

## Prelarvae of Conger Pike, *Muraenesox cinereus* from Western Part of Seto Inland Sea

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The author successively obtained eggs of the conger pike, *Muraenesox cinereus*, using the dry method of the artificial fertilization and described the embryonic and a part of larval development till 44 hours after hatching<sup>1)</sup>. As one of the series of this study, the present paper deals with further data on the larval morphology of the conger pike till 77 hours after hatching.

### 1. MATERIALS AND METHODS

Adult conger pikes were collected from the Suonada, western part of the Seto Inland Sea and stocked at a pen of the Marifu Fish Market, Tabusecho, Kumagegun, Yamaguchi Prefecture. One pair of matured individuals were selected for the parents. Eggs were artificially fertilized by the dry method at 19 : 30 on August 21, 1985, as mentioned in the previous report<sup>1)</sup>. The examined eggs were hatched at 14 : 00 on August 23. A 500 ml glass container, which contained the hatched larvae, was placed in a water bath controlled at a temperature of 22.0-25.0 °C. The morphology of larvae was examined under a binocular microscope.

### 2. DESCRIPTION

The present larvae at 44 hours after hatching showed the same morphological characters as the last stage larvae of the previous report<sup>1)</sup>, and then the author treated with the larvae after that time in the present paper. They were morphologically separated into 4 stages (Table 1, and Fig. 1, 2).

First stage (6.12 mm in total length, 44 hours after hatching): The yolk was observed below the first to 65th myomeres. The post brain vesicle was large, and the finfold was developed. Five oil-globules were rather large, scattered on the yolk surface. Mouth was not opened. The chromatophores faintly appeared on the chorioid membrane and the distal end of body. Anterior end of the alimentary canal was blind and placed in the finfold (Table 1-1 and Fig. 1-1).

Second stage (7.00 mm in total length, 52 hours after hatching): The yolk was reduced in size and spoon-shaped in lateral view. Buds of the otolith and the upper and

lower jaws appeared. The chromatophore on the distal end of body were developed (Table 1-2 and Fig. 1-2).

Third stage (7.84 mm in total length, 60 hours after hatching): The yolk

Table 1. Morphometry of prelarvae of conger pike, *Muraenesox cinereus*.

Figures in parenthesis show percentages to total length and figures with asterisk are round numbers, because several caudal myomeres not clear.

Stage	Length (mm)						Counts		
	Total	Prealanal	Fourth ventricle	Yolk	Eye diameter	Body height	Myomere	Oil-globule	Chromatophore
1	6.12	5.38 (88.0)	0.91 (14.9)	4.29 (70.1)	7.3	0.70 (11.4)	80+21* = 101*	5	no
2	7.00	6.10 (87.1)	0.91 (13.0)	4.65 (66.4)	7.5	0.71 (10.1)	80+25* = 105*	14	1 spot at tail
3	7.84	6.66 (84.9)	0.89 (11.4)	4.65 (59.3)	7.5	0.79 (10.1)	81+36* = 116*	10	1 spot at tail
4	8.10	6.76 (83.5)	0.32 (4.0)	4.29 (53.0)	7.2	0.70 (8.7)	81+46* = 127*	4	8 spots on alimentary canal

