

***Cymothoa spinipalpa* sp. nov. (Isopoda, Cymothoidae) a buccal cavity parasite of the marine fish, *Oligoplites saurus* (Bloch & Schneider) (Osteichthyes, Carangidae) of Rio Grande do Norte State, Brazil ¹**

Vernon E. Thatcher ²; Gustavo S. de Araújo ³; José T. A. X. de Lima ⁴ & Sathyabama Chellappa ³

¹ Contribution number 1694 of the Departamento de Zoologia, Universidade Federal do Paraná.

² Departamento de Zoologia, Universidade Federal do Paraná. Caixa Postal 19020, 81531-990 Curitiba, Paraná, Brasil. E-mail: thatcher@ufpr.br

³ Programa de Pós-Graduação em Bioecologia Aquática, Departamento de Oceanografia e Limnologia, Universidade Federal do Rio Grande do Norte. Praia de Mãe Luiza, Via Costeira, 59014-100 Natal, Rio Grande do Norte, Brasil.

⁴ Departamento de Fisiologia, Programa de Pós-Graduação em Psicobiologia, Universidade Federal do Rio Grande do Norte. Campus Universitário, 59078-970 Natal, Rio Grande do Norte, Brasil

ABSTRACT. *Cymothoa spinipalpa* sp. nov. (Isopoda, Cymothoidae) a buccal cavity parasite of the marine fish, *Oligoplites saurus*, is described on the basis of eight male specimens and one female. The fish hosts were captured in the coastal waters of Natal, Rio Grande do Norte State, Brazil. In the new species, the anterior margin of the cephalon is doubled ventrally over the bases of the antennae. In this respect, it resembles *C. recifea* Thatcher & Fonseca, 2005. It differs from that species, however, in being much smaller and having basal carinae on the pereopods 4 to 7 that are small and rounded (not large and pointed). Also, pleopods 2-4 lack the folds and pockets that are present in *C. recifea*. The new species can be distinguished from all known *Cymothoa* spp. by the mandibular palps which are entirely covered with small spines in adult males. The mancas of the new species resemble those of *Cymothoa oestrum* since they have elongate antennae but they are wider and have shorter uropods.

KEY WORDS. Atlantic Ocean; isopod parasite; marine fish parasite.

