

A NEW SPECIES OF *SCYPHOPROCTUS* GRAVIER (FAMILY  
CAPITELLIDAE) FROM THE GULF OF MANNAR, SOUTH INDIA\*

By K. RANGARAJAN

*Central Marine Fisheries Research Institute, Mandapam Camp*

A PERUSAL of relevant literature shows that there are only four described species of the genus *Scyphoproctus* Gravier. *Scyphoproctus djiboutiensis* Gravier has been recorded from the Bay of Djibouti (Gravier, 1904), the Red Sea (Gravier, 1906) and the Gulf of Mannar, India (Fauvel, 1930, 1953); *S. gravieri* Okuda was described from a single posterior bit comprising of seven setigerous segments and a pygidium collected at Kakihana, Okinawa (Okuda, 1940); *S. oculatus* Reish was taken in Newport Bay on the Southern California (Reish, 1959) and *S. platyproctus* Jones obtained from a sandy bottom off the Florida coast at Panama City, Bay County (Jones, 1961).

During the study of the polychaete fauna of Gulf of Mannar, South India, six specimens of *Scyphoproctus* were obtained from the inter-tidal region near Vedalai on 21-4-1962, of which three are complete, two incomplete posteriorly and one incomplete anteriorly. As these specimens differ markedly from all known species of *Scyphoproctus*, they are reported here as *Scyphoproctus variabilis*.

Genus *Scyphoproctus* Gravier 1904

*Scyphoproctus variabilis* sp. nova

Six specimens form the basis of this description of *Scyphoproctus variabilis*. The three complete specimens measure 14 mm. (69 setigers), 13 mm. (57 setigers) and 11 mm. (55 setigers) respectively. The two specimens which were incomplete posteriorly measure 9 mm. (45 setigers) and 7 mm. (31 setigers). Another anteriorly incomplete specimen in which only six thoracic setigers are present measures 18 mm. and consists of 59 setigers. The general form of the animal is slender, elongate and the breadth varies from 0.47 to 0.55 mm. The prostomium is short, cylindrical and rounded anteriorly. There are no well-developed eyes but a number of small, subdermal pigment spots could be made out on either side arranged in two groups. Two elongated nuchal slits are present at the posterior margin of the prostomium. The proboscis which is everted on some individuals, is smooth.

The thorax and the abdomen can be easily distinguished by the presence of long, capillary setae on the former and hooded hooks on the latter. The thoracic setigerous segments are biannulate and bear simple, long capillary setae in both notopodial and neuropodial fascicles. The setae are inserted in the intersegmental furrow and project from the body of the worm (Fig. 1). The thoracic epithelium is smooth and devoid of any reticulation. Branchiae are absent in all the specimens examined.

\*Published with the kind permission of the Director, Central Marine Fisheries Research Institute, Mandapam Camp.

Between the peristomium and the first setigerous segment there is a well defined segment devoid of any setae. A perusal of the chart provided by Hartman (1947) for the various genera of Capitellidae shows that in the genus *Scyphoproctus* the first visible segment, i.e. the peristomium, is achaetous, and simple capillary setae are present from the second segment. Fauvel (1953) in describing *S. djiboutiensis* from Gulf of Mannar, South India, mentions that peristomium as well as the succeeding segment are achaetous, the capillary setae appearing only from the third segment. His observation is in conformity with Gravier's (1904) original description of the genus. On the other hand Reish (1959) in his description of *S. oculatus* from California mentions that only the peristomium is achaetous, the capillary setae commencing from the second segment. The anterior end of *S. gravieri* is not known as the description of this species was based on a single posterior fragment of seven setigerous segments. More recently Jones (1961) has proved the existence of a true segment between the peristomium and the first setiger in *S. platyproctus* and has redrawn the diagrammatic representation of Hartman for the genus *Scyphoproctus*. *S. variabilis* agrees with *S. djiboutiensis* and *S. platyproctus* in possessing two achaetous segments at the anterior end.

