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RESEARCH & KNOWLEDGE

Short Communication

An Upper Cretaceous ichthyodectiform fish from Kyushu, Japan

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Abstract - Ichthyodectiform fishes are an exclusively extinct basal teleost clade, with a temporal range from the Middle Jurassic (Bathonian) to Upper Cretaceous (Maastrichtian). The fish fossils here described were found from Maeshima islet in Kumamoto, Kyushu, Japan in an outcrop of the Hinoshima Formation of the Lower Subgroup of the Himenoura Group. Although the material is constituted by parts of the head, the middle of the body, the caudal skeleton and fin of several individuals, all specimens belong to the same species due to the same features found in the bodies, vertebrae and scales. This species belongs to the order Ichthyodectiformes in having the elongate and laterally compressed body, the posteriorly situated dorsal fin and uroneurals covering the lateral faces of ural centra and the first preuralcentrum.

Keywords: Cretaceous, Ichthyodectiformes, Fish, Japan, Goshoura

1. Introduction

Ichthyodectiform fishes are an exclusively extinct basal teleost clade, erected by Bardack and Sprinkle (1969), with a temporal range from the Middle Jurassic (Bathonian) to Upper Cretaceous (Maastrichtian) (Arratia, 2004; Cavin *et al*., 2013). The monophyly of this order was established by Patterson and Rosen (1977) based on two synapomorphies: the presence of an ethmopalatine bone roofing the floor of the nasal capsule (a uniquely ichthyodectiform element in the ethmoid region), and uroneurals covering the lateral sides of the preural centra (Patterson and Rosen, 1977; Stewart, 1999; Leal and Brito, 2004).

Fishes of this order are known from marine and estuarine strata from Australia, North and South America, Africa, Antarctica, Europe and the Middle East (Bardack, 1965; Bardack and Sprinkle, 1969; Schaeffer and Patterson 1984; Stewart 1999; Taverne and Bronzi 1999; Arratia 2000; Taverne and Chanet 2000; Blanco and Cavin 2003; Arratia, 2004; Alvarado-Ortega 2004; Taverne 2008, 2010; Alvarado-Ortega and Brito 2010, Berrell *et al*., 2014), as well as from freshwater deposits from eastern Asia (Chang, 1963; Liu, 1974; Chang and Chou, 1977; Yabumoto, 1994) and from South America (Brito, 2007; Brito and Yabumoto, 2011).

2. Material and method

The fish fossils here described were found at the construction site of the bridge between Goshoura Island and Maeshima islet in Kumamoto, Kyushu, Japan in an outcrop of the Hinoshima Formation of the Lower Subgroup of the Himenoura Group. The age of the Hinoshima Formation is the Late Cretaceous (Santonian). The specimens are deposited in Goshoura Cretaceous Museum.

Any remains of bones were removed from the specimens with a needle under a microscope. The bone impressions of fossils were then coated with a very thin synthetic resin, surrounded with a low clay wall. Latex was poured onto the fossil impression in a vacuum. The latex was allowed to dry for about an hour and then the latex was peeled off from the fossil. The latex cast was scanned or photographed and drawn on a personal computer and observed under a microscope.

3. Systematic description and discussion

Although the material is constituted by parts of the head, the middle of the body and the caudal skeleton and fin of several individuals, all specimens belong to the same species due to the same features found in the bodies, vertebrae and scales. This species belongs to the order Ichthyodectiformes in having the elongate and laterally compressed body, the posteriorly situated dorsal fin and uroneurals covering the lateral faces of ural centra and the first preuralcentrum.

This species resembles *Heckelichthys vexillfer* from Cenomanian of Slovenia and Morocco and *Heckelichthys* sp. from uppermost Cenomanian to Lower Turonian of Vallecillo, north-eastern Mexico (Giersch, 2014) in having a similar preopercle and the short dorsal fin base. How-

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ever, this species differs from *H. vexlillfer* and *H.* sp. in having a longer snout, the small mouth with small conical teeth and the falcate dorsal fin, not a sail-like. This species is similar to *Heckelichthys microdon* from Turonian of Croatia in having almost the same position of the lower jaw articulation, a similar preopercle, but this species differs from *H. microdon* in having the longer snout, the smaller mouth with small conical teeth and the longer dorsal fin base. The age of this species is slightly younger than those of the species of the genus *Hechkelichthys*.

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