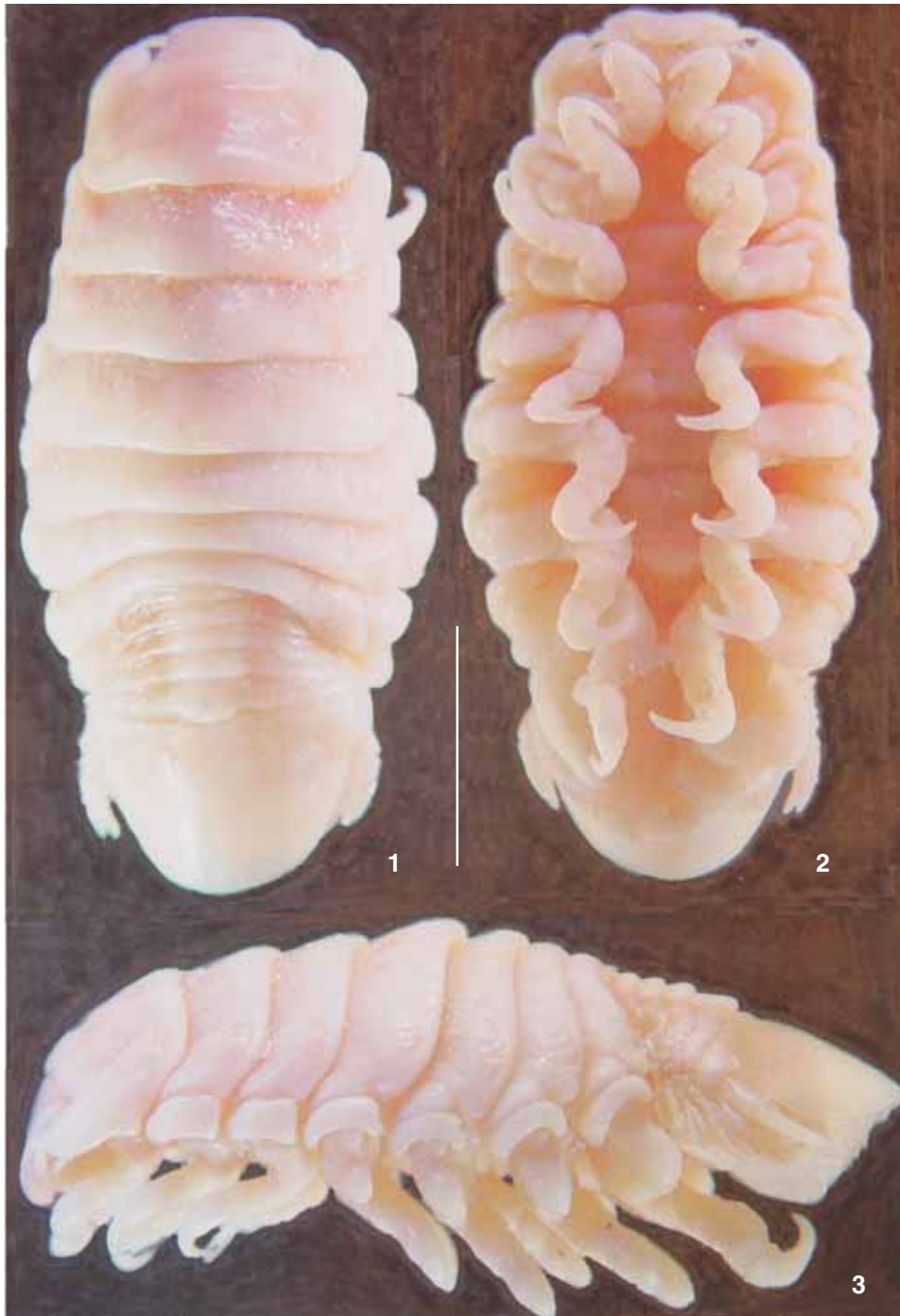
RESUMO. *Cymothoa spinipalpa* sp. nov. (Isopoda, Cymothoidae) um parasito da cavidade bucal do peixe marinho, *Oligoplites saurus* (Bloch & Schneider) (Osteichthyes, Carangidae) do Estado do Rio Grande do Norte, Brasil. *Cymothoa spinipalpa* sp. nov. (Isopoda, Cymothoidae), um parasito da cavidade bucal do peixe marinho, *Oligoplites saurus*, é descrita baseada em oito espécimes machos e uma fêmea. Os peixes foram capturados nas águas costeiras de Natal, Rio Grande do Norte, Brasil. Na nova espécie, a margem anterior do cefalão é dobrada ventralmente sobre as bases das antenas. Neste aspecto, ela assemelha-se a *C. recifea* Thatcher & Fonseca, 2005. Distingue-se dessa espécie, no entanto, pelo menor tamanho e pelas carinas dos pereópodos 4 a 7 que são relativamente pequenas e arredondadas (não grandes e ponte agudas). Aliás, os pleópodos 2-4 carecem das dobras e bolsos que são presentes em *C. recifea*. *Cymothoa spinipalpa* sp. nov. distingue-se de todas as demais espécies de *Cymothoa* por ter palpos mandibulares completamente cobertos por espinhos nos machos adultos. As mancas têm antenas compridas e por isso parecem com as de *Cymothoa oestrum* mas distinguem-se por serem mais largas e de terem urópodos mais curtos.

PALAVRAS-CHAVE. Oceano Atlântico; isópodo parasito; parasito de peixe marinho.

TRILLES (1991) listed 32 species of *Cymothoa* Fabricius, 1793, from marine fishes world-wide with 5 of these said to occur in Brazilian waters. THATCHER *et al.* (2003) described a new species from Santa Catarina State and compared it to 6 other species that have been attributed to Brazil. THATCHER & FONSECA (2005) described an additional species from marine fishes of Pernambuco State bringing the total of species to 8. The present paper describes the ninth Brazilian species of *Cymothoa* from the waters of Rio Grande do Norte State.

