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On a small collection of Laophontidae T. Scott (Copepoda: Harpacticoida) from Mexico. II. New records of *Quinquelaophonte* Wells, Hicks and Coull and description of *Onychoquinpes permixtionis* gen. nov. et sp. nov.

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A number of new species and new records of harpacticoid copepods have been published in the last 14 years in an effort to achieve a better knowledge of the Mexican harpacticoid fauna. This is the second contribution dealing with the description and new records of species of the family Laophontidae collected in 1991 from central and southern Sinaloa State (north-western Mexico) and from the Gulf of Mexico. In this contribution, new illustrated records of *Quinquelaophonte quinquespinosa* (Sewell) and *Quinquelaophonte capillata* (Wilson) are provided. Also, a new genus and species, *Onychoquinpes permixtionis* gen. nov. et sp. nov. is described. The new genus and species herein proposed exhibits a unique mixture of character states typical for *Onychocamptus* Daday and *Folioquinpes* Fiers and Rutledge; so the erection of a new genus is justified.

http://www.zoobank.org/urn:lsid:zoobank.org:pub:2F77DCEA-37EE-428C-9E84-1F518F77512C

Keywords: harpacticoids; taxonomy; new species; biodiversity; meiofauna; Mexico

Introduction

Harpacticoids have been collected since 1991 to study the effects of organic enrichment and offshore oil platforms on the temporal and spatial variation of harpacticoid diversity in north-western Mexico, and on the soft-bottom meiofauna of the Gulf of Mexico, respectively. The present contribution constitutes the second of two papers about new species and new records of Laophontidae T. Scott collected during the last 14 years, and deals with new illustrated records of *Quinquelaophonte quinquespinosa* (Sewell) and *Quinquelaophonte capillata* (Wilson), and with the proposal and description of a new genus and species, *Onychoquinpes permixtionis* gen. nov. et sp. nov., which as mentioned below, is hypothesized to bear a sister-group relationship with *Onychocamptus* Daday and *Folioquinpes* Fiers and Rutledge.

Material and methods

Sediment samples for meiofaunal analyses were taken during a number of sampling campaigns to study the effects of organic enrichment and the impact of offshore oil

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platforms on harpacticoid copepods from the south-eastern Gulf of California and Gulf of Mexico. Sediment samples were sieved through 500-μm and 40-μm sieves and benthic copepods were separated from the rest of the meiofauna under a stereomicroscope at 40 × magnification. Specimens were stored in 70% ethanol. Observations and drawings at a magnification of 1000 × were made from whole and dissected specimens mounted in lactophenol with a Leica compound microscope equipped with phase contrast and a drawing tube. The type material was deposited in the Copepoda collection of the Instituto de Ciencias del Mar y Limnología, Mazatlán Marine Station. The terminology proposed by Huys and Boxshall (1991) for the general description was adopted. Abbreviations used in the text and tables are: CI, CII, CIV, CV, first, second, fourth and fifth copepodid, respectively; 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; ae, aesthetasc.

Systematics

Family **LAOPHONTIDAE** T. Scott, 1905
Subfamily **LAOPHONTINAE** T. Scott, 1905
Genus ***Quinquelaophonte*** Wells, Hicks and Coull, 1982
Quinquelaophonte quinquespinosa (Sewell, 1924)
(Figures 1–6)

Material examined

Two dissected females (EMUCOP-090301-190, EMUCOP-090301-191) and one dissected CV female (EMUCOP-090301-192). Collected from Urías System, Sinaloa State, north-western Mexico (23°11′06″ N, 106°25′06″ W), 9 March 2001, coll. S. Gómez.

Locality

Urías System (Sinaloa State, north-western Mexico) (23°11′06″ N, 106°25′06″ W).

Remarks

Quinquelaophonte quinquespinosa was originally described by Sewell (1924) from Chilka Lake (India). As pointed out by Lee (2003), the precise number of setae on the antennary exopod is uncertain because Sewell (1924) illustrated this ramus bearing three elements, whereas in the written description he described it as possessing four setae. Since its original description, the species has been reported from distant localities (see Lee 2003: 667 for a complete list). This allegedly cosmopolitan species is known to exhibit a wide range of interpopulation variability in the number of setae on the antennary exopod, P1 EXP2 : EXP1 length ratio, number of setae on the P4 EXP3 and ENP2, length : width ratio of the caudal rami and number of setae on the female P5 EXP (see Wells and McKenzie 1973; Lee

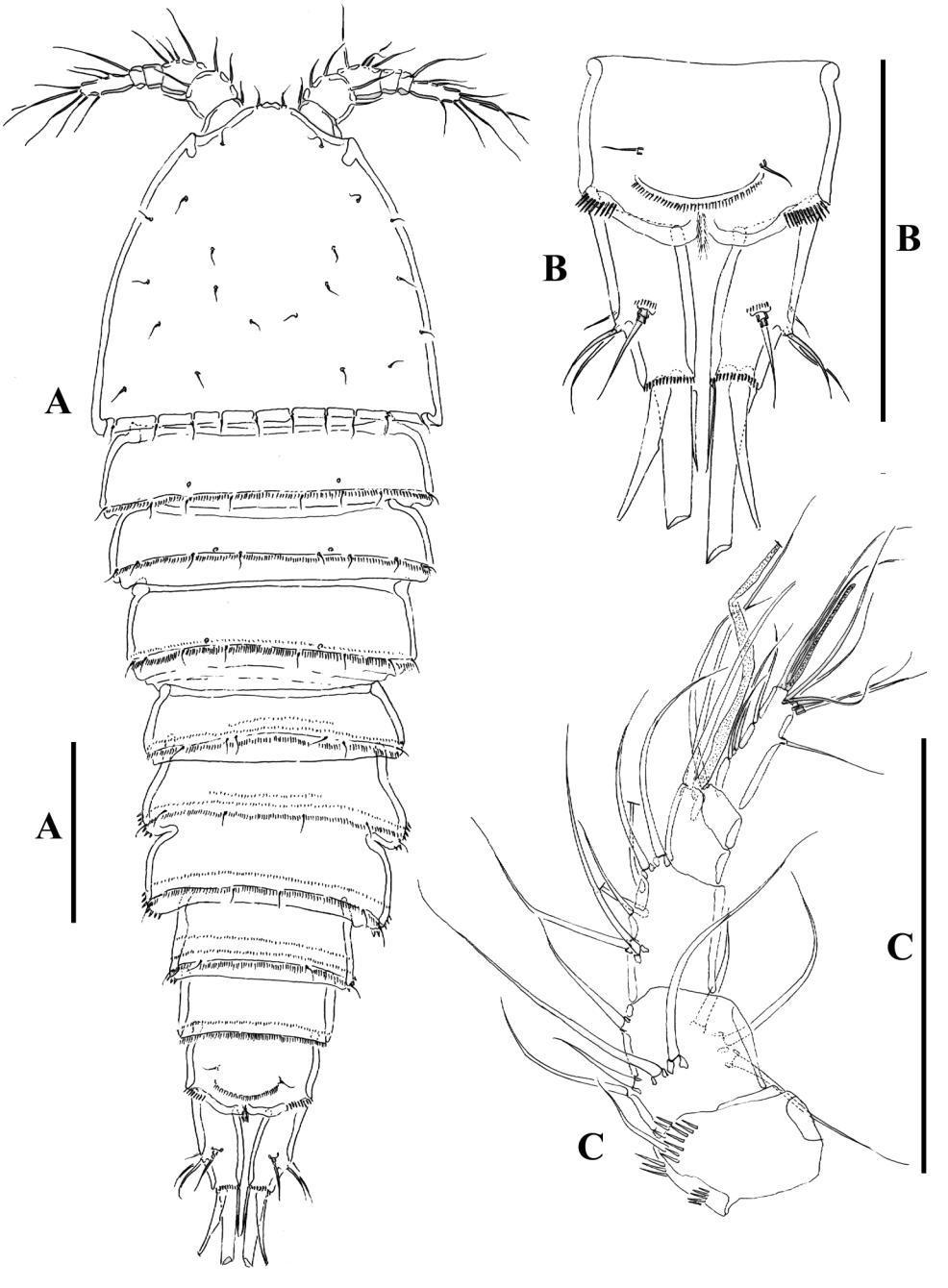

Figure 1. *Quinquelaophonte quinquespinosa* (Sewell), female. (A) Habitus, dorsal; (B) anal somite and caudal rami, dorsal; (C) antennule. Scale bars: A–C 100 μm.

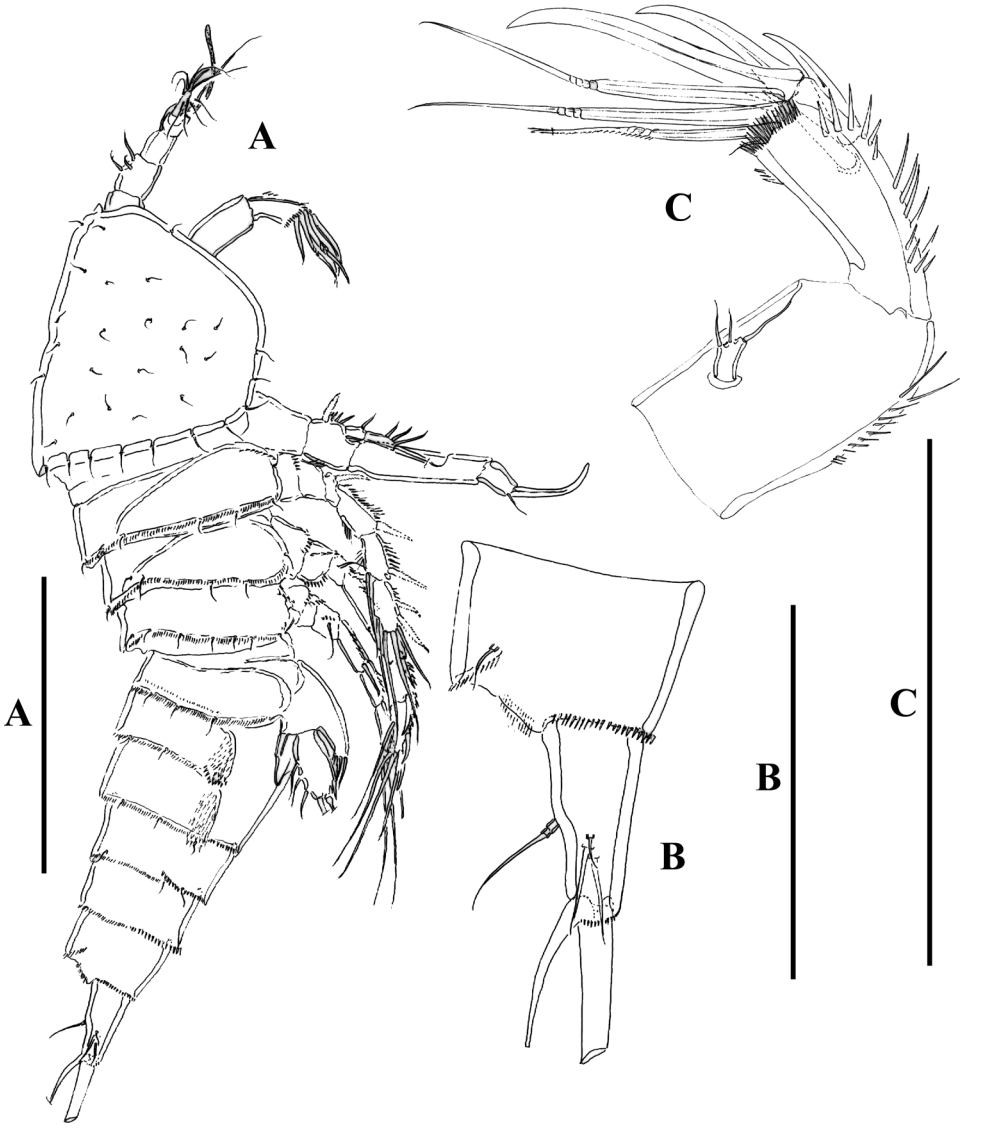

Figure 2. *Quinquelaophonte quinquespinosa* (Sewell), female. (A) Habitus, lateral; (B) anal somite and right caudal ramus, lateral; (C) antenna. Scale bars: A, 200 μm; B, C, 100 μm.

