APPENDIX 1

List of characters used in the phylogenetic analysis.

(1) Narial shelf: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #1)

(2) If narial shelf is present, it is: found on the nasal (0); found on the nasal and maxilla (1). (Modified from Laurin and Reisz, 1995 #1)

(3) Prefrontal-postfrontal contact in dorsal view: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #2)

(4) If prefrontal-postfrontal contact is absent, the frontal contribution to the orbital margin in dorsal view is: narrow (0); broad (1). (Modified from Laurin and Reisz, 1995 #2) When the frontal contribution is narrow, the frontal occupies less than 1/3 of the dorsal orbital margin.

(5) Frontal lateral lappet: absent (0); present (1). (Modified from deBraga and Reisz, 1996 #7)

(6) Pineal foramen position: in the middle of the body of the parietal (0); displaced posteriorly (1); displaced anteriorly (2). (Modified from deBraga and Rieppel, 1997 #49)

(7) Postparietal: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #4)

(8) If postparietal is present, it is: paired (0); median (1). (Modified from Laurin and Reisz, 1995 #4)

(9) If postparietal is present, its size is: large (0); small (1). (Modified from Laurin and Reisz, 1995 #4). Postparietal (either both paired elements together or a single median one) is large when it is at least the width of one of the parietals (at their widest point).

(10) If postparietal is present, it is positioned such that it is: dorsally exposed, integrated into skull table (0); occipital (1). (Laurin and Reisz, 1995 #5)

(11) Prefrontal-palatal contact: absent (0); present (1). (Modified from Laurin and Reisz 1995 #6)

(12) If prefrontal-palatal contact is present, it is: narrow and acuminate (0); strong, with sutural base (1). (Modified from Laurin and Reisz, 1995 #6)

(13) Prefrontal medial flange: narrow (0); wide (1). (Modified from Laurin and Reisz 1995 #7)When narrow, the mediolateral length of the prefrontal medial flange is equal to or less than 1/5 the height of the orbit.

(14) Bulbous medial process of prefrontal: absent (0); present (1). (Laurin and Reisz, 1995 #8)

(15) Lacrimal narial contact: present (0); absent (1). (Laurin and Reisz, 1995 #9)

(16) Foramen orbitonasale: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #10)

(17) If foramen orbitonasale is present, it is: represented by a medial indentation on the lacrimal and a dorsal indentation on the palatine (0); enclosed between prefrontal, lacrimal and palatine (1). (Modified from Laurin and Reisz, 1995 #10)

(18) Jugal anterior process: does not extend to anterior orbital rim (0); extends at least to level of anterior orbital rim (1). (Laurin and Reisz, 1995 #11)

(19) Suborbital ramus of jugal: dorsoventrally broad (0); slender or reduced with no dorsoventral extension (1). (MacDougall and Reisz, 2014) When the suborbital ramus of the jugal is slender, its dorsoventral height is less than that of the dorsoventral height of the suborbital portion of the maxilla.

(20) Posterior extension of jugal that contributes to temporal region of skull roof: present (0); absent (1). (MacDougall and Reisz, 2014)

(21) Postorbital posterior process shape in lateral view: slender, anteroposterior length is at least twice its dorsoventral width (0); increased width, length is less than twice its width (1). (Modified from deBraga and Reisz, 1996 #14)

(22) Postorbital-supratemporal contact: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #12)

(23) Posterolateral corner of skull roof; formed by tabular (0); formed mostly by supratemporal (1); formed by parietal and small supratemporal or parietal alone (2). (Laurin and Reisz, 1995 #15)

(24) Tabular: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #17)

(25) If tabular is present, it is: part of skull table (0); largely occipital (1). (Modified from Laurin and Reisz, 1995 #17)

(26) Supratemporal: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #18)

(27) If supratemporal is present, it is: large (0); small (1). (Modified from Laurin and Reisz, 1995 #18) When small the mediolateral width of the element is equal to or less than 1/10 of the midline skull length.

