

*Scopelarchus linguicens*, a New Bathypelagic Fish  
from off Northern Japan

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The specimens described below are part of a collection of fishes assembled by a group of American, Canadian and Japanese biologists who were engaged in a study of the North Pacific fur-bearing seal during the spring of 1952. Although all three specimens are juveniles, they are sufficiently developed to be recognizable as an undescribed species and to be compared with their known relatives. Among other distinctive characters, the teeth of the tongue serve to identify our specimens with the family Scopelarchidae.

*Scopelarchus linguicens*, new species

*Holotype*: A specimen 47.3 mm in standard length, collected on May 26, 1952, by Mr. F. H. C. TAYLOR and others aboard the *Iwate Maru*, research vessel of the Iwate Prefectural Experimental Station, with a ten-foot midwater trawl. Locality: 45 miles east of Ohakozaki, Iwate Prefecture, Japan ( $39^{\circ} 21' N. Lat., 142^{\circ} 57' 30'' E. Long.$ ). Time: 2003-2113. Depth: less than 13 meters. The type will be deposited in the collection of the U. S. National Museum.

*Paratypes*: A specimen 38.8 mm in length, collected on the same date and under similar circumstances as the holotype. Locality: 44 miles east of Ohakozaki ( $39^{\circ} 21' N. Lat., 142^{\circ} 56' 30'' E. Long.$ ). Time: 2235-2347. Depth: 66- 100 meters unless the fish entered the net while it was being raised or lowered.

A cleared and stained specimen 38.2 mm in length bearing the same data as the holotype.

*Description*: Body compressed, tapering evenly from its point of greatest depth (behind the head) to the moderate caudal peduncle. Greatest depth 9.0-10.0 in standard length; least depth of caudal peduncle 4.0 in length of caudal peduncle. Anus located in center third of body, below middle of base of dorsal fin and at tip of ventral fin when appressed.

Head less compressed than body and slightly deeper, its length 5.2-6.2 in standard length. Greatest depth of head 1.4-1.5 in head length. Operculum ending in a smooth curve. From above eye to tip of snout the forehead is slightly concave. The nostril centers on a line between tip of snout and center of eye when viewed laterally and is about midway between tip of snout and anterior rim of orbit; length of snout 2.3-2.4 in that of head. Orbit irregular; eye elliptical; lens round. Eyes directed somewhat upward and forward. Horizontal diameter of orbit 3.5-4.0 in length of head. Dorsal rim of orbit not entering into dorsal profile; interorbital convex. Jaws coterminal or the lower slightly projecting. Maxillary and premaxillary extending nearly to a verti-

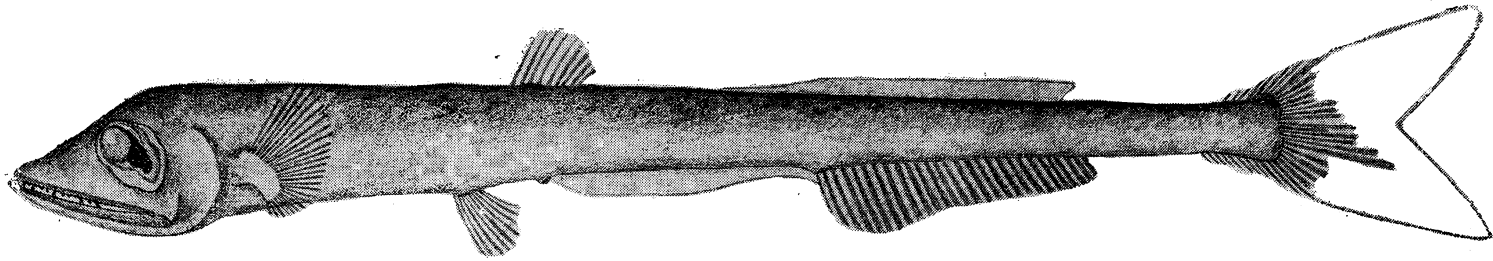
cal with posterior orbital rim. Maxillary, measured from tip of snout, 1.3-1.4 in head. Dentary extending to or slightly beyond eye, its length 1.2-1.3 in head. Gill rakers absent.

Dentition moderate. It is apparent that the teeth exclusive of those on the tongue are still in the course of development. It is also probable that some were lost during the collecting and subsequent handling as evidenced by irregularities in the jaw series. The description is based largely on the 38.2 mm specimen, which was cleared in potassium hydroxide, stained with alizarine red, and destained and preserved in glycerine followed by synthetic oil of wintergreen. The premaxillaries, anterior to the point where they become overlain by the maxillaries, bear 4-10 minute teeth which are not readily visible on unstained material. Posterior to these are 7-18 small, irregularly spaced, depressible teeth. The teeth of this series are more numerous anteriorly. The posterior 0.4 of the premaxillary bears several teeth in the largest specimen, none in the smaller. Three to five moderate, slightly recurved and very slender palatine teeth. Each half of the dentary bears 6-8 depressible teeth. Those nearest the symphysis are the shortest, being comparable in length to those of the palatine. Those lying toward the center of the toothed area are the strongest, equal in length to the diameter of the pupil. Coexistent with these depressible dentary teeth are smaller regularly spaced teeth which form a continuous series along the anterior 0.8 of the dentary and are scarcely apparent in unstained material. Due to loss or poor development the continuity of this series is interrupted at various places in our material. The posterior 0.2 of the dentary is apparently toothless. The tongue bears 6-8 distinctive teeth which in all probability are depressible. The anterior 3-6 are large, both in diameter and in length. The sharp tip is hooked strongly backward, forming a right angle with the base. The angle is strongly incised and resembles the last two segments of the tail of a scorpion. The teeth following these larger anterior ones are smaller but equivalent in shape.

