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Upper Jurassic Hybodontidae (Selachii) from Lourinhã, Portugal

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Abstract

Key-words: Hybodontidae; Upper Jurassic; Lourinhã.

Hybodontidae teeth and spines from the Lourinhã Formation, Sobral unit are described. These teeth and spines have been ascribed to the genus *Hybodus* and regarded as *Hybodus* cf. *reticulatus*.

Resumo

Palavras-chave: Hybodontidae; Jurássico superior; Lourinhã.

São descritos dentes e espinhos de Hybodontidae colhidos em depósitos da Formação da Lourinhã, unidade Sobral, do género *Hybodus*, representado por *Hybodus* cf. *reticulatus*.

1. Introduction

Mesozoic shark remnants are known in Portugal since long ago. However, jurassic shark material is scarce, and have mostly been overlooked. As far as we can ascertain, the first reference has been produced by Sauvage (1897-1898: 10): a single tooth collected at Santa Cruz "dans le Malm supérieur" has been briefly referred (without any figure) by him to "*Hybodus* aff. *polyprion* Ag.".

Another, isolated *Asteracanthus* tooth was collected in the older beds at the Fonte Quente limestone quarry close by the Tomar to Pedreira road, ca 2 Km from this last locality. Limestones have been ascribed to the *Hammatoceras insigne* main level, upper Toarcian (Antunes, 1967: 13).

Later on, an isolated *Orthacodus* (*Sphenodus*) sp. tooth was collected by G. Manuppella at Ribeira do Barranco in Algarve, upper Jurassic (determ. by M. T. Antunes; unpublished so far).

On the other hand, a lot of excavation and other work has been carried on upper Jurassic near Lourinhã. The most remarkable results concern the discovery and collecting of dinosaur material, most of which is being kept at the GEAL/Lourinhã Museum (see Antunes & Mateus, 2003; Manuppella, 1996 and Mateus, 1998). An account was presented in a Colloquium held at the Academy of Sciences from Lisbon - "Upper Jurassic Palaeoenvironments in Portugal - Geology, plants, eggs & Dinosaurs, mammals", April 1998. Most of dinosaur the specimens have been found in the Sobral Member of Lourinhã Formation,

corresponding to a lower deltaic plain dated from early Tithonian. However, other fossils were collected there, among them the shark remnants under study.

2. Systematics

Class	CHONDRICHTYES Huxley, 1880
Subclass	ELASMOBRANCHII Bonaparte, 1838
Cohort	Euselachii Hay, 1902
Superfamily	Hybodontoidea Zangerl, 1981
Family	Hybodontidae Owen, 1846

The family Hybodontidae, known as early as in late Paleozoic is especially well represented in the Triassic and in the Rhaetic. It persists as late as Maastrichtian (Cappetta, 1987). Several genera are included in this family. Dentitions are of tearing-type in some genera such as *Hybodus*, while in other genera, as in *Acrodus*, dentitions are of grinding-type.

Cappetta 1987 includes in this family the genera *Hybodus*, *Priohybodus,* and *Pororhiza*.

The Hybodontidae are known in Europe, North America, Northern and Western Africa, and Asia (Cappetta, 1987).

Genus *Hybodus* Agassiz, 1837

This genus is known from complete skeletons and skin impressions as well as by a large number of isolated teeth. The body is long and massive, with a subterminal mouth (fig. 1).

The two dorsals are large and supported by a powerful anterior fin spine. In certain species, the fin spines are ornamented with rounded tubercles.

The teeth are rather mesio-distally expanded and have a straight main cusp. The lateral cusplets are generally numerous, straight, pointed, broadly united at their base and decreasing in size toward the margins of the tooth. In certain species they are very short. The cusp has more or less convex labial and lingual faces and well defined cutting edges; it shows strong and high enamel folds; the cusplets are folded too. The root is not very thick; it is nearly perpendicular to the crown with a rather prominent labial face; the basal face is flat, often slightly depressed in its labial part which presents many foramina; the lingual face is generally rather convex.

The type species is *H. reticulatus* Agassiz 1837. Cappetta (1987) includes in the genus *Hybodus* the following species: *H. huangnidanensis* Wang 1977; *H. multiconus* Jaekel 1889; *H. nevadensis* Wemple 1906; *H. plicatilis* Agassiz 1843; *H. rapax* Stensiö 1921 and *H. shastensis* Wemple 1906.