2003: 667, table 1), and, as suggested by Lee (2003), *Q. quinquespinosa* might well be a complex of species. The Mexican material matches best the description and illustrations by Por (1973) of *Q. quinquespinosa* from the Sirbonian lagoon as evidenced from the descriptions by Lee (2003: 667, table 3) and Por (1973), especially in the relative length of the setae of the female P5 EXP and BENP (Figure 6C). However, it has to be noted that only two adult females were found in the Mexican sediment samples, and that some variability was observed in the P4 ENP2 (with

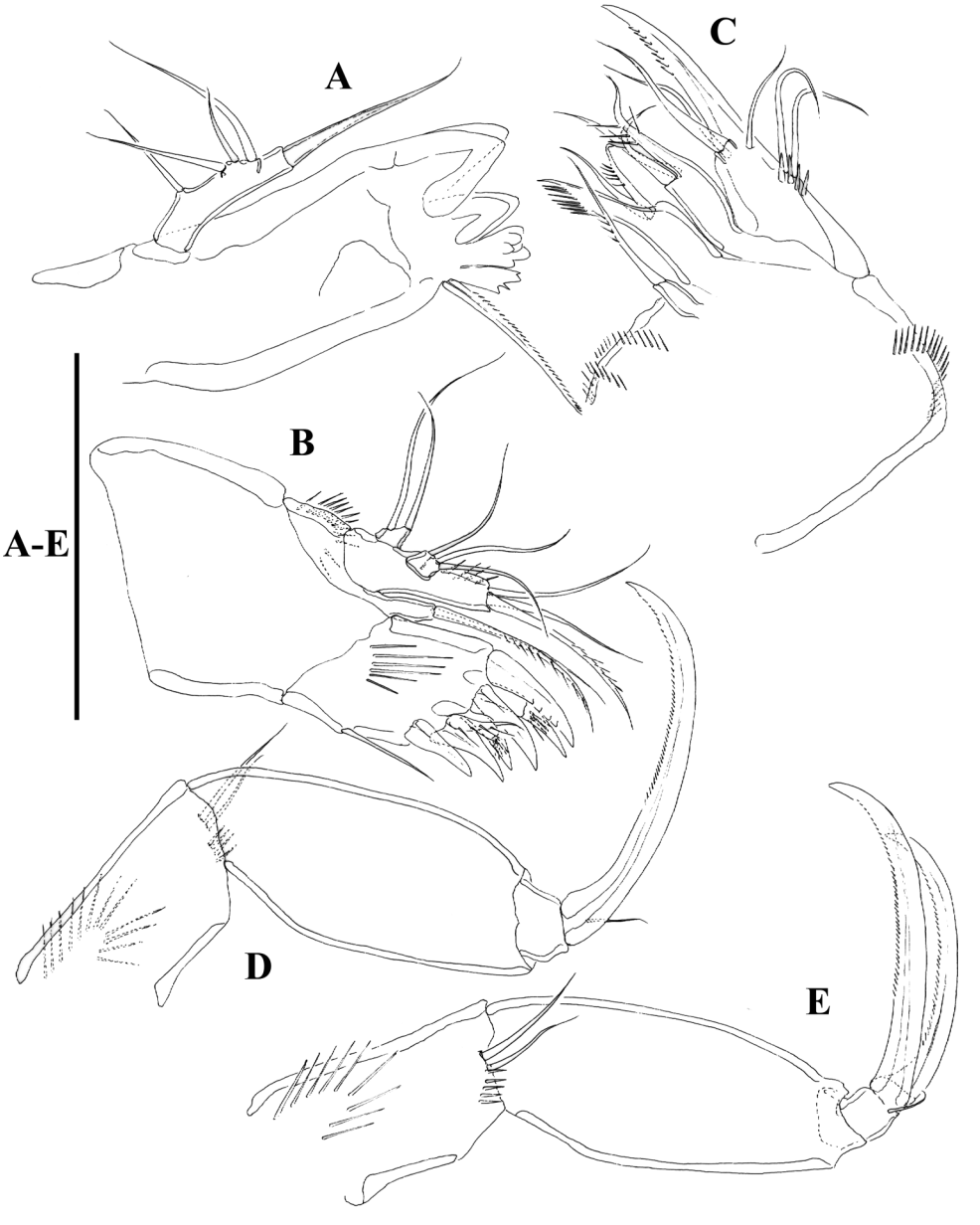

Figure 3. *Quinquelaophonte quinquespinosa* (Sewell), female. (A) Mandible; (B) maxillule; (C) maxilla; (D) maxilliped; (E) aberrant maxilliped with two endopodal claws. Scale bars: A–E, 50 μm.

three – 111 – or four – 121 – elements; Figure 6A, B), casting doubts about the "normal" setal armature of this limb and about its relationships with other species within the genus. Also, a slight variation in the relative length of the setae of the P5 baseoendopodal lobe was observed.

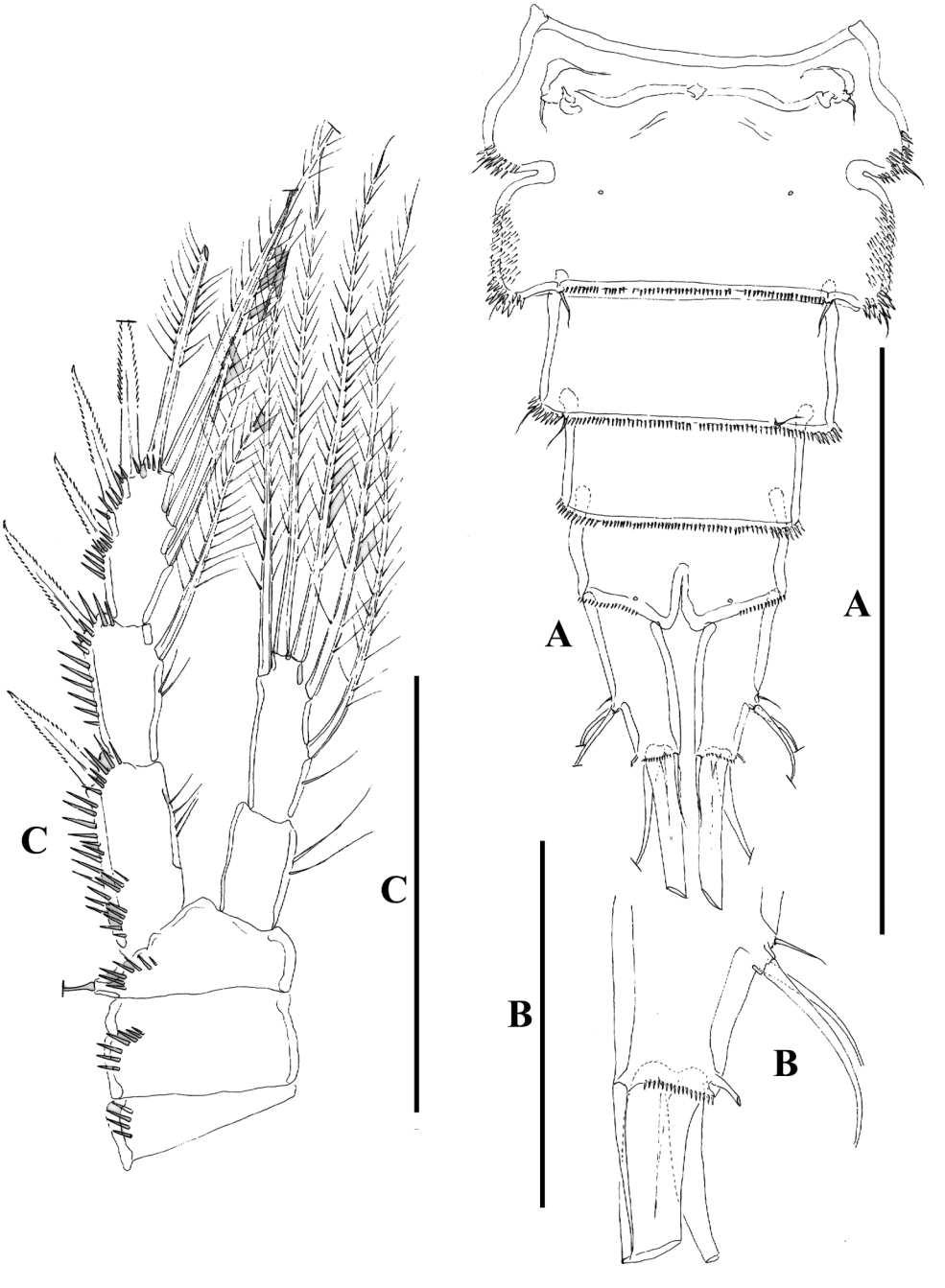

Figure 4. *Quinquelaophonte quinquespinosa* (Sewell), female. (A) Urosome, ventral (P5-bearing somite omitted); (B) right caudal ramus, ventral; (C) P3. Scale bars: A, 200 μm; B, 50 μm; C, 100 μm.

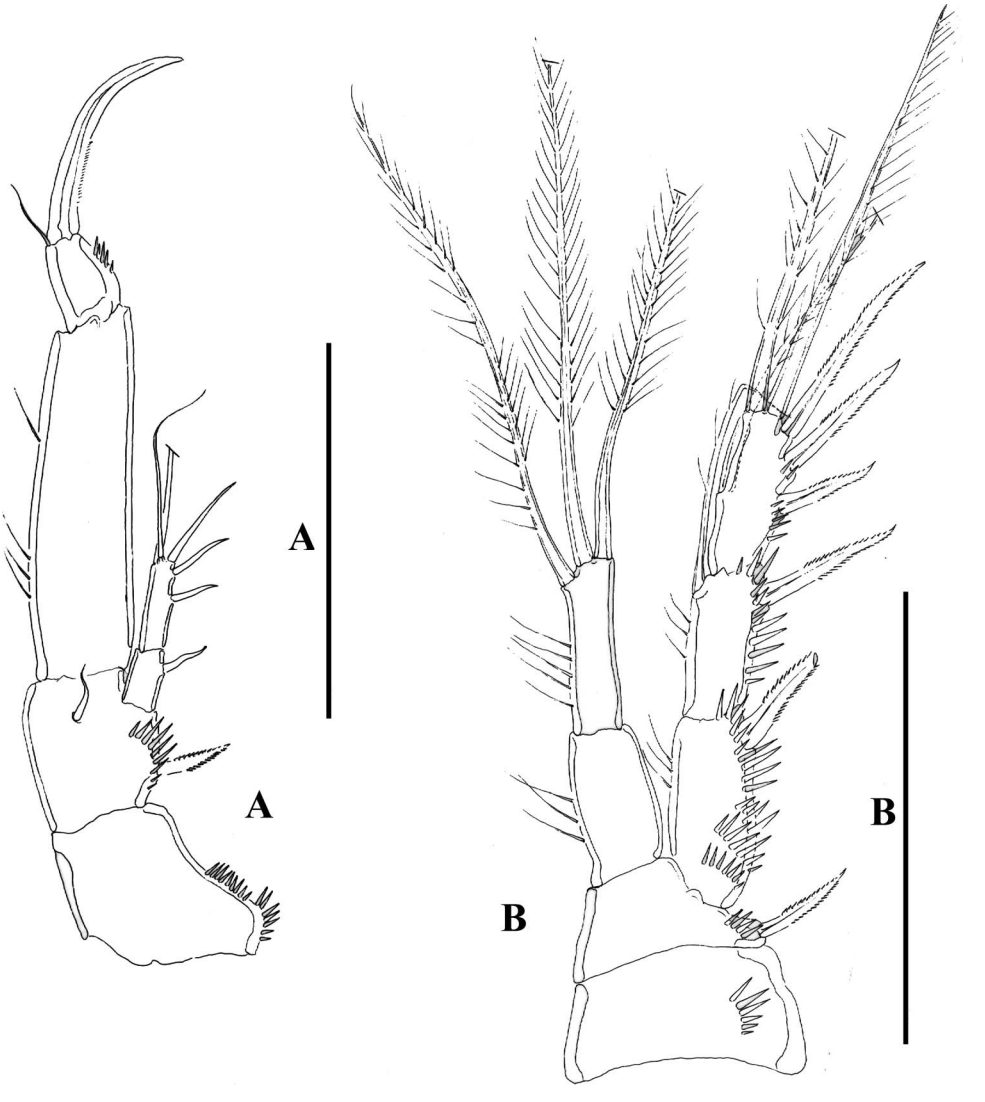

Figure 5. *Quinquelaophonte quinquespinosa* (Sewell), female. (A) P1; (B) P2. Scale bars: A, B, 100 μm.