MATERIAL AND METHODS

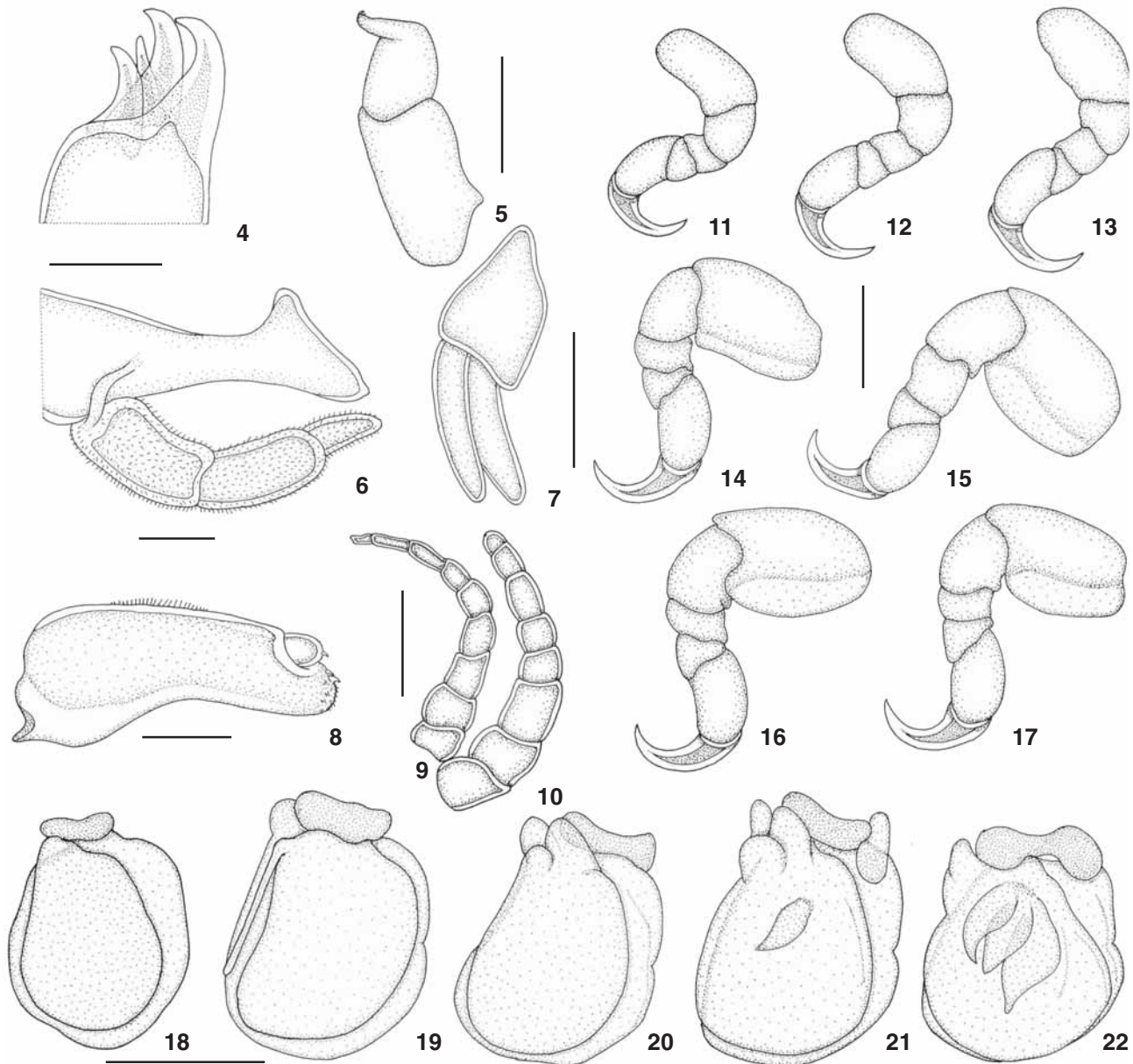
Fish hosts, *Oligoplites saurus* (Bloch & Schneider, 1801) (Osteichthyes: Carangidae) were netted from the coastal waters at Ponta Negra, Natal, Rio Grande do Norte State, Brazil. They were taken on ice to the Ichthyology Laboratory of the Federal University of Rio Grande do Norte. The isopod parasites were removed from the mouths of the fish and fixed in 70% alcohol. These specimens were sent to the Zoology De-



