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SUPPLEMENTARY ONLINE MATERIAL FOR

First phylogenetic analysis of the Miocene armadillo *Vetelia* reveals novel affinities with Tolypeutinae

Daniel Barasoain, Laurento R. González Ruiz,
Rodrigo L. Tomassini, Afredo E. Zurita, Víctor H. Contreras,
and Claudia I. Montalvo

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Supplementary Online Material

SOM 1. List of fossil and extant specimens analyzed in this work with their geographic and stratigraphic provenance.

SOM 2. List of the morphological characters selected for the phylogenetic analysis.

SOM 3. Matrix used in the phylogenetic analysis.

SOM 4. Amended diagnoses proposed in this work for the Priodontini and Tolypeutini tribes.

Institutional abbreviations for SOM 1

AMNH, American Museum of Natural History, New York, USA; **CD-UNNE**, Colección Didáctica de la Universidad Nacional del Nordeste, Corrientes, Argentina; **CML**, Colección Mamíferos, Facultad de Ciencias Naturales e Instituto Miguel Lillo, San Miguel de Tucumán, Argentina; **FMNH**, Field Museum of Natural History, Chicago, USA.; **INGEO-PV**, Instituto de Geología "Dr. Emiliano P. Aparicio", Universidad Nacional de San Juan, San Juan, Argentina; **LEVAC-CO**, Colección Laboratorio de Evolución de Vertebrados y Ambientes Cenozoicos, Corrientes, Argentina; **MACN**, Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Buenos Aires, Argentina; **MD-CH**, Colección Arroyo Chasicó, Museo Municipal de Ciencias Naturales "Carlos Darwin", Punta Alta, Argentina; **MLP**, Museo de La Plata, La Plata, Argentina; **MMH-CH**, Colección Arroyo Chasicó, Museo Municipal de Ciencias Naturales "Vicente di Martino", Monte Hermoso, Argentina; **PVL**, Colección de Paleontología de Vertebrados, Facultad de Ciencias Naturales e Instituto Miguel Lillo, San Miguel de Tucumán, Argentina; **PVSJ**, Instituto y Museo de Ciencias Naturales, Universidad Nacional de San Juan, San Juan, Argentina.

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SOM 1. List of fossil and extant specimens analyzed in this work.

Specimen	Taxa	Anatomical element	Geographic provenance	Stratigraphical provenance	Age
MACN A 2139 (holotype)	*Vetelia puncta*	2 mobile and 2 fixed osteoderms	Karaiken (Santa Cruz Province, Argentina)	Santa Cruz Formation	Early Miocene (Santacrucian SALMA)
MLP 28-X-11-45 (holotype)	*Vetelia perforata*	5 mobile and 4 fixed osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-87-7-109	*Vetelia perforata*	Complete right hemimandible	Arroyo Chasicó (Buenos Aires Province, Argentina	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-88-6-76	*Vetelia perforata*	6 articulated mobile osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-88-6-92-b	*Vetelia perforata*	5 mobile osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-83-3-35	*Vetelia perforata*	Fixed osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-83-3-64	*Vetelia perforata*	Mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-83-3-106	*Vetelia perforata*	Mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-84-4-13	*Vetelia perforata*	Fixed osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-84-4-49	*Vetelia perforata*	Mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-84-4-54	*Vetelia perforata*	Fragmented mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-84-4-58	*Vetelia perforata*	Mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-84-4-63	*Vetelia perforata*	Mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-83-3-35	*Vetelia perforata*	Fixed osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-83-3-64	*Vetelia perforata*	Mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-83-3-106	*Vetelia perforata*	Mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MMH-CH-84-4-13	*Vetelia perforata*	Cephalic osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MLP-76-VI-12-95	*Vetelia perforata*	Fragmented right hemimandible and 2 fragmented fixed osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)

MD-CH-49	*Vetelia perforata*	Fixed osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-112	*Vetelia perforata*	3 fixed osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-125	*Vetelia perforata*	3 mobile and 2 fixed osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-152	*Vetelia perforata*	1 mobile and 6 articulated fixed osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-156	*Vetelia perforata*	Fixed osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-221	*Vetelia perforata*	Mobile osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-299	*Vetelia perforata*	Fixed osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-326	*Vetelia perforata*	Fixed osteoderm	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-329	*Vetelia perforata*	4 mobile and 1 fixed osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-414	*Vetelia perforata*	2 mobile and 1 fixed osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
MD-CH-437	*Vetelia perforata*	1 mobile and 2 fixed osteoderms	Arroyo Chasicó (Buenos Aires Province, Argentina)	Arroyo Chasicó Formation	Late Miocene (Chasicoan Stage/Age)
GHUNLPam-6987-2	*Vetelia perforata*	Fixed osteoderm	Cerro La Bota (La Pampa Province, Argentina)	Cerro Azul Formation	Late Miocene (Chasicoan Stage/Age)
GHUNLPam-8011-1	*Vetelia perforata*	Fixed osteoderm	Cerro La Bota (La Pampa Province, Argentina)	Cerro Azul Formation	Late Miocene (Chasicoan Stage/Age)
GHUNLPam-8041-1	*Vetelia perforata*	Fixed osteoderm	Cerro Patagua (La Pampa Province, Argentina)	Cerro Azul Formation	Late Miocene (Chasicoan Stage/Age)
GHUNLPam-9107	*Vetelia perforata*	3 fragmented mobile and 1 fragmented fixed osteoderms	Telén (La Pampa Province, Argentina)	Cerro Azul Formation	Late Miocene (Huayquerian Stage/Age)
GHUNLPam-9184-19	*Vetelia perforata*	2 fixed osteoderms	Algarrobo del Águila (La Pampa Province, Argentina)	Cerro Azul Formation	Late Miocene (Huayquerian Stage/Age)
GHUNLPam-9184-4	*Vetelia perforata*	Fixed osteoderm	Algarrobo del Águila (La Pampa Province, Argentina)	Cerro Azul Formation	Late Miocene (Huayquerian Stage/Age)
PVL 4800, (holotype)	*Vetelia ghandii*	1 fragmented mobile and 46 fixed osteoderms	Santa María (Catamarca Province, Argentina)	Playa del Zorro Alloformation	Late Miocene (late Tortonian-early Messinian)
INGEO-PV-262	*Vetelia ghandii*	Fixed osteoderm	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
INGEO-PV-010	*Vetelia ghandii*	1 fragmented mobile and 2 fragmented fixed osteoderms	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)