(28) Premaxillary dorsalf process: broad, narial opening faces predominantly laterally (0); narrow, narial opening faces anteriorly (1). (deBraga and Reisz, 1996 #1)

(29) Anterodorsal process of the maxilla: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #19)

(30) Anterior lateral maxillary foramen: equal in size to other maxillary foramina (0); much larger than other foramina (1). (Modified from Laurin and Reisz, 1995 #20)

(31) Maxilla and quadratojugal: in contact (0); separated (1). (Laurin and Reisz, 1995 #22)

(32) Suture between jugal and maxilla: straight, jugal thins out smoothly towards anterior direction (0); ‘stepped’, anterior most tip of jugal very narrow but expands broadly posteriorly along with a dramatic thinning of the posterior process of the maxilla (1). (Müller and Tsuji, 2007 #133)

(33) Contact between maxilla and prefrontal: absent (0); present (1). (Müller and Tsuji, 2007 #136)

(34) Contribution of maxilla to external naris: maxilla is either excluded from naris or forms only its ventral/posterior edge (0); maxilla extends also to the posterodorsal margin of naris (1). (Müller and Tsuji, 2007 #137)

(35) Presence of size related heterodonty on the anterior 2/3 of the maxilla: present (0); absent (1). (MacDougall and Reisz, 2014). Size related heterodonty as used here refers to the presence of significantly larger teeth on the anterior 2/3 of the maxilla. Significantly larger as used here refers to teeth that have a base width that is at least 50% larger than the other teeth.

(36) Presence of size related heterodonty on the anterior 2/3 of the dentary: present (0); absent (1). (MacDougall and Reisz, 2014) Size related heterodonty as used here refers to the presence of significantly larger teeth on the anterior 2/3 of the dentary. Significantly larger as used here refers to teeth that have a base width that is at least 50% larger than the other teeth.

(37) If size related heterodonty is present on the maxilla, it is represented by: one tooth (0); two or more teeth (1). (MacDougall and Reisz, 2014)

(38) Squamosal and post-temporal fenestra: separated (0); in contact (1). (Laurin and Reisz, 1995 #26)

(39) Quadratojugal shape: does not reach beyond the level of the ventral orbital margin (0); extends dorsally beyond the level of ventral orbital margin (1). (Modified from Laurin and Reisz, 1995 #28)

(40) Quadratojugal anterior extent: reaches posterior border of orbit (0); does not reach level of posterior border of orbit (1). (Modified from Laurin and Reisz, 1995 #23)

(41) Quadratojugal ornamentation: confluent with the cheek and not ornate in any manner (0); ornamented, dermal protuberances project from its surface (1). (deBraga and Rieppel, 1997 #43)

(42) Upper temporal fenestra: absent (0); present (1). The upper temporal fenestra is formed by contributions from the postorbital, the parietal, the squamosal. (Laurin and Reisz, 1995 #29)

(43) Lower lateral temporal opening (fenestra or emargination): absent (0); present (1). (Modified from Laurin and Reisz, 1995 #30)

(44) If a lower temporal opening is present, it is: bounded ventrally, forming a fenestra (0); unbounded ventrally, forming an emargination (1). (Modified from Laurin and Reisz, 1995 #30)

(45) Postorbital contribution to lower lateral temporal opening (fenestra or emargination): present (0); absent (1). (Modified from deBraga and Reisz, 1996 #20)

(46) Quadratojugal contribution to lower lateral temporal opening (fenestra or emargination): absent (0), present (1). (Modified from Laurin and Reisz, 1995 #16)

(47) Region of skull posterior to the orbit, anteroposterior length: equals anteroposterior extension of orbit (0); shorter than anteroposterior extension of orbit (1); longer than anteroposterior extension of orbit (2). (Modified from Laurin and Reisz, 1995 #32)

(48) Ventral margin of skull region posterior to orbit: expanded below ventral extent of maxilla (0); rectilinear (1); emarginated (2). (Modified from Laurin and Reisz, 1995 #33)

(49) Lateral surface of quadrate: covered by squamosal and quadratojugal (0); not covered (1). (Modified from Laurin and Reisz, 1995 #34)

(50) Quadrate anterior process: extends anteriorly for at least 50% the length of the quadrate ramus (0); extends anteriorly for less than 50% the length of the quadrate ramus (1). (Modified from Laurin and Reisz, 1995 #35)

(51) Quadrate condyle articular surfaces: strongly convex, anteroposteriorly longer than they are wide (0); nearly flat, anteroposteriorly shorter than they are wide (1). (Modified from Laurin and Reisz, 1995 #65)

(52) Jaw articulation position: posterior to occiput (0); even with occiput (1); anterior to occiput (2). (Laurin and Reisz, 1995 #36)

(53) Posterior extension of orbit: absent (0); present (1). (Laurin and Reisz, 1995 #37)

