

Additional description of larvae of *Neopinnula*
orientalis (GILCHRIST and VON BONDE)
(Pisces: Gempylidae)

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Abstract

Supplement information is given on the postlarvae of *Neopinnula orientalis* (GILCHRIST and VON BONDE) based on 8 specimens, 2.9–7.9 mm standard length, collected from the Caribbean Sea, the north-west coast of Australia and near Okinawa.

The postlarvae are distinguished easily from other larval forms of the family Gempylidae by the heavily pigmented spinous dorsal fin, a black pigment spot present on the front part of the anus, and the black pigment dots scattered on the pelvic fin membrane while fine serrated dorsal and pelvic spines, and well-developed preopercular spination are shared by all larval gempylids.

Larvae of *N. orientalis* from Okinawa represent the first larval record of this fish from the western North Pacific Ocean.

Introduction

In the previous paper (NISHIKAWA and NAKAMURA, 1978), we reported the early developmental stages of *N. orientalis* based on specimens larger than 6.5 mm SL collected from the North Arabian Sea. After it was published, I examined 8 more postlarvae smaller than the previous ones. Diagnostic features on these additional specimens are noted down to supplement the previous report.

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Materials and methods

These additional specimens were collected from the western Atlantic near Bahamas on December 28, 1969, the eastern Indian Ocean off the northwest coast of Australia on

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January 1, 1979, and the western North Pacific near Okinawa on May 30 and June, 3, 1982 by the R/V Shoyo Maru of the Fisheries Agency. They ranged from 2.9 mm to 7.9 mm in standard length (Table 1). Specimens were treated as in the previous paper (op. cit.).

Table 1. Capture records of the larval *N. orientalis*.

Date	Time	Locality		No. of specimens	Size range (mm in SL)	Collecting method
		Lat.	Long.			
1969 Dec. 28	08:00-08:20	21°43' N	76°39.5' W	2	5.6, 5.9	Larva-net (subsurface)
1969 Dec. 28	22:00-22:20	22°53' N	78°46.5' W	1	5.2	" "
1979 Jan. 1	08:14-08:34	12°53.2' S	123°04.5' E	3	2.9-4.0	" "
1982 May 30	05:28-05:48	26°11.2' N	124°30.3' E	1	4.9	" "
1982 Jun. 3	06:49-07:09	26°42.6' N	125°03.4' E	1	7.9	" "

Description

Three postlarval specimens selected to represent typical developmental stages are described in detail. The smallest specimen of 2.9 mm SL can not be illustrated because of its bad fixing condition. Pigment characters of this specimen is identical with the specimen of 3.4 mm SL. Measurements and counts of the specimens described are shown in Table 2.

In the specimen 3.4 mm SL (Fig. 1a), the body is deep and rather short, sharply tapering posteriorly. The head is large and deep, about 38 % of the body length. The snout is rather blunt, and its front edge is square-built in shape. Dorsal profile of head is concave in upper part of the nasal opening. The posterior end of the maxillary reaches below the middle of the eye. Dentition is rather weak, and the small conical teeth are present on both jaws. The nasal opening is an oval single pore. There are two rows of preopercular spines, 3 in the inner and 4 in the outer margin. The augular spine in outer row is smooth and prominent. An isolated small upturned spine is present on the postorbital region. Two pointed spines are found at the temporal region. The abdominal cavity is compact and nearly triangular with the anus at a little posterior to the mid-point of the body length. Of six broad and stout dorsal spines, the anterior 4 have serrated edges. The pelvic fin is rudimentary, with a minute spine and a soft ray as fleshy bud. The soft dorsal, anal, pectoral, and caudal fins are also still rudimentary. The myomere count is about 25.

Pigmentation of the dorsal fin is well developed, numerous pigment dots scattering on the upper two-thirds of the dorsal membrane between the 1st and 4th spines. Large chromatophores are on the top of the head and on the postorbital region. A conspicuous pigment spot is present just in front of the anus*. Anterodorsally the abdominal cavity is dark.

* This pigment spot was overlooked in specimens in our previous report.

Table 2. Data on capture, measurements and counts of larval *N. orientalis* described. Numerals in parentheses show percentages to standard length.