INGEO-PV-096a	*Vetelia ghandii*	Fixed osteoderm	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-25	*Vetelia ghandii*	Fragmented left hemimandible and 12 fragmented mobile osteoderms	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-26	*Vetelia ghandii*	6 fragmented mobile and 3 fixed osteoderms, plus >50 indet. small fragments	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-148	*Vetelia ghandii*	6 fragmented mobile osteoderms	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-151	*Vetelia ghandii*	2 fragmented mobile and 2 fixed osteoderms	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-152	*Vetelia ghandii*	7 fixed osteoderms	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-154	*Vetelia ghandii*	almost complete skull with damaged basicranial portion	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-198	*Vetelia ghandii*	Fixed osteoderm	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-267	*Vetelia ghandii*	Fixed osteoderm	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-289	*Vetelia ghandii*	almost complete skull, left hemimandible, three fragments of dorsal carapace with several articulated fixed and mobile osteoderms, several isolated fixed and mobile osteoderms, vertebrae, and broken long bones	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-90	*Vetelia ghandii*	fragment of maxilla and palatine, 1 mobile and 2 fixed osteoderms	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-549	*Vetelia ghandii*	2 fixed osteoderms	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ-645	*Vetelia ghandii*	Fixed osteoderm	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
PVSJ 650	*Vetelia ghandii*	4 fixed osteoderms	Loma de Las Tapias (San Juan Province, Argentina)	Loma de Las Tapias Formation	Late Miocene (Chasicoan Stage/Age)
INGEO-PV-97	*Vetelia ghandii*	1 fixed osteoderm and 1 fragmented fixed osteoderm	Sierra de Mogna (San Juan Province, Argentina)	Huachipampa Formation	Late Miocene (Chasicoan Stage/Age)
MLP-64-V1-21-3	*Vetelia ghandii*	Fragmented left mandibular ramus	Los Berros (San Juan Province, Argentina)	Unnominated litostratigraphic unit	Late Miocene (Chasicoan Stage/Age)
CD-UNNE-129	*Tolypeutes matacus*	Skull and mandibles	-	-	Recent

CML-06208	*Tolypeutes matacus*	Skull and mandibles	Salta Province (Argentina)	-	Recent
CML-04131	*Tolypeutes matacus*	Skull and mandibles	Salta Province (Argentina)	-	Recent
CML-04132	*Tolypeutes matacus*	Skull and mandibles	Salta Province (Argentina)	-	Recent
CML-04134	*Tolypeutes matacus*	Skull and mandibles	Salta Province (Argentina)	-	Recent
CML-4511	*Tolypeutes matacus*	Taxidermy specimen	Santiago del Estero Province (Argentina)	-	Recent
CML-12843	*Tolypeutes matacus*	Taxidermy specimen	La Rioja Province (Argentina)	-	Recent
LEVAC-CO-53	*Tolypeutes matacus*	Complete carapace	Salta Province (Argentina)	-	Recent
LEVAC-CO-54	*Tolypeutes matacus*	Complete carapace	-	-	Recent
CML-02414	*Cabassous chacoensis*	Skull and mandibles	Chaco Province (Argentina)	-	Recent
CML-03066	*Cabassous tatouay*	Complete carapace	-	-	Recent
LPV-CO-55	*Cabassous tatouay*	Complete carapace	Corrientes Province (Argentina)	-	Recent
AMNH-14862	*Cabassous unicinctus*	Taxidermy specimen	-	-	Recent
AMNH-133318	*Cabassous unicinctus*	Taxidermy specimen	-	-	Recent
FMNH-121224	*Cabassous centralis*	Taxidermy specimen	-	-	Recent
CML-06228	*Priodontes maximus*	Skull and mandibles	Chaco Province (Argentina)	-	Recent
CML-00137	*Priodontes maximus*	Skull and mandibles and complete carapace	-	-	Recent
AMNH-147493	*Priodontes maximus*	Complete carapace	-	-	Recent
Museo Municipal de Ciencias Naturales “Carlos Darwin” (without signature)	*Priodontes maximus*	Complete carapace	-	-	Recent
Museo de Ciencias Naturales “Augusto Schulz” (without signature)	*Priodontes maximus*	Complete carapace	Chaco Province (Argentina)	-	Recent
Museo de Ciencias Naturales “Augusto Schulz” (without signature)	*Priodontes maximus*	Complete carapace	Chaco Province (Argentina)	-	Recent

SOM 2. Morphological characters selected for the phylogenetic analysis.

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*Characters with a "B" after the number were taken from Billet et al. (2011). The rest were taken from Gaudin and Wible (2006). "GW" and "B" after each character indicate the character number of Gaudin and Wible (2006) and Billet et al. (2011) respectively.

1. Number of upper teeth: 5 (0), 6 (1), 7 (2), 8 (3), 9 (4), or more than 9 (5). **GW1**

2. Number of lower teeth: 4 (0), 7 (1), 8 (2), 9 (3), 10 (4), or more than 10 (5). **GW2**

3. Premaxillary teeth: present (0) or absent (1). **GW3**

4. Histology of central region of tooth: tooth center composed of modified orthodentine (0), or tooth center composed of an elevated core of osteodentine (1). **GW5**

5. Modified orthodentine core of teeth: avascular (0), poorly vascularized (1), well vascularized (2), or highly vascularized, almost resembling a vasodentine (3). **GW6**

6. Orientation of long axis of teeth relative to long axis of toothrow: all teeth oriented parallel to the long axis of the toothrow (0), posterior teeth oriented obliquely to the long axis of the toothrow (1), anterior teeth oriented obliquely to the long axis of the toothrow (2), or all teeth oriented obliquely to the long axis of the toothrow (3). **GW8**

7. Length of mandibular spout: elongated, greater than or equal to the length of the mandibular symphysis (0), reduced, half the length of the symphysis or less (1), or spout absent (2). **GW11**

8. Mandibular symphysis delineated from mandibular horizontal ramus by distinct angle in lateral view: clear angle present (0), or clear angle absent, ventral edge of the symphysis grades imperceptibly into the ventral edge of the ramus (1).
Stegotherium, Vassalia, Prozaedyus, Tamandua are here scored "1", and *Peltephilus* is scored "0". **GW12**

9. Position of posterior end of mandibular symphysis relative to anteriormost mental foramen: posterior to (0) or anterior to (1). **GW13**

10. Anterior termination of lower toothrow: posterior to the mandibular symphysis (0) or at least two lower teeth dorsal to the mandibular symphysis (1). *Peltephilus* is here scored "1". **GW14**

11. Depth of mandible: shallow, maximum depth of the horizontal ramus <10% of the maximum mandibular length (0), moderate depth, maximum depth of the horizontal ramus ≥10%, <20% of the maximum mandibular length (1), or deep, maximum depth of the horizontal ramus ≥20% of the maximum mandibular length (2). **GW16**

12. Position of last lower tooth relative to ascending ramus of mandible: fully hidden in lateral view (0), partially hidden in lateral view (1), or located well anterior to (2). **GW17**

13. Angle between toothrow and anterior edge of ascending ramus of mandible: <40° (0), 40°–49° (1), 50°–59° (2), 60°–69° (3), 70°–79° (4), 80°–89° (5), or ≥90° (6). **GW18**

14. Coronoid process shape: elongated (0), or small (1). The original GW states 0-1-2 are here clustered in state 0, as the GW 0 and 2 states were not informative and can be clustered together with state 1, as simply "elongated". **GW19**

15. Distal extent of coronoid process relative to condylar process: dorsal to (0) or ventral to (1). *Priodontes* is here scored "1". **GW20**

16. Relative distance between coronoid, condylar, and angular processes of mandible: condyle closer to the coronoid than to the angle (0), three processes essentially equidistant (1), or condyle closer to the angle than to the coronoid (2). *Priodontes* and *Tolypeutes* are here scored "1". **GW22**

17. Shape of mandibular condyle in dorsal view: narrow, greatest anteroposterior length more than one and a half times greater than the greatest width (0), greatest width and the anteroposterior length roughly equivalent (1), or wide, greatest width more than one and a half times the greatest anteroposterior length (2). **GW24**

