

SHAPE OF SWIMBLADDER IN FAMILY *SILLAGINIDAE* (PISCES)
AND ITS TAXONOMIC VALUE.

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ABSTRACT

The variations in the shape of swimbladder in eight species of Sillaginids from Indian Waters are described. Distinct differences in shape help in easy identification of species.

Key-words : Swimbladder, Sillaginidae.

The shape of the swimbladder in the family Sillaginidae is of taxonomic value and help to distinguish between species. The general shape of the swimbladder in eight of the nine species (it is absent in *Sillaginopsis panijus*) so far recorded from Indian Waters is described.

In *Sillago* spp. the first few caudal vertebrae do not bear haemal spines, but have elongated transverse processes which extend below the haemal canal. The distal half of each transverse process is bent back and flattened, so that when viewed from the side, the transverse process appears L-shaped. Shao & Chang (1978) suggest that the number of such L-shaped transverse processes is of diagnostic value. The transverse processes of the last one or two trunk vertebrae may also be L-shaped, but lack a haemal canal. When viewed from the ventral side, this part of the vertebral column, appears like a trough which accommodates the postcoelomic extension(s) of the swimbladder. The trough gradually narrows down posteriorly. Thus the number of vertebrae involved in the formation of the trough is related to the length of the postcoelomic extension(s) in a species and is of diagnostic value. *Sillaginopodys chondropus* has a relatively simple and small swimbladder devoid of postcoelomic extension. *Sillaginopsis panijus* lacks a swimbladder and consequently there are no L-shaped transverse processes.

The shapes of swimbladder were noted *in situ* in formalin preserved specimens and compared with those of fresh fishes. The vertebral column was removed dried and examined.

The swimbladder of sillaginids is lanceolate with a broad anterior and a narrow and tapering posterior end. Anteriorly, it may have extensions while posteriorly one or two postcoelomic extensions are seen in genus *Sillago*. The lateral edges of the main body of the swimbladder appear broadly serrated.

In most species of *Sillago* a median blind tubular duct arises near the posterior end of the swimbladder and terminates near the vent. In species with a single postcoelomic extension this duct is median and ventral while in species with a pair of postcoelomic extensions it is terminal. It is absent in *Sillago argentifasciata* and in *Sillaginopodys chondropus*.

In *Sillago argentifasciata*, the swimbladder is lanceolate and the anterior edge is slightly convex. Anterolaterally, there are four pairs of short extensions. The edge of the swimbladder behind them is smooth. The single postcoelomic extension is relatively long and pointed and terminates at the ninth or tenth caudal vertebra. The Median tubular duct is absent. (Fig. 1a).

In *S. vincenti* the anterior edge of the swimbladder is blunt and conical. Anterolaterally, there are two pairs of short conical extensions. The lateral edges of the swimbladder are broadly serrate. There is a single postcoelomic extension. The median tubular duct arises from the ventral side, about $3/4$ the distance from the anterior end and terminates blindly near the vent. The postcoelomic extension extends the fifth or sixth caudal vertebra. (Fig. 1b).

In *S. macrolepis* the anterior edge bears a narrow median extension. The edge of the swimbladder is broadly serrated. The postcoelomic extension is relatively short, tapers gradually to a point, and ends at 2nd or 3rd caudal vertebra. The median tubular duct arises from the ventral side at about $3/4$ its length and terminates near the vent. (Fig. 1c).

In *S. soringa* the swimbladder has a median finger-like anterior extension, which is relatively longer than that in *S. macrolepis*. There are a pair of recurved extensions anterolaterally. The single tapering postcoelomic

