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Doolia, A New Genus of Nannopodidae (Crustacea: Copepoda: Harpacticoida) from off Jeju Island, Korea

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Abstract: A new harpacticoid copepod is described from the waters off Jeju Island, Korea. This species displays a unique set of characteristics including a rostrum that is clearly demarcated from the cephalosome, a setular (spinular) row on the rostrum, a well-developed frill along the posterior margins of each body segment except for the cephalosome, long and cylindrical caudal rami, four segmented female antennules, paired genital apertures in the female, the absence of sexual dimorphism in legs P1–P4, and highly reduced P5 and P6 in the male. This combination of characteristics allocates the specimen to the family Nannopodidae Por, 1986, but the new species belongs to none of the extant genera within the family. A new genus, *Doolia,* is proposed. *Nannopus* is suggested as a sister taxon of the new genus based on shared plesiomorphic characteristics in the maxilliped, legs P1–P4, and P5. *Doolia* gen. nov. is the eighth genus of Nannopodidae, and an amended key for the genus is provided herein.

Keywords: taxonomy; huntermaniidae; cletodidae; rhizotrichidae; *Nannopus*; meiofauna

1. Introduction

The family Cletodidae sensu T. Scott, 1904 has been recognized in previous reports as being potentially the most heterogenous harpacticoid family [1]. Lang [2] recognized several lineages within the family, although he did not take any action on the subject. Por [1] revised and redefined the family Cletodidae T. Scott, 1905, establishing four new families: Paranannopidae Por, 1986, Huntemanniidae Por, 1986, Rhizotrichidae Por, 1986, and Argestidae Por, 1986. Among Por's new families, Huys [3] synonimized Huntemanniidae with Nannopodidae Brady, 1880. Consequently, two genera, *Metahuntemannia* Smirnov, 1946 and *Talpina* Dahms & Pottek, 1982 were re-allocated to the subfamily Hemimesochrinae Por, 1986 in the Canthocamptidae Brady, 1880 based on their affinities with genera including *Bathycamptus* Huys & Thistle, 1989, *Micropsammis* Mielke, 1975, *Isthmiocaris* George & Schminke, 2003, and *Perucamptus* Huys & Thistle, 1989 [4].

Currently, Nannopodidae includes about 25 valid species in seven genera: *Nannopus* Brady, 1880, *Pontopolites* T.Scott, 1894, *Huntemannia* Poppe, 1884, *Rosacletodes* Wells, 1985, *Laophontisochra* George, 2002, *Acuticoxa* Huys & Kihara, 2010, and *Talpacoxa* Corgosinho, 2012.

During a study of the harpacticoid copepods in Korean Waters, a nannopodid-like copepod was collected; however, the specimens could not be allocated to any extant genera in the family Nannopodidae. The present study aims to describe this new taxon and establish a new genus based on the current specimens from Korea.

2. Materials and Methods

Specimen Collection and Morphological Examinations

Samples were collected at one site, A5 (34°00' N, 123°30' E), among 18 field sites off the coast of Jeju Island, South Korea from September 24 to October 3, 2002 (Figure 1) by the R/V Ara (Jeju National

University) [5]. Sediments were collected with a box corer, and five replicates were taken from each box corer. Three replicates were used for analyses of meiofauna. Organisms were extracted from sediments by a Ludox-Am. Copepods were sorted under a dissecting microscope and stored in 70% ethanol. Dissections were applied to the specimens in lactic acid and the dissected appendages were mounted permanently on slides in lactophenol mounting medium. Preparations were sealed with transparent nail varnish. Each appendage was observed and drawn under an Olympus BX51 differential interference contrast microscope using a drawing tube. The descriptive terminology is adopted from Huys et al. [6]. Abbreviations are A1, antennule; A2, antenna; ae, aesthetasc; exp, exopod; enp, endopod; P1–P6, first to sixth thoracopod; exp(enp)-1(2, 3) to denote the proximal (middle, distal) segment of a ramus [6]. Specimens were deposited in the National Institute of Biological Resources (NIBR), Korea, and in the Marine Biodiversity Institute of Korea (MABIK). All scale bars in the figures are in μm

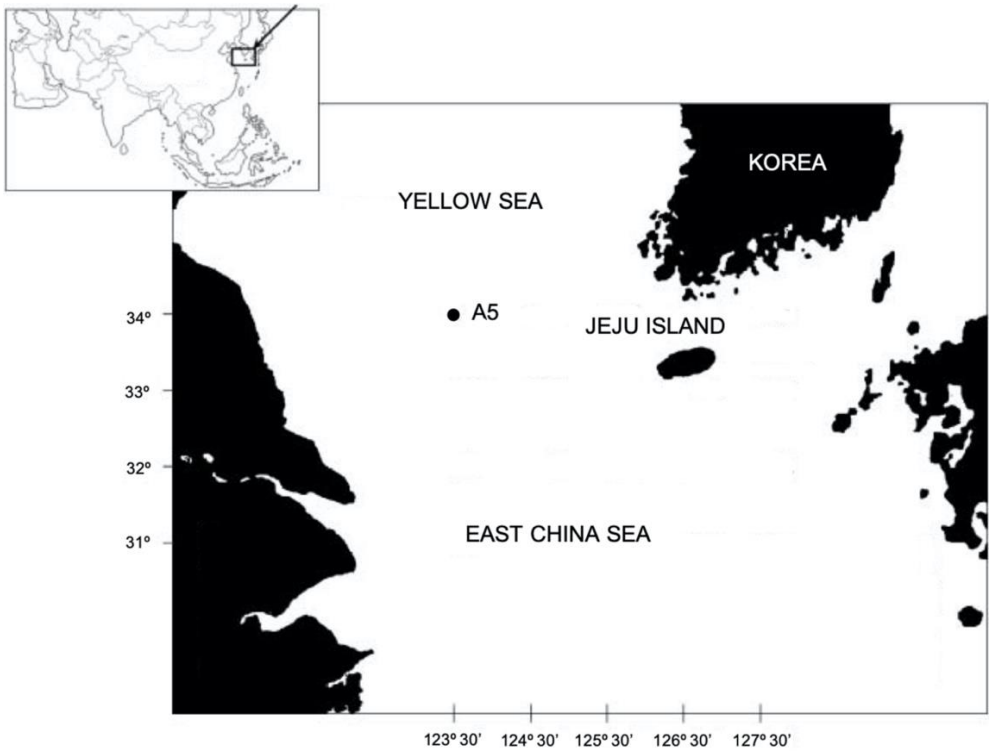

Figure 1. A map of the sampling location (reconstructed from [5]).