Quinquelaophonte capillata (Wilson, 1932)
(Figures 7–12)

Material examined

One dissected adult female (EMUCOP-240691-02), one dissected male (EMUCOP-010591-12), and one CIV (EMUCOP-030192-01), one CI, one CII, one CIV and one CV (EMUCOP-010591-13) preserved in alcohol. Collected from Ensenada del Pabellón, Sinaloa, Mexico (24°19′–24°35′ N, 107°28′–107°45′ W), 1 May, 24 June

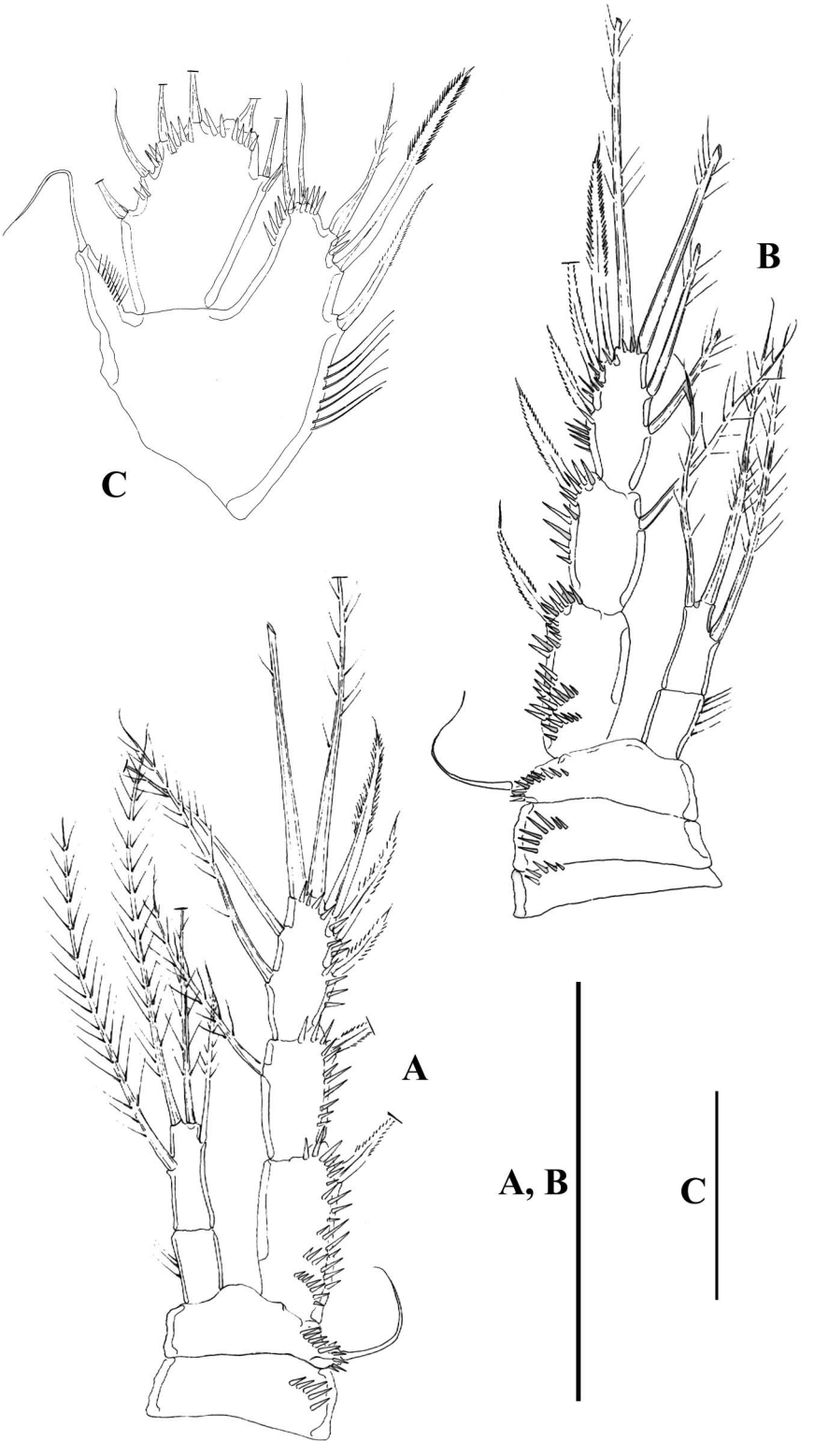

Figure 6. *Quinquelaophonte quinquespinosa* (Sewell), female. (A) P4 with four setae on ENP2; (B) P4 with three setae on ENP2; (C) P5. Scale bars: A, B, 100 μm; C, 50 μm.

1991, 3 January 1992, stns. 6 (0.001 μmolCg^{-1}, 0.008 μmolNg^{-1}, fine sand), 13 (0.834 μmolCg^{-1}, 0.027 μmolNg^{-1}, fine sand), and 14 (0.045 μmolCg^{-1}, 0.014 μmolNg^{-1}, lime) (see Gómez Noguera and Hendrickx 1997), coll S. Gómez.

Locality

Ensenada del Pabellón, Sinaloa, north-western Mexico (24°19′–24°35′ N, 107°28′–107°45′ W).

Remarks

Wilson (1932) described *Laophonte capillata* from Katama Bay (Martha's Vineyard, MA, USA). Later, Lang (1948) noted that Wilson's (1932) *L. capillata* represented in fact a complex of species, questioned the identity of the species, and reassigned it to a new species of *Heterolaophonte* Lang, as *Heterolaophonte noncapillata* Lang. He allocated Wilson's (1932) *L. capillata* males as part of his *discophora*-species group, and created a new species of *Paronychocamptus* Lang, *Paronychocamptus capillatus* (Wilson), a member of his *curticaudatus*-species group in which he allocated Wilson's (1932) females of *L. capillata* (Lang 1948). Coull (1976) made subsequent arrangements of Wilson's (1932) nomenclature of *L. capillata* and Lang's (1948) *H. noncapillata* to fit the requirements set by the International Code of Zoological Nomenclature prevailing in 1964. Upon the revision of Wilson's (1932) material, Coull (1976) reinstated and partially redescribed *H. capillata* (Wilson), and suggested Lang's *H. noncapillata* as a junior objective synonym of Wilson's (1932) male type of *H. capillata*. Also, Coull (1976) suggested Lang's *H. noncapillata* as a junior synonym of *H. capillata* and formally designated one of Wilson's males as the lectotype, and the remaining five males and two females as paralectotypes. Coull (1976) noted that Lang's (1948) view was right in that he had placed Wilson's female *L. capillata* in the genus *Paronychocamptus* Lang, but renamed and described the species as *Paronychocamptus wilsoni* Coull to meet the ICZN rules (Lang 1948). On the other hand, Coull (1976) noted that Lang's (1948) view was wrong in that *H. capillata* does not belong to the *discophora*-species group, but to the *quinquespinosa*-group. Later, Wells et al. (1982) moved all the species of the *quinquespinosa*-species group to the genus *Quinquelaophonte*. Coull (1976) found only two females in Wilson's vial, and even though a full redescription of the species was fully justified, he felt that the dissection of one of the two females available was unjustified, and partially redescribed the female upon a temporary whole mount from which he was able to figure the antennule, the antenna, the P5, and the three posterior urosomites and caudal rami, and was also able to observe the armature formula for P1–P4. On the other hand, he dissected one male and described those parts that varied from Wilson's (1932) original description. The Mexican material keys out *Q. capillata* using Wells' (2007) key. In fact, the armature formula of the female P1–P4 (see Figures 9A, B, 10A, B) fully corresponds to Coull's (1976) observations, being the armature formula of the P3 EXP unique for the species and for *Q. longifurcata* (Coull, 1976). The female antennule (Figure 8A), the A2 EXP (Figure 8B), and the female and male P5 (Figure 12F, D, respectively) also agree well with Coull's (1976) drawings and text descriptions.

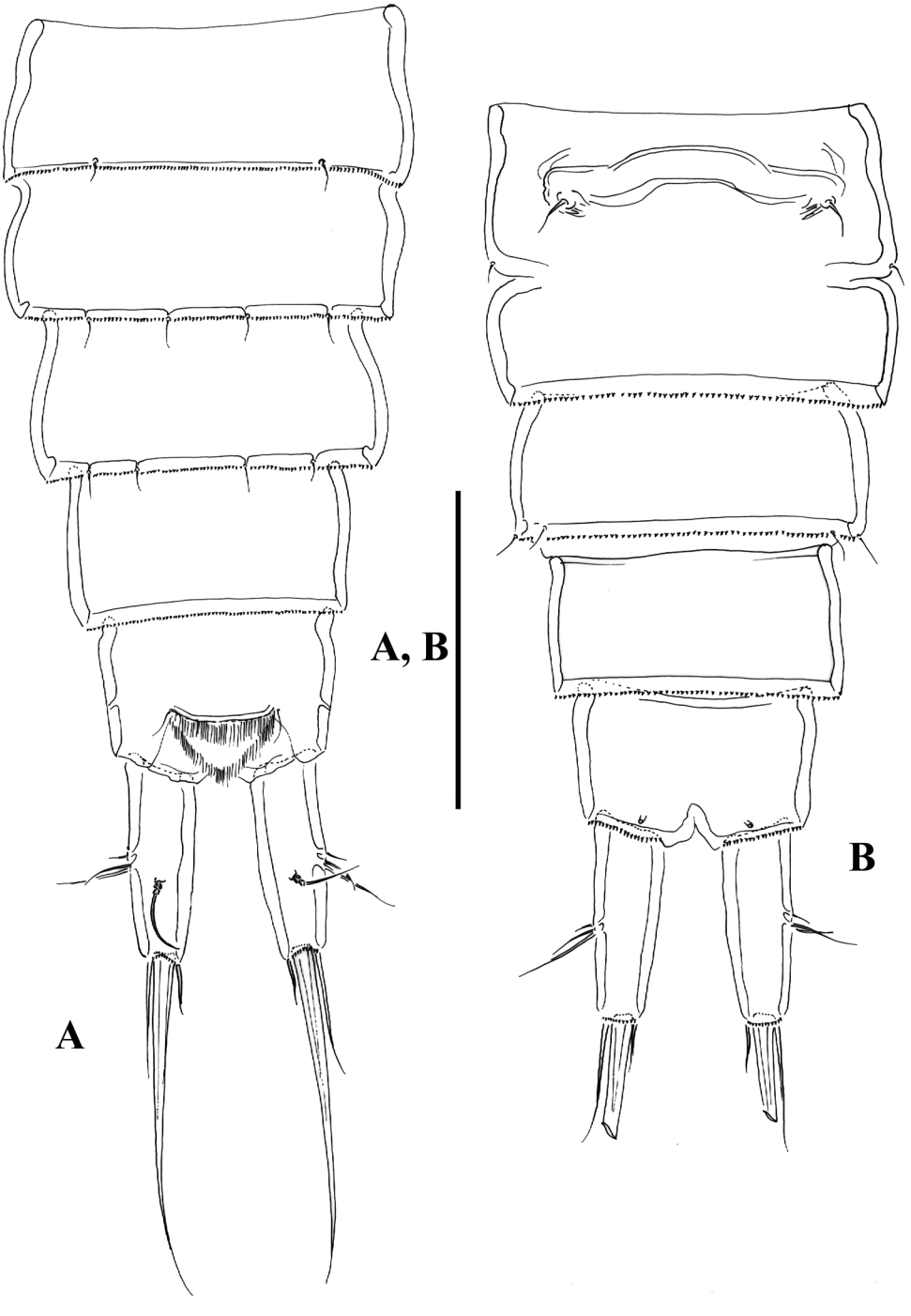

Figure 7. *Quinquelaophonte capillata* (Wilson), female. (A) Urosome, dorsal (P5-bearing somite omitted); (B) urosome, ventral (P5-bearing somite omitted). Scale bars: A, B, 100 μm.

