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A new species of *Ectinosoma* Boeck, 1865 (Copepoda: Harpacticoida: Ectinosomatidae) from northwestern Mexico

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Abstract.—A new species of harpacticoid copepod, *Ectinosoma mexicanum* (Harpacticoida: Ectinosomatidae), is described from a coastal lagoon in northwestern Mexico (Sinaloa state). *Ectinosoma mexicanum* appears to be allied to *E. porosum* (Wells, 1967) by sharing a robust endopod on P2 and P4 and a strong setae on the first and second endopodal segment of P2 and P4. The new Mexican ectinosomatid also has the seta next to the outermost seta of exopod of P5 barely longer than the exopod inner edge as in *E. porosum* and *E. mediterraneum* Kunz, 1975.

In 1991 a one-year study on the impact of organic enrichment on the distribution and abundance of meiofauna in a coastal lagoon in the southeastern Gulf of California (Mexico) was undertaken (Gómez-Noguera & Hendrickx, 1997). During this study 63 harpacticoid taxa were identified, most of which turned out to be new to science. Ectinosomatidae was by far the most abundant family throughout the study period (39.4%), and was represented by species of *Halectinosoma* Lang, 1965, *Hastigerella* Nicholls, 1935, *Pseudectinosoma* Kunz, 1935 and *Ectinosoma* Boeck, 1865. This contribution deals with the description of the only species of *Ectinosoma* found in the sediment samples taken in Ensenada del Pabellon lagoon (northwestern Mexico).

Materials and Methods

Quantitative triplicate sediment samples were taken in Ensenada del Pabellon lagoon (Sinaloa, northwestern Mexico). The sample strategy was described in Gómez-Noguera & Hendrickx (1997). Harpacticoids were stored in 70% ethanol prior to further investigation. Observations and drawings were made from the whole and then dissected specimen mounted in glycerin, at 1250× using a Leitz Periplan phase contrast light microscope equipped with a drawing tube. The terminology proposed by Huys & Boxshall (1991) for the general morphological description, Koomen (1992) and Seifried & Dürbaum (2000) for U-pores, Seifried (1997) and Seifried & Dürbaum (2000) for the somitic ornamentation (palisades), and Moore (1976) for hyaline frill, were adopted. Abbreviations used in the text and tables: P1–P6, first to sixth leg; EXO, exopod; END, endopod; ae, aesthetasc.

Family Ectinosomatidae Sars, 1903

Genus *Ectinosoma* Boeck, 1865

Ectinosoma mexicanum, new species

Figs. 1–6

Type material.—A single dissected female (holotype) catalogued EMUCOP-020591-17, deposited in the collection of the Institute of Marine Sciences and Limnology, Mazatlan Marine Station.

Type locality.—Ensenada del Pabellón lagoon (24°19′–24°35′N, 107°28′–107°45′W). Leg. S. Gómez, May 1991.

Diagnosis.—Ectinosomatidae. Rostrum relatively large and fused to cephalothorax. Antennule six-segmented. Armature formula of P1–P4 (EXO/END): 0.1.123/1.1.221; 1.1.223/1.1.221; 1.1.323/1.1.221; 1.1.323/1.1.221. First and second endopodal segment of P2–P4 with one strong spinulose seta. Endopod of P2–P4 robust, first endopodal segment of P2 and P3 as long as wide, first endopodal segment of P4 wider than long. Seta next to the outermost seta of exopod of P5 barely longer than inner edge of exopod. Setae I and VI of caudal rami spine-like.

Description.—Habitus (Fig. 1A–B, 2A–C), fusiform. Length 773 μm including rostrum and caudal rami. Rostrum (Fig. 1A) relatively large, fused with cephalothorax. The latter about ⅓ of total body length, with denticulate hyaline frill and sensilla; integument ornamented with tiny depressions arranged longitudinally and perforated by U-pores. Surface of third to fifth thoracic somites with tiny depressions arranged as in cephalothorax; U-pores present. Third thoracic somite without palisades, fourth and fifth thoracic somites with 2 and 4 transverse rows of palisades, respectively; third to fifth thoracic somites with denticulate hyaline frill, that of the fifth one deeper than that of the third and fourth thoracic somites. Fifth thoracic somite with 1 transverse row of small palisades and 3 transverse rows of long palisades. P5 bearing-somite (sixth thoracic somite) ornamented with 3 transverse rows of small palisades and 1 row of long palisades, and with evenly distributed tiny depressions (possibly pores) and U-pores; with denticulate hyaline frill. W:L ratio of genital double-somite, 1.19 (width measured in the proximal wider part of seventh thoracic somite); dorsal surface with remains of ancestral subdivision between seventh thoracic somite and first post genital abdominal somite (indicated in Fig. 1A–B) and ornamented with transverse rows of palisades and evenly distributed depressions and U-pores; ventral surface plain, with U-pores; P6 represented by 2 setae, genital pore located in proximal half; hyaline frill of first post genital abdominal somite as in sixth thoracic somite. Second and third post genital abdominal somites ornamented with 3 and 4 rows of palisades; second post genital abdominal somite with U-pores and with denticulate hyaline frill; third post genital abdominal somite without U-pores, with protruded pseudoperculum dorsally, reaching to distal third of anal segment, with entire striated hyaline frill ventrally (Fig. 2C). Anal segment (fourth post genital abdominal somite) with palisades and U-pores. Caudal rami about 1.5 times longer than broad, with 7 elements. Posterior dorsal edge of caudal rami terminating as an acuminate lappet; rami with 1 ventral proximal row of small palisades, and 2 sets of ventrolateral spinules at base of elements I and II; setae I and VI developed as spines.

