

ON THE SIZE OF EGGS FOUND IN THE MOUTH OF TWO MALES
OF THE CAT-FISH, *TACHYSURUS CAELATUS* (VALENCIENNES)

ABSTRACT

Two males of the cat fish, *Tachysurus caelatus* (Val.) with eggs in the mouth were collected on 28th May 1965. The eggs in the mouth of one fish were yellow and large (11–15 mm), and were in advanced stage of development; their diameter frequency distribution was unimodal. On the other hand the eggs in the mouth of the other fish were in a bunch, and the diameter frequency distribution showed three groups each with a distinct mode. The largest group of eggs (11–13 mm) were yellow, but the embryos could not be distinguished. The other groups of ova were white, much smaller in size (less than 6 mm), were not fertilised and were obviously disintegrating. The present observations indicate that some species of fishes may release all size-categories of ova, both mature and immature, in the course of spawning.

DURING work at sea on board a Govt. of India trawler off Visakhapatnam on 28 May 1965, one of us (K.V.S) collected two males of the Cat-fish, *Tachysurus caelatus* (Val.) with eggs (both fertilised and unfertilised ova are referred to as eggs here) in the mouth, which proved to be interesting from the point of view of their size-range and stage of development. The frequency distributions of the diameter (of the eggs in the mouth) are given in Fig. 1. Those in the mouth of one fish were all large (11–15 mm) and their diameter frequency distribution was unimodal (Fig. 1b). They were yellow and in an advanced stage of development. The embryos with eyes and pectoral fins already formed, were visible to the naked eye. In

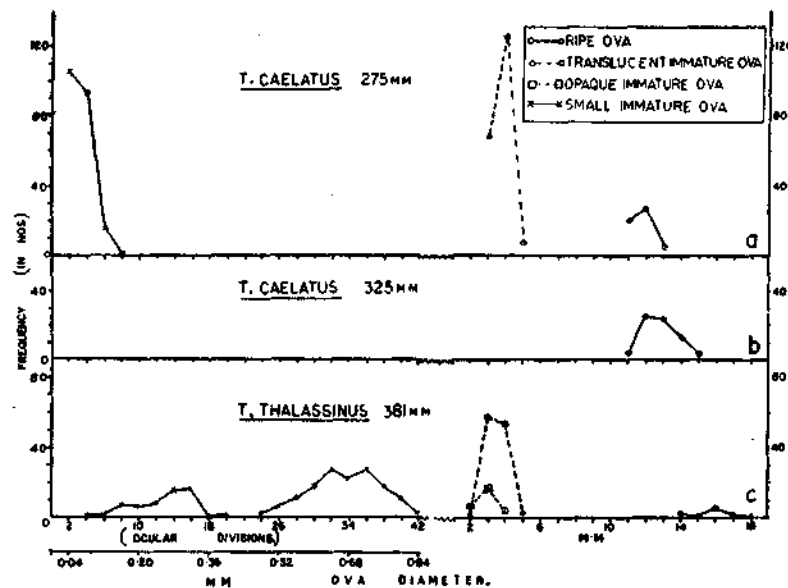


Fig. 1 a, b. Frequency distribution of the eggs in the mouth of *T. caelatus*, of total length 275 mm (a) and 325 mm (b); and c, frequency distribution of the eggs in the ovary of a mature *T. thalassinus*, of total length 381 mm.

contrast, the mouth of the other fish contained what was obviously the major part of an ovary itself, including portions of the ovary wall. The eggs were in a bunch,

as described by Chidambaram (1941) in the case of the just fertilised eggs in the mouth of *T. jella* (Day). The diameter frequency distribution showed three groups of eggs (Fig. 1a), each with a distinct mode. The largest group of eggs (11-13 mm) were yellow as in the other fish. But the embryos could not be distinguished; only a white spot was visible, which indicated that fertilisation had probably taken place just prior to the capture of the fish. In *T. jella* (Day), the embryo could be made out only on the third day after fertilisation (Chidambaram, 1941). The other ova, much smaller in size (less than 6 mm) and white in colour, were not fertilised and were obviously disintegrating. In fact, because of the process of disintegration, it was only with difficulty that the ova of the smallest size-category (0.04-0.16 mm) could be distinguished. If this fish had been at liberty for some more time, the probability is that the small ova (less than 6 mm in size) would have completely disintegrated, leaving no trace of their having been in the mouth, a condition which would have been similar to what was seen in the case of the other fish. Eight large ova (9.0-11.0 mm) were also found in the stomach of the fish (*i.e.*, the fish having three size-classes of eggs in the mouth). Whether they were fertilised or not could not be determined, because of the deterioration in their condition. They might have been swallowed because of the limited capacity of the mouth or because of shock at the time of capture. However, their presence in the stomach was another indication that the eggs in the buccal cavity had probably been stored only for a short time before the capture of the fish.

The number of eggs of the second and third size-categories in the mouth of the two fishes is given below:

Total length of the fish	No. of ova of the size-range	
	3-5 mm	11-15 mm
275 mm (Fig. 1 a)	475 (translucent) 2 (opaque)	Plus 33
325 mm (Fig. 1 b)	nil	68

Mature ovaries of *T. caelatus* could not be collected. But mature ovaries of two other species of *Tachysurus*, abundant off Visakhapatnam, show polymodal frequency distribution of the egg diameters. A typical distribution of the diameter frequency of ova in a mature specimen of *T. thalassinus* (Rüppell), 381 mm in total length, is shown in Fig. 1 c.

After Clark (1934) and Hickling and Rutenberg (1936) it has become generally accepted that polymodal frequency distribution of ova diameter in fishes may indicate fractional spawning. But according to Nikolsky (1963), the small eggs remaining in the ovary after the large ones are shed may in some cases be reabsorbed. The present observation raises the question whether in some cases a third type of spawning also is not possible, in which all size-categories of ova both mature and immature, may be released at the same time, although only ova of the largest size category may be fertilised. Chidambaram's (1941) remarks on the spawning of *T. jella*, which, according to him, also has different size-categories of ova, are pertinent here. He states that the eggs are laid in a bunch and held together by mucus. When the eggs are laid in a bunch, the possibility of the small eggs coming out with the large ones cannot be ruled out. In such cases, the development of different size-categories of ova may have to be regarded as only steps in the preparation of a small number of ova for fertilisation. This is also apparent from Fig. 1, where

in both *T. caelatus* and *T. thalassinus*, the number of eggs of the largest group or batch is much fewer. More observations of the type described here would be valuable.

The authors thank Dr. R. N. Bhattacharyya and the skipper and crew of m.v. Champa for the facilities given for observations on board the vessel.

K. V. SEKHARAN

P. MOJUMDER

*Central Marine Fisheries Research Institute,
Cochin.*

REFERENCES

- CHIDAMBARAM, K. 1941. *Proc. Indian Acad. Sci.*, 14 B (6): 502-508.
CLARK, F. N. 1934. *Fish. Bull. Sacramento*, 42: 1-49.
HICKLING, C. F. and E. RUTENBERG 1936. *J. mar. biol. Ass., U. K.*, 21: 311-317.
NIKOLSKY, G. V. 1963. *The ecology of fishes*, 352 pp. Academic Press, London and New York.