

## **Supplementary Data**

### **An articulated Late Triassic (Norian) thalattosauroid from Alaska and ecomorphology and extinction of Thalattosauria**

Patrick S. Druckenmiller, Neil P. Kelley, Eric T. Metz and James Baichtal

#NEXUS

[written Wed Sep 25 11:57:08 AKDT 2019 by Mesquite version 3.6 (build 917) at FBK-021J1GN.local/172.20.154.63]

BEGIN TAXA;

TITLE Taxa;

DIMENSIONS NTAX=24;

TAXLABELS

'Claudiosaurus\_germaini' 'Petrolacosaurus\_kansensis'  
'Youngina\_capensis' 'Agkistrognathus\_campbelli'  
'Anshunsaurus\_huangguoshuensis' 'Anshunsaurus\_huangnihensis'  
'Anshunsaurus\_wushaensis' 'Askeptosaurus\_italicus' 'Clarazia\_schinzi '  
'Concavispina\_biseridens' 'Endennasaurus\_acutirostris'  
'Gunakadeit\_joseeae' 'Hescheleria\_rubeli' 'Koessen\_thalattosaur'  
'Miodentosaurus\_brevis' 'Nectosaurus\_halius' 'Oregon\_thalattosaur'  
'Paralonectes\_merriami' 'Thalattosaurus\_alexandrae '  
'Thalattosaurus\_borealis' 'TMP\_88.99.21' 'Xinpusaurus\_kohi '  
'Xinpusaurus\_suni' 'Xinpusaurus\_xingyiensis'

;

END;

BEGIN CHARACTERS;

TITLE Character\_Matrix;

DIMENSIONS NCHAR=78;

FORMAT DATATYPE = STANDARD RESPECTCASE GAP = - MISSING = ? SYMBOLS

= " 0 1 2";

CHARSTATELABELS

1 #1,  
2 #2,  
3 #3,  
4 #4,  
5 #5,  
6 #6,  
7 #7,  
8 #8,  
9 #9,  
10 #10,  
11 #11,  
12 #12,  
13 #13,  
14 #14,  
15 #15,  
16 #16,  
17 #17,  
18 #18,  
19 #19,  
20 #20,  
21 #21,  
22 #22,  
23 #23,  
24 #24,  
25 #25,

26 #26,  
27 #27,  
28 #28,  
29 #29,  
30 #30,  
31 #31,  
32 #32,  
33 #33,  
34 #34,  
35 #35,  
36 #36,  
37 #37,  
38 #38,  
39 #39,  
40 #40,  
41 #41,  
42 #42,  
43 #43,  
44 #44,  
45 #45,  
46 #46,  
47 #47,  
48 #48,  
49 #49,  
50 #50,  
51 #51,  
52 #52,  
53 #53,  
54 #54,  
55 #55,  
56 #56,  
57 #57,  
58 #58,  
59 #59,  
60 #60,  
61 #61,  
62 #62,  
63 #63,  
64 #64,  
65 #65,  
66 #66,  
67 #67,  
68 #68,  
69 #69,  
70 #70,  
71 #71,  
72 #72,  
73 #73,  
74 #74,  
75 #75,  
76 #76,  
77 #77,  
78 #78 ;

MATRIX

'Claudiosaurus\_germaini'  
00010010101000?00100011000000010000010011010?0110000100000010210?11?0?000  
00000

'Petrolacosaurus\_kansensis'  
00010000101010000100011000000000010010011010?0110001100000010?00111000000  
00000

'Youngina\_capensis'  
01010000101010000100011100000010000010??10?0?01100000000000?0?11?11?0?00?  
00000

'Agkistrognathus\_campbelli'  
??0??1000????1110111????????????????????  
?????

'Anshunsaurus\_huangguoshuensis'0211000100?0?1100000?1000011201?0011  
?0101011?01100002100010?000100010001000210

'Anshunsaurus\_huangnihensis'  
??11????10?1?011000001??1000120??00??01????0?0??0??2??0??1?????1110001?  
00110

'Anshunsaurus\_wushaensis'  
0111001100?0?110?1?0110????1?2??100??01?00110011000021000101?000?0?10?0?  
00210

'Askeptosaurus\_italicus'  
02110001001011001000011000011011011100010000?1110000210000010201111101000  
00110

'Clarazia\_schinzi '  
11111??101??1111?10??01111112??1010001?10101011101201101??1001011011??100  
11110

'Concavispina\_biseridens'  
??1??2??0111?100?111?????1??001??10????0101011????2?0211011?0200101011201  
10111

'Endennasaurus\_acutirostris'  
021000010000?100??0??1??11??1??111011????0?0?00?0200001001011011100000  
00110

'Gunakadeit\_joseeae'  
021000010000111102011010?110110121??01?1111101?0?000111101011?110?011201  
11111

'Hescheleria\_rubeli'  
2?1111110100111??0??1??1??????????1??01110111011011210111?10?10110?100  
00110

'Koessen\_thalattosaur'  
??1??1????????2??  
?0110

'Miodentosaurus\_brevis'  
01110001001?0010000011110?1120?110111?00001110110000210001011210011101010  
00210

'Nectosaurus\_halius'  
2?1?1?110001??????11111111?21?1?0001??1?0111????11????111??1????????2??  
1?11?

'Oregon\_thalattosaur'  
2211?10100120111001011101111211121000????????0110110????101????0?1100121?  
111??

