#NEXUS

BEGIN TAXA;

DIMENSIONS NTAX=45;

TAXLABELS

'Tribosphenomys minutus'

'Archetypomys erlianensis'

'Cocomys lingchaensis'

'Tanquammys robustus'

'Reithroparamys delicatissimus'

'Acritoparamys atavus'

'Microparamys sambucus'

'Eogliravus wildi'

'Eogliravus moltzeri'

'Eogliravus hammeli'

'Ailuravus michauxi'

'Ailuravus inexpectatus'

'Ailuravus macrurus'

'Corbarimys hottingeri'

'Euromys cardosoi'

'Euromys thaleri'

'Paramys woodi'

'Meldimys louisi'

'Meldimys musak'

'Plesiarctomys savagei'

'Plesiarctomys hartenbergeri'

'Pseudoparamys cezannei'

'Plesiarctomys lapicidinarum'

'Pseudoparamys teilhardi'

'Sparnacomys chandoni'

'Pantrogna russelli'

'Pantrogna marandati'

'Hartenbergeromys hautefeuillei'

'Hartenbergeromys parvus'

'Pantrogna mattaueri'

'Masillamys krugi'

'Masillamys beegeri'

'Protadelomys cartieri'

'Protadelomys lugdunensis'

'Protadelomys alsaticus'

'Protadelomys nievesae'

'Protadelomys maximini'

'Tardenomys chartreuvensis'

'Ailuravus subita'

'Tarnomys helveticus'

'Tarnomys spelaeus'

'Treposciurus precei'

'Sciuroides rissonei'

'Paradelomys santjaumensis'

'Elfomys catalaunicus'

;

ENDBLOCK;

BEGIN CHARACTERS;

DIMENSIONS NCHAR=343;

FORMAT DATATYPE=STANDARD MISSING=? GAP=- SYMBOLS="012345";

CHARLABELS

[1] '\*Infraorbital foramen'

[2] 'Infraorbital gutter'

[3] 'Lower jaw masseteric crests'

[4] 'State of lower jaws masseteric crests'

[5] 'Ascending ramus'

[6] '\*Crown growth'

[7] '\*Height of the of main cusps (buccal and lingual) relative to the base of the crown, on upper molars'

[8] '\*Rough enamel on the periphery of upper tooth crown, with possible wrinkles'

[9] '\*Development of enamel wrinkles on the periphery of the upper tooth crown, as seen on unworn to moderately worn teeth'

[10] 'Upper DP3'

[11] '\*DP4 size'

[12] Parastyle

[13] 'Shape of the parastyle'

[14] 'Extension of the parastyle (or of the anteroloph, when the parastyle is not developed)'

[15] '\*Length of the anteroloph (= precingulum)'

[16] '\*Anteroflexus'

[17] 'Height of the anteroloph and posteroloph on upper teeth (DP4, P4, molars)'

[18] Anterostyle

[19] '\*Size of the anterostyle'

[20] 'Antesinus on DP4'

[21] 'Shape of the paracone'

[22] '\*Preparacrista on unworn to moderately worn DP4'

[23] 'Postparacrista on unworn to moderately worn DP4'

[24] 'Shape of the postparacrista on unworn to moderately worn DP4'

[25] '\*Protoloph on DP4'

[26] 'Protoloph shape and orientation'

[27] '\*Protoloph lingual connection (or orientation)'

[28] '\*Preparaconule on DP4 (as a conule placed within the lingual part of the anteroflexus)'

[29] 'Paraconule on DP4'

[30] 'Strength of paraconule on DP4'

[31] '\*Mesostyle'

[32] '\*Size of mesostyle'

[33] 'Shape of the mesostyle'

[34] '\*Number of divisions of the mesostyle'

[35] 'Premetacrista (anterior arm of the metacone)'

[36] 'Size of the premetacrista'

[37] '\*Premetacrista connection with the mesostyle'

[38] '\*Ectocingulae - ectoloph'

[39] 'State of the ectocingulae - ectoloph'

[40] 'Ectoflexus on DP4'

[41] '\*Mesoloph'

[42] '\*Number of divisions of the mesoloph'

[43] '\*Strength of the mesoloph on DP4'

[44] '\*Metacone on DP4'

[45] 'Height of the metacone'

[46] 'Postmetacrista on unworn or moderately worn teeth'

[47] 'Shape of the metacone'

[48] '\*Metaconule'

[49] 'State of the metaconule'

[50] 'Shape of the metaconule'

[51] '\*Size of the metaconule'

[52] '\*Mesial branch of the metaloph (= metalophule I)'

[53] '\*Main branch of the metaloph (= metalophule II)'

[54] '\*Protocone on DP4'

[55] '\*Preprotocrista and postprotocrista on DP4 and molars'

[56] 'Preprotocrista mesial connections'

[57] 'Relationships between the protocone, preprotocrista and postprotocrista on DP4'

[58] 'Hypocone on DP4'

[59] '\*Size of the hypocone relative to the protocone on DP4'

[60] '\*Position of the hypocone on upper DP4'

[61] Prehypocrista

[62] 'Orientation of the prehypocrista on DP4 and molars'

[63] 'Strength of the prehypocrista'

[64] '\*Endoloph on DP4'

[65] 'State of endoloph on DP4'

[66] '\*Height of the endoloph on DP4 and molars'

[67] '\*Mure on DP4'

[68] 'Sinus (= hypoflexus)'

[69] '\*Shape of the sinus'

[70] 'Posteroconule (= posterostyle)'

[71] '\*Posteroloph on DP4'

[72] 'Posteroloph connections on unworn or moderately worn DP4'

[73] '\*P4 buccal roots'

[74] '\*P4 size'

[75] Parastyle

[76] '\*Size of the parastyle'

[77] '\*Anteroloph on P4'

[78] 'State of the anteroloph'

[79] '\*Anterostyle'

[80] 'Size of the anterostyle'

[81] '\*Anteroflexus (anterosyncline) on P4'

[82] 'Metacone on P4'

[83] '\*Size of the paracone relative to the metacone'

[84] '\*Postparacrista'

[85] 'Shape of the postparacrista on unworn to moderately worn P4'

[86] 'Postparacrista connection with the mesostyle'

[87] Protoloph

[88] '\*Protoloph lingual connection (or directed to, if incomplete)'

[89] '\*Preparaconule on P4'

[90] Paraconule

[91] '\*Shape of the paraconule'

[92] '\*Mesostyle'

[93] 'Mesostyle development'

[94] 'Ectoflexus on P4'

[95] '\*Premetacrista (anterior arm of the metacone)'

[96] 'Development of the premetacrista'

[97] '\*Premetacrista connection with the mesostyle'

[98] '\*Mesoloph on P4'

[99] '\*Occurrence of an ectocingulum on P4'

[100] '\*State of the ectocingulum on P4'

[101] '\*Metaconule'

[102] 'Shape of the metaconule'

[103] '\*Mesiobuccal branch of the metaloph (= metalophule I)'

[104] '\*Shape of the mesial buccal metaloph on P4'

[105] 'Main branch of the buccal metaloph (distal, metalophule II)'

[106] 'Connections of the mesial buccal metalophule'

[107] '\*Connections of the distal buccal metaloph'

[108] '\*Connections of the lingual metaloph(s) on DP4 and P4'

[109] '\*Protocone'

[110] '\*Preprotocrista and postprotocrista'

[111] 'Relationships between protocone, preprotocrista and postprotocrista'

[112] 'Preprotocrista mesial connections'

[113] '\*Hypocone (sv= 0.5)'

[114] '\*Size of the hypocone compared to that of the anterostyle'

[115] '\*Height of the hypocone compared to that of the protocone'

[116] '\*Presence of an endoloph'

[117] 'Height of the endoloph on P4'

[118] 'State of the endoloph on P4'

[119] '\*Sinus'

[120] '\*Posteroconule'

[121] '\*Presence of the posteroloph on P4'

[122] '\*Posteroloph length'

[123] 'Posteroloph connections'

[124] 'Presence of a posteroflexus on P4'

[125] '\*Length of M1 relative to M2'

[126] '\*Length of M3'

[127] '\*Anteroflexus on M1'

[128] Parastyle

[129] '\*Development of the parastyle on M1'

[130] '\*Development of the parastyle on M2'

[131] 'Length of the anteroloph'

[132] Anterostyle

[133] 'Size of the anterostyle'

[134] '\*Presence of a preparacrista on M1-M2'

[135] 'Postparacrista (posterior arm of the paracone)'

[136] 'Shape of the postparacrista'

[137] 'Development of the buccal protoloph'

[138] '\*Paraconule'

[139] 'Position of the paraconule on upper molars'

[140] '\*Shape of the paraconule'

[141] '\*Preparaconule (= preprotoconule) on molars'

[142] '\*Protoloph lingual connections on molars'

[143] Mesostyle

[144] '\*Position of the mesostyle on molars'

[145] '\*Development of the mesostyle'

[146] '\*Postparacrista connection with the mesostyle on unworn or weakly worn teeth'

[147] Premetacrista

[148] 'Orientation of the premetacrista'

[149] '\*Premetacrista connection with the mesostyle'

[150] 'Occurrence of ectocingulum elements on M1 and M2'

[151] '\*Postparacrista and premetacrista connections with the ectocingulum'

[152] 'Ectocingulum M1'

[153] 'Ectocingulum on M2'

[154] 'State of ectocingulum-ectoloph'

[155] '\*Mesoloph'

[156] '\*Number of divisions of the mesoloph'

[157] 'Metacone on M1'

[158] '\*Shape of the paracone and metacone'

[159] 'Occurrence of a buccal metaloph'

