |                              /--56--+
|       |      |       |                              |      \-------- Bridetherium(17)
|       |      |       |                      /--55---+
|       |      |       |                      |       \--------------- Megazostrodon(8)
|       |      |       |                      |
|       |      |       |                      +----------------------- Morganucodon(9)
|       |      |       |                      |
|       |      |       +----------55----------+              /-------- Brachyzostrodon(10)
|       |      |       |                      +------97------+
|       |      |       |                      |              \-------- Paceyodon(11)
|       |      |       |                      |
|       |      |       |                      \----------------------- Erythrotherium(14)
|       |      |       |
|       |      |       +---------------------------------------------- Rosierodon(13)
|       \--77--+       |
|              |       +---------------------------------------------- Helvetiodon(15)
|              +--69---+
|              |       |                                     /-------- Fluctuodon(19)
|              |       |                              /-100--+
|              |       |                              |      \-------- Kuehneotherium(20)
|              |       +--------------90--------------+
|              |       |                              |      /-------- Castorocauda(23)
|              |       |                              \--99--+
|              |       |                                     \-------- Haldanodon(24)
|              |       |
|              |       |       /-------------------------------------- Woutersia(21)
|              |       |       |
|              |       |       |                      /--------------- Delsatia(22)
|              |       |       |                      |
|              |       |       |              /--100--+      /-------- Amphitherium(37)
|              |       +--100--+              |       \-100--+
|              |       |       |      /--100--+              \-------- Dryolestes(38)
|              |       |       |      |       |
|              |       |       |      |       \----------------------- Zhangheotherium(36)
|              |       |       \-100--+
|              |       |              |               /--------------- Shuotherium(33)
|              |       |              |               |
|              |       |              \------100------+      /-------- Ambondro(34)
|              |       |                              \-100--+
|              |       |                                     \-------- Asfaltomylos(35)
|              |       |
|              |       |                                     /-------- Amphilestes(31)
|              |       \-----------------99------------------+
|              |                                             \-------- Priacodon(32)
|              |
|              \------------------------------------------------------ Purbeckodon(18)
|
+--------------------------------------------------------------------- Paikasigudodon(12)
|
\--------------------------------------------------------------------- Hallautherium(16)
```

Bipartitions found in one or more trees and frequency of occurrence:

```
         1         2         3       3
12345678901234567890123456789012345678      Freq      %
-----------------------------------------------------------
........................**............     12700 100.0%
.....................*..............**     12700 100.0%
............................**........     12700 100.0%
.....................*..........******     12700 100.0%
.....................*.............***     12700 100.0%
....................**..........******     12700 100.0%
........................******........     12700 100.0%
.................................**...     12700 100.0%
....................................**     12700 100.0%
..................**..................     12700 100.0%
```

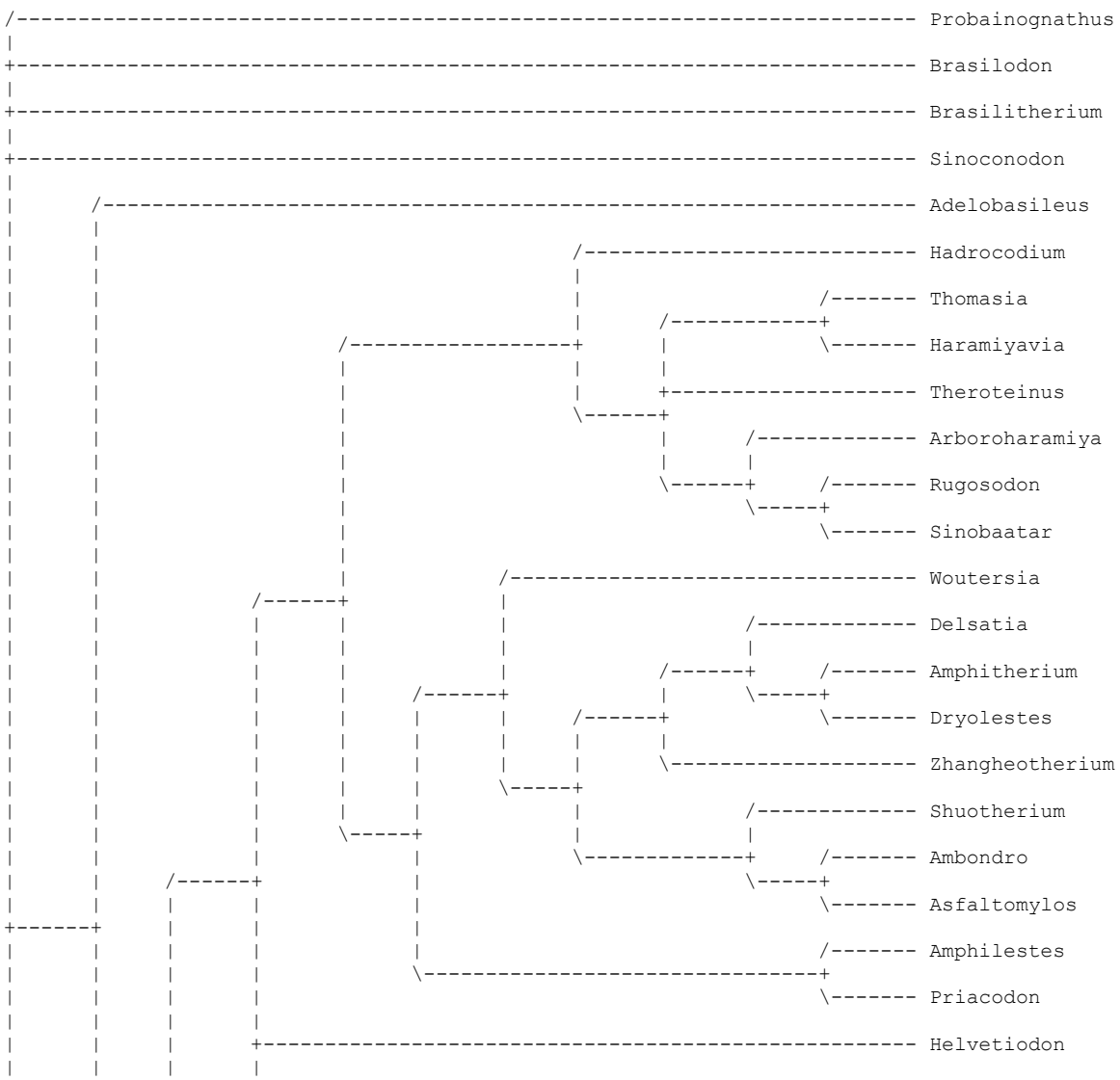
```
................................***...     12700 100.0%
..............................**......     12575  99.0%
.......................**.............     12547  98.8%
.........**...........................     12286  96.7%
...................**..**.............     11448  90.1%
.............................***........      9863  77.7%
....*******.***.**********************      9733  76.6%
...********.***.**********************      8819  69.4%
.....******.***.*.********************      8819  69.4%
.....*...................******........      8046  63.4%
......*.........*......................      7150  56.3%
........................***............      7003  55.1%
......*****..*..*......................      6969  54.9%
......**........*......................      6969  54.9%
.**........*...*.......................      6306  49.7%
........*....*.........................      6005  47.3%
..............*.....**..........******      5807  45.7%
.....*......*.*...********************      5703  44.9%
............................****........      5697  44.9%
............*.*.....**........********      4357  34.3%
............*.*.....**..........******      4357  34.3%
..............*.....**........********      4355  34.3%
......***....*..*......................      4192  33.0%
.....******.***.**********************      3808  30.0%
.**........*...........................      3770  29.7%
....***********.**********************      3658  28.8%
...***********.**********************      3524  27.7%
.**....................................      3491  27.5%
....*******.***.*.********************      2939  23.1%
....*............*.....................      2931  23.1%
.....*......*.*.....**..***************      2861  22.5%
............................**..........      2837  22.3%
......................**........********      2694  21.2%
.**............*.......................      2658  20.9%
..............*...**..**...............      2277  17.9%
.....**********.**********************      2221  17.5%
..*............*.......................      2213  17.4%
............*...*.......................      2127  16.7%
.*.........*...........................      2095  16.5%
..*........*...........................      2092  16.5%
............*........**..........******      2083  16.4%
.**************.**********************      1988  15.7%
.*..............*.......................      1967  15.5%
.....*........*.....**..***************      1926  15.2%
.....*..............**..***************      1890  14.9%
............*.....**..**...............      1844  14.5%
............*.*.........................      1842  14.5%
......*.....*...*.......................      1821  14.3%
............*.*...**..**...............      1799  14.2%
........***..*.........................      1727  13.6%
.....*.....**.*..**********************      1716  13.5%
......*****.**..*.......................      1684  13.3%
......**....*...*.......................      1684  13.3%
.....*.....*.....*......******.........      1629  12.8%
.....*.........*...********************      1604  12.6%
.....*.........*..*..**..***************      1569  12.4%
.....*.........*..**********************      1569  12.4%
.....*......*.*..**********************      1569  12.4%
......*..**............................      1558  12.3%
......*****..*.........................      1531  12.1%
.....*......*.*.*.********************      1512  11.9%
.....*......*.*.*...**..***************      1512  11.9%
............*.....*.....................      1498  11.8%
......**.....*..*.......................      1407  11.1%
.....*.....*..*..*..**..***************      1392  11.0%
......***........*.....................      1391  11.0%
......**.**.....*.....................      1389  10.9%
............*.....*......******........      1348  10.6%
```

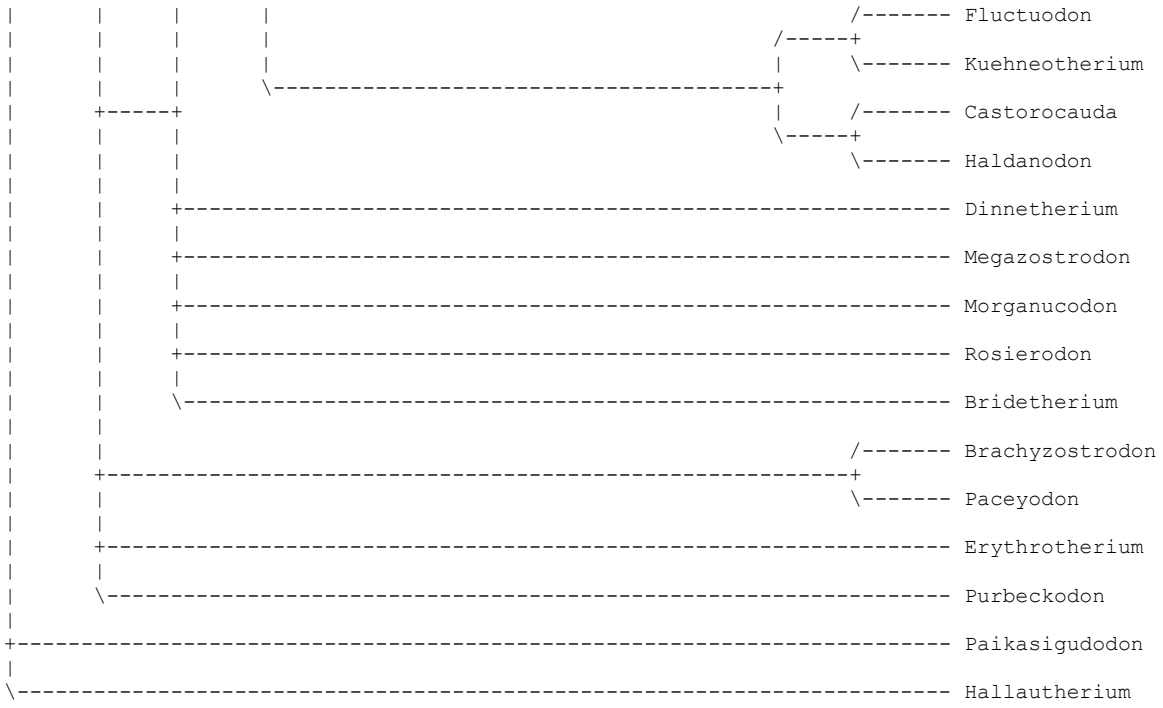


1282	10.1%
1271	10.0%
1264	10.0%
1259	9.9%
1258	9.9%
1257	9.9%
1134	8.9%
1134	8.9%
1023	8.1%
1009	7.9%
1008	7.9%
975	7.7%
947	7.5%
947	7.5%
928	7.3%
928	7.3%
804	6.3%
804	6.3%
804	6.3%
765	6.0%
765	6.0%
756	6.0%
730	5.7%
728	5.7%
699	5.5%
675	5.3%
641	5.0%
641	5.0%
630	5.0%
630	5.0%
622	4.9%
594	4.7%
587	4.6%
568	4.5%
539	4.2%
539	4.2%
539	4.2%
539	4.2%
530	4.2%
498	3.9%
450	3.5%
378	3.0%
378	3.0%
340	2.7%
336	2.6%
336	2.6%
315	2.5%
275	2.2%
272	2.1%
271	2.1%
252	2.0%
252	2.0%
244	1.9%
243	1.9%
229	1.8%
225	1.8%
225	1.8%
223	1.8%
212	1.7%
210	1.7%
206	1.6%
204	1.6%
137	1.1%
135	1.1%
135	1.1%
125	1.0%
125	1.0%
125	1.0%

```
..*.*..........*.....................          87   0.7%
.*.***********.**********************          82   0.6%
..............*.......*...............          77   0.6%
..............*........*..............          76   0.6%
.....*.....*..........................          75   0.6%
...........*.....*.............*......          75   0.6%
.....*...........*....................          75   0.6%
...........*.....*............**......          75   0.6%
....*****...*.*.**********************          70   0.6%
......*.....*.........................          45   0.4%
....*..........*......................          32   0.3%
..*.*.................................          29   0.2%
.**..*********************************          27   0.2%
.*.**********************************          26   0.2%
...........*...................*.......          25   0.2%
..............*.............*.......          25   0.2%
...........*..*..*............*......          25   0.2%
.................*............**......          25   0.2%
......***....*........................          19   0.1%
...........**...**......******........          19   0.1%
.....*.....**.*.**..**..***************          19   0.1%
.....*.....**...**......******........          19   0.1%
......**.....*........................           8   0.1%
......***.............................           5   0.0%
```

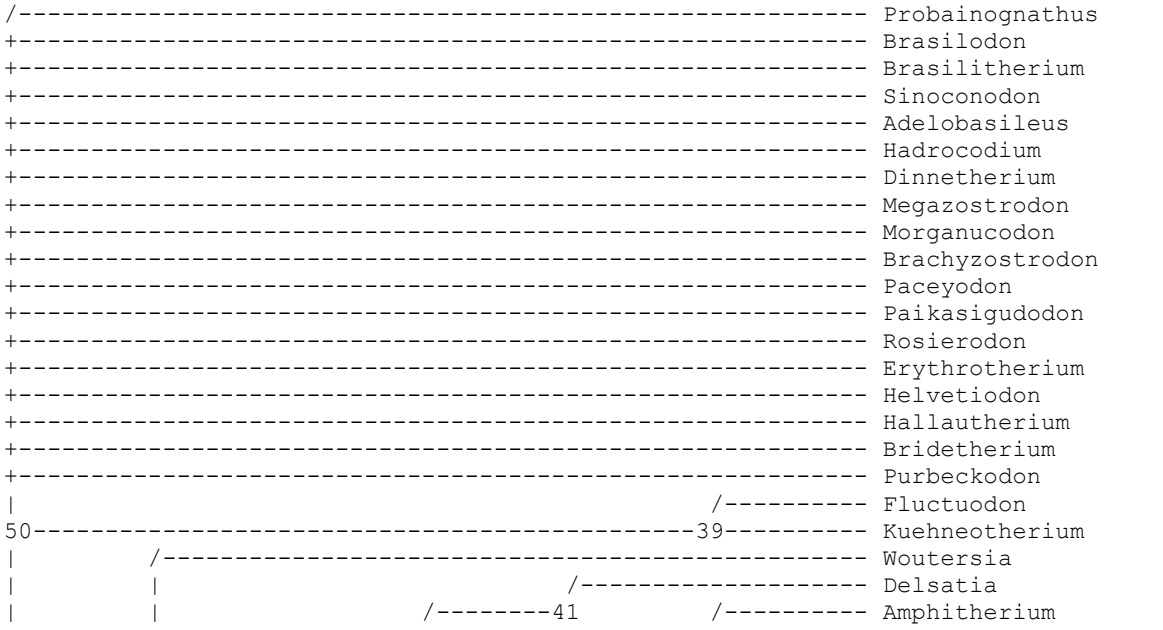
Adams consensus of 12700 trees:

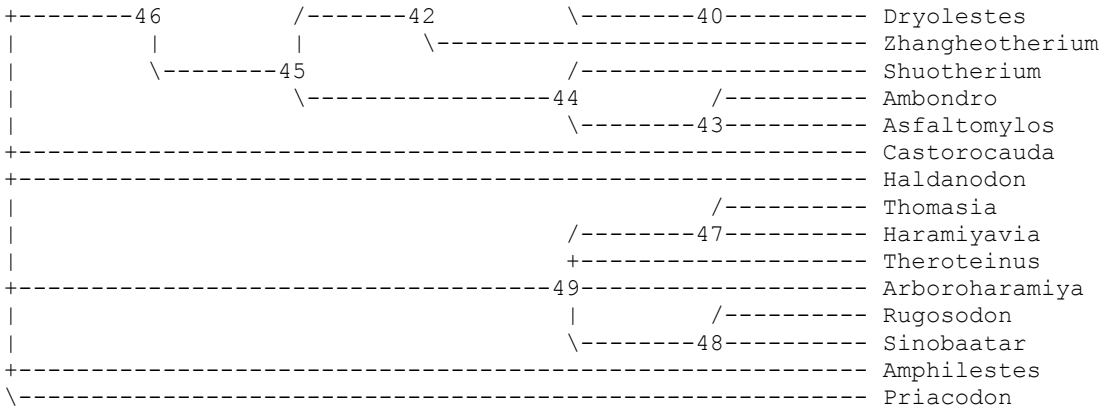




----*Optimisation des caractères sur l'arbre de consensus en ACCTRAN*

```
Tree length = 978
Consistency index (CI) = 0.481
Homoplasy index (HI) = 0.519
CI excluding uninformative characters = 0.411
HI excluding uninformative characters = 0.589
Retention index (RI) = 0.317
Rescaled consistency index (RC) = 0.152
   (above indices do not include stepmatrix characters)
f value = 6517
f-ratio = 0.1955
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```





Possible character-state assignments to internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node                1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
39                  000101?3000004041112011021110101010011220100000011011011
                        1         15              1                          1
40                  0023010000000727O?020010211100010100220100010000O7?30000001
                       41    1      1  3  2             43  1 3  4  38    1
                             3                           3
41                  00220100000007070?120010211100010100220100010000O7030000001
                                   1  3  2                 1             1
                                                          3
42                  00220100000007070?120010211100O1?100200000010000O7000000?1
                                   1     2              11 12         1  1
                                                        2  3          2
                                                                      3
43                  00221200010017271?121110211100010100200002010000O7001000011
                                        3  2         1     1 1       4     1  2
                                                              3       5
44                  00220100010007071?121110211100010100200002010000O7001000011
                                        2         1     1 1       4     1  2
                                                              3       5
45                  00220100000007071?120010211100010100200002010000O7001000011
                                        2         1     1 1             1  2
                                                              3
46                  00110100000004071?110010211101010100100002010000O7001000011
                       2                2  2         1   2 1 1             1 12
                                                              3
47                  10000102000010000101101021110110021100011001000000000000020
                         22             2             3                    3 21
48                  20000102000000000101101021110110031100011001100000001002001
                         2              2                                    2
49                  10000102000000000101101021110110031100011001000000001000001
                         2      1       2                                  3 212
50                  00000101000000001111001021110111010000011201000000001000011
                               2        2                                    1 12
```

Possible character-state assignments to internal nodes (continued)

```
                                                          1111111111111111111
                    6666666666777777777788888888899999999990000000000111111111
Node                0123456789012345678901234567890123456789012345678901234578
-------------------------------------------------------------------------------
39                  20010011?000001000011000000000000000002001000001000000100O
                         1                                    1   1
40                  20010011O?0000111?1?11100002200011210012103120111000O?00000
                         1       2                             1
41                  20010011O?0000111?0?1010000220001?2100?2101100111000O??0000
                         1            1  1                    13 2          1 1
                                                               4
42                  20010011O?0000111?0?1010000220001?2100?2101100111000O??1000
```

```
                      1                                   13 2            1
                                                           4
43               2001?011??0000100101101?000021000000?00021011001010000?11011
                      1            2  2            2      1  2           1
                                                          3
44               2001?011??0000100101101?000021000000?00021011001010000?11011
                      1                            2      1  2           1
                                                          3
45               2001?011??0000100?0110100000200000?00021011001010000??1000
                      1                            2      1  2            1
                                                          3
46               2001?0111?0000100?0110?000000000000?0002101??00010000??1000
                      1                      2     2      1    1          1
                                                          3
47               21010210?000022?1001100000?02110?000?002201010021?000001200
                               3   2        3             24
48               2101?21010001131112110000 0?32110102121022240100210000001200
49               2101?2101000023?1001100000?02110?000?0022010100210000001200
                                   2        3             24
50               21010011100000100001100000000000000000021010100010000001000
                      1

Possible character-state assignments to internal nodes (continued)

                 11111111111111111111111111111111111111111111111111111111111
                 12222222222333333333344444444445555555555666666666677777777
Node             90123456789012345678901234567890123456789012345678901234567
----------------------------------------------------------------------------
39               0000000000000000000000110100 0?001110000?10?10000?000000000
                        1     1 1
                              3
40               01000000100000?0000000?111020??00111??00?1??1?????????????0
                       1                                     2             1
                       2
41               01000000000000?0000000?111020??00111??00?1??1?????????????0
                       1 1                                   2             1
                       2 2
42               01000000000000?00000000111020??00111??00?1??1?????????????0
                       1 1                                   2             1
                       2 2
43               11000000000000?0000000011?000??00111??00?1??1?????????????0
                       1 1       1         12                2             1
                       2 2       3
44               11000000000000?0000000011?000??00111??00?1??1?????????????0
                       1 1       1         12                2             1
                       2 2       3
45               01000000000000?0000000011?000??00111??00?1??1?????????????0
                       1 1       1         12                2             1
                       2 2       3
46               0?000000000000?0000000011?000??00111??00?1??1?????????????0
                       1 1       1         12                2             1
                       2 2       3
47               000020001100?00133??00?11120?????1111000?1?11?00??????0?000
                       2 42    1 44                                        2
                       3       3
48               ?000212041?02001442?01?11120?1?1111110001111110011111101000
                          2                                                2
49               000020001100?00144??00?11120?????1111000?1?11?00??????0?000
                       2 42    1                                           2
                       3       3
50               0000000000000000000000110100 0?001110000?10?10000?000000000
                        1     1 1
                              3

Possible character-state assignments to internal nodes (continued)

                 11111111111111111111112222222222222222222222222222222222222
                 77888888888899999999990000000000111111111122222222223333333
```

```
Node             89012345678901234567890123456789012345678901234567890123456
----------------------------------------------------------------------------
39               000000012100000100010000000?0000000??01000000100110110231111
                  1           1                             2
40               ?0????0121??0??1???1?00??0?0???00???01000000110 11?11?231111
                  1          2      2            1       2  2    2
41               ?0????0121??0??1???1?00??0?0???00???010000001101 1?11?231111
                  1          2      2            1       2  2    2
42               ?0????0121??0??1???1?00??0?0???00???0100000011011?11?231111
                  1          2      2            1       2  2    2
43               ?0????0121??0??1???1?00??0?0???00???01000000 1?011?11?231111
                  1          2      2            1       2  2    2
44               ?0????0121??0??1???1?00??0?0???00???010000001?011?11?231111
                  1          2      2            1       2  2    2
45               ?0????0121??0??1???1?00??0?0???00???010000001?011?11?231111
                  1          2      2            1       2  2    2
46               ?0????0121??0??1???1?00??0?0???00???010000001?011?11?231111
                  1          2      2            1       2  2    2
47               0000??0121000011 00?100?0?????00?0???????00?011011?1?0231111
                  1           1                  2       1  2
48               00001111210011110012011012111001211110111112110 11?1?0231111
49               0000??01210000110 0?100?0?????00?0???????00?011011?1?0231111
                  1           1                  2       1  2
50               000000012100000100010000000?0000000??01000000100110110231111
                  1           1                             2
```

Possible character-state assignments to internal nodes (continued)

```
                 22222222222222222222222222222222222222222222222222222222222
                 33344444444445555555555666666666677777777778888888888999999
Node             78901234567890123456789012345678901234567890123456789012345
----------------------------------------------------------------------------
39               21000111101000110101010110101002121000011011011110020100200
                                                         2
40               21???11110100011?1?1?1?1101?1?02121000?1101101111002010020?
                                  2     2                2           2  1
41               21???11110100011?1?1?1?1101?1?02121000?1101101111002010020?
                                  2     2                2           2  1
42               21???11110100011?1?1?1?1101?1?02121000?1101101111002010020?
                                  2     2                2           2  1
43               21???11110100011?1?1?1?1101?1?02121000?1101101111002010020?
                                  2     2                2           2  1
44               21???11110100011?1?1?1?1101?1?02121000?1101101111002010020?
                                  2     2                2           2  1
45               21???11110100011?1?1?1?1101?1?02121000?1101101111002010020?
                                  2     2                2           2  1
46               21???11110100011?1?1?1?1101?1?02121000?1101101111002010020?
                                  2     2                2           2  1
47               210001111010001101010101101010021 21?000?1011011110020100200
                                                         2
48               21000111101000110101010110101002121?000?1011011110020100200
                                                         2
49               21000111101000110101010110101002121?000?1011011110020100200
                                                         2
50               21000111101000110101010110101002121000011011011110020100200
                                                         2
```

Possible character-state assignments to internal nodes (continued)

```
                 222233333333
                 999900000000
Node             678901234567
-----------------------------
39               011011?001?2
40               011011?001?2
41               011011?001?2
42               011011?001?2
43               011011?001?2
```

```
44                011011?001?2
45                011011?001?2
46                011011?001?2
47                011011?001?2
48                011011?001?2
49                011011?001?2
50                011011?001?2
```

Reconstructed states for internal nodes

```
                          1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
--------------------------------------------------------------------------------
39                0001111300000415111201102111010101001011220100000001101l011
40                0024110001000727000300202111000101004301003104003863001000l
41                0022010000000707001300202111000101002201000100000703001000l
42                0022010000000707001200202111000101002200000100000703001001l
43                0022120001001727121311202111000111002010020100005700101002l
44                0022010001000707101211202111000111002010020100005700101002l
45                0022010000000707101200202111000111002010020100000700101001l
46                0012010000000407101100202111010111002010020100000700101001l
47                1000022200001000010110102111011002110001100100000000302020
48                2000020200000000010110102111011003110001100110000000l002001
49                1000020200001000010110102111011003110001100100000000l302001
50                0000010100000000111100102111011101000001120100000000l000011
```

Reconstructed states for internal nodes (continued)

```
                                                              111111111111111111
                  6666666666777777777788888888899999999990000000000111111111
Node              0123456789012345678901234567890123456789012345678901234567
--------------------------------------------------------------------------------
39                2001001100000010000110000000000000000002001000001000000l000
40                2001011101000211111011100002200011210012113120111000010000l
41                2001011101000011111011100002200011210012113120111000010000l
42                2001011101000011110010100002200011210012113100111000011101l
43                2001111101000010012112110000210000220002131120101000011111l
44                2001111101000010010110110000210000220002131100101000011111l
45                2001111101000010010110100000200000210002111100101000011101l
46                2001101111000010010110100000200000210002111100101000011101l
47                2101021000000220100110000000211000000002201010021100000l200
48                2101121010001131112110000013211010212102224010021000000l200
49                2101121010000231102110000013211010002002224010021000000l200
50                2101001110000010000110000000000000000002101010001000000l000
```

Reconstructed states for internal nodes (continued)

```
                  1111111111111111111111111111111111111111111111111111111111
                  1222222222233333333334444444445555555555666666666677777777
Node              9012345678901234567890123456789012345678901234567890123456
--------------------------------------------------------------------------------
39                0000000000000000000000011010000001110000010010000000000000
40                0100001010000010000000311102011001111100111121111111111111
41                0100001010000010000000311102011001111100111121111111111111
42                0100001010000010000000011102011001111100111121111111111111
43                1100001010000010300000011102011001111100111121111111111111
44                1100001010000010300000011102011001111100111121111111111111
45                0100001010000010000000011102011001111100111121111111111111
46                0100001010000010000000011102011001111100111121111111111111
47                0000202011001011332100311120111111111000111111001111110l002
48                1000212041102001442201311120111111111000111111001111110l002
49                0000202041001001442100311120111111111000111111001111110l002
50                0000000000000000000000011010000001110000010010000000000000
```

Reconstructed states for internal nodes (continued)

```
                  1111111111111111111112222222222222222222222222222222222222
                  7788888888889999999999000000000011111111112222222223333333
```

```
Node             8901234567890123456789012345678901234567890123456789012345678901234567890123456
-------------------------------------------------------------------------------------------------
39               0000000121000001000100000000000000000010000001001101102311111
40               1011110121112211111210011000132011110100200211012111231111
41               1011110121112211111210011000132011110100200211012111231111
42               1011110121112211111210011000132011110100200211012111231111
43               1011110121112211111210011000132011110100200211012111231111
44               1011110121112211111210011000132011110100200211012111231111
45               1011110121112211111210011000132011110100200211012111231111
46               1011110121112211111210011000132011110100200211012111231111
47               0000110121000011001100101211100121111011101011011100231111
48               0000111121001111001201101211100121111011111211011100231111
49               0000110121000011001100101211100121111011101011011100231111
50               0000000121000001000100000000000000000010000001001101102311111

Reconstructed states for internal nodes (continued)

                 2222222222222222222222222222222222222222222222222222222222
                 3334444444444555555555566666666667777777777888888888999999
Node             7890123456789012345678901234567890123456789012345678901234
-------------------------------------------------------------------------------------------------
39               2100011110100011010101011010100212100001101101111002010020
40               2111111110100011121111121011110212100011101101111002210120
41               2111111110100011121111121011110212100011101101111002210120
42               2111111110100011121111121011110212100011101101111002210120
43               2111111110100011121111121011110212100011101101111002210120
44               2111111110100011121111121011110212100011101101111002210120
45               2111111110100011121111121011110212100011101101111002210120
46               2111111110100011121111121011110212100011101101111002210120
47               2100011110100011010101011010100212110002101101111002010020
48               2100011110100011010101011010100212110002101101111002010020
49               2100011110100011010101011010100212110002101101111002010020
50               2100011110100011010101011010100212100001101101111002010020

Reconstructed states for internal nodes (continued)

                 222233333333
                 999900000000
Node             678901234567
------------------------------
39               011011000102
40               011011000102
41               011011000102
42               011011000102
43               011011000102
44               011011000102
45               011011000102
46               011011000102
47               011011000102
48               011011000102
49               011011000102
50               011011000102

Character change lists:

