APPENDIX II

Taxa/Characters Matrix from Dental Material (Nexus Format).

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#NEXUS
[ File saved by NDE version 0.5.0, Fri Nov 29 16:15:11 2020 ]
BEGIN TAXA;
	DIMENSIONS NTAX=24;
	TAXLABELS
		'Paroxacron valdense'
		'Paroxacron bergeri'
		'Oxacron courtoisii'
		'Plesiomeryx huerzeleri'
		'Plesiomeryx cadurcensis'
		'Caenomeryx procommunis'
		'Caenomeryx filholi'
		'Cainotherium laticurvatum'
		'Palembertina deplasi'
		'Robiacina minuta'
		'Robiacina quercyi'
		'Robiacina lavergnensis'
		'Dacrytherium ovinum'
		'Anoplotherium latipes'
		'Mixtotherium cuspidatum'
		'Parvitragulus priscus'
		'Lophiomeryx chalaniati'
		'Archaeomeryx optatus'
		'Amphimeryx murinus'
		'Xiphodon castrense'
		'Paratoceras coatesi '
		'Eotylopus reedi'
		'Dichobune leporina'
		'Eurodexis russelli'
		;
ENDBLOCK;

BEGIN CHARACTERS;
	DIMENSIONS NCHAR=80;
	FORMAT DATATYPE=STANDARD MISSING=? GAP=- SYMBOLS="0123";
	CHARLABELS
		[1] 'Lower incisors'
		[2] 'Lower canine'
		[3] 'Diastema between C-P1/'
		[4] 'Diastema between P1/-P2/'
		[5] 'Diastema between P/1-P/2'
		[6] 'Diastema between P/2-P/3'
		[7] 'Upper M: styles, crests'
		[8] 'Upper M: parastyle, size'
		[9] 'Upper M: mesostyle'
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[10] 'Upper M: mesostyle, shape'
[11] Distostyle
[12] 'Distostyle (size)'
[13] 'Upper M: position of the protocone (A)'
[14] 'M1/-M2/: hypocone'
[15] 'Upper M: paraconule'
[16] 'Upper M: paraconule, size'
[17] 'Upper M: preprotocrista and paraconule, junction'
[18] 'Upper M: metaconule, size'
[19] 'M3/: position of protocone relative to mesial or distal lingual cusp (bucco-lingual axis)'
[20] 'Upper M: cingulum surrounding the protocone (A)'
[21] 'Upper M: dilambdodonty'
[22] 'Upper M: dilambdodonty, type'
[23] 'Upper M: premetacristula'
[24] 'Upper M: premetacristula, length'
[25] 'Upper M: premetacristula, shape'
[26] 'Upper M: postmetacristula and metastyle, junction'
[27] 'Upper M: preparacrista, length'
[28] 'Upper M: postprotocrista'
[29] 'Upper M: postprotocrista, direction'
[30] 'Upper M: postprotocrista, bifurcation'
[31] 'Upper M: postparacristula'
[32] 'Upper M: postparacristula long and joins preprotocrista in the center of the tooth'
[33] 'Upper M: shape (A)'
[34] 'Upper M: elongated bucco-lingually'
[35] 'Lower M: metaconulid'
[36] 'Lower M: metaconulid, size'
[37] 'Lower M: metaconulid and metaconid, linked'
[38] 'Lower M: metaconulid (distinct to metaconid), relative position '
[39] 'Lower M: metastylid'
[40] 'M/3: basin-shaped hypoconulid'
[41] 'M/1-M/2: hypoconulid'
[42] 'Lower M: entoconid in ‘loop-like’'
[43] 'Lower M: entoconid and hypoconid, relative position (mesio-distal axis) (A)'
[44] 'Lower M: valley between entoconid and metaconid or metaconulid'
[45] 'Lower M: paraconid'
[46] 'M/1-M/2: talonid (size)'
[47] 'Lower M: prehypocristid, fused (cusp or crest)'
[48] 'Lower M: prehypocristid (oblique cristid), junction with (NA)'
[49] 'Lower M: prehypocristid'
[50] 'Lower M: postprotocristid and postmetacristid, fused'
[51] 'Lower M: neotrigonid (centroconulid + postendocentrocristulid)'
[52] 'Lower M: neotrigonid, centroconulid large and postendocentrocristulid pronounced'
[53] 'M/3: prehypocristulid, fused (cusp or crest)'
[54] 'M/3: prehypocristulid, junction with'
[55] 'M/3: posthypocristulid'

