

Two new species of *Mesochra* BOECK, 18654 (Copepoda: Harpacticoida) from a coastal lagoon in Sinaloa State, Mexico

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Abstract

Two new species of the genus *Mesochra*, *M. pacifica* n. sp. and *M. pseudoparva* n. sp., are described from Ensenada del Pabellón Lagoon (southeastern Gulf of California, Mexico). Both species are considered as most closely related to *M. parva* THOMSON 1946, although they share some features with *M. sewelli* LANG 1948. A particular forked structure on the male P3 endopodite of *M. pseudoparva* n. sp. was found and the homology of this structure is discussed. An updated key to the species in the genus is provided.

Key words: Harpacticoida, Canthocamptidae, *Mesochra*, new species, taxonomy, Mexico.

Résumé

Deux nouvelles espèces du genre *Mesochra*, *M. pacifica* n.sp. et *M. pseudoparva* n. sp., sont décrites de Ensenada del Pabellón Lagoon (au sud-est du Golfe de Californie, Mexique). Ces deux espèces sont considérées comme étroitement liées à *M. parva* THOMSON 1946, de plus, elles partagent certaines caractéristiques avec *M. sewelli* LANG, 1948. Une structure fourchue particulière sur l'endopodite P3 chez le mâle de *M. pseudoparva* n.sp. a été découverte et l'homologie de cette structure est discutée. Finalement, une remise à jour de la clé d'identification des espèces du genre est présentée.

Mots clefs: Harpacticoida, Canthocamptidae, *Mesochra*, nouvelles espèces, taxonomie, Mexique.

Introduction

To improve the management of some of the most important brackish water systems in northwestern Mexico, a multidisciplinary study was initiated in 1990 on the Altata-Ensenada del Pabellón coastal lagoon in Sinaloa State (Mexico) (ARENAS FUENTES & FLORES VERDUGO, 1990; AYALA CASTAÑARES, *et al.*, 1994). This aquatic system is generally known as one of the largest lagoonal areas along the Mexican Pacific coast line, and is of important commercial value sustaining fisheries of some important mercantile species. With increasing industrialisation and the expansion of agricultural enterprises on the surrounding mainland, the system has been subjected to severe impacts, leading to deterioration of water and soil quality (DE LA LANZA ESPINO *et al.*, 1991). It has been demonstrated (IZAGUIRRE FIERRO *et al.*, 1992; PAEZ USUNA *et al.*, 1992; 1993a; 1993b; 1994) that the agroindustrial

impact on the system strongly affected the quality of the local fishery industries.

Part of the multidisciplinary program was to analyze the distribution, abundance and composition of benthic macrofauna (HENDRICKX *et al.*, 1991) and meiofauna (GÓMEZ NOGUERA, 1993; GÓMEZ NOGUERA & HENDRICKX, 1997). As a result of an indepth study of the benthic copepod assemblages, approximately 30 different species were found, most of these species being new to science. This paper, which includes the description of two new species of the canthocamptid genus *Mesochra*, is the first in a series dealing with the taxonomy of several harpacticoid species from this area.

Materials and methods

Meiobenthic organisms were retrieved using a 63 µm sieve. Nematodes and copepods were picked out from sediment samples under a dissecting microscope, counted and stored in 70 % ethanol. Dissected parts of the harpacticoids were mounted in glycerin with sealed coverglasses. Observations and drawings were made at 1250X on a Leitz Periplan phase contrast light microscope equipped with a drawing tube.

Type-material, labeled as EMUCOP, has been deposited in the copepod collection of the "Instituto de Ciencias del Mar y Limnología, U. N. A. M.", Station of Marine Sciences, Mazatlan (Mexico). Terminology and abbreviations following LANG (1948), except for nuccal organ (Nackenorgan) named herein "integumental window". Abbreviations used in the text and table: P1-P6, first to sixth leg; EXO, exopodite; END, endopodite.

Taxonomic account

Genus *Mesochra* BOECK, 1865

Mesochra pacifica n. sp.

Figs. 1-7

TYPE-MATERIAL

Female holotype, alcohol preserved (EMU-4646-H1); dissected allotype

(EMU-4642-C); 5 dissected paratypes: 3 females (EMU-4641-C, EMU-4645-H, EMU-4640-C), and 2 males (EMU-4643-E, EMU-4644-A).

TYPE-LOCALITY

Ensenada del Pabellón Lagoon, Sinaloa, Mexico (24°19'–24°35'N, 107°28'–107°45'W), at a depth ranging from 0.5 to 1.0 m.

ETYMOLOGY

The specific name refers to the Pacific Ocean, type region of the species.

DESCRIPTION

Female. Habitus (Figs. 1a, b; 2a, b). Body fusiform compressed, with clear demarcation between prosome and narrow urosome; length, including rostrum and caudal rami, ranging from 390 to 507 μm (holotype 507.8 μm); no integumental windows observed; largest width near posterior edge of cephalothorax, latter nearly equalling 1/3 of total body length; hyaline frill of cephalothorax and body somites, except P5 bearing somite, minutely incised; surface of prosomal somites smooth; P5 bearing somite with two short lateral combs of minute spinules; genital double-somite with medio-dorsally and medio-ventrally interrupted sub-cuticular ridge; genital double-somite and succeeding urosomal somites ornamented with slender spinules along postero-lateral and/or postero-ventral margins.

Anal somite (Fig. 2a) short, with spinules present around ventral hind margin; anal operculum rounded and furnished with minute spinules; caudal rami (Fig. 2a, b) nearly as long as wide, with six setae; anterolateral seta arising at midlength of outer margin; posterolateral seta arising from a ventral position near outer distal corner, being distinctly longer than ramus; inner distal seta 1.5 times longer than ramus; dorsal seta implanted close to inner margin, articulating on two basal parts. All setae smooth except for pinnate principal terminal setae.

Rostrum (Fig. 3g) demarcated at base, bell-shaped, with rounded tip; with a single pair of sub-distal sensilla.

Antennule (Fig. 3a) 6-segmented; segment I with 2 spinules rows, and segment II with 1 spinule row; third segment about 1.5 times longer than wide, with aesthetasc; majority of setae smooth, segments III and VI with a pinnate element; setal armament: I(0)-II(8)-III(6+aesth)-IV(1)-V(2)-VI(9+aesth).

Antenna (Fig. 3b). Allobasis with 1 proximal spinulose and 1 distal bare inner seta along abexopodal margin; exopodite one-segmented with 2 plumose and 1 smaller bare setae apically; endopod inner margin with spinule row proximally; lateral armature consisting of 2 spines and one small seta; row of fine outer spinules distally;

apical armature consisting of 5 elements: 2 spines, 2 geniculate bare setae, and 1 geniculate seta armed with spinules.

Mandible (Fig. 3c) with biting edge formed by strong teeth and one plumose seta; basis apparently fused to endopodite, with long spinules and 1 seta; endopodal lobe with 3 distal and one lateral setae.

Maxillule (Fig. 3d). Praecoxal arthrite ornamented with some minute spinules posteriorly; with 2 setae anteriorly; distal margin with 5 strong curved spines and 3 setae (one smooth). Coxa apparently fused with basis; coxal endite bearing some spinules along inner margin, with 1 slender and 1 strong setae, distally; exopodite and endopodite obsolete, apparently represented by 3 and 2 setae respectively; basis with 2 lateral, 2 subdistal setae and a distal pectinate element.

Maxilla (Fig. 3e). Syncoxa ornamented with spinulerows close to inner and outer margins; two endites, each with 2 plumose and one smooth setae; basis produced into strong claw accompanied with 2 slender setae; endopodite not well defined, with 3 setae (of which two are fused basally).

Maxilliped (Fig. 3f). Syncoxal part with 2 rows of spinules and 1 distal seta; basis particularly spinulose along both anterior and posterior rims of palm, having a small group of spinules near middle and distal edge of outer margin; endopodite minute, bearing smooth claw and a single accompanying seta.

P1 (Fig. 4a). Protod components ornamented with several spinule rows; basis with strong unipinnate outer and inner spine; exopodite 3-segmented, bearing inner seta on second segment, and reaching not quite to insertion of inner seta on first endopodal segment; endopodite 2-segmented, with first segment reaching far beyond exopodite, about 6 times as long as wide; inner seta on first segment pectinate, and inserted in distal third; second segment with an inner short smooth sub-terminal seta, a distal geniculated long seta, and a distal claw.

P2-P3 (Fig. 4b, c, respectively). Praecoxa as in P1; coxa with on both sides a row of spinules near outer distal corner; basis with fine spinules near articulation with endopodite, and stronger elements near joint with exopodite; outer seta of basis slender and plumose; exopodite 3-segmented, all ornamented with strong spinules along outer margin, and with fragil distal inner fringe; inner exopodal setae on terminal segment plumose in P2, pectinate in P3; endopodite two-segmented, reaching just beyond second exopodal segment; first segment with outer distal corner acute; second segment with proximal inner seta pectinate; chaetotaxy in Table I.

P4 (Fig. 5a). Anterior surface of protopodite as in P3, posterior surface lacking spinule row; exopodite 3-segmented; third exopodal segment with large and strong pectinate inner sub-distal seta; endopodite two-segmented, reaching not quite to middle of second exopodal segment; endopodal setae plumose; chaetotaxy in Table I.

