

Article

New Species of *Eupelte* (Crustacea, Copepoda, Harpacticoida) from the East Sea, with Notes on the Zoogeography of the Genus

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Abstract: A new species of the genus *Eupelte* Claus, 1860, was obtained from the algal bed bottom in Dokdo Island, East Sea of Korea, using a light trap. Specimens of both sexes of the Korean new species are described in detail and compared with its congeners. The present species, *Eupelte dokdoensis* sp. nov., is closely similar to *E. aurulenta* Wells and Rao, 1987, found in algal sands from the Andaman and Nicobar Islands, and *E. setacauda* Monk, 1941, collected from seaweeds in the Californian coast of the USA. These species share the body length (0.5–0.7 mm), the nine-segmented A1, the setation of the first and second endopodal segments of P1 (one and four setae), P4 exp-3 with three inner setae, and enp-3 of P2–P4 with five setae in both sexes. The new species can be readily discernable from the previous two species by the short rostrum with a serrate distal margin, the shape of the maxillipedal basis, the setation and surface ornamentation of P1 enp-2 (covered with long setules), the exp-3 of P3 and P4 with thicker middle inner seta, and the setation of female and male P5 exopod and baseopod (six and six, four and two setae, respectively). In addition, the zoogeography of the valid species of the genus *Eupelte* is briefly discussed, and a diagnostic key to the females of the species is provided. *Eupelte dokdoensis* sp. nov. described herein is the first report of the genus from Korean waters and is the fourteenth member of the genus.



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Keywords: Crustacea; Peltidiidae; meiofauna; Dokdo Island; biodiversity; taxonomy

1. Introduction

Dokdo is the easternmost island in the East Sea of Korea, and it is typically influenced by two big currents: the East Korean warm current and the North Korean cold current [1]. Moreover, the island is well known for its substantial marine species biodiversity [2]. Dokdo Island, designated a Natural Monument by the Cultural Heritage Administration of Korea, was recorded as a global biodiversity hotspot, with 578 species of marine invertebrates [3]. Recently, Hwang et al. [4] provided an updated list of 1963 species that were reported from 1952 to 2020, comprising the flora and fauna in Dokdo. Of these, 27 species of harpacticoid copepods were distributed in 23 genera of 10 families [Ancorabolidae (1); Canuellidae (1); Harpacticidae (4); Laophontidae (3); Miraciidae (2); Peltidiidae (3); Porcellidiidae (7); Pseudotachidiidae (2); Thalestridae (3); and Tisbidae (1)]. However, only the species names are presented, without any remarks or information about these tiny animals.

Thus far, only five species of harpacticoid copepods have been described or reported from the island: *Bicorniphontodes lacuna* Kim, Lee & Cho, 2021 (Ancorabolidae), from the subtidal zone off Gajae Rock [5]; *Stenocaris marcida* Kim, Cho, Yoon & Lee, 2023 (Cyliptrop-syllidae), from the sublittoral sandy bottom, 73.3 m in depth [6]; *Dactylopodamphiascopsis latifolius* (Sars, 1909) (Miraciidae), from algal beds [7]; *Goniopsyllus dokdoensis* Cho, Kim &

Lee, 2010 (Peltidiidae), from zooplankton samples [8]; and *Kioloaria similis* (Kim & Kim, 1996) (Porcellidiidae), associated with the hermit crab, *Pagurus similis* (Ortmann, 1892) [9].

The Peltidiidae is one of the most conspicuous and specialized phytal-dwelling harpacticoid families, with a flattened body adapted to strong water flows [10,11]. Hicks [12] established a new genus, *Alteuthoides* Hicks, 1986, and analyzed the phylogenetic relationships between all genera, providing key insight into eight genera. Claus [13] created the genus *Eupelte* Claus, 1860, for a new species, *E. gracilis* Claus, 1860 (type species), in the family Peltidiidae Claus, 1860, and he added two more species in 1983 (*E. bicornis* Claus, 1863; *E. oblonga* Claus, 1863) [14], with insufficient diagnostic figures or descriptions. Following Lang's monograph [15], he only included one species, *E. gracilis*, in the genus and reported it in his book, and he regarded other species (viz. *E. bicornis* and *E. oblonga*) as synonyms of *E. gracilis*. Lang [15] reported the key characters of the genus *Eupelte* as follows: (1) P1 endopod two-segmented, (2) A2 exp two-segmented with four setae, (3) caudal ramus wide, (4) P5 exopod with strong spines distally, and (5) P1 exp-1 very short and P1 enp-1 with four setae.

Later, Hicks [16] described *E. regalis* Hicks, 1971, from sublittoral seaweeds at the Island Bay of Wellington, New Zealand, and he discussed the differences in characters between the species, *E. tristanensis* Wiborg, 1964; *E. regalis*; *E. gracilis*; and *E. gracilis* sensu Monard (1928). Subsequently, Hicks [10] described two new species, *E. hexaseta* Hicks, 1982, and *E. beckleyae* Hicks, 1982, from St Croix Island, South Africa, and provided an identification table for the seven known species (two species excluded: *E. bicornis* and *E. oblonga*). Recently, Varela and Gómez [17] reported one new species, *E. cubensis* Varela and Gomez, 2013, that was obtained from macroalgae (15 m depth) near the Cayo Palomo lighthouse, Matanzas, in Cuba. More recently, Varela et al. [18] described *E. hughesi* Varela, Iliffe & Walter, 2023, collected from Cherry Pit Cave in Bermuda. However, they mentioned 16 valid species in the genus *Eupelte*, including *E. bicornis*, *E. oblonga*, *E. purpurocincta* (Norman, 1869), and *E. typica* (Scott T., 1912), without any comments. The latter four species had not been considered within the genus *Eupelte* since Lang [15]'s monograph. Furthermore, Bodin [19] and Wells [20] did not include these species in *Eupelte*, although they offer a diagnostic key to the species of *Eupelte*, recognizing 14 species.

Thus far, only three species of *Eupelte* have been recorded from Asian waters, *E. simile* (Monk, 1941) from Hokkaido, Japan [21]; *E. acutispinis* Zhang & Li, 1976, from Paracel Islands, China [22]; and *E. aurulenta* Wells & Rao, 1987, from algal sands in the Andaman and Nicobar Islands [23].

