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# *SIGECHERES BRITTAE* GEN. ET SP. NOV., A PARASITIC COPEPOD FROM THE POLYCHAETE *SIGE FUSIGERA* MALMGREN

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## ABSTRACT

Both sexes of *Sigecheres brittae* gen. et sp. nov., a parasitic copepod found on the phyllodocid polychaete *Sige fusigera* in Danish waters, are described and figured.

The systematic relations of the new genus are discussed and it is concluded that it is rather closely related to the family Clausiidae.

## MATERIALS

While systematically examining invertebrates from the Øresund for parasitic crustaceans I found some small, whitish copepods attached to the phyllodocid polychaete *Sige fusigera*. These were collected off Knähaken and Odinshøj at a depth of about 27 m in clay with *Haploops* tubes, clay mixed with sand, and clay with *Cyprina* shells.

The host is by no means common as only 6 specimens were found, all of which had one or more copepods attached to them. Thus, one had 3, and two had 2 parasites. All these worms were collected in the period from September to May.

In addition, two parasite specimens taken in the Kattegat (exact locality and depth unknown) and originally identified as *Nereicola* sp. were present in the Zoological Museum in Copenhagen; and 3 specimens from a single *Sige fusigera* taken at the mouth of the Gullmarfjord on the Swedish west coast (depth unknown) were kindly placed at my disposal by Mr. Anders Eliason, Gothenburg.

All but one of the collected parasites were females, all of which carried ovisacs. The single male was taken on May 12th 1964. The type specimens have been deposited in the Zoological Museum of Copenhagen.

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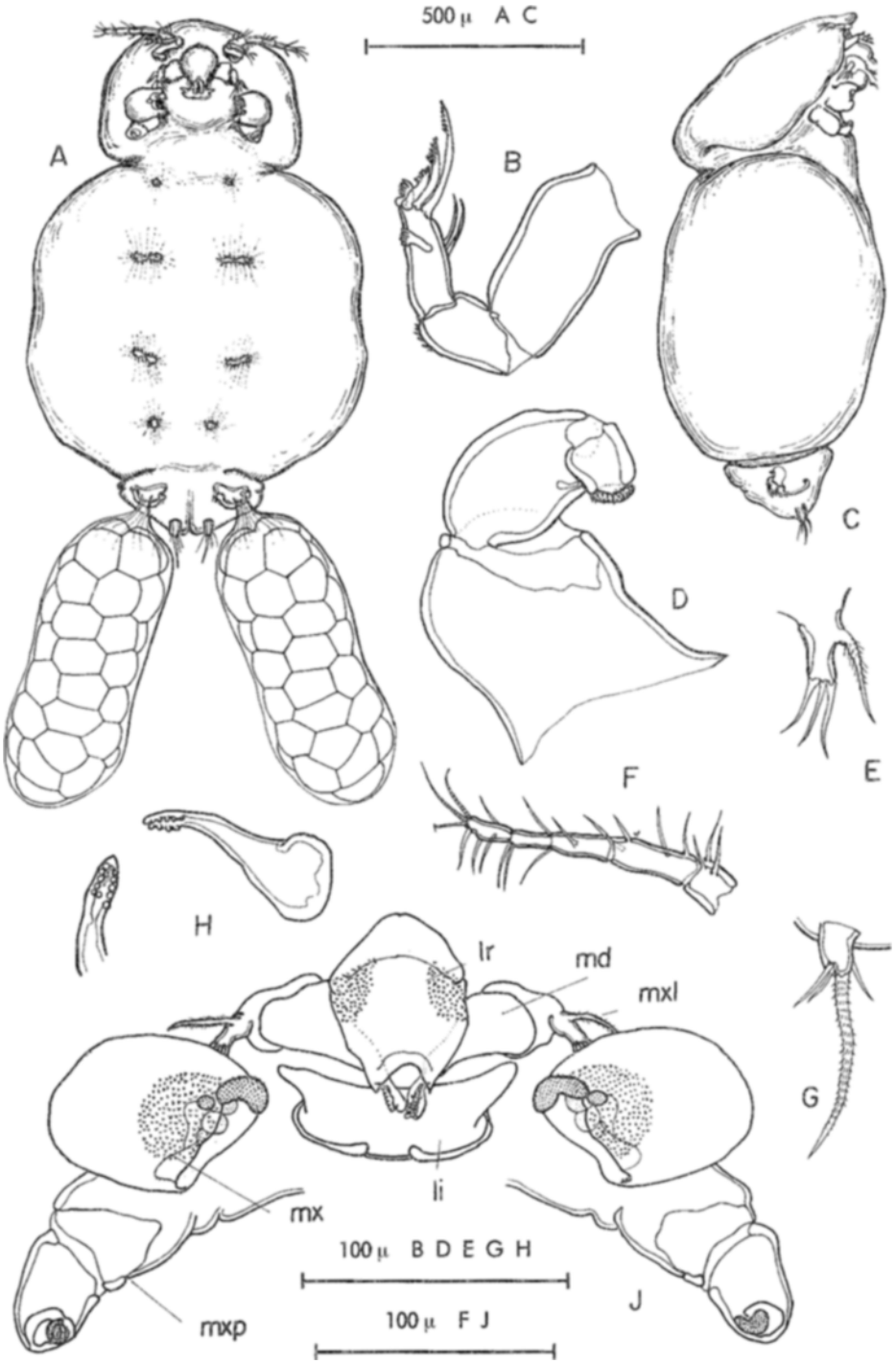