Antennule (Fig. 3A), six-segmented. Surface of segments smooth. Armature formula 1.10.3+ae.0.3.3+ae.

Antenna (Fig. 3B): basis massive, with 2 inner long elements (indicated in Fig. 3B). Endopod two-segmented; first segment bare; second segment ornamented with strong and short proximal spinules and with longer spinules at base of 2 inner lateral spines; with 6 distal spines. Exopod three segmented; first segment as long as third and about 2.3 times longer than second one, with one seta; second segment with 1 spine; third segment with 2 spines and ornamented with subapical set of spinules, one of them markedly stronger.

Mandible (Fig. 3C): gnathobase of coxa with a strong spinulose distal spine on cutting edge, 1 strong and 4 smaller teeth; basis large with 2 long and slender inner setae and 1 thickened and spinulose inner element. Endopod one-segmented, with 8 setae, 2 each of distal 4 fused at base forming 2 pairs of elements. Exopod one-segmented, small, with 1 lateral and 2 distal setae.

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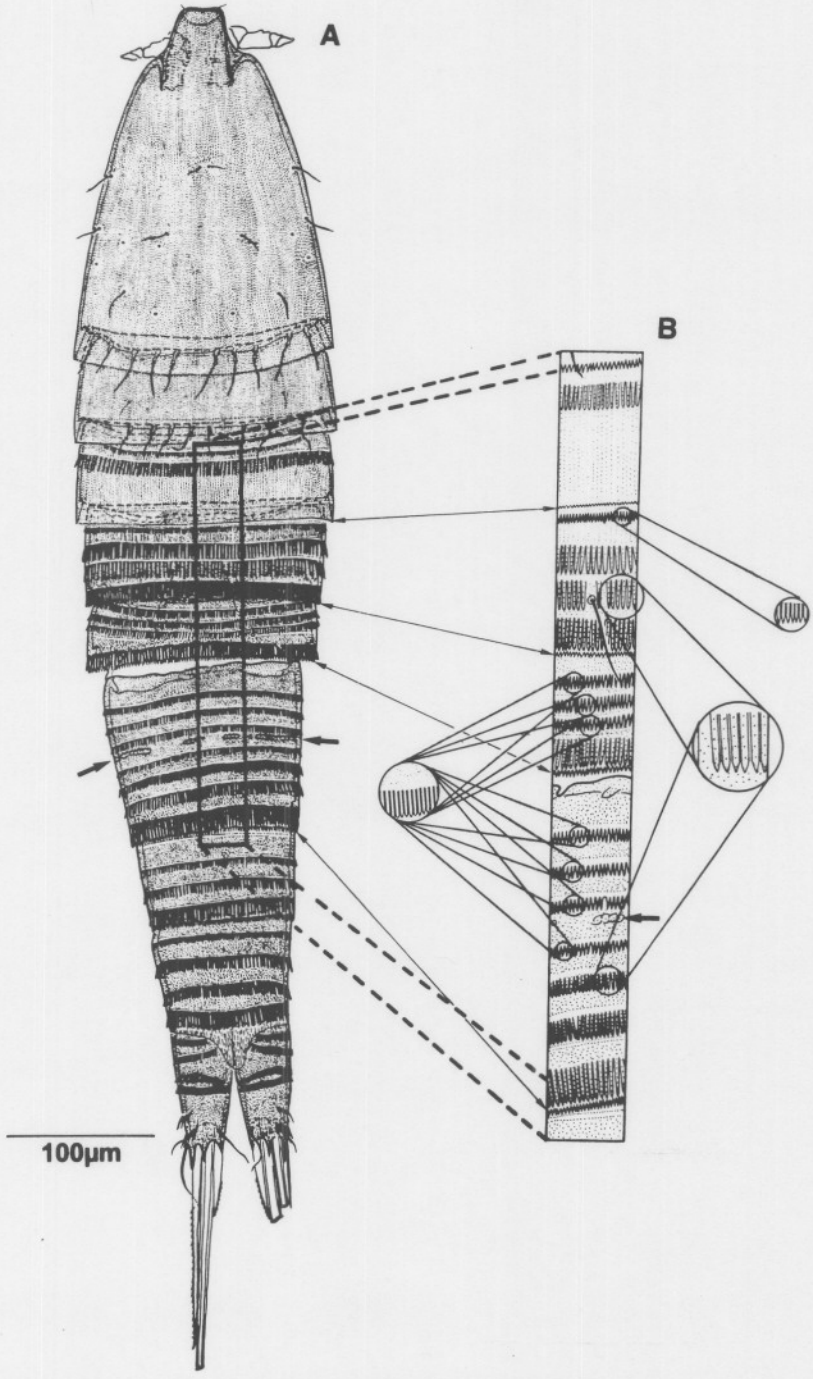

