

***Clavellopsis nodula* sp. nov. (Copepoda: Lernaeopodidae) Parasitic
on Sea Bream, *Mylio macrocephalus* (BASILEWSKY)
(Pisces: Sparidae) in Japan**

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Clavellopsis nodula sp. nov., hitherto reported as *C. sargi* (KURZ, 1877) from Japanese sea breams, is redescribed and renamed based on the specimens recovered from the gill rakers of *Mylio macrocephalus* collected in Kojima Bay, Japan.

Clavellopsis WILSON, 1915 is a genus of lernaeopodid copepods that parasitize marine teleosts. They are peculiar lernaeopodids in having their females exhibiting a *Brachiella*-type of body and their males, a *Clavella*-type. Twenty-six species of lernaeopodids have so far been attributed to genus *Clavellopsis* ever since C. B. WILSON's erection of the genus in 1915. Among them is a parasite of sea breams, *C. sargi* (KURZ), which was originally called *Anchorella sargi* KURZ, 1877. *C. sargi* had been known as a parasite of European sea breams until 1939 when S. YAMAGUTI reported it from Japan. Although SHIINO (1956) was skeptical about the occurrence of *C. sargi* on the Japanese sea breams, he could not but adopt YAMAGUTI's identification, because of the poor state of knowledge of the European *C. sargi*.

Fortunately, *C. sargi* was recently redescribed by BEN HASSINE *et al.* (1978) with certain details. With this work we are now able to conclude that the Japanese "*Clavellopsis sargi*" is in reality representing a new species. We shall present in the following the evidence and our arguments for the new status of Japanese *Clavellopsis* from the sea breams.

The type specimens have been deposited in the United States National Museum of Natural History, Smithsonian Institution, Washington, D.C. We would like to thank Dr. Shogoro Kasahara of the Faculty of

Applied Biological Science, Hiroshima University for the use of facilities in his laboratory and Dr. Shin-ichi Uye of the same institution for his assistance in collecting the host fishes.