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        [56] 'M/3: posthypocristulid, inclined'
        [57] 'Lower M: hypolophid'
        [58] 'Lower M: straight buccal wall'
        [59] 'Lower M: mesial cingulid '
        [60] 'P4/: metacone'
        [61] 'P4/: paracone et metacone, individualized'
        [62] 'P4/: paracone and protocone, level'
        [63] 'P4/: postprotocrista'
        [64] 'P3/-P4/: styles, crests'
        [65] 'P3/: metacone'
        [66] 'P3/: metacone and paracone, relative size'
        [67] 'P3/: triangular'
        [68] 'P3/: mesial lobe, very elongated'
        [69] 'P3/: protocone, mesio-distal width'
        [70] 'P2/: protocone'
        [71] 'P2/: protocone (size)'
        [72] 'P/3: metaconid'
        [73] 'P/3: entoconid + long preentocristide'
        [74] 'P/2-P/3: hypoconid'
        [75] 'Lower P: postprotoconulid'
        [76] 'Lower P: postprotoconulid, size'
        [77] 'P/1: roots'
        [78] 'P/1: shape'
        [79] 'P: cingulum/id pronounced'
        [80] 'Lower P: large premolars with strong main cusp'
        ;
STATELABELS
        1
                'one endocristulid'
                'two endocristulids',
        2
                caniniform
                incisiform,
        3
                absence
                presence,
        4
                absence
                presence,
        5
                'absent to reduced'
                'short to important',
        6
                'absent to reduced'
                'short to important',
        7
                'short, weakly pronounced'
                'long, strongly pronounced',
        8
                'very large, superior to other styles'
```

'large, like other styles',

9

absence
presence,

10

looped
pinched,

11

absence
presence,

12

small
large,

13

mesial
central
distal,

14

absence
presence,

15

absence
presence,

16

small
large,

17

absence
presence,

18

small
large,

19

'at the same level'
'protocone more lingual',

20

'absent to very weak'
weak
wide,

21

absence
presence,

22

'strong, with crests weakly oblique and pronounced'
'very strong, with crests very oblique and pronounced',

23

absence
presence,

24

short

'long, extend into the central valley',

25

continuous
discontinuous,

26

absence
presence,

27

'as long as the postparacrista'
'shorter than postparacrista',

28

'absent to reduced'
long,

29

'disto-buccally directed'
'distally directed',

30

absence
presence,

31

absence
presence,

32

absence
presence,

33

triangular
subtriangular
quadrangular,

34

absence
presence,

35

absence
presence,

36

small
'large (like other cuspids)',

37

absence
presence,

38

'closer to metaconid than entoconid'
'equidistant from entoconid and metaconid',

39

absence
presence,

40

absence
presence,

41
absence
presence,
42
absence
presence,
43
'opposed, to entoconid more mesial'
'entoconid slightly more distal'
'entoconid very distal',
44
absence
presence,
45
'absent to small'
large,
46
'small (close to the trigonid size)'
'large (larger than the trigonid)',
47
absence
presence,
48
postprotocristid
'metaconulid or metastylid'
preentocristid
'postprotocristid then preentocristid',
49
'straight to convex buccally'
'concave buccally',
50
absence
presence,
51
absence
presence,
52
absence
presence,
53
absence
presence,
54
'posthypocristid '
'posthypocristid and postentocristid',
55
absence
presence,
56
'mesio-buccally'

'mesio-distally',

57

absence
presence,

58

absence
presence,

59

'absent to very weak'
large,

60

absence
presence,

61

absence
presence,

62

'at the same level'
'protocone more mesial'
'paracone more mesial',

63

'absent to reduced'
long,

64

absence
presence,

65

absence
presence,

66

'metacone smaller than paracone'
'metacone and paracone sub-equal',

67

absence
presence,

68

absence
presence,

69

small
large,

70

absence
presence,

71

small
large,

72

absence
presence,