In 2021, during an investigation of invertebrate samples at Dokdo Island, Korea, several specimens of Peltidiidae were obtained using a light trap. In this contribution, we provide a detailed description of both sexes of *Eupelte dokdoensis* sp. nov., collected from the sublittoral algal beds of Dokdo Island, Korea. This species is the fourth member of the genus described in Far East Asian waters.

2. Materials and Methods

2.1. Sample Collection and Preparation

The material was collected from the algal beds (depth 4–5 m) at Dokdo Island, Korea, using a light trap. All samples were fixed in 95% ethanol in the field, immediately after collection. Peltidiid harpacticoids were sorted under a stereomicroscope (Olympus Model SZ11, Tokyo, Japan) at 40× to 80× magnification. Specimens were cleared, dissected, drawn, and measured in lactic acid. Dissected parts were mounted on slides in glycerin as mounting medium. The slides were sealed with transparent nail varnish. All figures were made with the aid of a drawing tube attached to a DIC microscope (Olympus Model BX-53) equipped with Nomarski optics.

2.2. Terminology and Abbreviations

The terminology for the general description of appendages follows Huys and Boxshall [24] and Huys et al. [25]. All abbreviations used in the text, figures, and table are as follows:

Cephalothorax (Ceph); Caudal ramus (CR); antennule (A1); antenna (A2); aesthetasc (ae); exopod (exp); endopod (enp); first exopodal segment (exp-1); first endopodal segment (enp-1); first to sixth thoracic legs (P1–P6). The terminal acrothek is composed of two setae fused to an aesthetasc on the apical segment of A1. Scale bars are in micrometers (μm). Measurements were made with a micrometer (slide glass type). All type materials were kept in the Invertebrates collections of the National Institute of Biological Resources (NIBR), Korea.

3. Results

3.1. Figures, Tables, and Schemes

Class: Copepoda Milne-Edwards, 1840

Order: Harpacticoida G. O. Sars, 1903

Family: Peltidiidae Claus, 1860

Genus: *Eupelte* Claus, 1860

[Korean name: Jin-Gap-Ot-Jang-Su-No-Beol-Re]

Type species. *Eupelte gracilis* Claus, 1860

Additional species. *E. acutispinis* Zhang & Li, 1976; *E. aurulenta* Wells & Rao, 1987; *E. beckleyae* Hicks, 1982; *E. cubensis* Varela & Gomez, 2013; *E. dokdoensis* sp. nov. (present contribution); *E. hexaseta* Hicks, 1982; *E. hughesi* Varela, Iliffe & Walter, 2023; *E. minuta* (Ramirez, 1971); *E. regalis* Hicks, 1971; *E. setacauda* Monk, 1941; *E. simile* (Monk, 1941); *E. tristanensis* Wiborg, 1964; *E. villosa* (Brady, 1910)

***Eupelte dokdoensis* sp. nov.**

[Korean name: Dok-Do-Jin-Gap-Ot-Jang-Su-No-Beol-Re]

(Figures 1–6)

3.1.1. Locus Typicus and Habitat

Dokdo Island (Dongdo), Korea (37°14'22.03'' N, 131°52'03.59'' E), at 4–5 m depth, algal bed bottom.

3.1.2. Type Material

Holotype female: preserved in ethanol (NIBRIV0000911252).

Paratypes: two females (NIBRIV0000911253) and one male (NIBRIV0000911254) preserved in alcohol, one female dissected on 12 slides (NIBRIV0000911255), one male dissected on 12 slides (NIBRIV0000911256). All type series are from the type locality, Dokdo Island. All material was collected by Dr Sung Joon Song and Dr Sang-kyu Lee leg.

3.1.3. Etymology

The new species is named after Dokdo Island of Korea, where the type locality is. It is in the nominative singular, feminine gender.

3.2. Differential Diagnosis

Eupelte dokdoensis sp. nov. is characterized from the congeners as follows: In the female, the genital double-somite has the deeply bilobed lateral margins. The rostrum is truncated with a serrate distal margin. The first segment of antennule is the longest. The caudal ramus is a little longer than wide (about 1.2 times). P1 has a unique second endopodal segment fully covered with long setules. The distal exopodal segment of P3–P4 has three inner setae, of which the proximal two setae are very close together. And the middle seta of P4 exp-3 is thicker than the other setae. Both P5 rami have five setae.

3.2.1. Morphological Description of Female

Habitus (Figure 1). Body length ranging from 0.55 to 0.60 mm ($n = 5$), measured from the tip of the rostrum to the posterior margin of the caudal ramus. Widest at the posterior end of cephalothorax. Dorsal surface fully ornamented with small round depressions (not figured) and many sensilla.