18. Dorsal surface of mandibular condyle in posterior view: concave transversely (0), flat (1), convex transversely (2), or concavo-convex (3). **GW27**

19. Orientation of mandibular condyle in lateral view: faces posterodorsally (0), dorsally (1), or anterodorsally (2). **GW28**

20. Fossa on anterodorsal surface of condylar process of mandible, immediately anterior to articular condyle: absent (0) or present (1). **GW29**

21. Ventral edge of angular process: ventral to the lower edge of the horizontal ramus (0) or dorsal to the lower edge of the horizontal ramus (1). **GW30**

22. Strong mylohyoid groove on anterior medial surface of mandibular horizontal ramus: absent (0) or present (1). **GW32**

23. Shape of processus ascendens and processus intrafenestralis of septomaxilla: processes slender, circumference fairly uniform throughout (0), processus intrafenestralis flared distally (1), or both processes elaborate, the processus ascendens bearing a posterior prong and the processus intrafenestralis a broad lateral flange (2). **GW35**

24. Length of rostrum to anterior orbital rim: short, <45% of the GSL (0), ≥40%, <50% of the GSL (1), ≥50%, <60% of the GSL (2), or elongated, ≥60% of the GSL (3). **GW36**

25. Length of nasal bone: short, < 25% of the GSL (0), 25%,<30% of the GSL (1), ≥30%, <35% of the GSL (2), or elongated, ≥35% of the GSL (3). **GW37**

26. Length of premaxillary/nasal suture: elongated, >12% of the condylobasal skull length (0), or short, <10% of the condylobasal skull length (1). **GW38**

27. Notch on anteroventral edge of premaxilla: absent (0), or present (1). We focus here on the presence of the notch. Tiny notches can be detected in *Euphractus, Zaedyus* and *Chaetophractus.* **GW39**

28. External naris shape: height>width (0), width=height (1), or width>height (2). **GW40**

29. Inclination of external narial aperture in lateral view: directed anteriorly or anterodorsally (0) or anteroventrally (1). **GW41**

30. Vomer overlaps premaxilla dorsally within external narial aperture: absent (0) or present (1). **GW42**

31. Anterior edge of nasal in dorsal view: with distinct medial and lateral processes separated by an indentation or notch (0), or without distinct processes, typically forming an evenly convex curve (1). **GW43**

32. Anterior extent of nasal bone relative to nasoturbinal: posterior to (0), or anterior to anterior tip of Nasoturbinal (1). **GW44**

33.B. Position of infraorbital foramen on rostrum: close to the maxillary root of zygomatic arch and at the same height (0), far anterior from maxillary root of zygomatic arch and lower (1), or far anterior from maxillary root of zygomatic arch and at the same height (2). **B33**

34.B. Distinct elongated, and more or less rough and concave surface for the nasolabialis muscle origin in front of the anterior edge of the orbit: oriented ventrally, on the maxillary root of the zygomatic arch (0) or oriented laterally, extended forward on the rostrum (1). **B34**

35.B. Antorbital depression at the nasolabialis muscle insertion: distinct antorbital depression and crest for nasolabialis muscle insertion (0) or antorbital depression and crest weak or absent (1). The taxa that do not present a distinct elongated, rough and concave surface for the nasolabialis muscle origin (ch. 35, state 0) are coded as non applicable. **B35**

36. Lacrimal fenestra at the juncture of the lacrimal, maxilla, and frontal bones: present (0) or absent (1). **GW50**

37. Length of upper toothrow: short, <30% of the GSL ≥30% (0), <35% of the GSL (1), ≥35%, <40% of the GSL (2), or elongated, ≥40% of the GSL (3). *Priodontes* is here coded '1+2+3', *Tolypeutes* '2+3', *Cabassous* '2', and *Peltephilus* '1+2'. **GW51**

38. Incisive foramen size: large, maximum diameter equal to or greater than half the anteroposterior length of the premaxilla measured at the midline (0) or small, maximum diameter less than half the anteroposterior length of the premaxilla (1). **GW52**

39. Maxilla participation in posterolateral margin of incisive foramina: present (0) or absent, incisive foramen completely or almost completely encircled by the premaxilla (1). **GW53**

40. Shape of maxilla/premaxilla palatal suture in ventral view: U- or V-shaped, midpoint directed posteriorly (0), approximately flat (1), V-shaped, midpoint directed anteriorly (2), or W-shaped, midline apex directed anteriorly (3). **GW54**

41. Maxillary/palatine suture shape: rectangular, with angular anterolateral corners (0), U-shaped with rounded anterolateral corners (1), or M-shaped, with the midline apex directed posteriorly and the anterolateral corners rounded (2). **GW55**

42. Anterior extent of horizontal process of palatine relative to anterior root of zygoma: posterior to or even with the posterior edge of zygomatic root (0), anterior to the posterior

edge of the zygomatic root (1), or anterior to the anterior edge of the zygomatic root (2). **GW56**

43. Posterior extent of palate relative to tooth row: even with the last tooth or not extending posteriorly beyond the toothrow by more than one anteroposterior diameter of the longest tooth (0) or extended posteriorly beyond the toothrow by more than one anteroposterior diameter of the longest tooth (1). *Tamandua* has been coded as not applicable as this taxon has no tooth. **GW57**

44. Median palatine suture: flat (0), raised to form a midline crest along the posterior half of the suture (1), or raised to form a midline crest along the entire length (2). **GW58**

45. Entopterygoid crests: grossly in line with the tooth rows (0) or clearly medial to the toothrows (posterolateral edge of palate converge posterior to the tooth rows (1). **B45**

46. Posterior part of palate profile from a posterior perspective: flat (0) or concave (1). **B46**

47. Pterygoid exposure on posterior edge of hard palate: absent (0) or present (1). **GW60**

48. Orientation of anterior orbital rim from an anterior perspective (view): oblique (0) or close to vertical (1). **B48**

49. Maximum width of skull at zygomatic arches: wide, >50% of the GSL (0) or narrow, <45% of the GSL (1). **GW61**

50. Maxillary foramen: not visible in ventral view (0) or visible in ventral view (1). **GW63**

51. Maxillary foramen: distinct from caudal palatine foramen (0) or linked in a groove with caudal palatine foramen (1). **B51**

52. Shape of palatine orbital exposure: tall and narrow, maximum height greater than the anteroposterior length (0) or long and low, maximum anteroposterior length much greater than the height (1). *Tolypeutes* is here coded '1'. **GW65**

53. Palatine/frontal contact: absent (0) or present (1). *Dasypus* is here scored as not applicable, due to the huge extent of the ethmoid preventing such a contact. **GW67**

54. Position of orbital wing of palatine's dorsal edge relative to sphenorbital fissure and/or foramen rotundum: ventral to (0) or at the level of or extending dorsal to (1). **GW68**

55. Posterior process of palatine orbital exposure extending between alisphenoid and pterygoid: absent (0) or present (1). **GW69**

56. Position of orbital exposure of pterygoid's dorsal edge relative to foramen ovale: ventral to (0) or at the level of or extending dorsal to (1). **GW70**

57. Sphenopalatine foramen position versus sphenorbital fissure/foramen rotundum: separate (0) or in common fossa (1). **GW72**