 Character         CI     Steps                  Changes

 1                 0.667      1           node_50 0 ==> 1 node_49
                              1           node_49 1 ==> 2 node_48
                              1           node_50 0 ==> 1 Amphilestes
 2                 0.333      1           node_47 0 ==> 1 Haramiyavia
                              1           node_49 0 ==> 1 Arboroharamiya
                              1           node_48 0 ==> 1 Rugosodon
 3                  n/a       1           node_50 0 ==> 5 Brachyzostrodon
                              1           node_50 0 ==> 5 Paceyodon
                              1           node_39 0 ==> 1 Kuehneotherium
                              1           node_50 0 ==> 1 node_46
                              1           node_46 1 ==> 2 node_45
```

		1	node_43 2 ==> 1 Ambondro
4	n/a	1	node_50 0 ==> 1 node_39
		2	node_50 0 ==> 2 node_46
		2	node_41 2 ==> 4 node_40
		1	node_43 2 ==> 3 Asfaltomylos
		3	node_50 0 ==> 3 Castorocauda
		2	node_50 0 ==> 23 Haldanodon
		1	node_49 0 ==> 1 Arboroharamiya
5	n/a	1	node_50 0 ==> 1 Brachyzostrodon
		1	node_50 0 ==> 1 Paceyodon
		1	node_50 0 --> 1 node_39
		1	node_41 0 --> 1 node_40
		1	node_44 0 ==> 1 node_43
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
6	0.250	1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Megazostrodon
		1	node_50 1 ==> 0 Brachyzostrodon
		1	node_50 1 ==> 0 Hallautherium
		1	node_46 1 ==> 2 Woutersia
		1	node_40 1 ==> 0 Dryolestes
		1	node_44 1 ==> 2 node_43
		1	node_50 1 --> 2 node_49
7	0.222	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Rosierodon
		1	node_50 0 ==> 1 Bridetherium
		1	node_50 0 --> 1 node_39
		1	node_39 1 --> 2 Kuehneotherium
		1	node_46 0 ==> 2 Woutersia
		1	node_49 0 --> 2 node_47
		1	node_50 0 ==> 1 Priacodon
8	0.214	1	node_50 1 ==> 3 Megazostrodon
		1	node_50 1 --> 2 Morganucodon
		1	node_50 1 ==> 3 Brachyzostrodon
		1	node_50 1 ==> 3 Paceyodon
		1	node_50 1 ==> 0 Rosierodon
		1	node_50 1 --> 2 Hallautherium
		1	node_50 1 --> 2 Bridetherium
		1	node_50 1 --> 2 Purbeckodon
		1	node_50 1 ==> 3 node_39
		1	node_50 1 ==> 0 node_46
		1	node_43 0 ==> 3 Asfaltomylos
		1	node_50 1 ==> 0 Haldanodon
		1	node_50 1 --> 2 node_49
		1	node_49 2 ==> 0 Arboroharamiya
9	0.667	1	node_46 0 ==> 2 Woutersia
		1	node_50 0 ==> 2 Haldanodon
		1	node_49 0 ==> 1 Arboroharamiya
10	0.300	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Rosierodon
		1	node_50 0 ==> 1 Bridetherium
		1	node_50 0 ==> 13 Purbeckodon
		1	node_39 0 ==> 2 Fluctuodon
		1	node_41 0 --> 1 node_40
		1	node_40 1 --> 3 Dryolestes
		1	node_45 0 ==> 1 node_44
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
11	0.333	1	node_50 0 ==> 1 Paceyodon
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
12	0.600	1	node_50 0 ==> 1 Paceyodon
		1	node_39 0 ==> 2 Fluctuodon
		1	node_40 0 ==> 3 Dryolestes
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 2 Haldanodon
13	n/a	1	node_50 0 ==> 1 Brachyzostrodon

		1	node_50 0 ==> 4 Paceyodon
		1	node_40 0 ==> 12 Dryolestes
		1	node_44 0 ==> 1 node_43
		1	node_43 1 ==> 2 Asfaltomylos
		1	node_50 0 --> 1 node_49
		1	node_47 1 ==> 2 Haramiyavia
		1	node_49 1 --> 0 node_48
14	n/a	1	node_50 0 ==> 1 Brachyzostrodon
		1	node_50 0 ==> 1 Paceyodon
		1	node_50 0 ==> 4 node_39
		1	node_50 0 ==> 4 node_46
		3	node_46 4 ==> 7 node_45
		2	node_40 7 ==> 45 Dryolestes
		2	node_43 7 ==> 5 Ambondro
		1	node_50 0 ==> 12 Haldanodon
15	n/a	1	node_50 0 --> 1 node_39
		2	node_41 0 ==> 2 node_40
		1	node_40 2 ==> 3 Dryolestes
		2	node_44 0 ==> 2 node_43
		3	node_50 0 ==> 3 Castorocauda
		1	node_50 0 ==> 12 Haldanodon
		1	node_47 0 ==> 1 Haramiyavia
16	n/a	2	node_50 0 ==> 5 node_39
		4	node_50 0 ==> 7 node_46
		3	node_50 0 ==> 6 Castorocauda
		4	node_50 0 ==> 7 Haldanodon
		1	node_47 0 ==> 4 Haramiyavia
17	0.273	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 3 Dinnetherium
		1	node_50 1 ==> 23 Megazostrodon
		1	node_50 1 ==> 0 Brachyzostrodon
		1	node_50 1 ==> 23 Rosierodon
		1	node_50 1 ==> 0 Hallautherium
		1	node_50 1 ==> 3 Bridetherium
		1	node_46 1 ==> 2 Woutersia
		1	node_45 1 --> 0 node_42
		1	node_50 1 ==> 0 node_49
18	0.375	1	node_50 1 ==> 0 Rosierodon
		1	node_50 1 ==> 0 Purbeckodon
		1	node_39 1 ==> 2 Kuehneotherium
		1	node_50 1 --> 0 node_46
		1	node_44 0 --> 2 node_43
		1	node_43 2 --> 3 Asfaltomylos
		1	node_50 1 ==> 0 Amphilestes
		1	node_50 1 ==> 0 Priacodon
19	0.167	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Purbeckodon
		1	node_41 1 ==> 0 node_40
		1	node_43 1 ==> 0 Asfaltomylos
		1	node_50 1 ==> 0 node_49
		1	node_50 1 ==> 0 Priacodon
20	n/a	1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 --> 2 Sinoconodon
		1	node_50 1 --> 23 Dinnetherium
		1	node_50 1 --> 2 Paceyodon
		1	node_50 1 --> 2 Rosierodon
		1	node_50 1 ==> 0 Hallautherium
		1	node_50 1 --> 2 node_39
		1	node_46 1 --> 2 node_45
		1	node_42 2 --> 3 node_41
		1	node_44 2 --> 3 node_43
		1	node_50 1 --> 2 Haldanodon
21	0.200	1	node_50 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Delsatia
		1	node_45 0 ==> 1 node_44
		1	node_50 0 ==> 1 node_49
		1	node_49 1 ==> 0 Arboroharamiya

22	0.200	1	node_50 0 ==> 1 Brasilitherium
		1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 node_39
		1	node_45 0 ==> 1 node_44
		1	node_50 0 ==> 1 Castorocauda
23	1.000	1	node_50 1 --> 2 node_46
24	0.125	1	node_50 0 ==> 1 Brasilodon
		1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 ==> 1 Bridetherium
		1	node_46 0 ==> 1 Woutersia
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
		1	node_50 0 ==> 1 Amphilestes
25	n/a	3	node_50 2 ==> 4 Brasilitherium
		1	node_50 2 ==> 1 Dinnetherium
		2	node_50 2 ==> 0 Megazostrodon
		1	node_50 2 ==> 01 Morganucodon
		1	node_50 2 ==> 01 Brachyzostrodon
		2	node_50 2 ==> 0 Erythrotherium
		1	node_50 2 ==> 3 Castorocauda
		1	node_50 2 ==> 3 Haldanodon
26	1.000	1	node_50 1 ==> 0 Brasilodon
27	1.000	1	node_49 1 ==> 0 Arboroharamiya
28	1.000	1	node_49 1 ==> 2 Arboroharamiya
		1	node_48 1 ==> 0 Sinobaatar
29	0.500	1	node_49 0 ==> 1 Arboroharamiya
		1	node_48 0 ==> 1 Rugosodon
30	0.143	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Hadrocodium
		1	node_46 1 ==> 0 node_45
		1	node_41 0 ==> 1 Delsatia
		1	node_50 1 ==> 0 Haldanodon
31	0.500	1	node_50 1 ==> 0 Dinnetherium
		1	node_50 1 --> 0 node_39
		1	node_50 1 ==> 0 node_46
		1	node_50 1 ==> 2 Priacodon
32	0.500	1	node_50 1 ==> 0 node_49
		1	node_48 0 ==> 1 Rugosodon
33	0.286	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Brachyzostrodon
		1	node_50 0 --> 1 node_46
		1	node_45 1 --> 0 node_42
		1	node_42 0 --> 2 Zhangheotherium
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
34	0.429	1	node_50 1 ==> 2 Brasilitherium
		1	node_50 1 ==> 2 Sinoconodon
		1	node_50 1 ==> 3 Erythrotherium
		1	node_50 1 ==> 3 node_49
		1	node_49 3 --> 2 node_47
		1	node_48 3 ==> 0 Sinobaatar
		1	node_50 1 ==> 2 Priacodon
35	n/a	1	node_50 0 ==> 1 node_49
		1	node_47 1 ==> 2 Haramiyavia
		1	node_49 1 ==> 2 Theroteinus
		1	node_48 1 ==> 2 Sinobaatar
36	1.000	1	node_50 0 ==> 1 node_49
37	n/a	1	node_50 0 ==> 1 Paikasigudodon
		1	node_50 0 ==> 1 Helvetiodon
		1	node_50 0 ==> 1 node_39
		2	node_50 0 ==> 2 node_46
		2	node_41 2 --> 4 node_40
		1	node_50 0 ==> 1 Haldanodon
38	n/a	1	node_50 0 ==> 1 Paikasigudodon
		1	node_39 0 ==> 1 Kuehneotherium

		2	node_45 0 --> 2 node_42
		1	node_41 2 --> 3 node_40
		1	node_49 0 ==> 12 Theroteinus
39	n/a	1	node_50 0 ==> 2 Paikasigudodon
		1	node_50 0 ==> 1 Helvetiodon
		1	node_50 0 ==> 1 node_39
		1	node_50 0 --> 1 node_46
		1	node_45 1 --> 0 node_42
		1	node_50 0 ==> 1 Haldanodon
		1	node_49 0 ==> 2 Theroteinus
40	0.200	1	node_50 1 ==> 0 Dinnetherium
		1	node_50 1 ==> 0 Brachyzostrodon
		1	node_50 1 ==> 0 node_46
		1	node_42 0 ==> 1 node_41
		1	node_49 1 ==> 0 Theroteinus
41	0.600	1	node_50 1 ==> 0 Paikasigudodon
		1	node_50 1 ==> 2 node_39
		1	node_50 1 --> 0 node_46
		1	node_46 0 --> 3 Woutersia
		1	node_50 1 ==> 2 Haldanodon
42	0.375	1	node_50 2 ==> 3 Megazostrodon
		1	node_50 2 ==> 3 Paikasigudodon
		1	node_50 2 ==> 1 Bridetherium
		1	node_46 2 ==> 3 Woutersia
		1	node_45 2 --> 0 node_42
		1	node_50 2 ==> 0 node_49
		1	node_47 0 ==> 1 Thomasia
		1	node_48 0 ==> 1 Sinobaatar
43	0.667	1	node_50 0 ==> 2 Paikasigudodon
		1	node_50 0 ==> 2 Purbeckodon
		1	node_41 0 --> 3 node_40
45	1.000	1	node_49 0 ==> 1 node_48
46	0.750	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Purbeckodon
		1	node_39 0 ==> 3 Kuehneotherium
		1	node_41 0 --> 4 node_40
47	0.500	1	node_50 0 ==> 1 Purbeckodon
		1	node_39 0 ==> 1 Fluctuodon
48	1.000	1	node_46 0 ==> 1 Woutersia
49	n/a	1	node_39 0 ==> 4 Kuehneotherium
		3	node_41 0 --> 3 node_40
		2	node_45 0 --> 5 node_44
50	n/a	2	node_50 0 ==> 2 Megazostrodon
		1	node_50 0 ==> 1 Helvetiodon
		1	node_39 0 ==> 12 Fluctuodon
		4	node_39 0 ==> 7 Kuehneotherium
		4	node_50 0 ==> 7 node_46
		1	node_41 7 --> 8 node_40
		2	node_50 0 ==> 2 Haldanodon
51	n/a	3	node_41 0 --> 6 node_40
52	n/a	2	node_50 0 ==> 2 Megazostrodon
		1	node_50 0 ==> 1 node_39
		1	node_39 1 ==> 2 Kuehneotherium
		3	node_45 0 --> 3 node_42
		1	node_41 3 ==> 7 Delsatia
53	0.250	1	node_50 1 ==> 0 Dinnetherium
		1	node_45 1 ==> 0 node_42
		1	node_50 1 ==> 0 Haldanodon
		1	node_49 1 ==> 0 node_47
54	0.750	1	node_50 0 ==> 1 Paikasigudodon
		1	node_46 0 ==> 2 Woutersia
		1	node_50 0 --> 3 node_49
		1	node_49 3 --> 0 node_48
55	0.429	1	node_50 0 --> 1 Brachyzostrodon
		1	node_50 0 ==> 2 Helvetiodon
		1	node_50 0 --> 1 Bridetherium
		1	node_50 0 ==> 2 Purbeckodon
		1	node_50 0 --> 1 node_39

		1	node_50 0 --> 1 node_46
		1	node_49 0 ==> 3 Theroteinus
56	0.400	1	node_50 0 ==> 2 Paikasigudodon
		1	node_50 0 ==> 2 Helvetiodon
		1	node_50 0 ==> 2 Purbeckodon
		1	node_50 0 ==> 1 node_39
		1	node_50 0 --> 2 node_49
57	0.286	1	node_50 0 --> 1 Brasilitherium
		1	node_50 0 --> 1 Dinnetherium
		1	node_50 0 --> 1 Megazostrodon
		1	node_50 0 --> 1 Brachyzostrodon
		1	node_50 0 --> 1 Erythrotherium
		1	node_50 0 ==> 2 Helvetiodon
		1	node_50 0 --> 12 Purbeckodon
58	0.143	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 --> 2 Dinnetherium
		1	node_50 1 --> 2 Megazostrodon
		1	node_50 1 --> 2 Morganucodon
		1	node_50 1 --> 2 Brachyzostrodon
		1	node_50 1 --> 2 Bridetherium
		1	node_50 1 --> 2 Purbeckodon
		1	node_42 1 --> 0 node_41
		1	node_45 1 --> 2 node_44
		1	node_50 1 --> 2 Haldanodon
		1	node_50 1 --> 0 node_49
		1	node_49 0 --> 2 node_47
		1	node_49 0 --> 2 Theroteinus
59	0.143	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Sinoconodon
		1	node_42 1 ==> 0 Zhangheotherium
		1	node_49 1 ==> 0 node_47
		1	node_50 1 ==> 0 Priacodon
60	n/a	2	node_50 2 ==> 0 Paikasigudodon
		1	node_50 2 ==> 1 Helvetiodon
		1	node_50 2 ==> 01 Purbeckodon
		1	node_41 2 ==> 3 Delsatia
61	0.125	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Helvetiodon
		1	node_50 1 ==> 0 Purbeckodon
		1	node_50 1 ==> 0 node_39
		1	node_50 1 ==> 0 node_46
		1	node_50 1 ==> 0 Haldanodon
		1	node_50 1 ==> 0 Priacodon
62	0.200	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 ==> 1 Morganucodon
		1	node_50 0 ==> 1 Erythrotherium
		1	node_50 0 ==> 1 Bridetherium
64	0.167	1	node_50 0 ==> 1 Helvetiodon
		1	node_50 0 --> 1 node_46
		1	node_45 1 --> 0 node_42
		1	node_50 0 ==> 1 Haldanodon
		1	node_50 0 --> 1 node_49
		1	node_49 1 --> 0 node_47
65	0.667	1	node_46 0 --> 1 node_45
		1	node_50 0 --> 1 Haldanodon
		1	node_50 0 ==> 2 node_49
66	0.250	1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Paikasigudodon
		1	node_49 1 ==> 0 Arboroharamiya
67	0.500	1	node_50 1 ==> 0 Bridetherium
		1	node_50 1 ==> 0 node_49
68	0.125	1	node_50 1 ==> 0 Probainognathus

		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Hadrocodium
		1	node_50 1 --> 0 node_39
		1	node_46 1 --> 0 node_45
		1	node_50 1 ==> 0 Haldanodon
		1	node_49 1 --> 0 node_47
69	1.000	1	node_50 0 --> 1 node_46
70	0.500	1	node_47 0 ==> 1 Thomasia
		1	node_49 0 ==> 1 Theroteinus
71	0.500	1	node_49 0 ==> 1 Theroteinus
		1	node_48 0 ==> 1 Rugosodon
72	1.000	1	node_49 0 ==> 1 node_48
73	0.400	1	node_50 0 ==> 1 Brachyzostrodon
		1	node_50 0 ==> 1 Bridetherium
		1	node_41 0 --> 2 node_40
		1	node_50 0 ==> 2 node_49
		1	node_49 2 ==> 1 node_48
74	0.750	1	node_50 1 ==> 0 Brasilodon
		1	node_42 1 ==> 2 Zhangheotherium
		1	node_50 1 ==> 3 node_49
		1	node_49 3 --> 2 node_47
75	0.167	1	node_50 0 ==> 1 Hadrocodium
		1	node_45 0 ==> 1 node_42
		1	node_50 0 --> 1 node_49
		1	node_49 1 --> 0 node_47
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
76	0.250	1	node_45 0 ==> 1 node_42
		1	node_50 0 ==> 1 node_49
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
77	0.500	1	node_50 0 --> 1 node_46
		1	node_49 0 ==> 1 node_48
78	0.333	1	node_42 0 --> 1 node_41
		1	node_44 0 --> 2 node_43
		1	node_50 0 --> 2 node_49
		1	node_49 2 --> 0 node_47
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
79	0.143	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_45 1 --> 0 node_42
		1	node_40 0 --> 1 Amphitherium
		1	node_50 1 ==> 0 Castorocauda
		1	node_50 1 ==> 0 Haldanodon
		1	node_50 1 ==> 0 Priacodon
80	0.167	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Megazostrodon
		1	node_50 1 ==> 0 Morganucodon
81	0.429	1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 3 Hadrocodium
		1	node_50 0 ==> 1 Morganucodon
		1	node_42 0 --> 1 node_41
		1	node_44 0 --> 2 node_43
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
82	1.000	1	node_50 0 --> 1 node_46
83	1.000	1	node_45 0 --> 1 node_44
84	1.000	1	node_50 0 ==> 1 Hadrocodium
85	0.500	1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
86	0.250	1	node_50 0 --> 1 node_49
		1	node_49 1 --> 0 node_47
		1	node_50 0 ==> 1 Amphilestes

		1	node_50 0 ==> 1 Priacodon
87	0.667	1	node_50 0 ==> 4 Hadrocodium
		1	node_45 0 ==> 2 node_42
		1	node_50 0 --> 3 node_49
		1	node_49 3 --> 0 node_47
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
88	0.286	1	node_50 0 ==> 2 Hadrocodium
		1	node_50 0 --> 2 node_46
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
		1	node_50 0 ==> 2 node_49
		1	node_50 0 ==> 2 Amphilestes
		1	node_50 0 ==> 2 Priacodon
89	0.200	1	node_50 0 ==> 1 Hadrocodium
		1	node_40 0 ==> 1 Amphitherium
		1	node_45 0 ==> 1 node_44
		1	node_50 0 ==> 1 node_49
		1	node_50 0 ==> 1 Priacodon
90	0.500	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 node_49
91	1.000	1	node_50 0 ==> 1 Probainognathus
92	0.167	1	node_45 0 ==> 1 node_42
		1	node_50 0 ==> 1 Haldanodon
		1	node_50 0 --> 1 node_49
		1	node_49 1 --> 0 node_47
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
93	0.400	1	node_45 0 --> 1 node_42
		1	node_42 1 --> 2 Zhangheotherium
		1	node_49 0 ==> 1 Arboroharamiya
		1	node_50 0 ==> 2 Amphilestes
		1	node_50 0 ==> 2 Priacodon
94	0.333	1	node_50 0 --> 2 node_46
		1	node_44 2 --> 0 Shuotherium
		1	node_49 0 ==> 1 Arboroharamiya
		1	node_49 0 ==> 2 node_48
		1	node_50 0 ==> 2 Amphilestes
		1	node_50 0 ==> 2 Priacodon
95	0.500	1	node_50 0 --> 1 node_46
		1	node_45 1 --> 2 node_44
		1	node_49 0 ==> 1 node_48
		1	node_50 0 ==> 1 Priacodon
96	0.500	1	node_50 0 --> 2 node_49
		1	node_49 2 --> 0 node_47
97	0.333	1	node_42 0 ==> 1 Zhangheotherium
		1	node_49 0 ==> 1 node_48
		1	node_50 0 ==> 1 Priacodon
98	1.000	1	node_45 0 --> 1 node_42
99	0.500	1	node_50 2 ==> 0 Probainognathus
		1	node_50 2 ==> 1 Brasilodon
		1	node_50 2 ==> 1 Brasilitherium
		1	node_50 2 ==> 1 Sinoconodon
100	0.333	1	node_50 1 ==> 0 Hadrocodium
		1	node_50 1 ==> 2 Dinnetherium
		1	node_50 1 ==> 0 Megazostrodon
		1	node_50 1 --> 0 node_39
		1	node_50 1 ==> 2 node_49
		1	node_50 1 ==> 2 Priacodon
101	0.429	1	node_50 0 --> 1 node_46
		1	node_40 1 --> 0 Amphitherium
		1	node_45 1 --> 3 node_44
		1	node_50 0 --> 2 node_49
		1	node_49 2 --> 0 node_47
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
102	0.444	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Dinnetherium

		1	node_50 1 ==> 2 Megazostrodon
		1	node_45 1 --> 3 node_42
		1	node_42 3 --> 4 Zhangheotherium
		1	node_50 1 --> 4 node_49
		1	node_49 4 --> 1 node_47
		1	node_50 1 ==> 4 Amphilestes
		1	node_50 1 ==> 4 Priacodon
103	1.000	1	node_50 0 --> 1 node_46
104	0.222	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 ==> 0 Morganucodon
		1	node_50 1 --> 0 node_39
		1	node_50 1 --> 0 node_46
		1	node_42 0 --> 2 node_41
		1	node_44 0 --> 2 node_43
		1	node_50 1 ==> 2 Amphilestes
105	1.000	1	node_42 0 ==> 1 Zhangheotherium
106	0.667	1	node_50 0 ==> 1 Probainognathus
		1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 2 Amphilestes
107	1.000	1	node_45 0 ==> 1 node_42
		1	node_50 0 ==> 2 node_49
108	1.000	1	node_50 1 ==> 0 Probainognathus
109	1.000	1	node_49 0 --> 1 node_47
110	1.000	1	node_40 0 ==> 1 Amphitherium
111	1.000	1	node_40 0 ==> 1 Amphitherium
112	1.000	1	node_50 0 ==> 1 Hadrocodium
113	0.500	1	node_50 0 --> 1 node_46
		1	node_40 1 --> 0 Amphitherium
114	0.200	1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 --> 1 node_46
		1	node_42 1 --> 0 node_41
		1	node_50 0 ==> 1 Amphilestes
115	0.333	1	node_50 1 ==> 0 Hadrocodium
		1	node_50 1 ==> 0 Dinnetherium
		1	node_50 1 ==> 0 Megazostrodon
		1	node_42 1 --> 0 node_41
		1	node_43 1 ==> 2 Ambondro
		1	node_50 1 ==> 0 Priacodon
116	0.667	1	node_45 0 --> 1 node_44
		1	node_43 1 --> 0 Asfaltomylos
		1	node_50 0 ==> 2 node_49
117	0.400	1	node_50 0 --> 1 node_46
		1	node_42 1 --> 0 node_41
		1	node_43 1 ==> 3 Ambondro
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
118	1.000	1	node_45 0 ==> 1 node_44
119	0.250	1	node_50 0 ==> 1 Probainognathus
		1	node_45 0 ==> 1 node_44
		1	node_49 0 --> 1 node_48
		1	node_50 0 ==> 1 Priacodon
120	0.333	1	node_50 0 ==> 1 Probainognathus
		1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 1 Haldanodon
121	1.000	1	node_50 0 ==> 1 Priacodon
122	0.333	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
123	1.000	1	node_50 0 ==> 2 node_49
124	1.000	1	node_49 0 ==> 1 node_48
125	0.600	1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 --> 1 node_46
		1	node_42 1 --> 2 Zhangheotherium
		1	node_50 0 --> 2 node_49
		1	node_49 2 --> 3 Arboroharamiya

126	1.000	1	node_48 0 ==> 1 Rugosodon
127	0.500	1	node_50 0 --> 1 Megazostrodon
		1	node_50 0 --> 1 node_46
		1	node_42 1 --> 2 Zhangheotherium
		1	node_50 0 --> 1 Castorocauda
		1	node_50 0 --> 1 Haldanodon
		1	node_50 0 --> 4 node_49
		1	node_49 4 --> 1 node_47
		1	node_50 0 ==> 3 Priacodon
128	0.500	1	node_42 0 ==> 1 Zhangheotherium
		1	node_50 0 ==> 1 node_49
		1	node_49 1 --> 2 Arboroharamiya
		1	node_48 1 --> 2 Sinobaatar
129	1.000	1	node_49 0 --> 1 node_48
130	1.000	1	node_50 0 ==> 1 Hadrocodium
131	0.667	1	node_42 0 ==> 1 Zhangheotherium
		1	node_50 0 --> 1 node_49
		1	node_49 1 --> 2 node_48
132	0.500	1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
133	0.375	1	node_50 0 --> 3 Sinoconodon
		1	node_50 0 --> 3 Hadrocodium
		1	node_50 0 --> 1 node_46
		1	node_42 1 --> 2 Zhangheotherium
		1	node_50 0 ==> 2 Haldanodon
		1	node_49 0 --> 1 node_47
		1	node_49 0 --> 3 Arboroharamiya
		1	node_50 0 --> 1 Priacodon
134	0.300	1	node_50 0 ==> 3 Sinoconodon
		1	node_50 0 ==> 3 Hadrocodium
		1	node_40 0 ==> 1 Dryolestes
		1	node_42 0 ==> 2 Zhangheotherium
		1	node_50 0 ==> 2 Haldanodon
		1	node_50 0 ==> 1 node_49
		1	node_49 1 ==> 3 Arboroharamiya
		1	node_48 1 ==> 2 Sinobaatar
		1	node_50 0 ==> 2 Amphilestes
		1	node_50 0 ==> 2 Priacodon
135	0.400	1	node_50 0 --> 1 Sinoconodon
		1	node_50 0 ==> 4 Hadrocodium
		1	node_50 0 --> 1 Dinnetherium
		1	node_50 0 --> 1 Megazostrodon
		1	node_50 0 ==> 23 Morganucodon
		1	node_45 0 --> 3 node_44
		1	node_50 0 ==> 4 node_49
		1	node_49 4 --> 3 node_47
		1	node_50 0 --> 1 Amphilestes
		1	node_50 0 ==> 2 Priacodon
136	0.667	1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 4 Hadrocodium
		1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 ==> 4 node_49
		1	node_49 4 --> 3 node_47
		1	node_50 0 ==> 2 Priacodon
137	0.400	1	node_50 0 ==> 2 Sinoconodon
		1	node_50 0 ==> 4 Hadrocodium
		1	node_50 0 --> 2 node_49
		1	node_49 2 --> 4 Arboroharamiya
		1	node_50 0 ==> 2 Priacodon
138	0.500	1	node_50 0 ==> 2 Sinoconodon
		1	node_50 0 ==> 3 Hadrocodium
		1	node_50 0 --> 1 node_49
		1	node_49 1 --> 2 node_48
		1	node_48 2 --> 3 Sinobaatar
		1	node_50 0 ==> 1 Priacodon
139	1.000	1	node_50 0 ==> 2 Sinoconodon
		1	node_42 0 ==> 1 Zhangheotherium
140	0.667	1	node_50 0 ==> 2 Brasilodon

		1	node_50 0 ==> 1 Brasilitherium
		1	node_49 0 ==> 1 node_48
141	0.333	1	node_42 0 --> 3 node_41
		1	node_50 0 --> 3 node_49
		1	node_48 3 --> 0 Sinobaatar
142	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
143	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Megazostrodon
144	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 1 node_49
145	0.400	1	node_50 1 --> 0 node_46
		1	node_50 1 ==> 0 Castorocauda
		1	node_50 1 ==> 0 Haldanodon
		1	node_50 1 ==> 2 node_49
		1	node_50 1 ==> 0 Amphilestes
146	0.500	1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 2 Megazostrodon
		1	node_50 0 --> 2 node_46
		1	node_50 0 ==> 1 Priacodon
147	1.000	1	node_50 0 --> 1 node_49
148	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
149	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
150	1.000	1	node_50 0 --> 1 node_49
151	1.000	1	node_50 0 --> 1 node_49
152	1.000	1	node_50 1 ==> 0 Castorocauda
153	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Castorocauda
154	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Castorocauda
155	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 1 node_49
156	1.000	1	node_50 0 --> 1 node_46
157	1.000	1	node_50 0 ==> 1 Sinoconodon
158	1.000	1	node_50 0 ==> 1 Morganucodon
159	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
160	1.000	1	node_50 1 ==> 0 Sinoconodon
161	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
162	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
163	1.000	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 --> 2 node_46
164	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
165	1.000	1	node_50 0 --> 1 node_46
166	1.000	1	node_50 0 --> 1 node_46
167	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
168	0.333	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 Haldanodon
		1	node_50 0 --> 1 node_49
169	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
170	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
171	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
172	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
173	1.000	1	node_50 0 --> 1 node_46
174	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
175	1.000	1	node_50 0 --> 1 node_46

176	1.000	1	node_50 0 --> 1 node_46
177	1.000	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 2 node_49
178	0.333	1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
179	0.400	1	node_50 0 --> 1 Sinoconodon
		1	node_50 0 --> 1 Megazostrodon
		1	node_50 0 --> 1 Morganucodon
		1	node_50 0 ==> 2 Castorocauda
		1	node_50 0 ==> 2 Haldanodon
180	1.000	1	node_50 0 --> 1 node_46
181	1.000	1	node_50 0 --> 1 node_46
182	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
183	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
184	1.000	1	node_49 0 ==> 1 node_48
185	1.000	1	node_50 1 ==> 0 Castorocauda
186	0.500	1	node_50 2 ==> 1 Probainognathus
		1	node_50 2 ==> 1 Castorocauda
187	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_49 1 ==> 0 Arboroharamiya
188	1.000	1	node_50 0 --> 1 node_46
189	1.000	1	node_50 0 --> 1 node_46
190	1.000	1	node_50 0 --> 2 node_46
		1	node_49 0 ==> 1 node_48
191	0.500	1	node_50 0 --> 1 Megazostrodon
		1	node_50 0 --> 1 Morganucodon
		1	node_50 0 --> 2 node_46
		1	node_49 0 --> 1 node_48
192	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 1 node_49
193	0.500	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Castorocauda
194	0.500	1	node_50 0 --> 1 node_46
		1	node_48 0 ==> 1 Sinobaatar
195	1.000	1	node_50 0 --> 1 node_46
196	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
197	0.667	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 --> 2 node_46
		1	node_49 1 ==> 2 node_48
198	1.000	1	node_50 0 --> 1 node_46
199	0.500	1	node_50 0 ==> 1 Castorocauda
		1	node_49 0 ==> 1 node_48
200	1.000	1	node_50 0 --> 1 node_49
201	1.000	1	node_50 0 --> 1 node_46
202	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
203	1.000	1	node_50 0 --> 2 node_49
204	1.000	1	node_50 0 --> 1 node_49
205	1.000	1	node_50 0 --> 1 node_49
206	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
207	1.000	1	node_50 0 --> 3 node_46
208	1.000	1	node_50 0 --> 2 node_46
209	1.000	1	node_50 0 --> 1 node_49
210	1.000	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 2 node_49
211	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
212	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
213	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
214	1.000	1	node_50 0 --> 1 node_49
215	1.000	1	node_50 1 --> 0 node_49

216	1.000	1	node_50 0 --> 1 node_49
217	1.000	1	node_50 0 --> 1 node_49
218	1.000	1	node_50 0 --> 2 node_46
		1	node_50 0 --> 1 node_49
219	1.000	1	node_49 0 ==> 1 node_48
220	1.000	1	node_50 0 --> 1 node_49
221	0.667	1	node_50 0 --> 2 node_46
		1	node_50 0 ==> 1 Castorocauda
		1	node_49 0 --> 2 node_48
222	1.000	1	node_50 1 ==> 0 Megazostrodon
223	0.500	1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 1 node_49
224	1.000	1	node_50 0 ==> 1 Hadrocodium
225	0.333	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
		1	node_50 1 ==> 0 Hadrocodium
226	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 --> 2 node_46
		1	node_50 1 ==> 2 Haldanodon
227	0.333	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 --> 1 node_46
		1	node_50 0 --> 1 node_49
228	0.500	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Hadrocodium
229	0.500	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 --> 0 node_49
230	1.000	1	node_50 0 --> 1 node_46
231	1.000	1	node_50 2 ==> 1 Probainognathus
232	0.667	1	node_50 3 ==> 0 Probainognathus
		1	node_50 3 ==> 2 Sinoconodon
		1	node_50 3 ==> 2 Adelobasileus
233	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
234	1.000	1	node_50 1 ==> 0 Probainognathus
235	0.250	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
		1	node_50 1 ==> 0 Megazostrodon
		1	node_50 1 ==> 0 Haldanodon
236	0.500	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
		1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 ==> 0 Haldanodon
237	0.600	1	node_50 2 ==> 0 Probainognathus
		1	node_50 2 ==> 1 Sinoconodon
		1	node_50 2 ==> 3 Hadrocodium
		1	node_50 2 ==> 1 Dinnetherium
		1	node_50 2 ==> 3 Priacodon
238	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
239	1.000	1	node_50 0 --> 1 node_46
240	1.000	1	node_50 0 --> 1 node_46
241	1.000	1	node_50 0 --> 1 node_46
242	1.000	1	node_50 1 ==> 0 Probainognathus
243	1.000	1	node_50 1 ==> 0 Probainognathus
244	1.000	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Haldanodon
245	1.000	1	node_50 1 ==> 0 Probainognathus
246	1.000	1	node_50 0 ==> 2 Priacodon
247	1.000	1	node_50 1 ==> 0 Probainognathus
248	0.250	1	node_50 0 ==> 1 Brasilitherium
		1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 1 Adelobasileus
		1	node_50 0 ==> 1 Morganucodon
249	1.000	1	node_50 0 ==> 1 Hadrocodium
250	1.000	1	node_50 0 ==> 1 Probainognathus
251	0.333	1	node_50 1 ==> 0 Probainognathus

		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
252	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
253	0.333	1	node_50 0 ==> 1 Probainognathus
		1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 1 Priacodon
254	0.400	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
		1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 ==> 2 Dinnetherium
		1	node_50 1 --> 2 node_46
255	0.333	1	node_50 0 ==> 1 Adelobasileus
		1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 --> 1 node_46
256	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Adelobasileus
257	0.250	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 ==> 1 Morganucodon
		1	node_50 0 --> 1 node_46
258	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
259	0.500	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 --> 1 node_46
260	0.667	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 --> 2 node_46
261	1.000	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Dinnetherium
262	1.000	1	node_50 0 ==> 1 Priacodon
263	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Adelobasileus
264	1.000	1	node_50 0 --> 1 node_46
265	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilitherium
266	1.000	1	node_50 0 --> 1 node_46
267	1.000	1	node_50 0 ==> 1 Sinoconodon
268	1.000	1	node_50 2 ==> 1 Probainognathus
269	1.000	1	node_50 1 ==> 0 Probainognathus
270	1.000	1	node_50 2 ==> 0 Probainognathus
		1	node_50 2 ==> 1 Sinoconodon
271	1.000	1	node_50 1 ==> 0 Probainognathus
272	1.000	1	node_50 0 --> 1 node_49
273	1.000	1	node_50 0 ==> 1 Castorocauda
274	1.000	1	node_50 0 ==> 1 Castorocauda
275	1.000	1	node_50 0 --> 1 node_46
276	1.000	1	node_50 1 --> 2 node_49
277	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 --> 2 Hadrocodium
		1	node_50 1 --> 2 Haldanodon
		1	node_50 1 --> 2 Priacodon
278	0.500	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 Haldanodon
279	1.000	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Hadrocodium
280	1.000	1	node_50 1 ==> 0 Probainognathus
281	1.000	1	node_50 0 ==> 3 Hadrocodium
282	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Priacodon
283	1.000	1	node_50 1 ==> 0 Probainognathus
284	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Hadrocodium
285	1.000	1	node_50 1 ==> 0 Probainognathus
286	0.500	1	node_50 0 ==> 1 Amphilestes

		1	node_50 0 ==> 1 Priacodon
287	1.000	1	node_50 0 ==> 1 Hadrocodium
288	1.000	1	node_50 2 ==> 1 Probainognathus
289	0.333	1	node_50 0 ==> 2 Hadrocodium
		1	node_50 0 --> 2 node_46
		1	node_50 0 ==> 12 Priacodon
290	1.000	1	node_50 1 ==> 0 Probainognathus
291	1.000	1	node_50 0 ==> 1 Priacodon
292	1.000	1	node_50 0 --> 1 node_46
		1	node_50 0 ==> 2 Priacodon
293	1.000	1	node_50 2 ==> 0 Probainognathus
294	0.333	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 Haldanodon
		1	node_50 0 ==> 1 Priacodon
295	1.000	1	node_50 0 --> 2 node_46
296	1.000	1	node_50 0 ==> 1 Hadrocodium
297	0.667	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 2 Hadrocodium
298	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
299	0.500	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 Haldanodon
300	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Hadrocodium
301	1.000	1	node_50 1 ==> 0 Sinoconodon
302	0.500	1	node_50 0 --> 1 Sinoconodon
		1	node_50 0 --> 1 Morganucodon
303	1.000	1	node_50 0 ==> 2 Hadrocodium
		1	node_50 0 ==> 1 Priacodon
304	1.000	1	node_50 0 ==> 1 Hadrocodium
305	0.500	1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 ==> 2 Haldanodon
306	0.500	1	node_50 0 --> 1 Hadrocodium
		1	node_50 0 --> 1 Morganucodon
307	1.000	1	node_50 2 ==> 1 Probainognathus
		1	node_50 2 ==> 3 Hadrocodium

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_50 --> Probainognathus	17	1	0.273	1 ==> 0
	19	1	0.167	1 ==> 0
	30	1	0.143	1 ==> 0
	58	1	0.143	1 ==> 0
	59	1	0.143	1 ==> 0
	61	1	0.125	1 ==> 0
	68	1	0.125	1 ==> 0
	79	1	0.143	1 ==> 0
	80	1	0.167	1 ==> 0
	91	1	1.000	0 ==> 1
	99	1	0.500	2 ==> 0
	102	1	0.444	1 ==> 0
	104	1	0.222	1 ==> 0
	106	1	0.667	0 ==> 1
	108	1	1.000	1 ==> 0
	119	1	0.250	0 ==> 1
	120	1	0.333	0 ==> 1
	142	1	0.500	1 ==> 0
	143	1	0.333	1 ==> 0
	153	1	0.500	1 ==> 0
	154	1	0.500	1 ==> 0
	186	1	0.500	2 ==> 1
	187	1	0.500	1 ==> 0
	226	1	0.500	1 ==> 0
	231	1	1.000	2 ==> 1
	232	1	0.667	3 ==> 0
	233	1	0.333	1 ==> 0

	234	1	1.000	1 ==> 0
	237	1	0.600	2 ==> 0
	238	1	0.500	1 ==> 0
	242	1	1.000	1 ==> 0
	243	1	1.000	1 ==> 0
	244	1	1.000	1 ==> 0
	245	1	1.000	1 ==> 0
	247	1	1.000	1 ==> 0
	250	1	1.000	0 ==> 1
	251	1	0.333	1 ==> 0
	252	1	0.500	1 ==> 0
	253	1	0.333	0 ==> 1
	256	1	0.333	1 ==> 0
	258	1	0.333	1 ==> 0
	260	1	0.667	1 ==> 0
	261	1	1.000	1 ==> 0
	263	1	0.500	1 ==> 0
	265	1	0.500	1 ==> 0
	268	1	1.000	2 ==> 1
	269	1	1.000	1 ==> 0
	270	1	1.000	2 ==> 0
	271	1	1.000	1 ==> 0
	277	1	0.500	1 ==> 0
	279	1	1.000	1 ==> 0
	280	1	1.000	1 ==> 0
	282	1	0.500	1 ==> 0
	283	1	1.000	1 ==> 0
	284	1	0.333	1 ==> 0
	285	1	1.000	1 ==> 0
	288	1	1.000	2 ==> 1
	290	1	1.000	1 ==> 0
	293	1	1.000	2 ==> 0
	297	1	0.667	1 ==> 0
	298	1	0.500	1 ==> 0
	300	1	0.500	1 ==> 0
	307	1	1.000	2 ==> 1
node_50 --> Brasilodon	24	1	0.125	0 ==> 1
	26	1	1.000	1 ==> 0
	30	1	0.143	1 ==> 0
	59	1	0.143	1 ==> 0
	66	1	0.250	1 ==> 0
	68	1	0.125	1 ==> 0
	74	1	0.750	1 ==> 0
	80	1	0.167	1 ==> 0
	99	1	0.500	2 ==> 1
	140	1	0.667	0 ==> 2
	233	1	0.333	1 ==> 0
node_50 --> Brasilitherium	6	1	0.250	1 ==> 0
	20	1	n/a	1 ==> 0
	22	1	0.200	0 ==> 1
	25	3	n/a	2 ==> 4
	30	1	0.143	1 ==> 0
	34	1	0.429	1 ==> 2
	57	1	0.286	0 --> 1
	59	1	0.143	1 ==> 0
	66	1	0.250	1 ==> 0
	68	1	0.125	1 ==> 0
	80	1	0.167	1 ==> 0
	99	1	0.500	2 ==> 1
	140	1	0.667	0 ==> 1
	233	1	0.333	1 ==> 0
	248	1	0.250	0 ==> 1
	256	1	0.333	1 ==> 0
	265	1	0.500	1 ==> 0
node_50 --> Sinoconodon	17	1	0.273	1 ==> 0
	20	1	n/a	1 --> 2
	34	1	0.429	1 ==> 2
	58	1	0.143	1 ==> 0

	59	1	0.143 1 ==> 0
	61	1	0.125 1 ==> 0
	79	1	0.143 1 ==> 0
	80	1	0.167 1 ==> 0
	81	1	0.429 0 ==> 1
	99	1	0.500 2 ==> 1
	104	1	0.222 1 ==> 0
	114	1	0.200 0 ==> 1
	133	1	0.375 0 --> 3
	134	1	0.300 0 ==> 3
	135	1	0.400 0 --> 1
	136	1	0.667 0 ==> 1
	137	1	0.400 0 ==> 2
	138	1	0.500 0 ==> 2
	139	1	1.000 0 ==> 2
	142	1	0.500 1 ==> 0
	143	1	0.333 1 ==> 0
	146	1	0.500 0 ==> 1
	157	1	1.000 0 ==> 1
	160	1	1.000 1 ==> 0
	163	1	1.000 1 ==> 0
	179	1	0.400 0 --> 1
	193	1	0.500 1 ==> 0
	197	1	0.667 1 ==> 0
	225	1	0.333 1 ==> 0
	228	1	0.500 1 ==> 0
	229	1	0.500 1 ==> 0
	232	1	0.667 3 ==> 2
	235	1	0.250 1 ==> 0
	236	1	0.500 1 ==> 0
	237	1	0.600 2 ==> 1
	238	1	0.500 1 ==> 0
	248	1	0.250 0 ==> 1
	251	1	0.333 1 ==> 0
	252	1	0.500 1 ==> 0
	254	1	0.400 1 ==> 0
	258	1	0.333 1 ==> 0
	260	1	0.667 1 ==> 0
	267	1	1.000 0 ==> 1
	270	1	1.000 2 ==> 1
	284	1	0.333 1 ==> 0
	297	1	0.667 1 ==> 0
	298	1	0.500 1 ==> 0
	301	1	1.000 1 ==> 0
	302	1	0.500 0 --> 1
node_50 --> Adelobasileus	225	1	0.333 1 ==> 0
	232	1	0.667 3 ==> 2
	235	1	0.250 1 ==> 0
	236	1	0.500 1 ==> 0
	248	1	0.250 0 ==> 1
	251	1	0.333 1 ==> 0
	254	1	0.400 1 ==> 0
	255	1	0.333 0 ==> 1
	256	1	0.333 1 ==> 0
	258	1	0.333 1 ==> 0
	263	1	0.500 1 ==> 0
node_50 --> Hadrocodium	7	1	0.222 0 ==> 1
	30	1	0.143 1 ==> 0
	68	1	0.125 1 ==> 0
	75	1	0.167 0 ==> 1
	81	1	0.429 0 ==> 3
	84	1	1.000 0 ==> 1
	87	1	0.667 0 ==> 4
	88	1	0.286 0 ==> 2
	89	1	0.200 0 ==> 1
	90	1	0.500 0 ==> 1
	100	1	0.333 1 ==> 0
	104	1	0.222 1 ==> 2

	112	1	1.000	0 ==> 1
	114	1	0.200	0 ==> 1
	115	1	0.333	1 ==> 0
	130	1	1.000	0 ==> 1
	133	1	0.375	0 --> 3
	134	1	0.300	0 ==> 3
	135	1	0.400	0 ==> 4
	136	1	0.667	0 ==> 4
	137	1	0.400	0 ==> 4
	138	1	0.500	0 ==> 3
	224	1	1.000	0 ==> 1
	225	1	0.333	1 ==> 0
	226	1	0.500	1 ==> 2
	227	1	0.333	0 ==> 1
	228	1	0.500	1 ==> 0
	236	1	0.500	1 ==> 2
	237	1	0.600	2 ==> 3
	249	1	1.000	0 ==> 1
	254	1	0.400	1 ==> 2
	255	1	0.333	0 ==> 1
	259	1	0.500	0 ==> 1
	277	1	0.500	1 --> 2
	278	1	0.500	0 ==> 1
	279	1	1.000	1 ==> 2
	281	1	1.000	0 ==> 3
	284	1	0.333	1 ==> 0
	287	1	1.000	0 ==> 1
	289	1	0.333	0 ==> 2
	294	1	0.333	0 ==> 1
	296	1	1.000	0 ==> 1
	297	1	0.667	1 ==> 2
	299	1	0.500	0 ==> 1
	300	1	0.500	1 ==> 0
	303	1	1.000	0 ==> 2
	304	1	1.000	0 ==> 1
	305	1	0.500	1 ==> 2
	306	1	0.500	0 --> 1
	307	1	1.000	2 ==> 3
node_50 --> Dinnetherium	7	1	0.222	0 ==> 1
	10	1	0.300	0 ==> 1
	17	1	0.273	1 ==> 3
	20	1	n/a	1 --> 23
	21	1	0.200	0 ==> 1
	22	1	0.200	0 ==> 1
	24	1	0.125	0 ==> 1
	25	1	n/a	2 ==> 1
	31	1	0.500	1 ==> 0
	33	1	0.286	0 ==> 1
	40	1	0.200	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
	57	1	0.286	0 --> 1
	58	1	0.143	1 --> 2
	62	1	0.200	0 ==> 1
	100	1	0.333	1 ==> 2
	102	1	0.444	1 ==> 2
	115	1	0.333	1 ==> 0
	122	1	0.333	0 ==> 1
	135	1	0.400	0 --> 1
	237	1	0.600	2 ==> 1
	254	1	0.400	1 ==> 2
	257	1	0.250	0 ==> 1
	261	1	1.000	1 ==> 2
node_50 --> Megazostrodon	6	1	0.250	1 ==> 0
	8	1	0.214	1 ==> 3
	17	1	0.273	1 ==> 23
	24	1	0.125	0 ==> 1
	25	2	n/a	2 ==> 0

	42	1	0.375	2	==>	3
	50	2	n/a	0	==>	2
	52	2	n/a	0	==>	2
	57	1	0.286	0	-->	1
	58	1	0.143	1	-->	2
	62	1	0.200	0	==>	1
	80	1	0.167	1	==>	0
	100	1	0.333	1	==>	0
	102	1	0.444	1	==>	2
	115	1	0.333	1	==>	0
	125	1	0.600	0	==>	1
	127	1	0.500	0	-->	1
	135	1	0.400	0	-->	1
	136	1	0.667	0	==>	1
	143	1	0.333	1	==>	0
	146	1	0.500	0	==>	2
	179	1	0.400	0	-->	1
	191	1	0.500	0	-->	1
	222	1	1.000	1	==>	0
	235	1	0.250	1	==>	0
	257	1	0.250	0	==>	1
node_50 --> Morganucodon	8	1	0.214	1	-->	2
	25	1	n/a	2	==>	01
	58	1	0.143	1	-->	2
	62	1	0.200	0	==>	1
	80	1	0.167	1	==>	0
	81	1	0.429	0	==>	1
	104	1	0.222	1	==>	0
	135	1	0.400	0	==>	23
	158	1	1.000	0	==>	1
	179	1	0.400	0	-->	1
	191	1	0.500	0	-->	1
	248	1	0.250	0	==>	1
	257	1	0.250	0	==>	1
	302	1	0.500	0	-->	1
	306	1	0.500	0	-->	1
node_50 --> Brachyzostrodon	3	1	n/a	0	==>	5
	5	1	n/a	0	==>	1
	6	1	0.250	1	==>	0
	8	1	0.214	1	==>	3
	13	1	n/a	0	==>	1
	14	1	n/a	0	==>	1
	17	1	0.273	1	==>	0
	25	1	n/a	2	==>	01
	33	1	0.286	0	==>	1
	40	1	0.200	1	==>	0
	55	1	0.429	0	-->	1
	57	1	0.286	0	-->	1
	58	1	0.143	1	-->	2
	73	1	0.400	0	==>	1
node_50 --> Paceyodon	3	1	n/a	0	==>	5
	5	1	n/a	0	==>	1
	8	1	0.214	1	==>	3
	11	1	0.333	0	==>	1
	12	1	0.600	0	==>	1
	13	1	n/a	0	==>	4
	14	1	n/a	0	==>	1
	20	1	n/a	1	-->	2
node_50 --> Paikasigudodon	37	1	n/a	0	==>	1
	38	1	n/a	0	==>	1
	39	1	n/a	0	==>	2
	41	1	0.600	1	==>	0
	42	1	0.375	2	==>	3
	43	1	0.667	0	==>	2
	54	1	0.750	0	==>	1
	56	1	0.400	0	==>	2
	60	2	n/a	2	==>	0
	66	1	0.250	1	==>	0

node_50 --> Rosierodon	7	1	0.222	0	==>	1
	8	1	0.214	1	==>	0
	10	1	0.300	0	==>	1
	17	1	0.273	1	==>	23
	18	1	0.375	1	==>	0
	20	1	n/a	1	-->	2
node_50 --> Erythrotherium	25	2	n/a	2	==>	0
	34	1	0.429	1	==>	3
	57	1	0.286	0	-->	1
	62	1	0.200	0	==>	1
node_50 --> Helvetiodon	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	50	1	n/a	0	==>	1
	55	1	0.429	0	==>	2
	56	1	0.400	0	==>	2
	57	1	0.286	0	==>	2
	60	1	n/a	2	==>	1
	61	1	0.125	1	==>	0
	64	1	0.167	0	==>	1
node_50 --> Hallautherium	6	1	0.250	1	==>	0
	8	1	0.214	1	-->	2
	17	1	0.273	1	==>	0
	20	1	n/a	1	==>	0
node_50 --> Bridetherium	7	1	0.222	0	==>	1
	8	1	0.214	1	-->	2
	10	1	0.300	0	==>	1
	17	1	0.273	1	==>	3
	24	1	0.125	0	==>	1
	42	1	0.375	2	==>	1
	55	1	0.429	0	-->	1
	58	1	0.143	1	-->	2
	62	1	0.200	0	==>	1
	67	1	0.500	1	==>	0
	73	1	0.400	0	==>	1
node_50 --> Purbeckodon	8	1	0.214	1	-->	2
	10	1	0.300	0	==>	13
	18	1	0.375	1	==>	0
	19	1	0.167	1	==>	0
	43	1	0.667	0	==>	2
	46	1	0.750	0	==>	1
	47	1	0.500	0	==>	1
	55	1	0.429	0	==>	2
	56	1	0.400	0	==>	2
	57	1	0.286	0	-->	12
	58	1	0.143	1	-->	2
	60	1	n/a	2	==>	01
	61	1	0.125	1	==>	0
node_50 --> node_39	4	1	n/a	0	==>	1
	5	1	n/a	0	-->	1
	7	1	0.222	0	-->	1
	8	1	0.214	1	==>	3
	14	1	n/a	0	==>	4
	15	1	n/a	0	-->	1
	16	2	n/a	0	==>	5
	20	1	n/a	1	-->	2
	22	1	0.200	0	==>	1
	31	1	0.500	1	-->	0
	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	41	1	0.600	1	==>	2
	52	1	n/a	0	==>	1
	55	1	0.429	0	-->	1
	56	1	0.400	0	==>	1
	61	1	0.125	1	==>	0
	68	1	0.125	1	-->	0
	100	1	0.333	1	-->	0
	104	1	0.222	1	-->	0
node_39 --> Fluctuodon	10	1	0.300	0	==>	2

	12	1	0.600	0	==> 2
	47	1	0.500	0	==> 1
	50	1	n/a	0	==> 12
node_39 --> Kuehneotherium	3	1	n/a	0	==> 1
	7	1	0.222	1	--> 2
	18	1	0.375	1	==> 2
	38	1	n/a	0	==> 1
	46	1	0.750	0	==> 3
	49	1	n/a	0	==> 4
	50	4	n/a	0	==> 7
	52	1	n/a	1	==> 2
node_50 --> node_46	3	1	n/a	0	==> 1
	4	2	n/a	0	==> 2
	8	1	0.214	1	==> 0
	14	1	n/a	0	==> 4
	16	4	n/a	0	==> 7
	18	1	0.375	1	--> 0
	23	1	1.000	1	--> 2
	31	1	0.500	1	==> 0
	33	1	0.286	0	--> 1
	37	2	n/a	0	==> 2
	39	1	n/a	0	--> 1
	40	1	0.200	1	==> 0
	41	1	0.600	1	--> 0
	50	4	n/a	0	==> 7
	55	1	0.429	0	--> 1
	61	1	0.125	1	==> 0
	64	1	0.167	0	--> 1
	69	1	1.000	0	--> 1
	77	1	0.500	0	--> 1
	82	1	1.000	0	--> 1
	88	1	0.286	0	--> 2
	94	1	0.333	0	--> 2
	95	1	0.500	0	--> 1
	101	1	0.429	0	--> 1
	103	1	1.000	0	--> 1
	104	1	0.222	1	--> 0
	106	1	0.667	0	--> 1
	113	1	0.500	0	--> 1
	114	1	0.200	0	--> 1
	117	1	0.400	0	--> 1
	120	1	0.333	0	--> 1
	125	1	0.600	0	--> 1
	127	1	0.500	0	--> 1
	133	1	0.375	0	--> 1
	144	1	0.500	0	--> 1
	145	1	0.400	1	--> 0
	146	1	0.500	0	--> 2
	148	1	0.500	0	--> 1
	149	1	0.500	0	--> 1
	155	1	0.500	0	--> 1
	156	1	1.000	0	--> 1
	159	1	0.500	0	--> 1
	161	1	0.500	0	--> 1
	162	1	0.500	0	--> 1
	163	1	1.000	1	--> 2
	164	1	0.500	0	--> 1
	165	1	1.000	0	--> 1
	166	1	1.000	0	--> 1
	167	1	0.500	0	--> 1
	168	1	0.333	0	--> 1
	169	1	0.500	0	--> 1
	170	1	0.500	0	--> 1
	171	1	0.500	0	--> 1
	172	1	0.500	0	--> 1
	173	1	1.000	0	--> 1
	174	1	0.500	0	--> 1
	175	1	1.000	0	--> 1

	176	1	1.000	0 --> 1
	177	1	1.000	0 --> 1
	178	1	0.333	0 --> 1
	180	1	1.000	0 --> 1
	181	1	1.000	0 --> 1
	182	1	0.500	0 --> 1
	183	1	0.500	0 --> 1
	188	1	1.000	0 --> 1
	189	1	1.000	0 --> 1
	190	1	1.000	0 --> 2
	191	1	0.500	0 --> 2
	192	1	0.500	0 --> 1
	194	1	0.500	0 --> 1
	195	1	1.000	0 --> 1
	196	1	0.500	0 --> 1
	197	1	0.667	1 --> 2
	198	1	1.000	0 --> 1
	201	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	206	1	0.500	0 --> 1
	207	1	1.000	0 --> 3
	208	1	1.000	0 --> 2
	210	1	1.000	0 --> 1
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	218	1	1.000	0 --> 2
	221	1	0.667	0 --> 2
	223	1	0.500	0 --> 1
	226	1	0.500	1 --> 2
	227	1	0.333	0 --> 1
	230	1	1.000	0 --> 1
	239	1	1.000	0 --> 1
	240	1	1.000	0 --> 1
	241	1	1.000	0 --> 1
	253	1	0.333	0 --> 1
	254	1	0.400	1 --> 2
	255	1	0.333	0 --> 1
	257	1	0.250	0 --> 1
	259	1	0.500	0 --> 1
	260	1	0.667	1 --> 2
	264	1	1.000	0 --> 1
	266	1	1.000	0 --> 1
	275	1	1.000	0 --> 1
	289	1	0.333	0 --> 2
	292	1	1.000	0 --> 1
	295	1	1.000	0 --> 2
node_46 --> Woutersia	6	1	0.250	1 ==> 2
	7	1	0.222	0 ==> 2
	9	1	0.667	0 ==> 2
	17	1	0.273	1 ==> 2
	24	1	0.125	0 ==> 1
	41	1	0.600	0 --> 3
	42	1	0.375	2 ==> 3
	48	1	1.000	0 ==> 1
	54	1	0.750	0 ==> 2
node_46 --> node_45	3	1	n/a	1 ==> 2
	14	3	n/a	4 ==> 7
	20	1	n/a	1 --> 2
	30	1	0.143	1 ==> 0
	65	1	0.667	0 --> 1
	68	1	0.125	1 --> 0
node_45 --> node_42	17	1	0.273	1 --> 0
	33	1	0.286	1 --> 0
	38	2	n/a	0 --> 2
	39	1	n/a	1 --> 0
	42	1	0.375	2 --> 0
	52	3	n/a	0 --> 3

	53	1	0.250	1	==>	0
	64	1	0.167	1	-->	0
	75	1	0.167	0	==>	1
	76	1	0.250	0	==>	1
	79	1	0.143	1	-->	0
	87	1	0.667	0	==>	2
	92	1	0.167	0	==>	1
	93	1	0.400	0	-->	1
	98	1	1.000	0	-->	1
	102	1	0.444	1	-->	3
	107	1	1.000	0	==>	1
node_42 --> node_41	20	1	n/a	2	-->	3
	40	1	0.200	0	==>	1
	58	1	0.143	1	-->	0
	78	1	0.333	0	-->	1
	81	1	0.429	0	-->	1
	104	1	0.222	0	-->	2
	114	1	0.200	1	-->	0
	115	1	0.333	1	-->	0
	117	1	0.400	1	-->	0
	141	1	0.333	0	-->	3
node_41 --> Delsatia	21	1	0.200	0	==>	1
	30	1	0.143	0	==>	1
	52	1	n/a	3	==>	7
	60	1	n/a	2	==>	3
node_41 --> node_40	4	2	n/a	2	==>	4
	5	1	n/a	0	-->	1
	10	1	0.300	0	-->	1
	15	2	n/a	0	==>	2
	19	1	0.167	1	==>	0
	37	2	n/a	2	-->	4
	38	1	n/a	2	-->	3
	43	1	0.667	0	-->	3
	46	1	0.750	0	-->	4
	49	3	n/a	0	-->	3
	50	1	n/a	7	-->	8
	51	3	n/a	0	-->	6
	73	1	0.400	0	-->	2
node_40 --> Amphitherium	79	1	0.143	0	-->	1
	89	1	0.200	0	==>	1
	101	1	0.429	1	-->	0
	110	1	1.000	0	==>	1
	111	1	1.000	0	==>	1
	113	1	0.500	1	-->	0
node_40 --> Dryolestes	6	1	0.250	1	==>	0
	10	1	0.300	1	-->	3
	12	1	0.600	0	==>	3
	13	1	n/a	0	==>	12
	14	2	n/a	7	==>	45
	15	1	n/a	2	==>	3
	134	1	0.300	0	==>	1
node_42 --> Zhangheotherium	33	1	0.286	0	-->	2
	59	1	0.143	1	==>	0
	74	1	0.750	1	==>	2
	93	1	0.400	1	-->	2
	97	1	0.333	0	==>	1
	102	1	0.444	3	-->	4
	105	1	1.000	0	==>	1
	125	1	0.600	1	-->	2
	127	1	0.500	1	-->	2
	128	1	0.500	0	==>	1
	131	1	0.667	0	==>	1
	133	1	0.375	1	-->	2
	134	1	0.300	0	==>	2
	139	1	1.000	0	==>	1
node_45 --> node_44	10	1	0.300	0	==>	1
	21	1	0.200	0	==>	1
	22	1	0.200	0	==>	1

	49	2	n/a	0	-->	5
	58	1	0.143	1	-->	2
	83	1	1.000	0	-->	1
	89	1	0.200	0	==>	1
	95	1	0.500	1	-->	2
	101	1	0.429	1	-->	3
	116	1	0.667	0	-->	1
	118	1	1.000	0	==>	1
	119	1	0.250	0	==>	1
	135	1	0.400	0	-->	3
node_44 --> Shuotherium	94	1	0.333	2	-->	0
node_44 --> node_43	5	1	n/a	0	==>	1
	6	1	0.250	1	==>	2
	13	1	n/a	0	==>	1
	15	2	n/a	0	==>	2
	18	1	0.375	0	-->	2
	20	1	n/a	2	-->	3
	78	1	0.333	0	-->	2
	81	1	0.429	0	-->	2
	104	1	0.222	0	-->	2
node_43 --> Ambondro	3	1	n/a	2	==>	1
	14	2	n/a	7	==>	5
	115	1	0.333	1	==>	2
	117	1	0.400	1	==>	3
node_43 --> Asfaltomylos	4	1	n/a	2	==>	3
	8	1	0.214	0	==>	3
	13	1	n/a	1	==>	2
	18	1	0.375	2	-->	3
	19	1	0.167	1	==>	0
	116	1	0.667	1	-->	0
node_50 --> Castorocauda	4	3	n/a	0	==>	3
	5	1	n/a	0	==>	1
	10	1	0.300	0	==>	1
	11	1	0.333	0	==>	1
	12	1	0.600	0	==>	1
	15	3	n/a	0	==>	3
	16	3	n/a	0	==>	6
	22	1	0.200	0	==>	1
	24	1	0.125	0	==>	1
	25	1	n/a	2	==>	3
	79	1	0.143	1	==>	0
	81	1	0.429	0	==>	1
	85	1	0.500	0	==>	1
	88	1	0.286	0	==>	1
	122	1	0.333	0	==>	1
	127	1	0.500	0	-->	1
	132	1	0.500	0	==>	1
	145	1	0.400	1	==>	0
	152	1	1.000	1	==>	0
	153	1	0.500	1	==>	0
	154	1	0.500	1	==>	0
	178	1	0.333	0	==>	1
	179	1	0.400	0	==>	2
	185	1	1.000	1	==>	0
	186	1	0.500	2	==>	1
	193	1	0.500	1	==>	0
	199	1	0.500	0	==>	1
	221	1	0.667	0	==>	1
	273	1	1.000	0	==>	1
	274	1	1.000	0	==>	1
node_50 --> Haldanodon	4	2	n/a	0	==>	23
	5	1	n/a	0	==>	1
	8	1	0.214	1	==>	0
	9	1	0.667	0	==>	2
	10	1	0.300	0	==>	1
	11	1	0.333	0	==>	1
	12	1	0.600	0	==>	2
	14	1	n/a	0	==>	12

	15	1	n/a	0	==>	12
	16	4	n/a	0	==>	7
	20	1	n/a	1	-->	2
	24	1	0.125	0	==>	1
	25	1	n/a	2	==>	3
	30	1	0.143	1	==>	0
	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	41	1	0.600	1	==>	2
	50	2	n/a	0	==>	2
	53	1	0.250	1	==>	0
	58	1	0.143	1	-->	2
	61	1	0.125	1	==>	0
	64	1	0.167	0	==>	1
	65	1	0.667	0	-->	1
	68	1	0.125	1	==>	0
	79	1	0.143	1	==>	0
	81	1	0.429	0	==>	1
	85	1	0.500	0	==>	1
	88	1	0.286	0	==>	1
	92	1	0.167	0	==>	1
	120	1	0.333	0	==>	1
	122	1	0.333	0	==>	1
	127	1	0.500	0	-->	1
	132	1	0.500	0	==>	1
	133	1	0.375	0	==>	2
	134	1	0.300	0	==>	2
	145	1	0.400	1	==>	0
	168	1	0.333	0	-->	1
	178	1	0.333	0	==>	1
	179	1	0.400	0	==>	2
	226	1	0.500	1	==>	2
	235	1	0.250	1	==>	0
	236	1	0.500	1	==>	0
	244	1	1.000	1	==>	2
	277	1	0.500	1	-->	2
	278	1	0.500	0	==>	1
	294	1	0.333	0	==>	1
	299	1	0.500	0	==>	1
	305	1	0.500	1	==>	2
node_50 --> node_49	1	1	0.667	0	==>	1
	6	1	0.250	1	-->	2
	8	1	0.214	1	-->	2
	13	1	n/a	0	-->	1
	17	1	0.273	1	==>	0
	19	1	0.167	1	==>	0
	21	1	0.200	0	==>	1
	32	1	0.500	1	==>	0
	34	1	0.429	1	==>	3
	35	1	n/a	0	==>	1
	36	1	1.000	0	==>	1
	42	1	0.375	2	==>	0
	54	1	0.750	0	-->	3
	56	1	0.400	0	-->	2
	58	1	0.143	1	-->	0
	64	1	0.167	0	-->	1
	65	1	0.667	0	==>	2
	67	1	0.500	1	==>	0
	73	1	0.400	0	==>	2
	74	1	0.750	1	==>	3
	75	1	0.167	0	-->	1
	76	1	0.250	0	==>	1
	78	1	0.333	0	-->	2
	86	1	0.250	0	-->	1
	87	1	0.667	0	-->	3
	88	1	0.286	0	==>	2
	89	1	0.200	0	==>	1
	90	1	0.500	0	==>	1

	92	1	0.167	0 --> 1
	96	1	0.500	0 --> 2
	100	1	0.333	1 ==> 2
	101	1	0.429	0 --> 2
	102	1	0.444	1 --> 4
	107	1	1.000	0 ==> 2
	116	1	0.667	0 ==> 2
	123	1	1.000	0 ==> 2
	125	1	0.600	0 --> 2
	127	1	0.500	0 --> 4
	128	1	0.500	0 ==> 1
	131	1	0.667	0 --> 1
	134	1	0.300	0 ==> 1
	135	1	0.400	0 ==> 4
	136	1	0.667	0 ==> 4
	137	1	0.400	0 --> 2
	138	1	0.500	0 --> 1
	141	1	0.333	0 --> 3
	144	1	0.500	0 ==> 1
	145	1	0.400	1 ==> 2
	147	1	1.000	0 --> 1
	148	1	0.500	0 --> 1
	149	1	0.500	0 --> 1
	150	1	1.000	0 --> 1
	151	1	1.000	0 --> 1
	155	1	0.500	0 ==> 1
	159	1	0.500	0 --> 1
	161	1	0.500	0 --> 1
	162	1	0.500	0 --> 1
	164	1	0.500	0 --> 1
	167	1	0.500	0 --> 1
	168	1	0.333	0 --> 1
	169	1	0.500	0 --> 1
	170	1	0.500	0 --> 1
	171	1	0.500	0 --> 1
	172	1	0.500	0 --> 1
	174	1	0.500	0 --> 1
	177	1	1.000	0 --> 2
	182	1	0.500	0 --> 1
	183	1	0.500	0 --> 1
	192	1	0.500	0 ==> 1
	196	1	0.500	0 --> 1
	200	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	203	1	1.000	0 --> 2
	204	1	1.000	0 --> 1
	205	1	1.000	0 --> 1
	206	1	0.500	0 --> 1
	209	1	1.000	0 --> 1
	210	1	1.000	0 --> 2
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	214	1	1.000	0 --> 1
	215	1	1.000	1 --> 0
	216	1	1.000	0 --> 1
	217	1	1.000	0 --> 1
	218	1	1.000	0 --> 1
	220	1	1.000	0 --> 1
	223	1	0.500	0 ==> 1
	227	1	0.333	0 --> 1
	229	1	0.500	1 --> 0
	272	1	1.000	0 --> 1
	276	1	1.000	1 --> 2
node_49 --> node_47	7	1	0.222	0 --> 2
	34	1	0.429	3 --> 2
	53	1	0.250	1 ==> 0
	58	1	0.143	0 --> 2

	59	1	0.143	1	==>	0
	64	1	0.167	1	-->	0
	68	1	0.125	1	-->	0
	74	1	0.750	3	-->	2
	75	1	0.167	1	-->	0
	78	1	0.333	2	-->	0
	86	1	0.250	1	-->	0
	87	1	0.667	3	-->	0
	92	1	0.167	1	-->	0
	96	1	0.500	2	-->	0
	101	1	0.429	2	-->	0
	102	1	0.444	4	-->	1
	109	1	1.000	0	-->	1
	127	1	0.500	4	-->	1
	133	1	0.375	0	-->	1
	135	1	0.400	4	-->	3
	136	1	0.667	4	-->	3
node_47 --> Thomasia	42	1	0.375	0	==>	1
	70	1	0.500	0	==>	1
node_47 --> Haramiyavia	2	1	0.333	0	==>	1
	13	1	n/a	1	==>	2
	15	1	n/a	0	==>	1
	16	1	n/a	0	==>	4
	35	1	n/a	1	==>	2
node_49 --> Theroteinus	35	1	n/a	1	==>	2
	38	1	n/a	0	==>	12
	39	1	n/a	0	==>	2
	40	1	0.200	1	==>	0
	55	1	0.429	0	==>	3
	58	1	0.143	0	-->	2
	70	1	0.500	0	==>	1
	71	1	0.500	0	==>	1
node_49 --> Arboroharamiya	2	1	0.333	0	==>	1
	4	1	n/a	0	==>	1
	8	1	0.214	2	==>	0
	9	1	0.667	0	==>	1
	21	1	0.200	1	==>	0
	27	1	1.000	1	==>	0
	28	1	1.000	1	==>	2
	29	1	0.500	0	==>	1
	66	1	0.250	1	==>	0
	93	1	0.400	0	==>	1
	94	1	0.333	0	==>	1
	125	1	0.600	2	-->	3
	128	1	0.500	1	-->	2
	133	1	0.375	0	-->	3
	134	1	0.300	1	==>	3
	137	1	0.400	2	-->	4
	187	1	0.500	1	==>	0
node_49 --> node_48	1	1	0.667	1	==>	2
	13	1	n/a	1	-->	0
	45	1	1.000	0	==>	1
	54	1	0.750	3	-->	0
	72	1	1.000	0	==>	1
	73	1	0.400	2	==>	1
	77	1	0.500	0	==>	1
	94	1	0.333	0	==>	2
	95	1	0.500	0	==>	1
	97	1	0.333	0	==>	1
	119	1	0.250	0	-->	1
	124	1	1.000	0	==>	1
	129	1	1.000	0	-->	1
	131	1	0.667	1	-->	2
	138	1	0.500	1	-->	2
	140	1	0.667	0	==>	1
	184	1	1.000	0	==>	1
	190	1	1.000	0	==>	1
	191	1	0.500	0	-->	1

	197	1	0.667	1 ==> 2
	199	1	0.500	0 ==> 1
	219	1	1.000	0 ==> 1
	221	1	0.667	0 --> 2
node_48 --> Rugosodon	2	1	0.333	0 ==> 1
	29	1	0.500	0 ==> 1
	32	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	126	1	1.000	0 ==> 1
node_48 --> Sinobaatar	28	1	1.000	1 ==> 0
	34	1	0.429	3 ==> 0
	35	1	n/a	1 ==> 2
	42	1	0.375	0 ==> 1
	128	1	0.500	1 --> 2
	134	1	0.300	1 ==> 2
	138	1	0.500	2 --> 3
	141	1	0.333	3 --> 0
	194	1	0.500	0 ==> 1
node_50 --> Amphilestes	1	1	0.667	0 ==> 1
	18	1	0.375	1 ==> 0
	24	1	0.125	0 ==> 1
	33	1	0.286	0 ==> 1
	75	1	0.167	0 ==> 1
	76	1	0.250	0 ==> 1
	78	1	0.333	0 ==> 1
	86	1	0.250	0 ==> 1
	87	1	0.667	0 ==> 1
	88	1	0.286	0 ==> 2
	92	1	0.167	0 ==> 1
	93	1	0.400	0 ==> 2
	94	1	0.333	0 ==> 2
	101	1	0.429	0 ==> 1
	102	1	0.444	1 ==> 4
	104	1	0.222	1 ==> 2
	106	1	0.667	0 ==> 2
	114	1	0.200	0 ==> 1
	117	1	0.400	0 ==> 1
	134	1	0.300	0 ==> 2
	135	1	0.400	0 --> 1
	145	1	0.400	1 ==> 0
	286	1	0.500	0 ==> 1
node_50 --> Priacodon	7	1	0.222	0 ==> 1
	18	1	0.375	1 ==> 0
	19	1	0.167	1 ==> 0
	31	1	0.500	1 ==> 2
	33	1	0.286	0 ==> 1
	34	1	0.429	1 ==> 2
	59	1	0.143	1 ==> 0
	61	1	0.125	1 ==> 0
	75	1	0.167	0 ==> 1
	76	1	0.250	0 ==> 1
	78	1	0.333	0 ==> 1
	79	1	0.143	1 ==> 0
	86	1	0.250	0 ==> 1
	87	1	0.667	0 ==> 1
	88	1	0.286	0 ==> 2
	89	1	0.200	0 ==> 1
	92	1	0.167	0 ==> 1
	93	1	0.400	0 ==> 2
	94	1	0.333	0 ==> 2
	95	1	0.500	0 ==> 1
	97	1	0.333	0 ==> 1
	100	1	0.333	1 ==> 2
	101	1	0.429	0 ==> 1
	102	1	0.444	1 ==> 4
	115	1	0.333	1 ==> 0
	117	1	0.400	0 ==> 1
	119	1	0.250	0 ==> 1

121	1	1.000	0	==> 1
127	1	0.500	0	==> 3
133	1	0.375	0	--> 1
134	1	0.300	0	==> 2
135	1	0.400	0	==> 2
136	1	0.667	0	==> 2
137	1	0.400	0	==> 2
138	1	0.500	0	==> 1
146	1	0.500	0	==> 1
237	1	0.600	2	==> 3
246	1	1.000	0	==> 2
253	1	0.333	0	==> 1
262	1	1.000	0	==> 1
277	1	0.500	1	--> 2
282	1	0.500	1	==> 0
286	1	0.500	0	==> 1
289	1	0.333	0	==> 12
291	1	1.000	0	==> 1
292	1	1.000	0	==> 2
294	1	0.333	0	==> 1
303	1	1.000	0	==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	n/a	6	13	n/a	n/a	n/a	n/a
4	n/a	12	25	n/a	n/a	n/a	n/a
5	n/a	7	8	n/a	n/a	n/a	n/a
6	2	8	9	0.250	0.750	0.143	0.036
7	2	9	9	0.222	0.778	0.000	0.000
8	3	14	18	0.214	0.786	0.267	0.057
9	2	3	3	0.667	0.333	0.000	0.000
10	3	10	11	0.300	0.700	0.125	0.038
11	1	3	3	0.333	0.667	0.000	0.000
12	3	5	5	0.600	0.400	0.000	0.000
13	n/a	8	10	n/a	n/a	n/a	n/a
14	n/a	12	29	n/a	n/a	n/a	n/a
15	n/a	11	15	n/a	n/a	n/a	n/a
16	n/a	14	39	n/a	n/a	n/a	n/a
17	3	11	16	0.273	0.727	0.385	0.105
18	3	8	8	0.375	0.625	0.000	0.000
19	1	6	12	0.167	0.833	0.545	0.091
20	n/a	11	11	n/a	n/a	n/a	n/a
21	1	5	9	0.200	0.800	0.500	0.100
22	1	5	7	0.200	0.800	0.333	0.067
23	1	1	1	1.000	0.000	0/0	0/0
24	1	8	8	0.125	0.875	0.000	0.000
25	n/a	12	12	n/a	n/a	n/a	n/a
26	1	1	1	1.000	0.000	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	7	11	0.143	0.857	0.400	0.057
31	2	4	5	0.500	0.500	0.333	0.167
32	1	2	4	0.500	0.500	0.667	0.333
33	2	7	7	0.286	0.714	0.000	0.000
34	3	7	8	0.429	0.571	0.200	0.086
35	n/a	4	9	n/a	n/a	n/a	n/a
36	1	1	3	1.000	0.000	1.000	1.000
37	n/a	8	14	n/a	n/a	n/a	n/a
38	n/a	6	8	n/a	n/a	n/a	n/a
39	n/a	7	8	n/a	n/a	n/a	n/a
40	1	5	6	0.200	0.800	0.200	0.040
41	3	5	6	0.600	0.400	0.333	0.200

42	3	8	12	0.375	0.625	0.444	0.167
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	n/a	6	6	n/a	n/a	n/a	n/a
50	n/a	15	22	n/a	n/a	n/a	n/a
51	n/a	3	3	n/a	n/a	n/a	n/a
52	n/a	8	12	n/a	n/a	n/a	n/a
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	7	8	0.429	0.571	0.200	0.086
56	2	5	7	0.400	0.600	0.400	0.160
57	2	7	7	0.286	0.714	0.000	0.000
58	2	14	16	0.143	0.857	0.143	0.020
59	1	7	8	0.143	0.857	0.143	0.020
60	n/a	5	5	n/a	n/a	n/a	n/a
61	1	8	12	0.125	0.875	0.364	0.045
62	1	5	5	0.200	0.800	0.000	0.000
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	6	6	0.167	0.833	0.000	0.000
65	2	3	4	0.667	0.333	0.500	0.333
66	1	4	4	0.250	0.750	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	8	10	0.125	0.875	0.222	0.028
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	3	4	6	0.750	0.250	0.667	0.500
75	1	6	9	0.167	0.833	0.375	0.062
76	1	4	9	0.250	0.750	0.625	0.156
77	1	2	4	0.500	0.500	0.667	0.333
78	2	6	8	0.333	0.667	0.333	0.111
79	1	7	7	0.143	0.857	0.000	0.000
80	1	6	6	0.167	0.833	0.000	0.000
81	3	7	8	0.429	0.571	0.200	0.086
82	1	1	3	1.000	0.000	1.000	1.000
83	1	1	1	1.000	0.000	0/0	0/0
84	1	1	1	1.000	0.000	0/0	0/0
85	1	2	2	0.500	0.500	0.000	0.000
86	1	4	4	0.250	0.750	0.000	0.000
87	4	6	9	0.667	0.333	0.600	0.400
88	2	7	8	0.286	0.714	0.167	0.048
89	1	5	8	0.200	0.800	0.429	0.086
90	1	2	4	0.500	0.500	0.667	0.333
91	1	1	1	1.000	0.000	0/0	0/0
92	1	6	9	0.167	0.833	0.375	0.062
93	2	5	6	0.400	0.600	0.250	0.100
94	2	6	9	0.333	0.667	0.429	0.143
95	2	4	7	0.500	0.500	0.600	0.300
96	1	2	3	0.500	0.500	0.500	0.250
97	1	3	4	0.333	0.667	0.333	0.111
98	1	1	2	1.000	0.000	1.000	1.000
99	2	4	4	0.500	0.500	0.000	0.000
100	2	6	8	0.333	0.667	0.333	0.111
101	3	7	8	0.429	0.571	0.200	0.086
102	4	9	11	0.444	0.556	0.286	0.127
103	1	1	4	1.000	0.000	1.000	1.000
104	2	9	11	0.222	0.778	0.222	0.049
105	1	1	1	1.000	0.000	0/0	0/0
106	2	3	7	0.667	0.333	0.800	0.533
107	2	2	7	1.000	0.000	1.000	1.000
108	1	1	1	1.000	0.000	0/0	0/0
109	1	1	1	1.000	0.000	0/0	0/0

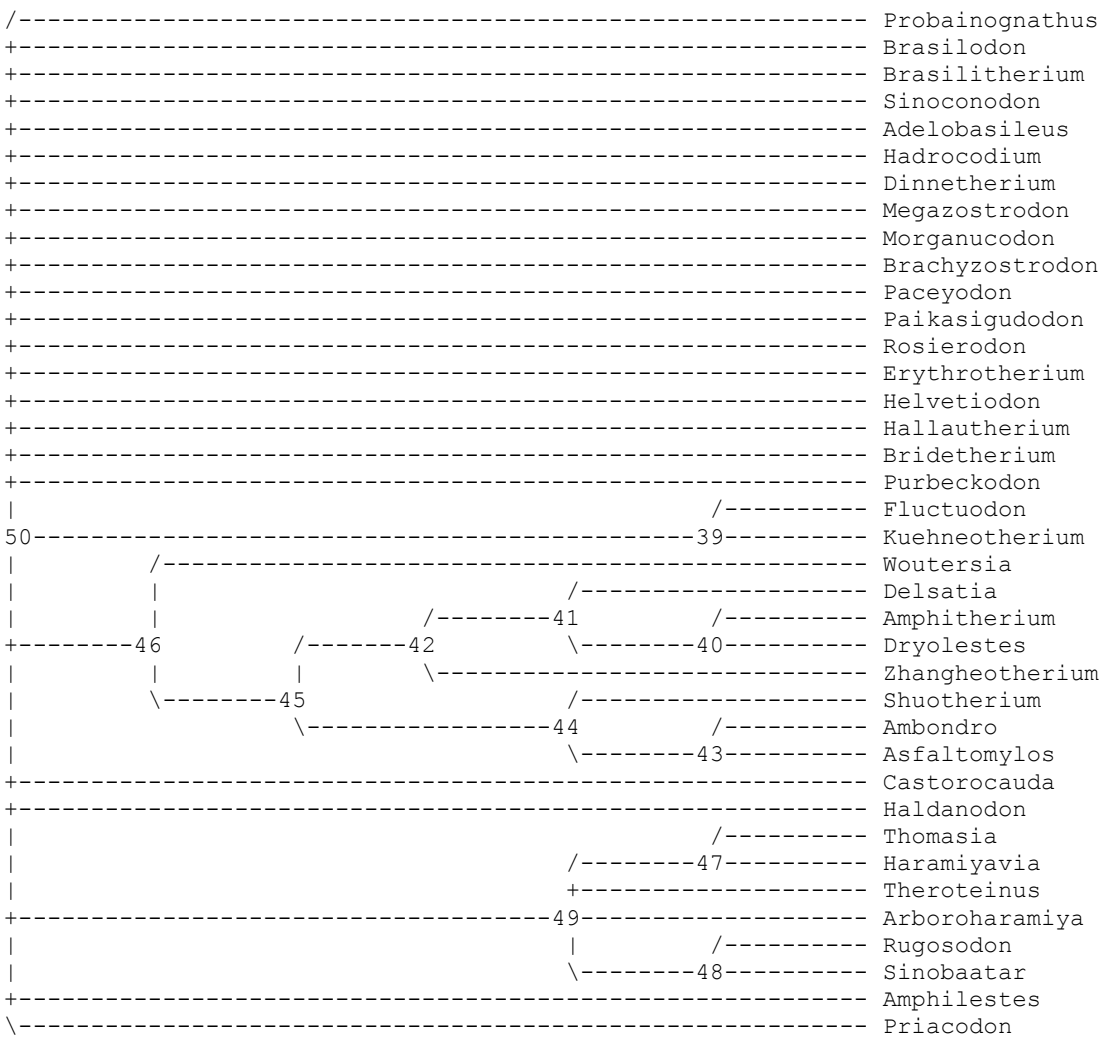
110	1	1	1	1.000	0.000	0/0	0/0
111	1	1	1	1.000	0.000	0/0	0/0
112	1	1	1	1.000	0.000	0/0	0/0
113	1	2	2	0.500	0.500	0.000	0.000
114	1	5	7	0.200	0.800	0.333	0.067
115	2	6	7	0.333	0.667	0.200	0.067
116	2	3	6	0.667	0.333	0.750	0.500
117	2	5	6	0.400	0.600	0.250	0.100
118	1	1	3	1.000	0.000	1.000	1.000
119	1	4	5	0.250	0.750	0.250	0.062
120	1	3	7	0.333	0.667	0.667	0.222
121	1	1	1	1.000	0.000	0/0	0/0
122	1	3	3	0.333	0.667	0.000	0.000
123	1	1	3	1.000	0.000	1.000	1.000
124	1	1	2	1.000	0.000	1.000	1.000
125	3	5	6	0.600	0.400	0.333	0.200
126	1	1	1	1.000	0.000	0/0	0/0
127	4	8	9	0.500	0.500	0.200	0.100
128	2	4	5	0.500	0.500	0.333	0.167
129	1	1	1	1.000	0.000	0/0	0/0
130	1	1	1	1.000	0.000	0/0	0/0
131	2	3	4	0.667	0.333	0.500	0.333
132	1	2	2	0.500	0.500	0.000	0.000
133	3	8	8	0.375	0.625	0.000	0.000
134	3	10	11	0.300	0.700	0.125	0.038
135	4	10	12	0.400	0.600	0.250	0.100
136	4	6	8	0.667	0.333	0.500	0.333
137	2	5	6	0.400	0.600	0.250	0.100
138	3	6	6	0.500	0.500	0.000	0.000
139	2	2	2	1.000	0.000	0/0	0/0
140	2	3	4	0.667	0.333	0.500	0.333
141	1	3	3	0.333	0.667	0.000	0.000
142	1	2	2	0.500	0.500	0.000	0.000
143	1	3	3	0.333	0.667	0.000	0.000
144	1	2	6	0.500	0.500	0.800	0.400
145	2	5	9	0.400	0.600	0.571	0.229
146	2	4	5	0.500	0.500	0.333	0.167
147	1	1	1	1.000	0.000	0/0	0/0
148	1	2	3	0.500	0.500	0.500	0.250
149	1	2	2	0.500	0.500	0.000	0.000
150	1	1	2	1.000	0.000	1.000	1.000
151	1	1	2	1.000	0.000	1.000	1.000
152	1	1	1	1.000	0.000	0/0	0/0
153	1	2	2	0.500	0.500	0.000	0.000
154	1	2	2	0.500	0.500	0.000	0.000
155	1	2	3	0.500	0.500	0.500	0.250
156	1	1	1	1.000	0.000	0/0	0/0
157	1	1	1	1.000	0.000	0/0	0/0
158	1	1	1	1.000	0.000	0/0	0/0
159	1	2	2	0.500	0.500	0.000	0.000
160	1	1	1	1.000	0.000	0/0	0/0
161	1	2	3	0.500	0.500	0.500	0.250
162	1	2	2	0.500	0.500	0.000	0.000
163	2	2	2	1.000	0.000	0/0	0/0
164	1	2	3	0.500	0.500	0.500	0.250
165	1	1	1	1.000	0.000	0/0	0/0
166	1	1	1	1.000	0.000	0/0	0/0
167	1	2	3	0.500	0.500	0.500	0.250
168	1	3	3	0.333	0.667	0.000	0.000
169	1	2	3	0.500	0.500	0.500	0.250
170	1	2	3	0.500	0.500	0.500	0.250
171	1	2	3	0.500	0.500	0.500	0.250
172	1	2	3	0.500	0.500	0.500	0.250
173	1	1	1	1.000	0.000	0/0	0/0
174	1	2	3	0.500	0.500	0.500	0.250
175	1	1	1	1.000	0.000	0/0	0/0
176	1	1	1	1.000	0.000	0/0	0/0
177	2	2	2	1.000	0.000	0/0	0/0

178	1	3	3	0.333	0.667	0.000	0.000
179	2	5	5	0.400	0.600	0.000	0.000
180	1	1	1	1.000	0.000	0/0	0/0
181	1	1	1	1.000	0.000	0/0	0/0
182	1	2	3	0.500	0.500	0.500	0.250
183	1	2	3	0.500	0.500	0.500	0.250
184	1	1	2	1.000	0.000	1.000	1.000
185	1	1	1	1.000	0.000	0/0	0/0
186	1	2	2	0.500	0.500	0.000	0.000
187	1	2	2	0.500	0.500	0.000	0.000
188	1	1	1	1.000	0.000	0/0	0/0
189	1	1	1	1.000	0.000	0/0	0/0
190	2	2	3	1.000	0.000	1.000	1.000
191	2	4	4	0.500	0.500	0.000	0.000
192	1	2	4	0.500	0.500	0.667	0.333
193	1	2	2	0.500	0.500	0.000	0.000
194	1	2	2	0.500	0.500	0.000	0.000
195	1	1	1	1.000	0.000	0/0	0/0
196	1	2	3	0.500	0.500	0.500	0.250
197	2	3	4	0.667	0.333	0.500	0.333
198	1	1	1	1.000	0.000	0/0	0/0
199	1	2	3	0.500	0.500	0.500	0.250
200	1	1	2	1.000	0.000	1.000	1.000
201	1	1	1	1.000	0.000	0/0	0/0
202	1	2	3	0.500	0.500	0.500	0.250
203	1	1	2	1.000	0.000	1.000	1.000
204	1	1	1	1.000	0.000	0/0	0/0
205	1	1	2	1.000	0.000	1.000	1.000
206	1	2	3	0.500	0.500	0.500	0.250
207	1	1	1	1.000	0.000	0/0	0/0
208	1	1	1	1.000	0.000	0/0	0/0
209	1	1	2	1.000	0.000	1.000	1.000
210	2	2	3	1.000	0.000	1.000	1.000
211	1	2	3	0.500	0.500	0.500	0.250
212	1	2	2	0.500	0.500	0.000	0.000
213	1	2	2	0.500	0.500	0.000	0.000
214	1	1	2	1.000	0.000	1.000	1.000
215	1	1	2	1.000	0.000	1.000	1.000
216	1	1	2	1.000	0.000	1.000	1.000
217	1	1	2	1.000	0.000	1.000	1.000
218	2	2	3	1.000	0.000	1.000	1.000
219	1	1	2	1.000	0.000	1.000	1.000
220	1	1	2	1.000	0.000	1.000	1.000
221	2	3	3	0.667	0.333	0.000	0.000
222	1	1	1	1.000	0.000	0/0	0/0
223	1	2	5	0.500	0.500	0.750	0.375
224	1	1	1	1.000	0.000	0/0	0/0
225	1	3	3	0.333	0.667	0.000	0.000
226	2	4	4	0.500	0.500	0.000	0.000
227	1	3	3	0.333	0.667	0.000	0.000
228	1	2	2	0.500	0.500	0.000	0.000
229	1	2	2	0.500	0.500	0.000	0.000
230	1	1	1	1.000	0.000	0/0	0/0
231	1	1	1	1.000	0.000	0/0	0/0
232	2	3	3	0.667	0.333	0.000	0.000
233	1	3	3	0.333	0.667	0.000	0.000
234	1	1	1	1.000	0.000	0/0	0/0
235	1	4	4	0.250	0.750	0.000	0.000
236	2	4	4	0.500	0.500	0.000	0.000
237	3	5	5	0.600	0.400	0.000	0.000
238	1	2	2	0.500	0.500	0.000	0.000
239	1	1	1	1.000	0.000	0/0	0/0
240	1	1	1	1.000	0.000	0/0	0/0
241	1	1	1	1.000	0.000	0/0	0/0
242	1	1	1	1.000	0.000	0/0	0/0
243	1	1	1	1.000	0.000	0/0	0/0
244	2	2	2	1.000	0.000	0/0	0/0
245	1	1	1	1.000	0.000	0/0	0/0

246	1	1	1	1.000	0.000	0/0	0/0
247	1	1	1	1.000	0.000	0/0	0/0
248	1	4	4	0.250	0.750	0.000	0.000
249	1	1	1	1.000	0.000	0/0	0/0
250	1	1	1	1.000	0.000	0/0	0/0
251	1	3	3	0.333	0.667	0.000	0.000
252	1	2	2	0.500	0.500	0.000	0.000
253	1	3	3	0.333	0.667	0.000	0.000
254	2	5	5	0.400	0.600	0.000	0.000
255	1	3	3	0.333	0.667	0.000	0.000
256	1	3	3	0.333	0.667	0.000	0.000
257	1	4	4	0.250	0.750	0.000	0.000
258	1	3	3	0.333	0.667	0.000	0.000
259	1	2	2	0.500	0.500	0.000	0.000
260	2	3	3	0.667	0.333	0.000	0.000
261	2	2	2	1.000	0.000	0/0	0/0
262	1	1	1	1.000	0.000	0/0	0/0
263	1	2	2	0.500	0.500	0.000	0.000
264	1	1	1	1.000	0.000	0/0	0/0
265	1	2	2	0.500	0.500	0.000	0.000
266	1	1	1	1.000	0.000	0/0	0/0
267	1	1	1	1.000	0.000	0/0	0/0
268	1	1	1	1.000	0.000	0/0	0/0
269	1	1	1	1.000	0.000	0/0	0/0
270	2	2	2	1.000	0.000	0/0	0/0
271	1	1	1	1.000	0.000	0/0	0/0
272	1	1	1	1.000	0.000	0/0	0/0
273	1	1	1	1.000	0.000	0/0	0/0
274	1	1	1	1.000	0.000	0/0	0/0
275	1	1	1	1.000	0.000	0/0	0/0
276	1	1	1	1.000	0.000	0/0	0/0
277	2	4	4	0.500	0.500	0.000	0.000
278	1	2	2	0.500	0.500	0.000	0.000
279	2	2	2	1.000	0.000	0/0	0/0
280	1	1	1	1.000	0.000	0/0	0/0
281	1	1	1	1.000	0.000	0/0	0/0
282	1	2	2	0.500	0.500	0.000	0.000
283	1	1	1	1.000	0.000	0/0	0/0
284	1	3	3	0.333	0.667	0.000	0.000
285	1	1	1	1.000	0.000	0/0	0/0
286	1	2	2	0.500	0.500	0.000	0.000
287	1	1	1	1.000	0.000	0/0	0/0
288	1	1	1	1.000	0.000	0/0	0/0
289	1	3	3	0.333	0.667	0.000	0.000
290	1	1	1	1.000	0.000	0/0	0/0
291	1	1	1	1.000	0.000	0/0	0/0
292	2	2	2	1.000	0.000	0/0	0/0
293	1	1	1	1.000	0.000	0/0	0/0
294	1	3	3	0.333	0.667	0.000	0.000
295	1	1	1	1.000	0.000	0/0	0/0
296	1	1	1	1.000	0.000	0/0	0/0
297	2	3	3	0.667	0.333	0.000	0.000
298	1	2	2	0.500	0.500	0.000	0.000
299	1	2	2	0.500	0.500	0.000	0.000
300	1	2	2	0.500	0.500	0.000	0.000
301	1	1	1	1.000	0.000	0/0	0/0
302	1	2	2	0.500	0.500	0.000	0.000
303	2	2	2	1.000	0.000	0/0	0/0
304	1	1	1	1.000	0.000	0/0	0/0
305	1	2	2	0.500	0.500	0.000	0.000
306	1	2	2	0.500	0.500	0.000	0.000
307	2	2	2	1.000	0.000	0/0	0/0

----Optimisation des caractères sur l'arbre de consensus en DELTRAN

```
Tree length = 978
Consistency index (CI) = 0.481
Homoplasy index (HI) = 0.519
CI excluding uninformative characters = 0.411
HI excluding uninformative characters = 0.589
Retention index (RI) = 0.317
Rescaled consistency index (RC) = 0.152
   (above indices do not include stepmatrix characters)
f value = 2497
f-ratio = 0.1309
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```




```
Possible character-state assignments to internal nodes

                         1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
39                000101?3000004041112011021110101010011220100000011011011
                      1         15              1                          1
40                00230100000007270?020010211100010100220100010000 7?30000001
                     41    1      1  3  2             43  1 3  4  38    1
                           3                           3
41                00220100000007070?120010211100010100220100010000 7030000001
                           1  3  2                 1             1
                                                  3
42                00220100000007070?120010211100 01?10020000001000007000000?1
                           1     2              11 12         1  1
                                                2  3          2
```

```
                                                                    3
43               00221200010017271?121110211100010100200002010000070010000 11
                                    3  2         1     1 1       4     1  2
                                                         3       5
44               00220100010007071?121110211100010100200002010000070010000 11
                                       2         1     1 1       4     1  2
                                                         3       5
45               00220100000007071?120010211100010100200002010000070010000 11
                                       2         1     1 1             1  2
                                                         3
46               00110100000004071?110010211101010100100002010000070010000 11
                    2               2  2         1   2 1 1             1 12
                                                         3
47               10000102000010000101101021110110021100011001000000000000020
                      22            2             3                   3 21
48               20000102000000000101101021110110031100011001100000001002001
                      2             2                                     2
49               10000102000000000101101021110110031100011001000000001000001
                      2      1      2                                 3 212
50               00000101000000000111100102111011101000001120100000000100001 1
                        2           2                                  1 12
```

Possible character-state assignments to internal nodes (continued)

```
                                                         1111111111111111111
                 66666666667777777777888888888899999999990000000000111111111
Node             01234567890123456789012345678901234567890123456789012345678
----------------------------------------------------------------------------
39               20010011?00000100001100000000000000000002001000001000000 1000
                      1                                  1   1
40               200100110?0000111?1?111000022000112100121031201110000?00000
                      1       2                           1
41               200100110?0000111?0?101000022000 1?2100?21011001110000??0000
                      1            1  1                   13 2          1 1
                                                           4
42               200100110?0000111?0?101000022000 1?2100?21011001110000??1000
                      1                                   13 2            1
                                                           4
43               2001?011??0000100101101?00002100000?00021011001010000?11011
                      1            2  2            2      1  2           1
                                                          3
44               2001?011??0000100101101?00002100000?00021011001010000?11011
                      1                            2      1  2           1
                                                          3
45               2001?011??0000100?01101000002000000?00021011001010000??1000
                      1                            2      1  2            1
                                                          3
46               2001?0111?0000100?0110?000000000000?0002101??00010000??1000
                      1                      2     2      1    1          1
                                                          3
47               21010210?000022?1001100000?02110?000?00220101002 1?000001200
                                3   2        3             24
48               2101?2101000113111211000 00?3211010212102224010021000000 1200
49               2101?2101000023?1001100000?02110?000?0022010100210000001200
                                    2        3             24
50               21010011100000100001100000000000000000002101010001000000 1000
                      1
```

Possible character-state assignments to internal nodes (continued)

```
                 11111111111111111111111111111111111111111111111111111111111
                 12222222222333333333344444444445555555555666666666677777777
Node             90123456789012345678901234567890123456789012345678901234567
----------------------------------------------------------------------------
39               00000000000000000000000110100 0?001110000?10?10000?000000000
                         1     1 1
                               3
40               0100000010000 0?0000000?111020??00111??00?1??1??????????????0
```

```
                      1                                       2             1
                      2
41                0100000000000?0000000?111020??00111??00?1??1?????????????0
                      1 1                                     2             1
                      2 2
42                01000000000000?000000001110 20??00111??00?1??1?????????????0
                      1 1                                     2             1
                      2 2
43                11000000000000?000000011?000??00111??00?1??1?????????????0
                      1 1       1         12                  2             1
                      2 2       3
44                11000000000000?000000011?000??00111??00?1??1?????????????0
                      1 1       1         12                  2             1
                      2 2       3
45                01000000000000?000000011?000??00111??00?1??1?????????????0
                      1 1       1         12                  2             1
                      2 2       3
46                0?000000000000?000000011?000??00111??00?1??1?????????????0
                      1 1       1         12                  2             1
                      2 2       3
47                00002000110 0?00133??00?11120?????1111000?1?11?00??????0?000
                      2 42    1 44                                          2
                      3       3
48                ?00021204 1?0200144 2?01?11120?1?11111100011111100111111010 00
                           2                                                2
49                00002000110 0?00144??00?11120?????1111000?1?11?00??????0?000
                      2 42    1                                             2
                      3       3
50                00000000000000000000000110 1000?00111000 0?10?10000?000000000
                        1     1 1
                              3

Possible character-state assignments to internal nodes (continued)

                  11111111111111111111112222222222222222222222222222222222222
                  77888888888899999999990000000000011111111112222222222333333 3
Node              89012345678901234567890123456789012345678901234567890123456
-------------------------------------------------------------------------------
39                00000001210000010001000000?0000000??0100000010011011023111 1
                   1           1                                 2
40                ?0????0121??0??1???1?00??0?0???00???0100000011011?11?231111
                   1         2      2           1       2  2    2
41                ?0????0121??0??1???1?00??0?0???00???0100000011011?11?231111
                   1         2      2           1       2  2    2
42                ?0????0121??0??1???1?00??0?0???00???0100000011011?11?231111
                   1         2      2           1       2  2    2
43                ?0????0121??0??1???1?00??0?0???00???0100000001?011?11?231111
                   1         2      2           1       2  2    2
44                ?0????0121??0??1???1?00??0?0???00???0100000001?011?11?231111
                   1         2      2           1       2  2    2
45                ?0????0121??0??1???1?00??0?0???00???0100000001?011?11?231111
                   1         2      2           1       2  2    2
46                ?0????0121??0??1???1?00??0?0???00???0100000001?011?11?231111
                   1         2      2           1       2  2    2
47                0000??0121000011 00?100?0??????00?0????????00?011011?1?0231111
                   1           1                 2       1  2
48                0000111121001111001201101211100121111011111211011?1?0231111
49                0000??0121000011 00?100?0??????00?0????????00?011011?1?0231111
                   1           1                 2       1  2
50                00000001210000010001000000?0000000??0100000010011011023111 1
                   1           1                           2

Possible character-state assignments to internal nodes (continued)

                  22222222222222222222222222222222222222222222222222222222222
                  33344444444445555555555666666666677777777778888888888999999
Node              78901234567890123456789012345678901234567890123456789012345
-------------------------------------------------------------------------------
```

```
39               21000111101000110101010110101002121000011011011110020100200
                                                         2
40               21???11110100011?1?1?1?1101?1?0212100?1101101111002010020?
                                  2     2                2            2  1
41               21???11110100011?1?1?1?1101?1?0212100?1101101111002010020?
                                  2     2                2            2  1
42               21???11110100011?1?1?1?1101?1?0212100?1101101111002010020?
                                  2     2                2            2  1
43               21???11110100011?1?1?1?1101?1?0212100?1101101111002010020?
                                  2     2                2            2  1
44               21???11110100011?1?1?1?1101?1?0212100?1101101111002010020?
                                  2     2                2            2  1
45               21???11110100011?1?1?1?1101?1?0212100?1101101111002010020?
                                  2     2                2            2  1
46               21???11110100011?1?1?1?1101?1?0212100?1101101111002010020?
                                  2     2                2            2  1
47               2100011110100011010101011010100212 1?000?1011011110020100200
                                                         2
48               2100011110100011010101011010100212 1?000?1011011110020100200
                                                         2
49               2100011110100011010101011010100212 1?000?1011011110020100200
                                                         2
50               21000111101000110101010110101002121000011011011110020100200
                                                         2

Possible character-state assignments to internal nodes (continued)

                 222233333333
                 999900000000
Node             678901234567
-----------------------------
39               011011?001?2
40               011011?001?2
41               011011?001?2
42               011011?001?2
43               011011?001?2
44               011011?001?2
45               011011?001?2
46               011011?001?2
47               011011?001?2
48               011011?001?2
49               011011?001?2
50               011011?001?2

Reconstructed states for internal nodes

                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
----------------------------------------------------------------------------
39               00010103000004041112011021110111010010112201000000011011011
40               00230100000007271102001021110001010022011001000007030000001
41               00220100000007071112001021110001010022011001000007030000001
42               00220100000007071112001021110001010020001201000007000000011
43               00221200010017271112111021110001010020001201000007001000011
44               00220100010007071112111021110001010020001201000007001000011
45               00220100000007071112001021110001010020001201000007001000011
46               00110100000004071111001021110101010010001201000007001000011
47               10000102000010000101101021110110031100011001000000000000020
48               20000102000000000101101021110110031100011001100000001002001
49               10000102000000000101101021110110031100011001000000001000001
50               00000101000000001111001021110111010000011201000000001000011

Reconstructed states for internal nodes (continued)

                                                         1111111111111111111
                 66666666667777777777888888888899999999990000000000111111111
Node             01234567890123456789012345678901234567890123456789012345678
----------------------------------------------------------------------------
```

```
39              2001001110000010000110000000000000000002101010001000000100
40              2001001100000011101111100002200011210012103120111000000000
41              2001001100000011100110100002200010210002101100111000000100
42              2001001100000011100110100002200010210002101100111000000100
43              2001001110000010010110100000210000000002101100101000001101
44              2001001110000010010110100000210000000002101100101000001101
45              2001001110000010000110100000200000000002101100101000000100
46              2001001110000010000110000000000000000002101010001000000100
47              2101021010000230100110000000211000000002201010021000000120
48              2101021010001131112110000032110102121022240100210000001200
49              2101021010000230100110000000211000000002201010021000000120
50              2101001110000010000110000000000000000002101010001000000100

Reconstructed states for internal nodes (continued)

                1111111111111111111111111111111111111111111111111111111111
                1222222222233333333334444444445555555555666666666677777777
Node            9012345678901234567890123456789012345678901234567890123456
-----------------------------------------------------------------------------
39              0000000000000000000000110100000011100000100100000000000000
40              0100000010000000000000011102000001110000010010000000000000
41              0100000000000000000000011102000001110000010010000000000000
42              0100000000000000000000011102000001110000010010000000000000
43              1100000000000000000000011010000011100000100100000000000000
44              1100000000000000000000011010000011100000100100000000000000
45              0100000000000000000000011010000011100000100100000000000000
46              0000000000000000000000011010000011100000100100000000000000
47              0000200041000001440000011120000001111000010110000000000000
48              0000212041002001442001011120010111111000111111001111110100 0
49              0000200041000001440000011120000001111000010110000000000000
50              0000000000000000000000011010000011100000100100000000000000

Reconstructed states for internal nodes (continued)

                1111111111111111111111222222222222222222222222222222222222
                7788888888889999999990000000000111111111122222222223333333
Node            8901234567890123456789012345678901234567890123456789012345
-----------------------------------------------------------------------------
39              0000000121000001000100000000000000000100000010011011023111 1
40              0000000121000001000100000000000000000100000011011011023111 1
41              0000000121000001000100000000000000000100000011011011023111 1
42              0000000121000001000100000000000000000100000011011011023111 1
43              0000000121000001000100000000000000000100000010011011023111 1
44              0000000121000001000100000000000000000100000010011011023111 1
45              0000000121000001000100000000000000000100000010011011023111 1
46              0000000121000001000100000000000000000100000010011011023111 1
47              0000000121000011000100000000000000000100000011011011023111 1
48              0000111121001111001201101211100121111011111211011011023111 1
49              0000000121000011000100000000000000000100000011011011023111 1
50              0000000121000001000100000000000000000100000010011011023111 1

Reconstructed states for internal nodes (continued)

                2222222222222222222222222222222222222222222222222222222222
                3334444444445555555555666666666677777777778888888888999999
Node            7890123456789012345678901234567890123456789012345678901234
-----------------------------------------------------------------------------
39              2100011110100011010101011010100212100001101101111002010020 0
40              2100011110100011010101011010100212100001101101111002010020 0
41              2100011110100011010101011010100212100001101101111002010020 0
42              2100011110100011010101011010100212100001101101111002010020 0
43              2100011110100011010101011010100212100001101101111002010020 0
44              2100011110100011010101011010100212100001101101111002010020 0
45              2100011110100011010101011010100212100001101101111002010020 0
46              2100011110100011010101011010100212100001101101111002010020 0
47              2100011110100011010101011010100212100001101101111002010020 0
48              2100011110100011010101011010100212100001101101111002010020 0
49              2100011110100011010101011010100212100001101101111002010020 0
```

```
50                210001111010001101010101101010021210000110110111100201002 00

Reconstructed states for internal nodes (continued)

                  222233333333
                  999900000000
Node              678901234567
------------------------------
39                011011000102
40                011011000102
41                011011000102
42                011011000102
43                011011000102
44                011011000102
45                011011000102
46                011011000102
47                011011000102
48                011011000102
49                011011000102
50                011011000102

Character change lists:

 Character         CI     Steps                  Changes

 1                0.667      1           node_50 0 ==> 1 node_49
                             1           node_49 1 ==> 2 node_48
                             1           node_50 0 ==> 1 Amphilestes
 2                0.333      1           node_47 0 ==> 1 Haramiyavia
                             1           node_49 0 ==> 1 Arboroharamiya
                             1           node_48 0 ==> 1 Rugosodon
 3                 n/a       1           node_50 0 ==> 5 Brachyzostrodon
                             1           node_50 0 ==> 5 Paceyodon
                             1           node_39 0 ==> 1 Kuehneotherium
                             1           node_50 0 ==> 1 node_46
                             1           node_46 1 ==> 2 node_45
                             1           node_43 2 ==> 1 Ambondro
 4                 n/a       1           node_50 0 ==> 1 node_39
                             1           node_50 0 ==> 1 node_45
                             1           node_46 1 --> 2 node_45
                             1           node_41 2 ==> 3 node_40
                             1           node_40 3 --> 46 Dryolestes
                             1           node_43 2 ==> 3 Asfaltomylos
                             3           node_50 0 ==> 3 Castorocauda
                             2           node_50 0 ==> 23 Haldanodon
                             1           node_49 0 ==> 1 Arboroharamiya
 5                 n/a       1           node_50 0 ==> 1 Bracyzostrodon
                             1           node_50 0 ==> 1 Paceyodon
                             1           node_39 0 --> 1 Fluctuodon
                             1           node_40 0 --> 1 Amphitherium
                             1           node_44 0 ==> 1 node_43
                             1           node_50 0 ==> 1 Castorocauda
                             1           node_50 0 ==> 1 Haldanodon
 6                0.250      1           node_50 1 ==> 0 Brasilitherium
                             1           node_50 1 ==> 0 Megazostrodon
                             1           node_50 1 ==> 0 Brachyzostrodon
                             1           node_50 1 ==> 0 Hallautherium
                             1           node_46 1 ==> 2 Woutersia
                             1           node_40 1 ==> 0 Dryolestes
                             1           node_44 1 ==> 2 node_43
                             1           node_48 1 --> 2 Rugosodon
 7                0.222      1           node_50 0 ==> 1 Hadrocodium
                             1           node_50 0 ==> 1 Dinnetherium
                             1           node_50 0 ==> 1 Rosierodon
                             1           node_50 0 ==> 1 Bridetherium
                             1           node_39 0 --> 1 Fluctuodon
                             1           node_39 0 --> 2 Kuehneotherium
                             1           node_46 0 ==> 2 Woutersia
```

