

## NOTES ON EGGS, LARVÆ AND JUVENILES OF FISHES FROM INDIAN WATERS

### V. *Euthynnus affinis* (Cantor)\*

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LARVAL stages of *Katsuwonus pelamis* (Linnaeus) and *Ncothunus macrop-terus* (Temminck and Schlegel) collected mostly on board the Research Vessel *KALAVA* from the Laccadive Sea and the Gulf of Marrar were described in the previous two numbers in this series (Jones, 1959). A few small larvæ resembling those of *Euthynnus* described from the Pacific region by Wade (1951) and Matsumoto (1958 and 1959) were present in the *KALAVA* collection but the material was not adequate for fixing the identity with reasonable certainty. However, a fairly large number of juvenile and young stages of *Euthynnus affinis* were obtained from shore-seines from Vizhinjam, a fishing centre about 9 miles south of Trivandrum and from boat-seines from Calicut and these are dealt with in this account.

According to Godsil (1954) four species are recognised under the genus *Euthynnus*, viz., *E. alletteratus* from the Atlantic, *E. affinis* from the Indian Ocean and *E. yaito* and *E. lineatus* from the Pacific. Of these *E. alletteratus* is distinct from the rest, while *E. lineatus*, in spite of its external resemblance to the other two species, is considered different on account of the difference in vertebral count. On the other hand it would appear that *E. affinis* and *E. yaito* constitute a widely distributed single species in the Indo-Pacific. This aspect is being dealt with elsewhere and if this view is confirmed the specific name *affinis* will have priority over *yaito*. In the present account for the sake of convenience *E. affinis* is treated separately but the stages are compared with the corresponding stages of *E. yaito*.

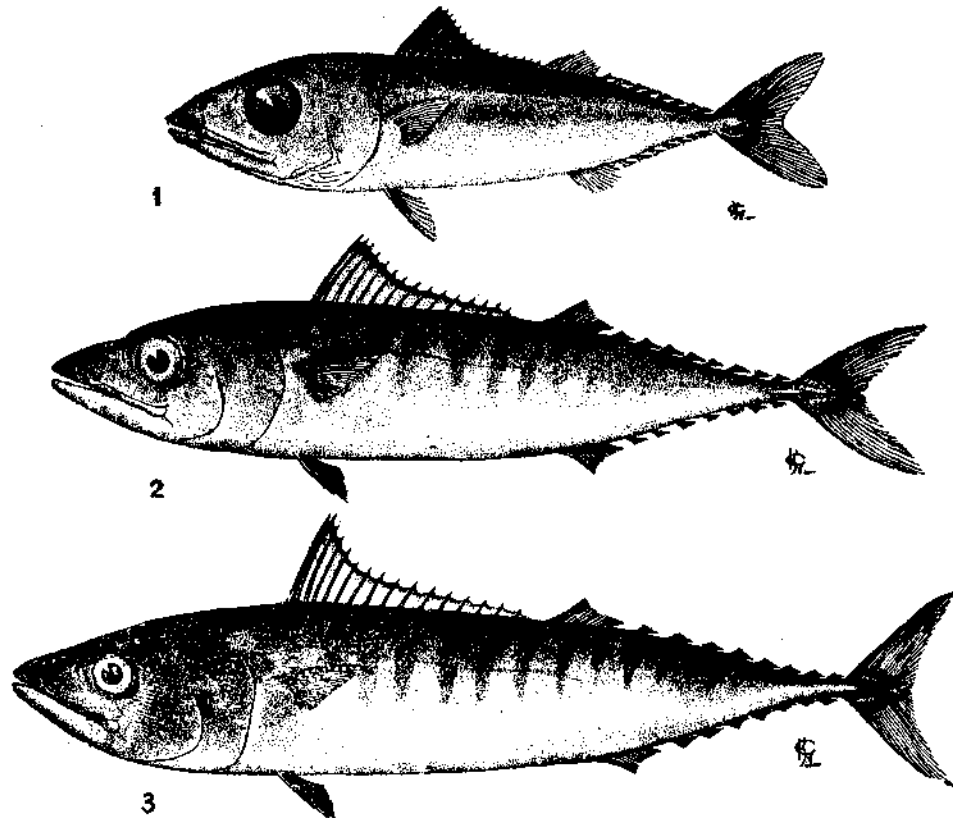
There is no information on the embryonic or larval stages of *E. affinis* from Indian waters. Delsman (1926) described some eggs and early larvæ from the Java Sea under the presumption that they were of *Scomber kana-gurta* but subsequently he adduced reasons (Delsman, 1931) to show that they were actually of *E. affinis*. If his inference is correct eggs of this species have a diameter of 0.85–0.95 mm. with an oil globule of about 0.21–0.24 mm. The newly hatched larva measures about 2.05 mm.