'Paralonectes\_merriami'  
1?1?121??0011100110?111??????0?1?00?10????1101110120?????1????????????????  
?????

```

        'Thalattosaurus_alexandrae '
1211011100011111101011111112?01110001011101?10?1121???11000????00010200
1?11?
        'Thalattosaurus_borealis'
1?11??11000??11?110?1????????????00????0????10?1?2????????????????????
?????
        'TMP_88.99.21'
????????????????????????????????????????????????????????????0?100?0????????????0
00111
        'Xinpusaurus_kohi '
011012?1?0?10??0?101?11111112???11?0????010101100?211101101?12??????1?2??
?02?1
        'Xinpusaurus_suni'
0111121100110110110110111?001112?01?100?1??11010110012112?110??????0011?2??
1?2??
        'Xinpusaurus_xingyiensis'
0?11?2?1?0?10????????11????????0???0000??110101100???0??0001??200?01110200
00111

;

END;
BEGIN ASSUMPTIONS;
    TYPESET * UNTITLED    = unord: 1- 78;

END;

BEGIN MESQUITECHARMODELS;
    ProbModelSet * UNTITLED    = 'Mk1 (est.)': 1- 78;
END;

Begin MESQUITE;
    MESQUITESCRIPTVERSION 2;
    TITLE AUTO;
    tell ProjectCoordinator;
    timeSaved 1569441428989;
    getEmployee #mesquite.minimal.ManageTaxa.ManageTaxa;
    tell It;
        setID 0 538471930577331891;
    endTell;
    getEmployee
#mesquite.charMatrices.ManageCharacters.ManageCharacters;
    tell It;
        setID 0 8571457993383312595;
        mqVersion 360;
        checksumv 0 3 555636633 null getNumChars 78 numChars 78
getNumTaxa 24 numTaxa 24 short true bits 7 states 7
sumSquaresStatesOnly 3923.0 sumSquares 3923.0 longCompressibleToShort
false usingShortMatrix true NumFiles 1 NumMatrices 1;
        mqVersion;
    endTell;
    getWindow;
    tell It;
        suppress;

```

```

        setResourcesState false false 159;
        setPopoutState 300;
        setExplanationSize 0;
        setAnnotationSize 0;
        setFontIncAnnot 0;
        setFontIncExp 0;
        setSize 2323 981;
        setLocation 8 23;
        setFont SanSerif;
        setFontSize 10;
        getToolPalette;
        tell It;
        endTell;
        desuppress;
    endTell;
    getEmployee
#mesquite.charMatrices.BasicDataWindowCoord.BasicDataWindowCoord;
    tell It;
        showDataWindow #8571457993383312595
#mesquite.charMatrices.BasicDataWindowMaker.BasicDataWindowMaker;
    tell It;
        getWindow;
        tell It;
            getTable;
            tell It;
                rowNamesWidth 224;
            endTell;
            setExplanationSize 30;
            setAnnotationSize 20;
            setFontIncAnnot 0;
            setFontIncExp 0;
            setSize 2164 909;
            setLocation 8 23;
            setFont SanSerif;
            setFontSize 10;
            getToolPalette;
            tell It;
                setTool
mesquite.charMatrices.BasicDataWindowMaker.BasicDataWindow.arrow;
            endTell;
            setActive;
            setTool
mesquite.charMatrices.BasicDataWindowMaker.BasicDataWindow.arrow;
            colorCells
#mesquite.charMatrices.NoColor.NoColor;
            colorRowNames
#mesquite.charMatrices.TaxonGroupColor.TaxonGroupColor;
            colorColumnNames
#mesquite.charMatrices.CharGroupColor.CharGroupColor;
            colorText
#mesquite.charMatrices.NoColor.NoColor;
            setBackground White;
            toggleShowNames on;
            toggleShowTaxonNames on;

```

```

        toggleTight off;
        toggleThinRows off;
        toggleShowChanges on;
        toggleSeparateLines off;
        toggleShowStates on;
        toggleAutoWCharNames on;
        toggleAutoTaxonNames off;
        toggleShowDefaultCharNames off;
        toggleConstrainCW on;
        toggleBirdsEye off;
        toggleShowPaleGrid off;
        toggleShowPaleCellColors off;
        toggleShowPaleExcluded off;
        togglePaleInapplicable on;
        togglePaleMissing off;
        toggleShowBoldCellText off;
        toggleAllowAutosize on;
        toggleColorsPanel off;
        toggleDiagonal on;
        setDiagonalHeight 80;
        toggleLinkedScrolling on;
        toggleScrollLinkedTables off;
    endTell;
    showWindow;
    getWindow;
    tell It;
        forceAutosize;
    endTell;
    getEmployee
#mesquite.charMatrices.AlterData.AlterData;
    tell It;
        toggleBySubmenus off;
    endTell;
    getEmployee
#mesquite.charMatrices.ColorByState.ColorByState;
    tell It;
        setStateLimit 9;
        toggleUniformMaximum on;
    endTell;
    getEmployee
#mesquite.charMatrices.ColorCells.ColorCells;
    tell It;
        setColor Red;
        removeColor off;
    endTell;
    getEmployee
#mesquite.categ.StateNamesStrip.StateNamesStrip;
    tell It;
        showStrip off;
    endTell;
    getEmployee
#mesquite.charMatrices.AnnotPanel.AnnotPanel;
    tell It;
        togglePanel off;

```

```
        endTell;
        getEmployee
#mesquite.charMatrices.CharReferenceStrip.CharReferenceStrip;
        tell It;
            showStrip off;
        endTell;
        getEmployee
#mesquite.charMatrices.QuickKeySelector.QuickKeySelector;
        tell It;
            autotabOff;
        endTell;
        getEmployee
#mesquite.charMatrices.SelSummaryStrip.SelSummaryStrip;
        tell It;
            showStrip off;
        endTell;
        getEmployee
#mesquite.categ.SmallStateNamesEditor.SmallStateNamesEditor;
        tell It;
            panelOpen true;
        endTell;
    endTell;
endTell;
endTell;
end;
```