		1	node_47 0 --> 2 Thomasia
		1	node_50 0 ==> 1 Priacodon
8	0.214	1	node_50 1 ==> 3 Megazostrodon
		1	node_50 1 --> 2 Morganucodon
		1	node_50 1 ==> 3 Brachyzostrodon
		1	node_50 1 ==> 3 Paceyodon
		1	node_50 1 ==> 0 Rosierodon
		1	node_50 1 --> 2 Hallautherium
		1	node_50 1 --> 2 Bridetherium
		1	node_50 1 --> 2 Purbeckodon
		1	node_50 1 ==> 3 node_39
		1	node_50 1 ==> 0 node_46
		1	node_43 0 ==> 3 Asfaltomylos
		1	node_50 1 ==> 0 Haldanodon
		1	node_50 1 --> 2 node_49
		1	node_49 2 ==> 0 Arboroharamiya
9	0.667	1	node_46 0 ==> 2 Woutersia
		1	node_50 0 ==> 2 Haldanodon
		1	node_49 0 ==> 1 Arboroharamiya
10	0.300	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Rosierodon
		1	node_50 0 ==> 1 Bridetherium
		1	node_50 0 ==> 13 Purbeckodon
		1	node_39 0 ==> 2 Fluctuodon
		1	node_40 0 --> 1 Amphitherium
		1	node_40 0 --> 3 Dryolestes
		1	node_45 0 ==> 1 node_44
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
11	0.333	1	node_50 0 ==> 1 Paceyodon
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
12	0.600	1	node_50 0 ==> 1 Paceyodon
		1	node_39 0 ==> 2 Fluctuodon
		1	node_40 0 ==> 3 Dryolestes
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 2 Haldanodon
13	n/a	1	node_50 0 ==> 1 Brachyzostrodon
		1	node_50 0 ==> 4 Paceyodon
		1	node_40 0 ==> 12 Dryolestes
		1	node_44 0 ==> 1 node_43
		1	node_43 1 ==> 2 Asfaltomylos
		1	node_49 0 --> 1 node_47
		1	node_47 1 ==> 2 Haramiyavia
		1	node_49 0 --> 1 Theroteinus
14	n/a	1	node_50 0 ==> 1 Brachyzostrodon
		1	node_50 0 ==> 1 Paceyodon
		1	node_50 0 ==> 4 node_39
		1	node_50 0 ==> 4 node_46
		3	node_46 4 ==> 7 node_45
		2	node_40 7 ==> 45 Dryolestes
		2	node_43 7 ==> 5 Ambondro
		1	node_50 0 ==> 12 Haldanodon
15	n/a	1	node_39 0 --> 1 Fluctuodon
		2	node_41 0 ==> 2 node_40
		1	node_40 2 ==> 3 Dryolestes
		2	node_44 0 ==> 2 node_43
		3	node_50 0 ==> 3 Castorocauda
		1	node_50 0 ==> 12 Haldanodon
		1	node_47 0 ==> 1 Haramiyavia
16	n/a	1	node_50 0 ==> 4 node_39
		1	node_39 4 --> 5 Fluctuodon
		4	node_50 0 ==> 7 node_46
		3	node_50 0 ==> 6 Castorocauda
		4	node_50 0 ==> 7 Haldanodon
		1	node_47 0 ==> 4 Haramiyavia
17	0.273	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon

		1	node_50 1 ==> 3 Dinnetherium
		1	node_50 1 ==> 23 Megazostrodon
		1	node_50 1 ==> 0 Brachyzostrodon
		1	node_50 1 ==> 23 Rosierodon
		1	node_50 1 ==> 0 Hallautherium
		1	node_50 1 ==> 3 Bridetherium
		1	node_46 1 ==> 2 Woutersia
		1	node_41 1 --> 0 Delsatia
		1	node_50 1 ==> 0 node_49
18	0.375	1	node_50 1 ==> 0 Rosierodon
		1	node_50 1 ==> 0 Purbeckodon
		1	node_39 1 ==> 2 Kuehneotherium
		1	node_44 1 --> 0 Shuotherium
		1	node_43 1 --> 2 Ambondro
		1	node_43 1 --> 3 Asfaltomylos
		1	node_50 1 ==> 0 Amphilestes
		1	node_50 1 ==> 0 Priacodon
19	0.167	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Purbeckodon
		1	node_41 1 ==> 0 node_40
		1	node_43 1 ==> 0 Asfaltomylos
		1	node_50 1 ==> 0 node_49
		1	node_50 1 ==> 0 Priacodon
20	n/a	1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 --> 2 Sinoconodon
		1	node_50 1 --> 23 Dinnetherium
		1	node_50 1 --> 2 Paceyodon
		1	node_50 1 --> 2 Rosierodon
		1	node_50 1 ==> 0 Hallautherium
		1	node_50 1 --> 2 node_39
		1	node_46 1 --> 2 node_45
		1	node_41 2 --> 3 Delsatia
		1	node_43 2 --> 3 Ambondro
		1	node_50 1 --> 2 Haldanodon
21	0.200	1	node_50 0 ==> 1 Dinnetherium
		1	node_41 0 ==> 1 Delsatia
		1	node_45 0 ==> 1 node_44
		1	node_50 0 ==> 1 node_49
		1	node_49 1 ==> 0 Arboroharamiya
22	0.200	1	node_50 0 ==> 1 Brasilitherium
		1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 node_39
		1	node_45 0 ==> 1 node_44
		1	node_50 0 ==> 1 Castorocauda
23	1.000	1	node_44 1 --> 2 Shuotherium
24	0.125	1	node_50 0 ==> 1 Brasilodon
		1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 ==> 1 Bridetherium
		1	node_46 0 ==> 1 Woutersia
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
		1	node_50 0 ==> 1 Amphilestes
25	n/a	3	node_50 2 ==> 4 Brasilitherium
		1	node_50 2 ==> 1 Dinnetherium
		2	node_50 2 ==> 0 Megazostrodon
		1	node_50 2 ==> 01 Morganucodon
		1	node_50 2 ==> 01 Brachyzostrodon
		2	node_50 2 ==> 0 Erythrotherium
		1	node_50 2 ==> 3 Castorocauda
		1	node_50 2 ==> 3 Haldanodon
26	1.000	1	node_50 1 ==> 0 Brasilodon
27	1.000	1	node_49 1 ==> 0 Arboroharamiya
28	1.000	1	node_49 1 ==> 2 Arboroharamiya
		1	node_48 1 ==> 0 Sinobaatar
29	0.500	1	node_49 0 ==> 1 Arboroharamiya
		1	node_48 0 ==> 1 Rugosodon
30	0.143	1	node_50 1 ==> 0 Probainognathus

		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Hadrocodium
		1	node_46 1 ==> 0 node_45
		1	node_41 0 ==> 1 Delsatia
		1	node_50 1 ==> 0 Haldanodon
31	0.500	1	node_50 1 ==> 0 Dinnetherium
		1	node_39 1 --> 0 Kuehneotherium
		1	node_50 1 ==> 0 node_46
		1	node_50 1 ==> 2 Priacodon
32	0.500	1	node_50 1 ==> 0 node_49
		1	node_48 0 ==> 1 Rugosodon
33	0.286	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Brachyzostrodon
		1	node_46 0 --> 1 Woutersia
		1	node_42 0 --> 2 Zhangheotherium
		1	node_44 0 --> 1 Shuotherium
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
34	0.429	1	node_50 1 ==> 2 Brasilitherium
		1	node_50 1 ==> 2 Sinoconodon
		1	node_50 1 ==> 3 Erythrotherium
		1	node_50 1 ==> 3 node_49
		1	node_47 3 --> 2 Haramiyavia
		1	node_48 3 ==> 0 Sinobaatar
		1	node_50 1 ==> 2 Priacodon
35	n/a	1	node_50 0 ==> 1 node_49
		1	node_47 1 ==> 2 Haramiyavia
		1	node_49 1 ==> 2 Theroteinus
		1	node_48 1 ==> 2 Sinobaatar
36	1.000	1	node_50 0 ==> 1 node_49
37	n/a	1	node_50 0 ==> 1 Paikasigudodon
		1	node_50 0 ==> 1 Helvetiodon
		1	node_50 0 ==> 1 node_39
		1	node_50 0 ==> 1 node_46
		1	node_46 1 --> 2 node_45
		2	node_40 2 --> 46 Dryolestes
		1	node_50 0 ==> 1 Haldanodon
38	n/a	1	node_50 0 ==> 1 Paikasigudodon
		1	node_39 0 ==> 1 Kuehneotherium
		2	node_42 0 --> 2 node_41
		1	node_40 2 --> 3 Dryolestes
		1	node_49 0 ==> 12 Theroteinus
39	n/a	1	node_50 0 ==> 2 Paikasigudodon
		1	node_50 0 ==> 1 Helvetiodon
		1	node_50 0 ==> 1 node_39
		1	node_46 0 --> 1 Woutersia
		1	node_44 0 --> 1 Shuotherium
		1	node_50 0 ==> 1 Haldanodon
		1	node_49 0 ==> 2 Theroteinus
40	0.200	1	node_50 1 ==> 0 Dinnetherium
		1	node_50 1 ==> 0 Brachyzostrodon
		1	node_50 1 ==> 0 node_46
		1	node_42 0 ==> 1 node_41
		1	node_49 1 ==> 0 Theroteinus
41	0.600	1	node_50 1 ==> 0 Paikasigudodon
		1	node_50 1 ==> 2 node_39
		1	node_46 1 --> 3 Woutersia
		1	node_41 1 --> 0 Delsatia
		1	node_50 1 ==> 2 Haldanodon
42	0.375	1	node_50 2 ==> 3 Megazostrodon
		1	node_50 2 ==> 3 Paikasigudodon
		1	node_50 2 ==> 1 Bridetherium
		1	node_46 2 ==> 3 Woutersia
		1	node_42 2 --> 0 node_41
		1	node_50 2 ==> 0 node_49
		1	node_47 0 ==> 1 Thomasia
		1	node_48 0 ==> 1 Sinobaatar

43	0.667	1	node_50 0 ==> 2 Paikasigudodon
		1	node_50 0 ==> 2 Purbeckodon
		1	node_40 0 --> 3 Dryolestes
45	1.000	1	node_49 0 ==> 1 node_48
46	0.750	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Purbeckodon
		1	node_39 0 ==> 3 Kuehneotherium
		1	node_40 0 --> 4 Dryolestes
47	0.500	1	node_50 0 ==> 1 Purbeckodon
		1	node_39 0 ==> 1 Fluctuodon
48	1.000	1	node_46 0 ==> 1 Woutersia
49	n/a	1	node_39 0 ==> 4 Kuehneotherium
		3	node_40 0 --> 3 Dryolestes
		2	node_44 0 --> 5 Shuotherium
50	n/a	2	node_50 0 ==> 2 Megazostrodon
		1	node_50 0 ==> 1 Helvetiodon
		1	node_39 0 ==> 12 Fluctuodon
		4	node_39 0 ==> 7 Kuehneotherium
		4	node_50 0 ==> 7 node_46
		1	node_40 7 --> 89 Dryolestes
		2	node_50 0 ==> 2 Haldanodon
51	n/a	3	node_40 0 --> 6 Dryolestes
52	n/a	2	node_50 0 ==> 2 Megazostrodon
		1	node_50 0 ==> 1 node_39
		1	node_39 1 ==> 2 Kuehneotherium
		3	node_42 0 --> 3 node_41
		1	node_41 3 ==> 7 Delsatia
53	0.250	1	node_50 1 ==> 0 Dinnetherium
		1	node_45 1 ==> 0 node_42
		1	node_50 1 ==> 0 Haldanodon
		1	node_49 1 ==> 0 node_47
54	0.750	1	node_50 0 ==> 1 Paikasigudodon
		1	node_46 0 ==> 2 Woutersia
		1	node_49 0 --> 3 Theroteinus
		1	node_49 0 --> 3 Arboroharamiya
55	0.429	1	node_50 0 --> 1 Brachyzostrodon
		1	node_50 0 ==> 2 Helvetiodon
		1	node_50 0 --> 1 Bridetherium
		1	node_50 0 ==> 2 Purbeckodon
		1	node_50 0 --> 1 node_39
		1	node_46 0 --> 1 Woutersia
		1	node_49 0 ==> 3 Theroteinus
56	0.400	1	node_50 0 ==> 2 Paikasigudodon
		1	node_50 0 ==> 2 Helvetiodon
		1	node_50 0 ==> 2 Purbeckodon
		1	node_50 0 ==> 1 node_39
		1	node_49 0 --> 2 node_48
57	0.286	1	node_50 0 --> 1 Brasilitherium
		1	node_50 0 --> 1 Dinnetherium
		1	node_50 0 --> 1 Megazostrodon
		1	node_50 0 --> 1 Brachyzostrodon
		1	node_50 0 --> 1 Erythrotherium
		1	node_50 0 ==> 2 Helvetiodon
		1	node_50 0 --> 12 Purbeckodon
58	0.143	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 --> 2 Dinnetherium
		1	node_50 1 --> 2 Megazostrodon
		1	node_50 1 --> 2 Morganucodon
		1	node_50 1 --> 2 Brachyzostrodon
		1	node_50 1 --> 2 Bridetherium
		1	node_50 1 --> 2 Purbeckodon
		1	node_42 1 --> 0 node_41
		1	node_44 1 --> 2 Shuotherium
		1	node_50 1 --> 2 Haldanodon
		1	node_50 1 --> 0 node_49
		1	node_49 0 --> 2 node_47
		1	node_49 0 --> 2 Theroteinus

59	0.143	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Sinoconodon
		1	node_42 1 ==> 0 Zhangheotherium
		1	node_49 1 ==> 0 node_47
		1	node_50 1 ==> 0 Priacodon
60	n/a	2	node_50 2 ==> 0 Paikasigudodon
		1	node_50 2 ==> 1 Helvetiodon
		1	node_50 2 ==> 01 Purbeckodon
		1	node_41 2 ==> 3 Delsatia
61	0.125	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Helvetiodon
		1	node_50 1 ==> 0 Purbeckodon
		1	node_50 1 ==> 0 node_39
		1	node_50 1 ==> 0 node_46
		1	node_50 1 ==> 0 Haldanodon
		1	node_50 1 ==> 0 Priacodon
62	0.200	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 ==> 1 Morganucodon
		1	node_50 0 ==> 1 Erythrotherium
		1	node_50 0 ==> 1 Bridetherium
64	0.167	1	node_50 0 ==> 1 Helvetiodon
		1	node_46 0 --> 1 Woutersia
		1	node_44 0 --> 1 Shuotherium
		1	node_50 0 ==> 1 Haldanodon
		1	node_49 0 --> 1 Theroteinus
		1	node_49 0 --> 1 Arboroharamiya
65	0.667	1	node_44 0 --> 1 Shuotherium
		1	node_50 0 --> 1 Haldanodon
		1	node_50 0 ==> 2 node_49
66	0.250	1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Paikasigudodon
		1	node_49 1 ==> 0 Arboroharamiya
67	0.500	1	node_50 1 ==> 0 Bridetherium
		1	node_50 1 ==> 0 node_49
68	0.125	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Hadrocodium
		1	node_39 1 --> 0 Kuehneotherium
		1	node_45 1 --> 0 node_42
		1	node_50 1 ==> 0 Haldanodon
		1	node_47 1 --> 0 Haramiyavia
69	1.000	1	node_46 0 --> 1 Woutersia
70	0.500	1	node_47 0 ==> 1 Thomasia
		1	node_49 0 ==> 1 Theroteinus
71	0.500	1	node_49 0 ==> 1 Theroteinus
		1	node_48 0 ==> 1 Rugosodon
72	1.000	1	node_49 0 ==> 1 node_48
73	0.400	1	node_50 0 ==> 1 Brachyzostrodon
		1	node_50 0 ==> 1 Bridetherium
		1	node_40 0 --> 2 Dryolestes
		1	node_50 0 ==> 2 node_49
		1	node_49 2 ==> 1 node_48
74	0.750	1	node_50 1 ==> 0 Brasilodon
		1	node_42 1 ==> 2 Zhangheotherium
		1	node_50 1 ==> 3 node_49
		1	node_47 3 --> 2 Haramiyavia
75	0.167	1	node_50 0 ==> 1 Hadrocodium
		1	node_45 0 ==> 1 node_42
		1	node_49 0 --> 1 Arboroharamiya
		1	node_49 0 --> 1 node_48
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon

76	0.250	1	node_45 0 ==> 1 node_42
		1	node_50 0 ==> 1 node_49
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
77	0.500	1	node_45 0 --> 1 node_44
		1	node_49 0 ==> 1 node_48
78	0.333	1	node_41 0 --> 1 node_40
		1	node_43 0 --> 2 Asfaltomylos
		1	node_49 0 --> 2 Arboroharamiya
		1	node_49 0 --> 2 node_48
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
79	0.143	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_40 1 --> 0 Dryolestes
		1	node_42 1 --> 0 Zhangheotherium
		1	node_50 1 ==> 0 Castorocauda
		1	node_50 1 ==> 0 Haldanodon
		1	node_50 1 ==> 0 Priacodon
80	0.167	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Megazostrodon
		1	node_50 1 ==> 0 Morganucodon
81	0.429	1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 3 Hadrocodium
		1	node_50 0 ==> 1 Morganucodon
		1	node_41 0 --> 1 node_40
		1	node_43 0 --> 2 Asfaltomylos
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
82	1.000	1	node_46 0 --> 1 node_45
83	1.000	1	node_43 0 --> 1 Asfaltomylos
84	1.000	1	node_50 0 ==> 1 Hadrocodium
85	0.500	1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
86	0.250	1	node_49 0 --> 1 Arboroharamiya
		1	node_48 0 --> 1 Sinobaatar
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
87	0.667	1	node_50 0 ==> 4 Hadrocodium
		1	node_45 0 ==> 2 node_42
		1	node_49 0 --> 3 Arboroharamiya
		1	node_49 0 --> 3 node_48
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
88	0.286	1	node_50 0 ==> 2 Hadrocodium
		1	node_46 0 --> 2 node_45
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
		1	node_50 0 ==> 2 node_49
		1	node_50 0 ==> 2 Amphilestes
		1	node_50 0 ==> 2 Priacodon
89	0.200	1	node_50 0 ==> 1 Hadrocodium
		1	node_40 0 ==> 1 Amphitherium
		1	node_45 0 ==> 1 node_44
		1	node_50 0 ==> 1 node_49
		1	node_50 0 ==> 1 Priacodon
90	0.500	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 node_49
91	1.000	1	node_50 0 ==> 1 Probainognathus
92	0.167	1	node_45 0 ==> 1 node_42
		1	node_50 0 ==> 1 Haldanodon
		1	node_49 0 --> 1 Arboroharamiya
		1	node_49 0 --> 1 node_48
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon

93	0.400	1	node_41 0 --> 1 node_40
		1	node_42 0 --> 2 Zhangheotherium
		1	node_49 0 ==> 1 Arboroharamiya
		1	node_50 0 ==> 2 Amphilestes
		1	node_50 0 ==> 2 Priacodon
94	0.333	1	node_45 0 --> 2 node_42
		1	node_43 0 --> 2 Asfaltomylos
		1	node_49 0 ==> 1 Arboroharamiya
		1	node_49 0 ==> 2 node_48
		1	node_50 0 ==> 2 Amphilestes
		1	node_50 0 ==> 2 Priacodon
95	0.500	1	node_45 0 --> 1 node_42
		1	node_43 0 --> 2 Asfaltomylos
		1	node_49 0 ==> 1 node_48
		1	node_50 0 ==> 1 Priacodon
96	0.500	1	node_49 0 --> 2 Arboroharamiya
		1	node_49 0 --> 2 node_48
97	0.333	1	node_42 0 ==> 1 Zhangheotherium
		1	node_49 0 ==> 1 node_48
		1	node_50 0 ==> 1 Priacodon
98	1.000	1	node_41 0 --> 1 node_40
99	0.500	1	node_50 2 ==> 0 Probainognathus
		1	node_50 2 ==> 1 Brasilodon
		1	node_50 2 ==> 1 Brasilitherium
		1	node_50 2 ==> 1 Sinoconodon
100	0.333	1	node_50 1 ==> 0 Hadrocodium
		1	node_50 1 ==> 2 Dinnetherium
		1	node_50 1 ==> 0 Megazostrodon
		1	node_39 1 --> 0 Kuehneotherium
		1	node_50 1 ==> 2 node_49
		1	node_50 1 ==> 2 Priacodon
101	0.429	1	node_40 0 --> 1 Dryolestes
		1	node_42 0 --> 1 Zhangheotherium
		1	node_43 0 --> 3 Asfaltomylos
		1	node_49 0 --> 12 Arboroharamiya
		1	node_49 0 --> 2 node_48
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
102	0.444	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Dinnetherium
		1	node_50 1 ==> 2 Megazostrodon
		1	node_41 1 --> 3 node_40
		1	node_42 1 --> 4 Zhangheotherium
		1	node_49 1 --> 34 Arboroharamiya
		1	node_49 1 --> 4 node_48
		1	node_50 1 ==> 4 Amphilestes
		1	node_50 1 ==> 4 Priacodon
103	1.000	1	node_46 0 --> 1 node_45
104	0.222	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 ==> 0 Morganucodon
		1	node_39 1 --> 0 Kuehneotherium
		1	node_46 1 --> 0 node_45
		1	node_41 0 --> 2 node_40
		1	node_43 0 --> 2 Asfaltomylos
		1	node_50 1 ==> 2 Amphilestes
105	1.000	1	node_42 0 ==> 1 Zhangheotherium
106	0.667	1	node_50 0 ==> 1 Probainognathus
		1	node_46 0 --> 1 node_45
		1	node_50 0 ==> 2 Amphilestes
107	1.000	1	node_45 0 ==> 1 node_42
		1	node_50 0 ==> 2 node_49
108	1.000	1	node_50 1 ==> 0 Probainognathus
109	1.000	1	node_47 0 --> 1 Haramiyavia
110	1.000	1	node_40 0 ==> 1 Amphitherium
111	1.000	1	node_40 0 ==> 1 Amphitherium
112	1.000	1	node_50 0 ==> 1 Hadrocodium

113	0.500	1	node_40 0 --> 1 Dryolestes
		1	node_42 0 --> 1 Zhangheotherium
114	0.200	1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 1 Hadrocodium
		1	node_42 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
		1	node_50 0 ==> 1 Amphilestes
115	0.333	1	node_50 1 ==> 0 Hadrocodium
		1	node_50 1 ==> 0 Dinnetherium
		1	node_50 1 ==> 0 Megazostrodon
		1	node_41 1 --> 0 node_40
		1	node_43 1 ==> 2 Ambondro
		1	node_50 1 ==> 0 Priacodon
116	0.667	1	node_44 0 --> 1 Shuotherium
		1	node_43 0 --> 1 Ambondro
		1	node_50 0 ==> 2 node_49
117	0.400	1	node_42 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
		1	node_43 1 ==> 3 Ambondro
		1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
118	1.000	1	node_45 0 ==> 1 node_44
119	0.250	1	node_50 0 ==> 1 Probainognathus
		1	node_45 0 ==> 1 node_44
		1	node_48 0 --> 1 Sinobaatar
		1	node_50 0 ==> 1 Priacodon
120	0.333	1	node_50 0 ==> 1 Probainognathus
		1	node_46 0 --> 1 node_45
		1	node_50 0 ==> 1 Haldanodon
121	1.000	1	node_50 0 ==> 1 Priacodon
122	0.333	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
123	1.000	1	node_50 0 ==> 2 node_49
124	1.000	1	node_49 0 ==> 1 node_48
125	0.600	1	node_50 0 ==> 1 Megazostrodon
		1	node_40 0 --> 1 Dryolestes
		1	node_42 0 --> 2 Zhangheotherium
		1	node_49 0 --> 3 Arboroharamiya
		1	node_49 0 --> 2 node_48
126	1.000	1	node_48 0 ==> 1 Rugosodon
127	0.500	1	node_50 0 --> 1 Megazostrodon
		1	node_41 0 --> 1 node_40
		1	node_42 0 --> 2 Zhangheotherium
		1	node_50 0 --> 1 Castorocauda
		1	node_50 0 --> 1 Haldanodon
		1	node_50 0 --> 4 node_49
		1	node_47 4 --> 1 Haramiyavia
		1	node_50 0 ==> 3 Priacodon
128	0.500	1	node_42 0 ==> 1 Zhangheotherium
		1	node_50 0 ==> 1 node_49
		1	node_49 1 --> 2 Arboroharamiya
		1	node_48 1 --> 2 Sinobaatar
129	1.000	1	node_48 0 --> 1 Rugosodon
130	1.000	1	node_50 0 ==> 1 Hadrocodium
131	0.667	1	node_42 0 ==> 1 Zhangheotherium
		1	node_47 0 --> 1 Haramiyavia
		1	node_49 0 --> 2 node_48
132	0.500	1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
133	0.375	1	node_50 0 --> 3 Sinoconodon
		1	node_50 0 --> 3 Hadrocodium
		1	node_40 0 --> 1 Dryolestes
		1	node_42 0 --> 2 Zhangheotherium
		1	node_50 0 ==> 2 Haldanodon
		1	node_47 0 --> 1 Haramiyavia
		1	node_49 0 --> 3 Arboroharamiya
		1	node_50 0 --> 1 Priacodon

134	0.300	1	node_50 0 ==> 3 Sinoconodon
		1	node_50 0 ==> 3 Hadrocodium
		1	node_40 0 ==> 1 Dryolestes
		1	node_42 0 ==> 2 Zhangheotherium
		1	node_50 0 ==> 2 Haldanodon
		1	node_50 0 ==> 1 node_49
		1	node_49 1 ==> 3 Arboroharamiya
		1	node_48 1 ==> 2 Sinobaatar
		1	node_50 0 ==> 2 Amphilestes
		1	node_50 0 ==> 2 Priacodon
135	0.400	1	node_50 0 --> 1 Sinoconodon
		1	node_50 0 ==> 4 Hadrocodium
		1	node_50 0 --> 1 Dinnetherium
		1	node_50 0 --> 1 Megazostrodon
		1	node_50 0 ==> 23 Morganucodon
		1	node_44 0 --> 3 Shuotherium
		1	node_50 0 ==> 4 node_49
		1	node_47 4 --> 3 Haramiyavia
		1	node_50 0 --> 1 Amphilestes
		1	node_50 0 ==> 2 Priacodon
136	0.667	1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 4 Hadrocodium
		1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 ==> 4 node_49
		1	node_47 4 --> 3 Haramiyavia
		1	node_50 0 ==> 2 Priacodon
137	0.400	1	node_50 0 ==> 2 Sinoconodon
		1	node_50 0 ==> 4 Hadrocodium
		1	node_49 0 --> 4 Arboroharamiya
		1	node_49 0 --> 2 node_48
		1	node_50 0 ==> 2 Priacodon
138	0.500	1	node_50 0 ==> 2 Sinoconodon
		1	node_50 0 ==> 3 Hadrocodium
		1	node_47 0 --> 1 Haramiyavia
		1	node_48 0 --> 2 Rugosodon
		1	node_48 0 --> 3 Sinobaatar
		1	node_50 0 ==> 1 Priacodon
139	1.000	1	node_50 0 ==> 2 Sinoconodon
		1	node_42 0 ==> 1 Zhangheotherium
140	0.667	1	node_50 0 ==> 2 Brasilodon
		1	node_50 0 ==> 1 Brasilitherium
		1	node_49 0 ==> 1 node_48
141	0.333	1	node_40 0 --> 3 Dryolestes
		1	node_49 0 --> 3 Arboroharamiya
		1	node_48 0 --> 3 Rugosodon
142	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
143	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Megazostrodon
144	0.500	1	node_45 0 --> 1 node_42
		1	node_50 0 ==> 1 node_49
145	0.400	1	node_45 1 --> 0 node_42
		1	node_50 1 ==> 0 Castorocauda
		1	node_50 1 ==> 0 Haldanodon
		1	node_50 1 ==> 2 node_49
		1	node_50 1 ==> 0 Amphilestes
146	0.500	1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 2 Megazostrodon
		1	node_45 0 --> 2 node_42
		1	node_50 0 ==> 1 Priacodon
147	1.000	1	node_48 0 --> 1 Rugosodon
148	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
149	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_48 0 --> 1 Rugosodon
150	1.000	1	node_49 0 --> 1 node_48
151	1.000	1	node_49 0 --> 1 node_48

152	1.000	1	node_50 1 ==> 0 Castorocauda
153	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Castorocauda
154	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Castorocauda
155	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_50 0 ==> 1 node_49
156	1.000	1	node_42 0 --> 1 Zhangheotherium
157	1.000	1	node_50 0 ==> 1 Sinoconodon
158	1.000	1	node_50 0 ==> 1 Morganucodon
159	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
160	1.000	1	node_50 1 ==> 0 Sinoconodon
161	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
162	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_50 0 --> 1 node_49
163	1.000	1	node_50 1 ==> 0 Sinoconodon
		1	node_42 1 --> 2 Zhangheotherium
164	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
165	1.000	1	node_42 0 --> 1 Zhangheotherium
166	1.000	1	node_42 0 --> 1 Zhangheotherium
167	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
168	0.333	1	node_42 0 --> 1 Zhangheotherium
		1	node_50 0 --> 1 Haldanodon
		1	node_49 0 --> 1 node_48
169	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
170	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
171	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
172	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
173	1.000	1	node_42 0 --> 1 Zhangheotherium
174	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
175	1.000	1	node_42 0 --> 1 Zhangheotherium
176	1.000	1	node_42 0 --> 1 Zhangheotherium
177	1.000	1	node_42 0 --> 1 Zhangheotherium
		1	node_48 0 --> 2 Sinobaatar
178	0.333	1	node_42 0 --> 1 Zhangheotherium
		1	node_50 0 ==> 1 Castorocauda
		1	node_50 0 ==> 1 Haldanodon
179	0.400	1	node_50 0 --> 1 Sinoconodon
		1	node_50 0 --> 1 Megazostrodon
		1	node_50 0 --> 1 Morganucodon
		1	node_50 0 ==> 2 Castorocauda
		1	node_50 0 ==> 2 Haldanodon
180	1.000	1	node_42 0 --> 1 Zhangheotherium
181	1.000	1	node_42 0 --> 1 Zhangheotherium
182	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
183	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
184	1.000	1	node_49 0 ==> 1 node_48
185	1.000	1	node_50 1 ==> 0 Castorocauda
186	0.500	1	node_50 2 ==> 1 Probainognathus
		1	node_50 2 ==> 1 Castorocauda
187	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_49 1 ==> 0 Arboroharamiya
188	1.000	1	node_42 0 --> 1 Zhangheotherium
189	1.000	1	node_42 0 --> 1 Zhangheotherium
190	1.000	1	node_42 0 --> 2 Zhangheotherium
		1	node_49 0 ==> 1 node_48
191	0.500	1	node_50 0 --> 1 Megazostrodon

		1	node_50 0 --> 1 Morganucodon
		1	node_42 0 --> 2 Zhangheotherium
		1	node_49 0 --> 1 node_48
192	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_50 0 ==> 1 node_49
193	0.500	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Castorocauda
194	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_48 0 ==> 1 Sinobaatar
195	1.000	1	node_42 0 --> 1 Zhangheotherium
196	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
197	0.667	1	node_50 1 ==> 0 Sinoconodon
		1	node_42 1 --> 2 Zhangheotherium
		1	node_49 1 ==> 2 node_48
198	1.000	1	node_42 0 --> 1 Zhangheotherium
199	0.500	1	node_50 0 ==> 1 Castorocauda
		1	node_49 0 ==> 1 node_48
200	1.000	1	node_49 0 --> 1 node_48
201	1.000	1	node_42 0 --> 1 Zhangheotherium
202	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
203	1.000	1	node_49 0 --> 2 node_48
204	1.000	1	node_49 0 --> 1 node_48
205	1.000	1	node_49 0 --> 1 node_48
206	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
207	1.000	1	node_42 0 --> 3 Zhangheotherium
208	1.000	1	node_42 0 --> 2 Zhangheotherium
209	1.000	1	node_49 0 --> 1 node_48
210	1.000	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 2 node_48
211	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
212	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
213	0.500	1	node_42 0 --> 1 Zhangheotherium
		1	node_49 0 --> 1 node_48
214	1.000	1	node_49 0 --> 1 node_48
215	1.000	1	node_49 1 --> 0 node_48
216	1.000	1	node_49 0 --> 1 node_48
217	1.000	1	node_49 0 --> 1 node_48
218	1.000	1	node_42 0 --> 2 Zhangheotherium
		1	node_49 0 --> 1 node_48
219	1.000	1	node_49 0 ==> 1 node_48
220	1.000	1	node_49 0 --> 1 node_48
221	0.667	1	node_42 0 --> 2 Zhangheotherium
		1	node_50 0 ==> 1 Castorocauda
		1	node_49 0 --> 2 node_48
222	1.000	1	node_50 1 ==> 0 Megazostrodon
223	0.500	1	node_45 0 --> 1 node_42
		1	node_50 0 ==> 1 node_49
224	1.000	1	node_50 0 ==> 1 Hadrocodium
225	0.333	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
		1	node_50 1 ==> 0 Hadrocodium
226	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Hadrocodium
		1	node_42 1 --> 2 Zhangheotherium
		1	node_50 1 ==> 2 Haldanodon
227	0.333	1	node_50 0 ==> 1 Hadrocodium
		1	node_42 0 --> 1 Zhangheotherium
		1	node_48 0 --> 1 Sinobaatar
228	0.500	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Hadrocodium
229	0.500	1	node_50 1 ==> 0 Sinoconodon
		1	node_48 1 --> 0 Sinobaatar
230	1.000	1	node_42 0 --> 1 Zhangheotherium

231	1.000	1	node_50 2 ==> 1 Probainognathus
232	0.667	1	node_50 3 ==> 0 Probainognathus
		1	node_50 3 ==> 2 Sinoconodon
		1	node_50 3 ==> 2 Adelobasileus
233	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilodon
		1	node_50 1 ==> 0 Brasilitherium
234	1.000	1	node_50 1 ==> 0 Probainognathus
235	0.250	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
		1	node_50 1 ==> 0 Megazostrodon
		1	node_50 1 ==> 0 Haldanodon
236	0.500	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
		1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 ==> 0 Haldanodon
237	0.600	1	node_50 2 ==> 0 Probainognathus
		1	node_50 2 ==> 1 Sinoconodon
		1	node_50 2 ==> 3 Hadrocodium
		1	node_50 2 ==> 1 Dinnetherium
		1	node_50 2 ==> 3 Priacodon
238	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
239	1.000	1	node_42 0 --> 1 Zhangheotherium
240	1.000	1	node_42 0 --> 1 Zhangheotherium
241	1.000	1	node_42 0 --> 1 Zhangheotherium
242	1.000	1	node_50 1 ==> 0 Probainognathus
243	1.000	1	node_50 1 ==> 0 Probainognathus
244	1.000	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Haldanodon
245	1.000	1	node_50 1 ==> 0 Probainognathus
246	1.000	1	node_50 0 ==> 2 Priacodon
247	1.000	1	node_50 1 ==> 0 Probainognathus
248	0.250	1	node_50 0 ==> 1 Brasilitherium
		1	node_50 0 ==> 1 Sinoconodon
		1	node_50 0 ==> 1 Adelobasileus
		1	node_50 0 ==> 1 Morganucodon
249	1.000	1	node_50 0 ==> 1 Hadrocodium
250	1.000	1	node_50 0 ==> 1 Probainognathus
251	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
252	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
253	0.333	1	node_50 0 ==> 1 Probainognathus
		1	node_42 0 --> 1 Zhangheotherium
		1	node_50 0 ==> 1 Priacodon
254	0.400	1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
		1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 ==> 2 Dinnetherium
		1	node_42 1 --> 2 Zhangheotherium
255	0.333	1	node_50 0 ==> 1 Adelobasileus
		1	node_50 0 ==> 1 Hadrocodium
		1	node_42 0 --> 1 Zhangheotherium
256	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilitherium
		1	node_50 1 ==> 0 Adelobasileus
257	0.250	1	node_50 0 ==> 1 Dinnetherium
		1	node_50 0 ==> 1 Megazostrodon
		1	node_50 0 ==> 1 Morganucodon
		1	node_42 0 --> 1 Zhangheotherium
258	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Adelobasileus
259	0.500	1	node_50 0 ==> 1 Hadrocodium
		1	node_42 0 --> 1 Zhangheotherium
260	0.667	1	node_50 1 ==> 0 Probainognathus

		1	node_50 1 ==> 0 Sinoconodon
		1	node_42 1 --> 2 Zhangheotherium
261	1.000	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Dinnetherium
262	1.000	1	node_50 0 ==> 1 Priacodon
263	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Adelobasileus
264	1.000	1	node_42 0 --> 1 Zhangheotherium
265	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Brasilitherium
266	1.000	1	node_42 0 --> 1 Zhangheotherium
267	1.000	1	node_50 0 ==> 1 Sinoconodon
268	1.000	1	node_50 2 ==> 1 Probainognathus
269	1.000	1	node_50 1 ==> 0 Probainognathus
270	1.000	1	node_50 2 ==> 0 Probainognathus
		1	node_50 2 ==> 1 Sinoconodon
271	1.000	1	node_50 1 ==> 0 Probainognathus
272	1.000	1	node_48 0 --> 1 Rugosodon
273	1.000	1	node_50 0 ==> 1 Castorocauda
274	1.000	1	node_50 0 ==> 1 Castorocauda
275	1.000	1	node_42 0 --> 1 Zhangheotherium
276	1.000	1	node_48 1 --> 2 Sinobaatar
277	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 --> 2 Hadrocodium
		1	node_50 1 --> 2 Haldanodon
		1	node_50 1 --> 2 Priacodon
278	0.500	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 Haldanodon
279	1.000	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 2 Hadrocodium
280	1.000	1	node_50 1 ==> 0 Probainognathus
281	1.000	1	node_50 0 ==> 3 Hadrocodium
282	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Priacodon
283	1.000	1	node_50 1 ==> 0 Probainognathus
284	0.333	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 0 Hadrocodium
285	1.000	1	node_50 1 ==> 0 Probainognathus
286	0.500	1	node_50 0 ==> 1 Amphilestes
		1	node_50 0 ==> 1 Priacodon
287	1.000	1	node_50 0 ==> 1 Hadrocodium
288	1.000	1	node_50 2 ==> 1 Probainognathus
289	0.333	1	node_50 0 ==> 2 Hadrocodium
		1	node_42 0 --> 2 Zhangheotherium
		1	node_50 0 ==> 12 Priacodon
290	1.000	1	node_50 1 ==> 0 Probainognathus
291	1.000	1	node_50 0 ==> 1 Priacodon
292	1.000	1	node_42 0 --> 1 Zhangheotherium
		1	node_50 0 ==> 2 Priacodon
293	1.000	1	node_50 2 ==> 0 Probainognathus
294	0.333	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 Haldanodon
		1	node_50 0 ==> 1 Priacodon
295	1.000	1	node_42 0 --> 2 Zhangheotherium
296	1.000	1	node_50 0 ==> 1 Hadrocodium
297	0.667	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
		1	node_50 1 ==> 2 Hadrocodium
298	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Sinoconodon
299	0.500	1	node_50 0 ==> 1 Hadrocodium
		1	node_50 0 ==> 1 Haldanodon
300	0.500	1	node_50 1 ==> 0 Probainognathus
		1	node_50 1 ==> 0 Hadrocodium
301	1.000	1	node_50 1 ==> 0 Sinoconodon
302	0.500	1	node_50 0 --> 1 Sinoconodon
		1	node_50 0 --> 1 Morganucodon

303	1.000	1	node_50 0 ==> 2 Hadrocodium
		1	node_50 0 ==> 1 Priacodon
304	1.000	1	node_50 0 ==> 1 Hadrocodium
305	0.500	1	node_50 1 ==> 2 Hadrocodium
		1	node_50 1 ==> 2 Haldanodon
306	0.500	1	node_50 0 --> 1 Hadrocodium
		1	node_50 0 --> 1 Morganucodon
307	1.000	1	node_50 2 ==> 1 Probainognathus
		1	node_50 2 ==> 3 Hadrocodium

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_50 --> Probainognathus	17	1	0.273	1 ==> 0
	19	1	0.167	1 ==> 0
	30	1	0.143	1 ==> 0
	58	1	0.143	1 ==> 0
	59	1	0.143	1 ==> 0
	61	1	0.125	1 ==> 0
	68	1	0.125	1 ==> 0
	79	1	0.143	1 ==> 0
	80	1	0.167	1 ==> 0
	91	1	1.000	0 ==> 1
	99	1	0.500	2 ==> 0
	102	1	0.444	1 ==> 0
	104	1	0.222	1 ==> 0
	106	1	0.667	0 ==> 1
	108	1	1.000	1 ==> 0
	119	1	0.250	0 ==> 1
	120	1	0.333	0 ==> 1
	142	1	0.500	1 ==> 0
	143	1	0.333	1 ==> 0
	153	1	0.500	1 ==> 0
	154	1	0.500	1 ==> 0
	186	1	0.500	2 ==> 1
	187	1	0.500	1 ==> 0
	226	1	0.500	1 ==> 0
	231	1	1.000	2 ==> 1
	232	1	0.667	3 ==> 0
	233	1	0.333	1 ==> 0
	234	1	1.000	1 ==> 0
	237	1	0.600	2 ==> 0
	238	1	0.500	1 ==> 0
	242	1	1.000	1 ==> 0
	243	1	1.000	1 ==> 0
	244	1	1.000	1 ==> 0
	245	1	1.000	1 ==> 0
	247	1	1.000	1 ==> 0
	250	1	1.000	0 ==> 1
	251	1	0.333	1 ==> 0
	252	1	0.500	1 ==> 0
	253	1	0.333	0 ==> 1
	256	1	0.333	1 ==> 0
	258	1	0.333	1 ==> 0
	260	1	0.667	1 ==> 0
	261	1	1.000	1 ==> 0
	263	1	0.500	1 ==> 0
	265	1	0.500	1 ==> 0
	268	1	1.000	2 ==> 1
	269	1	1.000	1 ==> 0
	270	1	1.000	2 ==> 0
	271	1	1.000	1 ==> 0
	277	1	0.500	1 ==> 0
	279	1	1.000	1 ==> 0
	280	1	1.000	1 ==> 0
	282	1	0.500	1 ==> 0
	283	1	1.000	1 ==> 0
	284	1	0.333	1 ==> 0

	285	1	1.000	1 ==> 0
	288	1	1.000	2 ==> 1
	290	1	1.000	1 ==> 0
	293	1	1.000	2 ==> 0
	297	1	0.667	1 ==> 0
	298	1	0.500	1 ==> 0
	300	1	0.500	1 ==> 0
	307	1	1.000	2 ==> 1
node_50 --> Brasilodon	24	1	0.125	0 ==> 1
	26	1	1.000	1 ==> 0
	30	1	0.143	1 ==> 0
	59	1	0.143	1 ==> 0
	66	1	0.250	1 ==> 0
	68	1	0.125	1 ==> 0
	74	1	0.750	1 ==> 0
	80	1	0.167	1 ==> 0
	99	1	0.500	2 ==> 1
	140	1	0.667	0 ==> 2
	233	1	0.333	1 ==> 0
node_50 --> Brasilitherium	6	1	0.250	1 ==> 0
	20	1	n/a	1 ==> 0
	22	1	0.200	0 ==> 1
	25	3	n/a	2 ==> 4
	30	1	0.143	1 ==> 0
	34	1	0.429	1 ==> 2
	57	1	0.286	0 --> 1
	59	1	0.143	1 ==> 0
	66	1	0.250	1 ==> 0
	68	1	0.125	1 ==> 0
	80	1	0.167	1 ==> 0
	99	1	0.500	2 ==> 1
	140	1	0.667	0 ==> 1
	233	1	0.333	1 ==> 0
	248	1	0.250	0 ==> 1
	256	1	0.333	1 ==> 0
	265	1	0.500	1 ==> 0
node_50 --> Sinoconodon	17	1	0.273	1 ==> 0
	20	1	n/a	1 --> 2
	34	1	0.429	1 ==> 2
	58	1	0.143	1 ==> 0
	59	1	0.143	1 ==> 0
	61	1	0.125	1 ==> 0
	79	1	0.143	1 ==> 0
	80	1	0.167	1 ==> 0
	81	1	0.429	0 ==> 1
	99	1	0.500	2 ==> 1
	104	1	0.222	1 ==> 0
	114	1	0.200	0 ==> 1
	133	1	0.375	0 --> 3
	134	1	0.300	0 ==> 3
	135	1	0.400	0 --> 1
	136	1	0.667	0 ==> 1
	137	1	0.400	0 ==> 2
	138	1	0.500	0 ==> 2
	139	1	1.000	0 ==> 2
	142	1	0.500	1 ==> 0
	143	1	0.333	1 ==> 0
	146	1	0.500	0 ==> 1
	157	1	1.000	0 ==> 1
	160	1	1.000	1 ==> 0
	163	1	1.000	1 ==> 0
	179	1	0.400	0 --> 1
	193	1	0.500	1 ==> 0
	197	1	0.667	1 ==> 0
	225	1	0.333	1 ==> 0
	228	1	0.500	1 ==> 0
	229	1	0.500	1 ==> 0
	232	1	0.667	3 ==> 2

	235	1	0.250 1 ==> 0
	236	1	0.500 1 ==> 0
	237	1	0.600 2 ==> 1
	238	1	0.500 1 ==> 0
	248	1	0.250 0 ==> 1
	251	1	0.333 1 ==> 0
	252	1	0.500 1 ==> 0
	254	1	0.400 1 ==> 0
	258	1	0.333 1 ==> 0
	260	1	0.667 1 ==> 0
	267	1	1.000 0 ==> 1
	270	1	1.000 2 ==> 1
	284	1	0.333 1 ==> 0
	297	1	0.667 1 ==> 0
	298	1	0.500 1 ==> 0
	301	1	1.000 1 ==> 0
	302	1	0.500 0 --> 1
node_50 --> Adelobasileus	225	1	0.333 1 ==> 0
	232	1	0.667 3 ==> 2
	235	1	0.250 1 ==> 0
	236	1	0.500 1 ==> 0
	248	1	0.250 0 ==> 1
	251	1	0.333 1 ==> 0
	254	1	0.400 1 ==> 0
	255	1	0.333 0 ==> 1
	256	1	0.333 1 ==> 0
	258	1	0.333 1 ==> 0
	263	1	0.500 1 ==> 0
node_50 --> Hadrocodium	7	1	0.222 0 ==> 1
	30	1	0.143 1 ==> 0
	68	1	0.125 1 ==> 0
	75	1	0.167 0 ==> 1
	81	1	0.429 0 ==> 3
	84	1	1.000 0 ==> 1
	87	1	0.667 0 ==> 4
	88	1	0.286 0 ==> 2
	89	1	0.200 0 ==> 1
	90	1	0.500 0 ==> 1
	100	1	0.333 1 ==> 0
	104	1	0.222 1 ==> 2
	112	1	1.000 0 ==> 1
	114	1	0.200 0 ==> 1
	115	1	0.333 1 ==> 0
	130	1	1.000 0 ==> 1
	133	1	0.375 0 --> 3
	134	1	0.300 0 ==> 3
	135	1	0.400 0 ==> 4
	136	1	0.667 0 ==> 4
	137	1	0.400 0 ==> 4
	138	1	0.500 0 ==> 3
	224	1	1.000 0 ==> 1
	225	1	0.333 1 ==> 0
	226	1	0.500 1 ==> 2
	227	1	0.333 0 ==> 1
	228	1	0.500 1 ==> 0
	236	1	0.500 1 ==> 2
	237	1	0.600 2 ==> 3
	249	1	1.000 0 ==> 1
	254	1	0.400 1 ==> 2
	255	1	0.333 0 ==> 1
	259	1	0.500 0 ==> 1
	277	1	0.500 1 --> 2
	278	1	0.500 0 ==> 1
	279	1	1.000 1 ==> 2
	281	1	1.000 0 ==> 3
	284	1	0.333 1 ==> 0
	287	1	1.000 0 ==> 1
	289	1	0.333 0 ==> 2

	294	1	0.333	0 ==> 1
	296	1	1.000	0 ==> 1
	297	1	0.667	1 ==> 2
	299	1	0.500	0 ==> 1
	300	1	0.500	1 ==> 0
	303	1	1.000	0 ==> 2
	304	1	1.000	0 ==> 1
	305	1	0.500	1 ==> 2
	306	1	0.500	0 --> 1
	307	1	1.000	2 ==> 3
node_50 --> Dinnetherium	7	1	0.222	0 ==> 1
	10	1	0.300	0 ==> 1
	17	1	0.273	1 ==> 3
	20	1	n/a	1 --> 23
	21	1	0.200	0 ==> 1
	22	1	0.200	0 ==> 1
	24	1	0.125	0 ==> 1
	25	1	n/a	2 ==> 1
	31	1	0.500	1 ==> 0
	33	1	0.286	0 ==> 1
	40	1	0.200	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
	57	1	0.286	0 --> 1
	58	1	0.143	1 --> 2
	62	1	0.200	0 ==> 1
	100	1	0.333	1 ==> 2
	102	1	0.444	1 ==> 2
	115	1	0.333	1 ==> 0
	122	1	0.333	0 ==> 1
	135	1	0.400	0 --> 1
	237	1	0.600	2 ==> 1
	254	1	0.400	1 ==> 2
	257	1	0.250	0 ==> 1
	261	1	1.000	1 ==> 2
node_50 --> Megazostrodon	6	1	0.250	1 ==> 0
	8	1	0.214	1 ==> 3
	17	1	0.273	1 ==> 23
	24	1	0.125	0 ==> 1
	25	2	n/a	2 ==> 0
	42	1	0.375	2 ==> 3
	50	2	n/a	0 ==> 2
	52	2	n/a	0 ==> 2
	57	1	0.286	0 --> 1
	58	1	0.143	1 --> 2
	62	1	0.200	0 ==> 1
	80	1	0.167	1 ==> 0
	100	1	0.333	1 ==> 0
	102	1	0.444	1 ==> 2
	115	1	0.333	1 ==> 0
	125	1	0.600	0 ==> 1
	127	1	0.500	0 --> 1
	135	1	0.400	0 --> 1
	136	1	0.667	0 ==> 1
	143	1	0.333	1 ==> 0
	146	1	0.500	0 ==> 2
	179	1	0.400	0 --> 1
	191	1	0.500	0 --> 1
	222	1	1.000	1 ==> 0
	235	1	0.250	1 ==> 0
	257	1	0.250	0 ==> 1
node_50 --> Morganucodon	8	1	0.214	1 --> 2
	25	1	n/a	2 ==> 01
	58	1	0.143	1 --> 2
	62	1	0.200	0 ==> 1
	80	1	0.167	1 ==> 0
	81	1	0.429	0 ==> 1
	104	1	0.222	1 ==> 0

	135	1	0.400	0	==>	23
	158	1	1.000	0	==>	1
	179	1	0.400	0	-->	1
	191	1	0.500	0	-->	1
	248	1	0.250	0	==>	1
	257	1	0.250	0	==>	1
	302	1	0.500	0	-->	1
	306	1	0.500	0	-->	1
node_50 --> Brachyzostrodon	3	1	n/a	0	==>	5
	5	1	n/a	0	==>	1
	6	1	0.250	1	==>	0
	8	1	0.214	1	==>	3
	13	1	n/a	0	==>	1
	14	1	n/a	0	==>	1
	17	1	0.273	1	==>	0
	25	1	n/a	2	==>	01
	33	1	0.286	0	==>	1
	40	1	0.200	1	==>	0
	55	1	0.429	0	-->	1
	57	1	0.286	0	-->	1
	58	1	0.143	1	-->	2
	73	1	0.400	0	==>	1
node_50 --> Paceyodon	3	1	n/a	0	==>	5
	5	1	n/a	0	==>	1
	8	1	0.214	1	==>	3
	11	1	0.333	0	==>	1
	12	1	0.600	0	==>	1
	13	1	n/a	0	==>	4
	14	1	n/a	0	==>	1
	20	1	n/a	1	-->	2
node_50 --> Paikasigudodon	37	1	n/a	0	==>	1
	38	1	n/a	0	==>	1
	39	1	n/a	0	==>	2
	41	1	0.600	1	==>	0
	42	1	0.375	2	==>	3
	43	1	0.667	0	==>	2
	54	1	0.750	0	==>	1
	56	1	0.400	0	==>	2
	60	2	n/a	2	==>	0
	66	1	0.250	1	==>	0
node_50 --> Rosierodon	7	1	0.222	0	==>	1
	8	1	0.214	1	==>	0
	10	1	0.300	0	==>	1
	17	1	0.273	1	==>	23
	18	1	0.375	1	==>	0
	20	1	n/a	1	-->	2
node_50 --> Erythrotherium	25	2	n/a	2	==>	0
	34	1	0.429	1	==>	3
	57	1	0.286	0	-->	1
	62	1	0.200	0	==>	1
node_50 --> Helvetiodon	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	50	1	n/a	0	==>	1
	55	1	0.429	0	==>	2
	56	1	0.400	0	==>	2
	57	1	0.286	0	==>	2
	60	1	n/a	2	==>	1
	61	1	0.125	1	==>	0
	64	1	0.167	0	==>	1
node_50 --> Hallautherium	6	1	0.250	1	==>	0
	8	1	0.214	1	-->	2
	17	1	0.273	1	==>	0
	20	1	n/a	1	==>	0
node_50 --> Bridetherium	7	1	0.222	0	==>	1
	8	1	0.214	1	-->	2
	10	1	0.300	0	==>	1
	17	1	0.273	1	==>	3
	24	1	0.125	0	==>	1

	42	1	0.375	2 ==> 1
	55	1	0.429	0 --> 1
	58	1	0.143	1 --> 2
	62	1	0.200	0 ==> 1
	67	1	0.500	1 ==> 0
	73	1	0.400	0 ==> 1
node_50 --> Purbeckodon	8	1	0.214	1 --> 2
	10	1	0.300	0 ==> 13
	18	1	0.375	1 ==> 0
	19	1	0.167	1 ==> 0
	43	1	0.667	0 ==> 2
	46	1	0.750	0 ==> 1
	47	1	0.500	0 ==> 1
	55	1	0.429	0 ==> 2
	56	1	0.400	0 ==> 2
	57	1	0.286	0 --> 12
	58	1	0.143	1 --> 2
	60	1	n/a	2 ==> 01
	61	1	0.125	1 ==> 0
node_50 --> node_39	4	1	n/a	0 ==> 1
	8	1	0.214	1 ==> 3
	14	1	n/a	0 ==> 4
	16	1	n/a	0 ==> 4
	20	1	n/a	1 --> 2
	22	1	0.200	0 ==> 1
	37	1	n/a	0 ==> 1
	39	1	n/a	0 ==> 1
	41	1	0.600	1 ==> 2
	52	1	n/a	0 ==> 1
	55	1	0.429	0 --> 1
	56	1	0.400	0 ==> 1
	61	1	0.125	1 ==> 0
node_39 --> Fluctuodon	5	1	n/a	0 --> 1
	7	1	0.222	0 --> 1
	10	1	0.300	0 ==> 2
	12	1	0.600	0 ==> 2
	15	1	n/a	0 --> 1
	16	1	n/a	4 --> 5
	47	1	0.500	0 ==> 1
	50	1	n/a	0 ==> 12
node_39 --> Kuehneotherium	3	1	n/a	0 ==> 1
	7	1	0.222	0 --> 2
	18	1	0.375	1 ==> 2
	31	1	0.500	1 --> 0
	38	1	n/a	0 ==> 1
	46	1	0.750	0 ==> 3
	49	1	n/a	0 ==> 4
	50	4	n/a	0 ==> 7
	52	1	n/a	1 ==> 2
	68	1	0.125	1 --> 0
	100	1	0.333	1 --> 0
	104	1	0.222	1 --> 0
node_50 --> node_46	3	1	n/a	0 ==> 1
	4	1	n/a	0 ==> 1
	8	1	0.214	1 ==> 0
	14	1	n/a	0 ==> 4
	16	4	n/a	0 ==> 7
	31	1	0.500	1 ==> 0
	37	1	n/a	0 ==> 1
	40	1	0.200	1 ==> 0
	50	4	n/a	0 ==> 7
	61	1	0.125	1 ==> 0
node_46 --> Woutersia	6	1	0.250	1 ==> 2
	7	1	0.222	0 ==> 2
	9	1	0.667	0 ==> 2
	17	1	0.273	1 ==> 2
	24	1	0.125	0 ==> 1
	33	1	0.286	0 --> 1

	39	1	n/a	0	-->	1
	41	1	0.600	1	-->	3
	42	1	0.375	2	==>	3
	48	1	1.000	0	==>	1
	54	1	0.750	0	==>	2
	55	1	0.429	0	-->	1
	64	1	0.167	0	-->	1
	69	1	1.000	0	-->	1
node_46 --> node_45	3	1	n/a	1	==>	2
	4	1	n/a	1	-->	2
	14	3	n/a	4	==>	7
	20	1	n/a	1	-->	2
	30	1	0.143	1	==>	0
	37	1	n/a	1	-->	2
	82	1	1.000	0	-->	1
	88	1	0.286	0	-->	2
	103	1	1.000	0	-->	1
	104	1	0.222	1	-->	0
	106	1	0.667	0	-->	1
	120	1	0.333	0	-->	1
node_45 --> node_42	53	1	0.250	1	==>	0
	68	1	0.125	1	-->	0
	75	1	0.167	0	==>	1
	76	1	0.250	0	==>	1
	87	1	0.667	0	==>	2
	92	1	0.167	0	==>	1
	94	1	0.333	0	-->	2
	95	1	0.500	0	-->	1
	107	1	1.000	0	==>	1
	144	1	0.500	0	-->	1
	145	1	0.400	1	-->	0
	146	1	0.500	0	-->	2
	223	1	0.500	0	-->	1
node_42 --> node_41	38	2	n/a	0	-->	2
	40	1	0.200	0	==>	1
	42	1	0.375	2	-->	0
	52	3	n/a	0	-->	3
	58	1	0.143	1	-->	0
node_41 --> Delsatia	17	1	0.273	1	-->	0
	20	1	n/a	2	-->	3
	21	1	0.200	0	==>	1
	30	1	0.143	0	==>	1
	41	1	0.600	1	-->	0
	52	1	n/a	3	==>	7
	60	1	n/a	2	==>	3
node_41 --> node_40	4	1	n/a	2	==>	3
	15	2	n/a	0	==>	2
	19	1	0.167	1	==>	0
	78	1	0.333	0	-->	1
	81	1	0.429	0	-->	1
	93	1	0.400	0	-->	1
	98	1	1.000	0	-->	1
	102	1	0.444	1	-->	3
	104	1	0.222	0	-->	2
	115	1	0.333	1	-->	0
	127	1	0.500	0	-->	1
node_40 --> Amphitherium	5	1	n/a	0	-->	1
	10	1	0.300	0	-->	1
	89	1	0.200	0	==>	1
	110	1	1.000	0	==>	1
	111	1	1.000	0	==>	1
node_40 --> Dryolestes	4	1	n/a	3	-->	46
	6	1	0.250	1	==>	0
	10	1	0.300	0	-->	3
	12	1	0.600	0	==>	3
	13	1	n/a	0	==>	12
	14	2	n/a	7	==>	45
	15	1	n/a	2	==>	3

	37	2	n/a	2	--> 46
	38	1	n/a	2	--> 3
	43	1	0.667	0	--> 3
	46	1	0.750	0	--> 4
	49	3	n/a	0	--> 3
	50	1	n/a	7	--> 89
	51	3	n/a	0	--> 6
	73	1	0.400	0	--> 2
	79	1	0.143	1	--> 0
	101	1	0.429	0	--> 1
	113	1	0.500	0	--> 1
	125	1	0.600	0	--> 1
	133	1	0.375	0	--> 1
	134	1	0.300	0	==> 1
	141	1	0.333	0	--> 3
node_42 --> Zhangheotherium	33	1	0.286	0	--> 2
	59	1	0.143	1	==> 0
	74	1	0.750	1	==> 2
	79	1	0.143	1	--> 0
	93	1	0.400	0	--> 2
	97	1	0.333	0	==> 1
	101	1	0.429	0	--> 1
	102	1	0.444	1	--> 4
	105	1	1.000	0	==> 1
	113	1	0.500	0	--> 1
	114	1	0.200	0	--> 1
	117	1	0.400	0	--> 1
	125	1	0.600	0	--> 2
	127	1	0.500	0	--> 2
	128	1	0.500	0	==> 1
	131	1	0.667	0	==> 1
	133	1	0.375	0	--> 2
	134	1	0.300	0	==> 2
	139	1	1.000	0	==> 1
	148	1	0.500	0	--> 1
	149	1	0.500	0	--> 1
	155	1	0.500	0	--> 1
	156	1	1.000	0	--> 1
	159	1	0.500	0	--> 1
	161	1	0.500	0	--> 1
	162	1	0.500	0	--> 1
	163	1	1.000	1	--> 2
	164	1	0.500	0	--> 1
	165	1	1.000	0	--> 1
	166	1	1.000	0	--> 1
	167	1	0.500	0	--> 1
	168	1	0.333	0	--> 1
	169	1	0.500	0	--> 1
	170	1	0.500	0	--> 1
	171	1	0.500	0	--> 1
	172	1	0.500	0	--> 1
	173	1	1.000	0	--> 1
	174	1	0.500	0	--> 1
	175	1	1.000	0	--> 1
	176	1	1.000	0	--> 1
	177	1	1.000	0	--> 1
	178	1	0.333	0	--> 1
	180	1	1.000	0	--> 1
	181	1	1.000	0	--> 1
	182	1	0.500	0	--> 1
	183	1	0.500	0	--> 1
	188	1	1.000	0	--> 1
	189	1	1.000	0	--> 1
	190	1	1.000	0	--> 2
	191	1	0.500	0	--> 2
	192	1	0.500	0	--> 1
	194	1	0.500	0	--> 1
	195	1	1.000	0	--> 1

	196	1	0.500	0 --> 1
	197	1	0.667	1 --> 2
	198	1	1.000	0 --> 1
	201	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	206	1	0.500	0 --> 1
	207	1	1.000	0 --> 3
	208	1	1.000	0 --> 2
	210	1	1.000	0 --> 1
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	218	1	1.000	0 --> 2
	221	1	0.667	0 --> 2
	226	1	0.500	1 --> 2
	227	1	0.333	0 --> 1
	230	1	1.000	0 --> 1
	239	1	1.000	0 --> 1
	240	1	1.000	0 --> 1
	241	1	1.000	0 --> 1
	253	1	0.333	0 --> 1
	254	1	0.400	1 --> 2
	255	1	0.333	0 --> 1
	257	1	0.250	0 --> 1
	259	1	0.500	0 --> 1
	260	1	0.667	1 --> 2
	264	1	1.000	0 --> 1
	266	1	1.000	0 --> 1
	275	1	1.000	0 --> 1
	289	1	0.333	0 --> 2
	292	1	1.000	0 --> 1
	295	1	1.000	0 --> 2
node_45 --> node_44	10	1	0.300	0 ==> 1
	21	1	0.200	0 ==> 1
	22	1	0.200	0 ==> 1
	77	1	0.500	0 --> 1
	89	1	0.200	0 ==> 1
	114	1	0.200	0 --> 1
	117	1	0.400	0 --> 1
	118	1	1.000	0 ==> 1
	119	1	0.250	0 ==> 1
node_44 --> Shuotherium	18	1	0.375	1 --> 0
	23	1	1.000	1 --> 2
	33	1	0.286	0 --> 1
	39	1	n/a	0 --> 1
	49	2	n/a	0 --> 5
	58	1	0.143	1 --> 2
	64	1	0.167	0 --> 1
	65	1	0.667	0 --> 1
	116	1	0.667	0 --> 1
	135	1	0.400	0 --> 3
node_44 --> node_43	5	1	n/a	0 ==> 1
	6	1	0.250	1 ==> 2
	13	1	n/a	0 ==> 1
	15	2	n/a	0 ==> 2
node_43 --> Ambondro	3	1	n/a	2 ==> 1
	14	2	n/a	7 ==> 5
	18	1	0.375	1 --> 2
	20	1	n/a	2 --> 3
	115	1	0.333	1 ==> 2
	116	1	0.667	0 --> 1
	117	1	0.400	1 ==> 3
node_43 --> Asfaltomylos	4	1	n/a	2 ==> 3
	8	1	0.214	0 ==> 3
	13	1	n/a	1 ==> 2
	18	1	0.375	1 --> 3
	19	1	0.167	1 ==> 0
	78	1	0.333	0 --> 2

	81	1	0.429	0 --> 2
	83	1	1.000	0 --> 1
	94	1	0.333	0 --> 2
	95	1	0.500	0 --> 2
	101	1	0.429	0 --> 3
	104	1	0.222	0 --> 2
node_50 --> Castorocauda	4	3	n/a	0 ==> 3
	5	1	n/a	0 ==> 1
	10	1	0.300	0 ==> 1
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 1
	15	3	n/a	0 ==> 3
	16	3	n/a	0 ==> 6
	22	1	0.200	0 ==> 1
	24	1	0.125	0 ==> 1
	25	1	n/a	2 ==> 3
	79	1	0.143	1 ==> 0
	81	1	0.429	0 ==> 1
	85	1	0.500	0 ==> 1
	88	1	0.286	0 ==> 1
	122	1	0.333	0 ==> 1
	127	1	0.500	0 --> 1
	132	1	0.500	0 ==> 1
	145	1	0.400	1 ==> 0
	152	1	1.000	1 ==> 0
	153	1	0.500	1 ==> 0
	154	1	0.500	1 ==> 0
	178	1	0.333	0 ==> 1
	179	1	0.400	0 ==> 2
	185	1	1.000	1 ==> 0
	186	1	0.500	2 ==> 1
	193	1	0.500	1 ==> 0
	199	1	0.500	0 ==> 1
	221	1	0.667	0 ==> 1
	273	1	1.000	0 ==> 1
	274	1	1.000	0 ==> 1
node_50 --> Haldanodon	4	2	n/a	0 ==> 23
	5	1	n/a	0 ==> 1
	8	1	0.214	1 ==> 0
	9	1	0.667	0 ==> 2
	10	1	0.300	0 ==> 1
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 2
	14	1	n/a	0 ==> 12
	15	1	n/a	0 ==> 12
	16	4	n/a	0 ==> 7
	20	1	n/a	1 --> 2
	24	1	0.125	0 ==> 1
	25	1	n/a	2 ==> 3
	30	1	0.143	1 ==> 0
	37	1	n/a	0 ==> 1
	39	1	n/a	0 ==> 1
	41	1	0.600	1 ==> 2
	50	2	n/a	0 ==> 2
	53	1	0.250	1 ==> 0
	58	1	0.143	1 --> 2
	61	1	0.125	1 ==> 0
	64	1	0.167	0 ==> 1
	65	1	0.667	0 --> 1
	68	1	0.125	1 ==> 0
	79	1	0.143	1 ==> 0
	81	1	0.429	0 ==> 1
	85	1	0.500	0 ==> 1
	88	1	0.286	0 ==> 1
	92	1	0.167	0 ==> 1
	120	1	0.333	0 ==> 1
	122	1	0.333	0 ==> 1
	127	1	0.500	0 --> 1