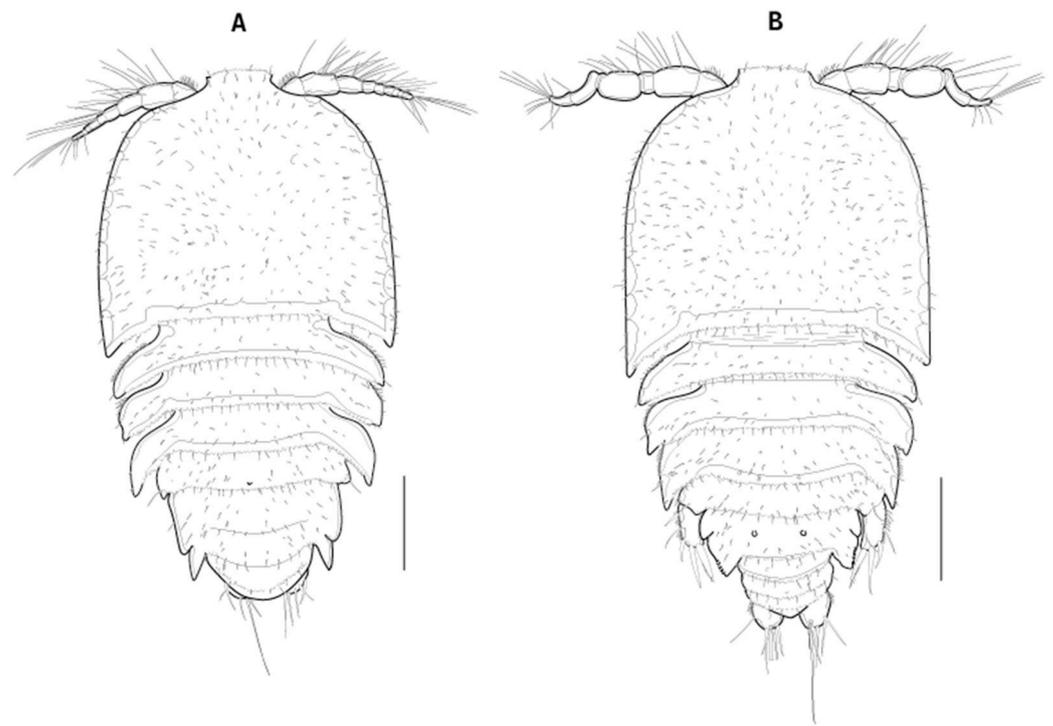


Figure 1. *Eupelte dokdoensis* sp. nov. (A) Female habitus, dorsal. (B) Male habitus, dorsal. Scale bars: 100 μ m.

Urosome (Figure 2A) tapering posteriorly, five-segmented, consisting of fifth pedigerous somite, genital double-somite, two free urosomites, and anal somite. Genital double-somite (Figure 2A) deeply bilobed laterally and about 2.2 times wider than long. Two free urosomites with many spinules on lateral lobe. Anal somite very small. Caudal ramus (Figure 2A) about 1.2 times as long as wide. Each ramus with seven setae: seta I bare, arising from dorsal surface; seta II strong and bipinnate, with normal base, inserted midway outer margin; seta III slender and bare; seta IV and seta V well-developed and bipinnate; the latter about 2.5 times as long as the former; setae VI as long as seta III, bipinnate, and with additional long setules on outer margin; seta VII bare, as long as seta III, arising from inner dorsal surface between setae IV and V.

Rostrum (Figure 2B) wide and truncated, with two pairs of sensilla on distal margin as depicted.

Antennule (Figure 2B) nine-segmented; segment 1 longest, with distal bare seta, and with long setules on outer border; segment 2 a little shorter than segment 1; segment 4 with aesthetasc fused to a seta, arising from pedestal; segment 8 shortest. Setal formula as follows: 1 – [1], 2 – [12], 3 – [8], 4 – [2 + (1 + ae)], 5 – [2], 6 – [3], 7 – [2], 8 – [2], 9 – [5 + acrothek].

Antenna (Figure 2C) consisting of basis and two free endopodal segments. Basis as long as wide, with one abexopodal seta. Exopod two-segmented; first segment slightly longer than second, with one bipinnate seta; second segment with two distal and one lateral bipinnate setae. Endopod two-segmented; first segment unornamented; second segment with spinular rows on proximal inner margin, anterior surface, and distal inner margin and with hyaline frill apically. Subdistal armature consisting of three pinnate setae; distal armature consisting of one pinnate spine, four geniculate setae, and two pinnate setae.