3. Systematic Account

Subclass Copepoda Milne Edwards, 1830
Order Harpacticoida Sars, 1903
Family Nannopodidae Por, 1986

3.1. Genus Doolia, gen. nov.

http://zoobank.org/urn:lsid:zoobank.org:act:2D8B250F-51BF-4DA8-AF59-965E25C72E0B

Diagnosis. Cylindrical body densely covered by denticles. Caudal rami cylindrical with six caudal setae and one large pore. Anal operculum well-developed with a spinular row along distal margin. Rostrum defined at base, with a pair of sensilla and a row of long spinules along anterior margin. Antennule four-segmented. Antenna three-segmented with one-segmented exopod. Mandibular palp well-developed with one segmented exopod and endopod. Maxillary syncoxa with two endites. Maxilliped subchelate. Swimming legs P1–P4 with three-segmented exopods and two-segmented endopods. Female P5 fused medially, with separate exopod. P6 with two naked setae in female. Sexual dimorphism in urosome, antennule, P5, and P6. No sexual dimorphism in swimming

legs. Male antennule eight-segmented, subchirocer. Male P5 baseoendopod fused with exopod, and represented by several setae. Male P6 represented by a small plate without ornamentation.

Type species: *Doolia ara* sp. nov. by original designation and monotype.

Etymology. The new genus was named after a famous cartoon character, "Dooly," a baby dinosaur created in 1983 in Korea.

3.2. Doolia ara, sp. nov.

Figures 2–7

http:/zoobank.org/urn:lsid:zoobank.org:act:5CABF7A6-2762-4784-92F3-0E1182D2FCD4

Type locality. Muddy sand substratum, station A5 (34°00′ N, 123°30′ E), off Jeju Island, the south west coast of Korea.

Material examined. Holotype 1♀ (NIBRIV0000862381) dissected on seven slides. Paratypes: three♀♀ and two♂♂; 2♀♀ (MABIK CR00246523 – 4) on five slides, 1♂ (MABIK CR00246525) on seven slides, 1♂ (NIBRIV0000862382) on six slides, and 1♀(NIBRIV0000862383) in 70% ethanol, all from the type locality, depth 66 m, collected by Y.H. Song and E.J. Nam during September 24 to October 3, 2002.

Etymology. The specific name refers to "Ara", the research vessel of Jeju National University, in appreciation of the crew and Prof. Joon Baek Lee (Jeju National University). Gender, feminine.

Female. Total body length: 239 μm (measured from anterior margin of rostrum to posterior margin of caudal rami). Largest width measured at posterior margin of cephalic shield: 63μm. Urosome gradually tapering posteriorly (Figure 2A).

Cephalothorax with serrulated posterior margin. Pleural areas rounded without lobate posterolateral angles. Entire surface covered with tiny denticles as illustrated [expressed as dots] in Figure 2A,B. Sensilla and a few pores are present as illustrated in Figure 2A,B.

Rostrum triangular-shaped (Figure 2A,C), broad at base, round anterior margin, clearly separated from cephalosome, and with a pair of sensilla and a row of long spinules along median anterior margin.

Pedigerous somites covered with minute denticles. Prosomites from P2-bearing to P4-bearing with well-developed, comb-shaped hyaline frills.

Urosome (Figures 2A–B, 3B,D) five-segmented, comprising P5-bearing somite, genital double-somite and three free abdominal somites. All urosomites covered with small denticles dorsally and ventrally and with well-developed hyaline frill along the hind margin. Genital double-somite (Figures 2A,B, 3B) without distinct dorsal surface ridge but with a thick internal cuticle layer indicating original segmentation; completely fused internally and externally. Genital field located near anterior margin (Figure 3B) with a large copulatory pore located in a median depression (Figure 3B). P6 with a small protuberance bearing two bare setae, inner seta longer than outer seta, and with a small pore next to Inner seta. Anal somite (Figure 3D) quadrate with well-developed operculum; opercular distal margin with a row of long spinules, and flanked by a pair of sensilla.