```
            73
                absence
                presence,
            74
                'absent to small'
                large,
            75
                absence
                presence,
            76
                'very small'
                'small to large',
            77
                uniradiclated
                biradiculated,
            78
                caniniform
                premolariform,
            79
                absence
                presence,
            80
                absence
                presence,
        ;
        MATRIX
            'Paroxacron valdense'       1101010110 1020110111 1110010110 1010110100
0121001101 11110-0011 0111111100 -000101100
            'Paroxacron bergeri'        ?100000111 1020110111 1110010110 102011010?
??2?00???? ?1?????011 0111111100 -??0??1100
            'Oxacron courtoisii'        1101010110 1020100111 1110010110 1010110100
0121001101 11110-0011 0111111000 -000101000
            'Plesiomeryx huerzeleri'    1110100111 1020100111 1110010110 1120110100
0121001101 11110-0011 0011111011 0000110101
            'Plesiomeryx cadurcensis'   ?110100111 1020100111 1110010110 1120110100
0121001101 11110-0011 0011111011 0000110101
            'Caenomeryx procommunis'    1110101111 1020110111 1110010110
1121110100 0121001101 11110-0011 0011111011 1000110101
            'Caenomeryx filholi'        ??10101111 1020110111 1110010110 1121110100
0121001101 11110-0011 0011111011 1000110101
            'Cainotherium laticurvatum' 1100001111 1020110101 1110010110
1120110100 0120001101 11110-0011 0011110000 -000110111
            'Palembertina deplasi'      ?????10110 1110110112 11100100--
1010110001 0111011101 101110001? ?????????? ??????????
            'Robiacina minuta'          ?1??000011 0-10101110 1011111100 0-10101-01
1111011101 0-11100011 000011100? ?100100100
            'Robiacina quercyi'         ?100??1011 0-10101110 10111110-0 0-10101-01
1111011101 0-11100011 0000111000 -??0????00
            'Robiacina lavergnensis'    ?0????1011 0-10101112 10100110-0 0-10101-01
1111011001 0-11100011 011111101? ?100??0?00
```

```
                    'Dacrytherium ovinum'          0100001011 0-00111102 10100100-0 0-20101-01
1111001101 0-11100001 0011100011 10010-?111
                    'Anoplotherium latipes'        ??00001011 0-001111?2 10100100-0 0-20101-0?
?111101101 0-1???0001 0011100011 10010-??11
                    'Mixtotherium cuspidatum'      ?000001011 0-00101102 10110100-0 0-200---10
1100000-11 0-11100011 1001101011 10010-?101
                    'Parvitragulus priscus'        ????10110- 0-000--100 0-11010100 --200---00
0000001301 0-10110101 1011101011 110?0-0000
                    'Lophiomeryx chalaniati'       ????101111 0-000--102 1011010100 --200---00
1000001201 0-100-0000 -010100111 10010-0010
                    'Archaeomeryx optatus'         ?1--101111 0-000--102 1011010100 --200---00
?000001201 0-10100000 -111101110 -0010-0000
                    'Amphimeryx murinus'           ??????0111 0-00110111 1110010100 10200---00
1000000-11 0-110-0011 00101?110? ????0-????
                    'Xiphodon castrense'           ?????01011 0-00110102 1010010100 10200---00
0000001201 0-0-100101 00101?000? ?0100-??10
                    'Paratoceras coatesi '         ????101111 0-000--112 0-10000100 --200---00
0000000-00 0-0-100000 -010100000 -0100-0011
                    'Eotylopus reedi'              0111100111 0-000--111 0-10000101 --200---00
0000000-00 0-0-100000 -010100010 -0100-0111
                    'Dichobune leporina'           ????11010- 0-01110112 0-0--100-0 0-200---0?
1001?00-01 0-100-1001 121??????? ??000-0??0
                    'Eurodexis russelli'           ??????010- 1010101012 0-0--10100 0-000---00
1000110-01 0-10100010 -0000-100? ?????-????
          ;
ENDBLOCK;

BEGIN ASSUMPTIONS;
          OPTIONS DEFTYPE=UNORD POLYTCOUNT=MINSTEPS;
          TYPESET * default = ORD: 13 20 33 43;
ENDBLOCK;
```