	132	1	0.500	0 ==> 1
	133	1	0.375	0 ==> 2
	134	1	0.300	0 ==> 2
	145	1	0.400	1 ==> 0
	168	1	0.333	0 --> 1
	178	1	0.333	0 ==> 1
	179	1	0.400	0 ==> 2
	226	1	0.500	1 ==> 2
	235	1	0.250	1 ==> 0
	236	1	0.500	1 ==> 0
	244	1	1.000	1 ==> 2
	277	1	0.500	1 --> 2
	278	1	0.500	0 ==> 1
	294	1	0.333	0 ==> 1
	299	1	0.500	0 ==> 1
	305	1	0.500	1 ==> 2
node_50 --> node_49	1	1	0.667	0 ==> 1
	8	1	0.214	1 --> 2
	17	1	0.273	1 ==> 0
	19	1	0.167	1 ==> 0
	21	1	0.200	0 ==> 1
	32	1	0.500	1 ==> 0
	34	1	0.429	1 ==> 3
	35	1	n/a	0 ==> 1
	36	1	1.000	0 ==> 1
	42	1	0.375	2 ==> 0
	58	1	0.143	1 --> 0
	65	1	0.667	0 ==> 2
	67	1	0.500	1 ==> 0
	73	1	0.400	0 ==> 2
	74	1	0.750	1 ==> 3
	76	1	0.250	0 ==> 1
	88	1	0.286	0 ==> 2
	89	1	0.200	0 ==> 1
	90	1	0.500	0 ==> 1
	100	1	0.333	1 ==> 2
	107	1	1.000	0 ==> 2
	116	1	0.667	0 ==> 2
	123	1	1.000	0 ==> 2
	127	1	0.500	0 --> 4
	128	1	0.500	0 ==> 1
	134	1	0.300	0 ==> 1
	135	1	0.400	0 ==> 4
	136	1	0.667	0 ==> 4
	144	1	0.500	0 ==> 1
	145	1	0.400	1 ==> 2
	155	1	0.500	0 ==> 1
	162	1	0.500	0 --> 1
	192	1	0.500	0 ==> 1
	223	1	0.500	0 ==> 1
node_49 --> node_47	13	1	n/a	0 --> 1
	53	1	0.250	1 ==> 0
	58	1	0.143	0 --> 2
	59	1	0.143	1 ==> 0
node_47 --> Thomasia	7	1	0.222	0 --> 2
	42	1	0.375	0 ==> 1
	70	1	0.500	0 ==> 1
node_47 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	n/a	1 ==> 2
	15	1	n/a	0 ==> 1
	16	1	n/a	0 ==> 4
	34	1	0.429	3 --> 2
	35	1	n/a	1 ==> 2
	68	1	0.125	1 --> 0
	74	1	0.750	3 --> 2
	109	1	1.000	0 --> 1
	127	1	0.500	4 --> 1
	131	1	0.667	0 --> 1

	133	1	0.375	0 --> 1
	135	1	0.400	4 --> 3
	136	1	0.667	4 --> 3
	138	1	0.500	0 --> 1
node_49 --> Theroteinus	13	1	n/a	0 --> 1
	35	1	n/a	1 ==> 2
	38	1	n/a	0 ==> 12
	39	1	n/a	0 ==> 2
	40	1	0.200	1 ==> 0
	54	1	0.750	0 --> 3
	55	1	0.429	0 ==> 3
	58	1	0.143	0 --> 2
	64	1	0.167	0 --> 1
	70	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
node_49 --> Arboroharamiya	2	1	0.333	0 ==> 1
	4	1	n/a	0 ==> 1
	8	1	0.214	2 ==> 0
	9	1	0.667	0 ==> 1
	21	1	0.200	1 ==> 0
	27	1	1.000	1 ==> 0
	28	1	1.000	1 ==> 2
	29	1	0.500	0 ==> 1
	54	1	0.750	0 --> 3
	64	1	0.167	0 --> 1
	66	1	0.250	1 ==> 0
	75	1	0.167	0 --> 1
	78	1	0.333	0 --> 2
	86	1	0.250	0 --> 1
	87	1	0.667	0 --> 3
	92	1	0.167	0 --> 1
	93	1	0.400	0 ==> 1
	94	1	0.333	0 ==> 1
	96	1	0.500	0 --> 2
	101	1	0.429	0 --> 12
	102	1	0.444	1 --> 34
	125	1	0.600	0 --> 3
	128	1	0.500	1 --> 2
	133	1	0.375	0 --> 3
	134	1	0.300	1 ==> 3
	137	1	0.400	0 --> 4
	141	1	0.333	0 --> 3
	187	1	0.500	1 ==> 0
node_49 --> node_48	1	1	0.667	1 ==> 2
	45	1	1.000	0 ==> 1
	56	1	0.400	0 --> 2
	72	1	1.000	0 ==> 1
	73	1	0.400	2 ==> 1
	75	1	0.167	0 --> 1
	77	1	0.500	0 ==> 1
	78	1	0.333	0 --> 2
	87	1	0.667	0 --> 3
	92	1	0.167	0 --> 1
	94	1	0.333	0 ==> 2
	95	1	0.500	0 ==> 1
	96	1	0.500	0 --> 2
	97	1	0.333	0 ==> 1
	101	1	0.429	0 --> 2
	102	1	0.444	1 --> 4
	124	1	1.000	0 ==> 1
	125	1	0.600	0 --> 2
	131	1	0.667	0 --> 2
	137	1	0.400	0 --> 2
	140	1	0.667	0 ==> 1
	148	1	0.500	0 --> 1
	150	1	1.000	0 --> 1
	151	1	1.000	0 --> 1
	159	1	0.500	0 --> 1

	161	1	0.500	0 --> 1
	164	1	0.500	0 --> 1
	167	1	0.500	0 --> 1
	168	1	0.333	0 --> 1
	169	1	0.500	0 --> 1
	170	1	0.500	0 --> 1
	171	1	0.500	0 --> 1
	172	1	0.500	0 --> 1
	174	1	0.500	0 --> 1
	182	1	0.500	0 --> 1
	183	1	0.500	0 --> 1
	184	1	1.000	0 ==> 1
	190	1	1.000	0 ==> 1
	191	1	0.500	0 --> 1
	196	1	0.500	0 --> 1
	197	1	0.667	1 ==> 2
	199	1	0.500	0 ==> 1
	200	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	203	1	1.000	0 --> 2
	204	1	1.000	0 --> 1
	205	1	1.000	0 --> 1
	206	1	0.500	0 --> 1
	209	1	1.000	0 --> 1
	210	1	1.000	0 --> 2
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	214	1	1.000	0 --> 1
	215	1	1.000	1 --> 0
	216	1	1.000	0 --> 1
	217	1	1.000	0 --> 1
	218	1	1.000	0 --> 1
	219	1	1.000	0 ==> 1
	220	1	1.000	0 --> 1
	221	1	0.667	0 --> 2
node_48 --> Rugosodon	2	1	0.333	0 ==> 1
	6	1	0.250	1 --> 2
	29	1	0.500	0 ==> 1
	32	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	126	1	1.000	0 ==> 1
	129	1	1.000	0 --> 1
	138	1	0.500	0 --> 2
	141	1	0.333	0 --> 3
	147	1	1.000	0 --> 1
	149	1	0.500	0 --> 1
	272	1	1.000	0 --> 1
node_48 --> Sinobaatar	28	1	1.000	1 ==> 0
	34	1	0.429	3 ==> 0
	35	1	n/a	1 ==> 2
	42	1	0.375	0 ==> 1
	86	1	0.250	0 --> 1
	119	1	0.250	0 --> 1
	128	1	0.500	1 --> 2
	134	1	0.300	1 ==> 2
	138	1	0.500	0 --> 3
	177	1	1.000	0 --> 2
	194	1	0.500	0 ==> 1
	227	1	0.333	0 --> 1
	229	1	0.500	1 --> 0
	276	1	1.000	1 --> 2
node_50 --> Amphilestes	1	1	0.667	0 ==> 1
	18	1	0.375	1 ==> 0
	24	1	0.125	0 ==> 1
	33	1	0.286	0 ==> 1
	75	1	0.167	0 ==> 1
	76	1	0.250	0 ==> 1

	78	1	0.333	0 ==> 1
	86	1	0.250	0 ==> 1
	87	1	0.667	0 ==> 1
	88	1	0.286	0 ==> 2
	92	1	0.167	0 ==> 1
	93	1	0.400	0 ==> 2
	94	1	0.333	0 ==> 2
	101	1	0.429	0 ==> 1
	102	1	0.444	1 ==> 4
	104	1	0.222	1 ==> 2
	106	1	0.667	0 ==> 2
	114	1	0.200	0 ==> 1
	117	1	0.400	0 ==> 1
	134	1	0.300	0 ==> 2
	135	1	0.400	0 --> 1
	145	1	0.400	1 ==> 0
	286	1	0.500	0 ==> 1
node_50 --> Priacodon	7	1	0.222	0 ==> 1
	18	1	0.375	1 ==> 0
	19	1	0.167	1 ==> 0
	31	1	0.500	1 ==> 2
	33	1	0.286	0 ==> 1
	34	1	0.429	1 ==> 2
	59	1	0.143	1 ==> 0
	61	1	0.125	1 ==> 0
	75	1	0.167	0 ==> 1
	76	1	0.250	0 ==> 1
	78	1	0.333	0 ==> 1
	79	1	0.143	1 ==> 0
	86	1	0.250	0 ==> 1
	87	1	0.667	0 ==> 1
	88	1	0.286	0 ==> 2
	89	1	0.200	0 ==> 1
	92	1	0.167	0 ==> 1
	93	1	0.400	0 ==> 2
	94	1	0.333	0 ==> 2
	95	1	0.500	0 ==> 1
	97	1	0.333	0 ==> 1
	100	1	0.333	1 ==> 2
	101	1	0.429	0 ==> 1
	102	1	0.444	1 ==> 4
	115	1	0.333	1 ==> 0
	117	1	0.400	0 ==> 1
	119	1	0.250	0 ==> 1
	121	1	1.000	0 ==> 1
	127	1	0.500	0 ==> 3
	133	1	0.375	0 --> 1
	134	1	0.300	0 ==> 2
	135	1	0.400	0 ==> 2
	136	1	0.667	0 ==> 2
	137	1	0.400	0 ==> 2
	138	1	0.500	0 ==> 1
	146	1	0.500	0 ==> 1
	237	1	0.600	2 ==> 3
	246	1	1.000	0 ==> 2
	253	1	0.333	0 ==> 1
	262	1	1.000	0 ==> 1
	277	1	0.500	1 --> 2
	282	1	0.500	1 ==> 0
	286	1	0.500	0 ==> 1
	289	1	0.333	0 ==> 12
	291	1	1.000	0 ==> 1
	292	1	1.000	0 ==> 2
	294	1	0.333	0 ==> 1
	303	1	1.000	0 ==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	n/a	6	13	n/a	n/a	n/a	n/a
4	n/a	12	25	n/a	n/a	n/a	n/a
5	n/a	7	8	n/a	n/a	n/a	n/a
6	2	8	9	0.250	0.750	0.143	0.036
7	2	9	9	0.222	0.778	0.000	0.000
8	3	14	18	0.214	0.786	0.267	0.057
9	2	3	3	0.667	0.333	0.000	0.000
10	3	10	11	0.300	0.700	0.125	0.038
11	1	3	3	0.333	0.667	0.000	0.000
12	3	5	5	0.600	0.400	0.000	0.000
13	n/a	8	10	n/a	n/a	n/a	n/a
14	n/a	12	29	n/a	n/a	n/a	n/a
15	n/a	11	15	n/a	n/a	n/a	n/a
16	n/a	14	39	n/a	n/a	n/a	n/a
17	3	11	16	0.273	0.727	0.385	0.105
18	3	8	8	0.375	0.625	0.000	0.000
19	1	6	12	0.167	0.833	0.545	0.091
20	n/a	11	11	n/a	n/a	n/a	n/a
21	1	5	9	0.200	0.800	0.500	0.100
22	1	5	7	0.200	0.800	0.333	0.067
23	1	1	1	1.000	0.000	0/0	0/0
24	1	8	8	0.125	0.875	0.000	0.000
25	n/a	12	12	n/a	n/a	n/a	n/a
26	1	1	1	1.000	0.000	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	7	11	0.143	0.857	0.400	0.057
31	2	4	5	0.500	0.500	0.333	0.167
32	1	2	4	0.500	0.500	0.667	0.333
33	2	7	7	0.286	0.714	0.000	0.000
34	3	7	8	0.429	0.571	0.200	0.086
35	n/a	4	9	n/a	n/a	n/a	n/a
36	1	1	3	1.000	0.000	1.000	1.000
37	n/a	8	14	n/a	n/a	n/a	n/a
38	n/a	6	8	n/a	n/a	n/a	n/a
39	n/a	7	8	n/a	n/a	n/a	n/a
40	1	5	6	0.200	0.800	0.200	0.040
41	3	5	6	0.600	0.400	0.333	0.200
42	3	8	12	0.375	0.625	0.444	0.167
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	n/a	6	6	n/a	n/a	n/a	n/a
50	n/a	15	22	n/a	n/a	n/a	n/a
51	n/a	3	3	n/a	n/a	n/a	n/a
52	n/a	8	12	n/a	n/a	n/a	n/a
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	7	8	0.429	0.571	0.200	0.086
56	2	5	7	0.400	0.600	0.400	0.160
57	2	7	7	0.286	0.714	0.000	0.000
58	2	14	16	0.143	0.857	0.143	0.020
59	1	7	8	0.143	0.857	0.143	0.020
60	n/a	5	5	n/a	n/a	n/a	n/a
61	1	8	12	0.125	0.875	0.364	0.045
62	1	5	5	0.200	0.800	0.000	0.000
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	6	6	0.167	0.833	0.000	0.000
65	2	3	4	0.667	0.333	0.500	0.333

66	1	4	4	0.250	0.750	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	8	10	0.125	0.875	0.222	0.028
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	3	4	6	0.750	0.250	0.667	0.500
75	1	6	9	0.167	0.833	0.375	0.062
76	1	4	9	0.250	0.750	0.625	0.156
77	1	2	4	0.500	0.500	0.667	0.333
78	2	6	8	0.333	0.667	0.333	0.111
79	1	7	7	0.143	0.857	0.000	0.000
80	1	6	6	0.167	0.833	0.000	0.000
81	3	7	8	0.429	0.571	0.200	0.086
82	1	1	3	1.000	0.000	1.000	1.000
83	1	1	1	1.000	0.000	0/0	0/0
84	1	1	1	1.000	0.000	0/0	0/0
85	1	2	2	0.500	0.500	0.000	0.000
86	1	4	4	0.250	0.750	0.000	0.000
87	4	6	9	0.667	0.333	0.600	0.400
88	2	7	8	0.286	0.714	0.167	0.048
89	1	5	8	0.200	0.800	0.429	0.086
90	1	2	4	0.500	0.500	0.667	0.333
91	1	1	1	1.000	0.000	0/0	0/0
92	1	6	9	0.167	0.833	0.375	0.062
93	2	5	6	0.400	0.600	0.250	0.100
94	2	6	9	0.333	0.667	0.429	0.143
95	2	4	7	0.500	0.500	0.600	0.300
96	1	2	3	0.500	0.500	0.500	0.250
97	1	3	4	0.333	0.667	0.333	0.111
98	1	1	2	1.000	0.000	1.000	1.000
99	2	4	4	0.500	0.500	0.000	0.000
100	2	6	8	0.333	0.667	0.333	0.111
101	3	7	8	0.429	0.571	0.200	0.086
102	4	9	11	0.444	0.556	0.286	0.127
103	1	1	4	1.000	0.000	1.000	1.000
104	2	9	11	0.222	0.778	0.222	0.049
105	1	1	1	1.000	0.000	0/0	0/0
106	2	3	7	0.667	0.333	0.800	0.533
107	2	2	7	1.000	0.000	1.000	1.000
108	1	1	1	1.000	0.000	0/0	0/0
109	1	1	1	1.000	0.000	0/0	0/0
110	1	1	1	1.000	0.000	0/0	0/0
111	1	1	1	1.000	0.000	0/0	0/0
112	1	1	1	1.000	0.000	0/0	0/0
113	1	2	2	0.500	0.500	0.000	0.000
114	1	5	7	0.200	0.800	0.333	0.067
115	2	6	7	0.333	0.667	0.200	0.067
116	2	3	6	0.667	0.333	0.750	0.500
117	2	5	6	0.400	0.600	0.250	0.100
118	1	1	3	1.000	0.000	1.000	1.000
119	1	4	5	0.250	0.750	0.250	0.062
120	1	3	7	0.333	0.667	0.667	0.222
121	1	1	1	1.000	0.000	0/0	0/0
122	1	3	3	0.333	0.667	0.000	0.000
123	1	1	3	1.000	0.000	1.000	1.000
124	1	1	2	1.000	0.000	1.000	1.000
125	3	5	6	0.600	0.400	0.333	0.200
126	1	1	1	1.000	0.000	0/0	0/0
127	4	8	9	0.500	0.500	0.200	0.100
128	2	4	5	0.500	0.500	0.333	0.167
129	1	1	1	1.000	0.000	0/0	0/0
130	1	1	1	1.000	0.000	0/0	0/0
131	2	3	4	0.667	0.333	0.500	0.333
132	1	2	2	0.500	0.500	0.000	0.000
133	3	8	8	0.375	0.625	0.000	0.000

134	3	10	11	0.300	0.700	0.125	0.038
135	4	10	12	0.400	0.600	0.250	0.100
136	4	6	8	0.667	0.333	0.500	0.333
137	2	5	6	0.400	0.600	0.250	0.100
138	3	6	6	0.500	0.500	0.000	0.000
139	2	2	2	1.000	0.000	0/0	0/0
140	2	3	4	0.667	0.333	0.500	0.333
141	1	3	3	0.333	0.667	0.000	0.000
142	1	2	2	0.500	0.500	0.000	0.000
143	1	3	3	0.333	0.667	0.000	0.000
144	1	2	6	0.500	0.500	0.800	0.400
145	2	5	9	0.400	0.600	0.571	0.229
146	2	4	5	0.500	0.500	0.333	0.167
147	1	1	1	1.000	0.000	0/0	0/0
148	1	2	3	0.500	0.500	0.500	0.250
149	1	2	2	0.500	0.500	0.000	0.000
150	1	1	2	1.000	0.000	1.000	1.000
151	1	1	2	1.000	0.000	1.000	1.000
152	1	1	1	1.000	0.000	0/0	0/0
153	1	2	2	0.500	0.500	0.000	0.000
154	1	2	2	0.500	0.500	0.000	0.000
155	1	2	3	0.500	0.500	0.500	0.250
156	1	1	1	1.000	0.000	0/0	0/0
157	1	1	1	1.000	0.000	0/0	0/0
158	1	1	1	1.000	0.000	0/0	0/0
159	1	2	2	0.500	0.500	0.000	0.000
160	1	1	1	1.000	0.000	0/0	0/0
161	1	2	3	0.500	0.500	0.500	0.250
162	1	2	2	0.500	0.500	0.000	0.000
163	2	2	2	1.000	0.000	0/0	0/0
164	1	2	3	0.500	0.500	0.500	0.250
165	1	1	1	1.000	0.000	0/0	0/0
166	1	1	1	1.000	0.000	0/0	0/0
167	1	2	3	0.500	0.500	0.500	0.250
168	1	3	3	0.333	0.667	0.000	0.000
169	1	2	3	0.500	0.500	0.500	0.250
170	1	2	3	0.500	0.500	0.500	0.250
171	1	2	3	0.500	0.500	0.500	0.250
172	1	2	3	0.500	0.500	0.500	0.250
173	1	1	1	1.000	0.000	0/0	0/0
174	1	2	3	0.500	0.500	0.500	0.250
175	1	1	1	1.000	0.000	0/0	0/0
176	1	1	1	1.000	0.000	0/0	0/0
177	2	2	2	1.000	0.000	0/0	0/0
178	1	3	3	0.333	0.667	0.000	0.000
179	2	5	5	0.400	0.600	0.000	0.000
180	1	1	1	1.000	0.000	0/0	0/0
181	1	1	1	1.000	0.000	0/0	0/0
182	1	2	3	0.500	0.500	0.500	0.250
183	1	2	3	0.500	0.500	0.500	0.250
184	1	1	2	1.000	0.000	1.000	1.000
185	1	1	1	1.000	0.000	0/0	0/0
186	1	2	2	0.500	0.500	0.000	0.000
187	1	2	2	0.500	0.500	0.000	0.000
188	1	1	1	1.000	0.000	0/0	0/0
189	1	1	1	1.000	0.000	0/0	0/0
190	2	2	3	1.000	0.000	1.000	1.000
191	2	4	4	0.500	0.500	0.000	0.000
192	1	2	4	0.500	0.500	0.667	0.333
193	1	2	2	0.500	0.500	0.000	0.000
194	1	2	2	0.500	0.500	0.000	0.000
195	1	1	1	1.000	0.000	0/0	0/0
196	1	2	3	0.500	0.500	0.500	0.250
197	2	3	4	0.667	0.333	0.500	0.333
198	1	1	1	1.000	0.000	0/0	0/0
199	1	2	3	0.500	0.500	0.500	0.250
200	1	1	2	1.000	0.000	1.000	1.000
201	1	1	1	1.000	0.000	0/0	0/0

202	1	2	3	0.500	0.500	0.500	0.250
203	1	1	2	1.000	0.000	1.000	1.000
204	1	1	1	1.000	0.000	0/0	0/0
205	1	1	2	1.000	0.000	1.000	1.000
206	1	2	3	0.500	0.500	0.500	0.250
207	1	1	1	1.000	0.000	0/0	0/0
208	1	1	1	1.000	0.000	0/0	0/0
209	1	1	2	1.000	0.000	1.000	1.000
210	2	2	3	1.000	0.000	1.000	1.000
211	1	2	3	0.500	0.500	0.500	0.250
212	1	2	2	0.500	0.500	0.000	0.000
213	1	2	2	0.500	0.500	0.000	0.000
214	1	1	2	1.000	0.000	1.000	1.000
215	1	1	2	1.000	0.000	1.000	1.000
216	1	1	2	1.000	0.000	1.000	1.000
217	1	1	2	1.000	0.000	1.000	1.000
218	2	2	3	1.000	0.000	1.000	1.000
219	1	1	2	1.000	0.000	1.000	1.000
220	1	1	2	1.000	0.000	1.000	1.000
221	2	3	3	0.667	0.333	0.000	0.000
222	1	1	1	1.000	0.000	0/0	0/0
223	1	2	5	0.500	0.500	0.750	0.375
224	1	1	1	1.000	0.000	0/0	0/0
225	1	3	3	0.333	0.667	0.000	0.000
226	2	4	4	0.500	0.500	0.000	0.000
227	1	3	3	0.333	0.667	0.000	0.000
228	1	2	2	0.500	0.500	0.000	0.000
229	1	2	2	0.500	0.500	0.000	0.000
230	1	1	1	1.000	0.000	0/0	0/0
231	1	1	1	1.000	0.000	0/0	0/0
232	2	3	3	0.667	0.333	0.000	0.000
233	1	3	3	0.333	0.667	0.000	0.000
234	1	1	1	1.000	0.000	0/0	0/0
235	1	4	4	0.250	0.750	0.000	0.000
236	2	4	4	0.500	0.500	0.000	0.000
237	3	5	5	0.600	0.400	0.000	0.000
238	1	2	2	0.500	0.500	0.000	0.000
239	1	1	1	1.000	0.000	0/0	0/0
240	1	1	1	1.000	0.000	0/0	0/0
241	1	1	1	1.000	0.000	0/0	0/0
242	1	1	1	1.000	0.000	0/0	0/0
243	1	1	1	1.000	0.000	0/0	0/0
244	2	2	2	1.000	0.000	0/0	0/0
245	1	1	1	1.000	0.000	0/0	0/0
246	1	1	1	1.000	0.000	0/0	0/0
247	1	1	1	1.000	0.000	0/0	0/0
248	1	4	4	0.250	0.750	0.000	0.000
249	1	1	1	1.000	0.000	0/0	0/0
250	1	1	1	1.000	0.000	0/0	0/0
251	1	3	3	0.333	0.667	0.000	0.000
252	1	2	2	0.500	0.500	0.000	0.000
253	1	3	3	0.333	0.667	0.000	0.000
254	2	5	5	0.400	0.600	0.000	0.000
255	1	3	3	0.333	0.667	0.000	0.000
256	1	3	3	0.333	0.667	0.000	0.000
257	1	4	4	0.250	0.750	0.000	0.000
258	1	3	3	0.333	0.667	0.000	0.000
259	1	2	2	0.500	0.500	0.000	0.000
260	2	3	3	0.667	0.333	0.000	0.000
261	2	2	2	1.000	0.000	0/0	0/0
262	1	1	1	1.000	0.000	0/0	0/0
263	1	2	2	0.500	0.500	0.000	0.000
264	1	1	1	1.000	0.000	0/0	0/0
265	1	2	2	0.500	0.500	0.000	0.000
266	1	1	1	1.000	0.000	0/0	0/0
267	1	1	1	1.000	0.000	0/0	0/0
268	1	1	1	1.000	0.000	0/0	0/0
269	1	1	1	1.000	0.000	0/0	0/0

270	2	2	2	1.000	0.000	0/0	0/0
271	1	1	1	1.000	0.000	0/0	0/0
272	1	1	1	1.000	0.000	0/0	0/0
273	1	1	1	1.000	0.000	0/0	0/0
274	1	1	1	1.000	0.000	0/0	0/0
275	1	1	1	1.000	0.000	0/0	0/0
276	1	1	1	1.000	0.000	0/0	0/0
277	2	4	4	0.500	0.500	0.000	0.000
278	1	2	2	0.500	0.500	0.000	0.000
279	2	2	2	1.000	0.000	0/0	0/0
280	1	1	1	1.000	0.000	0/0	0/0
281	1	1	1	1.000	0.000	0/0	0/0
282	1	2	2	0.500	0.500	0.000	0.000
283	1	1	1	1.000	0.000	0/0	0/0
284	1	3	3	0.333	0.667	0.000	0.000
285	1	1	1	1.000	0.000	0/0	0/0
286	1	2	2	0.500	0.500	0.000	0.000
287	1	1	1	1.000	0.000	0/0	0/0
288	1	1	1	1.000	0.000	0/0	0/0
289	1	3	3	0.333	0.667	0.000	0.000
290	1	1	1	1.000	0.000	0/0	0/0
291	1	1	1	1.000	0.000	0/0	0/0
292	2	2	2	1.000	0.000	0/0	0/0
293	1	1	1	1.000	0.000	0/0	0/0
294	1	3	3	0.333	0.667	0.000	0.000
295	1	1	1	1.000	0.000	0/0	0/0
296	1	1	1	1.000	0.000	0/0	0/0
297	2	3	3	0.667	0.333	0.000	0.000
298	1	2	2	0.500	0.500	0.000	0.000
299	1	2	2	0.500	0.500	0.000	0.000
300	1	2	2	0.500	0.500	0.000	0.000
301	1	1	1	1.000	0.000	0/0	0/0
302	1	2	2	0.500	0.500	0.000	0.000
303	2	2	2	1.000	0.000	0/0	0/0
304	1	1	1	1.000	0.000	0/0	0/0
305	1	2	2	0.500	0.500	0.000	0.000
306	1	2	2	0.500	0.500	0.000	0.000
307	2	2	2	1.000	0.000	0/0	0/0

--Matrice "totale" avec "*Sinoconodon*" et caractères ordonnés

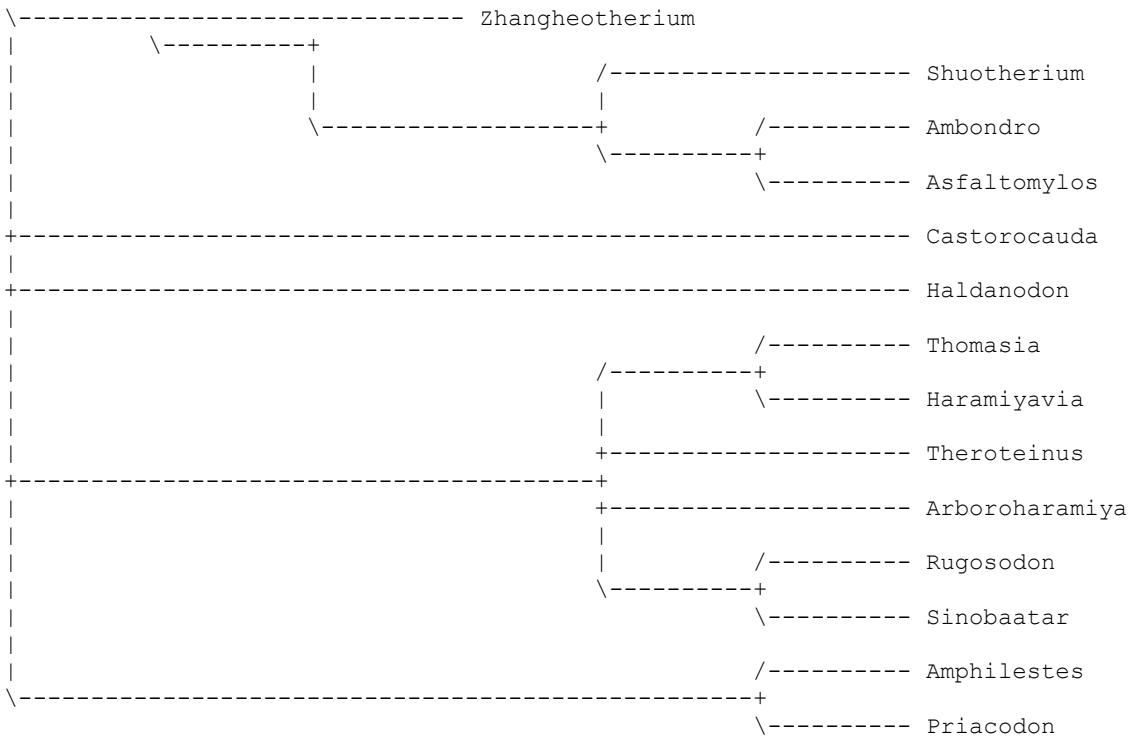
----*Buffer de l'analyse*

```
Data matrix has 35 taxa, 307 characters
Valid character-state symbols: 0123456789
Missing data identified by '?'
"Equate" macros in effect:
   N ==> ?

Heuristic search settings:
  Optimality criterion = parsimony
    Character-status summary:
      Of 307 total characters:
        289 characters are of type 'unord'
        2 characters are of user-defined type "a"
        2 characters are of user-defined type "b"
        2 characters are of user-defined type "c"
        4 characters are of user-defined type "d"
        1 character is of user-defined type "e"
        2 characters are of user-defined type "f"
        2 characters are of user-defined type "g"
        1 character is of user-defined type "h"
        1 character is of user-defined type "i"
```

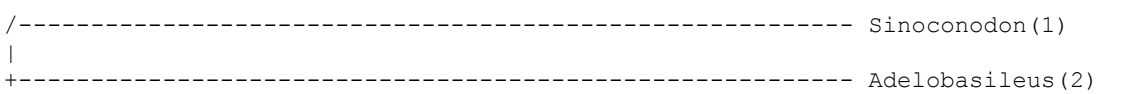
```
        1 character is of user-defined type "j"
        All characters have equal weight
        23 characters are constant
        91 variable characters are parsimony-uninformative
        Number of parsimony-informative characters = 193
    Multistate taxa interpreted as uncertainty
  Starting tree(s) obtained via stepwise addition
  Addition sequence: random
    Number of replicates = 100
    Starting seed = 1839188256
  Number of trees held at each step during stepwise addition = 1
  Branch-swapping algorithm: tree-bisection-reconnection (TBR)
  Steepest descent option not in effect
  Initial 'MaxTrees' setting = 100 (will be auto-increased by 100)
  Branches collapsed (creating polytomies) if maximum branch length is zero
  'MulTrees' option in effect
  Topological constraints not enforced
  Trees are unrooted

Heuristic search completed
   Total number of rearrangements tried = 5.1927e+009
   Score of best tree(s) found = 703
   Number of trees retained = 681
   Time used = 04:06:56.0

Tree-island profile:
                    First      Last                       First   Times
Island      Size     tree      tree        Score     replicate     hit
-------------------------------------------------------------------------
     1         3         1         3          703             4       4
     2        12         4        15          703             6       7
     3        22        16        37          703            14       1
     4       361        38       398          703            17       4
     5        80       399       478          703            20       1
     6         6       479       484          703            24       1
     7        18       485       502          703            25       3
     8         1       503       503          703            28       1
     9        53       504       556          703            31       1
    10         1       557       557          703            39       1
    11         1       558       558          703            43       1
    12        24       559       582          703            44       1
    13         1       583       583          703            46       1
    14         7       584       590          703            53       1
    15         1       591       591          703            56       1
    16        24       592       615          703            58       1
    17        24       616       639          703            59       1
    18        28       640       667          703            61       1
    19         5       668       672          703            62       1
    20         2       673       674          703            64       1
    21         3       675       677          703            70       1
    22         1       678       678          703            85       1
    23         1       679       679          703            88       1
    24         1       680       680          703            97       1
    25         1       681       681          703           100       1
    26      5680         -         -          704            26       1
    27       655         -         -          704             9       1
    28       514         -         -          704             1       1
    29       504         -         -          704            37       8*
    30         5         -         -          704            48       1
    31      2340         -         -          705             3       1
    32      2282         -         -          705            21       1
    33      2266         -         -          705            74       1
    34      2262         -         -          705            60       1
    35      2258         -         -          705            50       1
    36      2257         -         -          705            90       1
    37      2256         -         -          705            86       1
    38      1419         -         -          705             7       1
    39      1359         -         -          705            45       1
```

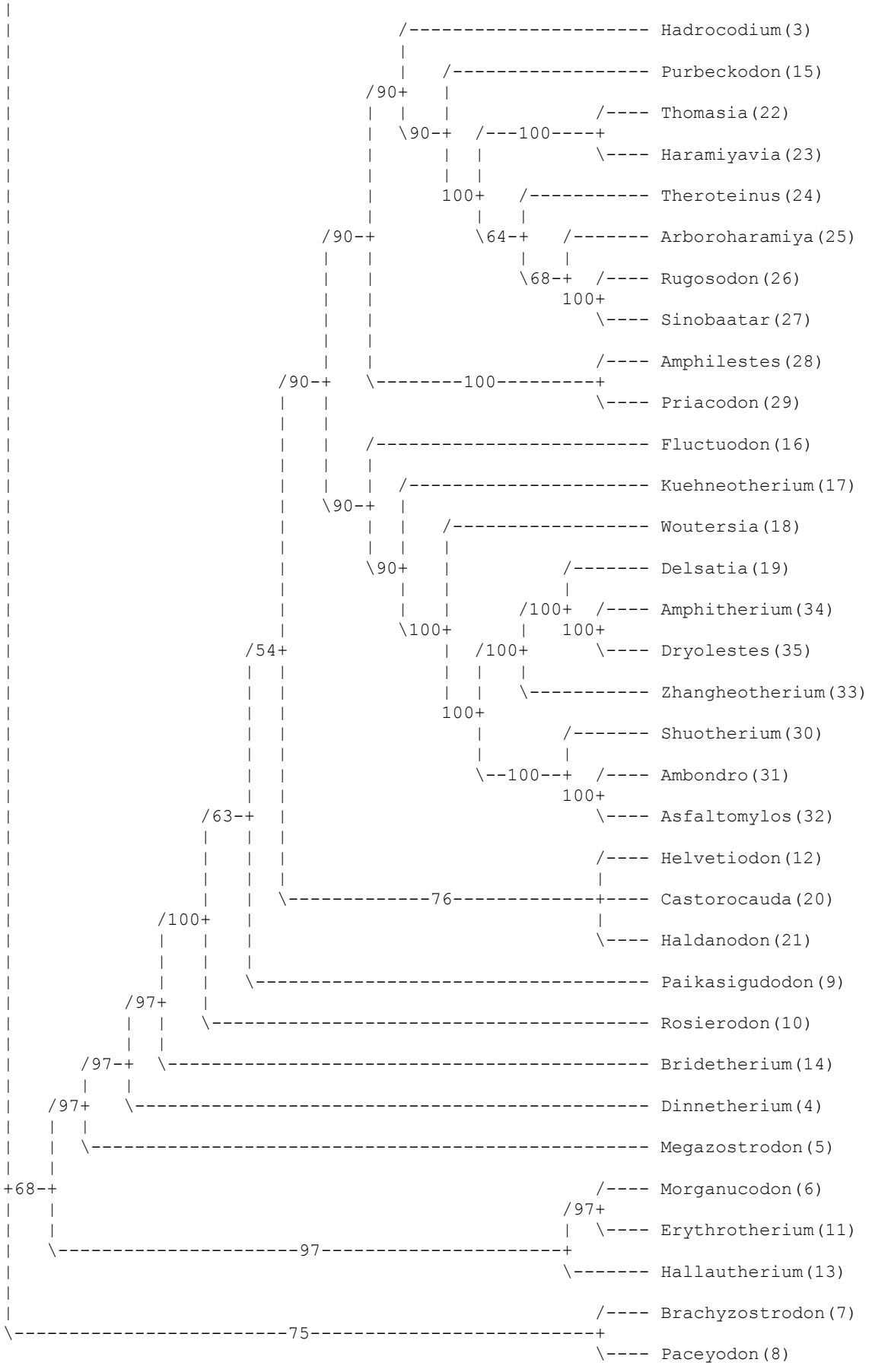
40	1351	-	-	705	94	1
41	1344	-	-	705	78	1
42	166	-	-	705	19	1
43	158	-	-	705	51	1
44	79	-	-	705	93	1
45	78	-	-	705	89	1
46	27	-	-	705	5	5*
47	9	-	-	705	8	1
48	2393	-	-	706	65	1
49	331	-	-	706	87	1
50	1012	-	-	707	11	1
51	842	-	-	707	33	1
52	745	-	-	707	2	1
53	74	-	-	707	49	1
54	753	-	-	709	13	1
55	743	-	-	709	12	1
56	734	-	-	709	16	1
57	731	-	-	709	15	1
58	634	-	-	709	18	1
59	620	-	-	709	23	1
60	619	-	-	709	29	1
61	617	-	-	709	55	2*
62	616	-	-	709	40	2*
63	615	-	-	709	69	2*
64	614	-	-	709	54	2*
65	613	-	-	709	99	1
66	611	-	-	709	98	1
67	609	-	-	709	71	3*
68	3	-	-	710	22	1
69	420	-	-	711	10	1

Note(s):
    * Multiple hits on islands of unsaved trees may in fact represent different islands



50% Majority-rule consensus of 681 trees



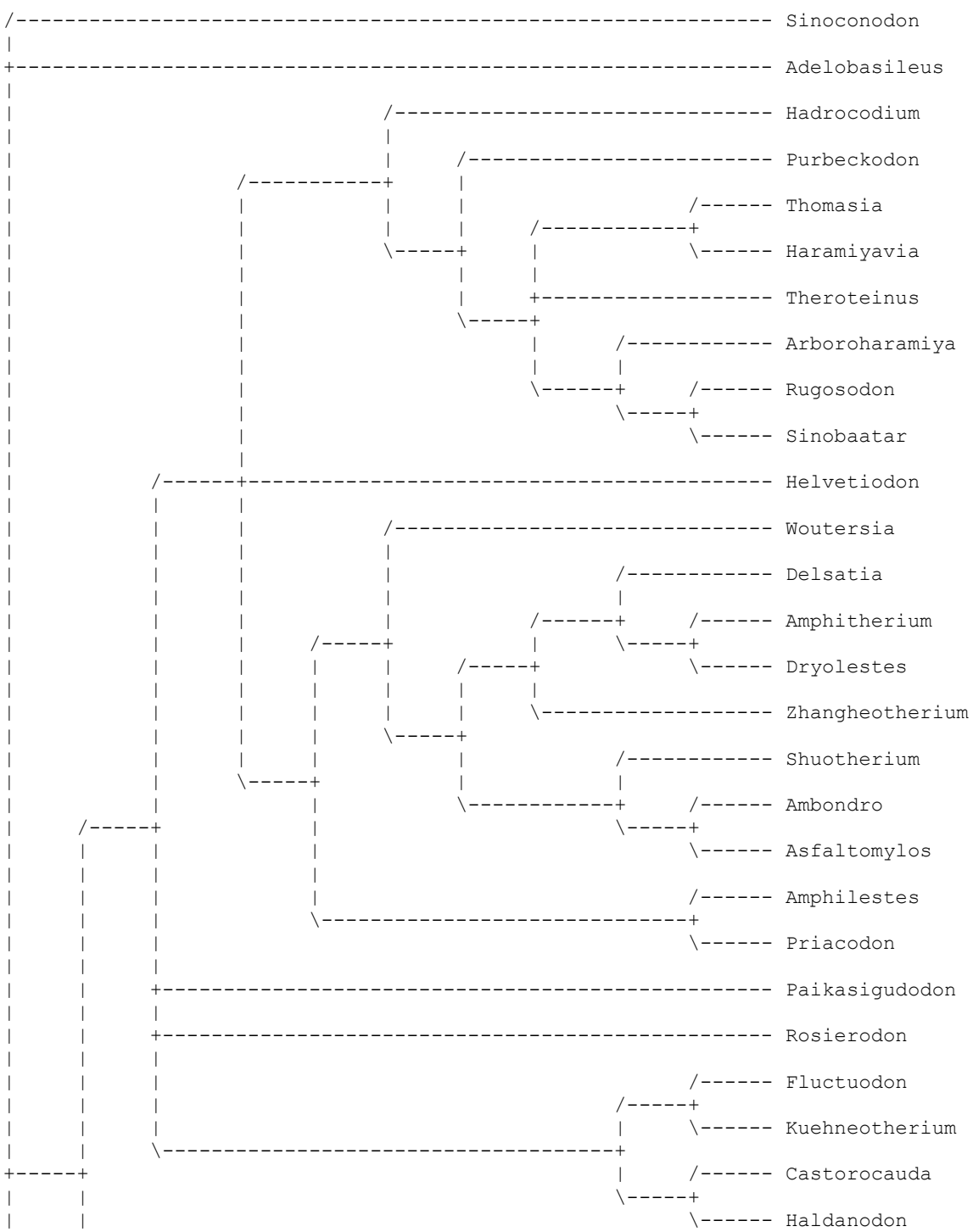


Bipartitions found in one or more trees and frequency of occurrence:

```
         1         2         3    3
12345678901234567890123456789012345      Freq      %
-----------------------------------------------------
..................*.............***       681 100.0%
..................*.............**        681 100.0%
.................**..........******       681 100.0%
..................*..........******       681 100.0%
................................**...       681 100.0%
....................**............       681 100.0%
................................**        681 100.0%
....................******........       681 100.0%
............................***...       681 100.0%
..........................**......       681 100.0%
.........................**.......       681 100.0%
..*.....**.*..**********************       678  99.6%
..*.....**.*.**********************       663  97.4%
.....*....*.........................       661  97.1%
..**....**.*.**********************       660  96.9%
.....*....*.*.......................       660  96.9%
..***...**.*.**********************       660  96.9%
................***..........******       614  90.2%
..*...........*......******........       614  90.2%
..*...........*......********......       614  90.2%
..............*......******........       614  90.2%
..............****..........******       614  90.2%
..*...........*****..***************      614  90.2%
...........*.......**..............       517  75.9%
......**............................       514  75.5%
..****..***************************       460  67.5%
........................***.........       460  67.5%
.......................****.........       434  63.7%
..*.....*..*..**********************       428  62.8%
..*.........*..**********************       370  54.3%
..*********************************       330  48.5%
...........*.........*..............       274  40.2%
...................**...............       258  37.9%
.....................***............       247  36.3%
........*..*.......**...............       244  35.8%
.*....**............................       241  35.4%
.......................**...........       221  32.5%
...........*.......*................       149  21.9%
..*......*.*..**********************       134  19.7%
..***.****.*.**********************       112  16.4%
.*****..***************************       110  16.2%
........**..........................        98  14.4%
.....***..*.*.......................        88  12.9%
.*....*.............................        87  12.8%
.*.....*............................        80  11.7%
........*.....*......******.........        67   9.8%
........*.....*.....................        67   9.8%
................**..**...............       67   9.8%
................**...................       67   9.8%
..*.....*.....*......******.........       64   9.4%
........*..*.........*..............       61   9.0%
...........*.....**...........******       59   8.7%
...........*.....**........********         54   7.9%
..*.....*..*..*..**..***************       51   7.5%
........*...........*...............       36   5.3%
...*..**............................       21   3.1%
...******..*..*.....................       18   2.6%
...******..*.**.....................       18   2.6%
...******..*........................       18   2.6%
...**.**..*.........................       18   2.6%
....*.....*.........................       18   2.6%
.........*.*.....**........********         13   1.9%
.........*.*.....**..........******         13   1.9%
..*.....**.*..*..**..***************       13   1.9%
```

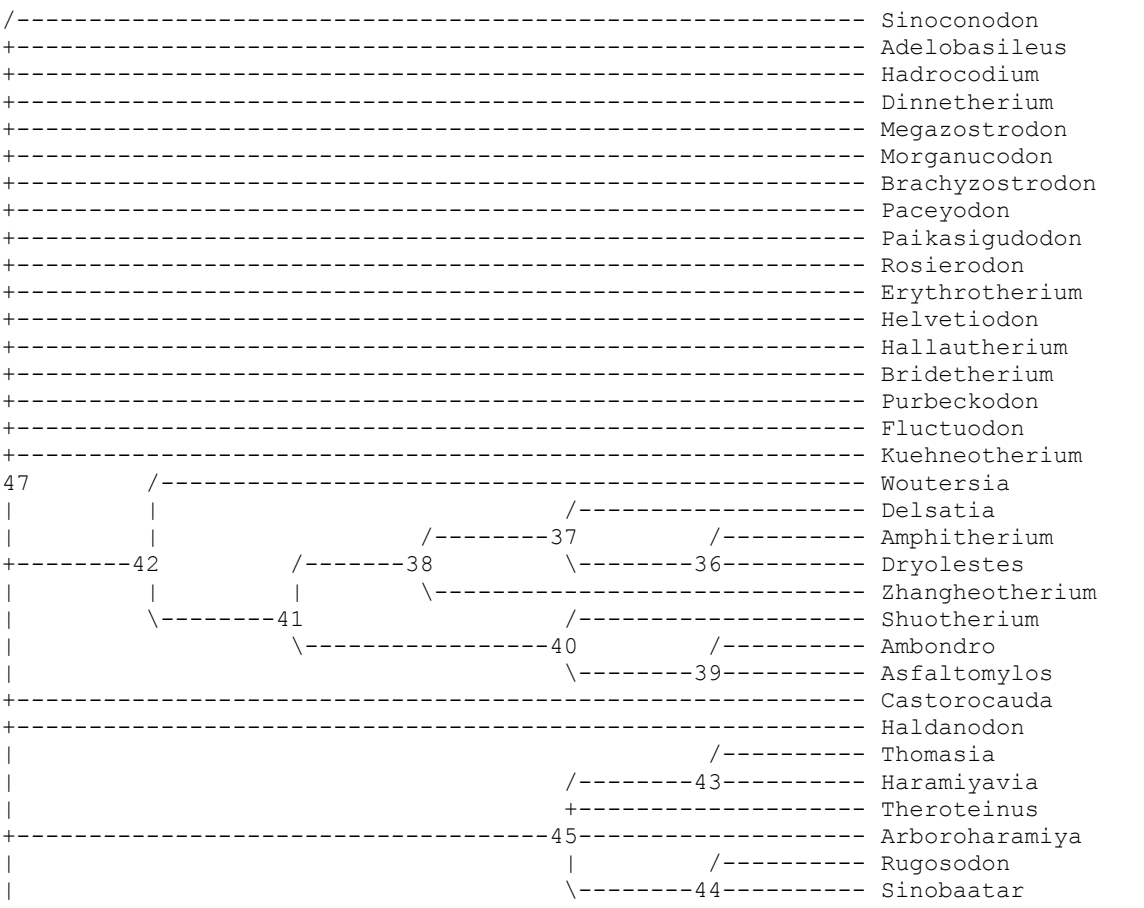
```
.........*.....**..**.............          5   0.7%
.........*.*.....................          4   0.6%
.........*.......**..........******         4   0.6%
.........**...**......******........        3   0.4%
.........*...*...................          3   0.4%
..*.....**...**......******........        3   0.4%
....**....*.*....................           3   0.4%
...*****..*.*....................           3   0.4%
..*.....**.*.**..**..**************        3   0.4%
....*.......*....................           3   0.4%
....*.....*.*....................           1   0.1%
....**......*....................           1   0.1%
```

Adams consensus of 681 trees:



----*Optimisation des caractères sur l'arbre de consensus en ACCTRAN*

```
Tree length = 871
Consistency index (CI) = 0.506
Homoplasy index (HI) = 0.494
CI excluding uninformative characters = 0.432
HI excluding uninformative characters = 0.568
Retention index (RI) = 0.370
Rescaled consistency index (RC) = 0.187
   (above indices do not include stepmatrix characters)
f value = 5834
f-ratio = 0.2035
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)
```



```
|                                                /---------- Amphilestes
\-----------------------------------------------46---------- Priacodon

Possible character-state assignments to internal nodes

                        1111111111222222222233333333334444444444555555555
Node                1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
36                  0023010000000727O?020010211100010100220100010000O7?30010001
                       41    1      1  3  2             43  1 3  4  38
                             3                           3
37                  0022010000000707O?120010211100010100220100010000O7030010001
                                   1  3  2                1
                                                          3
38                  0022010000000707O?120010211100O1?100200000010000O7000100?1
                                   1     2              11 12         1
                                                        2  3          2
                                                                      3
39                  0022120001001727O?121110211100010100200002010000O7001010011
                                      3  2         1     1 1       4        2
                                                          3       5
40                  0022010001000707O?121110211100010100200002010000O7001010011
                                      2         1     1 1       4        2
                                                          3       5
41                  0022010000000707O?120010211100010100200002010000O7001010011
                                      2         1     1 1                2
                                                          3
42                  0011010000000407O?120010211101010100100002010000O7001010011
                       2              2         1   2 1 1                2
                                                          3
43                  1000010200001000010210102111011002110001100100000000000020
                         22                          3                   3 2
44                  2000010200000000010210102111011003110001100110000000001002001
                         2                                                      2
45                  1000010200000000010210102111011003110001100100000000001000021
                         2      1                                          3 2
46                  0000010100000000101200102111011111000001120100000000101001?
                          12                      2                           2
                           3
47                  0000010100000000111200102111011101000001120100000000101002 1
                           2
                           3

Possible character-state assignments to internal nodes (continued)

                                                                 1111111111111111111
                    6666666666777777777788888888889999999999000000000011111111 1
Node                0123456789012345678901234567890123456789012345678901234567 8
-------------------------------------------------------------------------------
36                  20010011O?0000111?1?1111000220001121001210312011100O0?00000
                         1       2                              1
37                  20010011O?0000111?O?1010000220001?2100?2101100111000O??0000
                         1            1  1                    13 2          1 1
                                                               4
38                  20010011O?0000111?O?1010000220001?2100?2101100111000O??1000
                         1                                     13 2            1
                                                               4
39                  2001?011??000010010110 1?0000210000?000210110010100O0?11011
                         1            2  2            2      1  2           1
                                                               3
40                  2001?011??000010010110 1?0000210000?000210110010100O0?11011
                         1                            2      1  2           1
                                                               3
41                  2001?011??0000100?0110100000200000?000210110010100O??1000
                         1                            2      1  2            1
                                                               3
42                  2001?0111?0000100?0110?000000000000?0002101??00010000??1000
                         1                       2    2      1    1          1
```

```
                                                          3
43               21010210?000022?1001100000?02110?000?002201010021?000001200
                               3   2        3             24
44               2101?210100011311121100000?32110102121022240100210000001200
45               2101?2101000023?1001100000?02110?000?00220101002100000001200
                                   2        3             24
46               200100111000001110111000001112?0012200?021140100010000001010
                      1                             1
47               20010011100000100001100000000000000000021010100010000001000
                      1

Possible character-state assignments to internal nodes (continued)

                 11111111111111111111111111111111111111111111111111111111111
                 12222222222333333333344444444445555555555666666666677777777
Node             90123456789012345678901234567890123456789012345678901234567
----------------------------------------------------------------------------
36               01000000100000?0000000?111020??00111??0011??1?????????????0
                       1                                     2             1
                       2
37               01000000100000?0000000?111020??00111??0011??1?????????????0
                       1                                     2             1
                       2
38               01000000100000?00000000111020??00111??0011??1?????????????0
                       1                                     2             1
                       2
39               11000000100000?0000000011?000??00111??0011??1?????????????0
                       1         1         12                2             1
                       2         3
40               11000000100000?0000000011?000??00111??0011??1?????????????0
                       1         1         12                2             1
                       2         3
41               01000000100000?0000000011?000??00111??0011??1?????????????0
                       1         1         12                2             1
                       2         3
42               0?000000100000?0000000011?000??00111??0011??1?????????????0
                       1         1         12                2             1
                       2         3
43               0000200011000?00133??00?11120?????111100011?11?00??????0?000
                       2 42    1 44                                        2
                       3       3
44               ?000212041?02001442?01?11120?1?1111110001111110011111101000
                          2                                                2
45               0000200011000?00144??00?11120?????111100011?11?00??????0?000
                       2 42    1                                           2
                       3       3
46               00000000100000020000000011010000?00111?000110?10000?000000000
                         3     1 122        1
                               3 2
47               00000000100000000000000011010000?00111?000110?10000?000000000
                               1 1
                               3

Possible character-state assignments to internal nodes (continued)

                 11111111111111111111112222222222222222222222222222222222222
                 77888888888899999999990000000000111111111122222222223333333
Node             89012345678901234567890123456789012345678901234567890123456
----------------------------------------------------------------------------
36               ?0????0121??01?1???1?00??0?0???00???0100000011 01??11?231111
                  1          22     2            1       2  2
37               ?0????0121??01?1???1?00??0?0???00???010000001101??11?231111
                  1          22     2            1       2  2
38               ?0????0121??01?1???1?00??0?0???00???010000001101??11?231111
                  1          22     2            1       2  2
39               ?0????0121??01?1???1?00??0?0???00???01000000 1?01??11?231111
                  1          22     2            1       2  2
40               ?0????0121??01?1???1?00??0?0???00???010000001?01??11?231111
```

```
                 1          22     2            1       2  2
41               ?0????0121??01?1???1?00??0?0???00???01000000?01??11?231111
                 1          22     2            1       2  2
42               ?0????0121??01?1???1?00??0?0???00???01000000?01??11?231111
                 1          22     2            1       2  2
43               0000??012100011100?100?0??????00?0????????00?011011?1?0231111
                 1                               2       1  2
44               0000111121001111001201101211100121111011111211011?1?0231111
45               0000??012100011100?100?0??????00?0????????00?011011?1?0231111
                 1                               2       1  2
46               0100000121000101000100000?0000000??0100000010011011O231111
                                                                     2
47               0100000121000101000100000?0000000??0100000010011011O231111
                                                                     2

Possible character-state assignments to internal nodes (continued)

                 2222222222222222222222222222222222222222222222222222222222
                 3334444444444555555555566666666667777777777888888888899999
Node             7890123456789012345678901234567890123456789012345678901234
-------------------------------------------------------------------------------
36               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                 2     2                                2  1
37               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                 2     2                                2  1
38               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                 2     2                                2  1
39               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                 2     2                                2  1
40               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                 2     2                                2  1
41               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                 2     2                                2  1
42               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                 2     2                                2  1
43               2100011110 1?00110101?10110101002121?000??011011110020100200
                                 2
44               2100011110 1?00110101?10110101002121?000??011011110020100200
                                 2
45               2100011110 1?00110101?10110101002121?000??011011110020100200
                                 2
46               210001111 0?1?0011?101?1011?10100212100001?0110?111102?1?02?0
                 3                2                                        2
47               2100011110 1?00110101?10110101002121000 01?011011110020100200
                                 2

Possible character-state assignments to internal nodes (continued)

                 222233333333
                 999900000000
Node             678901234567
------------------------------
36               011011100?12
37               011011100?12
38               011011100?12
39               011011100?12
40               011011100?12
41               011011100?12
42               011011100?12
43               011011100?12
44               011011100?12
45               011011100?12
46               011011100?12
                        1
47               011011100?12

Reconstructed states for internal nodes
```

```
                          1111111111222222222233333333334444444444555555555
Node              1234567890123456789012345678901234567890123456789012345678
-------------------------------------------------------------------------------
36                0024110001000727000300202111000101004301003104003863001000 1
37                0022010000000707001300202111000101002201000100000703001000 1
38                0022010000000707001200202111000101002200000100000703001001 1
39                0022120001001727121311202111000111002010020100005700101002 1
40                0022010001000707101211202111000111002010020100005700101002 1
41                0022010000000707101200202111000111002010020100000700101001 1
42                0012010000000407101200202111010111002010020100000700101001 1
43                1000022200001000010210102111011002110001100100000000302020
44                2000020200000000010210102111011003110001100110000000001002001
45                1000020200001000010210102111011003110001100100000000001302021
46                0000011100000000101200102111012111000001120100000000001010010
47                0000010100000000111200102111011101000001120100000000001010021

Reconstructed states for internal nodes (continued)

                                                                  1111111111111111111
                  6666666666777777777788888888889999999999000000000001111111111
Node              0123456789012345678901234567890123456789012345678901234567890 1
-------------------------------------------------------------------------------
36                2001011101000211111011100002200011210012113120111000010000 0
37                2001011101000011111011100002200011210012113120111000010000 0
38                2001011101000011110010100002200011210012113100111000011101 0
39                2001111101000010012112110000210000220002131120101000011111 1
40                2001111101000010010110110000210000220002131100101000011111 1
41                2001111101000010010110100000200000210002111100101000011101 0
42                2001101111000010010110100000200000210002111100101000011101 0
43                2101021000000220100110000000211000000002201010021100000120 0
44                2101121010001131112110000013211010212102224010021000000120 0
45                2101121010000231102110000013211010002002224010021000000120 0
46                2001001110000011101110000011210012210102114010001000000101 0
47                2001001110000010000110000000000000000021010100010000000100 0

Reconstructed states for internal nodes (continued)

                  1111111111111111111111111111111111111111111111111111111111111
                  1222222222233333333334444444444555555555566666666667777777777
Node              9012345678901234567890123456789012345678901234567890123456789 1
-------------------------------------------------------------------------------
36                0100001010000010000000311102011001111100111121111111111111 1
37                0100001010000010000000311102011001111100111121111111111111 1
38                0100001010000010000000011102011001111100111121111111111111 1
39                1100001010000010300000011102011001111100111121111111111111 1
40                1100001010000010300000011102011001111100111121111111111111 1
41                0100001010000010000000011102011001111100111121111111111111 1
42                0100001010000010000000011102011001111100111121111111111111 1
43                0000202011001011332100311120111111111000111111001111110100 2
44                1000212041102001442201311120111111111000111111001111110100 2
45                0000202041001001442100311120111111111000111111001111110100 2
46                0000000030000012122000011011000001110000110010000000000000 0
47                0000000010000000000000011010000001110000110010000000000000 0

Reconstructed states for internal nodes (continued)

                  1111111111111111111112222222222222222222222222222222222222
                  7788888888889999999990000000001111111111222222222233333333
Node              8901234567890123456789012345678901234567890123456789012345 6
-------------------------------------------------------------------------------
36                1011110121112211111210011000132011110100200211012111123111 1
37                1011110121112211111210011000132011110100200211012111123111 1
38                1011110121112211111210011000132011110100200211012111123111 1
39                1011110121112211111210011000132011110100200211012111123111 1
40                1011110121112211111210011000132011110100200211012111123111 1
41                1011110121112211111210011000132011110100200211012111123111 1
42                1011110121112211111210011000132011110100200211012111123111 1
43                0000110121000111001100101211100121111011101011011100231111
```

```
44                0000111121001111001201101211100121111011111211011110023111 1
45                0000110121000111001100101211100121111011110101101111002311 11
46                0100000121000101000100000000000000000010000001001101102311 11
47                0100000121000101000100000000000000000010000001001101102311 11

Reconstructed states for internal nodes (continued)

                  2222222222222222222222222222222222222222222222222222222222
                  3334444444444555555555566666666667777777777888888888999999
Node              7890123456789012345678901234567890123456789012345678901234 5
-------------------------------------------------------------------------------
36                2111111110100011121111121011110212100011101101111002210120 2
37                2111111110100011121111121011110212100011101101111002210120 2
38                2111111110100011121111121011110212100011101101111002210120 2
39                2111111110100011121111121011110212100011101101111002210120 2
40                2111111110100011121111121011110212100011101101111002210120 2
41                2111111110100011121111121011110212100011101101111002210120 2
42                2111111110100011121111121011110212100011101101111002210120 2
43                2100011110100011010101011010100212110002101101111002010020 0
44                2100011110100011010101011010100212110002101101111002010020 0
45                2100011110100011010101011010100212110002101101111002010020 0
46                3100011112100011110101011110100212100001201100111102111221 0
47                2100011110100011010101011010100212100001101101111002010020 0

Reconstructed states for internal nodes (continued)

                  222233333333
                  999900000000
Node              678901234567
------------------------------
36                011011100112
37                011011100112
38                011011100112
39                011011100112
40                011011100112
41                011011100112
42                011011100112
43                011011100112
44                011011100112
45                011011100112
46                011011110112
47                011011100112

Character change lists:

 Character         CI     Steps                  Changes

 1                0.667      1           node_47 0 ==> 1 node_45
                             1           node_45 1 ==> 2 node_44
                             1           node_46 0 ==> 1 Amphilestes
 2                0.333      1           node_43 0 ==> 1 Haramiyavia
                             1           node_45 0 ==> 1 Arboroharamiya
                             1           node_44 0 ==> 1 Rugosodon
 3                 n/a       1           node_47 0 ==> 5 Brachyzostrodon
                             1           node_47 0 ==> 5 Paceyodon
                             1           node_47 0 ==> 1 Kuehneotherium
                             1           node_47 0 ==> 1 node_42
                             1           node_42 1 ==> 2 node_41
                             1           node_39 2 ==> 1 Ambondro
 4                 n/a       1           node_47 0 ==> 1 Fluctuodon
                             1           node_47 0 ==> 1234 Kuehneotherium
                             2           node_47 0 ==> 2 node_42
                             2           node_37 2 ==> 4 node_36
                             1           node_39 2 ==> 3 Asfaltomylos
                             3           node_47 0 ==> 3 Castorocauda
                             2           node_47 0 ==> 23 Haldanodon
                             1           node_45 0 ==> 1 Arboroharamiya
 5                 n/a       1           node_47 0 ==> 1 Brachyzostrodon
```

		1	node_47 0 ==> 1 Paceyodon
		1	node_47 0 ==> 1 Fluctuodon
		1	node_37 0 --> 1 node_36
		1	node_40 0 ==> 1 node_39
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
6	0.286	1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_47 1 ==> 0 Hallautherium
		1	node_42 1 ==> 2 Woutersia
		1	node_36 1 ==> 0 Dryolestes
		1	node_40 1 ==> 2 node_39
		1	node_47 1 --> 2 node_45
7	0.222	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Rosierodon
		1	node_47 0 ==> 1 Bridetherium
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 2 Kuehneotherium
		1	node_42 0 ==> 2 Woutersia
		1	node_45 0 --> 2 node_43
		1	node_47 0 --> 1 node_46
8	0.200	1	node_47 1 --> 3 Megazostrodon
		1	node_47 1 --> 2 Morganucodon
		1	node_47 1 --> 3 Brachyzostrodon
		1	node_47 1 --> 3 Paceyodon
		1	node_47 1 ==> 0 Rosierodon
		1	node_47 1 --> 2 Hallautherium
		1	node_47 1 --> 2 Bridetherium
		1	node_47 1 --> 2 Purbeckodon
		1	node_47 1 --> 3 Fluctuodon
		1	node_47 1 --> 3 Kuehneotherium
		1	node_47 1 ==> 0 node_42
		1	node_39 0 ==> 3 Asfaltomylos
		1	node_47 1 ==> 0 Haldanodon
		1	node_47 1 --> 2 node_45
		1	node_45 2 ==> 0 Arboroharamiya
9	0.667	1	node_42 0 ==> 2 Woutersia
		1	node_47 0 ==> 2 Haldanodon
		1	node_45 0 ==> 1 Arboroharamiya
10	0.300	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Rosierodon
		1	node_47 0 ==> 1 Bridetherium
		1	node_47 0 ==> 13 Purbeckodon
		1	node_47 0 ==> 2 Fluctuodon
		1	node_37 0 --> 1 node_36
		1	node_36 1 --> 3 Dryolestes
		1	node_41 0 ==> 1 node_40
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
11	0.333	1	node_47 0 ==> 1 Paceyodon
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
12	0.600	1	node_47 0 ==> 1 Paceyodon
		1	node_47 0 ==> 2 Fluctuodon
		1	node_36 0 ==> 3 Dryolestes
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 2 Haldanodon
13	n/a	1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 4 Paceyodon
		1	node_36 0 ==> 12 Dryolestes
		1	node_40 0 ==> 1 node_39
		1	node_39 1 ==> 2 Asfaltomylos
		1	node_47 0 --> 1 node_45
		1	node_43 1 ==> 2 Haramiyavia
		1	node_45 1 --> 0 node_44
14	n/a	1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Paceyodon

		1	node_47 0 ==> 4 Fluctuodon
		1	node_47 0 ==> 45 Kuehneotherium
		1	node_47 0 ==> 4 node_42
		3	node_42 4 ==> 7 node_41
		2	node_36 7 ==> 45 Dryolestes
		2	node_39 7 ==> 5 Ambondro
		1	node_47 0 ==> 12 Haldanodon
15	n/a	1	node_47 0 ==> 1 Fluctuodon
		2	node_37 0 ==> 2 node_36
		1	node_36 2 ==> 3 Dryolestes
		2	node_40 0 ==> 2 node_39
		3	node_47 0 ==> 3 Castorocauda
		1	node_47 0 ==> 12 Haldanodon
		1	node_43 0 ==> 1 Haramiyavia
16	n/a	2	node_47 0 ==> 5 Fluctuodon
		1	node_47 0 ==> 4567 Kuehneotherium
		4	node_47 0 ==> 7 node_42
		3	node_47 0 ==> 6 Castorocauda
		4	node_47 0 ==> 7 Haldanodon
		1	node_43 0 ==> 4 Haramiyavia
17	0.300	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 3 Dinnetherium
		1	node_47 1 ==> 23 Megazostrodon
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_47 1 ==> 23 Rosierodon
		1	node_47 1 ==> 0 Hallautherium
		1	node_47 1 ==> 3 Bridetherium
		1	node_42 1 ==> 2 Woutersia
		1	node_41 1 --> 0 node_38
		1	node_47 1 ==> 0 node_45
18	0.429	1	node_47 1 ==> 0 Rosierodon
		1	node_47 1 ==> 0 Purbeckodon
		1	node_47 1 ==> 2 Kuehneotherium
		1	node_47 1 --> 0 node_42
		1	node_40 0 --> 2 node_39
		1	node_39 2 --> 3 Asfaltomylos
		1	node_47 1 ==> 0 node_46
19	0.200	1	node_47 1 ==> 0 Purbeckodon
		1	node_37 1 ==> 0 node_36
		1	node_39 1 ==> 0 Asfaltomylos
		1	node_47 1 ==> 0 node_45
		1	node_46 1 ==> 0 Priacodon
20	n/a	1	node_47 2 ==> 1 Megazostrodon
		1	node_47 2 ==> 1 Morganucodon
		1	node_47 2 ==> 1 Erythrotherium
		2	node_47 2 ==> 0 Hallautherium
		1	node_42 2 ==> 1 Woutersia
		1	node_38 2 --> 3 node_37
		1	node_40 2 --> 3 node_39
		1	node_47 2 ==> 1 Castorocauda
21	0.200	1	node_47 0 ==> 1 Dinnetherium
		1	node_37 0 ==> 1 Delsatia
		1	node_41 0 ==> 1 node_40
		1	node_47 0 ==> 1 node_45
		1	node_45 1 ==> 0 Arboroharamiya
22	0.200	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 1 node_40
		1	node_47 0 ==> 1 Castorocauda
23	1.000	1	node_47 1 --> 2 node_42
24	0.143	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 1 Bridetherium
		1	node_42 0 ==> 1 Woutersia
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
		1	node_46 0 ==> 1 Amphilestes

25	n/a	1	node_47 2 ==> 1 Dinnetherium
		2	node_47 2 ==> 0 Megazostrodon
		1	node_47 2 ==> 01 Morganucodon
		1	node_47 2 ==> 01 Brachyzostrodon
		2	node_47 2 ==> 0 Erythrotherium
		1	node_47 2 ==> 3 Castorocauda
		1	node_47 2 ==> 3 Haldanodon
27	1.000	1	node_45 1 ==> 0 Arboroharamiya
28	1.000	1	node_45 1 ==> 2 Arboroharamiya
		1	node_44 1 ==> 0 Sinobaatar
29	0.500	1	node_45 0 ==> 1 Arboroharamiya
		1	node_44 0 ==> 1 Rugosodon
30	0.250	1	node_47 1 ==> 0 Hadrocodium
		1	node_42 1 ==> 0 node_41
		1	node_37 0 ==> 1 Delsatia
		1	node_47 1 ==> 0 Haldanodon
31	0.500	1	node_47 1 ==> 0 Dinnetherium
		1	node_47 1 ==> 0 Kuehneotherium
		1	node_47 1 ==> 0 node_42
		1	node_47 1 --> 2 node_46
32	0.500	1	node_47 1 ==> 0 node_45
		1	node_44 0 ==> 1 Rugosodon
33	0.333	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 --> 1 node_42
		1	node_41 1 --> 0 node_38
		1	node_38 0 --> 2 Zhangheotherium
		1	node_47 0 ==> 1 node_46
34	0.500	1	node_47 1 ==> 2 Sinoconodon
		1	node_47 1 ==> 3 Erythrotherium
		1	node_47 1 ==> 3 node_45
		1	node_45 3 --> 2 node_43
		1	node_44 3 ==> 0 Sinobaatar
		1	node_46 1 ==> 2 Priacodon
35	n/a	1	node_47 0 ==> 1 node_45
		1	node_43 1 ==> 2 Haramiyavia
		1	node_45 1 ==> 2 Theroteinus
		1	node_44 1 ==> 2 Sinobaatar
36	1.000	1	node_47 0 ==> 1 node_45
37	n/a	1	node_47 0 ==> 1 Paikasigudodon
		1	node_47 0 ==> 1 Helvetiodon
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 12 Kuehneotherium
		2	node_47 0 ==> 2 node_42
		2	node_37 2 --> 4 node_36
		1	node_47 0 ==> 1 Haldanodon
38	n/a	1	node_47 0 ==> 1 Paikasigudodon
		1	node_47 0 ==> 1 Kuehneotherium
		2	node_41 0 --> 2 node_38
		1	node_37 2 --> 3 node_36
		1	node_45 0 ==> 12 Theroteinus
39	n/a	1	node_47 0 ==> 2 Paikasigudodon
		1	node_47 0 ==> 1 Helvetiodon
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 1 Kuehneotherium
		1	node_47 0 --> 1 node_42
		1	node_41 1 --> 0 node_38
		1	node_47 0 ==> 1 Haldanodon
		1	node_45 0 ==> 2 Theroteinus
40	0.200	1	node_47 1 ==> 0 Dinnetherium
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_47 1 ==> 0 node_42
		1	node_38 0 ==> 1 node_37
		1	node_45 1 ==> 0 Theroteinus
41	0.500	1	node_47 1 ==> 0 Paikasigudodon
		1	node_47 1 ==> 2 Fluctuodon
		1	node_47 1 ==> 2 Kuehneotherium
		1	node_47 1 --> 0 node_42

