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Upeneus japonicus (Houttuyn), a Senior Synonym of the Japanese Goatfish *U. bensasi* (Temminck et Schlegel)

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Abstract *Upeneus japonicus* (Houttuyn, 1782), described from a single specimen from Japan, is shown to be a senior synonym of *U. bensasi* (Temminck et Schlegel). It ranges from Hokkaido and Korea south to Taiwan and Hong Kong. A neotype is described.

Houttuyn (1782: 334) briefly described a goatfish from Japan as *Mullus japonicus* in Dutch. He wrote that it has two barbels at the mouth, two dorsal fins of seven and nine rays, a forked caudal fin, no teeth in the mouth, and color "which may be a little modified" more yellow than red. Gmelin (1788: 1340) included Houttuyn's species in his compilation.

Cuvier in Cuvier and Valenciennes (1829: 460) reviewed the mullid fishes known at that time, classifying them either in the genus *Mullus* Linnaeus or *Upeneus* Cuvier. He placed Houttuyn's *japonicus* in *Upeneus*. In his account of *japonicus* he wrote that de Langsdorff brought back from Japan "un upénéus de cette subdivision à dents en velours" (a *Upeneus* of the group with villiform teeth) and gave it to the Cabinet de Berlin (Museum für Naturkunde de Humboldt-Universität zu Berlin). Lichtenstein sent the dried holotype of *Mullus japonicus* from Berlin to Cuvier and Valenciennes in Paris and passed on its Japanese name, bensatsch. Cuvier recorded the length of the specimen as five pouces (one pouce = 27.07 mm), hence 135.4 mm. He wrote that the color seems to have been entirely yellowish, adding that its barbels still have some of this color. He gave the following fin-ray counts: "D. 7-1/8; A. 1/6; C. 17; P. 19; V. 1/5." Obviously, the pectoral-ray count is in error, because we know of no mullid fish with so high a count.

Cuvier could not understand why Gmelin stated that the jaws of this mullid are edentate. Cuvier either overlooked Houttuyn's remark that the mouth was without teeth, or he did not understand Dutch very well. Houttuyn could have failed to see the villiform teeth in the jaws of a small dried specimen of *Upeneus* because they may have been entirely covered by varnish.

Temminck and Schlegel (1844: 30, pl. 11, fig. 2) described *Mullus bensasi* from a badly preserved specimen 6 pouces (162.4 mm) in total length collected from the bay of Nagasaki. In addition to their color figure, they provided a color description in which the barbels were described as citron yellow. They gave the same count of the dorsal fins as Cuvier, but the anal count as I, 7. Probably they counted the last anal ray, which is divided to the base, as two rays. Boeseman (1947: 43) noted that the Rijiksmuseum van Natuuurlijke Historie in Leiden (now the Nationaal Natuurhistorisch Museum) has two specimens of *Mullus bensasi* from von Siebold's collection of Japanese fishes. Boeseman stated that it is probable that only the larger one (RMNH 4683, 128 mm SL, 145 mm TL) was used in the original description; he selected it as the lectotype. The anal ray count was recorded as I, 6. In a foot note to their description of *Mullus dubius*, Temminck and Schlegel wrote, "Nous n'avon pas reçu le Mullus japonicus, Hout. (conf. Cuv. et Val. III. p. 460), rapporté du Japon par. Mr. de Langsdorff."

Bleeker (1854: 71) reported four specimens from Nagasaki as *Upeneoides bensasi* [*Upeneoides* Bleeker is a synonym of *Upeneus* Cuvier, both with the same type species, *U. vittatus* (Forsskål)].

Günther (1859: 404) recognized Houttuyn's *japonicus* as valid, but he placed it in the genus *Mulloides* Bleeker.

