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On a small collection of Tetragonicipitidae Lang, 1944 (Copepoda: Harpacticoida) from Mexico: new records and new species

Samuel Gómez[a]* and Francisco Neptali Morales-Serna[b]

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At present 151 species/subspecies distributed in 85 genera and 31 families are known from marine and freshwater systems in Mexico. Also, several species belonging to 78 genera and 25 families are yet to be described. Based on previous literature and new samplings, previous studies reported *Diagoniceps* cf. *monodi*, *Diagoniceps mexicana*, *Diagoniceps laevis*, *Godianiceps maya*, *Odaginiceps* cf. *elegantissima*, *Odaginiceps clarkae*, *Odaginiceps xamaneki*, *Oniscopsis robinsoni*, *Phyllopodopsyllus yucatanensis*, and *Phyllopodopsyllus* sp. nov. pauli group. Of these, *Diagoniceps* cf. *monodi* from Ensenada del Pabellon (Sinaloa), *Godianiceps maya* from off Campeche State, and *Odaginiceps* cf. *elegantissima* from off Veracruz State and from Ensenada del Pabellon (Sinaloa State) were reported earlier as 'unpublished' records. Additionally, an unidentified genus of Tetragonicipitidae, and the genera *Odaginiceps and Tetragoniceps* from Campeche State, and *Phyllopodospsyllus* and *Laophontella* from Campeche and Quintana Roo States were reported. The present contribution aims to formally report the following species found in samples from the Gulf of Mexico, Caribbean sea, Mexican Pacific, Gulf of California, and cenotes from the Yucatan Peninsula: *Laophontella horrida dentata Godianiceps maya, Odaginiceps elegantissima, Odaginiceps xamaneki* and *Phyllopodopsyllus tenuis.* Also, the illustrated description of three new species of three genera, *Phyllopodopsyllus parastigmosus* sp. nov., *Tarengoticeps yokotaanensis* gen. nov. et sp. nov. and *Adoginiceps camaxeni*, gen. nov. et sp. nov., are presented.

http://zoobank.org/urn:lsid:zoobank.org:pub:36481904-D8F5-4F26-B3FE-B3AC362DAB18

Keywords: Tetragonicipitidae; Harpacticoida; new species; new records; Mexico

Introduction

The study of harpacticoid copepods from Mexico has been largely disregarded due to a number of factors, of which, the lack of specialists is the most important. As noted by Gómez and Morales-Serna (2014), the first records of harpacticoid copepods date back to the first half of the twentieth century when Wilson (1936) reported some species from cenotes and caves of Yucatán. In the most recent checklist of Mexican harpacticoids, Gómez and Morales-Serna (2014) reported 151 species/subspecies of marine and freshwater harpacticoids distributed in 85 genera and 31 families and pointed out that the species of 78 genera are waiting to be described. In their Table 1, Gómez and

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Morales-Serna (2014, p. 114) reported 10 species of Tetragonicipitidae (*Diagoniceps* cf. *monodi* Chappuis and Kunz, 1955; *Diagoniceps mexicana* Fiers, 1995; *Diagoniceps laevis* Willey, 1930; *Godianiceps maya* Fiers, 1995; *Odaginiceps* cf. *elegantissima* Fiers, 1995; *Odaginiceps clarkae* Fiers, 1995; *Odaginiceps xamaneki* Fiers, 1995; *Oniscopsis robinsoni* Chappuis and Delamare Deboutteville, 1956; *Phyllopodopsyllus yucatanensis* Fiers, 1995; *Phyllopodopsyllus* sp. nov. pauli group) [for a complete list of species and references see Gómez and Morales-Serna (2014)]. Of these, *D.* cf. *monodi* from Ensenada del Pabellon (Sinaloa State), *G. maya* from off Campeche State, and *O.* cf. *elegantissima* from off Veracruz State and from Ensenada del Pabellon (Sinaloa State) were reported by Gómez and Morales-Serna (2014) as 'unpublished' records. However, after thorough examination, the specimen referred to as *D.* cf. *monodi* turned out to belong to a new genus and new species, *Adoginiceps camaxeni* gen. nov. et sp. nov., whose diagnosis is given herein. Additionally, in their table 2, Gómez and Morales-Serna (2014) mentioned an unidentified genus of Tetragonicipitidae, and the genera *Odaginiceps* Fiers, 1995 *and Tetragoniceps* Brady, 1880 from Campeche State, and *Phyllopodopsyllus* T. Scott, 1906 and *Laophontella* Thompson and A. Scott, 1903 from Campeche and Quintana Roo States. The unidentified specimen of the genus Tetragonicipitidae along with the specimen of *Phyllopodopsyllus* from Tabasco State (not Campeche State as in Gómez and Morales-Serna 2014, Appendix 2: 121) turned out to be representatives of *Phyllopodopsyllus tenuis* Wells and Rao, 1987. The material of *Phyllopodopsyllus* from Quintana Roo State will be reported elsewhere. Additionally, another species of *Phyllopodopsyllus* from Ensenada del Pabellon (Sinaloa State) not reported by Gómez and Morales-Serna (2014), is described as a new species, *Phyllopodopsyllus parastigmosus* sp. nov. After careful inspection, the material attributed to the genus *Odaginiceps* from Campeche State turned out to belong to *O. xamaneki* and the material attributed to *Tetragoniceps* turned out to belong to a new genus and to a new species, *Tarengoticeps yokotaanensis* gen. nov. et sp. nov. whose diagnosis is presented herein, and the specimen of *Laophontella* from Quintana Roo State turned out to be conspecific to *Laophontella horrida dentata* Mielke, 1992. The present contribution aims to formally report the following species found in samples from the Gulf of Mexico, Caribbean sea, Mexican Pacific, Gulf of California, and cenotes from the Yucatan Peninsula: *L. horrida dentata, G. maya, O. elegantissima, O. xamaneki* and *P. tenuis*. Also, the illustrated description of one new species, *P. parastigmosus* sp. nov., and two additional new genera and two new species, *T. yokotaanensis* gen. nov. et sp. nov. and *A. camaxeni*, gen. nov. et sp. nov., are presented.

Material and methods

A number of marine sediment samples were taken during the course of some short-term projects at different locations in Quintana Roo (Yucatan Peninsula), Ensenada del Pabellón lagoon (Sinaloa State, northwestern Mexico), off Campeche and Veracruz States (Gulf of Mexico) aimed at obtaining better knowledge of the diversity of harpacticoid copepods and of the effects of offshore oil platforms and organic enrichment on these benthic communities.

Sediment samples were sieved through 500- and 40-μm sieves and benthic copepods were separated under a stereomicroscope. Specimens were stored in 70% ethanol. Observations and drawings were made from whole and dissected specimens at 1000 × magnification under a Leica DMLB microscope equipped with phase contrast and a drawing tube. Dissected specimens were mounted in lactophenol, and both the material preserved in alcohol and the dissected material were deposited in the Copepoda collection (EMUCOP) of the Instituto de Ciencias del Mar y Limnología, Mazatlán Marine Station. The terminology proposed by Huys and Boxshall (1991) for general descriptions was adopted. Abbreviations used in the text and tables: CIV, fourth copepodid; P1–P6, first to sixth swimming legs; EXP, exopod; ENP, endopod; P1(P2–P4)EXP (ENP)1(2,3) denotes the proximal (middle, distal) exopodal (endopodal) segment of P1, P2, P3 or P4; BENP, baseoendopod; ae, aesthetasc.

Taxonomy

Family **TETRAGONICIPITIDAE** Lang, 1944
Genus ***Laophontella*** Thompson and A. Scott, 1903
Laophontella Thompson and A. Scott, 1903 in Gómez and Morales-Serna (2014)
Laophontella horrida dentata Mielke, 1992

Locality

Nohoch Nah Chich system, Casa Cenote, Quintana Roo; 20.2662° N, 87.3902° W.

Material examined

One adult female, dissected (EMUCOP 010408–01).

Remarks

Laophontella horrida dentata was described by Mielke (1992) from the Pacific coast of Costa Rica. The species was found also in sediment samples taken from the coast of São Paulo (Brazil) (Björnberg et al. 2007). The species is reported here from the Nohoch Nah Chich cave system (Casa Cenote, Quintana Roo) showing preference for well-oxygenated and coarse sediments.

Genus ***Godianiceps*** Fiers, 1995
Godianiceps maya Fiers, 1995

Locality

Off Campeche State; 18.8394°N, 92.2777°W; 18 m depth.

Material examined

One adult male, dissected (EMUCOP-04); one adult male in alcohol (EMUCOP-05).

Remarks

The genus *Godianiceps* was created by Fiers (1995) for a new tetragonicipitid species, *G. maya*, found in samples from Nichupté lagoon (Quintana Roo, Mexico). The species has also been reported by Suárez-Morales et al. (2009) from the southwest coast of the Gulf of Mexico. So far, *G. maya* has been found in shallow waters up to 3 m in depth. The specimens reported here were found at a depth of 18 m. The species shows preference for sandy and well-oxygenated shallow habitats.

Genus ***Odaginiceps*** Fiers, 1995
Odaginiceps elegantissima Fiers, 1995

Locality

Off Campeche State (not Veracruz State as in Gómez and Morales-Serna 2014 Appendix 1: 114); 18.7525° N, 92.5028° W; 16 m depth; Ensenada del Pabellón, Sinaloa State; 24.3167–24.5833° N, 107.4667–107.75° W.

Material examined

One adult female, dissected (EMUCOP-06); two adult males, dissected (EMUCOP 020591–06, EMUCOP 020591–07).

Remarks

See below.

Odaginiceps xamaneki Fiers, 1995

Odaginiceps Fiers, 1995 in Gómez and Morales-Serna (2014, Appendix 2: 121)

Locality

Off Campeche State; 18.7525° N, 92.5028° W; 16 m depth.

Material examined

One adult female, dissected (EMUCOP-07); one adult male dissected (EMUCOP-08); one adult male, one adult female and one male C IV in alcohol (EMUCOP-09).

Remarks

The genus *Odaginiceps* was created by Fiers (1995) to accommodate *O. clarkae* Fiers, 1995 as the type species, *O. elegantissima* and *O. xamaneki*. At present the genus is composed of the preceding species and *O. immanis* Fiers and De Troch, 2000, and *O. korykosensis* Karaytug, Sak and Alper, 2010. *Odaginiceps elegantissima* has been reported from Bermuda only. The records of *O. elegantissima* presented herein extend its distribution range to the southern region of the Gulf of Mexico and to the Tropical Eastern Pacific. The species shows preference for sandy-silt sediments of relatively shallow systems (up to 16 m depth) (Fiers 1995; Gómez-Noguera and Hendrickx 1997). *Odaginiceps xamaneki* was originally described by Fiers (1995) from samples collected from the western region of the Yucatan continental shelf. The record of this species presented herein extends its distribution range to the coasts of Campeche State. The species has been found at depths of 40.9 m (Fiers 1995) and 16 m (present study), and shows preference for sandy and well-oxygenated sediments.

Genus ***Phyllopodopsyllus*** T. Scott, 1906
Phyllopodopsyllus tenuis Wells and Rao, 1987
(Figures 1A, B, 2A–C, 3A–D, 4A–F, 5A–C, 6A–C, 7A–D)

Phyllopodopsyllus T. Scott, 1906 in Gómez and Morales-Serna (2014)

Locality

Off Tabasco State (not Campeche State as in Gómez and Morales-Serna 2014, Appendix 2: 121); 18.6169° N, 93.5° W; 36 m depth; 18.6189° N, 94.00° W; 24 m depth.

Material examined

One adult female, dissected (EMUCOP-11–00); one adult male, dissected (EMUCOP-12–00).

Partial redescription

Female. Habitus fusiform; tapering from posterior margin of cephalothorax to anal somite. Second and third urosomites fused forming genital double-somite, with remains of former division ventrally, completely fused dorsally (Figure 1A, B). Genital double-somite and following urosomite with ventral and dorsal pores and sensilla as figured (Figure 1A, B). Fifth urosomite without pores and sensilla. Anal somite (Figure 1A, B) as long as preceding somite; dorsally (Figure 1A) with two pores and two sensilla, ventrally (Figure 1B) with two pores close to medial cleft; with spinules along posterior margin ventrally; with rounded anal operculum ornamented with spinules along posterior margin (Figure 1A). Caudal rami as figured, elongate, about 3.4 times as long as broad, with longitudinal row of inner setules along distal third; with seven setae as follows: seta I and II in proximal fifth, the former small and ventral to seta II, the latter about four times as long as the former; seta III about halfway along outer margin of caudal ramus, as long as seta II; seta IV as long as seta III, fused to seta V, the latter with swollen proximal part; seta VI inserted on inner distal corner of caudal ramus, half as long as seta IV; seta VII longer than seta III, inserted dorsally at same level as seta III, biarticulated.

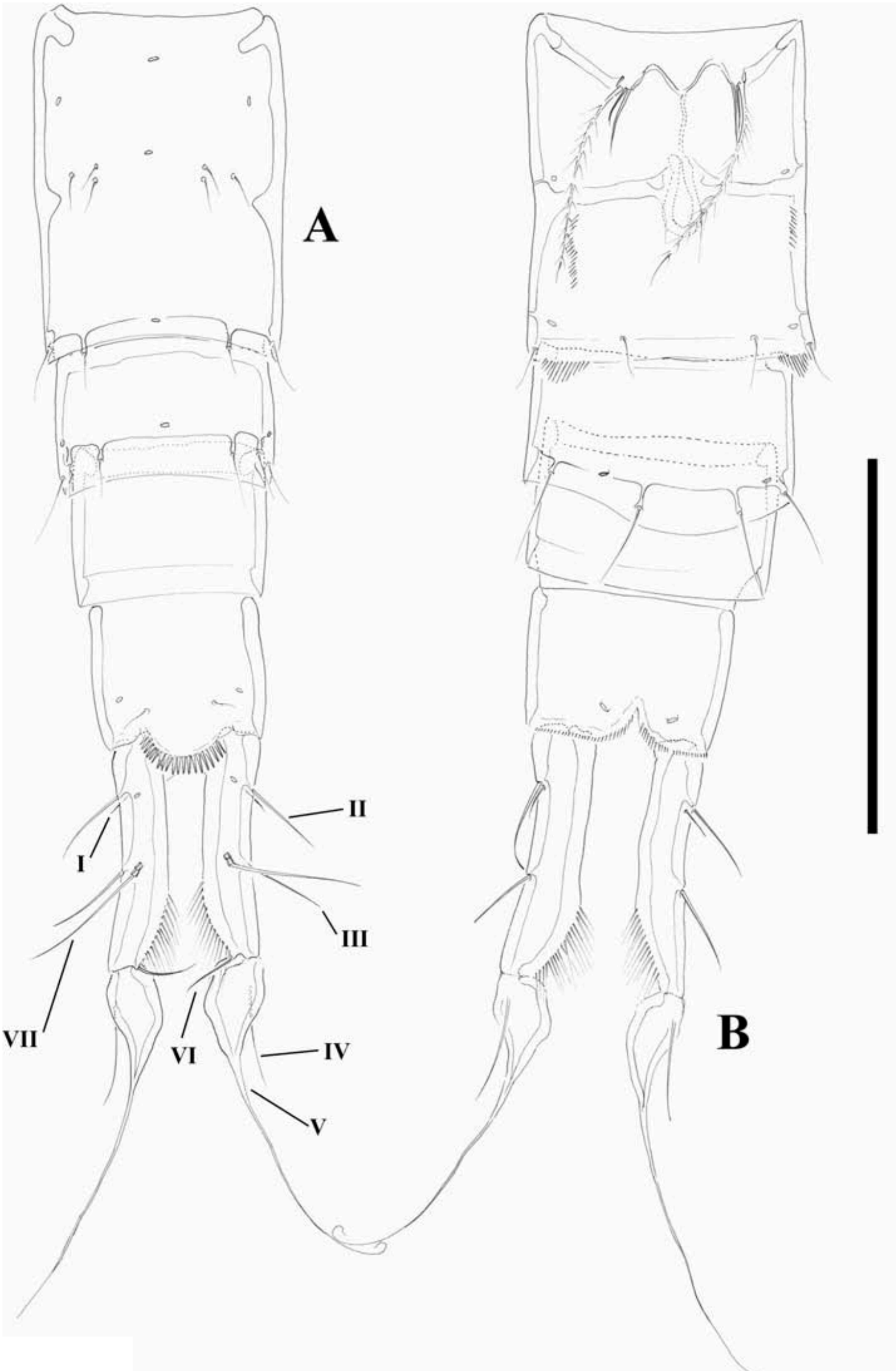

Figure 1. *Phyllopodopsyllus tenuis* Wells and Rao, 1987. Female. (A) Urosome, dorsal, P5 bearing-somite omitted; (B) urosome, ventral, P5 bearing-somite omitted. Scale bars: A, B, 100 μm.