		1	node_42 0 --> 3 Woutersia
		1	node_47 1 ==> 2 Haldanodon
42	0.375	1	node_47 2 ==> 3 Megazostrodon
		1	node_47 2 ==> 3 Paikasigudodon
		1	node_47 2 ==> 1 Bridetherium
		1	node_42 2 ==> 3 Woutersia
		1	node_41 2 --> 0 node_38
		1	node_47 2 ==> 0 node_45
		1	node_43 0 ==> 1 Thomasia
		1	node_44 0 ==> 1 Sinobaatar
43	0.667	1	node_47 0 ==> 2 Paikasigudodon
		1	node_47 0 ==> 2 Purbeckodon
		1	node_37 0 --> 3 node_36
45	1.000	1	node_45 0 ==> 1 node_44
46	0.750	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Purbeckodon
		1	node_47 0 ==> 3 Kuehneotherium
		1	node_37 0 --> 4 node_36
47	0.500	1	node_47 0 ==> 1 Purbeckodon
		1	node_47 0 ==> 1 Fluctuodon
48	1.000	1	node_42 0 ==> 1 Woutersia
49	n/a	1	node_47 0 ==> 4 Kuehneotherium
		3	node_37 0 --> 3 node_36
		2	node_41 0 --> 5 node_40
50	n/a	2	node_47 0 ==> 2 Megazostrodon
		1	node_47 0 ==> 1 Helvetiodon
		1	node_47 0 ==> 12 Fluctuodon
		4	node_47 0 ==> 7 Kuehneotherium
		4	node_47 0 ==> 7 node_42
		1	node_37 7 --> 8 node_36
		2	node_47 0 ==> 2 Haldanodon
51	n/a	3	node_37 0 --> 6 node_36
52	n/a	2	node_47 0 ==> 2 Megazostrodon
		1	node_47 0 ==> 1 Fluctuodon
		2	node_47 0 ==> 2 Kuehneotherium
		3	node_41 0 --> 3 node_38
		1	node_37 3 ==> 7 Delsatia
53	0.250	1	node_47 1 ==> 0 Dinnetherium
		1	node_41 1 ==> 0 node_38
		1	node_47 1 ==> 0 Haldanodon
		1	node_45 1 ==> 0 node_43
54	0.750	1	node_47 0 ==> 1 Paikasigudodon
		1	node_42 0 ==> 2 Woutersia
		1	node_47 0 --> 3 node_45
		1	node_45 3 --> 0 node_44
55	0.429	1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Morganucodon
		1	node_47 1 ==> 0 Paikasigudodon
		1	node_47 1 ==> 2 Helvetiodon
		1	node_47 1 ==> 2 Purbeckodon
		1	node_47 1 ==> 0 node_45
		1	node_45 0 ==> 3 Theroteinus
56	0.333	1	node_47 0 ==> 2 Paikasigudodon
		1	node_47 0 ==> 2 Helvetiodon
		1	node_47 0 ==> 2 Purbeckodon
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 1 Kuehneotherium
		1	node_47 0 --> 2 node_45
57	0.333	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Erythrotherium
		1	node_47 0 ==> 2 Helvetiodon
		1	node_47 0 ==> 12 Purbeckodon
58	0.167	1	node_47 2 ==> 0 Sinoconodon
		1	node_47 2 ==> 1 Paikasigudodon
		1	node_47 2 ==> 1 Erythrotherium
		1	node_47 2 ==> 1 Helvetiodon

		1	node_47 2 ==> 1 Fluctuodon
		1	node_47 2 ==> 1 Kuehneotherium
		1	node_47 2 --> 1 node_42
		1	node_38 1 --> 0 node_37
		1	node_41 1 --> 2 node_40
		1	node_45 2 ==> 0 Arboroharamiya
		1	node_45 2 --> 0 node_44
		1	node_47 2 --> 1 node_46
59	0.250	1	node_47 1 ==> 0 Sinoconodon
		1	node_38 1 ==> 0 Zhangheotherium
		1	node_45 1 ==> 0 node_43
		1	node_47 1 --> 0 node_46
60	n/a	2	node_47 2 ==> 0 Paikasigudodon
		1	node_47 2 ==> 1 Helvetiodon
		1	node_47 2 ==> 01 Purbeckodon
		1	node_37 2 ==> 3 Delsatia
61	0.143	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Paikasigudodon
		1	node_47 0 ==> 1 Erythrotherium
		1	node_47 0 ==> 1 Bridetherium
		1	node_47 0 ==> 1 node_45
62	0.200	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 1 Morganucodon
		1	node_47 0 ==> 1 Erythrotherium
		1	node_47 0 ==> 1 Bridetherium
64	0.167	1	node_47 0 ==> 1 Helvetiodon
		1	node_47 0 --> 1 node_42
		1	node_41 1 --> 0 node_38
		1	node_47 0 ==> 1 Haldanodon
		1	node_47 0 --> 1 node_45
		1	node_45 1 --> 0 node_43
65	0.667	1	node_42 0 --> 1 node_41
		1	node_47 0 --> 1 Haldanodon
		1	node_47 0 ==> 2 node_45
66	0.500	1	node_47 1 ==> 0 Paikasigudodon
		1	node_45 1 ==> 0 Arboroharamiya
67	0.500	1	node_47 1 ==> 0 Bridetherium
		1	node_47 1 ==> 0 node_45
68	0.200	1	node_47 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 0 Kuehneotherium
		1	node_42 1 --> 0 node_41
		1	node_47 1 ==> 0 Haldanodon
		1	node_45 1 --> 0 node_43
69	1.000	1	node_47 0 --> 1 node_42
70	0.500	1	node_43 0 ==> 1 Thomasia
		1	node_45 0 ==> 1 Theroteinus
71	0.500	1	node_45 0 ==> 1 Theroteinus
		1	node_44 0 ==> 1 Rugosodon
72	1.000	1	node_45 0 ==> 1 node_44
73	0.400	1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Bridetherium
		1	node_37 0 --> 2 node_36
		1	node_47 0 ==> 2 node_45
		1	node_45 2 ==> 1 node_44
74	0.667	1	node_38 1 ==> 2 Zhangheotherium
		1	node_47 1 ==> 3 node_45
		1	node_45 3 --> 2 node_43
75	0.200	1	node_47 0 ==> 1 Hadrocodium
		1	node_41 0 ==> 1 node_38
		1	node_47 0 --> 1 node_45
		1	node_45 1 --> 0 node_43
		1	node_47 0 ==> 1 node_46
76	0.333	1	node_41 0 ==> 1 node_38
		1	node_47 0 ==> 1 node_45
		1	node_47 0 ==> 1 node_46

77	0.500	1	node_47 0 --> 1 node_42
		1	node_45 0 ==> 1 node_44
78	0.400	1	node_38 0 --> 1 node_37
		1	node_40 0 --> 2 node_39
		1	node_47 0 --> 2 node_45
		1	node_45 2 --> 0 node_43
		1	node_47 0 ==> 1 node_46
79	0.167	1	node_47 1 ==> 0 Sinoconodon
		1	node_41 1 --> 0 node_38
		1	node_36 0 --> 1 Amphitherium
		1	node_47 1 ==> 0 Castorocauda
		1	node_47 1 ==> 0 Haldanodon
		1	node_46 1 ==> 0 Priacodon
80	0.333	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Morganucodon
81	0.429	1	node_47 0 ==> 1 Sinoconodon
		1	node_47 0 ==> 3 Hadrocodium
		1	node_47 0 ==> 1 Morganucodon
		1	node_38 0 --> 1 node_37
		1	node_40 0 --> 2 node_39
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
82	1.000	1	node_47 0 --> 1 node_42
83	1.000	1	node_41 0 --> 1 node_40
84	1.000	1	node_47 0 ==> 1 Hadrocodium
85	0.500	1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
86	0.333	1	node_47 0 --> 1 node_45
		1	node_45 1 --> 0 node_43
		1	node_47 0 ==> 1 node_46
87	0.800	1	node_47 0 ==> 4 Hadrocodium
		1	node_41 0 ==> 2 node_38
		1	node_47 0 --> 3 node_45
		1	node_45 3 --> 0 node_43
		1	node_47 0 ==> 1 node_46
88	0.333	1	node_47 0 ==> 2 Hadrocodium
		1	node_47 0 --> 2 node_42
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
		1	node_47 0 ==> 2 node_45
		1	node_47 0 ==> 2 node_46
89	0.200	1	node_47 0 ==> 1 Hadrocodium
		1	node_36 0 ==> 1 Amphitherium
		1	node_41 0 ==> 1 node_40
		1	node_47 0 ==> 1 node_45
		1	node_47 0 --> 1 node_46
90	0.500	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 node_45
92	0.200	1	node_41 0 ==> 1 node_38
		1	node_47 0 ==> 1 Haldanodon
		1	node_47 0 --> 1 node_45
		1	node_45 1 --> 0 node_43
		1	node_47 0 ==> 1 node_46
93	0.500	1	node_41 0 --> 1 node_38
		1	node_38 1 --> 2 Zhangheotherium
		1	node_45 0 ==> 1 Arboroharamiya
		1	node_47 0 ==> 2 node_46
94	0.400	1	node_47 0 --> 2 node_42
		1	node_40 2 --> 0 Shuotherium
		1	node_45 0 ==> 1 Arboroharamiya
		1	node_45 0 ==> 2 node_44
		1	node_47 0 ==> 2 node_46
95	0.500	1	node_47 0 --> 1 node_42
		1	node_41 1 --> 2 node_40
		1	node_45 0 ==> 1 node_44
		1	node_47 0 --> 1 node_46
96	0.500	1	node_47 0 --> 2 node_45

		1	node_45 2 --> 0 node_43
97	0.333	1	node_38 0 ==> 1 Zhangheotherium
		1	node_45 0 ==> 1 node_44
		1	node_47 0 --> 1 node_46
98	1.000	1	node_41 0 --> 1 node_38
99	1.000	1	node_47 2 ==> 1 Sinoconodon
100	0.333	1	node_47 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 2 Dinnetherium
		1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Kuehneotherium
		1	node_47 1 ==> 2 node_45
		1	node_46 1 ==> 2 Priacodon
101	0.500	1	node_47 0 --> 1 node_42
		1	node_36 1 --> 0 Amphitherium
		1	node_41 1 --> 3 node_40
		1	node_47 0 --> 2 node_45
		1	node_45 2 --> 0 node_43
		1	node_47 0 ==> 1 node_46
102	0.429	1	node_47 1 ==> 2 Dinnetherium
		1	node_47 1 ==> 2 Megazostrodon
		1	node_41 1 --> 3 node_38
		1	node_38 3 --> 4 Zhangheotherium
		1	node_47 1 --> 4 node_45
		1	node_45 4 --> 1 node_43
		1	node_47 1 ==> 4 node_46
103	1.000	1	node_47 0 --> 1 node_42
104	0.250	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 2 Hadrocodium
		1	node_47 1 ==> 0 Morganucodon
		1	node_47 1 ==> 0 Kuehneotherium
		1	node_47 1 --> 0 node_42
		1	node_38 0 --> 2 node_37
		1	node_40 0 --> 2 node_39
		1	node_46 1 ==> 2 Amphilestes
105	1.000	1	node_38 0 ==> 1 Zhangheotherium
106	1.000	1	node_47 0 --> 1 node_42
		1	node_46 0 ==> 2 Amphilestes
107	1.000	1	node_41 0 ==> 1 node_38
		1	node_47 0 ==> 2 node_45
109	1.000	1	node_45 0 --> 1 node_43
110	1.000	1	node_36 0 ==> 1 Amphitherium
111	1.000	1	node_36 0 ==> 1 Amphitherium
112	1.000	1	node_47 0 ==> 1 Hadrocodium
113	0.500	1	node_47 0 --> 1 node_42
		1	node_36 1 --> 0 Amphitherium
114	0.200	1	node_47 0 ==> 1 Sinoconodon
		1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 --> 1 node_42
		1	node_38 1 --> 0 node_37
		1	node_46 0 ==> 1 Amphilestes
115	0.333	1	node_47 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 0 Dinnetherium
		1	node_47 1 ==> 0 Megazostrodon
		1	node_38 1 --> 0 node_37
		1	node_39 1 ==> 2 Ambondro
		1	node_46 1 ==> 0 Priacodon
116	0.667	1	node_41 0 --> 1 node_40
		1	node_39 1 --> 0 Asfaltomylos
		1	node_47 0 ==> 2 node_45
117	0.500	1	node_47 0 --> 1 node_42
		1	node_38 1 --> 0 node_37
		1	node_39 1 ==> 3 Ambondro
		1	node_47 0 ==> 1 node_46
118	1.000	1	node_41 0 ==> 1 node_40
119	0.333	1	node_41 0 ==> 1 node_40
		1	node_45 0 --> 1 node_44
		1	node_46 0 ==> 1 Priacodon
120	0.500	1	node_47 0 --> 1 node_42

		1	node_47 0 ==> 1 Haldanodon
121	1.000	1	node_46 0 ==> 1 Priacodon
122	0.333	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
123	1.000	1	node_47 0 ==> 2 node_45
124	1.000	1	node_45 0 ==> 1 node_44
125	0.600	1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 --> 1 node_42
		1	node_38 1 --> 2 Zhangheotherium
		1	node_47 0 --> 2 node_45
		1	node_45 2 --> 3 Arboroharamiya
126	1.000	1	node_44 0 ==> 1 Rugosodon
127	0.571	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 0 Dinnetherium
		1	node_38 1 ==> 2 Zhangheotherium
		1	node_47 1 --> 4 node_45
		1	node_45 4 --> 1 node_43
		1	node_47 1 --> 3 node_46
128	0.500	1	node_38 0 ==> 1 Zhangheotherium
		1	node_47 0 ==> 1 node_45
		1	node_45 1 --> 2 Arboroharamiya
		1	node_44 1 --> 2 Sinobaatar
129	1.000	1	node_45 0 --> 1 node_44
130	1.000	1	node_47 0 ==> 1 Hadrocodium
131	0.667	1	node_38 0 ==> 1 Zhangheotherium
		1	node_47 0 --> 1 node_45
		1	node_45 1 --> 2 node_44
132	0.500	1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
133	0.375	1	node_47 0 --> 3 Sinoconodon
		1	node_47 0 --> 3 Hadrocodium
		1	node_47 0 --> 1 node_42
		1	node_38 1 --> 2 Zhangheotherium
		1	node_47 0 ==> 2 Haldanodon
		1	node_45 0 --> 1 node_43
		1	node_45 0 --> 3 Arboroharamiya
		1	node_47 0 --> 1 node_46
134	0.333	1	node_47 0 ==> 3 Sinoconodon
		1	node_47 0 ==> 3 Hadrocodium
		1	node_36 0 ==> 1 Dryolestes
		1	node_38 0 ==> 2 Zhangheotherium
		1	node_47 0 ==> 2 Haldanodon
		1	node_47 0 ==> 1 node_45
		1	node_45 1 ==> 3 Arboroharamiya
		1	node_44 1 ==> 2 Sinobaatar
		1	node_47 0 ==> 2 node_46
135	0.400	1	node_47 0 --> 1 Sinoconodon
		1	node_47 0 ==> 4 Hadrocodium
		1	node_47 0 --> 1 Dinnetherium
		1	node_47 0 --> 1 Megazostrodon
		1	node_47 0 ==> 23 Morganucodon
		1	node_41 0 --> 3 node_40
		1	node_47 0 ==> 4 node_45
		1	node_45 4 --> 3 node_43
		1	node_47 0 --> 1 node_46
		1	node_46 1 --> 2 Priacodon
136	0.667	1	node_47 0 ==> 1 Sinoconodon
		1	node_47 0 ==> 4 Hadrocodium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 4 node_45
		1	node_45 4 --> 3 node_43
		1	node_47 0 --> 2 node_46
137	0.400	1	node_47 0 ==> 2 Sinoconodon
		1	node_47 0 ==> 4 Hadrocodium
		1	node_47 0 --> 2 node_45
		1	node_45 2 --> 4 Arboroharamiya

		1	node_47 0 --> 2 node_46
138	0.500	1	node_47 0 ==> 2 Sinoconodon
		1	node_47 0 ==> 3 Hadrocodium
		1	node_47 0 --> 1 node_45
		1	node_45 1 --> 2 node_44
		1	node_44 2 --> 3 Sinobaatar
		1	node_46 0 ==> 1 Priacodon
139	1.000	1	node_47 0 ==> 2 Sinoconodon
		1	node_38 0 ==> 1 Zhangheotherium
140	1.000	1	node_45 0 ==> 1 node_44
141	0.333	1	node_38 0 --> 3 node_37
		1	node_47 0 --> 3 node_45
		1	node_44 3 --> 0 Sinobaatar
142	1.000	1	node_47 1 ==> 0 Sinoconodon
143	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Megazostrodon
144	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 ==> 1 node_45
145	0.400	1	node_47 1 --> 0 node_42
		1	node_47 1 ==> 0 Castorocauda
		1	node_47 1 ==> 0 Haldanodon
		1	node_47 1 ==> 2 node_45
		1	node_46 1 ==> 0 Amphilestes
146	0.500	1	node_47 0 ==> 1 Sinoconodon
		1	node_47 0 ==> 2 Megazostrodon
		1	node_47 0 --> 2 node_42
		1	node_47 0 --> 1 node_46
147	1.000	1	node_47 0 --> 1 node_45
148	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
149	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
150	1.000	1	node_47 0 --> 1 node_45
151	1.000	1	node_47 0 --> 1 node_45
152	1.000	1	node_47 1 ==> 0 Castorocauda
153	1.000	1	node_47 1 ==> 0 Castorocauda
154	1.000	1	node_47 1 ==> 0 Castorocauda
155	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
156	1.000	1	node_47 0 --> 1 node_42
157	1.000	1	node_47 0 ==> 1 Sinoconodon
158	1.000	1	node_47 0 ==> 1 Morganucodon
159	1.000	1	node_47 1 ==> 0 Sinoconodon
160	1.000	1	node_47 1 ==> 0 Sinoconodon
161	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
162	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
163	1.000	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 --> 2 node_42
164	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
165	1.000	1	node_47 0 --> 1 node_42
166	1.000	1	node_47 0 --> 1 node_42
167	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
168	0.333	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 Haldanodon
		1	node_47 0 --> 1 node_45
169	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
170	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
171	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
172	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
173	1.000	1	node_47 0 --> 1 node_42

174	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
175	1.000	1	node_47 0 --> 1 node_42
176	1.000	1	node_47 0 --> 1 node_42
177	1.000	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 2 node_45
178	0.333	1	node_47 0 --> 1 node_42
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
179	0.500	1	node_47 1 --> 0 node_42
		1	node_47 1 ==> 2 Castorocauda
		1	node_47 1 ==> 2 Haldanodon
		1	node_47 1 --> 0 node_45
180	1.000	1	node_47 0 --> 1 node_42
181	1.000	1	node_47 0 --> 1 node_42
182	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
183	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
184	1.000	1	node_45 0 ==> 1 node_44
185	1.000	1	node_47 1 ==> 0 Castorocauda
186	1.000	1	node_47 2 ==> 1 Castorocauda
187	1.000	1	node_45 1 ==> 0 Arboroharamiya
188	1.000	1	node_47 0 --> 1 node_42
189	1.000	1	node_47 0 --> 1 node_42
190	1.000	1	node_47 0 --> 2 node_42
		1	node_45 0 ==> 1 node_44
191	0.667	1	node_47 1 --> 2 node_42
		1	node_47 1 ==> 0 Castorocauda
		1	node_45 1 ==> 0 Arboroharamiya
192	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 ==> 1 node_45
193	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Castorocauda
194	0.500	1	node_47 0 --> 1 node_42
		1	node_44 0 ==> 1 Sinobaatar
195	1.000	1	node_47 0 --> 1 node_42
196	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
197	0.667	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 --> 2 node_42
		1	node_45 1 ==> 2 node_44
198	1.000	1	node_47 0 --> 1 node_42
199	0.500	1	node_47 0 ==> 1 Castorocauda
		1	node_45 0 ==> 1 node_44
200	1.000	1	node_47 0 --> 1 node_45
201	1.000	1	node_47 0 --> 1 node_42
202	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
203	1.000	1	node_47 0 --> 2 node_45
204	1.000	1	node_47 0 --> 1 node_45
205	1.000	1	node_47 0 --> 1 node_45
206	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
207	1.000	1	node_47 0 --> 3 node_42
208	1.000	1	node_47 0 --> 2 node_42
209	1.000	1	node_47 0 --> 1 node_45
210	1.000	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 2 node_45
211	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
212	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
213	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
214	1.000	1	node_47 0 --> 1 node_45
215	1.000	1	node_47 1 --> 0 node_45
216	1.000	1	node_47 0 --> 1 node_45

217	1.000	1	node_47 0 --> 1 node_45
218	1.000	1	node_47 0 --> 2 node_42
		1	node_47 0 --> 1 node_45
219	1.000	1	node_45 0 ==> 1 node_44
220	1.000	1	node_47 0 --> 1 node_45
221	0.667	1	node_47 0 --> 2 node_42
		1	node_47 0 ==> 1 Castorocauda
		1	node_45 0 --> 2 node_44
222	1.000	1	node_47 1 ==> 0 Megazostrodon
223	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 ==> 1 node_45
224	1.000	1	node_47 0 ==> 1 Hadrocodium
225	0.333	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
		1	node_47 1 ==> 0 Hadrocodium
226	0.333	1	node_47 1 ==> 2 Hadrocodium
		1	node_47 1 --> 2 node_42
		1	node_47 1 ==> 2 Haldanodon
227	0.333	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_45
228	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Hadrocodium
229	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 --> 0 node_45
230	1.000	1	node_47 0 --> 1 node_42
232	0.500	1	node_47 3 ==> 2 Sinoconodon
		1	node_47 3 ==> 2 Adelobasileus
235	0.250	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
		1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Haldanodon
236	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
		1	node_47 1 ==> 2 Hadrocodium
		1	node_47 1 ==> 0 Haldanodon
237	0.500	1	node_47 2 ==> 1 Sinoconodon
		1	node_47 2 ==> 3 Hadrocodium
		1	node_47 2 ==> 1 Dinnetherium
		1	node_47 2 --> 3 node_46
238	1.000	1	node_47 1 ==> 0 Sinoconodon
239	1.000	1	node_47 0 --> 1 node_42
240	1.000	1	node_47 0 --> 1 node_42
241	1.000	1	node_47 0 --> 1 node_42
244	1.000	1	node_47 1 ==> 2 Haldanodon
246	1.000	1	node_47 0 --> 2 node_46
248	0.333	1	node_47 0 --> 1 Sinoconodon
		1	node_47 0 --> 1 Adelobasileus
		1	node_47 0 --> 1 Morganucodon
249	1.000	1	node_47 0 ==> 1 Hadrocodium
251	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
252	1.000	1	node_47 1 ==> 0 Sinoconodon
253	0.500	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 1 node_46
254	0.400	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
		1	node_47 1 --> 2 Hadrocodium
		1	node_47 1 --> 2 Dinnetherium
		1	node_47 1 --> 2 node_42
255	0.333	1	node_47 0 ==> 1 Adelobasileus
		1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 --> 1 node_42
256	1.000	1	node_47 1 ==> 0 Adelobasileus
257	0.250	1	node_47 0 --> 1 Dinnetherium
		1	node_47 0 --> 1 Megazostrodon
		1	node_47 0 --> 1 Morganucodon
		1	node_47 0 --> 1 node_42

258	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
259	0.500	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 --> 1 node_42
260	1.000	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 --> 2 node_42
261	1.000	1	node_47 1 ==> 2 Dinnetherium
262	1.000	1	node_47 0 --> 1 node_46
263	1.000	1	node_47 1 ==> 0 Adelobasileus
264	1.000	1	node_47 0 --> 1 node_42
266	1.000	1	node_47 0 --> 1 node_42
267	1.000	1	node_47 0 ==> 1 Sinoconodon
270	1.000	1	node_47 2 ==> 1 Sinoconodon
272	1.000	1	node_47 0 --> 1 node_45
273	1.000	1	node_47 0 ==> 1 Castorocauda
274	1.000	1	node_47 0 ==> 1 Castorocauda
275	1.000	1	node_47 0 --> 1 node_42
276	1.000	1	node_47 1 --> 2 node_45
277	0.333	1	node_47 1 --> 2 Hadrocodium
		1	node_47 1 --> 2 Haldanodon
		1	node_47 1 --> 2 node_46
278	0.500	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 Haldanodon
279	1.000	1	node_47 1 ==> 2 Hadrocodium
281	1.000	1	node_47 0 ==> 3 Hadrocodium
282	1.000	1	node_47 1 --> 0 node_46
284	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Hadrocodium
286	1.000	1	node_47 0 ==> 1 node_46
287	1.000	1	node_47 0 ==> 1 Hadrocodium
289	0.333	1	node_47 0 ==> 2 Hadrocodium
		1	node_47 0 --> 2 node_42
		1	node_47 0 --> 1 node_46
291	1.000	1	node_47 0 --> 1 node_46
292	1.000	1	node_47 0 --> 1 node_42
		1	node_47 0 --> 2 node_46
294	0.333	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 Haldanodon
		1	node_47 0 --> 1 node_46
295	1.000	1	node_47 0 --> 2 node_42
296	1.000	1	node_47 0 ==> 1 Hadrocodium
297	1.000	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 2 Hadrocodium
298	1.000	1	node_47 1 ==> 0 Sinoconodon
299	0.500	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 Haldanodon
300	1.000	1	node_47 1 ==> 0 Hadrocodium
301	1.000	1	node_47 1 ==> 0 Sinoconodon
302	1.000	1	node_47 1 ==> 0 Haldanodon
303	1.000	1	node_47 0 ==> 2 Hadrocodium
		1	node_47 0 --> 1 node_46
304	1.000	1	node_47 0 ==> 1 Hadrocodium
305	0.500	1	node_47 1 --> 2 Hadrocodium
		1	node_47 1 --> 2 Haldanodon
306	1.000	1	node_47 1 ==> 0 Sinoconodon
307	1.000	1	node_47 2 ==> 3 Hadrocodium

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_47 --> Sinoconodon	17	1	0.300	1 ==> 0
	34	1	0.500	1 ==> 2
	58	1	0.167	2 ==> 0
	59	1	0.250	1 ==> 0
	79	1	0.167	1 ==> 0
	80	1	0.333	1 ==> 0
	81	1	0.429	0 ==> 1

	99	1	1.000 2 ==> 1
	104	1	0.250 1 ==> 0
	114	1	0.200 0 ==> 1
	127	1	0.571 1 ==> 0
	133	1	0.375 0 --> 3
	134	1	0.333 0 ==> 3
	135	1	0.400 0 --> 1
	136	1	0.667 0 ==> 1
	137	1	0.400 0 ==> 2
	138	1	0.500 0 ==> 2
	139	1	1.000 0 ==> 2
	142	1	1.000 1 ==> 0
	143	1	0.500 1 ==> 0
	146	1	0.500 0 ==> 1
	157	1	1.000 0 ==> 1
	159	1	1.000 1 ==> 0
	160	1	1.000 1 ==> 0
	163	1	1.000 1 ==> 0
	193	1	0.500 1 ==> 0
	197	1	0.667 1 ==> 0
	225	1	0.333 1 ==> 0
	228	1	0.500 1 ==> 0
	229	1	0.500 1 ==> 0
	232	1	0.500 3 ==> 2
	235	1	0.250 1 ==> 0
	236	1	0.500 1 ==> 0
	237	1	0.500 2 ==> 1
	238	1	1.000 1 ==> 0
	248	1	0.333 0 --> 1
	251	1	0.500 1 ==> 0
	252	1	1.000 1 ==> 0
	254	1	0.400 1 ==> 0
	258	1	0.500 1 ==> 0
	260	1	1.000 1 ==> 0
	267	1	1.000 0 ==> 1
	270	1	1.000 2 ==> 1
	284	1	0.500 1 ==> 0
	297	1	1.000 1 ==> 0
	298	1	1.000 1 ==> 0
	301	1	1.000 1 ==> 0
	306	1	1.000 1 ==> 0
node_47 --> Adelobasileus	225	1	0.333 1 ==> 0
	232	1	0.500 3 ==> 2
	235	1	0.250 1 ==> 0
	236	1	0.500 1 ==> 0
	248	1	0.333 0 --> 1
	251	1	0.500 1 ==> 0
	254	1	0.400 1 ==> 0
	255	1	0.333 0 ==> 1
	256	1	1.000 1 ==> 0
	258	1	0.500 1 ==> 0
	263	1	1.000 1 ==> 0
node_47 --> Hadrocodium	7	1	0.222 0 ==> 1
	30	1	0.250 1 ==> 0
	68	1	0.200 1 ==> 0
	75	1	0.200 0 ==> 1
	81	1	0.429 0 ==> 3
	84	1	1.000 0 ==> 1
	87	1	0.800 0 ==> 4
	88	1	0.333 0 ==> 2
	89	1	0.200 0 ==> 1
	90	1	0.500 0 ==> 1
	100	1	0.333 1 ==> 0
	104	1	0.250 1 ==> 2
	112	1	1.000 0 ==> 1
	114	1	0.200 0 ==> 1
	115	1	0.333 1 ==> 0
	127	1	0.571 1 ==> 0

	130	1	1.000	0 ==> 1
	133	1	0.375	0 --> 3
	134	1	0.333	0 ==> 3
	135	1	0.400	0 ==> 4
	136	1	0.667	0 ==> 4
	137	1	0.400	0 ==> 4
	138	1	0.500	0 ==> 3
	224	1	1.000	0 ==> 1
	225	1	0.333	1 ==> 0
	226	1	0.333	1 ==> 2
	227	1	0.333	0 ==> 1
	228	1	0.500	1 ==> 0
	236	1	0.500	1 ==> 2
	237	1	0.500	2 ==> 3
	249	1	1.000	0 ==> 1
	254	1	0.400	1 --> 2
	255	1	0.333	0 ==> 1
	259	1	0.500	0 ==> 1
	277	1	0.333	1 --> 2
	278	1	0.500	0 ==> 1
	279	1	1.000	1 ==> 2
	281	1	1.000	0 ==> 3
	284	1	0.500	1 ==> 0
	287	1	1.000	0 ==> 1
	289	1	0.333	0 ==> 2
	294	1	0.333	0 ==> 1
	296	1	1.000	0 ==> 1
	297	1	1.000	1 ==> 2
	299	1	0.500	0 ==> 1
	300	1	1.000	1 ==> 0
	303	1	1.000	0 ==> 2
	304	1	1.000	0 ==> 1
	305	1	0.500	1 --> 2
	307	1	1.000	2 ==> 3
node_47 --> Dinnetherium	7	1	0.222	0 ==> 1
	10	1	0.300	0 ==> 1
	17	1	0.300	1 ==> 3
	21	1	0.200	0 ==> 1
	22	1	0.200	0 ==> 1
	24	1	0.143	0 ==> 1
	25	1	n/a	2 ==> 1
	31	1	0.500	1 ==> 0
	33	1	0.333	0 ==> 1
	40	1	0.200	1 ==> 0
	46	1	0.750	0 ==> 1
	53	1	0.250	1 ==> 0
	57	1	0.333	0 ==> 1
	61	1	0.143	0 ==> 1
	62	1	0.200	0 ==> 1
	100	1	0.333	1 ==> 2
	102	1	0.429	1 ==> 2
	115	1	0.333	1 ==> 0
	122	1	0.333	0 ==> 1
	127	1	0.571	1 ==> 0
	135	1	0.400	0 --> 1
	237	1	0.500	2 ==> 1
	254	1	0.400	1 --> 2
	257	1	0.250	0 --> 1
	261	1	1.000	1 ==> 2
node_47 --> Megazostrodon	6	1	0.286	1 ==> 0
	8	1	0.200	1 --> 3
	17	1	0.300	1 ==> 23
	20	1	n/a	2 ==> 1
	24	1	0.143	0 ==> 1
	25	2	n/a	2 ==> 0
	42	1	0.375	2 ==> 3
	50	2	n/a	0 ==> 2
	52	2	n/a	0 ==> 2

	55	1	0.429	1 ==> 0
	57	1	0.333	0 ==> 1
	61	1	0.143	0 ==> 1
	62	1	0.200	0 ==> 1
	80	1	0.333	1 ==> 0
	100	1	0.333	1 ==> 0
	102	1	0.429	1 ==> 2
	115	1	0.333	1 ==> 0
	125	1	0.600	0 ==> 1
	135	1	0.400	0 --> 1
	136	1	0.667	0 ==> 1
	143	1	0.500	1 ==> 0
	146	1	0.500	0 ==> 2
	222	1	1.000	1 ==> 0
	235	1	0.250	1 ==> 0
	257	1	0.250	0 --> 1
node_47 --> Morganucodon	8	1	0.200	1 --> 2
	20	1	n/a	2 ==> 1
	25	1	n/a	2 ==> 01
	55	1	0.429	1 ==> 0
	62	1	0.200	0 ==> 1
	80	1	0.333	1 ==> 0
	81	1	0.429	0 ==> 1
	104	1	0.250	1 ==> 0
	135	1	0.400	0 ==> 23
	158	1	1.000	0 ==> 1
	248	1	0.333	0 --> 1
	257	1	0.250	0 --> 1
node_47 --> Brachyzostrodon	3	1	n/a	0 ==> 5
	5	1	n/a	0 ==> 1
	6	1	0.286	1 ==> 0
	8	1	0.200	1 --> 3
	13	1	n/a	0 ==> 1
	14	1	n/a	0 ==> 1
	17	1	0.300	1 ==> 0
	25	1	n/a	2 ==> 01
	33	1	0.333	0 ==> 1
	40	1	0.200	1 ==> 0
	57	1	0.333	0 ==> 1
	61	1	0.143	0 ==> 1
	73	1	0.400	0 ==> 1
node_47 --> Paceyodon	3	1	n/a	0 ==> 5
	5	1	n/a	0 ==> 1
	8	1	0.200	1 --> 3
	11	1	0.333	0 ==> 1
	12	1	0.600	0 ==> 1
	13	1	n/a	0 ==> 4
	14	1	n/a	0 ==> 1
node_47 --> Paikasigudodon	37	1	n/a	0 ==> 1
	38	1	n/a	0 ==> 1
	39	1	n/a	0 ==> 2
	41	1	0.500	1 ==> 0
	42	1	0.375	2 ==> 3
	43	1	0.667	0 ==> 2
	54	1	0.750	0 ==> 1
	55	1	0.429	1 ==> 0
	56	1	0.333	0 ==> 2
	58	1	0.167	2 ==> 1
	60	2	n/a	2 ==> 0
	61	1	0.143	0 ==> 1
	66	1	0.500	1 ==> 0
node_47 --> Rosierodon	7	1	0.222	0 ==> 1
	8	1	0.200	1 ==> 0
	10	1	0.300	0 ==> 1
	17	1	0.300	1 ==> 23
	18	1	0.429	1 ==> 0
node_47 --> Erythrotherium	20	1	n/a	2 ==> 1
	25	2	n/a	2 ==> 0

	34	1	0.500	1	==>	3
	57	1	0.333	0	==>	1
	58	1	0.167	2	==>	1
	61	1	0.143	0	==>	1
	62	1	0.200	0	==>	1
node_47 --> Helvetiodon	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	50	1	n/a	0	==>	1
	55	1	0.429	1	==>	2
	56	1	0.333	0	==>	2
	57	1	0.333	0	==>	2
	58	1	0.167	2	==>	1
	60	1	n/a	2	==>	1
	64	1	0.167	0	==>	1
node_47 --> Hallautherium	6	1	0.286	1	==>	0
	8	1	0.200	1	-->	2
	17	1	0.300	1	==>	0
	20	2	n/a	2	==>	0
node_47 --> Bridetherium	7	1	0.222	0	==>	1
	8	1	0.200	1	-->	2
	10	1	0.300	0	==>	1
	17	1	0.300	1	==>	3
	24	1	0.143	0	==>	1
	42	1	0.375	2	==>	1
	61	1	0.143	0	==>	1
	62	1	0.200	0	==>	1
	67	1	0.500	1	==>	0
	73	1	0.400	0	==>	1
node_47 --> Purbeckodon	8	1	0.200	1	-->	2
	10	1	0.300	0	==>	13
	18	1	0.429	1	==>	0
	19	1	0.200	1	==>	0
	43	1	0.667	0	==>	2
	46	1	0.750	0	==>	1
	47	1	0.500	0	==>	1
	55	1	0.429	1	==>	2
	56	1	0.333	0	==>	2
	57	1	0.333	0	==>	12
	60	1	n/a	2	==>	01
node_47 --> Fluctuodon	4	1	n/a	0	==>	1
	5	1	n/a	0	==>	1
	7	1	0.222	0	==>	1
	8	1	0.200	1	-->	3
	10	1	0.300	0	==>	2
	12	1	0.600	0	==>	2
	14	1	n/a	0	==>	4
	15	1	n/a	0	==>	1
	16	2	n/a	0	==>	5
	22	1	0.200	0	==>	1
	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	41	1	0.500	1	==>	2
	47	1	0.500	0	==>	1
	50	1	n/a	0	==>	12
	52	1	n/a	0	==>	1
	56	1	0.333	0	==>	1
	58	1	0.167	2	==>	1
node_47 --> Kuehneotherium	3	1	n/a	0	==>	1
	4	1	n/a	0	==>	1234
	7	1	0.222	0	==>	2
	8	1	0.200	1	-->	3
	14	1	n/a	0	==>	45
	16	1	n/a	0	==>	4567
	18	1	0.429	1	==>	2
	22	1	0.200	0	==>	1
	31	1	0.500	1	==>	0
	37	1	n/a	0	==>	12
	38	1	n/a	0	==>	1

	39	1	n/a	0	==> 1
	41	1	0.500	1	==> 2
	46	1	0.750	0	==> 3
	49	1	n/a	0	==> 4
	50	4	n/a	0	==> 7
	52	2	n/a	0	==> 2
	56	1	0.333	0	==> 1
	58	1	0.167	2	==> 1
	68	1	0.200	1	==> 0
	100	1	0.333	1	==> 0
	104	1	0.250	1	==> 0
node_47 --> node_42	3	1	n/a	0	==> 1
	4	2	n/a	0	==> 2
	8	1	0.200	1	==> 0
	14	1	n/a	0	==> 4
	16	4	n/a	0	==> 7
	18	1	0.429	1	--> 0
	23	1	1.000	1	--> 2
	31	1	0.500	1	==> 0
	33	1	0.333	0	--> 1
	37	2	n/a	0	==> 2
	39	1	n/a	0	--> 1
	40	1	0.200	1	==> 0
	41	1	0.500	1	--> 0
	50	4	n/a	0	==> 7
	58	1	0.167	2	--> 1
	64	1	0.167	0	--> 1
	69	1	1.000	0	--> 1
	77	1	0.500	0	--> 1
	82	1	1.000	0	--> 1
	88	1	0.333	0	--> 2
	94	1	0.400	0	--> 2
	95	1	0.500	0	--> 1
	101	1	0.500	0	--> 1
	103	1	1.000	0	--> 1
	104	1	0.250	1	--> 0
	106	1	1.000	0	--> 1
	113	1	0.500	0	--> 1
	114	1	0.200	0	--> 1
	117	1	0.500	0	--> 1
	120	1	0.500	0	--> 1
	125	1	0.600	0	--> 1
	133	1	0.375	0	--> 1
	144	1	0.500	0	--> 1
	145	1	0.400	1	--> 0
	146	1	0.500	0	--> 2
	148	1	0.500	0	--> 1
	149	1	0.500	0	--> 1
	155	1	0.500	0	--> 1
	156	1	1.000	0	--> 1
	161	1	0.500	0	--> 1
	162	1	0.500	0	--> 1
	163	1	1.000	1	--> 2
	164	1	0.500	0	--> 1
	165	1	1.000	0	--> 1
	166	1	1.000	0	--> 1
	167	1	0.500	0	--> 1
	168	1	0.333	0	--> 1
	169	1	0.500	0	--> 1
	170	1	0.500	0	--> 1
	171	1	0.500	0	--> 1
	172	1	0.500	0	--> 1
	173	1	1.000	0	--> 1
	174	1	0.500	0	--> 1
	175	1	1.000	0	--> 1
	176	1	1.000	0	--> 1
	177	1	1.000	0	--> 1
	178	1	0.333	0	--> 1

	179	1	0.500	1	-->	0
	180	1	1.000	0	-->	1
	181	1	1.000	0	-->	1
	182	1	0.500	0	-->	1
	183	1	0.500	0	-->	1
	188	1	1.000	0	-->	1
	189	1	1.000	0	-->	1
	190	1	1.000	0	-->	2
	191	1	0.667	1	-->	2
	192	1	0.500	0	-->	1
	194	1	0.500	0	-->	1
	195	1	1.000	0	-->	1
	196	1	0.500	0	-->	1
	197	1	0.667	1	-->	2
	198	1	1.000	0	-->	1
	201	1	1.000	0	-->	1
	202	1	0.500	0	-->	1
	206	1	0.500	0	-->	1
	207	1	1.000	0	-->	3
	208	1	1.000	0	-->	2
	210	1	1.000	0	-->	1
	211	1	0.500	0	-->	1
	212	1	0.500	0	-->	1
	213	1	0.500	0	-->	1
	218	1	1.000	0	-->	2
	221	1	0.667	0	-->	2
	223	1	0.500	0	-->	1
	226	1	0.333	1	-->	2
	227	1	0.333	0	-->	1
	230	1	1.000	0	-->	1
	239	1	1.000	0	-->	1
	240	1	1.000	0	-->	1
	241	1	1.000	0	-->	1
	253	1	0.500	0	-->	1
	254	1	0.400	1	-->	2
	255	1	0.333	0	-->	1
	257	1	0.250	0	-->	1
	259	1	0.500	0	-->	1
	260	1	1.000	1	-->	2
	264	1	1.000	0	-->	1
	266	1	1.000	0	-->	1
	275	1	1.000	0	-->	1
	289	1	0.333	0	-->	2
	292	1	1.000	0	-->	1
	295	1	1.000	0	-->	2
node_42 --> Woutersia	6	1	0.286	1	==>	2
	7	1	0.222	0	==>	2
	9	1	0.667	0	==>	2
	17	1	0.300	1	==>	2
	20	1	n/a	2	==>	1
	24	1	0.143	0	==>	1
	41	1	0.500	0	-->	3
	42	1	0.375	2	==>	3
	48	1	1.000	0	==>	1
	54	1	0.750	0	==>	2
node_42 --> node_41	3	1	n/a	1	==>	2
	14	3	n/a	4	==>	7
	30	1	0.250	1	==>	0
	65	1	0.667	0	-->	1
	68	1	0.200	1	-->	0
node_41 --> node_38	17	1	0.300	1	-->	0
	33	1	0.333	1	-->	0
	38	2	n/a	0	-->	2
	39	1	n/a	1	-->	0
	42	1	0.375	2	-->	0
	52	3	n/a	0	-->	3
	53	1	0.250	1	==>	0
	64	1	0.167	1	-->	0

	75	1	0.200	0	==>	1
	76	1	0.333	0	==>	1
	79	1	0.167	1	-->	0
	87	1	0.800	0	==>	2
	92	1	0.200	0	==>	1
	93	1	0.500	0	-->	1
	98	1	1.000	0	-->	1
	102	1	0.429	1	-->	3
	107	1	1.000	0	==>	1
node_38 --> node_37	20	1	n/a	2	-->	3
	40	1	0.200	0	==>	1
	58	1	0.167	1	-->	0
	78	1	0.400	0	-->	1
	81	1	0.429	0	-->	1
	104	1	0.250	0	-->	2
	114	1	0.200	1	-->	0
	115	1	0.333	1	-->	0
	117	1	0.500	1	-->	0
	141	1	0.333	0	-->	3
node_37 --> Delsatia	21	1	0.200	0	==>	1
	30	1	0.250	0	==>	1
	52	1	n/a	3	==>	7
	60	1	n/a	2	==>	3
node_37 --> node_36	4	2	n/a	2	==>	4
	5	1	n/a	0	-->	1
	10	1	0.300	0	-->	1
	15	2	n/a	0	==>	2
	19	1	0.200	1	==>	0
	37	2	n/a	2	-->	4
	38	1	n/a	2	-->	3
	43	1	0.667	0	-->	3
	46	1	0.750	0	-->	4
	49	3	n/a	0	-->	3
	50	1	n/a	7	-->	8
	51	3	n/a	0	-->	6
	73	1	0.400	0	-->	2
node_36 --> Amphitherium	79	1	0.167	0	-->	1
	89	1	0.200	0	==>	1
	101	1	0.500	1	-->	0
	110	1	1.000	0	==>	1
	111	1	1.000	0	==>	1
	113	1	0.500	1	-->	0
node_36 --> Dryolestes	6	1	0.286	1	==>	0
	10	1	0.300	1	-->	3
	12	1	0.600	0	==>	3
	13	1	n/a	0	==>	12
	14	2	n/a	7	==>	45
	15	1	n/a	2	==>	3
	134	1	0.333	0	==>	1
node_38 --> Zhangheotherium	33	1	0.333	0	-->	2
	59	1	0.250	1	==>	0
	74	1	0.667	1	==>	2
	93	1	0.500	1	-->	2
	97	1	0.333	0	==>	1
	102	1	0.429	3	-->	4
	105	1	1.000	0	==>	1
	125	1	0.600	1	-->	2
	127	1	0.571	1	==>	2
	128	1	0.500	0	==>	1
	131	1	0.667	0	==>	1
	133	1	0.375	1	-->	2
	134	1	0.333	0	==>	2
	139	1	1.000	0	==>	1
node_41 --> node_40	10	1	0.300	0	==>	1
	21	1	0.200	0	==>	1
	22	1	0.200	0	==>	1
	49	2	n/a	0	-->	5
	58	1	0.167	1	-->	2

	83	1	1.000	0	-->	1
	89	1	0.200	0	==>	1
	95	1	0.500	1	-->	2
	101	1	0.500	1	-->	3
	116	1	0.667	0	-->	1
	118	1	1.000	0	==>	1
	119	1	0.333	0	==>	1
	135	1	0.400	0	-->	3
node_40 --> Shuotherium	94	1	0.400	2	-->	0
node_40 --> node_39	5	1	n/a	0	==>	1
	6	1	0.286	1	==>	2
	13	1	n/a	0	==>	1
	15	2	n/a	0	==>	2
	18	1	0.429	0	-->	2
	20	1	n/a	2	-->	3
	78	1	0.400	0	-->	2
	81	1	0.429	0	-->	2
	104	1	0.250	0	-->	2
node_39 --> Ambondro	3	1	n/a	2	==>	1
	14	2	n/a	7	==>	5
	115	1	0.333	1	==>	2
	117	1	0.500	1	==>	3
node_39 --> Asfaltomylos	4	1	n/a	2	==>	3
	8	1	0.200	0	==>	3
	13	1	n/a	1	==>	2
	18	1	0.429	2	-->	3
	19	1	0.200	1	==>	0
	116	1	0.667	1	-->	0
node_47 --> Castorocauda	4	3	n/a	0	==>	3
	5	1	n/a	0	==>	1
	10	1	0.300	0	==>	1
	11	1	0.333	0	==>	1
	12	1	0.600	0	==>	1
	15	3	n/a	0	==>	3
	16	3	n/a	0	==>	6
	20	1	n/a	2	==>	1
	22	1	0.200	0	==>	1
	24	1	0.143	0	==>	1
	25	1	n/a	2	==>	3
	79	1	0.167	1	==>	0
	81	1	0.429	0	==>	1
	85	1	0.500	0	==>	1
	88	1	0.333	0	==>	1
	122	1	0.333	0	==>	1
	132	1	0.500	0	==>	1
	145	1	0.400	1	==>	0
	152	1	1.000	1	==>	0
	153	1	1.000	1	==>	0
	154	1	1.000	1	==>	0
	178	1	0.333	0	==>	1
	179	1	0.500	1	==>	2
	185	1	1.000	1	==>	0
	186	1	1.000	2	==>	1
	191	1	0.667	1	==>	0
	193	1	0.500	1	==>	0
	199	1	0.500	0	==>	1
	221	1	0.667	0	==>	1
	273	1	1.000	0	==>	1
	274	1	1.000	0	==>	1
node_47 --> Haldanodon	4	2	n/a	0	==>	23
	5	1	n/a	0	==>	1
	8	1	0.200	1	==>	0
	9	1	0.667	0	==>	2
	10	1	0.300	0	==>	1
	11	1	0.333	0	==>	1
	12	1	0.600	0	==>	2
	14	1	n/a	0	==>	12
	15	1	n/a	0	==>	12

	16	4	n/a	0	==>	7
	24	1	0.143	0	==>	1
	25	1	n/a	2	==>	3
	30	1	0.250	1	==>	0
	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	41	1	0.500	1	==>	2
	50	2	n/a	0	==>	2
	53	1	0.250	1	==>	0
	64	1	0.167	0	==>	1
	65	1	0.667	0	-->	1
	68	1	0.200	1	==>	0
	79	1	0.167	1	==>	0
	81	1	0.429	0	==>	1
	85	1	0.500	0	==>	1
	88	1	0.333	0	==>	1
	92	1	0.200	0	==>	1
	120	1	0.500	0	==>	1
	122	1	0.333	0	==>	1
	132	1	0.500	0	==>	1
	133	1	0.375	0	==>	2
	134	1	0.333	0	==>	2
	145	1	0.400	1	==>	0
	168	1	0.333	0	-->	1
	178	1	0.333	0	==>	1
	179	1	0.500	1	==>	2
	226	1	0.333	1	==>	2
	235	1	0.250	1	==>	0
	236	1	0.500	1	==>	0
	244	1	1.000	1	==>	2
	277	1	0.333	1	-->	2
	278	1	0.500	0	==>	1
	294	1	0.333	0	==>	1
	299	1	0.500	0	==>	1
	302	1	1.000	1	==>	0
	305	1	0.500	1	-->	2
node_47 --> node_45	1	1	0.667	0	==>	1
	6	1	0.286	1	-->	2
	8	1	0.200	1	-->	2
	13	1	n/a	0	-->	1
	17	1	0.300	1	==>	0
	19	1	0.200	1	==>	0
	21	1	0.200	0	==>	1
	32	1	0.500	1	==>	0
	34	1	0.500	1	==>	3
	35	1	n/a	0	==>	1
	36	1	1.000	0	==>	1
	42	1	0.375	2	==>	0
	54	1	0.750	0	-->	3
	55	1	0.429	1	==>	0
	56	1	0.333	0	-->	2
	61	1	0.143	0	==>	1
	64	1	0.167	0	-->	1
	65	1	0.667	0	==>	2
	67	1	0.500	1	==>	0
	73	1	0.400	0	==>	2
	74	1	0.667	1	==>	3
	75	1	0.200	0	-->	1
	76	1	0.333	0	==>	1
	78	1	0.400	0	-->	2
	86	1	0.333	0	-->	1
	87	1	0.800	0	-->	3
	88	1	0.333	0	==>	2
	89	1	0.200	0	==>	1
	90	1	0.500	0	==>	1
	92	1	0.200	0	-->	1
	96	1	0.500	0	-->	2
	100	1	0.333	1	==>	2

	101	1	0.500	0 --> 2
	102	1	0.429	1 --> 4
	107	1	1.000	0 ==> 2
	116	1	0.667	0 ==> 2
	123	1	1.000	0 ==> 2
	125	1	0.600	0 --> 2
	127	1	0.571	1 --> 4
	128	1	0.500	0 ==> 1
	131	1	0.667	0 --> 1
	134	1	0.333	0 ==> 1
	135	1	0.400	0 ==> 4
	136	1	0.667	0 ==> 4
	137	1	0.400	0 --> 2
	138	1	0.500	0 --> 1
	141	1	0.333	0 --> 3
	144	1	0.500	0 ==> 1
	145	1	0.400	1 ==> 2
	147	1	1.000	0 --> 1
	148	1	0.500	0 --> 1
	149	1	0.500	0 --> 1
	150	1	1.000	0 --> 1
	151	1	1.000	0 --> 1
	155	1	0.500	0 --> 1
	161	1	0.500	0 --> 1
	162	1	0.500	0 --> 1
	164	1	0.500	0 --> 1
	167	1	0.500	0 --> 1
	168	1	0.333	0 --> 1
	169	1	0.500	0 --> 1
	170	1	0.500	0 --> 1
	171	1	0.500	0 --> 1
	172	1	0.500	0 --> 1
	174	1	0.500	0 --> 1
	177	1	1.000	0 --> 2
	179	1	0.500	1 --> 0
	182	1	0.500	0 --> 1
	183	1	0.500	0 --> 1
	192	1	0.500	0 ==> 1
	196	1	0.500	0 --> 1
	200	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	203	1	1.000	0 --> 2
	204	1	1.000	0 --> 1
	205	1	1.000	0 --> 1
	206	1	0.500	0 --> 1
	209	1	1.000	0 --> 1
	210	1	1.000	0 --> 2
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	214	1	1.000	0 --> 1
	215	1	1.000	1 --> 0
	216	1	1.000	0 --> 1
	217	1	1.000	0 --> 1
	218	1	1.000	0 --> 1
	220	1	1.000	0 --> 1
	223	1	0.500	0 ==> 1
	227	1	0.333	0 --> 1
	229	1	0.500	1 --> 0
	272	1	1.000	0 --> 1
	276	1	1.000	1 --> 2
node_45 --> node_43	7	1	0.222	0 --> 2
	34	1	0.500	3 --> 2
	53	1	0.250	1 ==> 0
	59	1	0.250	1 ==> 0
	64	1	0.167	1 --> 0
	68	1	0.200	1 --> 0
	74	1	0.667	3 --> 2

	75	1	0.200	1 --> 0
	78	1	0.400	2 --> 0
	86	1	0.333	1 --> 0
	87	1	0.800	3 --> 0
	92	1	0.200	1 --> 0
	96	1	0.500	2 --> 0
	101	1	0.500	2 --> 0
	102	1	0.429	4 --> 1
	109	1	1.000	0 --> 1
	127	1	0.571	4 --> 1
	133	1	0.375	0 --> 1
	135	1	0.400	4 --> 3
	136	1	0.667	4 --> 3
node_43 --> Thomasia	42	1	0.375	0 ==> 1
	70	1	0.500	0 ==> 1
node_43 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	n/a	1 ==> 2
	15	1	n/a	0 ==> 1
	16	1	n/a	0 ==> 4
	35	1	n/a	1 ==> 2
node_45 --> Theroteinus	35	1	n/a	1 ==> 2
	38	1	n/a	0 ==> 12
	39	1	n/a	0 ==> 2
	40	1	0.200	1 ==> 0
	55	1	0.429	0 ==> 3
	70	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
node_45 --> Arboroharamiya	2	1	0.333	0 ==> 1
	4	1	n/a	0 ==> 1
	8	1	0.200	2 ==> 0
	9	1	0.667	0 ==> 1
	21	1	0.200	1 ==> 0
	27	1	1.000	1 ==> 0
	28	1	1.000	1 ==> 2
	29	1	0.500	0 ==> 1
	58	1	0.167	2 ==> 0
	66	1	0.500	1 ==> 0
	93	1	0.500	0 ==> 1
	94	1	0.400	0 ==> 1
	125	1	0.600	2 --> 3
	128	1	0.500	1 --> 2
	133	1	0.375	0 --> 3
	134	1	0.333	1 ==> 3
	137	1	0.400	2 --> 4
	187	1	1.000	1 ==> 0
	191	1	0.667	1 ==> 0
node_45 --> node_44	1	1	0.667	1 ==> 2
	13	1	n/a	1 --> 0
	45	1	1.000	0 ==> 1
	54	1	0.750	3 --> 0
	58	1	0.167	2 --> 0
	72	1	1.000	0 ==> 1
	73	1	0.400	2 ==> 1
	77	1	0.500	0 ==> 1
	94	1	0.400	0 ==> 2
	95	1	0.500	0 ==> 1
	97	1	0.333	0 ==> 1
	119	1	0.333	0 --> 1
	124	1	1.000	0 ==> 1
	129	1	1.000	0 --> 1
	131	1	0.667	1 --> 2
	138	1	0.500	1 --> 2
	140	1	1.000	0 ==> 1
	184	1	1.000	0 ==> 1
	190	1	1.000	0 ==> 1
	197	1	0.667	1 ==> 2
	199	1	0.500	0 ==> 1
	219	1	1.000	0 ==> 1

	221	1	0.667	0 --> 2
node_44 --> Rugosodon	2	1	0.333	0 ==> 1
	29	1	0.500	0 ==> 1
	32	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	126	1	1.000	0 ==> 1
node_44 --> Sinobaatar	28	1	1.000	1 ==> 0
	34	1	0.500	3 ==> 0
	35	1	n/a	1 ==> 2
	42	1	0.375	0 ==> 1
	128	1	0.500	1 --> 2
	134	1	0.333	1 ==> 2
	138	1	0.500	2 --> 3
	141	1	0.333	3 --> 0
	194	1	0.500	0 ==> 1
node_47 --> node_46	7	1	0.222	0 --> 1
	18	1	0.429	1 ==> 0
	31	1	0.500	1 --> 2
	33	1	0.333	0 ==> 1
	58	1	0.167	2 --> 1
	59	1	0.250	1 --> 0
	75	1	0.200	0 ==> 1
	76	1	0.333	0 ==> 1
	78	1	0.400	0 ==> 1
	86	1	0.333	0 ==> 1
	87	1	0.800	0 ==> 1
	88	1	0.333	0 ==> 2
	89	1	0.200	0 --> 1
	92	1	0.200	0 ==> 1
	93	1	0.500	0 ==> 2
	94	1	0.400	0 ==> 2
	95	1	0.500	0 --> 1
	97	1	0.333	0 --> 1
	101	1	0.500	0 ==> 1
	102	1	0.429	1 ==> 4
	117	1	0.500	0 ==> 1
	127	1	0.571	1 --> 3
	133	1	0.375	0 --> 1
	134	1	0.333	0 ==> 2
	135	1	0.400	0 --> 1
	136	1	0.667	0 --> 2
	137	1	0.400	0 --> 2
	146	1	0.500	0 --> 1
	237	1	0.500	2 --> 3
	246	1	1.000	0 --> 2
	253	1	0.500	0 --> 1
	262	1	1.000	0 --> 1
	277	1	0.333	1 --> 2
	282	1	1.000	1 --> 0
	286	1	1.000	0 ==> 1
	289	1	0.333	0 --> 1
	291	1	1.000	0 --> 1
	292	1	1.000	0 --> 2
	294	1	0.333	0 --> 1
	303	1	1.000	0 --> 1
node_46 --> Amphilestes	1	1	0.667	0 ==> 1
	24	1	0.143	0 ==> 1
	104	1	0.250	1 ==> 2
	106	1	1.000	0 ==> 2
	114	1	0.200	0 ==> 1
	145	1	0.400	1 ==> 0
node_46 --> Priacodon	19	1	0.200	1 ==> 0
	34	1	0.500	1 ==> 2
	79	1	0.167	1 ==> 0
	100	1	0.333	1 ==> 2
	115	1	0.333	1 ==> 0
	119	1	0.333	0 ==> 1
	121	1	1.000	0 ==> 1

135	1	0.400	1 --> 2
138	1	0.500	0 ==> 1

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	n/a	6	13	n/a	n/a	n/a	n/a
4	n/a	13	25	n/a	n/a	n/a	n/a
5	n/a	7	8	n/a	n/a	n/a	n/a
6	2	7	8	0.286	0.714	0.167	0.048
7	2	9	9	0.222	0.778	0.000	0.000
8	3	15	18	0.200	0.800	0.200	0.040
9	2	3	3	0.667	0.333	0.000	0.000
10	3	10	11	0.300	0.700	0.125	0.038
11	1	3	3	0.333	0.667	0.000	0.000
12	3	5	5	0.600	0.400	0.000	0.000
13	n/a	8	10	n/a	n/a	n/a	n/a
14	n/a	13	29	n/a	n/a	n/a	n/a
15	n/a	11	15	n/a	n/a	n/a	n/a
16	n/a	15	39	n/a	n/a	n/a	n/a
17	3	10	15	0.300	0.700	0.417	0.125
18	3	7	8	0.429	0.571	0.200	0.086
19	1	5	11	0.200	0.800	0.600	0.120
20	n/a	9	9	n/a	n/a	n/a	n/a
21	1	5	9	0.200	0.800	0.500	0.100
22	1	5	6	0.200	0.800	0.200	0.040
23	1	1	1	1.000	0.000	0/0	0/0
24	1	7	7	0.143	0.857	0.000	0.000
25	n/a	9	9	n/a	n/a	n/a	n/a
26	n/a	0	0	0/0	0/0	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0
28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	4	8	0.250	0.750	0.571	0.143
31	2	4	5	0.500	0.500	0.333	0.167
32	1	2	4	0.500	0.500	0.667	0.333
33	2	6	7	0.333	0.667	0.200	0.067
34	3	6	7	0.500	0.500	0.250	0.125
35	n/a	4	9	n/a	n/a	n/a	n/a
36	1	1	3	1.000	0.000	1.000	1.000
37	n/a	9	14	n/a	n/a	n/a	n/a
38	n/a	6	8	n/a	n/a	n/a	n/a
39	n/a	8	8	n/a	n/a	n/a	n/a
40	1	5	6	0.200	0.800	0.200	0.040
41	3	6	6	0.500	0.500	0.000	0.000
42	3	8	12	0.375	0.625	0.444	0.167
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	n/a	6	6	n/a	n/a	n/a	n/a
50	n/a	15	22	n/a	n/a	n/a	n/a
51	n/a	3	3	n/a	n/a	n/a	n/a
52	n/a	9	12	n/a	n/a	n/a	n/a
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	7	8	0.429	0.571	0.200	0.086
56	2	6	7	0.333	0.667	0.200	0.067
57	2	6	6	0.333	0.667	0.000	0.000
58	2	12	13	0.167	0.833	0.091	0.015
59	1	4	5	0.250	0.750	0.250	0.062
60	n/a	5	5	n/a	n/a	n/a	n/a

61	1	7	10	0.143	0.857	0.333	0.048
62	1	5	5	0.200	0.800	0.000	0.000
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	6	6	0.167	0.833	0.000	0.000
65	2	3	4	0.667	0.333	0.500	0.333
66	1	2	2	0.500	0.500	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	5	7	0.200	0.800	0.333	0.067
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	2	3	5	0.667	0.333	0.667	0.444
75	1	5	9	0.200	0.800	0.500	0.100
76	1	3	9	0.333	0.667	0.750	0.250
77	1	2	4	0.500	0.500	0.667	0.333
78	2	5	8	0.400	0.600	0.500	0.200
79	1	6	6	0.167	0.833	0.000	0.000
80	1	3	3	0.333	0.667	0.000	0.000
81	3	7	8	0.429	0.571	0.200	0.086
82	1	1	3	1.000	0.000	1.000	1.000
83	1	1	1	1.000	0.000	0/0	0/0
84	1	1	1	1.000	0.000	0/0	0/0
85	1	2	2	0.500	0.500	0.000	0.000
86	1	3	4	0.333	0.667	0.333	0.111
87	4	5	9	0.800	0.200	0.800	0.640
88	2	6	7	0.333	0.667	0.200	0.067
89	1	5	8	0.200	0.800	0.429	0.086
90	1	2	4	0.500	0.500	0.667	0.333
91	n/a	0	0	0/0	0/0	0/0	0/0
92	1	5	9	0.200	0.800	0.500	0.100
93	2	4	6	0.500	0.500	0.500	0.250
94	2	5	9	0.400	0.600	0.571	0.229
95	2	4	7	0.500	0.500	0.600	0.300
96	1	2	3	0.500	0.500	0.500	0.250
97	1	3	4	0.333	0.667	0.333	0.111
98	1	1	2	1.000	0.000	1.000	1.000
99	1	1	1	1.000	0.000	0/0	0/0
100	2	6	8	0.333	0.667	0.333	0.111
101	3	6	8	0.500	0.500	0.400	0.200
102	3	7	10	0.429	0.571	0.429	0.184
103	1	1	4	1.000	0.000	1.000	1.000
104	2	8	10	0.250	0.750	0.250	0.062
105	1	1	1	1.000	0.000	0/0	0/0
106	2	2	6	1.000	0.000	1.000	1.000
107	2	2	7	1.000	0.000	1.000	1.000
108	n/a	0	0	0/0	0/0	0/0	0/0
109	1	1	1	1.000	0.000	0/0	0/0
110	1	1	1	1.000	0.000	0/0	0/0
111	1	1	1	1.000	0.000	0/0	0/0
112	1	1	1	1.000	0.000	0/0	0/0
113	1	2	2	0.500	0.500	0.000	0.000
114	1	5	7	0.200	0.800	0.333	0.067
115	2	6	7	0.333	0.667	0.200	0.067
116	2	3	6	0.667	0.333	0.750	0.500
117	2	4	6	0.500	0.500	0.500	0.250
118	1	1	3	1.000	0.000	1.000	1.000
119	1	3	4	0.333	0.667	0.333	0.111
120	1	2	6	0.500	0.500	0.800	0.400
121	1	1	1	1.000	0.000	0/0	0/0
122	1	3	3	0.333	0.667	0.000	0.000
123	1	1	3	1.000	0.000	1.000	1.000
124	1	1	2	1.000	0.000	1.000	1.000
125	3	5	6	0.600	0.400	0.333	0.200
126	1	1	1	1.000	0.000	0/0	0/0
127	4	7	8	0.571	0.429	0.250	0.143
128	2	4	5	0.500	0.500	0.333	0.167