[160] 'Position of the buccal metaloph'

[161] '\*Shape of mesial buccal metaloph (= metalophule I) on molars, when present'

[162] '\*Connections of the mesial buccal metaloph'

[163] 'Connections of the distal buccal metalophule II'

[164] '\*Metaconule'

[165] 'Number of metaconules'

[166] 'Position of the two cusps of the metaconule, when double'

[167] 'Shape of the metaconule'

[168] '\*Size of the main metaconule relative to the paraconule '

[169] '\*Lingual connections of the metaconule'

[170] Protocone

[171] '\*Protocrista (linguobuccal crista sloping from the apex of the protocone to the bottom of the mesoflexus)'

[172] '\*Connections of the protocrista on molars'

[173] Hypocone

[174] Prehypocrista

[175] '\*Posthypocrista'

[176] '\*Position of the hypocone on upper M1'

[177] 'Position of the hypocone on upper M2'

[178] '\*Size of the hypocone relative to the protocone on upper M1-M2'

[179] 'Configuration of the hypocone'

[180] '\*Endoloph'

[181] 'State of the endoloph on molars'

[182] '\*Height of the endoloph on molars'

[183] '\*Occurrence of a mure on molars'

[184] '\*State of the mure on molars'

[185] '\*Mesoconule(s) and pseudomure (relatively thick extraridges developed in the mesoflexus between the paraconule and metaconule level)'

[186] '\*Sinus (= hypoflexus)'

[187] 'Shape of the sinus'

[188] '\*Posteroconule (= posterostyle)'

[189] Posteroloph

[190] 'Posteroloph connections on unworn or moderately worn teeth'

[191] '\*Extra-ridges within the anteroflexus of M1-2'

[192] '\*Wrinkles and or granules within the mesoflexus'

[193] '\*Extra-ridges along the protoloph to the mesoflexus'

[194] '\*Extra-ridges along the metaloph to the mesoflexus (other than the metalophule I ridge)'

[195] '\*Extra-ridges from the metaconule area to the mesoflexus'

[196] '\*Extra-ridges or ripples within the posteroflexus of M1-2'

[197] '\*Strength - shape of extra-ridges into the flexi'

[198] '\*Granules on the enamel surface of the flexi'

[199] 'Anterostyle on M3'

[200] '\*Paracone on M3'

[201] '\*Metacone on M3'

[202] 'State of metacone on M3'

[203] 'Position and shape of the metacone on M3'

[204] '\*Height of the metacone on M3, as seen on unworn to weakly worn teeth'

[205] 'State of metaloph on M3'

[206] '\*State of flexi on upper M3'

[207] 'Shape of the basin of M3'

[208] '\*Number of mesostyle divisions on M3'

[209] 'Shape of the mesostyle(s) on M3'

[210] 'Mesoloph on M3'

[211] 'Number of mesoloph subdivisions on M3'

[212] '\*Preparaconule on M3'

[213] '\*Paraconule on M3'

[214] 'Metaconule on M3'

[215] '\*Size of metaconule on M3'

[216] '\*Hypocone on M3'

[217] '\*Length of lower incisors'

[218] '\*Lower dp4 size'

[219] '\*Length of p4 relative to m1'

[220] '\*Size of m1 relative to m2'

[221] '\*Length of m3 relative to m2'

[222] '\*Metaconid-protoconid width compared to the entoconid-hypoconid width on dp4'

[223] '\*Entoconid-hypoconid width compared to the metaconid-protoconid width on m3'

[224] '\*Roots of p4'

[225] '\*Talonid on p4'

[226] 'Paraconid on dp4 and molars'

[227] 'Anteroconid on dp4'

[228] 'Anteroconid on p4'

[229] '\*Anterolophid (anterocingulid) on dp4'

[230] '\*State of anterolophid on dp4'

[231] '\*Anterolophid on p4'

[232] 'State of anterolophid on p4'

[233] '\*Anterolophid (anterocingulid) on molars'

[234] 'Length of the anterolophid on molars'

[235] '\*Height of the anterolophid on molars'

[236] '\*Anteroconid on molars'

[237] '\*Anterolophulid (connecting the anterolophid/anteroconid to the buccal metalophid) on molars'

[238] 'Buccal anterolophulid on molars, closing the anteroflexid, developed from the buccal extremity of the anterolophid and protoconid'

[239] '\*Antesinusid on molars'

[240] '\*Buccal anterocingulid (sloping linguobuccally, from the anteroconid to the buccomesial flank of the protoconid) on molars, leaving the antesinusid open buccally'

[241] 'Anteroflexid on d4'

[242] 'Anteroflexid on molars'

[243] '\*''Trigonid'' height (trh)/talonid height (tah) on m1'

[244] '\*''Trigonid'' height (trh)/talonid height (tah) on m2 and m3'

[245] 'Shape of the talonid basin on molars'

[246] '\*Metaconid on dp4'

[247] '\*Position of the metaconid on dp4'

[248] '\*Position of the metaconid on p4'

[249] 'Size of the metaconid/protoconid on p4'

[250] '\*Protoconid on p4'

[251] '\*Metaconid on lower molars'

[252] '\*Mesiodistal position of lingual/buccal cuspids'

[253] '\*Premetacristid on p4'

[254] 'Cristids along the distal flank of the trigonid on dp4'

[255] 'Number of mesiodistal cristids along the distal flank of dp4'

[256] 'Mesiodistal extra-ridges along the medial axis of the teeth, from the metaconid to the bottom of the basin on p4'

[257] 'Number of mesiodistal extra-ridges along the medial axis of the teeth, from the metaconid on p4'

[258] '\*Postmetacristid (mesiodistal ridge from the metaconid to the mesoflexid opening) on p4'

[259] '\*Postmetacristid on molars'

[260] '\*Mesostylid (/metastylid) on molars'

[261] 'Lingual opening of the mesoflexid on molars'

[262] '\*Occurrence of a lingual mesolophid on dp4 and p4'

[263] '\*Occurrence of a lingual mesolophid on molars'

[264] '\*Length of the lingual mesolophid on molars'

[265] '\*Occurrence of a buccal mesolophid on dp4 and p4'

[266] 'State of the buccal mesolophid on dp4 and p4'

[267] 'Occurrence of a buccal mesolophid on molars'

[268] 'Number of buccal mesolophids on molars'

[269] 'Buccal mesolophid and premesoconid swelling or ridge'

[270] 'Length of the buccal mesolophid on dp4 and p4'

[271] 'Buccal mesolophid and postmesoconid spur or ridge on dp4 and p4'

[272] 'Buccal mesolophid and postmesoconid ridge on molars (sv= 1)'

[273] '\*State of the buccal and lingual mesolophids on molars '

[274] 'Occurrence of the metalophid elements on p4'

[275] 'State of the metalophid on p4'

[276] 'Occurrence of a metalophid on dp4'

[277] 'Occurrence of a metalophid on molars'

[278] 'State of the metalophid on molars'

[279] 'Path of the metalophid I on dp4 and molars, when present alone or present together with the metalophule II'

[280] '\*When buccal and lingual parts present: connections of the components of the metalophid'

[281] 'State of lingual metalophulids'

[282] '\*Linguobuccal premetacristid (mesial premetacristid sloping linguobuccally) on molars'

[283] '\*Occurrence of wrinkles along the metalophid towards the basin (converge) on molars'

[284] '\*Development of extra-ridges along the metalophid towards the basin on molars'

[285] 'Number of mesiodistal cristids (stronger and longer than wrinkles) along the distal slope of the trigonid'

[286] 'Orientation of main extra-ridges along the metalophid towards the basin on molars'

[287] 'Protoconid on dp4'

[288] '\*Development of the protoconid on p4'

[289] 'Protoconid shape on molars'

[290] 'Buccal protocristid developed transversely from the apex of the protoconid (= metalophulid I)'

[291] 'Postprotocristid on dp4, p4 and molars'

[292] 'Height of the oblique (mesiobuccal to distolingual) postprotocristid on molars, when present'

[293] '\*Premesoconid swelling - spur - or ridge on dp4 and p4 '

[294] '\*Premesoconid swelling or spur on molars'

[295] 'Mesial ectolophid on p4'

[296] '\*Distal ectolophid on p4'

[297] 'Ectolophid orientation on dp4 and molars'

[298] '\*Length of the ectolophid (when present) on dp4 and molars'

[299] 'State of ectolophid on dp4 and molars'

[300] 'State of the mesial and distal parts of the ectolophid on molars when the ectolophid is mesiodistal, or oriented mesiobuccal to distolingual'

[301] 'Mesoconid on dp4 and molars'

[302] 'Height of the mesoconid on dp4 and molars'

[303] 'Shape of the mesoconid'

[304] '\*Ectomesolophid on dp4 and p4'

[305] '\*Ectomesolophid(s) on molars'

[306] 'Length of ectomesolophid(s) on molars'

[307] '\*Number of ectomesolophids on molars'

[308] '\*Postmesoconid swelling, spur or ridge on dp4 and p4'

[309] '\*Postmesoconid swelling, spur or ridge on molars'

[310] 'Shape of the sinusid on molars'

[311] '\*Ectostylid-ectocingulid at the buccal border of the sinusid on molars'

[312] '\*Mesiobuccal spur of the hypoconid on molars'

[313] 'Connections of the mesiobuccal spur of the hypoconid on dp4 and molars'

[314] '\*Buccodistal spur of the protoconid on m1 and m2'

[315] '\*Strong wrinkles on the flanks of the sinusid'

[316] 'Hypoconid on p4'

[317] 'Occurrence of prehypocristid and posthypocristid on lower teeth'

