**Supplementary Data 1:**

**Matrix of the phylogenetic analyses.**

In order to replicate the phylogenetic results presented in the paper, the matrix (below) should be copied, pasted and saved as a new text document with extension ‘\*.nex’. The matrix should then be loaded within PAUP\*.

Characters followed by an asterisk are "ordered." Ordered characters are scaled by the number of character states, such that the sum of the steps in the morphocline equals 100. This weight is indicated as “weight = number”.

#NEXUS

[ File saved by NDE version 0.5.0, Fri Feb 19 14:36:39 2016 ]

BEGIN TAXA;

DIMENSIONS NTAX=132;

TAXLABELS

'Tribosphenomys minutus'

'Archetypomys erlianensis'

'Cocomys lingchaensis'

'Tanquammys wilsoni'

'Reithroparamys delicatissimus'

'Acritoparamys atavus'

'Knightomys depressus/minor'

'Prolapsus sibilatoris'

'Euromys cardosoi'

'Plesiarctomys savagei'

'Pseudoparamys teilhardi'

'Sparnacomys chandoni'

'Corbarimys hottingeri'

'Pantrogna marandati'

'Hartenbergeromys aff. hautefeullei'

'Zamoramys extraneus'

'Protadelomys nievesae'

'Protadelomys maximini'

'Protadelomys alsaticus'

'Protadelomys cartieri'

'Protadelomys lugdunensis'

'Tardenomys chartreuvensis'

'Sciuroides siderolithicus'

'Sciuroides ehrensteinensis'

'Sciuroides russelli '

'Sciuroides romani'

'Sciuroides rissonei'

'Treposciurus mutabilis'

'Treposciurus intermedius'

'Treposciurus preceei'

'Treposciurus gardneri'

'"Treposciurus" manentis'

'Suevosciurus authodon'

'Suevosciurus minimus'

'Suevosciurus sp.'

'Suevosciurus bosmae'

'Suevosciurus fraasi'

'Tarnomys depereti'

'Tarnomys helveticus'

'Tarnomys quercinus'

'Tarnomys schmidtkittleri'

'Tarnomys spelaeus'

'Pseudosciurus praecedens'

'Pseudosciurus suevicus'

'Estellomys cansouni'

'Estellomys varleti ("Blainvillimys" varleti)'

'Paradelomys santjaumensis'

'Paradelomys crusafonti'

'Sciuromys cayluxi'

'Sciuromys rigali'

'Columbomys cuencae'

'Columbomys agustii'

'Columbomys lavocati'

'Elfomys catalaunicus'

'Elfomys parvulus'

'Elfomys tobieni'

'Elfomys engesseri'

'Elfomys hartenbergeri'

'Issiodoromys medius'

'Issiodoromys nanus'

'Issiodoromys minor'

'Issiodoromys pauffiensis'

'Issiodoromys quercyi '

'Issiodoromys limognensis'

'Issiodoromys pseudanaema'

'Issiodoromys bransatensis'

'"Pseudoltinomys" phosphoricus'

'Pseudoltinomys cosetanus'

'Pseudoltinomys crebrum'

'Pseudoltinomys mamertensis'

'Pseudoltnomys cuvieri'

'Pseudoltinomys gaillardi'

'Pseudoltinomys amblesi'

'Pseudoltinomys major'

'Oltinomys platyceps'

'Ectropomys exigus'

'Ectropomys monacensis'

'Ectropomys gliriformis'

'Blainvillimys gousnatensis'

'Blainvillimys civracensis'

'Blainvillimys pseudosiderolithicus'

'Blainvillimys rotundidens'

'Blainvillimys langei'

'Blainvillimys gregarius'

'Blainvillimys gemellus'

'Blainvillimys helmeri (= Bl. varians)'

'Blainbillimys heimersheimensis'

'Blainvillimys blainvillei'

'Blainvillimys stehlini'

'Blainvillimys campinsensis ("Theridomys" campinsensis)'

'? Blainvillimys avus'

'Patriotheridomys sudrei'

'Patriotheridomys altus neboulensis'

'Patriotheridomys altus'

'Thalerimys headonensis'

'Thalerimys fordi'

'Thalerimys perrealensis ("Theridomys" perrealensis)'

'Theridomys brachydens'

'Theridomys golpei'

'Theridomys aquatilis'

'Theridomys calafensis'

'Theridomys major'

'Theridomys lembronicus'

'Theridomys octogesensis'

'Theridomys bonduelli'

'Theridomys bonduelli Ham1-3'

'Paratheridomys margaritae'

'Paratheridomys ludensis'

'Protechimys truci'

'Protechimys lebratierensis'

'Protechimys variabilis'

'Protechimys gracilis'

'Protechimys blainvillei'

'Protechimys major'

'Archaeomys or Blainvillimys sp.'

'Archaeomys or Blainvillimys huerzeleri'

'Archaeomys or Blainvillimys robustus'

'Archaeomys quercyi'

'Archaeomys ehrensteini'

'Archaeomys intermedius'

'Archaeomys helveticus'

'Archaeomys arvernensis'

'Archaeomys laurillardi'

'Toeniodus curvistriatus'

'Toeniodus hexalophodus'

'Remys minimus'

'Remys garimondi'

'Remys major'

'Pairomys ibericus'

'Pairomys crusafonti'

'Frontyanamys russelli'

'Bernardia marandati '

;

ENDBLOCK;

BEGIN CHARACTERS;

DIMENSIONS NCHAR=315;

FORMAT DATATYPE=STANDARD MISSING=? GAP=- SYMBOLS="01234567";

CHARLABELS

[1] '\*Infraorbital foramen (w: 50)'

[2] 'Lower jaw masseteric crests (w: 100)'

[3] 'Ascending ramus (w: 100)'

[4] 'Palate anterior width/posterior width (w: 100)'

[5] '\*Crown growth (w: 25)'

[6] '\*Crown height ratio of upper molars = maximum (H) of unworn or weakly worn M1-2 relative to their length (L) (w: 17)'

[7] '\*Differential in enamel thickness on opposite sides of lophs (lophids) and sinus (sinusid); applicable to species with crown height ratio of upper molars = or > state 2 (w: 50)'

[8] '\*Cement (w: 33)'

[9] '\*Enamel wrinkles and ridges on upper teeth (w: 33)'

[10] 'Upper DP3 (w: 100)'

[11] '\*DP4 size (w: 50)'

[12] 'Parastyle (w: 100)'

[13] 'Size of parastyle (w: 100)'

[14] '\*Length of the anteroloph (w: 50)'

[15] '\*Height of anteroloph and posteroloph on upper teeth (DP4, P4, molars) (w: 50)'

[16] 'Anterostyle (= preprotoconule? = protostyle) (w: 100)'

[17] 'Size of the anterostyle (w: 100)'

[18] 'Antesinus on DP4 (w: 100)'

[19] '\*Preprotocrista on unworn or weakly worn DP4 of moderately to strongly hypsodont species (w: 50)'

[20] 'Preparacrista on unworn to weakly worn upper teeth (w: 100)'

[21] 'Postmetacrista on unworn or weakly worn teeth (w: 100)'

[22] 'Orientation of preparacrista and / or postmetacrista on upper teeth (w: 100)'

[23] '\*Protoloph w: 50)'

[24] '\*Protoloph lingual connection (or orientation) (w: 25)'

[25] 'Paraconule on DP4 (w: 100)'

[26] 'Paraconule state on DP4 (w: 100)'

[27] 'Protocone (w: 100)'

[28] 'Mesostyle (w: 100)'

[29] '\*Size of mesostyle (w: 50)'

[30] 'Additional syncline (S0) into the anterosyncline (SI) (w: 100)'

[31] 'Additional buccal cusp / crest between paracone and mesostyle on DP4 and P4 (w: 100)'

[32] 'Premetacrista (anterior arm of metacone) (w: 100)'

[33] 'Size of premetacrista (w: 100)'

[34] 'Premetacrista connection with the mesostyle (w: 100)'

[35] 'Mesoloph (w: 100)'

[36] 'Mesolophule on DP4 (w: 100)'

[37] '\*Mesoloph lingual connection on DP4 (w: 50)'

[38] '\*Height of mesoloph + mesolophule on DP4 when both present (w: 50)'

[39] 'Metacone (w: 100)'

[40] 'Shape of paracone (w: 100)'

[41] 'Shape of metacone (w: 100)'

[42] '\*Metaconule (w: 50)'

[43] 'Shape of metaconule (w: 100)'

[44] '\*Size of metaconule II (w: 50)'

[45] 'Metalophule I (mesial metaloph: connection either to prehypocrista or to mid-hypocone, sometimes reduced to a lingual crest) (w: 100)'

[46] '\*State of metalophule I (w: 50)'

[47] 'Metalophule II (at least distal to metaloph I) (w: 100)'

[48] 'Hypocone (w: 100)'

[49] '\*Size of hypocone relative to protocone w: 50)'

[50] 'Position of hypocone on upper DP4 and P4 (w: 100)'

[51] 'Endoloph on DP4 (w: 100)'

[52] '\*State of endoloph on DP4 (w: 50)'

[53] 'Height of endoloph on DP4 (w: 50)'

[54] '\*Mure on DP4 (w: 50)'

[55] 'State of the mure (w: 100)'

[56] '\*Sinus (= hypoflexus) measured on the occlusal surface (w: 25)'

[57] 'Posteroconule (= posterostyle) (w: 100)'

[58] '\*Posteroloph (w: 50)'

[59] 'Posteroloph connections on unworn or weakly worn teeth (w: 100)'

[60] 'Additional posterosyncline (SV) on DP4 (w: 100)'

[61] 'Upper DP4 with additional short buccolingual crest or cusp, mesial to the metacone and metaloph (w: 100)'

[62] '\*P4 size (w: 50)'

[63] 'Parastyle (w: 100)'

[64] 'Size of parastyle (w: 100)'

[65] '\*State of anteroloph (w: 50)'

[66] 'Anterostyle (w: 100)'

[67] 'Size of the anterostyle (w: 100)'

[68] '\*Syncline I (SI) on P4 (w: 50)'

[69] '\*Occurence of SI in strongly semihypsodont species (w: 50)'

[70] 'State of SI on P4 (w: 100)'

[71] 'Postparacrista of P4 (posterior arm of paracone) (w: 100)'

[72] 'Strength of postparacrista (w: 100)'

[73] 'Postparacrista connection with the mesostyle (w: 100)'

[74] 'Protoloph (= protolophule I) (w: 100)'

[75] '\*State of protoloph on P4 (w: 50)'

[76] '\*Protoloph lingual connection (or directed to if incomplete) (w: 33)'

[77] '\*Paraconule (w: 50)'

[78] '\*Shape of the paraconule (w: 50)'

[79] 'Protocone (w: 100)'

[80] 'Mesostyle (w: 100)'

[81] '\*Mesostyle strength (w: 50)'

[82] '\*Premetacrista (anterior arm of metacone) (w: 50)'

[83] 'Strength of premetacrista (w: 100)'

[84] 'Premetacrista connection with the mesostyle (w: 100)'

[85] 'Central loph on P4 (w: 100)'

[86] 'State of central loph (w: 100)'

[87] '\*Height of central loph (w: 50)'

[88] '\*Mesoloph lingual connection on P4 (w: 50)'

[89] 'P4 metacone (w: 100)'

[90] 'Shape of metacone (w: 100)'

[91] 'Strength of the metacone on P4 (w: 100)'

[92] 'Metastyle on P4 (w: 100)'

[93] '\*State of metastyle on P4 (w: 50)'

[94] '\*Metaconule (w: 50)'

[95] 'Shape of metaconule (w: 100)'

[96] '\*Metalophule I (mesial metaloph, connecting the metacone either to the protocone or to the prehypocrista) (w: 50)'

[97] '\*Shape of metalophule I on P4 (w: 33)'

[98] 'Metalophule II (distal metaloph connecting the metacone either to the hypocone, the posthypocrista or the posteroloph) (w: 100)'

[99] '\*Connections of the metalophule II (w: 33)'

[100] 'Presence of posteroflexus (SIV) on P4 (w: 100)'

[101] 'Synclines IV (posteroflexus) on P4 (w: 100)'

[102] '\*Buccolingual length of the posterosyncline SIV (w: 50)'

[103] '\*Shape of posterosyncline (SIV) on P4 (w: 33)'

[104] 'Additional posterosyncline (SV) on P4 (w: 100)'

[105] '\*Hypocone (w: 50)'

[106] '\*Size of hypocone compared to that of protocone (w: 50)'

[107] 'Height of hypocone compared to that of protocone (w: 100)'

[108] 'Shape of hypocone (w: 100)'

[109] 'Presence of endoloph (w: 100)'

[110] 'State of endoloph on P4 (w: 100)'

[111] 'Length of endoloph on P4 (w: 100)'

[112] 'Height of endoloph (w: 100)'

[113] '\*Mure (w: 33)'

[114] '\*State of the mure (w: 50)'

[115] '\*Sinus (measured on the occlusal surface) (w: 20)'

[116] '\*Posteroconule (w: 50)'

[117] '\*Presence of posteroloph on P4 (w: 50)'

[118] '\*Posteroloph (w: 50)'

[119] 'Posteroloph connections (w: 100)'

[120] '\*Length of M1 relative to M2 (w: 50)'

[121] '\*Length of M3 (w: 50)'

[122] 'Parastyle (w: 100)'

[123] 'Size of parastyle on M1-M2 (w: 100)'

[124] 'Length of anteroloph (w: 100)'

[125] 'Anterostyle (= preprotoconule on early rodentiaforms?) (w: 100)'

[126] 'Size of the anterostyle (w: 100)'

[127] 'Presence of a preprotocrista on M1-M2 (w: 100)'

[128] 'State of the preprotocrista on strongly hypsont species (w: 100)'

[129] 'Postparacrista (posterior arm of the paracone) (w: 100)'

[130] 'Strength of postparacrista (w: 100)'

[131] '\*Postparacrista connection with the mesostyle (w: 50)'

[132] '\*Paraconule (w: 50)'

[133] 'Position of paraconule on DP4 and upper molars (w: 100)'

[134] 'Shape of the paraconule (w: 100)'

[135] 'Protocone (w: 100)'

[136] '\*Protoloph connections on molars (w: 33)'

[137] 'Mesostyle (w: 100)'

[138] '\*Position of mesostyle on DP4 and molars (w: 50)'

[139] '\*Strength of mesostyle (w: 50)'

[140] 'Premetacrista (anterior arm of metacone) (w: 100)'

[141] 'Strength of premetacrista (w: 100)'

[142] '\*Premetacrista connection with the mesostyle (w: 50)'

[143] 'Additional cusp / short buccolingual crest mesial to the metacone, from the premetacrista or isolated (w: 100)'

[144] 'Mesoloph (w: 100)'

[145] 'Mesolophule (w: 100)'

[146] '\*State of mesoloph + mesolophule (w: 50)'

[147] '\*Height of mesoloph (w: 50)'

[148] 'Mesoloph lingual connections (w: 100)'

[149] 'Mesolophule lingual connection (w: 100)'

[150] 'Metacone (w: 100)'