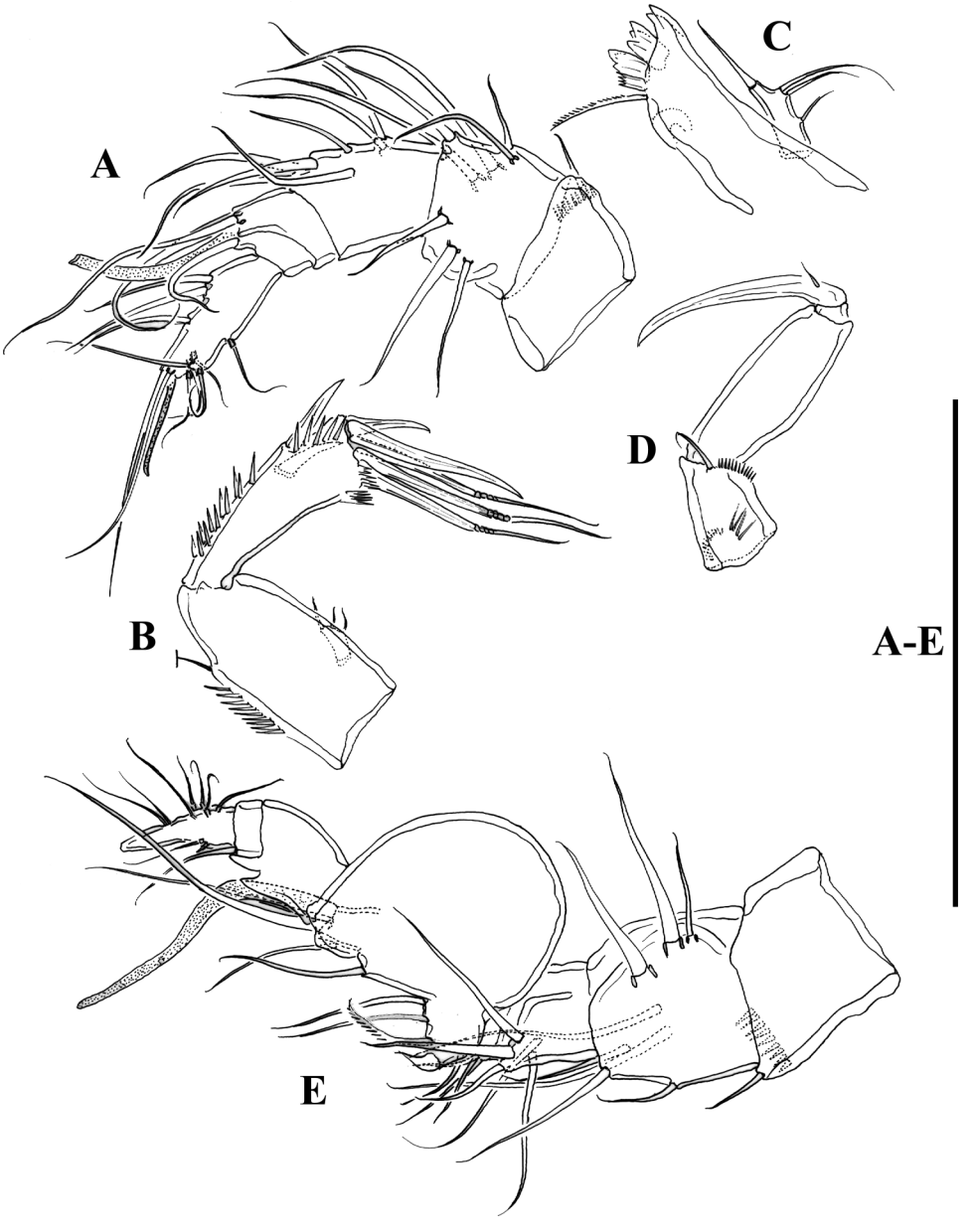

Figure 8. ***Quinquelaophonte capillata*** (Wilson), female. (A) Antennule; (B) antenna; (C) mandible; (D) maxilliped. ***Quinquelaophonte capillata*** (Wilson), male. (E) Antennule. Scale bars: A–E, 100 μm.

The male P2 (Figure 12A) agrees well with Wilson's (1932) description and Coull's (1976) observations. The male P3 EXP (Figure 12B) of the Mexican material agrees well with both Wilson's (1932) and Coull's (1976) observations. On the other hand, even though Wilson (1932) omitted any comment on the male P3 ENP, he showed

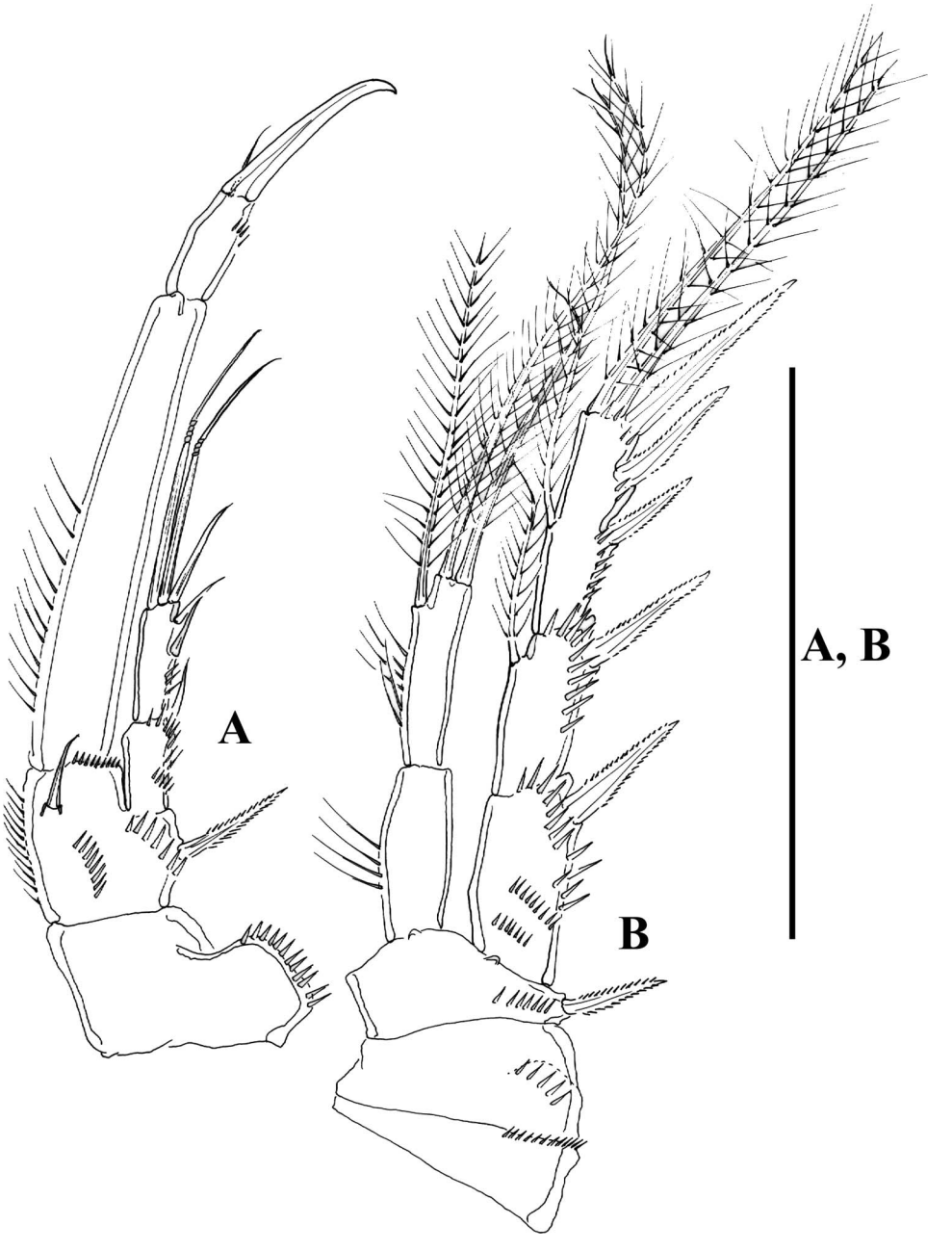

Figure 9. *Quinquelaophonte capillata* (Wilson), female. (A) P1; (B) P2. Scale bars: A, B, 100 μm.

this ramus with six seta/spines, and in his paper, Coull (1976) observed only five elements. The male P3 ENP of the Mexican material (Figure 12B) is similar to that observed by Coull (1976) except for the outer element, which has been described by Coull (1976) as a seta, but appears as an acute and short process in the Mexican

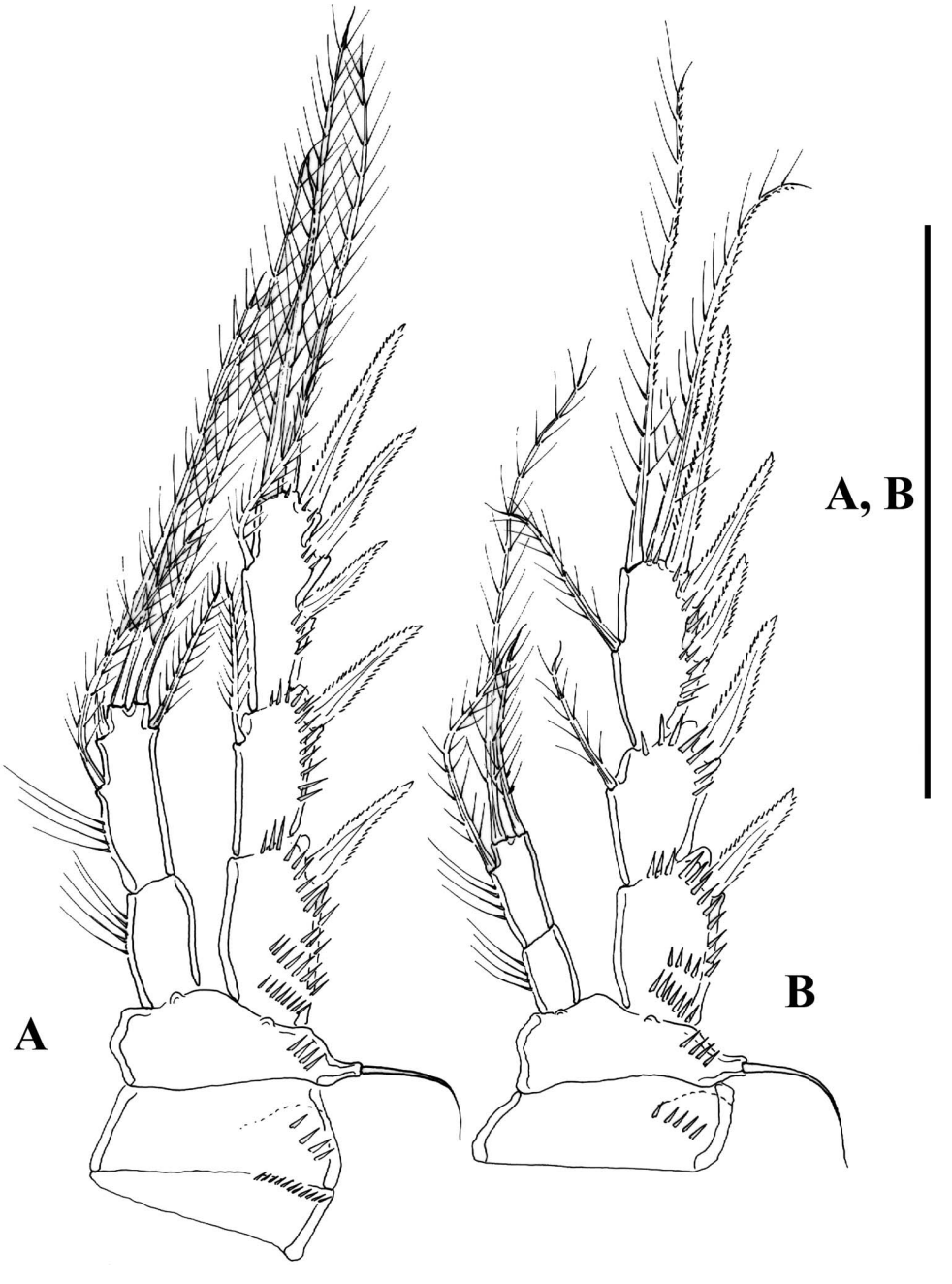

Figure 10. *Quinquelaophonte capillata* (Wilson), female. A, P3; B, P4. Scale bars: A, B, 100 μm.

specimens. Sewell (1924) and Wells and McKenzie (1973) observed homologous structures for *Q. quinquespinosa*. Wilson (1932) described the male P4 ENP as possessing four elements, and Coull (1976) redescribed this limb and showed the presence of