58. Groove connecting sphenorbital fissure/foramen rotundum to sphenopalatine foramen (crest bordering anterolaterally the sphenorbital fissure up to the sphenopalatine foramen):

absent (0) or present (1). The definition has been slightly modified to consider also the presence of the crest associated to the groove. *Cabassous* is here scored '1'. **GW73**

59. Orbitosphenoid participation in sphenopalatine/caudal palatine foramen: present (0) or absent (1). **GW74**

60. Ethmoid orbital exposure: rudimentary/absent (0) or large (1). **GW77**

61. (Anterior opening of postemporal canal) cranioorbital foramen: absent (0) or present (1). **GW78**

62. Position of optic foramen within orbitosphenoid: dorsocentral (0), central (1), or posteroventral (2). **GW80**

63. Orbital muscular crest: absent (0), weak (1), or strong (2). The original GW state '3' has been clustered with state '2', the character made additive and the definition simplified. **GW83**

64. Zygomatic process of maxilla: weak or absent (0), present, excluded from the anterior margin of the infratemporal fossa by the jugal/lacrimal contact (1), or present, forms the anterior margin of the infratemporal fossa (2). **GW84**

65. Depth of jugal (posterior to descending process): uniform depth throughout its length (0), maximum depth in the anterior half, narrower posteriorly (1), or maximum depth in posterior half, narrower anteriorly (2). **GW85**

66. Ventral process on zygomatic arch: absent (0), present as ventral boss on the zygomatic arch at the maxillary/jugal suture (1), present as elongated, anteroposteriorly compressed process on the anterior half of the jugal (2), or present as elongated, mediolaterally compressed process on the posterior half of the jugal (3). **GW86**

67. Shape of jugal/squamosal suture: suture oriented obliquely relative to the long axis of the skull (0), or suture horizontal relative to the long axis of the skull (1). The taxa that have an incomplete zygoma are here coded as not applicable. **GW89**

68. Orientation of posterior root of zygoma: directed anteriorly to anterolaterally (0) or laterally (1). **GW90**

69. Zygomatic arch profile from a lateral perspective: with a sharp break slope near jugal-squamosal suture (0), sinuous (1), straight and oblique (2), or straight and horizontal (3). **B69**

70. Shape of braincase: elevated, parietal with extensive lateral exposure (braincase typically cylindrical with domed parietals) (0) or dorsoventrally compressed, parietals appear relatively flat (1). *Proeutatus* is here scored '0'. **GW91**

71. Position of temporal lines: lines meet in the dorsal midline to form a sagittal crest (0), lines approximate midline but do not meet to form a sagittal crest (1), or lines are laterally situated, do not approximate midline (2). **GW92**

72. Multiple foramina on dorsal surface of frontal, around midline: absent (0) or present (1). **GW94**

73. Position of frontal/parietal suture at its lateral-most point relative to anterior edge of glenoid fossa: well anterior to (0), at the level of (1), or posterior to (2). **GW96**

74. Number of foramina for rami temporales in temporal fossa of parietal (near parietal/squamosal suture): 5 or less (0) or more than 5 (1). **GW97**

75. Alisphenoid/parietal contact: present (0) or absent, excluded by frontal/squamosal contact (1). **GW98**

76. Supraoccipital exposure on skull roof: present (0) or absent (1). **GW99**

77. Shape of nuchal crest in dorsal view: lacking distinct posterior extensions lateral to the midline, roughly C-shaped (0) or W-shaped, with distinct posterior extensions situated lateral to the midline (1). **GW100**

78. Relative height of palate and auditory region: grossly the same (0) or auditory region much more dorsal than palate (strong breakslope in pterygoid region) (1). **B78**

79. Endocranial surface of presphenoid forms raised median crest anterior to optic foramina: absent (0) or present (1). **GW103**

80. Entopterygoid processes: gracile (0) or rugose (1). **GW104**

81. Vidian nerve (nerve of pterygoid canal) pathway: internal, contained in a canal within the pterygoid or between the pterygoid and sphenoid (0), partially exposed along a groove at the base of the medial surface of the pterygoid, partially enclosed by a canal within the pterygoid (1), or fully exposed along a groove at the base of the medial surface of the pterygoid (2). **GW106**

82. Distinct groove for eustachian (auditory) tube on basisphenoid: absent (0) or present (1). **GW108**

83. Large vascular foramen (transverse canal foramen of Wible and Gaudin [2004]) located immediately anterior or ventral to foramen ovale: absent (0) or present (1). *Tolypeutes* and *Cabassous* are here scored '1'. **GW111**

84. Alisphenoid contribution to margin of Glaserian fissure: absent, fissure lateral to the alisphenoid, between the ectotympanic and squamosal (0) or present (1). **GW113**

85. Squamosal/pterygoid contact: absent (0) or present (1). **GW114**

86. Entoglenoid process: absent (0), present as a distinct ridge near the squamosal/alisphenoid suture (typically contacting the ectotympanic) (1), or present as in state (1) but distinctly inflated (2). **GW115**

87. Surface anterior to foramen post-glenoid: delimited posteriorly by a line continuous with the lateral edge of the zygomatic arch surface not elongated anteroposteriorly (0), or not delimited posteriorly by a line continuous with the lateral edge of the zygomatic arch surface elongated anteroposteriorly (1). **B87**

88. Maximum width of glenoid fossa relative to anteroposterior length: glenoid long and narrow, ratio of width to length <1.0 (0), width of glenoid roughly equivalent to length, ratio ≥1.0, <1.5 (1), or glenoid wide and short, ratio of width to length ≥1.5 (2). **GW117**

89. Position of glenoid fossa relative to optic foramen: at the level of or ventral to (0) or dorsal to (1). **GW118**

90. Petrosal contact with basicranial axis: petrosal unattached (0) or sutured medially to basicranial axis (1). *Dasypus* and *Stegotherium* are here scored '0'. **GW121**

91. Promontory shape: globose (0) or extended anteromedially (epitympanic wing) (1). **B91**

92. Extent of epitympanic wing: spread anterolaterally as much as anteromedially (0) or elongated anteromedially, far anterior from the tegmen tympani (1). **B92**

93. Shape of processus crista facialis (=?tegmen tympani): flat, rather small, rectangular (0), concave, rather small, ovate (1), large, concave, quadrangular (2), convex lump, small, ovate (3), concave, greatly enlarged, tripartite (4), or small, concave, elongated anteromedially (5). **GW124**

94. Fossa incudis: formed entirely by the petrosal (0) or formed between the squamosal and petrosal (1). **GW125**

95. Epitympanic sinus: absent (0) or present (1). **GW126**

96. Position of stylomastoid foramen: directly anterior to the paroccipital process (0), anteromedial or medial to the paroccipital process (1), or posteromedial to the paroccipital process (2). **GW127**

97. Medial extension and distal expansion of tympanohyal: absent (0), medial extension present, but unexpanded distally (1), or medial extension present, flares distally (2). **GW128**

98. Vagina processus hyoidei: absent (0) or present (1). **GW129**

99. Position of vagina processus hyoidei: visible in posterior view (0) or displaced anteriorly, not visible in posterior view (1). **GW130**

100. Distinct stapedius fossa below elongated ridge originating on promontorium between fenestra vestibuli and fenestra cochleae: fossa and ridge absent (0), fossa and ridge present (1), or fossa well-defined but ridge absent (2). **GW131**