[151] '\*Ectocingulum: low buccal cingulum, developed mesially and distally from the mesostyle, on the distal flanks of paracone and metacone, more or less long, on upper teeth (w: 50)'

[152] '\*State of ectocingulum on molars (w: 50)'

[153] 'Shape of paracone and metacone (w: 100)'

[154] '\*Metaconule (w: 50)'

[155] 'Size of metaconule II (w: 100)'

[156] 'Shape of metaconule II (w: 100)'

[157] 'Size of metaconule relative to paraconule (w: 100)'

[158] 'Metalophule I (mesial part of metaloph) (w: 100)'

[159] '\*State of metalophule I (w: 50)'

[160] '\*Metalophule I lingual connection (w: 33)'

[161] '\*Metalophule II (distal metaloph) (w: 50)'

[162] 'Shape of metalophule II (w: 100)'

[163] '\*Connections of metalophule II (w: 25)'

[164] 'Syncline I (SI) on molars (w: 100)'

[165] 'State of mesoflexus (w: 100)'

[166] '\*States of SII (when distinct) (w: 50)'

[167] '\*State of SIII when distinct from SII (w: 50)'

[168] 'Depth of SII and SIII (SII + SIII when indistinct) (w: 100)'

[169] 'Relative depth of SIII and SII (w: 100)'

[170] '\*Length of SIV on M1-M2 (w: 25)'

[171] 'Syncline IV (SIV) on molars (w: 100)'

[172] 'State of Syncline IV (posteroflexus) (w: 100)'

[173] '\*Additional posterosyncline (SV) on upper molars (w: 33)'

[174] 'Hypocone (w: 100)'

[175] 'Position of hypocone on upper M1-M2 (w: 100)'

[176] '\*Size of hypocone (w: 50)'

[177] 'Shape of hypocone (w: 100)'

[178] '\*When hypocone is obliquely stretched to the prehypocrista (w: 50)'

[179] '\*Endoloph (w: 50)'

[180] 'State of endoloph on M1-M2 (w: 100)'

[181] 'Height of endoloph (w: 100)'

[182] '\*Mure (w: 50)'

[183] 'Shape of the mure (w: 100)'

[184] 'State of mure (w: 100)'

[185] 'Height of mure (w: 100)'

[186] '"Mesocone" = swelling of the prehypocrista (w: 100)'

[187] '\*Sinus = hypoflexus (measured on the occlusal surface) (w: 20)'

[188] 'Posteroconule (w: 100)'

[189] 'Short posterosinus underlining the posteroconule (w: 100)'

[190] '\*Posteroloph (w: 50)'

[191] 'Posteroloph connections (w: 100)'

[192] '\*Length of lower incisors (w: 50)'

[193] '\*Lower dp4 size (w: 25)'

[194] '\*Length of p4 relative to m1 (w: 33)'

[195] '\*Size of m1 relative to m2 (w: 50)'

[196] '\*Length of m3 relative to m2 (w: 50)'

[197] '\*Metaconid-protoconid width compared to entoconid-hypoconid width on dp4 and p4 (w: 50)'

[198] 'Anteroconid on dp4 (w: 100)'

[199] 'Number of anteroconids on dp4 (w: 100)'

[200] 'Anteroconid on p4 (w: 100)'

[201] '\*Anteroconid on m1, m2 (w: 50)'

[202] '\*Position of anteroconid on dp4, when there is one anteroconid, and of the larger when there are two or more (w: 50)'

[203] '\*Position of anteroconid on p4 (w: 50)'

[204] '\*Position of anteroconid on m1-m2 (w: 50)'

[205] 'Size of anteroconid on p4 (w: 100)'

[206] '\*Size of anteroconid on m1, m2 (w: 50)'

[207] 'State of anterolophid on dp4 (w: 100)'

[208] '\*Anterolophid on molars (w: 50)'

[209] 'Height of anterolophid on molars (w: 100)'

[210] 'Mesiobuccal cingulid on p4 (w: 100)'

[211] 'Mesiobuccal cingulid, developed buccally from the anteroconid or anterolophid on m1, m2 (w: 100)'

[212] '\*Anterolophulid (connecting the anteroconid to the metalophid I) on m1, m2 (this is a lophid distinct of wrinkles) (w: 50)'

[213] 'Antesinusid on dp4 (w: 100)'

[214] 'Antesinusid on p4 (w: 100)'

[215] '\*Antesinusid on m1, m2 (w: 50)'

[216] 'Occurence of distinct synclinids from the metalophid area to the posterolophid on dp4 (w: 100)'

[217] '\*Synclinid I (= SI, entoflexid mesial to the metalophid I) on dp4 (w: 50)'

[218] 'State of SI on dp4 (w: 100)'

[219] 'Depth (buccolingual) of antesinusid on dp4 (w: 100)'

[220] 'Closure of SI on dp4 (w: 100)'

[221] 'Position of SI on dp4 (w: 100)'

[222] '\*SI at least on unworn to moderately worn m1, m2 (w: 50)'

[223] '\*Relationship SI / SII on dp4 (w: 50)'

[224] 'Position of the SI on m1-m2 (w: 100)'

[225] 'Shape of the SI on m1-m2 (w: 100)'

[226] '\*Occurrence of mesiolingual SI on hypsodont molars (m1-m2) (w: 50)'

[227] 'Additional synclinid(s) mesial to SI on dp4 (w: 100)'

[228] 'Additional pre-anterosyncline (S0) on lower p4 and molars (w: 100)'

[229] 'Relative position of the protoconid and metaconid on dp4 (w: 100)'

[230] '\*Position of metaconid on dp4 (w: 50)'

[231] 'Shape of metaconid with respect to protoconid on dp4 (w: 100)'

[232] '\*Development of the protoconid on p4 (w: 50)'

[233] '\*State of mesial notch between protoconid and metaconid on p4 (w: 50)'

[234] '\*Metaconid on lower molars (w: 50)'

[235] 'Shape of the protoconid on dp4 (w: 100)'

[236] 'protoconid shape on p4 and m1- m2 (w: 100)'

[237] '\*Metaconid and entoconid shape on lower dp4 and m1, m2 (w: 50)'

[238] 'Mesio-distal crestid along the medial axis of the teeth, from the mesial lophid or conids on dp4 and p4 (w: 100)'

[239] 'Lingual anteroconid (developed as a preprotoconid cuspid on molarized dp4, more or less extended in an oblique crestid parallel and mesial to the protoconid)(w: 100)'

[240] 'Metalophid I on dp4 (w: 100)'

[241] '\*State of metalophid on dp4 (w: 50)'

[242] 'Orientation of the metalophid (or neo-metalophid) on dp4 (w: 100)'

[243] 'Metalophid on m1-m2 (w: 100)'

[244] 'Position of buccal root of the metalophid on m1, m2 (w: 100)'

[245] 'State of metalophid on m1-m2 (w: 100)'

[246] 'Shape of the metalophid, when its buccal half is attached to the tip of the protoconid or to its mesial flank (i.e., metalophulid II excepted) (w: 100)'

[247] '\*Mesio-distal crestids along the medial axis of the teeth on m1, m2 (in strongly semi-hypsodont species, visible only on unworn teeth) (w: 50)'

[248] 'Presence and number of mesio-distal well-individualized additional crestids from the lingual end of the labial metalophulid I into the talonid basin, or more lingually from this metalophulid I on m1, m2 (w: 100)'

[249] 'Postprotocristid on dp4, p4 and m1, m2 (w: 100)'

[250] '\*Length of posprotocristid on dp4, p4 and m1, m2 (w: 50)'

[251] 'Posprotocristid orientation on dp4, p4 and m1, m2 (w: 100)'

[252] '\*Ectolophid on p4 and m1, m2 (w: 50)'

[253] '\*Length of the ectolophid on p4, m1 and m2 (w. 50)'

[254] 'Direction of the ectolophid on dp4, p4, m1 and m2 (w: 100)'

[255] 'Connections of the ectolophid (as depicted on unworn or weakly worn teeth) on dp4, p4, m1 and m2 (w: 100)'

[256] '\*Position of the ectolophid on p4, m1 and m2 (w: 25)'

[257] 'Mesoconid on dp4 and molars (w: 100)'

[258] 'Height of the mesoconid (or neomesoconid) on dp4 and molars (w: 100)'

[259] 'State of mesoconid (w: 100)'

[260] 'Neomesoconid position on molars (w: 100)'

[261] 'Ectomesolophid on p4 and m1, m2 (w: 100)'

[262] 'Length of ectomesolophid on p4, m1 and m2 (w: 100)'

[263] '\*Orientation of the ectomesolophid on m1 and m2 (w: 50)'

[264] 'State of mesostylid on dp4 and p4 (w: 100)'

[265] 'Number of mesostylids on dp4 and p4 (w: 100)'

[266] 'Size of mesostylid on dp4 and p4 (w: 100)'

[267] '\*Mesostylid on m1, m2 (w: 50)'

[268] 'Connections of mesostylid on dp4 and p4 (w: 100)'

[269] 'State of connections of mesostylid on dp4 and p4 (w: 100)'

[270] 'Connections of mesostylid on m1-m2 (w: 100)'

[271] 'State of connections of mesostylid on m1, m2 (w: 100)'

[272] 'Occurence of mesolophid on dp4 (w: 100)'

[273] '\*On dp4, p4, m1-2 of weakly to strongly semi-hypsodont species: relationship between central flexid (SIII when mesolophid individualized) and sinusid (w: 50)'

[274] 'State of mesolophid on lower teeth (w: 100)'

[275] '\*Number of mesolophids on dp4 (w: 50)'

[276] 'State of mesolophid on dp4 (w: 100)'

[277] 'Occurence of mesolophid on p4, m1, m2 (w: 100)'

[278] 'Number of mesolophid (-s) on p4 (w: 100)'

[279] '\*Length of mesolophid on p4 and molars (w: 50)'

[280] 'State of lingual connection of the mesolophid on dp4 (w: 100)'

[281] '\*State of mesolophid: relationship between lingual mesolophulid and buccal mesolophid on m1-m2 (w: 50)'

[282] 'On unworn or slightly worn m1 and m2: mesio-distal length of the synclinid between metalophulid I and entolophid (when SII and SIII are undistinct, due to the absence of mesolophid) compared to mesio-distal length of the posterosynclinid (= SIV) (w: 100)'

[283] '\*State of lingual mesolophid (= mesolophulid) when present on p4, and m1, m2 (w: 50)'

[284] 'Hypoconid on p4 (w: 100)'

[285] 'Hypoconid on m1, m2 (w: 100)'

[286] '\*State of hypoconid on p4 (w: 50)'

[287] '\*On dp4, p4 and m1, m2 relationships between SIV (posterosynclinid) and sinusid (ectoflexid), i.e., strength of the entolophid and / or prehypocristid (w: 50)'

[288] 'Distobuccal spur of the hypoconid on m1 and m2 (connected or not to the mesoconid) (w: 100)'

[289] 'Mesiobuccal spur of the protoconid on m1 and m2 (w: 100)'

[290] 'Entoconid on p4 (w: 100)'

[291] 'Entolophid (= hypolophid) on dp4 and p4 (w: 100)'

[292] 'Entolophid on m1-m2 (w: 100)'

[293] 'State of entolophid (= hypolophid) on dp4 and p4 (w: 100)'

[294] '\*Connections of the entolophid on p4 and dp4 (w: 33)'

[295] '\*State of entolophid on m1 and m2 (w: 50)'

[296] 'Entolophid components on p4, dp4 and m1, m2 (w: 100)'

[297] '\*Entolophid connections on m1, m2 (w: 33)'

[298] 'Shape of the entolophid (from the entoconid to its labial connection) on m1, m2 (w: 100)'

[299] 'Entoconulid on the entolophid of m1, m2 (w: 100)'

[300] 'Hypoconulid on dp4 (seen on unworn teeth) (w: 100)'

[301] 'Shape of hypoconulid on dp4 (and p4 when hypoconulid is present) (w: 100)'

[302] 'Hypoconulid on p4 (w: 100)'

[303] 'Hypoconulid on m1, m2 (w: 100)'

[304] 'Shape of hypoconulid on m1, m2 (w: 100)'

[305] 'Connections of the hypoconulid on molars (w: 100)'

[306] 'Relationship between the hypoconulid and the posthypocristid on m1-m2 (w: 100)'

[307] 'Elements of the hypoconulid on dp4 (w: 100)'

[308] '\*Posterolophid on dp4 and p4 (w: 50)'

[309] 'Posterolophid on m1, m2 (w: 100)'

[310] 'State of the posterolophid on dp4, p4 (when present) and m1, m2 (w: 100)'

[311] 'Posterolophid connections, as seen on unworn or weakly worn teeth on dp4, p4 (when present) and m1, m2 (w: 100)'

[312] 'On dp4, additional lingual cuspid/crestid mesial to the lingual end of the posterolophid or isolated in the posterosynclinid (w: 100)'

[313] 'Length of the additional lingual cuspid/crestid mesial to the lingual end of the posterolophid on dp4 (w: 100)'

[314] 'Surface of the talonid basins on m1, m2 (w: 100)'

[315] 'State of wrinkles and low cristids on m1 and m2 (w: 100)'

;

STATELABELS

1

'small (protrogomorphous)'

'moderately enlarged'

'very enlarged (hystricomorphous)',

2

'two masseteric crests equally developed'

'upper masseteric crest stronger than the lower one'

'lower masseteric crest absent'

'lower masseteric crest stronger',

3

high

low,

4

'equally wide (parallel toothrows)'

'anterior < posterior (divergent toothrows)',

5

'brachydonty or weak increase of crown height'

'semi - hypsodonty (clear encrease in height mainly on lingual sides of upper teeth and buccal sides of lower teeth); roots present'

'semi-hypsodonty + additional increase of crown height on buccal sides of upper teeth and mesial sides of lower teeth; roots open'

'upper buccal roots and lower mesial roots strongly reduced; upper lingual root and lower distal root widely open since old individuals'

'hypselodonty (roots always open, during the whole life)',

6

' H<L'

'H nearly = L'

'1L < H < 1.24L'

'1.25L < H < 1.49L'

'1.5L < H < 1.99L'

'2 < H < 2,49L'

'2.5L < H < 2.99L'

'H > 3L',

7

'equal (or nearly equal) enamel thickness in all sides'

'nearly equal on the upper part of the crown, appears unequal (thicker on distal sides) on worn teeth'

'enamel thicker on distal sides than on mesial sides',

8

absent

'occasionally present on limited areas'

'present on limited areas of the crown, close to the roots, or at the bottom of flexus and flexids'

'covering also the peripheral surfaces of the crown, even in early stages of wear',

9

absent

rare

numerous

'reticulate enamel wrinkling',

10

present

absent,

11

'smaller than M1'

'slightly smaller to subequal than M1'

'longer than M1',

12

absent

present,

13

strong

small,

14

'very short to absent'

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

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

15

'low, lower than the protoloph and metaloph'

'high: as high as protoloph and metaloph, but less than paracone and metacone'

'as high as protoloph, metaloph, paracone and metacone',

16

absent

present,

17

strong

reduced,

18

absent

present,

19

present

'variably interrupted'

'always interrupted',

20

absent

present,

21

absent

présent,

22

'short and making a soft wide angle open lingually'