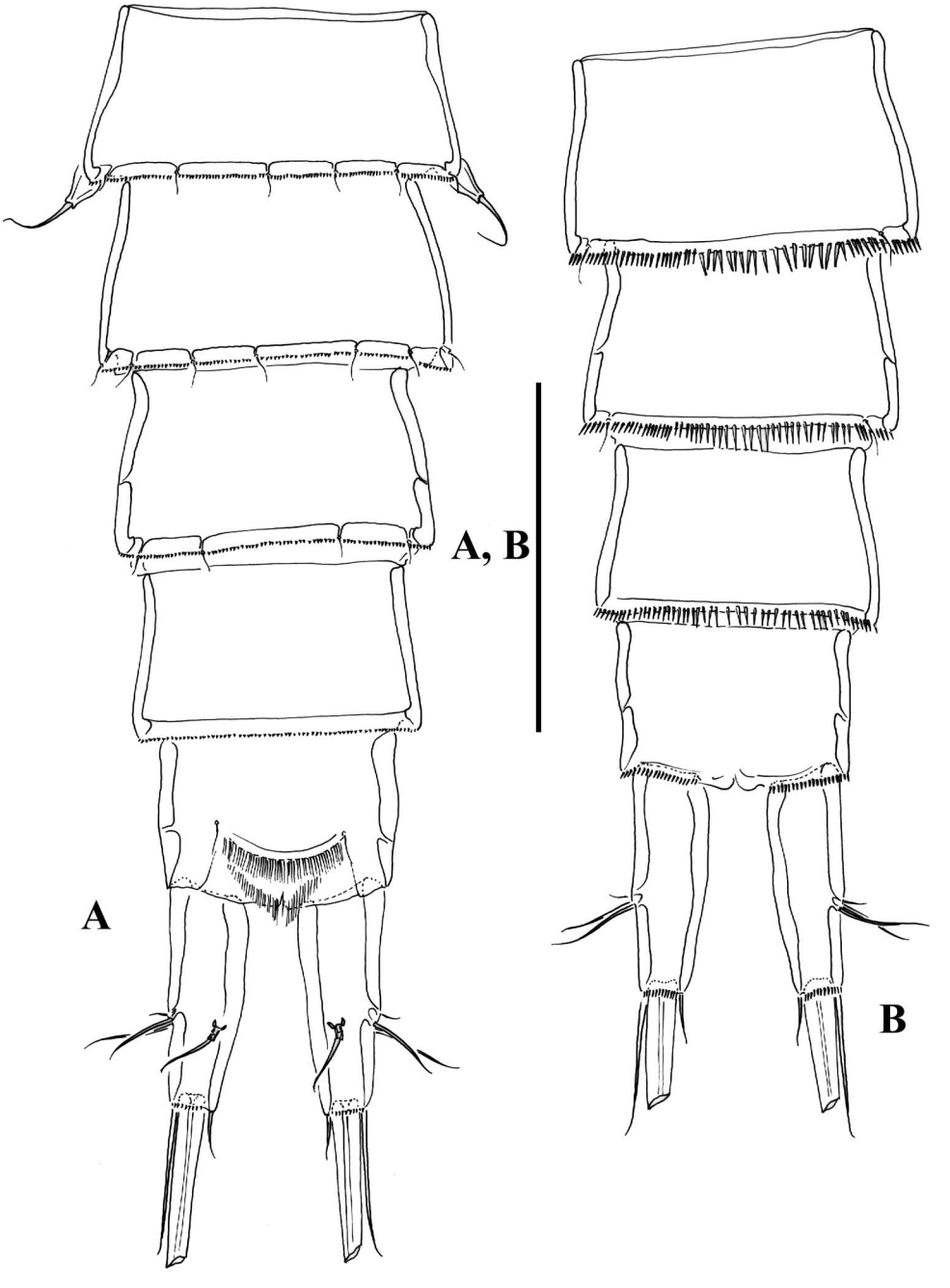

Figure 11. *Quinquelaophonte capillata* (Wilson), male. (A) Urosome, dorsal (P5-bearing somite omitted); (B) urosome, ventral (P5-bearing somite and second urosomite omitted). Scale bars: A, B, 100 μm.

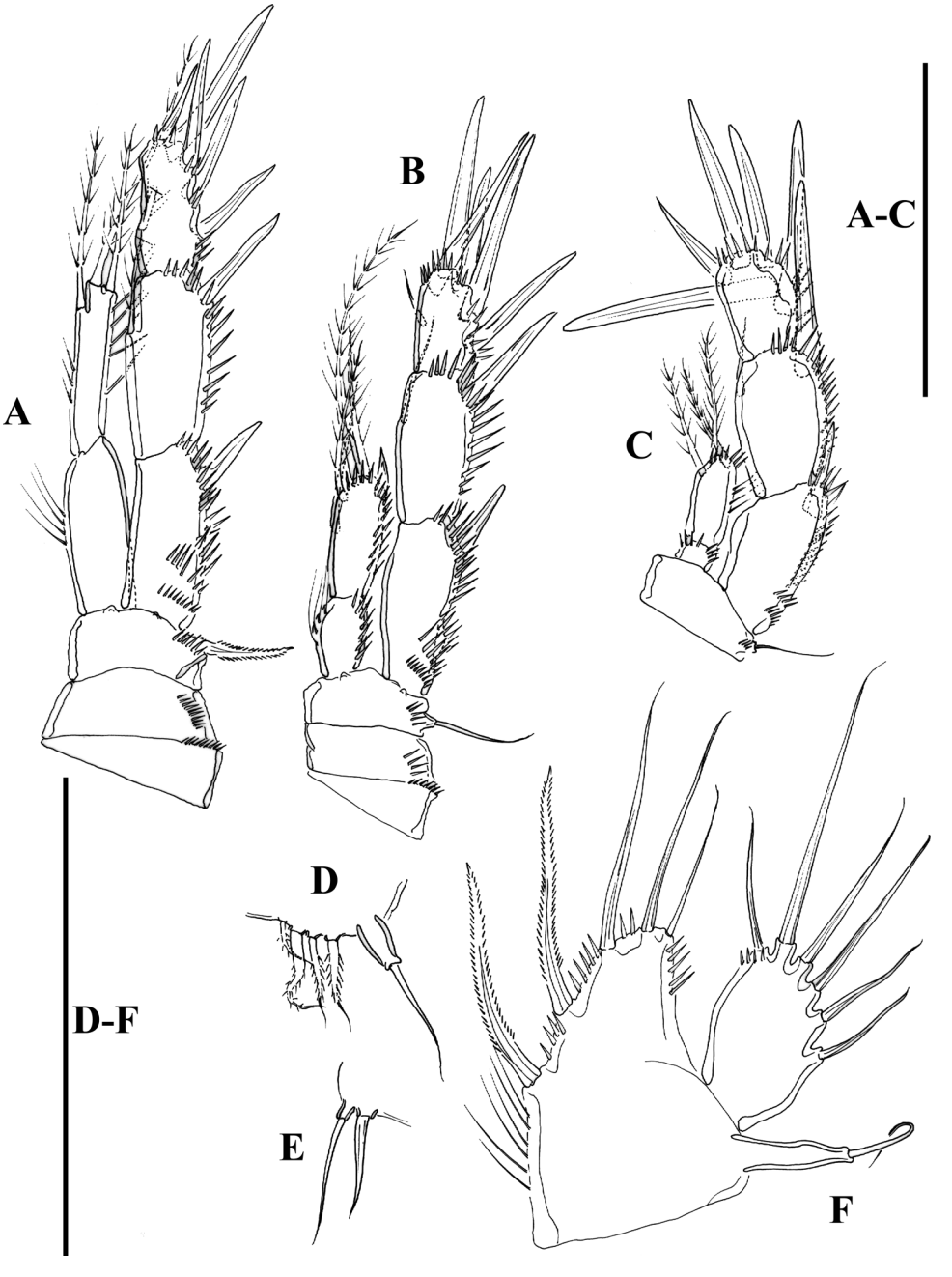

Figure 12. *Quinquelaophonte capillata* (Wilson), male. (A) P2; (B) P3; (C) P4; (D) P5; (E) P6. *Quinquelaophonte capillata* (Wilson), female. (F) P5. Scale bars: A–F, 100 μm.

three setae only. The male P4 ENP of the Mexican material (Figure 12C) agrees well with Coull's (1976) observations. On the other hand, the male P4 EXP as figured by Wilson (1932) and Coull (1976) are identical, but differ from the Mexican material in

that the EXP3 lacks the inner small seta in the latter (Figure 12C). Seemingly, Coull (1976) based his observations on one dissected male only. It is not clear whether he inspected the other five males contained in Wilson's vial, and nothing was said about the intraspecific variability of the species, which, at least for *Q. quinquespinosa*, seems to be ample. Also, the identification of the Mexican specimens was based on one adult female and one adult male, and the variability could not be assessed. Until this is done it is suggested that the Mexican material be attributed to *Q. capillata*.

Genus ***Onychoquinpes*** gen. nov.

Diagnosis of genus

As for the type and only species (see below).

Type species

Onychoquinpes permixtionis sp. nov.

Etymology

The generic name alludes to the relationship of the genus with *Onychocamptus* Daday and *Folioquinpes* Fiers and Rutledge.

Onychoquinpes permixtionis sp. nov.
(Figures 14–21)

Material examined

One female holotype (EMUCOP-080405-14), one male allotype (EMUCOP-080405-15) preserved in alcohol, five dissected female (EMUCOP-080405-16, EMUCOP-080405-17, EMUCOP-080405-18, EMUCOP-080405-19, EMUCOP-080405-20) and four dissected male paratypes (EMUCOP-080405-21, EMUCOP-080405-22, EMUCOP-080405-23, EMUCOP-080405-24), and one CI, one CIV, and one CV paratypes (EMUCOP-080405-25), one male paratype (EMUCOP-080405-26), one male and one female paratype (EMUCOP-080405-27), one female paratype (EMUCOP-080405-28), and four female and three male paratypes (EMUCOP-080405-29) preserved in alcohol. Collected from El Verde estuary, Sinaloa, Mexico (23°25′30″ N, 106°33′30″ W), 8 April 2005, stns. 1 (sand, 3.38%, clay, 64.41%, silt, 32.21%; oxygen content, 2.7 ml l^{-1}; salinity, 21‰; carbon content, 2.6%), 2 (sand, 5.8%, clay, 24.15%, silt, 80.52%; oxygen content, 2.7 ml l^{-1}; salinity, 20‰; carbon content, 2.9%), 6 (sand, 6.46%, clay, 59.52%, silt, 34.01%; oxygen content, 3.7 ml l^{-1}; salinity, 20‰; carbon content, 2.4%), 8 (sand, 10.71%, clay, 62.5%, silt, 26.79%; oxygen content, 5.6 ml l^{-1}; salinity, 20‰; carbon content, 3.0%), coll F. E. Vargas Arriaga, F.N. Morales Serna and S. Gómez.

Type locality

El Verde Estuary, Sinaloa State, north-western Mexico (23°25′30″N, 106°33′30″W).

Etymology

The specific epithet (Latin *permixtionis*, mixture) makes reference to the mixture of characters present both in *Onychocamptus* and *Folioquinpes*.

Descriptions

Female. Habitus (Figure 13A, B), fusiform. Total body length measured from tip of rostrum to posterior margin of caudal rami, ranging from 405 μm to 535 μm (mean = 494 μm; $n = 11$). Cephalothorax, prosomites and urosomites covered with small spinules, and with row of small spinules along posterior and lateral margins. Rostrum (Figure 13C) fused to cephalic shield, with flat tip, with row of setules ventrally, flanked by pair of sensilla. Genital-double somite distinct dorsally (Figures 13A, 14A) and laterally (Figure 13B), fused ventrally (Figure 14B); lateral processes of genital half moderately developed, with a sensillum arising from bulbous structure with tiny spinules; second half of genital double somite as previous somite dorsally, lateral processes moderately developed, with sensilla. Fourth urosomite as previous somite. Fifth urosomite as preceding somite, except for lack of sensilla in former. Anal somite (Figure 14A, B) with ventral tube pores; posterior margin with spinules dorsally and ventrally; anal operculum rounded, posterior margin plain, flanked by two sensilla. Caudal rami (Figure 14C, D) about 2.6 times as long as wide, with seven setae; seta I small, seta II dorsal to seta I, seta III visibly longer than seta II and situated laterally close to distal outer corner, seta IV nearly as long as seta II and fused basally to seta V, latter being longest, without fracture plan, seta VI small, arising at inner distal corner and about twice as long as seta I, seta VII situated dorsally close to posterior margin of ramus and biarticulated at base.

Antennule (Figure 16A) five-segmented; first segment with medial and distal small inner spinules; first and second segments about 1.5 times as long as wide; third segment longest, about three times as long as wide; fourth segment smallest; fifth segment elongate. Armature formula, I-(1); II-(8); III-(9 + ae); IV-(1); V-(9 + (1 + ae)).

Antenna (Figure 15A). Coxa as figured. Allobasis with one abexopodal seta, and with inner spinules. Exopod one-segmented, with two lateral and two distal elements, and with row of spinules. Free endopodal segment with inner row of spinules, with two spines and one slender seta laterally, and two strong spines, two geniculate single setae and one element fused to tiny seta basally.

Mandible (Figure 16B, C). Strong gnathobase with bi- and multicuspidate teeth distally and one pinnate seta laterally. Palp small, one-segment, armed with one lateral and four apical elements.

Maxillule (Figure 16D). Arthrite with five spines and a slender seta apically, and a slender seta laterally, with some spinules as depicted. Coxa with two setae. Basis with three elements (one element broken in Figure 16D). Exopod seemingly represented by one seta. Endopod represented by three elements.