## DESCRIPTION

### *Sigecheres* gen. nov.

The body is distinctly divided into a cephalothorax, a voluminous metasome, and a minute urosome; the cephalothorax carries the following appendages: First pair of antennae composed of 5 joints; 2nd pair of antennae with 3 joints; a pair of short mandibles, almost covered by a conical labrum; 1st pair of maxillae which are delicate and inserted laterally to the mandibles; 2nd pair of maxillae which are stout and broad appendages without partitions; finally a pair of 3-jointed maxillipedes.

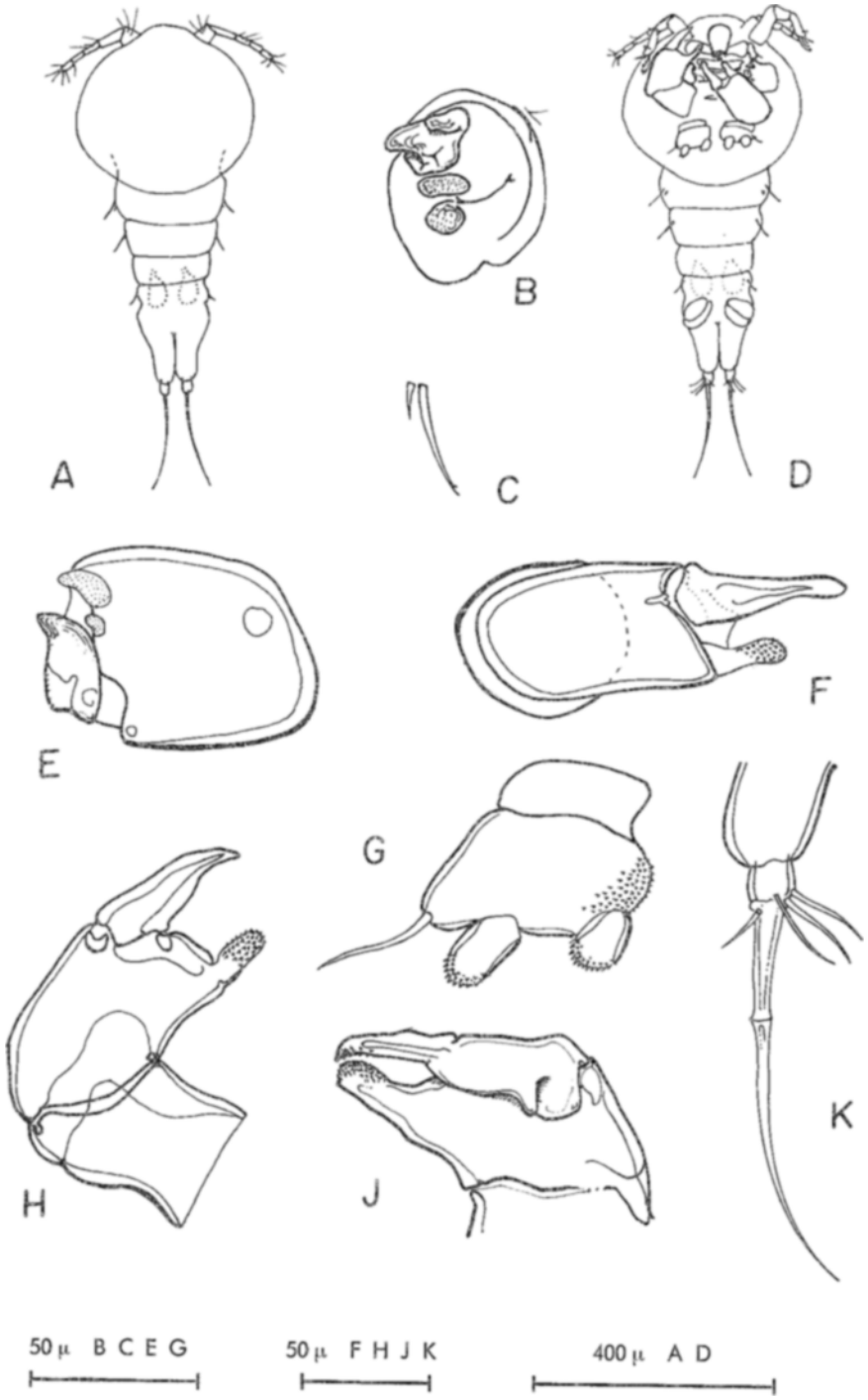
The metasome has no swimming-legs. Its general outline is subquadrate with rounded corners of which the foremost project like shoulders behind the cephalothorax. On both the dorsal and the ventral surface 4 pairs of muscle attachments are placed at fairly equal intervals. The urosome is very small, of a triangular shape, and carries two minute caudal ramii.