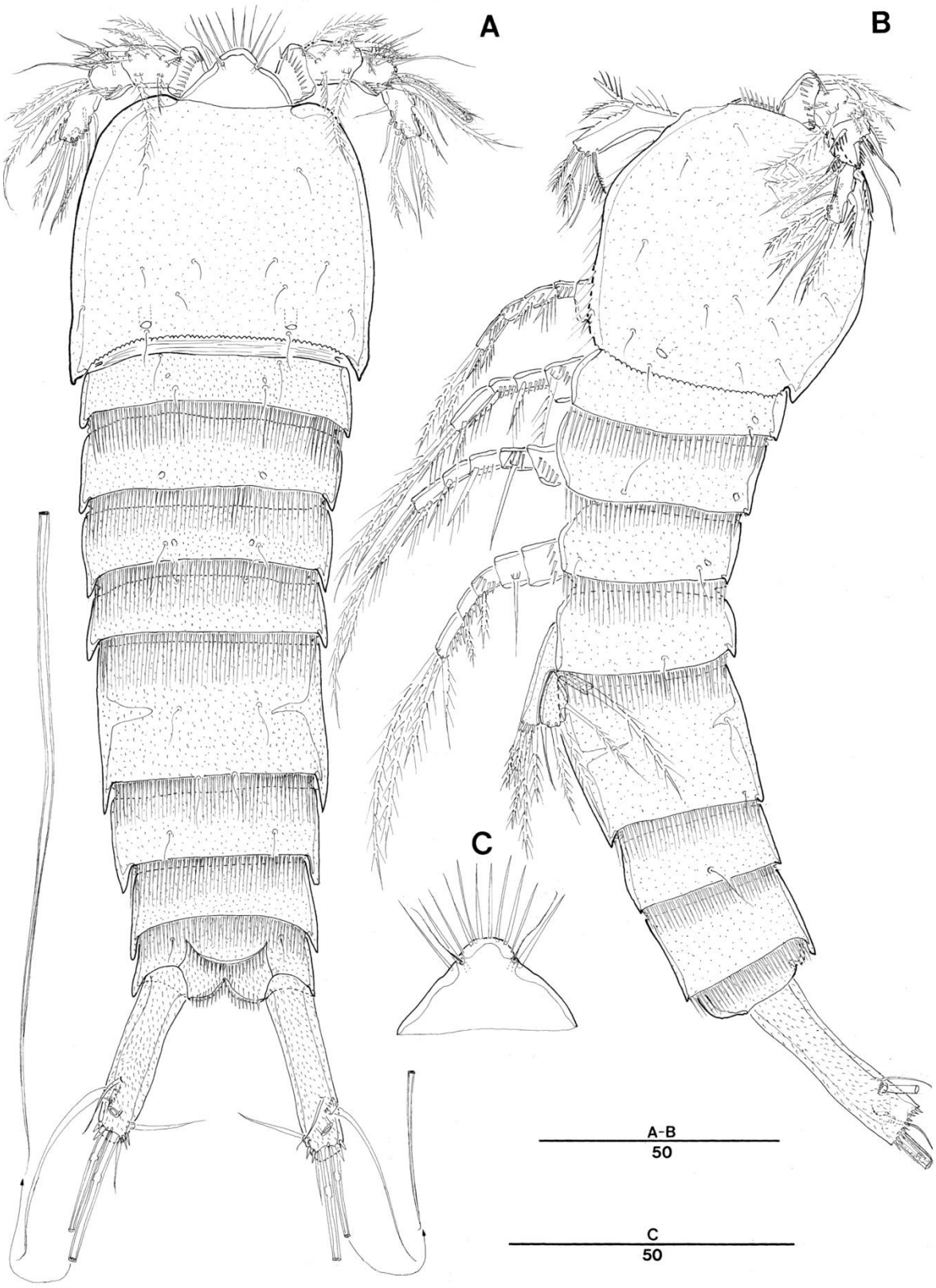

Figure 2. *Doolia ara* gen. et. sp. nov. holotype female. **A**, habitus, dorsal; **B**, habitus, lateral; **C**, rostrum, dorsal.

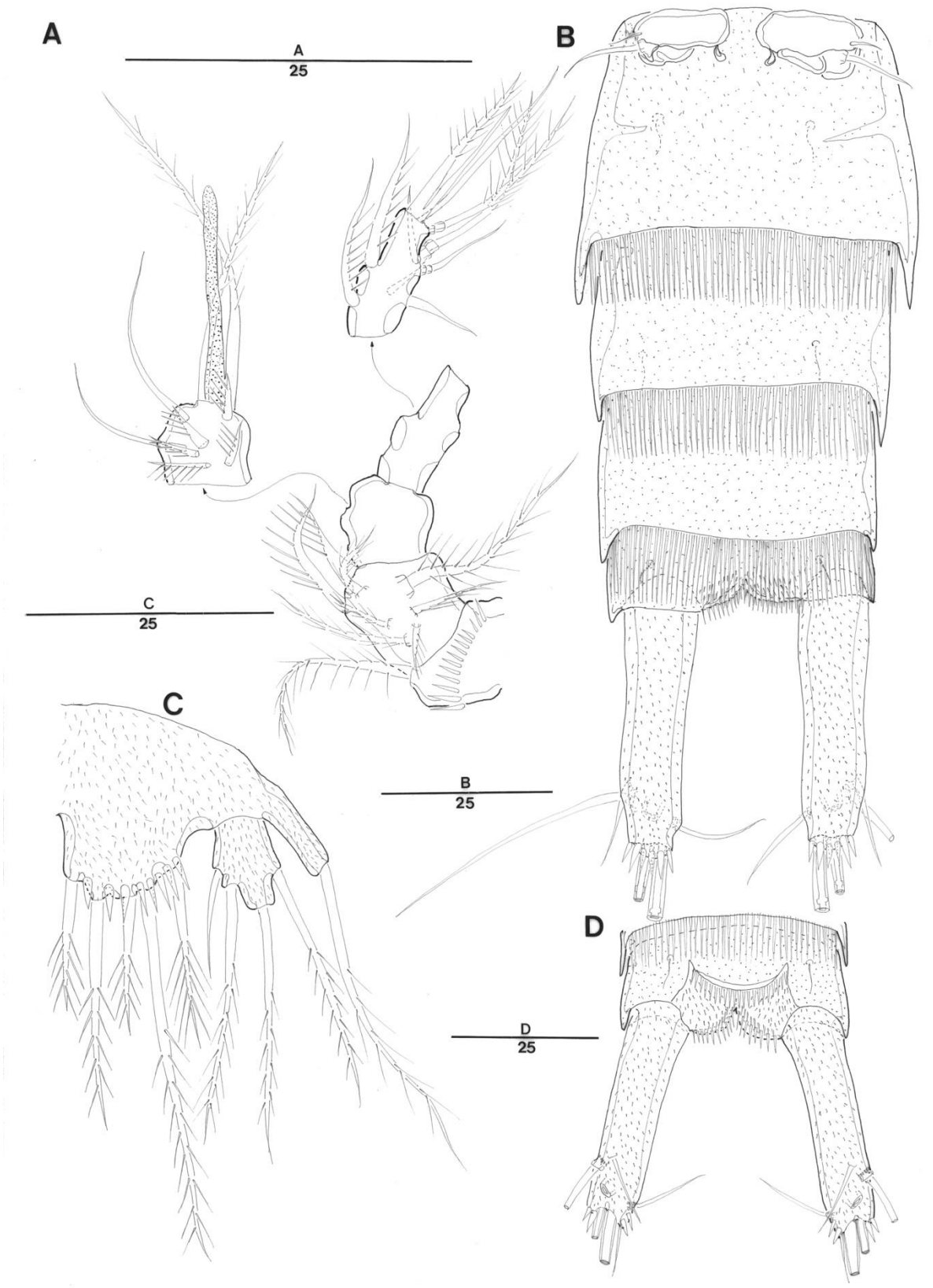

Figure 3. *Doolia ara* gen. et. sp. nov. holotype female. **A**, antennule; **B**, urosome (excluding P5 bearing somite), ventral; **C**, P5, anterior; **D**, anal segment and caudal rami, dorsal.

Caudal rami (Figure 3B,D) long, cylindrical, three times longer than it is wide; each ramus with six setae: seta I bare, shortest; setae II bare and long; seta III absent, or presumably represented by

one large pore on dorsal distal surface; setae IV and V separated basally; seta VI bare and small; seta VII tri-articulate at base. Each ramus with spinules on entire surface; additional spinular rows along distal margin.