Maxilla (Figure 16E). Syncoxa with outer and inner spinules as depicted; with two endites, each with three setae. Allobasis drawn into strong claw with one anterior and one posterior accessory seta. Endopod represented by two long elements.

Maxilliped (Figure 16F). Syncoxa with spinular rows as depicted, and with one apical seta; basis with small spinules along outer margin. Endopodal segment very small, with claw with one accompanying seta.

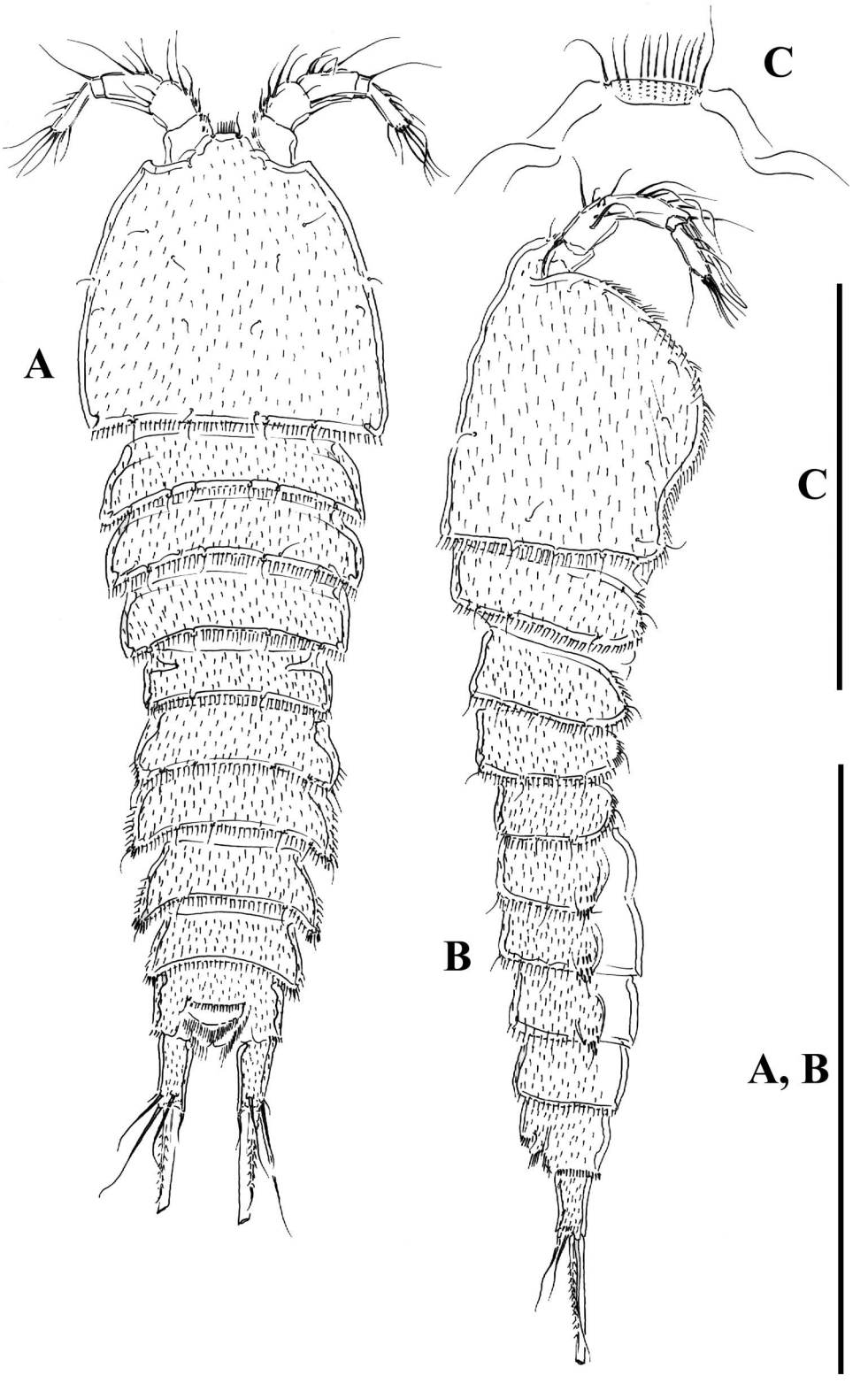

Figure 13. *Onychoquinpes permixtionis* gen. nov., sp. nov., female. (A) Habitus, dorsal; (B) habitus, lateral; (C) rostrum, dorsal. Scale bars: A, B, 300 μm; C, 50 μm.

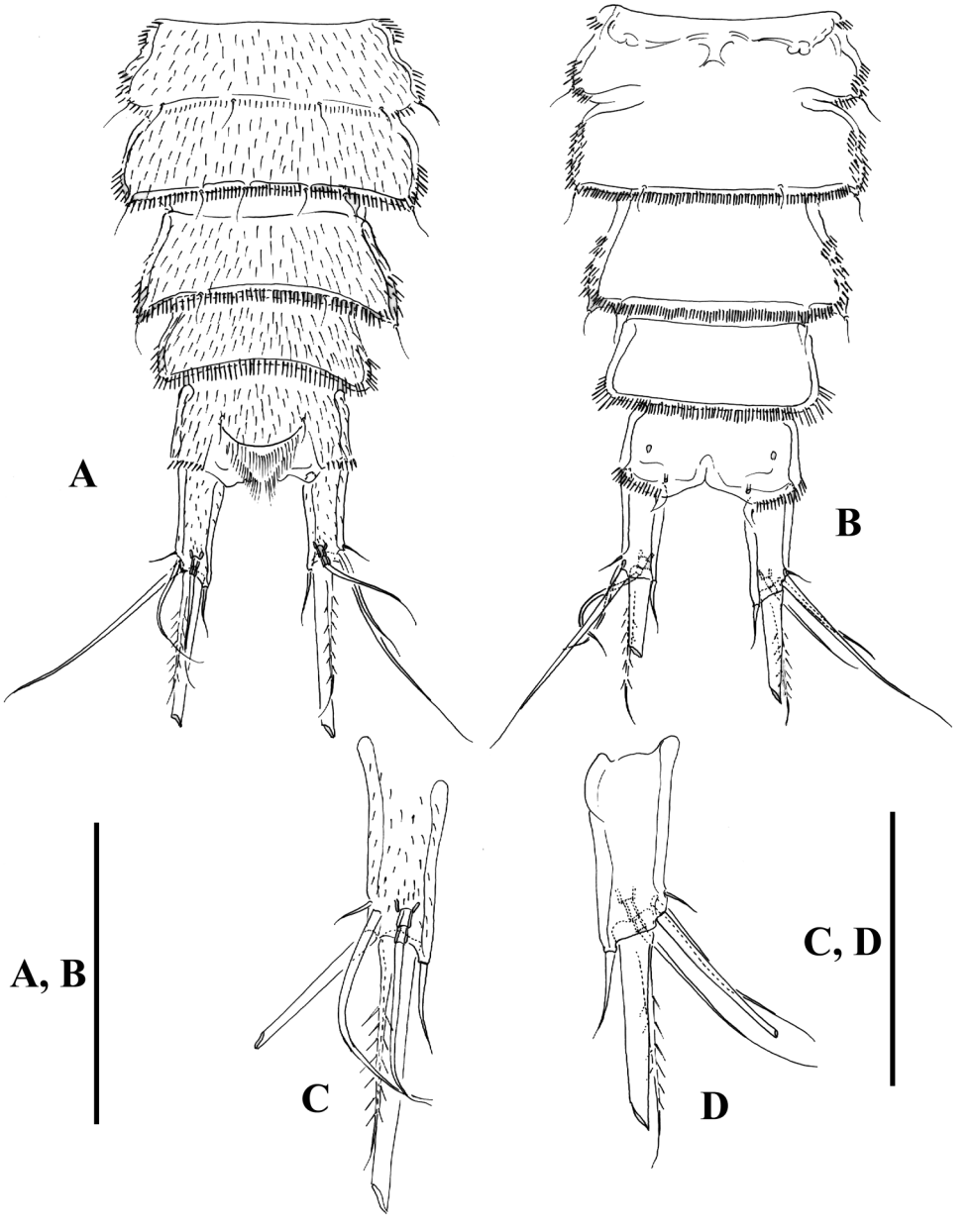

Figure 14. *Onychoquinpes permixtionis* gen. nov., sp. nov., female. (A) Urosome, dorsal (P5-bearing somite omitted); (B) urosome, ventral (P5-bearing somite omitted); (C) left caudal ramus, dorsal; (D) left caudal ramus, ventral. Scale bars: A, B, 100 μm; C, D, 50 μm.

P1 (Figure 17A). Coxa with several spinules as figured. Basis with longitudinal row of spinules, with naked inner element and pinnate outer element. Rami two-segmented. Exopod barely reaching proximal fifth of ENP1 because of the remarkable elongation of the basis at the insertion site of ENP; EXP1 with one outer spine; EXP2 with three

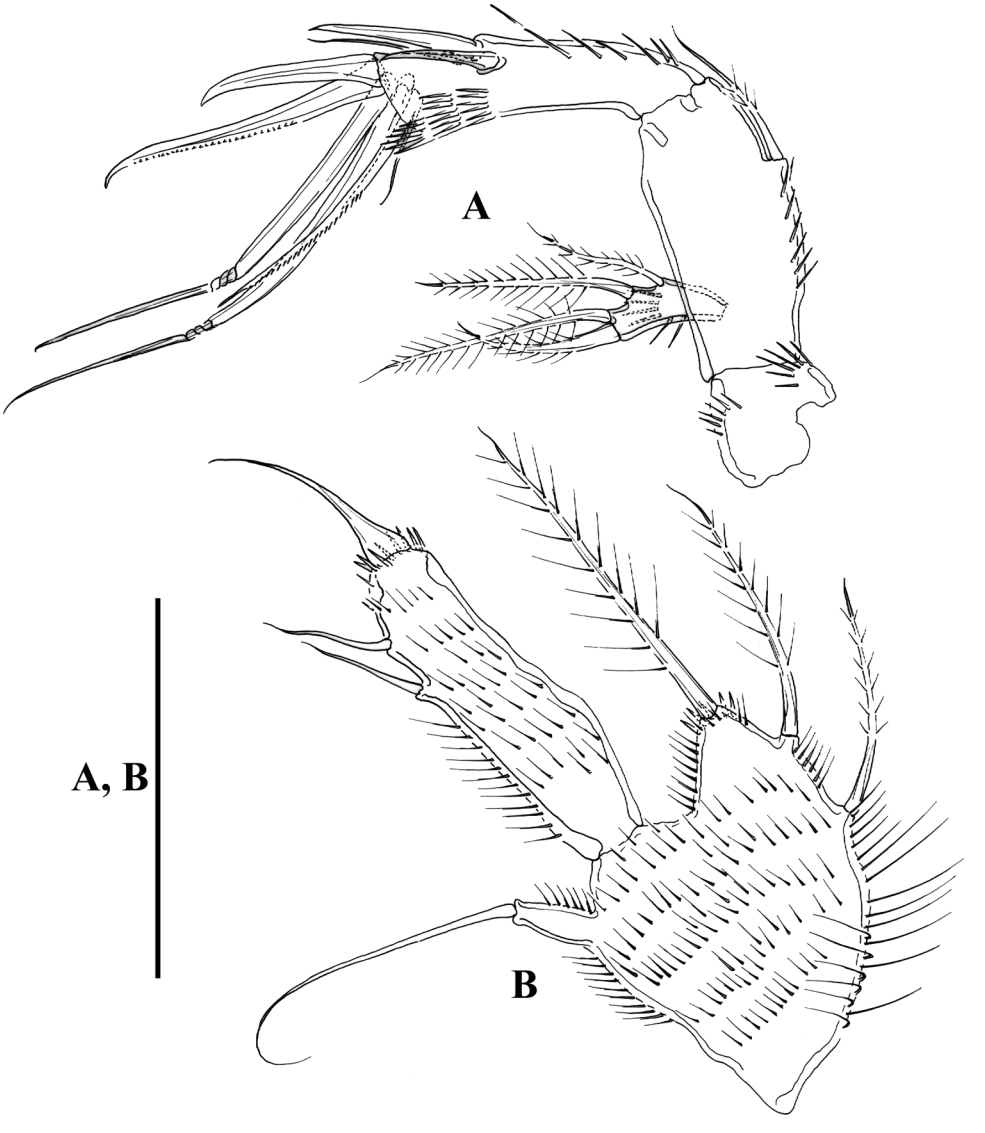

Figure 15. *Onychoquinpes permixtionis* gen. nov., sp. nov., female. (A) Antenna; (B) P5. Scale bars: A, B, 50 μm.

spines and two geniculate setae. Endopod elongate; ENP1 about seven times as long as wide, ornamented as depicted; ENP2 about three times as long as wide, with some outer spinules, with one small apical seta and one strong claw, the latter about twice as long as supporting segment.

