

Feeding Intensity in Relation to Breeding Cycle in Gobiid Fish *Oligolepis acutipennis* (Cuv. & Val.)

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Rate of feeding in the fish is directly related to the maturity of gonads. Intensity of feeding increases steadily till the middle of the spawning period and thereafter it decreases. The increased feeding helps the fish in building up the gonadal reserves, while soon after spawning it becomes too exhausted to feed actively.

Despite numerical abundance and wide distribution, not much is known about the biology of gobiid fishes. As regard to the feeding biology the available information is restricted to that of *Glossogobius giurus*, the large goby¹⁻³. Among the various factors that influence the feeding of fishes the breeding cycle is found to be very important. In a study of the feeding biology of *Oligolepis acutipennis*, a gobiid fish considerably abundant in the brackish water bodies of southwest coast of India, certain interesting relations have been observed between the feeding intensity and breeding cycle which are communicated here.

Monthly samples of the fish, about 35 specimens on an average, from July 1977 to July 1978 were analysed for biological parameters indicative of the feeding intensity and breeding cycle. The fish were collected from the Veli estuary in Trivandrum, Kerala and were immediately preserved in 5% formalin before being taken to the laboratory for detailed studies. Intensity of feeding of individual fish was ascertained³. Based on visual estimation of the distension and quantity of food in the stomach they were grouped as empty, poor, medium, good and heavy. Monthwise feeding intensity was calculated as percentage of good and heavy stomachs, which reflects well fed condition, in each month. These values stand for the feeding index³⁻⁵. Gonadosomatic index (GSI) calculated as percentage of gonad weight to weight of the fish, was used for determining the breeding cycle of the fish. Variations in the monthly mean GSI were used reliably in bringing out the pattern of breeding in the fish.

Mean monthly GSI and the feeding index are represented in Fig.1 for females and males. GSI indicates a protracted breeding with a short spell of no breeding in March and April. The feeding intensity is very low in these months suggesting that the fish abstain from feeding once the fully grown ova are

spawned. After the period of recuperation in March and April, the fresh brood of ova starts maturing and simultaneously the fish begins to feed actively commensurate with the maturity of the ova.

In males even though active spawning starts from May onwards the feeding intensity has an upward trend till June and there is a slackening only in July. In Aug. even though there is a waxing of the maturity of the gonad the feeding rate is on the wane, it is even lower than in July. From Sept. onwards there is a steep increase in the maturity of gonads, reaching the peak in Oct. in females and in Dec. in males. After this the fish start spawning actively, till March. Corresponding to the rise in the rate of maturation the feeding intensity also increases and gradually reaches the peak in Jan. in

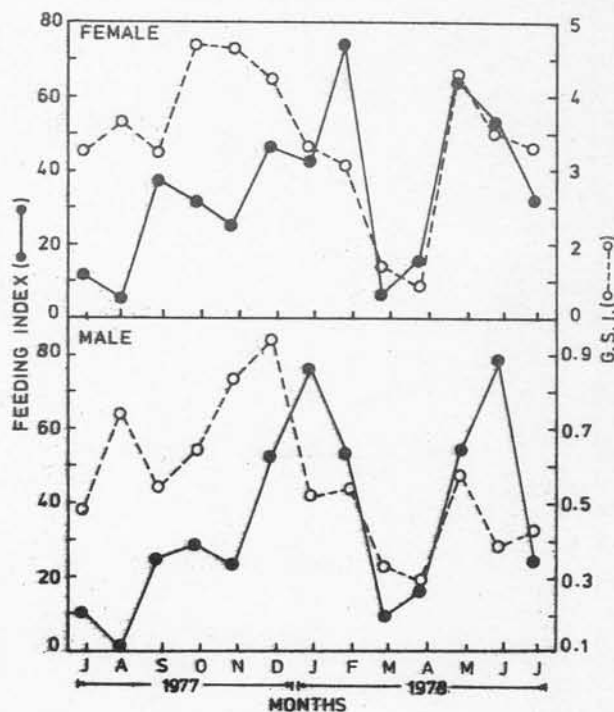


Fig. 1—Monthly mean GSI and feeding index of *O. acutipennis*

males and Feb. in females. Feeding intensity is very low in March when probably all the fishes have completed spawning. Thus in *O. acutipennis* the rate of feeding is closely related to the maturity of gonads and thus the breeding cycle of the fish.

The phenomenon of increased feeding correlated to the progress of maturity, as seen in *O. acutipennis*, has been reported for *G. giuris* also^{2,3}. This is rather an unusual feature because generally in fishes the feeding intensity tends to decrease with maturity and increase after spawning as in *Polynemus indicus*⁶ and *Mystus seenghala*⁷. The only reason attributable to this unusual trend in *O. acutipennis* and *G. giuris* is that the feeding intensity increases as the maturity advances in order to meet the extra requirements of energy for the formation of yolk in the maturing ova. It can also be explained that the exhaustion caused by the spawning

may be the inhibiting factor preventing the fish even from normal feeding immediately after spawning.

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