Antennule (Figure 3A) four-segmented. Segment 1 with a row of long spinules on anterior surface. Segment 2 the largest. Segment 3 with aesthetasc fused basally to one long plumose seta. Armature formula: 1-[1 pinnate], 2-[8 pinnate], 3-[6 pinnate + 2 bare + (1 pinnate + ae)], 4-[4 pinnate + 4 bare + trithek]. Apical trithek consisting of small aesthetasc fused basally to two setae (1 bare, and 1 pinnate).

Antenna (Figure 4A) three-segmented, comprising coxa, allobasis, free one-segmented endopod and one-segmented exopod. Coxa small (not figured). Allobasis without distinct surface sutures marking original segmentation; with abexopodal pinnate seta on median inner margin and a row of setules along outer margin. Exopod small, about twice as longer as it is wide, with four well-developed pinnate setae and few spinules along outer margin. Endopod slightly shorter than allobasis, lateral armature arising in distal half, consisting of two strong pinnate spines; apical armature consisting of one strong pinnate spine, two pinnate, and two geniculate setae; with two rows of long spinules laterally; apical outer most spine basally fused to one tiny seta.

Mandible (Figure 4B) with well-developed gnathobase bearing several multicuspidate teeth around distal margin and one slender spine at dorsal corner. Palp well-developed. Basis with one plumose seta. Endopod one-segmented, rectangular with one lateral plumose seta, four naked apical setae, and one row of spinules along apical margin. Exopod one-segmented, cylindrical with one naked apical seta.

Maxillule (Figure 4D). Arthrite strongly developed, with two naked setae on anterior surface and eight spines/setae around distal margin and a row of spinules on posterior surface. Coxa with one short cylindrical endite bearing one long naked seta. Endopod and exopod incorporated into the basis, with three naked setae apically, and one plumose and four naked setae laterally.

Maxilla (Figure 4C). Syncoxa with two endites and a row of long spinules along outer margin. Each coxal endite cylindrical; proximal endite with two pinnate spines; distal endite with one naked and two pinnate spines. Allobasis drawn out into strong, slightly curved claw; endopod represented by two naked setae on anterior surface.

Maxilliped (Figure 4E) with one plumose seta and one row of spinules on syncoxa. Basis with one row of tiny spinules along palmar margin. Endopod one-segmented with long, curved, coarsely pinnate claw, and one naked slender seta.

Legs P1–P4 (Figures 5A,B, 6A,B) with well-developed intercoxal plates and praecoxae bearing row of spinules along distal margin near borderline with each related coxa. Coxae and bases with surface ornamentations of spinules as figured. All legs P1–P4 with three-segmented exopods, and two-segmented endopods.

P1 (Figure 5A). Coxa moderate, with long spinular rows as figured. Basis with one strong, bipinnate inner and one stout, unipinnate outer spines. Anterior surface covered with spinules as figured. Exopod longer than endopod; exp-1 and exp-2 with unipinnate spine, respectively; exp-3 longest with two unipinnate spines and two plumose setae. Enp-2 about three times longer than enp-1; enp-1 without spine or seta; enp-2 with row of long setules along outer and inner margins; two terminal plumose setae on enp-2 fused basally, inner one more than three times longer than the outer.

P2–P4 (Figures 5B, 6A,B). Coxae and bases ornamented with spinular rows along outer or distal margins and anterior surface. Outer margin of basis producing a setophore armed with pinnate spine (P2) or naked seta (P3–P4) at each distal end. All segments with rows of spinules along inner and outer margins as figured. Endopod segments of P2–P3 with long setules or spinules alonge inner and outer margins. P4 endopod without setula ornamentations. P2 enp-2 three times longer than enp-1, endopod reaching to proximal area of exp-3, and exp-3 longest. P3 enp-2 2.5 times longer than enp-1, endopod reaching to middle of exp-2, and exp-1 largest. P4 endopod small, enp-2 2.3 times longer than enp-1, endopod reaching to middle of exp-1, and exp-3 longer than exp-1.

