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OSTRINCOLA BREVISETI N. SP., A COPEPOD PARASITE OF AN OYSTER FROM PENANG, MALAYSIA

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ABSTRACT

A new species of poecilostomatoid copepod, *Ostrincola breviseti*, is described from the mantle cavity of the oyster, *Saccostrea cucullata* (Born), collected at Penang, Malaysia. The new species is distinguished by the short terminal setae on leg 5. The species of *Ostrincola* are discussed in terms of the relationships between the pattern of morphology and geographical distribution.

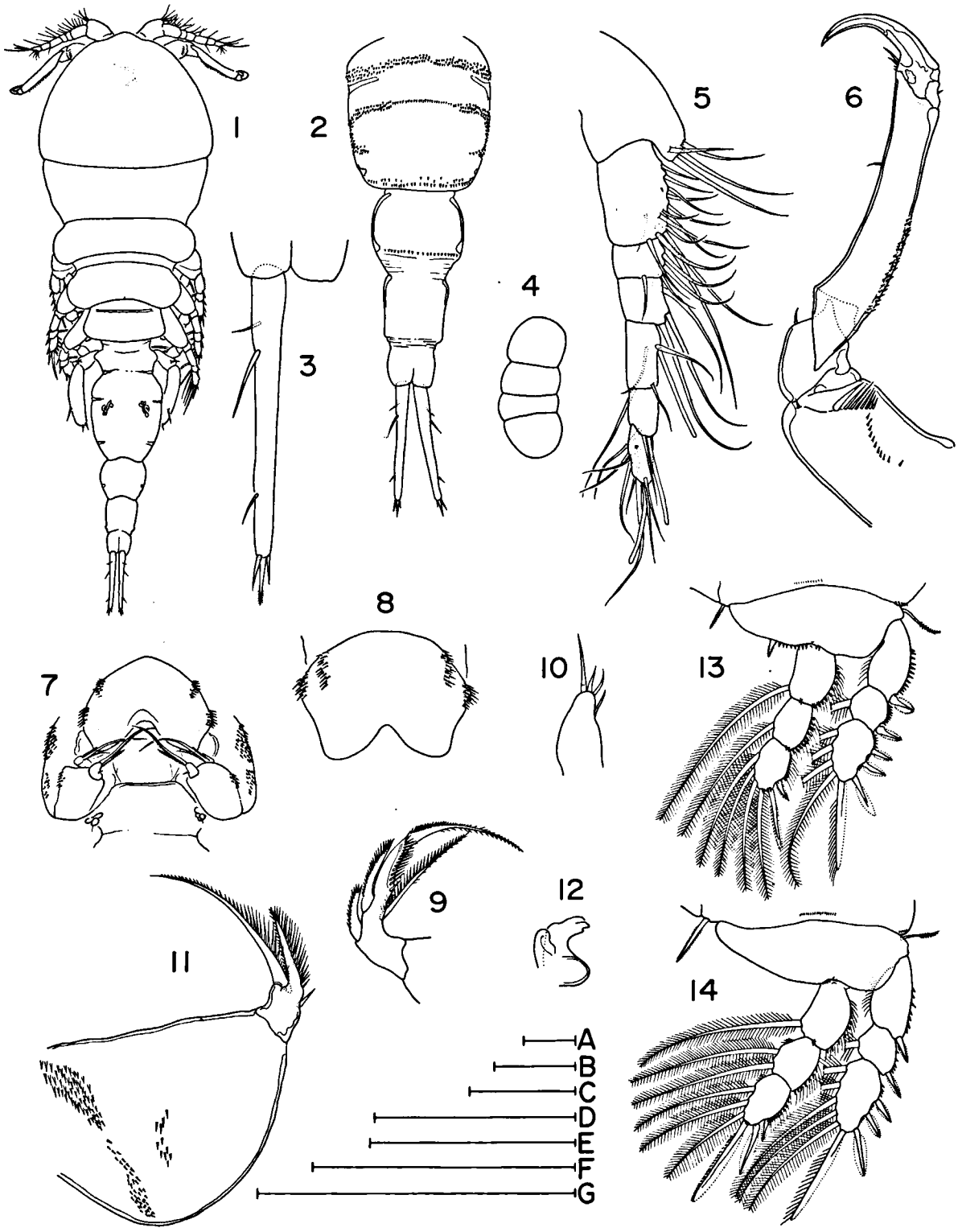
INTRODUCTION

Eight species of poecilostomatoid copepods are currently known in the genus *Ostrincola* Wilson, 1944. They live in the mantle cavity of bivalves in coastal, shallow waters of tropical and warm-temperate areas. Nearly 30 species of bivalves have been reported as hosts of this myicolid genus (Humes, 1984, 1988). In this report we describe a new species of *Ostrincola* obtained from the mantle cavity of a species of oyster purchased in the market in George Town, Penang, Malaysia. In comparison with other species of *Ostrincola*, we discovered a relationship between the pattern of geological distribution and a certain morphological structure. Therefore, in addition to describing the new species, a discussion on this morphological-biogeographical relationship is given.

Ostrincola breviseti n. sp. (Figs. 1-24)