Fig. 1. *Ectinosoma mexicanum,* new species. Holotype, female, EMUCOP-020591-17. A, habitus, dorsal; B, surface ornamentation of fourth to seventh thoracic somites and first post genital abdominal somite.

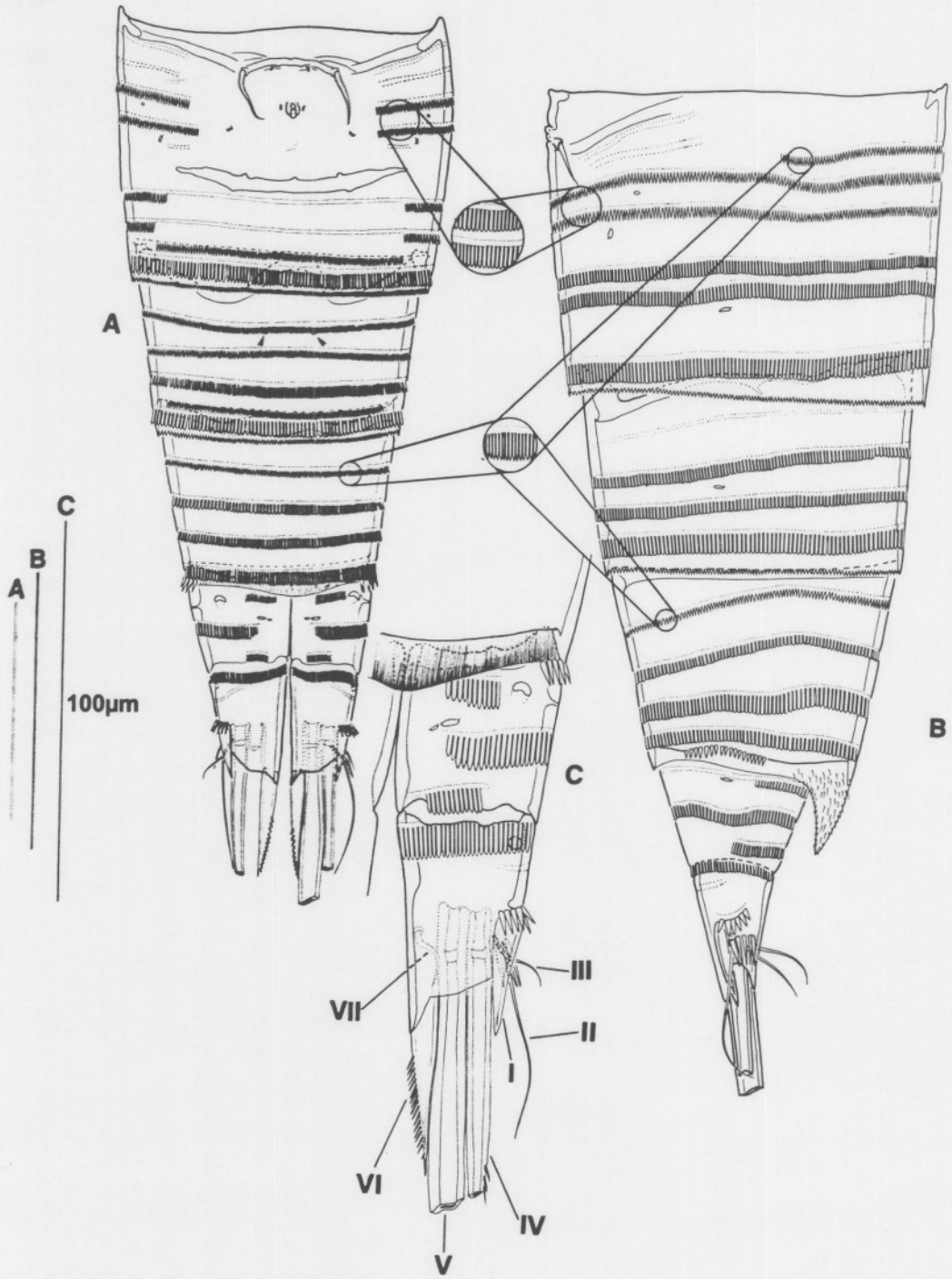

Fig. 2. *Ectinosoma mexicanum,* new species. Holotype, female, EMUCOP-020591-17. A, urosome, ventral (first urosomite omitted); B, urosome, lateral, (first urosomite omitted); C, part of anal segment and left caudal ramus, ventral.