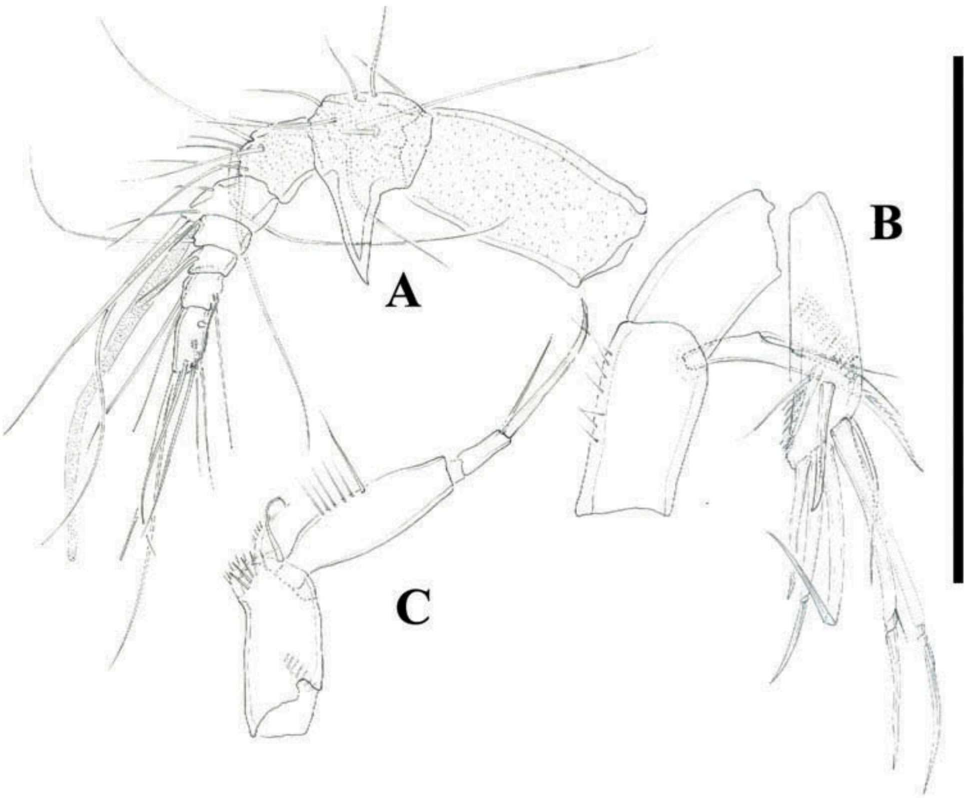

Figure 2. *Phyllopodopsyllus tenuis* Wells and Rao, 1987. Female. (A) Antennule; (B) antenna; (C) maxilliped. Scale bars: A, 100 μm; B, C, 70 μm.

Antennule (Figure 2A). Eight-segmented; first segment elongate, about 2.3 times as long as broad; second segment slightly longer than broad, with strong acute process; all setae bare; armature formula as follows: 1(1); 2(7); 3(8); 4(3+(1+ae)); 5(2); 6(3); 7(3); 8(4+(1+ae)).

Antenna (Figure 2B). With basis about 1.7 times as long as broad, with inner longitudinal row of setules; exopod one-segmented, with three elements; distalmost element fused to exopod. First endopodal segment without armature; second endopodal segment with medial and distal hyaline frills; with one slender seta and two spines laterally, and with six elements distally as shown.

Maxilliped (Figure 2C). Syncoxa with spinules and with three inner elements as figured. Basis with some setules and with one seta along inner margin as shown; endopodal segment small, elongate, about three times as long as broad, with long and slender claw and one seta.

P1 (Figure 3A-C). Only one leg was recovered. Coxa (Figure 3A) large, with some minute spinules medially. Basis (Figure 3A) with outer and inner element as shown.

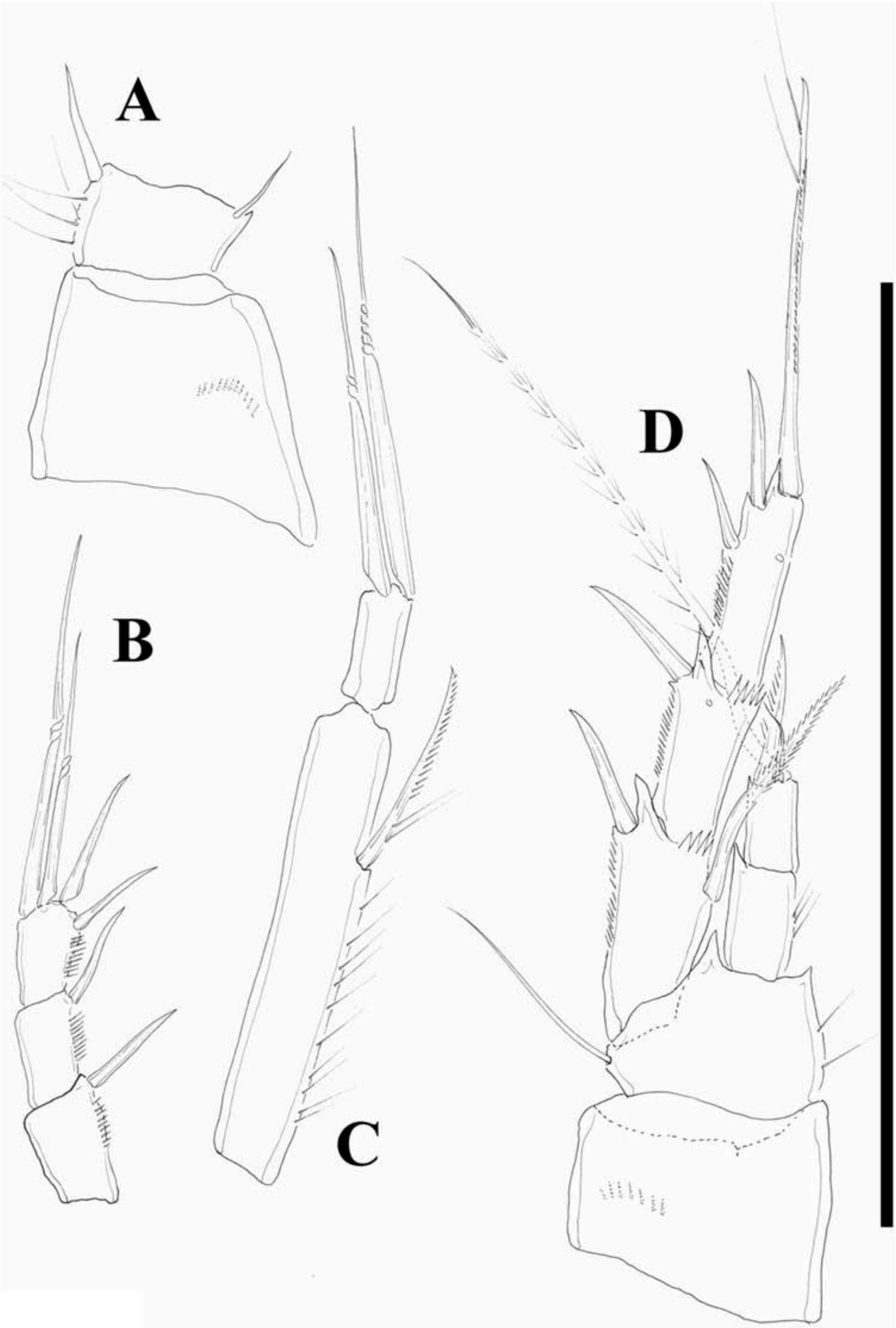

Figure 3. *Phyllopodopsyllus tenuis* Wells and Rao, 1987. Female. (A) Basis of P1, anterior; (B) P1 EXP, anterior; (C) P1 ENP, anterior; (D) P2, anterior. Scale bars: A–D, 100 μm.

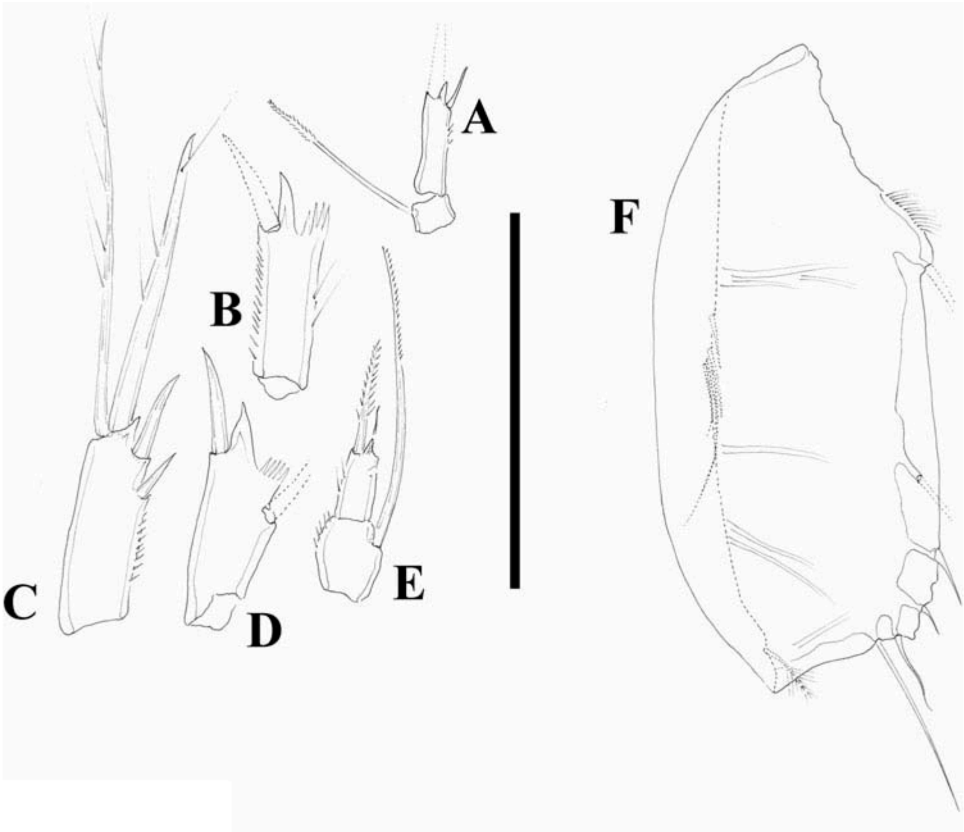

Figure 4. *Phyllopodopsyllus tenuis* Wells and Rao, 1987. Female. (A) P4 ENP, anterior; (B) P3 EXP2, anterior; (C) P3 EXP3, anterior; (D) P3 EXP1, anterior; (E) P3 ENP, anterior; (F) P5, anterior. Scale bars: A–E, 50 µm; F, 100 µm.

Exopod (Figure 3B) three-segmented; first and second segments with outer minute spinules and outer spine; third segment with four elements. Endopod (Figure 3C) two-segmented; first segment elongate, about 5.7 times as long as broad, with one inner element on distal third; second segment small, about twice as long as broad, with two apical elements.

P2 (Figure 3D). Only the left P2 was recovered completely. Coxa large with spinules as shown. Basis with some inner setules, with outer long seta. Exopod three-segmented; first segment with, second segment without inner seta; third segment with four elements in all (innermost distal seta probably lost during dissection). Endopod two-segmented, reaching about middle of second exopodal segment; first segment unarmed; second segment with three elements (one minute innermost and one medial long seta, and one outermost spiniform element).

P3 (Figure 4B-E). Both legs badly damaged. Exopod three-segmented; first segment with inner seta (Figure 4D), second segment (Figure 4B) without inner seta; third

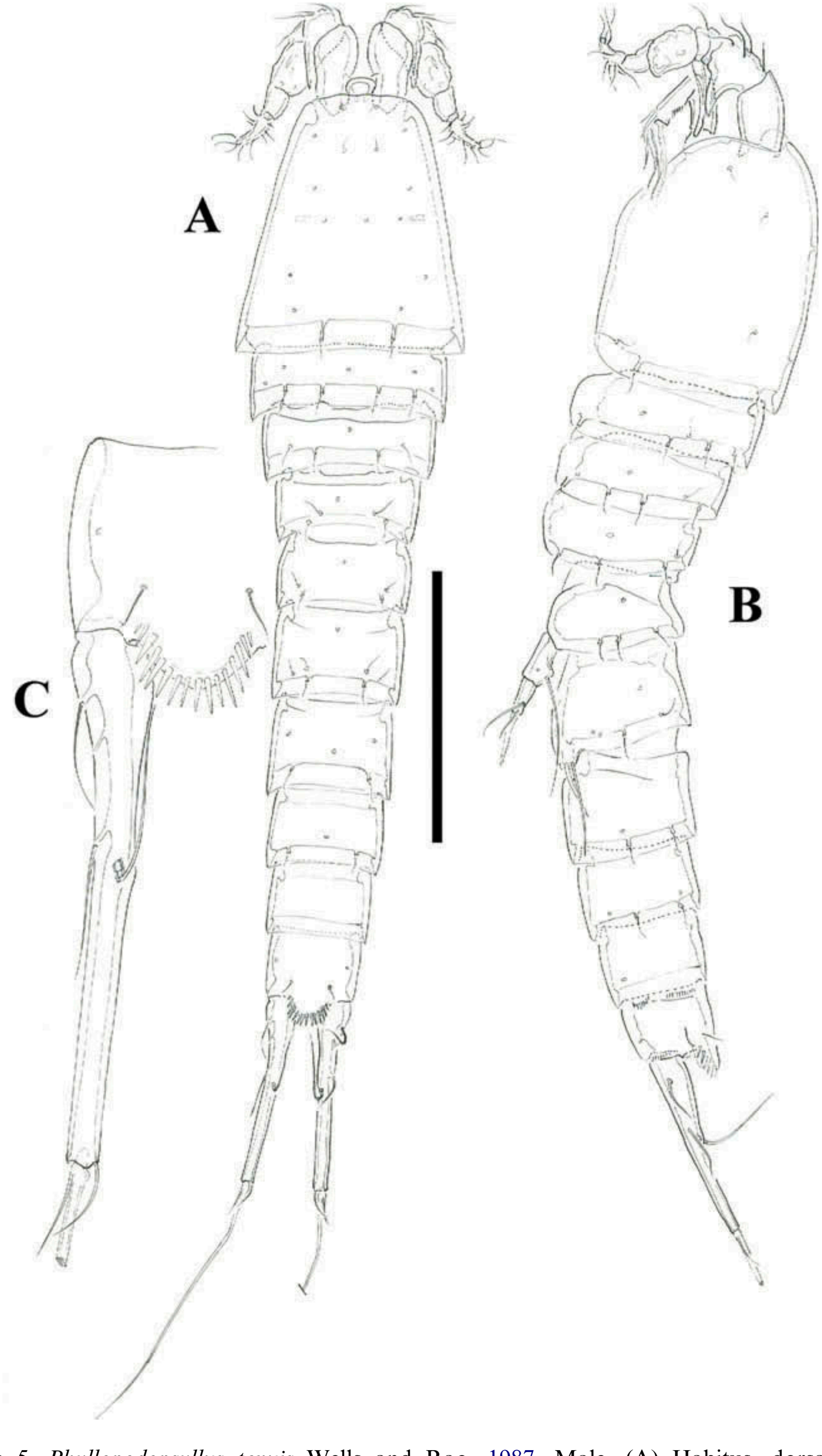

Figure 5. *Phyllopodopsyllus tenuis* Wells and Rao, 1987. Male. (A) Habitus, dorsal; (B) habitus, lateral; (C) anal somite and left caudal ramus, dorsal. Scale bars: A, B, 100 μm; C, 286 μm.

