

SUPPLEMENTARY MATERIAL

Taxon-Character Matrix in Nexus Format

The text below is formatted for PAUP*. Uncertain and polymorphic coding are reported in curly { } and round () brackets, respectively.

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#NEXUS

BEGIN TAXA;
    DIMENSIONS NTAX=55;
    TAXLABELS
        Anthracosaurus_russelli Archeria_crassidisca
Ariekanerpeton_sigalovi Balanerpeton_woodi Baphetes_kirkbyi
Bruktererpeton_fiebigi Caerorhachis_bairdi Calligenethlon_watsoni
Captorhinus_aguti Carbonoherpeton_carrolli Chroniosaurus_dongusensis
Crassigyrinus_scoticus Dendrysekos_helogenes Desmatodon_hesperis
Diadectes_absitus Diadectes_sideropellicus Diasparactus_zenos
Dimetrodon_grandis Discosauriscus_austriacus Eobaphetes_kansensis
Pholiderpeton_attheyi Eoherpeton_watsoni Eothyris_parkeri
Eucritta_melanolimnetes Gephyrostegus_bohemicus Greererpeton_burkemorani
Karpinskiosaurus_secundus Labidosaurus_hamatus Leptoropha_talanophora
Limnoscelis_paludis Makowskia_laticephala Megalocephalus_pachycephalus
Microphon_exiguum Oedaleops_campi Orobates_pabsti Ossinodus_pueri
Palaeoherpeton_decorum Paleothyris_acadiana Pederpes_finneyae
Petrolacosaurus_kansensis Pholiderpeton_scutigerum Proterogyrinus_pancheni
Proterogyrinus_scheelei Seymouria_baylorensis Seymouria_sanjuanensis
Silvanerpeton_miripedes Solenodonsaurus_janenschii
Spinarerpeton_brevicephalum Tseajaia_campi Utegenia_shpinari
Varanops_brevirostris Westlothiana_lizziae Whatcheeria_deltae
Eldeceeon_rolfei Limnoscelis_dynatis
    ;

END;

BEGIN CHARACTERS;
    DIMENSIONS NCHAR=294;
    FORMAT DATATYPE = STANDARD GAP = - MISSING = ? SYMBOLS = " 0 1 2 3 4 5
6";
    MATRIX
        Anthracosaurus_russelli
?0010000??00111000000000000100010102100000001001010001000011000101101000000000
011011001110110011002020023?201000244?11?0?011?0?100000100?00?00000002001010
0010101?110????110?10011?0?201?????0000??00100010022????????????????????
????????????????????????????????????????????????????????0000????00???
        Archeria_crassidisca
210100?0??000110000000001010011010210010001001010000000001100101001100001?00
0010111110101?0011001020023?000000{0
1}3?0????0???????0?0?000001010000000?00101000101013?000001110111011000201010
10101110122000100102102110000011100102000001111021401111011200110101?2010000
1111001010100??????0000000101003
        Ariekanerpeton_sigalovi
2101000001000100000001110000012010210000010?00000000100001000301101101010100
01101210100?1000200020000210101101{1
2}33010010011001101101110021?00000002?0?0??011200131211???110?1?01110?201010
1010110111?010000020112021001??1?01102110000110010?1?0?????20?1???010104????
1100100010?001?????0000?0012100?
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Balanerpeton_woodi
10100010??000100000000121000000010002100000000?0000000010100110000001000100001000
00110200100011101100201002??101000044000?11011201100101110?01000001112?010??
100000130?01???10001001100120101010101???10000000100010?100000?1??0111?11000
01100110003?11?0200100000000040?0010000000100101?????000000010100?

Baphetes_kirkbyi
1000001000001100100000000100001000210??00000000000001011011000011000000000000
101023100100110012002021001020000003?000010011201100101110?0010001???200?010
000001101?00101??0???0????2????????????????0000010?01????????200010201000
01?00??{2 3}00???????00110????04???????0?????00?????0000????00???

Brukererpeton_fiebigi 3?0???{0
1}???0001?0?0000?????101?1010210000010?0?00?000?000001000??000?????????????
?????????10?????2002???01000{2
3}??0?00????20??011??110??1?00?????????????????????????????????????
?????????????0?0?0101{0
1}2?2???1??1101102001001110121?????110120010010102????001100000010??01?????
0000000??00?