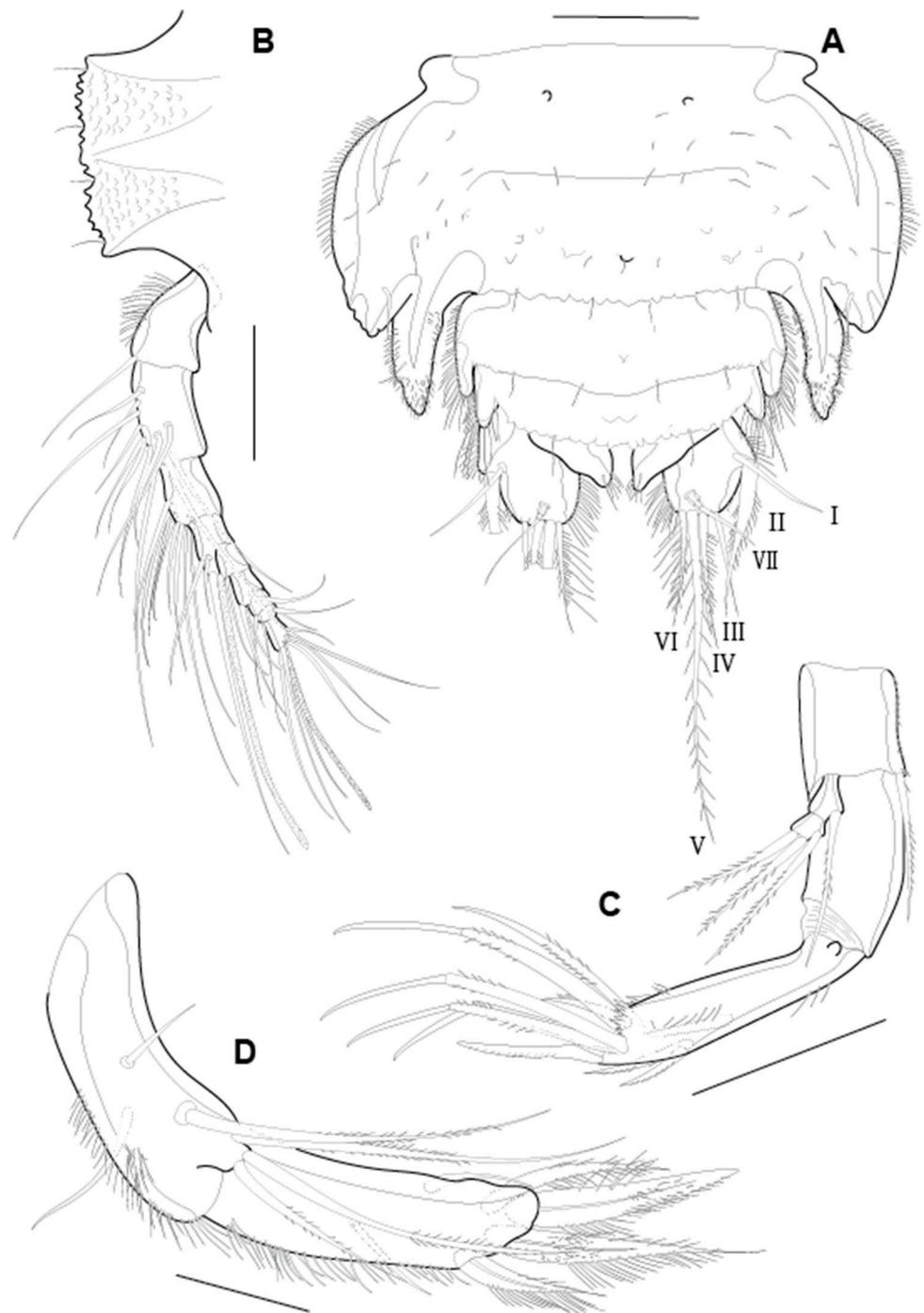


Figure 2. *Eupelte dokdoensis* sp. nov. female. (A) Urosome, dorsal; (B) rostrum and antennule; (C) antenna; (D) P5, posterior. Scale bars: 30 μ m (D); 50 μ m (A–C).

Mandible (Figure 3A) gnathobase well-developed with eight distal cuspidate teeth and one long seta on dorsal corner as depicted. Palp consisting of basis, one-segmented exopod, and one-segmented endopod. Basis armed with spinules on surface, and with three unequal setae. Exopod smaller than endopod, with three distal setae. Endopod with one plumose seta laterally and four setae distally.

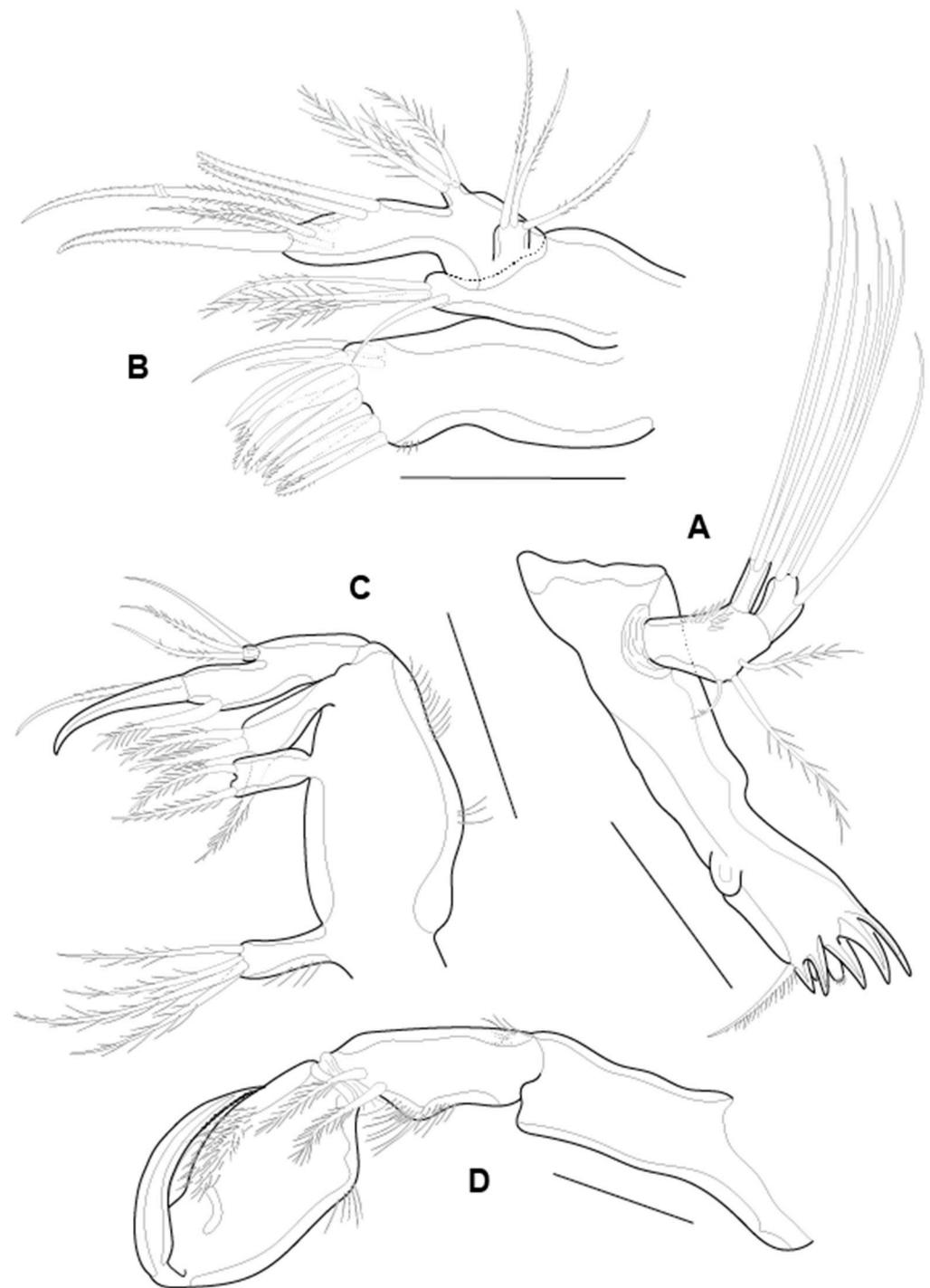


Figure 3. *Eupelte dokdoensis* sp. nov. female. (A) Mandible; (B) maxillule, posterior; (C) maxilla; (D) maxilliped. Scale bars: 30 μ m.

Maxillule (Figure 3B) arthrite of praecoxa well-developed, with nine distal spines/setae and two juxtaposed setae on surface. Coxal endite with one bare lateral seta, and one bipinnate and two plumose distal setae. Basis elongate with one strong distal seta, one long geniculate, and four bipinnate setae. Exopod small with three setae distally. Endopod slightly smaller than exopod, with three setae distally.

