

SUPPLEMENTARY FILE S1

to the paper

A new species of Sigmodontinae (Rodentia) from the late Hemphillian of central Mexico,
and comments on the possible radiation of this group

by

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Published in Revista Mexicana de Ciencias Geológicas, vol. 36, núm. 3, 2019, p.321-333

Table A1. Specimens used for comparison and phylogenetic analysis. In LACM the catalogue number is locality/fossil specimen number (paleontology collection), single number correspond only to specimen number (mammalogy collection). (*) Specimens reviewed in the literature, not physically.

| Species | Catalogue number | Reference | Age |
|--------------------------------------|---|--|------------------|
| <i>Copemys dentalis</i> | LACM 5720/150716, LACM 4698/125662 | Whistler <i>et al.</i> , 2009 | Clarendonian |
| <i>Baiomys musculus musculus</i> | LACM 059364 | This work | Recent |
| <i>Baiomys taylori paulus</i> | LACM 035277 | This work | Recent |
| <i>Neotoma cinerea</i> | LACM 070416 | This work | Recent |
| <i>Neotoma albigula</i> | LACM 044329 | This work | Recent |
| <i>Peromyscus maniculatus</i> | LACM 006854 | This work | Recent |
| <i>Peromyscus mexicanus</i> | LACM 014265 | This work | Recent |
| <i>Prosigmodon tecolotum</i> sp. nov | Holotype MGGJ 3368, Paratype MPGJ 3340, Paratype MPGJ 3342, Paratype MPGJ 3336 | This work | Late Hemphillian |
| <i>Prosigmodon oroscoi</i> | Holotype IGM 5708, Paratype IGM 5709, Paratype IGM 5806 | Lindsay and Jacobs 1985; Carranza- Castañeda and Walton, 1992 | Late Hemphillian |
| <i>Prosigmodon ferrusquiae</i> | Holotype IGM 8245, Paratype IGM 8227, Paratype IGM 8293, Paratype IGM 8328 | Carranza-Castañeda and Walton, 1992 | Late Hemphillian |
| <i>Prosigmodon chihuahuensis</i> | Holotype IGM 5808, Paratype IGM 5818, Paratype IGM 5809, Paratype IGM 5810 | Lindsay and Jacobs, 1985 | Late Hemphillian |

| | | | |
|--|---|--|---------------|
| <i>Prosigmodon holocuspis</i> * | Holotype V4830, Paratype V4831, Paratype V4834; FHSM 15457, FHSM 15479. | Czaplewsky, 1987 | Early Blancan |
| <i>Reithrodontomys chrysopsis</i> | CNMA 1436 | This work | Recent |
| <i>Reithrodontomys megalotis alticulus</i> | CNMA 33752 | This work | Recent |
| <i>Sigmodon curtisi</i> * | Holotype USNM 10510, FHSM 14055, FHSM 14117 | Martin <i>et al.</i> , 2003, Gidley 1922 | Blancan |
| <i>Sigmodon fulviventer</i> | CNMA 2797 | This work | Recent |
| <i>Sigmodon alleni</i> | CNMA 14517 | This work | Recent |
| <i>Sigmodon arizonae</i> | CNMA 11018 | This work | Recent |
| <i>Sigmodon leucotis</i> | CNMA 1439 | This work | Recent |
| <i>Sigmodon mascotensis</i> | CNMA 13770 | This work | Recent |
| <i>Sigmodon hispidus</i> | LACM 192/2995, LACM 192/2993 | This work | Rancholabrean |

Table A2. List of characters and character states used in the phylogenetic analysis. Some characters were taken from Steppan, 1995, Weksler (2006), and Rincón *et al.*, (2016). We used anterocone (id) instead of the procingulum of Rincón *et al.*, (2016).

Continuous characters:

0. Ratio of the anteroposterior length of M1-M3 and the anteroposterior length of M1.
1. Ratio of the anteroposterior length of M1 and the width of anterocone.
2. Ratio of the anteroposterior length of m1 and the anteroposterior length of m1-m3 length.
3. Ratio of the anteroposterior length of m1 and the width of anteroconid.
4. Ratio of the length of diastema and the m1 anteroposterior length.
5. Ratio of the depth of mandible and the m1 anteroposterior length. The width of the mandible was taken in a straight line with the anterior root of m1 and the anterior end of the masseteric ridge.