Figures 1-3. *Cymothoa spinipalpa* sp. nov., male: (1) dorsal (2) ventral (3) lateral. Scale bar = 5 mm.

partment of the Federal University of Paraná, Curitiba, Brazil, for study. There, dissections of the mouthparts, pereopods, pleopods and uropods were made and these parts were cleared in pure phenol for study. Photographs were made

with a digital camera at five megapixels and some of these were used in making the drawings. Measurements are in micrometers (μm) except where designated as millimeters (mm).



Figures 4-22. *Cymothoa spinipalpa* sp. nov., male: (4) tip of maxillule (5) maxilliped (6) mandible and palp (7) uropod (8) maxilla (9) antennule (10) antenna; (11-17) pereopods 1-7; (18-22) pleopods 1-5. Scale bars: (4) = 50 μ m; (5, 9 and 10) = 500 μ m; (6 and 8) = 200 μ m; (7, 11-17) = 1000 μ m; (18-22) 2000 μ m.

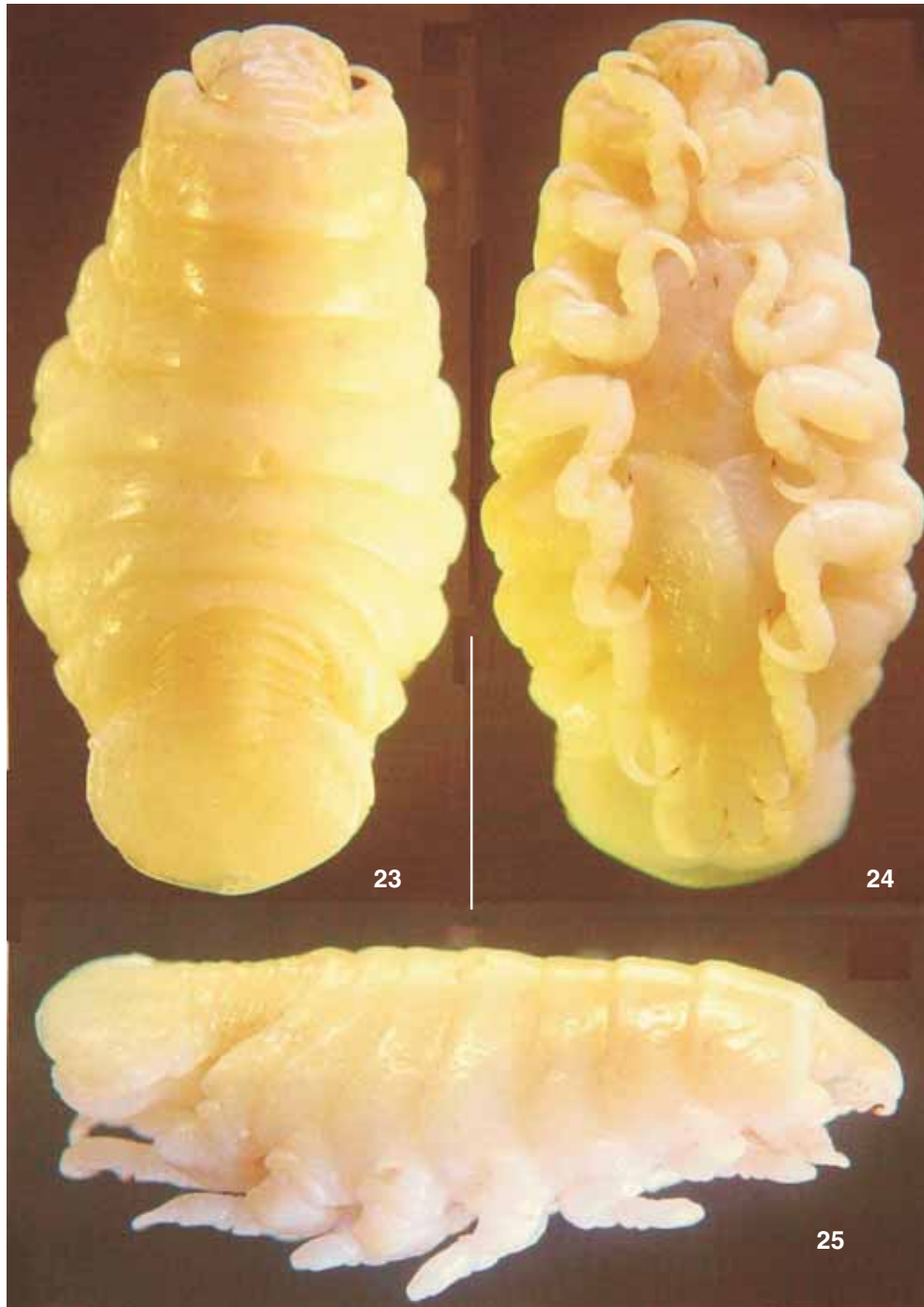
***Cymothoa spinipalpa* sp. nov.**

Figs 1-48

Species description (based on eight males and one female).

Male (Figs 1-3; measurements in table I): body elongate, widest at level of pereonite 5. Cephalon immersed in pereonite 1; frons doubled downward over bases of antennae; eyes covered ex-

cept in very young specimens. Antennule (Fig. 10) stout, of eight articles; antenna (Fig. 9) slender, of nine articles. Mouthparts (Figs 4-6 and 8): mandible with rounded incisor and molar process; mandibular palp about as long as mandible, of three articles with terminal one much shorter; all three articles of palp covered with small spines (Fig. 6); maxillule (Fig. 4) with four recurved spines distally; maxilla (Fig. 8) bilobed, with one



Figures 23-25. *Cymothoa spinipalpa* sp. nov., female: (23) dorsal (24) ventral (25) lateral; Scale bar = 5 mm.

to three recurved spines and spinules on each lobe; maxilliped (Fig. 5) slender with two to five recurved spines distally. Pereon (Fig. 1): pereonite 1 longest; 2-4 subequal in length; 5-7 shorten progressively with seven being very short. Antero-lateral mar-