An interesting feature of the present material is the variation exhibited in the number of thoracic segments and the distribution of long, capillary setae. The number of thoracic segments varies from twelve to sixteen out of which ten to fourteen are setigerous. The demarcation between thorax and abdomen is generally sharp, but in some cases, one or two segments of transitional character are interposed. To get a clear understanding of the variations met with in *S. variabilis*, a chart is provided following the scheme adopted by Hartman.

Specimen		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	
1	Left		S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H	H	H	H	H	H
	Right		S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H	H	H	H	H	H
2	Left		S	S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H	H	H	H	H
	Right		S	S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H	H	H	H	H
3	Left		S	S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H	H	H	H	H
	Right		S	S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H	H	H	H	H
4	Left		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H
	Right		S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H
5	Left		S	S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H	H	H	H	H
	Right		S	S	S	S	S	S	S	S	S	S	S	S	S	H	H	H	H	H	H	H	H	H

\* sixth specimen incomplete anteriorly.

The present study has revealed that the number of thoracic segments is not so specific and constant as was supposed so far for the genus *Scyphoproctus* but subject to variation not only from individual to individual but even between the two sides of the same animal.

The number of abdominal setigers ranges from 45 to 59. The abdominal uncinigerous tori, are hardly raised from the surface of the worm and carry a single row of long handled hooks. The abdominal tori do not differ from one another except there is a gradual decrease in their length posteriorly with the diminishing width of the body. The uncinigerous tori in the posterior region are slightly raised from the surface giving a nodulated appearance to the animal. On two segments immediately anterior to the anal plaque the notopodial fascicles of hooded hooks are replaced by transverse rows of heavy acicular setae. These setae (Fig. 2) are arranged dorsally as a pair of groups on each segment, but on the segment just preceding the anal plaque the groups approximate each other on the medial line and appear as one continuous row of 15 to 17 acicular setae (Fig. 3).

In *S. oculatus* the heavy acicular setae in the notopodia of the posterior region first appear on the sixth to second segment from the anal funnel and there is only one seta in each group. On the other hand in *S. platyproctus* they first appear on fourth to seventh segments immediately anterior to the anal plaque and there are two to seven in each group. In *S. djiboutiensis* the dorsal line of acicular spines on the segment just anterior to the anal funnel nearly touch one another and form one continuous line. In the present collection, four specimens have their anal plaque in tact, and in all of them it is found that the heavy acicular setae always first appear on the second segment immediately anterior to the anal plaque and the arrangement of spines closely resembles the condition found in *S. djiboutiensis*.

The pygidium of *S. variabilis* is a flattened, oblique plate (Fig. 3). The anus is almost terminal and opens to the exterior on a small conical mass. Just below the anus two cylindrical anal cirri are situated. The periphery of the anal plate is stiffened by seven to eight bundles of thick, pointed setae measuring 325-337  $\mu$  in length and 22-25  $\mu$  in breadth. The number of groups of acicular setae in the anal plate has been used by various workers to distinguish the different species of this genus. In both *S. djiboutiensis* and *S. gravi*, there are eleven groups of setae in the anal plaque but can be separated from one another by the lesser number of setae in the former (4, 4, 3, 3, 3, 2, 2, 2, 1, 1, 1=26) and greater number 13 (or 12), 7, 5, 5 (or 4), 4, 3, 2, (or 3), 2, 2, 1 (=45-46) in the latter. In *S. oculatus* there are only six groups of acicular setae in the anal plate. In the typical form the arrangement is 3, 3, 2, 2, 1, 1 (=12), although the following variations 4, 4, 4, 2, 2, 2 (=18), 4, 3, 2, 2, 1, (=13) on the left side and 4, 4, 2, 2, 2, 2 (=16), 4, 4, 2, 2, 1, 1 (=14) on the right side have been observed. In *S. platyproctus* there are five to seven groups of acicular setae around the periphery of the anal plaque and the number of acicular setae in each group varies from one to seven. The most common number of groups in the anal plaque of *S. variabilis* is eight (Fig. 4) although one specimen shows only seven groups (Fig. 5). The total number of acicular setae on each side varies from seventeen to twenty and the following variations have been met with in their arrangement : on the right side 5, 3, 3, 2, 2, 2, 2, 1 ; 4, 4, 4, 2, 1, 2, 2, 1 ; 4, 3, 3, 3, 2, 2, 1, 1 and on the left side 4, 3, 3, 2, 2, 2, 1, 1 ; 4, 3, 2, 3, 2, 1, 1, 1 and 4, 3, 3, 3, 2, 1, 1, 1.

