

Do alligatoroids really derive from North America?

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Results in the historical biogeography studies of early (Late Cretaceous) alligatoroids are based on the paleogeographical occurrence of generally not frequent specimens of different taxa. The theories which try to answer where the first radiation of alligatoroids happened basically use phylogenetical and chronostratigraphical data. According to the generally accepted explanation, alligatoroids as a derived crocodylian (eusuchian) group first appeared in North America during the Late Cretaceous and soon after migrated to Europe from the direction of the Atlantic-ocean. It is supported by the occurrence of two phylogenetically basal species in the Campanian and Maastrichtian sediments of North America, *Leidyosuchus canadensis* and *Deinosuchus rugosus*. The idea of a migration route from the direction of the Atlantic-ocean (not necessarily across it) to Europe relies on the fact that no identifiable alligatoroid material is known yet from the Upper Cretaceous beds of Asia. In Europe at least two Late Cretaceous alligatoroid taxa have been described: *Acynodon* and *Musturzabalsuchus*, discovered in the area of the former Mediterranean (Iberia and Apulia). Recently the Hungarian dinosaur bearing locality in the Bakony Mts at Iharkút has yielded isolatedly preserved alligatoroid remains. Several isolated mandibular bones; dentary fragments, an angular, two surangulars an articular and a quadrate represent this alligatoroid but possibly other cranial bone fragments can also be assigned to this taxon. Some of the autapomorph characters of the group are present (the foramen

aërum is laterally shifted on the articular and on the quadrate) and comparisons with other Late Cretaceous taxa suggest that the Iharkút alligatoroid is probably a new taxon. The biogeographical importance of the discovery is given by the age of the material which is Santonian, so far the oldest alligatoroid remains ever reported. The age of the bone containing sediment is based on palynological examinations and paleomagnetic age determination. Some characters on the dentary (U shaped symphysis, separated 3rd and 4th alveoli) indicate that the Iharkút alligatoroid is more closely related to the derived, blunt-snouted alligatoroids such as *Brachychampsa*, *Stangerochampsa* and *Acynodon* than to the basal Alligatoroidea group (including *Leidyosuchus*, *Deinosuchus* and *Musturzabalsuchus*). This new discovery questions the North American origin of the group as the oldest alligatoroid is presently known from Europe and it morphologically seems to be a derived form. Crocodyliformes unearthed from older than Santonian but Late Cretaceous sediments in North America are even not eusuchians (*Woodbinesuchus*, *Gilchristosuchus* from the Cenomanian of Texas and Alberta). It must be mentioned that the basal most member of the Crocodylia is only known from the Maastrichtian while derived alligators had already developed during the Campanian. Missing links make the evolutionary story of early alligatoroids extremely confused and the discovery of a totally unknown early Late Cretaceous or Early Cretaceous “ghost fauna” can be expected in the future.