(54) Dermal sculpturing: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #38)

(55) If dermal sculpturing is present, it is in the form of: tuberosities (0); round pits (1); honeycomb pattern of ridges and pits (2). (Modified from Laurin and Reisz, 1995 #38)

(56) Sculpturing involving circumorbital bumps: no distinctive ornamentation (0); circumorbital tubercles (1). (Tsuji, 2006 #45)

(57) Dorsal dermal ossifications: absent (0); present (1). (Laurin and Reisz, 1995 #124)

(58) Posterior margin of skull roof: roughly straight (0); with a single, median embayment (1); embayed bilaterally (2). (Modesto, 1999 #125)

(59) Temporal notch: present (0); absent (1). (Müller and Tsuji, 2007 #134)

(60) Temporal depression associated with posterolateral excavation: restricted to the posterior half of the cheek (0); closely approaches the orbital margin (1). (Müller and Tsuji, 2007 #135)

(61) Interpterygoid vacuity anterior extent: reaches beyond posterior border of palatine (0); reaches level of palatine or less (1). (Modified from Reisz et al., 2007 #127)

(62) Anterior shape of interpterygoid vacuity: acuminate (0); rounded (1).

(63) Choana: parallel to maxilla; palatine forms its posterior edge only (0); curved posteromedially; palatine forms its posterior and part of its lateral edge (1). (Laurin and Reisz, 1995 #40)

(64) Alar flange of the vomer (thin anterolateral flange of vomer): absent (0); present (1). (Tsuji, 2006 #50)

(65) Arcuate flange of pterygoid: present (0); absent (1). (Laurin and Reisz, 1995 #42)

(66) Cranio-quadrate space: small, quadrate ramus of pterygoid and paraoccipital process of opisthotic converge posterolaterally (0); large, quadrate ramus of pterygoid and paraoccipital process of opisthotic are parallel to each other (1). (Laurin and Reisz, 1995 #43)

(67) Pterygoid anterior extent: reaches level of posterior end of choana (0); posterior to choana (1). (Laurin and Reisz, 1995 #44)

(68) Transverse flange of the pterygoid: large, approaches cheek, a noticeable lateral projection (0); small, does not approach cheek (1). (Modified from Lee, 1997 #19)

(69) Transverse flange of pterygoid orientation: directed posterolaterally or transversely (0); directed anterolaterally (1); directed anteriorly (2). (Modified from Laurin and Reisz, 1995 #45)

(70) Transverse flange of pterygoid dentition: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #46)

(71) If dentition is present on the transverse flange of the pterygoid, it is a: shagreen of very small teeth, no ventral ridge (0); single row of large teeth, no ventral ridge (1); single row of large teeth, with a shagreen of very small teeth, no ventral ridge (2). (Modified from Laurin and Reisz, 1995 #46)

(72) Quadrate flange of pterygoid dentition: absent (0); present (1).

(73) Quadrate ramus of pterygoid: merges smoothly into transverse flange without distinctive excavation (0); deep excavation on posterolateral surface (1). (deBraga and Reisz, 1996 #29)

(74) Quadrate ramus of pterygoid relation to trasverse flange: not continuous with transverse flange (0); continuous with transverse flange, forming a ridge (1).

(75) Lateral pocket on the pterygoid found between quadrate ramus and transverse flange: absent (0); present (1).

(76) Ectopterygoid: present (0); absent (1). (MacDougall and Reisz, 2014)

(77) If ectopterygoid is present, ectopterygoid dentition is: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #48)

(78) If ectopterygoid is present, its relationship to transverse flange: distal to transverse flange, does not contribute to lateral portion of flange (0); makes contact with lateral portion of transverse flange (1). (Modified from deBraga and Reisz, 1996 #33)

(79) Suborbital opening on the palate: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #49) Refers to the suborbital foramen or fenestra.

(80) Basicranial articulation: kinetic/synovial (0); sutured and/or immobile (1). (Modified from Lee, 1997 #2)

(81) Length of basicranial articulation: restricted to anterolateral margin of the parasphenoid (0); extends over much of length of main body of parasphenoid (1). (deBraga and Reisz, 1996 #36)

(82) Parasphenoid pocket for cervical musculature (one or two): present (0); absent (1). (Laurin and Reisz, 1995 #50)

(83) If a parasphenoid pocket for cervical musculature is present it is represented by: a single median pocket (0); two pockets (1).