Fig. 3. *Ectinosom*
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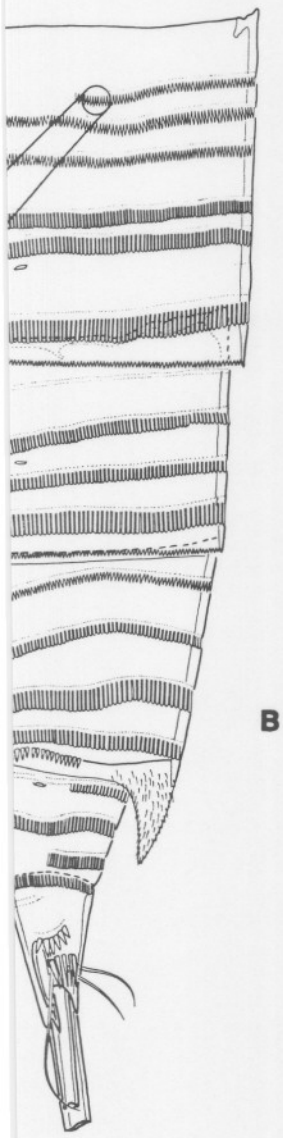

0591-17. A, urosome, ventral
anal segment and left caudal

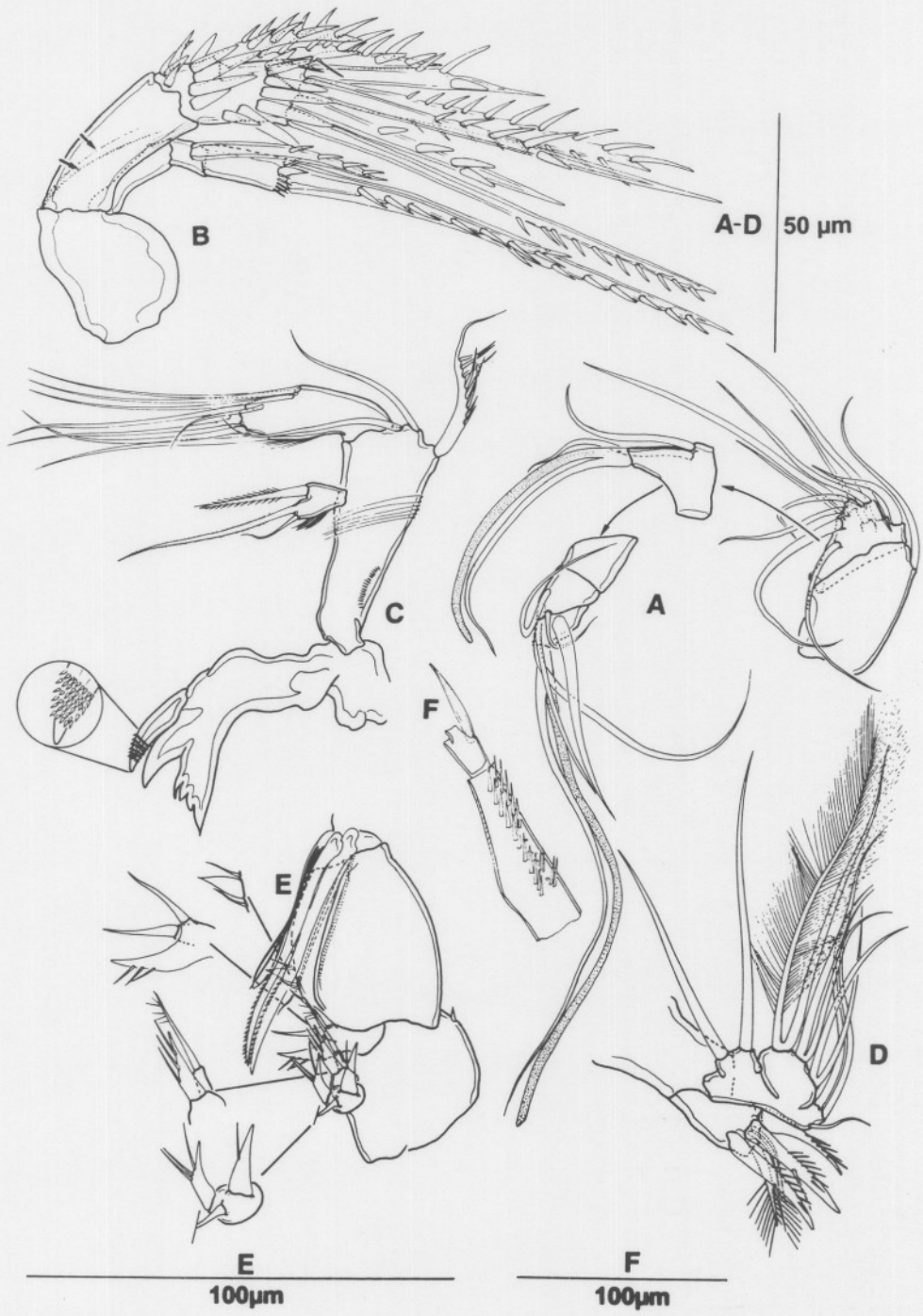

Fig. 3. *Ectinosoma mexicanum,* new species. Holotype female, EMUCOP-020591-17. A, antennule, third segment separated from second and fourth; B, antenna; C, mandible; D, maxillule; E, maxilla; F, maxilliped (endopodal setae lost during dissection).