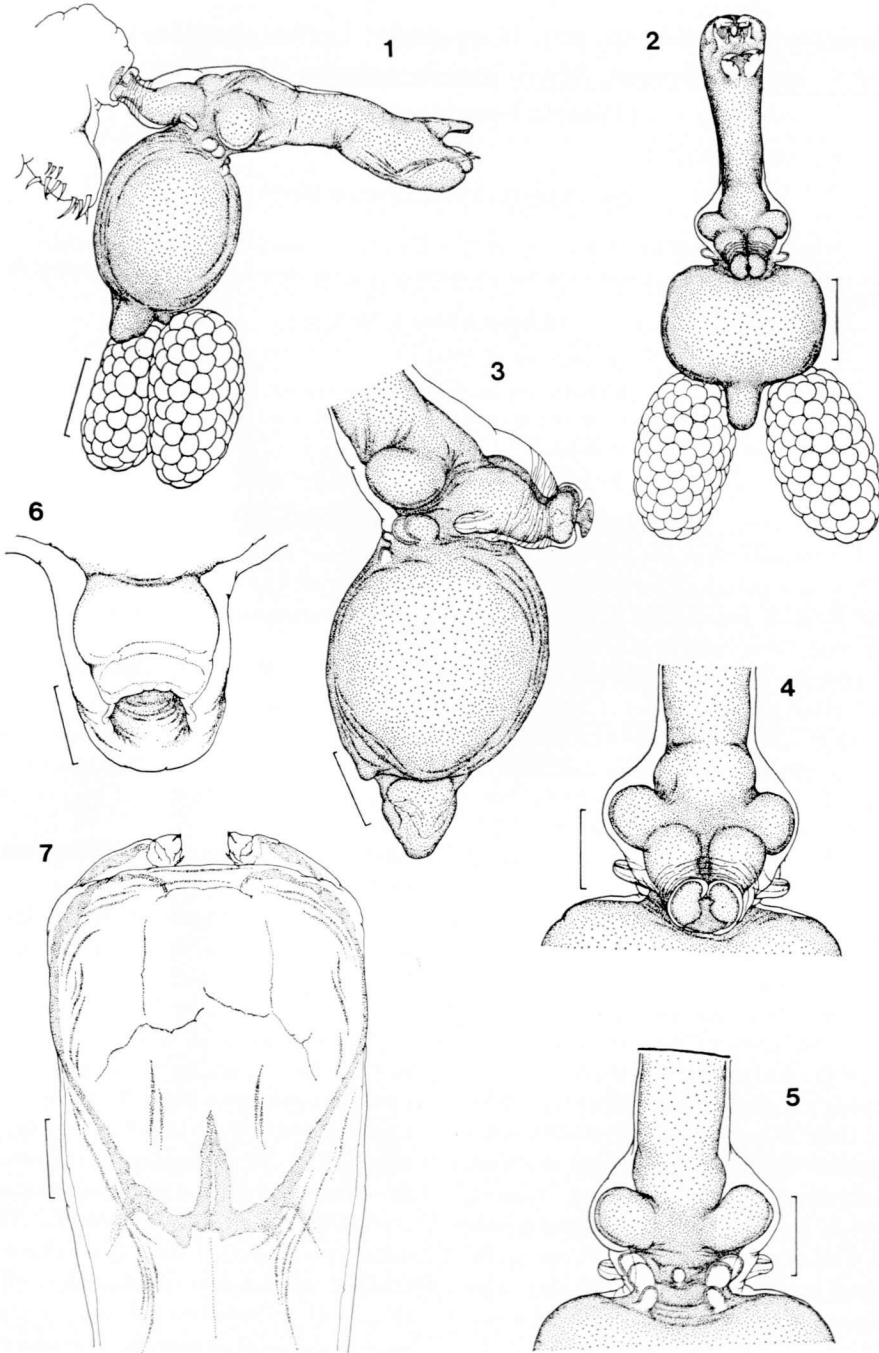
Material Examined

Five females and one male obtained from the gill rakers (not gill filaments) of four *Mylio macrocephalus* (BASILEWSKY) collected between May 13, 1980 and March 24, 1981.