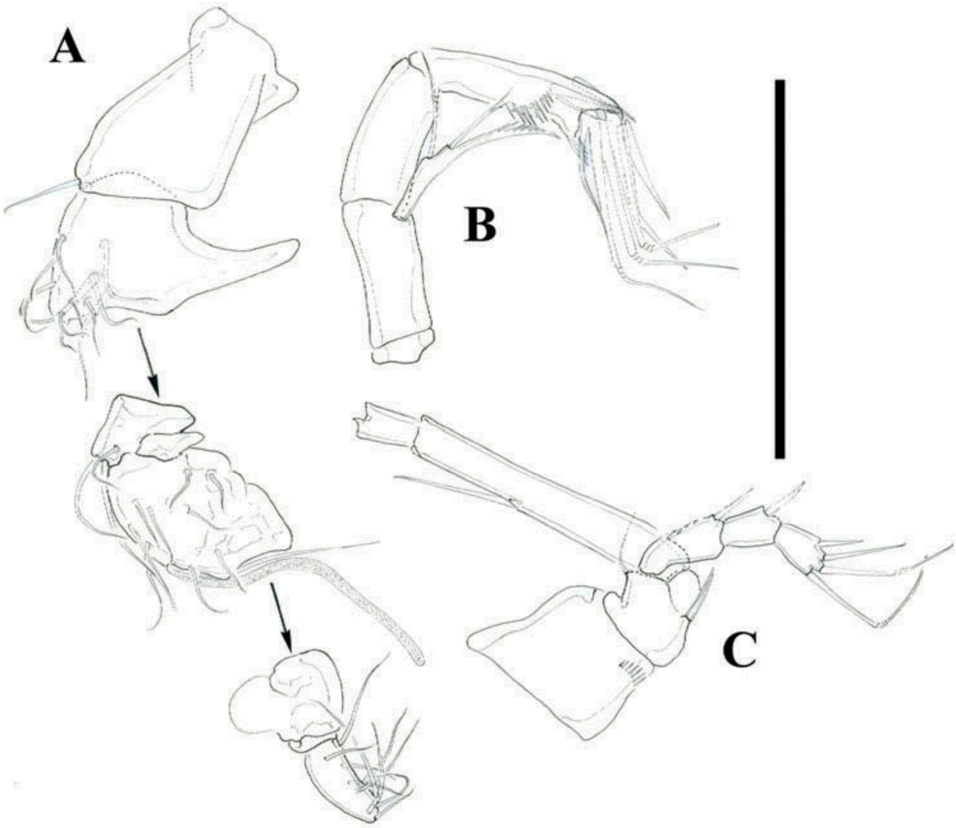

Figure 6. *Phyllopodopsyllus tenuis* Wells and Rao, 1987. Male. (A) Antennule; (B) antenna; (C) P1, anterior. Scale bars: A–C, 50 µm.

segment (Figure 4C) with four elements. Endopod two-segmented (Figure 4E); first segment with one inner seta; second segment with three elements (one lost during dissection).

P4. Badly damaged. Endopod (Figure 4A) two-segmented; first segment with one inner seta; second segment with two elements.

P5 (Figure 4F). Large, foliose, forming brood pouch; with 10 elements.

P6 (Figure 1B). Each leg represented by small lobe bearing one long outer seta and two inner elements.

Male. Habitus (Figure 5A, B) fusiform; tapering from posterior margin of cephalothorax to anal somite. Body length measured from anterior tip of rostrum to posterior margin of caudal rami, 270 µm. Rostrum minute (Figure 5A). Surface ornamentation of urosomites as in female. Anal somite and anal operculum

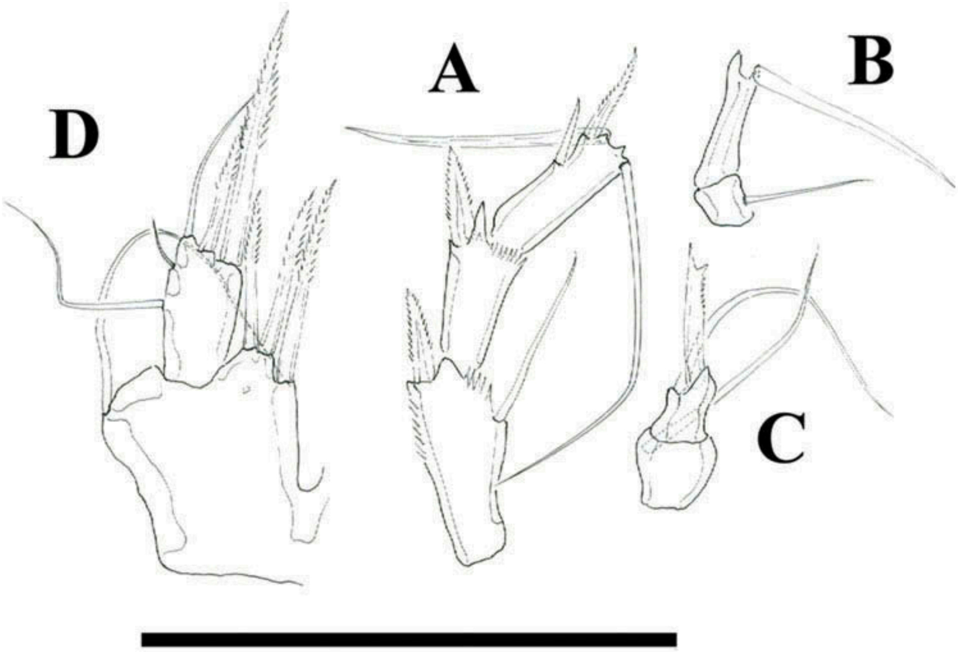

Figure 7. *Phyllopodopsyllus tenuis* Wells and Rao, 1987. Male. (A) P2 EXP, anterior; (B) P4 ENP, anterior; (C) P3 ENP, anterior; (D) P5, anterior. Scale bars A–D, 50 µm.

(Figure 5C) as in female. Caudal rami sexually dimorphic, elongate, about 11 times as long as wide, with seven setae (Figure 5C).

Antennule (Figure 6A). seven-segmented, subchirocer; first segment elongate, about 1.3 times as long as wide; second segment nearly as long as wide, with strong acute process. Armature formula difficult to define, most probably as follows: 1(1); 2(11); 3(3); 4(9+(1+ae)); 5(0); 6(0); 7(10+(1+ae)?).

Antenna (Figure 6B). As in female.

P1 (Figure 6C). Badly damaged, as in female.

P2. Badly damaged. Exopod (Figure 7A) as in female. Endopod lost during processing.

P3. Badly damaged. Exopod lost during processing. Endopod (Figure 7C) two-segmented, sexually dimorphic, first segment with one element, second segment with one strong bifid and one slender seta.

P4. Badly damaged. Endopod (Figure 7B) two-segmented; first and second segments with one seta each.

P5 (Figure 7D). Baseoendopod of both legs confluent, with outer basal seta and with three elements on inner endopodal lobe. Exopod with five setae as shown.

Remarks

See below.

Phyllopodopsyllus parastigmosus sp. nov.
(Figures 8A, B, 9A, B, 10A–D, 11A, B, 12A, B, 13A–D, 14, 15A–D)

Type locality

Ensenada del Pabellón, Sinaloa State; 24.3167–24.5833° N, 107.4667–107.75° W.

Type material

Female holotype, dissected (EMUCOP-010192–01); male allotype, dissected (EMUCOP-010192–02).

Etymology

The specific name alludes to the strong resemblance to *P. stigmosus* Wells and Rao, 1987.

Description

Female. Habitus (not shown) fusiform; tapering from posterior margin of cephalothorax to anal somite. Second and third urosomites fused forming genital double-somite, with remains of former division ventrally, completely fused dorsally (Figure 8A, B). Genital double-somite and following urosomite with ventral and dorsal pores and sensilla and spinules as figured (Figure 8A, B). Fifth urosomite without sensilla, with two ventral pores. Anal somite (Figure 8A, B) slightly shorter than preceding somite; dorsally (Figure 8A) with two pores and two sensilla, ventrally (Figure 8B) with two pores close to medial cleft; with minute spinules along posterior margin ventrally; with rounded anal operculum ornamented with spinules along posterior margin (Figure 8A). Caudal rami as figured, elongate, about 3.7 times as long as broad; with six setae as follows: seta II in proximal third ventrally; seta III smaller than seta II, situated laterally on distal fourth of ramus; seta IV as long as seta III, fused to seta V; seta VI inserted on inner distal corner of caudal armus, half as long as seta IV; dorsal seta VII long, biarticulated.

Antennule (Figure 9A). Eight-segmented; first segment elongate, about 2.3 times as long as broad; second segment slightly longer than broad, with strong acute process; armature formula as follows: 1(1); 2(9); 3(8); 4(3+(1+ae)); 5(2); 6(3); 7(4); 8(5+(1+ae)).

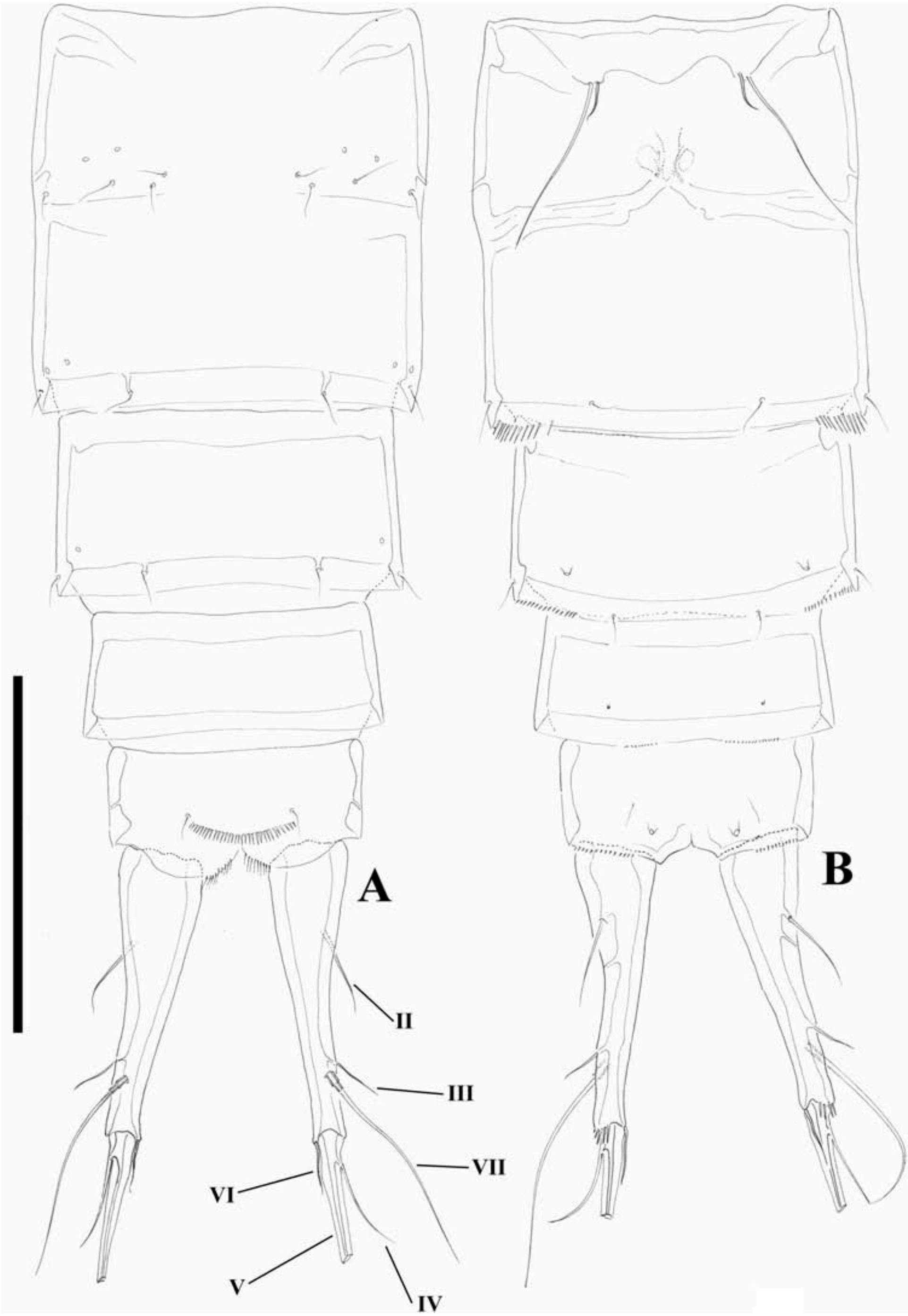

Figure 8. *Phyllopodopsyllus parastigmosus* sp. nov. Female. (A) Urosome, dorsal, P5 bearing-somite omitted; (B) urosome, dorsal, P5 bearing somite omitted. Scale bars: A, B, 100 µm.

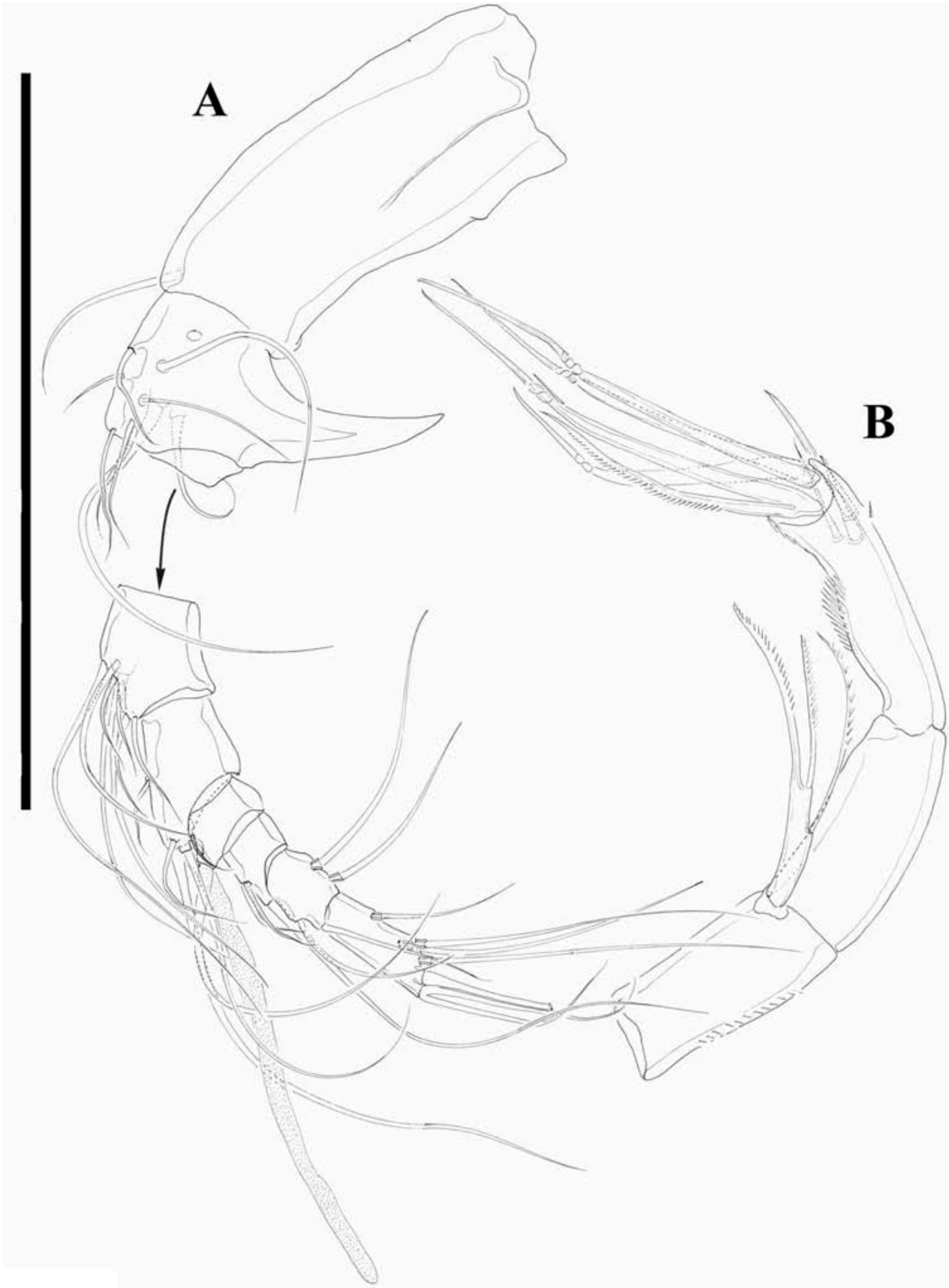

Figure 9. *Phyllopodopsyllus parastigmosus* sp. nov. Female. (A) Antennule; (B) antenna. Scale bars: A, B, 100 μm.