Material examined. — 47 ♀♀ and 4 ♂♂ from 36 *Saccostrea cucullata* (Born) collected at Penang, Malaysia on July 16, 1989. Holotype ♀, allotype, and 12 paratypes (10 ♀♀, 2 ♂♂) deposited in the National Museum of Natural History, Smithsonian Institution Washington, D.C.; the remaining paratypes in the collection of the senior author.

Female. — Body (Fig. 1) 1.10 mm long and 0.33 mm wide, with a distinct suture line between cephalosome and first pediger but not between fifth pediger and genital complex. Ventral surface of genital complex and first abdominal somite with spinules as shown in Fig. 2. No spinules on second and third abdominal somites. Caudal ramus (Fig. 3) slender, about 8.5 times longer than wide. Egg sac (Fig. 4) small, containing 3 to 5 uniseriate eggs. First antenna (Fig. 5) 7-segmented, with formula of armature: 4, 14, 5, 3, 4 + 1 aesthete, 2 + 1 aesthete, and 7 + aesthete. Second antenna (Fig. 6) 3-segmented, with formula of armature: 1, 1, 3 + claw. First segment with a row of unequal spines and third segment, about 5.2 times longer than wide, bearing a patch of



Figs. 1-14. *Ostrincola breviseti* n. sp., female. 1, habitus, dorsal (A); 2, genital complex and abdomen, ventral (C); 3, caudal ramus, ventral (F); 4, egg sac (A); 5, first antenna (F); 6, second antenna (F); 7, oral area, ventral (C); 8, labrum, ventral (G); 9, mandible (F); 10, first maxilla (F); 11, second maxilla (F); 12, maxilliped rudiment (G); 13, leg 1 (D); 14, leg 2 (D). Scales A - G = 0.1 mm.