Maxilla (Figure 3C) syncoxa with setules on outer border, and with three endites fused to syncoxa; proximal endite set apart from others, with setules along proximal margin and four long bipinnate setae; middle and distal endites with two and three bipinnate setae,

respectively. Basis drawn into strong claw with two accessory setae; Endopod represented by small segment bearing three pinnate setae.

Maxilliped (Figure 3D) well-developed, prehensile. Pedestal elongated and unarmed. Syncoxa armed with spinules as depicted, and with two plumose distal setae. Basis elongated with strong spinules on palmar surface, and with one bipinnate seta on palmar surface. Endopod represented by a strong claw bearing tiny spinules along distal half inner margin.

P1 (Figure 4A). Coxa longitudinally elongated, ornamented with spinular rows along both margins. Basis much wider than long, with several long setules on outer margin and spinular row along inner margin, with one plumose seta on middle of outer margin and one plumose seta on inner distal corner. Exopod three-segmented, much longer than endopod; exp-1 with outer spinules, and one outer bipinnate seta; exp-2 very long, with outer spinules, one outer bipinnate seta, and one pinnate inner seta; exp-3 very small, with one geniculated seta and four strong, outwardly curved claws. Endopod two-segmented; enp-1 a little longer than enp-2, ornamented with long setular rows along both margins, with one plumose inner seta; enp-2 fully covered with long setules, with one plumose inner seta, two bipinnate distal setae, and one bipinnate outer seta.

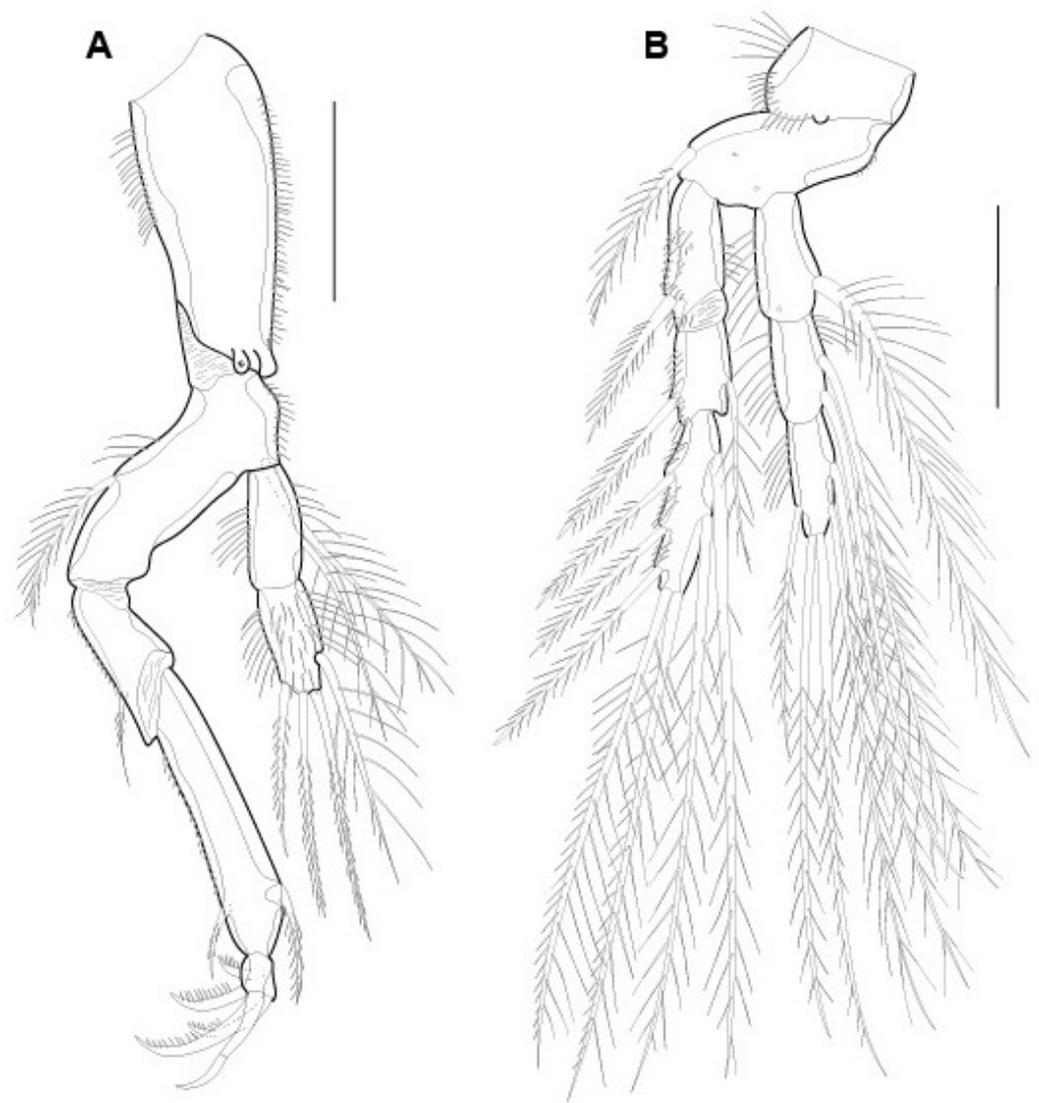


Figure 4. *Eupelte dokdoensis* sp. nov. female. (A) P1; (B) P2. Scale bars: 50 μ m.

P2 (Figure 4B, Table 1). Coxa wider than long, with long setules proximally and short spinules along outer and distal margins. Basis much wider than long, with one plumose outer seta, with few small inner spinules and two medial pores. Exopod with three segments, a little longer than endopod; exp-1 with spinules on outer margin and anterior surface, and long setules on inner margin, with one bipinnate outer spine; exp-2 with outer spinules, with one bipinnate outer spine and one plumose inner seta; exp-3 with spinules on outer margin, three bipinnate outer spines, two terminal spinulose setae, and two plumose inner setae. Endopod with three subequal segments; enp-1 with outer long setules and one plumose inner seta; enp-2 with inner and outer long setules and with two plumose inner setae; enp-3 with outer setules, and with one outer bipinnate seta, two distal bipinnate setae, and two inner plumose setae.