[318] '\*State of pre- and posthypocristids on lower teeth'

[319] 'Posthypocristid (always stronger and longer than the prehypocristid) on molars'

[320] 'Posthypocristid orientation on molars'

[321] 'Hypoconulid on dp4 and molars (seen on unworn teeth)'

[322] 'Shape of the hypoconulid on dp4'

[323] 'Shape of the hypoconulid on molars'

[324] '\*Size of hypoconulid relative to the entoconid on m1-m2'

[325] 'State of connection of the posthypocristid with the hypoconulid on dp4 and molars'

[326] '\*Posterolophid on dp4 and p4'

[327] '\*Posterolophid on molars (more or less short and thin lingual prolongation of the hypoconulid)'

[328] '\*Postentocristid (developed on the distal flank of the entoconid, towards the posterolophid) on dp4 and molars'

[329] 'Postentocristid connections'

[330] 'Pre-entocristid (arm developed on the mesial flank of the entoconid on molars'

[331] 'Entoconid on p4'

[332] '\*Entolophid on dp4 and p4'

[333] '\*Entolophid on molars'

[334] 'State of the entolophid on dp4 and p4'

[335] 'State of the entolophid on molars'

[336] '\*Shape of the lingual entolophid on molars'

[337] '\*Buccal entolophid on molars, directed or connected to'

[338] 'Shape of the entolophid when it is complete (from the entoconid to its buccal connection) on molars'

[339] '\*Entoconulid on the entolophid of m1 and m2'

[340] '\*Extra-ridges (other than the main ones along the metalophid area) or granules on m1 and m2'

[341] '\*State of the extra-ridges (other than the main ones along the metalophid area) on m1 and m2'

[342] '\*Granules on the enamel surface of the flexids'

[343] 'State of the extra-ridges on m3'

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STATELABELS

1

small

'moderately enlarged'

'very enlarged',

2

absent

present,

3

'two masseteric crests present'

'lower masseteric crest absent',

4

'both equally developed'

'upper masseteric crest stronger than the lower one'

'lower masseteric crest stronger than the upper one',

5

high

low,

6

brachydonty

'weak unilateral hypsodonty (lingual side of upper teeth less than x 2 buccal side in height; mesial and distal sides of lower teeth nearly equal in height); roots present'

'unilateral hypsodonty (increase in height on lingual sides of upper teeth; lingual height about x 2 height of buccal side); roots present'

'unilateral hypsodonty (increase in height on lingual sides of upper teeth; lingual height more than x 2 height of buccal side)',

7

'higher than the base of the crown'

'equal with the height of the crown below'

'less high, cusps moderately salient',

8

absent

'variably present'

'always present',

9

weak

'variably: thin to strong wrinkles'

strong,

10

present

absent,

11

'strongly smaller than M1'

'smaller than M1'

'slighly smaller than M1'

'equal as to larger than M1',

12

'absent or indistinct'

present,

13

bulged

'stretched and swollen'

'stretched and merged into the anteroloph'

'buccal extremity curved',

14

'reaches the bucco-mesial corner of the paracone'

'extending to the paracone buccal flank and/or to the para-ectoloph',

15

'very short to absent'

'short (less than half-width of the tooth)'

'equal or longer than half-width of the tooth',

16

'reduced to a slot (anteroloph attached low to the mesial flank)'

narrow

'well-developed, but less than the mesoflexus'

'as wide as the mesoflexus',

17

'low (lower than the protoloph and metaloph)'

'high (as high as the protoloph and metaloph, but less than the paracone and metacone)',

18

absent

'variably or always present',

19

reduced

small

strong,

20

absent

present,

21

'swollen and acute'

'swollen and rounded'

'buccolingually stretched but well-defined'

'merged within the protoloph',

22

absent

'variably present'

present,

23

absent

present,

24

'mesiodistal and relatively straight'

'straight and oblique mesiolingual to distobuccal'

'first mesiodistal then turns to the mesostyle and grooved in a buccal notch',

25

absent

'short or incomplete'

'complete, but with variations in height'

'complete and continuous',

26

transverse

'oblique mesially'

'oblique distally'

'angled at the paraconule level',

27

'to the anterostyle or to the anteroloph'

'both to the anterostyle / anteroloph and the preprotocrista'

'to the preprotocrista (anterior arm of protocone)'

'to the protocone'

'to the postprotocrista'

'to the endoloph and or to the hypocone',

28

'absent or indistinct from the paraconule'

'variably present'

present,

29

'present and single'

'present and double'

'absent or indistinct from the protoloph',

30

'large (swollen)'

'protruding mesially'

'small, reduced',

31

present

'variably present'

absent,

32

strong

'small to moderate'

'indistinct to absent',

33

rounded

'stretched mesiodistally'

'stretched buccolingually',

34

one

two

three,

35

present

absent,

36

strong

'weak or short',

37

absent

'variably present'

present,

38

present

'variably present'

absent,

39

'short elements mesial and distal from the mesostyle'

'0 + paraectocingulum more or less developed'

'0 + metaectocingulum more or less developed'

'both 1 and 2, not fused'

'continuous all along the buccal side, from the anteroloph to the posteroloph',

40

absent

'variably present',

41

absent

'variably present'

present,

42

'one to two'

'always two'

three,

43

'weak, low and short'

'low but well distinct'

thick,

44

'smaller than the paracone'

'as large than the paracone'

'stronger than the paracone',

45

'lower than the paracone'

'as high as the paracone',

46

absent

present,

47

swollen

'bucco-lingually stretched but well-defined (protruding)'

'merged within the metaloph'

'swollen and acute'

arched,

48

'absent or indistinct'

'variably present'

present,

49

one

'two or more',

50

'swollen, bulged or conical'

'stretched mesiodistally'

'extended buccolingually'

'merged into the buccal metalophule II'

'one merged into the metalophule II, and one fused into an oblique linguobuccal to distobuccal prehypocrista ',

51

'stronger than the paraconule'

'as large as the paraconule'

'smaller than the paraconule',

52

absent

'buccally only, reduced to a low and short ridge'

'present buccally (buccal to the metaconule)'

'present buccally + lingually',

53

absent

'part buccal to the metaconule only'

'buccal part present and lingual part reduced or low'

'buccolingually complete, with variations in height'

'strong / high buccal and lingual parts',

54

'rounded, conical'

'tip more or less sharp and base more or less swollen '

'apex more or less stretched',

55

'preprotocrista shorter than postprotocrista'

'equally long'

longer,

56

'to the preparaconule (= preprotoconule)'

'connected to the anteroloph / anterostyle'

'ending free into the anteroflexus '

'connected / directed to the paraconule / to the protoloph '

'to the protoloph and to the anterostyle',

57

'making an acute angle '

'making an obtuse angle'

'aligned obliquely (mesiobuccal to distolingual)'

'aligned mesiodistally',

58

absent

present,

59

'much smaller and lower than the protocone, and faintly swollen on the lingual extremity of the posteroloph'

'smaller and lower'

'nearly as high and large as the protocone'

larger,

60

'placed more lingually than the protocone'

'little lingual'

'slightly more buccal or same level than the protocone',

61

absent

present,

62

'nearly aligned or making a wide open V with the posthypocrista and the hypocone'

'oblique linguodistal to buccomesial, directed towards the mesoflexus',

63

weak

strong,

64

'absent or indistinct'

'variably present and incomplete'

present,

65

'more or less mesiodistal ridge connecting the opposite flanks of the protocone and hypocone'

'resulting from the junctions of more or less oblique postprotocrista and prehypocrista'

'postprotocrista only, connected to the mesial flank of the hypocone or prehypocrista',

66

'low (much lower than the protocone) or vestigial'

'moderately lower than the protocone'

'as high as the protocone or slightly lower',

67

absent

sketched

present,

68

'absent or indistinct'

present,

69

'shallow and weak'

'very narrow (furrow like)'

'wide mesiodistally and short buccolingually and vertically'

'well-marked but short linguobuccally'

'well-marked and long linguobuccally',

70

'absent or indistinct'

present,

71

long

'short (half width of the tooth or less)'

'reduced buccally',

72

'free (without connection)'

'from the hypocone to the ectocingulum'

'from the hypocone to the postparacrista'

'connected to the hypocone and to the buccodistal flank of the metacone'

'to the metaconule',

73

one

'two very close roots'

'two well-separated buccal roots',

74

'P4 strongly smaller than M1'

'P4 moderately smaller than M1'

'P4 slightly smaller than to as long as M1'

'P4 longer than M1',

75

'absent or indistinct'

present,

76

'very strong'

strong

'weak/slender',

77

present

'variably present'

absent,

78

'low, cingular'

'like 0 but very short, and/or discontinuous'

'relatively high and long'

'relatively high but short (half-width of the tooth or less)'

'like (3), but very short',

79

absent

'indistinct from the paraconule'

'variably present'

present,

80

strong

'small to reduced',

81

'always present'

'variably present'

'reduced to a short slot'

absent,

82

absent

present,

83

'much stronger'

'slightly stronger'

'similar size',

84

present

'variably present'

absent,

85

'oblique mesiolingual to distobuccal'

'oblique mesiolingual to distobuccal and grooved with a buccal notch'

'mesiodistal and relatively straight',

86

absent

'variably present'

present,

87

absent

'present and distinct from the anteroloph',

88

'both to the anterostyle (or anteroloph) and the preprotocrista'

'to the preprotocrista (anterior arm of protocone)'

'both to the preprotocrista and the protocrista'

'to the protocone'

'to the postprotocrista',

89

'absent or indistinct from the paraconule'

'variably present'

present,

90

present

'reduced to indistinct',

91

'large and swollen'

