

†*Aethocephalichthys hyainarhinus* gen. et sp. nov., a new and enigmatic Late Cretaceous actinopterygian from North America and New Zealand

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Abstract

A new actinopterygian, *Aethocephalichthys hyainarhinus* gen. et sp. nov., is described. It is Late Cretaceous in age and found in the Niobrara, Eutaw, and Pierre Shale formations of North America, and in the Maungataniwha Sandstone Formation of New Zealand. Almost all specimens consist solely of the neurocranium. It is rectangular in shape with a blunt snout and characterized by the fusion of all the bones of the neurocranium. The bones of the roof and snout are covered with a dermal pattern of polygons, many of which have a central pore. Each pectoral fin-ray has a shallow channel with pits along the channel. This species shares a number of primitive characters with various actinopterygian groups such as an ossified interorbital septum. Potential characters that could place *Aethocephalichthys* within the teleosts are inconclusive due to the bone fusion. These include a deep posterior myodome and an unpaired vomer. We conclude that this fish is an incertae sedis actinopterygian.

Introduction

The worldwide record of Late Cretaceous marine fishes is well documented (WOODWARD 1901, ARAMBOURG 1954, RUSSELL 1988). Identification of that fossil material is often a different matter. As listed by RUSSELL (1988), there are a number of North American localities that yield fossil-fish remains, but these are very poorly preserved fossils and cannot be identified beyond high taxonomic levels. There are also those specimens that defy identification despite being moderately well preserved. These lack the characters that allow them to be assigned to a particular taxonomic group. *Aethocephalichthys hyainarhinus* is an example of a species that is both poorly preserved and lacks characters to allow it to be assigned to a taxonomic group. It has been found at several Late Cretaceous localities in North America and in New Zealand. To date, specimens of *A. hyainarhinus* consist mostly of neurocrania. Numerous collectors have encountered this species in the Pierre Shale (L. D. MARTIN pers. comm.), but despite the large number of specimens collected, it has remained undescribed until now.

Localities and biostratigraphy

New Zealand: Neurocranial specimens are found at the Mangahouanga Stream fossil site which is a tributary of the Te Hoe River, west of Hawke's Bay (Fig. 1A). The Maungataniwha Sandstone Formation is Upper Piripauan to Lower Haumurian in age. This is equivalent to Santonian to Maastrichtian ages of North America and Europe. The boundary between uppermost Piripauan and lowermost Haumurian is not clear. The formation represents a near-shore, shallow-water environment such as a bay. A nearby delta is suggested by the preservation of terrestrial plants and animals (CRAMPTON & MOORE 1990).

Initially, the neurocranial specimens were found in the rocks of the conglomeratic facies of the Maungataniwha Sandstone. The neurocrania are incomplete fragments, and most are found in calcareous and phosphatic concretions. Other fossils found in this formation consist of a mixture of marine and terrestrial organisms. Marine organisms include bivalves, such as *Inoceramus*, and other mollusks, such as ammo-

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