SUPLEMENTARY DATA 1

A new elasmosaurid from the upper Maastrichtian of the López de Bertodano Formation: new data on the Weddellonectia diversity

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**Alcheringa**

CHARACTERS AND SCORING

Citation and lists for previous uses of modified characters are given by Benson & Druckenmiller (2014) and O'Gorman & Coria (2016). List of new characters, comments and modifications from the data set of Benson & Druckenmiller (2014).

**35**. Prefrontal participation in rim of external naris: does not participate (0); participates (1).

O’Keefe (2001, Ch. 39), Sato (2002, Ch. 27), Druckenmiller & Russell (2008*a*, Ch. 27), Smith & Dyke (2008, Ch. 16), Ketchum & Benson (2010, Ch. 25), Vincent *et al.* (2011, Ch. 4), Benson *et al.* (2012*a*, Ch. 31). Modified from Großmann (2007, Ch. 7).

**Comment**: In several elasmosaurids the prefrontal seems to be fused with the maxilla and therefore this is scored as ?.

**114. Structure of the dentary along the ventral surface of the mandibular symphysis**: no ventral elaboration (0); forms raised ventral platform or sharp keel/ridge adjacent to symphysis (1); forms an anteroposterior narrow sulcus (2). Form a broad sulcus (3).

Modified for O’Keefe (2001, Ch. 88), Smith & Dyke (2008, Ch. 57), Vincent *et al.* (2011, Ch. 38). Druckenmiller & Russell (2008*a*, Ch. 80), Ketchum & Benson (2010, Ch. 92); Benson *et al.* (2012*a*, Ch. 89); Benson & Druckenmiller (2014) by the addition of the state 3.

**Comment:** modified from Benson & Druckenmiller (2014) by the addition of the state 3.

**138**. **Number of maxillary teeth**: 12–17 (0); 20–25 (1); >28-40 (2); 40-45 (3); >45(4).

Benson *et al.* (2012*a*, Ch. 108). Modified from Albright *et al.* (2007*b*, Ch. 2), Druckenmiller & Russell (2008*a*, Ch. 94), Ketchum & Benson (2010, Ch. 111), Bardet *et al.* (1999, Ch. 16), Sato (2002, Ch. 111), Gasparini *et al.* (2003, Ch. 15), Albright *et al.* (2007*b*, Ch. 4), O’Keefe (2008, Ch. 4). Benson & Druckenmiller (2014).

**Comment**: (Different quantification)

**173**. **Cervical centrum, proportional width**: mediolateral width subequal to height or less (0); at least 1.2 times as wide mediolaterally as high dorsoventrally (1). at least 1,4 (2).

Modified from Benson *et al.* (2012*a*, Ch. 133) by addition of state 2

**208**. **Coracoid, median fenestra/large embayment**: absent, although intercoracoid contact may be slightly split posteriorly (0); median embayment present and posteriorly opened (1); posterior processes strongly divergent forming prominent V-shaped or otherwise mediolaterally narrow emargination (2). Present but posteriorly closed (3).

Benson *et al.* (2012*a*, Ch. 164).

State 1 from Bardet *et al.* (1999, Ch. 27), O’Keefe (2001, Ch. 141), Sato (2002, Ch. 164), O’Keefe & Wahl (2003*b*, Ch. 79), Großmann (2007, Ch. 33), Druckenmiller & Russell (2008*a*, Ch. 127), O’Keefe & Street (2009, Ch. 70), Ketchum & Benson (2010, Ch. 149). State 2 modified from Smith & Dyke (2008, Ch. 77).

Modified from Benson & Druckenmiller (2014) by addition of state 3.

**221.** **Ilium curvature shaft in lateral view:** appears straight, pelvic articular end equally expanded anteriorly and posteriorly (0); curves anterodorsally, articular end expanded only anteriorly (1); sigmoidal equally two sections (2); lower section smaller (3)

Modified from Sato (2002, Ch. 170), Albright *et al.* (2007*b*, Ch. 29), O’Keefe (2008, Ch. 29), Druckenmiller & Russell (2008*a*, Ch. 142), Ketchum & Benson (2010, Ch. 167), Vincent *et al.* (2011, Ch. 60), Benson *et al.* (2012*a*, Ch. 172) by addition of state 2, Benson & Druckenmiller by modification of state 2 and addition of state three.

**232.** **Limbs postaxial accessory ossicles of anterior limb:** absent, or small, round elements appearing late in ontogeny without well-defined articular surfaces (0); present as small elements (1); present contacting other limb bones (e.g. humerus, ulna) *via* well-defined articular surfaces, ossification of these elements is often late but their presence can be inferred by the presence of articular surfaces (2).

Benson *et al.* (2012*a*, Ch. 182). Modified from Druckenmiller & Russell (2008a, Ch. 137), Ketchum & Benson (2010, Ch.s 160–161) (merged separate Ch.s/states of the propodial and epipodial rows), O’Keefe (2001, Ch. 153), O’Keefe & Wahl (2003*b*, Ch. 87), Albright *et al.* (2007*b*, Ch. 20), O’Keefe (2008, Ch. 20), O’Keefe & Street (2009, Ch. 78) [split single Ch. describing all ‘supernumerary ossifications’ into separate Ch.s for postaxial and preaxial (Ch. 183) ossifications]. Sato (2002, Ch.s 199–200) (merged separate Ch.s for forelimb and hindlimb), Benson & Druckenmiller considering only the anterior limb.

**233.** **Second postaxial accessory ossicle articulating with humerus:** absent (0); present a (1).

Benson & Druckenmiller 2014.

Modified from Benson & Druckenmiller considering only the anterior limb.

**271. Dorsal expantion of the trochanter (femur)**: Absent or weakly developed (0), present (1)

O'Gorman, 2016

**272. Humeus posterior expantion** Absent (0) present but small (1) developed (3).

Sato, 2003 ch.187.

**273. Axial neural spine:** posterior margin almost at the level of the postzygapophysis (0); pointed and extended posteriorly to the postzygapophysys (1).

O'Gorman 2016

**274. Ventral surface of the humerus, deep depression anterior to the main muscle scar**: absent (0) present (1).

O'Gorman & Coria 2016

**275. Anterior margin of the humeral shaft**: convex (0); flat to concave (1).

O'Gorman & Coria 2016

**276**. **Femur with hemispherical head**: present (1); absent (0).

Modified from Welles & Greeg, 1971, Hiller *et al*. 2005.

**277. scapular ridge:** Small ridge on the dorsal surface of the ventral ramus of scapula. Absent (0); present (1). New Character

This feature is mentioned by O'Gorman *et al*., 2015 as present for *Vegasaurus* *molyi*. It is also recorded in MLP 14-I-20-16 but absent in all the other elasmosaurids with well preserved scapula.

**278.posterior limb postaxial osicles.** Absent (0); present (1).

Modification of ch. 232 from Benson & Druckenmiller (2014).

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