'strong and protruding mesially (reaching or not the mesial border of the tooth)'

small,

92

absent

'variably present'

present,

93

'strong and swollen'

'divided into two to three elements'

moderate

'small to reduced',

94

absent

'variably present',

95

present

'nearly indistinct even on weakly to moderately worn teeth'

absent,

96

strong

'weak or short',

97

'absent (on unworn or moderately worn teeth of semi-hypsodont species)'

'variably present'

'present as early as the early stages of wear',

98

absent

'variably present'

present,

99

absent

'variably present'

present,

100

'short elements mesial and/or distal from the mesostyle '

'0 + short para-ectocingulum'

'0 + short meta-ectocingulum'

'long, strong, but low (from the parastyle to the posteroloph)'

'long, strong, and high',

101

'absent (or indistinct from a thickening of the metaloph)'

' one metaconule present (well distinct)'

'variably two metaconules',

102

'more or less bulged'

'stretched mesiodistally, crested'

'stretched into the metaloph'

'bearing a mediobuccal ridge oriented/connected to the mesoloph',

103

absent

'reduced to absent'

present,

104

'a ridge more or less continuous (complete)'

'present, low and discontinuous'

'reduced to a short ridge'

'absent ',

105

absent

present,

106

'separated from the metaconule'

'connection with the metaconule '

'with the neomesoconule (merged into the oblique prehypocrista)',

107

'separated from the metaconule'

'variably connected with the metaconule'

'connected or directed to the posteroloph'

'1+2, always or variably',

108

'joining (or directed towards) the protocone and/or the postprotocrista'

'with the postprotocrista and/or the endoloph, or the hypocone'

'variable connections with the hypocone or the prehypocrista'

'joining both the posteroloph and hypocone',

109

'swollen, conical'

'apex more or less sharp and base more or less swollen'

'stretched more or less with its pre- and post- protocristae',

110

'preprotocrista shorter than postprotocrista'

'equally long'

'preprotocrista longer than the postprotocrista',

111

'making an acute angle'

'making an obtuse angle'

'aligned obliquely (mesiobuccally to distolingually)'

'aligned mesiodistally',

112

'ending free into the anteroflexus'

'connected to the anteroloph / anterostyle'

'connecting the preparaconule'

'connected to the protoloph'

'variably 1 + 2 + 3',

113

'absent or indistinct'

'small to minute'

present,

114

smaller

'as large'

larger,

115

'hypocone strongly lower'

lower

'similar in height',

116

'absent or indistinct'

'variably present'

present,

117

'much lower than the protocone and hypocone'

'slightly lower',

118

'very short low ridge or spur, at the contact between the hypocone against the protocone'

'distinct ridge, more or less high, joining the protocone and hypocone flanks'

'high and short mesiodistal ridge joining the extremities of the mesiodistally or obliquely aligned postparacrista and prehypocrista'

'resulting from the junction of the linguodistally oriented postprotocrista with the linguomesially oriented prehypocrista',

119

'absent or barely marked'

'very short linguo-buccally'

'well-marked',

120

'absent to indistinct'

'weak and underlined by a short posterosinus'

'well-defined',

121

present

'variably present'

absent,

122

long

'moderately long to short (half width of the tooth or less)'

'reduced buccally',

123

'from the base of the protocone to the ectocingulum / to the postparacrista'

'from the hypocone to the ectocingulum / to the postparacrista'

'from the hypocone / posterocone to the buccomesial corner of the metacone'

'free (without connection with the metacone and hypocone)',

124

absent

present,

125

'M1 clearly shorter than M2'

'M1 slightly shorter or equal to M2'

'M1 slightly longer than M2',

126

'M3 > M2'

'M3 = M2'

'M3 < M2',

127

'short linguobuccally and narrow mesiodistally'

'long and narrow'

'long and wide, but less than the mesoflexus'

'as wide as, or wider than the mesoflexus',

128

'present (variably or always)'

absent,

129

strong

moderate

weak,

130

strong

moderate

weak,

131

'short (half-width to less than half-width of the tooth)'

'longer than half-width of the tooth',

132

'absent or indistinct'

present,

133

strong

'small, reduced',

134

absent

'variably present'

present,

135

absent

present,

136

'sloping linguobuccally from the paracone apex'

'sloping mesiodistally from the paracone apex'

'sloping mesiodistally, then turns buccally and notched to the mesostyle'

'sloping obliquely (mesiolingual to distobuccal) and notched buccally',

137

thin

thick,

138

present

reduced

absent,

139

'situated at the mesial edge'

'situated far from the mesial edge, and not protruding from the protoloph position'

'protruding mesially from the protoloph position (at least on a part of the population)'

'variably 1 and 2',

140

swollen

'stretched - at least protruding - distomesially'

'stretched bucco-lingually within the protoloph',

141

absent

'variably and rarely present'

'frequently to always present',

142

'to the anterostyle or anteroloph'

'to the preparaconule or to the extremity of the preprotocrista'

'fused or directed closer to the protocone apex or to the protocrista'

'both (1) and (2)'

'to the postprotocrista or to the endoloph',

143

absent

present,

144

'on the buccal edge of the crown'

'close to the mesio-distal paracone-metacone line, but slightly buccal'

'at the mesio-distal line joining the paracone to the metacone',

145

strong

moderate

'weak to reduced',

146

absent

'variably present'

present,

147

absent

present,

148

linguobuccally

distomesially

'more or less oblique, distolingual to mesiobuccal, possibly notched buccally',

149

'absent, at least on weakly to moderately worn teeth'

'variably present'

present,

150

absent

'variably present on M1 only'

'variably present on M2 only'

'variably present on M1 and M2',

151

present

'variably present'

absent,

152

'very short to short buccal elements, mesial and distal from the mesostyle'

'0 + para-ectocingulum'

'0 + meta-ectocingulum'

'both (1) and (2)'

'faint para-ectocingulum and/or meta-ectocingulum'

'long, low, from the parastyle to the posteroloph',

153

'short buccal elements mesial and distal from the mesostyle variably present'

'faint para-ectocingulum or meta-ectocingulum'

'0 + para-ectocingulum elements present'

'0 + meta-ectocingulum elements',

154

'separated from the base of the cusps by a relatively wide groove'

'developed at the level where the cusps emerge from the periphery of the crown',

155

absent

'variably present'

present,

156

one

'one to two'

'two to three',

157

'less developed / lower than the paracone'

'as strong as the paracone',

158

'swollen/bulged'

'sharp apex and swollen base'

'bucco-lingually stretched but well-defined'

'merged with the buccal protoloph and metaloph',

159

absent

present,

160

'mesial (developed towards the mesiolingual side of the metacone)'

'distal (slightly - or more - distally oriented)'

'both 0 and 1',

161

'reduced to short elements'

'low and discontinuous'

'straight, low'

'a ridge from the mesial flank of the metacone lower than the metalophule II',

162

'separated from the metaconule'

'weakly connected or directed to the metaconule'

'strongly connected to the metaconule, variably or always'

'directed or connected to the neomesoconule area of the prehypocrista',

163

'separated from or much lowly connected to the metaconule'

'more or less strong connection with the metaconule'

'0 and variably linked to the posteroloph',

164

'absent or indistinct'

'variably present'

present,

165

'one metaconule present'

'metaconule with at least one mesiodistal ridge directed to or connecting to the posteroloph'

'double metaconule (always or variably)'

'one metaconule bearing a strong (and lower than it) mediobuccal ridge towards the mesoloph or the metalophule I (variably or always)',

166

'successive buccolingually'

'side by side',

167

rounded

'rounded and apex sharp'

'stretched mesiodistally'

'stretched buccolingually into the metaloph'

'variable shape, of the two metaconules, from swollen to stretched',

168

stronger

equal

'variably stronger to equal'

smaller,

169

'directed and/or joining the protocone and/or the postprotocrista'

'connected variably to the endoloph or to the postprotocrista'

'directed/joining the postprotocrista or the endoloph and/ or the hypocone'

'when two (or more) metaconules - mesoconules, junctions with the endoloph, the prehypocrista and the hypocone'

'connection with the hypocone'

'connected to the posthypocrista or to the posteroloph',

170

inflated

'apex more or less sharp and base more or less swollen'

'apex weakly protruding (on weakly worn teeth) and stretched mesiodistally'

'as (2) but obliquely stretched from the anterostyle to the hypocone',

171

'absent or indistinct'

'variably distinct'

present,

172

'generally ending free'

'present, not always connected'

'present, generally connected, distinct or fused to the lingual protoloph',

173

absent

present,

174

absent

present,

175

absent

'variably present'

present,

176

'placed clearly more lingually than the protocone'

'placed a little lingually than the protocone'

'placed at the same level than the protocone or slightly more buccal ',

177

'lingual to the protocone'

'same level or slightly buccal to the protocone',

178

'much smaller and lower than the protocone, and slightly swollen'

'smaller and lower'

'nearly or as high and large as the protocone',

179

cingular

bulbous

'swollen and apex sharp'

'more or less stretched'

'stretched mesiolingual to distobuccal, with the strong prehypocrista',

180

present

'variably present'

'absent or indistinct',

181

'mesiodistal crest connecting the distal flank of the protocone and the mesial flank of the hypocone, low or higher'

'resulting from the junction of the extremities of the postprotocrista and prehypocrista'

'postprotocrista only, with low extension to the mesial flank of the prehypocrista',

182

'low (much lower than the protocone) or vestigial'

'relatively high but lower than the hypocone'

'nearly as high as the hypocone'

'lower than the two lingual cusps, when the hypocone is as high as the protocone, as seen on unworn or weakly worn teeth',