P5 (Fig. 5b) with distinct exopodite and baseoendopodite; the latter extending beyond distal edge of the former, and bearing 5 elements; hyaline tube pore present on inner

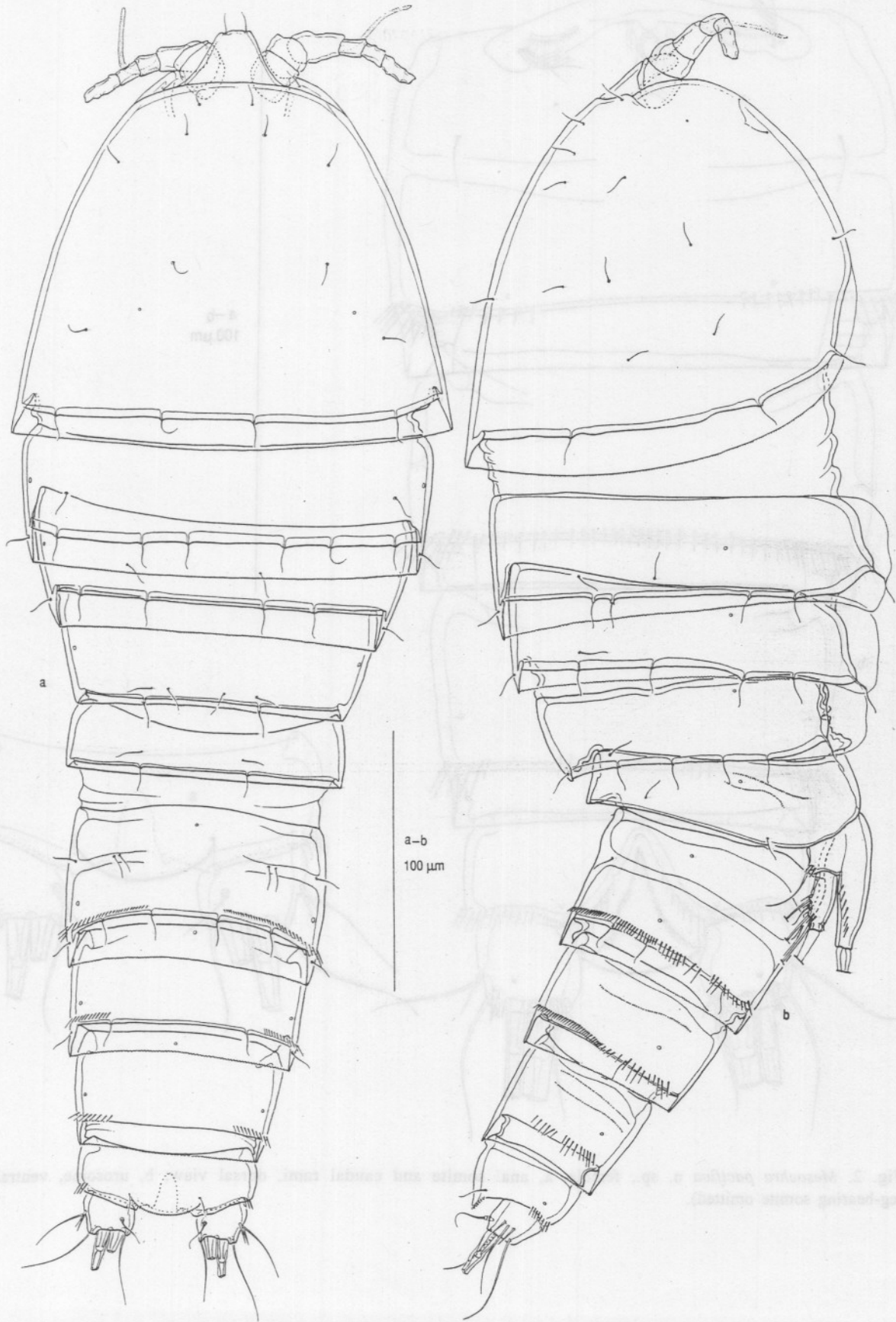


Fig. 1. *Mesochra pacifica* n. sp., female. a, habitus, dorsal view; b, idem, lateral view.

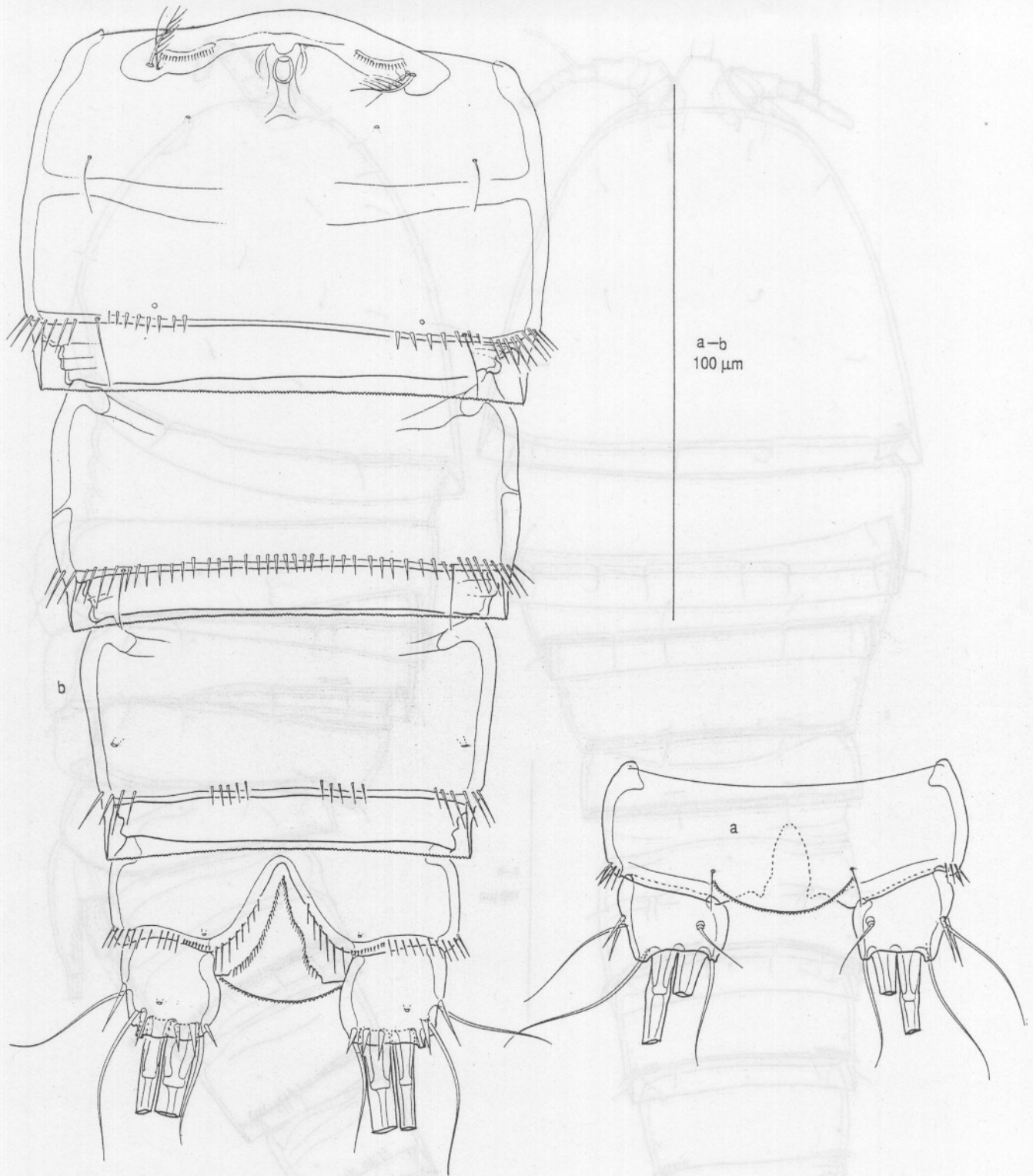


Fig. 2. *Mesochra pacifica* n. sp., female. a, anal somite and caudal rami, dorsal view; b, urosome, ventral view (fifth leg-bearing somite omitted).



Fig. 3. *Mesochra pacifica* n. sp., female. a, antennule (exploded) ventral view; b, antenna; c, mandible; d, maxillule (exploded); e, maxilla; f, maxilliped; g, rostrum; h, labrum.

margin (arrowed in Fig. 5b). Exopodite small, roughly ovate; outer (3) and distal (1) setae slender and smooth, inner sub-distal element rigid and bipinnate.

P6 vestiges (Fig. 2b), represented by a small crescent shaped lobe, bearing 2 setae, and ornamented with minute spinules; copulatory pore situated in anterior half of

genital somite, flanked by pair of pores posteriorly; copulatory duct distinct, leading to paired small seminal receptacles.