(84) Parasphenoid wings; present, parasphenoid broader posteriorly than long (0); absent, parasphenoid narrower posteriorly than long (1). (Modified from Laurin and Reisz, 1995 #51)

(85) Cultriform process: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #52)

(86) If cultriform process is present, it is: longer than the body of the parasphenoid (0); shorter than the body of the parasphenoid (1). (Modified from Laurin and Reisz, 1995 #52)

(87) Parasphenoid teeth: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #53)

(88) If parasphenoid teeth are present, they are found: in rows (0); as a shagreen (1). (Modified from Laurin and Reisz, 1995 #53)

(89) Supraoccipital: plate-like, with no sagittal crest (0); constricted at midline, forming sagittal crest (1); plate-like, with a saggital crest (2). (Modified from deBraga and Rieppel, 1997 #56)

(90) Paroccipital process: vertically broad (0); anteroposteriorly expanded (1); narrow (2); tubular, composed of opisthotic (3). (Laurin and Reisz, 1995 #56)

(91) Paroccipital process orientation: directed primarily laterally (0); oriented obliquely, at an angle of at least 45 degrees from the horizontal plane of the skull (1). (deBraga and Reisz, 1996 #44)

(92) Sutural contact between paroccipital process and dermatocranium: absent (0); present (1). (Modified Laurin and Reisz, 1995 #57)

(93) Otic trough in ventral flange of opisthotic: absent (0); present (1). (Laurin and Reisz 1995 #58)

(94) Medial wall of inner ear (made of prootic): unossified (0); ossified with acoustic nerve foramina (1). (Laurin and Reisz, 1995 #59)

(95) Post-temporal fenestra: absent (0); present (1). (Modified from deBraga and Rieppel, 1997 #59)

(96) If post-temporal fenestra is present, it is: small, diameter less than the diameter of foramen magnum (0); large, diameter at least equal to foramen magnum (1). (Modified from deBraga and Rieppel, 1997 #59)

(97) Osseous contact between basioccipital and basisphenoid: present (0); absent (1). (Lee, 1993 #A3, scored as per Laurin and Reisz, 1995 #61)

(98) Occipital condyle shape: transversely broad (0); reniform to circular (1). (Laurin and Reisz, 1995 #62)

(99) Ventral exposure of basioccipital: contributes extensively to ventral surface of the braincase (0); restricted to condylar region (1). (deBraga and Reisz, 1996 #37)

(100) Ventral braincase tubera: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #63, and deBraga and Rieppel 1997 #65)

(101) If ventral braincase tubera are present, they are: restricted to basioccipital (0); very large and restricted to basisphenoid (1). (Modified from Laurin and Reisz, 1995 #63, and deBraga and Rieppel, 1997 #65)

(102) Lateral flange of exoccipital: absent (0); present (1). (Laurin and Reisz, 1995 #64)

(103) Stapes: robust, greatest depth exceeding one-third of total length (0); slender, length at least four times depth (1). (Modified from deBraga and Rieppel, 1997 #45)

(104) Stapedial dorsal process: ossified (0); unossified (1). (Laurin and Reisz, 1995 #67)

(105) Morphology of marginal dentition: single cusp (0); two to seven cusps (1); more than seven cusps (2). (Modified from Lee 1997, #59)

(106) Foramen intermandibularis: an anterior symphysial foramen (0); an anterior symphysial foramen and a posterior foramen (1). (Modified from Laurin and Reisz, 1995 #69)

(107) If there are two intermandibular foramina the posterior foramen is located: anterior to coronoid process (0); posterior to or at level of coronoid process (1). (Modified from Laurin and Reisz, 1995 #69)

(108) Meckelian fossa orientation: faces mediodorsally (0); faces dorsally (1). (Modified from Laurin and Reisz, 1995 #70)

(109) Meckelian fossa anteroposterior length: long, occupies at least 25% of lower jaw length (0); short, occupies less than 25% of lower jaw length (1). (Modified from Laurin and Reisz, 1995 #71)

(110) Surangular length: extends beyond coronoid eminence (0); does not extend beyond coronoid eminence (1). (Laurin and Reisz, 1995 #72)

(111) Accessory lateral shelf on surangular anterior to articular region: absent (0); present (1). (Laurin and Reisz, 1995 #73)

(112) Two laterally located foramina on the anteroposterior midline of the surangular: absent (0); present (1).

