南西水研報
Bull. Nansei Reg. Fish.
Res. Lab. No. 17, 1984

The Occurrence of Deformed Larva of Anchovy (*Engraulis japonica*) Reared in the Tank

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飼育したカタクチイワシ仔魚の一奇形

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The symptom of deformation of *Engraulis japonica* was described on the specimen reared in the laboratory conditions. The deformity of specimen resulted from the failure of the caudal fin formation or the amputation of the caudal portion in early stage from the morphological observations.

The malformation of fishes in the wild and under artificial rearing conditions is well known (e.g. TAKASHIMA et al., 1976; FUKUHARA, 1977; TAKASHIMA, 1977; PAPERNA, 1978; KOMADA, 1980; BARAHONA-FERNANDES, 1982). Most reports have focused on fingerlings and adults where abnormalities have been attributed to deformities of the vertebrae. In a 1982 experiment to artificially reared anchovy, *Engraulis japonica* one anmalous larva was found in the specimens collected from the rearing tank. The symptoms of the deformed specimen shall be described briefly as no descriptions have been made previously.

Materials and Methods

The specimen used for the morphological observation was collected from a rearing tank capaciting 500 *l*. The rearing techniques and environmental conditions were described in detail by FUKUHARA (1983). The collected larva was preserved in 5% nonbuffered formalin solution (30‰S sea water), and inspected morphologically under dissecting microscope, comparing with a normal specimen.

Results and discussion

The deformed larva and a normal larva are shown in Figs 1 and 2. Both larvae were hatched in a 500 *l* tank and were 20 days old when collected. The deformed specimen

Received: June 15, 1984. Contribution No. 145 from the Nansei Regional Fisheries Research Laboratory, Ohno-cho, Hiroshima-ken, 739-04, Japan

exhibited an indentation just behind the anus. Posterior to the indentation a fin with rays was formed. Rays in the upper lobe of the fin were segmented and a few melanophores were seen in the fin membrane. Rays in the lower lobe were unsegmented with no pigmentation. The anal fin of the normal specimen was also unsegmented but the caudal fin was segmented. The lower lobe of the caudal fin was pigmented.

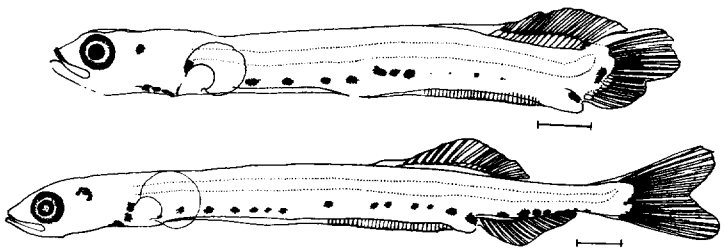

Fig. 1. Deformed and normal larva of *Engraulis japonica* grown in a rearing tank. Scales denote 1.0 mm.

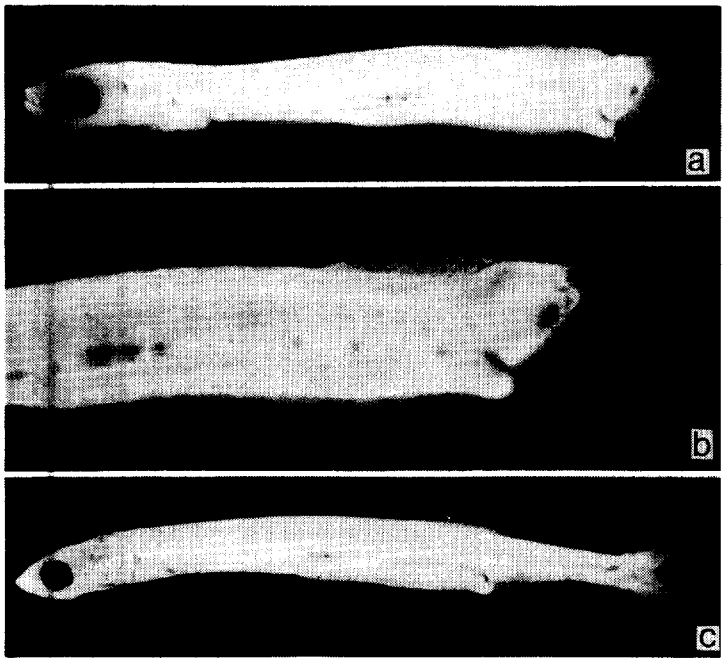

Fig. 2. Photographs of deformed and normal anchovy larvae. a, full view of deformed specimen; b, close-up of the posterior section of the deformed specimen; c, full view of a normal specimen.

These findings suggest that the fin formed behind the anus of the deformed specimen is composed of the anal and caudal fins. The deformity of the anchovy larva resulted from

the failure of the caudal fin to develop normally of the amputation of the caudal portion. The larva probably survived since there was no damage to the intestine.

Acknowledgements

I would like to thank Mr. THOMAS B. MCCORMICK III for his critical reading of the manuscript.

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室内において人工飼育したカタクチイワシ仔魚から尾部を欠損した標本を採取し，その症状を観察した。標本はふ化後20日目で，500 *l* 水槽においてシオミズツボワムシを与え飼育されたものである。症状は尾部が欠損し，肛門直後に背鰭につながる鰭が形成されている。鰭の上葉は鰭条が分節し黒色素胞を有するが，その下葉は分節せず，黒色素胞も有しない。正常個体との形態学的比較から形成された鰭は尾鰭と臀鰭から形成されていると考えられた。また，その原因は発生過程での異常かあるいは仔魚期における尾部切断によると考えられる。消化管部分が正常なため生残できたと思われる。