Male. Habitus (Fig. 6a) closely resembling that of female, but with narrower prosome, and without genital double somite; length ranging from 319 to 326 μm (allotype 326

Table I: Chaetotaxy of the natatorial legs

	P1		P2		P3		P4		P5
	EXO	END	EXO	END	EXO	END	EXO	END	END δ
<i>M. pacifica</i>	0-1-022	1-111	0-1-122	1-221	0-1-222	1-221	0-1-222	1-221	0-0-020
<i>M. pseudoparva</i>	0-1-022	1-111	0-1-122	1-221	0-1-222	1-221	0-1-222	1-221	0-0-220

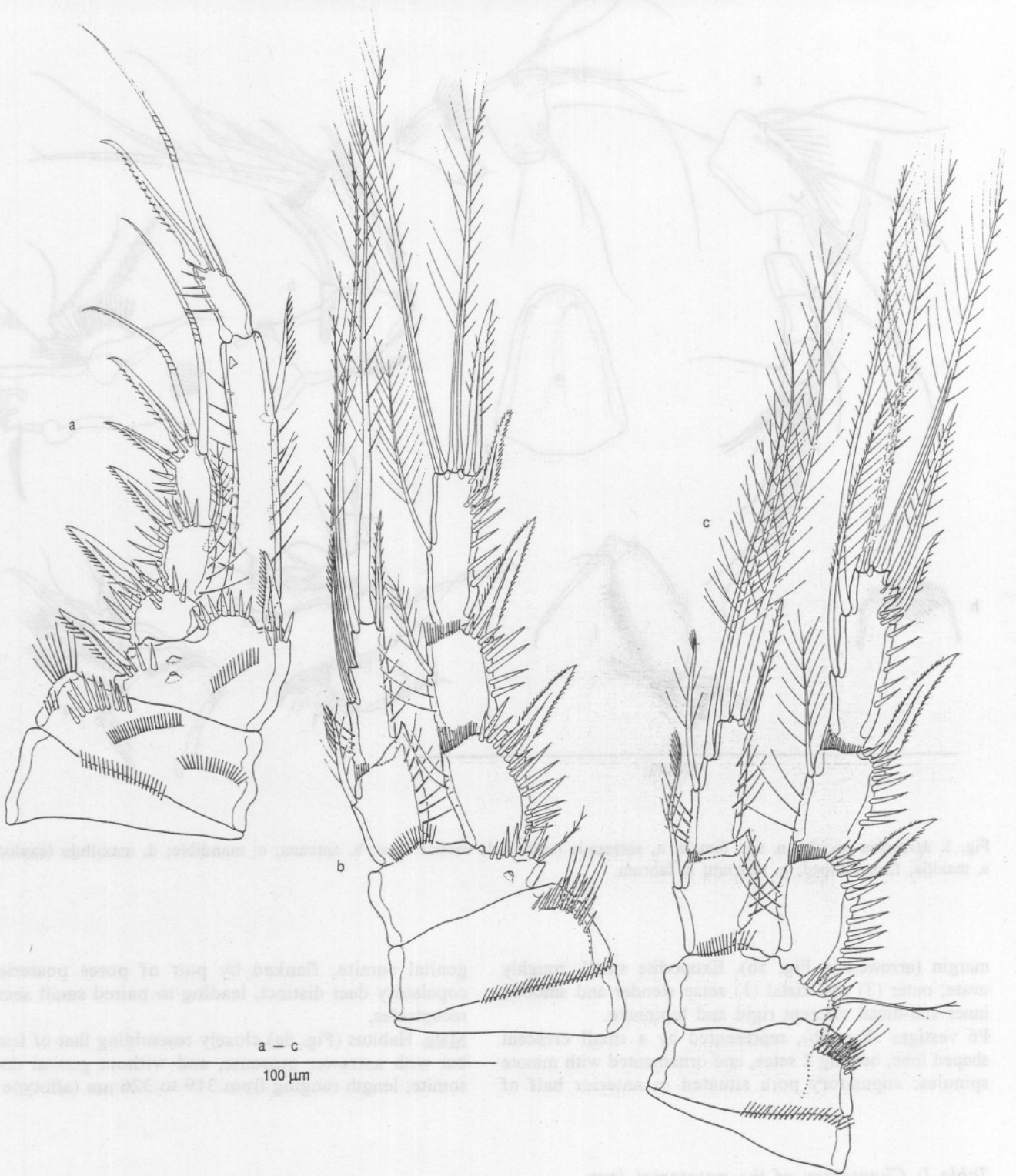


Fig. 4. *Mesochra pacifica* n. sp., female. a, P1; b, P2; c, P3 (a-c anterior view).

	END	EXO	END	EXO	END	EXO	END	EXO	END	EXO
<i>M. pacifica</i>	0-1-052	1-111	0-1-152	1-321	0-1-152	1-321	0-1-152	1-321	0-1-152	1-321
<i>M. pseudopacifica</i>	0-1-052	1-111	0-1-152	1-321	0-1-152	1-321	0-1-152	1-321	0-1-152	1-321

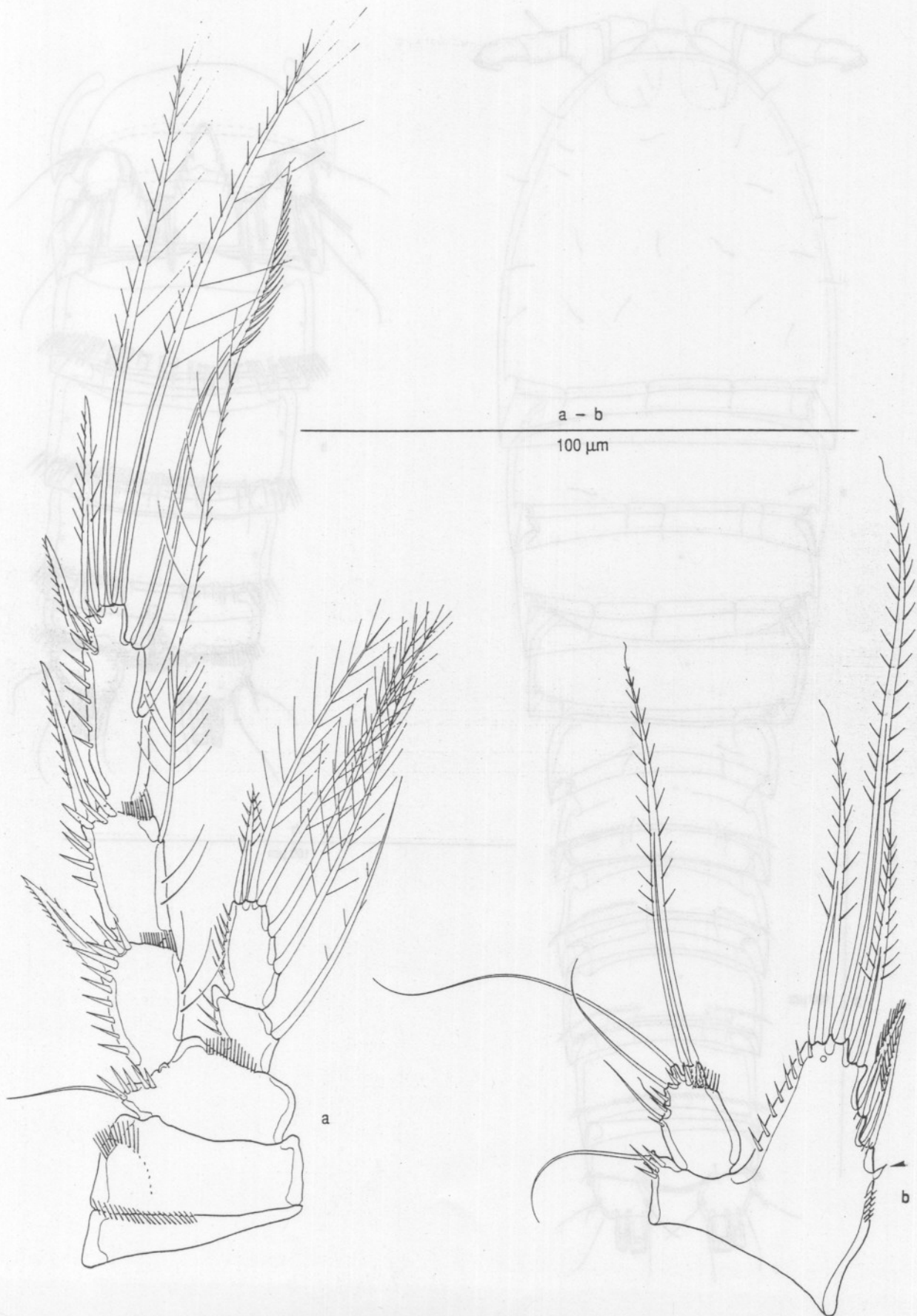


Fig. 5. *Mesochra pacifica* n. sp., female. a, P4; b, P5 (a-b anterior view).