Table 1. Setal formula of P2–P4 of *Eupelte dokdoensis* sp. nov. female.

Thoracopod	Exopod	Endopod
P2	0 1 223	1 2 221
P3	0 1 323	1 2 221
P4	0 1 323	1 2 221

P3 (Figure 5A, Table 1). Coxa much wider than long, with outer spinular row and one medial pore. Basis much wider than long, with spinules on outer margin, with one bare outer seta and one outer pore. Exopod with three segments, a little longer than endopod; exp-1 with spinules on outer margin and anterior distal surface, and several long inner setules, with one bipinnate outer spine; exp-2 with spinules on outer margin, with one bipinnate outer spine and one plumose inner seta; exp-3 with spinules on outer border, three bipinnate outer spines, two terminal spinulose setae, and three plumose inner setae. Endopod with three subequal segments; enp-1 with outer long setules and with one plumose inner seta; enp-2 ornamented with spinular rows on both margins, with two plumose inner setae; enp-3 with long outer setules, and with one bipinnate outer seta, two bipinnate distal setae, and two plumose inner setae.

P4 (Figure 5B, Table 1). Coxa and basis as in P3 except for lack of pore on basis. Exopod with three segments; exp-1 armed with spinular row along outer border and on distal surface, with one bipinnate outer spine; exp-2 with spinules on outer margin, with one bipinnate outer spine and one short plumose inner seta; exp-3 with spinules on outer border, three bipinnate outer spines, two terminal spinulose setae, and three plumose inner setae, of which middle seta (arrow in figure) thicker than others. Endopod with three segments; enp-1 with long setules on outer margin and one plumose inner seta; enp-2 armed with long setules along both margins and with two plumose inner setae; enp-3 with outer long setules, and with one outer bipinnate seta, 2 distal bipinnate setae, and two inner plumose setae. The armature formula of female P2–P4 is given in Table 1.

P5 (Figure 2D). Both rami completely separated. Baseoendopod elongated, with outer spinules on distal half and on surface as depicted in figure, and with one naked seta on outer surface, three bipinnate seta on inner lobe extending distally, one bipinnate long seta, and one short bare seta on inner surface. Exopod elongated with many spinular rows near outer margin, with one surface seta, four strong spines distally, and one bipinnate inner spine.

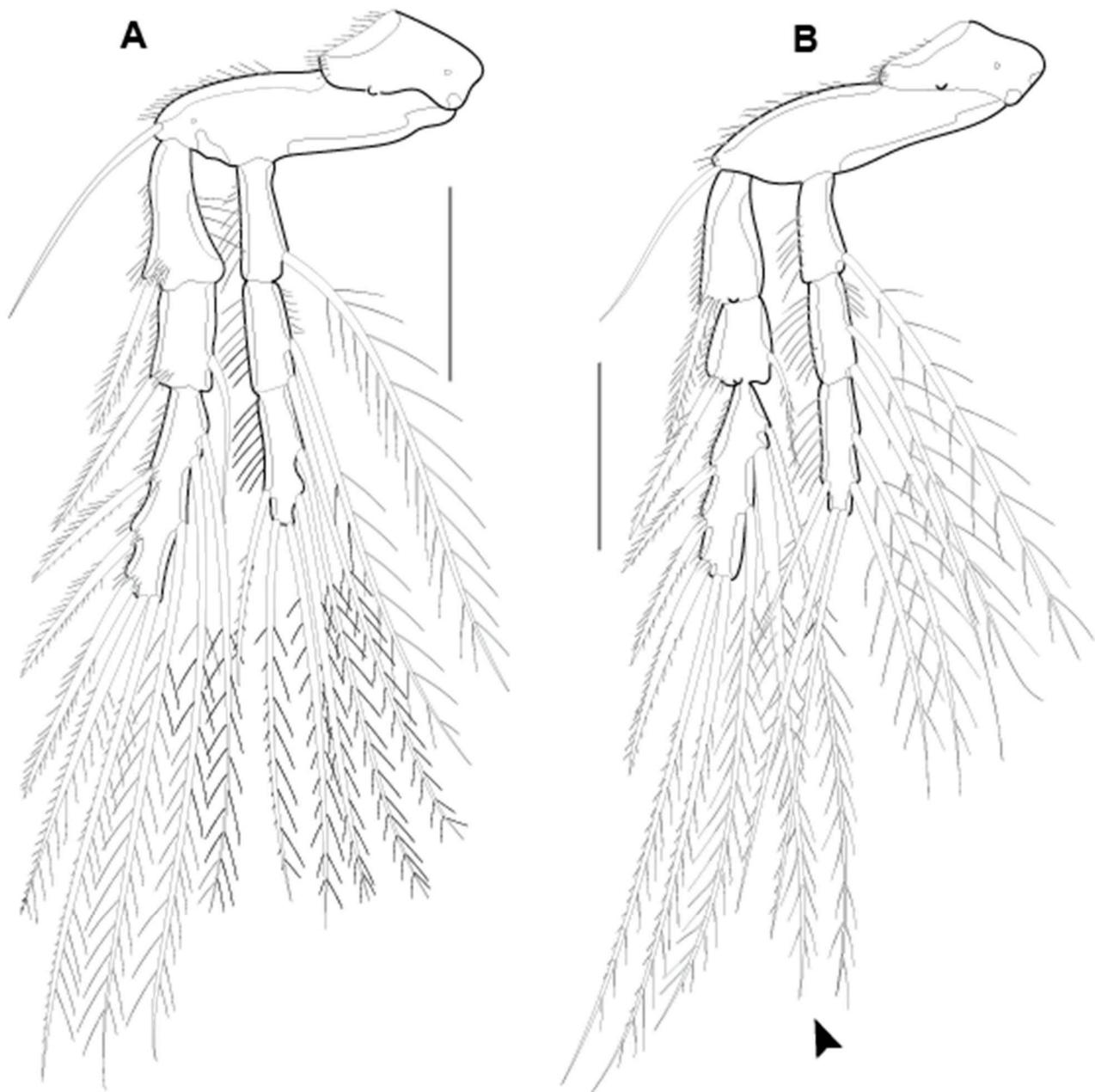


Figure 5. *Eupelte dokdoensis* sp. nov. female. (A) P3; (B) P4. Scale bars: 50 μ m.