183

absent

'variably present'

'always present',

184

incomplete

'variably incomplete or complete'

complete,

185

absent

'variably present'

present,

186

'absent or barely marked'

'variably present'

present,

187

'shallow and weak'

'narrow to very narrow'

'wide mesiodistally and short buccolingually and vertically'

'well-developed but short linguobuccally'

'well-developed and deep linguobuccally',

188

absent

'variably present'

present,

189

'long on M1'

'short (less than half width of the tooth or less)',

190

'from the base of the protocone to the ectocingulum'

'from the hypocone to the postmetacrista or to the ectocingulum'

'from the hypocone/posterostyle to the buccomesial corner of the metacone'

'from the metacone to the metaconule'

'free (without connection, either to the metacone, or to the hypocone'

'connected both to the hypocone and metacone',

191

absent

'absent but short ripples along the anteroloph'

'present and rare (0 to 4)'

'numerous (more then 4)',

192

absent

'present and not numerous'

numerous,

193

none

'variable between 0 and 1'

'variable between 1 and 4'

more,

194

none

'variable between 0 and 1'

'variable between 2 and 4'

more,

195

absent

'one or two'

'more numerous wrinkles present',

196

absent

'posteroloph rippled'

'present, along the lophs'

'from the metaconule, directed to the posteroloph',

197

'weak, thin low ridges'

'both 0 + thicker sloping ridges'

'well-defined and higher than for 1',

198

absent

'present and rare'

numerous,

199

present

'indistinct to absent',

200

'less to as high as the protocone'

'slightly higher'

'much higher than the protocone',

201

absent

'variably present'

'always present',

202

one

divided

reduced,

203

'buccal, and bulged'

'swollen and curved, buccodistal'

'stretched and curved, buccodistal to distal',

204

'protruding from the posterior cingulum'

'slightly protruding'

'not protruding',

205

'well distinct, transversely developed'

'well distinct, attached to the metacone, and directed mesially'

'angled, attached to the metacone and to the postprotocrista'

'reduced and diversely organized (discontinuous, broken, mesiodistal, absent)'

'attached to the hypocone',

206

'mesoflexus distinct from the well-developed posteroflexus'

'reduced posteroflexus'

'posteroflexus absent',

207

'narrow valley'

'flat to slightly concave'

'cup-shaped'

'like 1 but reduced to its buccal half',

208

'one mesostyle'

'one to two'

'one to four',

209

swollen

stretched,

210

'absent or indistinct'

'present, variably to always',

211

one

'one + parallel extra-ridges'

'one to four, parallel, slightly converging to the basin',

212

absent

'variably present'

'always present',

213

present

'variably present'

'absent or indistinct',

214

present

'absent or indistinct',

215

strong

moderate

'small or minute',

216

absent

'indistinct or reduced'

'present and small',

217

'ending distally to m3'

'ending distally below m3 or slightly distally'

'ending mesially to m3',

218

'much smaller than m1'

'smaller than m1'

'subequal to m1',

219

'much shorter'

shorter

'slightly shorter'

'same size'

longer,

220

shorter

'equal or slightly shorter'

longer,

221

longer

equal

shorter,

222

'strongly narrower'

'slightly narrower'

'similar width',

223

'strongly narrower'

'slightly narrower'

'similar width'

wider,

224

'fused over a large part of their height, at least as high as the height of the crown'

'shortly fused'

'nearly or completely separated',

225

'reduced, without cuspid'

'cuspidate, but with entoconid and/or protoconid reduced'

'cuspidate, with well-marked hypoconid and entoconid',

226

'present and small'

absent,

227

absent

'present, variably or always',

228

'absent or indistinct'

'present (variably or always)',

229

absent

'rarely present'

present,

230

'absent: only a low buccal cingulid not connected to the metaconid apex'

'reduced (incomplete)'

complete,

231

'absent or indistinct'

reduced

present,

232

'short and low cingulid'

'short cingulid in the continuity of the linguobuccal premetacristid'

'mesiodistal, attached at the distal end of the postmetacristid up to the preprotocristid'

'buccal cingulid in the continuity of linguobuccal premetacristid, reaching the ectocingulid, which limits the buccal base of the sinusid'

'buccal cingulid low, not connected to the metaconid apex or to the anterolophid, variably present'

'reduced to the anteroconid',

233

absent

'variably present'

present,

234

'short, less to half width of the tooth, distinct from the premetacristid (as seen on unworn and weakly worn teeth)'

longer,

235

'lower than the buccal metalophid'

'nearly as high as the buccal metalophid'

'higher than the buccal metalophid',

236

absent

'present and distinct from the anterolophid'

'variably present as a swelling of the anterolophid',

237

'absent to indistinct'

'variably present'

'always present',

238

absent

'present, variably or always',

239

absent

'variably present, shallow and short'

present,

240

absent

'present and short'

'present and long, reaching the base of the protoconid',

241

'present, variably to always'

absent,

242

'buccally closed (via the elevation of its buccal border, via a preprotocristid or a buccal anterolophulid)'

'open buccally',

243

'trh > tah'

'trigonid basin only slightly higher'

'trh = tah',

244

'trh > tah'

'trh only slightly higher than tah on m2, and nearly as high as tah on m3'

'trh = tah',

245

'flat to a little concave'

'cup-shaped',

246

'strongly higher than the protoconid'

'moderately higher than the protoconid'

'slightly higher',

247

lingual

mesiolingual

'clearly mesial',

248

lingual

mesiolingual

mesial,

249

'metaconid smaller than protoconid'

'metaconid larger than protoconid'

'protoconid a little smaller to nearly similar in size',

250

present

'reduced to a mesiodistal protocristid'

absent,

251

'strongly higher than the protoconid'

'moderately higher than the protoconid'

'slightly higher',

252

'metaconid much mesial with respect to the protoconid'

'metaconid slightly mesial with respect to the protoconid'

'metaconid lingually opposed to the protoconid and entoconid lingually opposed to the hypoconid',

253

absent

'variably present'

'always present',

254

absent

'present and mesiodistal'

'present and oblique mesiobuccal to distolingual',

255

'one to two'

'one to four',

256

absent

present,

257

'one to two'

'one to four',

258

'steeply sloping distally'

'moderately sloping distally'

'weakly sloping distally',

259

'steeply sloping distally'

'moderately sloping distally'

'gently sloping distally',

260

'absent or indistinct from the distal extremity of the postmetacristid'

'variably distinct from the distal extremity of the postmetacristid'

'frequently distinct'

'developed at the mesoflexid lingual opening, distinct from the postmetacristid',

261

'wide V'

'narrow V'

'marked by a flat',

262

absent

'variably present'

present,

263

absent

'indistinct from extraridges'

'variably present'

present,

264

'very short'

short

'moderately long',

265

absent

'variably present'

present,

266

'not obviously different from low and thin extra-ridges'

'slightly stronger and longer',

267

absent

'variably present'

present

'not distinct from extra-ridges',

268

one

'two or more',

269

distinct

indistinct

'both 0 and 1',

270

short

'moderately long',

271

'distinct of the postmesoconid spur/ridge'

indistinct

'both 0 and 1, variably',

272

'distinct from the postmesoconid spur/ridge'

'indistinct from the postmesoconid ridge'

'indistinct from extraridges'

'both 0 and 1',

273

'not significantly different from low and thin extra-ridges'

'slightly stronger and longer'

'stronger and longer',

274

absent

present,

275

'metalophulid I complete or incomplete'

'metalophulid II complete or incomplete'

'both 0 and 1'

'reduced to a short ridge preceding the protocristid (when the protoconid is reduced to absent)',

276

'metalophulid I present, complete or incomplete'

'metalophulid II present, complete or incomplete'

'both present'

'reduced to a short connection with the protocristid, when the protoconid is absent or tiny',

277

absent

'one present'

'two present, variably or generally',

278

'main metalophid, from the posterior arm of the protoconid to the apex of the metaconid (= metalophid II)'

'main metalophid, transverse from the apex of the protoconid to the apex of the metaconid (= metalophid I)'

'both metalophids I and II',

279

'buccal part only'

'from the apex of the protoconid to the apex of the metaconid'

'from the anterior arm of the protoconid to the apex of the metaconid',

280

'buccal and lingual parts not connected, widely separated'

'not connected, separated by a relatively narrow gutter'

'variably, both 1 and 3'

'always connected',

281

'only one relatively central on the metaconid'

'additional between the ''central'' and the premetacristid (mesial), variably or always'

'additional = main lingual, connecting the buccal metalophulid; more distal one being separated from the buccal metalophulid'

'only one, mesial',

282

absent

'present, not reaching the metaconid apex'

present,

283

'absent or exceptionally present'

'variably present'

present,

284

'thin wrinkles and or granules'

'relatively thick wrinkles'

'relatively strong ridges',

285

'one to three'

'more than three',

286

'converging to the bottom of the talonid basin'

mesiodistal

'oblique (mesiobuccal to distolingual)',

287

bulged

'stretched mesiodistally',

288

absent

'indistinct from a protocristid-postprotocristid'

'present but poorly bulged'

'present and well-distinct',

289

swollen

stubby

'base swollen and apex sharp'

'slightly mesio-distally stretched'

'more or less obliquely stretched',

290

'absent '

'present '

'present and angled lingually with a mesiobuccal to distolingual high extraridge',

291

'posterior arm of the protoconid, delimiting the buccodistal flank of the talonid; higher and separated from the ectolophid'

'oblique postprotocristid, directed mesiolingual to distobuccal, sloping to the ectolophid'

'0 + sloping mesiodistal cristid, aligned with the horizontal ectolophid',

292

'weak, strongly sloping but higher than the ectolophid '