### *Sigecheres brittae* sp. nov.

The female (Fig. 1) has a total body length of 1.2 mm (excluding furca). Width and height of metasome 0.75 mm and 0.5 mm respectively. Living specimens are milky-white.

The 1st pair of antennae are about 110 μ long (Fig. 1 F) and 5-jointed; the 1st joint is the shortest, and the 2nd joint the longest, whereas the remaining joints are of about equal length; all joints carry rather short setae. The 2nd pair of antennae (Fig. 1 B) is 3-jointed; the 1st joint is the longest and broadest, the 2nd is the shortest and has a row of fine, short spines on the inner border; the 3rd joint carries 5 pectinate setae of different length, 4 placed apically, the 5th a short distance from them; in addition 2 setae of normal shape are present on its inner side. The labrum (Fig. 1 J) is protruding and of a conical shape; it partly covers the two mandibles; at each side there is a finely denticulated area. Mandibles (Fig. 1 H, J) are stout, unjointed and club-shaped, the distal end tapering into a spoon-like structure with short and blunt teeth in rows along the two borders. The 1st maxilla (Fig. 1 E, J) is situated lateral to the mandible; it carries 3 apical setae and 1 lateral pinnate seta. The 2nd maxilla (Fig. 1 J) is large and stout, with a rounded outline except for the terminal part which is irregularly excavated and carries a heavily sclerotized renal-shaped structure with a finely denticulated surface. A semicircular area around the excavation is likewise finely denticulated. The maxillipeds (Fig. 1 D, J) are 3-jointed. The 1st joint is very large and broad, the 2nd joint is of about the same length, but more slender, and the 3rd joint is small and ends in a terminal button-like structure

Fig. 1. *Sigecheres brittae*, female. A, ventral view; B, 2nd antenna; C, side view; D, maxilliped; E, 1st maxilla; F, 1st antenna; G, caudal ramus; H, mandibles; J, mouth area; lr, labrum; md, mandible; mxl, 1st maxilla; mx, 2nd maxilla; li, labium; mxp, maxilliped.



with a denticulated surface comparable to that present on the 2nd pair of maxillae. The labium is a trapezoidal chitinous plate occupying the space between the 2nd pair of maxillae.

It is a remarkable fact that no thoracal appendages exist.

The caudal ramii are diminutive structures provided with 1 very lange seta with small hairs arranged in circles, and flanked by 3 short setae (Fig. 1 G).

The ovisacs are sausage-shaped, rather short, the length exceeding the diameter by 2.5-3 times. The length is about two thirds of the body length.

All the collected females were found adhered to the ventral side of the host animals close to the parapodia. The living specimens were observed to carry out rhythmical movements, but they were obviously not able to move from one place to another.

The male has a total length of 600 μ. As in the female, the cephalothorax and abdomen are distinctly separated (Fig. 2 A, D). The cephalothorax carries the same appendages as in the female. The metasome is divided into 3 or 4 segments. The urosome has two minute caudal ramii each of which carries 1 very long and 4 short setae. The 1st and 2nd pair of antennae, the mandibles and the 1st pair of maxillae are similar to those of the female.

The 2nd pair of maxillae (Fig. 2 E) are at a first glance similar to those of the female; a closer inspection, however, reveals that a small apical segment is present situated within the excavated side of the 1st segment.