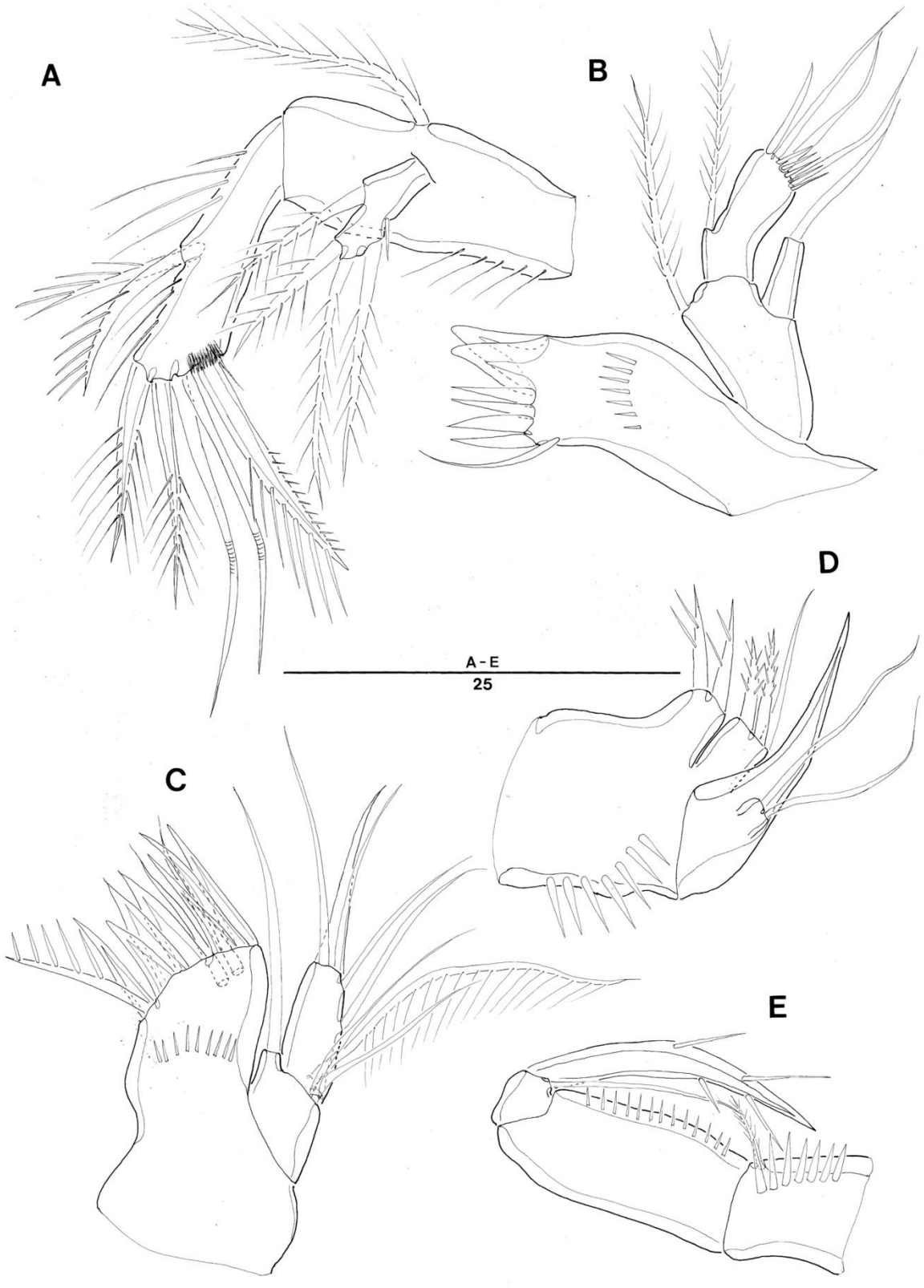

Figure 4. *Doolia ara* gen. et. sp. nov. holotype female. **A**, antenna; **B**, mandible; **C** maxillule; **D**, maxilla; **E**, maxilliped.

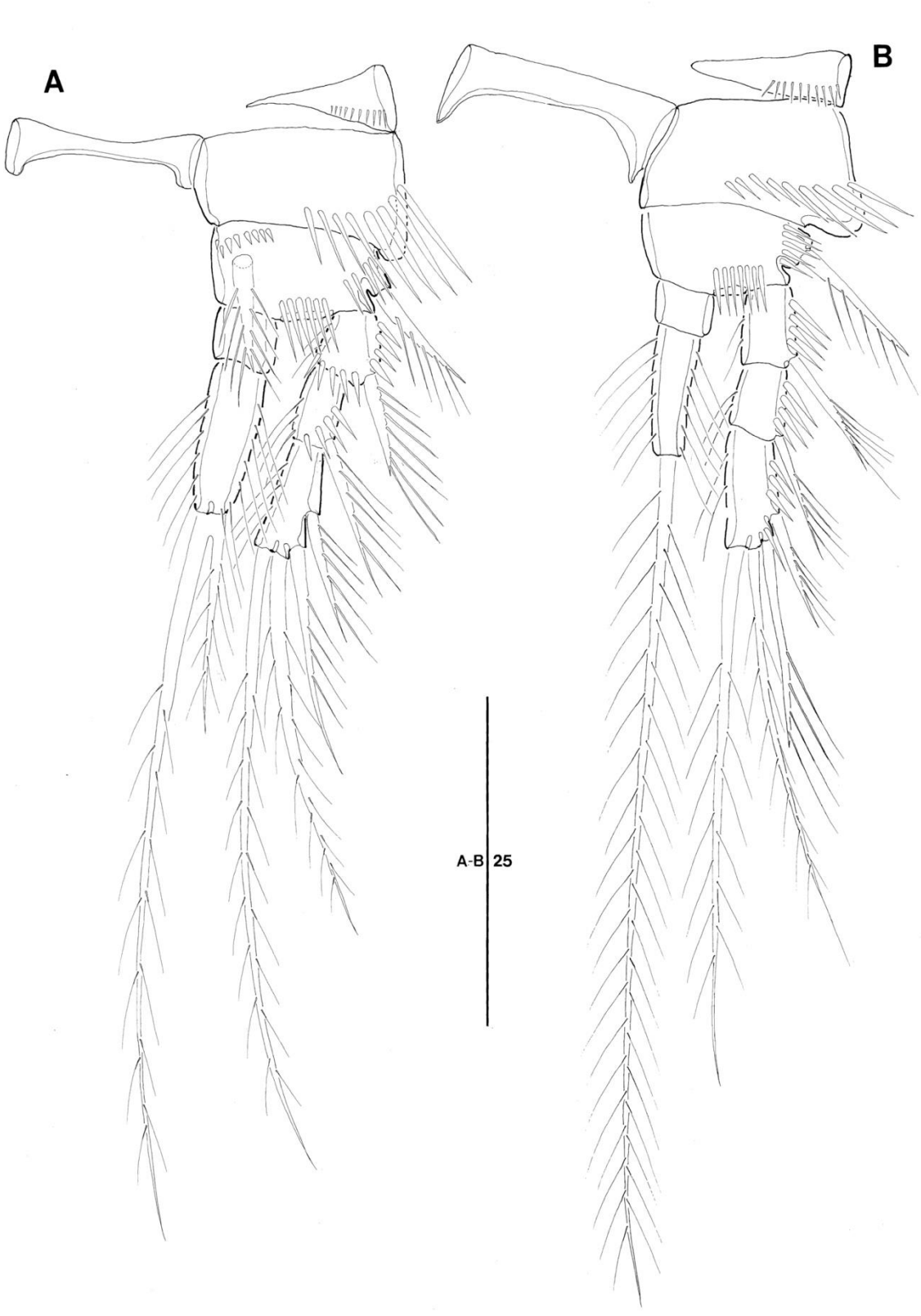

Figure 5. *Doolia ara* gen. et. sp. nov. holotype female. **A**, P1, anterior; **B**, P2, anterior.