Hybodus cf. *reticulatus* Agassiz, 1837
(Text-fig. 1; Pl. 1, fig. 1-2; Pl. 2, fig. 1-4)

Localities: Peralta and Porto das Barcas.
Material: 33 (some incomplete) teeth and spines.
Description: The best preserved teeth are small, with a straight main cusp. Enamel presents several parallel, well marked and straight folds, from the crown's base until nearly half of the height of the main cusp.

The cusps has well defined cutting edges. The lateral cusplets are small, pointed and folded on both faces. The crown's labial face does not overhang the root. The not very thick root is nearly perpendicular to the crown. The basal face is flat and slightly depressed in the labial face, which bears many foramina; the lingual face is rather convex.

Dorsal fin spines show several longitudinal crests presenting small nodules (Pl. 2, fig. 3). Some smaller spines also have longitudinal crests; their posterior edges bear a double row of denticles (Pl. 2, fig. 2). Spines are roughly triangular in dorsal section.

Discussion: The fossil teeth under study have been compared to those from *Hybodus plicatilis*, *H. sublaevis*, *H. cuspidatus* and *H. marginalis* figured by Agassiz (1836). There are some differences as far as the crown, the crests and the number of cusplets are concerned.

In *H. grossiconus* Delsate, 1995 teeth have a thicker and broader crown, with thicker and more numerous cusps than in our specimens. There are also significant differences between Lourinhã's specimens and the *H. obtusus* and *H. grossiconus* teeth shown by Priem (1908).

The above proposed classification is a result of comparison with teeth from *Hybodus reticulatus* Agassiz, 1837 kept at the Laboratoire de Paléontologie collections (Muséum National d'Histoire Naturelle de Paris).

3. Conclusions

Quite large-sized, upper Jurassic sharks ascribed to *Hybodus* cf. *reticulatus* Agassiz, 1837 are represented at Peralta and Porto das Barcas (near Lourinhã) by mostly incomplete teeth and dorsal fin spines.

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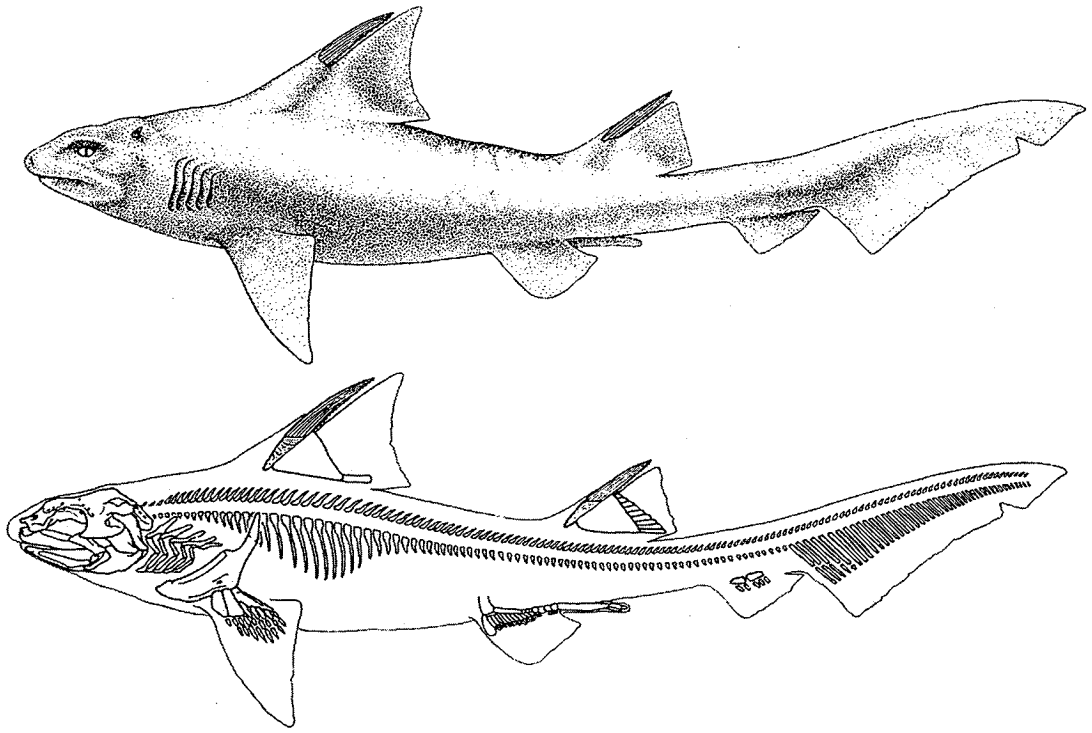

Fig. 1 - Restoration of *Hybodus* sp. after Maisey (1982), *in* Cappetta (1987).