Discrete characters:

6. Mental foramen (Character 44 of Weksler 2006, the character code was changed): (0) “mental foramen opens dorsally, at the diastema”; (1) “mental foramen opens laterally, at body of mandible”.
7. Masseteric ridge (Character 46 of Weksler 2006, the character code was changed): (0) “anterior portion of ridges conjoined as single crest”; (1) “superior and inferior masseteric ridges converge anteriorly as an open chevron”.
8. Relative position of the zygomatic plate of M1 (character 29 modified from Weksler 2006): (0) the zygomatic plate begins in the same level of the anterocone of M1; (1) the zygomatic plate starts before to M1; (2) the zygomatic plate initiate in the paracone of M1.
9. Upper incisors: (0) not bifurcated; (1) bifurcated.
10. Hypsodonty of the molars: (0) brachydont; (1) mesodont; (2) hypsodont.
11. Anterocone of M1 (character 10P modified from Steppan, 1995; character 58 modified from Weksler, 2006): (0) slightly bilobed in young specimens, divided by a weak anteromedian flexus and the anterocone is expanded at the anterior corona base; (1) bilobed into labial and lingual conules by anteromedian flexus; (2) single, not bilobed, and the anterior wall is straight parallel to the occlusal plane.
12. Anteroloph of M1(character 59 modified from Weksler, 2006): (0) absent; (1) present.
13. Paraloph of M1: (0) absent; (1) present.

14. Protostyle of M1 (character 60 of Weksler, 2006): (0) absent; (1) present.
15. The anterior wall of anterocone: (0) expanded, sometimes with a cingulum; (1) straight, without cingulum.
16. Mesostyle of M1 and M2 (character 11P. of Steppan, 1995): (0) present; (1) absent.
17. Mesoloph of M1 and M2 (character 1S modified from Steppan, 1995; character 62 modified of Weksler, 2006): (0) mesolophs present and well developed, sometimes fused with the mesostyle; (1) mesolophs small but well distinguished; (2) mesolophs absent.
18. Form and interpenetration of labial flexus, paraflexus and mesoflexus of M1-M2 (character 57 of Weksler, 2006) : (0) “Flexus of M1 and M2 do not interpenetrate”, flexus have a L form, and starts transversely towards the center of the molar and rotates towards the anterior region parallel to the anteroposterior axis; (1) flexus interpenetrate, and oriented from labial-anterior side to posterior-lingual border.
19. Paracone and hypocone connection of M1: (0) paracone and hypocone are identifiable cusps narrowly connected by enamel in the median mure; (1) paracone and hypocone are strongly connected, and their dentin forms a continuous lake.
20. Median mure connection of M1 (character 63 modified from Weksler, 2006): (0) enamel connection between the protocone, the paracone and the hypocone; (1) enamel connection between the paracone and the hypocone.
21. Fusion of the protocone and the paracone of M1-M2: (0) the protocone and the paracone are isolated; (1) the protocone and the paracone are fused in a single loph.
22. Enamel in the posterior arms of the protocone and paracone of M1-M2: (0) enamel present and well developed; (1) enamel poorly developed or absent.
23. Loph or cuspids of M1-M2: (0) the major cusps are identifiable and easy to distinguish between labial and lingual cusps; (1) the cusps are fused forming lophs, the molar has three lophs, one anterior, one medially, and one posterior.
24. Connection of the cusps in M3: (0) the protocone, the paracone, and the hypocone are connected; (1) the anteroloph, the protocone and the paracone are joined, and form a single cusp different from the hypocone and the metacone; (2) the anteroloph and the protocone form a single cusp different from the paracone, the hypocone, and the metacone.
25. Metacone size in M3: (0) the metacone is well developed and easy distinguishable; (1) the metacone is reduced or is not identifiable, the m3 seems to be composed by three cusps.
26. Anteroconid bilobed in m1 (character 70 of Weksler, 2006): (0) the anteroconid is not bilobed; (1) the anteroconid is bilobed by a well-developed anteromedial flexid; (2) the anteroconid is weakly bilobed by a tenuous anteromedial flexid; (3) the anteroconid is bilobed by an irregular anteromedial flexid with an anteromedian fossettid (enamel lake).
27. Lake enamel in anteroconid: (0) absent; (1) present.
28. Anteroconid connection: (0) the anteroconid is connected to the metaconid, sometimes in young individuals (as LACM 142923) the anteroconid is weakly connected to the metaconid, or they are not connected; (1) the anteroconid is connected to the protoconid; (2) the connection is complete between the anteroconid and the metaconid, both cuspids form a single anterior lophid.
29. Anteroconid symmetry of m1: (0) asymmetric conules differing in size, the lingual conule is well identifiable and the labial conule is minuscule and not differentiable from anterolabial cingulum; (1) symmetric conules, similar in shape and size (2) asymmetric conules different and both are well identifiable, usually the labial conule is smaller than the lingual conule.
30. Anterolabial cingulum in m1 (character 71 modified from Weksler, 2006): (0) A long anterolabial cingulum is present in m1, sometimes fused with the anterior margin of the protoconid, and the protoflexid is an internal fossettid; (1) A small anterolabial cingulum is present in m1, not joined to the anterior margin of the protoconid; (2) anterolabial cingulum absent.
31. Mures orientation in m1 (character four modified from Rincón *et al.* 2016): (0) parallel tendency with respect to the anteroposterior midline of the tooth; (1) oblique with respect to the tooth anteroposterior midline.
32. Enamel in the anterior wall of the hypoconid and the entoconid in m1-m2: (0) enamel present and well developed; (1) enamel poorly developed or absent.
33. Roots on m1: (0) two roots, in some cases a very small accessory root; (1) three roots, the third root is the accessory higher, and is between the anterior and the posterior roots; (3) four roots; (4) reduced roots, common in hypsodont teeth.
34. Labial cingulum in m2: (0) present; (1) absent.
35. Alignment of the metaflexid and the hypoflexid in m3: (0) not aligned; (1) aligned in two symmetrical cuspids.
36. Metaconid isolation in m1: (0) the metaconid is not isolated; (1) the metaconid is isolated in young specimens.
37. Relative size m2 vs m3: (0) m2 is bigger than m3; (1) m3 is bigger than or similar in size to m2.
38. Anterolabial cingulum of m3 (character 76 modified from Weksler, 2006): (0) the cingulum is separated from the protoconid by protoflexid; (1) a vestigial cingulum and shallow protoflexid are present; (2) without cingulum, protoflexid absent.
39. Accessory fold on m3: (0) absent; (1) present.
40. Cingulum anterolingual that closes the mesoflexid in m3: (0) the cingulum anterolingual is present, and the mesoflexid is closed forming an internal fossettid; (1) the anterolingual cingulum is not formed and the mesoflexid is open.