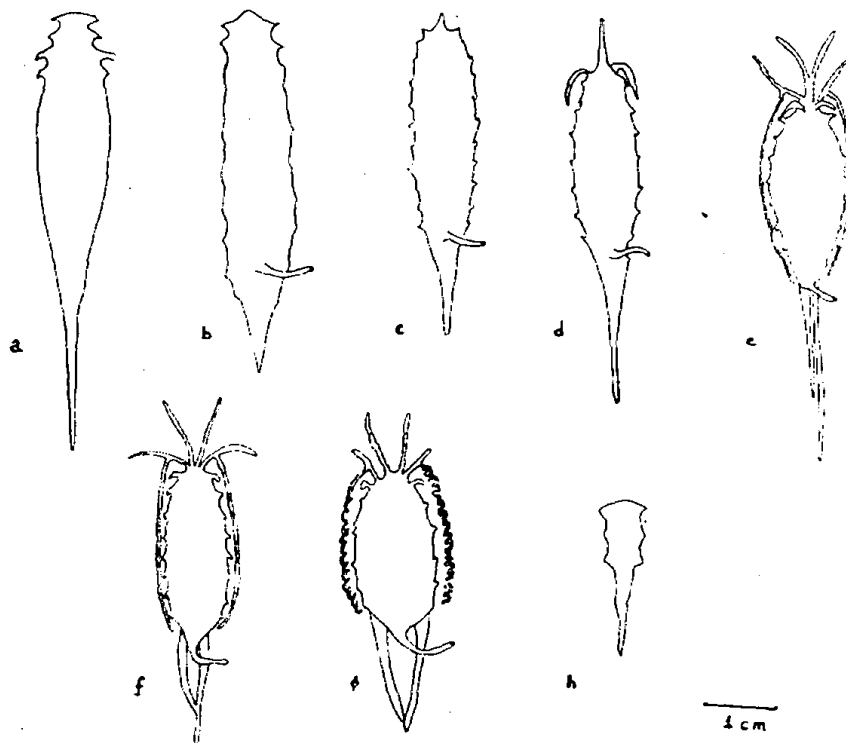


Fig 1. Swimbladder shapes in Sillaginidae a. *Sillago argentifasciata*, b. *S. vincenti*, c. *S. macrolepis*, d. *S. soringa*, e. *S. sihama*, f. *S. intermedius*, g. *S. parvisquamis*, h. *Sillaginopodys chondropus*.

extension is relatively narrow. The median tubular duct arises at about 4/5 the distance from its anterior end, and terminates near the vent. The post-coelomic extension extends to 5th to 7th caudal vertebra. (Fig. 1d).

In *S. sihama* the swimbladder is relatively broad, being widest in the middle. Anteriorly, there are three pairs of tubular extensions. Of these, the anterior two pairs are relatively short and directed forward. The third pair which arise from the basal half of the second pair are the longest and curve back and run posteriorly parallel to the lateral edge of the swimbladder. Anterolaterally, there are two pairs of short conical extensions. The blind tubular duct arises from the posterior end of the swimbladder and terminates near the vent. There are two postcoelomic extensions, the left one longer, arising one on either side of the base of the tubular duct. This extends to the 5th or 6th caudal vertebra. (Fig. 1e).

In *S. intermedius* the swimbladder resembles that of *S. sihama*, but the two postcoelomic extensions are slightly shorter. The short right extension fuses with the left to form a common tube which terminates at the 4th or 5th caudal vertebra. (Fig. 1f).

In *S. parvisquamis* the shape is as in *S. sihama* and *S. intermedius*. This species has the stoutest swimbladder. The third pair of tubular extensions at the anterior end are the longest and distinctly more convoluted than in *S. sihama*. The longer left postcoelomic extension extends to the 3rd or 4th caudal vertebra. (Fig. 1g)

In *Sillaginopodys chondropus* the swimbladder is smaller and simpler than in the seven species of *Sillago*. Anterior and postcoelomic extensions are absent. None of the transverse processes of the caudal vertebrae is L-shaped. The swimbladder also lacks the tubular extension on the ventral side. (Fig. 1h)

McKay (1980) gives two figures (of presumably specimens of different sizes) of the swimbladder of *Sillago vincenti*. In Sillaginidae, the shape of the swimbladder does not change with age as observed during the present study. Thus the second figure of McKay (op. cit., P. 379, Fig. 1c) is most probably that of *S. macrolepis*. Although *S. soring*, *S. macrolepis*, *S. vincenti* and *S. sihama* resemble each other externally in some respects and could be confused for each others, the shapes of the swimbladder are distinctly different and help in correct identification.

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