

New Birds from the Lower Eocene Green River Formation, North America

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ABSTRACT. The Lower Eocene Green River Formation has yielded a large number of hitherto mostly undescribed birds. In this study, I describe a new species and genus as the first representative of Zygodactylidae from the New World. Furthermore, new specimens are referred to *Gallinuloides wyomingensis* (Galliformes), *Messelornis nearctica* (Gruiformes), and “*Neanis*” *kistneri* (?Galbulae). Based on the new specimens, I reveal additional information on the osteology and the systematic affinities of these species. The new specimens corroborate the fact that there is a strong similarity between the Green River avifauna and that of the roughly contemporaneous avifauna of Messel (Germany). In both sites, Messelornithidae and small arboreal birds are predominant in the fossil record.

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Situated in Wyoming, Utah and Colorado (USA), the Green River Formation was formed in the early Tertiary when the climate was warm-temperate to subtropical (Grande 1980). The Green River Formation contains the largest number of complete or nearly complete articulated bird skeletons from the North American Tertiary (Grande, 1980). However, only few species are described so far, and most of these species are based on a single specimen each. The first fossil bird described from the Green River Formation was the galliform *Gallinuloides wyomingensis* Eastman, 1900. Among the more abundant taxa from the Green River Formation are the Presbyornithidae with *Presbyornis pervetus* Wetmore, 1926, which were described in detail by Feduccia & McGrew (1975) as well as Olson & Feduccia (1980) and Ericson (1997, 1999, 2000). Additional taxa include gruiform, “caprimulgiform” and coraciiform birds (for details see Table 1).

In this paper, a new species referred to Zygodactylidae Brodkorb, 1971, which so far were only known from the Old World, as well as new specimens of three already known Green River species, *Gallinuloides wyomingensis* Eastman,

1900, *Messelornis nearctica* Hesse, 1992, and *Neanis kistneri* (Feduccia, 1973), are described.

Material and methods

Osteological nomenclature follows Baumel & Witmer (1993). The dimensions are in millimetres and they represent the overall length of the bone along its longitudinal axis. The following abbreviations are used to indicate the collections in which the specimens are deposited: BHI Black Hills Institute, Black Hills, South Dakota, USA; FMNH Field Museum of Natural History, Chicago, Illinois, USA; MCZ Museum of comparative Zoology, Cambridge, Massachusetts, USA; NAMAL North American Museum of Ancient Life, Lehi, Utah, USA; SMF Senckenbergmuseum Frankfurt, Germany; SMNK Staatliches Museum fuer Naturkunde Karlsruhe, Germany; USNM National Museum of Natural History, Washington, DC, USA; UWGM University of Wyoming Geological Museum, Laramie, Wyoming, USA; WDC Wyoming Dinosaur Center, Thermopolis, Wyoming, USA.