'making a wide angle open buccally (centered on paracone and metacone), close to 180° or slightly less'

'making an acute angle open buccally, less than 90° or equal'

'mesio-distal',

23

absent

'short or incomplete'

complete,

24

'to the anterostyle or to the anteroloph'

'both to the anterostyle and the preprotocrista'

'to the preprotocrista (anterior arm of protocone)'

'to the protocone (without angle with the postprotocrista)'

'to the postprotocrista (angle between the mesoloph and the postprotocrista) and / or to the mure',

25

'present and simple'

'present and double'

'absent or indistinct from the protoloph',

26

'large (swollen)'

'protruding mesially'

'small, reduced',

27

inflated

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

'stretchted obliquely (more or less compressed mesiolingual to distobuccal)',

28

present

absent,

29

strong

small

'indistinct to absent',

30

absent

'sketched due to a short buccol lingual crest'

'present, due to the subdivision of the SI by a loph developed lingually from an anterobuccal extra-cusp'

'S0 + additional short crest mesial to the S0'

'S0 + additional short distal crest to the S0'

'present with additional subdivisions (double or triple S0) than (2)',

31

absent

'variably present',

32

present

absent,

33

strong

'weak or short',

34

absent

present,

35

absent

present,

36

absent

present,

37

'free or connected to accessory crests present in the central basin'

'mesoloph + mesolophule continuous, connected to the mesocone when present, or to the middle of the mure '

'mesoloph + mesolophule continuous, joining the buccal extremity of the prehypocrista, this being connected or not to the mure ',

38

'low, sometimes connection broken between mesoloph and mesolophule'

'high but lower than the protoloph and metaloph'

'as high as the the other lophs',

39

'smaller than paracone'

'as large than paracone',

40

'swollen and rounded'

'buccolingually stretched but well-defined'

'merged within the protoloph'

'swollen and pointed'

'slightly strechted mesio-distally'

'more or less crescent-shaped, due to the V formed by pre and post-paracristae',

41

swollen

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

'merged within the metaloph'

'swollen and pointed'

'slightly stretched mesio-distally'

'crescent-shaped and oblique buccomesial to distolingual'

'stretched in an oblique metacrista, buccomesial to distolingual',

42

'absent or indistinct'

'metaconule present'

'double metaconule',

43

swollen

'stretched mesio-distally'

'extended buccolingually'

'oblique mesiobuccal crest',

44

'stronger than protoconule'

'as large as protoconule'

'reduced to absent',

45

absent

'present ',

46

'poorly developed and discontinuous, or lingual part only'

'buccal and lingual part separated'

continuous,

47

absent

present,

48

absent

present,

49

'smaller and lower than protocone'

'as high and large as protocone'

'larger than protocone',

50

'placed more lingually than protocone'

'slightly more buccal or same level than protocone',

51

absent

present,

52

'true endoloph (mesiodistal crest connecting protocone and hypocone)'

'resulting from two oblique (linguodistally) spurs one on the distal flank of the protocone, the other on the mesial flank of the hypocone'

'only one mesiodistal to slightly oblique lingually spur from the protocone',

53

'low (much lower than protocone) or vestigial'

'as high as the protocone or slightly lower'

'high but not reaching the occlusal surface in semi-hypsodont species',

54

absent

sketched

present,

55

low

'higher but generally lower than the occlusal surface of inner cusps'

'high and complete'

'interrupted distally to the protocone (to the protoloph), at least on unworn teeth',

56

'absent or small'

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

'about 1/2 of the width of the tooth'

'about 2/3 of the width'

'longer, occupies the whole width or nearly the whole width',

57

absent

present,

58

long

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

'reduced buccally',

59

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

'connected to hypocone / posterocone'

'connected both to hypocone and metacone'

'connected to metaloph and hypocone'

'connected to metaloph only, at the posterocone level'

'connected to metacone and metaloph',

60

absent

present,

61

absent

present,

62

'P4 clearly smaller than M1'

'P4 slightly smaller to subequal to M1'

'P4 longer than M1',

63

absent

present,

64

strong

'very strong'

'weak / slender',

65

'low, cingular, and weak'

'higher, generally connected to the preprotocrista, and short (half-width of the tooth or less)'

'like (1), but very short',

66

'absent or indistinct'

present,

67

strong

'small, reduced',

68

'always present'

'variably present'

absent,

69

'always present'

'present from unworn to average-worn teeth'

'absent since early stages of wear',

70

'a more or less long furrow distally to the mesial cingulum'

'shallow flexus more or less long, distal to the anteroloph'

'deeper flexus, more or less long, distal to the anteroloph'

'reduced to a short flexus or an islet on semihypsodont teeth',

71

'absent or indistinct'

present,

72

weak

strong,

73

absent

present,

74

absent

'present and distinct from the anteroloph'

'protoloph indistinct (fused) to the anteroloph, as seen on unworn teeth',

75

'buccal part only'

'lingual and buccal parts separated'

'complete and continuous',

76

'to the anterostyle or to the anteroloph'

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

'to the preprotocrista (anterior arm of protocone)'

'to the protocone'

'to the postprotocrista or / and to the mure',

77

present

'reduced or indistinct',

78

'large and swollen'

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

small,

79

swollen

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

'as (1) + more or less compressed mesio-distally'

'stretched, more or less obliquely, from the anteroloph (more or less compressed mesiolingual to distobuccal)',

80

absent

present,

81

strong

small

'indistinct to absent',

82

present

'nearly indistinct even on weakly to moderately worn teeth'

absent,

83

strong

weak,

84

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

'present since early stages of wear',

85

absent

present,

86

'mesoloph only'

'mesolophule only'

'both, but separated'

'complete mesoloph + mesolophule',

87

low

'high, but lower than the protoloph and metaloph'

'as high as the other lophs',

88

'no lingual connection'

'joining the mesocone when present or to the middle of the mure'

'joining the buccal extremity of the prehypocrista, this being connected or not to the mure',

89

absent

present,

90

'swollen rounded'

'tip xVŒp and base swollen'

'buccolingually stretched to the metaloph, but still protruding'

'buccolingually stretched and merged within the metaloph'

'stretched mesiobuccal to distolingual',

91

'smaller than the paracone'

'as strong (or stronger) to the paracone',

92

absent

present,

93

strong

small

reduced,

94

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

'one metaconule present (well distinct)'

'metaconule doubled',

95

'swollen (as a swelling of the metalophule I and / or the metalophule II)'

'stretched mesio-distally',

96

absent

'variably present'

present,

97

'reduced to a short element of the buccal part'

'low and discontinuous, buccal part only or lingual only'

'buccal + lingual part with interruptions'

'complete and continuous',

98

absent

present,

99

'joining the metaconule only or / and to the ostprotocrista'

'weak connection with the hypocone'

'strong connection to the hypocone'

'joining both posteroloph and hypocone'

'joining the posteroloph, since early stages of wear',

100

absent

present,

101

'open buccally'

'closed buccally',

102

long

'moderately long'

'reduced (short)',

103

'transverse (linguobuccal)'

'oblique (mesiobucco - distolingual)'

arched

'small oval to circular islet',

104

absent

'present, at least on some teeth',

105

minute

present,

106

smaller

'as large as protocone'

'stronger than protocone',

107

lower

'as high',

108

rounded

'swollen and tip sharp'

'tip of hypocone a little stretched mesio-distally'

'more or less compressed mesio-distally at the upper part of the crown: low to moderate wear producing a triangular occlusal surface'

'stretched, more or less obliquely, from the prehypocrista',

109

absent

present,

110

'true endoloph = loph connecting the tops of the protocone and hypocone'

'crest resulting from more or less oblique-buccally spurs developed one from the distal flank of the protocone and / or from the mesial flank of the hypocone',

111

minute

short,

112

low

high,

113

absent

'low, more or less continuous mesio-distal crista between the protoloph and the metalophule I'

'sketched out'

present

'present, and close to / or undistinct from the lingual border of SII',

114

complete

'variably interrupted'

'always interrupted (on unworn and weakly worn teeth at least)',

115

'absent or incipient (= very short)'

'short labio-lingually (less than half-width)'

'about half-width of the tooth'

'long labio-lingually, more than half-width to 2/3 width'

'long labio-lingually about 4/5 of the width of the teeth'

'longer occupies the whole width or nearly the whole width',

116

'absent or indistinct'

'weak and underlined by a short posterosinus'

'well-defined',

117

present

'variably present'

absent,

118

long

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

'posteroloph reduced buccally',

119

'connected to hypocone'

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

'connected both to hypocone and metacone (at least joined to its base)'

'connected to hypocone and lingual end of metaloph, and separated from metacone (at least on unworn or weakly worn strongly hypsodont species)'

'connected to metacone and metaloph, and separated from hypocone, only at least on unworn or weakly worn teeth',

120

'M1 clearly shorter than M2'

'slightly shorter or equal to M2'

'M1 slightly longer than M2',

121

'M3 > M2'

'M3 = M2'

'M3 < M2',

122

'present (variably or always)'

absent,

123

strong

weak,

124

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

'longer than half-width of the tooth',

125

'absent or undistinct'

present,

126

strong

'small, reduced',

127

absent

present,

128

distinct

indistinct,

129

absent

present,

130

strong

weak,

131

absent

'variably present'

present,

132

present

reduced

absent,

133

'at the mesial edge'

'away 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',

134

swollen

'stretched - at least protruding - distomesially'

'stretched bucco-lingually within the protoloph',

135

'inflated - swollen'

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

'tip protruding (on weakly worn teeth) and a little stretched mesio-distally'

'as (1) and more or less pinched mesio-distally'

'obliquely stretched from the anteroloph, more or less compressed mesiolingual to distobuccal',

136

'to the anterostyle or anteroloph'

'to the preprotocrista'

'to the protocone (or directed to the protocone if the lingual part of protoloph is missing)'

'to the postprotocrista or to the mure',

137

absent

present,

138

'on the buccal edge of the crown'

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

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

139

strong

small

'indistinct/absent',

140

absent

present,

141

strong

weak,

142

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

'variably present'

present,

143

absent

present,

144

absent

present,

145

absent

present,

146

short

'both, separated'

'both, making a continuous loph',

147

low

'high but lower than the protoloph and metaloph'

'as high than other lophs',

148

free

'joining elements (spurs, crestids) from the protoloph or of the metalophule I, or from the bottom of the central basin'

'connected to the buccal extremity of the mesolophule',

149

'connected to the mesocone when present or to the middle of the mure'

'connected to the mesial extremity of the prehypocrista, connected or not with the mure'

'connected to a swelling of the extremity of the prehypocrista connecting the mure',

150

'less developed than the paracone'

'as strong than the paracone',

151

absent

'variably present'

'always present',

152

'very short cingulae, discontinuous, close to the mesostyle'

'cingulum longer, but not connected with the parastyle and posterololoph '

'cingulum long, connected both with the mesostyle, the pre and postprotocristae, the pre and postmetacristae, the parastyle and posteroloph',

153

swollen

'tip sharp, base swollen'

'bucco-lingually stretched but well-defined'

'merged with the protoloph and metaloph'

'metacone stretched from mesiobuccal to distolingual'

'paracone and metacone slightly stretched mesio-distally',

154

'doubled metaconule (always or variably)'

'one metaconule present'

absent,

155

strong

'small, reduced',

156

swollen

'swollen and tip sharp'

'prolonged in two oblique opposite short crests'

'protruding and streched distally'

'protruding mesially',

157

stronger

equal

lower,

158

'absent or vestigial'

present,

159

'low, buccal part only or discontinuous crestules'

'buccal + lingual part, with interruptions, or lingual only'

'complete and continuous',

160

'attached or directed to the protocone'

'attached both to the protocone and the prehypocrista'

'generally confluent to the metalophule II lingually, and both attached to the hypocone'

'attached to the hypocone'

'metalophule I connected variably to the end of the prehypocrista',

161

absent

'reduced to a short buccal part between metacone and metaconule positions'

present,

162

'more or less sinuous, irregularly ornamented'

'straight bucco-lingually or a little regularly curved'

'postwardly oblique, straight, or angulated',

163

'strong junction to the hypocone / to the prehypocrista'

'broken lingually to the metaconule, or weak junction to the hypocone'

'variably connected to both hypocone and posteroloph'

'connected to the posteroloph / posterocone or ending free'

'indistinct from the posteroloph',

164

'present (at least on unworn or weakly worn hypsodont teeth)'

'present and divided in two unequal elements by a mesio-distal crest on some of the teeth'

'absent or incipient'

'indistinct since early stage of wear on hypsodont species',

165

'undivided mesoflexus (SII and SIII undifferenciated'

'mesoflexus shortly divided buccally (SII and SIII widely confluent)'

'mesoflexus fractioned by the buccal mesoloph and additional crests'

'SII and SIII distinct'

'SII vestigial to absent and SIII present',

166

'open buccally'

'variably closed buccally'

'always closed buccally',

167

'open buccally'

'variably closed buccally'

'always closed buccally',

168

shallow

'deep in their whole width'

'deeper lingually than buccally',

169

'equally deep'

'SII less deep than SIII'

'SIII less deep than SII',

170

'weak (very shallow)'

'long and well individualized'

short

'reduced to an islet'

'inidstinct to absent',

171

'transverse (buccolingual)'

'oblique (mesiobucco to distolingual)',

172

'open labially (= buccally) at least on unworn or weakly worn teeth'

'closed labially since early stages of wear',

173

absent

'sketched on a few teeth'

'variably present'

'always present',

174

absent

present,

175

'lingual to protocone'

'same level of slightly buccal to protocone',

176

'smaller and lower than the protocone'

'smaller but as high than the protocone'

'as elevated and long as the protocone',

177

bulbous

'swollen and tip sharp'

'tip sharp and base more or less stretched mesio-distally'

'more or less crescent-shaped wear surface of the protocone, due to the flattening of its buccal slope'

'id, (3) + lingual side pinched mesio-distally'

'id. (3) + protocone obliquely stretched from the prehypocrista',

178

'resulting crest making clear angle with the cebtral loph at the level of the mure'

'resulting crest regularly curved, with smooth angles with the central loph or/and more lingually'

'resulting crest regularly curved without angles',

179

present

'variably present'

absent,

180

'true endoloph (mesiodistal crest connecting protocone and hypocone)'

'resulting from two oblique (linguodistally) spurs, one on the distal flank of the protocone, the other on the mesial flank of the hypocone'

'only one mesiodistal to slightly oblique linguodistally spur from the protocone'

'one oblique linguodistally spur, and additional low margino-lingual cingulum'

'short mesiodistal crest between the protocone and the level of the prehypocrista mesial extremity',

181

low

'high but not reaching the occlusal surface on unworn or weakly worn molars'

high,

182

absent

sketched

present,

183

'more or less continuous low mesio-distal crista between the protoloph and the metalophule I ("pseudo-mure")'

'joining the postprotocrista and prehypocrista extremities'

'addition of a more or less long crest between these extremities',

184

interrupted

continuous,

185

'lower than protocone and hypocone'

'as high as the protocone and hypocone',

186

absent

present,

187

'absent or reduced'

'shorter labio-lingually than half-width of the tooth'

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

'clearly longer (between 2/3 and 3/4 labio-lingually until average stages of wear'