Table A3. Morphologic data matrix of 18 Cricetidae taxa by 41 characters used for phylogenetic model. The taxa correspond to those listed in Table A1. Scored characters are from Table A2. (?) Indicates missing character. The file in TNT format to run the analysis is in Supplementary File S2.

| | Continuous characters | | | | | | Discrete characters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-------------------------------------|-----------------------|------|------|------|------|------|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | 0 | 1 | 2 | 3 | 4 | 5 | 6-41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <i>Copemys dentalis</i> † | 2.21 | 1.99 | 2.65 | 2.24 | ¿ | ¿ | ??? | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | |
| <i>Prosigmodon ticolotum</i> † | 2.40 | 2.35 | 2.53 | 2.11 | 1.29 | 1.65 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| <i>Prosigmodon oroscoi</i> † | ¿ | 2.15 | ? | ? | ? | ¿ | ??? | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | ? | 0 | ? | ? | ? | ? | 0 | ? | 0 | 0 | 0 | 0 | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? | ? |
| <i>Prosigmodon ferrusquiae</i> † | ¿ | 2.18 | ? | 2.13 | ¿ | ¿ | ??? | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| <i>Prosigmodon chihuahuaensis</i> † | ¿ | 2.00 | ¿ | 1.87 | 1.58 | 1.76 | 0 | 0 | ? | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| <i>Prosigmodon holocuspis</i> † | ¿ | 1.98 | ¿ | 2.03 | ¿ | ¿ | ??? | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | ? | 0 | 1 | | | | | | | | | | | | | | |
| <i>Sigmodon minor</i> † | ¿ | 1.90 | ¿ | 2.48 | 0.76 | ¿ | ??? | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| <i>Sigmodon curtisi</i> † | ¿ | 1.76 | ¿ | ¿ | 1.81 | 2.08 | 0 | 0 | ? | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | ? | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | | | | | | | | | | | | |
| <i>Sigmodon fulviventer</i> | 2.47 | 1.58 | 2.70 | 2.07 | 1.38 | 2.22 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | | | | | | | | | | | | |
| <i>Sigmodon alleni</i> | 2.49 | 1.62 | 2.60 | 2.10 | 1.64 | 1.72 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | | | | | | | | | | | | |
| <i>Sigmodon arizonae</i> | 2.54 | 1.54 | 2.77 | 2.10 | 1.5 | 2.12 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | | | | | | | | | | | | |
| <i>Sigmodon leucotis</i> | 2.38 | 1.65 | 2.7 | 2.23 | 1.69 | 1.61 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | | | | | | | | | | | | | |
| <i>Sigmodon mascotensis</i> | 2.53 | 1.48 | 2.84 | 2.08 | 1.74 | 2.50 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | | | | | | | | | | | | |
| <i>Sigmodon hispidus</i> | 2.28 | 1.85 | 2.04 | 2.21 | 1.70 | 2.35 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | | | | | | | | | | | | |
| <i>Neotoma cinerea</i> | 2.40 | 1.69 | 2.75 | 1.99 | 2.09 | 1.94 | 1 | 0 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | | | | | | | | | | | | |
| <i>Neotoma albigula</i> | 2.26 | 1.78 | 2.59 | 2.07 | 1.89 | 2.31 | 1 | 0 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 0 | 2 | 2 | 2 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 2 | 1 | | | | | | | | | | | | | |