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\* *Thynnus thumina*, Cuvier and Valenciennes of Day (1878).

There are in all 82 specimens measuring from 24.5 mm. to 321.5 mm. Of these 54 specimens are below 75.00 mm., all of which are from Vizhinjam except three which are from Calicut. Of the remaining larger specimens only five are from Vizhinjam and the rest are from Calicut. Particulars about a selected number of specimens from these are given in Table I.

24.5 mm. (Fig. 1).—This is the smallest specimen in the collection and has a total length of 29.5 mm. It was obtained from Vizhinjam on 29-5-1958. The eyes are large and conspicuous and the mouth has small teeth. All the larval characters are lost except the vestiges of the preopercular spines. Lateral line is not distinct. The general colour is brown dorsally gradually becoming white below.



FIGS. 1-3. *Euthynnus affinis* (Cantor). Fig. 1. 24.5 mm. Fig. 2. 56.6 mm. Fig. 3. 96.0 mm. (by Mr. K. G. Nambiar).

The resemblance of this to the 33.5 mm. *E. yaito* described by Wade (1950) from the Philippine waters is striking while it looks distinctly

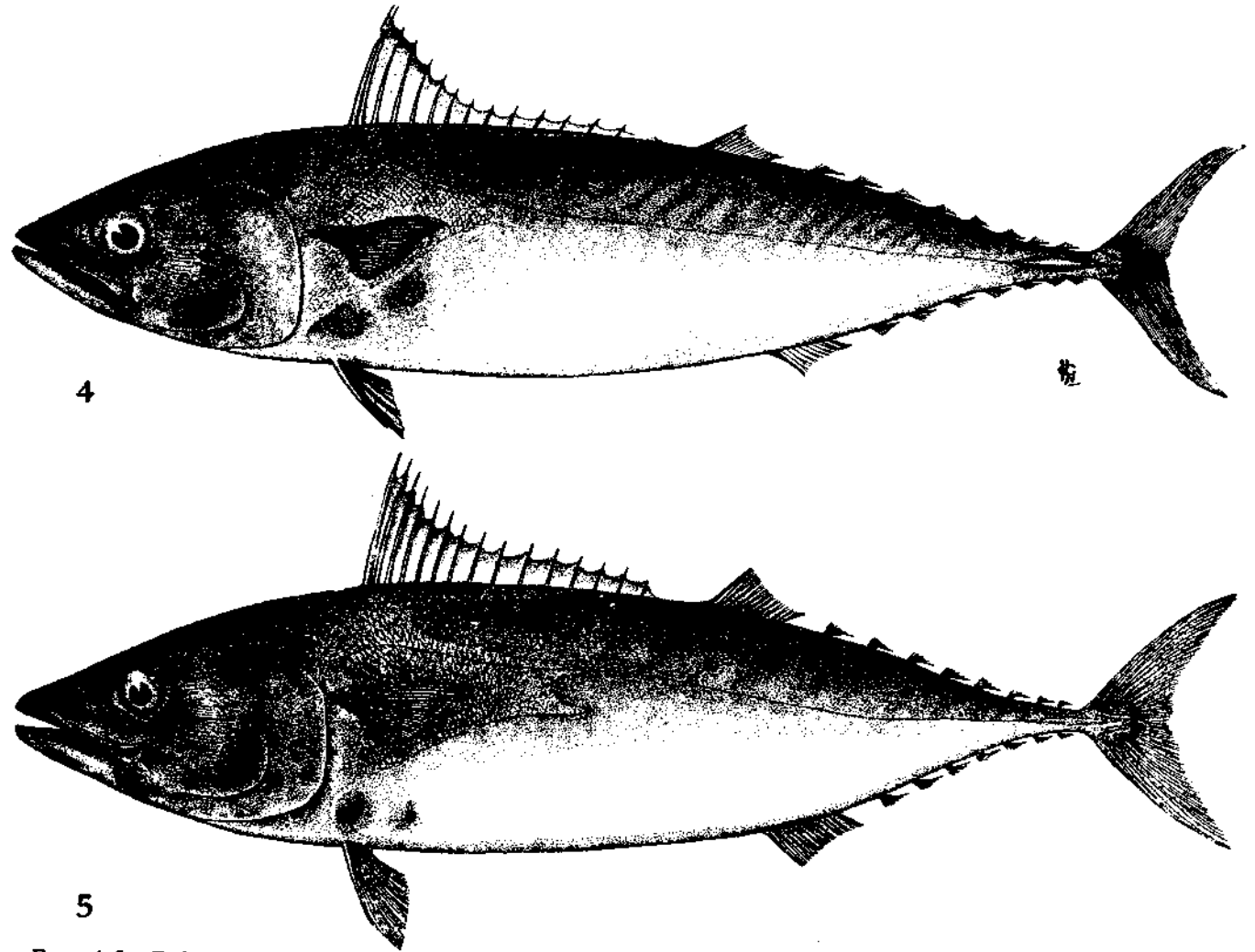
TABLE I  
Measurements of *Euthynnus affinis* (Cantor) in mm.

