

**A NEW GENUS AND SPECIES OF A CYCLOPOID COPEPOD
PARASITIC ON A STARFISH***

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HUMES and Cressey (1958) created the family Stellicomitidae to include two new genera, namely, *Stellicomes* and *Onycopygus* which are parasitic on different genera of starfishes (*vide* Humes & Cressey *loc. cit.*) collected from the coasts of West Africa and Madagascar (Republique Malgache). Under the genus *Stellicomes*, two new species *S. tumidulus* and *S. guineensis* and under the genus *Onycopygus* a single species *O. impavidus* were described. To my knowledge no other genera and species have so far been added to the family.

Stellicomitids are peculiarly modified siphonostomatous cyclopoids characterised by the presence of a highly reduced siphon. They appear to be exclusively parasitic on starfishes. The form described in this paper does not correspond to any of the known forms and hence is treated here as a new genus. It is interesting to note that there are morphological gradations between the two known genera and the present form. It may be added here that it is obtained along with the two species of the genus *Stellicomes*. The latter are reported here for the first time after their discovery from the African Coasts.

The generic name of the present form refers to the host of preference and the specific name to the region of occurrence.

Material examined. During collection trips to various field centres on the south-east coast of India, opportunities were available for examining large number of starfishes at Vedalai and Devipatnam where they were brought ashore in crab-nets. The parasitic copepods collected from starfishes contained an apparently new form which is now dealt with in this paper. All the starfishes were not parasitised by this form. A total of twenty-one female (one is egg carrying) and nine male specimens were gathered from the washings of eight specimens of the host *Pentaceros hedemanni* (Lütken) in 5% formalin.

The holotype, the allotype, and the paratypes are deposited in the Reference Collection Museum of the Central Marine Fisheries Research Institute, Mandapam Camp and bear the registered numbers J/736/21, J/737/21, J/738-744/21 and J/745-748/21 respectively.

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Family STELLICOMITIDAE Humes and Cressey

Genus *Asterocomes* gen.nov.

Body translucent, swollen dorsally with distinct prosome with anterior cephalosome and posterior thorax and urosome which is a subrectangular complex; no segmentation on the surface of the body; antennule 14-segmented; antenna 4-segmented, the last segment ending in two recurved spines; mandible a simple spine; maxillule two-lobed, one lobe with a seta and a spine, the other lobe with a spine; maxilla 2-segmented, the second segment ending in a strong recurved spine; maxilliped 4-segmented ending in a small spine and a recurved spine; first natatory leg with 2-segmented exopod and 1-segmented endopod, second leg with 3-segmented exopod and 1-segmented long endopod; third and fourth legs with 3-segmented exopod and without endopod; fifth leg 1-segmented with 3 spines and a seta; sixth leg absent in female, rudimentary in male; caudal rami confluent with urosome each ramus being represented by a group of 4-setae borne on a descending lobe of urosome.

Genotype: *Asterocomes indica* sp.nov.

Type locality. South-east Coast of India.

Asterocomes indica sp.nov.

FEMALE

Size of the female varies from 0.59 to 0.62 mm. The body is translucent and can easily be distinguished into prosome with anterior cephalosome and posterior thorax and urosome. Prosome overlaps urosome to some extent on the dorsal side. There is no external segmentation on the body. Urosome is a subrectangular complex without any segmentation. The posterior region descends into two lobe-like structures, each bearing 4-setae, represent the caudal rami. On either side of the urosome there is an oval egg sac, apparently containing single embryo. Size of the egg sac is 0.12 mm. (fig. 1).