3.2.2. Morphological Description of Male

Total body length ranging from 0.52 to 0.57 mm ($n = 5$), measured as in the female specimen (Figure 1B). Urosome tapering posteriorly. Cephalothorax a little wider than long, with lots of sensilla on surface as depicted.

Urosome (Figure 6A) six-segmented, comprising P5-bearing somite, genital somite, third to fifth urosomites, and anal somite. Fourth and fifth urosomites with many spinules on lateral lobe.

P6 (Figure 6A) represented by one strong bipinnate spine and one bipinnate seta, outer one thicker than inner one.

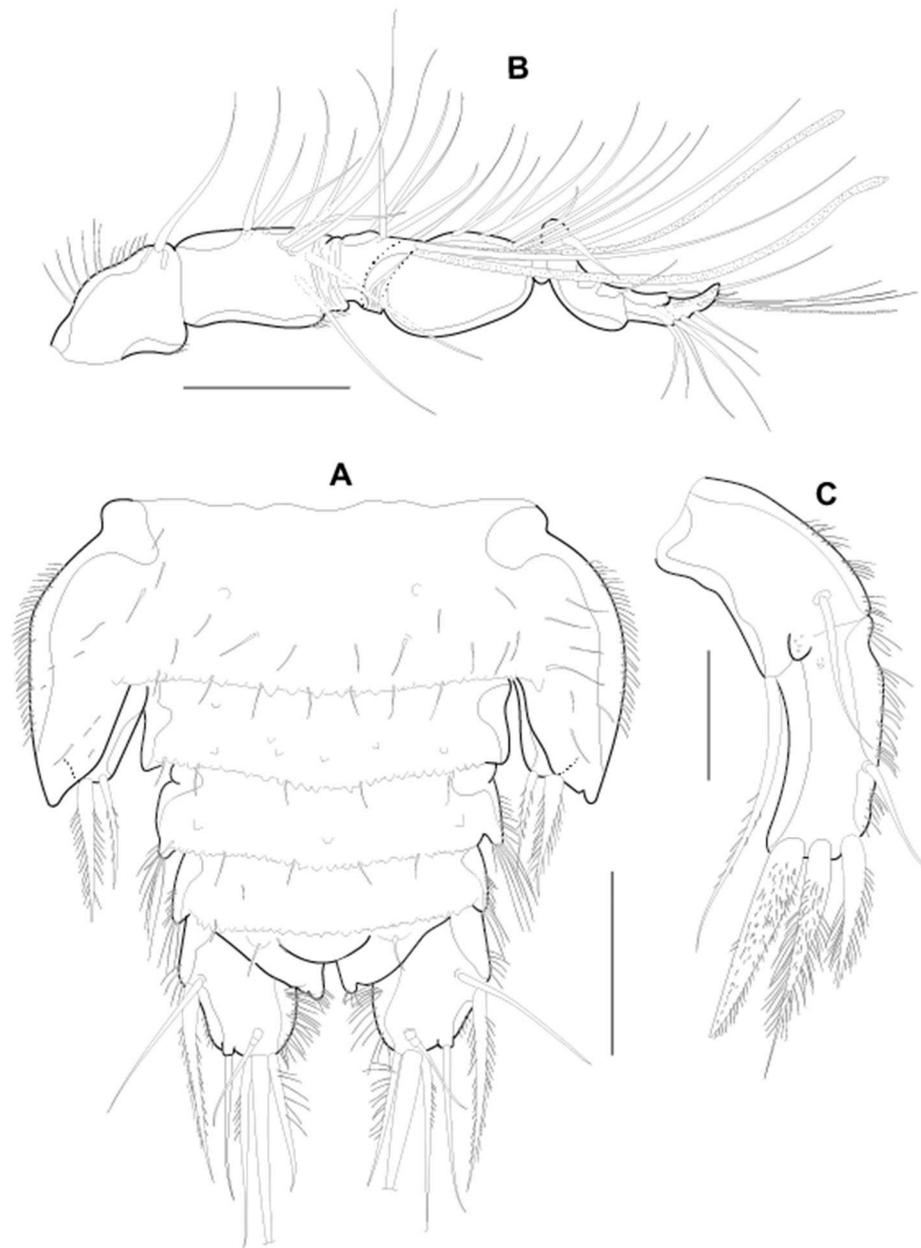


Figure 6. *Eupelte dokdoensis* sp. nov. male. (A) Urosome, dorsal; (B) antennule; (C) P5, anterior. Scale bars: 30 μm (C); 50 μm (A,B).

Antennule (Figure 6B) with eight segments; segment 1 with long proximal setules and short distal spinules on anterior margin; segment 2 longest, with spinules on distal posterior corner; segment 5 much swollen, with aesthetasc and seta fused basally; segment 6 shortest with one seta. Setal formula as follows: 1 – [1], 2 – [10], 3 – [4 + (1 + ae)], 4 – [1], 5 – [8 + (1 + ae)], 6 – [1], 7 – [2], 8 – [10 + acrothek].

Antenna, mouth appendages, and P1, P2, P3, P4 as in female.

P5 (Figure 6C). Both rami distinctly separated. Baseoendopod elongated, with outer spinules on distal half and on surface as depicted, armed with one naked seta on outer surface and one long bipinnate inner seta. Exopod elongated with many spinules near or along outer margin, and with one outer seta and three strong distal spines.

3.2.3. Distribution

Korea (Dokdo Island).

4. Discussion

According to Wells's key [20], the new species from Dokdo Island described herein can be assigned to the genus *Eupelte* based on the combination of the following features: (1) a body with simple architecture; (2) urosome with distinct somites except for genital double-somite; (3) P1 endopod two-segmented; (4) P2–P4 exp-3 with seven, eight, and eight setae, respectively; and (5) baseoendopod and exopod of P5 that are not fused and completely separated.