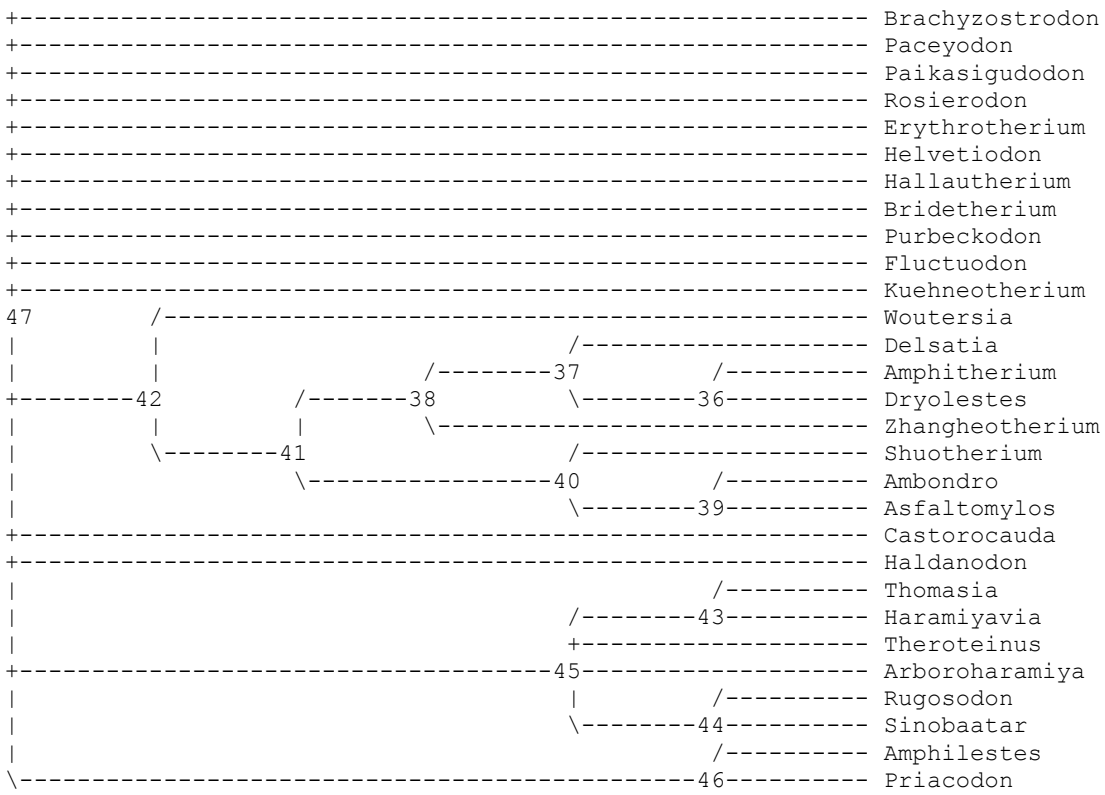
129	1	1	1	1.000	0.000	0/0	0/0
130	1	1	1	1.000	0.000	0/0	0/0
131	2	3	4	0.667	0.333	0.500	0.333
132	1	2	2	0.500	0.500	0.000	0.000
133	3	8	8	0.375	0.625	0.000	0.000
134	3	9	11	0.333	0.667	0.250	0.083
135	4	10	12	0.400	0.600	0.250	0.100
136	4	6	8	0.667	0.333	0.500	0.333
137	2	5	6	0.400	0.600	0.250	0.100
138	3	6	6	0.500	0.500	0.000	0.000
139	2	2	2	1.000	0.000	0/0	0/0
140	1	1	2	1.000	0.000	1.000	1.000
141	1	3	3	0.333	0.667	0.000	0.000
142	1	1	1	1.000	0.000	0/0	0/0
143	1	2	2	0.500	0.500	0.000	0.000
144	1	2	6	0.500	0.500	0.800	0.400
145	2	5	9	0.400	0.600	0.571	0.229
146	2	4	5	0.500	0.500	0.333	0.167
147	1	1	1	1.000	0.000	0/0	0/0
148	1	2	3	0.500	0.500	0.500	0.250
149	1	2	2	0.500	0.500	0.000	0.000
150	1	1	2	1.000	0.000	1.000	1.000
151	1	1	2	1.000	0.000	1.000	1.000
152	1	1	1	1.000	0.000	0/0	0/0
153	1	1	1	1.000	0.000	0/0	0/0
154	1	1	1	1.000	0.000	0/0	0/0
155	1	2	2	0.500	0.500	0.000	0.000
156	1	1	1	1.000	0.000	0/0	0/0
157	1	1	1	1.000	0.000	0/0	0/0
158	1	1	1	1.000	0.000	0/0	0/0
159	1	1	1	1.000	0.000	0/0	0/0
160	1	1	1	1.000	0.000	0/0	0/0
161	1	2	3	0.500	0.500	0.500	0.250
162	1	2	2	0.500	0.500	0.000	0.000
163	2	2	2	1.000	0.000	0/0	0/0
164	1	2	3	0.500	0.500	0.500	0.250
165	1	1	1	1.000	0.000	0/0	0/0
166	1	1	1	1.000	0.000	0/0	0/0
167	1	2	3	0.500	0.500	0.500	0.250
168	1	3	3	0.333	0.667	0.000	0.000
169	1	2	3	0.500	0.500	0.500	0.250
170	1	2	3	0.500	0.500	0.500	0.250
171	1	2	3	0.500	0.500	0.500	0.250
172	1	2	3	0.500	0.500	0.500	0.250
173	1	1	1	1.000	0.000	0/0	0/0
174	1	2	3	0.500	0.500	0.500	0.250
175	1	1	1	1.000	0.000	0/0	0/0
176	1	1	1	1.000	0.000	0/0	0/0
177	2	2	2	1.000	0.000	0/0	0/0
178	1	3	3	0.333	0.667	0.000	0.000
179	2	4	5	0.500	0.500	0.333	0.167
180	1	1	1	1.000	0.000	0/0	0/0
181	1	1	1	1.000	0.000	0/0	0/0
182	1	2	3	0.500	0.500	0.500	0.250
183	1	2	3	0.500	0.500	0.500	0.250
184	1	1	2	1.000	0.000	1.000	1.000
185	1	1	1	1.000	0.000	0/0	0/0
186	1	1	1	1.000	0.000	0/0	0/0
187	1	1	1	1.000	0.000	0/0	0/0
188	1	1	1	1.000	0.000	0/0	0/0
189	1	1	1	1.000	0.000	0/0	0/0
190	2	2	3	1.000	0.000	1.000	1.000
191	2	3	3	0.667	0.333	0.000	0.000
192	1	2	4	0.500	0.500	0.667	0.333
193	1	2	2	0.500	0.500	0.000	0.000
194	1	2	2	0.500	0.500	0.000	0.000
195	1	1	1	1.000	0.000	0/0	0/0
196	1	2	3	0.500	0.500	0.500	0.250

197	2	3	4	0.667	0.333	0.500	0.333
198	1	1	1	1.000	0.000	0/0	0/0
199	1	2	3	0.500	0.500	0.500	0.250
200	1	1	2	1.000	0.000	1.000	1.000
201	1	1	1	1.000	0.000	0/0	0/0
202	1	2	3	0.500	0.500	0.500	0.250
203	1	1	2	1.000	0.000	1.000	1.000
204	1	1	1	1.000	0.000	0/0	0/0
205	1	1	2	1.000	0.000	1.000	1.000
206	1	2	3	0.500	0.500	0.500	0.250
207	1	1	1	1.000	0.000	0/0	0/0
208	1	1	1	1.000	0.000	0/0	0/0
209	1	1	2	1.000	0.000	1.000	1.000
210	2	2	3	1.000	0.000	1.000	1.000
211	1	2	3	0.500	0.500	0.500	0.250
212	1	2	2	0.500	0.500	0.000	0.000
213	1	2	2	0.500	0.500	0.000	0.000
214	1	1	2	1.000	0.000	1.000	1.000
215	1	1	2	1.000	0.000	1.000	1.000
216	1	1	2	1.000	0.000	1.000	1.000
217	1	1	2	1.000	0.000	1.000	1.000
218	2	2	3	1.000	0.000	1.000	1.000
219	1	1	2	1.000	0.000	1.000	1.000
220	1	1	2	1.000	0.000	1.000	1.000
221	2	3	3	0.667	0.333	0.000	0.000
222	1	1	1	1.000	0.000	0/0	0/0
223	1	2	5	0.500	0.500	0.750	0.375
224	1	1	1	1.000	0.000	0/0	0/0
225	1	3	3	0.333	0.667	0.000	0.000
226	1	3	3	0.333	0.667	0.000	0.000
227	1	3	3	0.333	0.667	0.000	0.000
228	1	2	2	0.500	0.500	0.000	0.000
229	1	2	2	0.500	0.500	0.000	0.000
230	1	1	1	1.000	0.000	0/0	0/0
231	n/a	0	0	0/0	0/0	0/0	0/0
232	1	2	2	0.500	0.500	0.000	0.000
233	n/a	0	0	0/0	0/0	0/0	0/0
234	n/a	0	0	0/0	0/0	0/0	0/0
235	1	4	4	0.250	0.750	0.000	0.000
236	2	4	4	0.500	0.500	0.000	0.000
237	2	4	4	0.500	0.500	0.000	0.000
238	1	1	1	1.000	0.000	0/0	0/0
239	1	1	1	1.000	0.000	0/0	0/0
240	1	1	1	1.000	0.000	0/0	0/0
241	1	1	1	1.000	0.000	0/0	0/0
242	n/a	0	0	0/0	0/0	0/0	0/0
243	n/a	0	0	0/0	0/0	0/0	0/0
244	1	1	1	1.000	0.000	0/0	0/0
245	n/a	0	0	0/0	0/0	0/0	0/0
246	1	1	1	1.000	0.000	0/0	0/0
247	n/a	0	0	0/0	0/0	0/0	0/0
248	1	3	3	0.333	0.667	0.000	0.000
249	1	1	1	1.000	0.000	0/0	0/0
250	n/a	0	0	0/0	0/0	0/0	0/0
251	1	2	2	0.500	0.500	0.000	0.000
252	1	1	1	1.000	0.000	0/0	0/0
253	1	2	2	0.500	0.500	0.000	0.000
254	2	5	5	0.400	0.600	0.000	0.000
255	1	3	3	0.333	0.667	0.000	0.000
256	1	1	1	1.000	0.000	0/0	0/0
257	1	4	4	0.250	0.750	0.000	0.000
258	1	2	2	0.500	0.500	0.000	0.000
259	1	2	2	0.500	0.500	0.000	0.000
260	2	2	2	1.000	0.000	0/0	0/0
261	1	1	1	1.000	0.000	0/0	0/0
262	1	1	1	1.000	0.000	0/0	0/0
263	1	1	1	1.000	0.000	0/0	0/0
264	1	1	1	1.000	0.000	0/0	0/0

265	n/a	0	0	0/0	0/0	0/0	0/0
266	1	1	1	1.000	0.000	0/0	0/0
267	1	1	1	1.000	0.000	0/0	0/0
268	n/a	0	0	0/0	0/0	0/0	0/0
269	n/a	0	0	0/0	0/0	0/0	0/0
270	1	1	1	1.000	0.000	0/0	0/0
271	n/a	0	0	0/0	0/0	0/0	0/0
272	1	1	1	1.000	0.000	0/0	0/0
273	1	1	1	1.000	0.000	0/0	0/0
274	1	1	1	1.000	0.000	0/0	0/0
275	1	1	1	1.000	0.000	0/0	0/0
276	1	1	1	1.000	0.000	0/0	0/0
277	1	3	3	0.333	0.667	0.000	0.000
278	1	2	2	0.500	0.500	0.000	0.000
279	1	1	1	1.000	0.000	0/0	0/0
280	n/a	0	0	0/0	0/0	0/0	0/0
281	1	1	1	1.000	0.000	0/0	0/0
282	1	1	1	1.000	0.000	0/0	0/0
283	n/a	0	0	0/0	0/0	0/0	0/0
284	1	2	2	0.500	0.500	0.000	0.000
285	n/a	0	0	0/0	0/0	0/0	0/0
286	1	1	2	1.000	0.000	1.000	1.000
287	1	1	1	1.000	0.000	0/0	0/0
288	n/a	0	0	0/0	0/0	0/0	0/0
289	1	3	3	0.333	0.667	0.000	0.000
290	n/a	0	0	0/0	0/0	0/0	0/0
291	1	1	1	1.000	0.000	0/0	0/0
292	2	2	2	1.000	0.000	0/0	0/0
293	n/a	0	0	0/0	0/0	0/0	0/0
294	1	3	3	0.333	0.667	0.000	0.000
295	1	1	1	1.000	0.000	0/0	0/0
296	1	1	1	1.000	0.000	0/0	0/0
297	2	2	2	1.000	0.000	0/0	0/0
298	1	1	1	1.000	0.000	0/0	0/0
299	1	2	2	0.500	0.500	0.000	0.000
300	1	1	1	1.000	0.000	0/0	0/0
301	1	1	1	1.000	0.000	0/0	0/0
302	1	1	1	1.000	0.000	0/0	0/0
303	2	2	2	1.000	0.000	0/0	0/0
304	1	1	1	1.000	0.000	0/0	0/0
305	1	2	2	0.500	0.500	0.000	0.000
306	1	1	1	1.000	0.000	0/0	0/0
307	1	1	1	1.000	0.000	0/0	0/0

----Optimisation des caractères sur l'arbre de consensus en DELTRAN

```
Tree length = 871
Consistency index (CI) = 0.506
Homoplasy index (HI) = 0.494
CI excluding uninformative characters = 0.432
HI excluding uninformative characters = 0.568
Retention index (RI) = 0.370
Rescaled consistency index (RC) = 0.187
   (above indices do not include stepmatrix characters)
f value = 2013
f-ratio = 0.1268
   (multistate unordered and stepmatrix characters
    excluded from f-value calculations)

/------------------------------------------------------------ Sinoconodon
+------------------------------------------------------------ Adelobasileus
+------------------------------------------------------------ Hadrocodium
+------------------------------------------------------------ Dinnetherium
+------------------------------------------------------------ Megazostrodon
+------------------------------------------------------------ Morganucodon
```



Possible character-state assignments to internal nodes

```
                        1111111111222222222233333333334444444444555555555
Node                123456789012345678901234567890123456789012345678901234567890123456789
-------------------------------------------------------------------------------------------
36                  00230100000007270?020010211100010100220100010000 07?30010001
                       41    1      1  3  2             43  1 3  4  38
                             3                             3
37                  00220100000007070?120010211100010100220100010000 7030010001
                                    1  3  2                 1
                                                            3
38                  00220100000007070?120010211100 01?100200000010000 7000100?1
                                    1     2              11 12         1
                                                         2  3          2
                                                                       3
39                  00221200010017271?121110211100010100200002010000 7001010011
                                       3  2         1     1 1       4        2
                                                               3       5
40                  00220100010007071?121110211100010100200002010000 7001010011
                                       2         1     1 1       4        2
                                                               3       5
41                  00220100000007071?120010211100010100200002010000 7001010011
                                       2         1     1 1                2
                                                               3
42                  00110100000004071?120010211101010100100002010000 7001010011
                       2               2         1   2 1 1                2
                                                               3
43                  10000102000010000102101021110110021100011001000000000000020
                         22                       3                      3 2
44                  20000102000000000102101021110110031100011001100000001002001
                         2                                                    2
45                  10000102000000000102101021110110031100011001000000001000021
                         2      1                                        3 2
46                  00000101000000001012001021110111110000011201000000001010 01?
                          12                      2                          2
                           3
47                  00000101000000001112001021110111010000011201000000001010021
                           2
```

```
                        3

Possible character-state assignments to internal nodes (continued)

                                                         1111111111111111111
                 66666666667777777777888888888899999999990000000000111111111
Node             01234567890123456789012345678901234567890123456789012345678
----------------------------------------------------------------------------
36               200100110?0000111?1?111000022000112100121031201110000?00000
                      1       2                           1
37               200100110?0000111?0?1010000220001?2100?21011001110000??0000
                      1            1  1                   13 2          1 1
                                                           4
38               200100110?0000111?0?1010000220001?2100?21011001110000??1000
                      1                                   13 2            1
                                                           4
39               2001?011??0000100101101?00002100000?0002101100101000 0?11011
                      1            2  2            2      1  2           1
                                                          3
40               2001?011??0000100101101?00002100000?00021011001010000?11011
                      1                            2      1  2           1
                                                          3
41               2001?011??0000100?0110100000200000 0?00021011001010000??1000
                      1                            2      1  2            1
                                                          3
42               2001?0111?0000100?0110?000000000000?0002101??00010000??1000
                      1                      2     2      1    1          1
                                                          3
43               21010210?000022?1001100000?02110?000?002201010021?000001200
                               3   2        3             24
44               2101?210100011311121100000?32110102121022240100210000001200
45               2101?210100023?1001100000?02110?000?00220101002100000 01200
                                   2        3             24
46               200100111000000111011100000112?0012200?021140100010000001010
                      1                             1
47               200100111000000100001100000000000000000021010100010000001000
                      1

Possible character-state assignments to internal nodes (continued)

                 11111111111111111111111111111111111111111111111111111111111
                 12222222222333333333344444444445555555555666666666677777777
Node             90123456789012345678901234567890123456789012345678901234567
----------------------------------------------------------------------------
36               01000000100000?0000000?111020??00111??0011??1?????????????0
                       1                                     2             1
                       2
37               01000000100000?0000000?111020??00111??0011??1?????????????0
                       1                                     2             1
                       2
38               01000000100000?000000000111020??00111??0011??1?????????????0
                       1                                     2             1
                       2
39               11000000100000?0000000011?000??00111??0011??1?????????????0
                       1         1         12                2             1
                       2         3
40               11000000100000?0000000011?000??00111??0011??1?????????????0
                       1         1         12                2             1
                       2         3
41               01000000100000?0000000011?000??00111??0011??1?????????????0
                       1         1         12                2             1
                       2         3
42               0?000000100000?0000000011?000??00111??0011??1?????????????0
                       1         1         12                2             1
                       2         3
43               000020001100?00133??00?11120?????111100011?11?00??????0?000
                       2 42    1 44                                        2
                       3       3
```

```
44               ?000212041?02001442?01?11120?1?1111110001111110011111101000
                          2                                                2
45               000020001100?00144??00?11120?????111100011?11?00??????0?000
                       2 42    1                                           2
                       3       3
46               000000001000000200000001101000?00111?000110?10000?000000000
                         3     1 122        1
                               3 2
47               000000001000000000000001101000?00111?000110?10000?000000000
                               1 1
                               3
```

Possible character-state assignments to internal nodes (continued)

```
                 11111111111111111111112222222222222222222222222222222222222
                 77888888888899999999990000000000111111111122222222223333333
Node             89012345678901234567890123456789012345678901234567890123456
----------------------------------------------------------------------------
36               ?0????0121??01?1???1?00??0?0???00???010000001101??11?231111
                  1          22     2            1       2  2
37               ?0????0121??01?1???1?00??0?0???00???010000001101??11?231111
                  1          22     2            1       2  2
38               ?0????0121??01?1???1?00??0?0???00???010000001101??11?231111
                  1          22     2            1       2  2
39               ?0????0121??01?1???1?00??0?0???00???01000001?01??11?231111
                  1          22     2            1       2  2
40               ?0????0121??01?1???1?00??0?0???00???01000001?01??11?231111
                  1          22     2            1       2  2
41               ?0????0121??01?1???1?00??0?0???00???01000001?01??11?231111
                  1          22     2            1       2  2
42               ?0????0121??01?1???1?00??0?0???00???01000001?01??11?231111
                  1          22     2            1       2  2
43               0000??0121000111 00?100?0?????00?0???????00?011011?1?0231111
                  1                              2       1  2
44               00001111210011110012011012111001211110111112110 11?1?0231111
45               0000??0121000111 00?100?0?????00?0???????00?011011?1?0231111
                  1                              2       1  2
46               01000001210001010001000000?0000000??0100000010011011 0231111
                                                            2
47               01000001210001010001000000?0000000??0100000010011011 0231111
                                                            2
```

Possible character-state assignments to internal nodes (continued)

```
                 22222222222222222222222222222222222222222222222222222222222
                 33344444444445555555555666666666677777777778888888888999999
Node             78901234567890123456789012345678901234567890123456789012345
----------------------------------------------------------------------------
36               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                  2     2                            2  1
37               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                  2     2                            2  1
38               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                  2     2                            2  1
39               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                  2     2                            2  1
40               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                  2     2                            2  1
41               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                  2     2                            2  1
42               21???111101?0011?1?1?1?1101?1?02121000?1?011011110020100 20?
                                  2     2                            2  1
43               21000111101?00110101?10110101002121?000??011011110020100200
                                  2
44               21000111101?00110101?10110101002121?000??011011110020100200
                                  2
45               21000111101?00110101?10110101002121?000??011011110020100200
                                  2
```

```
46               210001111?1?0011?101?1011?10100212100001?0110?111102?1?02?0
                 3                2                                       2
47               2100011101?00110101?1011010100212100001?011011110020100200
                                  2
```

Possible character-state assignments to internal nodes (continued)

```
                 222233333333
                 999900000000
Node             678901234567
-----------------------------
36               011011100?12
37               011011100?12
38               011011100?12
39               011011100?12
40               011011100?12
41               011011100?12
42               011011100?12
43               011011100?12
44               011011100?12
45               011011100?12
46               011011100?12
                        1
47               011011100?12
```

Reconstructed states for internal nodes

```
                          11111111112222222222333333333344444444445555555555
Node             12345678901234567890123456789012345678901234567890123456789
----------------------------------------------------------------------------
36               00230100000007271102001021110001010022011001000007030010001
37               00220100000007071112001021110001010022011001000007030010001
38               00220100000007071112001021110001010020001201000007000010021
39               00221200010017271112111021110001010020001201000007001010021
40               00220100010007071112111021110001010020001201000007001010021
41               00220100000007071112001021110001010020001201000007001010021
42               00110100000004071112001021110101010010001201000007001010021
43               10000102000010000102101021110110031100011001000000000000020
44               20000102000000000102101021110110031100011001100000001002021
45               10000102000000000102101021110110031100011001000000001000021
46               00000101000000000101200102111011111000001120100000000101002 1
47               00000101000000000111200102111011101000001120100000000101002 1
```

Reconstructed states for internal nodes (continued)

```
                                                         1111111111111111111
                 6666666666777777777788888888889999999999000000000011111111
Node             0123456789012345678901234567890123456789012345678901234567 8
----------------------------------------------------------------------------
36               2001001100000011101111100002200011210012103120111000000000 0
37               2001001100000011100110100002200010210002101100111000000100 0
38               2001001100000011100110100002200010210002101100111000000100 0
39               2001001110000010010110100000210000000002101100101000001101 1
40               2001001110000010010110100000210000000002101100101000001101 1
41               2001001110000010000110100000200000000002101100101000000100 0
42               2001001110000010000110000000000000000002101010001000000100 0
43               2101021010000230100110000000211000000002201010021000000120 0
44               2101021010001131112110000003211010212102224010021000000120 0
45               2101021010000230100110000000211000000002201010021000000120 0
46               2001001110000011101110000011200012200002114010001000000101 0
47               2001001110000010000110000000000000000002101010001000000100 0
```

Reconstructed states for internal nodes (continued)

```
                 111111111111111111111111111111111111111111111111111111111111
                 122222222223333333333444444444455555555556666666666777777777
Node             901234567890123456789012345678901234567890123456789012345678 67
----------------------------------------------------------------------------
```

```
36                0100000010000000000000011102000001110000110010000000000000
37                0100000010000000000000011102000001110000110010000000000000
38                0100000010000000000000011102000001110000110010000000000000
39                1100000010000000000000011010000001110000110010000000000000
40                1100000010000000000000011010000001110000110010000000000000
41                0100000010000000000000011010000001110000110010000000000000
42                0000000010000000000000011010000001110000110010000000000000
43                0000200011000001440000011120000001111000110110000000000000
44                0000212041002001442001011120010111111000111111011111101000
45                0000200011000001440000011120000001111000110110000000000000
46                0000000010000002000000011010000001110000110010000000000000
47                0000000010000000000000011010000001110000110010000000000000

Reconstructed states for internal nodes (continued)

                  1111111111111111111112222222222222222222222222222222222222
                  7788888888889999999990000000000111111111122222222223333333
Node              8901234567890123456789012345678901234567890123456789012345
-------------------------------------------------------------------------------
36                0100000121000101000100000000000000000100000011011011023111 1
37                0100000121000101000100000000000000000100000011011011023111 1
38                0100000121000101000100000000000000000100000011011011023111 1
39                0100000121000101000100000000000000000100000010011011023111 1
40                0100000121000101000100000000000000000100000010011011023111 1
41                0100000121000101000100000000000000000100000010011011023111 1
42                0100000121000101000100000000000000000100000010011011023111 1
43                0100000121000111000100000000000000000100000011011011023111 1
44                0000111121001111001201101211100121111011111211011011023111 1
45                0100000121000111000100000000000000000100000011011011023111 1
46                0100000121000101000100000000000000000100000010011011023111 1
47                0100000121000101000100000000000000000100000010011011023111 1

Reconstructed states for internal nodes (continued)

                  2222222222222222222222222222222222222222222222222222222222
                  3334444444444555555555566666666667777777777888888888999999
Node              7890123456789012345678901234567890123456789012345678901234
-------------------------------------------------------------------------------
36                2100011110100011010101011010100212100001101101111002010020 0
37                2100011110100011010101011010100212100001101101111002010020 0
38                2100011110100011010101011010100212100001101101111002010020 0
39                2100011110100011010101011010100212100001101101111002010020 0
40                2100011110100011010101011010100212100001101101111002010020 0
41                2100011110100011010101011010100212100001101101111002010020 0
42                2100011110100011010101011010100212100001101101111002010020 0
43                2100011110100011010101011010100212100001101101111002010020 0
44                2100011110100011010101011010100212100001101101111002010020 0
45                2100011110100011010101011010100212100001101101111002010020 0
46                2100011110100011010101011010100212100001101101111002010020 0
47                2100011110100011010101011010100212100001101101111002010020 0

Reconstructed states for internal nodes (continued)

                  222233333333
                  999900000000
Node              678901234567
------------------------------
36                011011100112
37                011011100112
38                011011100112
39                011011100112
40                011011100112
41                011011100112
42                011011100112
43                011011100112
44                011011100112
45                011011100112
46                011011100112
```

47 011011100112

Character change lists:

Character	CI	Steps	Changes
1	0.667	1	node_47 0 ==> 1 node_45
		1	node_45 1 ==> 2 node_44
		1	node_46 0 ==> 1 Amphilestes
2	0.333	1	node_43 0 ==> 1 Haramiyavia
		1	node_45 0 ==> 1 Arboroharamiya
		1	node_44 0 ==> 1 Rugosodon
3	n/a	1	node_47 0 ==> 5 Brachyzostrodon
		1	node_47 0 ==> 5 Paceyodon
		1	node_47 0 ==> 1 Kuehneotherium
		1	node_47 0 ==> 1 node_42
		1	node_42 1 ==> 2 node_41
		1	node_39 2 ==> 1 Ambondro
4	n/a	1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 1234 Kuehneotherium
		1	node_47 0 ==> 1 node_42
		1	node_42 1 --> 2 node_41
		1	node_37 2 ==> 3 node_36
		1	node_36 3 --> 46 Dryolestes
		1	node_39 2 ==> 3 Asfaltomylos
		3	node_47 0 ==> 3 Castorocauda
		2	node_47 0 ==> 23 Haldanodon
		1	node_45 0 ==> 1 Arboroharamiya
5	n/a	1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Paceyodon
		1	node_47 0 ==> 1 Fluctuodon
		1	node_36 0 --> 1 Amphitherium
		1	node_40 0 ==> 1 node_39
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
6	0.286	1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_47 1 ==> 0 Hallautherium
		1	node_42 1 ==> 2 Woutersia
		1	node_36 1 ==> 0 Dryolestes
		1	node_40 1 ==> 2 node_39
		1	node_44 1 --> 2 Rugosodon
7	0.222	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Rosierodon
		1	node_47 0 ==> 1 Bridetherium
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 2 Kuehneotherium
		1	node_42 0 ==> 2 Woutersia
		1	node_43 0 --> 2 Thomasia
		1	node_46 0 --> 1 Priacodon
8	0.200	1	node_47 1 --> 3 Megazostrodon
		1	node_47 1 --> 2 Morganucodon
		1	node_47 1 --> 3 Brachyzostrodon
		1	node_47 1 --> 3 Paceyodon
		1	node_47 1 ==> 0 Rosierodon
		1	node_47 1 --> 2 Hallautherium
		1	node_47 1 --> 2 Bridetherium
		1	node_47 1 --> 2 Purbeckodon
		1	node_47 1 --> 3 Fluctuodon
		1	node_47 1 --> 3 Kuehneotherium
		1	node_47 1 ==> 0 node_42
		1	node_39 0 ==> 3 Asfaltomylos
		1	node_47 1 ==> 0 Haldanodon
		1	node_47 1 --> 2 node_45
		1	node_45 2 ==> 0 Arboroharamiya
9	0.667	1	node_42 0 ==> 2 Woutersia
		1	node_47 0 ==> 2 Haldanodon

		1	node_45 0 ==> 1 Arboroharamiya
10	0.300	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Rosierodon
		1	node_47 0 ==> 1 Bridetherium
		1	node_47 0 ==> 13 Purbeckodon
		1	node_47 0 ==> 2 Fluctuodon
		1	node_36 0 --> 1 Amphitherium
		1	node_36 0 --> 3 Dryolestes
		1	node_41 0 ==> 1 node_40
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
11	0.333	1	node_47 0 ==> 1 Paceyodon
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
12	0.600	1	node_47 0 ==> 1 Paceyodon
		1	node_47 0 ==> 2 Fluctuodon
		1	node_36 0 ==> 3 Dryolestes
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 2 Haldanodon
13	n/a	1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 4 Paceyodon
		1	node_36 0 ==> 12 Dryolestes
		1	node_40 0 ==> 1 node_39
		1	node_39 1 ==> 2 Asfaltomylos
		1	node_45 0 --> 1 node_43
		1	node_43 1 ==> 2 Haramiyavia
		1	node_45 0 --> 1 Theroteinus
14	n/a	1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Paceyodon
		1	node_47 0 ==> 4 Fluctuodon
		1	node_47 0 ==> 45 Kuehneotherium
		1	node_47 0 ==> 4 node_42
		3	node_42 4 ==> 7 node_41
		2	node_36 7 ==> 45 Dryolestes
		2	node_39 7 ==> 5 Ambondro
		1	node_47 0 ==> 12 Haldanodon
15	n/a	1	node_47 0 ==> 1 Fluctuodon
		2	node_37 0 ==> 2 node_36
		1	node_36 2 ==> 3 Dryolestes
		2	node_40 0 ==> 2 node_39
		3	node_47 0 ==> 3 Castorocauda
		1	node_47 0 ==> 12 Haldanodon
		1	node_43 0 ==> 1 Haramiyavia
16	n/a	2	node_47 0 ==> 5 Fluctuodon
		1	node_47 0 ==> 4567 Kuehneotherium
		4	node_47 0 ==> 7 node_42
		3	node_47 0 ==> 6 Castorocauda
		4	node_47 0 ==> 7 Haldanodon
		1	node_43 0 ==> 4 Haramiyavia
17	0.300	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 3 Dinnetherium
		1	node_47 1 ==> 23 Megazostrodon
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_47 1 ==> 23 Rosierodon
		1	node_47 1 ==> 0 Hallautherium
		1	node_47 1 ==> 3 Bridetherium
		1	node_42 1 ==> 2 Woutersia
		1	node_37 1 --> 0 Delsatia
		1	node_47 1 ==> 0 node_45
18	0.429	1	node_47 1 ==> 0 Rosierodon
		1	node_47 1 ==> 0 Purbeckodon
		1	node_47 1 ==> 2 Kuehneotherium
		1	node_40 1 --> 0 Shuotherium
		1	node_39 1 --> 2 Ambondro
		1	node_39 1 --> 3 Asfaltomylos
		1	node_47 1 ==> 0 node_46
19	0.200	1	node_47 1 ==> 0 Purbeckodon
		1	node_37 1 ==> 0 node_36

		1	node_39 1 ==> 0 Asfaltomylos
		1	node_47 1 ==> 0 node_45
		1	node_46 1 ==> 0 Priacodon
20	n/a	1	node_47 2 ==> 1 Megazostrodon
		1	node_47 2 ==> 1 Morganucodon
		1	node_47 2 ==> 1 Erythrotherium
		2	node_47 2 ==> 0 Hallautherium
		1	node_42 2 ==> 1 Woutersia
		1	node_37 2 --> 3 Delsatia
		1	node_39 2 --> 3 Ambondro
		1	node_47 2 ==> 1 Castorocauda
21	0.200	1	node_47 0 ==> 1 Dinnetherium
		1	node_37 0 ==> 1 Delsatia
		1	node_41 0 ==> 1 node_40
		1	node_47 0 ==> 1 node_45
		1	node_45 1 ==> 0 Arboroharamiya
22	0.200	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 1 Kuehneotherium
		1	node_41 0 ==> 1 node_40
		1	node_47 0 ==> 1 Castorocauda
23	1.000	1	node_40 1 --> 2 Shuotherium
24	0.143	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 1 Bridetherium
		1	node_42 0 ==> 1 Woutersia
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
		1	node_46 0 ==> 1 Amphilestes
25	n/a	1	node_47 2 ==> 1 Dinnetherium
		2	node_47 2 ==> 0 Megazostrodon
		1	node_47 2 ==> 01 Morganucodon
		1	node_47 2 ==> 01 Brachyzostrodon
		2	node_47 2 ==> 0 Erythrotherium
		1	node_47 2 ==> 3 Castorocauda
		1	node_47 2 ==> 3 Haldanodon
27	1.000	1	node_45 1 ==> 0 Arboroharamiya
28	1.000	1	node_45 1 ==> 2 Arboroharamiya
		1	node_44 1 ==> 0 Sinobaatar
29	0.500	1	node_45 0 ==> 1 Arboroharamiya
		1	node_44 0 ==> 1 Rugosodon
30	0.250	1	node_47 1 ==> 0 Hadrocodium
		1	node_42 1 ==> 0 node_41
		1	node_37 0 ==> 1 Delsatia
		1	node_47 1 ==> 0 Haldanodon
31	0.500	1	node_47 1 ==> 0 Dinnetherium
		1	node_47 1 ==> 0 Kuehneotherium
		1	node_47 1 ==> 0 node_42
		1	node_46 1 --> 2 Priacodon
32	0.500	1	node_47 1 ==> 0 node_45
		1	node_44 0 ==> 1 Rugosodon
33	0.333	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Brachyzostrodon
		1	node_42 0 --> 1 Woutersia
		1	node_38 0 --> 2 Zhangheotherium
		1	node_40 0 --> 1 Shuotherium
		1	node_47 0 ==> 1 node_46
34	0.500	1	node_47 1 ==> 2 Sinoconodon
		1	node_47 1 ==> 3 Erythrotherium
		1	node_47 1 ==> 3 node_45
		1	node_43 3 --> 2 Haramiyavia
		1	node_44 3 ==> 0 Sinobaatar
		1	node_46 1 ==> 2 Priacodon
35	n/a	1	node_47 0 ==> 1 node_45
		1	node_43 1 ==> 2 Haramiyavia
		1	node_45 1 ==> 2 Theroteinus
		1	node_44 1 ==> 2 Sinobaatar
36	1.000	1	node_47 0 ==> 1 node_45

37	n/a	1	node_47 0 ==> 1 Paikasigudodon
		1	node_47 0 ==> 1 Helvetiodon
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 12 Kuehneotherium
		1	node_47 0 ==> 1 node_42
		1	node_42 1 --> 2 node_41
		2	node_36 2 --> 46 Dryolestes
		1	node_47 0 ==> 1 Haldanodon
38	n/a	1	node_47 0 ==> 1 Paikasigudodon
		1	node_47 0 ==> 1 Kuehneotherium
		2	node_38 0 --> 2 node_37
		1	node_36 2 --> 3 Dryolestes
		1	node_45 0 ==> 12 Theroteinus
39	n/a	1	node_47 0 ==> 2 Paikasigudodon
		1	node_47 0 ==> 1 Helvetiodon
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 1 Kuehneotherium
		1	node_42 0 --> 1 Woutersia
		1	node_40 0 --> 1 Shuotherium
		1	node_47 0 ==> 1 Haldanodon
		1	node_45 0 ==> 2 Theroteinus
40	0.200	1	node_47 1 ==> 0 Dinnetherium
		1	node_47 1 ==> 0 Brachyzostrodon
		1	node_47 1 ==> 0 node_42
		1	node_38 0 ==> 1 node_37
		1	node_45 1 ==> 0 Theroteinus
41	0.500	1	node_47 1 ==> 0 Paikasigudodon
		1	node_47 1 ==> 2 Fluctuodon
		1	node_47 1 ==> 2 Kuehneotherium
		1	node_42 1 --> 3 Woutersia
		1	node_37 1 --> 0 Delsatia
		1	node_47 1 ==> 2 Haldanodon
42	0.375	1	node_47 2 ==> 3 Megazostrodon
		1	node_47 2 ==> 3 Paikasigudodon
		1	node_47 2 ==> 1 Bridetherium
		1	node_42 2 ==> 3 Woutersia
		1	node_38 2 --> 0 node_37
		1	node_47 2 ==> 0 node_45
		1	node_43 0 ==> 1 Thomasia
		1	node_44 0 ==> 1 Sinobaatar
43	0.667	1	node_47 0 ==> 2 Paikasigudodon
		1	node_47 0 ==> 2 Purbeckodon
		1	node_36 0 --> 3 Dryolestes
45	1.000	1	node_45 0 ==> 1 node_44
46	0.750	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Purbeckodon
		1	node_47 0 ==> 3 Kuehneotherium
		1	node_36 0 --> 4 Dryolestes
47	0.500	1	node_47 0 ==> 1 Purbeckodon
		1	node_47 0 ==> 1 Fluctuodon
48	1.000	1	node_42 0 ==> 1 Woutersia
49	n/a	1	node_47 0 ==> 4 Kuehneotherium
		3	node_36 0 --> 3 Dryolestes
		2	node_40 0 --> 5 Shuotherium
50	n/a	2	node_47 0 ==> 2 Megazostrodon
		1	node_47 0 ==> 1 Helvetiodon
		1	node_47 0 ==> 12 Fluctuodon
		4	node_47 0 ==> 7 Kuehneotherium
		4	node_47 0 ==> 7 node_42
		1	node_36 7 --> 89 Dryolestes
		2	node_47 0 ==> 2 Haldanodon
51	n/a	3	node_36 0 --> 6 Dryolestes
52	n/a	2	node_47 0 ==> 2 Megazostrodon
		1	node_47 0 ==> 1 Fluctuodon
		2	node_47 0 ==> 2 Kuehneotherium
		3	node_38 0 --> 3 node_37
		1	node_37 3 ==> 7 Delsatia
53	0.250	1	node_47 1 ==> 0 Dinnetherium

		1	node_41 1 ==> 0 node_38
		1	node_47 1 ==> 0 Haldanodon
		1	node_45 1 ==> 0 node_43
54	0.750	1	node_47 0 ==> 1 Paikasigudodon
		1	node_42 0 ==> 2 Woutersia
		1	node_45 0 --> 3 Theroteinus
		1	node_45 0 --> 3 Arboroharamiya
55	0.429	1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Morganucodon
		1	node_47 1 ==> 0 Paikasigudodon
		1	node_47 1 ==> 2 Helvetiodon
		1	node_47 1 ==> 2 Purbeckodon
		1	node_47 1 ==> 0 node_45
		1	node_45 0 ==> 3 Theroteinus
56	0.333	1	node_47 0 ==> 2 Paikasigudodon
		1	node_47 0 ==> 2 Helvetiodon
		1	node_47 0 ==> 2 Purbeckodon
		1	node_47 0 ==> 1 Fluctuodon
		1	node_47 0 ==> 1 Kuehneotherium
		1	node_45 0 --> 2 node_44
57	0.333	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Erythrotherium
		1	node_47 0 ==> 2 Helvetiodon
		1	node_47 0 ==> 12 Purbeckodon
58	0.167	1	node_47 2 ==> 0 Sinoconodon
		1	node_47 2 ==> 1 Paikasigudodon
		1	node_47 2 ==> 1 Erythrotherium
		1	node_47 2 ==> 1 Helvetiodon
		1	node_47 2 ==> 1 Fluctuodon
		1	node_47 2 ==> 1 Kuehneotherium
		1	node_42 2 --> 1 Woutersia
		1	node_38 2 --> 0 node_37
		1	node_38 2 --> 1 Zhangheotherium
		1	node_45 2 ==> 0 Arboroharamiya
		1	node_44 2 --> 0 Sinobaatar
		1	node_46 2 --> 1 Priacodon
59	0.250	1	node_47 1 ==> 0 Sinoconodon
		1	node_38 1 ==> 0 Zhangheotherium
		1	node_45 1 ==> 0 node_43
		1	node_46 1 --> 0 Priacodon
60	n/a	2	node_47 2 ==> 0 Paikasigudodon
		1	node_47 2 ==> 1 Helvetiodon
		1	node_47 2 ==> 01 Purbeckodon
		1	node_37 2 ==> 3 Delsatia
61	0.143	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Paikasigudodon
		1	node_47 0 ==> 1 Erythrotherium
		1	node_47 0 ==> 1 Bridetherium
		1	node_47 0 ==> 1 node_45
62	0.200	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 1 Morganucodon
		1	node_47 0 ==> 1 Erythrotherium
		1	node_47 0 ==> 1 Bridetherium
64	0.167	1	node_47 0 ==> 1 Helvetiodon
		1	node_42 0 --> 1 Woutersia
		1	node_40 0 --> 1 Shuotherium
		1	node_47 0 ==> 1 Haldanodon
		1	node_45 0 --> 1 Theroteinus
		1	node_45 0 --> 1 Arboroharamiya
65	0.667	1	node_40 0 --> 1 Shuotherium
		1	node_47 0 --> 1 Haldanodon
		1	node_47 0 ==> 2 node_45
66	0.500	1	node_47 1 ==> 0 Paikasigudodon

		1	node_45 1 ==> 0 Arboroharamiya
67	0.500	1	node_47 1 ==> 0 Bridetherium
		1	node_47 1 ==> 0 node_45
68	0.200	1	node_47 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 0 Kuehneotherium
		1	node_41 1 --> 0 node_38
		1	node_47 1 ==> 0 Haldanodon
		1	node_43 1 --> 0 Haramiyavia
69	1.000	1	node_42 0 --> 1 Woutersia
70	0.500	1	node_43 0 ==> 1 Thomasia
		1	node_45 0 ==> 1 Theroteinus
71	0.500	1	node_45 0 ==> 1 Theroteinus
		1	node_44 0 ==> 1 Rugosodon
72	1.000	1	node_45 0 ==> 1 node_44
73	0.400	1	node_47 0 ==> 1 Brachyzostrodon
		1	node_47 0 ==> 1 Bridetherium
		1	node_36 0 --> 2 Dryolestes
		1	node_47 0 ==> 2 node_45
		1	node_45 2 ==> 1 node_44
74	0.667	1	node_38 1 ==> 2 Zhangheotherium
		1	node_47 1 ==> 3 node_45
		1	node_43 3 --> 2 Haramiyavia
75	0.200	1	node_47 0 ==> 1 Hadrocodium
		1	node_41 0 ==> 1 node_38
		1	node_45 0 --> 1 Arboroharamiya
		1	node_45 0 --> 1 node_44
		1	node_47 0 ==> 1 node_46
76	0.333	1	node_41 0 ==> 1 node_38
		1	node_47 0 ==> 1 node_45
		1	node_47 0 ==> 1 node_46
77	0.500	1	node_41 0 --> 1 node_40
		1	node_45 0 ==> 1 node_44
78	0.400	1	node_37 0 --> 1 node_36
		1	node_39 0 --> 2 Asfaltomylos
		1	node_45 0 --> 2 Arboroharamiya
		1	node_45 0 --> 2 node_44
		1	node_47 0 ==> 1 node_46
79	0.167	1	node_47 1 ==> 0 Sinoconodon
		1	node_36 1 --> 0 Dryolestes
		1	node_38 1 --> 0 Zhangheotherium
		1	node_47 1 ==> 0 Castorocauda
		1	node_47 1 ==> 0 Haldanodon
		1	node_46 1 ==> 0 Priacodon
80	0.333	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Morganucodon
81	0.429	1	node_47 0 ==> 1 Sinoconodon
		1	node_47 0 ==> 3 Hadrocodium
		1	node_47 0 ==> 1 Morganucodon
		1	node_37 0 --> 1 node_36
		1	node_39 0 --> 2 Asfaltomylos
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
82	1.000	1	node_42 0 --> 1 node_41
83	1.000	1	node_39 0 --> 1 Asfaltomylos
84	1.000	1	node_47 0 ==> 1 Hadrocodium
85	0.500	1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
86	0.333	1	node_45 0 --> 1 Arboroharamiya
		1	node_44 0 --> 1 Sinobaatar
		1	node_47 0 ==> 1 node_46
87	0.800	1	node_47 0 ==> 4 Hadrocodium
		1	node_41 0 ==> 2 node_38
		1	node_45 0 --> 3 Arboroharamiya
		1	node_45 0 --> 3 node_44
		1	node_47 0 ==> 1 node_46
88	0.333	1	node_47 0 ==> 2 Hadrocodium
		1	node_42 0 --> 2 node_41

		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
		1	node_47 0 ==> 2 node_45
		1	node_47 0 ==> 2 node_46
89	0.200	1	node_47 0 ==> 1 Hadrocodium
		1	node_36 0 ==> 1 Amphitherium
		1	node_41 0 ==> 1 node_40
		1	node_47 0 ==> 1 node_45
		1	node_46 0 --> 1 Priacodon
90	0.500	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 node_45
92	0.200	1	node_41 0 ==> 1 node_38
		1	node_47 0 ==> 1 Haldanodon
		1	node_45 0 --> 1 Arboroharamiya
		1	node_45 0 --> 1 node_44
		1	node_47 0 ==> 1 node_46
93	0.500	1	node_37 0 --> 1 node_36
		1	node_38 0 --> 2 Zhangheotherium
		1	node_45 0 ==> 1 Arboroharamiya
		1	node_47 0 ==> 2 node_46
94	0.400	1	node_41 0 --> 2 node_38
		1	node_39 0 --> 2 Asfaltomylos
		1	node_45 0 ==> 1 Arboroharamiya
		1	node_45 0 ==> 2 node_44
		1	node_47 0 ==> 2 node_46
95	0.500	1	node_41 0 --> 1 node_38
		1	node_39 0 --> 2 Asfaltomylos
		1	node_45 0 ==> 1 node_44
		1	node_46 0 --> 1 Priacodon
96	0.500	1	node_45 0 --> 2 Arboroharamiya
		1	node_45 0 --> 2 node_44
97	0.333	1	node_38 0 ==> 1 Zhangheotherium
		1	node_45 0 ==> 1 node_44
		1	node_46 0 --> 1 Priacodon
98	1.000	1	node_37 0 --> 1 node_36
99	1.000	1	node_47 2 ==> 1 Sinoconodon
100	0.333	1	node_47 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 2 Dinnetherium
		1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Kuehneotherium
		1	node_47 1 ==> 2 node_45
		1	node_46 1 ==> 2 Priacodon
101	0.500	1	node_36 0 --> 1 Dryolestes
		1	node_38 0 --> 1 Zhangheotherium
		1	node_39 0 --> 3 Asfaltomylos
		1	node_45 0 --> 12 Arboroharamiya
		1	node_45 0 --> 2 node_44
		1	node_47 0 ==> 1 node_46
102	0.429	1	node_47 1 ==> 2 Dinnetherium
		1	node_47 1 ==> 2 Megazostrodon
		1	node_37 1 --> 3 node_36
		1	node_38 1 --> 4 Zhangheotherium
		1	node_45 1 --> 34 Arboroharamiya
		1	node_45 1 --> 4 node_44
		1	node_47 1 ==> 4 node_46
103	1.000	1	node_42 0 --> 1 node_41
104	0.250	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 2 Hadrocodium
		1	node_47 1 ==> 0 Morganucodon
		1	node_47 1 ==> 0 Kuehneotherium
		1	node_42 1 --> 0 node_41
		1	node_37 0 --> 2 node_36
		1	node_39 0 --> 2 Asfaltomylos
		1	node_46 1 ==> 2 Amphilestes
105	1.000	1	node_38 0 ==> 1 Zhangheotherium
106	1.000	1	node_42 0 --> 1 node_41
		1	node_46 0 ==> 2 Amphilestes
107	1.000	1	node_41 0 ==> 1 node_38

		1	node_47 0 ==> 2 node_45
109	1.000	1	node_43 0 --> 1 Haramiyavia
110	1.000	1	node_36 0 ==> 1 Amphitherium
111	1.000	1	node_36 0 ==> 1 Amphitherium
112	1.000	1	node_47 0 ==> 1 Hadrocodium
113	0.500	1	node_36 0 --> 1 Dryolestes
		1	node_38 0 --> 1 Zhangheotherium
114	0.200	1	node_47 0 ==> 1 Sinoconodon
		1	node_47 0 ==> 1 Hadrocodium
		1	node_38 0 --> 1 Zhangheotherium
		1	node_41 0 --> 1 node_40
		1	node_46 0 ==> 1 Amphilestes
115	0.333	1	node_47 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 0 Dinnetherium
		1	node_47 1 ==> 0 Megazostrodon
		1	node_37 1 --> 0 node_36
		1	node_39 1 ==> 2 Ambondro
		1	node_46 1 ==> 0 Priacodon
116	0.667	1	node_40 0 --> 1 Shuotherium
		1	node_39 0 --> 1 Ambondro
		1	node_47 0 ==> 2 node_45
117	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_41 0 --> 1 node_40
		1	node_39 1 ==> 3 Ambondro
		1	node_47 0 ==> 1 node_46
118	1.000	1	node_41 0 ==> 1 node_40
119	0.333	1	node_41 0 ==> 1 node_40
		1	node_44 0 --> 1 Sinobaatar
		1	node_46 0 ==> 1 Priacodon
120	0.500	1	node_42 0 --> 1 node_41
		1	node_47 0 ==> 1 Haldanodon
121	1.000	1	node_46 0 ==> 1 Priacodon
122	0.333	1	node_47 0 ==> 1 Dinnetherium
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
123	1.000	1	node_47 0 ==> 2 node_45
124	1.000	1	node_45 0 ==> 1 node_44
125	0.600	1	node_47 0 ==> 1 Megazostrodon
		1	node_36 0 --> 1 Dryolestes
		1	node_38 0 --> 2 Zhangheotherium
		1	node_45 0 --> 3 Arboroharamiya
		1	node_45 0 --> 2 node_44
126	1.000	1	node_44 0 ==> 1 Rugosodon
127	0.571	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Hadrocodium
		1	node_47 1 ==> 0 Dinnetherium
		1	node_38 1 ==> 2 Zhangheotherium
		1	node_45 1 --> 4 Arboroharamiya
		1	node_45 1 --> 4 node_44
		1	node_46 1 --> 3 Priacodon
128	0.500	1	node_38 0 ==> 1 Zhangheotherium
		1	node_47 0 ==> 1 node_45
		1	node_45 1 --> 2 Arboroharamiya
		1	node_44 1 --> 2 Sinobaatar
129	1.000	1	node_44 0 --> 1 Rugosodon
130	1.000	1	node_47 0 ==> 1 Hadrocodium
131	0.667	1	node_38 0 ==> 1 Zhangheotherium
		1	node_43 0 --> 1 Haramiyavia
		1	node_45 0 --> 2 node_44
132	0.500	1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
133	0.375	1	node_47 0 --> 3 Sinoconodon
		1	node_47 0 --> 3 Hadrocodium
		1	node_36 0 --> 1 Dryolestes
		1	node_38 0 --> 2 Zhangheotherium
		1	node_47 0 ==> 2 Haldanodon
		1	node_43 0 --> 1 Haramiyavia
		1	node_45 0 --> 3 Arboroharamiya

		1	node_46 0 --> 1 Priacodon
134	0.333	1	node_47 0 ==> 3 Sinoconodon
		1	node_47 0 ==> 3 Hadrocodium
		1	node_36 0 ==> 1 Dryolestes
		1	node_38 0 ==> 2 Zhangheotherium
		1	node_47 0 ==> 2 Haldanodon
		1	node_47 0 ==> 1 node_45
		1	node_45 1 ==> 3 Arboroharamiya
		1	node_44 1 ==> 2 Sinobaatar
		1	node_47 0 ==> 2 node_46
135	0.400	1	node_47 0 --> 1 Sinoconodon
		1	node_47 0 ==> 4 Hadrocodium
		1	node_47 0 --> 1 Dinnetherium
		1	node_47 0 --> 1 Megazostrodon
		1	node_47 0 ==> 23 Morganucodon
		1	node_40 0 --> 3 Shuotherium
		1	node_47 0 ==> 4 node_45
		1	node_43 4 --> 3 Haramiyavia
		1	node_46 0 --> 1 Amphilestes
		1	node_46 0 --> 2 Priacodon
136	0.667	1	node_47 0 ==> 1 Sinoconodon
		1	node_47 0 ==> 4 Hadrocodium
		1	node_47 0 ==> 1 Megazostrodon
		1	node_47 0 ==> 4 node_45
		1	node_43 4 --> 3 Haramiyavia
		1	node_46 0 --> 2 Priacodon
137	0.400	1	node_47 0 ==> 2 Sinoconodon
		1	node_47 0 ==> 4 Hadrocodium
		1	node_45 0 --> 4 Arboroharamiya
		1	node_45 0 --> 2 node_44
		1	node_46 0 --> 2 Priacodon
138	0.500	1	node_47 0 ==> 2 Sinoconodon
		1	node_47 0 ==> 3 Hadrocodium
		1	node_43 0 --> 1 Haramiyavia
		1	node_44 0 --> 2 Rugosodon
		1	node_44 0 --> 3 Sinobaatar
		1	node_46 0 ==> 1 Priacodon
139	1.000	1	node_47 0 ==> 2 Sinoconodon
		1	node_38 0 ==> 1 Zhangheotherium
140	1.000	1	node_45 0 ==> 1 node_44
141	0.333	1	node_36 0 --> 3 Dryolestes
		1	node_45 0 --> 3 Arboroharamiya
		1	node_44 0 --> 3 Rugosodon
142	1.000	1	node_47 1 ==> 0 Sinoconodon
143	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Megazostrodon
144	0.500	1	node_41 0 --> 1 node_38
		1	node_47 0 ==> 1 node_45
145	0.400	1	node_41 1 --> 0 node_38
		1	node_47 1 ==> 0 Castorocauda
		1	node_47 1 ==> 0 Haldanodon
		1	node_47 1 ==> 2 node_45
		1	node_46 1 ==> 0 Amphilestes
146	0.500	1	node_47 0 ==> 1 Sinoconodon
		1	node_47 0 ==> 2 Megazostrodon
		1	node_41 0 --> 2 node_38
		1	node_46 0 --> 1 Priacodon
147	1.000	1	node_44 0 --> 1 Rugosodon
148	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
149	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_44 0 --> 1 Rugosodon
150	1.000	1	node_45 0 --> 1 node_44
151	1.000	1	node_45 0 --> 1 node_44
152	1.000	1	node_47 1 ==> 0 Castorocauda
153	1.000	1	node_47 1 ==> 0 Castorocauda
154	1.000	1	node_47 1 ==> 0 Castorocauda
155	0.500	1	node_38 0 --> 1 Zhangheotherium

		1	node_47 0 --> 1 node_45
156	1.000	1	node_38 0 --> 1 Zhangheotherium
157	1.000	1	node_47 0 ==> 1 Sinoconodon
158	1.000	1	node_47 0 ==> 1 Morganucodon
159	1.000	1	node_47 1 ==> 0 Sinoconodon
160	1.000	1	node_47 1 ==> 0 Sinoconodon
161	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
162	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_47 0 --> 1 node_45
163	1.000	1	node_47 1 ==> 0 Sinoconodon
		1	node_38 1 --> 2 Zhangheotherium
164	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
165	1.000	1	node_38 0 --> 1 Zhangheotherium
166	1.000	1	node_38 0 --> 1 Zhangheotherium
167	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
168	0.333	1	node_38 0 --> 1 Zhangheotherium
		1	node_47 0 --> 1 Haldanodon
		1	node_45 0 --> 1 node_44
169	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
170	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
171	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
172	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
173	1.000	1	node_38 0 --> 1 Zhangheotherium
174	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
175	1.000	1	node_38 0 --> 1 Zhangheotherium
176	1.000	1	node_38 0 --> 1 Zhangheotherium
177	1.000	1	node_38 0 --> 1 Zhangheotherium
		1	node_44 0 --> 2 Sinobaatar
178	0.333	1	node_38 0 --> 1 Zhangheotherium
		1	node_47 0 ==> 1 Castorocauda
		1	node_47 0 ==> 1 Haldanodon
179	0.500	1	node_38 1 --> 0 Zhangheotherium
		1	node_47 1 ==> 2 Castorocauda
		1	node_47 1 ==> 2 Haldanodon
		1	node_45 1 --> 0 node_44
180	1.000	1	node_38 0 --> 1 Zhangheotherium
181	1.000	1	node_38 0 --> 1 Zhangheotherium
182	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
183	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
184	1.000	1	node_45 0 ==> 1 node_44
185	1.000	1	node_47 1 ==> 0 Castorocauda
186	1.000	1	node_47 2 ==> 1 Castorocauda
187	1.000	1	node_45 1 ==> 0 Arboroharamiya
188	1.000	1	node_38 0 --> 1 Zhangheotherium
189	1.000	1	node_38 0 --> 1 Zhangheotherium
190	1.000	1	node_38 0 --> 2 Zhangheotherium
		1	node_45 0 ==> 1 node_44
191	0.667	1	node_38 1 --> 2 Zhangheotherium
		1	node_47 1 ==> 0 Castorocauda
		1	node_45 1 ==> 0 Arboroharamiya
192	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_47 0 ==> 1 node_45
193	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Castorocauda
194	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_44 0 ==> 1 Sinobaatar
195	1.000	1	node_38 0 --> 1 Zhangheotherium
196	0.500	1	node_38 0 --> 1 Zhangheotherium

		1	node_45 0 --> 1 node_44
197	0.667	1	node_47 1 ==> 0 Sinoconodon
		1	node_38 1 --> 2 Zhangheotherium
		1	node_45 1 ==> 2 node_44
198	1.000	1	node_38 0 --> 1 Zhangheotherium
199	0.500	1	node_47 0 ==> 1 Castorocauda
		1	node_45 0 ==> 1 node_44
200	1.000	1	node_45 0 --> 1 node_44
201	1.000	1	node_38 0 --> 1 Zhangheotherium
202	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
203	1.000	1	node_45 0 --> 2 node_44
204	1.000	1	node_45 0 --> 1 node_44
205	1.000	1	node_45 0 --> 1 node_44
206	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
207	1.000	1	node_38 0 --> 3 Zhangheotherium
208	1.000	1	node_38 0 --> 2 Zhangheotherium
209	1.000	1	node_45 0 --> 1 node_44
210	1.000	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 2 node_44
211	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
212	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
213	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_45 0 --> 1 node_44
214	1.000	1	node_45 0 --> 1 node_44
215	1.000	1	node_45 1 --> 0 node_44
216	1.000	1	node_45 0 --> 1 node_44
217	1.000	1	node_45 0 --> 1 node_44
218	1.000	1	node_38 0 --> 2 Zhangheotherium
		1	node_45 0 --> 1 node_44
219	1.000	1	node_45 0 ==> 1 node_44
220	1.000	1	node_45 0 --> 1 node_44
221	0.667	1	node_38 0 --> 2 Zhangheotherium
		1	node_47 0 ==> 1 Castorocauda
		1	node_45 0 --> 2 node_44
222	1.000	1	node_47 1 ==> 0 Megazostrodon
223	0.500	1	node_41 0 --> 1 node_38
		1	node_47 0 ==> 1 node_45
224	1.000	1	node_47 0 ==> 1 Hadrocodium
225	0.333	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
		1	node_47 1 ==> 0 Hadrocodium
226	0.333	1	node_47 1 ==> 2 Hadrocodium
		1	node_38 1 --> 2 Zhangheotherium
		1	node_47 1 ==> 2 Haldanodon
227	0.333	1	node_47 0 ==> 1 Hadrocodium
		1	node_38 0 --> 1 Zhangheotherium
		1	node_44 0 --> 1 Sinobaatar
228	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Hadrocodium
229	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_44 1 --> 0 Sinobaatar
230	1.000	1	node_38 0 --> 1 Zhangheotherium
232	0.500	1	node_47 3 ==> 2 Sinoconodon
		1	node_47 3 ==> 2 Adelobasileus
235	0.250	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
		1	node_47 1 ==> 0 Megazostrodon
		1	node_47 1 ==> 0 Haldanodon
236	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
		1	node_47 1 ==> 2 Hadrocodium
		1	node_47 1 ==> 0 Haldanodon
237	0.500	1	node_47 2 ==> 1 Sinoconodon
		1	node_47 2 ==> 3 Hadrocodium

		1	node_47 2 ==> 1 Dinnetherium
		1	node_46 2 --> 3 Priacodon
238	1.000	1	node_47 1 ==> 0 Sinoconodon
239	1.000	1	node_38 0 --> 1 Zhangheotherium
240	1.000	1	node_38 0 --> 1 Zhangheotherium
241	1.000	1	node_38 0 --> 1 Zhangheotherium
244	1.000	1	node_47 1 ==> 2 Haldanodon
246	1.000	1	node_46 0 --> 2 Priacodon
248	0.333	1	node_47 0 --> 1 Sinoconodon
		1	node_47 0 --> 1 Adelobasileus
		1	node_47 0 --> 1 Morganucodon
249	1.000	1	node_47 0 ==> 1 Hadrocodium
251	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
252	1.000	1	node_47 1 ==> 0 Sinoconodon
253	0.500	1	node_38 0 --> 1 Zhangheotherium
		1	node_46 0 --> 1 Priacodon
254	0.400	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
		1	node_47 1 --> 2 Hadrocodium
		1	node_47 1 --> 2 Dinnetherium
		1	node_38 1 --> 2 Zhangheotherium
255	0.333	1	node_47 0 ==> 1 Adelobasileus
		1	node_47 0 ==> 1 Hadrocodium
		1	node_38 0 --> 1 Zhangheotherium
256	1.000	1	node_47 1 ==> 0 Adelobasileus
257	0.250	1	node_47 0 --> 1 Dinnetherium
		1	node_47 0 --> 1 Megazostrodon
		1	node_47 0 --> 1 Morganucodon
		1	node_38 0 --> 1 Zhangheotherium
258	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Adelobasileus
259	0.500	1	node_47 0 ==> 1 Hadrocodium
		1	node_38 0 --> 1 Zhangheotherium
260	1.000	1	node_47 1 ==> 0 Sinoconodon
		1	node_38 1 --> 2 Zhangheotherium
261	1.000	1	node_47 1 ==> 2 Dinnetherium
262	1.000	1	node_46 0 --> 1 Priacodon
263	1.000	1	node_47 1 ==> 0 Adelobasileus
264	1.000	1	node_38 0 --> 1 Zhangheotherium
266	1.000	1	node_38 0 --> 1 Zhangheotherium
267	1.000	1	node_47 0 ==> 1 Sinoconodon
270	1.000	1	node_47 2 ==> 1 Sinoconodon
272	1.000	1	node_44 0 --> 1 Rugosodon
273	1.000	1	node_47 0 ==> 1 Castorocauda
274	1.000	1	node_47 0 ==> 1 Castorocauda
275	1.000	1	node_38 0 --> 1 Zhangheotherium
276	1.000	1	node_44 1 --> 2 Sinobaatar
277	0.333	1	node_47 1 --> 2 Hadrocodium
		1	node_47 1 --> 2 Haldanodon
		1	node_46 1 --> 2 Priacodon
278	0.500	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 Haldanodon
279	1.000	1	node_47 1 ==> 2 Hadrocodium
281	1.000	1	node_47 0 ==> 3 Hadrocodium
282	1.000	1	node_46 1 --> 0 Priacodon
284	0.500	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 0 Hadrocodium
286	1.000	1	node_47 0 ==> 1 node_46
287	1.000	1	node_47 0 ==> 1 Hadrocodium
289	0.333	1	node_47 0 ==> 2 Hadrocodium
		1	node_38 0 --> 2 Zhangheotherium
		1	node_46 0 --> 12 Priacodon
291	1.000	1	node_46 0 --> 1 Priacodon
292	1.000	1	node_38 0 --> 1 Zhangheotherium
		1	node_46 0 --> 2 Priacodon
294	0.333	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 Haldanodon

		1	node_46 0 --> 1 Priacodon
295	1.000	1	node_38 0 --> 2 Zhangheotherium
296	1.000	1	node_47 0 ==> 1 Hadrocodium
297	1.000	1	node_47 1 ==> 0 Sinoconodon
		1	node_47 1 ==> 2 Hadrocodium
298	1.000	1	node_47 1 ==> 0 Sinoconodon
299	0.500	1	node_47 0 ==> 1 Hadrocodium
		1	node_47 0 ==> 1 Haldanodon
300	1.000	1	node_47 1 ==> 0 Hadrocodium
301	1.000	1	node_47 1 ==> 0 Sinoconodon
302	1.000	1	node_47 1 ==> 0 Haldanodon
303	1.000	1	node_47 0 ==> 2 Hadrocodium
		1	node_46 0 --> 1 Priacodon
304	1.000	1	node_47 0 ==> 1 Hadrocodium
305	0.500	1	node_47 1 --> 2 Hadrocodium
		1	node_47 1 --> 2 Haldanodon
306	1.000	1	node_47 1 ==> 0 Sinoconodon
307	1.000	1	node_47 2 ==> 3 Hadrocodium

Apomorphy lists:

Branch	Character	Steps	CI	Change
node_47 --> Sinoconodon	17	1	0.300	1 ==> 0
	34	1	0.500	1 ==> 2
	58	1	0.167	2 ==> 0
	59	1	0.250	1 ==> 0
	79	1	0.167	1 ==> 0
	80	1	0.333	1 ==> 0
	81	1	0.429	0 ==> 1
	99	1	1.000	2 ==> 1
	104	1	0.250	1 ==> 0
	114	1	0.200	0 ==> 1
	127	1	0.571	1 ==> 0
	133	1	0.375	0 --> 3
	134	1	0.333	0 ==> 3
	135	1	0.400	0 --> 1
	136	1	0.667	0 ==> 1
	137	1	0.400	0 ==> 2
	138	1	0.500	0 ==> 2
	139	1	1.000	0 ==> 2
	142	1	1.000	1 ==> 0
	143	1	0.500	1 ==> 0
	146	1	0.500	0 ==> 1
	157	1	1.000	0 ==> 1
	159	1	1.000	1 ==> 0
	160	1	1.000	1 ==> 0
	163	1	1.000	1 ==> 0
	193	1	0.500	1 ==> 0
	197	1	0.667	1 ==> 0
	225	1	0.333	1 ==> 0
	228	1	0.500	1 ==> 0
	229	1	0.500	1 ==> 0
	232	1	0.500	3 ==> 2
	235	1	0.250	1 ==> 0
	236	1	0.500	1 ==> 0
	237	1	0.500	2 ==> 1
	238	1	1.000	1 ==> 0
	248	1	0.333	0 --> 1
	251	1	0.500	1 ==> 0
	252	1	1.000	1 ==> 0
	254	1	0.400	1 ==> 0
	258	1	0.500	1 ==> 0
	260	1	1.000	1 ==> 0
	267	1	1.000	0 ==> 1
	270	1	1.000	2 ==> 1
	284	1	0.500	1 ==> 0
	297	1	1.000	1 ==> 0

	298	1	1.000	1 ==> 0
	301	1	1.000	1 ==> 0
	306	1	1.000	1 ==> 0
node_47 --> Adelobasileus	225	1	0.333	1 ==> 0
	232	1	0.500	3 ==> 2
	235	1	0.250	1 ==> 0
	236	1	0.500	1 ==> 0
	248	1	0.333	0 --> 1
	251	1	0.500	1 ==> 0
	254	1	0.400	1 ==> 0
	255	1	0.333	0 ==> 1
	256	1	1.000	1 ==> 0
	258	1	0.500	1 ==> 0
	263	1	1.000	1 ==> 0
node_47 --> Hadrocodium	7	1	0.222	0 ==> 1
	30	1	0.250	1 ==> 0
	68	1	0.200	1 ==> 0
	75	1	0.200	0 ==> 1
	81	1	0.429	0 ==> 3
	84	1	1.000	0 ==> 1
	87	1	0.800	0 ==> 4
	88	1	0.333	0 ==> 2
	89	1	0.200	0 ==> 1
	90	1	0.500	0 ==> 1
	100	1	0.333	1 ==> 0
	104	1	0.250	1 ==> 2
	112	1	1.000	0 ==> 1
	114	1	0.200	0 ==> 1
	115	1	0.333	1 ==> 0
	127	1	0.571	1 ==> 0
	130	1	1.000	0 ==> 1
	133	1	0.375	0 --> 3
	134	1	0.333	0 ==> 3
	135	1	0.400	0 ==> 4
	136	1	0.667	0 ==> 4
	137	1	0.400	0 ==> 4
	138	1	0.500	0 ==> 3
	224	1	1.000	0 ==> 1
	225	1	0.333	1 ==> 0
	226	1	0.333	1 ==> 2
	227	1	0.333	0 ==> 1
	228	1	0.500	1 ==> 0
	236	1	0.500	1 ==> 2
	237	1	0.500	2 ==> 3
	249	1	1.000	0 ==> 1
	254	1	0.400	1 --> 2
	255	1	0.333	0 ==> 1
	259	1	0.500	0 ==> 1
	277	1	0.333	1 --> 2
	278	1	0.500	0 ==> 1
	279	1	1.000	1 ==> 2
	281	1	1.000	0 ==> 3
	284	1	0.500	1 ==> 0
	287	1	1.000	0 ==> 1
	289	1	0.333	0 ==> 2
	294	1	0.333	0 ==> 1
	296	1	1.000	0 ==> 1
	297	1	1.000	1 ==> 2
	299	1	0.500	0 ==> 1
	300	1	1.000	1 ==> 0
	303	1	1.000	0 ==> 2
	304	1	1.000	0 ==> 1
	305	1	0.500	1 --> 2
	307	1	1.000	2 ==> 3
node_47 --> Dinnetherium	7	1	0.222	0 ==> 1
	10	1	0.300	0 ==> 1
	17	1	0.300	1 ==> 3
	21	1	0.200	0 ==> 1

	22	1	0.200	0	==>	1
	24	1	0.143	0	==>	1
	25	1	n/a	2	==>	1
	31	1	0.500	1	==>	0
	33	1	0.333	0	==>	1
	40	1	0.200	1	==>	0
	46	1	0.750	0	==>	1
	53	1	0.250	1	==>	0
	57	1	0.333	0	==>	1
	61	1	0.143	0	==>	1
	62	1	0.200	0	==>	1
	100	1	0.333	1	==>	2
	102	1	0.429	1	==>	2
	115	1	0.333	1	==>	0
	122	1	0.333	0	==>	1
	127	1	0.571	1	==>	0
	135	1	0.400	0	-->	1
	237	1	0.500	2	==>	1
	254	1	0.400	1	-->	2
	257	1	0.250	0	-->	1
	261	1	1.000	1	==>	2
node_47 --> Megazostrodon	6	1	0.286	1	==>	0
	8	1	0.200	1	-->	3
	17	1	0.300	1	==>	23
	20	1	n/a	2	==>	1
	24	1	0.143	0	==>	1
	25	2	n/a	2	==>	0
	42	1	0.375	2	==>	3
	50	2	n/a	0	==>	2
	52	2	n/a	0	==>	2
	55	1	0.429	1	==>	0
	57	1	0.333	0	==>	1
	61	1	0.143	0	==>	1
	62	1	0.200	0	==>	1
	80	1	0.333	1	==>	0
	100	1	0.333	1	==>	0
	102	1	0.429	1	==>	2
	115	1	0.333	1	==>	0
	125	1	0.600	0	==>	1
	135	1	0.400	0	-->	1
	136	1	0.667	0	==>	1
	143	1	0.500	1	==>	0
	146	1	0.500	0	==>	2
	222	1	1.000	1	==>	0
	235	1	0.250	1	==>	0
	257	1	0.250	0	-->	1
node_47 --> Morganucodon	8	1	0.200	1	-->	2
	20	1	n/a	2	==>	1
	25	1	n/a	2	==>	01
	55	1	0.429	1	==>	0
	62	1	0.200	0	==>	1
	80	1	0.333	1	==>	0
	81	1	0.429	0	==>	1
	104	1	0.250	1	==>	0
	135	1	0.400	0	==>	23
	158	1	1.000	0	==>	1
	248	1	0.333	0	-->	1
	257	1	0.250	0	-->	1
node_47 --> Brachyzostrodon	3	1	n/a	0	==>	5
	5	1	n/a	0	==>	1
	6	1	0.286	1	==>	0
	8	1	0.200	1	-->	3
	13	1	n/a	0	==>	1
	14	1	n/a	0	==>	1
	17	1	0.300	1	==>	0
	25	1	n/a	2	==>	01
	33	1	0.333	0	==>	1
	40	1	0.200	1	==>	0