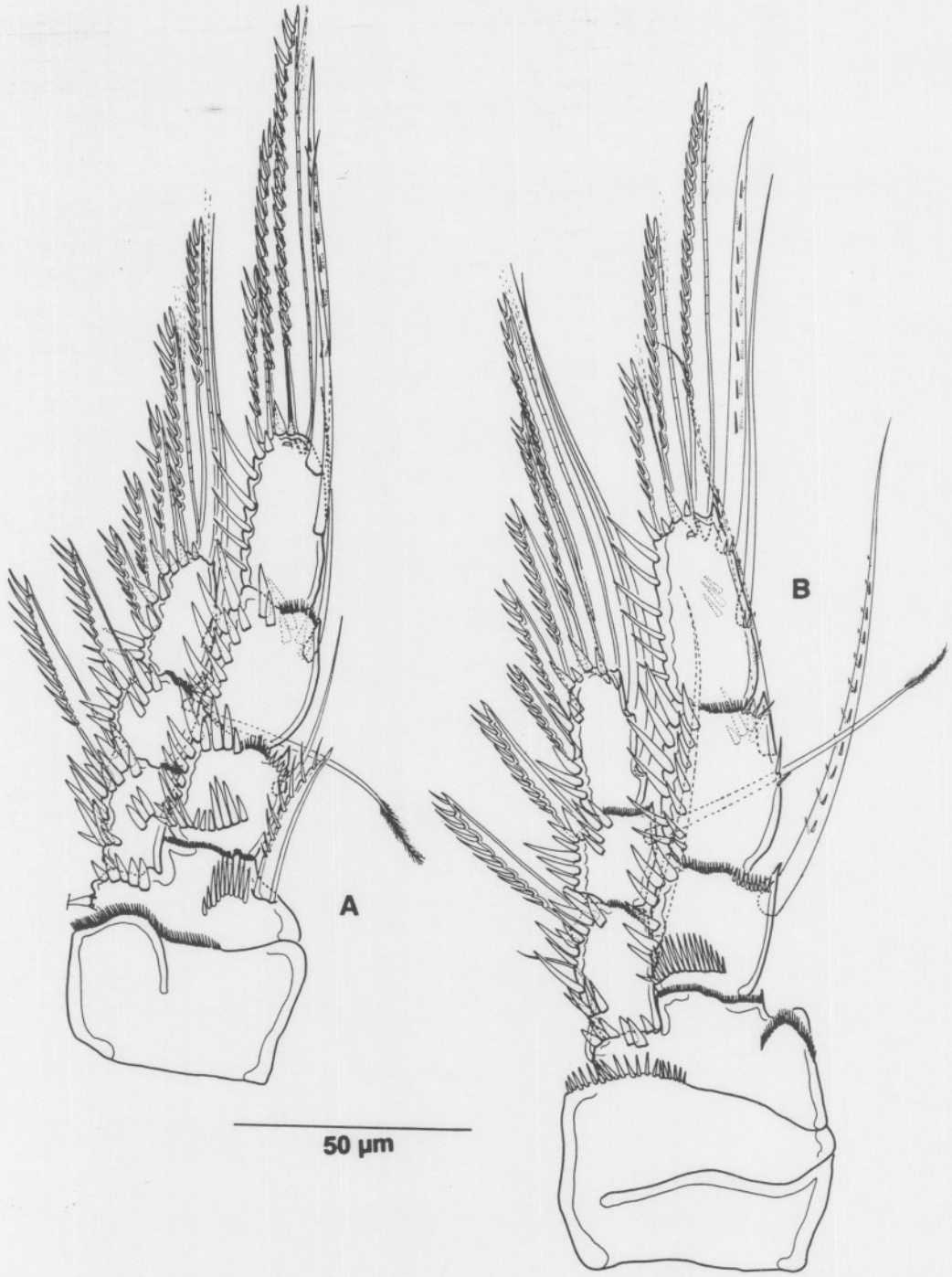

Fig. 4. *Ectinosoma mexicanum,* new species. Holotype female, EMUCOP-020591-17. A, P1, anterior; B, P2, anterior.

