Echinogobius hayashii, a new genus and species of Gobiidae

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Abstract Echinogobius hayashii, a new genus and species of Gobiidae is described, based on 11 specimens from Japan and Australia. This genus is distinguishable from all other gobiid genera in having the following combination of characters: first spine of first dorsal fin hard and straight, about 1.5 times second spine in thickness; first spine of second dorsal fin hard, with similar thickness as first soft ray of second dorsal fin, supported by two normally-sized pterygiophores; snout convex; preopercular spine absent; predorsal scales absent; all scales cycloid. The species occurs between 1-20 m in clear water on clear sandy bottoms influenced by fast tidal currents. Based on our observations, it is not associated with an alpheid shrimp.

Key words. — New genus; new species; Gobiidae; Echinogobius.

The gobiid fishes, comprising about 270 nominal genera (Hoese, 1984), have soft thin flexible first spines in both dorsal fins, of a thickness similar to the adjacent spines. However, Hazeus, Oplophorus, Oplophrops and Opus have hard pungent first spines in both dorsal fins, being thicker than those following (Akihito et al. 1993a; Herre, 1927; Koumans, 1953; Smith, 1959). A species of gobiid fish characterised by similar spine conditions, but not referable to any of the latter genera, was collected in the Ryukyu Islands and Western Australia. It is herein described as a new genus and species of Gobiidae.

Materials and Methods

Counting and measuring procedures followed Hubbs and Lagler (1958), Akihito et al. (1984) and Iwata and Hirata (1994). Vertebrae were counted from soft x-ray negatives. Notation of the dorsal fin pterygiophores and vertebrae (P-V), cephalic canal pores, and cephalic pit lines follow those of Akihito et al. (1984) and Gill and Miller (1990). The cephalic sensory canal system and papillae were examined by staining the specimens with suminol cyanine. Descriptions of the cephalic sensory canal system and papillae were based on the holotype, and of fresh color pattern on color photographs of BLIH 1988190-1, 2 and 1991385. Tooth observations were based on specimens cleared and stained following the procedure of Dingerkus and Uhler (1977). Catalogue abbreviations used are: AMS, The Australian Museum, Sydney; BLIH, Biological Laboratory, Imperial Household, Tokyo; BMNH, The Museum of Natural History, London; BPBM, Bernice P. Bishop Museum, Honolulu; NSMT, National Science Museum, Tokyo; OMNH, Osaka Museum of Natural History, Osaka; URM, Department of Marine Science, University of the Ryukyus; YCM, Yokosuka City Museum, Yokosuka; WAM, Western Australia Museum, Perth.

Echinogobius gen. nov.
(New Japanese name: Moyoushinobi-haze zoku)

Type species. Echinogobius hayashii sp. nov.

Diagnosis. First spine of first dorsal fin hard, pungent, straight, about 1.5 times second spine in thickness. First spine of second dorsal fin hard, pungent, of similar thickness as first soft ray of second dorsal fin, supported by two normally-sized pterygiophores. Snout convex. Preopercular edge smooth. Predorsal scales absent. All scales cycloid.

Description. (Data for holotype given first, followed by paratype data in parentheses; see also Figs...
Fig. 1. *Echinogobius havushii* sp. nov. A) Holotype (NSMT-P 49907), 70.1 mm SL; B) paratype (BLIH 1991385), 63.1 mm SL. (just after fixation).

1, 2 and 3, and Table 1). Dorsal fins VI-I, 12 (VI-I, 12); anal fin I, 12 (I, 12); pectoral fin 16 (15-17); pelvic fin I, 5 (I, 5); upper and lower segmented caudal fin rays 9+8 (9+8); upper and lower branched caudal fin rays 7+6 (7+6); lateral scale rows 30 (29-32); transverse scale rows 8 (7-9); predorsal scales 0 (0); P-V 3 II I 1 I 0/9 (3 II I I 1 0/9); vertebrae 10+16=26 (10+16=26).


**Comparisons.** Figure 3 compares dorsal fin elements and pterygiophores of *Echinogobius* and *Oplopomus*. In the latter, the first and second pterygiophores of the second dorsal fin are strong and large, and the first spine of the second dorsal fin is about twice the thickness of the following soft ray. The first spine of the first dorsal fin is similarly thick-