'about 3/4 to 4/5 of the width'

'occupies nearly or completely the whole width',

188

absent

present,

189

absent

present,

190

long

'short (half width of the tooth)'

'reduced buccally',

191

'free (without connection either to metacone or to hypocone)'

'connected to hypocone (posthypocrista) directly or via the posterocone'

'connected both to hypocone and metacone (at least at its base)'

'to the lingual end of metaloph and hypocone (posthypocrista) via the posterocone when present, and separated from metacone'

'connected to metacone and metaloph, and separated from hypocone, at least on unworn or weakly worn teeth',

192

'ending distally to m3'

'ending below m3 or slightly distally'

'ending mesially to m3',

193

'smaller than m1'

'subequal to m1'

'slightly longer than m1 (1Lm1< Ldp4 < 1.24m1)'

'longer than m1 (1.25 Lm1 < Ldp4 < 1.49 m1)'

'strongly longer than m1 (1.5 Lm1 < Ldp4 < 1.75m1)',

194

shorter

'slightly shorter'

'equal or slightly longer'

'clearly longer',

195

shorter

'equal or slightly shorter'

longer,

196

longer

equal

shorter,

197

'strongly narrower'

'slightly narrower'

'as wide',

198

absent

'present, variably or always',

199

one

'two, at least',

200

'absent or indistinct'

'present (variably or always)',

201

absent

'variably (not always) present'

present,

202

'mesio-lingual'

'mesio-median'

'mesio-buccal',

203

'mesiobuccal, closer to the protoconid than to the metaconid'

'mesio-median'

'mesio-lingual, closer to the metaconid than to the protoconid',

204

mesiolingual

medial

mesiobuccal,

205

large

small,

206

minute

moderate

strong,

207

absent

present,

208

absent

'variably present'

present,

209

low

high,

210

absent

present,

211

'absent, or very reduced'

present,

212

'absent to indistinct'

'variably present'

'always present',

213

'absent, or slightly developed'

present,

214

absent

present,

215

absent

'small or reduced'

present,

216

absent

present,

217

'absent (or sketched if the metalophid is incomplete, and oblique)'

'variably present'

present,

218

incomplete

complete,

219

shallow

deep,

220

'closed lingually (with a crestid from -at least- the anteroconid to the mesostylid)'

'open lingually, mesial to the metaconid '

'open lingually and buccally'

'closed lingually and buccally, open mesially'

'closed mesially, buccally and lingually'

'closed mesially, buccally and lingually, and subdivided by additional crestids',

221

lingual

'whole width of the "prelobe"',

222

'absent, or as a short lingual notch'

'variably present'

'always present',

223

separated

'connected only on unworn or weakly worn teeth'

connected,

224

'along the mesial margin of the teeth'

'in the buccal half of the teeth'

'in the lingual one/third of the teeth',

225

'shallow and narrow'

'SI relatively deep, thus well-defined, even on moderately worn hypsodont teeth'

'reduced to a mesiolingual notch'

'reduced to a mesial notch'

'SI as a shallow mesiolingual islet'

'shallow buccally; prolonged and divided lingually by small crestids',

226

'on less than 50% of the teeth'

'between 51 to 90% of the teeth'

'95 to 100% of the teeth',

227

absent

present,

228

absent

present,

229

'well distinct'

'nearly or completely fused mesially',

230

lingual

mesiolingual

'clearly mesial',

231

swollen

'stretched in linguolabial crestids'

'stretched in mesiodistal crestids'

'metaconid and protoconid stretched in oblique crestids',

232

'present, strong and much more developed than the hypoconid'

'present and clearly weaker than the hypoconid'

'present and well developed (as high as the hypoconid)',

233

absent

'notch medial'

'notch lingual, closer to the metaconid than to the protoconid',

234

'strongly higher than the entoconid'

'slightly higher than the entoconid'

'equally elevated as the other main cuspids',

235

'rounded, tip more or less sharp'

'crestiform mesiodistally, weakly prominent'

'as (1) + a little pinched mesiodistally'

'stretched into oblique (mesiobuccal to distolingual) crestid, to the postprotocristid',

236

'swollen - bulbous'

'base swollen and tip sharp'

'stretched mesio-distally, tip weakly prominent'

'slightly mesio-distally pinched'

'more or less obliquely strechted'

'more or less obliquely stretched and strongly pinched mesio-distally on their buccal side',

237

'swollen, more or less pointed'

'more or less stretched linguobucally (but still protruding from the lophids)'

'merged in lophids',

238

absent

'present from the anterolophid to the mesolophid positions (SII)'

'variably present in the SI '

'variably present in S0',

239

absent

present,

240

absent

present,

241

incomplete

complete

'complete with additionnal mesio-distal crestids',

242

'transverse (linguobuccal) or slightly oblique '

'strongly oblique buccomesial to distolingual'

'angulated (linguobuccal then distomedial to the front of the teeth)'

'strongly oblique linguomesial to buccodistal',

243

'absent or incipient'

present,

244

'on the distal flank of the protoconid (or from its posterior arm)'

'from the tip of the protoconid'

'from the mesial flank of the protoconid, whether there is an anterior arm or not',

245

'short buccal lophid '

'buccal metalophid + low lingual from the tip of metaconid'

'complex (buccal metalophid + lingual part mesially displaced)'

'high linguobuccal lophid developed from the lingual half of the complex metalophid (and therefore the lingual metalophid curves here), close to the metaconid, at least on some teeth'

'complex + straight linguobuccal lophid ( = high anterolophid?) all along the mesial length of the molars, at least on some teeth',

246

'irregular, low, straigfht or gently curved'

'angle between lingual and buccal halves'

'high and regularly straight or nearly straight',

247

absent

'some, rare'

'high and strong',

248

absent

'one crestid present, low, short, close to the mesio-distal axis'

'one or two crestids individualized, and strong, close to the mesio-distal axis'

'one or two spurs, variably localized from the metalophulid I: from its lingual part and directed obliquely to the lingual border, or from the mesio-distal axis and straight postward',

249

'absent or indistinct'

present,

250

short

'long, but not reaching the lingual 1/2 of the teeth'

'long, reaching the 1/2 to 1/3 of the teeth',

251

'more or less transverse bucco-lingually'

'oblique bucco-distally',

252

present

'shallow interruption, present below'

absent,

253

long

short

'very short, reduced',

254

'mesiodistal, more or less straight'

'oblique mesiobucco-distolingual'

'oblique mesiolinguo-buccodistal',

255

'separated from the postprotocristid (posterior arm of protoconid)'

'separated from the prehypocristid (anterior arm of hypoconid), at least on some unworn teeth'

'connected to both even in unworn or weakly worn teeth'

'interrupted between the levels of mesolophid and entolophid buccal connections',

256

'in the buccal transverse half of the tooth'

'close to the mesio-distal midline of the tooth'

'in the lingual transverse half of the tooth'

'close to (but not reaching) the lingual border of the tooth'

'at the lingual border of the tooth',

257

present

'absent to indistinct',

258

'salient '

'weakly salient or not salient',

259

'true mesoconid (as a swelling or a well-defined cuspid)'

neomesoconid,

260

'present at the junction of ectolophid and the lingual end of postprotocristid'

'present at the junction of the lingual end of the entolophid with the ectolophid'

'both, as thickenings of the lingual ends of mesolophid and entolophid'

'addition of a pre-neomesoconid as a swelling mesial to the neomesoconid, at the junction of the entolophid with the prehypocristid',

261

absent

present,

262

short

long,

263

'linguo-buccal (= transverse)'

'variably directed (or adjoined) to the mesial base of hypoconid'

'always directed or adjoined to the mesial base of hypoconid',

264

'absent or indistinct'

present,

265

one

'two or more',

266

'small to indistinct'

'moderate to strong',

267

present

indistinct

absent,

268

isolated

connected,

269

'connected only to the lingual mesio-distal crestid (metastylid crestid and/or premetaconid crestid)'

'connected to the mesolophid only'

'connected to lingual mesio-distal crestid (metastylid crestid and/or premetaconid crestid), in addition to the connection with the mesolophid(s)',

270

free

connected,

271

'connected to the metaconid only, generally through a metastylid crest (postmetacristid)'

'connected only to the mesolophid'

'connected both to the mesolophid and postmetacristid',

272

absent

present,

273

'separated by the ectolophid - entolophid'

'shallow communication (only on unworn teeth in hypsodont species)'

'deep communication',

274

'true mesolophid'

'neocrestid oblique directed (but separated) to the mesostylid from the buccal crestid between the protoconid and anteroconid on dp4'

'neocrestid developed from the end of the postprotocrestid, distinct on dp4 and p4, fused all along the entolophid on molars',

275

one

'two (1 additional more or less long lophid in the SIII)'

'three (two additional lophids in the SIII)',

276

'transverse (or nearly transverse) buccolingually'

'oblique mesiolinguo-buccally',

277

absent

present,

278

one

'two or more',

279

'mesolophulid, as a spur from the mesoconid'

'short, generally less than half width of the tooth'

'long, reaching the lingual border of the tooth on almost teeth, or on whole teeth',

280

'no connection'

'connected to the mesostylid'

'connected to the metastylid crestid',

281

'lingual "mesolophid" separated from the mesolophulid'

'weakly connected (shallow breaks along the mesolophid)'

'completely connected, without breaks',

282

'SII+III longer than SIV'

'SII+III length = or nearly = to SIV length',

283

absent

'present, short'

'longer, connected or not (char. 260) to the mesolophulid',

284

'absent to indistinct from the entoconid'

present,

285

'expanded posterobuccally on m1 and m2'

'nearly placed at the same buccal level than protoconid or slightly buccally',

286

'developed but less than the protoconid'

'as large (or larger) as the protoconid',

287

'separated by the entolophid and / or the prehypocristid'

'shallow communication, at least on unworn teeth'

'deep communication',

288

absent

present,

289

absent

present,

290

absent

present,

291

absent

present,

292

absent

present,

293

'short and incomplete'

'long and complete',

294

'connected to ectolophid or mesoconid'

'connected to the prehypocristid (to the hypoconid, when the ectolophid is absent, or broken distally)'

'connected (at least directed) to the posterolophid',

295

'lingual part only'

'two parts, lingual and buccal (prehypocristid) separated'

complete,

296

single

'bifid or double',

297

'connected to the mesoconid or ectolophid'

'connected (or directed) to the end of the prehypocristid (to its junction to the ectolophid)'

'connected or directed to the hypoconulid / to the posthypocristid'

'indistinct from / fused to the posterolophid',

298

'more or less curved backwardly'

straight

'angulated backwardly in its buccal half'

'oriented forwardly',

299

absent

present,

300

present

'indistinct (or absent)',

301

swollen

'stretched bucco-lingually in the posterolophid',

302

present

'absent, or indistinct',

303

present

'indistinct (or absent)',

304

swollen

'stretched bucco-lingually in the posterolophid'

'curved mesio-linguodistally',

305

isolated

connected,

306

'on unworn m1-m2, hypoconulid separated from (or weakly connected to) the poshypocristid'

'strongly connected to the poshypocristid',

307

single

'divided in two or three elements',

308

'absent or reduced'

'moderately developed'

present,

309

absent

present,

310

'free buccally and lingually'

connected,

311

'connected to the hypoconid and separated from the entoconid, or merged in its base'

'connected only to the entoconid'

'connected to both the entoconid and hypoconid',

312

absent

present,

313

'reduced to a cuspid'

'short linguobuccal lophid'

'lophid connected to the posthypocristid, dividing the posteroflexid (SIV) in two separate flexids',

314

smooth

'rugose, or with low wrinkles'

'wrinkles along the crestids and lophids'

'in addition with (2), clear small ridges,somewhat convergent in the basins'

reticulate,

315

rare

numerous,

;

MATRIX

'Tribosphenomys minutus' 000?00-000 0100-100-0 0-0?020010 001100--10 0100100100 0--0-00000 001000-1-0 10?0----01 101-0---0- -0-0-0-0-0 ---000000- --0-000001 00100-1-10 0000000001 10000----0 0-0100010- 0--20----0 0001000-00 00----00-0 00000000-0 0------201 0000000--- -0------00 0000000000 --0---000- -01100000- 0--0--0--0 -0----0--- -0-00--000 00-------0 0000000100 -0-0-

'Archetypomys erlianensis' ????00-00? 0110-100-0 0-00000000 01--00--10 01001000?? 0--0-00100 0????????? ?????????? ?????????? ?????????? ?????????? ?????????0 0000100-0- -000000010 -0000----0 0-01000110 0--00----0 0000----2- -0----00-1 000?1000-? 0-?-?--20? 000?000--- -0------00 0??0000000 --0---000- -01100000- 0--0--0--1 00----0--- -0-?0?010? 00-------0 0000000000 -0-0-

'Cocomys lingchaensis' 000000-000 0112?110-0 0-22000020 -01000--10 0100110100 0--0-00000 001000-0-0 10?1121200 ?2--0---0- -0-0-0-0-0 ---000000- --0-000001 00010-1-11 0010011001 10000----0 0-01000110 0--00----1 0001000-00 00----00-0 10?000???0 0?----?0-0 --?0-????? ?0?---?-?? ?000?00??? ??100-000- -01000000- 0--0--2--- -?--??0--? -0-1000001 00--002--0 0000100000 -0-0-

'Tanquammys wilsoni' 2???00-000 0112?0-0-0 0-120001-0 01--00--10 0100110100 1010-10010 000-00-0-0 0--1030000 ----0---0- -0-0-0-0-0 ---000000- --0-000001 ?0110-1-0- -0100110?? ???00----? ??01000100 0--00----1 0001000-00 00----10-0 11?000???0 0?----?0-1 --?0-????? ?0?---?-?? ?001?00??? ??100-000- -01000000- 0--???2??- -?-???0--? -0-00-0001 00--202000 0000100011 00-0-

'Reithroparamys delicatissimus' 000000-000 ????0??0-0 0-???????? ?????????? ?????????? ?????????? 010-00-0-0 1111130001 02--0---10 10-20220-1 0000100010 000-000000 00-11-1-10 2010011001 1-010000-1 0-01000110 0--00----1 0001100-00 00----00-0 10?000???0 0?----?200 00?00????? ?0?---?-?? ?100?00??? ??100-0000 000000000- 0--0--1--1 0?--??0--? -0-1110001 00--00--?1 111?1?-111 00-10

'Acritoparamys atavus' 0??000-000 0?-20??0-0 0-22020000 00--00--10 0100100100 0--0-00010 001200-0-0 1001231201 10--0---10 10-10220-1 0000100010 000-000001 0001101-0- -110011000 --000----1 0-01000110 0--00----1 0001100-0- -0----10-0 1??000???0 0?0100?200 00?00????? ?0----?-?? ?100?00??? ??101-0000 001000000- 0--0--2--- -?--??0--? -0-1110001 00------?0 1000110111 20-0-

'Knightomys depressus/minor' 00?000-010 ???????0-0 0-???????? ?????????? ?????????1 ?????????? ?00-00-0-1 1111230-00 -01-0---10 10-102(23)111 000010000- --0-000011 10110-1-11 22--011111 12000----1 1021---111 20000----1 0101120-2- -0----1100 0??010???0 0?----?200 00?00????? ?0----?-?? ?100?00??? ??100-0010 02----000- 0--0--1--1 0?--??101? --01110001 1102002-?1 -01----211 00-0-