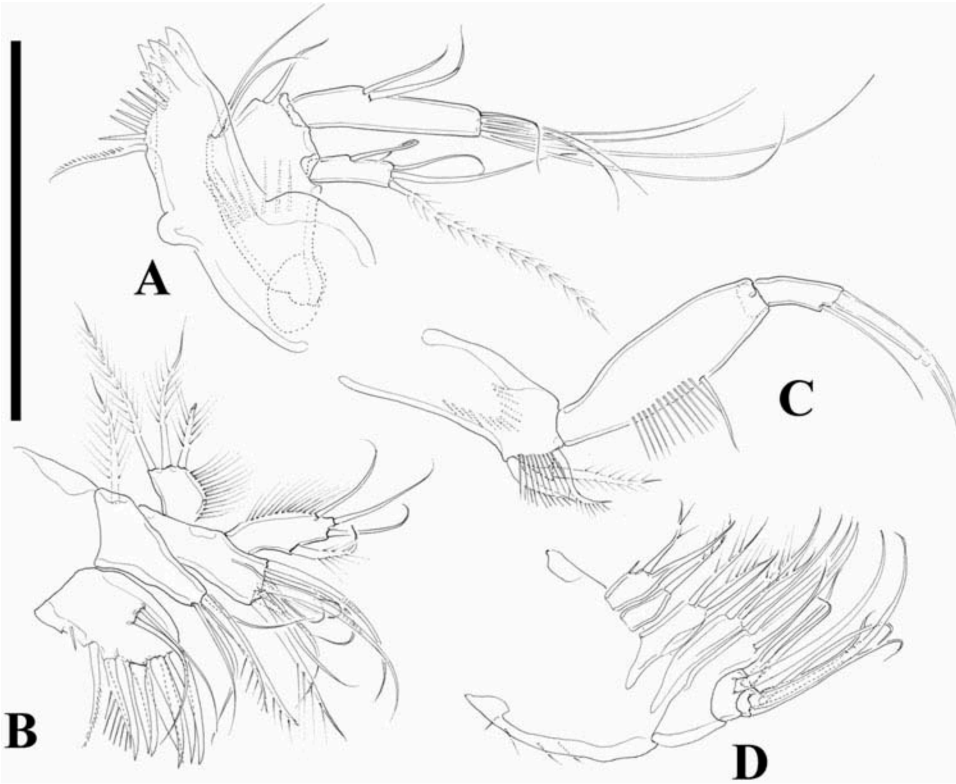

Figure 10. *Phyllopodopsyllus parastigmosus* sp. nov. Female. (A) Mandible; (B) maxillule; (C) maxilliped; (D) maxilla. Scale bars: A–D, 50 μm.

Antenna (Figure 9B). With basis; the latter about twice as long as broad, with inner longitudinal row of minute spinules; exopod one-segmented, with three elements (apicalmost fused to exopod). First endopodal segment without armature; second endopodal segment with medial and distal hyaline frills; with one slender seta and two spines laterally, and with five elements distally as shown.

Mandible (Figure 10A). Gnathobase with three bicuspidate teeth, some spinules and one lateral pinnate seta. Coxa-basis with some medial spinules as shown, with three setae. Exopod one-segmented, with two lateral and seven distal setae. Endopod one-segmented, with one lateral and three distal setae.

Maxillule (Figure 10B). Arthrite of praecoxa with two surface setae, one lateral pinnate seta and eight distal spines. Coxa with epipodal plumose seta and with two pinnate and three slender apical elements. Basis with eight setae. Exopod one-segmented, large, with one lateral strong seta, two subdistal and one apical element. Endopod one-segmented, small, with three setae.

Maxilla (Figure 10D). Syncoxa with four endites; proximal endite with two, second endite with one, third endite with three, distal endite with three setae. Basis with

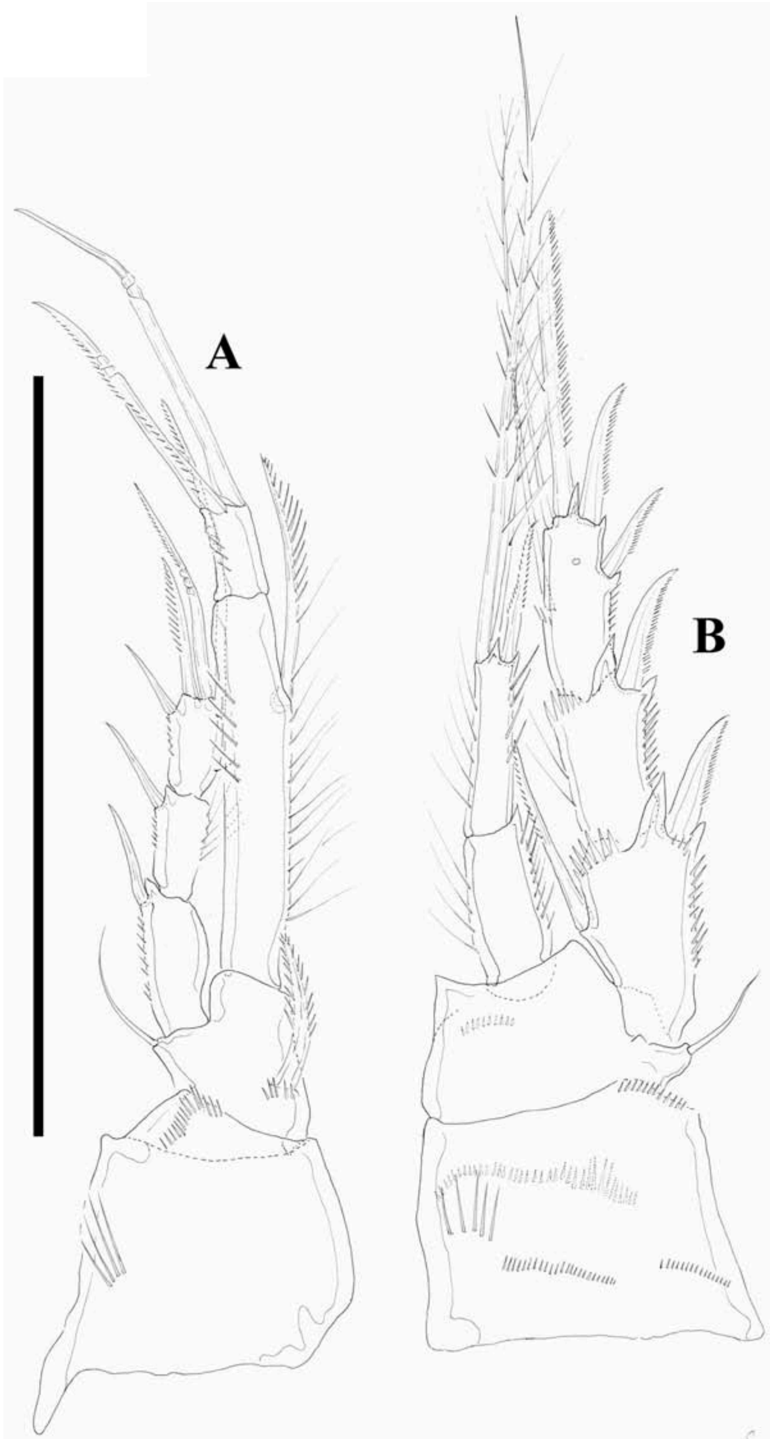

Figure 11. *Phyllopodopsyllus parastigmosus* sp. nov. Female. (A) P1, anterior; (B) P2, anterior. Scale bars: A, B, 100 μm.

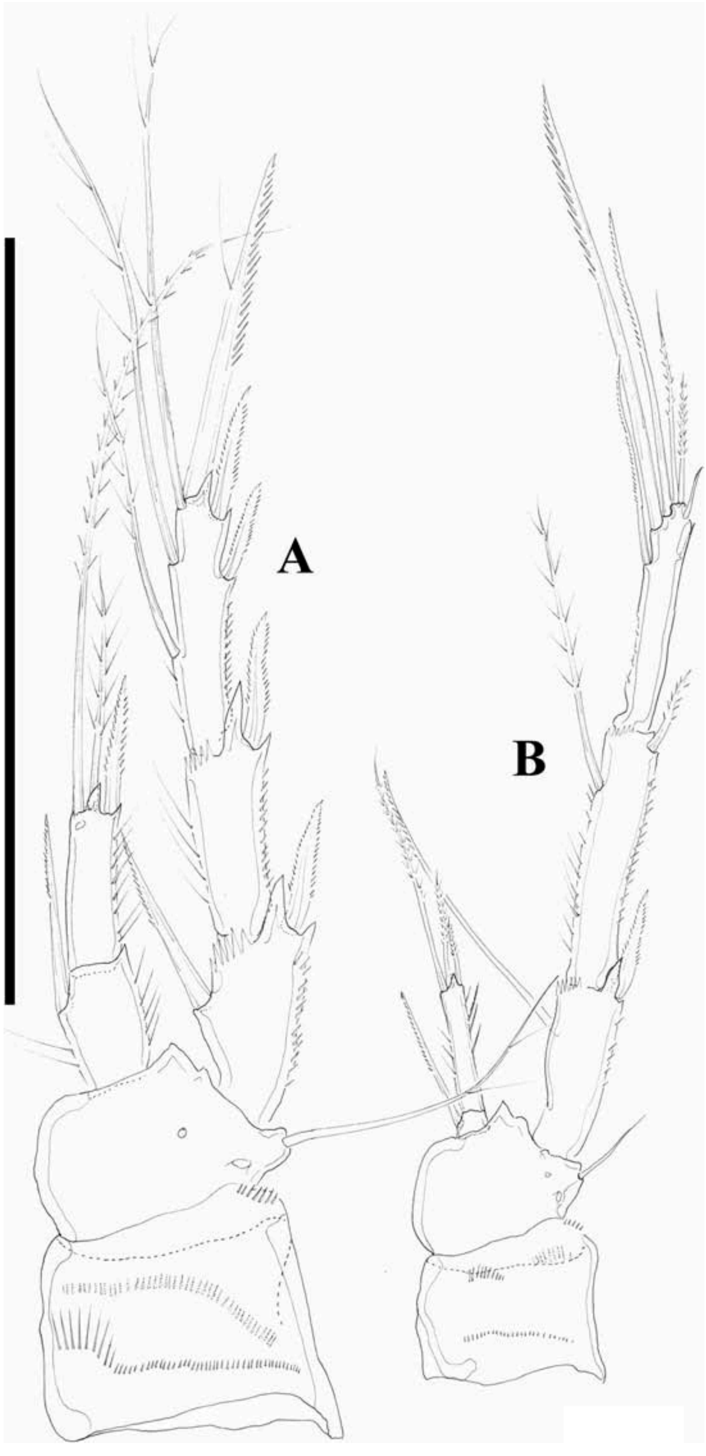

Figure 12. *Phyllopodopsyllus parastigmosus* sp. nov. Female. (A) P3, anterior; (B) P4, anterior. Scale bars: A, 100 µm; B, 143 µm.

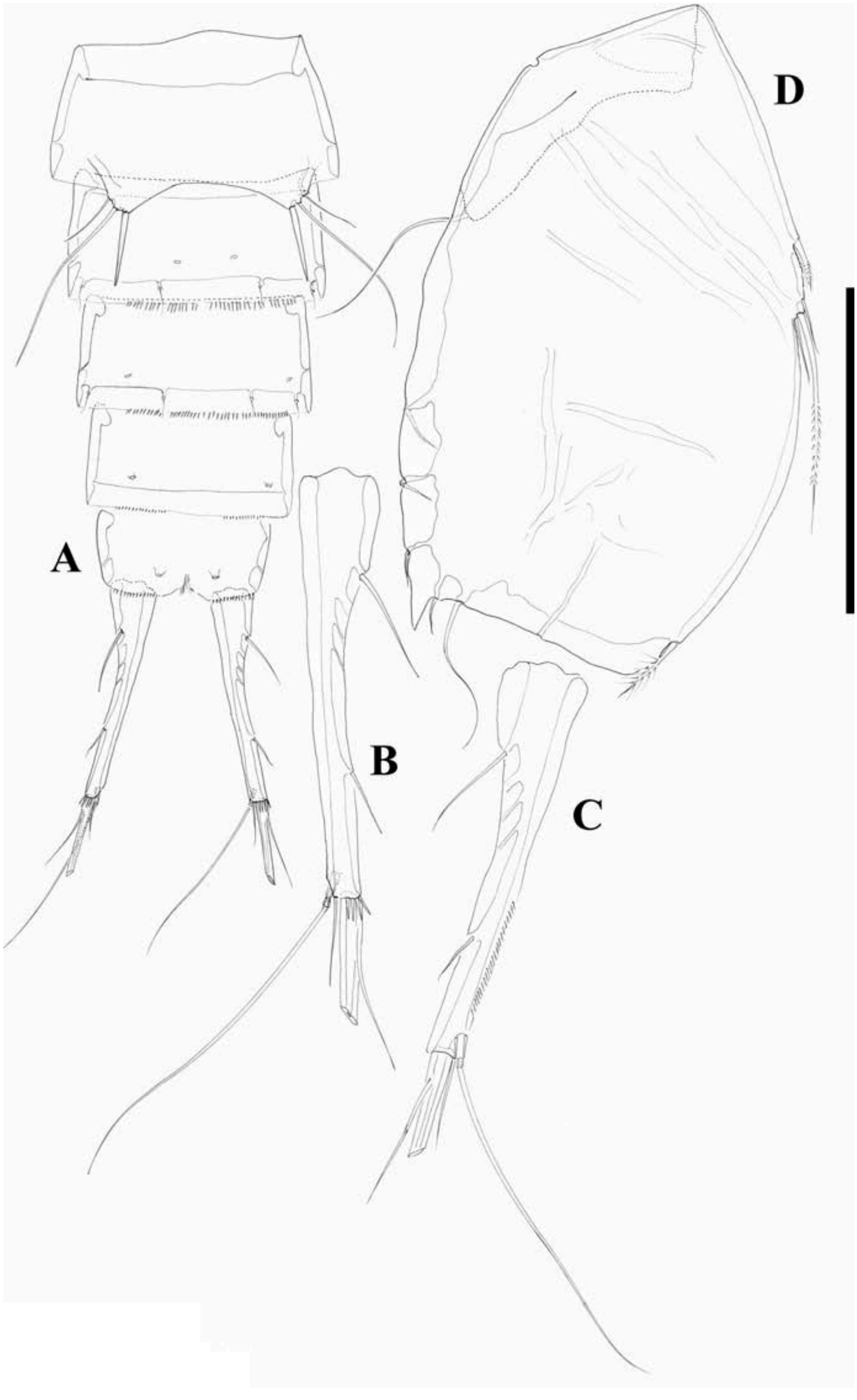

Figure 13. *Phyllopodopsyllus parastigmosus* sp. nov. Male. (A) Urosome, ventral, P5 bearing-somite omitted; (B) left caudal ramus, ventral; (C) left caudal ramus, dorsal. Female. (D) P5, anterior. Scale bars: A, D, 100 µm; B, C, 50 µm.

Figure 14. *Phyllopodopsyllus parastigmosus* sp. nov. Male. Antennule. Scale bar: 50 µm.

strong claw and two slender setae. Endopod two-segmented; first segment with three, second segment with four setae.

Maxilliped (Figure 10C). Syncoxa with spinules as figured and with three inner setae. Basis with longitudinal row of inner spinules and with one inner seta; endopodal segment elongate, with long claw and one seta.