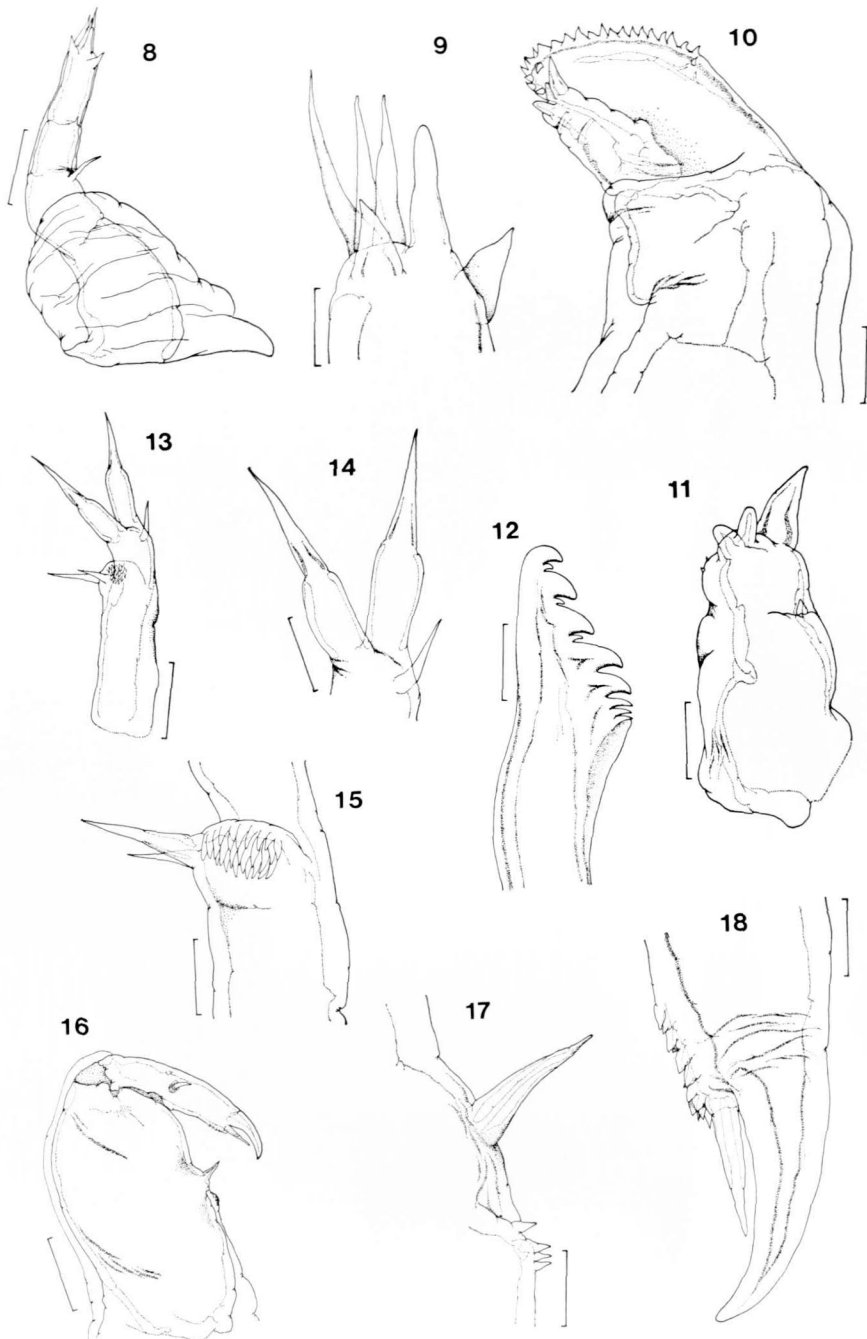
Results and Discussion

Clavellopsis nodula sp. nov.

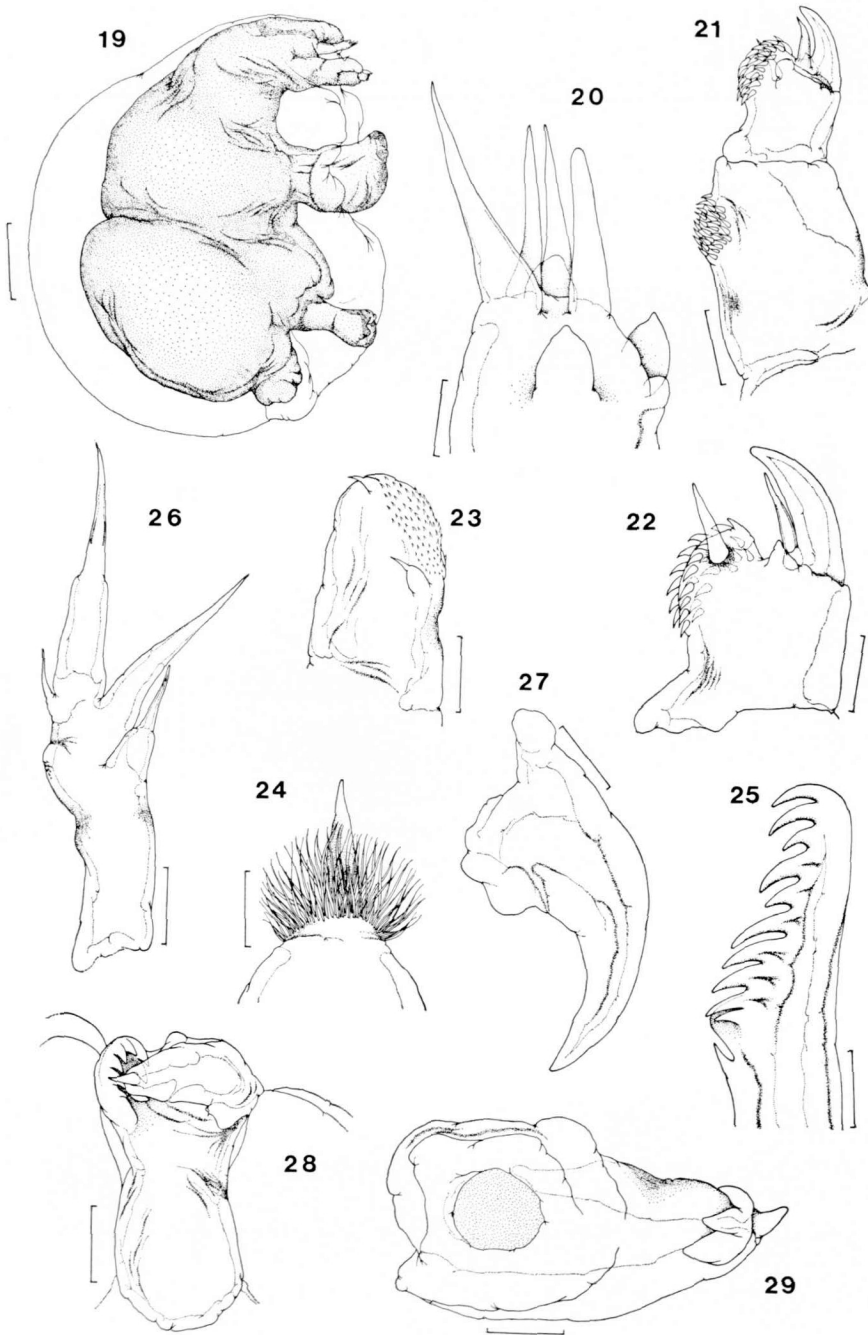
Female: The body (Figs. 1, 2) is rather stocky, with its cephalothorax distinctly longer than the trunk. There is a pair of prominent lateral swellings at the base of the cephalothorax and a row of three nodules right behind them on the anterodorsal surface of the trunk (see Figs. 3, 4, 5). The genital process (Figs. 3, 6) is relatively large and the head (Fig. 7) is truncated anteriorly. The first antenna (Fig. 8) is 4-segmented with the tip (Fig. 9) sparsely armed. The second antenna (Fig. 10) has its inflated endopod fringed with a row of denticles. The exopod (Fig. 11) is indistinctly bimerite and tipped with 3 unequal elements. The dental formula of the mandible (Fig. 12) is P1, S1, P1, S1, P1, S1 and B5. The endopod of the first maxilla (Figs. 13, 14) is armed with 2 large papillae and a small seta. The exopod (Fig. 15) is relatively inconspicuous, bearing two setae



