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SUPPLEMENTARY ONLINE MATERIAL FOR

The early fossil record of dinosaurs in North America: a new neotheropod from the base of the Dockum Group (Upper Triassic) of Texas

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Supplementary Online Material

SOM 1. Characters modified/added from the character lists of Nesbitt et al. (2009b)

SOM 2. Data matrix

References

SOM 1

Characters modified here from the character lists of Nesbitt et al. (2009b) after being modified by Ezcurra and Brusatte (2011):

254. Tibia, posterolateral process (= lateral malleolus) of the distal portion: absent (0); present and extends subequally to the level of the lateral margin of the facet for the reception of the ascending process of astragalus (1); present and extends distinctly beyond the level of the lateral margin of the facet for the reception of the ascending process of astragalus (2); present and extends well posterior to the fibula (3) (modified from Nesbitt et al. 2009b: 254). ORDERED.

Characters added here to the character lists of Nesbitt et al. (2009b) after being modified by Ezcurra and Brusatte (2011):

340. Manus, phalanx I-1: horizontal axes of the proximal and distal ends approximately parallel with each other (0); horizontal axis of the distal end rotated medially 35° or more than the axis of the proximal end (1) (Serenó 1999).

341. Ilium, lateral surface of the postacetabular process: smooth (0); distinct posterior rim for the origin of the *M. iliofibularis* (1) (Rowe and Gauthier 1990).

342. Tibia, posterolateral process (= lateral malleolus) in anterior or posterior view: lobular (0); tabular (1) (Serenó 1999). This character is inapplicable in taxa without a posterolateral process, i.e., character-state 254(0).

343. Tibia, distinct posteromedially opened notch on the distal end: absent (0); present and shallow (1); present and very deep, to receive a pyramidal posteromedial process on the astragalus (2) (modified from Langer 2004 and Ezcurra and Novas 2007). This character can be

scored also based on the presence of a notch on the posteromedial corner of the distal end of the tibia to receive the posteromedial process of the astragalus. ORDERED.

Scorings modified from Nesbitt et al. (2009b) and Ezcurra and Brusatte (2011):

Character 106: the anterior portion of the dentary lacks teeth in *Eoraptor lunesis*, *Efraasia minor* and *Plateosaurus engelhardti* (Yates 2003; Martínez et al. 2011; Sereno et al. 2013).

Accordingly, the scorings for these taxa were changed from (0) to (1). In addition, the presence or absence of teeth in the anterior portion of the dentary cannot be determined in *Saturnalia tupiniquim* (Langer et al. 1999) and, as a result, the scoring of this taxon was changed from (0) to (0/1).

Character 231: scoring changed from (1) to (2) in *Coelophysis rhodesiensis*, “*Syntarsus*” *kayentakatae* and *Coelophysis bauri*.

Character 254: the modification of this character (see above) resulted in the following scoring changes: from (1) to (2) in *Sacisaurus agudoensis*, *Silesaurus opolensis*, *Pisanosaurus mertii*, *Heterodontosaurus tucki*, *Tawa hallae*, *Coelophysis bauri*, *Liliensternus liliensterni*, *Zupaysaurus rougieri*, *Cryolophosaurus ellioti* and *Camposaurus arizonensis*; from (2) to (3) in *Eocursor parvus*, *Lesothosaurus diagnosticus*, *Scutellosaurus lawleri*, “*Syntarsus*” *kayentakatae*, *Dilophosaurus wetherilli*, *Ceratosaurus nasicornis*, *Piatnitzkysaurus floresi*, *Allosaurus fragilis*, *Velociraptor mongoliensis*, *Coelophysis rhodesiensis*; and from (1) to (2/3) in *Chindesaurus bryansmalli*.

Character 273: scoring changed from (0) to (1) in *Lagerpeton chanarensis* and *Dromomeron romeri* based on Nesbitt et al. (2009a).

Coelophysis bauri

Character 332: the lateral surface of the distal half of tibia of *Coelophysis bauri* lacks a sharp longitudinal edge (AMNH unnumbered). Accordingly, the scoring of this character was changed from (?) to (0).

Character 333: the anterior surface of the distal end of the tibia of *Coelophysis bauri* has a tuberosity immediately above the facet for the reception of the ascending process of the astragalus (AMNH FR 30614, 30615), as also occurs in *Coelophysis rhodesiensis*, *Camposaurus arizonensis* (Ezcurra and Brusatte 2011) and TMM 41936-1.3. As a result, the scoring of this character was changed from (0) to (1).

Eoraptor lunensis

Character 47: the ventral process of the squamosal is narrower than one-quarter of its length in *Eoraptor lunensis* (Martínez et al. 2011; Sereno et al. 2013). Accordingly, the scoring of this character was changed from (?) to (1).

Character 100: the glenoid fossa of the mandible is located well ventral of the dorsal margin of the dentary (PVSJ 512). Accordingly, the scoring of this character was changed from (0) to (1).

Character 108: the tooth denticles of *Eoraptor lunensis* are large and coarse, resembling the condition present in basal sauropodomorphs (Martínez et al. 2011). Accordingly, the scoring of this character was changed from (0) to (1).