P1 (Figure 11A). Coxa large, with spinules as figured. Basis with outer slender seta and strong bipinnate inner spine; with sparse spinules at base of inner element. Exopod three-segmented; first and second segments with outer spine; third segment with four elements. Endopod two-segmented; first segment elongate, about 5.7 times

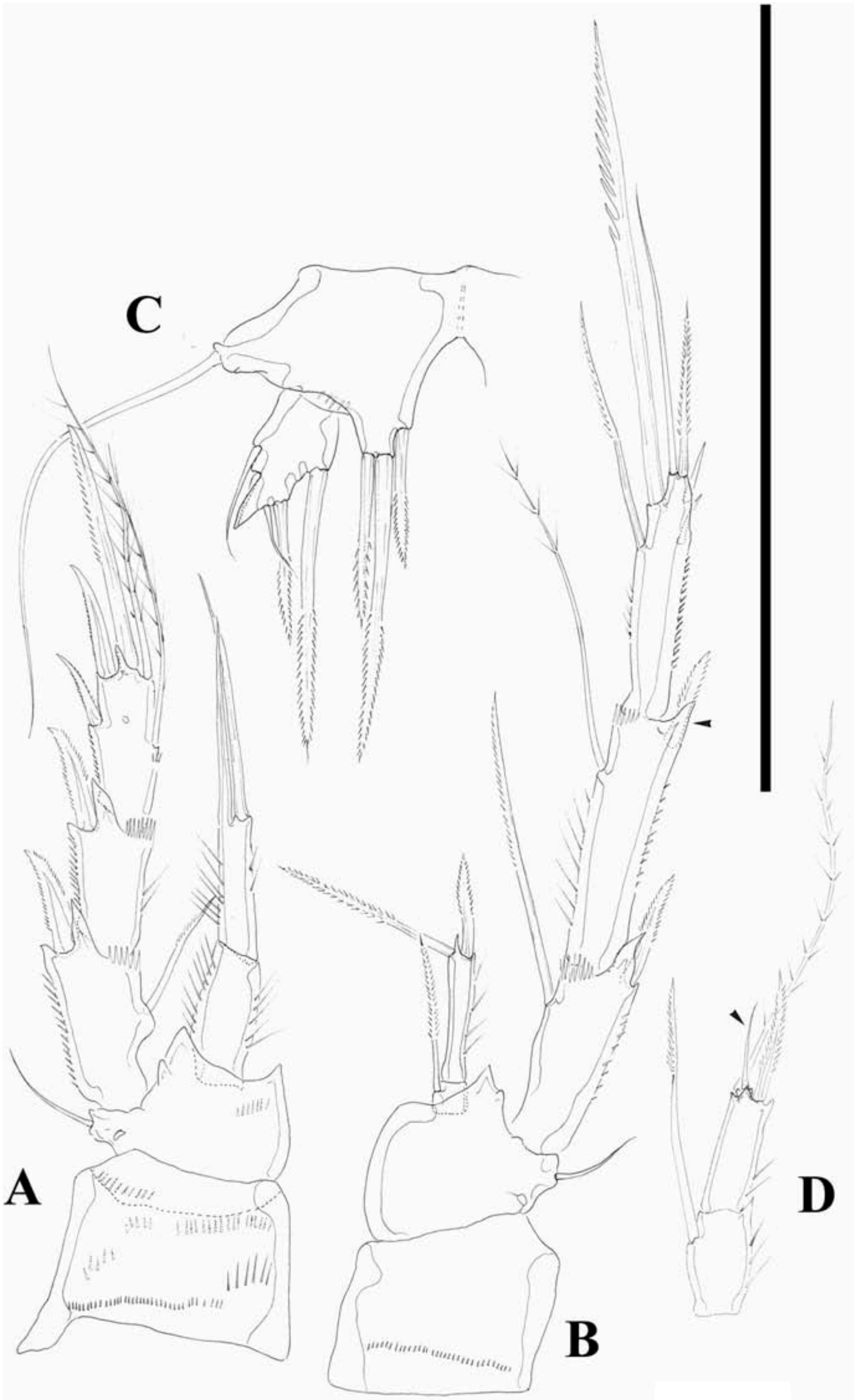

Figure 15. *Phyllopodopsyllus parastigmosus* sp. nov. Male. (A) P2, anterior; (B) P4, anterior; (C) P5 anterior; (D) P3 ENP. Scale bars: A–D, 100 µm.

as long as broad, with one inner element on distal third; second segment small, about twice as long as broad, with two apical elements.

P2 (Figure 11B). Coxa large, with spinules as shown. Basis with sparse posterior spinules, with outer long seta. Exopod three-segmented; first segment with inner seta, second segment without inner seta; third segment with two outer spines, two apical and one inner element. Endopod two-segmented, reaching about proximal fifth of EXP3; first segment unarmed; second segment with three elements.

P3 (Figure 12A). Coxa large, with spinules as shown. Basis with outer long seta. Exopod three-segmented; first segment with, second segment without inner seta; third segment with two outer spines, two apical and two inner elements. Endopod two-segmented, reaching about the distal fourth of EXP2; first segment with one inner element; second segment with three elements.

P4 (Figure 12B). Coxa large, with spinules as shown. Basis with outer long seta. Exopod three-segmented; first and second segments with inner seta; third segment with two outer small spines, two apical and three inner elements as shown. Endopod two-segmented, reaching tip of EXP1; first segment small, with one inner element; second segment elongate, with three setae.

P5 (Figure 13D). Large, foliose, forming brood pouch; with 11 setae.

P6 (Figure 8B). Each leg represented by small lobe bearing one long outer and one minute inner seta.

Male. Habitus (not shown) as in female. Surface ornamentation of urosomites as in female, except for continuous row of minute spinules along posterior margin of third and fourth urosomites ventrally. Anal somite and anal operculum (Figure 13A) as in female. Caudal rami more slender than in female, elongate, about 5.7 times as long as wide, with six setae (Figure 13A–C); all setae as in female, except for seta VII situated more distally in male.

Antennule (Figure 14). Seven-segmented, subchirocer; first segment elongate, about 1.8 times as long as wide; second segment nearly as long as wide, with strong acute process. Armature formula difficult to define, most probably as follows: 1(1); 2(9); 3(6); 4(9+(1+ae)); 5(0); 6(1); 7(10+(1+ae)?).

Antenna, mandible, maxillule, maxilla and maxilliped (not shown). As in female.

P1 (not shown). As in female.

P2 (Figure 15A). Coxa, basis and exopod as in female. Endopod two-segmented; first segment unarmed; second segment sexually dimorphic, with one inner apophysis and one seta distally.

P3EXP (not shown). As in female. Endopod (Figure 15D) as in female except for comparatively longer seta of ENP1 and smaller medial seta of ENP2.

P4 (Figure 15B). Coxa and basis as in female. Exopod as in female except for outer distal process at base of outer spine of male EXP2 (triangular arrow in Figure 15B) and for six instead of seven elements in EXP3. Endopod as in female except for two instead of three setae on ENP2.

P5 (Figure 15C). Baseoendopods of both legs fused, with outer basal seta and with three elements on inner endopodal lobe. Exopod with five setae as shown; with acute distal process.

P6 (Figure 13A). Represented by transverse plate bearing both P6; each leg represented by well-developed lobe bearing three elements.

Remarks

Phyllopodopsyllus tenuis was originally described inhabiting fine to medium sandy bottoms with algae and high amounts of detritus from Seaward Bay (Mayabandar, North Andaman). The Mexican specimen fits well the description by Wells and Rao (1987), especially in the shape and length:width ratio of the caudal rami and shape of caudal seta V (Figure 1A–C), number of segments and shape of the female (Figure 2A) and male (Figure 6A) antennule, shape of the female (Figure 4F) and male (Figure 7D) P5, general shape of female (Figure 3A–C) and male (Figure 6C) P1, female P2 (Figure 3D), female P3 (Figure 4B–E) and male P3ENP (Figure 7C), and female (Figure 4A) and male (Figure 7B) P4ENP. Some slight differences were observed regarding the number of setae on the endopodal segment of the maxilliped and regarding the relative length of some setae of the female and male P5. Also, the apical innermost seta of P2EXP3 and the apical seta of P4ENP2 of the Mexican female specimen might have fallen off during sample processing. The innermost minute seta of the female P3ENP2, and of the male P3ENP2 and P4ENP2 as shown by Wells and Rao (1987, p. 349, fig. 125 b, e, f) are in fact acute projections of the supporting segment in the Mexican material. The Mexican material presented herein is proposed to be attributed to *P. tenuis* until more specimens from the Gulf of Mexico are available for further inspection.

Kunz (1984) suggested nine species-groups (*bradyi-, furciger-, aegypticus-, borutzkyi-, pauli-, opistoceratus-, mossmani-, xenus-* and *longipalpatus*-group) for the genus *Phyllopodopsyllus* based on the number of segments of the female antennule, presence/absence of an unguiform projection on the second antennular segment, and structure and chaetotaxy of the female swimming legs. Fiers (1995) questioned the naturalness of these groups but recognized it as useful as an identification tool, and commented on the difficulties of performing sound phylogenetic interpretations with the current knowledge of the expression of sexual dimorphism, among other characters.

Currently, Kunz's (1984) *furciger*-group, which he defined by the presence of (1) a female eight-segmented, antennule, (2) five and six setae/spines on the P2EXP3 and P3EXP3, (3) one inner seta on the P4EXP2, and (4) a two-segmented P4ENP, is composed by *P. furciger* Sars, 1907, *P. minutus* Lang, 1948, *P. bermudae* Lang, 1948, *P. parafurciger parafurciger* Geddes, 1968, *P. parafurciger carolinensis* Coull, 1971, *P. chavei* Coull, 1970, *P. langi* Kunz, 1975, *P. curtus* Marcus, 1976, *P. stigmosus* Wells and Rao, 1987, *P. galapagoensis* Mielke, 1989 and

P. yucatanensis Fiers, 1995. Following Fiers (1995), *P. yucatanensis, P. parafurciger parafurciger* and *P. parafurciger carolinensis* seem to be related, based on the presence of an additional sharp process on the anterior distal corner of the second antennular segment, which as noted by Fiers (1995) is also present in other species-groups of *Phyllopodopsyllus*.

The Mexican material differs from the other species of the group in the armature formula of P3ENP1, P4EXP3 and P4ENP2, (compared with *P. minutus*), shape of the caudal seta V, relative length of P1ENP1, and armature formula of P3ENP1 and P4EXP3 (compared with *P. bermudae*), shape of the female caudal ramus, and armature formula of the male P4ENP2 (compared with *P. furciger* and *P. galapagoensis*), armature formula of P2ENP1, shape of the female caudal ramus, relative length of the male P4ENP, shape of the male P5, armature formula of the male P2ENP2 (compared with *P. galapagoensis*), shape of the caudal ramus, armature formula of the female P4EXP3, P4ENP2 and P4EXP3, shape and chaetotaxy of the male P3EXP, P3ENP and P4EXP3, and shape of the male P5 (compared with *P. langi*), shape of the female caudal ramus and caudal seta V, armature formula of the female P2ENP1, P4EXP3 and shape of the male P5 (compared with *P. chavei*), so reinforcing Fiers (1995) doubts about the naturalness of Kunz's (1984) groupings.

Marcus (1976) described *P. curtus* from the Libyan coast of the Mediterranean, and a decade later, Wells and Rao (1987) described *P. stigmosus* from several places in the Andaman and Nicobar Islands. Despite the marked differences observed by Marcus (1976, p. 123, Table 1), he hypothesized a closer relationship between *P. curtus, P. bermudae* and *P. longicaudatus*, and Wells and Rao (1987) could not define any relationship between *P. stigmosus* and other species of the genus known at that time. *Phyllopodopsyllus parastigmosus* sp. nov. seems to be more closely related to *P. curtus* and to *P. stigmosus* than to any other species. In fact, *P. parastigmosus* sp. nov. fits Wells and Rao's (1987) description of *P. stigmosus* and Marcus's (1976) description of *P. curtus* in almost every character, especially in the combination of the following: general shape of the female caudal rami (Figure 8A, B), expression of sexual dimorphism in the male caudal rami (more slender in the male) (Figure 13A–C) and in the armature formula of the P4EXP3 [with seven elements in the female, but only six in the male, though not conclusive for *P. curtus* in Marcus (1976)], shape and general structure of the female antennule (Figure 9A) (with the first segment as long as the succeeding five segments combined), shape and armature of the female P1–P4 (Figures 11A, B, 12A, B, 15A, B, D), and general shape of the female (Figure 13D) and male (Figure 15C) P5, and general sexual dimorphism in swimming legs. *Phyllopodopsyllus parastigmosus* sp. nov., *P. stigmosus* and *P. curtus* can be separated by the relative length of the P1ENP1 (P1ENP1 1.2 times as long as P1EXP in *P. paratigmosus* sp. nov. and *P. stigmosus*, but 1.7 times in *P.* curtus), by the relative length of the P2ENP (shorter than P2EXP1 and EXP2 combined in *P. stigmosus*, but P2ENP reaching beyond P2EXP2 in *P. parastigmosus* sp. nov. and *P. curtus*); by the P3ENP (comparatively more elongated, reaching the distal third of P3EXP2 in the new species and in *P. curtus*, but P3ENP2 comparatively shorter and reaching proximal third of P3EXP2 in *P. stigmosus*; by the number of setae on the female P5 (11 setae in the new species, but 10 setae in *P. stigmosus* and *P. curtus*), and by the relative length of the setae of the male P5 (more similar between *P. parastigmosus* sp. nov. and *P. curtus*) and P6 (more similar between *P. curtus* and *P. stigmosus*).

Genus ***Tarengoticeps*** gen. nov.

Tetragoniceps Brady, 1880 in Gómez and Morales-Serna (2014, Appendix 2: 121)

Diagnosis (based on the female only)

Tetragonicipitidae. Rostrum small. A1 eight-segmented; first antennular segment elongate. Antenna with basis; without abexopodal seta; exopod one-segmented, with three setae. P1ENP two-segmented; first segment with one inner, second segment with two apical setae; EXP three-segmented, distal segment with four setae/spines. P2–P4 with three-segmented exopods and two-segmented endopods; P2–P4ENP1 with inner seta, P2–P4ENP2 with three elements each; P2–P4EXP1 and EXP2 with inner seta; P2–P4EXP3 with four, four and seven setae, respectively. P5 not foliaceous; exopod and endopod distinct; exopod with four setae; endopodal lobe with five setae.

Species

Tarengoticeps yokotaanensis sp. nov.

Tarengoticeps yokotaanensis sp. nov.
(Figures 16A–D, 17A–J, 18A, B, 19A, B, 20)

Tetragoniceps Brady, 1880 in Gómez and Morales-Serna (2014, Appendix 2: 121)

Type locality

Off Tabasco State (not Campeche State as in Gómez and Morales-Serna 2014, Appendix 2: 121); 18.6169° N, 93.5° W; 36 m depth.

Type material

Adult female holotype, dissected (EMUCOP-10–00).

Etymology

The generic name, *Tarengoticeps*, is an anagram of *Tetragoniceps*. The specific name *yokotaanensis* makes reference to the ancient word ‘yoko t’aan’ which means ‘those of the true language’ and was the name the Chontal people of Tabasco State used to refer to themselves.

Description

Female. Habitus (not shown) fusiform; tapering from posterior margin of cephalothorax to anal somite. Second and third urosomites fused forming genital double-somite, with remains of former division ventrally, completely fused dorsally. Rostrum (Figure 16B) minute; not fused to cephalothorax.

Figure 16. *Tarengoticeps yokotaanensis* gen. nov. et sp. nov. Female. (A) Antennule; (B) first antennular segment and rostrum; (C) antenna; (D) mandible. Scale bars: A, 140 μm; B, 100 μm; C, 100 μm; D, 70 μm.

