Japan. J. Ichthyol.
40(3): 323–326, 1993

魚類学雑誌
40(3): 323–326, 1993

Muraenichthys japonicus, a New Worm Eel from the Sea of Japan (Ophichthidae: Myrophinae)

Yoshihiko Machida[1] and Suguru Ohta[2]

[1] Department of Biology, Faculty of Science, Kochi University, 2–5–1 Akebono-cho, Kochi 780, Japan
[2] Ocean Research Institute, University of Tokyo, 1–15–1 Minamidai, Nakano-ku, Tokyo 164, Japan

(*Received February 12, 1993; in revised form July 2, 1993; accepted August 19, 1993*)

Abstract A new ophichthid eel, *Muraenichthys japonicus*, is described on the basis of a single specimen from the Sea of Japan. The new species clearly differs from its congeners in having extremely short dorsal and anal fins originating near the tip of the tail.

The worm eel genus *Muraenichthys* Bleeker contains about 20 or more species (McCosker, 1979). Matsubara (1955) and Asano (1984) noted four *Muraenichthys* species from Japanese waters. Recently, Machida and Shiogaki (1990) described *M. borealis* from Aomori, northern Japan. However, only a single occurrence of the genus from the Sea of Japan has been reported, being *M. gymnotus* from Sado Island, Niigata Prefecture, by Honma (1962).

In 1990, the R/V Tansei-maru of the Ocean Research Institute, University of Tokyo, dredged a single worm eel specimen from the Sea of Japan, off Yamaguchi Prefecture, southwestern Honshu, Japan (Fig. 1). It had a short but distinct caudal fin, and extremely short dorsal and anal fins, which were confluent with the caudal fin, near the tip of the tail. Subsequent study of the specimen revealed that it represented a new species of the genus *Muraenichthys*. It is here described as *Muraenichthys japonicus*.

The methods of taking counts and measurements generally followed McCosker (1979). Counts of the cephalic sensory pores followed McCosker et al. (1989).

The holotype is deposited in the Department of Biology, Faculty of Science, Kochi University (BSKU).

Muraenichthys japonicus sp. nov.
(New Japanese name: Nihon-mimizuanago)
(Figs. 2–5)

Holotype. BSKU 81581, 197.2 mm total length (TL), sex unknown, 34°58.08–58.11′N, 131°04.87–05.06′E, R/V Tansei-maru cruise KT-90-15, station CB-2-2, Sea of Japan, off Mishima, Yamaguchi Pref., southwestern Japan, depth 74–78 m, 1-m span ORI dredge, 2 Nov. 1990.

Diagnosis. A species of *Muraenichthys* with: posterior nostril entirely inside upper lip, covered by a valvular flap; two cephalic sensory pores between anterior and posterior nostrils; three preopercular pores; a short, median groove on ventral side of snout; snout acute; all teeth conical, uniserial on maxillary, dentary and prevomer; intermaxillary teeth not in a broad patch; dorsal and anal fins opposite, their bases extremely short, originating about 1/2 head length from tip of caudal fin; eye diameter 17.5 in head length; body depth 56 in TL; total vertebrae 137.

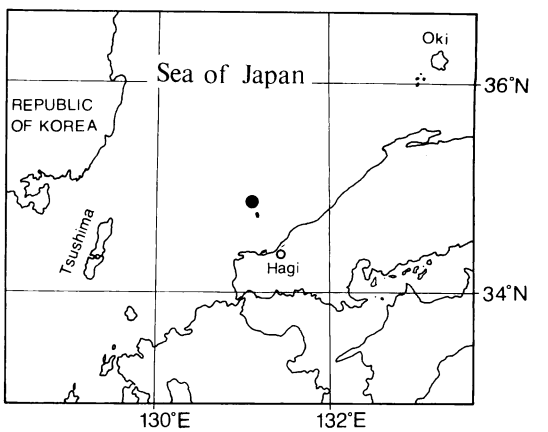

Fig. 1. Map showing the type locality of *Muraenichthys japonicus*.

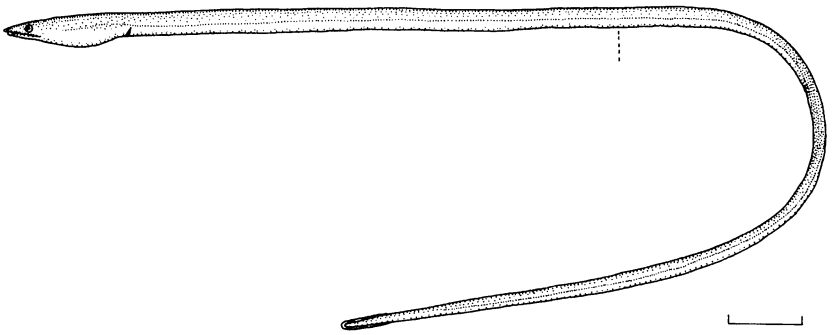

Fig. 2. *Muraenichthys japonicus*, holotype, BSKU 81581, 197.2 mm TL, from the Sea of Japan. Scale bar indicates 10 mm.