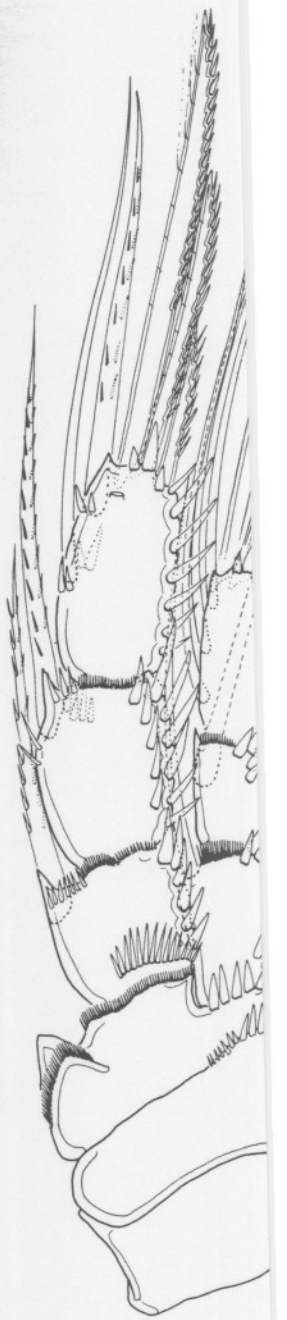

Fig. 5. *Ectinosoma mex*
P4, anterior.

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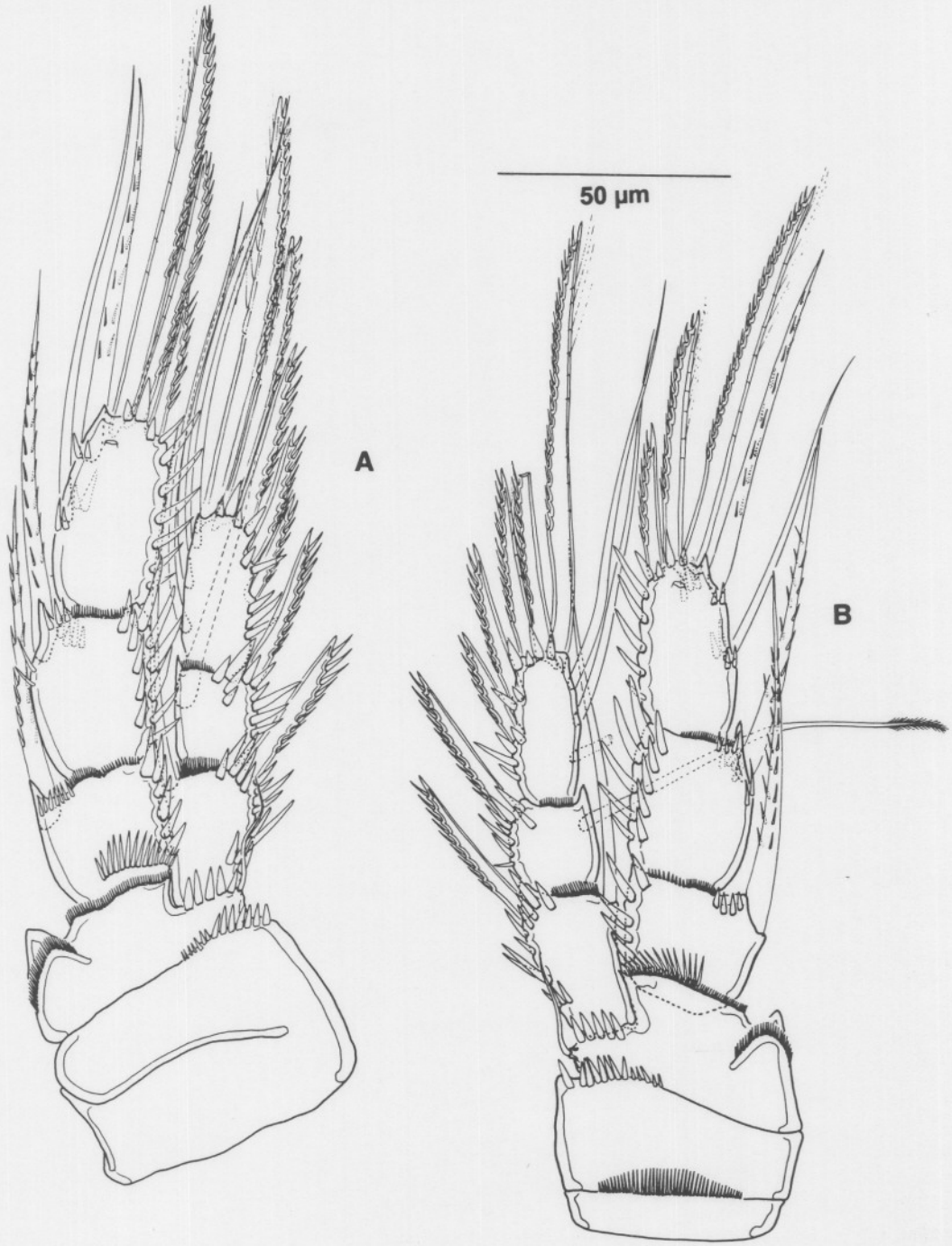

Fig. 5. *Ectinosoma mexicanum,* new species. Holotype female, EMUCOP-020591-17. A, P3, anterior; B, P4, anterior.