101. Digastric fossa: absent or only weakly indicated (0) or well-developed depression present (1). **GW133**

102. Paroccipital process (see Wible and Gaudin [2004]; equals "mastoid process"of Patterson et al. [1989]. Gaudin [1995]) shape and position: greatest width in the anteroposterior plane, freestanding (0) or greatest width in the mediolateral plane, appressed to the posterior surface of the ectotympanic/external auditory meatus (1). **GW134**

103. Distance from distal tip of paroccipital process to distal extremity of paracondylar process (or exoccipital crest, if latter is poorly developed): paroccipital and paracondylar

processes well-separated, distance between them five percent of the GSL (0) or processes closely approximated, distance between them ≥5% of the GSL (1). **GW135**

104. Auditory bulla: with substantial membranous or cartilaginous contribution, with horseshoe-shaped ectotympanic that may exhibit either a small anteroventral contact with a single entotympanic or both an antero- and posteroventral contact with rostral and caudal entotympanics (0) or bony, formed by broad fusion of the entotympanic and ectotympanic (1). *Tolypeutes* and *Cabassous* are here scored '0', and *Eutatus* is scored '?', as the authors were not able to observe these features precisely. **GW136**

105. Entotympanic participation in tympanic cavity floor: small or nonexistent (0) or forming 1/3 or more (1). **GW137**

106. Position of ectotympanic and fissura Glaseri: ectotympanic posterior to the glenoid fossa, Glaserian fissure well posterior of the foramen ovale (0), ectotympanic medial to the glenoid, Glaserian fissure immediately posterior to the foramen ovale (1), or ectotympanic medial to glenoid fossa, Glaserian fissure lateral to foramen ovale (2). **GW140**

107. Lateral surface of ectotympanic: no ossified external auditory meatus present (0), forms incomplete external auditory meatus (1), forms complete but short external auditory meatus (2), or forms complete, tubular, elongated external auditory meatus (3). **GW141**

108. Shape of porus acousticus and form of ectotympanic: porus ovate, ectotympanic lacking a vertical muscular crest externally (0), porus ovate, ectotympanic with a short vertical muscular crest anterior to the porus, crest not extending ventrally onto the external surface of the bulla (1), or porus drawn into a narrow V ventrally, sharp muscular crest present on the outer surface of the ectotympanic extending ventrally across the external surface of the bulla (2). **GW142**

109. Relationship of porus acousticus to glenoid fossa: porus situated close to the glenoid, postglenoid fossa absent or if present, either situated medial to the glenoid or posterior to the glenoid but overlapped ventrally by the ectotympanic (0) or porus far posterior to the glenoid, separated by horizontal postglenoid fossa in which the postglenoid foramen is centrally located (1). **GW143**

110. Shape of mallear head: elongated anteroposteriorly (0), bulbous, almost spherical (1), or anteroposteriorly compressed (2). **GW144**

111. Angle between incudal facets on mallear head: >90° (0) or <90° (1). **GW145**

112. Distinct swelling at junction of mallear neck and manubrium: absent (0) or present (1). **GW146**

113. Size of lamina and lateral process of manubrium of malleus: both small (0), small lamina but large lateral process (1), or large lamina but small lateral process (2). **GW147**

114. Position of cochlear cavaliculus (aqueduct): opens within the jugular foramen (0) or opens within the cranial cavity, dorsal to the jugular foramen (1). **GW148**

115. Articular facet on odontoid notch of basioccipital: absent (0) or present (1). **GW151**

116. Hypoglossal foramen position: at the level of or dorsal to the jugular foramen (0) or ventral to the jugular foramen (1). **GW152**

117. Paracondylar process of exoccipital: absent (0), weakly indicated (1), or present (2). **GW154**

118. Occipital condyle shape in ventral view: roughly triangular, narrowing laterally (0) or roughly rectangular (1). **GW155**

119. Lateral indentation in occipital condyle: absent (0) or present (1). **GW156**

120. Notch/depression in the medial internal wall of the occipital condyles: absent (0) or present (1). **B120**

121. Shape of occiput: low and wide, maximum width is ≥1.5 times the maximum height (0), moderately wide, maximum width ≥1.25, <1.5 times the maximum height (1), or maximum height is roughly equivalent to (<1.25), or greater than the maximum width (2). *Euphractus* is here scored '0+1'. **GW157**

122. Width of foramen magnum: narrow, maximum width less than or equal to one half the maximum width of the occiput (0) or wide, maximum width greater than one half the maximum width of the occiput (1). **GW159**

123. Occipital exposure of squamosal: absent (0) or present (1). **GW160**

124. Squamosal participation in lateral wall of post temporal foramen: present (0) or absent (1). **GW161**

125. Groove for occipital artery continues dorsal to post temporal foramen: absent (0) or present (1). **GW162**

CARAPACE

***Characters with a "H" after the number were taken from Herrera et al. (2017). The rest are new. "H" after each character indicates the character number from Herrera et al. (2017).**

126. Osteoderms: not forming carapace (0), forming a rigid carapace (1), or forming a movable carapace (2). Modified from **H1**

127. Dorsal carapace: formed by movable bands and pelvic shield (0), formed by a pseudo shield shoulder, movable bands and pelvic shields (1), or formed by scapular shield, movable bands and pelvic shields (2). **H2**

128. Ornamentation on the external surface of the osteoderms: no figures or figures underdeveloped (0), flat figures (1), or convex figures (2). **H6**

129. Dorsal surface of mobile osteoderms: flattened (0), convex (1), or keeled (2). Modified from **H7**

130. Peripheral figures of movable osteoderms: greatly divided (0) or scarcely divided (1). **H8**

131. Shape of the main figure of movable osteoderms: lageniform (0) or subrectangular (1). **H9**

132. Extension of the main figure of the osteoderm: contacting the posterior edge (0) or without contact with the posterior edge (1). **H10**

133. Transition zone of movable osteoderms: not defined (0), well defined and rugose (1), or well defined and smooth (2). **H11**

134. Piliferous foramina in movable osteoderms: small, located on the posterior edge (0), small, located on the sides and posterior edges (1), or large, located on the posterior edge (2). **H16**

135. Development of the articular region of movable osteoderms (length of the articular region/total length of the osteoderm): developed >0.35 (0) or undeveloped <0.35 (1). **H17**

136. Shape of movable osteoderms: width is much less than half the length (0) or width is approximately half the length (1). **H19**

137. Main figure of fixed osteoderms: elongated (0) or subcircular and posteriorly located or centered (1). **H21**

138. Presence of rump plate: absent (0) or present (1).

139. Dorsal carapace extremely thin and vascularized: absent (0) or present (1).

140. Loss of central upper peripheral figure in fixed osteoderms: absent (0) or present (1).

141. Ornamentation loss from horny scale to bony surface of the osteoderms: absent (0) or present (1).

142. Peripheral figures of the fixed osteoderms: restricted to the anterior part (0) or not restricted to the anterior part (1).

143. Fixed osteoderms towards the carapace lateral margins: become sub circular (0) or maintain its shape (1).

144. Main figure of mobile osteoderms: keeled (0) or flat (1).

145. Osteoderm surface: all surface rugged (0), mostly rugged (1), or mostly flat (2). *Peltephilus* is here scored as "0".