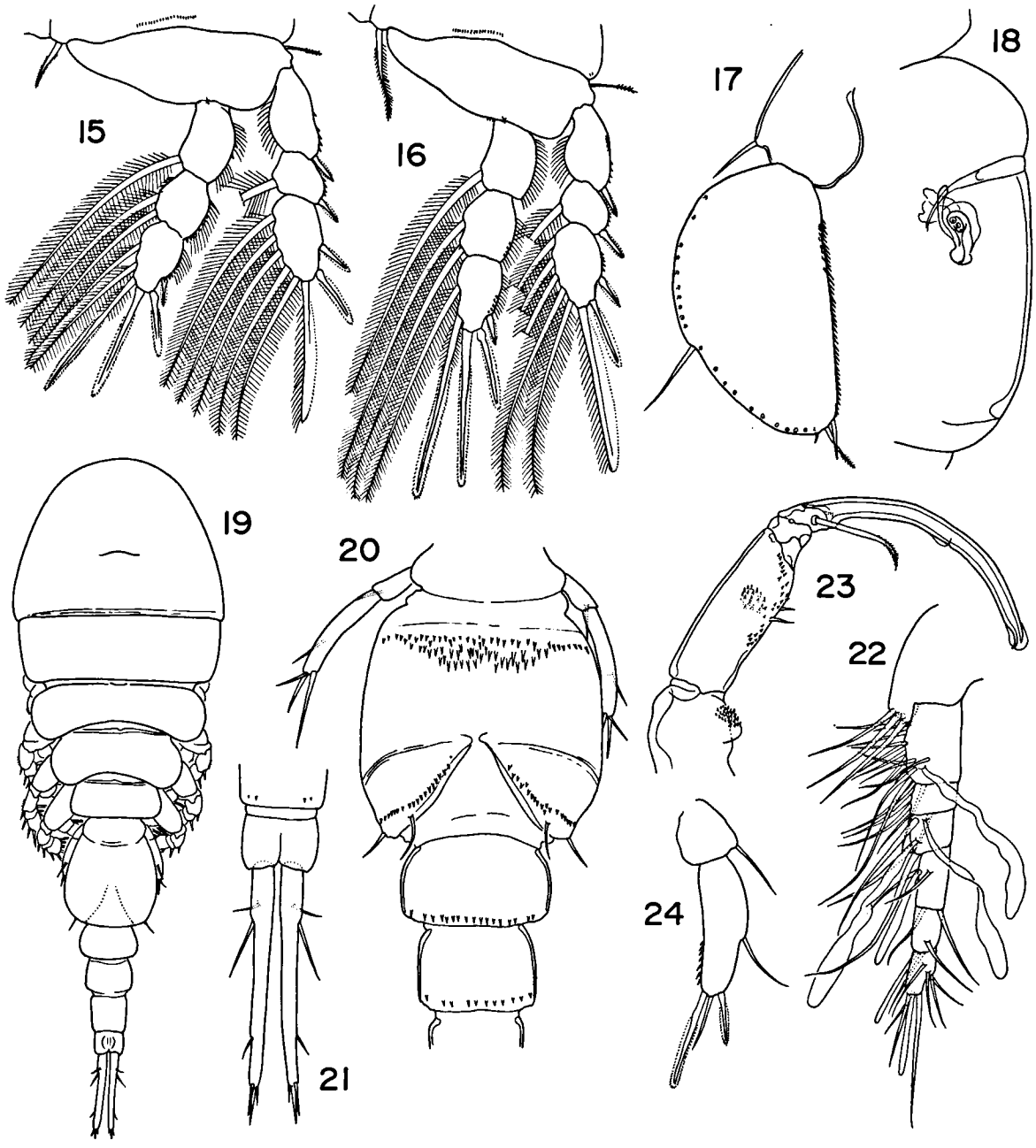


Fig. 15-24. *Ostrincola breviseti* n. sp. Female: 15, leg 3 (D); 16, leg 4 (D); 17, leg 5 (D); 18, area of egg sac attachment and leg 6 (F). Male: 19, habitus, dorsal (B); 20, anterior part of urosome, ventral (E); 21, posterior part of urosome, ventral (E); 22, first antenna (F); 23, maxilliped (F); 24, leg 5 (F).

spinules. Labrum with two rows of spinules on each side as shown in Figs. 7 and 8. Mandible (Fig. 9), first maxilla (Fig. 10), and second maxillia (Fig. 11) as in most species of the genus. Maxilliped reduced to a rudimentary sclerite as shown in Fig. 7 and 12.

Legs 1-4 (Figs. 13-16) biramus with 3-segmented rami. Armature of legs as follows

(Roman numerals indicating spines, Arabic numerals representing setae):

P1	Coxa 0-1	Basis 1-I	Exp I-0; I-1; III,I,4 Enp 0-1; 0-1; II,4
P2	Coxa 0-1	Basis 1-0	Exp I-0; I-1; III,I,5 Enp 0-1; 0-2; III,3
P3	Coxa 0-1	Basis 1-0	Exp I-0; I-1; II,I,5 Enp 0-1; 0-2; IV,2
P4	Coxa 0-1	Basis 1-0	Exp I-0; I-1; II,I,5 Enp 0-1; 0-2; IV,1

Free segment of leg 5 (Fig. 17) 2-segmented, with 1 and 4 setae respectively on proximal and distal segment. Distal segment about 1.75 times longer than wide, with straight, spinulate inner margin and round, smooth outer margin. Leg 6 represented by 2 small setae in area of egg sac attachment (Fig. 18).

Male. — Body (Fig. 19) 0.74 mm long, with 4-segmented abdomen. Ventral surface of urosome bearing rows of spinules as shown in Figs. 20 and 21. Formula of armature for first antenna (Fig. 22) as in female, except for addition of 1 large easthete on second segment and another 2 large aesthetes on fourth segment. Maxilliped (Fig. 23) 4-segmented, first two segments with denticles. Formula of armature: 0, 2, 0, and 2. Terminal segment drawn out into a long claw. Distal segment of leg 5 (Fig. 24) slender, 3 terminal elements larger and stronger than in female.