'Prolapsus sibilatoris' ?00?00-000 ???????0-0 0-???????? ?????????? ?????????1 ?????????? 01120101-1 1111230-(01)1 0011100010 00-2(01)11111 1000000210 110-000021 ?011100-0- -2--021101 10010000-1 10011(03)-0-- 20?0100111 0(01)01120-2- -0----1100 11?010???? 2??1?2?10? 00??0????? ?0----?-?? ?2?0?00??? ??100-0010 02----000- 1000--1--1 0?-???101? --01110001 1111202-?1 -01----211 00-0-

'Euromys cardosoi' ????00-00? 0101?0-0-0 0-12000010 001000--10 0100100100 00-0-00010 0????????? ?????????? ?????????? ?????????? ?????????? ?????????1 1001101-11 00103?1001 12000----1 2201001100 0--00----1 0001000-00 00----00-0 1??010???0 1?-0-0?200 00?00????? ?0----?-?? ?100?00??? ??100-000- -21000000- 0--0--0--- -0----0--? -0-1110-01 00------?0 00000{01}0111 00-10

'Plesiarctomys savagei' 000?00-020 0111?0-0-0 0-22021000 01--00--01 1100100101 1000-00010 001200-0-1 1111221211 00110---10 10-10210-1 1000100010 000-00000? 2001111-11 0110111001 10010000-1 222100-100 0--00----1 0001102-01 20----10-0 1000000??0 0?----?200 00?00????? ?2-00-?00? ?100000??? ??100-0010 001020000- 0--1000101 00----0--? -0-1010101 00------?0 00011--111 20-11

'Pseudoparamys teilhardi' ?0??00-010 0112?110-0 0-21021010 001000--00 0102100101 1000-00010 000-0110-1 1001121201 12--100-10 00-10210-1 1000000010 000-000001 1001111-10 2010111?00 --010000-0 2100000100 0--00----1 0101100-01 20----00-0 1?00000??0 0?----?201 00?00????? ?0?---?-0? ?100100??? ??11100010 001000000- 0--1000101 0?--??0--? -0-1110001 00------?1 -1101--211 20-31

'Sparnacomys chandoni' ????00-01? ???????0-0 0-???????? ?????????? ?????????1 ?????????? 000-0110-1 1001110001 1010??--10 10-10210-1 1000000010 100-000001 10-1111-11 211?011000 --010000-1 2101100110 0--00----1 0001100-00 00----00-1 0?00100??0 2?-2-2?200 00?02?0-?- -0----0-1? ?100110??? ??11100010 000010000- 0--100110- -0----0--- -0-1110001 01--00--?0 00101--211 00-31

'Corbarimys hottingeri' ????00-00? 010200-0-0 0-23020010 01--00--10 01000-0100 0--0-00010 000-10-0-1 1011130-01 12--(01)00-10 10-(12)0220-1 1000000010 000-000001 2001101-(01)1 111?011000 --000----1 1101000100 0--00----1 0001(01)00-00 00----00-0 1?00100??0 0?----?200 00?02?0-?- -0----0-0? ?100010??? ??100-000- -00010000- 0--1001101 00----0--- -0-1110001 01--00--?0 0000100011 00-0-

'Pantrogna marandati' 0??000-010 010210-0-0 0-22001010 001100--10 0100110101 1010-00010 001210-0-1 1011130001 00100---10 10-10220-1 1000100011 100-000001 0001111-10 0010021101 00010001-1 1001000110 0--0100001 0101110-00 00----10-1 (01)?00001??0 0?----?200 00?02?0-?- -2-00-001? ?100110??? ??11101011 101100000- 1101011101 00----101- -0011101(01)1 1100(12)1(01)-?0 11011--211 00-31

'Hartenbergeromys aff. hautefeullei' 00??00-020 00-20110-0 0-00001010 00-000--10 0100110101 1010-10000 000-10-0-1 1101021201 02-00---10 00-10220-1 1000000010 100-000001 00-1101-10 211?111101 02010001-1 2121000111 0--00----1 0101110-01 20----00-0 1?00001??0 2?-2-1?200 00?00?0-?- -0----0-0? ?101121??? ??11012011 101110010- 0--101010(01) 00----101- -0(01)11101(01)1 110-110-?0 111----211 00-31

'Zamoramys extraneus' ????00-00? 010100-0-0 0-23020000 01--00-010 0100100100 1010-00010 0????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?000100-0- -11?021110 --000----1 0-010000-- 0--00----1 0001000-0? 00----1100 1????0???0 1?0111?20? 10??2????? ?0?---?-?? ???0?00??? ??110-0011 101010000- 0--1012??- -?-???0--? -0-?1?000? ?1??00--?0 000000000- -0-0-

'Protadelomys nievesae' ????00-01? 0101011000 0-21021010 001100--10 0100100101 10-0-01110 00101101-1 1101010001 1010100011 00-10210-1 0000000-10 110-00010? ?0110-1-10 0021121101 10010001-1 1001000112 2010100001 0001112-00 00----0(01)01 0?00-100-0 2--2-0-200 1100210--- -0----0-01 0100120000 --11211211 101010000- 0--100010- -0(01)---0--- -0-1110001 110-1010?1 -01?10-211 00-10

'Protadelomys maximini' ????00-02? 011100-000 0-20111010 0011100010 0200101101 1010-01100 00121101-1 1101011201 10010---11 00-10210-1 1200000-10 110-00010? 1011111-10 0021221101 00010001-1 1000001111 2010100001 0001102-00 00----0(01)01 0?00-100-0 2--2-1-200 1000210--- -0----0-01 0110110100 --112(01)1011 101010000- 100100010- -0(01)---0--- -0-1110001 110-10--?1 -01?10-211 00-31

'Protadelomys alsaticus' ????00-02? 00-10?-000 0-23001000 0010100010 02000-1111 1010-00010 000-10-1-1 1001021201 1010100011 10-100-0-1 0000100210 110-000001 2011101-10 0021221101 00010001-1 10010000-- 1--0100001 0001112-00 00----0101 0?00-100-0 2--2-1-200 1000210--- -1-10-0001 0100110101 --11210111 101010000- 100100110- -01---101- -0(01)1110001 11112011?1 100110-211 00-31

'Protadelomys cartieri' 2???00-010 ?????????? ?????????? ?????????? ?????????1 ?????????? 000-10-1-1 1001021201 12--0---11 10-10210-1 0200100210 110-000101 20-1--1-0- -021121101 00010001-1 10010000-- 2010100001 0001110-00 00----00-0 1??0011??0 2?-2-1?200 00?02????? ?0?-0-?0?? ?100?100?? ??11211111 101010000- 0--100210- -?1???0--? -0-1110001 11112010?1 100110-211 00-30

'Protadelomys lugdunensis' 2???00-011 00-100-000 0-102-11-0 000-00--10 010-0-1101 1010-00020 0????????? ?????????? ?????????? ?????????? ?????????? ?????????1 2011111-11 002112110(01) 10010001-1 10010000-- 2010100001 0001100-00 00----0101 0??0011??0 2?-2-2?201 11?02????? ?0?---?-?? ?1001100?? ??11212111 1010(12)0000- 110100110- -?1???0--? -0-1110001 11112010?0 000?100211 -0-31

'Tardenomys chartreuvensis' 2??000-021 00-1010000 0-1-011010 000(01)100010 01020-1111 1200-21100 0(01)0-11-0-1 1001031200 10100-0-11 10-102-111 000010?211 100-000101 2011101-11 0121(24)21(12)11 10011101(01)1 200113-0-- 2010100001 0001112-00 0110001101 0??0001??0 2?-2-1?200 11?02????? ?0?---00?? ?1001102?? ??11211211 101110010- 0--1001101 0?1???101? -001110001 11112011?1 -11010-211 00-31

'Sciuroides siderolithicus' 2???00-010 0101011001 0023011000 0010100010 0201121111 1110-11010 0????????? ?????????? ?????????? ?????????? ?????????? ?????????1 ?000111-11 1021121001 10010-01-1 1010001123 2000110001 0001121-01 2100001111 1???0010-? 2-?2?2120? 100?11000- -00---0000 0??0?10001 0011200011 101020010- 1001000101 000---0--- -001110001 11112010(01)0 -?1----211 00-11

'Sciuroides ehrensteinensis' 2???00-01? 0101011001 1023011000 0000100010 0201121111 1111011120 0????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?000101-10 2021121001 02010-01-1 1010001122 2000111001 0001121-01 2100001101 1??1001??1 2?0212?200 11?02????? ?0?---?-?? ?210?10??? ??11210011 101010000- 1001000010 -?0---0--? -001110001 1111201(01)0? ?001100211 00-10

'Sciuroides russelli ' 2???00-02? ?????????0 0-???????? ?????????? ?????????1 ?????????? ?11010-0-1 111111?-11 0001100-11 1110-22121 1000111111 101-00000? ?000101-10 0021121001 01010-01-1 1010001123 2000111001 0001121-01 2100001111 1?010010-1 2-02111201 1100210--- -0-00-0002 0210010101 0011201111 101010000- 0--1010101 000---0--- -001110001 1111201001 -10----211 10-31

'Sciuroides romani' 2???00-02? 011100-000 0-23011000 0010100010 0200111111 1111011110 0????????? ?????????? ?????????? ?????????? ?????????? ?????????- 2010101-10 0021121001 10010-01-1 1010000113 2010100001 0001121-01 21---01101 1??1011??1 2?0212?000 10?02????? ?0?---?-?? ?211?100?? ??11200011 1010(12)0000- 1--1010(01)00 -?0???101? -001110001 1111201001 -10?100211 (01)0-31

'Sciuroides rissonei' 2???00-02? 0100011000 0-23001000 0010100010 02011(12)1111 1111011110 001210-0-1 1001110201 0000100011 10-2023131 1100121111 101100012? 2000101-10 10(12)1121001 00010-0(01)-1 1010001113 2000111001 0001121-01 2100001111 1?010010-0 2-02111201 1200210--- -0-00-0001 0210010100 01112(01)1111 101020000- 1--1010101 000---0--- -001110001 1111201000 1101100211 (01)0-31

'Treposciurus mutabilis' 20??00-03? ?????????1 03???????? ?????????? ?????????? ????????1? ?11210-0-1 1001230011 0000100011 10-1021121 1100111111 100-00012? 2010111-11 0021121001 01010-0(01)-1 1011112102 2000101001 0001121-01 10---11101 2001021100 22-2-10200 1000010--- -1-00-0001 0211010001 1111220010 101010000- 1121010101 000---0--- -001110001 1111201101 1111100211 10-41

'Treposciurus intermedius' 200000-021 ?????????? ?????????? ?????????? ?????????? ????????1? ?11010-0-1 1001230111 0010100011 10-1111120 1100111111 100-000121 1000111-11 0021121001 10010-00-1 101?112112 2100100001 0001121-01 10---11(01)01 20?1101??0 2?-2-2?20- 11?01????? ?1?00-?0?? ?211?100?? ??11220011 101010000- 1021010(01)01 0?0---0--? -001110001 1111201101 ?111100211 (01)??11

'Treposciurus preceei' 2???00-02? 0101001000 0-23011000 0010100010 0201101111 1110-11010 01101111-1 10012(23)0111 0010100011 1?-2022121 1100111111 100-00010? 2000101-11 0021121001 10010-00-1 1010112112 2020100001 0001121-01 10---11101 1?01?01101 2202120200 1110110-0- -1-00-0001 0210010001 0011221011 1010(01)0000- 102101(01)(01)01 000---0--- -001110001 1111201100 -11--0-211 (01)0-41

'Treposciurus gardneri' 2??000-020 0101-0-001 0023021010 0010100-10 0100121111 1100-10010 01??1??1-1 1001230?01 0011100011 10-1022121 0100111111 100-0?0101 2000101-10 2021121001 11010-0001 1010112112 2000110001 0001121-01 10---11(01)01 1?011?1101 2202120200 0110110-0- -1-00-0001 0210010101 1011221011 1010(01)0000- 0--1011101 000---0--- -001110001 1111201(01)00 111--0-211 (01)0-11

'"Treposciurus" manentis' 2???00-03? 0101111000 0-2(34)110001 1001112010 0110121111 1201111130 1????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?000111-10 0021121001 00111202(01)1 10?2011112 2011200002 0001122-11 0100011101 0????0???? 2??2?2?20? 12??2????? ?2?00-?0?? ???2?11??? ??11221111 101120000- 0--???0??1 1?000?102? 102?1?000? ?1??201101 1?1----?11 01?41

'Suevosciurus authodon' 2???00-02? 0100-(01)1000 0-23011000 0010100-10 0(12)02101111 1111011120 00102110-1 1101110101 0011(01)00011 1001022121 1000111111 101102012? 20001(01)1-11 1021121101 110(01)0000-1 1010112112 21001--0-1 0001121-01 2100001101 1?01?0110(01) 2202121200 001(01)210-0- -0----0001 02(01)0010001 1111221011 101200000- 1020--1101 000---1-00 -001110001 11112011?0 1(01)1----211 10-(23)1

'Suevosciurus minimus' 2???00-02? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?010??1-11 1021121101 11010000-1 ??11112112 21001--0-1 0101121-01 2100001100 2???10???? 2????2?20? 10??2????? ?2000-?0?? ???1?10??? ??11220-11 101200000- 101???1??1 0?0---0--? -00?1?010? ?1??201101 -01----211 10-21

'Suevosciurus sp.' 2??000-021 010000-001 1023021000 001000--13 3122101111 1101000000 001120-0-1 100113(01)201 0010110011 1001012121 1000111111 101100002? 2010101-11 1021121101 11010000-1 1011112112 21001--0-1 0101121-01 2100001100 2?01111100 22-2-21200 1010110--- -2000-0001 02000100-1 1111220-11 101200000- 1020--1--1 000---0--- -001110101 1111201101 -11----211 10-21

'Suevosciurus bosmae' 2???00-02? ?????????? ??????1??? ?????????? ?????????1 ?????????0 ?01120-0-1 1001130201 0010110011 1001012121 1000111111 101100002? 2010101-11 1021121101 11010000-1 1010112112 21001--0-1 0101121-01 2100001100 2?01(01)01100 22-2-21200 1010110--- -2000-0001 02000100-1 1111220011 101200000- 1020--1--1 000---0--- -001110101 1111201101 -(01)1----211 10-21

'Suevosciurus fraasi' 2???00-02? 010000-001 1023021000 001000--13 3122101111 11010100(02)0 021120-0-1 1101130201 0010120011 1000-12121 1000111111 101100002? 2010111-11 0011121101 1201110011 1012---112 21001--0-1 0101121-01 2100001100 2??1??1??0 22-2-2?200 10?01????? ?2000-?0?? ?-01?100-? ??11220011 101200000- 1120--1--(01) 0?0???101? 0001110101 1111201101 -11----211 10-31

'Tarnomys depereti' 20??00-0?? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?0?10?1??0 2?-2-2?0-0 02?02????? ?0--3-?0?? ?210?100?? ??11?20011 101020000- 0--0--1--- -?0---0--- -001110-01 1111201101 -01----211 0??11

