

DESCRIPTION OF *SABELLIPHILUS FOLIACEA* SP. N.
(COPEPODA, CYCLOPOIDA) WITH NOTES ON THE
AFFINITIES OF THE SPECIES *

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(With 2 text-figures)

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I—INTRODUCTION

Six female and five male specimens of a new species of copepod were obtained from the body cavity of *Holothuria atra* collected from the Gulf of Mannar on 13th November 1960.

The species derives its name from the peculiar, flattened, leaf-like structures that are present on the distal outer angle of the basal protopod segment, both in second and third legs.

The holotype (one female), allotype (one male) and paratypes (two female and one male) are deposited in the Reference Collection Museum of Central Marine Fisheries Research Institute, Mandapam Camp and bear the registered numbers C.M.F.R.I., No. 61, No. 62 and No. 63, respectively.

I am thankful to Dr. S. Jones, Director, Central Marine Fisheries Research Institute for his encouraging guidance and helpful suggestions during the course of this study.

II—DESCRIPTION OF THE SPECIES

Sabelliphilus foliacea sp. n.

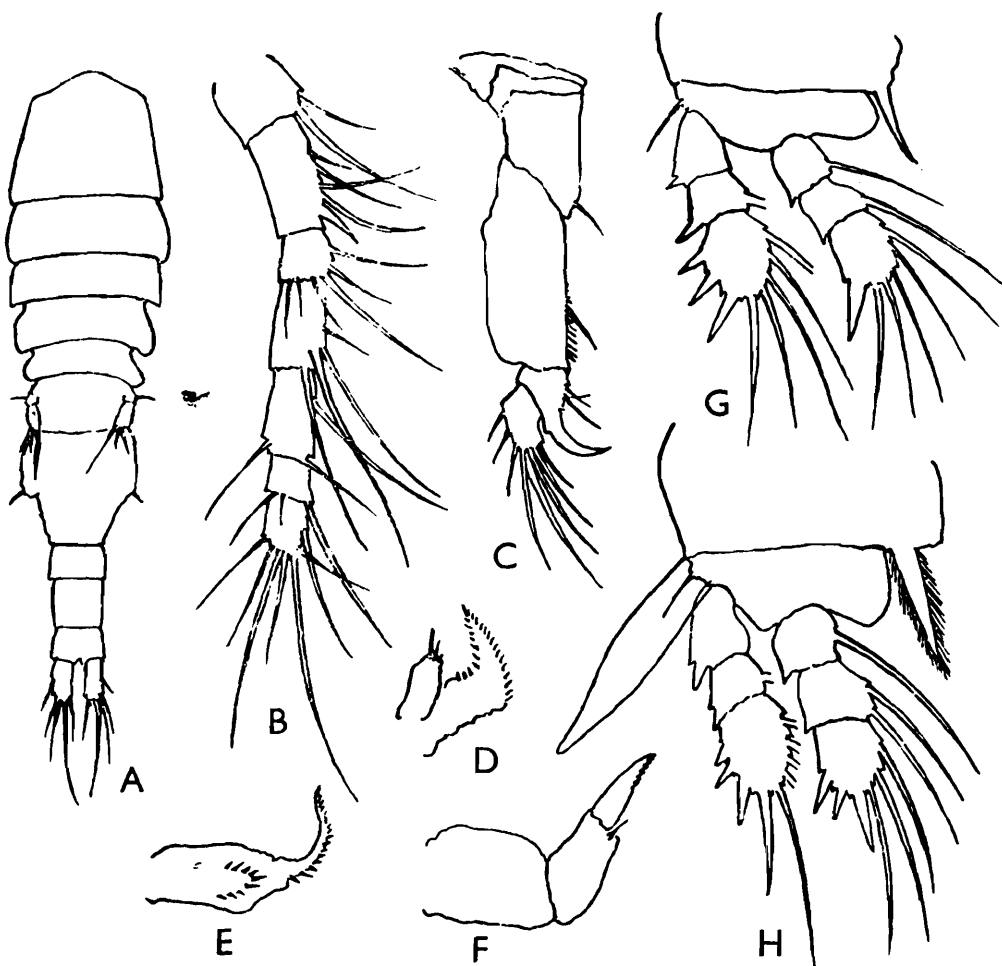
Female.—Body (Text-fig. 1, A) elongate, narrow with the demarcation between prosome and urosome rather inconspicuous. Cephalosome fused with first pedigerous segment, but trace of division still visible. Urosome composed of five segments, genital segment equivalent in length to three abdominal segments combined together. Caudal ramus a little longer than last abdominal segment; bears four setae terminally and a single seta on its outer margin at about midlength. Longest apical seta, second from inner side, characteristically incurved in its distal half. Female bears a pair of gracefully cylindrical, egg sacs reaching middle of caudal rami.