Sl. No.	Place and date	Standard length	Head	Snout	Eye	Maxilla	Depth (max.)	Sn. to Ist D.	Ist dorsal spine	Gill raker count
1*	† V. 29-5-1958	24.5	9.65	3.0	2.4	5.2	6.1	10.4	3.4	?
2	V. Jan. 1957	34.3	11.7	4.1	3.2	6.3	7.8	13.0	3.9	5+15
3	V. 24-1-1957	38.6	13.2	4.7	3.3	6.9	8.6	14.9	4.2	5+18
4	V. 29-5-1958	40.6	13.5	4.6	3.1	7.0	9.0	14.8	4.1	5+17
13	V. Jan. 1957	45.5	14.1	5.0	3.6	7.4	9.9	16.2	5.3	6+21
18	V. Jan. 1957	50.0	15.8	5.3	3.8	8.1	10.7	17.2	6.2	6+21
25*	V. 24-1-1957	56.6	17.5	6.0	4.0	8.8	11.8	20.0	6.3	7+23
32	V. Jan. 1957	60.5	18.0	6.0	4.2	9.1	13.1	21.3	6.8	7+22
37	V. Jan. 1957	65.0	20.0	6.7	4.2	10.0	14.2	23.3	7.7	7+23
52	† C. 25-9-1956	72.0	20.9	7.1	4.6	10.0	14.9	24.2	8.2	8+23
55	V. Jan. 1957	75.0	22.2	7.6	4.7	11.0	15.0	25.6	9.1	8+23
56	C 25-9-1956	85.0	24.9	8.6	5.0	12.0	17.0	29.0	9.3	8+23
59	C. 25-9-1956	88.5	25.8	8.4	5.1	12.2	17.5	29.1	9.5	8+23
60	C. 25-9-1956	90.8	25.7	8.4	5.1	12.1	17.5	29.2	10.1	8+24
65*	V. 3-6-1958	96.0	28.0	9.3	5.2	13.0	19.0	31.4	11.2	8+23
67	V. 15-10-1956	116.5	33.7	11.0	6.2	15.4	26.9	38.2	14.5	8+24
68	C. 25-9-1956	137.5	37.5	12.1	6.5	17.0	29.0	42.6	17.7	8+24
69	C. 25-9-1956	140.0	38.7	12.2	6.7	16.8	30.1	43.7	17.4	8+24
70*	V. 10-11-1956	162.0	42.2	13.0	7.1	18.8	35.0	50.4	18.8	8+25
71	C. 14-9-1956	209.5	56.0	18.2	10.5	25.0	45.0	65.5	26.0	8+19
72*	C. 14-9-1956	222.0	62.5	21.0	9.8	26.3	53.5	72.5	27.6	9+23
75	C. 14-9-1956	231.0	65.0	20.5	11.2	27.3	55.0	75.5	31.0	9+21
76	C. 14-9-1956	237.0	66.5	19.8	11.3	28.0	51.5	76.3	30.5	9+21
77	C. 15-9-1956	242.5	66.5	21.5	11.5	29.0	57.0	77.5	32.0	9+21
78	C. 27-7-1956	246.5	66.5	21.0	11.3	29.0	56.5	78.0	32.3	9+21
79	C. 25-9-1956	263.0	73.0	22.8	12.2	31.2	68.5	86.5	35.0	9+22
81	V. 29-5-1958	281.0	78.5	24.8	12.3	32.6	70.0	91.0	36.5	9+23
82	V. 29-5-1958	321.5	89.5	27.0	15.0	37.5	80.5	100.5	44.5	9+22