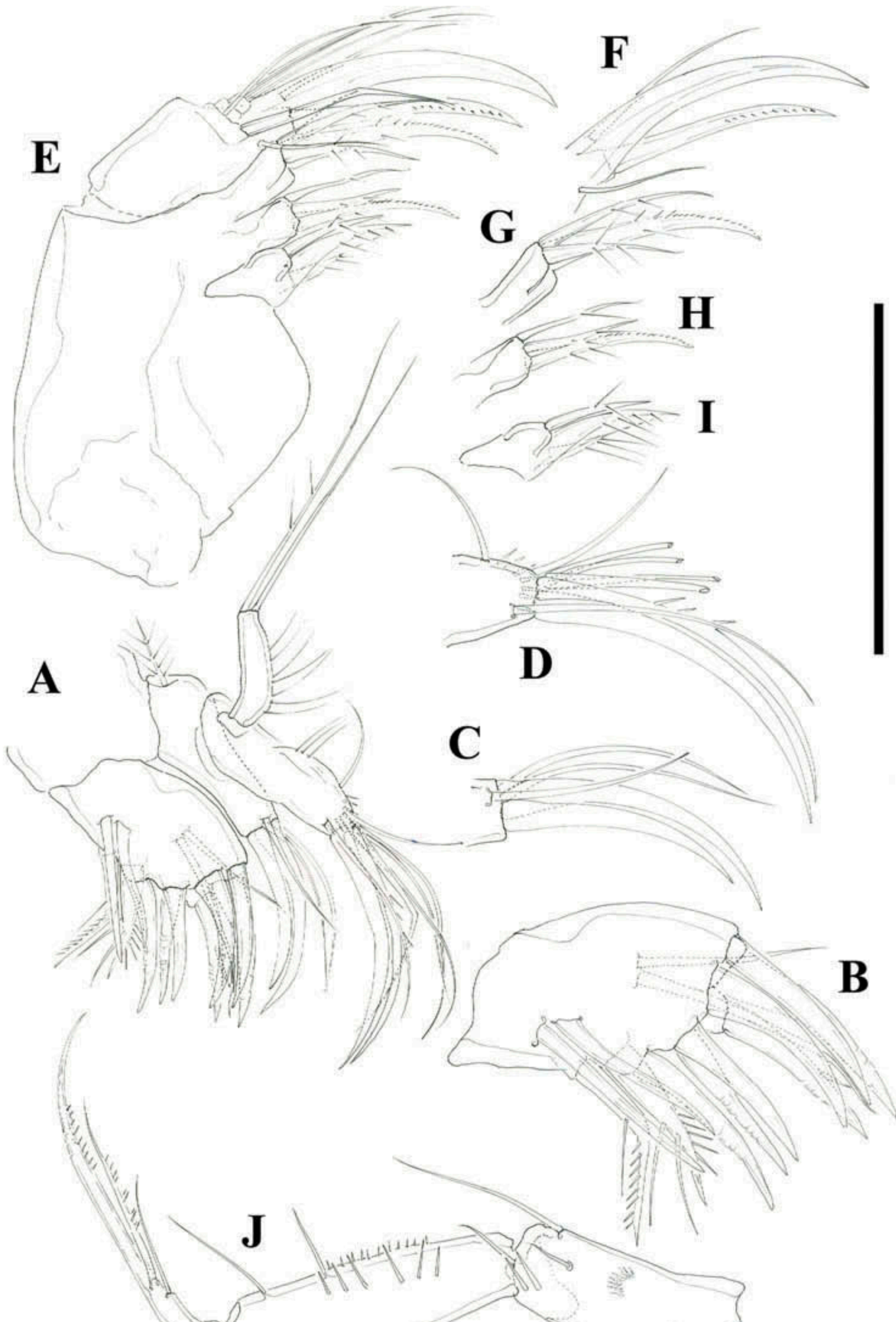

Figure 17. *Tarengoticeps yokotaanensis* gen. nov. et sp. nov. Female. (A) Maxillule; (B) arthrite of maxillule; (C) coxal endite; (D) basis and exopod; (E) maxilla; (F) basis of maxilla; (G) distal endite of syncoxa of maxilla; (H) medial endite of syncoxa of maxilla; (I) proximal endite of syncoxa of maxilla; (J) maxilliped. Scale bars: A, E–I, 50 µm; B–D, 33 µm; J, 71 µm.

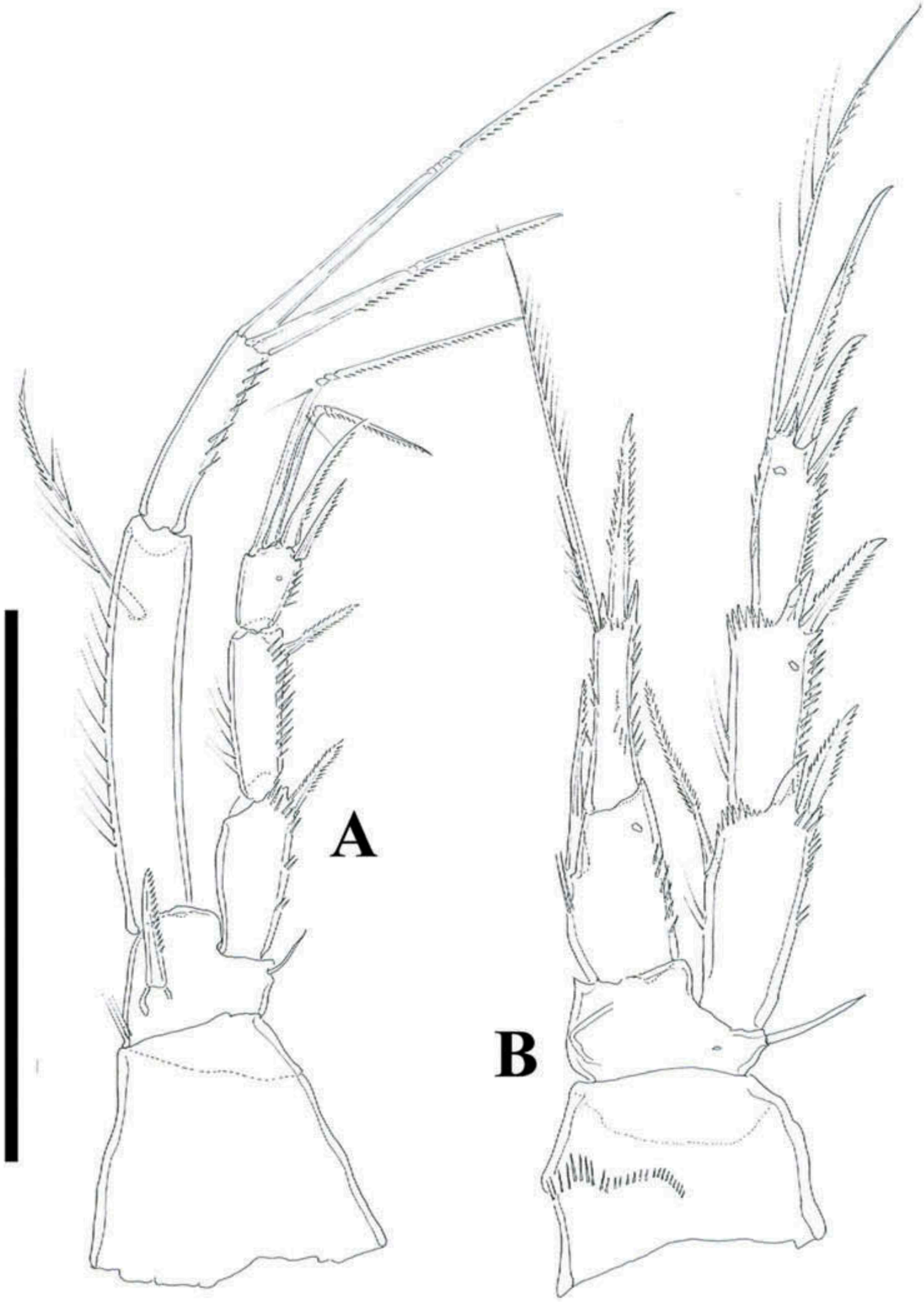

Figure 18. *Tarengoticeps yokotaanensis* gen. nov. et sp. nov. Female. (A) P1, anterior; (B) P2, anterior. Scale bars: A, B, 100 μm.

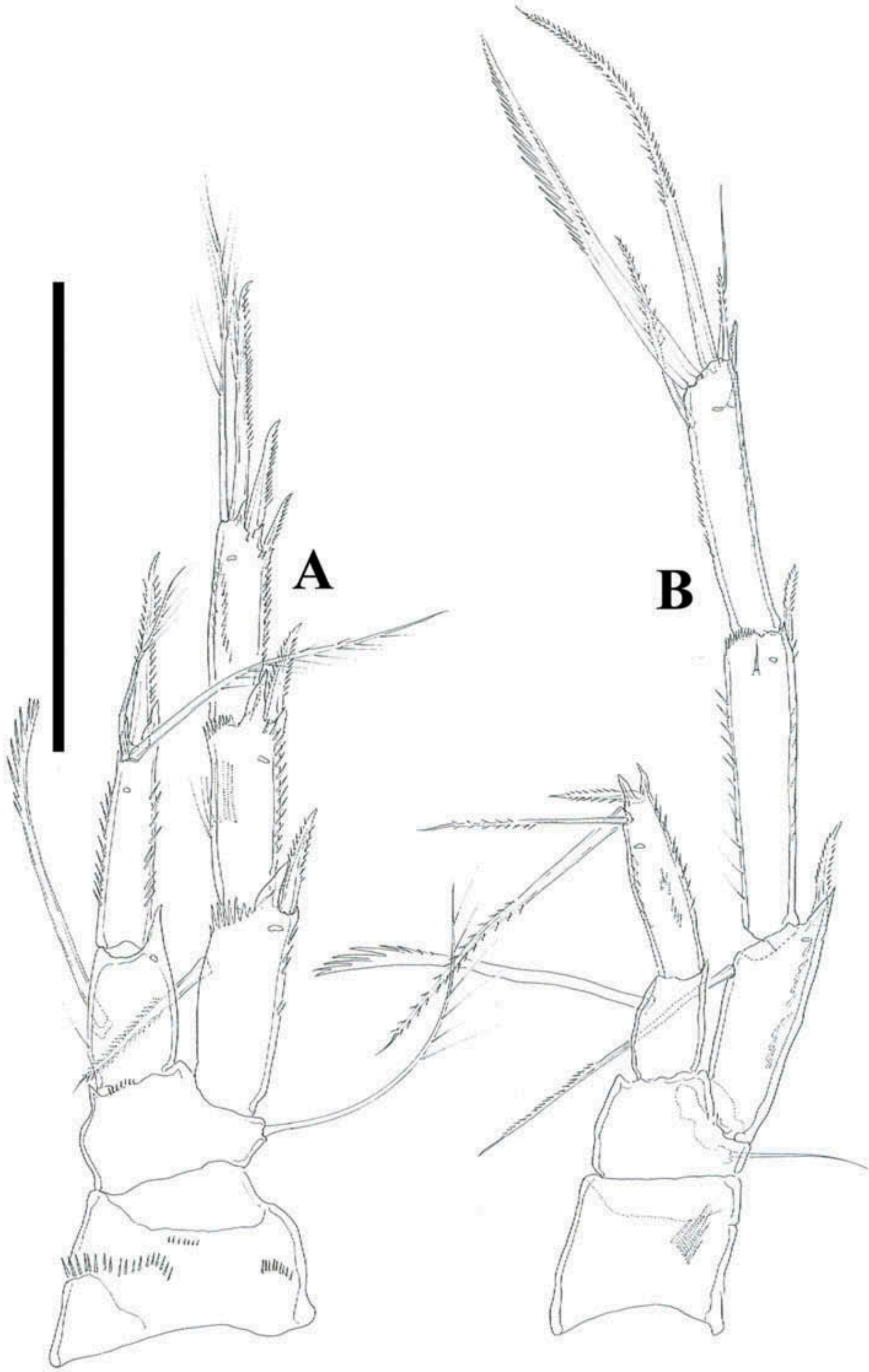

Figure 19. *Tarengoticeps yokotaanensis* gen. nov. et sp. nov. Female. (A) P3, anterior; (B) P4, anterior. Scale bars: A, 100 μm; B, 116 μm.

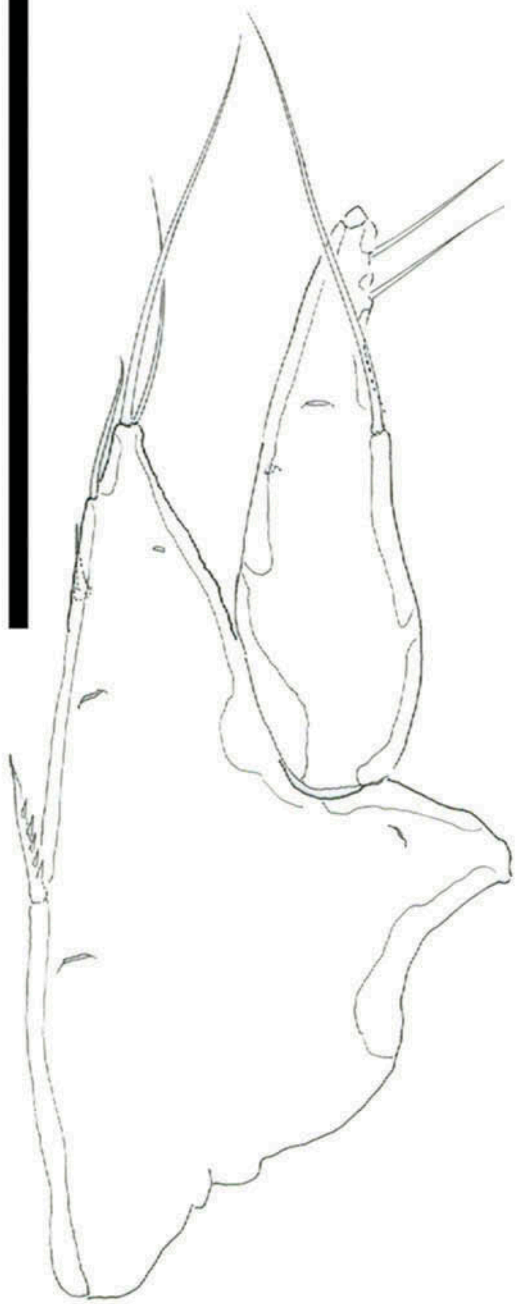

Figure 20. *Tarengoticeps yokotaanensis* gen. nov. et sp. nov. Female. P5, anterior. Scale bar: 100 μm.

Antennule (Figure 16A, B). Eight-segmented; first segment elongate, about 2.8 times as long as broad (Figure 16B); second segment slightly longer than broad, without process; armature formula as follows: 1(1); 2(7); 3(8); 4(3+(1+ae)); 5(2); 6(3); 7(4); 8(5 +(acrothek)). Acrothek consisting of two seta fused to an aesthetasc.

Antenna (Figure 16C). With basis about twice as long as broad, with inner longitudinal row of minute spinules. Exopod one-segmented, with three elements (apicalmost fused to exopod). First endopodal segment without armature; second endopodal segment with medial and apical outer hyaline frills; with two slender setae and two spines laterally, and with seven elements distally (one spiniform element, three geniculate single setae, one slender seta and two (outermost) elements fused).

Mandible (Figure 16D). Gnathobase with multicuspidate teeth, three spines and two lateral pinnate seta. Coxa-basis with three setae. Exopod one-segmented, with two lateral and six setae distally. Endopod two-segmented; first segment with two lateral setae; second segment with one lateral and three distal setae.

Maxillule (Figure 17A–D). Arthrite of praecoxa with two surface setae, two lateral elements and nine distal spines (Figure 17B). Coxa with epipodal plumose small seta, with two strong and three slender apical elements (Figure 17C). Basis with eight setae (Figure 17D) and with some spinules distally. Exopod represented by single seta (Figure 17D). Endopod one-segmented, elongate, with two apical setae.

Maxilla (Figure 17E–I). Syncoxa with three endites, with three elements each (Figure 17G–I). Basis with two strong claws and two slender setae (Figure 17F). Endopod three-segmented; first segment with two, second segment with one, third segment with two setae.

Maxilliped (Figure 17J). Syncoxa with spinules as figured and with three setae. Basis with longitudinal row of inner spinules and with two inner setae; endopodal segment elongate, with long claw and two setae.

P1 (Figure 18A). Coxa large. Basis with outer slender seta and strong inner spine. Exopod three-segmented; elongate, reaching tip of ENP1; first and second segments with outer spine; third segment with four elements. Endopod two-segmented; first segment elongate, about five times as long as broad and about twice as long as second segment, with one inner element on distal third; second segment elongate, about four times as long as broad, with two apical elements.

P2 (Figure 18B). Coxa large, with spinules as shown. Basis with outer spiniform element. Exopod three-segmented; first segment with, second segment without inner seta; third segment with two outer spines and two apical elements. Endopod two-segmented, reaching tip of EXP2; first segment with one inner seta; second segment with three elements.

P3 (Figure 19A). Coxa large, with spinules as shown. Basis with outer long seta. Exopod three-segmented; first segment with, second segment without inner seta; third segment with two outer spines and two apical setae. Endopod two-segmented, barely reaching tip of EXP3; first segment with one inner element strongly serrate distally; second segment with three elements.

P4 (Figure 19B). Coxa large, with spinules as shown. Basis with outer seta shorter than in P3. Exopod three-segmented; first segment with well developed inner seta; second segment with minute inner seta; third segment with two outer small spines, two apical and three inner elements as shown. Endopod two-segmented, reaching middle of EXP2; first segment with one inner element strongly serrate distally; second segment with three setae.

P5 (Figure 20). Large, not foliose. Exopod elongate, with four outer (proximalmost seta lost during dissection), one apical (lost during dissection), and one inner seta (lost during dissection). Baseoendopod with outer seta; endopodal lobe with three inner and two apical elements.

Male. Unknown.