gins of pereonite 1 rounded. Pereopods (Figs 11-17): 1-3 small, slender, without carinae; 4-7 larger and with low carinae. Pleon immersed in pereonite 7. Pleopods (Figs 18-22) all bilaminar; 1-3 simple, without folds or pockets; 2 with slender appendix

Table I. Measurements in millimeters of eight males of *Cymothoa spinipalpa* sp. nov.

Males	Length	Width
1	18	8
2	13	5
3	12	6
4	11	5
5	11	5
6	10	5
7	10	4
8	7	3
Mean = 11.5 ± 3.16		Mean = 5.1 ± 1.46

masculinum: 4 with small pocket; 5 with several folds and pockets. Uropod (Fig. 7) with slender subequal rami.

Pleotelson rounded posteriorly, about twice as wide as long.

Female (Figs 23-45: based on a single specimen having well formed mancas in its marsupium): body elongate, 16 mm long and 9 mm wide at the level of pereonite 5. Cephalon immersed in pereonite 1; frons doubled down over bases of antennae; eyes covered and invisible. Antennule (Fig. 39) stout, of seven articles, with spinules on articles 4-7; antenna (Fig. 40) slender, of eight articles; with few spinules on 7-8. Mouthparts (Figs 26-29): mandible with rounded incisor and molar process; palp about as long as mandible, of three articles with distal one very short; few spines present on terminal article (Fig. 29); maxilla bilobed (Fig. 28) with two to three recurved spines on each lobe; maxillule (Fig. 26) with four recurved spines distally, one of which is slightly smaller than the rest; maxilliped (Fig. 27) with three segmented palp, terminal segment with five spines, flattened part bordered by setae. Pereon (Fig. 23) as in male; pereopods (Figs 31-37) similar to those of male but carinae on 4-7 more pronounced. Pleon immersed in pereonite 7; pleopods (Figs 41-45) similar to those of male, showing pockets only on 4-5 and lacking appendix masculinum on 2. Uropod (Fig. 38) with slender, subequal rami. Pleotelson about twice as wide as long.

