

Taphonomy and geology of dinosaur fossil localities in the Gobi desert, Mongolia

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Many dinosaur fossil localities of Mesozoic age are distributed in the Gobi desert, Mongolia. The geologic age of these localities is mainly late Cretaceous, however, there are those with early Cretaceous and late Jurassic age. The sedimentological environments of these localities have been clearly understood by joint expeditions between Mongolia and Japan, or with U.S. In addition to the results, taphonomy of those localities and dinosaurs there has also been understood. The localities are all continental. The upper Cretaceous is of mainly fluvial and partially alluvial origin. In Campanian period, the wide distribution of eolian beds with dinosaur fossils, by development of arid environments is observed. Those two different environments existed in the same time. From those coexisting fluvial and eolian beds, mass burial sites of dinosaurs were found. This mass burial events are occurred in sandstorm in the eolian condition, and in flood and mud-trap in the fluvial. The eolian beds yield lizard, turtle, and Mesozoic mammals, bird, and dinosaur footprints. In the terminal Cretaceous, the eolian environments became minor, and fluvial environments were widely distributed. From the fluvial beds, mainly flood plain and channel deposits, isolated and partially articulated dinosaur bones, turtle, lizard, crocodiles, fish, and pterosaur are found. The footprints of dinosaurs are preserved on the flood plain deposits. In early Cretaceous, fluvial and lacustrine environments are dominant. The former yields rich dinosaur fossils, and the latter rich plant and insect fossils, together with bird feathers. The oldest dinosaur bearing beds, the upper Jurassic, deposited in fluvial condition, yields sauropod dinosaur, crocodiles, and synapsid reptile. The reconstruction of sedimentary environments of those localities in the Gobi desert provides important information for understanding of ecology, behavior, habitat, and kinetics of dinosaurs. For this, taphonomy of those fossils should be correctly interpreted.

Keywords: dinosaur, Mongolia, Mesozoic, taphonomy