

A Rare Macrourid Alevin of the Genus *Hymenocephalus* from the Pacific Ocean

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During the midwater trawl survey of the T/V Oshoro-Maru of Hokkaido University, a rare macrourid larva was collected at 0-400 m depth in the southeast of the Ryukyu Islands in November 1988. The larva has a discoid pectoral fin with long, stalked base, a feature that identifies it as a macrourid alevin (Merrett, 1989). The structure of the light organ and the presence of seven branchiostegal rays further identifies the specimen as a species of *Hymenocephalus*.

Information on the early life history of Pacific Ocean macrourids is available for only four species of two genera, *Coryphaenoides* and *Mesobius* (Gilbert and Burke, 1912; Hubbs and Iwamoto, 1977; Stein, 1980). In this paper, we report the first discovery from the Pacific Ocean of an alevin of *Hymenocephalus*.

The specimen was fixed and preserved in 5% buffered formalin, and is deposited in the larval collection of the Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University (HUMZ-L). Methods for taking meristic and morphological data follow Stein (1980) and Merrett (1989). Terminology for life history stages follows Merrett (1989).

Hymenocephalus sp. (Figs. 1, 2)

Material examined. HUMZ-L 5220, 3.59 mm in head length (HL), 20.5 mm in total length (TL), 24°17.0'N, 131°45.8'E, 0-400 m depth, beam trawl on November 17, 1988.

Comparative adult material. *Hymenocephalus aterrimus*: HUMZ 107628 (1 specimen, 35 mm HL, 156+ mm TL); *H. gracilis*: HUMZ 35803 (1, 40 mm HL, 169+ mm TL); *H. kuronumai*: HUMZ 36533 (1, 40 mm HL, 169+ mm TL); *H. lethonemus*: HUMZ 36038, 36225 (2, 18-19 mm HL, 96-104+ mm TL); *H. longiceps*: HUMZ 36629 (1, 24 mm HL, 107 mm TL); *H. striatissimus*: HUMZ 36682, 90357, 90358 (3, 20-23 mm HL, 84-146+ mm TL).

Description of alevin. Meristic counts: first dorsal fin rays II, 9; pelvic fin rays 8; gill rakers on

first arch 0+7/0+8; branchiostegal rays 7; retia mirabilia and gas glands 2; abdominal vertebrae 12. Measurements in mm: body depth 3.88; predorsal 4.30; preanal 5.48; first dorsal fin base 1.58; longitudinal length of light organ 2.34.

Head and body compressed. Head partly damaged, both eyes lost. Pectoral fin stalked and discoid in shape. Pelvic fin well developed. Presence of serrations on second spine of first dorsal fin uncertain because of loss of spine. Anal fin rays much longer than second dorsal rays. First gill slit restricted. Gill rakers differentiated and tubercle in shape. Mouth oblique. Premaxilla provided laterally with a band of needle-like teeth (Fig. 2). Mandibular dentition composed of one row of small, widely spaced, conical teeth. Small mental barbel differentiated. Light organ on abdomen having two rounded lens-like bodies connected by a secondary duct; large anterior lens immediately before a line through pelvic fin bases, small posterior lens just before anus (Fig. 2). Anus just before anal fin origin. Vertebrae ossified.

Pelvic fin bases, light organ and abdominal region heavily pigmented. Some melanophores present on first dorsal fin base and area from thorax to isthmus. Leucophores widely scattered on head, thorax and anterior lens of light organ. No striations on underside of body.

Remarks. The discoid pectoral fin with elongate peduncle of the present larva is a distinctive character of the macrourid alevin period (Merrett, 1989). Our Ryukyu Islands alevin has macrourid characters (e.g., restricted first gill slit and well-developed anal fin), and the following features are diagnostic for the genus *Hymenocephalus*: branchiostegal rays 7; light organ having two lens-like bodies connected by a secondary duct; anus situated immediately before anal fin origin; retia mirabilia and gas glands 2.

Among the genus *Hymenocephalus*, which comprises 18 nominal species, 9 species possibly occur from Japan to the Philippines (Iwamoto, 1990). Based on adult characters from our comparative material and from the literature (Smith and Radcliffe, 1912; Gilbert and Hubbs, 1917, 1920; Okamura 1970a, b; Iwamoto, 1990), the present alevin agrees with *H. gracilis* Gilbert et Hubbs, 1920 or *H. kuronumai* Kamohara, 1938 in having 8 pelvic fin rays, 12 abdominal vertebrae, a chin barbel and low gill raker counts.