'Tarnomys helveticus' 2???00-0(12)? 0????????0 0-???????? ?????????? ?????????? ?????????? 01121110-1 1101231201 101-100011 10-1021121 1100111111 1021000001 10(01)0111-10 1021121001 1201110101 1010001112 2110100001 0001121-02 022(01)0011(01)1 1?02000100 22-2-1?200 10?02????? ?2?00-?0?? ?211?100-1 0211220011 101020000- 1011000101 0?0---0-1? -001110-01 111120110? ?11----211 (01)0-(12)(01)

'Tarnomys quercinus' 2??000-020 1100-0-0-1 1113121000 000110-015 5112121111 1212111210 01101100-1 1111141101 1000120114 10-1122111 1200111111 1030010202 1000111-10 1011131001 0001000101 111013?112 1--0210002 0101121-03 0221001112 1???0????? 2?-(12)-2?0-? 12??2????? ?0--3-?0?? ???2?10??? ??112(12)2211 101020000- 0--???1??1 0?00??100? -00?1?0(01)0? ?1??20120? ?11----?11 00-31

'Tarnomys schmidtkittleri' 200000-0(12)? ???????0-1 11???????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????2 1000111-10 1011131001 0111000101 10(14)0041112 2010200002 0101121-02 0221001112 1??200???1 2?0(12)12?0-0 12?12????? ?0--3-?0?? ?211?100?? ??112(12)1111 101021000- 1001001101 0?00??100? -001110101 111120120? ?11----211 (01)0-30

'Tarnomys spelaeus' 200000-010 01?????0-0 0-????1??? ?????????? ?????????? ?????????? 01121100-1 1011140-11 1010120(12)11 1111011141 0200111111 1031010102 2000111-11 0121131001 1201110101 101114-112 2010200012 0001121-02 0221001112 1002011101 220(12)1200-0 1211210-0- -0--3-0001 0211010001 10112(12)0011 101021010- 0--0--2--- -00---(01)00- -001110101 1111201101 -11----211 00-10

'Pseudosciurus praecedens' 2???00-03? 01000110-1 1112011000 000110--13 31000-0111 1201010120 021010-0-1 11111(34)0011 00010-0-11 1111012111 1200111111 1021000121 1010111-10 2020131001 02000----1 2111011112 20102----1 0101121-02 02200010-1 2002001101 2202111201 1210210-01 -1-00-0000 0211010001 10112(12)1011 101200000- 1000--0--1 00----101- -0011101(01)1 1111201101 -11----211 20-41

'Pseudosciurus suevicus' 200000-03? 01000110-1 1212011000 000110--13 31120-0111 120101?120 021010-0-1 1111140011 0001(01)00-11 1111122111 1200111111 1021000121 10-0111-10 2021131001 02000----1 2211011112 20102----1 0101121-03 02200010-1 2012001??1 2?0211?201 12?02????? ?1-00-?00? ?212?10??? ??112(12)1111 101200000- 1(01)10--0--1 0?-???0--? -0011101(01)1 1111201111 -11----211 20-41

'Estellomys cansouni' 20??10-01? ?????????? ?????????? ?????????? ?????????1 ?????????? 0????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?010111-1(01) 1110421211 10011(12)0(12)11 0-2110-002 2130300001 0001123-12 0(12)200010-1 1??202(12)??1 2?1212?110 00?02????? ?0?03-?0?? ?212?411?? ??112(12)1211 102010011- 0--10101(12)1 2?00??101? 1021110001 1111201101 -1(01)1100211 20-31

'Estellomys varleti ("Blainvillimys" varleti)' 2???10-01? 0(01)110(01)10-0 0-24022000 0010112110 0122??1111 1221110110 010-10-0-2 0--1240-31 02--131212 10-1?0-141 120011140- --2-10?13? ?010111-1(01) 0110421211 1001121211 0-2110-0-- 2130300(01)01 0001123-12 01200010-1 1?02??1100 21-2-100-0 0000110--- -0-03-0000 22(01)2?4110- (01)0112(12)(01)(01)11 102010111- 0--1010121 210000101(01) 1021110001 1111201101 -1(01)1100211 (01)??(01)0

'Paradelomys santjaumensis' 2???00-02? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?000111-10 20212(12)1111 10010000-1 0-00131112 2000100001 0001110-00 00---00100 1?000010-0 2--2120101 1101210--- -0----0002 02011101-0 --11210011 101110110- 0--1000101 00----0--- -001110001 1111201010 0001100211 00-10

'Paradelomys crusafonti' 2???00-011 01110110-1 0023011100 001000--10 0100101121 0--101111? 01021110-1 1111241-01 0010100212 1110-11141 0200111111 1021020101 2010111-10 2021221111 1001110(01)11 0-02---(01)14 2110300001 0001120-10 0120001100 1?000010-0 2--212?101 11?02????? ?0?---?0?? ?202?111?0 --11210011 101111110- 0--1000101 0?-???0--? -001110001 1111201100 (01)001100211 00-10

'Sciuromys cayluxi' 2010130001 10-110-000 0-242-1020 0010112110 00--0-1111 0--2211110 020-10-001 0--1240-21 22--131212 10-0-0-141 02001113-1 --30100102 21100-1-11 02--331211 1001121211 0-22---0-- 2131300202 0001123-2- -2211121-1 31011010-0 2--2-20010 1200210--- -0----0-01 1212231-01 1312220311 1020211--1 0--0--2--- -001--0--- -1-1110001 1110200100 111----211 00-0-

'Sciuromys rigali' 2??014020? 010110-000 0-242-1020 01-0112110 00--0-1111 0--2210110 020-10-001 1011240-21 22--131212 10-0-0-141 02001113-1 --30100102 21100-1-11 02--331211 1001121211 0-22---0-- 2130300202 0001123-2- -221112111 31011010-0 2--2-20010 1200210-0- -00---0-01 0212231-01 1312220311 1020211--1 0--0--2--- -001--0--- -1-1110001 1110200100 111---?211 00-0-

'Columbomys cuencae' 2???23000? ????????0? ?????????? ?????????? ?????????1 ?????????? 020-10-001 1111240-21 2010132213 10-0-0-141 12301113-1 --30110132 21-00-1010 22--331201 0001122221 0-32---0-- 2130300203 -101124-2- -221112111 3??1?21??0 2?-1-2?010 12?02????? ?2?22-?0?? ?212?32??? ??12220011 1020211-13 0--0--2--- -?02??101? -1-1110001 111020010? ??1----?11 00-0-

'Columbomys agustii' 2???23020? ????????0? ?????????? ?????????? ?????????? ?????????? 0????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?1-00-1010 22--331201 1001122221 0-32---0-- 2130300203 -101124-2- -221112111 3????????? 2??1?2?01? 12??2????? ?2?22-?0?? ?????32??? ??12220011 102021???? 0--???2??- -?02??101? -1-?1?000? ?1??200101 -11----211 00-0-

'Columbomys lavocati' 221?24030? ????????0? ?????????? ?????????? ?????????1 ?????????? 0????????? ?????????? ?????????? ?????????? ?????????? ?????????2 21-00-1011 22--331211 1001122221 0-32---0-- 2130300203 -101124-2- -221113??1 3?02??10?0 2--1-2?010 12?02?0-?- -0?---0-01 ?212?52??1 1312220011 1020211-13 0--0--2--- -102001010 21-1110001 1110200101 -11----211 00-0-

'Elfomys catalaunicus' 2???00-00? 0111011000 0-1(03)010010 0010000-00 0101101101 1000-01110 00121111-1 11012301?1 1010(01)00010 00-1111111 02001(01)1211 100-0201(01)? 1000101-11 0121021101 1001110011 0-01101102 21(23)0100002 0001122-02 00---11101 0?00?010-0 2--2-21200 1000200--- -0----0001 0200130100 --11211311 1120111110 0--1000101 001---0-0- -001111001 1111201000 0000100211 00-10

'Elfomys parvulus' 2???10-00? 01110??000 0-23020000 00--102010 00--0-1111 0--0-11110 000-10-0-1 1001230-31 0010120210 1101010141 0200121211 100-10010? 2000111-11 002(12)421211 1001110(12)11 0-21121002 2130100002 0001123-1- -0---01101 3???001??? 2??2?2?10? 10??2????? ?1?00-?0?? ?????30??? ??112(12)1111 1120101--- 0--???0??1 0?0???101? -00?1?000? ?1??201001 -11----211 00-10

'Elfomys tobieni' 2???10-00? 011100-000 0-13011000 01-0102010 0131101111 1000-10110 000-10-0-1 0--1010131 0010120212 10-0-20141 0200111211 100-02010? 2000111-0- -02(12)421200 -001110(02)11 0-01121002 2130100002 0001123-04 00---11101 3?000110-0 2--2-21200 1000210--- -0----0-01 0201130100 --112(12)1311 1120101110 0--1010101 0110001000 -001111001 1111201001 -11----211 00-10

'Elfomys engesseri' 2???00-00? 011100-000 0-13001010 0000102010 0101101111 1000-11110 001210-0-1 1111030-01 1011110212 10-0-21141 0200121211 100-02010? 2010111-11 2021421210 --01110211 0-21101102 2110100002 0001123-0(02) 00---01101 0??0001??0 2?-2-21200 10?02????? ?0?---?0?? ?201?301?? ??112(12)1311 1120111110 0--1000101 0?1???100? -001111001 111120100? 1101100211 00-10

'Elfomys hartenbergeri' 2???10-00? 0111110000 0-23221100 00--112112 11000-1111 1100-10110 1????????? ?????????? ?????????? ?????????? ?????????? ?????????? ??10111-0- -2--421210 --01121211 0-22---0-- 2130301222 0001123-04 10---010-1 3?10??1100 22-2-11110 1000210--- -0----0-01 2202130100 --12220011 1120311112 0--1010101 2110001020 2021110001 1111201001 111----211 00-0-

'Issiodoromys medius' 2110230001 20-1110110 0-(12)3(02)21000 0011112112 20--0-1111 1120-10110 010-20-002 0--1231-01 0010131212 10-0-0-141 1200121311 110-100131 21-0111-0- -2--421220 --01121211 0-22---0-- 2130311222 0101123-04 10---01101 3120001100 22-1-11110 1000210--- -0----0-01 2202131100 --12221311 1120311112 0--10101(02)1 2110001020 2-21110001 1111201101 -11----211 00-0-

'Issiodoromys nanus' 2???22000? 10-1110110 0-13021000 01--112111 10--0-1111 1120-10110 000-20-002 0--1231-01 0010131212 10-0-0-141 1200121311 110-100131 21-0111-0- -2--42122? ??01121211 0-22---0-- 2130311222 0101123-04 10---01101 3??0001??0 2?-1-11110 10?02????? ?0?---?-?? ?2021311?? ??12221311 1020311112 0--10?0101 2?1???102? 2-21110001 111120110? -11----211 00-0-

'Issiodoromys minor' 2110240001 20-1210110 0-232-1000 0011112112 20--0-1111 1120-10110 010-20-002 0--1231-01 02--131213 10-0-0-141 0200121311 110-100131 21-00-1011 02--421221 1001121211 0-32---0-- 2230311223 -101124-04 10---010-1 3130001110 22-1-010-0 1000210--- -0----0-01 2202132100 --12221311 1120311112 0--10101(02)1 2110011020 2-21110001 1111201101 -11----211 00-0-

'Issiodoromys pauffiensis' 2110250101 20-1210110 0-232-2000 0011112212 20--0-1111 1120-10110 010-20-112 0--1231-31 1010132213 10-0-0-141 0200121311 110-200131 21-00-1011 22--421221 1201122211 0-32---0-- 2230322223 -101124-04 10---010-1 3140011110 12-1-010-0 00001121-0 10----0-02 2202232201 0112221311 1120311112 0--10101(02)1 2110011022 2-21110001 1111201101 -11----211 00-0-

'Issiodoromys quercyi ' 2???250201 20-1210111 13232-2000 0011112212 20--0-1121 1120-10120 010-20-122 0--1231-31 100(01)132213 10-0-0-141 1210121311 110-200131 21-00-1011 22--421221 1201122211 0-32---0-- 2230322223 -101124-04 10---020-1 3240011110 02----10-0 0010012100 100---0-02 2202252201 0112221311 1120321112 0--10101(02)1 2110011022 2-21110001 1111201101 -11----211 0100-

'Issiodoromys limognensis' 2110360201 20-1210121 13232-2000 0011112212 20--0-1121 1120-10120 010-20-122 1011231-31 1011132213 10-0-0-141 1230121311 110-200131 21-00-1011 22--421221 1201122211 0-32---0-- 2230322223 -101124-04 10---020-1 3240011110 02----10-0 0010012100 100---0-02 2202352201 0112220011 1120321112 0--10101(02)1 2110011022 2-21110001 1111201101 -11----211 0100-

'Issiodoromys pseudanaema' 2211370201 ?????????? ?????????? ?????????? ?????????? ?????????? 010-20-122 1011231-31 1011132213 10-0-0-141 ?230121311 110-200131 21-00-11-- -2--421221 --01122211 0-32---0-- 2243322224 --01124-04 10---030-1 3240011110 02----10-0 0010012100 100---0-02 2202352?01 0112220011 112032???2 0--10101(02)1 2110011022 2-21110001 1111201101 -11----211 0100-

'Issiodoromys bransatensis' 2211470201 20-1210121 13232-2000 0001112212 20--0-1121 1-20-10120 010-20-122 0--1231-11 -1--132213 10-0-0-141 ?230121311 110-200131 11-00-11-- -2--42?--1 --01122211 0-32---0-- 2243322224 --01124-04 10---030-1 3240011110 02----10-0 0010012100 100---0-02 2202352?01 0112220011 112032???2 0--10101(02)1 2110011022 2-21110001 1111201101 -11----211 0??0-

'"Pseudoltinomys" phosphoricus' 23?010-00? ?????????? ?????????? ?????????? ?????????? ?????????? 011210-002 0--1241-01 1000130212 10-0-0-141 0200111301 --30100131 2000111-0- -2--031211 0001120211 0-02---0-- 2230301202 0001123-2- -0---11101 10?1021??1 2?1112?0-0 12?02????? ?2?03-?0?? ?2021311?? ??12221311 1020211110 0--10101(02)1 0?0???101? --21110001 111120110- -11?10-211 0??0-

'Pseudoltinomys cosetanus' 2???10-01? ?????????? ?????????? ?????????? ?????????? ?????????? 0????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?000111-0- -112021210 --011(12)0211 0-011010-- 2130300202 0001123-04 00---11101 1????????? 2??1?2?0-? 12??2????? ?0?---?-?? ???1?31??? ??12221111 1020?01110 0--???0??1 0?0???101? 0-1?1?000? ?1??20110? ?11?10-?11 00-10

'Pseudoltinomys crebrum' 2???10-01? 0101010000 0-23001000 0010102010 0(12)01101121 1220-11110 000-20-1-1 0--123??01 01--1(23)0212 10-????1(24)1 0200121311 100-1?010? (12)000101-11 0012021200 --(01)11(12)0(12)11 0-01001002 1120300202 0001123-04 00---11101 1?00?010-0 2--2-21110 1100210--- -1-10-0001 0201131100 --11211311 1120101110 0--1010(01)01 001---101- --21110001 1111201100 0(01)1?100211 00-0-

