

## NOTES

### TWO NEW RECORDS OF MESO- AND BATHY-PLANKTONIC CHAETOGNATHS FROM THE INDIAN SEAS

#### ABSTRACT

A brief description of the two meso- and bathy-planktonic species of *Sagitta* namely, *S. macrocephala* Fowler and *S. prox. maxima* (Conant) that are recorded for the first time from the Indian seas is given here. The affinities of *S. prox. maxima* with its congeners are discussed.

THE systematic explorations of the deep waters of the Indian seas carried out during the research cruises of R.V. *VARUNA* have led to the discovery of several species of meso- and bathy-planktonic chaetognaths hitherto not known from this area. The presence of 20 species of chaetognaths belonging to 5 genera in the Indian seas has been reported (Silas and Srinivasan, 1969). The subsequent collection made off the west coast of India, has indicated the occurrence of two more deep water species of *Sagitta*, namely *S. macrocephala* Fowler (1905) and *S. prox. maxima* (Conant, 1896). The significant feature is the occurrence of specimens very closely resembling the meso-bathy-planktonic species *S. maxima*, which has not been recorded north of 30°S in the Indian Ocean (David, 1958).

The principal differential characters of the 'maxima' group have been given by Alvarino (1967), from which it will be evident that *S. maxima* differs from its congeners of the 'maxima' group (a) in having a distinctly longer tail segment, (b) in the relative position of the origin of anterior fin to ventral ganglion, (c) in the pigmentation of the eye and (d) in the disposition of the sympathetic nerve cords. *S. scrippsae* Alvarino (1962) is the only species of the 'maxima' group that has got a collarette at the neck region.

The specimens in the present collection agree in most of the salient characters with the diagnosis of *S. maxima* given by the earlier workers, except in the arrangement of ova in the ovary, mature specimens (Stage IV) having ova in two rows instead of four or five rows. The significance of this difference is not clear. No new nomenclatorial designation is given to these specimens on account of this difference alone, but they are described here as *Sagitta prox. maxima* (Conant).

The second species *S. macrocephala* Fowler (1905) has been reported earlier by Burfield and Harvey (1926) from the Chagos Archipelago. David (1959) recorded the species from the Antarctic Ocean and considered that it may be more frequent in the Sub-Antarctic than in the Antarctic waters. A brief description of these two species is given here.

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**Sagitta prox. maxima** (Conant)

(Fig. 1 a-d)

**Material :** 3 specimens (fully mature) collected during cruise No. 135 of R.V. VARUNA at station 4423 (09° 57'N., 75° 27'E) on 15, January 1970 in IOS net open tow from 1730 metres to surface between 00.13 and 01.35 hrs.

**Description :** Total length (including the tail fin) 33 to 36 mm. Body transparent, flaccid; head differentiated from body by a distinct neck; collarette absent. Length of tail segment varies from 24.2-25.0% of total length (mean=24.7%). Head of medium size; width of the head being more than its length; eyes oval, pigmented region small. (Length of eye=0.2 mm, length of pigmented region=0.04 mm; width of eye=0.14 mm, width of pigmented region=0.028 mm). Intestinal diverticula absent. Anterior fin commences slightly above middle of ventral ganglion, longer and narrower than posterior fin and anterior half of fin rayless; only outer margin of posterior fin rayed; both fins are connected by a fin bridge; ovaries long (Stage IV) and extend beyond posterior one-fourth of anterior fin; ova are arranged in two rows. Seminal vesicles oval and closer to posterior fin than to tail fin; hooks 4; anterior teeth 2 and posterior teeth 2-3.

**Sagitta macrocephala** Fowler

(Fig. 1 e)

**Material :** 9 specimens (immature) from station 4423 as given above for *Sagitta prox. maxima*.

**Description :** Total length of the specimens varies between 6.8 and 14.0 mm. Body opaque and robust; head larger than body and has a distinct neck; length of head is greater than its width; eyes oval without pigments; collarette absent; intestinal diverticula absent and intestine bright red; length of tail segment from 31.6-33.3% of total length (mean=32.4%). Anterior fin smaller than posterior fin, fully rayed and starting far behind ventral ganglion; posterior fin longer and wider than anterior fin and outer margin of anterior half of posterior fin rayless; (fully mature specimens are not present in the collection and hence the length of the ovary is not given); ova are arranged in four rows; seminal vesicles oval and situated closer to posterior fin than to tail fin; hooks 10-12 (mode=11.3); anterior teeth 6-8 (mode=7.2) and posterior teeth 21-27 (mode=25).

**Remarks :** The other meso- or bathy-planktonic species present in this tow from this station (4423) are (number of specimens given in parentheses): 1. *S. decipiens* Fowler (95); 2. *S. lyra* Krohn, (8); 3. *Eukrohnia fowleri* Ritter-Zahony (25) and *E. minuta* Silas and Srinivasan (36). The epi-planktonic species which could have come from the upper 200 metres depth are 1. *S. bedori* Beraneck (4); 2. *S. ferox* Doncaster (5); 3. *S. hexaptera* d'Orbigny (11); 4. *S. inflata* Grassi (60); 5. *S. regularis* Aida (3); 6. *S. robusta* Doncaster (1); 7. *S. pacifica* Tokioka (61) and 8. *Pterosagitta draco* (Krohn) (47).