Caerorhachis_bairdi
??0??????00?1?????0001??0?00?000210110000?0?00?001?000??0000?000?100001000
?0100??0???11?0?????0?0??2000?0?0?0110?111011001010?0?00100000002?0????
?000101?100010010011001100000101010101100122000?0000?????????????????????
??????1{3 4}011?11?1?001??10101?30?001100000010?00?????00000001??103

Calligenethlon_watsoni
????????????????????????????????11?10000001?0??1?00??0?0??10010?001?????????
????????????????????????????01??0???0{0
4}????????????????????0???????1?????????????????????????????????????
?????????????0?0?0?????1?11011???????1?0111?0121401111101?00100??101?1????1
11000(0 1)?101?0?0?????0?0???1????3

Captorhinus_aguti
110100200?001100000002??00101110?121100001001000011???000??110??0??000001110
1010?01110101?00110000100211?000010344011?00011?1?11?????10120100000002101100
001110101211???010???1?110021???1???11111101000110021???15100011110110211101
1110021000211111200100101021411101110110111101?121001?000101120003

Carbonherpeton_carrolli
??????????????0?000?1???10??11????????????????????????????????0??0?0?00
10?0??11?11?1????01?1?0??????0?04?0????????????000?0?????????????????
??????????0????????????????????????????????0??02????????0?????????????
?1?00??????1111??????1101?????1111001010????????000?????????

Chroniosaurus_dongusensis
30?10?????001100000002??1010002010210000000?0001001???00?110001100{0
1}10000101100110201101?11111200002002??00000014?0100100110010001?0110?011000
00002?????011110131?0?????1?1?110?0??111010111???1????0010010???11001????
?0111?1?00?1000?0001?0?????1?1?0?10??40??111100101????1?????000000012000
3

Crassigyrinus_scoticus
0000012011001100010001011000001000210??0001?01000100?00001100401000000000000
00100100000011111110202000??2000001130000000000001000000000?001000?0001??00??
001010011200101100100001000101010101?????000100000010?01??000???110000{1
2}000000000000200??1111201110??102?1????0???0?0?00???0?????0000000100???

Dendrysekos_helogenes
101000?110000100000000110000000000210110010100010001000011000011000100000000
0011120010?111112000001002??00000004?000111?11201100101?10?01010001102?110??
10000013020?????0???01100?0???0???????11000000000010?10000001??0110211000
01100110013111?12001?00001?4????1000000010?1?1?????10000?00100001

Desmatodon_hesperis
??0??0??
?????????????1?????????????20?????2????????????101???????112??1?1?????????
?????????????1???1111??1?110021???0111111100011001?121????????????????????
?????????????????????????????1?1?111??1????????????????111?????????

Diadectes_absitus
001110001000110000000011000001101121000111001100011???0001?00001110100000010

0000?11010011110200010201220111000144011?0001121010101111102?10111???2?01110
001110131211?1111?1?110021?1?111110011001012110012100111?01110211100
010002161201101020010010101141111111110010?01?1011102122111101004

Diadectes sideropelicus

??011000?00110000000011000011100121000110101100001???001?00001110000000010
1100?1100001100000000020112011100014?011?0?0112100010111102??011????2001110
001010131???????1????????????????????????????0?1?121????2?????????????????
????????????????????????????1?1111????????????1????????2122111?01004

Diasparactus zenos

?????0???
????????????0????????????0????0????0????????2????????????????1?????????
?????????1????101????????2?????????1???001100???12110002?0011111110011101
01000206120111?0100100?01?014????111?11?1101?1????????122?111?????

Dimetrodon grandis (1 3)101(0 1)00?000001(0

1)0000002??00?101101121?0111010110?001???10?000011011000010????10?01?00111
110200000201120?01000?44111?000112111011110102211000100021011111????13???11?
??10111?1?1110211111???111110000011002211?15000011?111102?1101010002101?011
11120010011102141000111?01?11?1?1?????1?2?00101120004

Discosauriscus austriacus

2101000001000100000001110000012010210000010?01000000100001100301101100010100
001112101001100011002000021000110103301001001100110110111002110001???2?0?0??
011200131211?110111011100201010101011111101000002011202100100100110211000
0110010612011000200100?0001040???111010001000?1?????0000000121003

Eobaphetes kansensis

???1???0???1100000010011011?01010210000001?0?0?000010?001100100101000000100
1?001?01?1101???100?0?2000???0100013?0????????????00????????????1?????
???????????01???110010011001201?101?10100?122000???0?????????????????
??0000?????????