Steindachner and Döderlein (1884: 22) obtained specimens of a goatfish from four localities in Japan which they identified as *Upeneoides japonicus*, but in small print in the heading after this name they added "*U. tokisensis* n. sp. Döderl.?" Evidently they were uncertain of the identity of *japonicus* due to inadequate early descriptions and wanted the name *tokisensis* to be available in the event more than one species was found.

In his review of the Mullidae of Japan, Snyder (1907: 96–97) listed Steindachner and Döderlein's *Upeneoides japonicus* as *Upeneus bensasi*, not *Mullus japonicus* Houttuyn, and placed *Upeneoides tokisensis* in the synonymy of *bensasi*. He recorded specimens of both *Mulloides japonicus* and *Upeneus bensasi* from Japan. However, it is clear from his count of VIII dorsal spines, 37 lateral-line scales, and 7+23 gill rakers for his two specimens of *M. japonicus* from Misaki that they are not the *japonicus* described by Houttuyn and redescribed by Cuvier. His specimens appear to be *Mulloidichthys vanicolensis* (Valenciennes).

Jordan et al. (1913) continued to classify *japonicus* in *Mulloides*, but shifted *bensasi* to *Upeneoides* Bleeker.

Fowler (1933) relegated *Mullus japonicus* Houttuyn to the synonymy of *Mulloidichthys auriflamma* (Forsskål); his description of *M. auriflamma* indicates he also had specimens of *M. vanicolensis*.

Lachner (1954) revised the genus *Upeneus*, recognizing 10 species; *U. japonicus* Houttuyn is not among them.

We conclude that *Mullus japonicus* is a valid species of *Upeneus* and a senior synonym of *U. bensasi*. Our evidence for this is as follows: villiform teeth in the jaws (hence eliminating the species of *Parupeneus* Bleeker); first dorsal fin of VII spines (of the five species of *Upeneus* with this count, only the one currently recognized as *bensasi* occurs in Japanese waters); yellow barbels; lack of black bands in either of the caudal-fin lobes (thus eliminating most of the species of *Upeneus*); and the Japanese name.

We wrote to Hans-Joachim Paepke of the Museum für Naturkunde der Humboldt-Universität in Berlin to inquire if the holotype of *Upeneus japonicus* is extant. He replied that there is a record of this species in the old catalogue of dry fishes written by H. M. Lichtenstein, but it is not listed in the catalog that was started in about 1860–1870. Paepke could not find the specimen in the present collection and believes it was lost "a long time ago." In the interest of stability, we designate and describe below a neotype of this species from a Japanese specimen of the National Science Museum of Tokyo.

Specimens of *Upeneus japonicus* were examined at the following institutions: American Museum of Natural History, New York (AMNH); Bernice P. Bishop Museum, Honolulu (BPBM); Field Museum of Natural History, Chicago (FMNH); Naturhistorisches Museum, Vienna (NMW); National Science Museum, Tokyo (NSMT); Nationaal Natuurhistorisch Museum, Leiden (RMNH); and the U.S. National Museum of Natural History, Washington, D.C. (USNM).

Lengths recorded for specimens examined by us are standard length (SL). Methods of counting and measuring specimens follow Randall and Guézé (1992).

Upeneus japonicus Houttuyn, 1782
(Japanese name: Himeji)
(Fig. 1)

Mullus japonicus Houttuyn, 1782: 334 (type locality, Japan).

Mullus bensasi Temminck and Schlegel, 1844: 30, pl. 11, fig. 2 (type locality, Nagasaki).

Upeneoides tokisensis Döderlein in Steindachner and Döderlein, 1884: 22 (type locality, Tokyo).