146. Number of foramina at osteoderms posterior margin: less than 10 (0) or more than 10 (1)

147. Carapace border: rounded (0) or serrated (1)

148. Development of a large number of small tubercles on the surface of the osteoderm: absent (0) or present (1).

SOM 3. Matrix used in the phylogenetic analysis.

CHARACTER-TAXON REALIZED MATRIX

Taxon	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Bradypus	0	0	1	0	3	3	1	0	1	1	2	1,2	2,3	0	0	0
Tamandua	?	?	?	?	?	?	2	1	1	?	0	?	?	?	?	?
Chaetophractus	4	4	0	0	0	0,2	1	1	0	1	1	0,1	5,6	0	0	0
Euphractus	4	4	0	0	0	0	1	1	0,1	1	1	0,1	4,5	0	0	0
Priodontes	5	5	1	0	1	0	0	1	0	0	1	2	0,1	1	1	1
Cabassous	4	3	1	0	0	0	0	1	0,1	0	1	1,2	4	1	1	1
Vetelia ghandii	4	3	0	0	?	3	0	1	0	1	1	1	5	1	1	1
Vetelia perforata	4	3	0	0	?	3	0	1	0	1	1	1	5	1	1	1
Dasypus	2,3	2	1	0	2	0	0	1	0,1	0	0	2	0	0	0	2
Tolypeutes	4	3	1	0	0	0	0	1	0,1	0	1	0	3,4,5	0	0	1
Pedrolypeutes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Chlamyphorus	3	2	1	0	?	1	0	0	0	0	1	2	6	1	1	0
Calyptophractus	3	2	1	0	?	1	0	0	0	0	1	1	6	1	1	0
Chlamydophractus	?	2	1	0	?	1	0	0	0	0	1	1	6	?	?	?
Eutatus	3	3	1	1	?	0	0	0,1	?	0	1	0	3	0	0	0
Proeutatus	4	4	0	1	?	1	0	1	0	1	1	2	6	0	0	0
Paleuphractus	4	4	0	0	?	0	1	1	0	1	1	1	4	?	0	?
Macroeuphractus	3	4	?	0	?	2	1	1	1	1	1	0	2	0	0	0
Proeuphractus	4	?	0	0	?	2	?	?	?	?	?	0	?	?	?	?
Stegotherium	0,1	1,2	1	0	?	0	0	1	0	?	0	2	0,1	0,1	1	2
Prozaedyus	2,3	4	1	0	?	0	1	1	1	?	0	2	4	0	0	0
Zaedyus	3,4	3	0,1	0	0	0	1	1	0,1	1	1	2	4	0	0	0
Peltephilus	2	1	0	0	?	2	2	0	0	1	2	2	1	1	0	2

Taxon	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Bradypus	1	2	0	0	0	0	?	0	0	?	0	0	0	0	0	1
Tamandua	0	2	2	0	0	0	?	1	2	1	0	1	0	0	0	0
Chaetophractus	2	0	2	0	1	0,1	0	2	2,3	0	1	2	1	1	1	1
Euphractus	2	0	2	0	1	0	0	2	2,3	0	1	2	1	1	1	1
Priodontes	0	1	1	0	1	0	1	2	2,3	1	1	2	1	1	1	1
Cabassous	1	1	1	0	1	0	2	3	2	1	0	2	1	1	1	1
Vetelia gandhii	?	?	?	?	1	0	1	1	0	1	1	2	1	1	1	1
Vetelia perforata	?	?	?	?	1	0	?	?	?	?	?	?	?	?	?	?
Dasypus	1	1	1	0	1	0	1	3	2,3	1	1	2	1	1	1	1
Tolypeutes	1	0	1	0	1	0	0	2	0	1	1	2	1	1	1	1
Pedrolypeutes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Chlamyphorus	2	0	2	0	1	0	0	2	2	0	0	2	1	1	1	1
Calyptophractus	2	0	2	0	1	0	0	2	2	0	0	2	1	1	1	1
Chlamydophractus	?	?	2	0	1	0	?	?	?	?	?	?	?	?	?	?
Eutatus	2	0	2	?	1	?	?	3	0	0	0	2	1	?	1	?
Proeutatus	2	0	2	0	1	1	?	2	3	0	?	2	1	1	1	?
Paleuphractus	?	?	2	?	1	?	?	1	?	1	?	2	1	?	1	?
Macroeuphractus	2	0	2	0	1	1	?	1	?	?	0	2	1	?	1	?
Proeuphractus	?	?	?	?	?	1	?	1	2	0	0	2	1	?	?	?
Stegotherium	0	2	1	0	1	0	?	3	3	1	1	2	1	?	1	?
Prozaedyus	2	0	1	0	1	0	?	2	2	0	?	2	1	?	1	1
Zaedyus	2	0	2	0	1	0	0	2	1,2	0	1	2	1	1	1	1
Peltephilus	2	?	0	?	0	?	?	1	2	0	1	2	1	?	1	1

Taxon	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Bradypus	-	0	-	1	1	0	0	0	0	0	0	0,1,2	0	0	0	1
Tamandua	0	0	-	0	-	0	0	0	0	2	-	0,1	-	0	1	1
Chaetophractus	0	1	0	0	3	1	1	2	0,1	0	0	2	1	1	0	0
Euphractus	0	1	0	0	3	1	1	2	1	1	0	2	1	1	0	0
Priodontes	2	1	1	0	3	1	1	2	0	1	1	0	0	0	0	1
Cabassous	2	1	1	0	2	1	1	1	0	1	1	0	0	0	0	1
Vetelia gandhii	0	1	1	0	3	1	1	2	0	1	1	0	0	1	0	1
Vetelia perforata	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dasypus	1	1	0	1	0	1	1	2	1	1	0	2	1	0	1	0
Tolypeutes	2	1	0	0,1	2,3	1	1	1	0	0	0	1	0	0	0	1
Pedrolypeutes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Chlamyphorus	0	1	0	1	2	1	1	2	?	?	0	?	1	1	0	0
Calyptophractus	0	1	0	1	2	1	1	2	?	?	0	?	1	1	0	0
Chlamydophractus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Eutatus	0	1	0	?	1	?	?	2	0	0	0	2	0	?	0	?
Proeutatus	0	1	0	?	2	1	1	2	1	1	0	2	1	1	0	0
Paleuphractus	?	?	?	0	3	?	?	?	?	?	?	?	?	?	0	?
Macroeuphractus	0	1	0	?	3	?	?	?	?	?	0	2	1	0	?	0
Proeuphractus	?	1	?	0	3	1	1	2	0	1	0	2	?	?	0	?
Stegotherium	1	1	0	1	0	1	1	2	1	1	0	2	1	0	1	0
Prozaedyus	0	1	0	0	1	1	1	2	0	1	0	2	1	1	?	0
Zaedyus	0	1	0	1	2	1	1	2	1	1	0	2	1	1	0	0
Peltephilus	0	0	-	0	1,2	?	?	?	0	0	1	0	1	?	?	0

