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Article XXV.—NOTE ON AN EMBRYO OF *PRISTIS CUSPIDATUS*.

By L. Hussakof.

Embryos of *Pristis* are exceedingly rare, and until recently very little was known regarding their appearance, structure or the size they attain by the time of birth. Bloch,[1] in 1786, published a colored figure of an embryo with a yolk sac, and referred to it briefly in a few lines. But this figure is rather poor, it shows no details, and the sword is erroneously represented with teeth in its anterior third, despite the statement in the text that "das Schwerdt ist noch weich, und die Zähne liegen in der Haut verborgen." Owen,[2] in 1846, briefly described an embryo in the Hunterian collection, in the following words: It is "eight inches in length, including the saw, and has the duct of the external vitellicle [yolk stalk] attached." These appear to be the only descriptions of sawfish embryos that have been published until recently. Günther,[3] in 1870, mentioned several embryos of *Pristis pectinatus* in the British Museum collections, but gave no description nor any data respecting them.

In view of this paucity of information regarding sawfish embryos, special interest attaches to a short paper published by Dr. T. Southwell,[4] in 1910, in which he briefly describes an embryo of *Pristis cuspidatus* Latham. This was one of a brood of twenty-three taken from a female sawfish 15½ feet long, which was caught on the coast of Ceylon. Through the kindness of Dr. Southwell, the American Museum has received as a gift three of these embryos (No. 3268, American Museum). And inasmuch as his description appeared in a Ceylonese journal and will probably escape the attention of many ichthyologists who would be interested in these embryos, it seems advisable to redescribe one of them briefly, and to give a good figure of it.[5]

The embryo (Figs. 1 and 2) of *Pristis cuspidatus* here described, is 355 mm. in total length. It closely resembles the full-grown sawfish,

[1] Naturgeschichte der ausländischen Fische. Berlin. 8°. Erster Theil, 1786, p. 56, and pl. 120.

[2] Lectures on the comparative anatomy and physiology of the vertebrate animals. Part I.— Fishes. London, 1846. 8°. p. 301.

[3] Catalogue of fishes in the British Museum of Natural History, VIII, p. 438.

[4] A descriptive note on the capture of a large sawfish (*Pristis cuspidatus*) containing intra-uterine embryos. Spolia Zeylanica, VI, 1910, pp. 137–139, 1 pl.

[5] Dr. Southwell's paper was illustrated by a plate giving two photographic views of an embryo; but the photographs do not show all the characters clearly.

except (1), for the presence of a large yolk sac which is attached by a yolk stalk; and (2), the circumstance that the teeth of the saw have not yet cut through the membrane enveloping them.

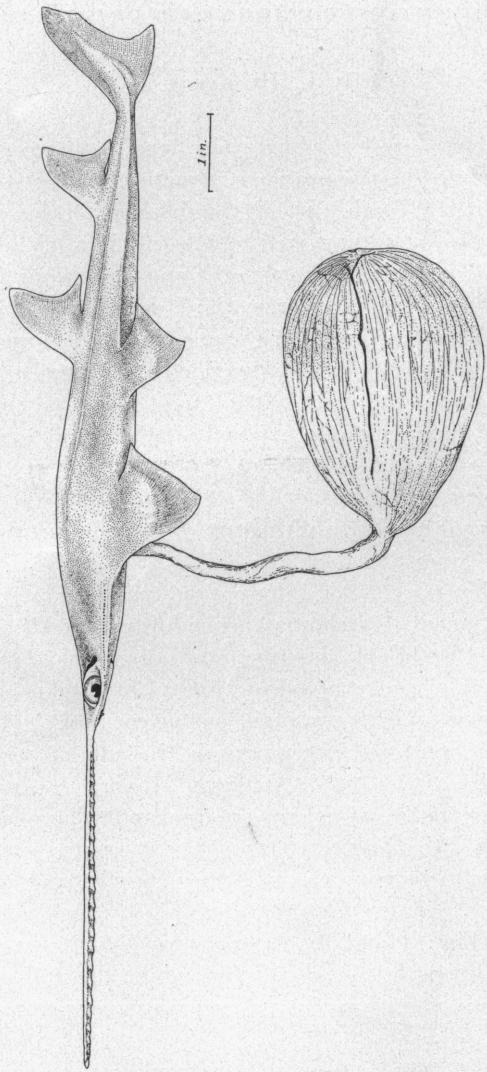

Fig. 1. Embryo of *Pristis cuspidatus* Latham, $\times \frac{2}{5}$. No. 3268 American Museum.