'nearly as high (or higher) as the mesoconid apex'

'higher than the prehypocristid, when the mesoconid and ectolophid are absent or indistinct',

293

'absent '

indistinct

'variably present'

'always present',

294

'absent or indistinct'

'variably present'

'always present',

295

absent

'lower than the grinding surface (shallow interruption)'

'present, elevated'

'indistinct from the postprotocristid',

296

absent

'shallow interruption (i.e., present but below the grinding surface)'

present,

297

'strongly oblique mesiolingual to distobuccal (crista obliqua)'

'oblique mesiobuccal to distolingual'

'mesiodistal, aligned with the sloping mesiodistal cristid'

'oriented mesiodistally ',

298

'long '

short

'much shorter, reduced with respect to the length of the tooth',

299

'mesial and distal part present, from part to part of the mesoconid'

'mesial part absent (indistinct from the postprotocristid)',

300

aligned

'distal making an angle with the mesoconid, or with the premesoconid swelling of the postprotocristid, variably'

'like 1, always',

301

present

absent

'indistinct from the postprotoconid ridge extremity / the premesoconid swelling',

302

salient

'weakly salient or not salient',

303

bulged

'stretched mesio-distally'

'stretched obliquely (buccomesial to linguodistal)'

'variably: stretched obliquely and / or stretched buccolingually',

304

absent

'variably present'

present,

305

absent

'variably present'

present,

306

short

long,

307

one

'at least one but sometimes two'

'at least one but frequently two, even three',

308

absent

'variably present'

'always present',

309

absent

'variably present'

'always present',

310

'weakly asymmetrical'

'strongly asymmetrical and long mesiodistally'

'asymmetrical and short mesiodistally'

'narrow and pinched buccally',

311

absent

'variably present'

'always present',

312

absent

'variably, rarely, present'

present,

313

'to the ectolophid-mesoconid'

'to the buccal edge of the sinusid or to the ectocingulid',

314

absent

'variably, rarely, present'

present,

315

absent

'variably present'

'always present',

316

'absent to indistinct'

present,

317

'both absent'

'prehypocristid present alone'

'posthypocristid present alone'

'both present',

318

distinct

'short and variably fused lingually from the apex of the hypoconid'

'fused lingually from the apex of the hypoconid into a short hypolophid',

319

'less than one - third of the hypoconulid + posterolophid'

longer,

320

'oblique backwards'

'more buccolingual',

321

present

'indistinct (or absent)',

322

'weakly swollen'

conical

'conical with mesial and distal sloping ridges, lengthening it buccolingually'

'stretched buccolingually, and a little distinct'

'merged within the posterior cingulid',

323

'weakly swollen'

conical

'conical with mesial and/or distal sloping ridges'

'stretched buccolingually but still distinct'

'merged at the lingual end of the posthypocristid, into the posterior cingulid',

324

'clearly smaller'

'moderately smaller'

'as large to stronger',

325

'separated or weakly connected'

'strongly connected',

326

'absent or reduced'

short

'moderately developed'

'well-developed',

327

'absent or reduced'

short

'relatively long',

328

absent

'variably present'

present,

329

'absent, seen on unworn to moderately worn teeth'

'present, with the posterolophid/hypoconulid, variably or always',

330

absent

'present, variably or always',

331

absent

present,

332

absent

'variably present'

present,

333

absent

'variably present'

present,

334

'extra-ridges and/or granules tracing a discontinuous entolophid'

'short lingual part only'

'buccal part only'

'lingual and buccal parts distinct and not fused'

'lingual and buccal parts connected',

335

'extra-ridges and/or granules tracing a discontinuous entolophid'

'lingual short part only'

'lingual and buccal parts distinct'

'lingual and buccal connected',

336

transverse

'variably transverse or backwards'

'backwardly oriented, to the hypoconulid',

337

'the hypoconid'

'the prehypocristid'

'the prehypocristid-distal ectolophid'

'the postmesoconid ridge'

'2 and 3',

338

'more or less curved backwardly'

'angulated between the lingual and buccal halves'

straight

'forwardly oriented'

'oblique: linguomesial to buccodistal',

339

absent

'variably present'

present,

340

absent

rare

numerous,

341

'thin and low'

'thick and low'

'relatively thick and high, some anastomosed to each other or with the main extra-ridges',

342

absent

'present and rare'

numerous

'making a grid (a net) with the numerous wrinkles',

343

'like on m1-m2'

'more numerous and better developed than on m1-m2',

;

MATRIX

'Tribosphenomys minutus' 00000000-0 0131?000-0 00110-022- 2---00-041 0--1113200 0001?100-- ---0--0--0 01000-000- 00-00-0-?0 ---0----?3 --------10 010------0 0001220022 00-2100000 000---10-? 05?00-1110 2--?0-1001 0?00------ --0-0--000 001100-010 ?201??0--0 -?00?00001 001100000- 0-0--0000? 1-00000000 0100-0-000 200-0-0--- ---0--100- ?0--?-0300 0-0000000- 000------1 00-0002-00 0000000200 000------0 -0?

'Archetypomys erlianensis' ?????000-? 00-00000-0 00110-002- 01001--000 0--0000200 0--1?000-- ---0--0--0 ?-???????? ?????????? ???0?????? ?????????? ?????????? ????020022 00-2130010 2110120--? 03?10-0110 2--?0-1001 0?00------ --0-0--013 001100-010 ??????0100 -?00?0?1?1 003??11?0- ??0--0000? 1-00000??? 00?0-0-002 200-0-0--- ---0--00-- ?00---0?00 0-0000000- 000------1 12000-0--- 01100000-0 ?00------0 -0?

'Cocomys lingchaensis' 00000000-0 01312200-0 1210202002 0110010040 0--0?00200 0300130100 ???0--0100 00?011000- 00-00211?0 2220---01- 102001-001 031-0---00 0021122000 10-?110010 011000110? 23?10-0011 ---?0-0000 0?11201011 000-022002 001100-010 ?211??0100 -?00?10?00 0?3?11?0?? 0-0--0000? ??000??010 11???0-12? ?00-0-0--- ---0-?10-- ?20---?300 0-00013100 00000----0 00-0013100 0?000220-0 100------0 -0?

'Tanquammys robustus' 20000120-0 0131220111 1010102002 0000010040 2011100200 0230130110 1012100130 010012000- 00-02-11?1 ---0----2- ------0000 031-020020 0011002000 1110111020 1310100--? 05?1201012 --1?0-0000 2?11201110 000-023001 001100-011 ?211??0101 0?20?20000 001?110001 0-0--0000? 1-00000010 0100-0-000 000-0-0--- ---11110-- ?20---0300 0-00111000 00000--000 00-0011100 01101000-0 1221312001 00?

'Reithroparamys delicatissimus' 00000000-0 ??????011? ?????????? ?????????? ?????????? ?????????? ??????0??? ???112000- 1112--10?0 222?11000- 200-00-002 13121???00 0021001011 10-00-0020 021210100? 2??-0-0012 ---?200001 0?11221002 --0-020002 00--00-10? ?220??00?0 -?01?00?30 0?3?21?0?? 0-210?000? ?0000??111 01?0-0-000 000-0-0--- ---11?10-- ?20---?100 0-00123100 01000--000 00--013100 0-?0120?00 1?231-2-00 -1?

'Acritoparamys atavus' ??0??0?0-0 0110200??? 1???20200- 0000?--2-0 0--1100200 0031130112 0--2000110 03?012000- 01120011?0 2120010?0- 100001-011 0320020010 0021121001 1110111112 111001102? 0??-0-0211 --1?0-0000 0?10221111 000-02{01}002 0011000000 ?021??2100 -?21?10?01 0?1?21?0?? 0-2000000? -0001--??? 01???0-000 (02)00-0-0--- ---0??10-? ?00----300 0-00123000 00000--000 0000013011 0?10122211 100-----00 -0?

'Microparamys sambucus' ??00?000-0 011021011? 0???202002 01000100-0 0--1?00202 0031030112 1000--0100 03?0?????? ?????????0 2220???0?? 20?????1?? ??1?1????? ?03111202? 110???12-- 011010120? 2??-200111 --110-0000 0?11221012 --0-020002 001100-0?? 0?????1??? ??21?0?0?0 011??11?21 ??11010?1? 0000000010 11?0-0-000 ?00-0-0-0- ---??010-- ?200--0?00 --00?13200 00000--000 00-00?3000 03?0132200 ?2221---00 00?