\* Denotes specimens described and figured.

† V = Vizhinjam.

‡ C = Calicut.



FIGS. 4-5. *Euthynnus affinis* (Cantor). Fig. 4. 162.0 mm. (by Mr. K. G. Nambiar). Fig. 5. 222.0 mm. (by Mr. K. L. K. Kesavan).

different from the 26 mm. *E. alleteratus* described by Matsumoto (1959) from the Gulf of Mexico.

56.6 mm. (Fig. 2).—This specimen was collected from Vizhinjam on 24-1-1957 and has a total length of 66 mm. Its body proportions and other details are given in Table I. The eyes are comparatively smaller and the body is more elongated than in the previous stage. The lateral line is distinct in the anterior region. The caudal peduncle bears a keel on each side. The general colour of the body is brown but there are dark bands which are broad at the dorsal aspect but taper and disappear as they come down to the sides.

In general appearance it is very much like the 67 mm. *E. yaito* described by Wade (1950) from Philippine waters.

96 mm. (Fig. 3).—This was collected from Vizhinjam on 3-6-1958 and has a total length of 106 mm. The general colour is somewhat deeper than in the previous stage and the bands, of which 13 on each side could be distinguished, are more distinct. The lateral line is complete and corselet scales have developed at the base of the pectoral fins.

162 mm. (Fig. 4).—This was collected from Calicut on 10-11-1956 and has a total length of 179 mm. Except for the rather elongated appearance of the body most of the external features of the adult are present at this stage. The corselet of scales have developed but they extend to only up to the vertical to the 9th dorsal spine on each side. Oblique irregular bands are present on the dorsal aspect above the lateral line but these have not resolved into the distinct patterns as in the adult. Two diffuse dark areas on either side between the pectoral and pelvic fins evidently indicate the position of the so-called thumb impressions or blotches in the adult.

222 mm. (Fig. 5).—This young fish was collected from Calicut on 14-9-1956 and has a total length of 248 mm. It has all the unmistakable features of the adult except for the characteristic colour pattern between the dorsal fin and the lateral lines. The blotches below the pectorals are clear though not so intense as in the adult.

Specimens larger than the above in the collection are being dealt with elsewhere. The fish grows to a length of about 75 cm. and is the commonest thunnid on the coasts of the mainland of India and forms a fishery of appreciable importance during certain seasons.

My thanks are due to my colleagues, Dr. V. Balakrishnan and Mr. K. V. Narayana Rao for the specimens from Vizhinjam and to Messrs. M. Kumaran and Egbert Dawson for the assistance given in the laboratory.

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