The maxilliped is very large compared with the other appendages and has a characteristic appearance; it consists of 2 stout joints and a smaller pointed joint which can be opposed to a denticulated protuberance of the joint which precedes it, thus forming a chela (Fig. 2 F, H, J). A single pair of very reduced swimming-legs are present on the cephalothorax (Fig. 2 G), each consisting of two basal joints and unjointed exo- and endopods; the exo- and endopods are distally denticulated as is the inner margin of the 2nd basal joint.

The 1st and 2nd segment of the metasome both carry a pair of minute, lateral spines which might be vestiges of appendages. Near the base of the spines of the 1st segment there is a very short spine (Fig. 2 C). Also the ill-defined segment behind the 3rd metasomal segment carries a pair of spines.

Ventrally the urosome has a pair of wart-like protuberances. The caudal ramii are very small and carry a very long, curved seta each in addition to 4 smaller setae.

Only a single male was found. In contrast to the female, it is able to move around on the host's body and it was seen to visit both its dorsal and ventral sides.

Fig. 2. *Sigecheres brittae,* male. A, dorsal view; B, medial view of 2nd maxilla; C, rudiment of 2nd swimming leg; D, ventral view; E, side view of 2nd maxilla; F, maxilliped in slightly oblique, medial view; G, 1st swimming leg; H and J, maxilliped in side view, opened and closed; K, caudal ramus.

## DISCUSSION

The complete reduction of the abdominal appendages in the female presents several difficulties when trying to place the new genus systematically. It seems natural first to inspect the possibilities of a relation with other annelidicolous copepods. The number of these has increased considerably since the account by Levinsen (1878) appeared, but their systematics is still under debate. One family among them, however, the Clausiidae, is relatively well-defined thanks to the work by Wilson & Illg (1955) according to whom it comprises the following genera: *Clausia* Claparède, *Seridium* Giesbrecht, *Mesnilia* Canu, *Teredicola* Wilson, and, with some reservation, *Rhodinicola*.

*Selioides* Levinsen, *Selius* Krøyer and *Bactropus* Gravier, no doubt, also belong to this family. This may be true, also, in the case of *Flabelliphilus* Bresciani & Lützen (Gooding, personal communication) and of *Serpulidicola* described by Southward (1964) and *Anomoclausia* described by Gotto (1964).

As in some members of the Clausiidae, the 1st pair of antennae in *Sigecheres* is 5-jointed. The 2nd pair of antennae is 3-jointed as in *Selioides* and *Rhodinicola* and the apical setae bear a great resemblance to the corresponding setae in these two genera (for a redescription of the last, see Bresciani (1964)). The 2nd maxilla is without comparison the most peculiar appendage found in *Sigecheres,* and its structure might possibly be traced back to the corresponding appendage in *Selioides*. Even though the maxillae of *Selioides* are bipartite, they have in common with those of *Sigecheres* a robust appearance and a fine striation very often found in many Clausiidae. It should be noted that the structure of the maxilliped of the male *Sigecheres* is similar to that found in the males of *Mesnilia* and *Pseudoclausia,* but also, however, to that of *Synaptiphilus* and *Presynaptiphilus* (Boquet & Stock, 1957, 1959, 1960).

Among other annelidicolous copepods a comparison with *Nereicola* Keferstein is of some interest. *Sigecheres* bears a striking outer resemblance with this genus but a further comparison is unfortunately rendered impossible since the mouth appendages of the female *Nereicola* are insufficiently described. The males, however, show certain resemblances, as for instance regarding habitus and the number and shape of the body appendages.

Summing up, however, several facts point to a rather close relation between the present genus and the family Clausiidae, which is surely in need of a wider definition (Gooding, personal communication).

Finally, it is worth mentioning that de Saint-Joseph (1888) in his account on polychaetes from Dinard, reports on the presence of a parasitic copepod on *Eulalia pallida* (pp. 295-296): »Sur un exemplaire je trouve une fois fixé à un des cotés du corps un copépode parasite femelle avec deux sacs ovigères en trop mauvais état pour être déterminé; d'un des oeufs je vois sortir un embryon sous la forme Nauplius«. He found another parasite on *Eulalia macroceros*

(p. 302) but was evidently wrong in claiming the identity of this with *Herpyllobius arcticus* Steenstrup & Lütken. In view of the fact that both *Eulalia* and *Sige* are members of the family Phyllodocidae, I venture to propose that the parasites found by de Saint-Joseph might belong to *Sigecheres* or a related genus.

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