The structure of the hooded hooks are similar to those found in other capitellids. The distal ends of the hooks are partly covered by a hood whose margin is finely

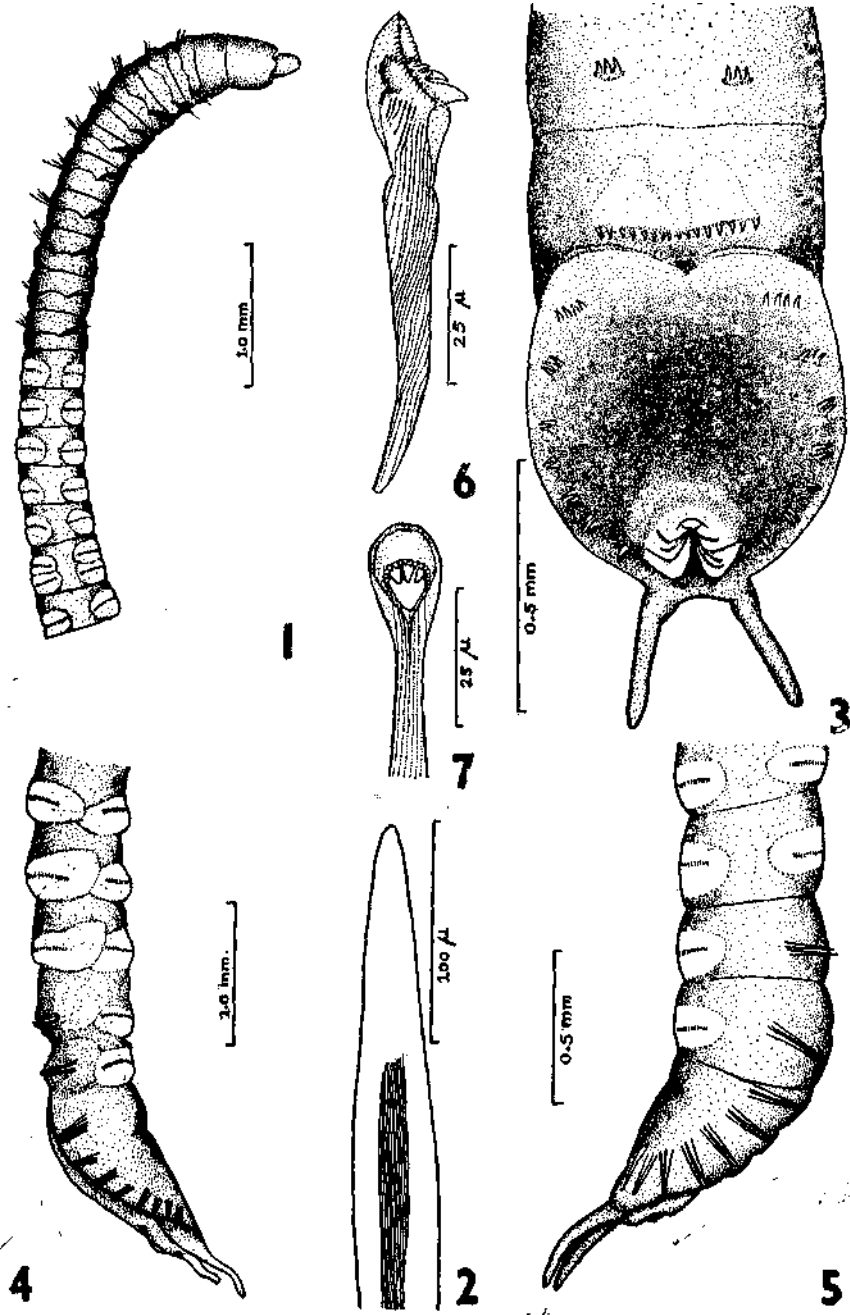


FIG. 1. Right lateral view of a specimen measuring 14 mm. in length showing ten setigerous segments in the thorax. FIG. 2. Acicular spine from anal plate. FIG. 3. Dorsal view of the anal plate. FIG. 4. Right lateral view of the posterior end of a worm showing eight groups of acicular setae in the anal plate. FIG. 5. Left lateral view of the posterior end of a worm showing seven groups of acicular setae in the anal plate. FIG. 6. Hooded abdominal hook from the 35th abdominal setiger. FIG. 7. Hooded abdominal hook, front view.

TABLE 1

Character	<i>S. djiboutiensis</i> Gravier	<i>S. gravieri</i> Okuda	<i>S. oculatus</i> Reish	<i>S. platyproctus</i> Jones	<i>S. variabilis</i> sp. novo
Eyes	Absent	Anterior portion unknown	A pair of elliptical shaped eyes	Subsurface pigment spots in a crescentic pattern on each side of prostomium	Subsurface pigment spots in a group on each side of prostomium
Achaetous segment behind prostomium	Present		Absent	Present	Present
Number of thoracic setigers	12	~5 ~>	12	12	10 to 14
Thoracic setae	Capillary setae	>5 s*	Simple capillary setae	Bilimbate capillary setae	Simple capillary setae
Hooded hooks		Notopodial hooks with 7 teeth and neuro-podial hooks with 4-5 teeth above main fang	3 smaller teeth above main fang	4 rows of teeth above main fang	2 rows of teeth above main fang