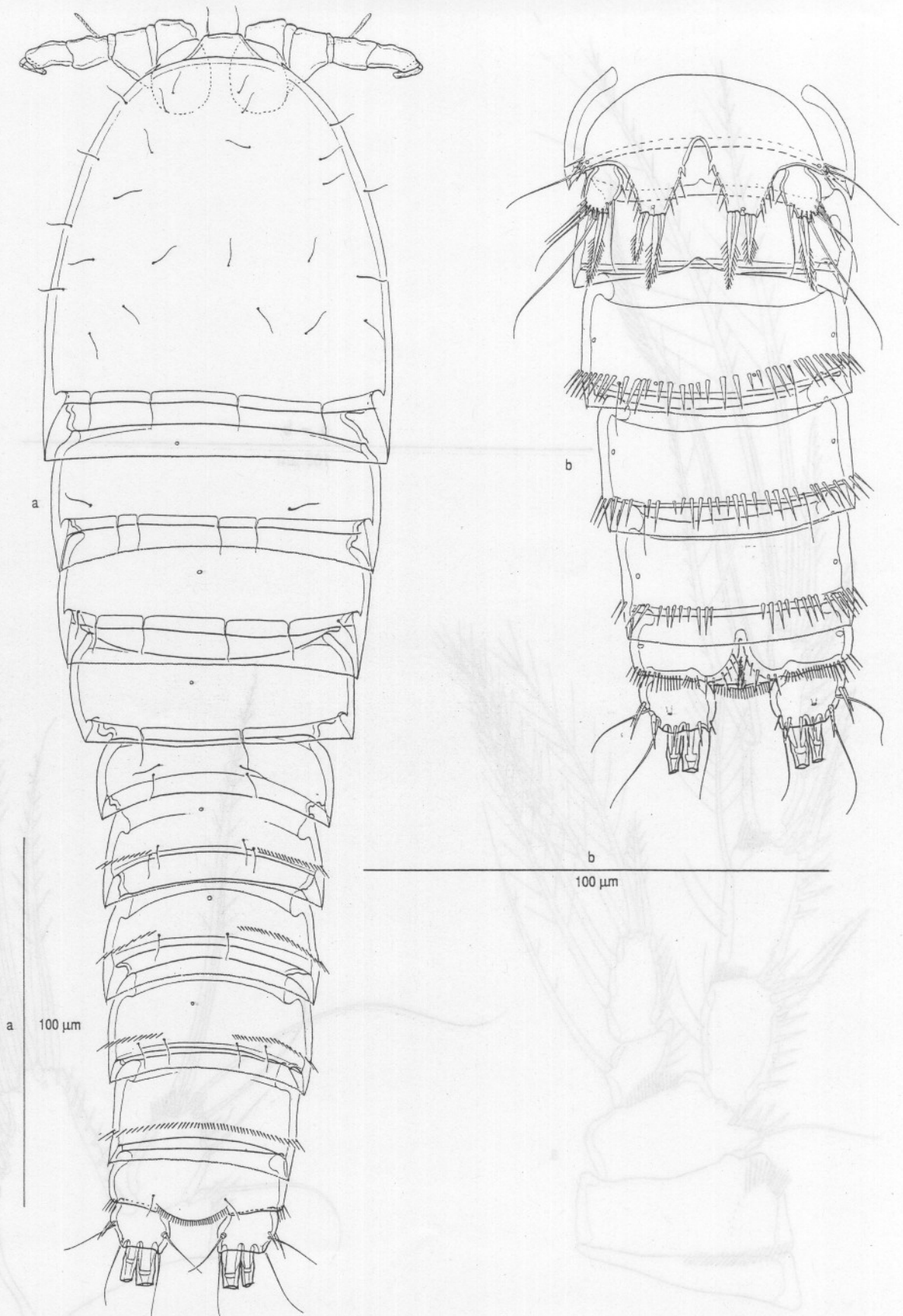


Fig. 6. *Mesochra pacifica* n. sp., male. a, habitus, dorsal view; b, urosome, ventral view.

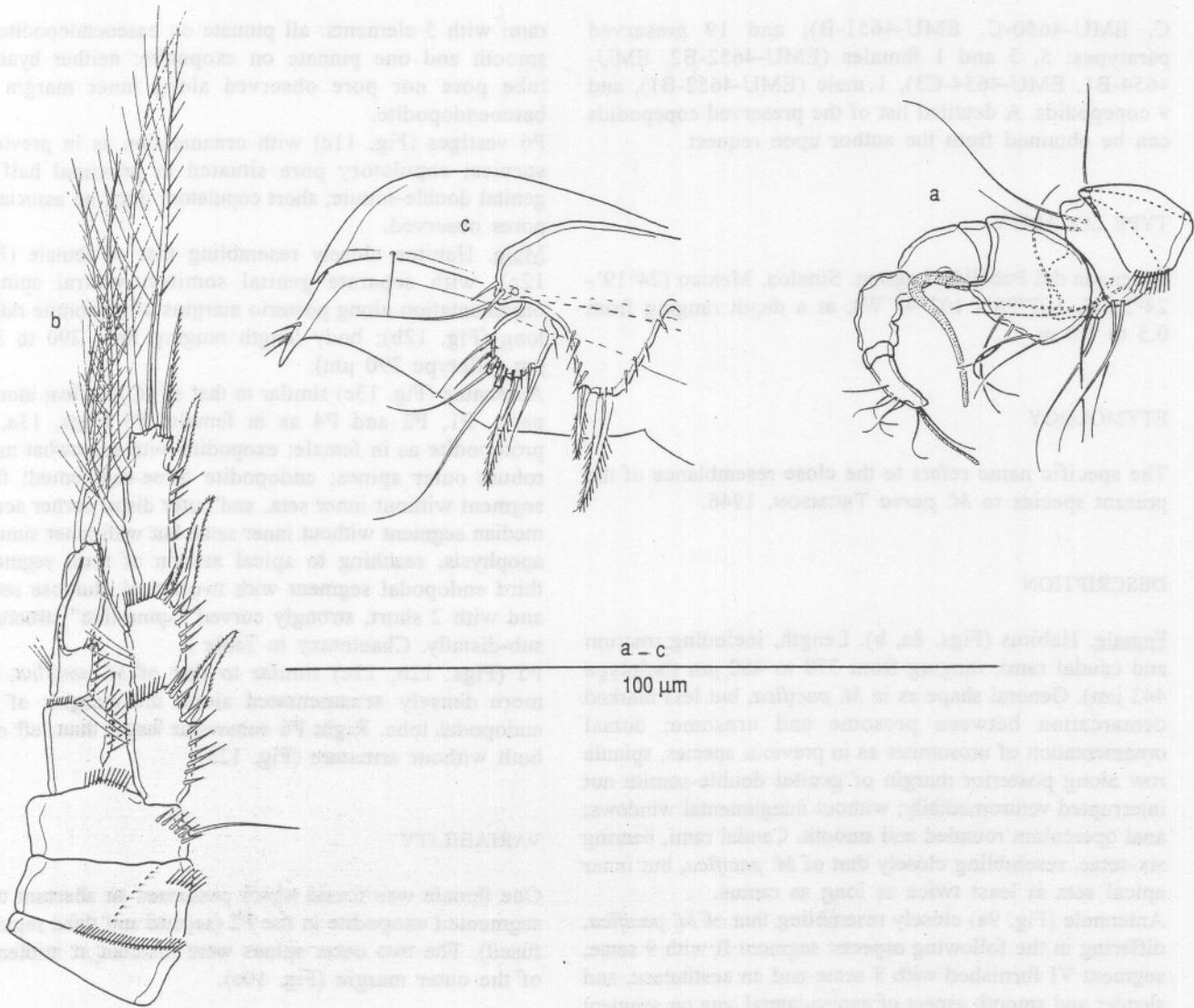


Fig. 7. *Mesochra pacifica* n. sp., male. a, antennule, ventral view; b, P3, anterior view; c, right P5 and P6.

μm); ventral spinules near posterior margins of urosomites, markedly coarser than in female (Fig. 6b); anal somite as in female, but somewhat more ornamented; caudal rami as in female.

Antennule (Fig. 7a) sub-chirocer and 8-segmented; ornamentation of proximal segments less dense than in female; segments IV and VIII with aesthetasc; armature smooth with following distribution: I(0)-II(9)-III(4+aesth)-IV(0)-V(0)-VI(0?)-VII(0)-VIII(7+aesth). Mouthparts, P1, P2, and P4 as in female.

P3 (Fig. 7b) with protopodite and exopodite as in female; endopodite three-segmented; first segment without inner seta, and outer distal corner acute; inner distal corner of second segment with sinuous inner apophysis, reaching nearly to apical margin terminal segment; third segment reaching to proximal third of third exopodal segment.

P5 (Fig. 6b, 7c) with medially fused baseoendopodites; exopodite distinct, reaching slightly beyond distal edge of endopodal lobe, with 5 naked setae, and 1 bipinnate

strong seta; endopodal lobe ornamented with spinules along inner and outer margins, with 2 bipinnate robust spines of unequal length distally.

P6 (Fig. 6b) symmetrical, lacking ornamentation and armature.

Discussion. - see below.

Mesochra pseudoparva n. sp.

Figs. 8 - 13

TYPE-MATERIAL

Female holotype, alcohol preserved (EMU-4653-H1) and allotype (EMU-4655-C1); 5 dissected paratypes: 2 females (EMU-46479-A, EMU-4648-B), and 3 males (EMU-4649-

C, EMU-4650-C, EMU-4651-B); and 19 preserved paratypes: 5, 3 and 1 females (EMU-4652-B2, EMU-4654-B1, EMU-4654-C3), 1 male (EMU-4652-B1), and 9 copepodids. A detailed list of the preserved copepodids can be obtained from the author upon request.