Character 111: several teeth of *Eoraptor lunensis* are mesiodistally expanded at the base of their crown, whereas others not (Sereno et al. 2013). Accordingly, the scoring of this character was changed from (0) to (0&1).

Character 173: the proximal ends of the metacarpals of *Eoraptor lunensis* overlap with each other (Sereno et al. 2013: 146). Accordingly, the scoring of this character was changed from (1) to (0).

Character 177: Sereno et al. (2013: 146) described the dorsal extensor pits of *Eoraptor lunensis* as shallow. Accordingly, the scoring of this character was changed from (1) to (0).

Character 216: the distal end of the ischium of *Eoraptor lunensis* is anteroposteriorly expanded relative to its shaft (Sereno et al. 2013). Accordingly, the scoring of this character was changed from (0) to (1).

Character 251: the lateral condyle of the proximal end of tibia of *Eoraptor lunensis* is anteriorly offset from the level of the posterior margin of the medial condyle (Sereno et al. 2013: 85f). Accordingly, the scoring of this character was changed from (1) to (0).

Character 332: the lateral surface of the distal half of tibia of *Eoraptor lunensis* lacks a sharp longitudinal edge (Sereno et al. 2013: fig. 85). Accordingly, the scoring of this character was changed from (?) to (0).

Character 333: *Eoraptor lunensis* lacks a tuberosity on the anterior surface of the distal end of tibia (Sereno et al. 2013: fig. 85). Accordingly, the scoring of this character was changed from (?) to (0).

Character 334: the medial surface of the distal end of tibia of *Eoraptor lunensis* lacks a diagonal tuberosity (Sereno et al. 2013: fig. 85) and, as a result, the scoring of this character was changed from (?) to (0).

Character 337: *Eoraptor lunensis* lacks a shallow fossa on the medial surface of the astragalus (Sereno et al. 2013: fig. 88). As a result, the scoring of this character was changed from (?) to (0).

Liliensternus liliensterni

Character 136: the anterior dorsal vertebrae of *Liliensternus liliensterni* have a poorly developed ventral median keel (MB R.2175). Accordingly, the scoring of this character was changed from (1) to (0).

Character 194: the posterior margin of the postacetabular process of the ilium is gently dorsoventrally concave in a left element (MB R.2175.4.2), but is straight in a right ilium (MB R.2175.4.1). Accordingly, the scoring of this character was changed from (1) to (0&1).

Character 325: the posterior extension of the posterior processes of the dentary cannot be determined in any of the preserved dentaries of *Liliensternus liliensterni* (MB R.2175). Accordingly, the scoring of this character was changed from (1) to (?).

Saturnalia tupiniquim

Character 16: the preserved tooth crowns possess straight or convex distal margins (MCP 3845-PV). Accordingly, the scoring of this character was changed from (?) to (0&1).

Character 161: 0.62

Tawa hallae

Character 332: the lateral surface of the distal half of the tibia of *Tawa hallae* lacks a sharp longitudinal shelf (GR 242) and, as a result, the scoring of this character was changed from (?) to (0).

Character 333: *Tawa hallae* lacks a tuberosity on the anterior surface of the distal end of the tibia (GR 242). Accordingly, the scoring of this character was changed from (?) to (0).

Character 334: the medial surface of the distal end of tibia of *Tawa hallae* lacks a diagonal tuberosity (GR 242) and, as a result, the scoring of this character was changed from (?) to (0).

Character 335: the medial condyle of the astragalar body is strongly anteriorly projected with respect to the lateral condyle (GR 242). Accordingly, the scoring of this character was changed from (?) to (0).

Character 336: the ventral margin of the astragalus of *Tawa hallae* is deeply transversely concave in anterior or posterior view (GR 242). As a result, the scoring of this character was changed from (1) to (0).

Character 337: *Tawa hallae* possesses a shallow fossa on the medial surface of the astragalus (GR 242). As a result, the scoring of this character was changed from (?) to (1).

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Batrachotomus kuperferzellensis

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Postosuchus kirkpatricki

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Dromicosuchus grillator

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Eudimorphodon ranzii

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Dimorphodon macronyx

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Lagerpeton chanarensis

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Dromomeron romeri

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Dromomeron gregorii

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Marasuchus lilloensis

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Eucoelophysis baldwini

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Sacisaurus agudoensis

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Silesaurus opolensis

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Eocursor parvus

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Pisanosaurus mertii

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Heterodontosaurus tucki

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Lesothosaurus dianosticus

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Scutellosaurus lawleri

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Saturnalia tupiniquim

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Plateosaurus engelhardti

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Efraasia minor

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Herrerasaurus ischigualastensis

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Staurikosaurus pricei

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Chindesaurus bryansmalli

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Eoraptor lunensis

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Tawa hallae

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Coelophysis bauri

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'*Syntarsus*' *kayentakatae*

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Liliensternus liliensterni

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Zupaysaurus rougieri

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Dilophosaurus wetherelli

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Cryolophosaurus ellioti

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Ceratosaurus nasicornis

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Piatnitzkysaurus floresi

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Allosaurus fragilis

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Velociraptor mongoliensis

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Camposaurus arizonensis

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Coelophysys rhodesiensis

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Eodromaeus murphi

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Lepidus praecisio holotype

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Lepidus praecisio combined

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