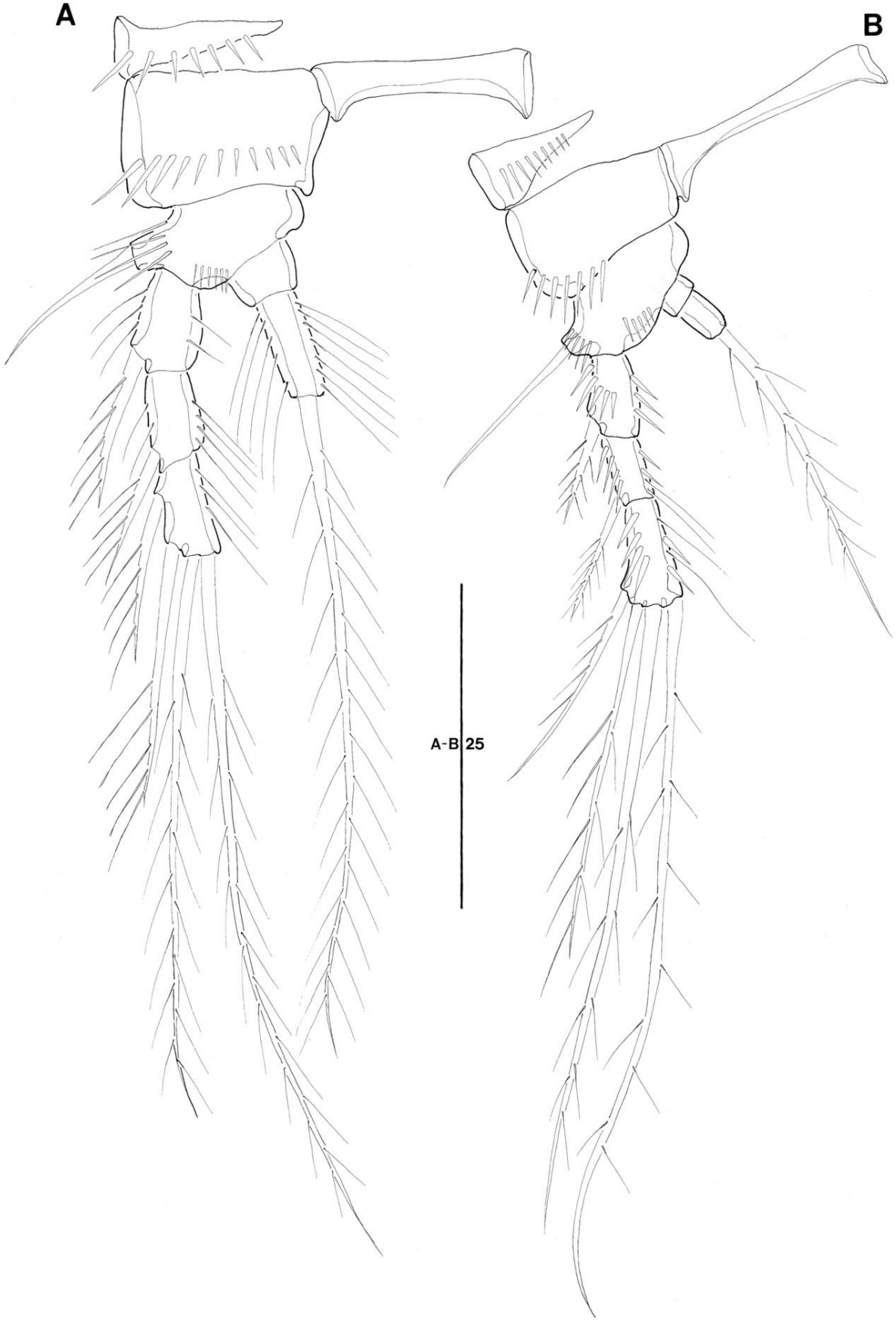

Figure 6. *Doolia ara* gen. et. sp. nov. holotype female. **A**, P3, anterior; **B**, P4, anterior.

Spine and setal formulae as follows:

	Exopod	Endopod
P1	0.0.022	0.020
P2	0.0.022	0.010
P3	0.0.022	0.010
P4	0.0.022	0.010

P5 (Figure 3C) fused medially, and exopod and baseoendopod separate; each covered with minute spinules as figured. Baseoendopod with a long outer setophore bearing one plumose basal seta. Endopodal lobe only reaching to middle of exopod, with five pinnate setae; second outermost seta longest; a row of spinules along distal margin. Exopod small, slightly longer than wide and with one naked and three pinnate setae.

Male. Body length 243 μm. Largest width measured at about median area of cephalic shield: 61 μm. Urosome gradually tapering posteriorly (Figure 7A).

Cephalothorax with serrulated posterior margin. Pleural areas well-developed and rounded without lobate posterolateral angles. Entire surface covered with tiny denticles as in female. Sensilla present as illustrated in Figure 7A.

Rostrum triangular-shaped (Figure 7A,E), broader than in female, smooth anterior margin, clearly separated from cephalosome, and with a pair of sensilla and a row of long spinules along entire anterior margin (only along median apical margin in female).

Urosome (Figure 7A) six-segmented, comprising P5-bearing somite, genital somite and four abdominal somites. All urosomites covered with small denticles dorsally and ventrally and with well-developed hyaline frill along the hind margin.

Antennule (Figure 7B) eight-segmented and subchirocer with geniculation between segments 5 and 6. Segment 1 with a row of coarse and widely spaced spinules. Segment 2 the largest. Segment 4 represented by a small sclerite along anterior margin of segment 3. Segment 5 swollen with one well-developed large aesthetasc. Segment 7 with three-dimensional process as figured in Figure 7B. Segment 8 with triangular distal half. Armature formula: 1-[1pinnate], 2-[7 pinnate], 3-[5 pinnate], 4-[1 pinnate], 5-[1 + 6 pinnate + (1 pinnate + ae)], 6-[0], 7-[2 modified process], 8-[6 + 1 pinnate + trithek]. Apical trithek consisting of a minute aesthetasc and two naked setae.

P5 (Figure 7D) fused medially, defined at base, and whole surface covered with minute spinules. Baseoendopod with a long, cylindrical setophore bearing one plumose outer basal seta. Exopod fused to endopod and represented by three pinnate setae. Minute and coarse spinules on anterior surface.

P6 (Figure 7C) asymmetrical, represented on both sides by a small plate without any additional ornamentation: fused to ventral wall of supporting somite along right side, articulating at base and covering gonopore along left side.