Appearance of notopodial acicular setae		—	6 to 2 segment from anal funnel	4 to 7 segments immediately anterior to anal funnel	2nd segment immediately anterior to anal funnel
Number of groups of acicular setae in anal funnel	11	11	6	5 to 7	Mostly 8, rarely 7
Number of acicular setae on each side	26	45-46	12-18	—	17-20
Segment immediately anterior to anal funnel	Notoacicular setae form a single continuous row of 16 acicular setae	Groups of notoacicular setae separate	Notoacicular setae of either side nearly touch one another forming a single dorsal line	Groups of notoacicular setae separate	Notoacicular setae in two groups but nearly touch one another forming a single dorsal line
Shape of anal plaque	Cup-shaped concave funnel	Concave funnel	Concave funnel	Flattened plate	Flattened plate

m  
 10  
 11  
 12  
 13  
 14  
 15  
 16  
 17  
 18  
 19  
 20  
 21  
 22  
 23  
 24  
 25  
 26  
 27  
 28  
 29  
 30  
 31  
 32  
 33  
 34  
 35  
 36  
 37  
 38  
 39  
 40  
 41  
 42  
 43  
 44  
 45  
 46  
 47  
 48  
 49  
 50  
 51  
 52  
 53  
 54  
 55  
 56  
 57  
 58  
 59  
 60  
 61  
 62  
 63  
 64  
 65  
 66  
 67  
 68  
 69  
 70  
 71  
 72  
 73  
 74  
 75  
 76  
 77  
 78  
 79  
 80  
 81  
 82  
 83  
 84  
 85  
 86  
 87  
 88  
 89  
 90  
 91  
 92  
 93  
 94  
 95  
 96  
 97  
 98  
 99  
 100