| <i>Reithrodontomys megalotis</i> | 2.12 | 2.07 | 2.28 | 2.28 | 1.62 | 1.71 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| <i>Reithrodontomys chrysopsis</i> | 2.27 | 2.06 | 2.38 | 2.30 | 1.72 | 2.06 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| <i>Baiomys musculus</i> | 1.99 | 2.10 | 2.37 | 1.87 | 1.98 | 1.96 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| <i>Baiomys taylori</i> | 2.02 | 2.17 | 2.36 | 1.85 | 1.63 | 1.67 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| <i>Peromyscus maniculatus</i> | 2.17 | 2.04 | 2.52 | 1.91 | 1.99 | 1.86 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| <i>Peromyscus mexicanus</i> | 2.17 | 2.00 | 2.44 | 2.89 | 1.95 | 1.84 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |

Table A4. Synapomorphies or autapomorphies of the phylogenetic analysis of Sigmodontini species. In each node the number and description of the character is given, the ancestral character state is indicated before an arrow and then the apomorphic character. The slash “/” indicates a ratio. The ancestral character state is indicated before an arrow and then the apomorphic character.

| Node | Synapomorphy or autapomorphy |
|------|---|
| A | No synapomorphies |
| B | 12 (anteroloph of M1): 0 → 1 |
| | 25 (metacone size in M3): 0 → 1 |
| C | 3 (anteroposterior length of m1/ width of anteroconid): 1.915 - 2.248 → 2.899 |
| D | 4 (length of diastema/m1 anteroposterior length): 1.958-1.984 → 1.998 |
| E | 1 (anteroposterior length of M1/ width of anterocone): 2.006-2.048 → 2.065-2.073 |
| | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.448-2.521 → 2.376-2.388 |
| | 17 (mesolophs of M1 and M2): 0 → 2 |
| | 24 (connection of the cusps in M3): 0 → 1 |
| F | 0 (anteroposterior length of M1-M3/ anteroposterior length of M1): 2.123-2.178 → 1998 |
| | 1 (anteroposterior length of M1/ width of anterocone): 2.065-2.073 → 2.101 |
| | 3 (anteroposterior length of m1/ width of anteroconid): 1.879-2.248 → 1.873 |
| | 5 (deep of mandible/m1 anteroposterior length): 1.849-1.869 → 1.968 |
| | 14 (protostyle of M1): 0 → 1 |
| G | 4 (length of diastema/m1 anteroposterior length): 1.958-1.984 → 1.634-1.722 |
| | 16 (mesostyle of M1 and M2): 0→1 |
| | 26 (anteroconid bilobed in m1): 2→1 |
| H | 3 (anteroposterior length of m1/ width of anteroconid): 1.879-2.248 → 2.280 |
| | 9 (upper incisors): 0→1 |
| | 12 (anteroloph of M1): 0→1 |
| I | 0 (anteroposterior length of M1-M3/ anteroposterior length of M1): 2.123-2.178 → 2.277 |
| | 3 (anteroposterior length of m1/ width of anteroconid): 2.280→ 2.306 |
| | 5 (depth of mandible/m1 anteroposterior length): 1.766-1.869 → 2.060 |
| | 17 (mesolophs of M1 and M2): 2→0 |
| | 27 (lake enamel in anteroconid): 0→1 |
| J | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.376-2.388→2.284 |
| | 4 (length of diastema/m1 anteroposterior length): 1.634-1.722→1.623 |
| | 5 (depth of mandible/m1 anteroposterior length): 1.766-1.869 → 1.717 |
| | 14 (protostyle of M1): 0 → 1 |
| K | 8 (relative position of the zygomatic plate of M1): 1→0 |
| L | 0 (anteroposterior length of M1-M3/ anteroposterior length of M1): 2.123-2.178 → 2.020 |
| | 1 (anteroposterior length of M1/ width of anterocone): 2.065-2.073 → 2.174 |
| | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.376-2.388→2.368 |
| | 3 (anteroposterior length of m1/ width of anteroconid): 1.879-2.101→1.857 |
| | 5 (depth of mandible/m1 anteroposterior length): 1.766 → 1.674 |
| | 13 (paraloph of M1): 0→1 |