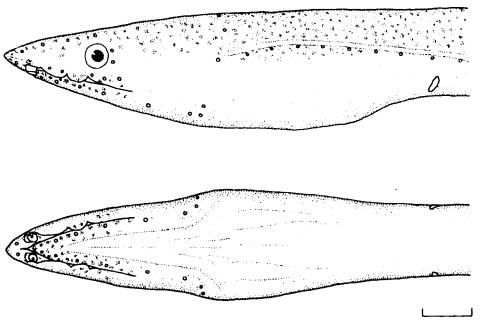

Fig. 3. Head of the holotype of *Muraenichthys japonicus*. Scale bar indicates 2 mm.

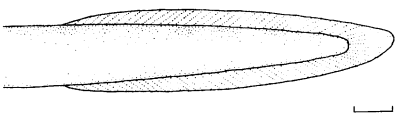

Fig. 5. Posterior end of the holotype of *Muraenichthys japonicus*. Scale bar indicates 1 mm.

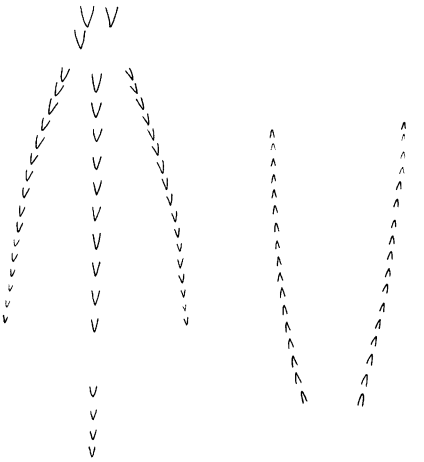

Fig. 4. Upper (*left*) and lower jaw dentition (*right*) of the holotype of *Muraenichthys japonicus*.

Description. *Measurements in mm* (in % TL in parentheses).—TL 197.2, head length 17.5 (8.9), head plus trunk length 85.5 (43.4), maximum body depth 3.5 (1.8), body depth at vent 3.3 (1.7), predorsal length 189.0 (95.8), preanal length 189.0 (95.8), snout length 3.3 (1.7), upper jaw length 6.3 (3.2), eye diameter 1.0 (0.5), interorbital width 1.7 (0.9), length of gill-opening 0.9 (0.5).

Counts.—lateral line pores before vent 54, vertebrae before vent 53, total vertebrae 137.

Body elongate, cylindrical, compressed posteriorly; tail much longer than head plus trunk length (Fig. 2). Head short, 11.3 in TL. Gill-opening lateral, low on body, a constricted hole about equal to eye diameter. Snout acute, extending beyond tip of lower jaw; a short median groove on ventral side of snout (Fig. 3). Tip of lower jaw reaching to anterior nostril. Anterior nostril tubular, its length 1/3 eye diameter. Posterior nostril a large opening just in front of eye, opens entirely inside upper lip, covered by a valvular flap. Eye small, circular, its diameter 17.5 in head length. Cleft of mouth large, extending backward one eye diameter beyond posterior margin of eye. Interorbital region weakly convex.

All teeth conical; uniserial in jaws and on prevomer (Fig. 4). Three rather large teeth on intermaxillary, scarcely visible when mouth closed.

Sensory pores on head as follows: supraorbital pores 1 + 4, infraorbital pores 4 + 3, two of the former between anterior and posterior nostrils, preoperculomandibular pores 5+3, frontal commisure pore present, supraorbital pores 3.

Pectoral fins absent. Dorsal and anal fins opposite, very low, continuous with caudal fin, originating about 1/2 head length from tip of caudal fin (Fig. 5).

Color in alcohol.—uniformly light-brown, dorsal half of fish with many small melanophores. Vertical fins much paler.

Distribution. Known only from the Sea of Japan, off Mishima Island, Hagi City, Yamaguchi Pref., southwestern Honshu, Japan, from a depth between 74 and 78 m (Fig. 1).

Etymology. This species is named *japonicus* in reference to its type locality, Japan.

Remarks. Following McCosker (1970, 1977, 1979) and McCosker et al. (1989), the present species is identified as a member of the genus *Muraenichthys*. It differs from two closely related genera, *Schultzidia* and *Schismorhynchus*, owing to the former lacking prevomerine teeth, and the latter having a prominent toothed groove on the underside of the snout and a long anterior nasal tube.