The yolk sac is very large (95 mm. in length), somewhat pear-shaped, and attached by its smaller end to the stalk. A cross-section at its middle (Fig. 2, *a*) is elliptical, with axes 72 mm. and 55 mm. respectively. The

stalk is 11 cm. long; widest at its juncture with the sac, where it is 8 mm. in diameter, and gradually decreasing to 4 mm. at its point of insertion in the

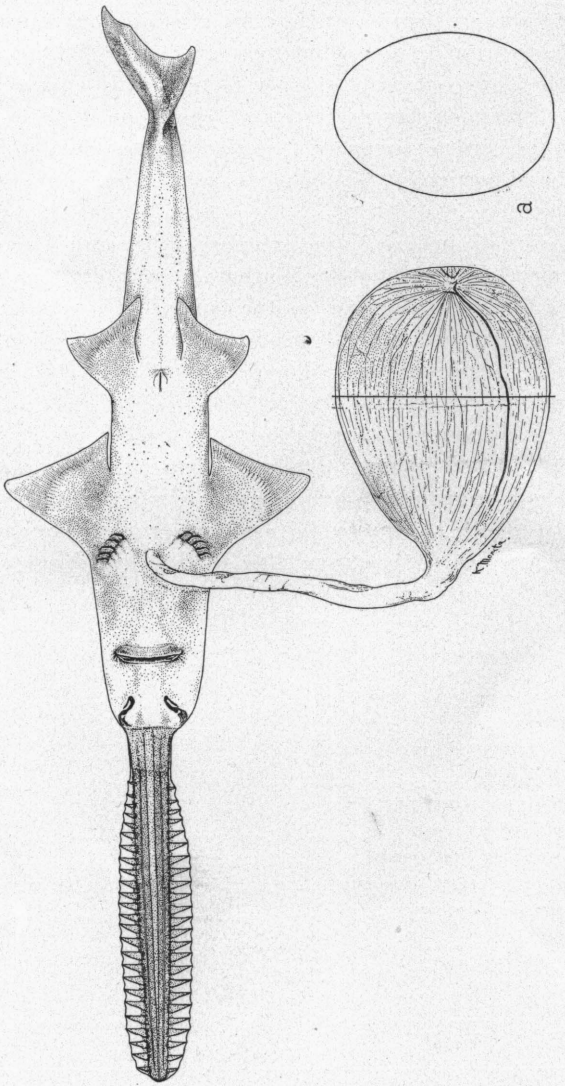

Fig. 2. Same embryo as in Figure 1, in ventral view; *a*, cross-section of yolk sac in plane indicated by the line. The saw is represented as it appears when held to the light.

ventral wall of the embryo, midway between the gills. A dark blood vessel, probably the vitelline artery, stands out clearly on the surface of the sac, and a network of very delicate vessels is also to be seen. The color of the

sac when fresh, according to Dr. Southwell, is that of the yolk of a hen's egg.[1]

The saw is 117 mm. long and still flexible. The teeth are completely enveloped in membrane, their points forming a series of crenulations at the margins of the rostrum. On holding the saw to the light they can be clearly seen; they are yellowish, sharply pointed, and average 6 mm. in length. In the specimen figured there are 25 teeth on the left side and 24 on the right. They are not arranged strictly opposite one another in pairs. The toothless basal portion of the saw measures 22 mm., or about one-sixth of the entire saw.

The embryo has all openings to the exterior—gills, spiracles and pores—completely formed, as was noted by Southwell. A lateral line is present; it extends along the side as far back as the caudal. There is a row of fine pores arranged in a horizontal line, extending from a point below the eye to near the origin of the pectoral fin. The eyes are completely formed, large and protruding.

Respecting the disposal of the embryos in the mother fish, Dr. Southwell says: "The embryos all lay horizontally, *i. e.*, parallel to the axis of the parent. There still remained a small quantity of a serous fluid in the oviduct, the bulk of which had probably been lost prior to examination.... Some embryos lay with the rostrum close to the cloacal opening, whilst others were exactly opposite."[2]

Measurements of an Embryo of Pristis cuspidatus.

Length (tip of saw to end of caudal)	355 mm.
Width across pectorals	95 "
Length of saw (from line of junction with head)	117 "
Greatest width of saw	24 "
Length of proximal untoothed portion of saw	22 "
Average length of rostral teeth	6 "
Base of saw to origin of first dorsal	113 "
Origin of first dorsal to origin of second	50 "
Width of head (in region of eyes)	31 "
Length of yolk sac	95 "
Greater diameter of yolk sac	72 "
Lesser diameter of yolk sac	55 "
Length of yolk stalk	110 "
Greatest diameter of yolk stalk	8 "

[1] In the two other embryos in the American Museum, the yolk sacs have been removed, and only the stalks remain.

[2] Southwell, *loc. cit.*, p. 139.