Fin formula: D. 9-10; A. 28; P. 25-27; V. 9-10. Branchiostegal rays 7.

Dorsal fin inserted in middle third of body and behind origin of ventrals; the distance from tip of snout to its origin 2.4 in standard length. Dorsal base short, about 3.0 in head. Third dorsal ray the longest, 3.6-3.8 in length of head. Adipose fin long, low and membranous, not developed into the well defined lobe characteristic of most adult iniomous fishes. Distance from tip of snout to anal insertion 1.5-1.6 in standard length; fourth anal ray the longest, 3.4-3.6 in head. Caudal fin moderately forked; shortest central caudal ray about 2.4-2.5 in head. Pectoral fin pedunculate; bases of fin rays lie on a curved line around base of fin. Ventral inserted well in advance of origin of dorsal and of anus. Ventral fin bases converging, their posterior ends lying immediately adjacent to the midline but not connected across the midline. Distance from tip of snout to ventral 2.7-2.9 in standard length. Length of fins 3.0-3.2 in head, 1.0 in distance from their insertions to anus. Remnants of the larval fin fold can be seen between anus and origin of anal fin.

Measurements in thousandths of standard length of the holotype (47.3mm) fol-



**Fig. 1.** *Scopelarchus linguoides*, new species. Drawn from the holotype, 47.3 mm in standard length

lowed, in parentheses, by those of the paratypes (38.2 and 38.8 mm). Since the second paratype is badly bent it was impossible to make the longer fin-placement measurements on that specimen. Head 160 (180, 191); snout 70 (75, 78); orbit 45 (50, 44); bony interorbital 26 (25, 26); anterior margin of orbit to nostril 30 (44); maxillary 121 (137, 132); mandible 129 (155, 150); depth of head 116 (124, 125); depth of body just behind nape 116 (124, 125); least depth of caudal peduncle 37 (37, 37); length of caudal peduncle 148 (149); snout to dorsal insertion 413 (425); longest dorsal ray 42 (50); snout to anal insertion 634 (646); longest anal ray 48 (50); snout to pectoral insertion 177 (194); length of pectoral fin 42; snout to ventral insertion 340 (348); length of ventral fin 53 (56); length of shortest caudal ray 63 (75); length of lower caudal lobe 112 (112).

The specimens, preserved in alcohol, are opaque and completely lacking in pigmentation except for the iris which is bluish-black.

*Relationships*: Of the members of the family Scopelarchidae the new species is most similar in general appearance to *Benthalbella infans*. This similarity is not unexpected since both are known from young specimens which have not developed the typical adult scopelarchid form. Since the morphometric characteristics of iniomous fishes are subject to considerable ontogenetic change, an analysis of the proportional measurements of the known species without adequate adult material proved to be of little value. A comparison of the fin-ray counts (table 1), however, shows clearly the impossibility of referring our specimens to any of the nominal species currently recognized: *Benthalbella infans* ZUGMAYER (1911a, p. 14; 1911b, p. 140 *Promacheon sibogae* WEBER (1913, p. 85, fig. 29); *Scopelarchoides nicholsi* PARR (1929, p. 16, fig. 5; 1931, p. 35, fig. 15); *Neoscopelarchoides dentatus* CHAPMAN (1939, p. 530, fig. 67); *Scopelarchus elongatus* NORMAN (1937, p. 86); *Scopelarchus güntheri* ALCOCK (1896, p. 307; 1897, pl. 17; 1899, p. 153.; and *Scopelarchus anale* (BRAUER), (1906, p. 138).

Of these species, *Promacheon sibogae* is possibly a post-larval or juvenile myctophid, *Benthalbella infans* a young *Scopelarchus* rather than an *Evermannella* as suggested by PARR (1930, p. 156), or a young *Omosudis* (ROULE, 1928, p. 8) and the other known species of Scopelarchidae may be referable to the single genus *Scopelarchus*, as indicated by HARRY (1951, p. 37). For a further discussion of the relationships of the scopelarchids see PARR (1928, p. 156), REGAN (1911, p. 130) and GREGORY (1933, p. 211).

Table 1. — Fin-ray counts of the currently recognized species of Scopelarchidae.

	Dorsal	Anal	Pectoral	Ventral
<i>Benthalbella infans</i>	9-10	17-22	22-26	7-9
<i>Promacheon sibogae</i>	14	17-18	15	10
<i>Scopelarchoides nicholsi</i>	6	21-23	20-22	9
<i>Neoscopelarchoides dentatus</i>	6-7	17-21	22-25	9
<i>Scopelarchus elongatus</i>	9-10	26	19	9
<i>Scopelarchus güntheri</i>	9	26	19	8
<i>Scopelarchus anale</i>	7-9	23-25	19-21	9
<i>Scopelarchus linguoides</i>	9-10	28	25-27	9-10

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