In pigmentation, the pelvic fin bases are notably black in both this alevin and adult *H. gracilis*, but slightly black in adult *H. kuronumai*. The number of

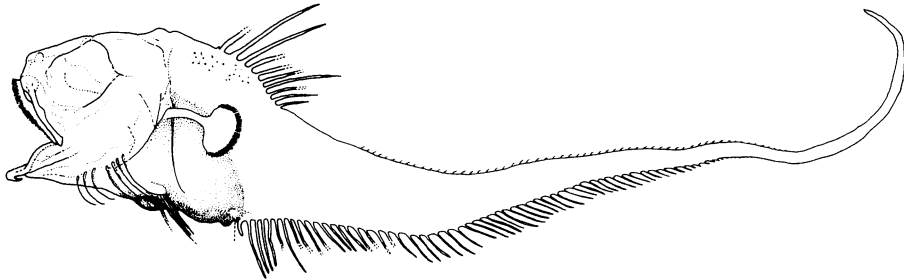


Fig. 1. *Hymenocephalus* sp., HUMZ-L 5220, 3.59 mm HL, 20.5 mm TL.

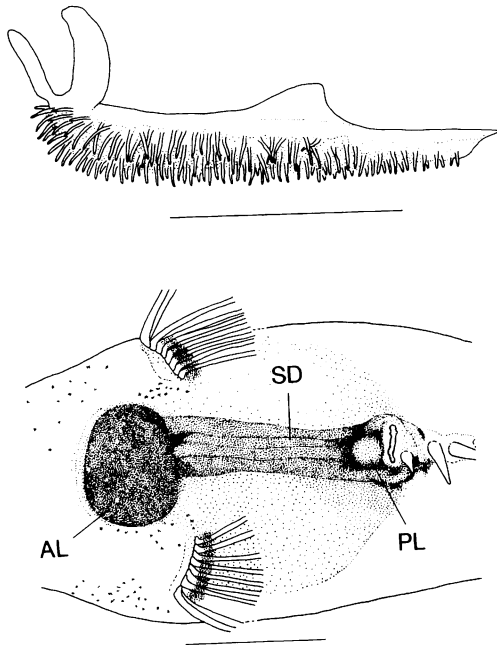


Fig. 2. *Hymenocephalus* sp., HUMZ-L 5220, left premaxilla in lateral view (above); light organ in abdominal view (below). AL, anterior lens of light organ; PL, posterior lens of light organ; SD, secondary duct. Scale bars indicate 1 mm.

anal pterygiophores located before the first haemal spine is four in *H. gracilis* and five in *H. kuronumai* in the comparative materials. The alevin corresponds with *H. gracilis* in having four pterygiophores. However, the amount of intraspecific variation in this character is presently uncertain. Merrett (1989) suggested that the serrated second spine of the first dorsal fin was developed during the alevin period in species bearing this character as adult. Adult *H. gracilis* is easily distinguished from the other 8 species of *Hymenocephalus* in the study area by this

serration feature, but unfortunately, this character was of no value in our specimen because of loss of the distal part of the second dorsal spine. Concerning the premaxillary dentition, the alevin showed a remarkable tooth band, which is not apparent in adult specimens of *H. gracilis* nor *H. kuronumai*. Hence, it may be considered a tentative character in the alevin period.

In the early alevin period of the genus *Hymenocephalus*, completely formed pelvic fin rays and abdominal vertebrae are distinctive characters to help separate *H. gracilis* and *H. kuronumai* from the other species. The present specimen, therefore, can only be determined to genus level, as *Hymenocephalus* sp., presently.

Early life history stages of two species of the genus *Hymenocephalus* have been recorded; *H. italicus* Giglioli, 1884 from the Mediterranean Sea by Sanzo (1933), and *H. italicus* and *H. gracilis* from the Atlantic Ocean by Merrett (1989). Accordingly, this is the third species of *Hymenocephalus* alevin recorded and is the first *Hymenocephalus* alevin reported from the Pacific Ocean. Merrett (1989) provided data, but not descriptions, on the development and pigmentation patterns of alevins of *H. gracilis* and *H. italicus*. Though the present alevin differs from Merrett's *H. gracilis* (4.5–5.0 mm HL) in lacking conspicuous pigments on the head and anterior part of the tail, it is uncertain whether the difference is caused by specific variation or specific difference, or loss of pigments during preservation.

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太平洋から記録されたソコダラ科スジダラ属 *Hymenocephalus* の仔魚

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沖縄南東海域の水深 0-400 m でのビームトロール調査により 1 個体 (3.59 mm HL, 20.5 mm TL) のソコダラ科仔魚が採集された。本標本は、ソコダラ科の Alevin 期に特徴的な有柄胸鰭を備え、鰓条骨数が 7 であること、2 個のレンズを備える発光器をもつこと、肛門が臀鰭始部直前に位置すること、鰾内の血管網とガス腺数が 2 であることからスジダラ属 *Hymenocephalus* に属することが判明した。また、腹鰭条数が 8 で、腹椎骨数が 12 であること、下顎に髭をもつこと、および腹鰭基部が黒いことなどから *H. gracilis* または *H. kuronumai* のいずれかであるが、種までは査定出来なかった。

スジダラ属の初期生活史に関しては、これまで Sanzo (1933) や Merrett (1989) により、*H. italicus* および *H. gracilis* の仔魚数個体が地中海および大西洋から記録されているが、太平洋からの報告はこれが初めてである。

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