(113) Coronoid number: two or three (0); one (1). (Laurin and Reisz, 1995 #74)

(114) Prearticular extends: beyond the coronoid eminence (0); does not extend beyond coronoid eminence (1). (Modified from Laurin and Reisz, 1995 #75)

(115) Retroarticular process: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #76)

(116) If present, the retroarticular process is: small and narrow (0); transversely broad, dorsally concave (1). (Modified from Laurin and Reisz, 1995 #76)

(117) If present, the retroarticular process is composed of: articular body (0); three or more elements (articular, prearticular, angular and surangular) (1). (Modified from Laurin and Reisz, 1995 #77)

(118) Lateral shelf on articular region: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #78)

(119) Coronoid process: low (0), high (1). (Modified from Laurin and Reisz, 1995 #79)

(120) If coronoid process is high, it is: composed of coronoid only (0); composed of dentary and coronoid (1). (Modified from Laurin and Reisz, 1995 #79)

(121) Splenial: contributes to mandibular symphysis (0); excluded from mandibular symphysis (1). (Laurin and Reisz, 1995 #80)

(122) Presacral vertebral count: more than twenty (0); twenty or less (1). (Laurin and Reisz, 1995 #81)

(123) Axial centrum orientation: in plane of axial skeleton (0); sloping anterodorsally (1). (Laurin and Reisz, 1995 #82)

(124) Atlantal neural arch: possesses epipophysis (0); lacks epipophysis (1). (Lee 1995, scored as per Modesto, 1999 #126)

(125) Axial intercentrum: with rounded anteroventral edge (0); with strong anterior process (1). (Laurin and Reisz, 1995 #84)

(126) Atlantal pleurocentrum and axial intercentrum: separate elements (0); attached or fused (1). (Laurin and Reisz, 1995 #85)

(127) Trunk neural arches: swollen (0); narrow (1). (Modified from Laurin and Reisz, 1995 #86)

(128) Ventral surface of anterior pleurocentra: ventral surface of vertebral centra uniform (0); ventral surface of vertebral centra bearing an excavation on either side of the midline, coupled with a flattened median crest between them (1). (Modified from Laurin and Reisz, 1995 #87)

(129) Number of sacral vertebrae: one (0); two (1); three or more (2). (Laurin and Reisz, 1995 #88)

(130) Sacral rib distal overlap: broad with narrow gap between ribs (0); small or absent with wide gap between ribs (1). (Laurin and Reisz, 1995 #89)

(131) Transverse process or ribs: present only on a few anterior caudals (0); present on at least thirteen caudals (1). (Laurin and Reisz, 1995 #90)

(132) Anterior caudal rib size: elongate and extend posteriorly to the end of the next vertebra (0); curve posteriorly but do not extend to the end of the next vertebrae (1); straight, with no posterior curvature (2).

(133) Caudal hemal arches: wedged between centra (0); attached to anterior centrum (1). (Laurin and Reisz, 1995 #91)

(134) Interclavicle: diamond-shaped (0); T-shaped, with long, slender lateral processes (1). (Laurin and Reisz, 1995 #92)

(135) Interclavicle attachment for clavicle: ventral sutural area (0); anteriorly directed groove (1); tightly sutured into plastron (2). (Laurin and Reisz, 1995 #93)

(136) Cleithrum: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #94)

(137) If cleithrum is present, it: caps scapula anterodorsally (0); does not cap scapula at all (1). (Modified from Laurin and Reisz, 1995 #94)

(138) Scapula: broad and low (0); narrow and high (1). (Modified from Laurin and Reisz, 1995 #96) When low the height of the scapula is equal to or less than two and a half times its anteroposterior length.

(139) Supraglenoid foramen: present (0); absent (1). (Laurin and Reisz, 1995 #97)

(140) Glenoid: helical, composed of a single facet (0); bipartite, composed of two facets (1). (Modified from Laurin and Reisz, 1995 #98)

(141) Acromion: absent (0); present (1). (Laurin and Reisz, 1995 #99)

(142) Sternum: not mineralized (0); mineralized (1). (Laurin and Reisz, 1995 #100)

(143) Supinator process: strongly angled relative to shaft (0); parallel to shaft (1). (Modified from Laurin and Reisz, 1995 #101)