P2 (Figure 17B). Coxa and basis ornamented as illustrated; the latter with outer pinnate spine-like element. Exopod three-segmented; EXP1 without, EXP2 with inner seta; EXP3 with three outer spines, two apical setae and one inner element. Endopod two-segmented, reaching slightly beyond EXP2; first segment without, second segment with two inner and two apical setae.

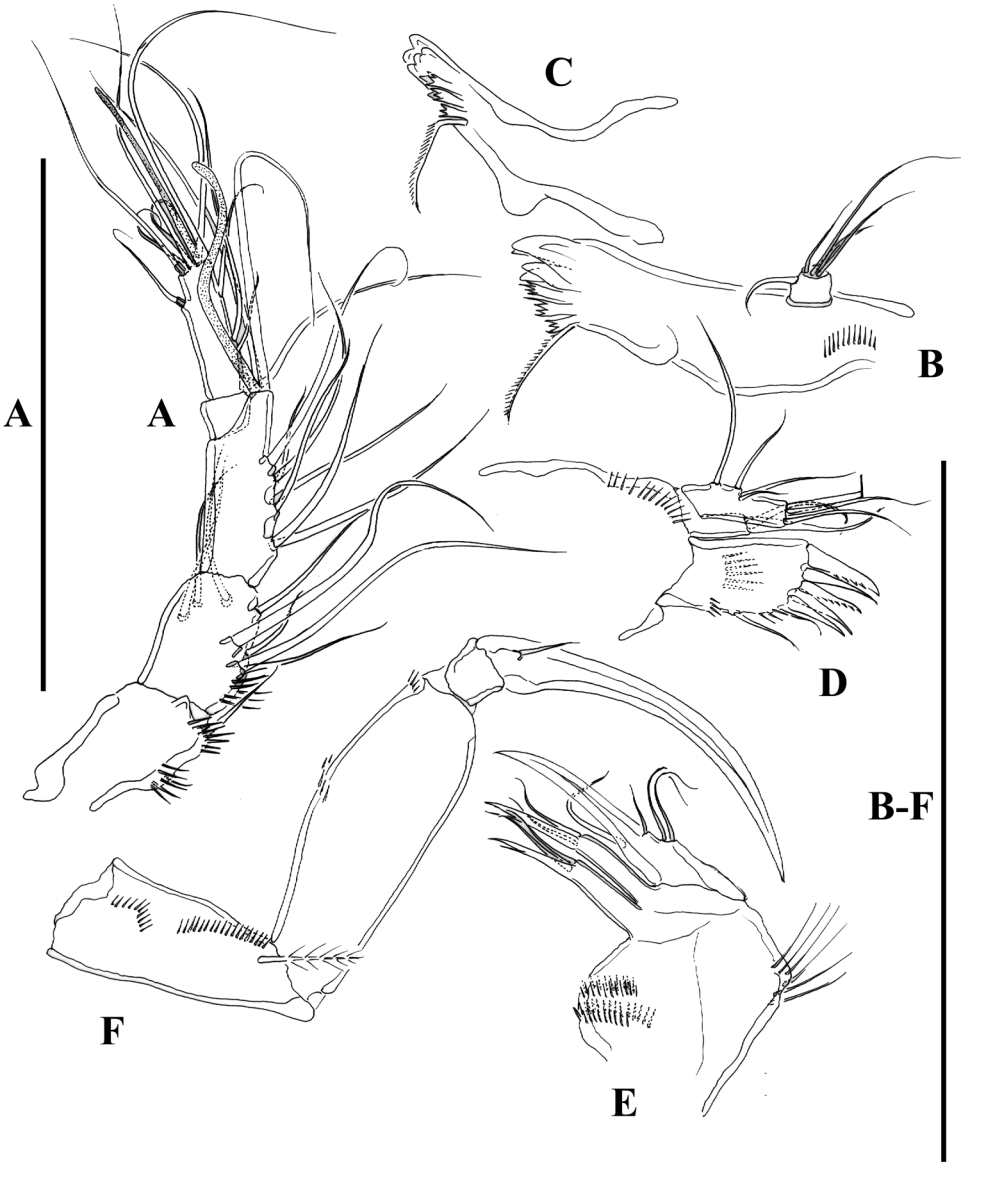

Figure 16. *Onychoquinpes permixtionis* gen. nov., sp. nov., female. (A) Antennule; (B) mandible; (C) gnathobase of mandible, another view; (D) maxillule; (E) maxilla; (F) maxilliped. Scale bars: A–F, 100 μm.

P3 (Figure 18A). Coxa and basis ornamented as illustrated; the latter with long outer seta. Exopod as in P2. Endopod two-segmented, reaching tip of EXP2; first segment without, second segment with three inner, two apical, and one outer element.

P4 (Figure 18B). Coxa and basis as in P3. Exopod as in P3 except for comparatively shorter EXP3. Endopod two-segmented, reaching half of EXP2; first segment without, second segment with one inner, one apical and one outer seta.

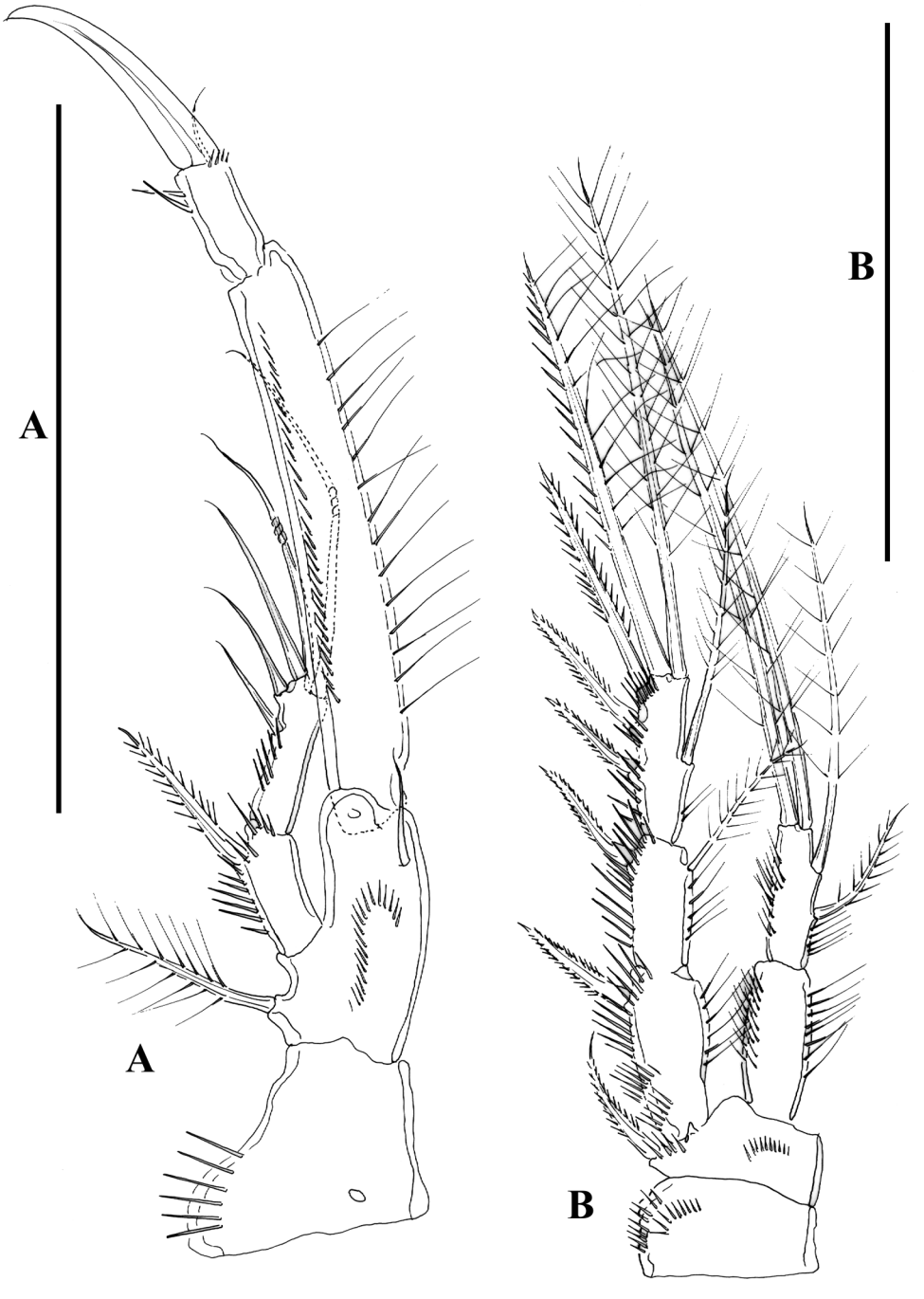

Figure 17. *Onychoquinpes permixtionis* gen. nov., sp. nov., female. (A) P1; (B) P2. Scale bar: A, B, 100 μm.

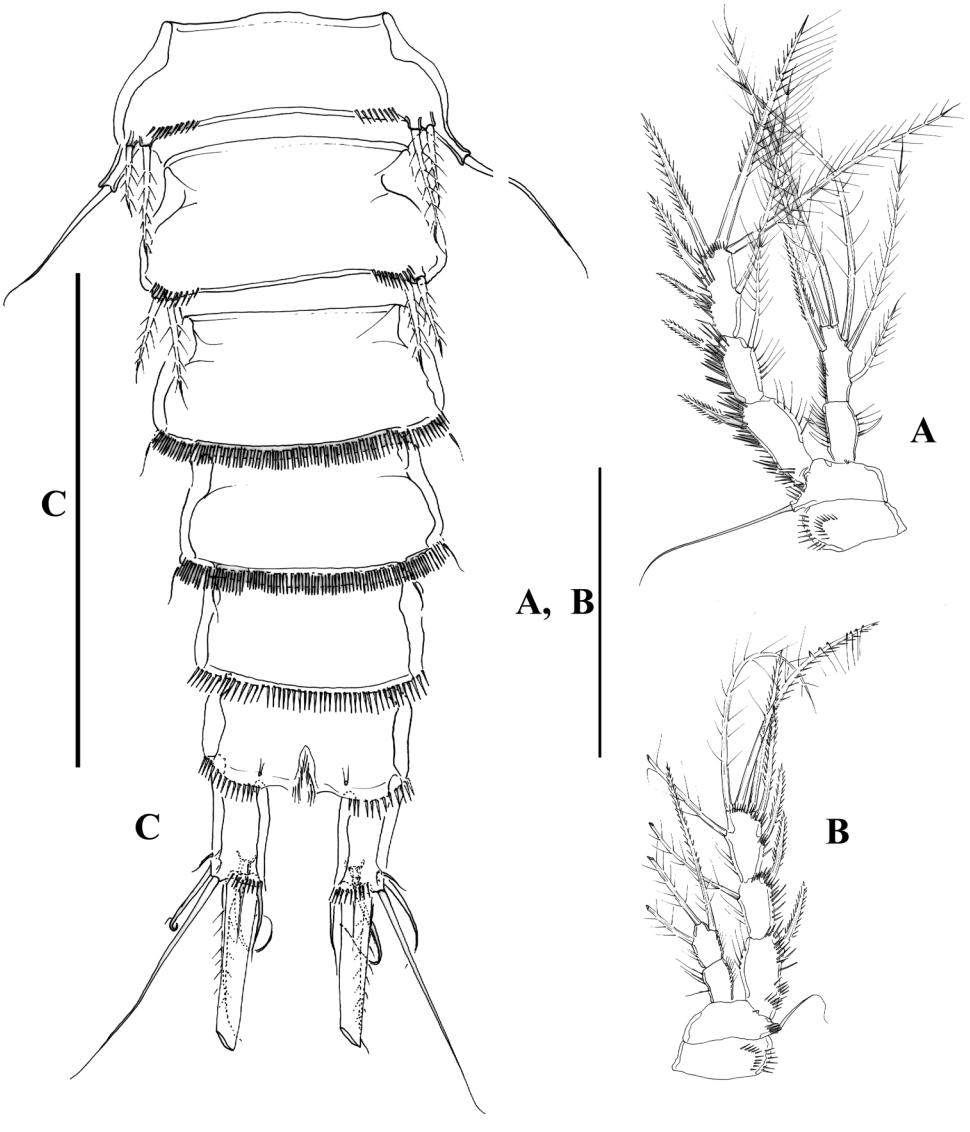

Figure 18. *Onychoquinpes permixtionis* gen. nov., sp. nov., female. (A) P3; (B) P4. *Onychoquinpes permixtionis* gen. nov., sp. nov., male. (C) Urosome, ventral. Scale bars: A–C, 100 μm.