serrated (Fig. 6). In front view (Fig. 7) a large fang is seen surmounted by a crest. The crest is composed of two rows. The row immediately above the fang is composed of three large teeth and the second row consists of an arc of fourteen small teeth. The node is prominent and the shoulder short. There are six prominent, short ridges over the neck. The shaft is penetrated by fine fibrillae which run in an oblique direction. No definite pattern of distribution of the smaller teeth of the crest has been observed in *S. platyproctus*, but the most common pattern is one in which the row immediately above the fang comprises three large and two small teeth. There are as many as four rows of teeth above the major fang. *S. variabilis* differs from *S. platyproctus* in having only two rows of teeth above the main fang of the hooded hooks.

The anal plaque of *S. variabilis* is flattened and resembles more closely that of *S. platyproctus* than those of other species of *Scyphoproctus*.

The important characters of *S. variabilis* are summarized and compared with those of other known species of *Scyphoproctus* in Table 1.

A short, cylindrical prostomium, eyes in the form of groups of subdermal pigment spots, absence of setae on the peristomium and the succeeding segment, ten to fourteen thoracic setigerous segments provided with simple, capillary setae, abdominal hooded hooks with two rows of smaller teeth above the main fang, a slanting, flattened anal plate, the periphery of which are reinforced with seven to eight groups of acicular setae on each side, anus opening on a conical mass to the exterior almost at the terminal end and a pair of short finger-shaped anal cirri are the chief distinguishing features of *Scyphoproctus variabilis*.

The specific name *variabilis* is proposed to indicate clearly the marked variation in the number of thoracic setigers (10-14) which in this genus was till now considered to be constant (12).

The syntypes consisting of six specimens have been deposited in the museum of the Central Marine Fisheries Research Institute (CMFRI No. 73).

#### ACKNOWLEDGEMENT

I wish to record my sincere gratitude to Dr. S. Jones, Director, Central Marine Fisheries Research Institute for his encouragement in this work. I am thankful to Dr. Olga Hartman, University of Southern California, U.S.A. and Dr. R. P. Varma, Central Marine Fisheries Research Institute for various suggestions for the improvement of the paper.

#### REFERENCES

- FAUVEL, P. 1930. Annelida Polychaeta of the Madras Government Museum. *Bull. Madras Govt. Mus.*, n.s., nat. hist. sect., 1 : 1-72.
- . 1953. Annelida Polychaeta. *The Fauna of India, including Pakistan, Ceylon, Burma and Malaya*. Allahabad, Indian Press : 1-507.
- GRAVIER, C. 1904. Sur un type nouveau de la famille des Capitelliens: *Scyphoproctus* nov. gen., *djiboutiens* nov. sp. *Bull. Mus. d'Hist. Nat. Paris*, 10 : 557-561.

- GRAVIERC. 1906. Contribution a l'etude des annelides polychaetes de la Mer Rouge. *Nouv. Arch. Mus. d'Hist. Nat. Paris*, 8 : 123-236.
- HARTMAN, OLGA. 1947. Polychaetous annelids. Pt. 7. Capitellidae. *Allan Hancock Found. Publ., Pacific Expeds.*, 10 : 391-481.
- . 1959. Catalogue of the polychaetous annelids of the world. *Allan Hancock Found. Publ., Occas. Paper*, No. 23 : 1-628.
- JONES, MEREDITH. 1961. Two new polychaetes of the families Pilargidae and Capitellidae from the Gulf of Mexico. *Amer. Mus. Novitates*, No. 2049 : 1-18.
- OKUDA, SHIRO. 1940. Polychaetous annelids of the Ryukyu Islands. *Bull. Biogeogr. Soc. Japan*, 10 : 1-24.
- REISH, DONALD, J. 1959. A new species of polychaetous annelid (family Capitellidae) from Southern California. *Pacific Sci.*, 13 : 78-80.