Manca = Pullus II (Figs 46-48): body elongate 2.37-2.51 mm long and 0.92-0.94 mm wide at the level of pereonite 4; pleon 0.54 mm wide. Six subequal pereonites present; dactyls 1-3 toothed, 4-6 without teeth. Cephalon wider than long, not immersed; eyes large, black. Mandibular palp (Fig. 47) of three articles, provided with setae and spinules. Antennule of eight articles, reaches to level of pereonite 2; antenna of 12 articles, reaches to level of pereonite 5. Uropods elongate, (Fig. 48) bases extend beyond pleotelson posteriorly, rami subequal in length.

Site: buccal cavity, over tongue.

Host: *Oligoplites saurus* (Cuvier, 1832); Carangidae.

Locality: Ponte Negra, Atlantic Ocean, near Natal, Rio Grande do Norte State, Brazil.

Type material: Holotype male, 5 paratype males and 1 paratype female deposited in the Crustacean Collection of the Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas, Brazil.

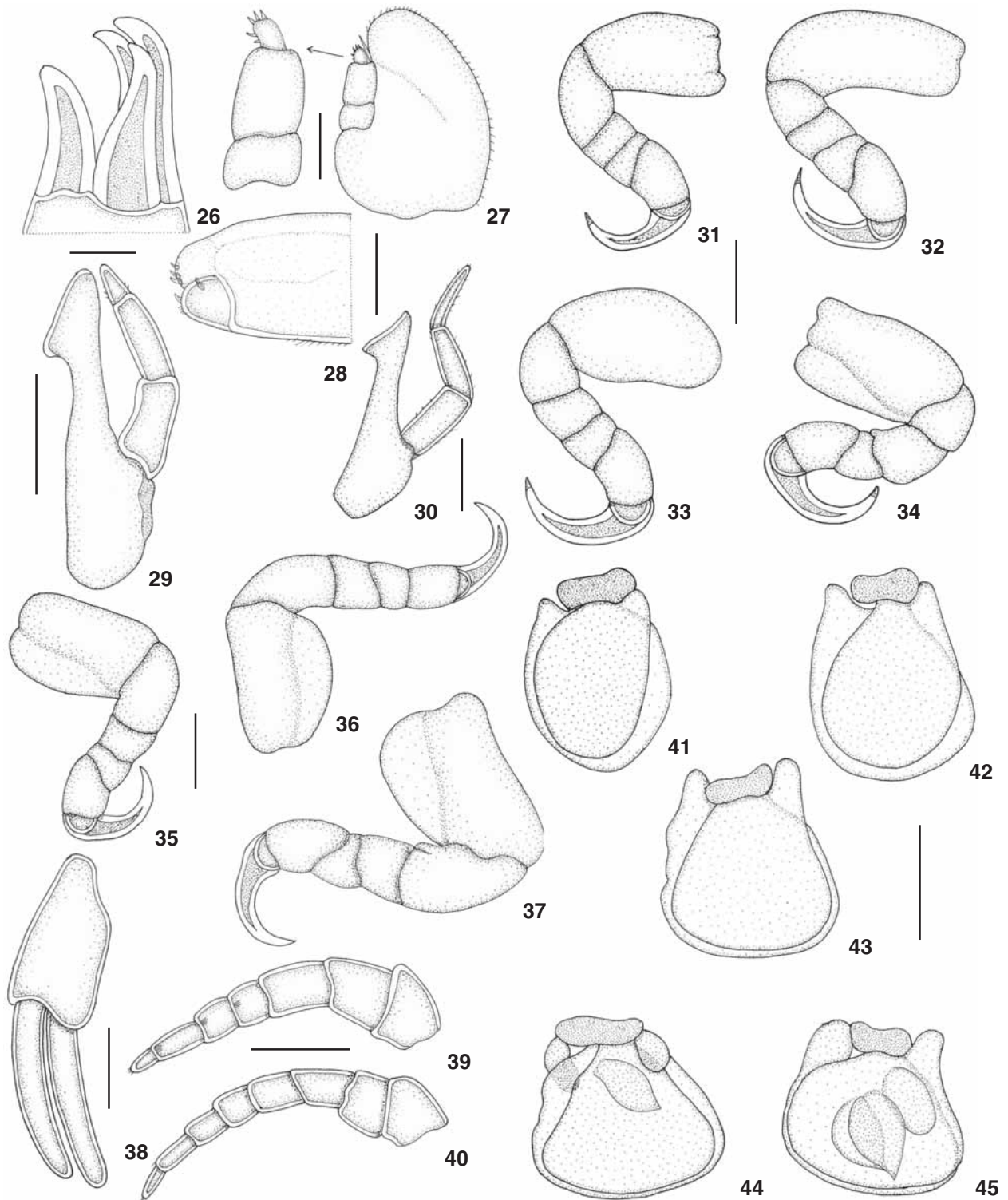
Etymology: the species name derives from the fact that in males the mandibular palp is unusually spinous.