| | |
|---|--|
| M | 1 (anteroposterior length of M1/ width of anterocone): 2.065-2.073 → 2.003 |
| | 6 (mental foramen): 1→0 |
| | 7 (masseteric ridge): 1→0 |
| | 10 (hypsodony of the molars): 0→1 |
| | 30 (anterolabial cingulum in m1): 0→1 |
| | 37 (relative size m2 vs m3): 0→1 |
| | 38 (anterolabial cingulum of m3): 0→1 |
| N | 16(mesostyle of M1 and M2): 1→0 |
| O | 1 (anteroposterior length of M1/ width of anterocone): 2.003 →1.909-1.988 |
| | 40 (cingulum anterolingual that closes the mesoflexid in m3): 0→1 |
| P | 4 (length of diastema/m1 anteroposterior length): 1.582-1.634 →1.299 |
| | 5 (depth of mandible/m1 anteroposterior length): 1.766 → 1.653 |
| Q | 3 (anteroposterior length of m1/ width of anteroconid): 2.079-2.113 →2.489 |
| | 4 (length of diastema/m1 anteroposterior length): 1.299 →0.762 |
| | 26 (anteroconid bilobed in m1): 1→0 |
| R | 28 (anteroconid connection): 0→1 |
| S | 3 (anteroposterior length of m1/ width of anteroconid): 2.079-2.113 →2.032 |
| | 26 (anteroconid bilobed in m1): 1 →3 |
| | 27 (lake enamel in anteroconid): 0→1 |
| | 36 (metaconid isolation in m1): 0 →1 |
| T | 1 (anteroposterior length of M1/ width of anterocone): 1.988 →2.157-2.186 |
| U | 3 (anteroposterior length of m1/ width of anteroconid): 2.113 →2.139 |
| V | 11 (anterocone of M1): 1→0 |
| W | 13 (paraloph of M1): 0→1 |
| X | 1 (anteroposterior length of M1/ width of anterocone): 2.157-2.186 → 2.351 |
| | 16 (mesostyle of M1 and M2): 1 → 0 |
| | 17 (mesolophs of M1 and M2): 2 → 1 |
| | 36 (metaconid isolation in m1): 0 →1 |
| Y | 1 (anteroposterior length of M1/ width of anterocone): 1.909-1.988 → 1.763-1.785 |
| | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.590 → 2.702 |
| | 4 (length of diastema/m1 anteroposterior length): 1.582-1.634 →1.697-1.819 |
| | 5 (depth of mandible/m1 anteroposterior length): 1.766 → 1.943-2.081 |
| | 11 (anterocone of M1): 1→2 |
| | 18 (Form and interpenetration of labial flexus, paraflexus and mesoflexus of M1-M2): 0→1 |
| | 19 (paracone and hypocone connection of M1): 0→1 |
| | 20 (median mure conection of M1): 0→1 |
| | 24 (connection of the cusps in M3): 1→2 |
| | 30 (anterolabial cingulum in m1): 1→2 |
| | 31 (mures orientation of m1) 0→1 |
| | 34 (labial cingulum in m2): 0→1 |
| | 38 (anterolabial cingulum of m3): 1→2 |