Eupelte dokdoensis sp. nov. is more similar to *E. setacauda* collected from the drifting kelp of the Californian coast and *E. aurulenta* obtained from the algal sands in the Andaman Islands. These species share a combination of nine-segmented A1, one seta on enp-1 and four setae on enp-2 of P2, the same setal formula of swimming legs P2–P4, and comparatively small-sized body lengths (0.58–0.75 mm in females and 0.55–0.70 mm in males) [21,26–28]. However, the new species differs from these two species with respect to the following: the deeply bilobed later margin of the genital double-somite, the caudal ramus (about 1.2 times longer than wide), the longest first segment of A1, the ornamentation of P1 enp-2 (fully covered with long setules), a thicker inner seta on P3 exp-3, and the number of setae on both the rami of P5, which are both bearing six setae. As pointed out by Wells and Rao [23], the description of *E. setacauda* is incomplete and lacks the necessary figures. However, this species is easily distinguished from its congeners by the stout lateral spiniform seta II of the caudal ramus, which does not reach beyond the end of the segment, and the pentasetose rami of the female P5.

The new species has a unique setation on its swimming legs. In the exp-3 of P3–P4, the proximal two inner setae are very close together. In the exp-3 of P4, the second seta is thicker than the other two setae. These similar features are also found in several species. Among them, based on their descriptions and figures, *E. minuta* has two closed proximal inner setae on P3 exp-3 but without a thicker inner seta. *Eupelte simile* (original description by Monk [27]) exhibits two closed inner setae on P4 exp-3, but *E. simile* sensu Ito [21] exhibits this character on the exp-3 of P3–P4 and has a thicker seta on P4 exp-3. *Eupelte gracilis* sensu Pallares [29] also exhibited similar features compared to Ito's [21] specimens.

Although the figure of maxilla is not provided for all species, most *Eupelte* species have four setae on the proximal endite of maxilla. However, *E. regalis* from Wellington has three setae, and *E. hughesi* from Bermuda only has two setae on it. On the other hand, *E. simile* sensu Ito [21] has four setae, as shown in the new species, but the innermost seta is represented by a short and thick spine. In addition, most species have nine segments in the female antennule, but only *E. acutispinis* from China has eight segments, and *E. regalis* shows a seven-to-nine segment range as an additional variation [10].

Thus far, the genus *Eupelte* Claus, 1860, comprises fourteen valid species (see [10,19,20]), and it is distributed in four major oceans: Atlantic Ocean (five species: *Eupelte gracilis* from the Mediterranean; *E. tristanensis*, from Tristan Da Cunha, southern Atlantic; *E. minuta*, from Mar del Plata, Argentina; *E. cubensis* Varela & Gomez, 2013, from Cuba; and *E. hughesi* Varela, Iliffe & Walter, 2023, from Cherry Pit Cave, Bermuda); Indian Ocean (three species: *E. hexaseta* and *E. beckleyae*, from St. Croix Is., South Africa; and *E. aurulenta*, from Andaman Islands); Southern Ocean (one species: *E. villosa*, from South Georgia, South Orkney, Gauss-Station, and Weddell Sea); and Pacific Ocean (five species: *E. setacauda* from California, USA; *E. simile* from California, USA, and Hokkaido, Japan; *E. regalis* from Wellington, New Zealand; *E. acutispinis* from Paracel Islands, China; and *E. dokdoensis* sp. nov. from Dokdo Is., Korea). *Eupelte* species are exclusively marine and are mainly associated with algae or seaweeds. However, *E. simile* was collected from drifting kelp [27] or planktonic specimens [21]. Moreover, *E. villosa* was reported from 20 to 450 m in depth from the bottom sediments [26].

An identification key to the species of the genus *Eupelte* is provided below (Table 2) based on Hicks [10], Wells [20], and the present contribution. In order to easily distinguish morphological characters, we used Pallares [29] for *E. gracilis*, Dahms [26] for *E. villosa*, and Ito [21] for *E. simile*.

Table 2. Key to the females of the species of the genus *Eupelte*.

1.	P1 enp-1 without inner seta-----	2.
	P1 enp-1 with inner seta-----	3.
2.	P1 enp-2 with three setae; P2 enp-3 with five inner setae-----	<i>E. tristanensis</i> .
	P1 enp-2 with four setae; P2 enp-3 with four inner setae-----	<i>E. beckleyae</i> .
3.	P4 enp-2 with one inner seta-----	4.
	P4 enp-2 with two inner setae-----	5.
4.	A1 nine-segmented; P2–P3 enp-2 with one seta -----	<i>E. gracilis</i> .
	A1 eight-segmented; P2–P3 enp-2 with two setae -----	<i>E. acutispinis</i> .
5.	P1 enp-2 with six setae-----	6.
	P1 enp-2 with five setae-----	7.
	P1 enp-2 with four setae-----	9.
6.	Ceph without pointed projection laterally; enp-3 of P2–P4 with five setae-----	<i>E. hexaseta</i> .
	Ceph with pointed projection laterally; enp-3 of P2–P4 with four setae-----	<i>E. hughesi</i> .
7.	Mxp enp longer than basis; P2 enp with inner setule row-----	<i>E. villosa</i> .
	Mxp enp much shorter than basis; P2 enp without inner setule row-----	8.
8.	A1 fourth segment longest; P3 exp-2 with normal inner seta-----	<i>E. minuta</i> .
	A1 second segment longest; P3 exp-2 with thick inner seta-----	<i>E. simile</i> .
9.	Stout lateral spiniform seta II of CR not extending beyond distal end-----	<i>E. setacauda</i> .
	Stout lateral spiniform seta II of CR extending beyond distal end-----	10.
10.	P4 exp-3 with normal inner seta-----	11.
	P4 exp-3 with thick inner seta-----	12.
11.	P5 exp and benp with five and seven setae-----	<i>E. regalis</i> .
	P5 exp and benp with six and five setae -----	<i>E. cubensis</i> .
12.	P5 exp and benp with four and five setae -----	<i>E. aurulenta</i> .
	P5 exp and benp with six and six setae -----	<i>E. dokdoensis</i> sp. nov.

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