Remarks

The Mexican genus presented herein could not be attributed to any of the known genera of Tetragonicipitidae given the following combination: (1) lack of any projection on either the first or the second antennular segment; (2) first antennular segment nearly as long as second to sixth segments combined; (3) antenna with basis, and without abexopodal seta; (4) female P5 not foliaceous, exopodite and endopodite separated; (5) P1ENP two-segmented, P1EXP three-segmented; (6) P2–P4 EXP1 with inner seta; (7) P2–P4 EXP2 without inner seta; (8) P2–P4 EXP3 with four, four, seven setae/spines; (9) P2–P4 ENP1 with inner seta; (10) P2–P4 ENP2 with three setae/spines each. Of particular interest is the lack of any projection on either the first or second antennular segment (which is shared with *Pteropsyllus* T. Scott, 1906, *Diagoniceps* Willey, 1930, *Oniscopsis* Chappuis, 1954, *Aigondiceps* Fiers, 1995, *Nidiagoceps* Fiers, 1995, *Odaginiceps* Fiers, 1995, *Godianiceps* Fiers, 1995, *Mwania* Fiers and De Troch, 2000, *Neogoniceps* Fiers and De Troch, 2000 and *Tetragoniceps santacruzensis* Mielke, 1997), the first elongate antennular segment (which is shared with *Pteropsyllus* T. Scott, 1906, *Phyllopodopsyllus* T. Scott, 1906, *Laophontella* Thompson and A. Scott, 1903 and *Tetragoniceps* Brady, 1880), and the not foliaceous female P5 (which is shared with *Diagoniceps, Aigondiceps, Godianiceps, Laophontella, Mwania, Neogoniceps, Odaginiceps, Protogoniceps, Nidiagoceps* and *Tetragoniceps*). The above suggests a closer relationship with *Tetragoniceps santacruzensis*. The absence of any projection on either the first or second antennular segment and the elongate first antennular segment both in *Tetragoniceps santacruzensis* and *Tarengoticeps yokotaanensis* sp. nov. might indicate a close relationship between these two species. Also, these two species share the small rostrum and the lack of antennal abexopodal seta, and the shape and armature of P1EXP and ENP. However, these two species can be easily separated by the armature formula of P2–P3 (with inner seta on P2–P3EXP1 and EXP2, and with five setae on P2EXP3 and four setae on P3EXP3 in *Tetragoniceps santacruzensis*, but with inner seta on P2–P3EXP1, without inner seta on P2–P3EXP2, and with four setae on P2–P3EXP3). Unfortunately, the female of *Tetragoniceps santacruzensis* and the male of

Tarengoticeps yokotaanensis sp. nov. remain unknown and nothing can be said about the sexual dimorphism of either species.

Mielke (1997) pointed out that the integration of *Tetragoniceps santacruzensis* into *Tetragoniceps* is questionable, particularly without knowledge of the female, and hypothesized a secondary loss of the distal outer projection on the first antennular segment, and agreed with Fiers' (1995) view about the polyphyletic nature of *Tetragoniceps* based on the variability of the armature formula of the pereiopods, the shape of P5 and shape of the caudal rami. The Mexican material herein presented could not be attributed to any of the known genera given the combination of characters above and it is suggested to allocate the new species to the new genus *Tarengoticeps* gen. nov. Even though *T. yokotaanensis* sp. nov. and *T. santacruzensis* share some characters, it would be premature to unite them into the new genus *Tarengoticeps* gen. nov, without the knowledge of either the female of *Tetragoniceps santacruzensis* or the male of *Tarengoticeps yokotaanensis* sp. nov.

Genus ***Adoginiceps*** gen. nov.

Diagoniceps cf. *monodi* Chappuis and Kunz, 1955 in Gómez and Morales-Serna (2014, Appendix 1: 114)

Diagnosis (based on the male only)

Tetragonicipitidae. Rostrum small. A1 haplocer, eight-segmented; second antennulary segment about 1.5 times as long as wide. Antenna with basis; with abexopodal seta; exopod one-segmented, with three setae. P1ENP two-segmented; first segment with one inner, second segment with two apical setae; EXP three-segmented, distal segment with four setae/spines. P2–P4 with three-segmented exopods and two-segmented endopods; P2–P4ENP1 with inner seta, P2–P4ENP2 with three, four, and four setae, respectively; P2–P3EXP1 without inner seta; P4EXP1 with inner seta; P2–P3EXP2 with inner setae; P4EXP2 without inner armature; P2–P4EXP3 with five, six, and seven setae, respectively. P5 with separated exopod and baseoendopod; P5EXP with five setae; P5BENP with three elements.

Adoginiceps camaxeni sp. nov.
(Figures 21A–D, 22A–C, 23A–D, 24A, B, 25A–D, 26A, B)

Diagoniceps cf. monodi Chappuis and Kunz, 1955 in Gómez and Morales-Serna (2014, Appendix 1: 114)

Type locality

Ensenada del Pabellón, Sinaloa State; 24.3167–24.5833° N, 107.4667–107.75° W.

Type material

Adult male holotype, dissected (EMUCOP 030192–34); adult male paratype preserved in alcohol (EMUCOP 010591–63).

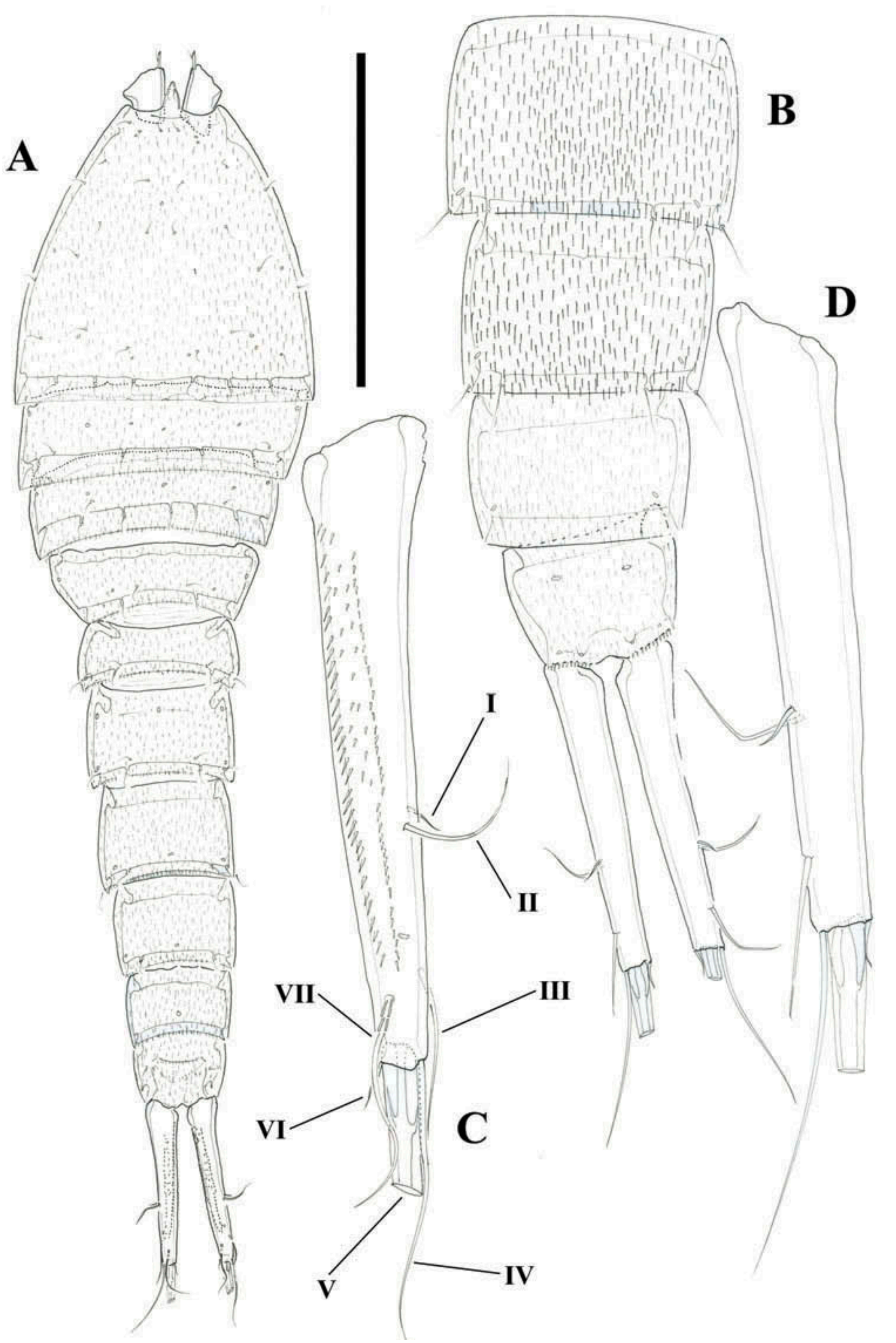

Figure 21. *Adoginiceps camaxeni* gen. nov. et sp. nov. Male. (A) Habitus. dorsal; (B) urosome, ventral, P5 bearing-somite and genital somite omitted; (C) caudal ramus, dorsal; (D) caudal ramus, ventral. Scale bars: A, 200 μm; B, 100 μm; C, D, 50 μm.

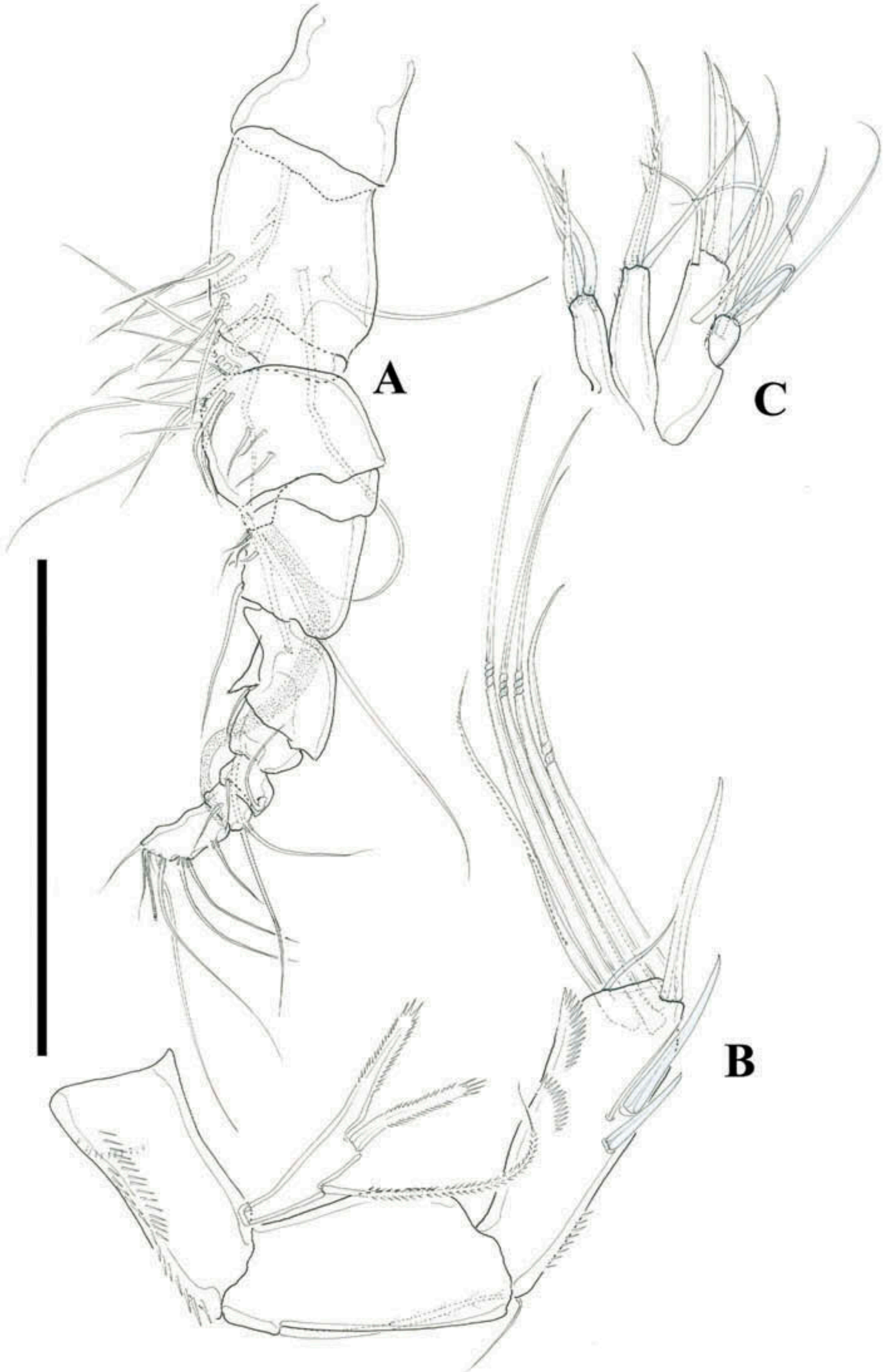

Figure 22. *Adoginiceps camaxeni* gen. nov. et sp. nov. Male. (A) Antennule; (B) antenna; (C) maxilla showing distal endites of syncoxa, basis and endopod. Scale bars: A, 100 µm; B, 70 µm; C, 54 µm.

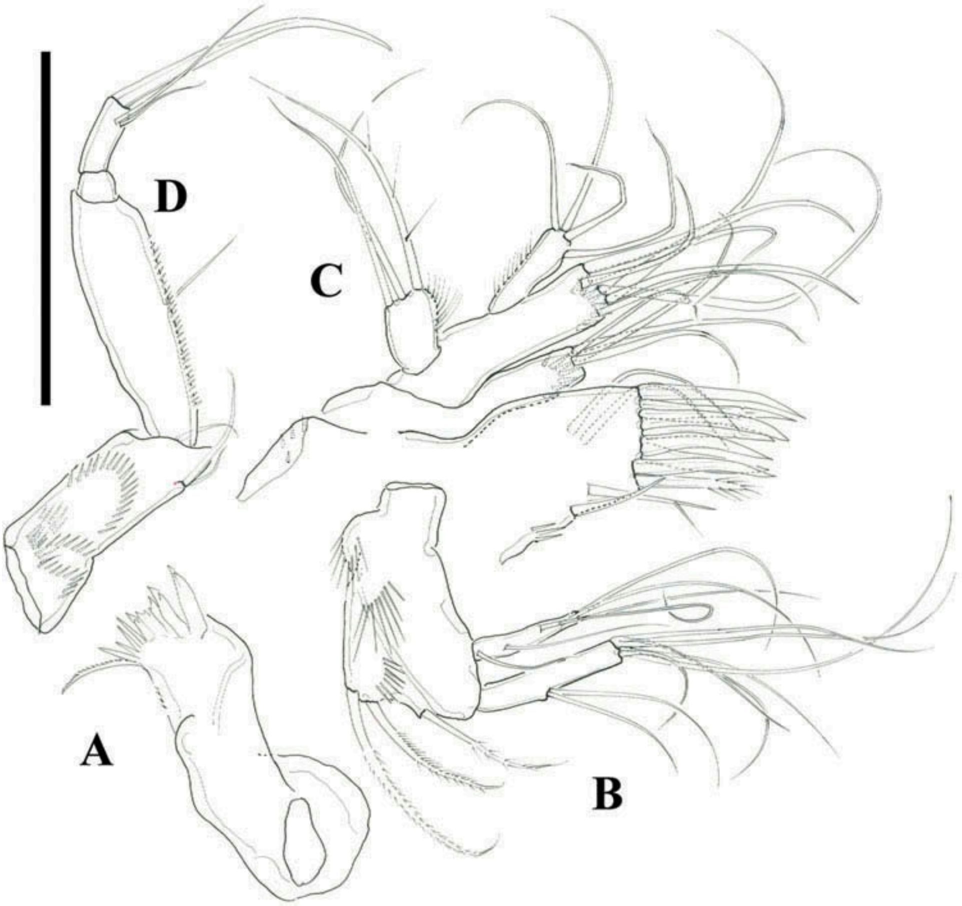

Figure 23. *Adoginiceps camaxeni* gen. nov. et sp. nov. Male. (A) Coxa and gnathobase of mandible; (B) basis, endopod and exopod of mandible; (C) maxillule; (D) maxilliped. Scale bars: A, B, D, 50 μm; C, 38 μm.

Etymology

The generic name, *Adoginiceps,* is an anagram of *Diagoniceps*; the specific name, *camaxeni*, is an anagram of *mexicana*.

Description (based on the male only)

Female. Unknown.