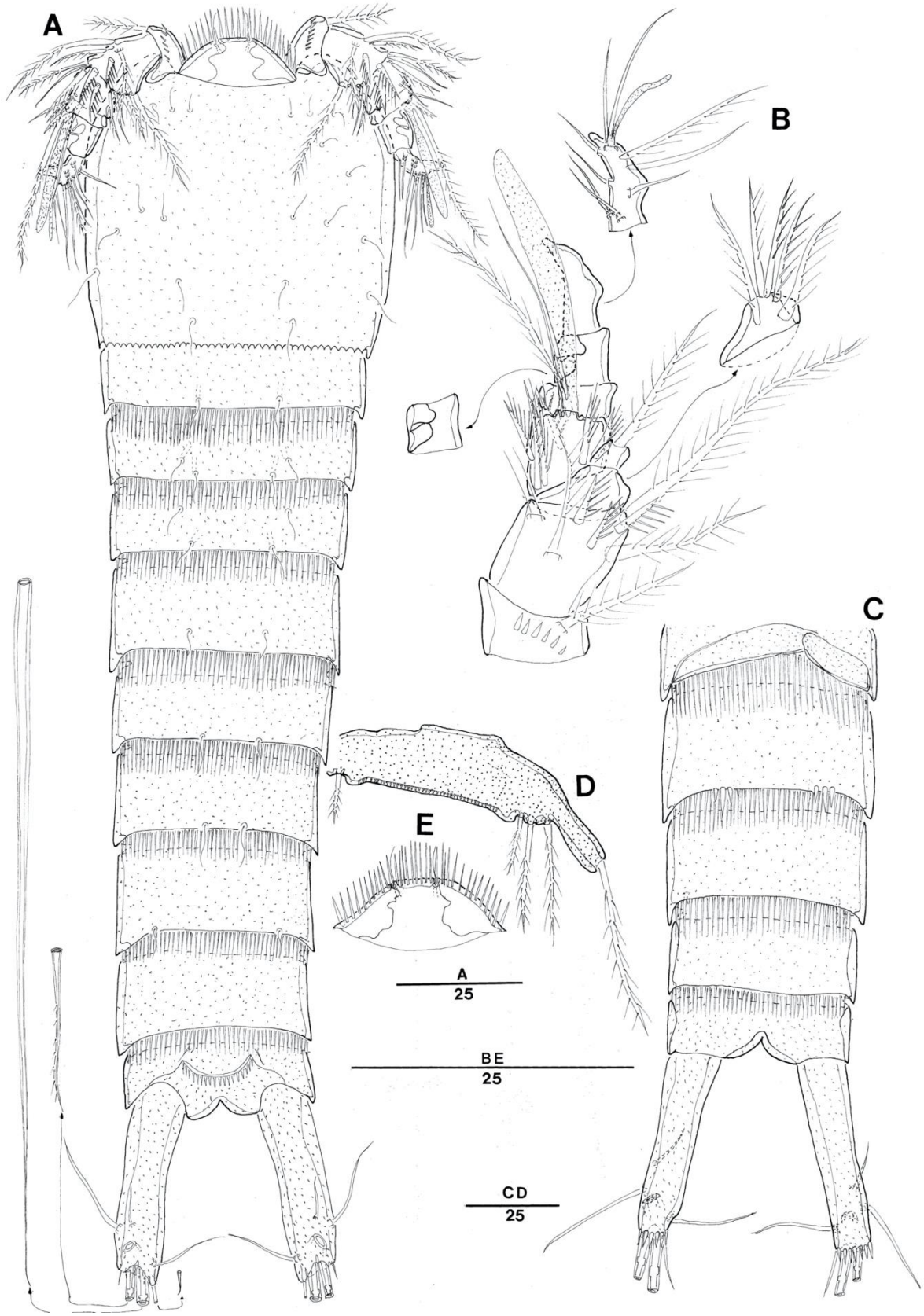

Figure 7. *Doolia ara* gen. et. sp. nov. paratype male. **A**, habitus, dorsal; **B**, antennule; **C**, urosome (excluding P5 bearing somite); **D**, P5; **E**, rostrum, dorsal.

4. Discussion

The new species displays interesting characteristics: the basally-defined rostrum, the well-developed mandibular palp with one segmented exopod and endopod, the presence of a seta on the maxilliped syncoxa, three segmented exopods and two segmented endopods in P1–P4, and the separate exopod of P5 in the female. The family Nannopodidae Por, 1986 could harbor the combination of these character sets based on character comparisons (Table 1). Among the seven extant genera of the Nannopodidae, *Nannopus* Brady, 1880 is the only member having the rostrum fused to the cephalothorax, while all other genera have basally-defined rostrum, as in the new species (Table 1). The new species, *Pontopolites* T. Scott, 1894, and *Talpacox*a Corgosinho, 2012 have a separate exopod on the mandibular palp, but in other genera, these are absent (*Nannopus*, and *Huntemannia* Poppe, 1884) or represented by a single seta (*Rosacletodes* Wells, 1985, *Laophontisochra* George, 2002, and *Acuticoxa* Huys & Kihara, 2010). The maxilliped syncoxa has a pinnate distal seta in the new species, as well as in *Nannopus*, *Huntemannia*, and *Rosacletodes*, while it is absent in *Pontopolites*, *Laophontisochra*, *Acuticoxa*, and *Talpacoxa*. The segmentation of P1–P4 in the new species is the most conservative state within the family, while *Rosacletodes* displays the most derived state with degenerated, or simply absent endopods in P2–P4. Finally, in the new species the P5 exopod of the female is clearly separated from the baseoendopod as in *Huntemannia*, *Rosacletode*s, *Laophontisochra*, *Talpacoxa*, and most *Nannopus* species. These five characters are suggested here as plesiomorphies of the Nannopodidae, and consequently, the new genus forms a basal group with *Nannopus* and *Pontopolites* within the family.

Doolia ara gen. et sp. nov. is the probable sister genus to *Nannopus* due several common plesiomorphic characteristics: the anterior spinular row on the apical margin of the rostrum, the presence of a single seta on the maxilliped syncoxa, the three-segmented exopod in P1—P4, a maximum two-segmented endopod in P1–P4, and the separate P5 exopod from baseoendopod in the female. However *D. ara* also has autapomorphies separating it easily from *Nannopus*: the four-segmented antennule in the female (five-segemented in *Nannopus*), the single abexopodal seta on the antennary allobasis (two abexopodal setae in *Nannopus*), no inner seta on the exp-2 in the exopods of P1–P4 (always present in P2–P3 of *Nannopus*), no sexually-modified P3 endopod in the male (apophysis present in *Nannopus*), and no seta on the P5 endopodal lobe in the male (3–4 setae in *Nannopus*) [7].

Pontopolites forms the basal group in Nannopodidae, with *Doolia* and *Nannopus* having primitive characters: the well-developed and defined triangular rostrum, the one-segmented mandibular exopod, the three-segmented exopods in P1–P4, and the two-segmented P1 endpod. Furthermore, this genus has a six-segmented antennule in the female, and the most primitive two-segmented antennary exopod (Table 1). As pointed out by Karanovic and Cho [9], *Pontopolites* are isolated from two other genera by having one plated P5 in both sexes. *Acuticoxa* also has a similarly-shaped P5 in the female [4]. The other genera, *Huntemannia*, *Rosacletodes*, *Laophontisochra*, *Acuticoxa*, and *Talpacoxa* have reduced segmentation in the legs (table 1). *Huntemannia*, *Rosacletodes*, and *Talpacoxa* have sexual modifications in the male P3 endopod. *Laophontisochra* is the only genus having no sexual modification in the legs, except for *Doolia*. The male of *Acuticoxa*, and the status of modification in the legs are unknown.