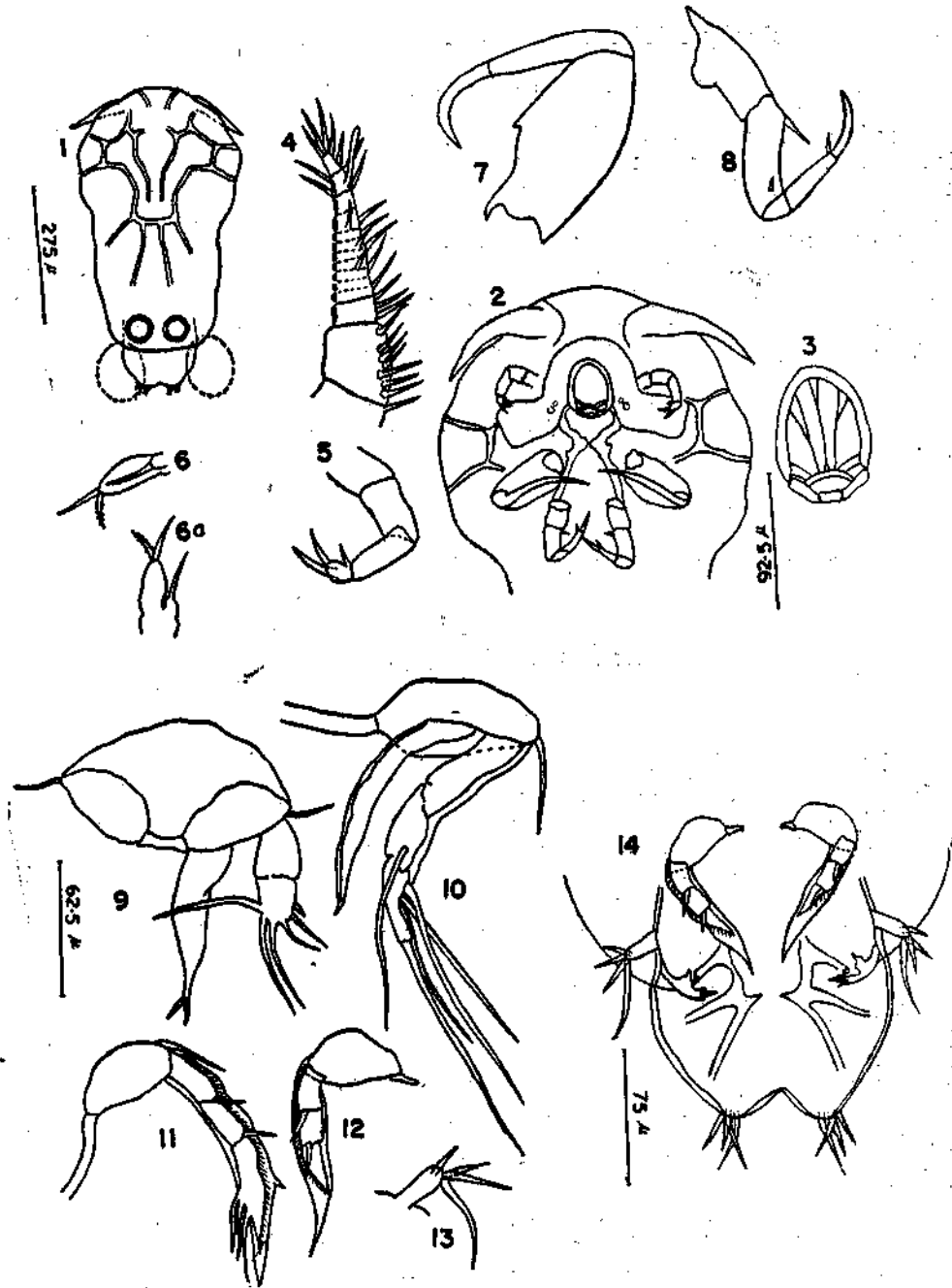
Antennule (fig. 4). Antennule is very short. There are fourteen segments but the segmentation is indistinct. The second segment is the widest bearing seven setae. The third and terminal four segments are moderate and the rest are narrow. There is a single aesthete on the penultimate segment.

Antenna (fig. 5). Antenna is 4-segmented, the terminal segment is provided with two recurved spines. At the origin of the terminal segment there is a small spine.

Mandible. Mandible is a single simple spine.

Maxillule (fig. 6). Maxillule consists of two lobes one with a spine and seta while the smaller lobe bears only a spine.

Maxilla (fig. 7). Maxilla is 2-segmented. The terminal segment bears a strong recurved spine.



FIGS. 1 to 14. *Asterocomes indica* sp. nov. 1. Dorsal view of adult (Female). 2. Ventral view of cephalosome. 3. Labrum and Labium. 4. Antennule. 5. Antenna. 6. Maxillule. 6(a) Maxillule (diagrammatic). 7. Maxilla. 8. Maxilliped. 9. First leg. 10. Second leg. 11. Third leg. 12. Fourth leg. 13. Fifth leg. 14. Urosome of male with fourth and fifth legs in position.

The scales at which the figures were drawn: Fig. 1—275 μ , Fig. 2—92.5 μ ; Figs. 3 to 13—62.5 μ . Fig. 14—75 μ .

Maxilliped (fig. 8). Maxilliped consists of four segments. The second segment bears a small spine at the distal end and a large spine at the proximal end. The last segment bears a strong recurved spine and a small spine at the terminal end.

First natatory leg (fig. 9). The first protopods of right and left legs fused to form a single massive structure. The second protopod is separate with a single seta for right and left legs. The exopod is 2-segmented the first segment is without setae, the second is with six setae, three outer setae which are short, two inner and a terminal which are long.