Pholiderpeton attheyi ??010?{1

2}0???001100000010001011001010210000001?0111000100000110010100000100100010101
111111011101100002001??201000133011?0000011?100000100?00100000002?????00001
01?1001???1100100110012010101010100?122000011102?0???100?????????????????
????????0?0?0????????1020????111?011010?00?????0000000?00???

Eoherpeton watsoni

100100????0011000000001?1010011010210000000?01010000?00000100401001?00000?00
00?00100101?11?020?00020023?10000024401???????0?000?000?0?00?000????????10
?010101??2?????1?011101100000101010101?0?1?10?0000020???????01?110010100000
11?1???401{1 3}1???1?00110?102?????1100000010?????????0000????00??3

Eothyris parkeri

31?11????001100000002??0000?0101121?11100101101011????00??000?100?100001011
0?00?00?100?1?102100202011?0?00000?441????????????????22??0???????1????11
?????????1?????0?????10????????????111?????010?2{1
2}?????100???
??1?00????20???

Eucritta melanolimnetes

??000??0??001100000000010100?020002100000?0?000000010110110000?1000100010000
??002{1 2
3}1?100?11?01110100000?00000010??0?0010011101100??0?10?0?10001?????????0010
101?1?0????????????????????????????????????002??01110000?1??0?10?0000001?0
011{2 4}0?0?????2001???00010????????????????0?????0000?0010?001

Gephyrostegus bohemicus

300100?0??000100000002??0010011110210000010?010?0000?0000?1005?10001000?1000
0010?100100011001100202002??2010002440100100???01100111110010100000002?0?0??
01?2??13?2?1???1001110000002000100010111010010000000010212000011?10110200100
111002110{0 1}11??0120011010102?4000011000000101011?????0000000120113

Greererpeton burkemorani 10000110??110011011000000001001{0

1}0120011000000011001???001?00001000001100000010000000000110010000010001010
0000022001?0001110?000000010?00100000001001010100001131?00101100110001000200
1001010111?0001001010000010001000111001010000001000210000111120010001001020
00010000000100001?????0000000100001

