

***Gaidropsarus pacificus* (Temminck & Schlegel), a junior synonym of *Rhinonemus cimbrius* (Linnaeus) (Pisces: Gadiformes: Gadidae)**

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Machida, Y. *Gaidropsarus pacificus* (Temminck & Schlegel), a junior synonym of *Rhinonemus cimbrius* (Linnaeus) (Pisces: Gadiformes: Gadidae).

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Key words: Gadiformes; Gadidae; *Gaidropsarus pacificus*; *Rhinonemus cimbrius*; synonym.

The gadid fish, *Gaidropsarus pacificus*, originally described as *Motella pacifica* by Temminck & Schlegel (1842) is reduced to a junior synonym of *Rhinonemus cimbrius* (Linnaeus, 1758). Confusion on the systematic status of *Gaidropsarus pacificus* seems to have resulted from the inadequate description of barbels in the original description of *Motella pacifica*.

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Introduction

The gadid, *Gaidropsarus pacificus*, was originally described as *Motella pacifica* by Temminck and Schlegel (1842), on the basis of a single specimen from Nagasaki, southwestern Japan. The genus *Motella* Cuvier, 1829 was regarded as a junior synonym of *Gaidropsarus* Rafinesque, 1810 (Jordan and Evermann, 1898).

During a visit to the Nationaal Natuurhistorisch Museum (NNM), Leiden, I examined the holotype of *Motella pacifica* and noted the presence of four barbels on its head; viz. one on the chin, one at each anterior nostril, and one on the snout tip just above the upper lip. According to Svetovidov (1986), such an arrangement of barbels is seen only in the gadid genus *Rhinonemus* Gill, 1864. The purpose of this paper, therefore, is to clarify the systematic status of *G. pacificus*.

Material and methods

Material.— RMNH 3444, holotype of *Motella pacifica*, 292 mm standard length (SL), Nagasaki, southwestern Japan, collected by P.F. von Siebold, 1823-1830. Comparative material: *Rhinonemus cimbrius*, Department of Biology, Faculty of Science, Kochi University (BSKU), 48225-48227 (formerly uncataloged specimens of the Zoological Museum, University of Copenhagen (ZMUC)), 3 specimens, 119-196 mm SL.

Counting and measuring methods follow Okamura and Kitajima (1984). Vertical fin rays and vertebrae were counted on soft X-ray photographs.

Result

Description of RMNH 3444.— Counts: First dorsal fin ray 1, second dorsal fin rays 45, anal fin rays 38, pectoral fin rays 15, pelvic fin rays 5, branchiostegal rays 7, gill rakers on first arch 1+7=8, lateral line pores ca. 26, transverse scale rows ca. 240,

