SHORT COMMUNICATION

THE Earliest RECORD OF A Galliform Bird in Asia, FROM THE Late Paleocene–Early Eocene OF THE GOBI Desert, Mongolia

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The fossil record of Paleogene birds in Asia is poorly known, and consists mostly of fragmentary specimens that are sparsely distributed throughout the continent (e.g., Wetmore, 1934; Kurochkin, 1976; Rich et al., 1986; Hou and Ericson, 2002; Clarke et al., 2005; Stidham et al., 2005; Mayr et al., 2007; Mayr, 2009). The majority of these Paleogene specimens were found in Mongolia and former states of the Soviet Union, and most are from crane-like birds assigned to the Gruoidea (Wetmore, 1934; Kozlova, 1960; Kurochkin, 1976, 1981, 1982; Clarke et al., 2005).

Most recently, numerous remains of the anseriform Presbyornithidae were described by Kurochkin and Dyke (2009) from the late Paleocene–early Eocene of Tsagaan Khushuu in the Gobi Desert of Mongolia. Kurochkin (1976), Nesov (1992), and Rich et al. (1986) further mention the presence of undescribed fragmentary anseriform specimens in the Paleocene and middle Oligocene of Mongolia, Paleocene of Kazakhstan, and Eocene of China, respectively. Here we describe a fairly well preserved but fragmentary proximal humerus of a galliform bird (ISMD-VP-10) that was discovered in 2006 at a microsite of the same locality by a joint expedition of scientists from the Institute for the Study of Mongolian Dinosaurs, New York College of Osteopathic Medicine, Georgia Southern University, and University of California Berkeley. The specimen was found in the Bumbanian Member of the Naranbulag Formation, exposed at the base of the west-facing escarpment of Tsagaan Khushuu. Exposures at Tsagaan Khushuu occur on the east and west sides of a long, roughly north-south ridge that is situated at the western end of the Nemegt Basin, Omnogovi Province, Mongolia. The new humerus was found in a lens of gravelly clay at the very bottom of the Bumban Member. This particular lens is rich in partial, isolated postcrania of small mammals and includes occasional dental material as well. Although this may represent a new microsite locality, it is more likely a remnant of a microsite extensively worked by Russian expeditions, which has yielded a plethora of dental material of insectivorous mammals (Lopatin, 2006). Below the Bumban Member is the white Naran Member. The Bumban fauna is the namesake for the Bumbanian land mammal fauna (Russell and Zhai, 1987). As in the earliest Eocene faunas in Europe and North America, Bumbanian faunas mark the first regional appearance of artiodactyls (Kondrashov et al., 2004) and perissodactyls in Asia (Dashzeveg, 1988).

MATERIAL AND METHODS

Osteological terminology follows Baumel and Witmer (1993). The fossil specimen is deposited in the Institute for the Study of Mongolian Dinosaurs, Ulaanbaatar, Mongolia.

Institutional Abbreviations—ISMD, Institute for the Study of Mongolian Dinosaurs, Ulaanbaatar, Mongolia; SMF, Forschungsinstitut Senckenberg, Frankfurt am Main, Germany.

DESCRIPTION AND COMPARISON

ISMD-VP-10 is the proximal portion of the left humerus of a small bird. The specimen measures 7.1 mm dorsoventrally at its widest part, from the margin of the crista deltopectoralis to the broken edge of the crista bicipitalis. The fragment is 9.9 mm long proximodistally, from the margin of the caput humeri to the broken distal edge.

On the caudal surface, there is an elongated accessory attachment site for the musculus supracoracoidei (crista musculi supracoracoidei) distal to its primary attachment site at the tuberculum dorsale, as in other galliformes (Mayr, 2000) (Fig. 1A). The tuberculum dorsale is small and separated from the caput humeri by a shallow groove, as in Paraortyxides (Mayr 2000) (Fig. 1B). The fossa pneumotricipitalis is divided into two fossae, with a deep, well-developed secondary dorsal fossa that undercuts the caput humeri. The caput humeri itself is narrower than in other, extant or fossil, Galliformes. Unlike in Paraortyx and Palaeortyx from the late Eocene–Oligocene of Europe (Mourer-Chauviré, 1992; Gohlöch and Mourer-Chauviré, 2005), the ventral fossa pneumotricipitalis is shallow. The incisura capitis is confluent with the secondary fossa pneumotricipitalis; contrary to crown group Galliformes (Mourer-Chauviré, 1992), there is no ridge separating it from the fossa. The proximal portions of the crura dorsale and ventrale fossae are abraded, and the ventral portion of the crista bicipitalis is broken, so their morphology is uncertain.

In cranial view, the tuberculum ventrale is visible as a well-defined protuberance proximal to the shallow sulcus ligamenti transversus (Fig. 2). The impressio coracobrachialis is also shallow as in other galliformes. As the distal portion of the crista deltopectoralis and humerus are not preserved, it cannot be ascertained whether its proportions are more similar to those of Paraortyxides and Gallinuloides (Mayr and Weidig, 2004; Mayr, 2006) or of the majority of extant galliformes. The apex of the crista deltopectoralis is located approximately 6 mm distal to the margin of the caput humeri and protrudes about 1 mm from the cranial surface of the humerus.

DISCUSSION

Galliformes, commonly known as the landfowl, include the extant clades Phasianidae (guineafowl, New World quail, grouse, pheasants, quail, and allies), Cracidae (chachalacas, guans, and curassows), and Megapodiidae (megapodes). Despite its fragmentary condition, ISMD-VP-10 can be referred to the Galliformes on the basis of an elongated accessory attachment site for the musculus supracoracoidei, a marked second fossa pneumotricipitalis, and a very low crista deltopectoralis. The first character was hypothesized to be a galliform apomorphy by Mayr.