Clavellopsis nodula sp. nov., female: **Fig. 1.** Ovigerous female, lateral (1 mm). **Fig. 2.** Same, ventral (1 mm). **Fig. 3.** Second maxilla and trunk, lateral (0.5 mm). **Fig. 4.** Second maxilla, ventral (0.5 mm). **Fig. 5.** Base of cephalothorax, dorsal (0.5 mm). **Fig. 6.** Genital process, dorsal (200 μ m). **Fig. 7.** Head, dorsal (200 μ m).



Clavellopsis nodula sp. nov., female: **Fig. 8.** First antenna, lateral (50 μm). **Fig. 9.** Same, tip (10 μm). **Fig. 10.** Second antenna, inner (50 μm). **Fig. 11.** Same, exopod (20 μm). **Fig. 12.** Tip of mandible (20 μm). **Fig. 13.** First maxilla, ventral (50 μm). **Fig. 14.** Same, endopod (25 μm). **Fig. 15.** Same, exopod (20 μm). **Fig. 16.** Maxilliped, posterior (100 μm). **Fig. 17.** Medial surface of corpus of maxilliped, anterior (20 μm). **Fig. 18.** Tip of maxilliped, posterior (20 μm).



Clavellopsis nodula sp. nov., male: **Fig. 19.** Male, lateral (200 μm). **Fig. 20.** Tip of first antenna, lateral (7 μm). **Fig. 21.** Endopod of second antenna (20 μm). **Fig. 22.** Same, terminal segment (10 μm). **Fig. 23.** Exopod of second antenna (20 μm). **Fig. 24.** Labrum, anterior (10 μm). **Fig. 25.** Tip of mandible (8 μm). **Fig. 26.** First maxilla, lateral (20 μm). **Fig. 27.** Tip of second maxilla (25 μm). **Fig. 28.** Maxilliped, inside lateral (50 μm). **Fig. 29.** Tip of maxilliped, anterior (20 μm).

and a patch of denticles. The second maxilla (Figs. 3, 4) are short and wrapped in a common cuticle. Each member of this pair of modified appendages bears a prominent nipple-like protrusion containing an excretory tube. The bula (Figs. 3, 4) is disc-shaped. The corpus of the maxilliped (Figs. 16, 17) is armed on its medial surface a spine and a small patch of denticles; the tip of its subchela is armed as shown in Fig. 18.

Male: The head and trunk are fused into a globose body that bears a prominent genital process immediately behind the bases of the maxillipeds (see Fig. 19). The tip of the first antenna (Fig. 20) bears one more papilla than in the female. The second antenna has its endopod (Fig. 21) larger than its exopod (Fig. 23). The former is distinctly bimerite and tipped with 1 spine, 2 setae, 1 papilla and a patch of denticles (see Fig. 22). The tip of the labrum (Fig. 24) bears a tuft of setules around the spinous, central rostrum. The dental formula of the mandible (Fig. 25) shows one less secondary tooth and one more basal tooth than in the female. The first maxilla (Fig. 26) is different from female in the exopod in bearing a single element. The second maxilla has an unornamented, simple terminal claw (Fig. 27). The distomedial corner of the corpus of the maxilliped (Fig. 28) is protruded and bearing serrated margin; the subchela (Fig. 29) bears a subterminal auxiliary spine and terminates in a pecten with 3 teeth.

Etymology: The specific name *nodula* refers to the seven nodules on the anterior surface of the trunk (see Fig. 5; one central and three on each lateral surface).

Remarks: A close comparison between our specimens and the works by YAMAGUTI (1939) and SHIINO (1956) on the Japanese "*Clavellopsis sargi* (KURZ, 1877)" has revealed that we are all dealing with the same species of parasite. However, comparison with the work of BEN HASSINE *et al.* (1978) on the Mediterranean *Clavellopsis sargi* (KURZ, 1877) has convinced us that our parasites represent a separate species. The differences are seen in the female: in the size of the genital process, the armature of the exopod of the second

antenna, the ornamentation on the exopod of the first maxilla, and in the male: in the ornamentation on the exopod of the second antenna and the armature in the first maxilla. Seven species of *Clavellopsis* (including the present new species) are known to parasitize teleosts of the family Sparidae. It is interesting to note that the males of these sparid parasitizing *Clavellopsis* have one character in common, that is the subchela of the maxilliped terminates in a pecten equipped with 3 to 5 coarse teeth (see Fig. 29). Five of these *Clavellopsis* [*C. characis* (RICHIARDI), *C. fallax* (HELLER), *C. pagri* (KROYER), *C. sargi* (KURZ), and *C. strumosa* (BRIAN)] are known from Europe and one each from Australia (*C. parasargi* ROUBAL) and Japan (*C. nodula* n. sp.), respectively. The new species from Japan is easily separated from the remaining six species by the presence of nodules on the anterior surface of the female trunk.

A report of this new species will not be complete without mentioning the followings: we are certain that the lernaepodid reported by ROUBAL (1981) as "*Clavellopsis* sp." is conspecific with *C. nodula* and so is the parasite reported as "*Clavellopsis sargi* (KURZ)" by SONG & CHEN (1976) and SONG & KUANG (1980) from China.

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児島湾産クロダイ (*Mylio macrocephalus*) に寄生する橈脚類の新種,
Clavellopsis nodula (Copepoda: Lernaeopodidae) について

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岡山県児島湾産クロダイ, *Mylio macrocephalus* (BASILEWSKY) の鰓耙に寄生する橈脚類, ナガクビムシを新種, *Clavellopsis nodula* (Copepoda: Lernaeopodidae) として記載した。本種は今まで, YAMAGUTI (1939), SHINO (1956) などにより *Clavellopsis sarg* (KURZ, 1877) として報告されていたものであるが, 詳細に検討した結果, 別種であると判明したものである。

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