TYPE LOCALITY

Ensenada del Pabellón Lagoon, Sinaloa, Mexico (24°19'-24°35'N, 107°28'-107°45'W), at a depth ranging from 0.5 to 1.0 m.

ETYMOLOGY

The specific name refers to the close resemblance of the present species to *M. parva* THOMSON, 1946.

DESCRIPTION

Female. Habitus (Figs. 8a, b). Length, including rostrum and caudal rami, ranging from 370 to 482 μm (holotype 443 μm). General shape as in *M. pacifica*, but less marked demarcation between prosome and urosome; dorsal ornamentation of urosomites as in previous species, spinule row along posterior margin of genital double-somite not interrupted ventromedially; without integumental windows; anal operculum rounded and smooth. Caudal rami, bearing six setae, resembling closely that of *M. pacifica*, but inner apical seta at least twice as long as ramus.

Antennule (Fig. 9a) closely resembling that of *M. pacifica*, differing in the following aspects: segment II with 9 setae, segment VI furnished with 8 setae and an aesthetasc, and slender and smooth aspect of antero-lateral seta on segment VI. Antenna (Fig. 9b) as in *M. pacifica* except for the sub-distal position of a seta on the exopodite. Maxillule (Fig. 9d) with coarser spinules on posterior surface of arthrite, and a robust recurved sub-distal pinnate seta. Mandible and maxilliped (Fig. 9c and f) as in *M. pacifica*. Maxilla (Fig. 9e) with only a few spinules on syncoxa. P1 (Fig. 10a) with protopodite ornamented as in preceding species; three-segmented exopodite reaching slightly beyond insertion point of inner setae on first endopodal segment; the latter only 5.5 times as long as wide, bearing inner seta in median third of inner margin; second endopodal segment with 3 elements, inner sub-distal one 1.5 times as long as segment.

P2-P4 resembling legs of *M. pacifica*, except for outer corner of first endopodal segment less acute. P2 endopodite (Fig. 10b) reaching not quite to middle of distal exopodal segment, P3 endopodite (Fig. 10d) reaching just beyond second exopodal segment, and P4 endopodite (Fig. 11a) to middle of second exopodal segment; sub-distal seta on third exopodal segment rigid and pectinate in P4. Chaetotaxy in Table I.

P5 (Fig. 11b) with robust, almost quadrate, exopodite reaching nearly to apical edge of endopodal lobe; both

rami with 5 elements: all pinnate on baseoendopodite, 4 smooth and one pinnate on exopodite; neither hyaline tube pore nor pore observed along inner margin of baseoendopodite.

P6 vestiges (Fig. 11c) with ornamentation as in previous species; copulatory pore situated in proximal half of genital double-somite; short copulatory duct; no associated pores observed.

Male. Habitus closely resembling that of female (Fig. 12a), with separate genital somites; ventral spinule ornamentation along posterior margins of urosomite rather long (Fig. 12b); body length ranging from 290 to 314 μm (allotype 290 μm).

Antennule (Fig. 13e) similar to that of *M. pacifica*; mouthparts, P1, P2 and P4 as in female. P3 (Figs. 13a, b) protopodite as in female; exopodite with somewhat more robust outer spines; endopodite three-segmented: first segment without inner seta, and outer distal corner acute; median segment without inner setae but with inner sinuous apophysis, reaching to apical margin of third segment; third endopodal segment with two apical plumose setae, and with 2 short, strongly curved "spine-like" structures sub-distally. Chaetotaxy in Table I.

P5 (Figs. 12b, 13c) similar to that of *M. pacifica*, but more densely ornamented along the margins of the endopodal lobe. Right P6 somewhat larger than left one, both without armature (Fig. 12b).

VARIABILITY

One female was found which possessed an aberrant two-segmented exopodite in the P2 (second and third segment fused). The two outer spines were inserted at midlength of the outer margin (Fig. 10c).

Discussion and comparison

Both presently described species occurred in the same lagoonal area and are not easy to distinguish under a dissecting microscope. Only the general body shape (more robust shape in *M. pacifica*, more slender in *M. pseudoparva*) and the length of the inner apical seta on the caudal rami (1.5 times longer than ramus in *M. pacifica*, more than twice the ramus length in *M. pseudoparva*) may be useful in separating them. However more detailed observations reveal many differences to distinguish both species. The most important are: the position of the copulatory pore in the females (median in *M. pacifica*, far anterior in *M. pseudoparva*); number of armature elements of antennule and in particular the morphology of the lateral element on the VI-th antennular segment (robust and pinnate in *M. pacifica*, smooth and slender in *M. pseudoparva*); insertion point of the inner seta on the first endopodal segment of the P1 (in distal third of segment for *M. pacifica*, in median third for *M. pseudoparva*); the general shape of the female P5 exopodite (small ovate in *M. pacifica*, square and more

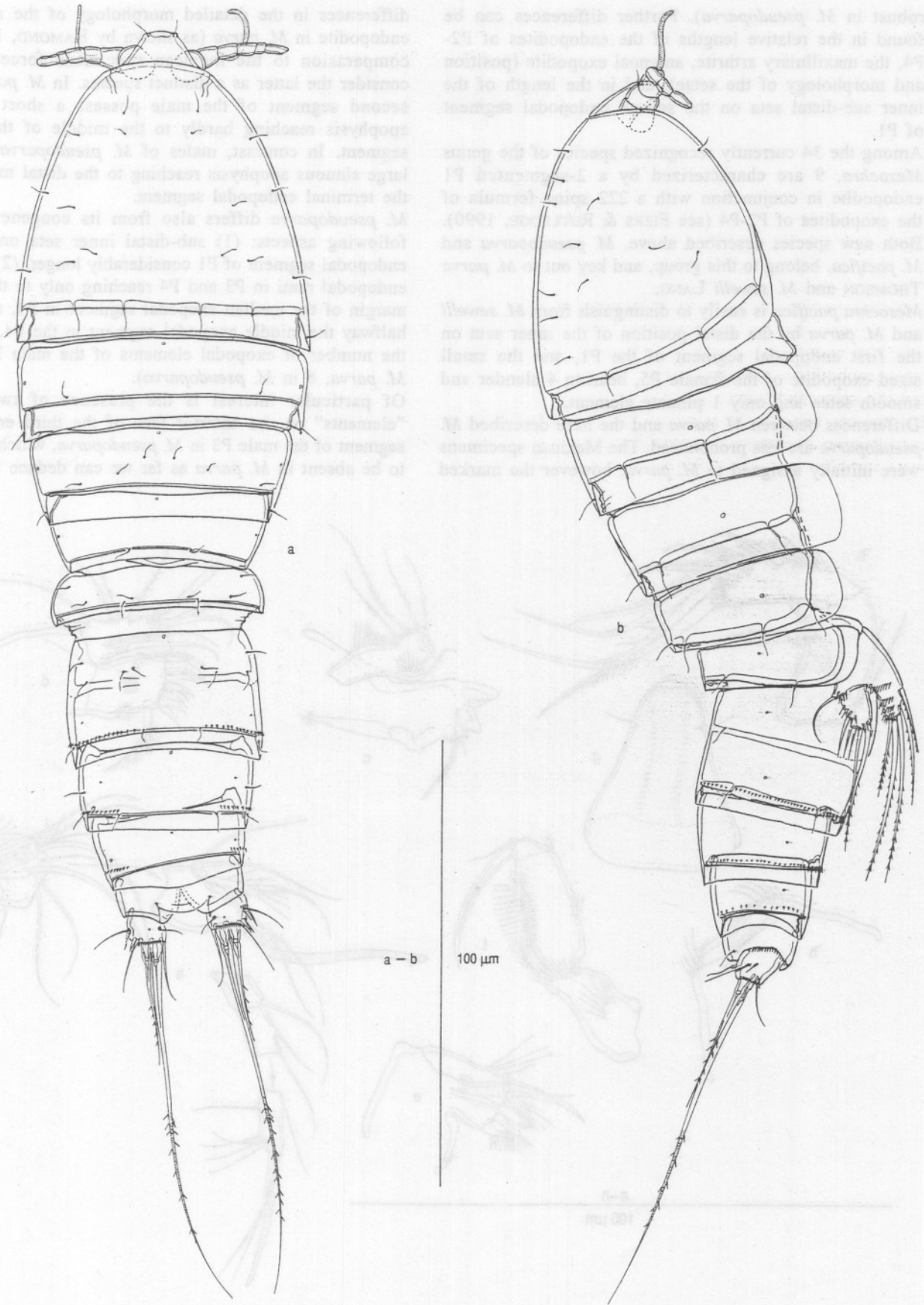


Fig. 8. *Mesochra pseudoparva* n. sp., female. a, habitus, dorsal view; b, idem, lateral view.

robust in *M. pseudoparva*). Further differences can be found in the relative lengths of the endopodites of P2-P4, the maxillulary arthrite, antennal exopodite (position and morphology of the setae), and in the length of the inner sub-distal seta on the second endopodal segment of P1.