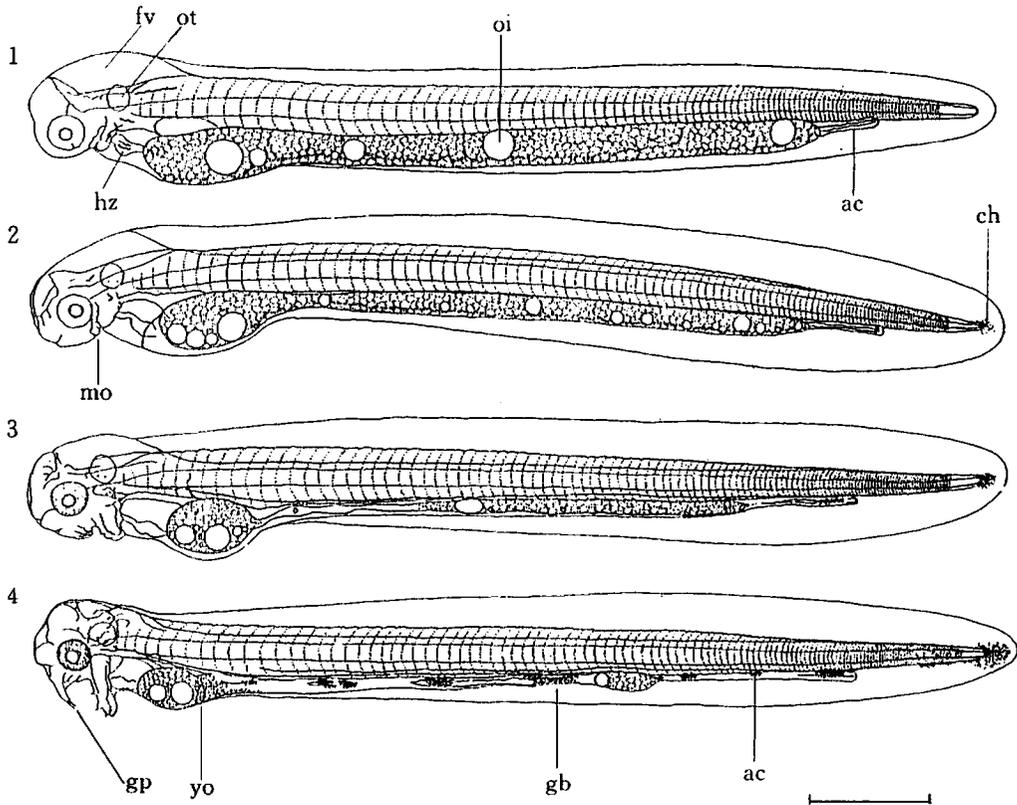


Fig. 1. Early larval stages of conger pike, *Muraenesox cinereus*, showing the location of various organs in relation to myomere. ac, Alimentary canal; ch, chromatophore; fv, fourth ventricle; gb, gall-bladder; gp, grasping tooth; hz, heart; mo, mouth; oi, oil-globule; ot, otocyst. Scale indicates 1 mm.

disappeared below the 10th to 21st myomeres, the remaining yolk was changed to an egg-shape at the anterior part, and a rod-shape at posterior part. Three to four oil globules were observed on the yolk surface. The upper and lower jaws were rather differentiated, with buds of a pair of large grasping teeth on the upper jaw. The chromatophores were developed on the distal ends of the tail and the alimentary canal (Table 1-3 and Fig. 1-3).

Fourth stage (8. 10 mm in total length, 77 hours after hatching): The yolk was almost absorbed, and only small amounts were seen. The post brain vesicle was greatly reduced. The xanthophores were appeared on the lateral medians of the 6th, 11th, 16th and 22nd myomeres. Eight chromatophores were present on the alimentary canal and one chromatophore on the distal end of the tail. The chromatophores on the chorioid membrane were much increased in number. The mouth was opened. A pair of the grasping teeth were fully developed. Two anterior teeth were present on the lower jaw. The Kupffer's vesicle still remained on the distal end of the tail (Table 1-4 and Fig. 1-4, Fig. 2).

### 3. REMARKS

This fourth stage larvae at 77 hours after hatching resembled a No. 6 larva of the family Ophichthidae (7.02 mm in total length, myomeres 77 + Ca. 60, 2.5 days old) described by Mito (1960)<sup>2)</sup> in the chromatophore patterns and the position the distal end of the alimentary canal.