Specimen	a	b	c
Date	1979, Jan. 4	1979, Jan. 4	1969, Dec. 28
Time	08 : 14 - 08 : 34	08 : 14 - 08 : 34	08 : 00 - 08 : 20
Locality	12°53.2' S 123°04.5' E	12°53.2' S 123°04.5' E	21°43' N 76°39.5' W
Measurements in mm			
Total length	3.5	4.2	6.5
Standard length	3.4	4.0	5.9
Head length	1.3 (38.2)	1.8 (45.0)	2.7 (45.8)
Maximum body depth	1.3 (38.2)	1.6 (40.0)	2.2 (37.3)
Snout length	0.35(10.3)	0.55(13.8)	0.9 (15.3)
Upper jaw length	0.6 (17.6)	0.9 (26.5)	1.4 (23.7)
Eye diameter	0.4 (11.8)	0.56(14.0)	0.8 (13.6)
Orbit diameter	0.45(13.2)	0.7 (17.5)	1.0 (16.9)
Pelvic spine length	0.1 (2.9)	0.67(16.8)	1.4 (23.7)
2nd dorsal spine length	0.8 (23.5)	1.43(35.8)	3.2 (54.2)
Snout to dorsal fin origin	1.25(36.8)	1.7 (42.5)	2.1 (35.6)
Snout to pectoral fin origin	1.3 (38.2)	1.8 (45.0)	2.8 (47.6)
Snout to pelvic fin origin	1.4 (41.2)	2.0 (50.0)	3.2 (54.2)
Snout to anterior margin of anus	1.9 (55.9)	2.6 (65.0)	4.1 (69.5)
Counts			
Dorsal fins	VI, 8	X, 8	XIV, 17
Anal fin	7	14	II, 15
Pectoral fin	6	9	15
Pelvic fin	I, 1	I, 3	I, 5
Myomeres	25	21	30

In the specimen 4.0 mm SL (Fig. 1b), the dorsal outline of the head is gently arched from interorbital to the dorsal fin origin. Dorsal spines become more prominent, and increase in number. The anterior 8 spines have the serrated edges. The pelvic fin is developed, with a stout, serrated spine and 3 rudimentary rays. The longest preopercular spine is serrated in this specimen. Some hypural elements are visible.

Dorsal fin pigments spread over the membrane between the 1st and 7th spines. Head pigmentation is denser than in the 3.4 mm specimen. An additional small pigment patch is found on the forebrain area.

In the larger specimen 5.9 mm SL (Fig. 1c), the nasal opening is elongated and has a constriction in the mid part. All fins are developed. The spinous dorsal fin increased in height (2nd spine length is over one half of the body length). Of the total of 14 dorsal spines, the anterior 11 are serrated. The dorsal fin originates fairly before the upper corner of the gill opening. The pelvic fin consists of a single spine and 5 soft rays. The pectoral