'Pseudoltinomys mamertensis' 23??10-00? ?????????? ?????????? ?????????? ?????????? ?????????? 011210-0-1 0--1231201 1010130212 10-100-1(04)1 02001213(01)1 110-120101 00000-1-0- -012421211 1001120211 0-011010-- 2130300202 0001123-14 -(01)---11100 1??1001??0 2?-2-2?0-0 12?02????? ?0?---?-?? ?2011311?? ??1(12)2(12)1311 1120101110 0--10001(02)1 0?0???101? --21110001 1111201100 0(01)1----211 00-10

'Pseudoltnomys cuvieri' 2300220001 0101011000 0-23021010 0010112111 10--0-1111 1220-11110 0012111001 0-01231-01 02--1(13)1212 10-0-0-141 0200121311 110-120101 2010111-0- -1-2021200 --01121211 0-22---0-- 2230300202 0001123-04 10---11101 1011001100 22-2-110-0 1000210--- -0----0-01 2202131100 --12221311 1120301110 0--1011121 2110001020 2-21110001 1111201100 011--0-211 00-0-

'Pseudoltinomys gaillardi' 2300230001 0101110100 0-23021000 0010112111 10--0-1111 1220-11110 0012111002 0-01231-01 00111(13)1212 10-0-0-141 0200121311 110-120101 201011100- -1-2021200 --01121211 0-22---0-- 2230300202 0001123-04 10---11101 101(12)001100 22-2-110-0 10002?0--- -0----0-01 2202131100 --12221311 1120301110 0--1011121 211000102(01) 2-21110001 1111201100 011--01211 00-0-

'Pseudoltinomys amblesi' 2???23000? 11?1210?00 0-23???000 0???112111 1???0-11?1 1220-1?110 0????????? ?????????? ?????????? ?????????? ?????????? ?????????? (12)01011100- -1-2021200 --01121211 0-22---0-- 2230300202 0001123-04 10---11101 1???00???? 2??2?1?0-? 10??2????? ?0?---?-?? ???2?31??? ??12220-11 1120?11110 0--???0??1 2?0???102? 2-2?1?000? ?1??20110? ??1?100?11 00-0-

'Pseudoltinomys major' 2???230001 1111111100 0-(01)3021000 0011112111 10--0-1121 1220-11110 020-211002 0-01231-31 10111(13)1212 10-0-0-141 0200121311 110-12010? 201011100- -1-2021200 --01121211 0-22---0-- 2230300202 0001123-04 10---11101 1?23011100 22-2-110-0 1000210--- -0----0-01 2202131100 --12221311 1120311112 0--1010(01)21 21100?1021 2-21110001 1111201100 111?100211 00-0-

'Oltinomys platyceps' 230011001? 00-210-000 0-23021010 0010112010 10--0-1111 1220-10110 000-1100-2 1101231211 100(01)130212 10-0-0-141 0200111211 100-120101 20-0101-10 0012221211 1011120211 0-52---0-- 2130300102 0001122-04 10---10101 3000011(01)01 2202121110 1100210--- -1-03-0001 2212121001 0012221011 11203100(01)2 0--1110111 0110001021 1-21111001 111120110(01) 111----211 00-0-

'Ectropomys exigus' 230?10-00? 00-110-010 0-13021020 0001112114 40--0-1111 1210-00140 000-10-0-2 1111231-11 2001131212 10-0-0-141 1200111211 100-00010? 21-00-1-10 2112221211 0101121211 0-52---0-- 2130311202 0001122-04 10---000-1 3??00?1??? 1??2?0?11? 12?01????? ?0?03??0?? ?2021220?? ??12220011 1120311112 0--?0011(02)1 0?1???102? (12)-21111001 111120110? ??1----211 (01)0-0-

'Ectropomys monacensis' 2???10-00? 00-120-000 0-232-2010 0001112214 40--0-1111 1210-00140 110-10-0-2 1111231-11 2001131212 10-0-0-141 0200111211 100-00010? 21-00-1110 22--221211 0201122211 0-52---0-- 2(12)30311202 0001122-04 10---000-1 3?1???10-? 2-?2?0011? 120?210--- -0---?0002 2??2?22000 --12220011 1120311112 0--10111(02)1 0110001021 2-2?1?100? 1111201101 -?1----?11 (01)0-0-

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'Blainvillimys gousnatensis' 2??011201? 2101110100 0-24022012 0010112111 11220-1111 0--2111140 010-1110-2 1001240-31 1010131212 10-0-0-141 020011140- --3110010? 20100-1-0- -2--431211 1001121221 0-22---0-- 2230300202 0001125-2- -221111(01)01 3?22?21110 2--2-110-0 0100110--0 -1-23-0000 2212141201 0012221311 1020101110 0--101(02)(01)11 210000102(01) (01)-21110001 1111201101 -11?100211 0(01)000

'Blainvillimys civracensis' 2???12201? 2101110100 0-24022012 0010112111 11220-1111 0--2111140 12(01)210-0-2 1001241-31 1010131212 10-0-0-141 020011140- --31120101 20100-1-0- -2--431211 1001121221 0-22---0-- 2230300202 000112502- -221111(01)01 3033?21110 11-2-1?0-0 01001121-0 11-23-0000 22(01)2142201 1012221311 1020101110 0--101(02)111 210000102(01) 2-21110001 1111201101 -11?100211 01100

'Blainvillimys pseudosiderolithicus' 2300102001 2111111100 0-24??2012 00--112111 1???0-1111 0--2?1?140 020-10-0-2 0--1241-31 12-0131212 10-0-0-141 020011140- --30121131 20100-1-0- -2--431210 --01121221 0-22---0-- 2130300202 000112502- -221111(01)02 3033021110 11-2-1?0-0 0?000120-? 11--3-0000 22(01)2142?01 1012220011 1020101110 0--1010111 2100001021 2-21110001 1111201101 -11----211 0(01)100

'Blainvillimys rotundidens' 2300122001 2111110100 0-242-2012 0000112111 10--0-1111 0--2311140 020-10-0-2 0--1241-31 1010131212 10-0-0-141 020011140- --30121131 20100-1-0- -2--431211 1001121221 0-22---0-- 2130300202 000112502- -221111101 3033021110 01----?0-0 0-000121-0 11-23-0000 2202?42201 1012221011 1020211112 0--1010111 2100001021 2-21111001 1111201101 -11----211 00-0-

'Blainvillimys langei' 2300132001 2111210100 0-242-2012 0010112111 10--0-1111 0--2211140 020-10-0-2 1101241-31 101013(12)212 10-0-0-141 021011140- --30121131 20100-1-11 02--431211 1001122221 0-32---0-- 2230311202 000112502- -221111101 3033021110 01----?0-0 0-000121-0 11---00000 2212(13)42201 1012221011 1020211112 0--1010111 2100001021 2-21111001 1111201101 -11----211 00-0-

'Blainvillimys gregarius' 2300242001 2111210100 0-242-2012 0000112212 20--0-1111 0--2220140 020-10-0-2 1111241-31 1001132213 10-0-0-141 121011140- --30200141 20-00-1011 22--431211 0201122221 0-32---0-- 2230311202 010112502- -2211120-1 3033021111 012-0-?0-0 0-10012100 1122400000 2212342211 1012321012 1020211112 0--1010111 2100001021 2-21111001 1111201101 -11----211 00-0-

'Blainvillimys gemellus' 23?024200? 211120-000 0-242-2012 1000112212 20--0-1111 0--2120140 021210-0-2 1111241-31 1001132213 10-0-0-141 121011140- --30200141 20-00-1011 22--431211 0201122221 0-32---0-- 2230311202 010112502- -2211120-1 3043121111 012-0-?0-0 0-10012101 1112(34)00000 1212342211 1112320012 1020211112 0--1010111 2100001021 2-21111001 1111201101 -11----211 00-0-

'Blainvillimys helmeri (= Bl. varians)' 230024200? 2111210101 13242-2013 0001112212 20--0-1111 0--2121140 021210-0-2 1111241-31 1001132213 10-0-0-141 121011140- --30300141 20100-1010 22--4312(01)1 0201122221 0-32---0-- 2230311212 010112502- -2211120-1 4043121111 012-0-?0-0 0-10012104 1212411000 1212342211 1012320012 1020221112 0--1010111 2100001021 2-21111001 1111201101 -11----211 00-0-

'Blainbillimys heimersheimensis' 2???2?200? 2111211000 0-242-2012 0000112212 20--0-1111 0--222?140 021210-0-2 0-01241-31 1010132213 10-0-0-141 121011140- --3020014? 20100-1011 02--431201 10011222?1 0-32---0-- 2230311202 010112502- -2211?10-1 3?33?21111 012-0-?0-0 0-10012114 1112(34)01000 1212342211 1012320012 1020211112 0--10101?1 2100001021 2-21111001 1111201101 -11----211 00-0-

'Blainvillimys blainvillei' 23??262001 2111210101 13242-2002 0001112212 20--0-1111 0--2231150 021210-0-2 1111241-31 0001132213 10-0-0-141 121011140- --3030014? 20100-1010 22--431201 0201122221 0-32---0-- 2230311212 110112502- -2211130-1 4?43121111 012-0-?0-0 0-10012104 1202411000 1212342211 1112320012 1020231112 0--10101?1 2100001021 2-21111001 1111201101 -11----211 00-0-

'Blainvillimys stehlini' 2???2?200? 211121010? ?3242-2002 0000112212 20--0-1111 0--223?150 121210-002 1111241-31 0001132213 10-0-0-141 123011140- --3030014? 20100-1010 22--431201 02011222?1 0-32---0-- 2230311213 -10112502- -2211?30-1 40?3121??1 0?2-0-?0-0 0-?00????? ?0?---?0?? ?202342??? ??12320012 10202(34)1112 0--10101?1 2?0???102? 2-21111001 1111201101 -11----211 00-0-

'Blainvillimys campinsensis ("Theridomys" campinsensis)' 2???2?200? ?????????1 13???????? ?????????? ?????????? ?????????? ?21210-002 1111241-31 0001132213 10-0-0-141 121011140- --3030014? ?0100-1010 22--431201 0201122211 0-32---0-- 2230311212 110112502- -2211130-1 4????2???? 0??-?-?0-? 00??0????? ?0?---?0?? ???2?42??? ??12220012 102022???? 0--???0??1 2?0???102? 2-2?1?100? ?1??20110? ??1----?11 0??0-

'? Blainvillimys avus' 23??232001 211120-001 13242-2002 0001112212 20--0-1111 0--2130150 021210-112 1111241-31 1001132213 10-0-0-141 121011140- --3130014? ?0-00-1010 22--431201 0201122221 0-32---0-- 2230311213 -?0112512- -2200130-1 4033221101 002-1-?0-0 0-000121-4 02-2121000 1202332001 1212320012 1(01)20221112 0--10101?1 2100001021 2-21111001 1111201101 -11----211 00-0-

'Patriotheridomys sudrei' 2???11200? 210120-000 0-232-2010 0010112211 112-0-1111 0--2021110 120-10-0-2 0--1231-31 1(02)10131212 10-0-0-141 021011140- --3210113? 20100-1011 0112421211 1001121221 0-22---0-- 2230300203 -10112502- -(12)20012??1 4?22?01100 10-2-1?0-0 0010111000 002--?0000 1202141210 --12221311 1020211111 0--1011(01)0- -11000102(01) 1-21110001 1111201101 -11----211 0100-

'Patriotheridomys altus neboulensis' 211013200? 211120-000 0-232-201(12) 0000112211 112-0-1111 0--2021110 120-10-0-2 0--1231-31 1010131212 10-0-0-141 021011140- --32201131 20100-100- -112421211 1001122221 0-22---0-- 2230300213 -10112502- -(12)20013101 4223011100 10-2-0?0-0 0010111000 002--?0000 1202342210 --12221311 1020211111 0--1010101 211000102(01) 2-21110001 1111201101 -11----211 01(01)0-

'Patriotheridomys altus' 2110242001 211120-000 0-232-2012 0000112212 212-0-1111 0--2021110 120-10-0-2 0--1231-31 1010132213 10-0-0-141 021011140- --32300131 10100-100- -112421211 1011122221 0-32---0-- 2230300213 -10112502- -(12)20013101 4233011111 112200?0-0 0010112100 12224?0000 1202342210 --12(23)21312 1020211111 0--1010121 2110001021 2-21110001 1111201101 -11----211 01(12)0-

'Thalerimys headonensis' 2???10002? 2101111000 0-24022002 0000112111 11120-1111 0--2211110 12121110-2 1001241-31 0010131212 1110-0-141 021011140- --301201(12)? 2000111011 12--431201 1001121221 0-22---0-- 2130300101 000112502- -221111101 3?23?01?10 01----?0-0 01000121-5 1101510001 2202141201 1011421011 1020201112 0--1110011 2100101121 1-21110001 1111201101 -11----211 01020

'Thalerimys fordi' 2???10003? 2101111000 0-24022002 1000112111 12020-1111 0--2211110 12121110-2 1011241-31 0010131212 1110-0-141 021011140- --3012012? 2000111011 12--431201 1011121221 0-22---0-- 2130300102 000112502- -221111101 3?23?01?10 01----?0-0 02000121-5 1201520000 2202141201 1011422011 1020201112 0--1110011 2100201121 1-21110001 1111201101 -11----211 01121

'Thalerimys perrealensis ("Theridomys" perrealensis)' 2???10002? 2101110100 0-242-2002 1010112111 61000-1111 0--2011140 111210-0-2 1111241231 0001131212 100100-141 100011140- --3?1?0121 ?000?-100- -2--431201 10111212?1 0-22---0-- 2130300102 000112502- -2211?1??1 3??21?2??1 0?1000?110 00?11????? ?1?22-?0?? ?222?412?? ??12220011 102010???? 0--10101(12)1 2?00??1021 2-21110001 1111201101 -11----211 0100-

'Theridomys brachydens' 2???10001? 2111111000 0-242-2002 0000112111 10--0-1111 0--2211130 010-10-0-2 0-01241-31 001?131212 10-0-0-141 121011140- --3010023? 201011100- 02--431200 --01121221 0-22---0-- 2230300102 000112502- -221111??1 3?33?11?00 12-2-0?0-0 0010112104 100---0001 2202?41201 0012220-11 1020201112 0--111(02)11- -100001021 2-21110001 1111201101 -11----211 00-0-

'Theridomys golpei' 2???10001? 2111111000 0-24022001 01--112111 11120-1111 0--231?140 021210-0-2 1001241-31 0000131212 10-0-0-141 110011140- --301001(34)1 20100-1011 02--431201 1001121221 0-22---0-- 2130311202 010112502- -2211110-1 2033111?11 110211?111 01000121-4 0002--0000 2212341211 0012220-11 1020201112 0--1110111 2100101021 2-21110001 1111201101 -11----211 00-0-