(144) If supinator process is parallel to shaft it is: separated from it by a groove (0); not separated from shaft (1). (Modified from Laurin and Reisz, 1995 #101)

(145) Ectepicondylar foramen: only groove present (0); groove and foramen present (1); only foramen present (2); both absent (3). (Laurin and Reisz, 1995 #102)

(146) Entepicondylar foramen: present (0); absent or not fully enclosed (1). (Laurin and Reisz, 1995 #103)

(147) Humerus: with robust heads and a short shaft (0); short and robust, without a distinct shaft (1); slender with long shaft (2). A short shaft is one that has a proximodistal length that is equal to or less than the mediolateral width of the heads. (Modified from Laurin and Reisz, 1995 #104)

(148) Olecranon process: present (0); absent (1). (Modified from Laurin and Reisz, 1995 #105)

(149) If present, the olecranon process is: large, with articular facet of ulna facing medially (0); small, with articular facet of ulna facing proximally (1). (Modified from Laurin and Reisz, 1995 #105)

(150) Manual phalangeal formula: 2 3 4 5 3 (0); 2 3 4 4 3 (1); 2 3 3 3 3 or less (2). (Laurin and Reisz 1995, #106)

(151) Dorsolateral shelf on iliac blade: absent (0); present (1). (Laurin and Reisz, 1995 #107)

(152) Iliac blade: low, with long posterodorsal process that extends beyond the posterior edge of the iliac body (0); dorsally expanded, distally flaring, the posterodorsal process does not extended beyond the posterior edge of the iliac body (1). (Laurin and Reisz, 1995 #108)

(153) Acetabular buttress: small, overhangs acetabulum only moderately (0); large, overhangs acetabulum strongly (1). (Laurin and Reisz, 1995 #109)

(154) Oblique ventral ridge of femur (adductor crest): present (0); absent (1). (Laurin and Reisz, 1995 #110)

(155) Femoral proximal articulation: anteroposteriorly long (0); round (1). (Laurin and Reisz, 1995 #111)

(156) Greater trochanter of femur: absent (0); present on posterior edge of femur (1). (Laurin and Reisz, 1995 #112)

(157) Femoral shaft: short and broad (0); long and slender (1). A short and broad femoral shaft is one that has a proximodistal length that is equal to or less than the mediolateral width of the distal head in ventral view (Laurin and Reisz, 1995 #113)

(158) Astragalus: absent (0); present (1). (Modified from Laurin and Reisz, 1995 #115)

(159) If astragalus is present, it: incorporates incompletely fused tibiale, intermedium, and perhaps centrale 4 (0); is without traces of compound origin (1). (Modified from Laurin and Reisz, 1995 #115)

(160) Tibio-astragalar joint: flat (0); tibial ridge fits into astragalar groove (1). (Laurin and Reisz, 1995 #116)

(161) Astragalus and calcaneum: separate (0); sutured or fused (1). (Laurin and Reisz, 1995 #117)

(162) Medial pedal centrale: present (0); absent (1). (Laurin and Reisz, 1995 #118)

(163) Number of distal tarsals: five (0); four or less (1). (Laurin and Reisz, 1995 #119)

(164) Metapodials: not overlapping (0); overlapping (1). (Laurin and Reisz, 1995 #121). When metapodials are not overlapping the carpus or tarsus is short and broad. Likewise, when metapodials are overlapping the carpus or tarsus is long and slender.

(165) Pedal phalangeal formula: 2 3 4 5 4 (0); 2 3 4 4 3 (1); 2 3 3 4 3 or less (2). (Laurin and Reisz, 1995 #122)

(166) Ratio between length of metatarsal I to length of metatarsal IV: at least 0.5 (0); less than 0.5 (1). (Laurin and Reisz, 1995 #123)

(167) Number of maxillary tooth positions: 0-15 (0); 16-30 (1); more than 30 (2). (Modesto et al., 2015)

(168) Number of premaxillary tooth positions: 0-3 (0); 4-6 (1); more than 6 (2). (Modesto et al., 2015)

(169) Single large tooth on anteriormost end of vomer: absent (0); present (1). In some taxa there is a single larger tooth found on the anterior end of the vomer, rather than numerous small teeth. (MacDougall et al., 2017)

(170) Bulbous marginal teeth: absent (0); present (1). Teeth of the maxilla and dentary are considered to be bulbous when the largest teeth have maximum widths that are equal to or more than their maximum height. (MacDougall et al., 2017)

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