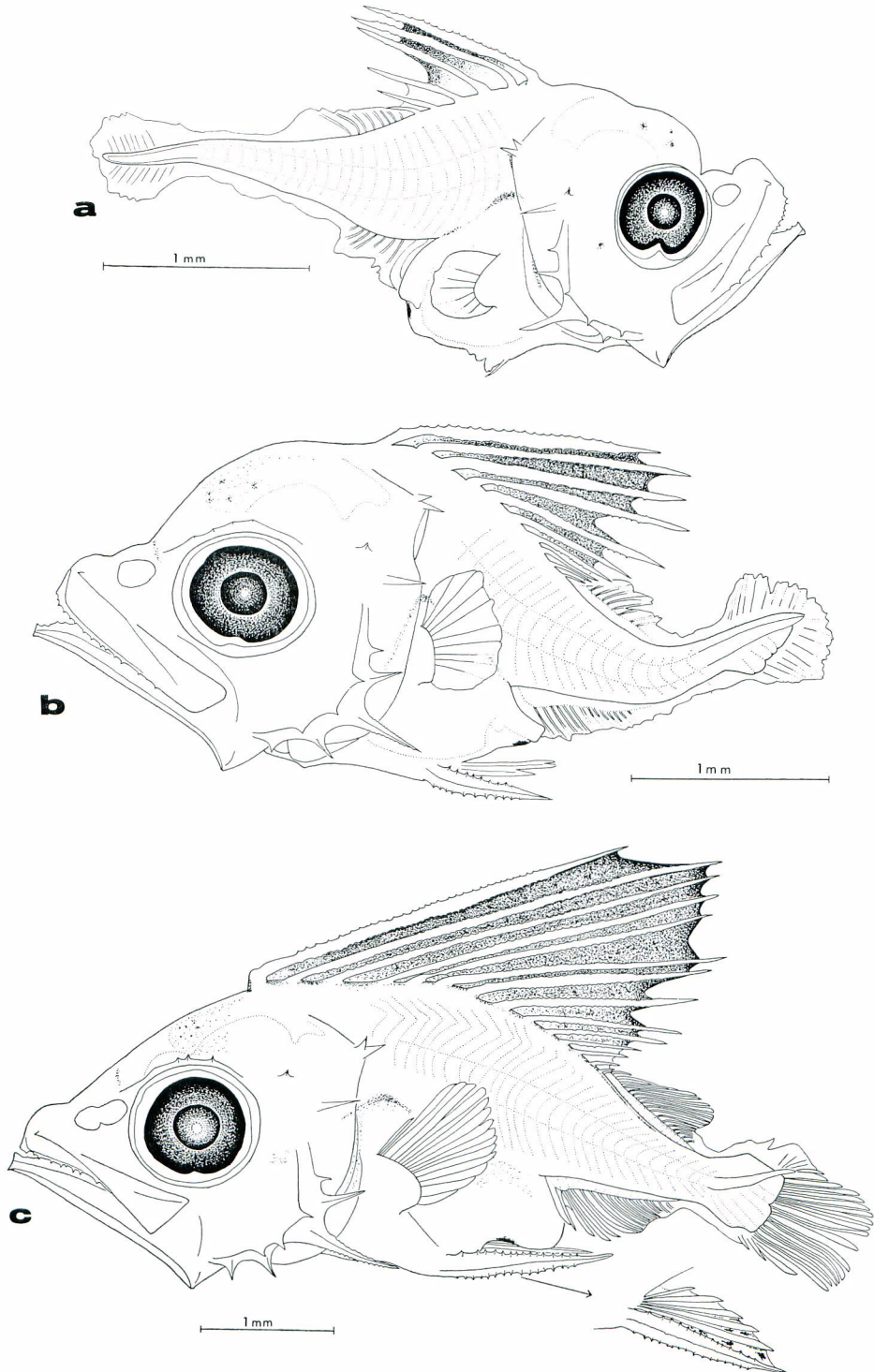


Fig. 1. Development of the larva of *N. orientalis*. a : 3.4 mm, b : 4.0 mm, c : 5.9 mm SL.

fin has 15 soft rays. The full adult complement of the fin rays are attained in both pelvic and pectoral fins. The caudal, anal, and dorsal fins are not yet fully differentiated. The myomere count is about 30.

The pigmented area of the dorsal fin membrane extends over the first 11 spines. The pigment dots are present on the pelvic fin membrane (these pigment dots first appear in the specimen larger than about 5 mm SL).^{*} There is a pigment row along the bases of the spinous and soft dorsal fins.

Discussion

Early postlarval specimens examined in this study are in general agreement with the Arabian specimens of *N. orientalis* reported by NISHIKAWA and NAKAMURA (1978) with respect to the densely pigmented dorsal fin, the shape of the preopercular spines, and count of the fin rays and myomeres. It is therefore concluded that the present specimens come into the same developmental series with our previous ones.

The features in body pigments particularly noted in these additional specimens are 1) the pigment spot in just front of the anus, and 2) the pigment dots on the pelvic fin membrane. As footnoted, these pigments were overlooked in our previous report based on North Arabian specimens. GORBUNOVA (1977) reported the presence of the pelvic fin pigment in a juvenile specimen of 30,5 mm. According to my observation, this pigment pattern seems to first appear at about 5 mm SL and persist throughout the postlarval and juvenile stages.

Recently, three postlarvae of this species have been reported from the Caribbean Sea (GORBUNOVA, 1982) and Flores and Halmahera Seas in the western tropical Pacific (BELYANINA, 1982). These postlarvae reveal little differences from the specimens of this report. All additional specimens herein examined occurred within the known ranges of their adult. Of these, however, two from Okinawa, southernmost Japan, represent the first record of larval *N. orientalis* from the western North Pacific Ocean.

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* These pigment dots were overlooked in specimens in our previous report.

クロタチカマス科, トウヨウカマス *Neopinnula*
orientalis (GILCHRIST and VON BONDE)
の仔魚についての追記載

西川 康夫

摘 要

カリブ海, 東部インド洋および日本南西の沖縄周辺水域から得られた8個体の仔魚標本(体長2.9~7.9 mm)に基づいて, トウヨウカマスの後期仔魚の形態の変化について検討, 記載すると共に本種の幼期についての前報の記載(NISHIKAWA and NAKAMURA, 1978)の補足も併せて行なった。

トウヨウカマスの後期仔魚は, 背鰭の棘条鰭膜に黒色素胞が濃く分布すること, 腹鰭々膜上に黒色素胞が出現すること, および肛門前方の体腹面に黒色素叢がある点において科内の他種幼期と明瞭に識別される。

従来, 日本近海における本種の成魚の出現は報告されているが, 仔魚の出現は今回が初記録である。