'Eogliravus wildi' 00000000-0 ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ????221012 1110121112 0111121221 00-1201211 --11203101 0?10221112 --0-10-002 0?2100-000 2021201111 2021-2??10 1?1?21?0?? 212102000? ?1110??010 1110-10111 1020211001 11211?10-2 011101?300 2-00112101 0001100000 0110113010 1-00100000 111110--01 101

'Eogliravus moltzeri' ?????0(01)0-? 111022(01)??? 1010231000 ???????2-0 0--1101200 1?40132102 0--0--0100 04?112200- 2110011101 213001010- 000-1-1(01)21 3212110010 0021?22011 10-0??1132 0-1110???0 ----201211 --10-----2 1?10?21112 --0-220004 000100-000 2021401111 2011-2?11? 211?2100?? 212102101? 0011000010 1120-0-111 ?00-212001 1121111013 0211010300 2-00113001 00211(01)0110 ????013010 1-40111??0 1123(23)03(23)01 100

'Eogliravus hammeli' ?????010-? 102-2100-0 2010302022 12-00012-0 1001101210 0042130112 0--0-001(01)1 03100-000- 2110(02)11001 213000010- 120-1-3122 0412111000 002122200(12) 1100111132 011(12)201100 ----211211 --11203121 0?10121111 000-100112 2101102001 1021001111 1021-1??10 2?1221?02? 1(01)2(01)02102? ?1120??110 111??0-111 10101120(01)0 23211?10-2 0(12)00--?320 0-00113101 01322(01)0110 1111012-10 1?40112000 1223(01)14-01 011

'Ailuravus michauxi' ?????0021? 1110220101 0211202111 1110010031 0--1113200 00321(23)2110 0--0--0100 0121120021 0121011100 22(23)1001110 2020112011 2312020000 00211(12)2002 1112110010 1310111111 2(15)010-0110 21-21-1001 2010011121 010-021001 11101(13)-102 2000000010 -11001?0(12)1 0022211122 102102000? 0000010020 1110-10001 200-0-0--- ---1112012 1220-00321 2-00122100 0000110000 2111213200 0222011000 111112--02 021

'Ailuravus inexpectatus' ?????0010? 1110220101 0211202111 1110010031 0--1113200 00321(23)2110 0--0--0100 0121120021 0120--1(13)00 2221010021 1020112011 2312020000 00211(12)2001 1112110020 1110111103 24110-1110 21-21-1001 2010211121 000-021001 01101(13)-102 2000000010 -11011?0(12)1 0012211021 0-2000000? 0000010020 1110-0-001 200-0-0--- ---11110-- -00---0320 2-00122100 0000110000 10-1013200 0222011000 111112--01 010

'Ailuravus macrurus' 0000000??0 ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ????120021 0120121020 220?00?00- 102001-011 23110???10 0021122011 1102110010 1110111121 20-10-1110 21-21-1221 2011221121 000-021001 ????????02 2010110010 -000110?30 0?2221?0?? 0-2102000? ?0000?0020 111??0-001 200-0-0--- ---11110?? ?20---?32? ??00122100 0000???000 ?11??13?00 0?22011000 1?2112--0? ???

'Corbarimys hottingeri' ?????000-? 011(01)2000-0 101(12)302002 11001--130 0--1100210 0000130100 0--0--00-0 01000-000- 1120021101 222000210- 200-0-0001 031200--00 0021121012 1100111(01)10 0311121110 2---100011 --02200201 0210011111 000-022202 2000010000 2021321110 -01021?000 200021000- 0-2002000? 00110?0212 1100-10001 000-0-100- -1113110-2 000---0000 2-00113100 0000100010 0110013000 0?301110-0 101-213300 -0-

'Euromys cardosoi' ?????1000? 0131200110 0210102001 0100010031 0--1013200 0(01)10130100 0--0--0111 01?011000- 1120101100 222001200- 100-1-0002 031200--00 0011111001 1112110020 0110011211 23010-0110 00020-0001 20100{12}1110 000-021201 0-0000-000 2110321110 -00011?000 00(12)?211021 102002000? 0000010??? 12?0-0-001 200-0-0--- 00-1?110-2 020---0310 2-00112100 00000--000 111?013100 03210110-0 111112--00 -0-

'Euromys thaleri' ?????1220? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ????1?2001 1112131020 1310001201 23?1200112 01120-1022 2110011110 010-021001 21112201?? ?????????? ????????10 ?????1???? ?22002110? ?0001??020 112??0-010 000-0-2--- -0010?1111 1220-0?301 10?1113100 0002210110 1210213010 00?0000200 1?21(01)2--02 020

'Paramys woodi' ?????1122? 0131220111 1212202100 01000110(34)0 2000113210 (01)2111(03)2100 0--2000100 0110110231 0110111100 012000021- 1020112021 3(03)20021110 0011122000 1110131020 0310001201 2301211112 01120-1002 2010011112 0-0-021001 3222221200 2010310211 20001(01)?010 0012211022 222002011? 0000110020 1120-10012 0030112100 0011021111 1220-00301 1032113100 0002211220 1210213000 00?0122201 1223013-02 031

'Meldimys louisi' ?????1110? 00202100-0 0211203011 011000104? 0--0113200 0121012100 0--2100100 01100-000- 0122011321 222?001011 1022012011 1211121100 0011102001 1112131020 0210121211 23-120111? 11120-1{01}12 2?11221130 010-021012 2112220000 2010311111 010001??21 0?1221?0?? 222100100? ?0000??010 011??10001 2102112100 00110?1112 1220-0?301 1132113000 0002200?20 2111113000 0??00020-0 1220(03)0(23)212 101

'Meldimys musak' ?????1100? 0131230110 0211311002 01100--04? 0--0?10??? ?3-1-30100 ???0--00-0 01???????? ?????????? ?????????? ?????????? ?????????? ????122000 1112131020 0310021220 2---20111? ---20-0001 2?10221030 010-020002 2111221000 2000001?10 -00011???1 ?????1???? ??20000?0? ?0001????? 11?0-???1? 0?0-??0--? ?--???110- -20---??0? ???0??31?0 000?0--?00 ?1100?3001 0?300?0000 ?????????0 -??

'Plesiarctomys savagei' 1000022210 0131210110 2212302022 011001002? 0--0110210 0032132100 10011?00-1 01100-000- 1110111101 213?011011 1121?01122 3312121100 00211220(01)1 1012111112 1110101113 232110011? 0012200112 0?11221130 010-021001 3222221000 2021311011 0110110001 0011211021 0-2100000? 0000110010 1110-0-112 00200-1000 11110210-2 1221000311 0-00122200 01100--120 2210213000 13?0122211 111(12)(02)03-02 131

'Plesiarctomys hartenbergeri' ?????3222? ?????????? ?????????? ?????????? ?????????? ?????????? ???????111 ???0???00- 0120201100 220?000224 1022101121 2320221100 0011121002 1110111020 0210001101 21-121121? 00020-0012 0?11221130 010-02120(12) 3222221200 1021311111 100011?001 003??10?0? ??2100000? 1000100010 1110-??120 1?1-0-3--? ?20???1112 1221001?11 ?1001(12)2200 01001--003 01102?3000 13?0132211 ?00-00?-02 231

'Pseudoparamys cezannei' ?????1200? 0131210100 1211332001 0100010040 0--2110200 0032133110 0--0000100 01100-000- 0100121100 222011000- 200-1-0021 2312021100 0121212012 1110131010 0111101201 21-10-0011 --020-0012 0?10211011 010-020002 010000-000 1021311110 -02021??0? 1?1??1???? ??2100000? ?0000??211 110??10010 000-0-100- -111??10-- 010---?0-0 0-00121101 01000--010 1110013000 0?30121210 101-003001 000

'Plesiarctomys lapicidinarum' ??????210? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ????1?2011 1112111020 0111101103 2121210210 --02200212 0?10221130 010-022002 21110200?? ?????????? ?????????? 0?2??1???? ??2110000? ?0?11????? 11?0-???11 0?10??210? ?00???2112 122000??11 11?11?3100 01(01)?210?10 22111?3000 0??01?2211 ??0------2 110

'Pseudoparamys teilhardi' 20???2220? 0121210111 0210202000 0110010040 0--0010200 2032133102 0--20100-0 0110020021 0110111100 2130010010 200-1-1021 3(03)11111110 0021112012 1110111020 0111101103 1221110210 0102200212 0?10221130 010-022201 2122020001 10212(01)2111 0000110001 0130210022 212110000? 0001110010 1120-10111 1120101000 0001022112 1220001231 1101113100 0101100010 2211113000 03?0132211 100------2 111

'Sparnacomys chandoni' ?????1210? 1131220111 0012201102 0110011110 0--1101200 0021130110 0--2010100 03100-100- 0110111010 2130010010 200-1-1001 04120101(01)0 00211(12)2012 1110131030 2311111201 20-1201110 --020-0001 2110211020 010-020002 2122001100 1022311011 0111-1?000 0001211021 132102011? 0000110(12)11 0101010000 000-101000 1111301112 122(01)001111 1022113100 01(01)1211120 10-0013010 03301000-0 102-12--02 0(12)1

'Pantrogna russelli' ?????1210? 1121220100 2112202201 011(01)0110-0 1001101200 01220(03)2110 0--2010100 03100-000- 0110(01)1100(01) 222001120- 100-1-(12)021 34221211(01)0 0021212011 1112121021 0311111110 2---211012 00020-0002 0110211110 010-02(01)002 2122021110 1022312011 000021?001 0001211021 132112011? 0001111111 1121010120 000-101000 2011301112 0221001111 1122113100 01(01)1211120 1110013010 03?01010-0 122(03)(02)13101 1(12)1

'Pantrogna marandati' 20???12100 1130130111 0012232001 01000022-0 0--1103200 0032042100 0--2010100 03200-000- 012121101(01) (02)22001010- 101211(12)021 34111211(01)0 0021112001 1101121021 0311(01)01103 2001221212 0112210222 1210211130 020-020002 2223132001 2022311111 2110(12)1?111 0112210022 132122111? 0012010111 1121111220 1121212000 2321302112 1221001111 112212(13)101 01(01)221111(01) 2212113010 0(03)?01010-0 122(34)(23)14102 111

'Hartenbergeromys hautefeuillei' 2000?12200 0111220110 01102(03)(23)001 01(01)0010110 1001103200 (01)132143110 0--2010100 03100-0021 0120201010 222001120- 1012111021 3412121100 00212120(01)1 1101121020 1311(01)01103 2101211212 0122210222 1110111130 020-020002 2122132001 2022311111 2110(12)1?111 0011210022 (01)22122111? 0012001211 1101011120 1121212000 2311301112 02210(12)1111 112212(13)100 01(01)221122(01) 2111113000 03?0111110 122(34)(23)1410(12) 121

