Short Paper

Spawning of the Silver Whiting *Sillago sihama* (FORSSKÅL) Cultivated in the Laboratory*¹

Spawning of the silver whiting *Sillago sihama* in laboratory tanks, using the adult fish caught in nature, has been successfully induced in 1975 independently by HIRAMOTO¹⁾ and ourselves²⁾. Our observation²⁾ revealed that one adult female (20.1 cm in fork length and 91.0 g in weight) produced a total of 1.8×10^8 eggs by her 65 spawning performances lasting from June 17 to October 2, 1975, when kept in a plastic tank of 500 l capacity with three adult males (15.9–19.3 cm in length and 36.5–74.5 g in weight). By subsequent rearing experiments, a majority of these laboratory-produced fry have been found to be grown up to adults just one year after their birth. The present paper deals with a brief account of these experiments.

About 6,500 fry hatched out from eggs spawned on June 24, 1975, were reared in a laboratory tank fed with rotifers until the end of August when they grew up to about 5.0 cm in length. They were then transferred to a field floating net-cage and fed with minced meat of anchovy and sand-eel. By the end of June, 1976, just one year after their birth, most of these fish grew up to adults, measuring 16.5–17.1 cm in fork length and 35.0–45.0 g in weight. Some males were found to release sperms by abdominal pressing. Two females and two males were again transferred back to the laboratory tank to induce spawning. These two females spawned almost every day (69 times) during a period from July 3, a week after the time of transfer, to October 7, as

Fig. 1. Number of eggs laid by two females of *Sillago sihama* reared in laboratory tank in 1976, with a record of water-temperature fluctuations.

shown in Fig. 1. During the period, water temperature fluctuated from 22.1 to 28.1°C (Fig. 1), and the specific gravity (S‰) of sea water ranged between 26.7 and 34.6. The maximum number of eggs laid by these two females was estimated to be 81,700 a day and the total number of eggs spawned throughout the period amounted to 2,037,000.

Just as in the case of the preceeding year, some fry hatched from the eggs spawned on July 4, 1976, have been reared up to the present time. One of the females, 14.5 cm long and 30.0 g, began to spawn on May 19, 1977 and continued to do so until the time of writing of this paper (September 30, 1977), amounting to a total of 2.38×10^8 eggs.

KAKUDA³⁾ noted for the same species caught in the Inland Sea of Japan that only 8 females were found to have ripe ovarian eggs out of 98 one-year old specimens examined and that all the fish older than 2 years of age were provided with ripe eggs. The present experiments revealed that a majority of laboratory-hatched fish reach maturity at least after one full year, some of which start laying their eggs as early as May. A total of 65 spawning performances was recorded for a single fish in 1975 and 69 for the 2 one-year females in 1976. These records indicate that spawning may occur in an almost equal frequency irrespective of the spawner's size. Total amount of eggs laid during the spawning period, however, seems to be dependent primarily on the size or age of females: a larger female in 1975 laid much more eggs (1.8×10^8) than the two smaller females in 1976 which laid only 1.0×10^8 eggs each.

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