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New material of *Caenagnathasia martinsoni* (Dinosauria: Theropoda: Oviraptorosauria) from the Bissekty Formation (Upper Cretaceous: Turonian) of Uzbekistan

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ABSTRACT

The oviraptorosaurian theropod *Caenagnathasia martinsoni* is the least common dinosaur taxon in the Late Cretaceous (Turonian) vertebrate assemblage from the Bissekty Formation of the Kyzylkum Desert, Uzbekistan. The dentaries show numerous caenagnathid synapomorphies, including a fused dentary symphysis bearing distinct vascular grooves and associated foramina on its lingual surface, a lingual triturating shelf on the dentary, and extensive pneumatization of the dentary. Cervical and dorsal vertebrae attributed to *C. martinsoni* show a structure typical for Caenagnathoidea, whereas a referred partial femur is relatively plesiomorphic in having a large, finger-like anterior (lesser) trochanter separated from the greater trochanter. A referred synsacrum has only four vertebrae but may represent an immature individual. *Caenagnathasia martinsoni* is closely related to the clade comprising the North American Campanian-Maastrichtian caenagnathids.

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1. Introduction

Oviraptorosauria is a clade of distinctive, bird-like theropod dinosaurs known primarily from the Late Cretaceous of East Asia and western North America and characterized by deep skulls with typically toothless jaws (Osmólska et al., 2004). Most Asian representatives belong to Oviraptoridae whereas the Late Cretaceous forms from North America represent another group, Caenagnathidae. Currie et al. (1994) reported the first caenagnathid from Central Asia, *Caenagnathasia martinsoni*, based on two sets of fused dentaries, CCMGE 401/12457 (holotype) and CCMGE 402/12457, from the Bissekty Formation (Upper Cretaceous: Turonian) of Uzbekistan. A recent phylogenetic analysis of Oviraptorosauria by Lamanna et al. (2014) also referred *Gigantoraptor erlianensis*, from the Iren Dabasu Formation (Coniacian-Santonian) of Inner Mongolia (China) and the largest known oviraptorosaurian (Xu et al., 2007), to Caenagnathidae.

Caenagnathasia martinsoni is the least common dinosaurian taxon from the Bissekty Formation at Dzharakuduk in the Kyzylkum Desert of Uzbekistan (Fig. 1). Previously, we have reported on the hadrosauroid *Levnesovia transoxiana*, the stem ceratopsid *Turanoceratops tardabilis*, the troodontid *Urbacodon* sp., isolated theropod teeth representing the form taxa *Paronychodon asiaticus* and *Richardoestesia asiatica*, skeletal remains of indeterminate tyrannosauroids, the dromaeosaurid *Itemirus medullaris*, and bones and teeth of indeterminate titanosaurian sauropods (Averianov and Sues, 2007, 2012; Sues and Averianov, 2009a,b, 2013, 2014; Sues et al., 2015).

Here we describe new specimens referable to *Caenagnathasia martinsoni*, which were recovered from the same horizon and locality complex as the type material. The material includes a third dentary specimen of *Caenagnathasia martinsoni* (ZIN PH 2354/16), which was collected by the joint Uzbek-Russian-British-American-Canadian (URBAC) expeditions that worked at the Dzharakuduk locality complex between 1997 and 2006 (Archibald et al., 1998). In addition, we also refer some dissociated postcranial bones to Oviraptorosauria. We assigned these remains to *Caenagnathasia martinsoni* because this taxon is the only known oviraptorosaurian from the Bissekty Formation.

Strata of the Bissekty Formation are exposed along an approximately 8 km long escarpment near the small settlement of

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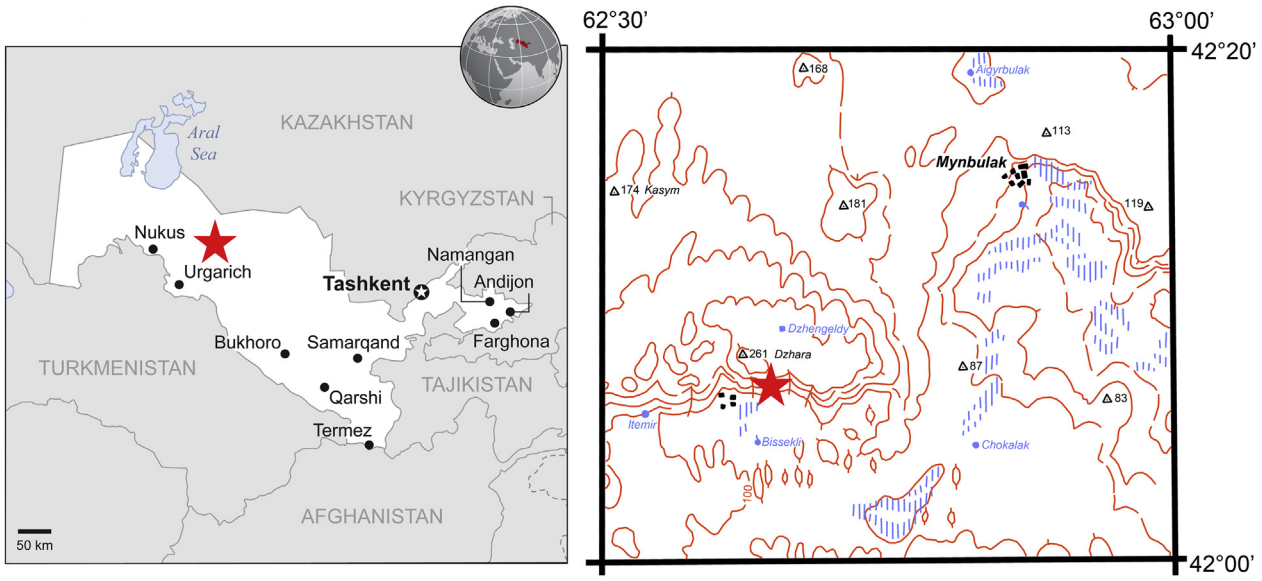