Karpinskiosaurus_secundus
21010000010111000000000110000000010210010000?010000000101001000001001100011100
0111{0
1}200100?10011000000002??00020114401001001100110?101110021?00000002?0?0??011
200131201???110???0111?02?????????1111?011000020?????????????????????
??0000????20??
Labidosaurus_hamatus
3111100100001100000102??0000?110?121010001001000011????00??11???1??011100110
1110?01000101010210000100211?00010244011?000110111010111100201000000021?1100
1?111013?{1 2}01???1101??1?110021???1???11111101000100021???051??101{0
1}10110211101010002100{0
1}0100112001001?10214????11101101111?1?1210011?00?0?120003
Leptoropha_talanophora
?????????001?0?0??00011????0?2010210000010?0?00100000000011000?010110100000?
??101???10??1???20?020000210?0120103?0????????????????????0????0?????????????
?????????2????110????????????????????????????0?000?????????????????????????
??0000????21??
Limnoscelis_paludis 311110001000110000000000000001111112101{0
1}111001000001???0001?000011110000000102110?01010011110000000200220?01010344
011?000112111010110001211000000020?1110001000131011???10011?1?1100200011???0
11?110010011102111?????11?011102111000110021612010?10100110?01021411111110
110110?00?????1?1000111120004
Makowskia_laticephala
2101000011011100000000110000111010210000000?01000000100001000301101100010110
01111210000?10011001100002??101201{0
1}3?010010011000101001110021100000?02??10??011201131211???1100??01110??????
??????1?????1000020112?41101?1110100?11???01?00??????11??200?????1?1?????
111?10??????1?????0000?00?21??
Megaloccephalus_pachycephalus
1000001000000110100000000101001000210000000000000001???101100001?000000000000
?010230101001100120000210010200000033000010011201100101110?0010001???0001010
000001101000101100111011000201110111100?101000000010?????????????????????
??0000????00??
Microphon_exiguum
2?0100000?000100000000100000010010210000010?0?000000100001100000101101010110
0?101?10100?11?0000020000210?01201233011?10000011101100110021?000????2?????
0???001???2????110???0?10?2????????????????????0000020?????????????????????
??0000????21??
Oedaleops_campi 31011????001100000002??0000?1101121?1{0
1}1001?1101011????00?0000?10??100100011?110?0??100?1?1??100{1 2}0201{0
1}0?00000?4?1????????????????????????????1?????????????????????????
????????????????????????1?????????51?001?111?10210?01???002100{0
1}0200?120????????????????????????????????00???120??
Orobates_pabsti
??011??01100110000000000001011101121010111001100001???0101?000?1110100000100
0110?{1
2}1?100?1?00000010201020?110013440????1????101010110?122000000000?10??100012
101?122?????101??1?11102?????????111?11001?001?12210??2?????1?1?10211?000100
12111101000?20?1??1010?1411111???1??110101?101110211111110?004
Ossinodus_pueri
????00?2???????0?0?????????0?0?1?00?0000000??0?0?00???00010000?1?00?????0?01
????1?????00?0?2???????00??200???01??000001?0100000000100???1?0000?02?????
????????1????????????????????????????????001?01?1010?111?0?????????????
????????1010?0100?01010?000???????????00??1?????????????0???0?????
Palaeoherpeton_decorum
??01?????0?00100000000000100000101021000000?00?010001000001100101000000000000
10101110001?1?0?11002000023?20100013?0?????????1?????????0?0?0110??00???1?????
?????????0????????????????????????????????0?1?02?????????????????????????
????????????????????????0????????????????????????0000????00??
Paleothyris_acadiana
110100?0??001110000002??001011101121110001001?00101???010?0100010111000?0100

0110?01010001000110010200011101000{2
3}44011?00011211???????01201000000021011000011101?121????1101??1?1100?????
????????????0010010????1????01??1111021111110001100011110120010011102111110
111?0101101010?????1000101120103
Pederpes_finneyae {0
1}?0?0???????100000100?0000010?000????1000000?000001101011000011100000000?0
0???02??0101?010?210110?0???20000021?0?0010????010001000?0?0?10000000?????
?0010000??20?????0???000??1????0?????0????0?1002?0011??011??21011010000
0010001010?0?0000210110?0012?30???10?0000010???1?????0000?0?0?0000
Petrolacosaurus_kansensis
110100?0???001100000002???00?001101121100?1100100?111???000??1000111000001?110
2?10?01010001?0110010200211?01010?44011?10011?11101011000120100000002101110
001110111211???1101?0111002?????1???1111010001001001110214100011?11110211111
1110021000211001200100101011411101110?10110?01???????1?00101121113
Pholiderpeton_scutigerum
??0100?0???00?10?00?0???01011011?1??10?0001001010?00?00000100101?0??00000000
10?001010000110011000020003?200000233011?0001110?10000000001010?00002001010
00101013120000110011101100020101010101110122000000101101?1???0001??0?0{1
2}?0?0111??0214???????????????0102???????11110010101??1?????0000000?00??3
Proterogyrinus_pancheni
????????????????????????????????1?10?10000001?0???0?000?0?0??1001????1?????????
?????1?????????????????02?????0?14?0?????????????????????????????????????
?????????????????1?011?01100?00101????0100?122001???1????????00?????0?????1???
?????????????1011?????????????????1110010010?????????00?0???00???
Proterogyrinus_scheelei
100100?0???00001000000100?010001010210000001001010000000001100101001100000000
0010011110?0110011002010023?200000234011?00???011001?0000?0010?00000?001010
00101013110?????10011?0?100?20?000101010???12200001010010?11000001110010201100
01110114011010112001101010201000011000000100001?????0000000100003
Seymouria_baylorensis
3101000011001100000000100010011010210000000101000001100011000301101000010100
0110121000111110200000100210201000044010010011001101101110021100000002001000
011200131211???110111011100201010101011111101001002010?03?00111111110211100
01100216120100?02001???00011401001110110110100?0001110000000121003
Seymouria_sanjuanensis
31?10???0110011000000001000?0011010210000000?01000001100011000301101100000100
0110121?10011?10000?001002??20100004?0????????????????????02?????????????????
?11????31????????????????????????????????????0?1?02??0??5?????11110211100
01100216?2?????????1100?0011401?0111?100110100?0001110000?00?2100?
Silvanerpeton_miripedes
21010??0???000100000001000000001010210000000?0?000000000000000101000101000000
2010011?100?1?002100100002??100000{0 1
2}4?01001??11001???????10?00100?00002??10?000101010?20?????1?01??01?00???????0
???0100?1????0000010?0?110000????0?10?00001110002030{0 1}1?????2??1??0010{1
2}?{0 3}????1100000?1??001?????0000?00010002
Solenodonsaurus_janenschi
???1???0???0011?0000010010010?111112101110???0?01001???00111001???001100000111
0?10?{1
2}1?100?1???1000010002???010??24?0????????????????????1?????????????????????
??????0?????0??????0?2????????????????????0?0?01?1???310?0?????110211?00?110
020?????????????????0102?1????111001?010????????????000????{0 1}0???
Spinarerpeton_brevicephalum
2101000011001100000001100000112010210000001001000000100001000301101100010010
00111210100?10001101000002??20120103?0101100?10001010011100211?0000002?110?0
01120013121????1100??01110?2????????????????????11000010?12?21111?1100110?01?00
010002?01?0111?2???????101?????????010?????1??1?????0000????21???
Tseajaia_campi
21011?00???00110000001000001001100121110111000100001???0001000001100000000101
001?021?100?10000000102010??11101034?01?????01?210?????100221000000002?01010
00020013110????1101??1?11002???10101011?11001?001002210?031?011???1?1021110?
010002161201001120?1??0?1021411111110110110100????11?1100111100???