*M. bagio*, with which *M. yamaguchiensis*<sup>3) 4)</sup> was treated as a junior synonymy, is known to distribute together with *M. cinereus* from the western part of the Seto Inland Sea. The main spawning season is May and June in *M. bagio*, while August and September in *M. cinereus*. The developing stage of the leptocephali of these two species, more than 20 mm in total length, were collected from November to March around their spawning area and its neighborhood by the surface tow of a larva net (45 mm in mouth diameter)<sup>1)</sup>. However, the leptocephali less than 10 mm in total length have never been collected so far. It is necessary to examine materials of less than 20 mm in total length, because they seem to greatly change their shape in these stages.

### REFERENCES

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Prelarvae of Conger Pike

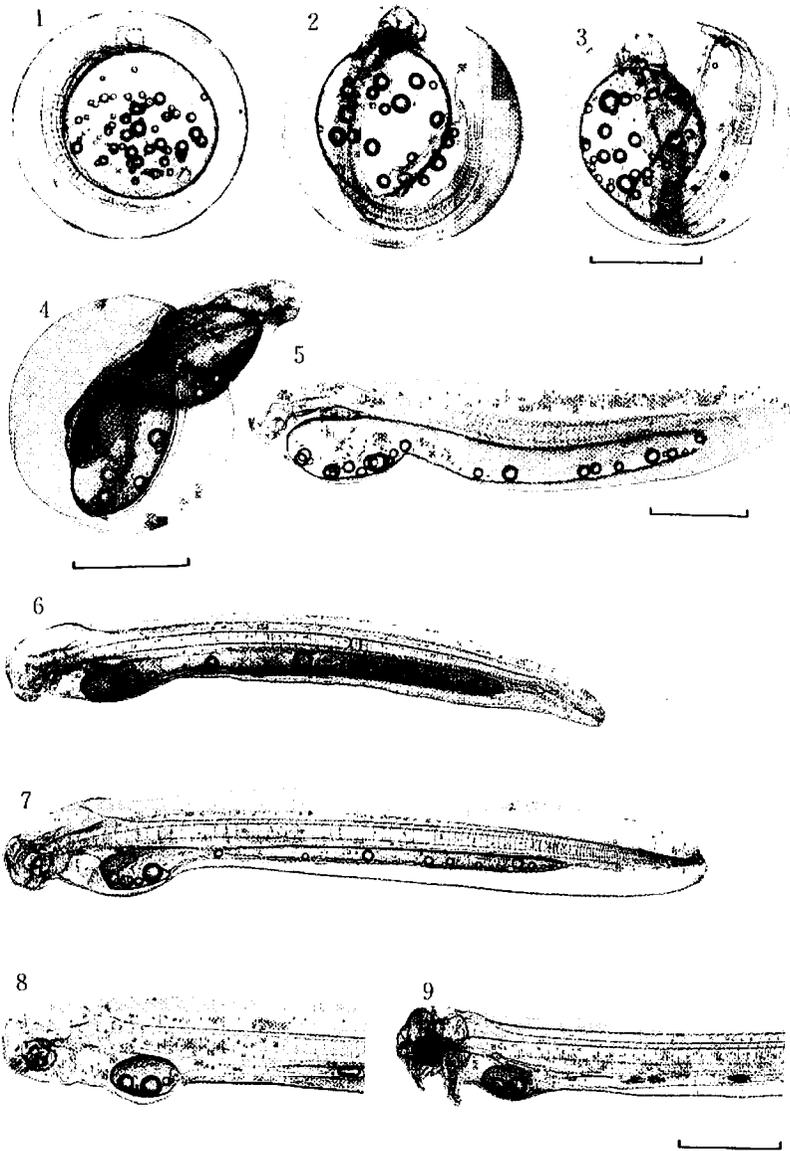


Fig. 2. Embryonic (1-4) and early larval (5-9) development of conger pike, *Muraenesox cinereus*. Scales indicate 1 mm.