Male. Habitus (Figure 21A) fusiform; tapering from posterior margin of cephalothorax to anal somite. Second and third urosomites not fused. Rostrum (Figure 21A) minute; fused to cephalothorax. Pro- and urosomites with pores, sensilla and small spinules dorsally and ventrally as depicted (Figure 21A, B). Anal somite (Figure 21A, B) as long as preceding somite; with rounded anal operculum flanked by

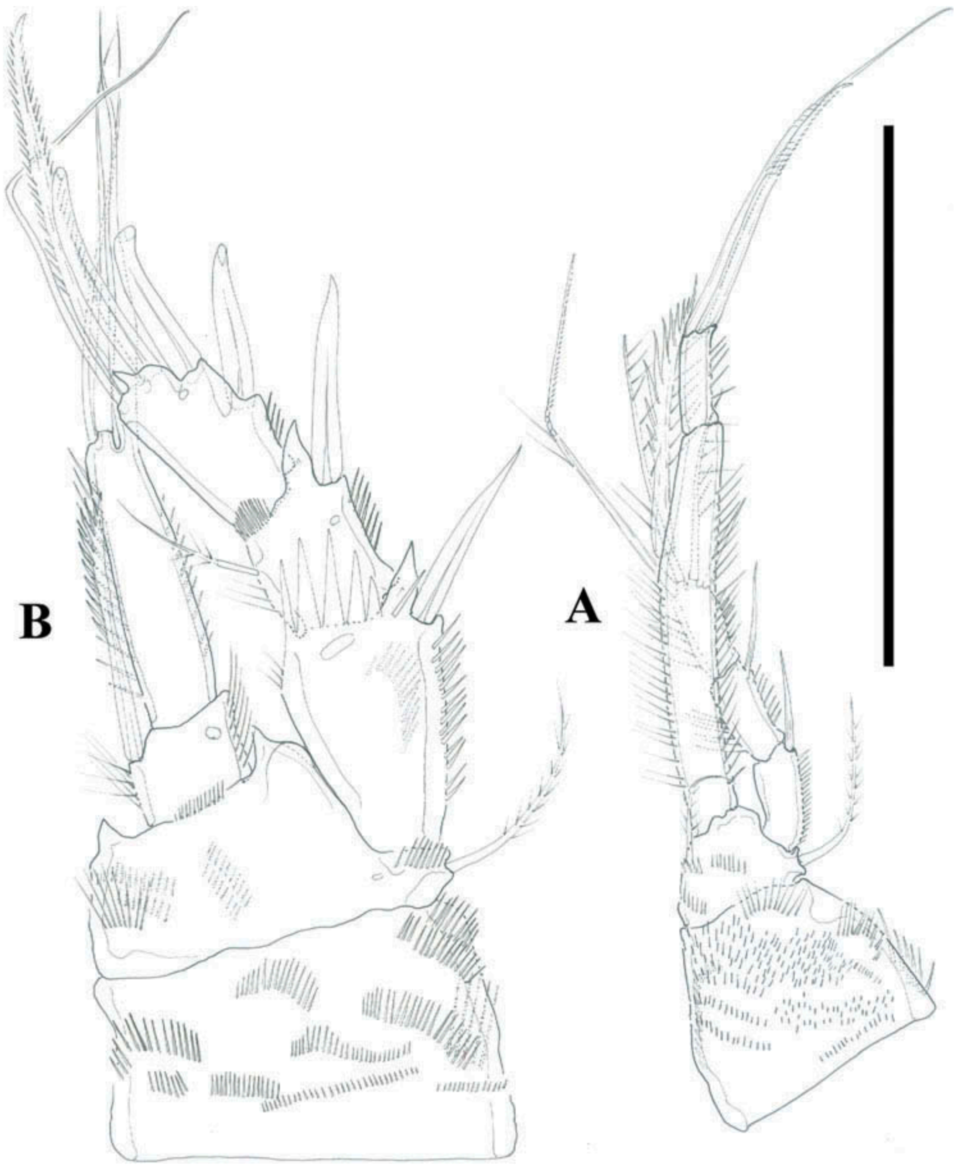

Figure 24. *Adoginiceps camaxeni* gen. nov. et sp. nov. Male. (A) P1, anterior; (B) P2, anterior. Scale bars: A, 100 µm; B, 70 µm.

two sensilla. Caudal rami (Figure 21A–D) with patches of minute spinules; elongate, about 7.4 times as long as wide; with seven setae as follows: seta I very small, ventral to seta II, the latter noticeably longer than the former, both situated just below first half of ramus; seta III about as long as seta II, situated subdistally on outer margin of ramus; seta IV slender and long, arising from outer distal corner; seta V strongest; seta VI very small, arising from inner distal corner; dorsal seta VII biarticulated, situated rather subdistally.

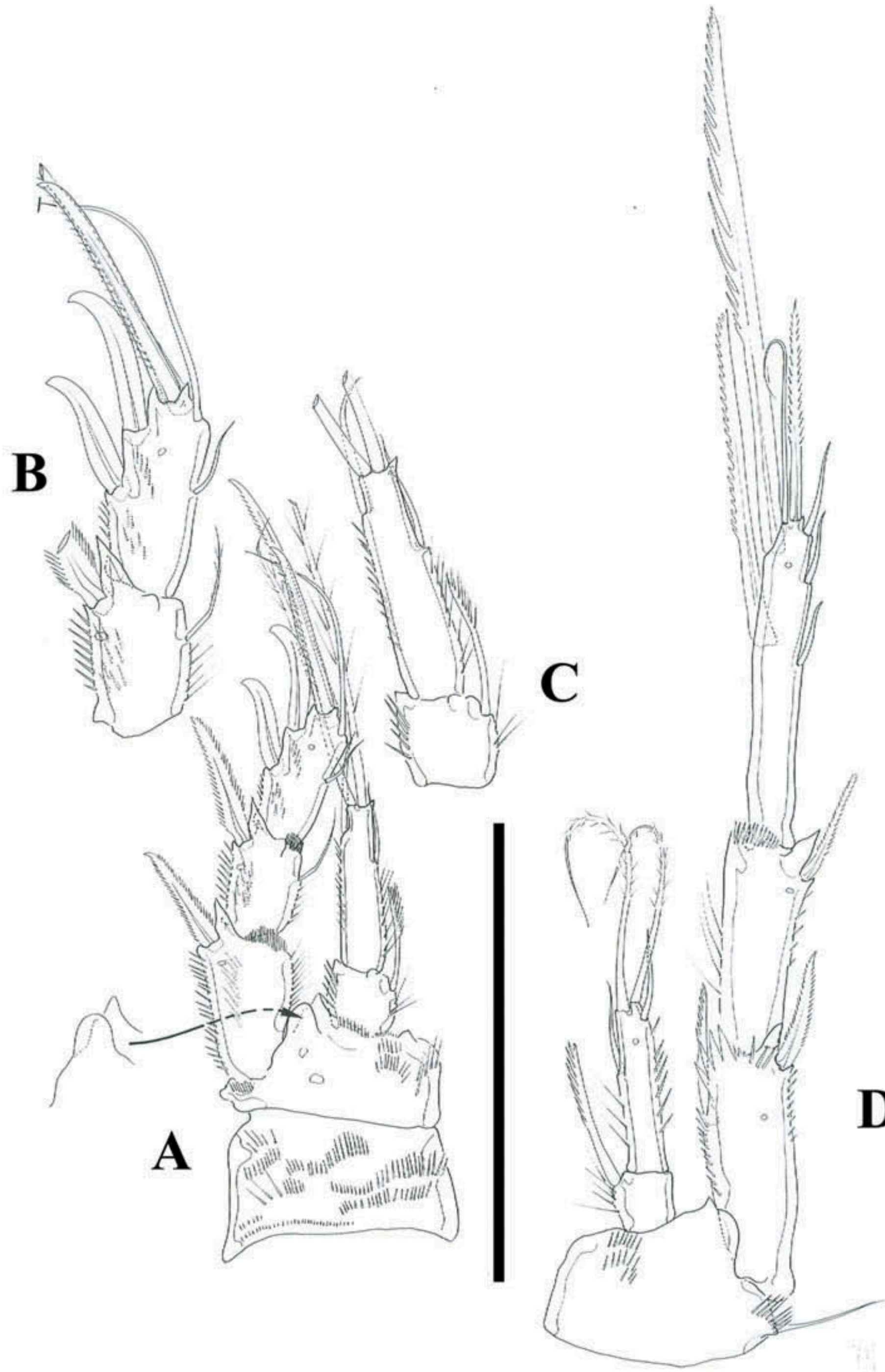

Figure 25. *Adoginiceps camaxeni* gen. nov. et sp. nov. Male. (A) P3, anterior; (B) P3EXP2 and 3, another view, anterior; (C) P3ENP another view, anterior; (D) P4, anterior. Scale bars: A, 100 μm; B, C, 70 μm; D, 70 μm.

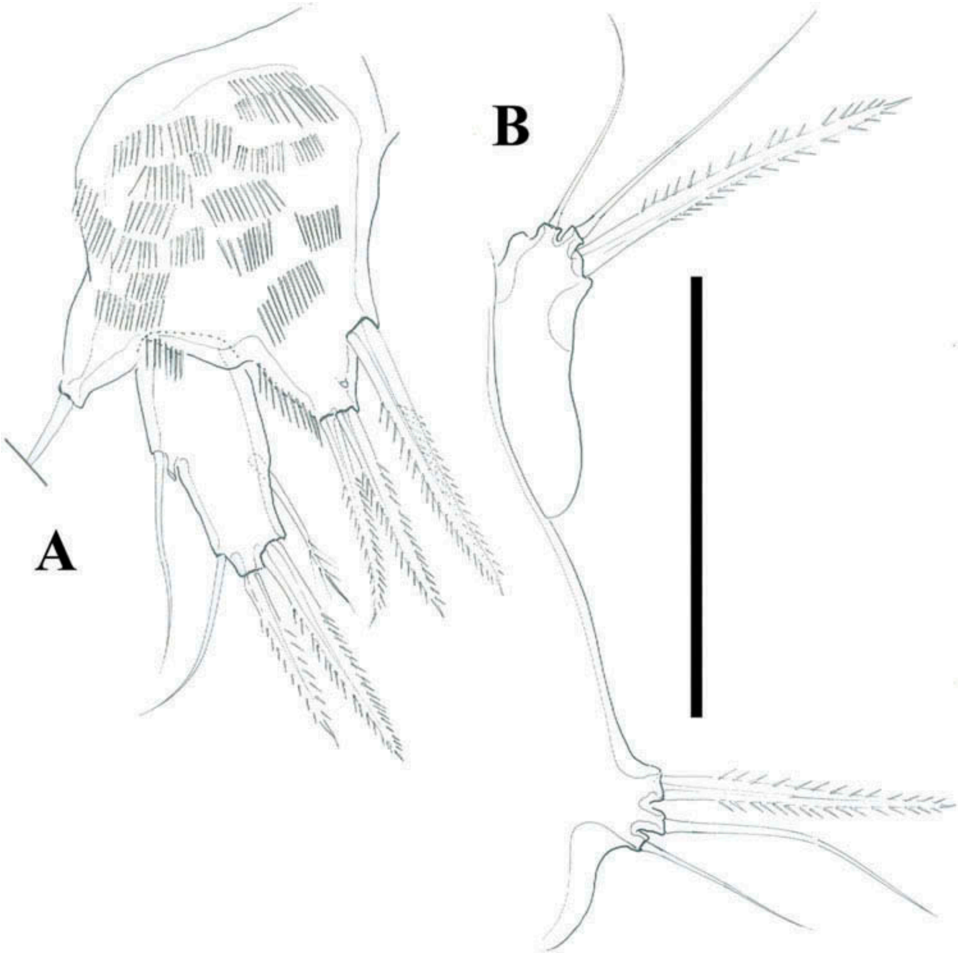

Figure 26. *Adoginiceps camaxeni* gen. nov. et sp. nov. Male. (A) P5, anterior; (B) P6, anterior. Scale bars: A, B, 50 µm.

Antennule (Figure 22A). Eleven-segmented, haplocer; first segment not elongate; second segment slightly longer than broad, without any process; armature formula difficult to define, most probably as follows: 1(1); 2(11); 3(6); 4(10+(1+ae)); 5(0); 6(5); 7(1); 8(1); 9(2); 10(2); 11(6+(1+ae).

Antenna (Figure 22B). With basis about twice as long as broad, with small spinules as depicted. Exopod one-segmented, with three elements (apicalmost fused to exopod). First endopodal segment with one abexopodal seta arising rather proximally; second endopodal segment with medial and apical outer hyaline frills, with some minute inner spinules proximally; with one slender seta and two spines laterally, and with seven elements distally [one spiniform element, three geniculate single setae, one slender seta, and one genuiclate and one pinnate long seta (outermost elements) fused].

Mandible (Figure 23A, B). Gnathobase with bicuspidate teeth, four spines and one lateral pinnate seta. Coxa-basis with three transverse spinular rows and with three setae as shown. Exopod one-segmented, elongate, with two lateral and seven setae distally. Endopod one-segmented, elongate, shorter than exopod; with three lateral and three apical setae.

Maxillule (Figure 23C). Arthrite of praecoxa with two surface setae, two lateral elements and eight distal spines. Coxal endite with some spinules subdistally and with four apical setae. Basis with seven setae and with some spinules distally. Exopod one-segmented, elongate, with five setae. Endopod one-segmented, small, with three setae.

Maxilla (Figure 22C). Two distalmost endites of syncoxa with three setae each. Basis with two strong claws and three slender setae. Endopod one-segmented, with five setae.

Maxilliped (Figure 23D). Syncoxa with spinules as figured and with three setae. Basis with longitudinal row of inner spinules and with one inner seta; endopodal segment elongate, with long claw and two setae.

P1 (Figure 24A). Coxa large, with spinules as shown. Basis with spinules as figured, with outer long seta and inner shorter element. Exopod three-segmented; elongate, reaching middle of ENP1; first and second segments with outer spine; third segment with four elements. Endopod two-segmented; first segment elongate, about eight times as long as broad and about four times as long as second segment, with one inner strong element on distal third; second segment elongate, about four times as long as broad, with two apical elements.

P2 (Figure 24B). Coxa large, with spinules as shown. Basis with spinules as depicted, with outer seta. Exopod three-segmented; first segment without, second segment with inner seta; third segment with three outer spines and two apical elements; outer exopodal spines bare, probably sexually dimorphic, outer spines of EXP3 bent at tip. Endopod two-segmented, not reaching tip of EXP3; first segment small, slightly wider than long, with one strong inner element; second segment elongate, about four times as long as broad, with three distal elements (outermost fused to segment).

P3 (Figure 25A–C). Coxa large, with spinules as shown. Basis with spinules as depicted, with outer element (lost during dissection). Exopod three-segmented; first segment with, second segment without inner seta; third segment with three outer spines, two apical setae and one inner small element; two proximalmost outer spines of EXP3 probably sexually dimorphic, bare, bent at tip. Endopod two-segmented, reaching proximal third of EXP3; first segment small, nearly as long as broad, with one inner element; second segment elongate, with one inner, two distal and one outer element.

P4 (Figure 25D). Basis with outer seta. Exopod three-segmented; first segment with, second segment without inner seta; third segment with three outer small spines, two apical and two inner elements as shown. Endopod two-segmented, reaching proximal fifth of EXP2; first segment small, nearly as long as wide, with one inner element; second segment elongate, with one inner, two apical and one outer seta.

P5 (Figure 26A). Baseoendopods of both legs fused, with spinules as depicted; with outer basal seta; endopodal lobes with one inner and two apical spiniform elements each. Exopod elongate, about 2.3 times as long as wide, with two outer, two apical and one inner seta.

P6 (Figure 26B). Asymmetrical; left leg functional, right leg fused to somite; each with two slender setae and one inner spine.

Remarks

The material herein presented could not be attributed to any of the existing genera within Tetragonicipitidae. The Mexican material seems to occupy an intermediate position between *Diagoniceps laevis* and *Diagoniceps monodi* in Huys' (1995) key, and keys out to *D. monodi* in Wells' (2007) key. However, the Mexican material cannot be attributed *D. monodi* given the lack of inner armature in the P2EXP1 and P3EXP1 in the new genus. The Mexican material did not fit the diagnosis by Huys (1995) and Fiers (1995), nor of any other genus within the family. Unfortunately, the female of the new species remains unknown and nothing can be said regarding its affinities or resemblance with other species and genera.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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