DISCUSSION

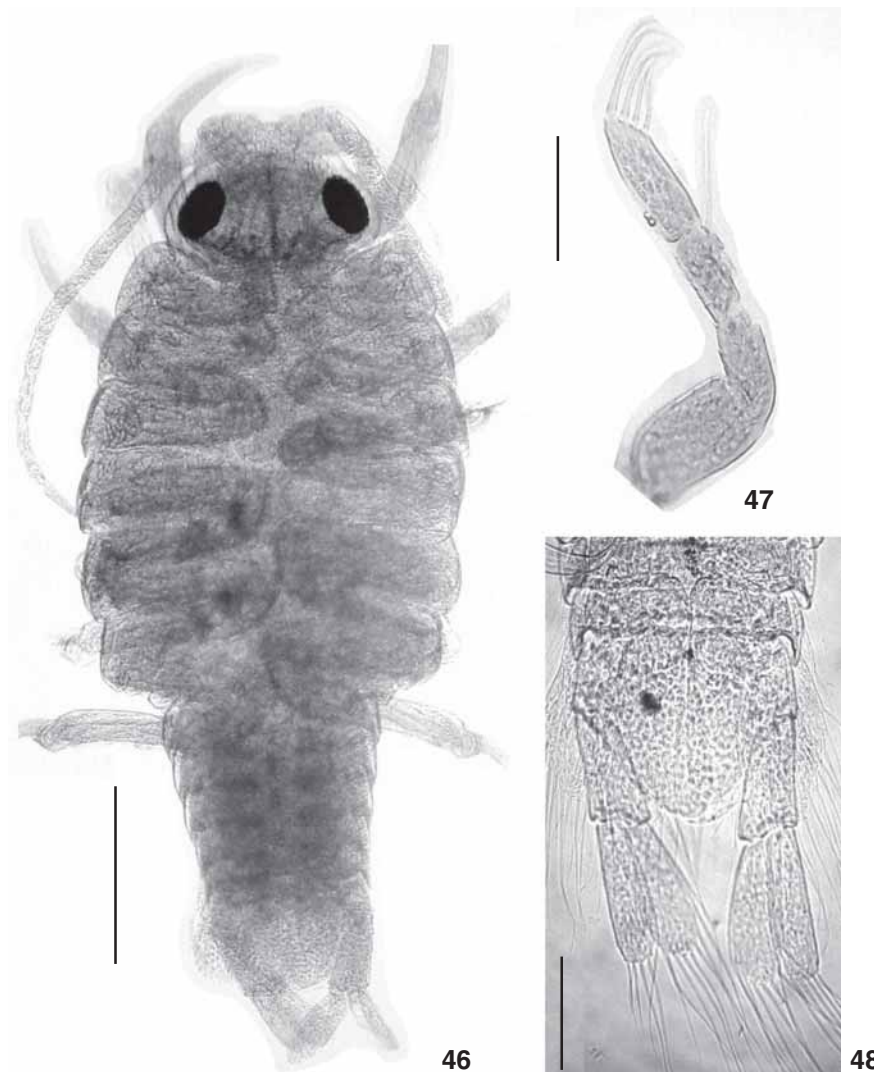
Cymothoa spinipalpa sp. nov. superficially resembles *C. recifea* Thatcher & Fonseca, 2005 but differs from the latter in a number of important features. The new species is much smaller (7-18 mm long) not 11-32, with a mean of 20, as in *C. recifea*. The pleopods of the new species have pockets and folds only on 4-5, whereas pleopods 2-5 have such structures in the other species. The basal carinae on the pereopods of the new species are low and rounded and smaller than those of *C. recifea*. In the new species, the mandibular palps of adult males are covered with small spines. This is a characteristic that has not been reported for other species of *Cymothoa*.