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Plate 1

Fig. 1 - 2 – *Hybodus* cf. *reticulatus* Agassiz, 1837

Fig. 1 - Lateral teeth: a, labial view; b, lingual view; c, occlusal view (Porto das Barcas).

Fig. 2 - Lateral teeth: a, labial view; b, lingual view (Peralta); c, occlusal view (Porto das Barcas).

PLATE 1

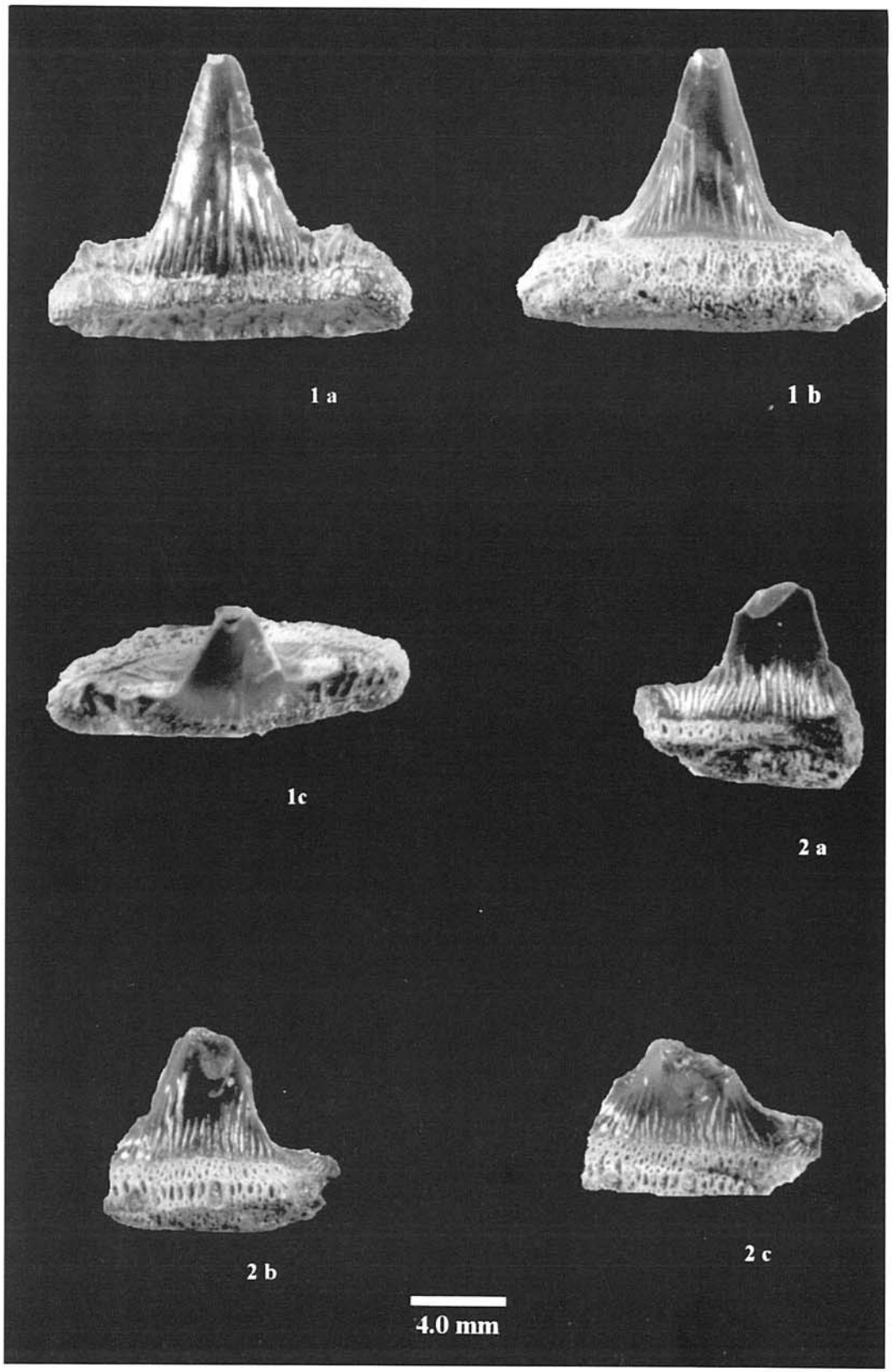

Plate 2

Fig. 1 - 4 – *Hybodus* cf. *reticulatus* Agassiz, 1837

Fig. 1 - Lateral teeth: a, labial view; b, lingual view (Peralta).

Fig. 2 - 4 - Dorsal fin spines, profil view (Peralta).

PLATE 2