'. A, P1, anterior; B,

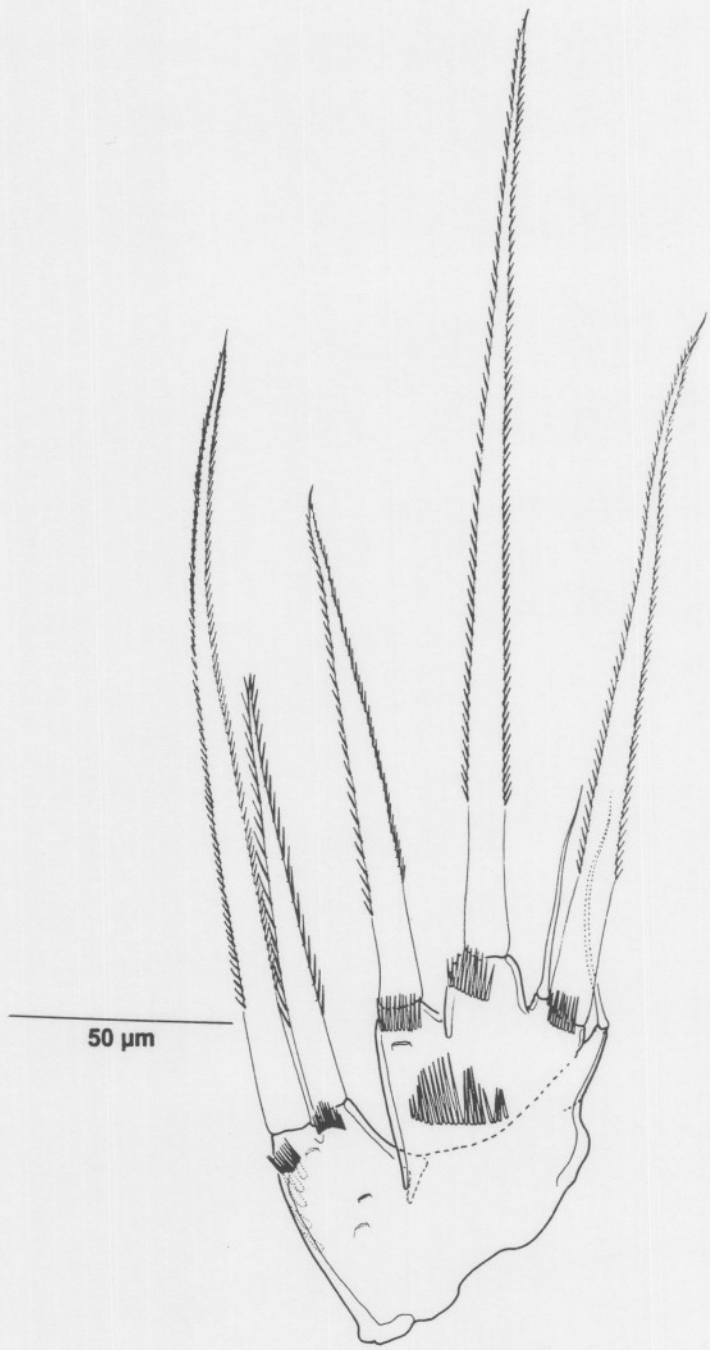

Fig. 6. *Ectinosoma mexicanum,* new species. Holotype female, EMUCOP-020591-17. Fifth leg, anterior.

Maxillule (Fig. 3D): arthrite of praecoxa with 4 apical spines and 2 bare setae; coxa and basis fused, the latter with 3 setae; exopod and endopod not articulating at base; exopod with 2 seta, endopod with 6 setae, 2 each fused at base to form 3 pairs of setae.

Maxilla (Fig. 3E): syncoxa with 3 en-

Fig. 7. *Ectino*
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P-020591-17. Fifth leg, anterior.

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Fig. 7. *Ectinosoma porosum* (Wells, 1967). Holotype female, Natural History Museum (London)-1967.8.4.21. Endopod of P4.

Table 1.—Armature formula of swimming legs (P1–P4) of *Ectinosoma mexicanum.*

	EXO	END
P1	I-0; I-1; III, II, 1	0-1; 0-1; I, II, 2
P2	I-1; I-1; III, II, 2	0-1; 0-1; I, II, 2
P3	I-1; I-1; III, II, 3	0-1; 0-1; I, II, 2
P4	I-1; I-1; III, II, 3	0-1; 0-1; I, II, 2

dites, proximal endite with 3, middle endite with 2, distal one with 3 setae; allobasis with 3 setae medially. Endopod one-segmented, with 2 long spines and 5 setae.

Maxilliped (Fig. 3F): badly damaged; the endopodal setae missing. Basis with 2 parallel rows of spinules.

P1 (Fig. 4A), with massive coxa ornamented with distal spinules. Basis with outer seta and inner strong spine, with spinules at base of exo- and endopod and close to inner spine. Rami three-segmented, ornamented with strong spinules; exopod barely reaching beyond second endopodal segment. Inner seta of second endopodal segment spinulose at tip. Armature formula as in Table 1.