Taxon	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64
Bradypus	0	0	-	0	1	0	0,1	0	0	0	1	0	0	2	2	0
Tamandua	1	1	0	1	1	0	0	1	0	0	1	0	0	1	1	1
Chaetophractus	0	0	0	0	1	1	0,1	1	0	0	0,1	0	1	0	2	2
Euphractus	0	0	0	0	1	1	1	1	0	0	1	0	1	0	2	2
Priodontes	1	1	1	1	1	0	0	1	0	1	1	0	0	1	1	1
Cabassous	0	1	1	1	1	0	1	1	0	1	1	0	1	0	0	2
Vetelia gandhii	0	1	1	1	1	0	1	1	0	1	1	0	1	0	1	2
Vetelia perforata	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dasypus	1	1	0	1	-	1	1	1	0	0	1	1	1	1	2	2
Tolypeutes	1	0,1	0	1	0	1	1	1	0	1	1	0	1	1	1	2
Pedrolypeutes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Chlamyphorus	0	0	0	0	0	0	?	0	0	1	1	0	0	0	2	2
Calyptophractus	0	0	0	0	0	0	?	0	0	1	1	0	0	0	2	2
Chlamydophractus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Eutatus	0	1	?	1	0	0	1	0	0	0	1	0	?	?	2	2
Proeutatus	0	0	?	0	0	1	?	1	0	0	1	0	?	0	2	2
Paleuphractus	0	0	?	?	?	?	?	1	?	?	?	?	1	?	0	2
Macroeuphractus	0	0	0	?	?	?	?	1	?	?	?	?	1	?	2	?
Proeuphractus	?	0	?	?	?	?	?	1	?	?	?	?	?	?	2	2
Stegotherium	1	1	1	1	0	?	1	1	0	1	0	1	1	?	0	1
Prozaedyus	0	0	0	1	?	0	1	1	0	0	0	?	1	?	1	2
Zaedyus	0	0	0	0	0,1	0,1	1	1	0	0	0,1	0	1	0	1	2
Peltephilus	?	0	0	1	1	0	?	1	?	0	?	?	?	?	0	2

Taxon	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80
Bradypus	2	3	-	0	-	0	2	0	0	0	0	0	0	0	0	0
Tamandua	0	0	-	0	-	0	2	0	0	0	0	0	0	0	0	0
Chaetophractus	2	1	1	0	2	1	1	1	1	1	1	1	1	0	1	0
Euphractus	1	1	1	0	2	1	1	1	2	1	1	1	1	0	0	0
Priodontes	2	0	1	0	0	0	2	1	2	1	1	1	1	0	1	0
Cabassous	2	0	1	0	0	0	2	1	1	1	1	1	1	1	1	0
Vetelia gandhii	1	0	1	0	0	0	2	1	?	1	1	1	1	0	1	0
Vetelia perforata	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dasypus	0	1	0	0	0	0	1	0	2	0	1	1	1	0	0	1
Tolypeutes	0	0	1	0	1	0	0	0	0	1	0,1	1	0	0	1	0
Pedrolypeutes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Chlamyphorus	1	0	1	1	0	1	0	1	?	0	?	1	1	0	1	0
Calyptophractus	1	0	1	1	0	1	0	1	?	0	?	1	1	0	1	0
Chlamydophractus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Eutatus	1	1	1	0	0	1	1	?	2	1	0,1	1	1	1	?	0
Proeutatus	1	1	1	0	2	0	1	1	1	1	1	1	1	1	?	?
Paleuphractus	0	1	1	0	?	1	2	?	2	1	1	1	1	?	?	?
Macroeuphractus	0	1	1	0	2	0	0	?	?	1	?	?	1	0	?	?
Proeuphractus	?	?	1	?	?	1	0	?	0	1	?	1	1	?	?	?
Stegotherium	1	3	1	0	3	0	1	0	2	0	1	1	1	0	0	0
Prozaedyus	1	1	1	0	1	1	1	0	1	0	1	1	1	0	?	0
Zaedyus	0	1	1	0	2	1	1,2	1	2	1	1	1	1	0	1	0
Peltephilus	1	?	?	?	3	0	0	1	0	0	?	?	1	0	?	0

Taxon	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96
Bradypus	2	0	0	0	1	1	-	0	0	1	0	-	0	1	1	1
Tamandua	0	0	0	0	1	0	-	0	0	1	0	-	0	1	1	1
Chaetophractus	1,2	0	1	1	0	1	0	1	1	1	1	0	2	0	1	0
Euphractus	1,2	0	1	1	0	1	0	1	1	1	1	0	2	0	1	0
Priodontes	0,1	0	1	0	0	2	1	0	1	1	1	0	4	1	0	2
Cabassous	0	0	1	0	0	1	1	0	1	1	1	1	3	1	0	2
Vetelia gandhii	?	0	?	0	0	1	1	?	1	1	1	?	?	?	?	2
Vetelia perforata	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dasypus	0,1,2	1	1	0	0	1	0	0	0	0	0	-	1	1	0	1
Tolypeutes	0	0	1	0	0	1	1	0	1	1	1	1	0	1	0	1
Pedrolypeutes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Chlamyphorus	0	0	0	1	0	1	1	1	1	1	?	?	?	?	?	0
Calyptophractus	0	0	0	1	0	1	1	1	1	1	?	?	?	?	?	0
Chlamydophractus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Eutatus	0	1	1	1	0	1	?	?	1	?	?	?	?	?	?	0
Proeutatus	2	1	0,1	?	0	2	?	1	1	1	1	1	?	0	0	1
Paleuphractus	?	0	?	0	0	1	?	0	1	1	1	?	?	0	0	0
Macroeuphractus	?	1	1	?	?	1	0	2	1	?	?	?	?	?	?	0
Proeuphractus	?	1	1	1	0	1	?	?	1	1	?	?	?	?	?	?
Stegotherium	?	0	0	0	0	2	0	0	0	0	0	-	?	1	0	1
Prozaedyus	?	0	1	0	0	1	0	0	1	1	1	?	?	?	?	0
Zaedyus	1,2	0	1	0,1	0	1	0	1	1	1	1	?	2	0	1	0
Peltephilus	?	1	?	0	0	1	?	2	0	?	?	?	?	?	?	1

Taxon	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112
Bradypus	0	1	0	1	1	0	0	1	1	0	2	0	0	0	0	0
Tamandua	0	0	?	1	0	0	0	1	0	0	2	0	0	0	1	0
Chaetophractus	0	1	0	0	0	1	0	1	1	1	3	1	0	1	0	0
Euphractus	0	1	0	0	0	1	0	1	1	1	3	1	0	1	0	0
Priodontes	2	0,1	1	1	1	0	0	0	0	0	0	0	0	2	1	1
Cabassous	2	1	0,1	1	0,1	0	0	0	0,1	1	0	0	0	2	1	1
Vetelia gandhii	?	?	?	?	1	0	0	0	?	1	0	0	0	?	?	?
Vetelia perforata	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Dasypus	1	0	?	1	0	0	1	0	?	1	0	1	0	2	1	0
Tolypeutes	1	0	?	1	0	0	0	0	0,1	1	0	0	0	2	1	1
Pedrolypeutes	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Chlamyphorus	?	1	0	?	0	1	0	1	1	2	3	0	0	1	0	0
Calyptophractus	?	1	0	?	0	1	0	1	1	2	3	0	0	1	0	0
Chlamydophractus	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?
Eutatus	?	1	0	?	0	1	1	?	1	1	1	2	0	1	0	0
Proeutatus	0	0	?	0	0	0	1	0	?	1	0	0	0	?	?	?
Paleuphractus	?	?	?	0	0	1	0	1	1	1	1	2	0	?	?	?
Macroeuphractus	?	?	?	?	0	1	0	1	1	0	1	2	0	?	?	?
Proeuphractus	?	1	1	?	0	1	0	1	1	1	1	2	0	?	?	?
Stegotherium	0	0	?	?	0	0	0	0	?	0	0	1	0	2	1	?
Prozaedyus	?	?	?	?	0	1	0	0	1	1	1	0	0	?	?	?
Zaedyus	?	1	0	0	0	1	0	1	1	1	3	0	0	1	0	0
Peltephilus	?	?	?	?	0	1	0	1	1	0	3	1	0	?	?	?