Table 1. Characteristic comparisons among genera of Nannopodidae.

Character\Species	*Doolia* gen. nov.	*Nannopus* Brady, 1880	*Huntemannia* Poppe, 1884	*Pontopolites* T.Scott, 1894	*Rosacletodes* Wells, 1985	*Laophontisochra* George, 2002	*Acuticoxa* Huys & Kihara, 2010	*Talpacoxa* Corgosinho, 2012
Rostrum	defined	fused to cephalothorax	defined	defined	defined	defined	defined	defined
Rostral spinules	present	present	present	absent	absent	present	absent	absent
A1 segment no., female	4	5	5	6	5	4	4	5
A2 exopodal segment	4 setae	3–4 setae	4 setae	2-segmented; 1,120	3 setae	1 segmented or, 1 seta	absent, or 1 minute seta	3 setae
Mandibular exopod	1 segment	absent	absent	1 segment	fused, 1 seta	fused, 1 seta	fused, 1 seta	1 segment
Maxilliped syncoxa	1 seta	1 seta	1 seta	no seta	1 seta	no seta	no seta	no seta
P1 exp:enp segment	3:2	3:1-2	3:1	3:2	2:1	2:2	2:2	1:2
P2 exp:enp segment	3:2	3:2	1–2:1	3:1	2:0	2:1	1-2:1	2:1
P3 exp:enp segment	3:2	3:1-2	1–2:1	3:1	1:0	2:1	1-2:1	2:1
P4 exp:enp segment	3:2	3:1	1–2:1	3:1	1:0	2:1 (1:1 in male)	1:1	2:1
P3 endopod in male	no modification	with apophysis	with additional seta	with apophysis	with apophysis	no modification	unknown	with apophysis
P5 exp:enp seta in female	4:5	4–5:3–4	5:4	fused to 1 plate with 10 setae	5:6	4:1–3	fused to 1 plate with 8 setae	5:3
P5 exp:enp seta in male	3:0	4–5:3–4	4:4	1 plate with 8 setae	5:4	4:2–4	unknown	4:2
P6 seta F:M	2:0	1:2–3	1:3	2:2	0:3	3:3	2: unknown	0:3
No. of valid species	1	11	5	2	1	2	2	1
Reference	present study	[7]	[8]	[9]	[10]	[11,12]	[4]	[13]

In addition, *Doolia* gen. nov. has superficial similarities with *Rhizothrix* Sars G.O., 1909, and they share the following character sets: the presence of pinnate setae on the antennule and its segmentation, the segmentation of exopods and endopods in P1–P4, lack of sexual dimorphism in legs P1–P4, and lack of ornamentation on P6 in the male. *Tryphoema* Monard, 1926 shares similar characters with *Doolia* except for the segmentation of the legs [14]. Based on previous reports [15] and the present study, *Rhizothrix* has clear discrepancies from *Doolia*: clearly separated rostrum with anterior row of long setules (spinules) in *Doolia ara* (fused to cephalosome and lacking the spinules in *Rhizothrix*), the well-developed comb-shaped hyaline frill on the body somites in *D. ara* (all frills serrulate in *Rhizothrix*), the long and cylindrical caudal rami in *D. ara* (short and robust, or ovoid in *Rhizothrix*), absence of the brush setae in the exopod and endopod in P1 in *D. ara* (present in *Rhizothrix*), and presence of setae on the P6 of female in *D. ara* (absent in *Rhizothrix*).

Similarities between *Doolia* and Rizotrichidae are probably the result of parallel evolution; however, this hypothesis should be tested with additional molecular evidence in further studies. There are no related studies of lineages of Nannopodidae based on molecular data, except for an intrageneric discussion of *Nannopus* [16]. There are a few scattered reports of molecular data for presumably related families, Cletodidae [17] and Laophontidae [18]. Unfortunately, I was unable to rescue any DNA markers for the new species. However, the phylogenetic relationships among genera in Nannopodidae could potentially be confirmed by molecular data in a future study.

Key to genera of Nannopodidae Por, 1986 amended from [4]

1. Exopods of P2–P4 three-segmented … 2
   Exopods of P2–P4 two-segmented … 4
2. Rostrum bell-shaped, anterior margin with multiple rows of long setules; P1 endopod distinctly shorter than exopod; P2 endopod two-segmented … 3
   Rostrum triangular, without setular ornamentations; P1 endopod extending beyond distal margin of exp-3; P2 endopod one-segmented with one apical seta … *Pontopolites* T.Scott, 1894
3. Antennule ♀ five-segmented; P2 enp-2 with 2–3 setae; P3 endopod ♂ with apophysis … *Nannopus* Brady, 1880
   Antennule ♀ five-segmented; P2 enp-2 with one seta; P3 endopod ♂ with no modification … *Doolia* gen. nov.
4. Antennary exopod one-segmented; P1 exopod one-segmented … *Talpacoxa* Corgosinho, 2012
   Antennary exopod absent, or represented by a seta; P1 exopod two- or, three-segmented … 5
5. Antennule ♀ four-segmented; P1 endopod prehensile, distinctly longer than exopod … 6
   Antennule ♀ five-segmented; P1 endopod not prehensile, distinctly shorter than exopod … 7
6. P2–P4 with outer spinous projection on coxa; P5 exopod and baseoendopod fused in ♀, forming a single plate with eight setae/spines … *Acuticoxa* Huys & Kihara, 2010
   P2–P4 without coxal processes; P5 biramous in ♀ … *Laophontisochra* George, 2002
7. Rostrum with setula ornamentation around apex: antennule ♀ with aesthetasc on segment three; distal exopod segment of P1 with innermost seta much longer than inner distal spine and penicillate apically … *Huntemannia* Poppe, 1884
   Rostrum without setula ornamentation around apex: antennule ♀ with aesthetasc on segment four; distal exopod segment of P1 with innermost seta much shorter than inner distal spine and penicillate at tip … *Rosacletodes* Wells, 1985

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