	57	1	0.333	0	==>	1
	61	1	0.143	0	==>	1
	73	1	0.400	0	==>	1
node_47 --> Paceyodon	3	1	n/a	0	==>	5
	5	1	n/a	0	==>	1
	8	1	0.200	1	-->	3
	11	1	0.333	0	==>	1
	12	1	0.600	0	==>	1
	13	1	n/a	0	==>	4
	14	1	n/a	0	==>	1
node_47 --> Paikasigudodon	37	1	n/a	0	==>	1
	38	1	n/a	0	==>	1
	39	1	n/a	0	==>	2
	41	1	0.500	1	==>	0
	42	1	0.375	2	==>	3
	43	1	0.667	0	==>	2
	54	1	0.750	0	==>	1
	55	1	0.429	1	==>	0
	56	1	0.333	0	==>	2
	58	1	0.167	2	==>	1
	60	2	n/a	2	==>	0
	61	1	0.143	0	==>	1
	66	1	0.500	1	==>	0
node_47 --> Rosierodon	7	1	0.222	0	==>	1
	8	1	0.200	1	==>	0
	10	1	0.300	0	==>	1
	17	1	0.300	1	==>	23
	18	1	0.429	1	==>	0
node_47 --> Erythrotherium	20	1	n/a	2	==>	1
	25	2	n/a	2	==>	0
	34	1	0.500	1	==>	3
	57	1	0.333	0	==>	1
	58	1	0.167	2	==>	1
	61	1	0.143	0	==>	1
	62	1	0.200	0	==>	1
node_47 --> Helvetiodon	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	50	1	n/a	0	==>	1
	55	1	0.429	1	==>	2
	56	1	0.333	0	==>	2
	57	1	0.333	0	==>	2
	58	1	0.167	2	==>	1
	60	1	n/a	2	==>	1
	64	1	0.167	0	==>	1
node_47 --> Hallautherium	6	1	0.286	1	==>	0
	8	1	0.200	1	-->	2
	17	1	0.300	1	==>	0
	20	2	n/a	2	==>	0
node_47 --> Bridetherium	7	1	0.222	0	==>	1
	8	1	0.200	1	-->	2
	10	1	0.300	0	==>	1
	17	1	0.300	1	==>	3
	24	1	0.143	0	==>	1
	42	1	0.375	2	==>	1
	61	1	0.143	0	==>	1
	62	1	0.200	0	==>	1
	67	1	0.500	1	==>	0
	73	1	0.400	0	==>	1
node_47 --> Purbeckodon	8	1	0.200	1	-->	2
	10	1	0.300	0	==>	13
	18	1	0.429	1	==>	0
	19	1	0.200	1	==>	0
	43	1	0.667	0	==>	2
	46	1	0.750	0	==>	1
	47	1	0.500	0	==>	1
	55	1	0.429	1	==>	2
	56	1	0.333	0	==>	2
	57	1	0.333	0	==>	12

	60	1	n/a	2	==>	01
node_47 --> Fluctuodon	4	1	n/a	0	==>	1
	5	1	n/a	0	==>	1
	7	1	0.222	0	==>	1
	8	1	0.200	1	-->	3
	10	1	0.300	0	==>	2
	12	1	0.600	0	==>	2
	14	1	n/a	0	==>	4
	15	1	n/a	0	==>	1
	16	2	n/a	0	==>	5
	22	1	0.200	0	==>	1
	37	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	41	1	0.500	1	==>	2
	47	1	0.500	0	==>	1
	50	1	n/a	0	==>	12
	52	1	n/a	0	==>	1
	56	1	0.333	0	==>	1
	58	1	0.167	2	==>	1
node_47 --> Kuehneotherium	3	1	n/a	0	==>	1
	4	1	n/a	0	==>	1234
	7	1	0.222	0	==>	2
	8	1	0.200	1	-->	3
	14	1	n/a	0	==>	45
	16	1	n/a	0	==>	4567
	18	1	0.429	1	==>	2
	22	1	0.200	0	==>	1
	31	1	0.500	1	==>	0
	37	1	n/a	0	==>	12
	38	1	n/a	0	==>	1
	39	1	n/a	0	==>	1
	41	1	0.500	1	==>	2
	46	1	0.750	0	==>	3
	49	1	n/a	0	==>	4
	50	4	n/a	0	==>	7
	52	2	n/a	0	==>	2
	56	1	0.333	0	==>	1
	58	1	0.167	2	==>	1
	68	1	0.200	1	==>	0
	100	1	0.333	1	==>	0
	104	1	0.250	1	==>	0
node_47 --> node_42	3	1	n/a	0	==>	1
	4	1	n/a	0	==>	1
	8	1	0.200	1	==>	0
	14	1	n/a	0	==>	4
	16	4	n/a	0	==>	7
	31	1	0.500	1	==>	0
	37	1	n/a	0	==>	1
	40	1	0.200	1	==>	0
	50	4	n/a	0	==>	7
node_42 --> Woutersia	6	1	0.286	1	==>	2
	7	1	0.222	0	==>	2
	9	1	0.667	0	==>	2
	17	1	0.300	1	==>	2
	20	1	n/a	2	==>	1
	24	1	0.143	0	==>	1
	33	1	0.333	0	-->	1
	39	1	n/a	0	-->	1
	41	1	0.500	1	-->	3
	42	1	0.375	2	==>	3
	48	1	1.000	0	==>	1
	54	1	0.750	0	==>	2
	58	1	0.167	2	-->	1
	64	1	0.167	0	-->	1
	69	1	1.000	0	-->	1
node_42 --> node_41	3	1	n/a	1	==>	2
	4	1	n/a	1	-->	2
	14	3	n/a	4	==>	7

	30	1	0.250	1	==>	0
	37	1	n/a	1	-->	2
	82	1	1.000	0	-->	1
	88	1	0.333	0	-->	2
	103	1	1.000	0	-->	1
	104	1	0.250	1	-->	0
	106	1	1.000	0	-->	1
	120	1	0.500	0	-->	1
node_41 --> node_38	53	1	0.250	1	==>	0
	68	1	0.200	1	-->	0
	75	1	0.200	0	==>	1
	76	1	0.333	0	==>	1
	87	1	0.800	0	==>	2
	92	1	0.200	0	==>	1
	94	1	0.400	0	-->	2
	95	1	0.500	0	-->	1
	107	1	1.000	0	==>	1
	144	1	0.500	0	-->	1
	145	1	0.400	1	-->	0
	146	1	0.500	0	-->	2
	223	1	0.500	0	-->	1
node_38 --> node_37	38	2	n/a	0	-->	2
	40	1	0.200	0	==>	1
	42	1	0.375	2	-->	0
	52	3	n/a	0	-->	3
	58	1	0.167	2	-->	0
node_37 --> Delsatia	17	1	0.300	1	-->	0
	20	1	n/a	2	-->	3
	21	1	0.200	0	==>	1
	30	1	0.250	0	==>	1
	41	1	0.500	1	-->	0
	52	1	n/a	3	==>	7
	60	1	n/a	2	==>	3
node_37 --> node_36	4	1	n/a	2	==>	3
	15	2	n/a	0	==>	2
	19	1	0.200	1	==>	0
	78	1	0.400	0	-->	1
	81	1	0.429	0	-->	1
	93	1	0.500	0	-->	1
	98	1	1.000	0	-->	1
	102	1	0.429	1	-->	3
	104	1	0.250	0	-->	2
	115	1	0.333	1	-->	0
node_36 --> Amphitherium	5	1	n/a	0	-->	1
	10	1	0.300	0	-->	1
	89	1	0.200	0	==>	1
	110	1	1.000	0	==>	1
	111	1	1.000	0	==>	1
node_36 --> Dryolestes	4	1	n/a	3	-->	46
	6	1	0.286	1	==>	0
	10	1	0.300	0	-->	3
	12	1	0.600	0	==>	3
	13	1	n/a	0	==>	12
	14	2	n/a	7	==>	45
	15	1	n/a	2	==>	3
	37	2	n/a	2	-->	46
	38	1	n/a	2	-->	3
	43	1	0.667	0	-->	3
	46	1	0.750	0	-->	4
	49	3	n/a	0	-->	3
	50	1	n/a	7	-->	89
	51	3	n/a	0	-->	6
	73	1	0.400	0	-->	2
	79	1	0.167	1	-->	0
	101	1	0.500	0	-->	1
	113	1	0.500	0	-->	1
	125	1	0.600	0	-->	1
	133	1	0.375	0	-->	1

	134	1	0.333	0 ==> 1
	141	1	0.333	0 --> 3
node_38 --> Zhangheotherium	33	1	0.333	0 --> 2
	58	1	0.167	2 --> 1
	59	1	0.250	1 ==> 0
	74	1	0.667	1 ==> 2
	79	1	0.167	1 --> 0
	93	1	0.500	0 --> 2
	97	1	0.333	0 ==> 1
	101	1	0.500	0 --> 1
	102	1	0.429	1 --> 4
	105	1	1.000	0 ==> 1
	113	1	0.500	0 --> 1
	114	1	0.200	0 --> 1
	117	1	0.500	0 --> 1
	125	1	0.600	0 --> 2
	127	1	0.571	1 ==> 2
	128	1	0.500	0 ==> 1
	131	1	0.667	0 ==> 1
	133	1	0.375	0 --> 2
	134	1	0.333	0 ==> 2
	139	1	1.000	0 ==> 1
	148	1	0.500	0 --> 1
	149	1	0.500	0 --> 1
	155	1	0.500	0 --> 1
	156	1	1.000	0 --> 1
	161	1	0.500	0 --> 1
	162	1	0.500	0 --> 1
	163	1	1.000	1 --> 2
	164	1	0.500	0 --> 1
	165	1	1.000	0 --> 1
	166	1	1.000	0 --> 1
	167	1	0.500	0 --> 1
	168	1	0.333	0 --> 1
	169	1	0.500	0 --> 1
	170	1	0.500	0 --> 1
	171	1	0.500	0 --> 1
	172	1	0.500	0 --> 1
	173	1	1.000	0 --> 1
	174	1	0.500	0 --> 1
	175	1	1.000	0 --> 1
	176	1	1.000	0 --> 1
	177	1	1.000	0 --> 1
	178	1	0.333	0 --> 1
	179	1	0.500	1 --> 0
	180	1	1.000	0 --> 1
	181	1	1.000	0 --> 1
	182	1	0.500	0 --> 1
	183	1	0.500	0 --> 1
	188	1	1.000	0 --> 1
	189	1	1.000	0 --> 1
	190	1	1.000	0 --> 2
	191	1	0.667	1 --> 2
	192	1	0.500	0 --> 1
	194	1	0.500	0 --> 1
	195	1	1.000	0 --> 1
	196	1	0.500	0 --> 1
	197	1	0.667	1 --> 2
	198	1	1.000	0 --> 1
	201	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	206	1	0.500	0 --> 1
	207	1	1.000	0 --> 3
	208	1	1.000	0 --> 2
	210	1	1.000	0 --> 1
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1

	218	1	1.000	0	-->	2
	221	1	0.667	0	-->	2
	226	1	0.333	1	-->	2
	227	1	0.333	0	-->	1
	230	1	1.000	0	-->	1
	239	1	1.000	0	-->	1
	240	1	1.000	0	-->	1
	241	1	1.000	0	-->	1
	253	1	0.500	0	-->	1
	254	1	0.400	1	-->	2
	255	1	0.333	0	-->	1
	257	1	0.250	0	-->	1
	259	1	0.500	0	-->	1
	260	1	1.000	1	-->	2
	264	1	1.000	0	-->	1
	266	1	1.000	0	-->	1
	275	1	1.000	0	-->	1
	289	1	0.333	0	-->	2
	292	1	1.000	0	-->	1
	295	1	1.000	0	-->	2
node_41 --> node_40	10	1	0.300	0	==>	1
	21	1	0.200	0	==>	1
	22	1	0.200	0	==>	1
	77	1	0.500	0	-->	1
	89	1	0.200	0	==>	1
	114	1	0.200	0	-->	1
	117	1	0.500	0	-->	1
	118	1	1.000	0	==>	1
	119	1	0.333	0	==>	1
node_40 --> Shuotherium	18	1	0.429	1	-->	0
	23	1	1.000	1	-->	2
	33	1	0.333	0	-->	1
	39	1	n/a	0	-->	1
	49	2	n/a	0	-->	5
	64	1	0.167	0	-->	1
	65	1	0.667	0	-->	1
	116	1	0.667	0	-->	1
	135	1	0.400	0	-->	3
node_40 --> node_39	5	1	n/a	0	==>	1
	6	1	0.286	1	==>	2
	13	1	n/a	0	==>	1
	15	2	n/a	0	==>	2
node_39 --> Ambondro	3	1	n/a	2	==>	1
	14	2	n/a	7	==>	5
	18	1	0.429	1	-->	2
	20	1	n/a	2	-->	3
	115	1	0.333	1	==>	2
	116	1	0.667	0	-->	1
	117	1	0.500	1	==>	3
node_39 --> Asfaltomylos	4	1	n/a	2	==>	3
	8	1	0.200	0	==>	3
	13	1	n/a	1	==>	2
	18	1	0.429	1	-->	3
	19	1	0.200	1	==>	0
	78	1	0.400	0	-->	2
	81	1	0.429	0	-->	2
	83	1	1.000	0	-->	1
	94	1	0.400	0	-->	2
	95	1	0.500	0	-->	2
	101	1	0.500	0	-->	3
	104	1	0.250	0	-->	2
node_47 --> Castorocauda	4	3	n/a	0	==>	3
	5	1	n/a	0	==>	1
	10	1	0.300	0	==>	1
	11	1	0.333	0	==>	1
	12	1	0.600	0	==>	1
	15	3	n/a	0	==>	3
	16	3	n/a	0	==>	6

	20	1	n/a	2	==> 1
	22	1	0.200	0	==> 1
	24	1	0.143	0	==> 1
	25	1	n/a	2	==> 3
	79	1	0.167	1	==> 0
	81	1	0.429	0	==> 1
	85	1	0.500	0	==> 1
	88	1	0.333	0	==> 1
	122	1	0.333	0	==> 1
	132	1	0.500	0	==> 1
	145	1	0.400	1	==> 0
	152	1	1.000	1	==> 0
	153	1	1.000	1	==> 0
	154	1	1.000	1	==> 0
	178	1	0.333	0	==> 1
	179	1	0.500	1	==> 2
	185	1	1.000	1	==> 0
	186	1	1.000	2	==> 1
	191	1	0.667	1	==> 0
	193	1	0.500	1	==> 0
	199	1	0.500	0	==> 1
	221	1	0.667	0	==> 1
	273	1	1.000	0	==> 1
	274	1	1.000	0	==> 1
node_47 --> Haldanodon	4	2	n/a	0	==> 23
	5	1	n/a	0	==> 1
	8	1	0.200	1	==> 0
	9	1	0.667	0	==> 2
	10	1	0.300	0	==> 1
	11	1	0.333	0	==> 1
	12	1	0.600	0	==> 2
	14	1	n/a	0	==> 12
	15	1	n/a	0	==> 12
	16	4	n/a	0	==> 7
	24	1	0.143	0	==> 1
	25	1	n/a	2	==> 3
	30	1	0.250	1	==> 0
	37	1	n/a	0	==> 1
	39	1	n/a	0	==> 1
	41	1	0.500	1	==> 2
	50	2	n/a	0	==> 2
	53	1	0.250	1	==> 0
	64	1	0.167	0	==> 1
	65	1	0.667	0	--> 1
	68	1	0.200	1	==> 0
	79	1	0.167	1	==> 0
	81	1	0.429	0	==> 1
	85	1	0.500	0	==> 1
	88	1	0.333	0	==> 1
	92	1	0.200	0	==> 1
	120	1	0.500	0	==> 1
	122	1	0.333	0	==> 1
	132	1	0.500	0	==> 1
	133	1	0.375	0	==> 2
	134	1	0.333	0	==> 2
	145	1	0.400	1	==> 0
	168	1	0.333	0	--> 1
	178	1	0.333	0	==> 1
	179	1	0.500	1	==> 2
	226	1	0.333	1	==> 2
	235	1	0.250	1	==> 0
	236	1	0.500	1	==> 0
	244	1	1.000	1	==> 2
	277	1	0.333	1	--> 2
	278	1	0.500	0	==> 1
	294	1	0.333	0	==> 1
	299	1	0.500	0	==> 1
	302	1	1.000	1	==> 0

	305	1	0.500	1 --> 2
node_47 --> node_45	1	1	0.667	0 ==> 1
	8	1	0.200	1 --> 2
	17	1	0.300	1 ==> 0
	19	1	0.200	1 ==> 0
	21	1	0.200	0 ==> 1
	32	1	0.500	1 ==> 0
	34	1	0.500	1 ==> 3
	35	1	n/a	0 ==> 1
	36	1	1.000	0 ==> 1
	42	1	0.375	2 ==> 0
	55	1	0.429	1 ==> 0
	61	1	0.143	0 ==> 1
	65	1	0.667	0 ==> 2
	67	1	0.500	1 ==> 0
	73	1	0.400	0 ==> 2
	74	1	0.667	1 ==> 3
	76	1	0.333	0 ==> 1
	88	1	0.333	0 ==> 2
	89	1	0.200	0 ==> 1
	90	1	0.500	0 ==> 1
	100	1	0.333	1 ==> 2
	107	1	1.000	0 ==> 2
	116	1	0.667	0 ==> 2
	123	1	1.000	0 ==> 2
	128	1	0.500	0 ==> 1
	134	1	0.333	0 ==> 1
	135	1	0.400	0 ==> 4
	136	1	0.667	0 ==> 4
	144	1	0.500	0 ==> 1
	145	1	0.400	1 ==> 2
	155	1	0.500	0 --> 1
	162	1	0.500	0 --> 1
	192	1	0.500	0 ==> 1
	223	1	0.500	0 ==> 1
node_45 --> node_43	13	1	n/a	0 --> 1
	53	1	0.250	1 ==> 0
	59	1	0.250	1 ==> 0
node_43 --> Thomasia	7	1	0.222	0 --> 2
	42	1	0.375	0 ==> 1
	70	1	0.500	0 ==> 1
node_43 --> Haramiyavia	2	1	0.333	0 ==> 1
	13	1	n/a	1 ==> 2
	15	1	n/a	0 ==> 1
	16	1	n/a	0 ==> 4
	34	1	0.500	3 --> 2
	35	1	n/a	1 ==> 2
	68	1	0.200	1 --> 0
	74	1	0.667	3 --> 2
	109	1	1.000	0 --> 1
	131	1	0.667	0 --> 1
	133	1	0.375	0 --> 1
	135	1	0.400	4 --> 3
	136	1	0.667	4 --> 3
	138	1	0.500	0 --> 1
node_45 --> Theroteinus	13	1	n/a	0 --> 1
	35	1	n/a	1 ==> 2
	38	1	n/a	0 ==> 12
	39	1	n/a	0 ==> 2
	40	1	0.200	1 ==> 0
	54	1	0.750	0 --> 3
	55	1	0.429	0 ==> 3
	64	1	0.167	0 --> 1
	70	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
node_45 --> Arboroharamiya	2	1	0.333	0 ==> 1
	4	1	n/a	0 ==> 1
	8	1	0.200	2 ==> 0

	9	1	0.667 0 ==> 1
	21	1	0.200 1 ==> 0
	27	1	1.000 1 ==> 0
	28	1	1.000 1 ==> 2
	29	1	0.500 0 ==> 1
	54	1	0.750 0 --> 3
	58	1	0.167 2 ==> 0
	64	1	0.167 0 --> 1
	66	1	0.500 1 ==> 0
	75	1	0.200 0 --> 1
	78	1	0.400 0 --> 2
	86	1	0.333 0 --> 1
	87	1	0.800 0 --> 3
	92	1	0.200 0 --> 1
	93	1	0.500 0 ==> 1
	94	1	0.400 0 ==> 1
	96	1	0.500 0 --> 2
	101	1	0.500 0 --> 12
	102	1	0.429 1 --> 34
	125	1	0.600 0 --> 3
	127	1	0.571 1 --> 4
	128	1	0.500 1 --> 2
	133	1	0.375 0 --> 3
	134	1	0.333 1 ==> 3
	137	1	0.400 0 --> 4
	141	1	0.333 0 --> 3
	187	1	1.000 1 ==> 0
	191	1	0.667 1 ==> 0
node_45 --> node_44	1	1	0.667 1 ==> 2
	45	1	1.000 0 ==> 1
	56	1	0.333 0 --> 2
	72	1	1.000 0 ==> 1
	73	1	0.400 2 ==> 1
	75	1	0.200 0 --> 1
	77	1	0.500 0 ==> 1
	78	1	0.400 0 --> 2
	87	1	0.800 0 --> 3
	92	1	0.200 0 --> 1
	94	1	0.400 0 ==> 2
	95	1	0.500 0 ==> 1
	96	1	0.500 0 --> 2
	97	1	0.333 0 ==> 1
	101	1	0.500 0 --> 2
	102	1	0.429 1 --> 4
	124	1	1.000 0 ==> 1
	125	1	0.600 0 --> 2
	127	1	0.571 1 --> 4
	131	1	0.667 0 --> 2
	137	1	0.400 0 --> 2
	140	1	1.000 0 ==> 1
	148	1	0.500 0 --> 1
	150	1	1.000 0 --> 1
	151	1	1.000 0 --> 1
	161	1	0.500 0 --> 1
	164	1	0.500 0 --> 1
	167	1	0.500 0 --> 1
	168	1	0.333 0 --> 1
	169	1	0.500 0 --> 1
	170	1	0.500 0 --> 1
	171	1	0.500 0 --> 1
	172	1	0.500 0 --> 1
	174	1	0.500 0 --> 1
	179	1	0.500 1 --> 0
	182	1	0.500 0 --> 1
	183	1	0.500 0 --> 1
	184	1	1.000 0 ==> 1
	190	1	1.000 0 ==> 1
	196	1	0.500 0 --> 1

	197	1	0.667	1 ==> 2
	199	1	0.500	0 ==> 1
	200	1	1.000	0 --> 1
	202	1	0.500	0 --> 1
	203	1	1.000	0 --> 2
	204	1	1.000	0 --> 1
	205	1	1.000	0 --> 1
	206	1	0.500	0 --> 1
	209	1	1.000	0 --> 1
	210	1	1.000	0 --> 2
	211	1	0.500	0 --> 1
	212	1	0.500	0 --> 1
	213	1	0.500	0 --> 1
	214	1	1.000	0 --> 1
	215	1	1.000	1 --> 0
	216	1	1.000	0 --> 1
	217	1	1.000	0 --> 1
	218	1	1.000	0 --> 1
	219	1	1.000	0 ==> 1
	220	1	1.000	0 --> 1
	221	1	0.667	0 --> 2
node_44 --> Rugosodon	2	1	0.333	0 ==> 1
	6	1	0.286	1 --> 2
	29	1	0.500	0 ==> 1
	32	1	0.500	0 ==> 1
	71	1	0.500	0 ==> 1
	126	1	1.000	0 ==> 1
	129	1	1.000	0 --> 1
	138	1	0.500	0 --> 2
	141	1	0.333	0 --> 3
	147	1	1.000	0 --> 1
	149	1	0.500	0 --> 1
	272	1	1.000	0 --> 1
node_44 --> Sinobaatar	28	1	1.000	1 ==> 0
	34	1	0.500	3 ==> 0
	35	1	n/a	1 ==> 2
	42	1	0.375	0 ==> 1
	58	1	0.167	2 --> 0
	86	1	0.333	0 --> 1
	119	1	0.333	0 --> 1
	128	1	0.500	1 --> 2
	134	1	0.333	1 ==> 2
	138	1	0.500	0 --> 3
	177	1	1.000	0 --> 2
	194	1	0.500	0 ==> 1
	227	1	0.333	0 --> 1
	229	1	0.500	1 --> 0
	276	1	1.000	1 --> 2
node_47 --> node_46	18	1	0.429	1 ==> 0
	33	1	0.333	0 ==> 1
	75	1	0.200	0 ==> 1
	76	1	0.333	0 ==> 1
	78	1	0.400	0 ==> 1
	86	1	0.333	0 ==> 1
	87	1	0.800	0 ==> 1
	88	1	0.333	0 ==> 2
	92	1	0.200	0 ==> 1
	93	1	0.500	0 ==> 2
	94	1	0.400	0 ==> 2
	101	1	0.500	0 ==> 1
	102	1	0.429	1 ==> 4
	117	1	0.500	0 ==> 1
	134	1	0.333	0 ==> 2
	286	1	1.000	0 ==> 1
node_46 --> Amphilestes	1	1	0.667	0 ==> 1
	24	1	0.143	0 ==> 1
	104	1	0.250	1 ==> 2
	106	1	1.000	0 ==> 2

	114	1	0.200	0 ==> 1	
	135	1	0.400	0 --> 1	
	145	1	0.400	1 ==> 0	
node_46 --> Priacodon	7	1	0.222	0 --> 1	
	19	1	0.200	1 ==> 0	
	31	1	0.500	1 --> 2	
	34	1	0.500	1 ==> 2	
	58	1	0.167	2 --> 1	
	59	1	0.250	1 --> 0	
	79	1	0.167	1 ==> 0	
	89	1	0.200	0 --> 1	
	95	1	0.500	0 --> 1	
	97	1	0.333	0 --> 1	
	100	1	0.333	1 ==> 2	
	115	1	0.333	1 ==> 0	
	119	1	0.333	0 ==> 1	
	121	1	1.000	0 ==> 1	
	127	1	0.571	1 --> 3	
	133	1	0.375	0 --> 1	
	135	1	0.400	0 --> 2	
	136	1	0.667	0 --> 2	
	137	1	0.400	0 --> 2	
	138	1	0.500	0 ==> 1	
	146	1	0.500	0 --> 1	
	237	1	0.500	2 --> 3	
	246	1	1.000	0 --> 2	
	253	1	0.500	0 --> 1	
	262	1	1.000	0 --> 1	
	277	1	0.333	1 --> 2	
	282	1	1.000	1 --> 0	
	289	1	0.333	0 --> 12	
	291	1	1.000	0 --> 1	
	292	1	1.000	0 --> 2	
	294	1	0.333	0 --> 1	
	303	1	1.000	0 --> 1	

Character diagnostics:

Character	Minimum Steps	Tree Steps	Maximum Steps	CI	HI	RI	RC
1	2	3	7	0.667	0.333	0.800	0.533
2	1	3	3	0.333	0.667	0.000	0.000
3	n/a	6	13	n/a	n/a	n/a	n/a
4	n/a	13	25	n/a	n/a	n/a	n/a
5	n/a	7	8	n/a	n/a	n/a	n/a
6	2	7	8	0.286	0.714	0.167	0.048
7	2	9	9	0.222	0.778	0.000	0.000
8	3	15	18	0.200	0.800	0.200	0.040
9	2	3	3	0.667	0.333	0.000	0.000
10	3	10	11	0.300	0.700	0.125	0.038
11	1	3	3	0.333	0.667	0.000	0.000
12	3	5	5	0.600	0.400	0.000	0.000
13	n/a	8	10	n/a	n/a	n/a	n/a
14	n/a	13	29	n/a	n/a	n/a	n/a
15	n/a	11	15	n/a	n/a	n/a	n/a
16	n/a	15	39	n/a	n/a	n/a	n/a
17	3	10	15	0.300	0.700	0.417	0.125
18	3	7	8	0.429	0.571	0.200	0.086
19	1	5	11	0.200	0.800	0.600	0.120
20	n/a	9	9	n/a	n/a	n/a	n/a
21	1	5	9	0.200	0.800	0.500	0.100
22	1	5	6	0.200	0.800	0.200	0.040
23	1	1	1	1.000	0.000	0/0	0/0
24	1	7	7	0.143	0.857	0.000	0.000
25	n/a	9	9	n/a	n/a	n/a	n/a
26	n/a	0	0	0/0	0/0	0/0	0/0
27	1	1	1	1.000	0.000	0/0	0/0

28	2	2	2	1.000	0.000	0/0	0/0
29	1	2	2	0.500	0.500	0.000	0.000
30	1	4	8	0.250	0.750	0.571	0.143
31	2	4	5	0.500	0.500	0.333	0.167
32	1	2	4	0.500	0.500	0.667	0.333
33	2	6	7	0.333	0.667	0.200	0.067
34	3	6	7	0.500	0.500	0.250	0.125
35	n/a	4	9	n/a	n/a	n/a	n/a
36	1	1	3	1.000	0.000	1.000	1.000
37	n/a	9	14	n/a	n/a	n/a	n/a
38	n/a	6	8	n/a	n/a	n/a	n/a
39	n/a	8	8	n/a	n/a	n/a	n/a
40	1	5	6	0.200	0.800	0.200	0.040
41	3	6	6	0.500	0.500	0.000	0.000
42	3	8	12	0.375	0.625	0.444	0.167
43	2	3	3	0.667	0.333	0.000	0.000
44	n/a	0	0	0/0	0/0	0/0	0/0
45	1	1	2	1.000	0.000	1.000	1.000
46	3	4	4	0.750	0.250	0.000	0.000
47	1	2	2	0.500	0.500	0.000	0.000
48	1	1	1	1.000	0.000	0/0	0/0
49	n/a	6	6	n/a	n/a	n/a	n/a
50	n/a	15	22	n/a	n/a	n/a	n/a
51	n/a	3	3	n/a	n/a	n/a	n/a
52	n/a	9	12	n/a	n/a	n/a	n/a
53	1	4	7	0.250	0.750	0.500	0.125
54	3	4	4	0.750	0.250	0.000	0.000
55	3	7	8	0.429	0.571	0.200	0.086
56	2	6	7	0.333	0.667	0.200	0.067
57	2	6	6	0.333	0.667	0.000	0.000
58	2	12	13	0.167	0.833	0.091	0.015
59	1	4	5	0.250	0.750	0.250	0.062
60	n/a	5	5	n/a	n/a	n/a	n/a
61	1	7	10	0.143	0.857	0.333	0.048
62	1	5	5	0.200	0.800	0.000	0.000
63	n/a	0	0	0/0	0/0	0/0	0/0
64	1	6	6	0.167	0.833	0.000	0.000
65	2	3	4	0.667	0.333	0.500	0.333
66	1	2	2	0.500	0.500	0.000	0.000
67	1	2	3	0.500	0.500	0.500	0.250
68	1	5	7	0.200	0.800	0.333	0.067
69	1	1	1	1.000	0.000	0/0	0/0
70	1	2	2	0.500	0.500	0.000	0.000
71	1	2	2	0.500	0.500	0.000	0.000
72	1	1	2	1.000	0.000	1.000	1.000
73	2	5	7	0.400	0.600	0.400	0.160
74	2	3	5	0.667	0.333	0.667	0.444
75	1	5	9	0.200	0.800	0.500	0.100
76	1	3	9	0.333	0.667	0.750	0.250
77	1	2	4	0.500	0.500	0.667	0.333
78	2	5	8	0.400	0.600	0.500	0.200
79	1	6	6	0.167	0.833	0.000	0.000
80	1	3	3	0.333	0.667	0.000	0.000
81	3	7	8	0.429	0.571	0.200	0.086
82	1	1	3	1.000	0.000	1.000	1.000
83	1	1	1	1.000	0.000	0/0	0/0
84	1	1	1	1.000	0.000	0/0	0/0
85	1	2	2	0.500	0.500	0.000	0.000
86	1	3	4	0.333	0.667	0.333	0.111
87	4	5	9	0.800	0.200	0.800	0.640
88	2	6	7	0.333	0.667	0.200	0.067
89	1	5	8	0.200	0.800	0.429	0.086
90	1	2	4	0.500	0.500	0.667	0.333
91	n/a	0	0	0/0	0/0	0/0	0/0
92	1	5	9	0.200	0.800	0.500	0.100
93	2	4	6	0.500	0.500	0.500	0.250
94	2	5	9	0.400	0.600	0.571	0.229
95	2	4	7	0.500	0.500	0.600	0.300

96	1	2	3	0.500	0.500	0.500	0.250
97	1	3	4	0.333	0.667	0.333	0.111
98	1	1	2	1.000	0.000	1.000	1.000
99	1	1	1	1.000	0.000	0/0	0/0
100	2	6	8	0.333	0.667	0.333	0.111
101	3	6	8	0.500	0.500	0.400	0.200
102	3	7	10	0.429	0.571	0.429	0.184
103	1	1	4	1.000	0.000	1.000	1.000
104	2	8	10	0.250	0.750	0.250	0.062
105	1	1	1	1.000	0.000	0/0	0/0
106	2	2	6	1.000	0.000	1.000	1.000
107	2	2	7	1.000	0.000	1.000	1.000
108	n/a	0	0	0/0	0/0	0/0	0/0
109	1	1	1	1.000	0.000	0/0	0/0
110	1	1	1	1.000	0.000	0/0	0/0
111	1	1	1	1.000	0.000	0/0	0/0
112	1	1	1	1.000	0.000	0/0	0/0
113	1	2	2	0.500	0.500	0.000	0.000
114	1	5	7	0.200	0.800	0.333	0.067
115	2	6	7	0.333	0.667	0.200	0.067
116	2	3	6	0.667	0.333	0.750	0.500
117	2	4	6	0.500	0.500	0.500	0.250
118	1	1	3	1.000	0.000	1.000	1.000
119	1	3	4	0.333	0.667	0.333	0.111
120	1	2	6	0.500	0.500	0.800	0.400
121	1	1	1	1.000	0.000	0/0	0/0
122	1	3	3	0.333	0.667	0.000	0.000
123	1	1	3	1.000	0.000	1.000	1.000
124	1	1	2	1.000	0.000	1.000	1.000
125	3	5	6	0.600	0.400	0.333	0.200
126	1	1	1	1.000	0.000	0/0	0/0
127	4	7	8	0.571	0.429	0.250	0.143
128	2	4	5	0.500	0.500	0.333	0.167
129	1	1	1	1.000	0.000	0/0	0/0
130	1	1	1	1.000	0.000	0/0	0/0
131	2	3	4	0.667	0.333	0.500	0.333
132	1	2	2	0.500	0.500	0.000	0.000
133	3	8	8	0.375	0.625	0.000	0.000
134	3	9	11	0.333	0.667	0.250	0.083
135	4	10	12	0.400	0.600	0.250	0.100
136	4	6	8	0.667	0.333	0.500	0.333
137	2	5	6	0.400	0.600	0.250	0.100
138	3	6	6	0.500	0.500	0.000	0.000
139	2	2	2	1.000	0.000	0/0	0/0
140	1	1	2	1.000	0.000	1.000	1.000
141	1	3	3	0.333	0.667	0.000	0.000
142	1	1	1	1.000	0.000	0/0	0/0
143	1	2	2	0.500	0.500	0.000	0.000
144	1	2	6	0.500	0.500	0.800	0.400
145	2	5	9	0.400	0.600	0.571	0.229
146	2	4	5	0.500	0.500	0.333	0.167
147	1	1	1	1.000	0.000	0/0	0/0
148	1	2	3	0.500	0.500	0.500	0.250
149	1	2	2	0.500	0.500	0.000	0.000
150	1	1	2	1.000	0.000	1.000	1.000
151	1	1	2	1.000	0.000	1.000	1.000
152	1	1	1	1.000	0.000	0/0	0/0
153	1	1	1	1.000	0.000	0/0	0/0
154	1	1	1	1.000	0.000	0/0	0/0
155	1	2	2	0.500	0.500	0.000	0.000
156	1	1	1	1.000	0.000	0/0	0/0
157	1	1	1	1.000	0.000	0/0	0/0
158	1	1	1	1.000	0.000	0/0	0/0
159	1	1	1	1.000	0.000	0/0	0/0
160	1	1	1	1.000	0.000	0/0	0/0
161	1	2	3	0.500	0.500	0.500	0.250
162	1	2	2	0.500	0.500	0.000	0.000
163	2	2	2	1.000	0.000	0/0	0/0

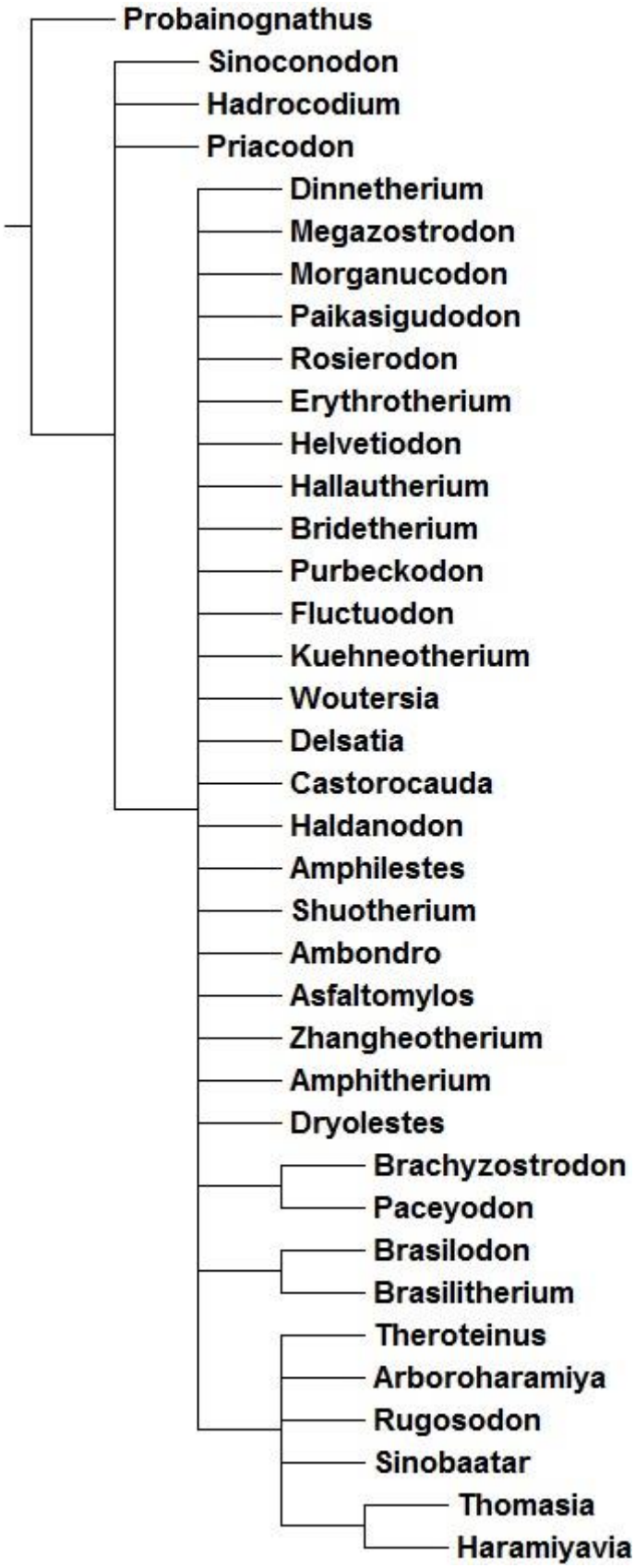
164	1	2	3	0.500	0.500	0.500	0.250
165	1	1	1	1.000	0.000	0/0	0/0
166	1	1	1	1.000	0.000	0/0	0/0
167	1	2	3	0.500	0.500	0.500	0.250
168	1	3	3	0.333	0.667	0.000	0.000
169	1	2	3	0.500	0.500	0.500	0.250
170	1	2	3	0.500	0.500	0.500	0.250
171	1	2	3	0.500	0.500	0.500	0.250
172	1	2	3	0.500	0.500	0.500	0.250
173	1	1	1	1.000	0.000	0/0	0/0
174	1	2	3	0.500	0.500	0.500	0.250
175	1	1	1	1.000	0.000	0/0	0/0
176	1	1	1	1.000	0.000	0/0	0/0
177	2	2	2	1.000	0.000	0/0	0/0
178	1	3	3	0.333	0.667	0.000	0.000
179	2	4	5	0.500	0.500	0.333	0.167
180	1	1	1	1.000	0.000	0/0	0/0
181	1	1	1	1.000	0.000	0/0	0/0
182	1	2	3	0.500	0.500	0.500	0.250
183	1	2	3	0.500	0.500	0.500	0.250
184	1	1	2	1.000	0.000	1.000	1.000
185	1	1	1	1.000	0.000	0/0	0/0
186	1	1	1	1.000	0.000	0/0	0/0
187	1	1	1	1.000	0.000	0/0	0/0
188	1	1	1	1.000	0.000	0/0	0/0
189	1	1	1	1.000	0.000	0/0	0/0
190	2	2	3	1.000	0.000	1.000	1.000
191	2	3	3	0.667	0.333	0.000	0.000
192	1	2	4	0.500	0.500	0.667	0.333
193	1	2	2	0.500	0.500	0.000	0.000
194	1	2	2	0.500	0.500	0.000	0.000
195	1	1	1	1.000	0.000	0/0	0/0
196	1	2	3	0.500	0.500	0.500	0.250
197	2	3	4	0.667	0.333	0.500	0.333
198	1	1	1	1.000	0.000	0/0	0/0
199	1	2	3	0.500	0.500	0.500	0.250
200	1	1	2	1.000	0.000	1.000	1.000
201	1	1	1	1.000	0.000	0/0	0/0
202	1	2	3	0.500	0.500	0.500	0.250
203	1	1	2	1.000	0.000	1.000	1.000
204	1	1	1	1.000	0.000	0/0	0/0
205	1	1	2	1.000	0.000	1.000	1.000
206	1	2	3	0.500	0.500	0.500	0.250
207	1	1	1	1.000	0.000	0/0	0/0
208	1	1	1	1.000	0.000	0/0	0/0
209	1	1	2	1.000	0.000	1.000	1.000
210	2	2	3	1.000	0.000	1.000	1.000
211	1	2	3	0.500	0.500	0.500	0.250
212	1	2	2	0.500	0.500	0.000	0.000
213	1	2	2	0.500	0.500	0.000	0.000
214	1	1	2	1.000	0.000	1.000	1.000
215	1	1	2	1.000	0.000	1.000	1.000
216	1	1	2	1.000	0.000	1.000	1.000
217	1	1	2	1.000	0.000	1.000	1.000
218	2	2	3	1.000	0.000	1.000	1.000
219	1	1	2	1.000	0.000	1.000	1.000
220	1	1	2	1.000	0.000	1.000	1.000
221	2	3	3	0.667	0.333	0.000	0.000
222	1	1	1	1.000	0.000	0/0	0/0
223	1	2	5	0.500	0.500	0.750	0.375
224	1	1	1	1.000	0.000	0/0	0/0
225	1	3	3	0.333	0.667	0.000	0.000
226	1	3	3	0.333	0.667	0.000	0.000
227	1	3	3	0.333	0.667	0.000	0.000
228	1	2	2	0.500	0.500	0.000	0.000
229	1	2	2	0.500	0.500	0.000	0.000
230	1	1	1	1.000	0.000	0/0	0/0
231	n/a	0	0	0/0	0/0	0/0	0/0

232	1	2	2	0.500	0.500	0.000	0.000
233	n/a	0	0	0/0	0/0	0/0	0/0
234	n/a	0	0	0/0	0/0	0/0	0/0
235	1	4	4	0.250	0.750	0.000	0.000
236	2	4	4	0.500	0.500	0.000	0.000
237	2	4	4	0.500	0.500	0.000	0.000
238	1	1	1	1.000	0.000	0/0	0/0
239	1	1	1	1.000	0.000	0/0	0/0
240	1	1	1	1.000	0.000	0/0	0/0
241	1	1	1	1.000	0.000	0/0	0/0
242	n/a	0	0	0/0	0/0	0/0	0/0
243	n/a	0	0	0/0	0/0	0/0	0/0
244	1	1	1	1.000	0.000	0/0	0/0
245	n/a	0	0	0/0	0/0	0/0	0/0
246	1	1	1	1.000	0.000	0/0	0/0
247	n/a	0	0	0/0	0/0	0/0	0/0
248	1	3	3	0.333	0.667	0.000	0.000
249	1	1	1	1.000	0.000	0/0	0/0
250	n/a	0	0	0/0	0/0	0/0	0/0
251	1	2	2	0.500	0.500	0.000	0.000
252	1	1	1	1.000	0.000	0/0	0/0
253	1	2	2	0.500	0.500	0.000	0.000
254	2	5	5	0.400	0.600	0.000	0.000
255	1	3	3	0.333	0.667	0.000	0.000
256	1	1	1	1.000	0.000	0/0	0/0
257	1	4	4	0.250	0.750	0.000	0.000
258	1	2	2	0.500	0.500	0.000	0.000
259	1	2	2	0.500	0.500	0.000	0.000
260	2	2	2	1.000	0.000	0/0	0/0
261	1	1	1	1.000	0.000	0/0	0/0
262	1	1	1	1.000	0.000	0/0	0/0
263	1	1	1	1.000	0.000	0/0	0/0
264	1	1	1	1.000	0.000	0/0	0/0
265	n/a	0	0	0/0	0/0	0/0	0/0
266	1	1	1	1.000	0.000	0/0	0/0
267	1	1	1	1.000	0.000	0/0	0/0
268	n/a	0	0	0/0	0/0	0/0	0/0
269	n/a	0	0	0/0	0/0	0/0	0/0
270	1	1	1	1.000	0.000	0/0	0/0
271	n/a	0	0	0/0	0/0	0/0	0/0
272	1	1	1	1.000	0.000	0/0	0/0
273	1	1	1	1.000	0.000	0/0	0/0
274	1	1	1	1.000	0.000	0/0	0/0
275	1	1	1	1.000	0.000	0/0	0/0
276	1	1	1	1.000	0.000	0/0	0/0
277	1	3	3	0.333	0.667	0.000	0.000
278	1	2	2	0.500	0.500	0.000	0.000
279	1	1	1	1.000	0.000	0/0	0/0
280	n/a	0	0	0/0	0/0	0/0	0/0
281	1	1	1	1.000	0.000	0/0	0/0
282	1	1	1	1.000	0.000	0/0	0/0
283	n/a	0	0	0/0	0/0	0/0	0/0
284	1	2	2	0.500	0.500	0.000	0.000
285	n/a	0	0	0/0	0/0	0/0	0/0
286	1	1	2	1.000	0.000	1.000	1.000
287	1	1	1	1.000	0.000	0/0	0/0
288	n/a	0	0	0/0	0/0	0/0	0/0
289	1	3	3	0.333	0.667	0.000	0.000
290	n/a	0	0	0/0	0/0	0/0	0/0
291	1	1	1	1.000	0.000	0/0	0/0
292	2	2	2	1.000	0.000	0/0	0/0
293	n/a	0	0	0/0	0/0	0/0	0/0
294	1	3	3	0.333	0.667	0.000	0.000
295	1	1	1	1.000	0.000	0/0	0/0
296	1	1	1	1.000	0.000	0/0	0/0
297	2	2	2	1.000	0.000	0/0	0/0
298	1	1	1	1.000	0.000	0/0	0/0
299	1	2	2	0.500	0.500	0.000	0.000

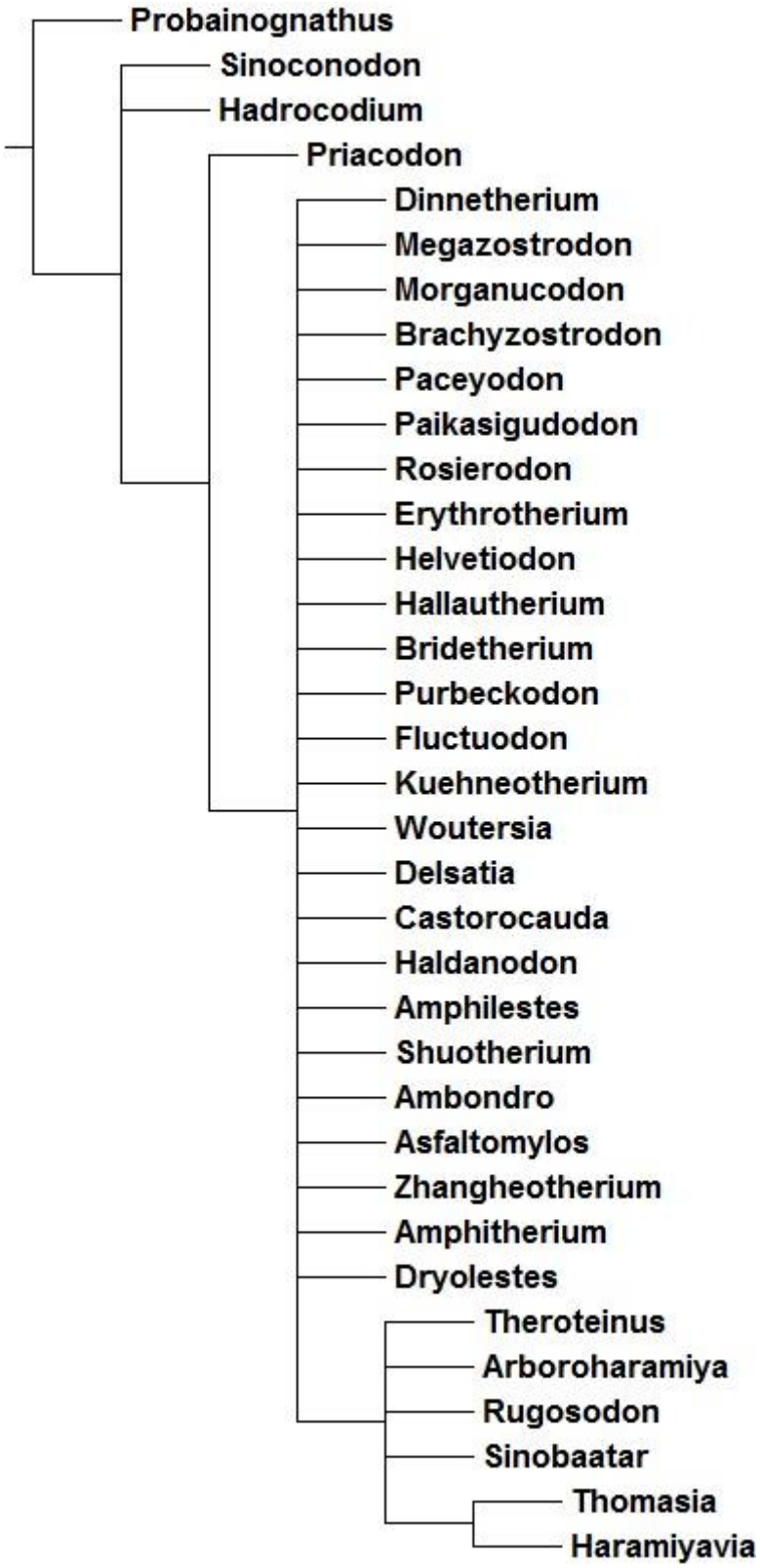
300	1	1	1	1.000	0.000	0/0	0/0
301	1	1	1	1.000	0.000	0/0	0/0
302	1	1	1	1.000	0.000	0/0	0/0
303	2	2	2	1.000	0.000	0/0	0/0
304	1	1	1	1.000	0.000	0/0	0/0
305	1	2	2	0.500	0.500	0.000	0.000
306	1	1	1	1.000	0.000	0/0	0/0
307	1	1	1	1.000	0.000	0/0	0/0

Annexe 5 : Résultats des tests sur les extra-groupes

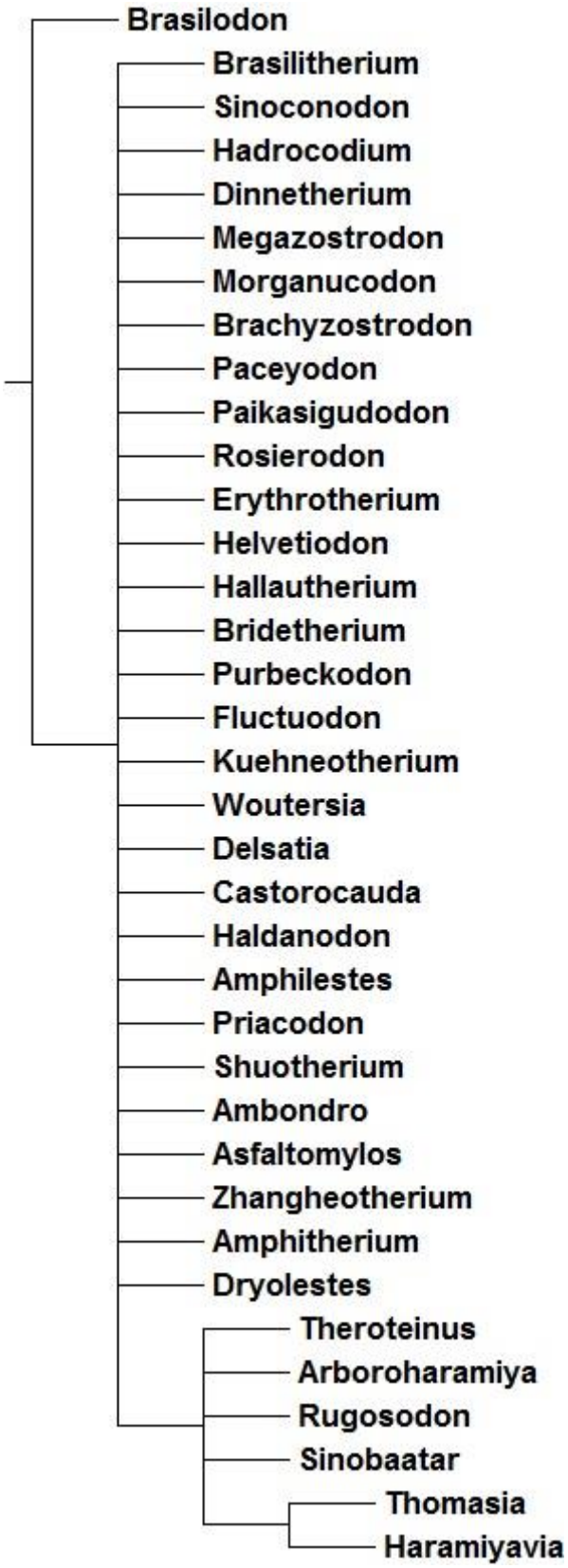
Consensus strict issu de la matrice « molaire » avec la combinaison « Base »



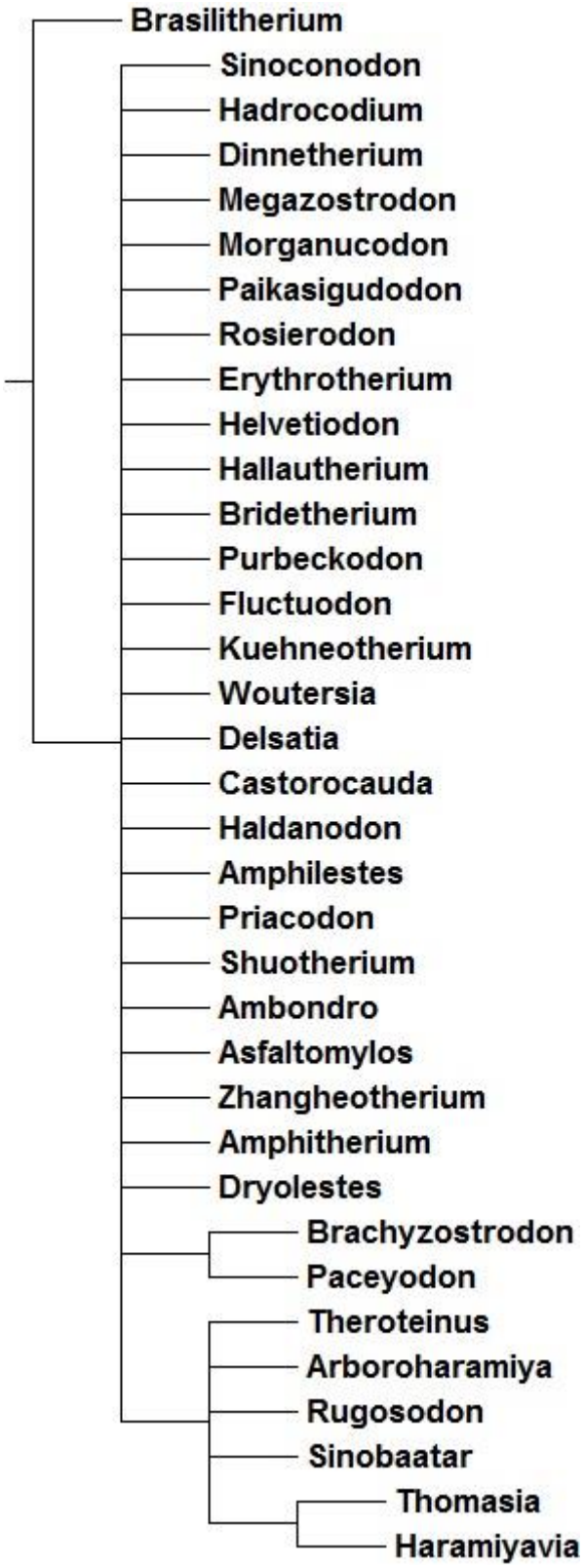
Consensus strict issu de la matrice « molaire » avec la combinaison « *Probainognathus* »



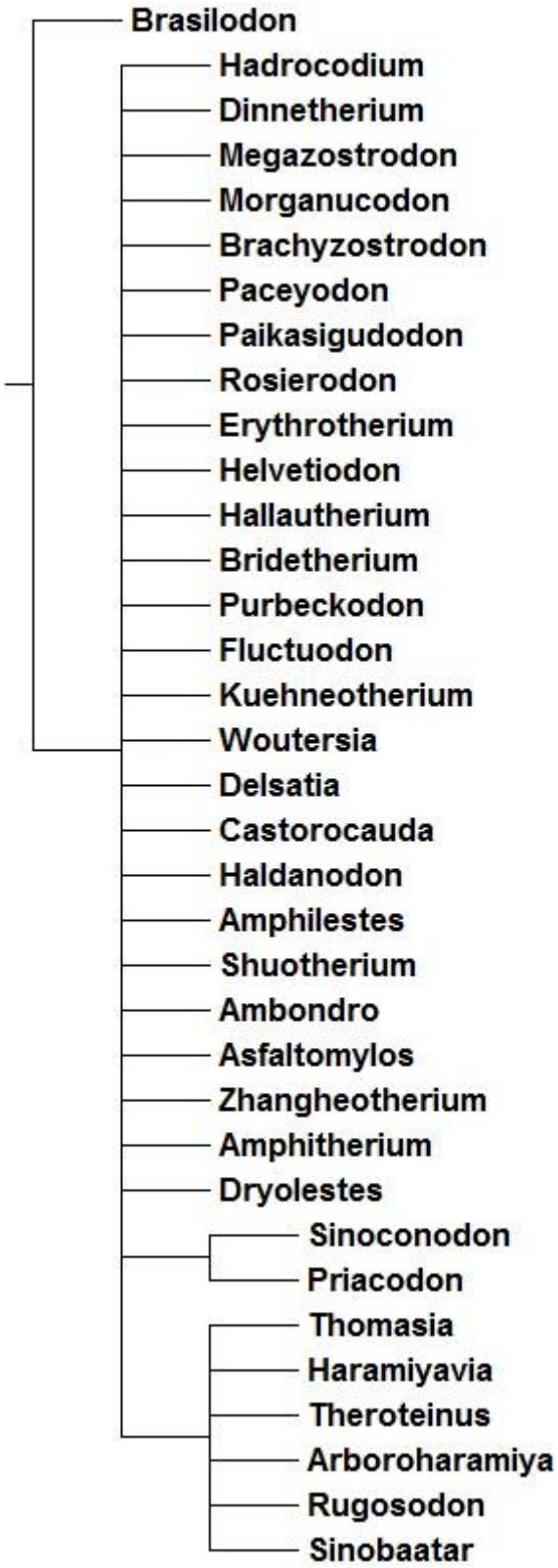
Consensus strict issu de la matrice « molaire » avec la combinaison « B&B »



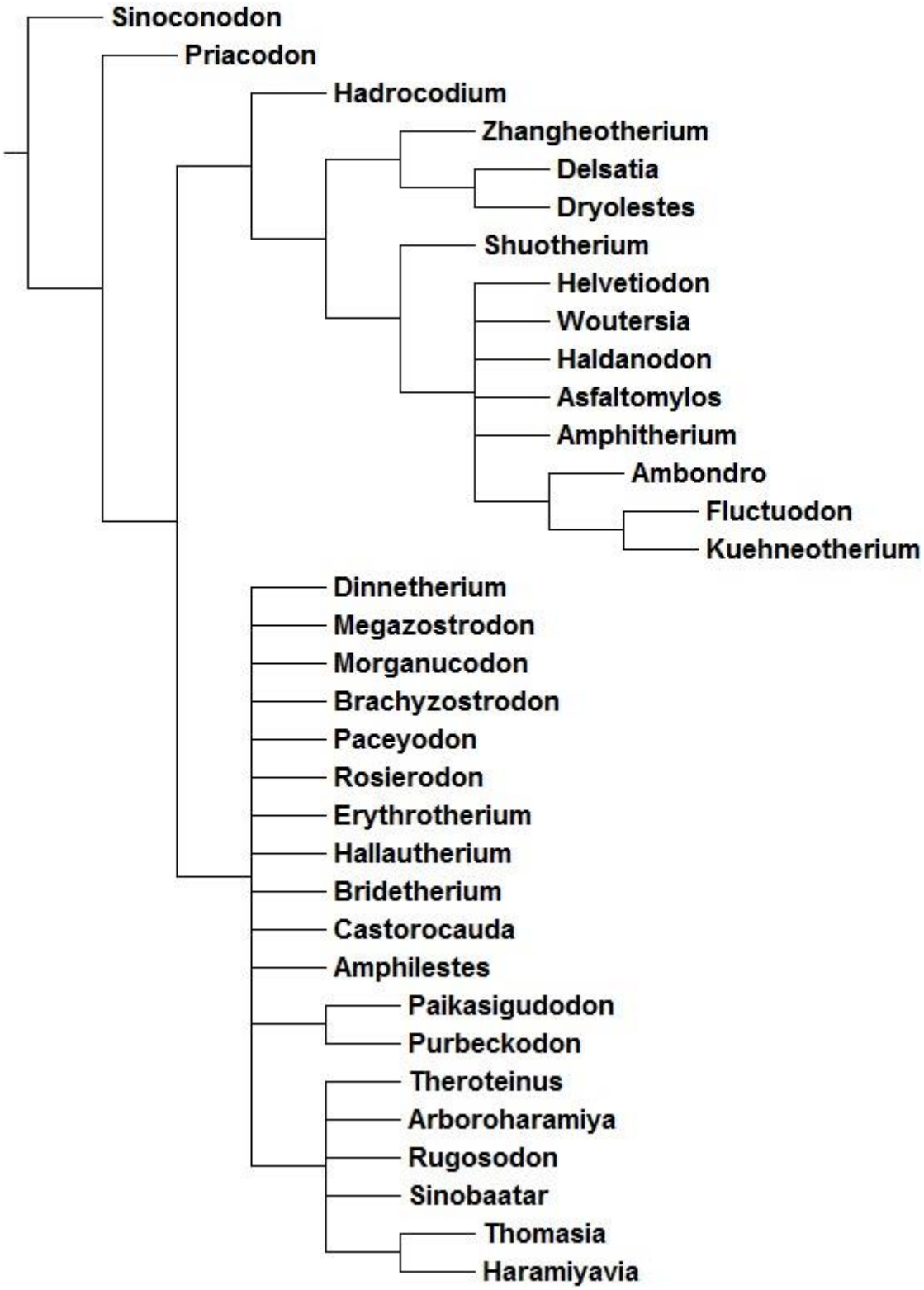
Consensus strict issu de la matrice « molaire » avec la combinaison « *Brasilitherium* »



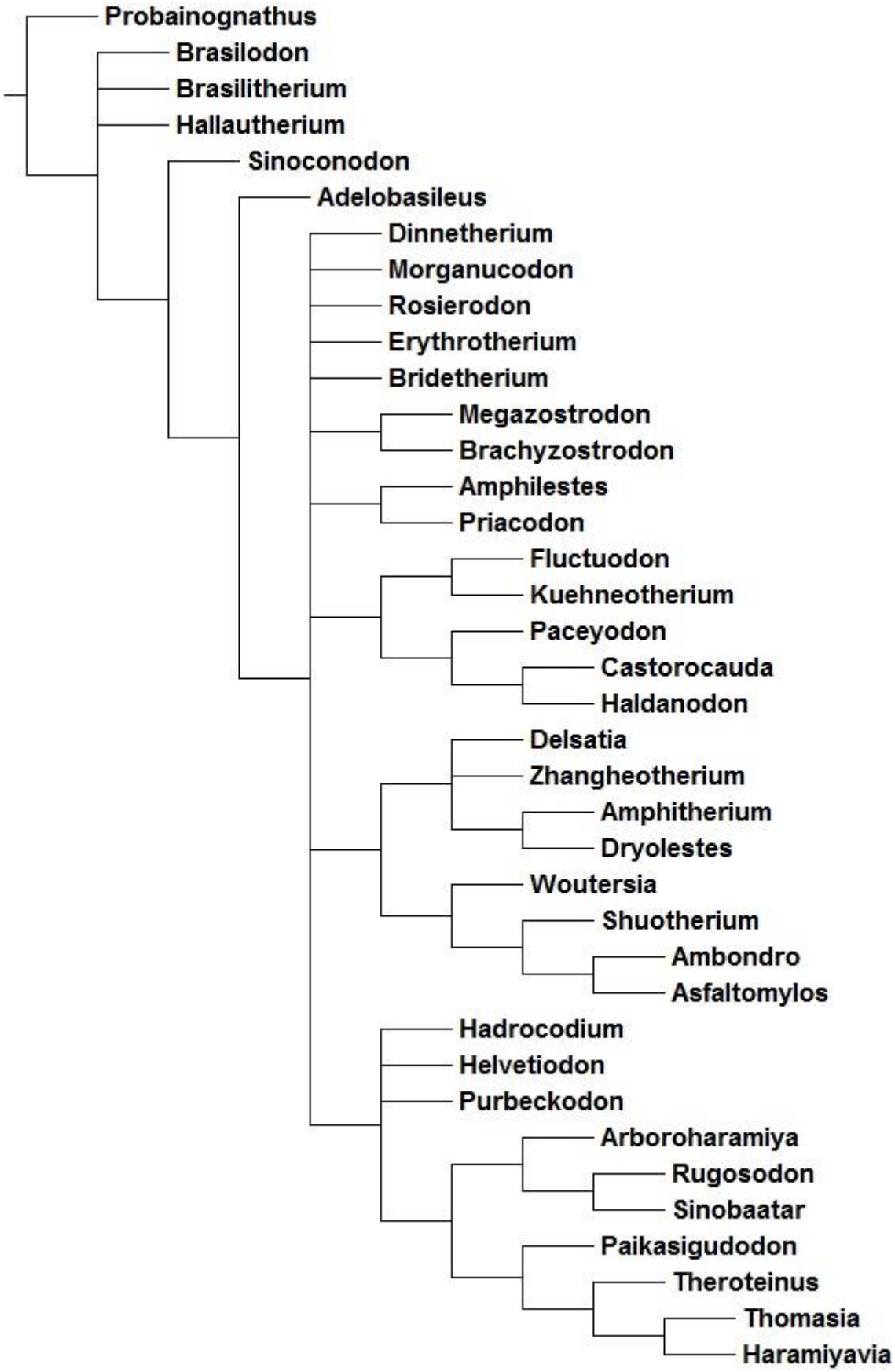
Consensus strict issu de la matrice « molaire » avec la combinaison « *Brasilodon* »



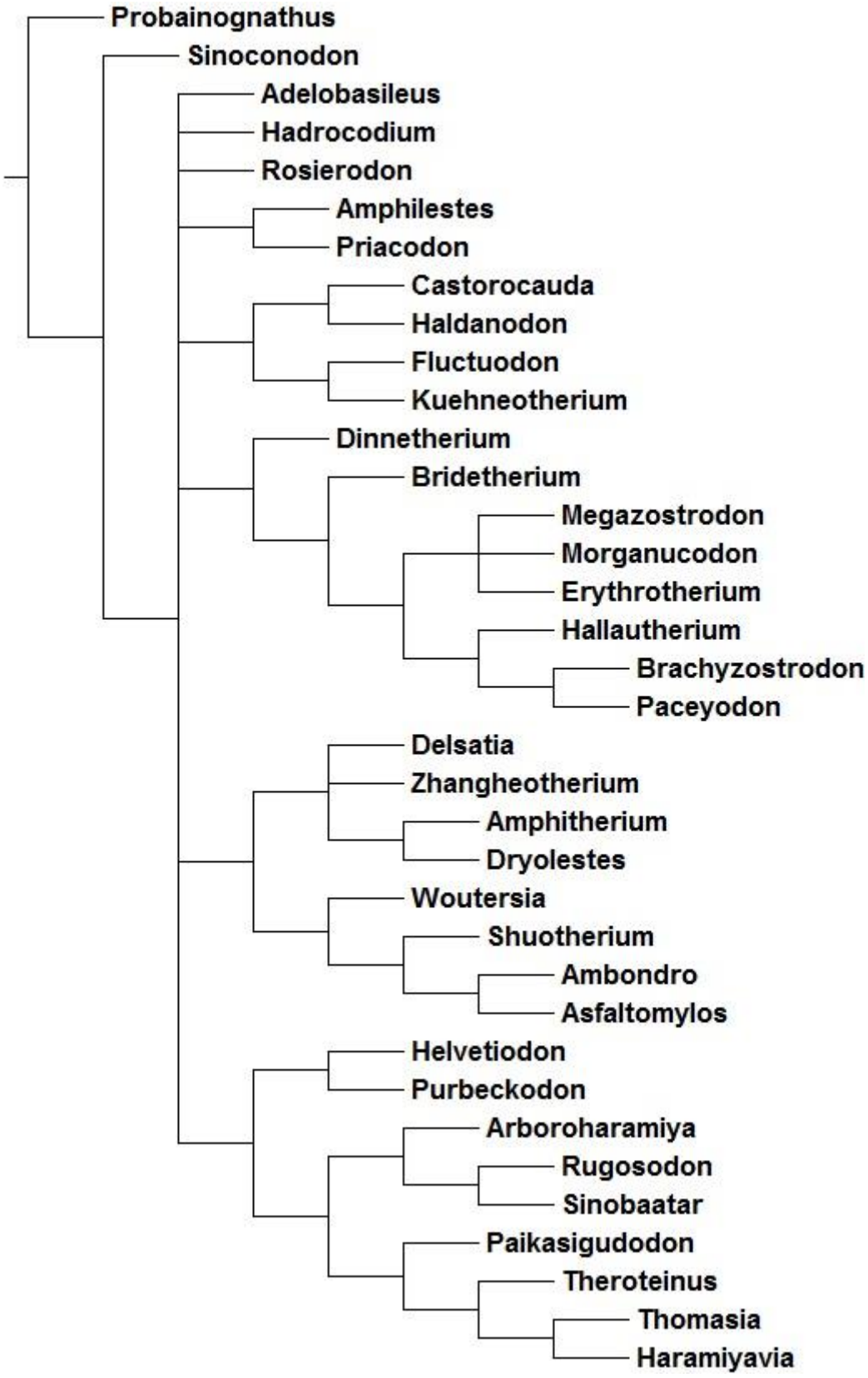
Consensus strict issu de la matrice « molaire » avec la combinaison « *Sinoconodon* »