Antennule (Text-fig. 1, B) 7-segmented, short, hardly reaching posterior margin of cephalosome. Antennular segments have following relative lengths:

1	2	3	4	5	6	7	
12.3	18.8	11.5	16.0	23.7	7.4	10.3	100

A digitiform spine on the antero-lateral corner of second segment in antennule present. Antenna (Text-fig. 1, C) 4-segmented,

prehensile; a little shorter than antennule, but much more stoutly built. First and second segment each with a seta. Third segment bears a strong claw and three spines. Last segment carries eight setae of varying lengths. Other mouthparts (Text-fig. 1, D-F) typically lichomolgid, being highly reduced.



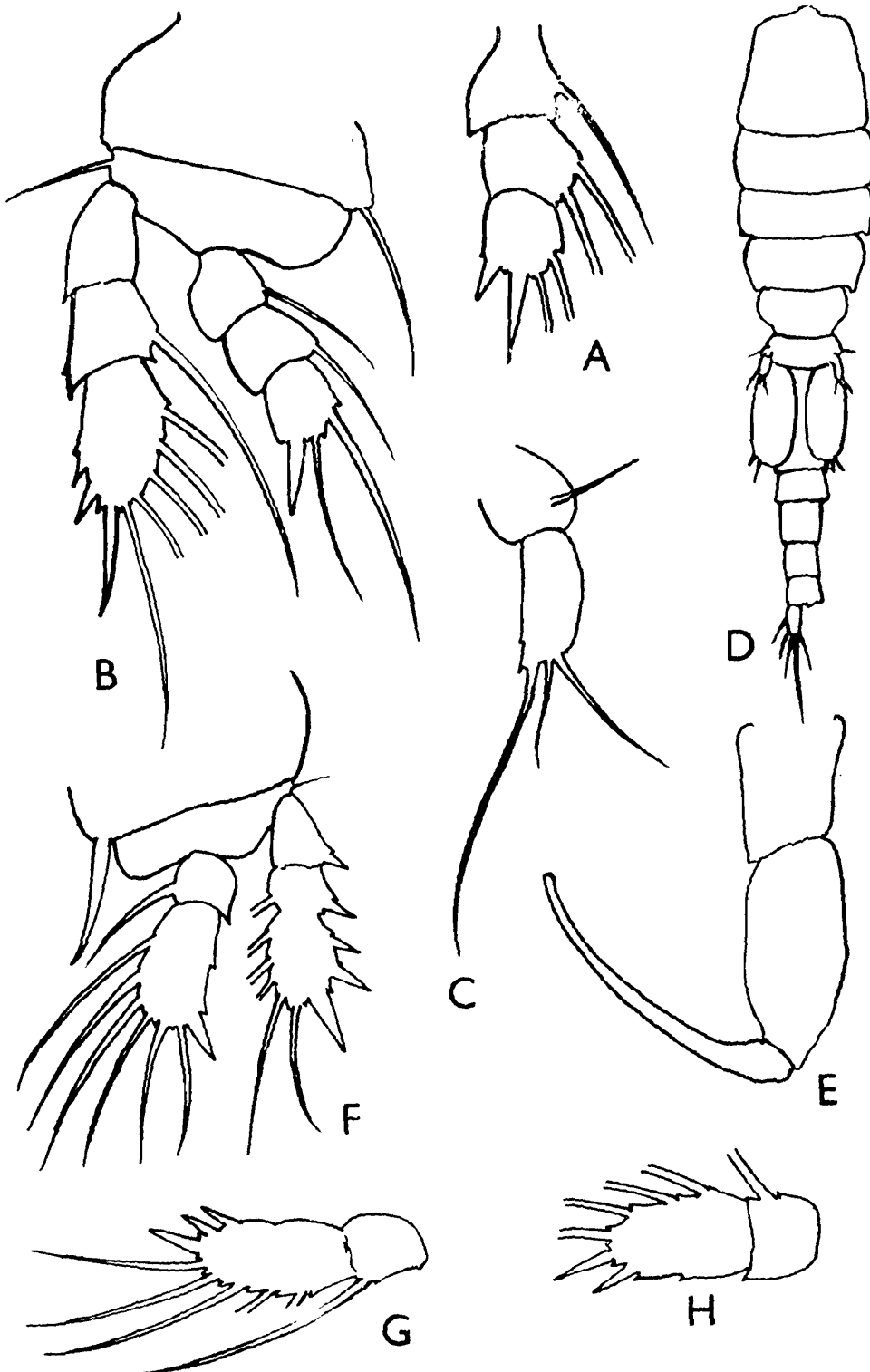
TEXT-FIG. 1. *Sabelliphilus foliacea* n. sp. A. Female, Dorsal view. B. Female antennule. C. Female, antenna. D-F. Female, mouth parts. G-H. Female, swimming legs.

