

## FECUNDITY AND SPAWNING HABITS OF SOME SILVER-BELLIES

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The results of fecundity and ova diameter frequency studies on four species of silver-bellies, viz., *Secutor insidiator*, *S. ruconius*, *Leiognathus dussumieri* and *Gazza minuta* are presented. The former three species seem to have a prolonged spawning season, while the last one has a restricted spawning period.

Silver-bellies contribute to an important fishery along the coast of India. Except for the detailed studies of Arora (1951) and Balan (1963) on the spawning periodicities and ova-diameter frequencies of *Leiognathus splendens* and *L. bindus* respectively, information on these aspects in other species of *Leiognathus* appears to be scanty. The present observations relate to the fecundity and ova-diameter frequency of four species of silver-bellies, viz., *Secutor insidiator* (Bloch), *Secutor ruconius* (Ham-Buch.), *Leiognathus dussumieri* (Val.) and *Gazza minuta* (Bloch) landed at Tuticorin by the offshore vessels of the Government of India.

Ovaries of the above four species were collected during April, May and June 1970 only. Subsequent observations were not possible as the trawlers did not operate for nearly one year. Mature specimens of these species were always absent in the catches landed by the local indigenous craft, although juveniles of *S. insidiator*, *S. ruconius* and *L. dussumieri* were commonly seen in the shore seine catches. Twenty ovaries preserved in 5% formalin, were selected for the fecundity estimation in each species. To study the ova diameter frequencies of the intra-ovarian eggs, 2,000 ova from six ripe ovaries were measured.

### *Secutor insidiator* (Bloch)

From the fecundity estimation studies of *S. insidiator*, the average number of eggs was found to be 10,621, the range of eggs being 7,252-15,700. One mature fish measuring 105 mm in total length with an ovary weight of 500

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mg was estimated to contain 15,700 eggs. Ovaries of six fishes, ranging in size from 87 mm to 100 mm in total length, were observed for the ova-diameter frequency studies. The size of eggs observed ranged from 0.168 mm to 0.369 mm. Three modes at 0.252 mm and 0.336 mm representing different groups of ova in the mature ovaries were noticed. The mature eggs represented by two modes at 0.302 mm and 0.336 mm were not sharply separated from the immature ones in the general egg stock, suggesting progressive maturation of the intra-ovarian eggs (Fig. 1). This would mean that *S. insidiator* does not have a short spawning period and spawns more than once in a season. The availability of ripe ovaries in all the three months and the presence of juvenile *S. insidiator* in shore seine catches in most part of the year support this view.

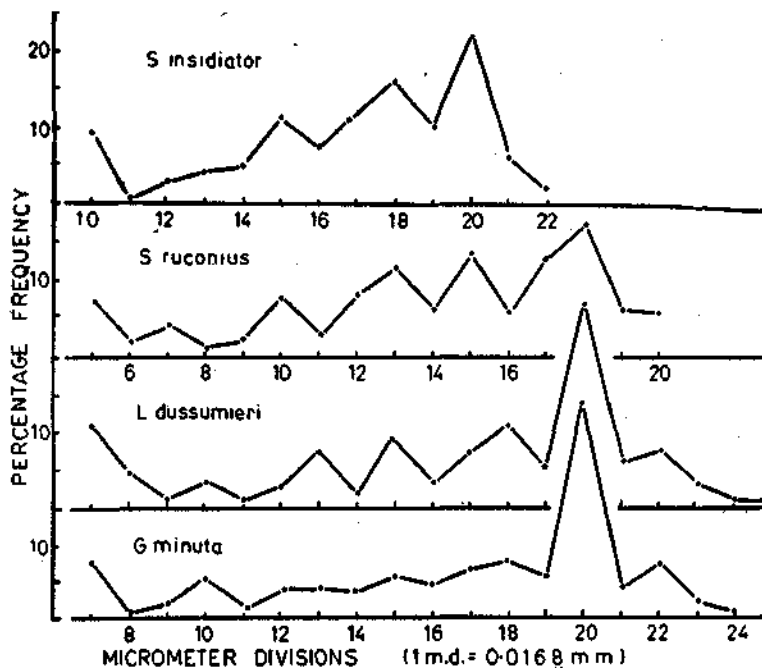


Fig. 1. Ova-diameter frequency of 4 species of Leiognathids collected from Tuticorin.