Among the 34 currently recognized species of the genus *Mesochra*, 9 are characterized by a 2-segmented P1 endopodite in conjunction with a 222 spine formula of the exopodites of P2-P4 (see FIERS & RUTLEDGE, 1990). Both new species described above, *M. pseudoparva* and *M. pacifica*, belong to this group, and key out to *M. parva* THOMSON and *M. sewelli* LANG.

Mesochra pacifica is easily to distinguish from *M. sewelli* and *M. parva* by the distal position of the inner seta on the first endopodal segment of the P1, and the small sized exopodite of the female P5, bearing 4 slender and smooth setae and only 1 pinnate element.

Differences between *M. parva* and the here described *M. pseudoparva* are less pronounced. The Mexican specimens were initially assigned to *M. parva*, however the marked

differences in the detailed morphology of the male P3 endopodite in *M. parva* (as shown by HAMOND, 1971) in comparison to the mexican specimens forced us to consider the latter as a distinct species. In *M. parva*, the second segment of the male possess a short curved apophysis reaching hardly to the middle of the distal segment. In contrast, males of *M. pseudoparva* have a large sinuous apophysis reaching to the distal margin of the terminal endopodal segment.

M. pseudoparva differs also from its congener in the following aspects: (1) sub-distal inner seta on second endopodal segment of P1 considerably longer, (2) shorter endopodal rami in P3 and P4 reaching only to the distal margin of the median exopodal segment in P3, and only halfway the middle exopodal segment in the P4, and (3) the number of exopodal elements of the male P5 (5 in *M. parva*, 6 in *M. pseudoparva*).

Of particular interest is the presence of two small "elements" on the anterior face of the third endopodal segment of the male P3 in *M. pseudoparva*, which appears to be absent in *M. parva* as far we can deduce from the

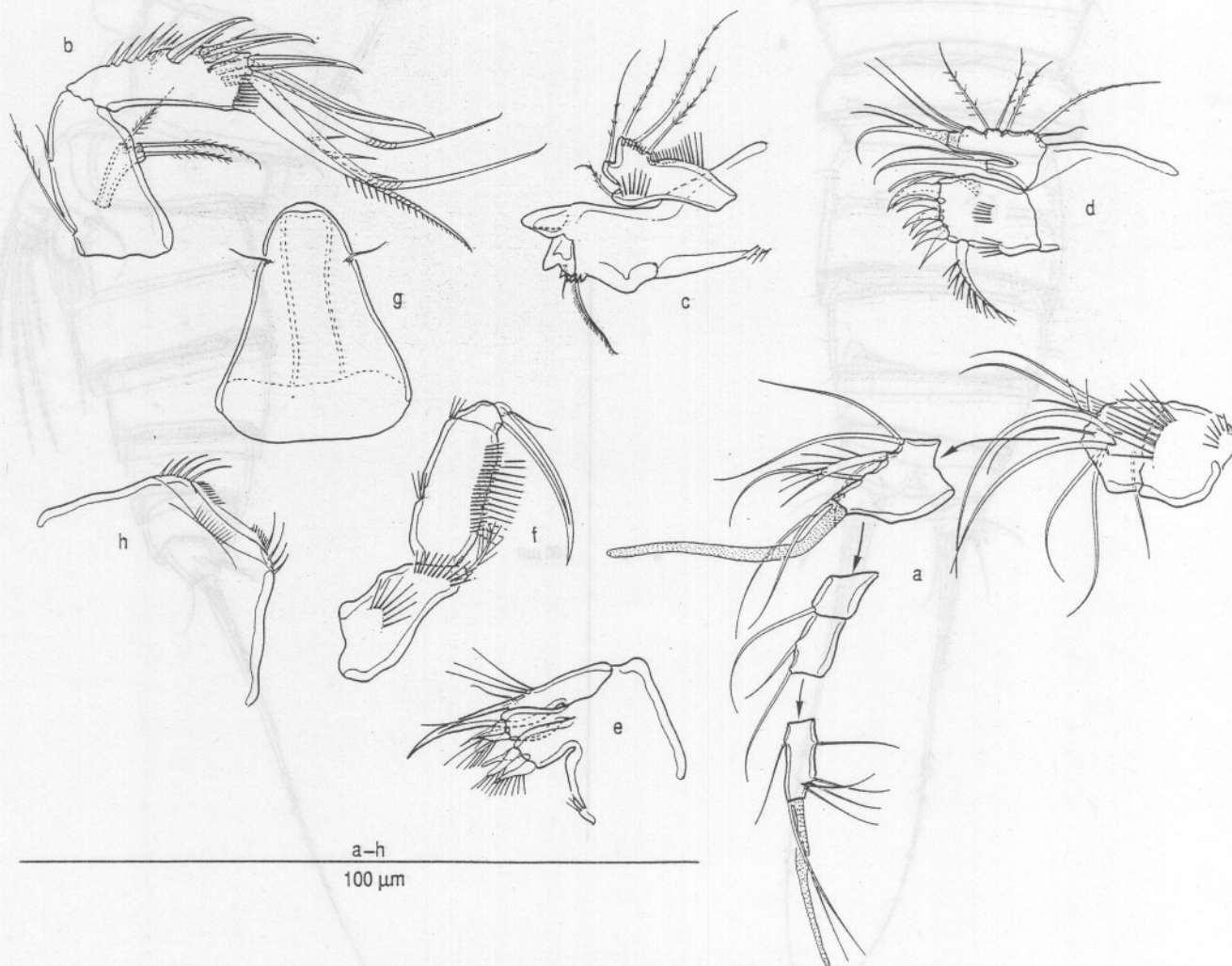


Fig. 9. *Mesochra pseudoparva* n. sp., female. a, antennule, dorsal view (exploded); b, antenna; c, mandible; d, maxillule; e, maxilla; f, maxilliped; g, rostrum; h, labrum.

illustration in HAMOND (1971). The two flame-shaped elements are inserted close to the inner edge of the segment (Fig. 13b) and form a small recurved fork. The tip of the apophysis seems to lie in close contact with these structures.

These structures are minute and have probably often been overlooked or misinterpreted. Reviewing the existing literature, comparable elements were found only in *M. wolskii* JAKUBISIAK, 1932 (in FIERS & RUTLEDGE, 1990, see Fig. 13d, herein) and *M. pontica* MARCUS, 1965 (in BODIN, 1972: Fig. 1). But, whether the two slender elements on the terminal P3 segment in *M. inconspiqua* (T. SCOTT, 1899) illustrated by MIELKE (1975: Fig. 62c) or in *M. lilljeborgi* BOECK, 1865 as shown by GURNEY (1932: Fig. 1001) are homologous can not be ascertained. In contrast, the sub-distal elements illustrated for *M. flava* in SOYER (1977: Fig. 5f) and *M. pallaresi* SOYER, 1977 in PALLARES (1968: Fig. 26:3), are considered not to be homologous as they occur on the outer sub-distal edge of the segment. Although the presence of these structures can easily be overlooked, not all species possess such elements. For instance the here described *M. pacifica*, and examination of *M. pygmaea* (CLAUS, 1863) from Corpus Christi Bay

(USA), and the Boulonnais (France) also clearly revealed that the male third endopodal segment lacked comparable structures.

It seems a general feature for Canthocamptidae and related families that those species with one or two setae on the inner margin of the second endopodal segment of the female P3, lack those elements in the P3 endopodite of the male. But, whether the two tiny elements observed here on the male P3 endopodite of *M. pseudoparva* are homologous with the two inner setae on the female P3 endopodite or they are novel structures, is impossible to conclude at this point.

Both structures arise in the distal third, near the inner margin, of the segment with their insertion point closely set. Such a position does not resemble the insertion point of the inner setae of the female P3 and leads us to presume that both male elements in question are novel in origin. However, observations (by the second author) on the development of *Canthocamptus staphylinus* JURINE, 1820 revealed that the two inner setae on the distal endopodal segment of the P3 appear in the third copepodid stage of both female and male juveniles. These setae gradually develop through successive stages in the female whereas