Diagnosis. Dorsal rays VII-I, 8; anal rays I, 6; pectoral rays 14 (one of 35 with 15, and one with 13); lateral-line scales to caudal-fin base 29 or 30; gill rakers 6–8+17–20; body depth 3.75–4.35 in SL; head length 3.35–3.55 in SL; snout 2.3–2.45 in head; orbit diameter varying from 3.8 in head length of a specimen 92 mm in SL to 4.45 in head of a specimen 157 mm in SL; barbels 1.3–1.45 in head; first dorsal spine longest, 1.4–1.5 in head; pectoral fins 1.2–1.3 in head. Color in alcohol generally light brown without dark markings, though vestiges of three or four transverse dark bands may be evident on the upper lobe of the caudal fin and two to four in the second dorsal fins. In life pinkish gray dorsally, white ventrally, some individuals with light red markings on scales of upper half of body, the most prominent being four series of three or four spots, one per scale in a midlateral row; barbels yellow; first dorsal fin with two broad oblique red bands; second dorsal fin with two to four longitudinal red bands; upper lobe of caudal fin with three or four oblique red bands; lower lobe solid red, shading to blackish red distally,

Fig. 1. *Top*—underwater photograph of *Upeneus japonicus*, about 140 mm TL, Izu Oceanic Park, Izu Peninsula, Honshu, Japan, 25 m (J. Randall); *middle*—aquarium photograph of neotype of *Upeneus japonicus*, 123 mm TL (Y. Yokota); *bottom*—neotype of *Upeneus japonicus*, 99.8 mm SL (H. Senou).

the margin whitish; anal and pelvic fins with white rays and hyaline membranes; pectoral fins with pinkish rays and hyaline membranes.

Neotype. NSMT-P 45177, 99.8 mm SL, Japan, Honshu, east coast of Izu Peninsula, off Futo Harbor, 15 m, K. Okamoto, Y. Yokota, and K. Takahashi, 12 March 1993.

Description of neotype. Dorsal rays VII-I, 8; anal rays I, 6; pectoral rays 14; pelvic rays I, 5; principal caudal rays 7+8 (median 13 branched); upper and lower procurrent caudal rays 9; lateral-line scales 29; scales above lateral line to origin of first dorsal fin 2; scales below lateral line to origin of anal fin 6; predorsal scales about 14 (anterior scales missing); median prepelvic scales 8; circumpeduncular scales 16; horizontal rows of scales on cheek 3; median dorsal scales between dorsal fins 4; gill rakers 6+19; pseudobranchial filaments about 25; branchiostegal rays 3; vertebrae 10+14.

Body moderately elongate, the depth 4.15 in SL, and compressed, the width 1.6 in depth; head length 3.35 in SL; snout length 2.4 in head; orbit diameter 4.1 in head; interorbital space slightly convex, the least width 3.75 in head; barbels short, 1.4 in head; caudal peduncle depth 2.9 in head; caudal peduncle length 1.2 in head; predorsal length 2.8 in SL; preanal length 1.55 in SL; prepelvic region flat, the prepelvic length 3.15 in SL.

Mouth small, the maxilla nearly reaching a vertical at front edge of orbit, the upper jaw length 2.85 in head; mouth inferior and oblique, the gape forming an angle of about 20° to horizontal axis of body; a narrow band of villiform teeth in jaws; a narrower band of villiform teeth on palatines and vomer, those on vomer forming a V-shape. Tongue fused to floor of mouth.

Anterior nostril in front of middle of eye about half distance to front of snout, the opening with a low rim that is thicker and higher posteriorly; posterior nostril a near-vertical slit in front of upper edge of pupil, just beneath dorsoanterior bony edge of orbit. Gill membranes narrowly attached to isthmus. Gill rakers not very long, the longest shorter than longest gill filaments, about half orbit diameter.

A single, small, near-horizontal spine posteriorly on opercle at level of lower edge of pupil; a membranous spine-like projection at edge of opercle a short distance above opercular spine; suprascapula with a small sharp spine (these three spines covered by scales).

Scales finely ctenoid; head nearly fully scaled (only lips, narrow region at front of snout and chin, and a small area around nostrils naked); first dorsal fin naked; second dorsal and anal fins with small scales on spine and first two rays extending on rays about two-thirds distance to fin margin; base of caudal fin with large scales, and small scales extending about three-fourths distance to fin margin; a few small scales basally on pectoral fins; pelvic fins with an axillary scale nearly half length of pelvic spine; lateral-line scales with branched tubules, those anteriorly with as many as four branches.