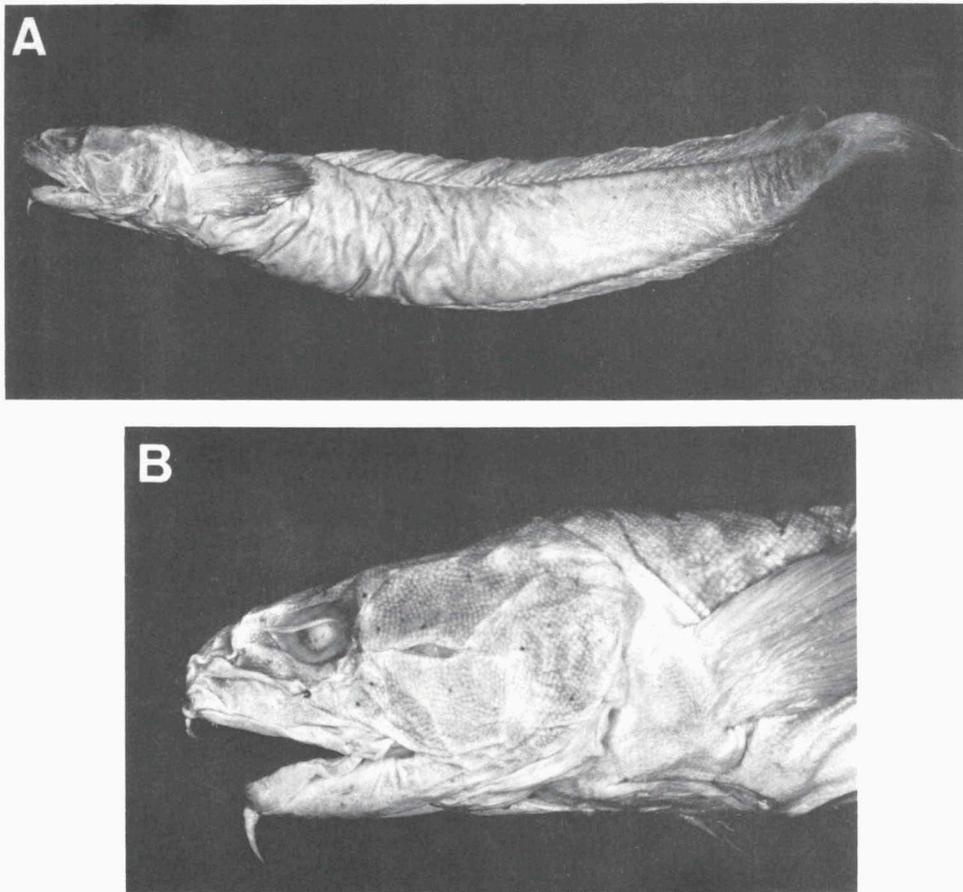


Fig. 1. *Rhinonemus cimbricus* (Linnaeus), RMNH 3444, holotype of *Motella pacifica* (Temminck & Schlegel), 292 mm SL, from Nagasaki, southwestern Japan. A, entire body. B, view of head.

scales above lateral line 26, scales below lateral line 49, vertebrae 16+36 = 52.

Proportional measurements as % of SL: head length (HL) 21.4, body depth 13.7, body width 9.0, predorsal length 19.3, distance between snout tip and origin of 2nd dorsal fin 32.5, preanal length 45.6. Proportional measurements as % of HL: Snout length 25.6, horizontal eye diameter 20.0, vertical eye diameter 11.2, interorbital width 8.7, upper jaw length 54.4, lower jaw length 55.6, length of barbel on snout tip just above upper lip 8.1, length of barbel at anterior nostril 32.6, length of chin barbel 12.8.

Body long (fig. 1A); head and body compressed. First dorsal fin with 1 short ray (probably broken), followed by 45 short, filamentous rays set in a shallow groove. Origin of second dorsal fin slightly anterior to tip of pectoral fin. Anal fin origin below 10th ray of second dorsal fin. Pectoral fin reaching below fourth ray of second dorsal fin. Outer pelvic fin rays not extended into filaments.

Mouth large, extending backward beyond posterior margin of eye. Lower jaw included in upper jaw. Eye elliptical. Interorbital width narrow, 2.3 times in horizontal diameter of eye. Length of chin barbel 1/2 snout length (fig. 1B). A single, short

barbel present on snout tip just above upper lip, about 2/3 length of chin barbel. A single, long barbel at posterior margin of each anterior nostril, reaching posterior margin of iris when laid back. Teeth on upper jaw generally small, conical, in several rows; those of outermost row much enlarged, canine-like. Lower jaw teeth generally small, conical, biserial anteriorly; those of innermost row enlarged. Head of pre-mover wedge-shaped, with small teeth. Palatine edentate. Gill rakers tubercular.

Head and body fully covered with small, cycloid scales. Lateral line single, complete, gradually descends from below eighth to seventeenth ray of second dorsal fin. Lateral line pores rather widely separated.

Colour in alcohol: head and body uniformly pale-brown, posterior ends of second dorsal and anal fins much darker. Mouth cavity bluish-black.

Discussion

Examination clearly established the presence of a single barbel on the snout tip, just above the upper lip, that was overlooked by Temminck and Schlegel (1842) in their original description of *Motella pacifica*. Likewise, Günther (1862) described *M. pacifica* as having "snout with three barbels: one on each side at the nostril and one at the chin."