*Secutor ruconius* (Ham. - Buch.)

The fecundity studies of this species showed that the ovary contained an average of 7,191 eggs, ranging from 3,563 to 11,563. One fish of 87 mm,

having an ovary weight of 250 mg, was estimated to contain as many as 11,563 eggs. Ovaries of six fishes ranging in size from 77 mm to 87 mm in total length were observed for ova diameter frequency studies and the size of ova ranged from 0.084 to 0.336 mm. In this species also, the presence of more than one mode representing different groups of ova in the maturing ovary was noticed as in the case of *S. insidiator* (Fig. 1). The size groups of mature eggs at 0.285 mm and 0.302 mm are not sharply separated from the preceding modes at 0.218 mm and 0.252 mm, which indicates continuous maturation of the intra-ovarian eggs, and therefore a prolonged spawning period. The availability of ripe ovaries in all the three months of the period of observation and the presence of juvenile *S. ruconius* in shore seine catches add weight to this inference.

*Leiognathus dussumieri* (Val.)

This was the predominant species of the silver-bellies in the trawl catches. The mature ovaries contained an average of 14,299 eggs, the range of eggs varying between 5,397 and 32,528. The size range of ova was found to be from 0.117 mm to 0.520 mm with more than one mode representing different groups of ova in the maturing ovary (Fig.1). The mode at 0.336 mm was not sharply separated from the immature egg stock, which, with the presence of three modes at 0.218 mm, 0.252 mm and 0.302 mm, suggests the prolonged spawning habit of this species. The availability of ripe ovaries of this species throughout the period of observation and presence of juvenile *L. dussumieri* in the shore seine catches in most part of the year support this view.

*Gazza minuta* (Bloch)

This was the least abundant species among the leiognathids in the trawl catches. Even though this was available from April to June in small numbers, mature specimens were met with only in June. The mature ovaries of this species contained an average of 13,526 eggs. The fecundity of *G. minuta* ranged 7,950 to 28,432. One mature fish of 130 mm in total length with an ovary weight of 1.150 g was estimated to contain 28,432 eggs. The size of eggs in the mature ovaries varied from 0.117 to 0.403 mm. The only sharp mode at 0.336 mm separated from the immature ones in the general egg stock without any secondary modes, suggests the restricted spawning habit of this species (Fig. 1).

According to Arora (1951), *Leiognathus splendens* spawns more than once in a season. Balan (1963), pointed out that *L. bindus* did not have a prolonged spawning habit. The present observations on the three species, *Secutor insidiator*, *S. ruconius* and *Leiognathus dussumieri* suggests a prolonged spawning habit for these. Bapat and Bal (1952), while studying the food of some

young fishes from Bombay waters have noticed the availability of juvenile *S. insidiator* from December to June. With regard to *S. ruconius*, Kuthalingam (1955) observed the occurrence of juveniles of this species in the coastal waters of Madras throughout the year.

In the case of *Gazza minuta*, the spawning seems to be much restricted, as Hickling and Rutenburg (1936) have observed that the spawning period of fish will be short and definite if the mature eggs are sharply separated from the stock of immature eggs. According to Vijayaraghavan (1950), the months of February, March and April witnessed the maximum quantity of *G. minuta* landed in the coastal waters of Madras and most of the fish examined by him during the period were immature. He had no opportunity to find out whether these fishes move into slightly deeper waters after April for purposes of spawning. The present observations on the availability of mature specimens of this species in the trawl catches from deeper waters is of some significance in this connection. It may be, that this species prefers deeper waters as it advances in maturity.

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