In an earlier revision of the genus, McCosker (1979: 507) noted that none of the 19 *Muraenichthys* species then known, had the dorsal fin originating from more than one head length behind a vertical line from the anus. *Muraenichthys puhioilo*, described from a single specimen from Hawaii, has the dorsal-fin origin in front of the anus (McCosker, 1979). The dorsal-fin origin is posterior to the anus by a distance between 1/7 and 1/2 head length in the most recently described species, *M. borealis* (Machida and Shiogaki, 1990). The dorsal and anal fin bases of *M. japonicus* are extremely short, their origins being 5.9 times the head length behind the anus. Thus the new species clearly differs from its congeners in this character, which is presently considered diagnostic of the species rather than at a higher level, because *M. japonicus* shares the following features with the subgenus *Scolecenchelys*: posterior nostril within mouth, covered by an exterior valvular flap; two pores between nostrils; jaw teeth uniserial, intermaxillary teeth not in a broad patch; snout usually acute and body moderately elongate, its depth usually more than 25 in TL (McCosker, 1977).

Muraenichthys is widely distributed in the tropical and temperate Indo-Pacific and southern Pacific oceans (McCosker, 1970). Honma (1962) reported the occurrence of two *M. gymnotus* specimens (256.0 mm and 321.0 mm TL) from Sado Island, being the first and up to now, only known record of the genus from the Sea of Japan. All the known specimens of *M. borealis* were collected from cold waters off Aomori Pref., northernmost district of Honshu, Japan, at depths shallower than 60 m (Machida and Shiogaki, 1990). The occurrence of *M. gymnotus* and *M. japonicus* in the Sea of Japan, and northern distribution of *M. borealis* suggest that some *Muraenichthys* species may adapt to colder waters than previously thought.

Acknowledgments

We thank the officers, crew and scientists on the R/V Tansei-maru KT-90-15 cruise for their help in collecting this unique specimen. This work was supported in part by funds from Cooperative Program (No. 009) provided by the Ocean Research Institute, University of Tokyo.

Literature Cited

Asano, H. 1984. Family Ophichthidae. Pages 30–32, pls. 33–34, 338 *in* H. Masuda, K. Amaoka, C. Araga, T. Uyeno and T. Yoshino, eds. The fishes of the Japanese Archipelago. English text and plates. Tokai Univ. Press, Tokyo. xxii+437 pp., 370 pls.

Honma, Y. 1962. Further additions to "A list of the fishes collected in the Province of Echigo, including Sado Island" (VII). Japan. J. Ichthyol., 9: 127–134. (In Japanese.)

Machida, Y. and M. Shiogaki. 1990. A new snake eel, *Muraenichthys borealis*, from Aomori, northern Japan. Japan. J. Ichthyol., 37: 1–5.

Matsubara, K. 1955. Fish morphology and hierarchy. Ishizaki Shoten, Tokyo. 3 vols., xii+1605 pp., 135 pls. (In Japanese.)

McCosker, J. E. 1970. A review of the eel genera *Leptenchelys* and *Muraenichthys*, with the description of a new genus, *Schismorhynchus*, and a new species, *Muraenichthys chilensis*. Pacif. Sci., 24: 506–516.

McCosker, J. E. 1977. The osteology, classification, and relationships of the eel family Ophichthidae. Proc. Calif. Acad. Sci., 41: 1–123.

McCosker, J. E. 1979. The snake eels (Pisces, Ophichthidae) of the Hawaiian Islands, with the description of two new species. Proc. Calif. Acad. Sci., 42: 57–67.

McCosker, J. E., E. G. Böhlke and J. E. Böhlke. 1989. Family Ophichthidae. Pages 254–412 *in* E. G. Böhlke, ed. Fishes of the western North Atlantic. Part 9, Vol. 1. Mem. Sears Found. Mar. Res., New Haven.

日本海産のウミヘビ科の新種ニホンミミズアナゴ

町田吉彦・太田　秀

山口県萩市見島の北方の日本海（水深 74–78 m）で，ドレッジにより採集された 1 個体（全長 197.2 mm）に基づき，ウミヘビ科ニンギョウアナゴ亜科の新種 *Muraenichthys japonicus* ニホンミミズアナゴ（新称）を記載した．本種は，背鰭と臀鰭が尾鰭と連続すること，胸鰭と腹鰭がないこと，両顎と前鋤骨に歯があること，鰓孔は体側にあり，小さくて眼とほぼ同大であること，前鼻孔は短い筒状であること，後鼻孔は口内に開くことでミミズアナゴ属と同定された．本属の既知種では，背鰭は肛門より前方かもしくは肛門より後方 1 頭長以内に始まる．しかし，本種の背鰭と臀鰭の基底は著しく短く，それらの始部が尾部後端から頭長の 1/2 に位置することで既知種と容易に区別される．本属はインド・太平洋の温・熱帯域に分布するとされているが，一部の種が冷水域に適応している可能性を指摘した．

(町田：〒780 高知市曙町 2–5–1　高知大学理学部生物学教室；太田：〒164 中野区南台 1–15–1　東京大学海洋研究所)