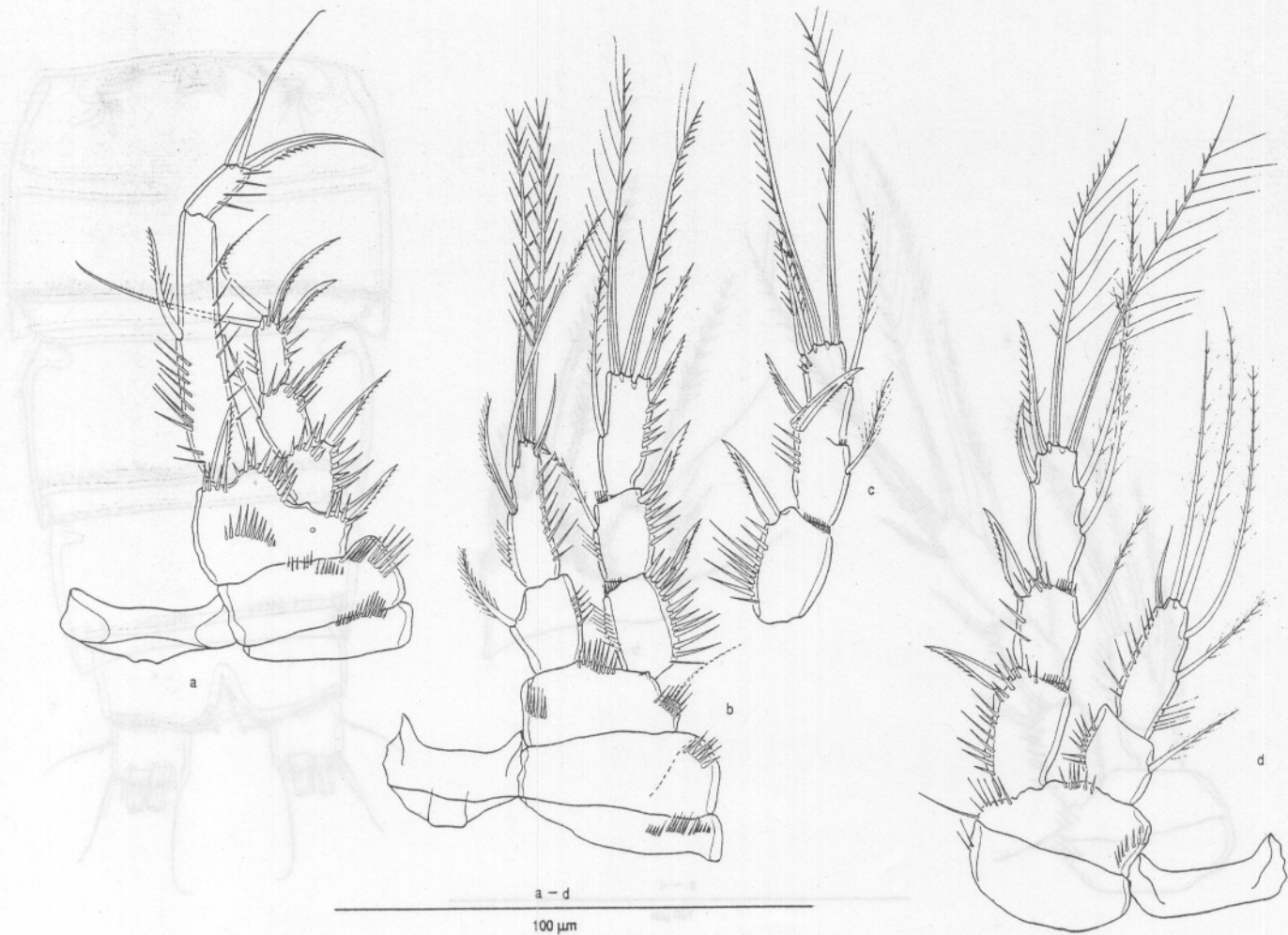


Fig. 10. *Mesochra pseudoparva* n. sp., female. a, P1; b, P2; c, P2 exopodite, aberrant; d, P3 (a-d anterior view).

in the male their development is arrested in the subsequent stages. Thus in *C. staphylinus* both these spinule/setule-like elements found on the inner margin of the distal segment of the adult male P3, are homologous with the two inner seta on the distal segment of the female P3 endopodite.

Based upon these developmental observations in *C. staphylinus*, we infer that the two minute elements found in the male and the two inner setae in the female of *M. pseudoparva* (and *M. wolskii*) are homologous structures. The novelty here is that the male elements have migrated in position, and seem to form a functional unit with the apophysis which arises from the median segment.

That the family Canthocamptidae *sensu* LANG, 1948 is a polyphyletic assemblage has been argued previously (i.e. in POR, 1986). An urgently needed, indepth revision of the family will undoubtedly lead to the removal of the genus *Mesochra* (and *Amphibiperita* FIERS & RUTLEDGE, 1990) from this family. Moreover, splitting up the genus *Mesochra* will be necessary as it constitutes an unnatural grouping. In conjunction with characters such as the

morphology of appendages, the presence or absence of integumental windows, and general shape of the male P3 endopodite, the presence or absence of the minute elements on the terminal segment of the male P3 endopodite may turn out to be of quite some importance to reveal the phylogenetic relationships within this taxon.

With the addition of the two new species herein to *Mesochra*, the key to the species (FIERS & RUTLEDGE, 1990) should be amended as follows:

Couplet 1 :

- | | |
|--|----|
| 1 - P1 endopodite three-segmented;
spine formula, 333 | 17 |
| - P1 endopodite three-segmented;
spine formula, 222 | 14 |
| - P1 endopodite three-segmented;
spine formula, 332 | 2 |
| - P1 endopodite two-segmented;
spine formula, 333 | 13 |
| - P1 endopodite two-segmented;
spine formula, 222 | 3 |

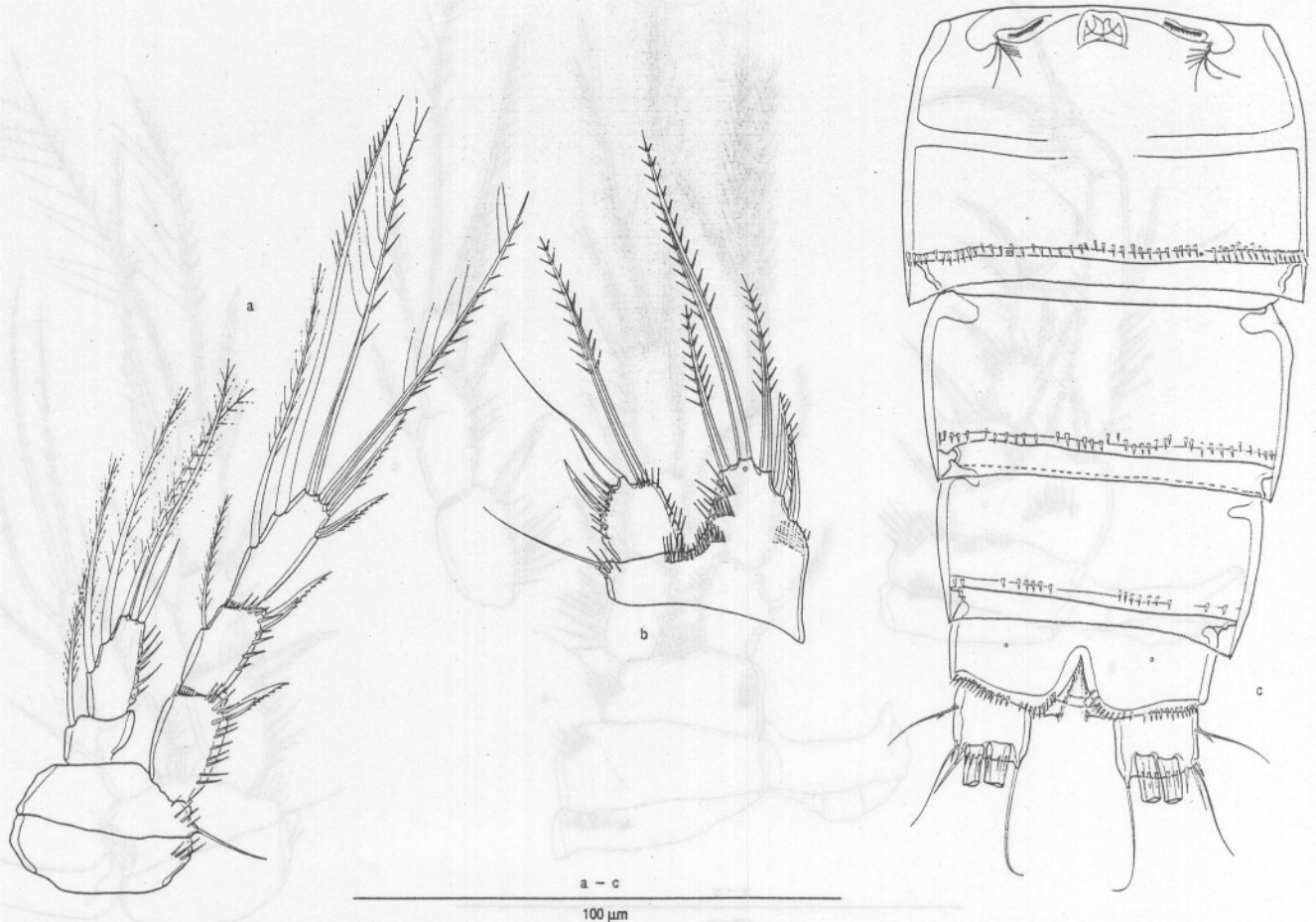


Fig. 11. *Mesochra pseudoparva* n. sp., female: a, P4, anterior view; b, P5, anterior view; c, urosome (fifth leg-bearing somite omitted), ventral view.