Taxon	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128
Bradypus	1	0	0	0	2	0	0	0	0	0	0	1	0	-	-	-
Tamandua	0	0	0	0	1	0	0	0	1	0	0	0	0	-	-	-
Chaetophractus	1	1	0,1	1	0	1	1	1	0	0	1	0	1	2	2	2
Euphractus	1	1	0,1	1	0	1	0,1	1	0,1	0	1	0	1	2	2	2
Priodontes	?	0	1	1	2	1	1	1	1	0	1	1	1	2	2	0
Cabassous	2	0	0,1	1	2	1	1	1	2	0	1	1	1	2	2	0
Vetelia gandhii	?	?	1	1	2	1	1	1	1	0	1	1	1	2	2	0
Vetelia perforata	?	?	?	?	?	?	?	?	?	?	?	?	1	2	2	0
Dasypus	2	0	0	1	0	1	1	0	2	1	1	0	1	2	2	1
Tolypeutes	2	0	0	1	0	1	0,1	1	2	1	0	0	1	2	2	1
Pedrolypeutes	?	?	?	?	?	?	?	?	?	?	?	?	?	2	2	1
Chlamyphorus	1	1	1	1	0	1	0	1	0	0	1	1	0	2	0	0
Calyptophractus	1	1	1	1	0	1	0	1	0	0	1	1	0	2	0	0
Chlamydophractus	?	?	?	?	?	?	?	?	?	?	?	?	?	2	0	0
Eutatus	?	?	0	1	0	1	1	?	0	0	0	0	1	2	1	2
Proeutatus	?	0	0	1	0	1	1	?	1	0	1	0	1	2	2	2
Paleuphractus	?	?	0	1	0	1	?	?	0	0	1	0	1	2	2	2
Macroeuphractus	?	?	1	1	1	1	1	?	1	0	?	?	1	2	?	2
Proeuphractus	?	?	0	1	0	1	1	?	0	0	?	?	?	2	2	2
Stegotherium	?	0	1	1	1	1	1	0	2	0	1	0	1	2	0	2
Prozaedyu	2	?	1	1	0	1	1	1	2	0	0	?	?	2	2	2
Zaedyus	?	1	0,1	1	0	1	0,1	?	1	0	0,1	1	0	2	2	2
Peltephilus	?	0	0	1	0	1	0	?	2	0	?	0	1	2	0	1

Taxon	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144
Bradypus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tamandua	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chaetophractus	2	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0
Euphractus	2	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0
Priodontes	1	1	1	1	2	0	0	1	0	0	0	0,1	1	0	0	1
Cabassous	1	1	1	1	2	0	0	1	0	0	0	0,1	1	0	0	1
Vetelia gandhii	1	1	1	1	2	0	0	1	0	0	0	0	0	0	0	1
Vetelia perforata	1	1	1	1	2	0	0	1	0	0	0	0	0	0	0	1
Dasypus	0	0	0	0	0	0	1	0	1	0	0	0	0	1	1	0
Tolypeutes	0	0	-	-	1	0	0	0	0	0	0	0	0	-	1	0
Pedrolypeutes	0	1	1	1	1	0	0	0	0	0	0	0	0	0	1	0
Chlamyphorus	1	1	1	1	2	0	0	0	0	1	1	1	1	0	0	0
Calyptophractus	1	1	1	1	2	0	0	0	0	1	1	1	1	0	0	0
Chlamydophractus	1	1	1	1	2	0	0	0	0	1	0	1	1	0	?	0
Eutatus	2	1	1	0	1	2	1	0	0	0	0	0	0	1	1	0
Proeutatus	0	1	1	0	1	2	1	0	0	0	0	0	0	1	1	0
Paleuphractus	2	1	1	0	1	1	0	0	0	0	0	0	0	1	1	0
Macroeuphractus	2	?	1	0	1	0	0	0	0	0	0	0	0	1	1	0
Proeuphractus	2	0	1	0	1	1	0	0	0	0	0	0	0	1	1	0
Stegotherium	0	?	0	0	2	1	0	0	1	0	0	0	0	1	1	0
Prozaedyus	2	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0
Zaedyus	2	0	1	0	1	0	0	0	0	0	0	0	0	1	1	0
Peltephilus	0	1	1	?	2	1	1	1	1	0	0	-	0	-	?	0

Taxon	145	146	147	148
Bradypus	-	-	-	-
Tamandua	-	-	-	-
Chaetophractus	2	0	1	0
Euphractus	2	0	1	0
Priodontes	1	0	0	0
Cabassous	1	0	0	0
Vetelia gandhii	1	0	0	0
Vetelia perforata	1	1	0	0
Dasypus	2	0	0	0
Tolypeutes	2	0	0	1
Pedrolypeutes	2	0	0	1
Chlamyphorus	1	0	0	0
Calyptophractus	1	0	0	0
Chlamydophractus	1	0	0	0
Eutatus	2	0	1	0
Proeutatus	2	0	1	0
Paleuphractus	2	0	1	0
Macroeuphractus	2	0	1	0
Proeuphractus	2	0	1	0
Stegotherium	2	0	1	0
Prozaedyus	2	0	1	0
Zaedyus	2	0	1	0
Peltephilus	0	0	0	0

SOM 4. Amended diagnosis proposed in this work for the Priodontini and Tolypeutini tribes.

PRIODONTINI Gray, 1873

Amended diagnosis (from Weber, 1928): Medium to large size armadillos. Carapace with differentiated scapular and pelvic shields, and a variable number of mobile bands. Oval cephalic shield. Absence of serrated carapace borders and elliptical caudal aperture. Thick osteoderms with a rugose surface, developing a common ornamentation pattern in the form of an inverted "U". Peripheral figures of fixed osteoderms restricted to the anterior part. Thickened skull in the interorbital region and convex frontals, with presence of developed olfactory bulbs. Absence of a crest along the bone suture on the posterior half palatine. Zygomatic arc reaching a lower position in relation to dental series. W-shaped nuchal crest with strong relief, and absence of the bony auditory canal. Mandibular vertical ramus much shorter than the horizontal ramus. Mandibular condylar process taller than coronoid process, and angular process located at the molariforms occlusal surface level.

TOLYPEUTINI Weber, 1928

Amended diagnosis (from Weber, 1928): Medium to small sized armadillos. Carapace with large differentiated scapular and pelvic shields and mobile bands. Rectangular caudal aperture. Very thick hexagonal and isodiametric fixed osteoderms with numerous peripheral figures. Development of small tubercles on the whole dorsal surface of both fixed and mobile osteoderms. Development of a crest along the bone suture on the posterior half palatine. Zygomatic arc reaching a higher position in relation to dental series. Mandibular coronoid process taller than condylar process.