Fig. 1. Location of the Dzharakuduk locality complex (indicated by star) on a map of Uzbekistan and neighboring regions (left) and on a more detailed map of the region around Mynbulak (right). Areas of vertical lines indicate salt flats (sor). Left illustration adapted and modified from http://en.wikipedia.org/wiki/Uzbekistan.

Dzharakuduk (variously given in the literature as Dzhara-Kuduk, Dzhirakuduk, Dzhyrakuduk, Bissekty, and Kul'beke) in the central Kyzylkum Desert, 32 km SW of Mynbulak in the Navoi district, Uzbekistan (Nesov, 1995, 1997; Archibald et al., 1998; Fig. 1). The escarpment extends from about 42°06′22.60″ N and 62°37′09.00″ E to 42°05′44.22″ N and 62°41′06.49″ E. The Bissekty Formation is up to about 80 m thick and comprises a succession of medium-grained, poorly lithified, cross-bedded fluvial sandstones and clast-supported, well-cemented infraformational conglomerates.

1.1. Institutional abbreviations

CCMGE — Chernyshev's Central Museum of Geological Exploration, Saint Petersburg, Russia; ZIN PH — Paleoherpetological Collection, Zoological Institute, Russian Academy of Sciences, Saint Petersburg, Russia; ZIN PO — Paleornithological Collection, Zoological Institute, Russian Academy of Sciences, Saint Petersburg, Russia.

1.2. Locality abbreviations

The locality information following catalog numbers uses prefixes established by Nesov for localities within the middle-upper and lower parts of the Bissekty Formation, respectively: CBI — Central (Kyzylkum) Bissekty; CDZH — Central (Kyzylkum) Dzharakuduk.

1.3. Measurements

Dentary: SSL, shortest symphysial length; SH, height behind symphysis. Vertebrae: ACH, anterior height of centrum (without hypapophysis); ACW, anterior width of centrum; ANW, anterior width of neural arch (measured between lateral margins of prezygapophyses); CL, centrum length (ventral); NAL, neural arch length (measured between anterior and posterior margins of dorsal roof of neural canal); NSL, neural spine length (maximum); PCH, posterior height of centrum; PCW, posterior centrum width. Femur: PW, width of proximal end (measured from greater trochanter to femoral head); HD, anteroposterior diameter of femoral head. All measurements are in millimeters.

2. Systematic paleontology

Dinosauria Owen, 1842
Saurischia Seeley, 1887
Theropoda Marsh, 1881
Maniraptora Gauthier, 1986
Oviraptorosauria Barsbold, 1976
Caenagnathidae Sternberg, 1940
Caenagnathasia Currie, Godfrey and Nessov, 1994
Caenagnathasia martinsoni Currie, Godfrey and Nessov, 1994
Figs. 2–7

1992 [Vertebrata indet.]: Nesov, pl. 1, fig. 2
1992 [cf.] *Kuszholia mengi*: Nesov, p. 44, pl. 4, fig. 5
1994 *Caenagnathasia martinsoni*: Currie et al., figs. 11-12
1995 *Caenagnathasia martinsoni*: Nesov, pl. 2, fig. 16
1995 Theropoda [indet.]: Nesov, pl. 3, fig. 5
1997 [cf.] *Kuszholia mengi*: Nesov, pl. 18, fig. 2
1997 [Vertebrata indet.]: Nesov, pl. 20, fig. 7

Holotype. CCMGE 401/12457, fused dentaries (Currie et al., 1994: fig. 11; Fig. 2).

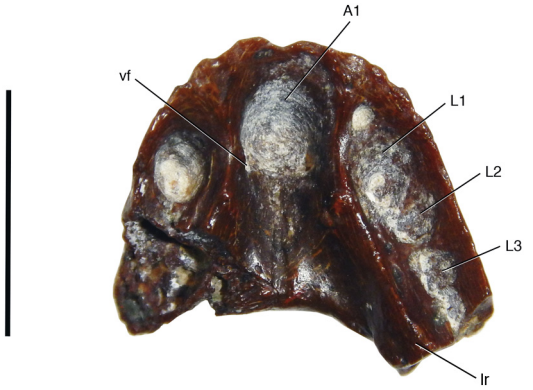

Fig. 2. CCMGE 401/12457, incomplete fused dentaries of *Caenagnathasia martinsoni* (holotype) from the Bissekty Formation (Turonian) at Dzharakuduk, Uzbekistan. Dorsal view. Abbreviations: A1, anterior occlusal groove; L1-3, lateral occlusal grooves; lr, lingual ridge; vf, vascular foramen. Scale bar equals 1 cm.

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