The results of the deep water plankton collections tend to show the more cosmopolitan distribution of the meso- and bathy-planktonic species of Chaetognatha. If collections are made from still deeper waters of the Indian Ocean north of the

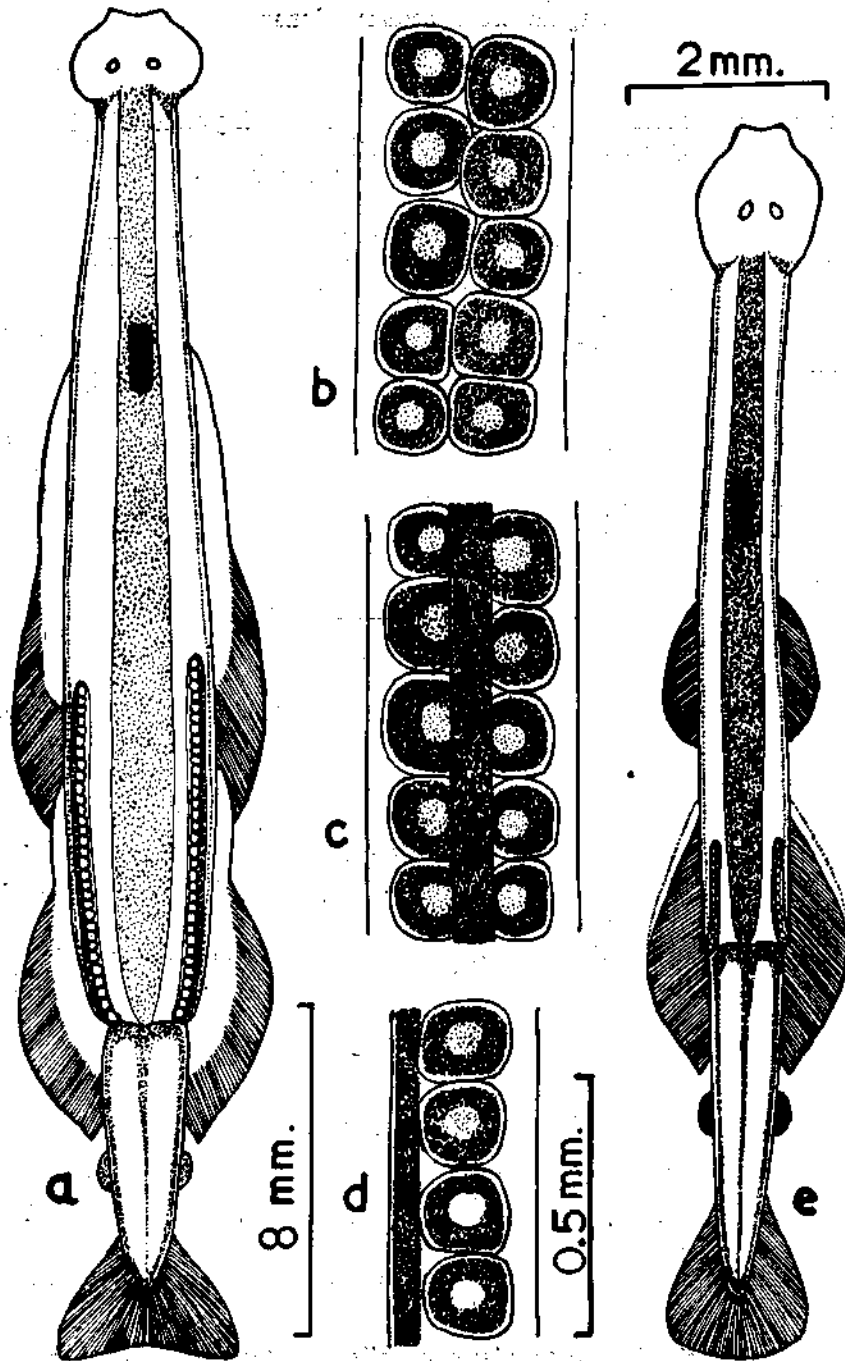


FIG. 1. a. *Sagitta prox. maxima*, dorsal view; b, c, d. Latero-internal, latero-external and dorsal views of part of ovary of *S. prox. maxima*; e. *S. macrocephala*, dorsal view.

equator, it is likely that species such as *E. hamata*, *E. bathypelagica*, *E. bathyantartica* and *S. gazellae*, which are at present known from the southern Indian Ocean and Sub-Antarctic, may also be found to occur.

The present two distributional records bring the total number of chaetognaths known from the Indian seas (Silas and Srinivasan, 1969, 1970) to 22 species. The specimens are deposited in the reference collection of the Institute at its Regional Centre at Mandapam Camp (Reg. No. *Sagitta prox. maxima* C 4, *Sagitta macrocephala* C 3).

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