The morphology of mancas has been studied for only a few species of Cymothoidae. The present series of specimens demonstrates some aspects of cymothoid growth. In addition to getting larger, profound morphological changes occur in several structures. In the manca, both the antennule and antenna are elongate; the former having eight articles and the latter 12 (Fig. 46). In adults, both the length and number of articles are reduced. In the adult female, the antennule has seven articles and the antennule eight (Figs 49 and 40). Mancas have only six pairs of pereopods of which dactyls 1-3 are serrate and 4-6 lack basal carinae. Adults, on the other hand, have seven pairs of pereopods, the dactyls are not serrate and basal carinae are found on 4-7. In mancas, the uropods extend posteriorly well beyond the pleotelson (Fig. 48) but in adults they do not reach the posterior margin of that structure (Figs 1-3). The pleopods and uropods are abundantly provided with setae in mancas and these setae are lost in the adults. The mandibular palp of the manca (Fig. 47) consists of three subequal articles the terminal one of which is provided with 4-5 elongate setae. The middle article also has a single elongate seta and all three articles have a few spinules. The mandibular palp in young males (Fig. 30) continues to have three subequal articles, extends well beyond the mandible and shows an increase in spination. In older males, the mandibular palp (Fig. 6) has become short, the terminal article is shorter than the other two and all three have become covered with spinules. In the adult female, the palp is similar to that of the male (Fig. 29) but the terminal article has become even smaller in relation to the other two and few spinules are present.

Not all species of *Cymothoa* have mancas with long antennae and uropods. RICHARDSON (1905) presented drawings of the mancas of *C. excisa* Perty, 1830, and *C. oestrum* (Linnaeus, 1758). The first of these is shown to have short antennae and the second long antennae. THATCHER *et al.* (2003) offered photographs



Figures 26-45 *Cymothoa spinipalpa* sp. nov., female: (26) tip of maxillule (27) maxilliped (28) tip of maxilla (29) mandible and palp (30) mandible and palp from young male; (31-34) pereopods 1-4; (35-37) pereopods 5-7; (38) uropod; (39) antennule; (40) antenna; (41-45) pleopods 1-5. Scale bars: (26) 25 μ m; (27, 29 and 38-40) 500 μ m; (28 and 30) 200 μ m; (31-37) 1000 μ m; (41-45) 2000 μ m.



Figures 46-48. *Cymothoa spinipalpa* sp. nov., manca stage: (46) entire, dorsal (47) mandibular palp; (48) pleotelson and uropods. Scale bars: (46) = 500 μ m; (47) = 100 μ m; (48) = 200 μ m.

of the mancas of two species, namely: *C. catarinensis* Thatcher, Loyola, Jost & Souza-Conceição, 2003, and *C. oestrum*. The first of these also has short antennae. SARTOR & PIRES (1988) described and figured the manca stage of their species called, *Cymothoa liannae* and it also has long antennae. The mancas of *Cymothoa spinipalpa* sp. nov., therefore, resemble those of *C. oestrum* and *C. liannae*. Reliable characters to separate the mancas of these three species have not been defined but there are probably differences in the form of the pleotelson and uropods.

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