All four pairs of swimming legs (Text-fig. 1, G, H; Text-fig. 2, A, B) biramous, ramus being 3-segmented. Rami of equal length and constituting segments rather stout. Second and third legs differ conspicuously from first and fourth; in the former two distal outer angle of basal protopod segment drawn out on its posterior face, into large foliaceous structure; this structure in second leg almost as large as ramus, but in third leg a little shorter. In first three pairs of legs seta on inner distal angle of basal protopod segment highly flattened, in fourth leg normal. Ornamentation of the swimming leg as below:

	Protopod		Endopod						Exopod									
	1	2	1		2		3	1		2		3						
	Si	Se	Si	Se	Si	Se	Si	Se	Si	St	Se	Si	Se	Si	St	Se		
F1	1	0	0	1	1	0	1	0	4	1	1	0	1	1	1	4	1	3
F3	1	*F	0	1	1	0	2	0	2	1	1	0	1	1	1	5	1	3
F2	1	*F	0	1	1	0	2	0	3	1	11	0	1	1	1	5	1	3
F4	1	0	0	1	1	0	1	0	1	1	1	0	1	1	1	5	1	2

(F) Represents foliaceous structures.

In fifth leg (Text-fig. 2, C) basal segment fused with body and indicated by a seta. Distal segment stout, cylindrical, almost twice as long as wide and bearing two setae of unequal lengths terminally. Size: 0.79 mm.



TEXT-FIG. 2. *Sabelliphilus foliacea* sp. n. A, B. Female, swimming legs. C. Female, fifth leg. D. Male, dorsal view. E. Male, maxilliped. F-H. Male, swimming legs.

Male: (Text-fig. 2, D) shows sexual dimorphism. Urosome 6-segmented and consists of fifth leg-bearing segment, genital segment bearing rudimentary sixth pair of legs and four abdominal segments. Caudal rami and setae identical to those of female.

Maxilliped (Text-fig. 2, E) geniculate and large with a well developed terminal claw ; other mouthparts, antennule, antenna quite normal. First four pairs of legs (Text-fig. 2, F, G) exhibit very interesting modifications. Second and third segments of endopods of all these legs indistinctly separated ; constrictions between them, clear ; some of setae and spines borne by segments similar to that of female. This phenomenon is observed in all five male specimens examined. Size: male, 0.75 mm.

Type-locality.—Gulf of Mannar, Bay of Bengal, India.

Distribution.—Gulf of Mannar, Bay of Bengal.

III—REMARKS

Etymology.—The species described above differs from all other known representatives of the subfamily Sabelliphilinae of the family Lichomolgidae in the following characters: (i) The ornamentation of swimming legs is unique as given in the text. (ii) Foliaceous outgrowths are developed on the proximal protopod segments of second and third legs. (iii) Differences are noted between the two sexes in the segmentation of endopod and exopod of the swimming legs.

It is difficult in view of these unique characters to assign the present species to any particular genus. However, there are two known genera, *Sabelliphilus* Sars and *Diogenidium* C. L. Edwards which should be considered for accommodating it. The present material agrees with *Sabelliphilus* in several morphological characters, including the general shape of the body and presence of a claw on third antennal segment, but it differs from it not only in the characters listed earlier but also in the structure of the antenna. The latter is prehensile in both cases. In *Sabelliphilus* the prehensility is attained by the development of strong teeth on second segment and stout claws on third and fourth segments. In the present material, however, antenna is simpler. There is a single claw on third segment and several spine-like setae on fourth segment. There are no teeth on second segment. The genus *Diogenidium* also differs from *Sabelliphilus* in the structure of antenna. In the former genus no tooth is present on second segment and the prehensility is attained by the subchelate, curved claw and short spines on fourth segment. In these two points it also differs from the present species, but it agrees with the latter in the habits, both being found in association with a holothurian.

It is probable that all these three forms represent only a single flexible genus whose members live not only in association with sabellids but also with a variety of other hosts. A strong support to this proposition is the fact that in recent years several lichomolgid species have been reported with a wide range of host preference. The life in association with tube-dwelling polychaetes is not probably very different from the life inside the body cavity of a holothurian. Nicholls (1944) has indicated that the number of setae and spines on swimming legs cannot be solely relied upon for generic distinction among the poecilostomes and Sewell (1949) has included under his new genus *Preherrmannella* several forms, some of them with a prehensile antenna and others without such antenna. It is, therefore, obvious that the structure of antenna alone cannot be taken as the criterion of generic separation. The foliaceous outgrowths of swimming legs of the present material

and the teeth on second antennal segment of *Sabelliphilus* appear to be only of specific importance. The aberrant nature of *Sabelliphilus* has already been recognized by G. O. Sars (1913-18). When dealing with such aberrant representatives, care should be taken not to lay too much stress on such characters. It would seem probable that the genus *Diogenidium* is synonymous with *Sabelliphilus*. The former lives in association with holothurians, and the latter with Sabellids. Although the present species differs from both these genera in some structural details, it has been placed under *Sabelliphilus* in the belief that all these forms constitute a single closely related group which, however, has diverged in some structural peculiarities, in order to meet the demands of their habits.

IV—SUMMARY

A new species of cyclopoid copepod, *Sabelliphilus foliacea* sp. n. is described. Because of its structural peculiarities and also because of its similarities with another genus, *Diogenidium*, the generic assignment of the species has been difficult. The reasons for designating the species under *Sabelliphilus* are discussed in the paper. It would seem probable that the genera *Sabelliphilus* and *Diogenidium* are synonymous.

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