黒潮の内側域と外側域で採集されたマイワシ仔魚の栄養状態の比較

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著者	清水, 弘文 中田, 薫 中野, 広
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Short Paper

Comparison of Nutritional Condition of Sardine Larvae, *Sardinops melanostictus* (T & S) taken from the Coastal and Offshore Region of the Kuroshio Current

Hirofumi Shimizu,*1 Kaoru Nakata,*1 and Hiroshi Nakano*1

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The main spawning ground of sardine has been formed in the coastal side of the Kuroshio current, it is shifting to the current axis and offshore side of the Kuroshio current in recent years.*2 It is believed that the food conditions are better on the coastal side of the Kuroshio current suggesting that the shift may affect the survival of the larvae. In this study, RNA/DNA ratio and protein contents of larvae from the coastal and offshore sides of the Kuroshio current were compared.

Larvae were collected at 3 stations each on the coastal and offshore sides of the Kuroshio current by the R/V Soyomaru of the Tokai Regional Fisheries Research Laboratory during 6 through 12 March 1986 (Fig. 1). A 130 cm ring net was towed at night at a speed of 2 knots for 5 minutes in the sea surface layer. A total of 500 larvae ranging from 4.2 to 23.5 mm TL from the coastal side, while a total of 357 larvae ranging from 4.0 to 24.2 mm TL from the offshore side were examined. Those larvae were measured to the nearest 0.1 mm and grouped into 1 mm size classes. Smaller-size larvae pooled in an appropriate number were weighed and homogenated for biochemical analyses. Larger larvae were weighed and analyzed individually. DNA and RNA were determined by Mizuno's STS adjusting method.[1] Protein contents were determined by Lowry method.[2]

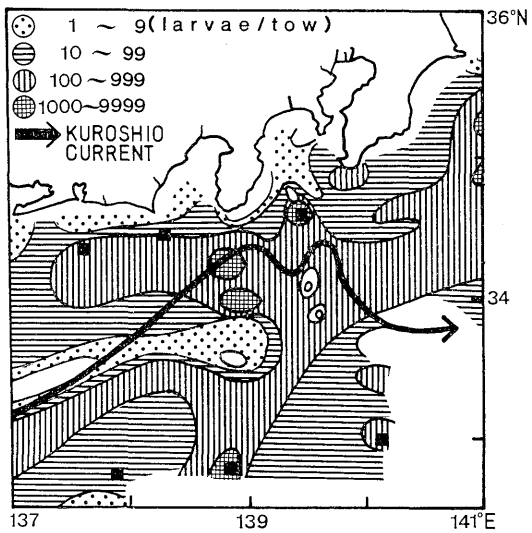

Fig. 1. Distribution of Japanese sardine larvae (No. of larvae/tow) collected with 130 cm ring net. Solid squares are sampling localities of materials (Kuroda, 1986).*2

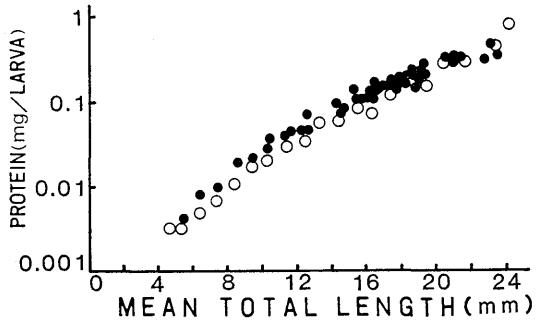

Fig. 2. The relationship between mean total length and RNA/DNA ratios. Solid circle, coastal; open circle, offshore.

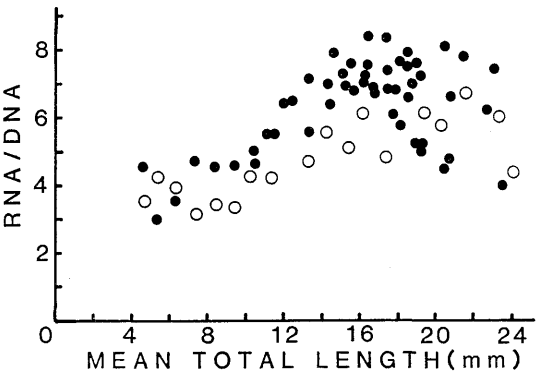

Fig. 3. The relationship between mean total length and protein content. Solid circle, coastal; open circle, offshore.

RNA/DNA ratio is used as an index of protein productivity per cell.[3] Up to 17 mm TL, the RNA/DNA ratios of offshore larvae found to be lower than those of the coastal larvae. There were little differences in the size classes larger than 17 mm TL (Fig. 2). Similarly, up to 17 mm TL, the protein contents of offshore larvae were lower than those of the coastal larvae while little difference was observed in the size classes larger than 17 mm TL (Fig. 3).

Judging from the above results, the nutritional condition of sardine from the offshore side of the Kuroshio current can be assumed to be poorer than that from coastal side of the Kuroshio current in larvae smaller than 17 mm TL.

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*1 Tokai Regional Fisheries Research Laboratory, Kachidoki, Chuo, Tokyo 104, Japan (清水弘文, 中田薫, 中野 広: 東海区水産研究所).

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