Jordan and Evermann (1898) considered *Motella* to be a junior synonym of *Gaidropsarus* Rafinesque, 1810, and Jordan et al. (1913) treated *Motella pacifica* as *Gaidropsarus pacificus*. Although Boeseman (1947) examined the holotype of *M. pacifica*, he did not refer to the presence of barbels on the specimen, which he referred to *Onus* (or *Gaidropsarus*) *pacificus*. Okada and Matsubara (1933), and Matsubara (1955) referred the species to *Gaidropsarus*, a genus which the authors considered to be characterised by five barbels on the head; viz. two on the snout, one on the chin, and one on each nostril. This differed from the generic diagnosis of *Gaidropsarus* given by Svetovidov (1948), which included three barbels on the head; viz. one on the chin and one at each anterior nostril. Although he did not examine the holotype of *M. pacifica*, Svetovidov remarked of *G. pacificus*, "by the number of rays in the fins the species differs greatly from all other species of the genus." Lindberg and Legeza (1965) also lacked opportunity to examine the holotype of *M. pacifica*, and accepted *G. pacificus* as the valid name. However, based on the original description of *M. pacifica*, they pointed out that Matsubara's (1955) key to *Gaidropsarus* seemed to be in error. Such confusion seems to have resulted from the inadequate description of the barbels in the original description of *Motella pacifica*.

RMNH 3444 generally complies with the generic diagnosis of *Rhinonemus* given by Svetovidov (1986), viz. an elongate gadoid fish with two dorsal fins and one anal fin, first dorsal fin reduced to a single ray, followed by a row of fine short filamentous rays set in a shallow groove; first dorsal fin ray usually longer than half of head length; four barbels, one on the chin, one on centre of upper lip and two on each of the anterior nostrils. According to Svetovidov (1986), the genus contains a single species, *R. cimbricus* (Linnaeus, 1758) (sometimes referred to *Enchelyopus* Bloch & Schneider, 1801). Svetovidov's figure of *R. cimbricus* showed a single barbel rising from the snout tip just above the upper lip, rather than directly from it. This was confirmed in all three *R. cimbricus* specimens used in the present study.

Counts of *M. pacifica* holotype (given first) agree well with those of *R. cimbrius* given by Svetovidov (1948, as *Enchelyopus cimbrius*; 1986); second dorsal fin rays 45 (45-55), anal fin rays 38(36-49), vertebrae 52(50-56), pectoral fin rays 15(15-16), pelvic fin rays 5(5), gill rakers 8(9-10), branchiostegal rays 7(7), pores in lateral line ca. 26(ca. 29). The following proportional comparisons (*M. pacifica* holotype given first) include some small discrepancies; in % of SL - head length 21.4(16.0-17.2), predorsal length 19.3(14.4-15.1), preanal length 45.6(37.4-43.0), pectoral fin 15.1(13.1-14.9), pelvic fin 7.5(7.4-8.9); in % of HL - horizontal eye diameter 20.0(22.2-24.4), snout 25.6(24.4-27.2), upper jaw 54.4(43.9-48.0), lower jaw 55.6(48.7-55.8). The interorbital width, 7.8-8.9 % SL given by Svetovidov (1948) is clearly in error. Interorbital width is contained 2.3 times in horizontal eye diameter in RMNH 3444, 2.5-3.0 times in Svetovidov's description of *E. cimbrius*, and 2.8-3.1 times in BSKU 48225-7. Interorbital width of the latter is 1.8-2.1 % SL (RMNH 3444, 1.9 % SL). In total, the differences, mostly in morphometric characters, between the holotype of *M. pacifica* and examples of *R. cimbrius* are too small to discriminate between two forms at species level.

Accordingly *Motella pacifica* is considered to be a junior synonym of *Rhinonemus cimbrius*.

Cheng and Zheng (1987) reported the gadid species with five barbels from the Yellow Sea and the East China Sea under the name *Ciliata pacifica* (Temminck & Schlegel), noting the presence of two pairs of barbels on the snout and one on the chin in their key to the genus. The figure of *C. pacifica* (Cheng and Zheng, 1987: 979, fig. 1190) clearly shows such an arrangement of barbels, which is characteristic of the genus *Ciliata* Couch, 1832 (Svetovidov, 1986). This strongly indicates that the example referred to *C. pacifica* by Cheng and Zheng (1987) is not *Rhinonemus cimbrius*.

Rhinonemus cimbrius is widely distributed in the western North Atlantic, the northern Atlantic and the western Baltic Sea (Svetovidov, 1986). Mori (1952) listed the name *Gaidropsarus pacificus* in the Korean ichthyofauna. It is hardly possible to confirm whether Mori's specimen referred to *G. pacificus* is *R. cimbrius* or not, because his Korean fish collection was probably lost (Nakabo, pers. comm.). The present study, therefore, may represent the one and only record of the species from the Far East. Why *R. cimbrius* occurs in two such widely disjunct regions is unknown, although there is no doubt that the species is caught very rarely in the Far East.

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