Utegenia_shpinari
210100000?001100000000010000011010210000010?010000000000001100201101100000000
01100110100?1000210010100210101000231010010011001001110110021?000????2?0?0??
011200121201???110???01110?201010101011001???11000020112?51001??{1
2}???1?????0??110?10?1{0
1}??????20?1???010103?????0100000010?0?1??????0000000110003
Varanops_brevirostris 3101(0
1)0??0000?100000002??00??01101121??011010110?001????10??0000110110000101???11
0?00?10111110200000201120?01000?441????????????????????????????101111???
???????01???10011?1?1110211111???1111110000011002011??5000011?111102?1101010
0021010{0 2}1111120010011102141010111?01?11?1?1?1?????1?2?00101120114
Westlothiana_lizziae {1
2}?0100?00?1001?00?000120?010011011210000000?0?0?01???000??000?110110010100
000?0??1?100010002?00000002???010003??0?????????1?11011?1?10?00?0000000?1????
?000?101?121?????10?????10????????????????????0000010?????????0??011110211?0
111000216001111012011001?10211????11101101110?????????0000?00100003
Whatcheeria_deltae {0 1}0000?{0
1}0??0001000000?000?0?0001100110000001001010001100011000{1
4}010000000101?0?0100???11?0?0?011111?2000102000003220?0?10?????010001?0??0?0
?0??0????2??????0??01013?200011100??00?0???010001101001?0000?011002000?0510
01?110011010000001?10?1100000?0?010101?111201????1011000010???0?????0000?00
020??0
Eldeceeon_rolfei 10?10?{0 1}???00110000000011?000000101021?(0
1)00000?0?0000000000001001?100110100001020101{0
1}1?100?11001111102002??100001{0 1
2}4?01????0??1?110??1??1??011000000020?????00?????0?10?????1101?????????????
????????????????10002011??21?0???????1??00?011100?2130{0
1}12?????21010000101?4?????1101000111?000??????0000?0012100{2 3}
Limnoscelis_dynatis
31110????????????????????????????1??1?111?1??1?????????0001?00001?1?????????10
2??0?01010?????????????????02?????????344????????????????????(0
2)21?0?????????????000100013?????????10????????????????????????????1?0??????
?????11??011102111000110021612010?10100110?0102?????1110110110?????1011111?00
???1?0??4

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END;
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