Table representing the setal formula of second, third and fourth legs (figs. 10, 11 and 12)

	Protopod		Endopod			Exopod						
	Si ¹	Se	Si	Se ¹	St	Si	Se ¹	Si ²	Se	Si	Se ³	St
P ₂	0	1	0	0	1	0	0	0	1	0	3	1
P ₃	0	1	Absent			0	I	0	I	3	I	0
P ₄	0	0	Absent			0	I	0	I	0	0	0

P₂, P₃, P₄ represent the second, third and fourth legs respectively.
 Si = Seta internal. Se = Seta external. St = Seta terminal.

The setae and spines have been represented with Arabic and Roman numerals respectively.

Fifth leg (fig. 13). It is a single segment bearing three spines and a seta. Out of the three spines the one towards the urosome is the strongest. As there is no segmentation on the urosome the exact location of the fifth leg can be traced by observing that portion of urosome which is just parallel to the tip of the fourth leg.

MALE

Size of the male varies from 0.58 to 0.61 mm. Body form as in female. The mouth parts and other appendages are like those of female. Body is greatly swollen on the dorsal side. In the urosome of male just below the fifth legs on either side there is a vestigial genital armature which may represent the vestigial portions of the sixth pair of legs.

Remarks. All siphonostomatous cyclopooids are characterised by the presence of a siphon in the oral region except the family Cancerillidae in which it is highly reduced. Recently a few more families with highly reduced siphon, namely, Micropontidae (Gooding, 1957), Nanaspidae (Humes & Cressey, 1959) and Stellicomidae (Humes & Cressey, 1958) have been added. These families are quite interesting in the fact that they are all parasitic on one or other order of the Phylum Echinodermata. We are far from having thorough knowledge of this group of animals

and therefore not much can be commented on the exact relationship with the other siphonostome forms.

Few words may be added here on the affinities of the present form. *Asterocomes indica* shows more affinities to the genus *Onycopygus* than to the genus *Stellicomes* of the family Stellicomitidae. It differs from *Stellicomes* and approaches *Onycopygus* in the following characters :

(a) In the structure of antenna which ends in two recurved claws instead of a truncated process and a spine.

(b) In the structure of maxilla which ends in a recurved claw instead of spinose pad.

(c) In the structure and arrangement of spines on maxilliped.

(d) In the structure and in the arrangement of six setae on the terminal segment of exopod of the first leg.

(e) In the structure and in the arrangement of setae and spines of the exopods of third and fourth legs.

However, the present form can be separated from the genus *Onycopygus* by considering the following characters in which it deviates considerably :

(a) In the presence of definite prosome with anterior cephalosome and posterior thorax and urosome which is a subrectangular complex.

(b) In the presence of 14-segmented antennule although the segmentation is indistinct.

(c) In the structure of maxillule which is two-lobed, one lobe bears a seta and a spine and the other small lobe with a spine.

(d) In the presence of two segments in the exopod of first leg.

(e) In the presence of four instead of five setae in the terminal segment of the exopod and in the presence of an elongated endopod with a short seta in place of a reduced endopod with two long setae in the second leg.

(f) In the complete absence of endopod in third and fourth legs.

(g) In the absence of a distinct sternal piece connecting the protopods of the right and left fourth legs.

(h) In the presence of three spines and seta in the fifth leg.

(i) In the absence of definite caudal rami.

(j) In the absence of definite sixth leg in male.

Most of the above characters like the complete absence of endopod in third and fourth legs, and the presence of a definite prosome with anterior cephalosome and posterior thorax, an urosome which is a subrectangular complex and a 14-segmented antennule, are not seen in either of the two genera. But they need not be considered as absolutely specialised characters of the present form for they are also partly shared by some of the genera of related families namely *Microponitius* Gooding (Microponitidae) and *Nanaspis* Humes & Cressey (Nanaspidae).

In the structure of mouth parts and natatory legs it shows closer resemblance to *Onycopygus* than to any of the genera of these families. It appears, therefore,

reasonable to include the present form in Stellicomitidae as a separate genus. Further it is evident that the present form in a way reduces the gulf between Stellicomitidae and the related families by showing some gradation in its characters. It is also of interest to note that the genus *Stellicomes* has a wide distribution as evidenced by the occurrence of *S. tumidulus* and *S. guineensis* along with the present form on *Pentaceros hedemanni* collected from the south-east coast of India.

SUMMARY

Asterocomes indica, a new genus and a species of cyclopoid copepod belonging to the family Stellicomitidae is described in detail. Only two genera and three species have so far been assigned to the family.

The affinities between the present form and the known two genera are discussed.

The distribution of the genus *Stellicomes* Humes and Cressey is indicated.

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