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'Theridomys major' 2300131001 2101211101 13242-2105 0001112214 60--0-1111 0--2210130 121210-002 1001241-31 0010132213 1110-0-141 111011140- --30120141 20100-1011 02--431211 1001122221 0-42---0-- 2230311202 0(01)0112502- -2211110-1 1033121??0 0?----?0-0 00?00????? ?2?212?0?? ?2123422?? ??12321012 1020201112 0--1010111 2?00??102? 2-21110001 1111201101 -11----211 00-00

'Theridomys lembronicus' 2300231001 ?????????? ?????????? ?????????? ?????????1 ?????????? ?21210-002 1001241-31 02--132213 1100-0-141 111011140- --30220141 20100-1011 02--431201 1011122221 0-42---0-- 2230311202 111112502- -2211110-1 1033121?10 01----?0-0 0010012111 1202121000 1212342211 1212320012 1022221112 0--1010111 2100001021 2-21110001 1111201101 -11----211 00-00

'Theridomys octogesensis' 2???23100? ?????????1 13???????? ?????????? ?????????1 ?????????? ?21210-002 1001241-31 02--132213 1100-0-141 111111140- --3032014? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ???3?21??0 2?-0-2?210 00?10????? ?2?212?1?? ?202?422?? ??12320012 102222???2 0--1010111 2?00??1021 2-211100-1 111120110? -11----211 0??0-

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'Theridomys bonduelli Ham1-3' 20??10001? 2111110100 0-242-2002 0000112211 60--0-1111 0--2210130 121210-0-2 1001241-31 0010131213 10-0-0-141 121011140- --301001(34)1 2010011011 02--431201 0001121211 0-42---0-- 2130300102 010112502- -2211?10-1 1?33011?10 01----?0-0 01000121-4 11-2110000 2212342111 1012321012 1020201112 0--1110121 2100101021 2-21110001 1111201101 -11----211 01120

'Paratheridomys margaritae' 2310120011 2101110100 0-24022002 1010112111 (16)(01)2-0-1111 0--2(23)10130 010-10-0-2 1001241-31 12--131212 10-0-0-141 021011140- --3010023? 20100-1011 02--431201 0001122211 0-22---0-- 2230300202 010112502- -2211010-1 4133021?10 01----?0-0 00000121-5 11-2400000 22(01)2(13)42211 1012221011 1020201112 0--1110110 -100101121 2-21110001 1111201101 -11----211 01000

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'Protechimys variabilis' 23??24200? 2111210101 13242-2003 0000112212 20--0-1111 0--2330150 02(01)210-003 0--1241-31 02--132213 10-0-0-141 123011140- --31400141 21-00-1011 12--431201 1101122211 0-32---0-- 2230311213 -10112512- -2200140-1 ?143121111 022-1-?0-0 00100?2111 000---1000 1202342311 0012220012 1120331112 0--1010121 1110001021 2-21110001 1111201101 -11----211 00-0-

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'Protechimys blainvillei' 2??1242001 211120-101 13242-2002 0000112212 20--0-1111 0--2340150 020-10-003 1001?41-31 0010132213 10-0-0-141 123011140- --31500141 21-00-1011 02--431201 --01122211 0-32---0-- 22304-1213 -(01)0112512- -2200050-1 ?143121111 022-1-?0-0 00100?2111 0122401000 ?202342311 0012220012 112034---- 0--1010121 11-0001021 2-21110001 1111201101 -11----211 00-0-

'Protechimys major' 2??1252201 211120-101 13242-2002 01--112212 20--0-1111 0--2340150 020-10-103 0--1241-31 0010132213 10-0-0-141 123011140- --41500141 21-00-1011 02--431201 --01122211 0-32---0-- 22304-1213 -(01)0112512- -2211050-1 ?143121?11 022-1-?0-0 00100?2112 102--?0000 1202342-11 0012220012 1120-4---- 0--1010121 11-0001021 2-21110001 1111201101 -11----211 00-0-

'Archaeomys or Blainvillimys sp.' 2??1222101 210120-100 0-242-2002 01--112212 20--0-1111 0--2330150 021210-013 1011241-31 0110132213 10-0-0-141 123011140- --30400141 20100-1011 12--431200 --01122211 0-32---0-- 2230321213 -(01)0112512- -2211040-1 ???3??1?11 ?12?0????0 ??10??2111 1?0???0000 1202342-11 001222??12 12-------- 0--101012? ?100001021 2-21?10001 1111201101 -11----211 00-??

'Archaeomys or Blainvillimys huerzeleri' 2??12?2201 210120-100 0-242-2002 01--112212 20--0-1111 0--2340151 021210-113 1011241-31 0110132213 10-0-0-141 121011140- --30400141 11-00-1011 22--431200 --01122211 0-32---0-- 2230321212 1(01)0112512- -2211040-1 ???3?21?11 011-0-?0-0 00100?2111 102---0000 1202342-11 001222-012 1(02)20-(34)---- 0--1010121 1100001021 2-21110001 1111201101 -11----211 00-0-

'Archaeomys or Blainvillimys robustus' 2001242201 ?????????? ?????????? ?????????? ?????????? ?????????? ?21210-113 1011241-31 0110132213 10-0-0-141 123011140- --30400141 11-00-1011 22--431200 --01122211 0-32---0-- 2230311213 -10112512- -2211050-1 ??331?1?11 011-0-?0-0 00100?2111 102---0000 1202342-11 001222-012 12-------- 0--1010121 11-0001021 2-21110001 1111201101 -11----211 00-0-

'Archaeomys quercyi' 2001242201 210120-100 0-242-2002 01--112212 20--0-1111 0--2340151 021210-113 1011241-31 0110132213 10-0-0-141 112011140- --30(45)00141 11-00-1011 12--431200 --01122211 0-32---0-- 2232421212 110112512- -2211050-1 ??33121?11 011-0-?0-0 00100?2111 1222400000 1202342-11 0012220012 12-------- 0--1010121 11-0001021 2-21110001 1111201101 -11----211 00-0-

'Archaeomys ehrensteini' 2??12?2201 210120-100 0-242-2002 01--112212 20--0-1111 0--2230150 021210-003 1011241-31 0110132213 10-0-0-141 123011140- --30400141 ?1-00-10?? ?2--43120? --01122211 0-32---0-- 2232321214 --0112512- -2211040-1 ??3?121?1? 01?-?-?0-? 001?0?2114 1?2???0?00 1???342-11 001222??12 12-------- 0--101?12? ?1-0001021 2-2?1?000? 1111201101 -11----211 00-0-

'Archaeomys intermedius' 2001252201 210120-100 0-242-2002 01--112212 20--0-1111 0--2340151 021210-22- 100?241-31 02--132213 10-0-0-141 112111140- --30400141 (01)1-00-10?? ?2--431200 --01122211 0-32---0-- 22324-02-2 112112512- -2-11050-1 ?243121?11 011-1-?0-0 00100?2111 102---0000 1202342-11 0012220012 12-------- 0--1010121 11-0001021 2-21110001 1111201101 -11----211 00-0-

'Archaeomys helveticus' 200?352201 ?????????? ?????????? ?????????? ?????????1 ?????????? ?2??10-22- 101?241-31 02--132213 10-0-0-141 011111140- --30500141 ?1-00-10?? ?2--431200 --01122211 0-32---0-- 22324-02-2 112112522- -2-11050-1 ???3121??1 0?1-1-?0-0 00?00????? ?0?---?0?? ?202342-?? ??12220012 12-------- 0--1010121 1?-???102? 2-21110001 1111203101 -11----211 00-0-

'Archaeomys arvernensis' 2001362201 ?????????? ?????????? ?????????? ?????????1 ?????????? ?21210-22- 0--?241-31 02--13--13 10-0-0-141 111111140- --40500141 11-00-10?? ?2--431200 --01122211 0-32---0-- 22324-02-2 102112522- -2-11050-1 ??????1?1? ?1???????? ??1???2111 1?2???0?00 1???342-11 001222??12 12-------- ???101?12? ?1-0001021 2-2???0??? 1?11?01??1 -?????-?11 00-??

'Archaeomys laurillardi' 2001362201 20--20-100 0-2-2-2000 01--112212 20--0-1111 0--2340151 02??10-22- 0--?241-31 02--13--13 10-0-0-141 111111140- --4-500141 (01)1-00-1011 12--43120? --01122211 0-32---0-- 22324-02-2 102112522- -2-11050-1 ?243121?11 011-1-?0-0 00100?2111 102---0000 1202342-11 0012220012 12-------- 0--1010121 11-0001021 2-21110001 1111203101 -11--0-211 00-0-

'Toeniodus curvistriatus' 20002?2001 20--20-000 0-242-2001 01--112212 20--0-1111 0--0-40150 021210-002 0--1241-31 0110132213 10-0-0-141 121011140- --30200141 20100-100- -2--431200 --01122211 0-32---0-- 2230311112 110112502- -2211030-1 ?033121?11 002-1-?0-0 0010012114 1222120000 1212342111 0012320012 1020121110 0--1010121 210-001021 2-21112001 1110200101 -11--0-211 00-0-

'Toeniodus hexalophodus' 2???23200? 2?-120-00? ??242-2002 01--112212 20--0-1111 0--0-40151 021210-002 ???1241-31 0110132213 10-0-0-141 121011140- --3030014? 20100-10?? ?2--431200 --01122211 0-32---0-- 2230311112 112112502- -2211030-1 ??33?21?11 002-0-?0-0 0010012114 1222120000 1212342211 0012320012 1020121110 0--1010121 210-001021 2-21112001 1111200101 -11--0-211 00-0-

'Remys minimus' 2000110001 00-1011010 0-232-01-0 01--00--10 010-100100 1020-00010 00(01)210-1-1 0--1231-00 -2--0---10 10-10230-1 0000100(02)10 110-0000?1 201010100- -112021210 --0(01)0000-1 0-0100000- 11000----1 0001123-10 00---000-1 1000110?-0 01----?0-0 000000---- -0----001- 0200101000 --12221011 12----1--- 0--0--2--- -02---100- -1-1111001 111-101000 0001100011 00-0-

'Remys garimondi' 2???11000? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? 2010??100- -2--021210 --0(01)0000-1 0-0100-00- 11100----1 0001123-10 00---000-1 1????1???? 0??-?-?0-? 00??0????? ?0?---?0?? ???0?01??? ??12220011 12----1--- 0--???2??- -?2???0-0- -1-?1?100? ?1??10100? ??01100?11 00-0-

'Remys major' 2????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ????01???? 0??-?-?0-? 10??1????? ?0?---?0?? ???0?01??? ??12221011 12----1--- 0--???2??- -?2???100- -1-?1?100? ?1??10100? ??01100?11 0??0-

'Pairomys ibericus' 2???13000? ?????????? ?????????? ?????????? ?????????? ?????????? 020-20-2-- 10-1031-30 -01-0---10 10-10??121 1000101210 110-0??02? ?1-00-1010 201022(01)211 02000----1 0-0100?112 12100---?2 11?1?2(34)-11 10---?00-1 2???02???? 0??-?-?0-? 00??0????? ?0??-??0?? ???2?42??? ??12220012 12----1--- 0--???2??- -?2???0--- -1-?1?100? ?1??00100? ??01100?11 0??0-

'Pairomys crusafonti' 2???1?000? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????2???? 0??-?-?0-? 00??0????? ?0??3??0?? ???2?42??? ??12220012 12----1--- 0--???1??- -?-???0--? -1-?1?100? ?1??00100? ??1--0-?11 0??0-

'Frontyanamys russelli' ????10000? 00-1010010 0-1-022010 001000--10 0100100100 1000-00000 000-1101-1 0-010-0200 -0100---10 10-1021101 00?0100210 110-00?02? ?010101011 0010020--1 10000----1 0-01?0?00- 11100---?1 00?1?10-00 00---?00-0 (02)??00?0??0 1??1-1?0-0 10001???-? ?0??-??0?? ?100?40??? ??122-1212 102-211--- 0--1012-0- -?--??0--? -0-1110001 111-20100? 0000100011 0??0-

'Bernardia marandati ' 2???13101? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?????????? ?0000-100- -2--431101 1101122?11 0-32---0-- 1230302202 1001??5002 10---010-1 ?????????? 0??-?-?0-? 00??0????? ?1?23-?0?? ?????42??? ??12221011 1120-11--- 0--???2??- -?2???102? 2-2???000? ?1??20110? ??1--0-?11 0??0-

;

ENDBLOCK;

BEGIN ASSUMPTIONS;

OPTIONS DEFTYPE=UNORD POLYTCOUNT=MINSTEPS;

TYPESET \* default = ORD: 1 5 - 10 12 15 - 16 20 24 - 25 30 38 - 39 43 45 47 50 53 55 57 59 63 66 69 - 70 76 - 79 82 - 83 88 - 89 94 - 95 97 - 98 100 103 - 104 106 - 107 114 - 119 121 - 122 132 - 133 137 139 - 140 143 147 - 148 152 - 153 155 160 - 162 164 167 - 168 171 174 177 179 - 180 183 188 191 193 - 198 202 - 205 207 209 213 216 218 223 - 224 227 231 233 - 235 238 242 247 250 252 - 253 256 263 267 273 275 279 281 283 286 - 287 294 - 295 297 308;

WTSET \* Scaled = 1: 2 - 4 10 12 - 13 16 - 18 20 - 22 25 - 28 30 - 36 39 - 41 43 45 47 - 48 50 - 51 55 57 59 - 61 63 - 64 66 - 67 70 - 74 79 - 80 83 - 86 89 - 92 95 98 100 - 101 104 107 - 112 119 122 - 130 133 - 135 137 140 - 141 143 - 145 148 - 150 153 155 - 158 162 164 - 165 168 - 169 171 - 172 174 - 175 177 180 - 181 183 - 186 188 - 189 191 198 - 200 205 207 209 - 211 213 - 214 216 218 - 221 224 - 225 227 - 229 231 235 - 236 238 - 240 242 - 246 248 - 249 251 254 - 255 257 - 262 264 - 266 268 - 272 274 276 - 278 280 282 284 - 285 288 - 293 296 299 - 307 309 - 315, 0.5: 1 7 11 14 - 15 19 23 29 37 - 38 42 44 46 49 52 - 54 58 62 65 68 - 69 75 77 - 78 81 - 82 87 - 88 93 - 94 96 102 105 - 106 114 116 - 118 120 - 121 131 - 132 138 - 139 142 146 - 147 151 - 152 154 159 161 166 - 167 176 178 - 179 182 190 192 195 - 197 201 - 204 206 208 212 215 217 222 - 223 226 230 232 - 234 237 241 247 250 252 - 253 263 267 273 275 279 281 283 286 - 287 295 308, 0.33: 8 - 9 76 97 99 103 113 136 160 173 194 294 298, 0.25: 5 24 56 163 170 193 256, 0.20: 115 187, 0.17: 6;

ENDBLOCK;

BEGIN PAUP;

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

ASSUME ANCSTATES=STANDARD;

SET/INCREASE= AUTO;

ENDBLOCK;

log file = Hsearch.out;

HSEARCH

NREPS = 1000

ADDSEQ = RANDOM;

[log file = Bootstrap\_Theridomorpha.out;

BOOTSTRAP

KEEPALL = YES

SEARCH = HEURISTIC

nreps = 1000

/addseq = random

Nreps = 2;]