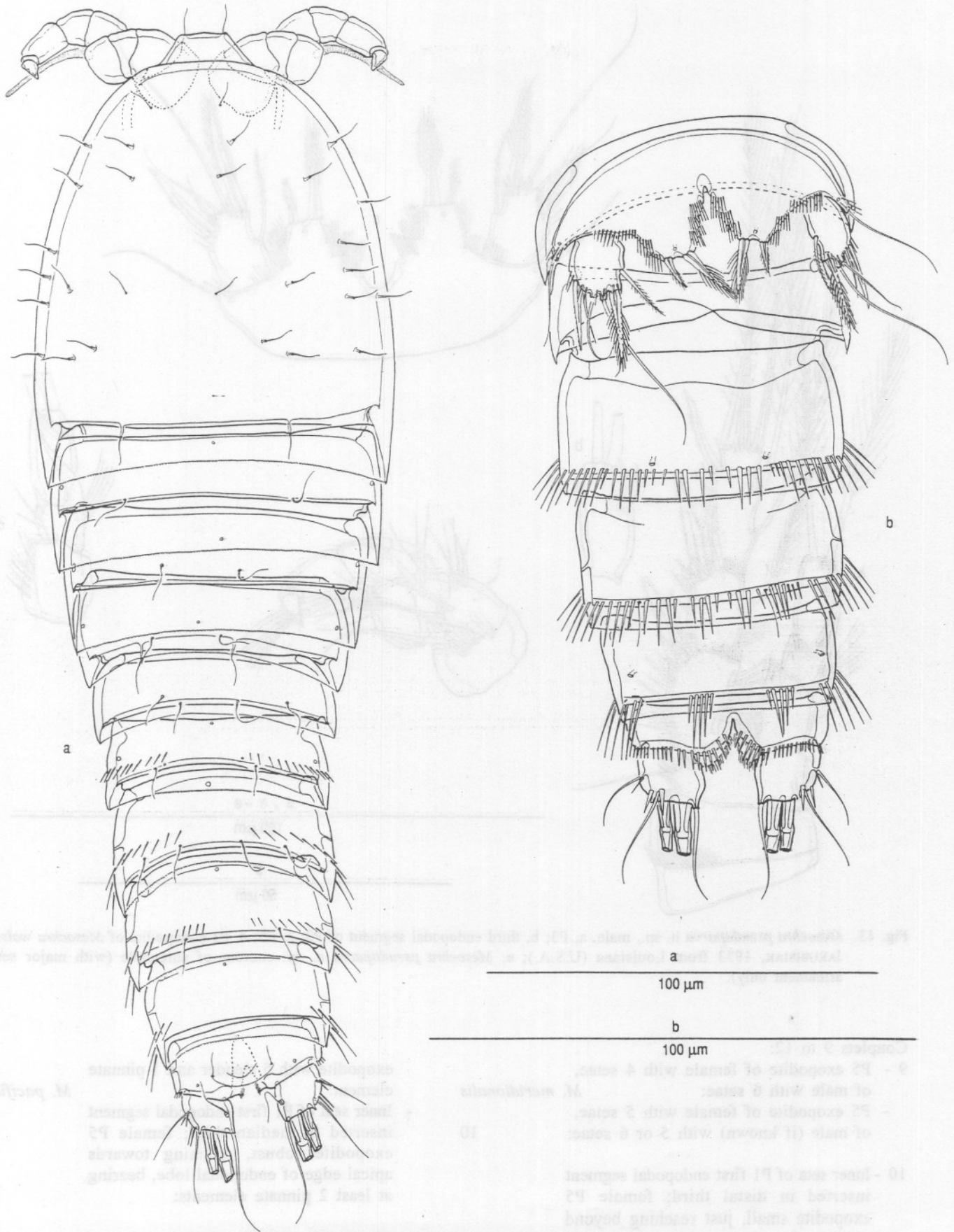


Fig. 12. *Mesochra pseudoparva* n. sp., male. a, habitus, dorsal view; b, urosome, ventral view.

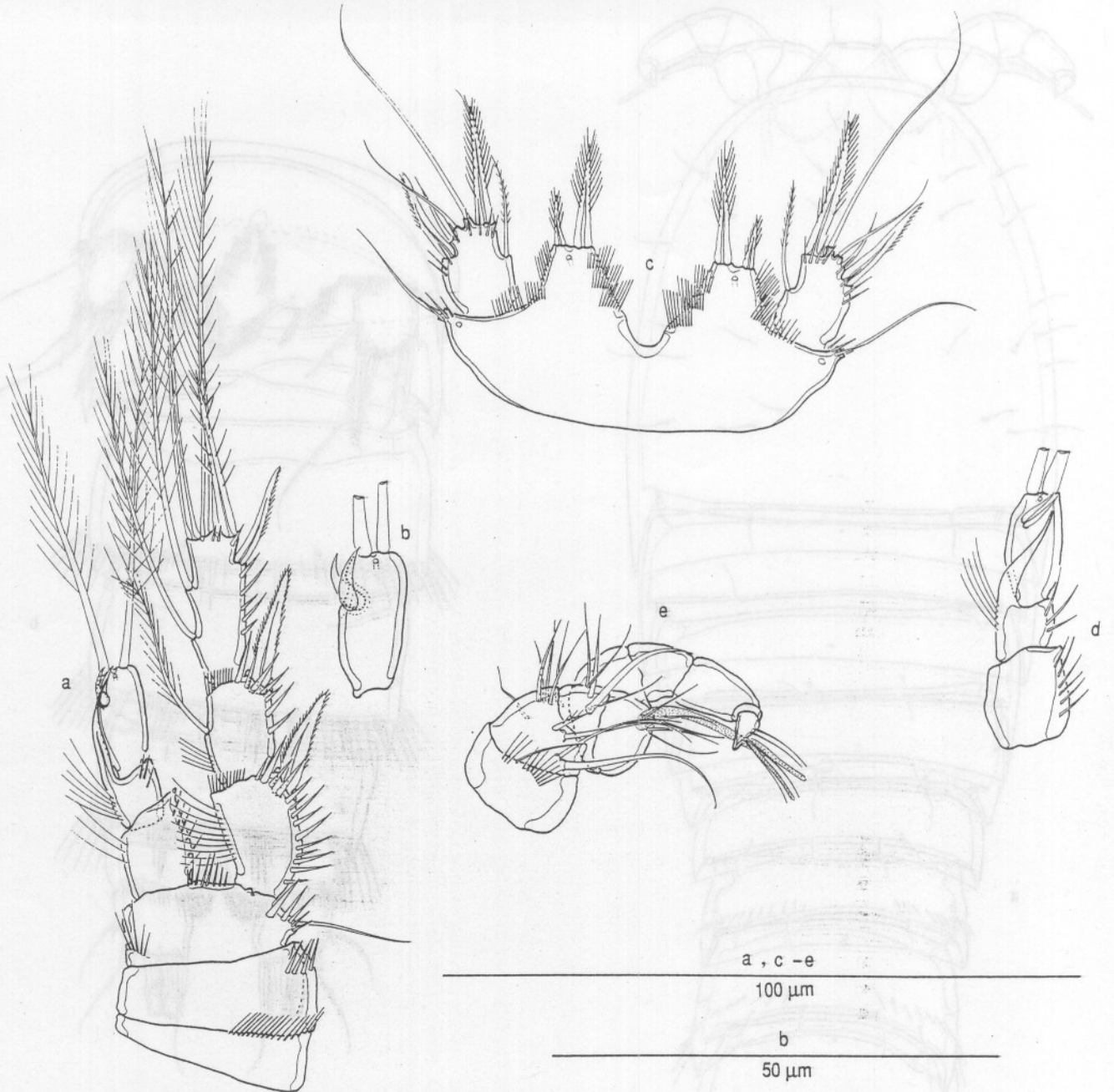


Fig. 13. *Mesochra pseudoparva* n. sp., male. a, P3; b, third endopodal segment of P3; c, P5; d, P3 endopodite of *Mesochra wolskii* JAKUBISIAK, 1933 from Louisiana (U.S.A.); e, *Mesochra pseudoparva* n. sp. contour of antennule (with major setal armament only).

Couplets 9 to 12:

9 - P5 exopodite of female with 4 setae,
of male with 6 setae: *M. meridionalis*
- P5 exopodite of female with 5 setae,
of male (if known) with 5 or 6 setae: 10

10 - Inner seta of P1 first endopodal segment
inserted in distal third; female P5
exopodite small, just reaching beyond
middle of endopodal lobe, bearing 4
slender and 1 pinnate element; male P5

exopodite with 5 slender and 1 pinnate
element: *M. pacifica*
- Inner seta of P1 first endopodal segment
inserted in median third; female P5
exopodite robust, reaching towards
apical edge of endopodal lobe, bearing
at least 2 pinnate elements: 11

11 - Female P5 with 5 robust setae/spines
on exopodite; inner 2 spines on

baseoendopodite twice as long as proximalmost spine:

- Female P5 with 3 slender and 2 robust elements; inner 2 proximal spines on baseoendopodite, equal and half as long as sub-distal one:

- 12 - Inner seta on second P1 endopodal segment shorter than supporting segment; P3 endopodite reaching to middle of third exopodal segment, of P4 towards distal end of median exopodal segment; male apophysis of P3 shorter than third segment; P5 exopodite of male fused with baseoendopodite:

- Inner seta on second P1 endopodal segment 1.5 times longer than supporting segment; P3 endopodite reaching only distal end of median exopodal segment, of P4 to middle distal of median exopodal segment; male apophysis on P3 as long as third segment; P5 exopodite of male not fused with baseoendopodite:

M. sewelli

12

M. parva

M. pseudoparva

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segment; P3 endopodite reaching
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Actinopterygii
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