P5 (Figure 15B) with separate rami. Baseoendopodal lobe well developed, with three setae plus outer seta of basis, and ornamented as shown. Exopod elongate, with two outer and one apical seta, the latter broad at its base, ornamented as depicted.

Armature formula as in Table 1.

Male. Habitus as in female, except for separate second and third urosomites (Figure 18C). Total body length ranging from 325 μm to 350 μm measured from tip of rostrum to posterior margin of caudal rami (mean = 337 μm; $n = 6$).

Table 1. Armature formula of the genus *Onychoquinpes* gen. nov.

	EXP	ENP
P1	I-0;III,2,0	0-0;0,I1,0
P2	I-0;I-1;III,I1,1	0-0;0,2,2
P3	I-0;I-1;III,I1,1	♀0-0;1,2,3/♂0-0;outer apophysis-1;022
P4	I-0;I-1;III,I1,1	0-0;1,1,1
P5	3	♀3 + 1 (basal)/♂2 + 1 (basal)

Antennule (Figure 19A, B) seven-segmented, subchirocer; fourth segment as in Figure 19B; fifth segment with two acute projections. Armature formula difficult to define: I-(1); II-(9);III-(8);IV-(10 + ae);V-(0);VI-(1); VII-(8 + (1 + ae)).

P1, P2 and P4 as in female; P3 EXP as in female; P3 ENP dimorphic (Figure 19C), three-segmented, first segment as in female, second segment with inner seta and outer apophysis, third segment with two inner and two apical setae. P5 (Figures 18C, 19D) fused to supporting somite; ornamented as illustrated; with two setae (outer most smaller) plus outer seta of basis. P6 (Figure 18C, 19E) with spinules as figured, represented by two setae.

Remarks

The taxonomic history of the genus *Onychocamptus* is somewhat complicated and involves several events such as the establishment of the genus *Echinolaophonte* Nicholls (Nicholls 1941) and further diagnosis of the genus *Onychocamptus*, creation of three subgroups within the genus (*mohammed*-, *horridus*- and *kliei*-group) and reallocation of Nicholls' (1941) species of *Echinolaophonte* in the *horridus*-group (Lang 1948). Also, some species listed in Lang (1948: 1416) (i.e. *Cleta minuticornis* Buchholz, *Laophonte hystrix* Brian and *Laophonte steueri* Gurney) were synonymized either with *Laophonte horrida* (=*Echinolaophonte horrida*) or *Laophonte armiger* (=*Echinolaophonte armiger*) (Nicholls 1941; Lang 1948). Upon recognition of two forms of *E. armiger*, Lang (1965) suggested that this genus might be composed of two lines of evolution as evidenced by the armature formula of the swimming legs, and noted that, of the species referred to *Onychocamptus*, only the species of his *mohammed*-group remain (i.e. *Onychocamptus mohammed* (Blanchard and Richard), *Onychocamptus chathamensis* (Sars), *Onychocamptus talipes* (Wilson) and *Onychocamptus bengalensis* (Sewell)).

Another part of this complex taxonomic history involves also the erection of the genus *Klieonychocamptus* Noodt (Noodt 1958) to accommodate five species/subspecies (*Klieonychocamptus kliei* (Monard) s. str., *Klieonychocamptus kliei adriaticus* (Petkovski) (comb. nov. for *Onychocamptus kliei adriatica* (Petkovski) (after Vervoort 1964)), *Klieonychocamptus kliei confluens* Nicholls, *Klieonychocamptus diarticulatus* Nicholls, and *Klieonychocamptus discipes* Noodt). Serban and Pleşa (1957) described *Klieonychocamptus ponticus* (Serban and Pleşa) (comb. nov. for *Onychocamptus ponticus* Serban and Pleşa (after Vervoort 1964)), and Lang (1965) and Marcus (1971) relegated *K. diarticulatus* as a synonym of the former, and, in view of the great diversity in the male sexual dimorphism, Lang (1965) questioned the naturalness of *Klieonychocamptus*. This was also noted by Wells and Rao (1987), and Lee

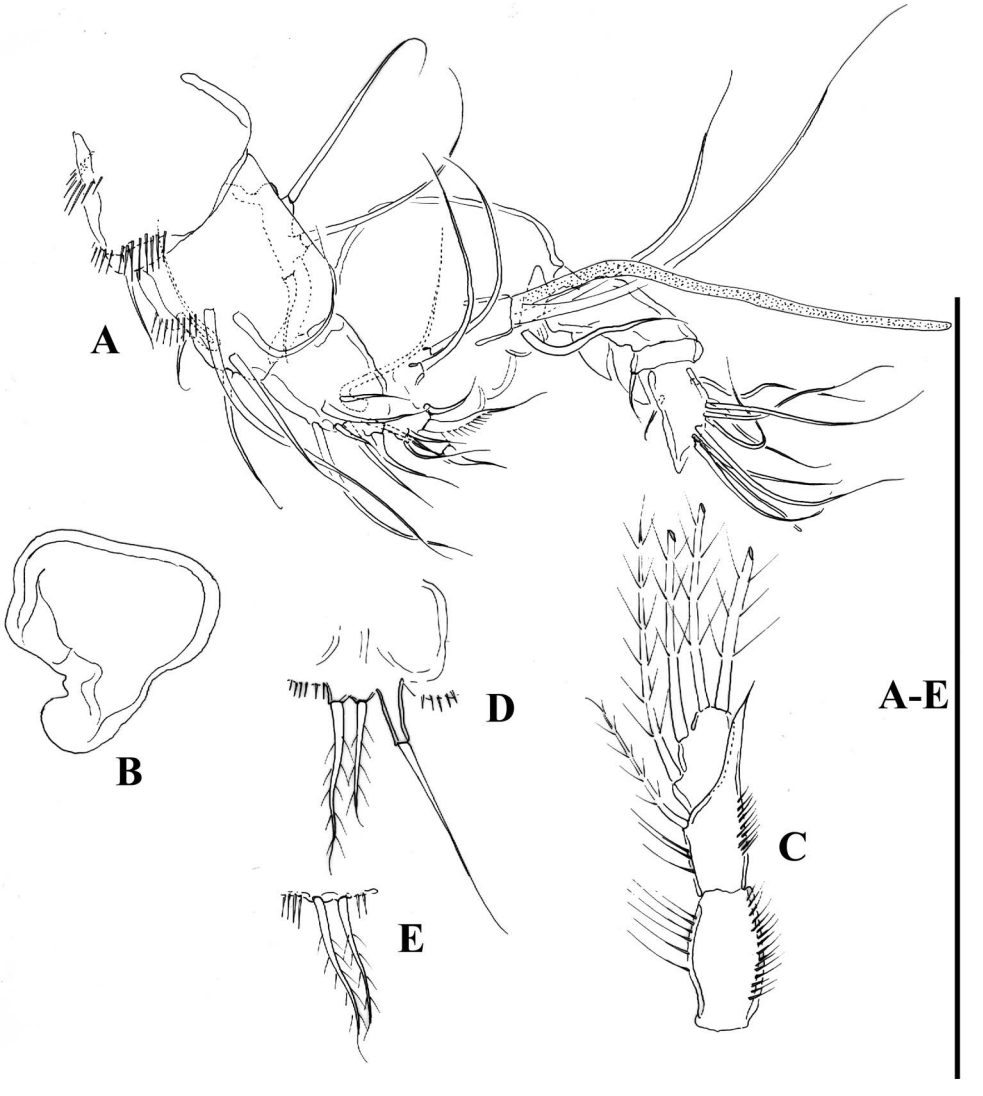

Figure 19. *Onychoquinpes permixtionis* gen. nov., sp. nov., male. (A) Antennule; (B) fourth antennulary segment; (C) P3 ENP; (D) P5; (E) P6. Scale bars: A–E, 100 μm.

and Huys (1999) created the genus *Psammoplatypus* Lee and Huys to accommodate *Paronychocamptus proprius* Lang and *K. discipes* Noodt as *Psammoplatypus proprius* (Lang) and *Psammoplatypus discipes* (Noodt), respectively.

Fiers (1998) demonstrated that *O. talipes* is a junior subjective synonym of *O. mohammed*, and Fiers and Rutledge (1990) created and diagnosed the genus *Folioquinpes*, with its type species, *Folioquinpes mangalis* Fiers and Rutledge being known from Papua New Guinea (Fiers and Rutledge 1990), Louisiana (USA) (Fiers and Rutledge 1990; Rutledge and Fleeger 1993) and Malaysia (Somerfield et al. 1998). In the same paper, Fiers and Rutledge (1990) removed *O. chathamensis* from

Onychocamptus and placed the species into *Folioquinpes* as *Folioquinpes chathamensis* (Sars). At present, *F. chathamensis* is known from the Chatham Islands (Sars 1905), South Africa (Ruhe 1914), India (Sewell 1924), the Gulf of Mexico (Suárez-Morales et al. 2009) and the Galapagos (Mielke 1981). The establishment of *Folioquinpes* to accommodate *F. mangalis* and further reallocation of *F. chathamensis* was based primarily on the lack of sexual dimorphism of the male swimming legs of these two species and on the foliaceous female P5 EXP. Lee and Huys (1999) presented an updated diagnosis of *Onychocamptus* and considered the genus as an ancient lineage as evidenced by the retention of the inner proximal seta in the female and male P3 ENP2 (this primitive condition is present also in the *cornuta*-species group of *Laophonte* (Lee and Huys 1999), and in the subfamily Esolinae Huys and Lee, except for *Troglophonte* Huys and Lee where it is lost in both sexes (Huys and Lee 2000)), and by the presence of an outer distal apophysis in the male P3 ENP2 (homologous to the outer element of the female P3 ENP2). Lee and Huys (1999) suggested that the lack of sexual dimorphism of the male swimming legs of *Folioquinpes* could be the result of heterochrony.

The new genus described herein exhibits a mixture of character states typical for *Onychocamptus* (presence of the primitive inner proximal seta in the female and male P3 ENP2, and the presence of an outer distal apophysis in the male P3 ENP2, and the armature formula of the P4 ENP2 (111)) and *Folioquinpes* (the foliaceous female P5 EXP, and the lack of sexual dimorphism in the male exopods) and is suggested to be placed in a new genus, *Onychoquinpes* gen. nov. The genus *Folioquinpes* bears a sister-group relationship with *Onychocamptus* (Lee and Huys 1999), which might also be the case for *Onychoquinpes* gen. nov. In their phylogenetic analysis, Huys and Lee (2000) confirmed the sister-group relationship between the *Laophonte cornuta*-group and *Onychocamptus*, and stressed that, even though the inclusion of advanced but related genera such as *Folioquinpes* might modify the relative position of *Laophonte* and *Onychocamptus*, the latter would show up as "an early speciation event predating the evolution of the other Laophontinae" (Huys and Lee 2000: 103) as evidenced by the retention of the ancestral setal formula of the male P3 ENP.

Further phylogenetic analysis in which genera such as *Folioquinpes* and *Onychoquinpes* gen. nov. are included, would confirm Lee and Huys' (1999) hypothesis of a sister-group relationship between *Onychocamptus*, *Folioquinpes* and *Onychoquinpes* gen. nov. Hence, *Onychocamptus* would be basal to the other two genera with an inner proximal seta in the female and male P3 ENP2, and the presence of an outer distal apophysis on the male P3 ENP2 homologous to the outer element of the female P3 ENP2. *Onychoquinpes* gen. nov. would represent an early offshoot, sharing with *Onychocamptus* the primitive inner proximal seta on the female and male P3 ENP2, and the presence of an outer distal apophysis on the male P3 ENP2. *Onychoquinpes* gen. nov. and *Folioquinpes* share the general shape of the female P5 and the slight dimorphism in the armature of the male P3 EXP and P4 EXP. Within *Folioquinpes*, *F. chathamensis* seems to be the most primitive species sharing with *Onychocamptus* and *Onychoquinpes* gen. nov. the presence of a primitive inner proximal seta on the female and male P3 ENP2. Both species of *Folioquinpes* are unique by the lack of sexual dimorphism of the male P3 ENP2 (without outer apophysis). *Folioquinpes mangalis* seems to be the more advanced representative of this lineage given the lack of the inner proximal seta on the male and female P3 ENP2.

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