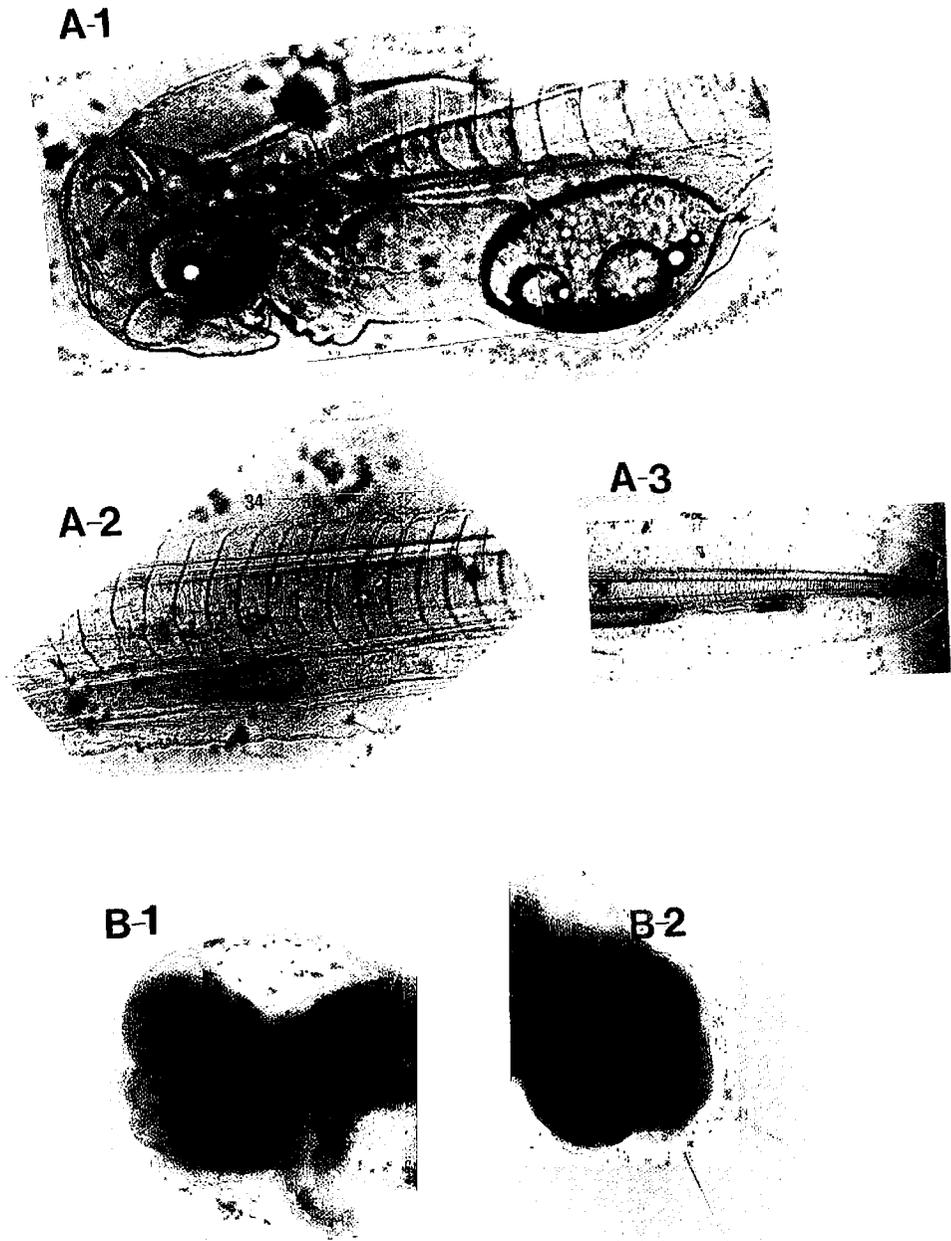


Fig. 3. Magnifying photographs of some organs in early larval stages of conger pike, *Muraenesox cinereus*. A, third stage (7.84 mm in total length); A-1, head and anterior part of trunk, A-2, gall-bladder showing location in relation to myomeres, which indicate respective figure; A-3, caudal. B, Grasping tooth in fourth stage (8.19 mm in total length); B-1, lateral view; B-2, dorsal view.