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| Z | 4 (length of diastema/m1 anteroposterior length): 1.697-1.819→1.897 |
| | 6 (mental foramen): 0→1 |
| | 8 (relative position of the zygomatic plate of M1): 0→2 |
| | 10 (hypsodony of the molars): 1→2 |
| | 21 (fusion of the protocone and the paracone in M1-M2): 0→1 |
| | 23 (lophs or cuspids of M1-M2): 0→1 |
| | 28 (anteroconid connection): 0→2 |
| | 29 (anteroconid symmetry of m1): 1→2 |
| | 35 (alignment of the metaflexid and the hypoflexid in m3): 0→1 |
| | 37 (relative size m2 vs m3): 1→0 |
| AA | 0 (anteroposterior length of M1-M3/ anteroposterior length of M1): 2.381-2.402→2.263 |
| | 5 (deep of mandible/m1 anteroposterior length): 1.943-2.081→2.319 |
| | 39 (accessory fold on m3): 0→1 |
| BB | 1 (anteroposterior length of M1/ width of anterocone): 1.763-1.785→1.692 |
| | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.590-2.702→2.751 |
| | 3 (anteroposterior length of m1/ width of anteroconid): 2.079→1.997 |
| | 4 (length of diastema/m1 anteroposterior length): 1.897→2.099 |
| CC | 15 (anterior wall of anterocone): 0→1 |
| | 22 (enamel in the posterior arms of the protocone and paracone in M1-M2): 0→1 |
| | 26 (anteroconid bilobed in m1): 1→0 |
| DD | No autapomorphies |
| EE | 1 (anteroposterior length of M1/ width of anterocone): 1.763→1.653 |
| | 32 (enamel in the anterior wall of the hypoconid and the entoconid in m1-m2): 0→1 |
| FF | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.609-2.702→2.783 |
| | 3 (anteroposterior length of m1/ width of anteroconid): 2.101→2.232 |
| | 5 (depth of mandible/m1 anteroposterior length): 1.943-2.081→1.610 |
| GG | 33 (roots on m1): 1→2 |
| HH | 5 (depth of mandible/m1 anteroposterior length): 1.943-2.122→2.351 |
| II | 0 (anteroposterior length of M1-M3/ anteroposterior length of M1): 2.381-2.493→2.281 |
| | 1 (anteroposterior length of M1/ width of anterocone): 1.628-1.653→1.853 |
| | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.609-2.702→2.044 |
| | 3 (anteroposterior length of m1/ width of anteroconid): 2.101→2.213 |
| JJ | 0 (anteroposterior length of M1-M3/ anteroposterior length of M1): 2.381-2.493→2.531 |
| | 1 (anteroposterior length of M1/ width of anterocone): 1.628-1.653→1.487 |
| | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.609-2.702→2.849 |
| | 3 (anteroposterior length of m1/ width of anteroconid): 2.101→2.084 |
| | 4 (length of diastema/m1 anteroposterior length): 1.707→1.744 |
| | 5 (depth of mandible/m1 anteroposterior length): 2.351→2.505 |
| KK | 4 (length of diastema/m1 anteroposterior length): 1.697-1.707→1.648 |
| | 29 (anteroconid symmetry of m1): 1→2 |
| LL | 5 (depth of mandible/m1 anteroposterior length): 1.943-2.122→1.723 |

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| MM | 1 (anteroposterior length of M1/ width of anterocone): 1.628→1.584 |
| | 4 (length of diastema/m1 anteroposterior length): 1.648→1.520 |
| NN | 0 (anteroposterior length of M1-M3/ anteroposterior length of M1): 2.473-2.493→2.544 |
| | 1 (anteroposterior length of M1/ width of anterocone): 1.584→1.540 |
| | 2 (anteroposterior length of m1/ anteroposterior length of m1-m3 length): 2.702→2.771 |
| | 3 (anteroposterior length of m1/ width of anteroconid): 2.101→2.102 |
| OO | 3 (anteroposterior length of m1/ width of anteroconid): 2.101→2.071 |
| | 4 (length of diastema/m1 anteroposterior length): 1.520→1.382 |
| | 5 (depth of mandible/m1 anteroposterior length): 2.122→2.222 |