Origin of first dorsal fin above fourth lateral-line scale; base of first dorsal fin 1.65 in head; dorsal spines slender and flexible; first dorsal spine 1.65 in head; second dorsal spine longest, 1.55 in head; origin of second dorsal fin above fourteenth lateral-line scale; base of second dorsal fin 2.1 in head; spine of second dorsal fin 3.0 in head; first soft ray of second dorsal fin longest, 1.9 in head; interdorsal distance 3.0 in head; origin of anal fin below base of second soft ray of second dorsal fin; anal fin base 2.5 in head; anal spine 3.0 in head; first anal soft ray longest, 2.0 in head; penultimate and last rays of second dorsal and anal fins subequal; caudal fin forked, its length 4.1 in SL, the caudal concavity 2.5 in head; third and fourth rays of pectoral fins longest, 4.1 in SL; pelvic spine 2.0 in head; second pelvic ray longest, 1.45 in head.

Color in alcohol light yellowish brown dorsally, shading to silvery white on sides and ventrally; fins pale, the lower lobe of caudal fin with a dusky submarginal band, the upper lobe with a dusky transverse band near tip; tip of second dorsal fin dusky.

Color in life as in Figure 1 (top); color shortly after death as in Figure 1 (bottom).

Remarks. *Upeneus japonicus* occurs from Japan as far north as Hokkaido (Masuda et al., 1975) and Korea (Mori, 1952) south to Taiwan (Shen, 1984) and Hong Kong on the coast of China. In Taiwan the species is found mainly in the northeastern part, thus indicating its predilection for cooler water. Records from more southern areas are probably mainly misidentifications of *U. guttatus* (Day) or *U. sundaicus* (Bleeker). The record of *U. bensasi* from New Zealand by Russell and Ayling (1976) proved to be a new species, *U. francisi*, described by Randall and Guézé (1992).

Upeneus japonicus is a small species; the largest

specimen we have examined measures 157 mm SL.

Material examined. JAPAN: RMNH 4682, 68 mm (Siebold); RMNH 5734, 5: 55–113 mm. Tokyo, NSMT-P 942, 2: 119–127 mm; NMW 74738, 3: 45–135 mm. Tateyama, Chiba Prefecture, Boso Peninsula, NSMT-P 1131, 8: 76–111 mm; NSMT-P 1333, 80 mm. Shizuoka, BPBM 32766, 2: 65–115 mm; FMNH 908967, 4: 122–151 mm. Izu Peninsula, BPBM 35449, 92 mm (collected with neotype). Miyazu, AMNH 34902, 2: 97–114 mm. Tatokui, AMNH 13242, 85 mm. Kobe, NMW 6594, 2: 99–157 mm. Misaki, AMNH 34856, 10: 92–144 mm. Kyushu, west coast, NSMT-P 1909, 2: 48–117 mm. Nagasaki, RMNH 4683, 122 mm, lectotype of *Mullus bensasi* Temminck and Schlegel. Kagoshima Bay, AMNH 26845, 2: 126–135 mm. HONG KONG: USNM 143452, 95 mm.

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Upeneus japonicus (Houttuyn) は *U. bensasi* (Temminck et Schlegel) の古参同物異名

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ヒメジ *Upeneus japonicus* (Houttuyn) を日本および香港産の標本に基づき記載し，それが *U. bensasi* (Temminck et Schlegel) の古参同物異名であることを明らかにした．*U. japonicus* の完模式標本はすでに紛失しており，名称の安定を考慮し，日本産の1標本を新模式標本に指定し，その記載も行なった．本種の分布域は北海道および韓国から，南は台湾および香港までの範囲である．