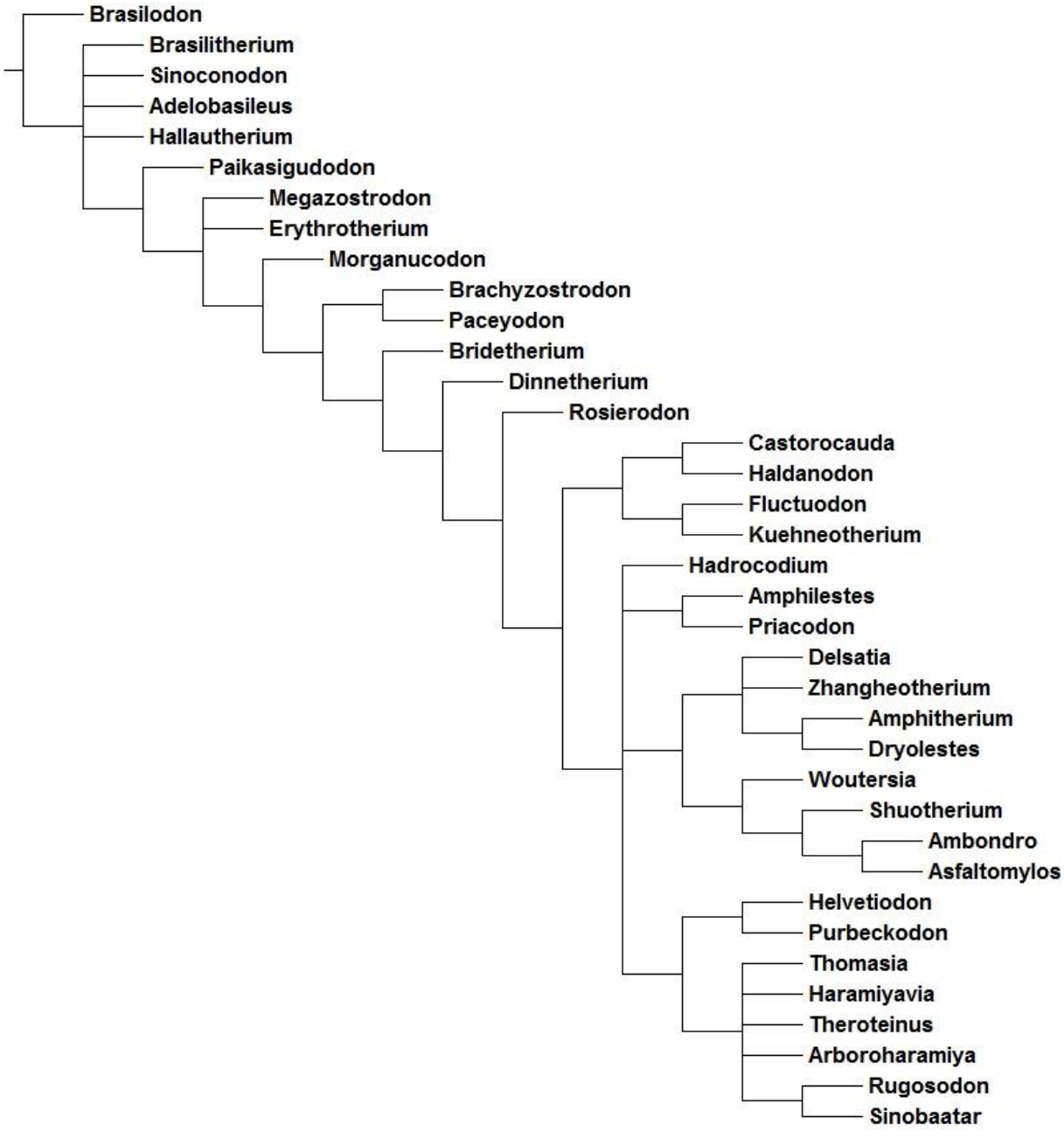
Consensus strict issu de la matrice « totale » avec la combinaison « Base »



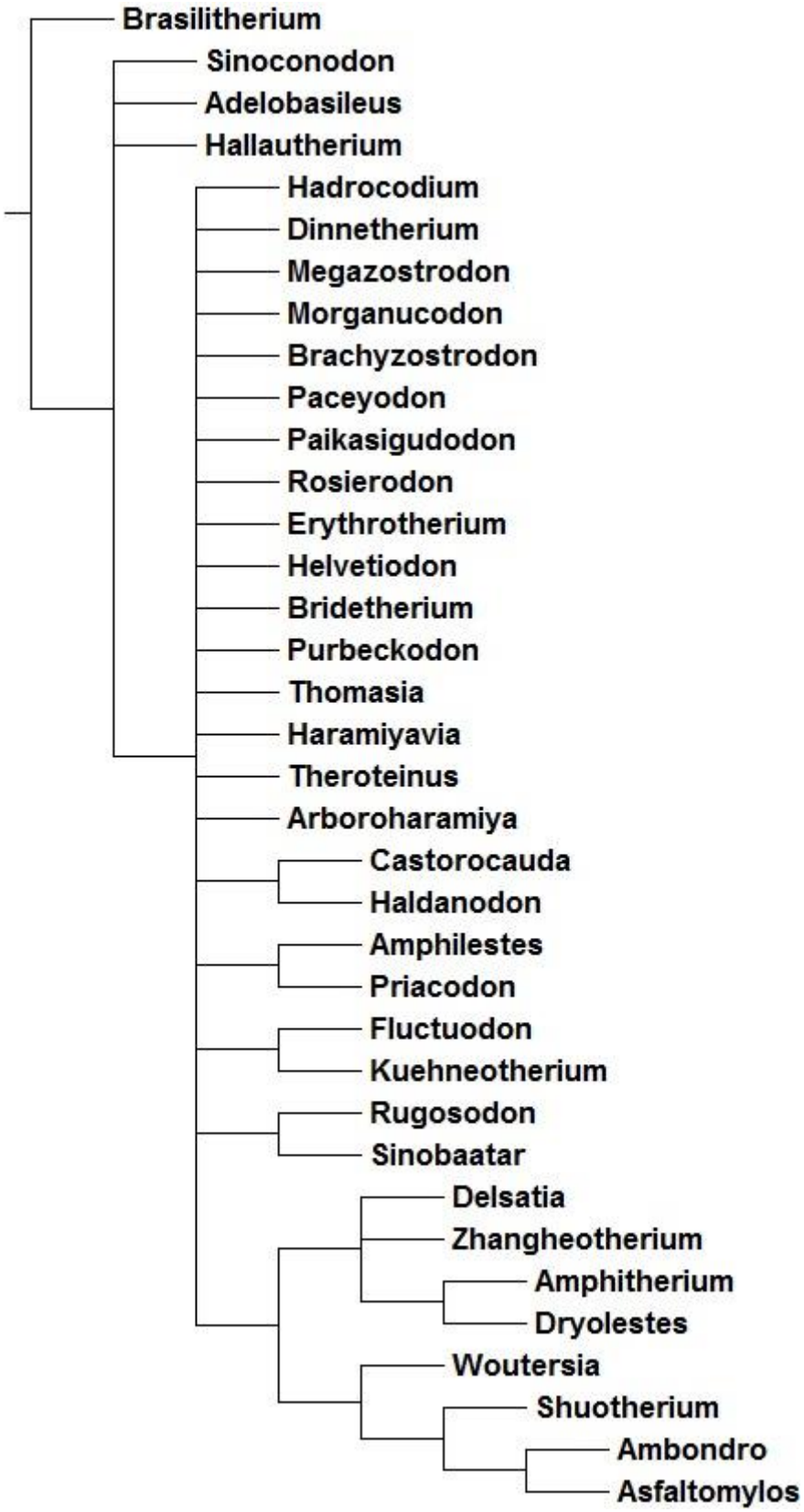
Consensus strict issu de la matrice « totale » avec la combinaison « *Probainognathus* »



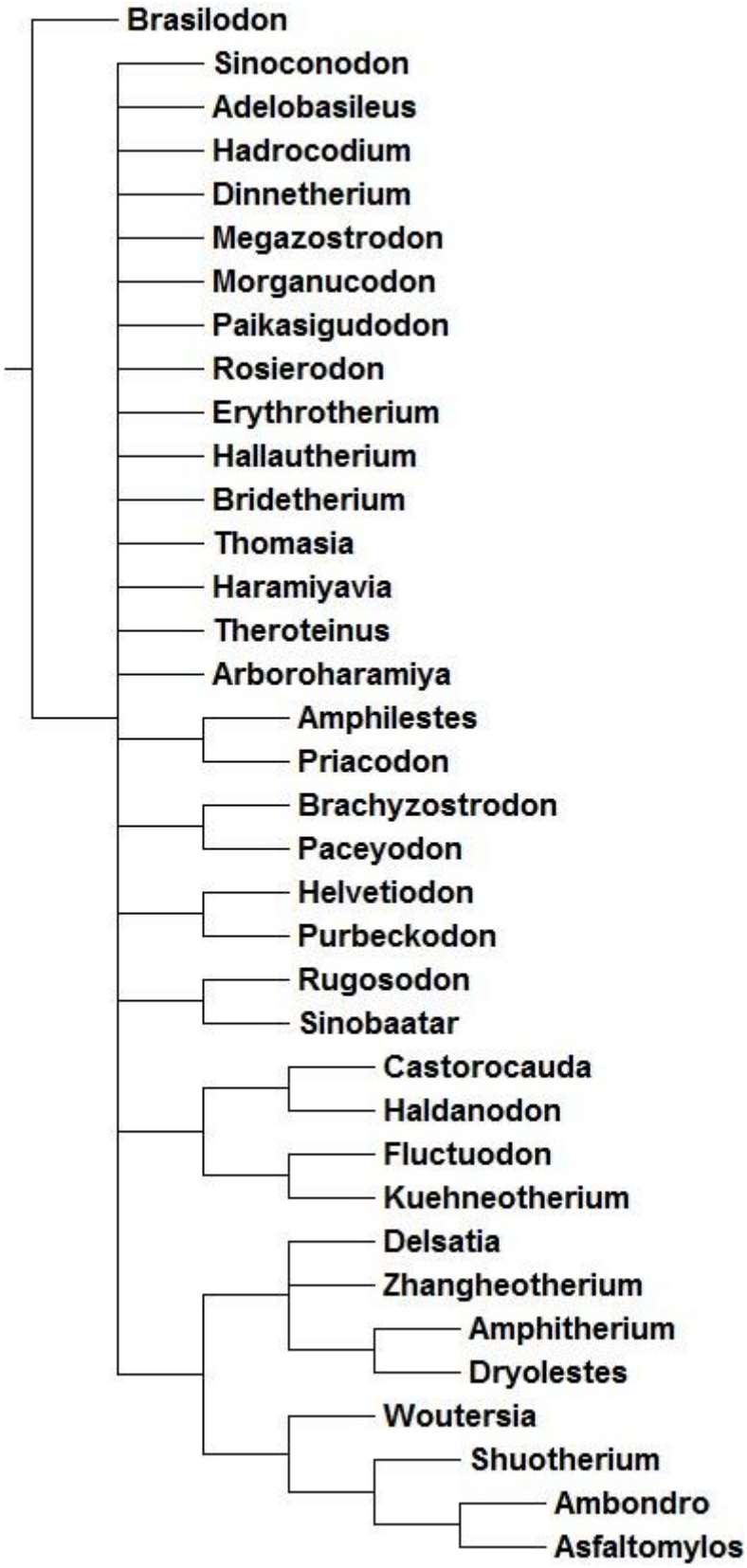
Consensus strict issu de la matrice « totale » avec la combinaison « B&B »



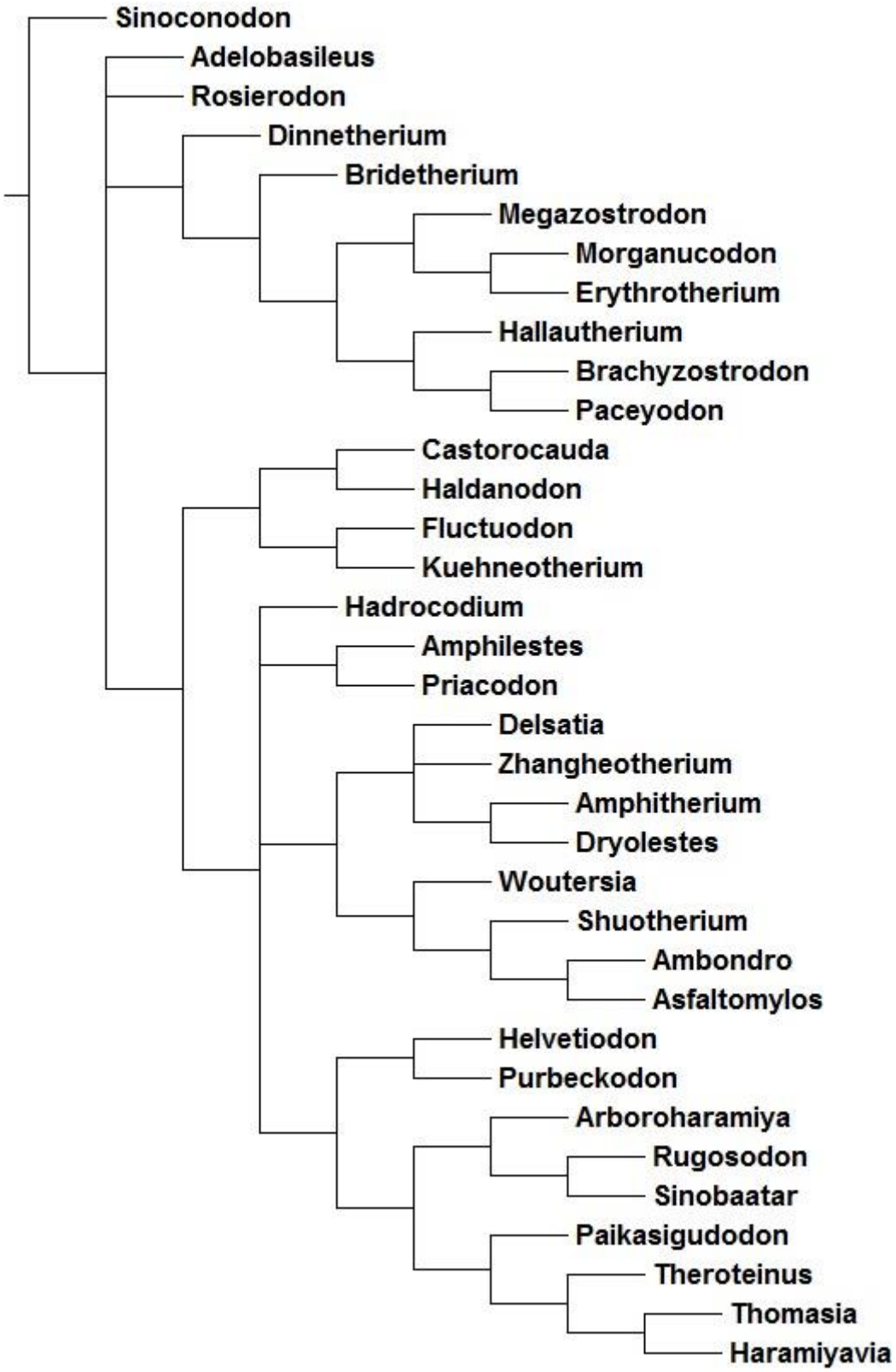
Consensus strict issu de la matrice « totale » avec la combinaison « *Brasilitherium* »



Consensus strict issu de la matrice « totale » avec la combinaison « *Brasilodon* »



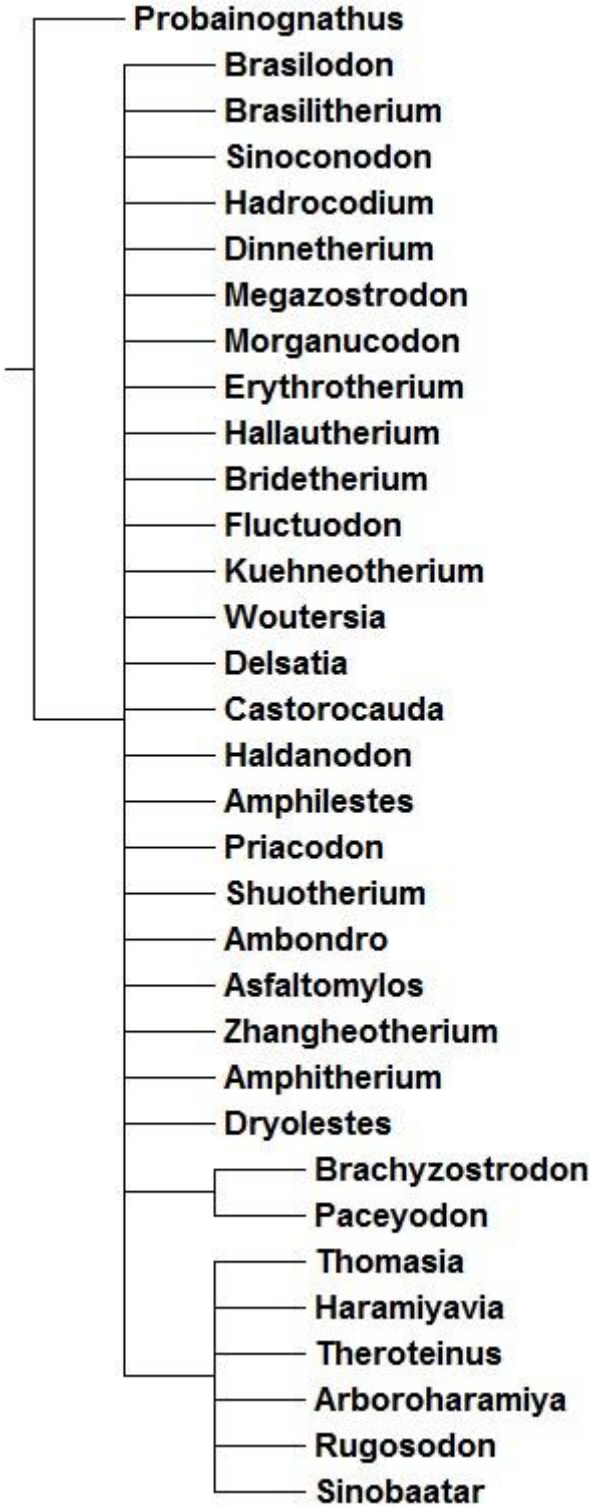
Consensus strict issu de la matrice « totale » avec la combinaison « *Sinoconodon* »



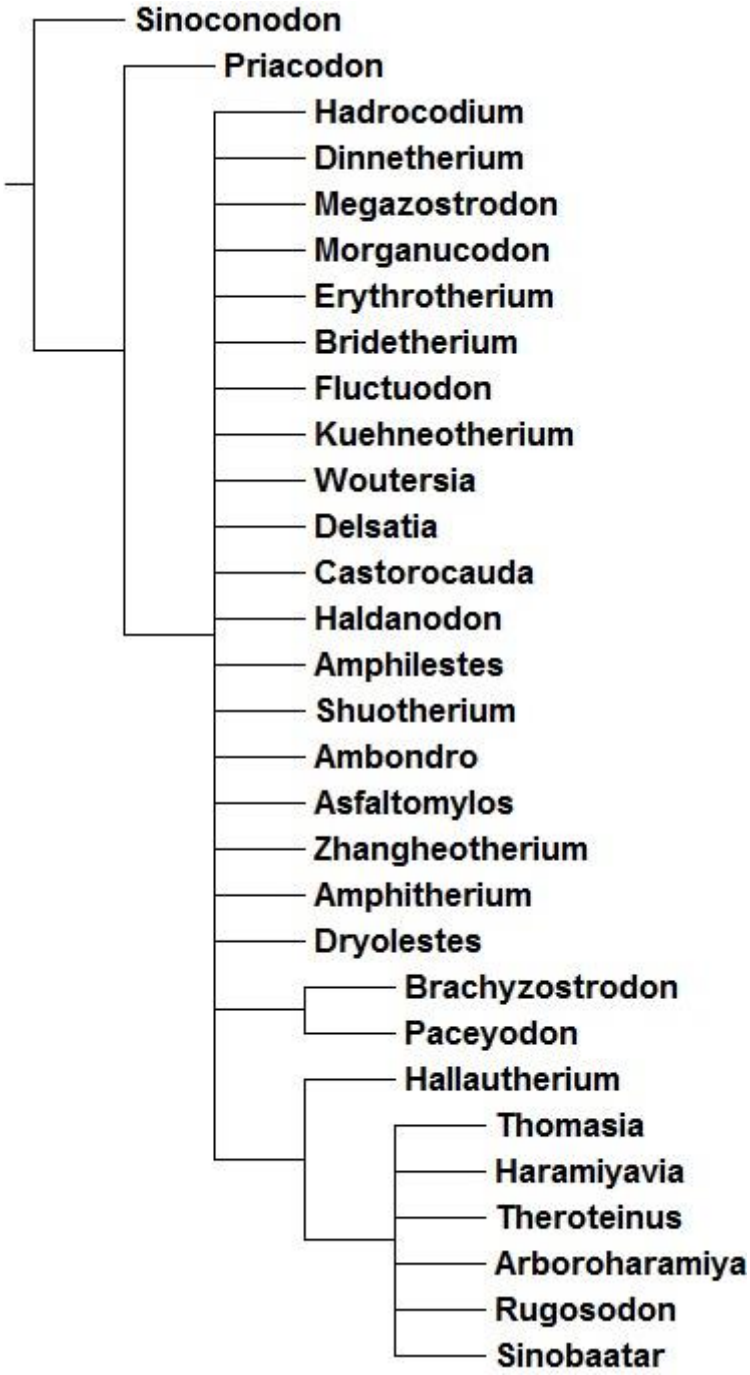
Annexe 6 : Résultats des tests en « minMorg »

Arbres issus d'une variante des matrices où certains taxons morganucodontes ont été enlevés (voir chapitre 10).

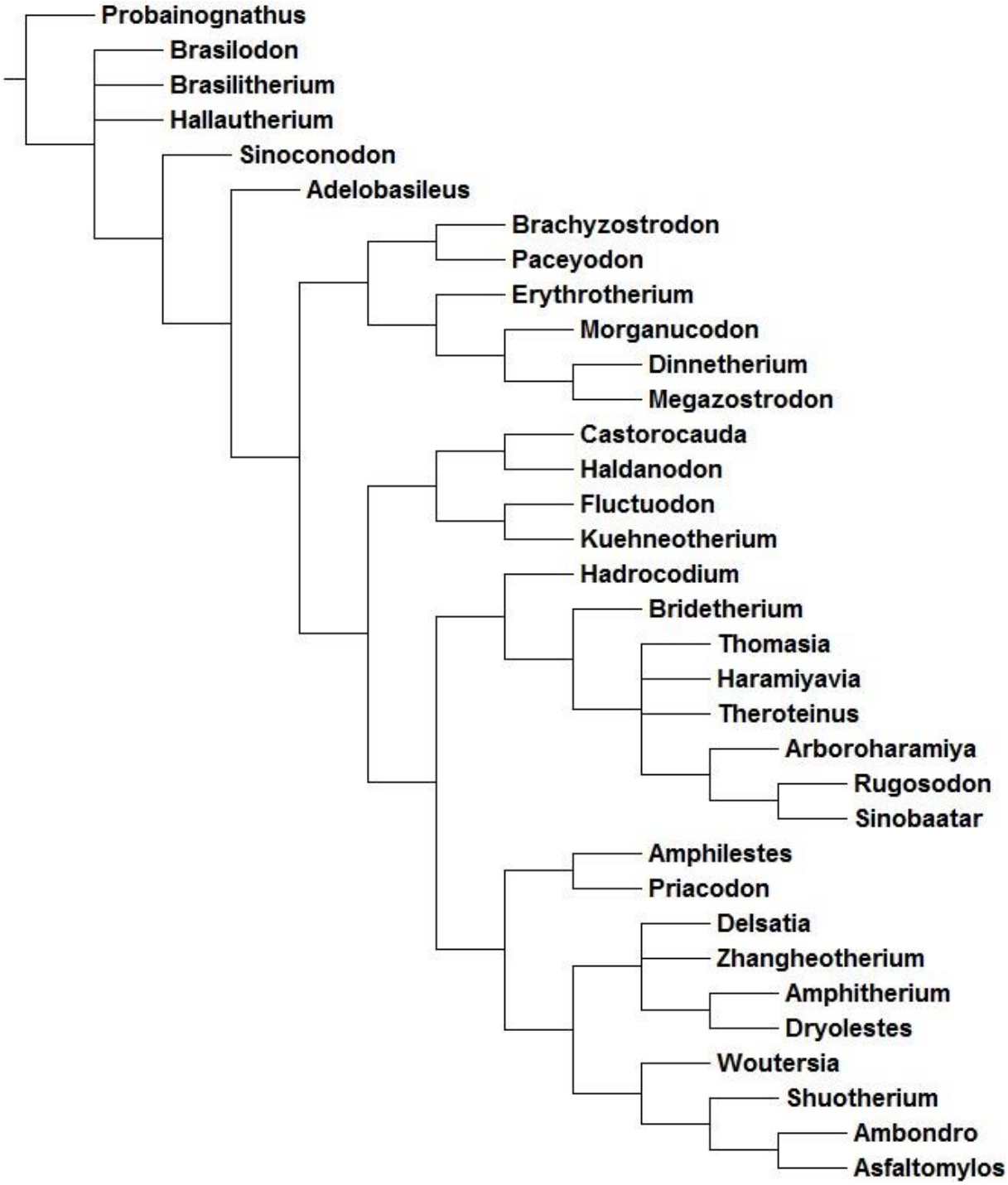
Consensus strict issu de la matrice « molaire » avec l'extra-groupe « Base » et les caractères non-ordonnés



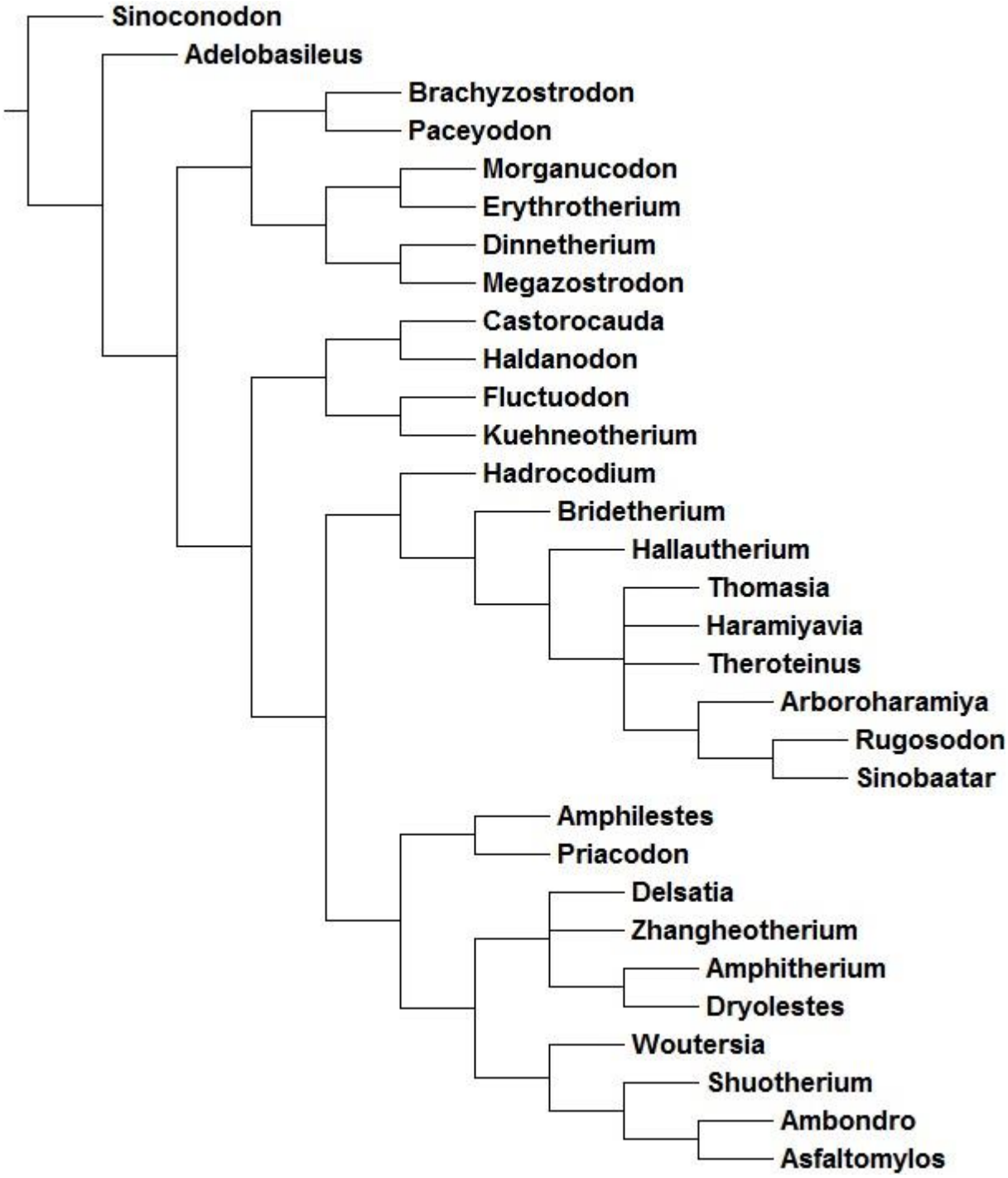
Consensus strict issu de la matrice « molaire » avec l'extra-groupe « *Sinoconodon* » et les caractères non-ordonnés



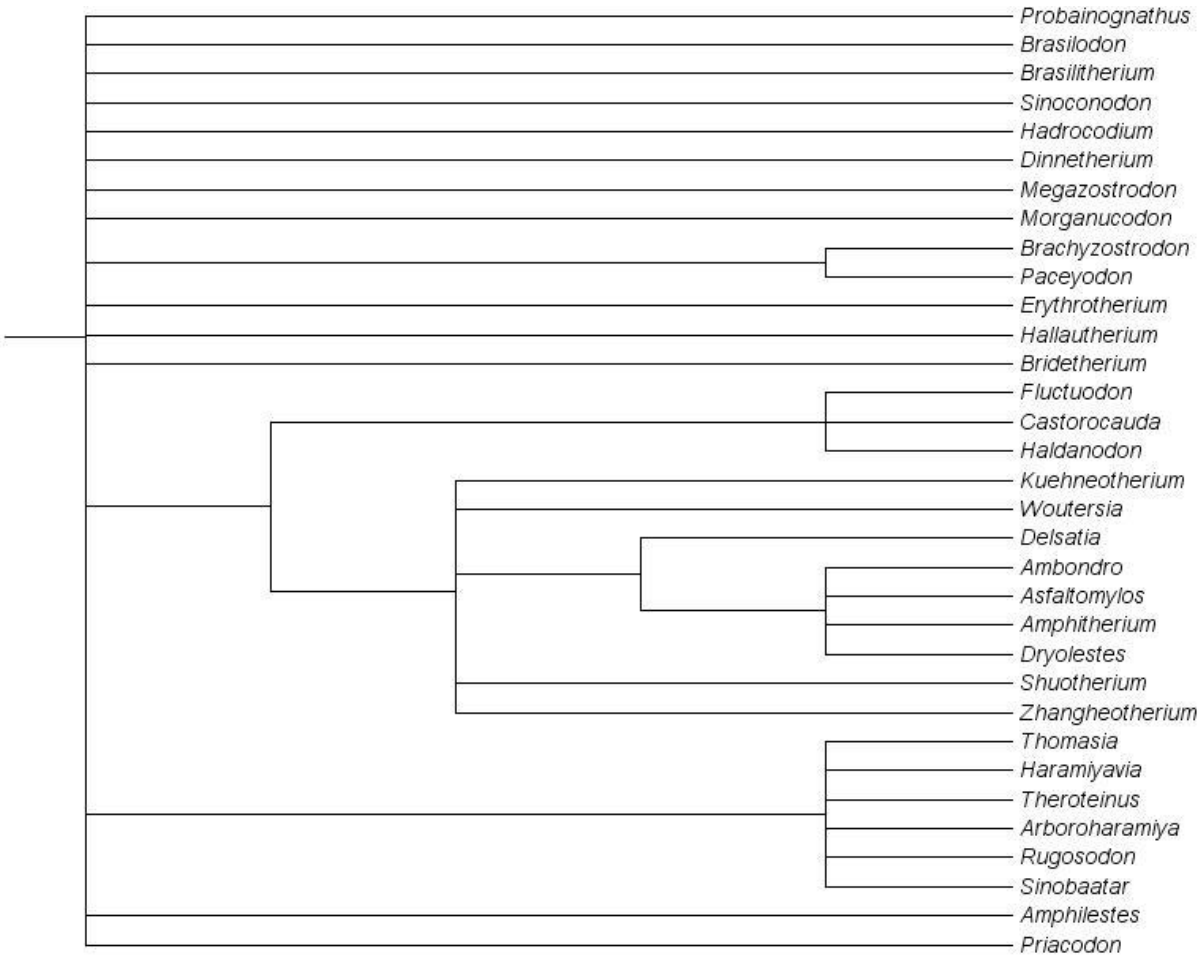
Consensus strict issu de la matrice « totale » avec l'extra-groupe « Base » et les caractères non-ordonnés



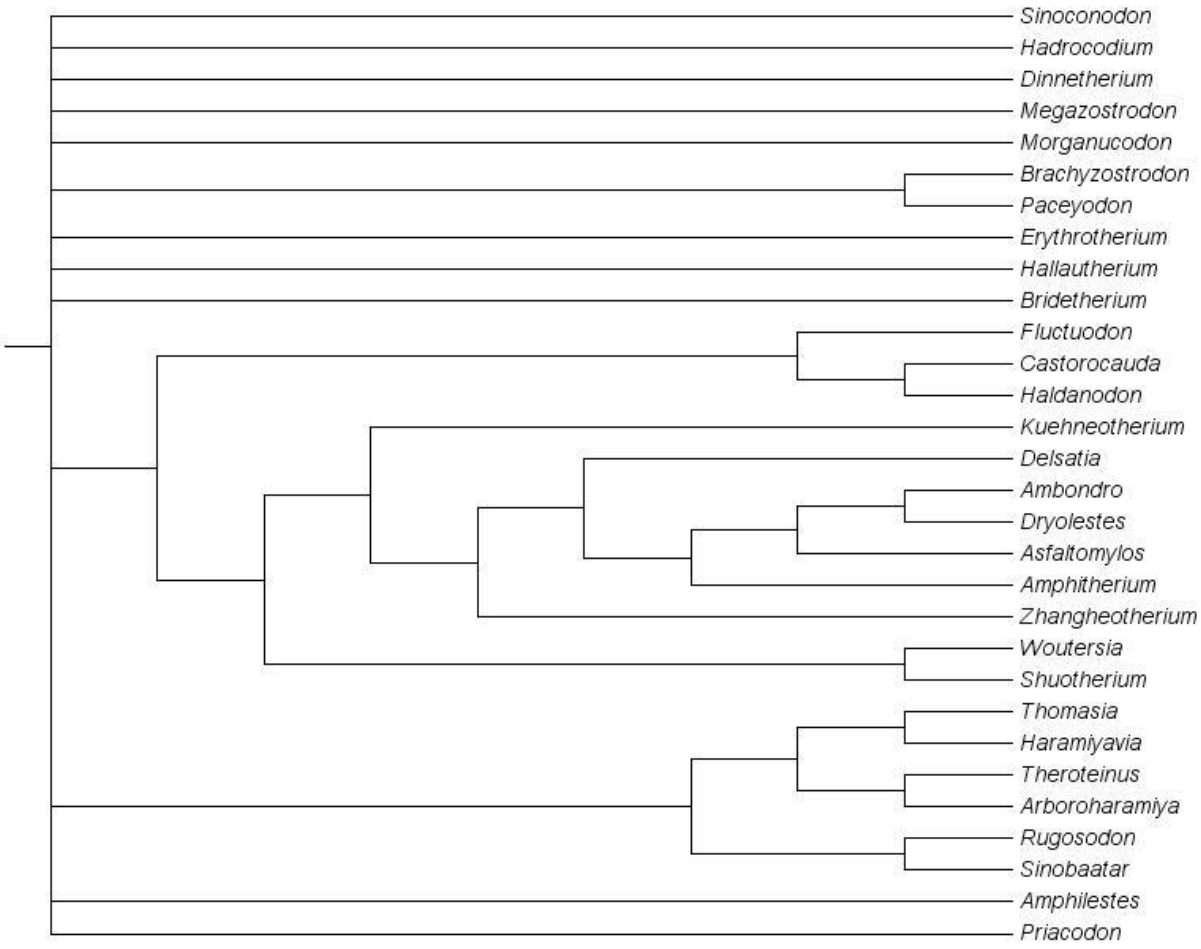
Consensus strict issu de la matrice « totale » avec l'extra-groupe « *Sinoconodon* » et les caractères non-ordonnés



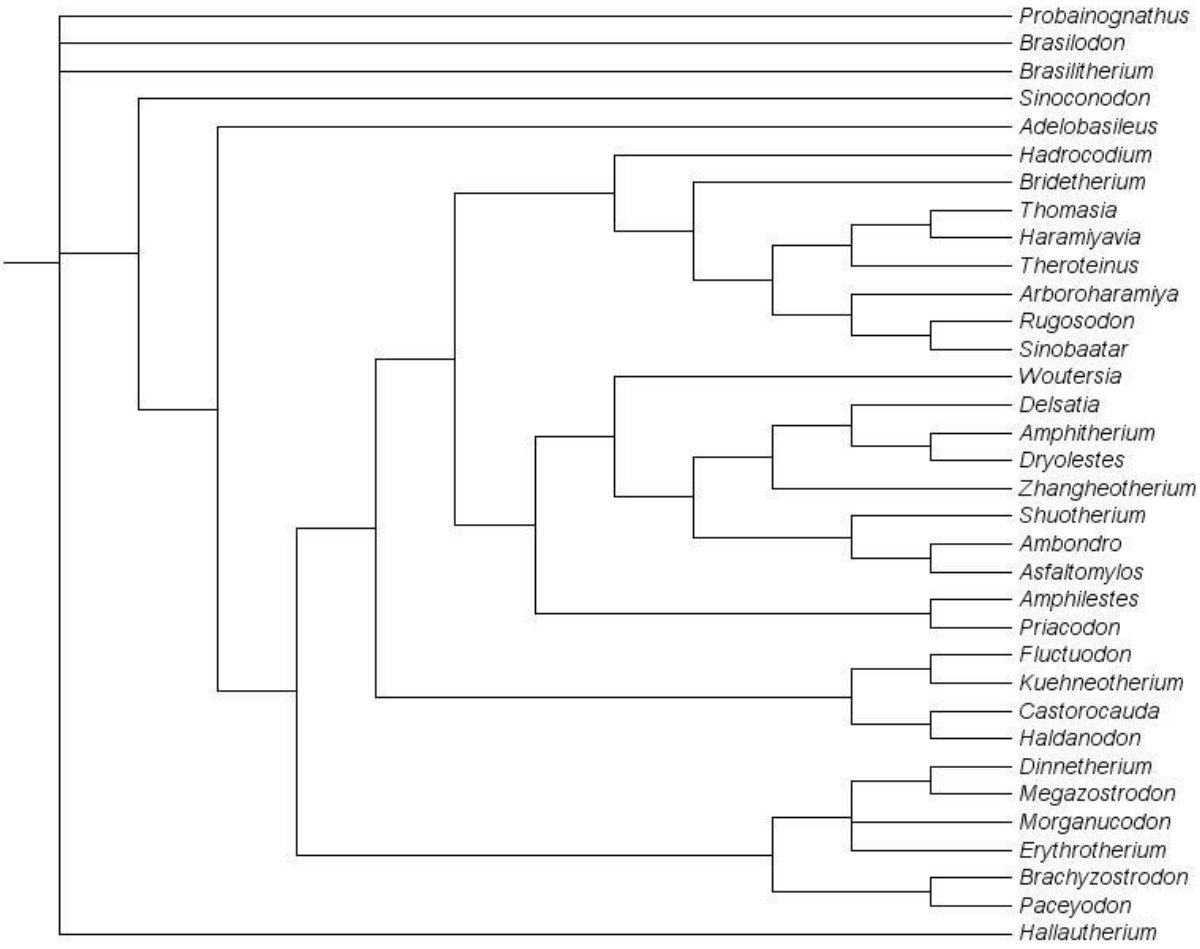
Consensus strict issu de la matrice « molaire » avec l'extra-groupe « Base » et les caractères ordonnés



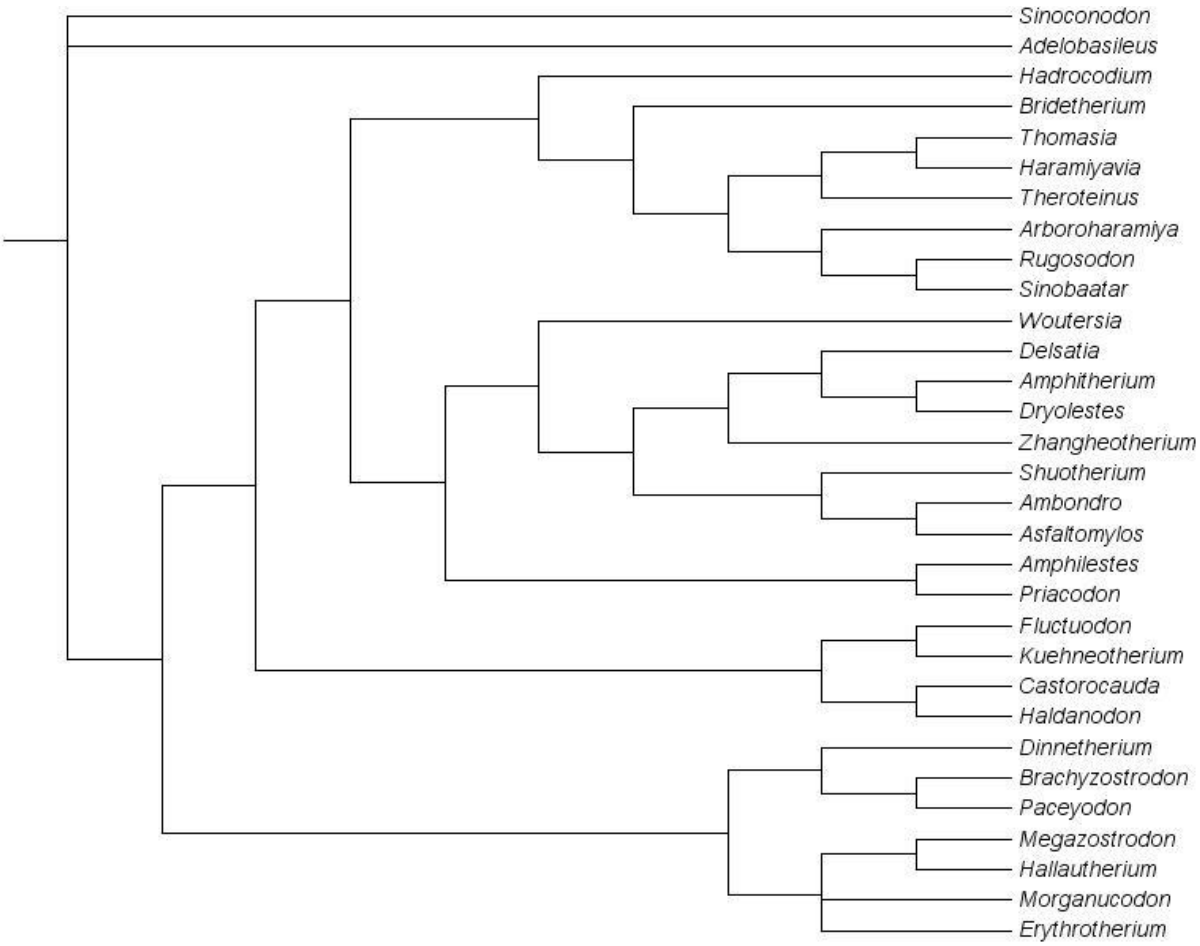
Consensus strict issu de la matrice « molaire » avec l'extra-groupe « *Sinoconodon* » et les caractères ordonnés



Consensus strict issu de la matrice « totale » avec l'extra-groupe « Base » et les caractères ordonnés



Consensus strict issu de la matrice « totale » avec l'extra-groupe « Sinoconodon » et les caractères ordonnés



Annexe 7 : Tableau des transformations

Tableau synthétisant les apomorphies au nœud pour les huit analyses développées dans la discussion du chapitre 10 (Première étude cladistique des mammaliaformes triasiques), en distinguant les transformations non-ambigües des transformations ambigües. Pour les caractères des molaires, les numéros des états sont notés et un code couleur permet d'identifier les transformations uniques, partagées et les réversions. Pour les autres caractères, seul le numéro du caractère est noté.

En gras : caractères des molariformes

Vert : transformations uniques sans réversions internes

Bleu : transformations uniques avec réversions internes

Orange: transformations homoplasiques avec taxons terminaux

Rouge : transformation homoplasiques avec taxons internes (si la ou les autres occurrences de la transformation sont ambigües, ces dernières sont marquées dans les colonnes correspondantes)

Molaires base non-ordonnés

Nœuds	Apomorphies		
	Non-ambiguës	acctran	deltran
42		**17, 30, 58**	
41 Mammaliaformes	**7(0), 8(0), 19(1), 34(1), 59(1)**	**18**	**17, 30, 58**
38	**3(5), 5(1), 8(3), 14(1)**	**13, 25, 33, 40, 57, 58, 61(1), 68(1), 73(1)**	
40 Allotheria	**1(1)*[1], 8(2), 17(0), 19(0), 21(1), 32(0), 34(3), 35(1), 36(1), 42(0), 55(0), 56(2), 61(1), 65(2), 67(0), 68(1), 73(1), 74(3)**	**6, 58, 64,**	**58**
39	**53(0), 59(0)**	**7, 13, 34, 58, 64, 68, 73, 74**	**58**

Molaires Sino non-ordonnés

Nœuds	Apomorphies		
	Non-ambiguës	acctran	deltran
47 Mammaliaformes	**34(1), 59(1)**	**19**	**19**
42 « symmétrodontes »	**30(0), 68(0)**	**25, 37, 41, 50, 55, 69**	
41 Mammalia	**3(2), 4(2), 8(0), 14(7), 16(7)**		**37, 50**
38	**10(1), 39(1), 64(1)**	**7, 41**	
37	**3(1), 5(1), 15(12), 37(1)**	**18**	**7, 25, 55**
36	**22(1)**	**14, 16, 21(1), 52, 56, 54**	
35	**8(3), 15(1)**	**4**	**14, 41, 56, 64**
40	**53(0)**	**17(0), 38, 42(0), 52**	
39	**58(0)**	**20**	**42(0)**
46 Triconodontes + allothères	**8(2), 18(1), 57(1), 58(2), 61(1), 62(1)**	**20, 24, 31, 65**	**31**
43	**43(2), 56(2), 60(0), 62(0)**	**10(1), 18, 19(0), 24,**	
45 Allotheria	**1(1)*[1], 17(0), 19(0), 21(1), 32(0), 34(3), 35(1), 36(1), 42(0), 56(2), 57(0), 67(0), 73(1), 74(3)**	**6, 24, 64(1)**	**65**
44	**53(0), 59(0)**	**7, 13, 34, 64, 68(0), 73, 74**	

Total base non-ordonnés

Nœuds	Apomorphies		
	Non-ambiguës	acctran	deltran
59	**6(1), 20(2),** 233, 265,	**30, 66, 68, 74**, 102, 153, 154, 179, 186, 187, 191, 226, 231, 232, 234, 237, 242, 243, 244, 245, 247, 248, 256, 261, 263, 268, 270, 271, 277, 279, 280, 282, 283, 285, 288, 290, 293, 300, 302, 307	102, 226, 231, 232, 234, 242, 243, 244, 245, 247, 261, 268, 271, 279, 280, 282, 283, 285, 288, 290, 293, 300, 307
58	252, 297, 298	**17, 34, 58, 59, 62**, 79, 80, 99, 104, 127, 142, 143, 459, 160, 162, 163, 168, 193, 228, 229, 237, 238, 260, 270, 277, 284, 301, 305, 036	
57 Mammaliaformes	225, 232, 235, 236, 251, 257, 258	248, 254, 278, 294	**17, 30, 34, 58, 59, 62, 66, 68, 74**, 79, 80, 99, 104, 127, 142, 143, 153, 154, 159, 160, 163, 186, 187, 193, 197, 228,229, 237, 238, 254, 256, 260, 263, 270, 277, 284, 301, 306
45	**19(0), 55(2), 56(2), 62(0),** 88, 89, 90, 135, 136, 137, 138, 227	**18, 34, 57, 60, 68(0), 74**, 75, 76, 100, 112, 114, 115, 123, 133, 134, 147, 148, 149, 150, 15, 155, 161, 164, 167, 169, 170, 171, 172, 174, 177, 179, 182, 192, 196, 200, 202, 203, 204, 205, 206, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 220, 223, 236, 237, 249, 254, 255, 257, 259, 272, 279, 281, 284, 287, 289, 296, 297, 299, 300, 303, 304, 307	
44 allothères + Paika	**1(1)*[1], 17(0), 32(0), 42(0), 55(0),** 107, 116, 144, 145	**6, 21(1), 36, 54, 57, 60, 61, 65, 67, 73**, 100, 125, 128, 131, 141, 183, 229, 276	**61, 65**, 76, 123, 134
41	**38(1), 39(2)**	**13, 27, 41, 70, 73**, 75, 109, 133, 135, 136, 138	
40 Haramiyides	**35(2)**	**55**	**13, 21(1), 27, 36, 67, 73**

Trias			
39	**53(0), 59(0)**	**7**	
43	**35(1), 58(0)**, 78, 86, 87, 92, 96, 101, 102, 127	**2, 29, 34, 64(1), 68, 72, 74**, 77, 94, 128, 129, 131	**34**, 74, 75, 100, 128, 155, 162, 193, 223
42 Multituberculata	**1(2), 45(1)**, 95, 97, 124, 137, 140, 184, 190, 197, 199, 219	**54**, 94, 119, 133, 221	**21(1), 72, 73**, 77, 94, 125, 131, 148, 150, 151, 161, 164, 167, 168, 169, 170, 171, 172, 174, 182, 183, 191, 196, 200, 202, 203, 204, 205, 206, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 220, 221
46	**6(0), 8(3), 25(0)**	**3, 14, 17(0), 20, 24(1), 42, 57, 61**, 80, 100, 102, 115, 125, 136, 143, 146, 168, 222, 235, 277, 294	**57, 61**
50 Doco + Kuehneo	**5(1), 8(3), 37(1), 39(1), 41(2), 50(2), 62(0), 68(0)**, 135	**14, 15, 56, 65**, 85, 122, 132, 133, 145, 152, 153, 154, 178, 179, 185, 186, 191, 193, 199, 221, 226, 235, 236, 244, 257, 273, 274, 299, 302	
48 Docodonta	**11(1), 12(1)**	**25, 53(0), 64(1)**, 79, 81, 88, 120	
47	**4(3), 10(1), 24(1)**	**8(0), 16**	**25**, 79, 81, 85, 88, 122, 132, 145, 178, 179
49 Kuehneotheriidae	**4(1), 16(5), 22(1), 58(1)**	**7, 14, 31(0), 52**, 100, 104	**14, 56**
56 Mammalia	**3(2), 4(2), 8(0), 14(7), 16(7), 31(0), 37(2), 50(7), 62(0)**, 82, 88, 103, 104, 106, 120	**18, 23, 30, 41, 69**, 77, 94, 95, 101, 113, 114, 117, 125, 133, 135, 144, 145, 146, 148, 149, 155, 156, 161, 163, 164, 165, 166, 167, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 188, 189, 190, 191, 192, 194, 195, 196, 197, 198, 201, 202, 206, 207, 208, 210, 211, 212, 213, 218, 221, 223, 226, 227, 230, 239, 240, 241, 253, 254, 255, 259, 560, 564, 266, 275, 289, 292, 295	

53	**33(1), 39(1), 40(0), 64(1)**	**6, 7, 41**, 83, 89, 95, 101, 116, 118, 119, 135	
52	**10(1), 21(1), 22(1)**	**49**	**30**, 77, 89, 114, 117, 118, 119
51 Australosphenida	**5(1), 15(2)**	**13, 18, 20**, 78, 81, 104	**6**
55 Trechnotheria	**42(0), 53(0), 58(0), 68(0)**, 75, 76, 87, 92, 107	**17(0), 38, 52**, 79, 93, 98, 102	94, 95, 135, 144, 145, 146, 223
54 Cladotheria	**4(4), 19(0)**, 78, 81,	**5(1), 10(1), 15(2), 37, 38, 43, 46, 49, 50, 51, 73**, 104, 114, 117, 141	**30**, 93, 98, 102, 104

Total sino non-ordonnés

Nœuds	Apomorphies		
	Non-ambiguës	acctran	deltran
55	17(1), 168, 226, 248, 277, 278, 294, 299, 305	**58, 69**, 80, 127, 133, 135, 145, 147, 148, 149, 159, 160, 161, 162, 178, 179, 221, 222, 225, 228, 229, 232, 237, 249, 251, 253, 254, 255, 258, 273, 274, 302, 304, 307	**58**, 80, 127, 222, 225, 228, 229, 232, 251, 258
51	10(0), 75, 76, 88, 89, 90, 155, 164, 167, 169, 170, 171, 172, 174, 182, 192, 196, 202, 206, 211, 212, 213, 227, 235, 236, 289	**23, 74**, 77, 94, 104, 114, 117, 125, 134, 135, 136, 137, 146, 177, 183, 185, 193, 197, 210, 218, 221, 223, 237, 259, 272, 275, 279, 287, 196, 197, 300, 303	104, 114, 133, 148, 149, 159, 160, 161, 162, 179, 237, 254
43	7(0), 8(2), 19(0), 56(2)	**6, 32, 34,** 55(0), **73**, 100, 104, 107, 116, 123, 128, 131, 138, 141, 144, 145, 150, 177, 178, 200, 203, 204, 205, 209, 210, 214, 215, 216, 217, 220, 226, 229, 276	
41 allothères + Paika	1(1)*[1], 17(0), 42(0), 61(1)	21(1), **36, 54, 65, 67**	**32, 55, 65**, 104, 107, 116, 123, 134, 144, 145
38	38(1), 39(2)	**13, 27, 41, 70, 73**, 75, 77, 94, 109, 136	
37 Haramiyida Trias	35(2)	**55, 58**	**13,** 21(1), **27, 36, 58, 67, 73**
36	53(0), 59(0)	**7**	
40	35(1), 58(0), 78, 86, 87, 92, 96, 101, 102, 127	**2, 29, 34,** 64(1), **68, 72, 74**, 128, 129, 131, 133, 135, 138	**34, 68, 74**, 100, 128, 135, 136, 223
39 Multituberculata	1(2), 45(1), 95, 97, 124, 140, 184, 190, 199, 219	**54**, 119, 191	21(1), **72, 73**, 77, 94, 125, 131, 133, 137, 150, 151, 183, 191, 197, 200, 203, 204, 205, 209, 210, 214, 215, 216, 217, 218, 220, 221
42	57(2), 60(1)	10(1), **55**	**55**

49 Mammalia	3(2), 4(2), 8(0), 14(7), 16(7), 37(2), 50(7), 82, 103, 106, 120	7(0), **30, 41**, 95, 101, 113, 136, 137, 144, 146, 156, 163, 165, 166, 173, 175, 176, 180, 181, 188, 189, 190, 191, 194, 195, 198, 201, 207, 208, 218, 230, 237, 239, 240, 241, 257, 260, 264, 266, 292, 295	
46	33(1), 39(1), 40(0), 64(1)	**6, 7, 41, 68**, 75, 76, 83, 95, 101, 116, 118,119	
45	10(1), 21(1), 22(1)	**49, 58, 65**	**30**, 75, 76, 77, 117, 118, 119
44 Australosphenida	5(1), 15(2)	**6**	**16, 18, 20**, 78, 81
48 Cladotheria	42(0), 53(0), 87, 92, 107	17(0), **38, 52,** 58(0), 79, 89, 93, 98, 102, 135	94, 95, 135, 144, 145, 146, 223
47 Trechnotheria	4(4), 19(0), 78, 81, 114, 115	5(1), 10(1), 15(2), **37, 38, 43, 46, 49, 50, 51, 73, 74**, 117, 125, 141	**30**, 93, 98, 102
50 Eutriconodonta	33(1), 78, 86, 87, 92, 93, 101, 102	**31,** 59(0), **68**, 95, 97, 127, 134, 135, 136, 223, 246, 254, 255, 259, 262, 282, 291, 292	94, 117, 134
54 Doco+Kuehneo	5(1), 15(1), 37(1), 39(1), 41(2), 50(2)	**4, 12, 16,** 22(1), **56, 65**, 85, 122, 132, 133, 152, 153, 154, 179, 186, 199, 244	135
52 Kuehneotheriidae	8(3), 14(4)	**52**, 100	**4, 16,** 22(1), **56**
53 Docodonta	11(1), 24(1), 25(3), 79, 81, 88	**4, 16,** 31(1), 53(0), **58,** 64(1), 104, 120	**4**, 85, 104, 122, 132, 145, 178, 179
61 Morganucodonta	18(1), 24(1), 61(1), 62(1), 236, 257	**57, 58, 68**, 100, 102, 104, 115, 125, 158, 191, 193, 225, 232, 235, 251, 254, 258	**58, 68**, 232, 251, 258
60	8(2), 31(1)	**73**, 127	
59	7(0), 10(0), 25(0)		**57**
56	20(1), 55(0)	**73**	191, 193, 225, 237, 254
58	17(0), 24(0)	**6,** 33(1), 40(0)	
57	3(5), 5(1), 8(3), 14(1)	**13**	

Molaires base ordonnés

Nœuds	Apomorphies		
	Non-ambiguës	acctran	deltran
58	8(0), 19(1), 34(1), 59(1)	17(1), 58	17(1)
51 Triconodontes + allothères	24(1)	30, 58, 61, 62, 65, 68	
50	10(1), 17(3)		30
49	8(2), 18(1)		58, 61, 62, 68
48	25(1), 57(1)	55	
47	7(0), 10(0), 20(1), 25(0)	6	55
46	17(1), 24(0), 34(3)	58, 74	
38	3(5), 5(1), 8(3), 14(1)		20, 33, 40, 55, 58, 73
45	19(0), 56(2)	6, 18, 32, 58, 62, 73, 74	
39	43(2), 60(0)	10(1)	62
44 Allotheria	17(0), 21(1), 35(1), 42(0)	1, 36, 57, 67	65, 74
42 Haramiyida	13(1)	38, 39, 54, 73	1, 32, 36, 67, 73
40	53(0), 59(0)	7(2), 34, 68, 74	
41	64(1)	40	54
43 Multituberculata	45(1), 72(1)	1, 58(0)	1, 57, 73
57 « symmétrodontes » + Helvetiodon	4(2), 16(6), 37(1), 39(1), 41(2)	14, 52, 69	58
53	5(1), 12(2), 15(1), 50(1)	10(1), 22, 25, 56	
52	11(1), 24(1), 64(1)	4(3), 14, 15(2), 52(2), 55, 56, 60	4, 10, 16, 25
56 Mammalia	3(1), 7(2), 14(7), 16(7), 31(0), 37(2), 50(7)	18, 40, 49	4
55	20(3), 38(2), 39(0), 42(0), 52(3), 53(0), 58(0)	3, 7(0), 17(0), 40, 41, 49	
54	4(3), 5(1), 10(1), 13(1), 15(2), 19(0)	6, 37, 38, 43, 46, 49, 50, 51, 73	

Molaires sino ordonnés

Nœuds	Apomorphies		
	Non-ambiguës	acctran	deltran
55 Mammaliaformes	34(1), 59(1)	19	19
46	30(0), 68(0)	25, 37, 39, 41, 55, 56, 69	
45 « symmétrodontes » + Helvetiodon	4(2), 16(6)	8, 14, 22	25, 37, 39, 41, 55
36	5(1), 12(2), 15(1), 50(1)	10(1), 25	
35 Docodonta + Helvetiodon	11(1), 24(1), 64(1)	4(3), 14, 15(2), 55, 56(2), 60	4, 10, 16, 25
44	3(1), 7(2), 16(7), 31(0), 37(2), 50(7)	14(5), 49	4, 8, 14
42	18(2), 38(1), 52(2)		
41 Mammalia	14(7), 53(0)	3, 7(0), 17(0), 22, 38, 39, 41, 42(0), 49	
40	20(3), 58(0)		38, 39, 42(0), 52
39	4(1), 5(1), 10(1), 15(2), 19(0)	37, 38, 43, 46, 49, 50, 51, 73	
38	6(2), 13(1)	12	
37	14(5)	3	
43	33(1), 40(0), 64(1)	23, 41, 56, 68	
54 triconodontes + allothères	7(0), 8(2), 18(1), 57(1), 58(2), 61(1), 62(1)	57, 65	
47	3(5), 5(5), 8(3), 14(1)	20, 33(1), 40(0), 55, 73	
48	43(2), 56(2), 60(0), 62(0)	10(1), 18, 19(0)	
53 Allotheria	17(0), 19(0), 21(1), 34(3), 35(1), 42(0), 74(3)	1, 6(2), 32, 36, 56(2), 57, 67, 73	65
51 Haramiyida	13(1)	38(1), 39, 54, 73	1, 32, 36, 67, 73
49	53(0), 59(0)	7, 34, 68(0), 74	
50	64(1)	40(0)	54
52	45(1), 72(1)	1, 58(0)	1, 56(2), 57,

Multituberculata			**73**

Total base ordonnés

Nœuds	Apomorphies		
	Non-ambiguës	acctran	deltran
39 Kuehneotheriidae	**4(1), 8(3), 14(4), 16(5), 22(1), 37(1), 39(1), 41(2), 52(1), 56(1), 61(0)**	**5(1), 7, 15, 20, 31(0), 55, 68**, 100, 104	**20, 55**
46	**3(1), 4(2), 8(0), 14(4), 16(7), 31(0), 37(2), 40(0), 50(7), 61(0)**	**39(1), 64, 69**, 77, 82, 88, 94, 95, 101, 103, 104, 106, 113, 114, 117, 120, 125, 127, 133, 144, 145, 146, 148, 149, 155, 156, 159, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 180, 181, 182, 183, 188, 189, 190, 191, 192, 194, 195, 196, 197, 198, 201, 202, 206, 207, 208, 210, 211, 212, 213, 218, 221, 223, 226, 227, 230, 239, 240, 241, 253, 254, 255, 257, 259, 260, 264, 266, 275, 289, 292, 295	
45 Mammalia	**3(2), 14(7), 30(0)**	**20, 65, 68**	**4, 20, 37**, 82, 88, 103, 104, 106, 120
42 Trechnotheria	**53(0)**, 75, 76, 87, 92, 107	**17(0), 33, 38, 39, 42(0), 52, 64**, 79, 93, 98, 102	94, 95, 144, 145, 146, 223
41	**40(1)**	**20, 58**, 78, 81, 104, 114, 115, 117, 141	**38, 42(0), 52, 58**
40 Cladotheria	**4(4), 15(2), 19(0)**	**5(1), 10(1), 37, 38, 43, 46, 49, 50, 51, 73(2)**	78, 81, 93, 98, 102, 104, 115, 127
44	**10(1), 21(1), 22(1)**, 89, 118, 119	**49, 58**, 83, 95, 101, 116, 135	77, 114, 117
43 Australosphenida	**5(1), 6(2), 13(1), 15(2)**	**18, 20**, 78, 81, 104	
49 Allotheria	**1(1)***[1], **17(0), 19(0), 21(1), 32(0), 34(3), 35(1), 36(1), 42(0), 65(2), 67(0), 73(2), 74(2)**, 76, 88, 89, 90, 100, 107, 116, 123, 128,	**6(2), 8, 13(1), 54, 56, 58, 64**, 75, 78, 86, 87, 92, 96, 101, 102, 125, 127, 131, 137, 138, 147, 148, 149, 150, 151, 159, 161, 162, 164, 167, 168, 169, 170, 171, 172, 174, 177, 182,	**5, 58**, 127, 162

	134, 135, 136, 144, 145, 155, 192, 223	183, 196, 200, 202, 203, 204, 205, 209, 210, 211, 212, 213, 214, 215, 16, 217, 218, 220, 227, 229, 272, 276	
47	**53(0), 59(0)**	**7, 34, 58, 64, 68, 74**, 75, 78, 86, 87, 92, 96, 101, 102, 109, 127, 133, 135, 136	**13(1), 58**
48 Multituberculata	**1(2), 45(1), 72(1), 73**, 77, 94, 95, 97, 124, 140, 184, 190, 197, 199, 219	**13, 54**, 119, 129, 131, 138, 191, 221	**56**, 75, 78, 87, 92, 96, 101, 102, 125, 131, 137, 148, 150, 151, 159, 161, 164, 167, 168, 169, 170, 171, 172, 174, 182, 183, 191, 196, 200, 202, 203, 204, 205, 206, 209, 210, 211, 213, 213, 214, 215, 216, 217, 218, 220, 221

Total sino ordonnés

Nœuds	Apomorphies		
	Non-ambiguës	acctran	deltran
42	**3(1), 4(2), 8(0), 14(4), 16(7), 31(0), 37(2), 40(0), 50(7)**	**18(0), 23, 33(1), 39, 41, 58, 64, 69**, 77, 82, 88, 94, 95, 101, 103, 104, 106, 113, 114, 117, 120, 125, 133, 144, 145, 146, 148, 149, 155, 156, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 188, 189, 190, 191, 192, 194, 195, 196, 197, 198, 201, 202, 206, 207, 208, 210, 211, 212, 213, 218, 221, 223, 226, 227, 230, 239, 240, 241, 253, 254, 255, 257, 259, 260, 264, 266, 275, 289, 292, 295	
41 Mammalia	**3(2), 14(7), 30(0)**	**65, 68**	**4, 37**, 82, 88, 103, 104, 106, 120
38 Cladotheria	**53(0)**, 75, 76, 87, 92, 107	**17(0), 33, 38, 39, 42(0), 52, 64**, 79, 93, 98, 102	**68**, 94, 95, 144, 145, 146, 223
37	**40(1)**	**20, 58**, 78, 81, 104, 114, 115, 117, 141	**30, 42(0), 52, 58**
36 Trechnotheria	**4(4), 15(2), 19(0)**	**5(1), 10(1), 37, 38, 43, 46, 49, 50, 51, 73(2)**	78, 81, 93, 98, 102, 104, 115
40	**10(1), 21(1), 22(1)**, 89, 118, 119	**49, 58**, 83, 95, 101, 116, 135	77, 114, 117
39 Australosphenida	**5(1), 6(2), 13(1), 15(2)**	**18, 20**, 78, 81, 104	
45 Allotheria	**1(1)**[*1], **17(0), 19(0), 21(1), 32(0), 34(3), 35(1), 36(1), 42(0), 55(0), 61(1), 65(2), 67(0), 73(2), 74(3)**, 76, 88, 89, 90, 100, 107, 116, 123, 128, 134, 135, 136, 144, 145, 192, 223	**6(2), 8, 13(1), 54, 56, 64**, 75, 78, 86, 87, 92, 96, 101, 102, 125, 127, 131, 137, 138, 141, 147, 148, 149, 150, 151, 155, 161, 162, 164, 167, 168, 169, 170, 171, 172, 174, 177, 179, 182, 183, 196, 200, 202, 203, 204, 205, 206,209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 220, 227, 229,	**8**, 155, 162

		272, 276	
43	**53(0), 59(0)**	**7, 34, 64, 68, 74**, 75, 78, 86, 87, 92, 96, 101, 102, 109, 127, 133, 135, 136	**13**
44 Multituberculata	**1(2), 45(1), 72(1), 73(1)**, 77, 94, 95, 97, 124, 140, 184, 190, 197, 199, 219	**13, 54, 58**, 119, 129, 131, 138, 221	**56**, 75, 78, 87, 92, 96, 101, 102, 125, 127, 131, 137, 148, 150, 151, 161, 164, 167, 168, 169, 170, 171, 172, 174, 179, 182, 183, 196, 200, 202, 203, 204, 205, 206, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 220, 221
46 Eutriconodonta	**18(0), 33(1)**, 75, 76, 78, 86, 87, 88, 92, 93, 94, 101, 102, 117, 134, 286	**7, 31, 58, 59(0)**, 89, 95, 97, 127, 133, 135, 136, 137, 146, 237, 246, 253, 262, 277, 282, 289, 291, 292, 294, 303	