P2–P4 (Fig. 4B, 5A–B), with massive coxa ornamented with row of spinules in outer distal corner. Basis ornamented with strong spinules at base of exopod and with minute ones at base of endopod and in distal inner corner, the latter with dentiform process. Rami three-segmented, ornamented with spinules as in P1. Exopod of P2 barely reaching beyond second endopodal segment, of P3 and P4 reaching middle of third endopodal segment. Endopods robust; first endopodal segment of P2 and P3 as long as wide, of P4 wider than long; first and second endopodal segment of P2–P4 with strong curved setae ornamented with 2 rows of spinules. Armature formula as in Table 1.

P5 (Fig. 6): baseoendopod with 2 inner setae, innermost about 1.8 times longer than outer one; inner expansion of baseoendopod ornamented with fine spinules at base of both setae, and with strong ones along inner margin of posterior face; with 1 median anterior, and 1 distal and 1 median posterior U-pore; inner baseoendopodal expansion reaching middle of exopod. Exopod wider than long, basal limit only visible on posterior face; with 4 marginal setae and ornamented with row of long spinules in the middle and at the base of the three largest marginal elements; outermost seta about 3.5 times longer than adjacent one, the latter barely longer than inner edge of exopod; seta adjacent to innermost seta about 1.8 times longer than innermost element, the latter about 1.2 times longer than outermost seta of baseoendopod.

Remarks.—At present about 35 species of Ectinosomatidae (apart from *E. mexicanum* new species), have been attributed to the genus *Ectinosoma.* The taxonomy and phylogeny of this genus has been obscured by poor descriptions that in most cases lack sufficient detail. Moreover, no revisions of the genus are available and nothing is known about the phylogenetic relationships of this taxon (Seifried, 1997; Seifried & Dürbaum, 2000).

Ectinosoma mexicanum and *E. porosum* (Wells, 1967), seem to be related by the following synapomorphies: strong spinulose seta on the first and second endopodal segment of P2 and P4, and by the robust endopod of P2 in which the first segment is as long as wide. Unfortunately, Wells (1967) illustrated only the third exopodal segment of P3, and did not discuss the general morphology of P4. In order to check the general morphology of P3 and P4 of *E. porosum,* the only material available (Holotype 1967.8.4.21) was borrowed from the Natural History Museum (London). Unfortunately, the only slide on which the dissected holotype of *E. porosum* was mounted was badly damaged during transit and only the mouth parts, P1, P2, P4, P5 and abdomen were successfully recovered.

The general morphology of P4 of *E. porosum* (Fig. 7) showed that the robust rami constitutes a synapomorphy for *E. porosum* and *E. mexicanum.* On the other hand, the general morphology of P2–P4 of *E. mexi-*

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Acknowle

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canum shows that the robust condition of the rami and the strong spinulose seta of the first and second endopodal segment is constant in these three swimming legs. This is the case also for P2 and P4 of *E. porosum* and in all probability for the third swimming leg.

Some *Bradya* Boeck, 1872, *Pseudobradya* Sars, 1904, and *Halectinosoma* Lang, 1965 species, exhibit more robust endopods of P2–P4 than observed for most *Ectinosoma* species, but *E. mexicanum* seems to be unique within the genus *Ectinosoma* in the following derived characters: endopod of P2–P4 robust, first endopodal segment of P2 and P3 as long as wide, and first endopodal segment of P4 wider than long; first and second endopodal segment of P2–P4 with strong curved setae equipped with 2 characteristic rows of spinules; exopod of P5 wider than long (not shared by any other *Bradya, Pseudobradya, Halectinosoma* or *Ectinosoma* species), and outermost but one seta barely longer than inner edge of exopod. The latter is shared with *E. mediterraneum* Kunz, 1974, and *E. porosum.* The outermost but one seta of exopod of P5 is much shorter than the inner edge of exopod in *E. obtusum* Sars, 1920, and much longer in all other *Ectinosoma* species.

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A new species of *Mo* from Brazi

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(CD) Universidade Federal do CE

Abstract.—Monstrill collected in the Guanab is similar to *M. brevic* tuberance on the ventra compared with the hol *pustulata* can be distin tennular armature and this species is its cuticu like processes on the h on some pedigerous so is complemented with *gida* Scott, also from th described as new from

Monstrilloid copepods a benthic invertebrates such and molluscs (Isaac 1975, Adults represent the mos stage since they are free-livi quently captured by plankt ever, the group has several nomenclatural problems du morphological information cies (Huys & Boxshall 1994a). In order to make a of the taxonomic status of a included in this peculiar ord it is important to have bet than has been the norm for also complementary data fo described species. Several been redescribed and/or rec ly (Grygier 1994b, Suárez- cardi 1997, Suárez-Mora much work is still needed, species in the tropical areas

An analysis of zooplankt