'Hartenbergeromys parvus' ?????120-? ?????????? ?????????? ?????????? ?????????? ?????????? ?????2???? ?????????? ?????????? ?????????? ?????????? ?????????? ?????120?2 1??2111021 ?411001220 ----201212 01121-0222 ??112?1?30 020-0222?2 21211?2001 2?21311011 100022?11? ?02?210?0- ??2120111? ?0?20??21? ?1???10220 10310-2100 ?310-?110- -22200?111 1122221102 0120211?21 2110013010 1??0111000 1224314001 111

'Pantrogna mattaueri' ?????1220? 0110220110 2011202001 01(01)10022-0 100110(14)200 0122132120 1002010100 13210-0101 1110221100 0220010110 1012101021 231210--00 0121212011 1110111021 2311(01)01201 20-1211212 0022200222 1110111130 020-01(01)102 22221(12)2102 2121311211 200021??11 1?1121?00? 0-2120000? ?01101?211 110??10220 102(01)0-1000 01113?1112 122210?111 1122211102 0122210121 2111113010 0?(03)0111000 1223213011 121

'Masillamys krugi' 2000012220 ??????00-? ?????????? ?????????? ?????????? ?????????? ?????20??? ???10-010- 2120021101 -21000220- 1120112021 330--0--00 0021112012 10-0111011 0211001203 2001220212 01220-0012 1111221130 020-021001 32221(13)2102 2022211001 2000110121 0?0?21?0?? 112110100? ?0120??111 11???10122 222(01)0-100- -0013?1113 212210?111 110122111- 2--2211001 2211113010 0-(03)0121210 1224302212 211

'Masillamys beegeri' 2000012210 1131??0??? 1?1??????? 01?0000000 ???110???? ?????????? ?????????? ???00-010- 2120201101 222001000- 1020101122 (13)312121120 0021112011 1110111021 0211001103 2001210212 0102210222 0?11121230 020-021202 2122111002 2212311211 2000110111 0?1?2100?? 132110000? ?0010??111 112??11110 12210-200- 00013?1113 022210?111 110221(13)202 0112201220 2210113010 0000111200 1223303102 211

'Protadelomys cartieri' 2000?120-1 ?????????? ?????????? ?????????? ?????????? ?????????? ?????2???? ??20121(01)2(01) 1121111001 22(12)001110- 10121-1101 (13)(12)121111(01)0 0121112001 110011102(01) 021(12)101100 ----201212 32120-0042 0?11221230 030-022202 0011000002 20(01)0011211 0000210000 0012210000 042012012? 1012002111 1221010110 000-101010 10-1331113 0010---111 123200---- 1--00--002 00-0013010 00001010-0 1223311011 000

'Protadelomys lugdunensis' 2000?12101 1120110110 221020(03)001 01100102-0 2001101200 0222112120 1002010100 03?(01)0-0101 0111201001 223011010- 1013111021 (23)112121100 0121112001 1101111021 0211111113 2101201212 (23)(12)02200042 0111121230 030-010202 0000100001 2012311011 0000210020 0002211021 0-2002011? ?012021211 1111010120 000-0-0--- ---13?1112 0000001111 120011321- 2--00--011 10-0013000 0000132110 1224302(01)11 011

'Protadelomys alsaticus' 2????1220? 0110220110 221020(23)001 00000112-0 2001101200 (01)132112110 10020100-1 23(12)00-0100 0121201000 1220001210 1012102222 31(12)2(12)21100 0221122012 11011(01)1021 021(12)111200 ----201212 11123-0242 0?11221230 030-000112 2122120111 2021321111 2000(12)1?011 (01)001210010 102012110? 0012021211 0121010221 000-102020 23010(03)1112 0221021211 113221(13)101 0121200101 1111113010 10(04)01110-0 122(34)(23)04(12)1(12) 121

'Protadelomys nievesae' 2????1110? 01(12)(01)(12)111(01)0 1210231001 01100022-0 0--11002(01)0 00(12)2112110 1002010100 13100-110- (12)110(02)11000 222000220- 1312101121 2112221200 00212(12)2012 11111(13)1021 0211111211 10-1201212 0012300042 0?10011230 030-01(01)102 2000112011 10(12)(12)311011 000021?011 000?21000- 0-2002111? 0011011(01)1(01) 0221010210 000-010110 10013311(01)2 0111021(12)11 122101321- 2--00--111 10-0013010 0(03)(04)01(23)21(01)0 1224304001 111

'Protadelomys maximini' 2????1210? 00-0(01)10110 211033100(12) 01010022-0 2001101210 0132142110 10020100-0 03100-1011 1120201000 223000210- 10131-1322 1110111200 01211(12)2012 0101111021 0311111110 ----111212 00123-22(24)2 0?11111130 030-00-112 (12)12(12)(12)31(12)01 2021211111 200021?111 (01)01221000- 002002110? 002201101(01) 1112110(12)10 000-0-100- -0113311(01)2 02110(02)1(12)21 1121223200 01001(01)0001 2110013010 0340132211 111(03)(02)04002 121

'Tardenomys chartreuvensis' 21???12101 01(12)0120120 211031300(12) 01000012-0 1011101114 -242142121 1111201141 10220-1121 1120211000 122000110- 2322113122 312(01)221200 0121122012 0101111021 0311101110 ----201212 3312214(23)33 0?11021241 2010024214 (12)000121000 20113131(01)1 2000(12)1??(23)1 2?(01)221?0?? 112012102? ?1220??(12)1(01) 1(01)0??10121 1120(01)01000 00110?1112 302200?232 11113(12)3211 2120100001 11100(01)3010 (01)?4-122211 12243120(01)1 111

'Ailuravus subita' ?????1010? 0120121??0 ????211000 00000????0 ???1??3200 0??1142110 1112010100 03???????? ?????????? ?????????? ?????????? ?????????? ????212012 1112121020 0210021221 21-1101112 0102211201 02112(12)1220 110-023201 21010(01)00?0 202?101201 200??2??41 000221?0?? 1020122022 ?0110??(01)10 112??10002 100-0-3-1- -2110?1113 301100?321 1111223100 0002210110 1111113200 0?30132211 1223204000 -00

'Tarnomys helveticus' 2????1?10? 1120220121 1010233001 0000000100 2021100210 1230111122 10112121(34)0 03220-11?? 0120201300 2230010?0- 1020121211 1122211320 0021122001 1100111021 0211011103 2001201112 3312214331 0211221241 111122(34)102 21010000?? 202???1??? ?00????1(23)0 001?210011 0-20021100 0011011(01)10 101??10111 ?00-0-0-0- ---1?01112 0110--03{12}1 1122223100 0000100000 ????013010 144-132210 1224302211 010

'Tarnomys spelaeus' 210001(01)210 21101200-0 021030302- 0021001010 020111(01)0-4 0321210132 1110--2141 122212030- 0110211201 -200001210 1222121212 112220--21 0121122011 01111112-- 0211111101 00-1201112 31123-3(23)51 2211221222 --21024212 2100000012 2021001001 0001-20110 000221110- 0-0--12121 0012012020 2011010100 000-0-100- -021001113 3010--0321 1100323110 01100--000 2111213010 1340122210 1224302401 011

'Treposciurus precei' 2????1110? 3110220110 (12)010203001 00000102-0 201110(12)213 1242213122 1012(01)10121 0322120321 0120201300 120001020- 2221111221 1122221(23)20 0021122001 0100111021 0211001100 ----201212 1312214232 1211221230 131012(12)212 120(12)211111 1(12)213(12)1210 -001-1?0(23)? 000221010- 15200?(12)111 0(01)22010010 1101010221 100-111000 0011001112 0011011331 1122223200 00011(01)0000 10-0113010 03(34)0132110 1224302202 131

'Sciuroides rissonei' 2????1122? 21112(23)0111 2110203001 00(01)0000030 2011101210 133221(13)122 1012(01)10121 012(23)0-02?? 0120101200 120000?221 2320113002 1122221120 0121122011 0100111020 0211001103 1301201212 2312314132 1211221230 (01)30022(23)212 1202210111 2121010101 2001-2?(12)(34)1 0112210010 1020012021 0122010010 1101010221 100-111000 0011001112 2011011331 1121223100 0100100000 2100013010 00(34)0132110 1224302402 121

'Paradelomys santjaumensis' ??00?1210? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ??????2011 10-0111021 0311121100 ----101012 (01)101(03)14(13)32 10112?1130 010-?10002 0110120111 2121010101 2001-20021 0012210021 0-10112122 1022012211 1101011121 100-0-0--- ---1001112 2001011101 1211321111 212?100001 1001113000 0330132210 1223302011 111

'Elfomys catalaunicus' ?????1200? 00--1200-0 1010203001 00000002-0 0--1100200 0111113132 1002000100 10?00-0(01)0- 1110201300 12202--00- 2312101101 2122221200 0131122000 1110111021 021(12)001100 ----201012 3322314033 1211221240 000-020114 000000-011 2010311011 0001-2?111 001221000- 0-20011121 1022002110 1101010121 100-0-0--- ---1001112 2011011201 121031(13)111 21200--??0 00-0013010 0000122000 1223302100 -00

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ENDBLOCK;

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ENDBLOCK;

BEGIN PAUP;

OUTGROUP 'Tribosphenomys minutus' 'Archetypomys erlianensis' 'Cocomys lingchaensis' 'Tanquammys robustus'/only;

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SET/INCREASE= AUTO;

ENDBLOCK;

log file = Hsearch.out;

HSEARCH

NREPS = 1000

ADDSEQ = RANDOM;