DISCUSSION

The species of *Ostrincola* can be easily divided into two groups by the armature of the third segment of the endopod of leg 1 (Humes, 1984). Although being distinguished by an anatomical character, this grouping reflects also their pattern of geographical distribution. According to this grouping, the new species from Malaysia, having two spines and four setae (II,4) on this segment, is in the same group with the two Madagascan species: *O. clavator* Humes and *O. simplex* Humes. As in *O. breviseti*, the latter two species are also known from oyster (Humes, 1959).

The new species can be distinguished from *O. clavator* by the structure and armature of leg 5. In *O. clavator* the distal segment of this leg is relatively longer and bears stronger terminal elements. Furthermore, the ratios of length to width for the caudal ramus and the third segment of the second antenna also show distinct differences between these two species. They are distinctly shorter in *O. clavator.* The structure and armature of leg 5 in the new species resembles those of *O. simplex*, and so are the caudal ramus and the second antenna. However, the Madagascan species is unusual for *Ostrincola* in having an armature of III,3 on the third segment of the endopod of leg 3 and a multiseriate, large egg sacs with numerous small eggs.

The second species group of *Ostrincola* is characterized by having an armature of I,5 (instead of II,4) on the third segment of the endopod of leg 1. It consists of six species living in the mantle cavity of bivalves outside of the Indian Ocean, except for the problematical species *O. portonoviensis* Reddiah which is known from both east and west coasts of southern India. Reddiah's (1962) original description for *O. portonoviensis* showed an armature of I,5 on the third segment of the endopod of leg 1 but Pillai's (1963) redescription showed II,4 for the same segment. The terminal element on this segment in Pillai's (1964, Fig. 8) redescription is armed with membrane on the outer surface and hair on the inner surface. Such a structure is easily mistaken for a plumose element when observed with improper illumination. If Pillai's redescription for this species is correct, then *O. portonoviensis* should be placed in the first group together with the other Indian Ocean species.

Other significant discrepancies between Reddiah's (1962) original description and Pillai's (1963) redescription of *O. portonoviensis* are, as pointed out by Humes (1984), found in the armature of the third segment of the endopod of leg 3 and leg 4. If both Reddiah and Pillai are correct in their description of this species, then Pillai's specimens from Quilon, Kerala would have to be renamed.

Outside of the Indian Ocean, the species of *Ostrincola* are so far known from the Atlantic

and Gulf coasts of North America (Humes, 1953), Japan (Tanaka, 1961), Pacific coast of Panama (Humes, 1984), and Patagonia (Humes, 1988). It is interesting to point out that we have found a new species of *Ostrincola* from Korea and, like all species of *Ostrincola* occurring outside of the Indian Ocean, it has an armature of I,5 on the third segment of the endopod of leg 1.

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REFERENCES

HUMES, A. G., 1953. *Ostrincola gracilis* C. B. Wilson, a parasite of marine pelecypods in Louisiana (Copepoda, Cyclopoida). Tulane Stud. Zool., **1**: 99-107.

——, 1959. Copépodes parasites de mollusques à Madagascar. Mém. Inst. Sci. Madagascar, sér. F, **2**: 285-342.

——, 1984. *Ostrincola* and *Pseudomyicola* (Crustacea: Copepoda: Poecilostomatoida) associated with marine bivalve mollusks on the Pacific coast of Panama. Proc. Biol. Soc. Wash., **97**(3): 589-600.

——, 1988. *Ostrincola patagonianus* n. sp. (Copepoda: Poecilostomatoida: Myicolidae) associated with intertidal bivalve mollusks on the Patagonian coast of Argentina. Trans. Am. Microsc. Soc., **107**(3): 232-239.

PILLAI, N. K., 1963. Copepods associated with South Indian invertebrates. Proc. Indian Acad. Sci., **58**: 235-247.

REDDIAH, K., 1962. Copepods associated with Indian mollusks (C). *Ostrincola portonoviensis* n. sp. from commercial bivalves at Portonovo, S. India. Crustaceana, **4**: 1-6.

TANAKA, O., 1961. On copepods associated with marine pelecypods in Kyushu. J. Fac. Agr., Kyushu Univ., **11**: 249-273, pls. 22-37.

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