

***Edotia tangaroa* sp. nov. (Crustacea: Isopoda: Idoteidae) from the western Ross Sea, Antarctica**

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Abstract

Edotia tangaroa sp. nov. is described from the western Ross Sea, Antarctica, the first record of the genus from that region. It is characterised by the dorsal ornamentation, consisting of numerous small, blunt tubercular, structures from the head to the tip of pleotelson, as well as short, blunt dorsal spines on basis of pereopods 1–7. Antenna 1 is slightly longer and more robust than antenna 2. An annotated species list is provided.

Key words: Ross Sea, Southern Ocean, taxonomy, Valvifera, Idoteidae, *Edotia*

Introduction

Edotia Guérin-Méneville, 1844 is a predominantly Southern Hemisphere genus, with six of the eighteen species known from the Northern Hemisphere. Only two species are from warm-water habitats, with most recorded from temperate to cold-water environments (see species list). The Southern Ocean, with seven species, appears to have the greatest diversity. *Edotia tangaroa* sp. nov. is the nineteenth species described for the genus and the first record from the Ross Sea and Pacific sector of Antarctica.

Methods

Specimens were collected during the 2004 ‘BIOROSS’ expedition with RV *Tangaroa* to the western Ross Sea. Two-hundred samples were taken using heavy-duty, 2 cm mesh ‘epibenthic sledges’. During the 19th Antarctic expedition with RV *Italica* to the Ross Sea in February 2004 an additional 18 samples were taken along a latitudinal transect between

Cape Adare and Terra Nova Bay using a Rauschert dredge. The material was fixed in precooled 80% ethanol in the laboratory. Total body length was measured medially from anterior edge of the head to the posterior tip of the pleotelson.

Material is deposited at the National Institute for Water and Atmospheric Sciences Ltd. (NIWA) in Wellington, New Zealand and in the Zoological Museum of the University of Hamburg (ZMH).

Taxonomy

Idoteidae Fabricius, 1798

Edotia Guérin-Méneville, 1844

Edotia Guérin-Méneville, 1844: 34.– Cunningham, 1871: 499; Miers, 1881:74.– Richardson, 1900: 131.– Ohlin, 1901: 292.– Stebbing, 1914: 353.– Giambiagi, 1925: 12.– Nordenstam, 1933: 94.– Sheppard, 1957: 154.– Menzies & Barnard, 1959: 21.– Menzies, 1962: 90.– Müller, 1988: 407.– Brandt, 1990: 152.

Desmarestia Nicolet, 1849: 284 [junior homonym also of *Desmarestia* Herrmannsen, 1847 (a mollusc) and *Desmarestia* Czerniavsky, 1878 (decapod crustacean) — see Neave 2006].

Epelys Dana, 1849: 426.– Harger, 1880: 357.

Edotea Ohlin, 1901: 292.– Richardson, 1905: 394.

Type species: *Edotia tuberculata* Guérin-Méneville, 1844; by monotypy.

Diagnosis [modified after Brandt (1990) and Wägele (1991)]

Body heavily calcified, oval, with tubercular or smooth body surface, broadest at pereonites 3 to 5. Pereonite 1 not fused with head, head sometimes ornamented with lobe-like protrusions or elevations. Coxal plates laterally protruded, coxal plates of anterior segments fused to tergites (exception: *E. bilobata*), not fused on pereonites 5–7 (Sheppard 1957). Pleon of up to 3 pleonites plus indication of another pleonite laterally on pleotelson. All pleonites fused with telson to pleotelson. Pleotelson caudally narrowing, round or concave, without caudal spines. Antennae short, as long as head only or as cephalothorax, proximal articles not much broader than distal articles. Flagellum of antenna 2 rudimentary, consisting of a single, thick article with a minute apical article. Maxilliped palp of 3 articles. All pereopods subsimilar, with stout propodus and dactylus forming a subchela, best developed in anterior pereopods. Uropods uniramous, ventral small ramus reduced.

Edotia tangaroa sp. nov. (Figs 1–5)

Material examined: All western Ross Sea. **Holotype** female: ♀ (ovig. 9.0 mm),

72°18.92'S, 170°21.66'E, 12 February 2004, 130 m, grab, TAN0402/94, RV *Tangaroa* (NIWA 25028). **Paratypes:** ♂ (11.0 mm), ♀ (7.8 mm), 72°18.92'S, 170°21.66'E, 12 February 2004, 130 m, grab, TAN0402/94, RV *Tangaroa* (NIWA 17929). ♀ (ovig. 9.5 mm), 71°31.80–31.41'S, 170°06.66–06.79'E, 191–220 m, Ross Sea, 17 February 2004, TAN0402/94, RV *Tangaroa* (NIWA 17928). ♀ (ovig. 8 mm), 72°18.5'S, 170°26.8'E, 235 m, Ross Sea, 12 February 2004, Rauschert dredge, H-out 4, RV *Italica*, (ZMH 41221). 6 manca I (4 at 3.0, 2 at 3.5 mm), 2 ♀ (ovig. 7.5, 8.0 mm), 4 ♂ (8.0, 8.2, 9.2, 10.0 mm), 72°17.0'S, 170°13.1'E, 316 m, Ross Sea, 16 February 2004, Rauschert dredge, H-in 3, RV *Italica*, (ZMH 41222). 2 manca I (2 at 3.0 mm), 1 manca II (3.5 mm), ♂ (10.2 mm), 72°17.2S, 170°17.9'E, 84 m, Ross Sea, 16 February 2004, Rauschert dredge, H-in 5, RV *Italica* (ZMH 41223). 2 manca II (4.0, 4.5 mm), 2 ♀ (ovig. 8.0, 9.0 mm), 2 ♂ (9.2, 10.0 mm), 73°22.7'S, 170°06.9'E, 410 m, Ross Sea, 18 February 2004, Rauschert dredge, C 2, RV *Italica* (ZMH 41224).

Diagnosis

Eyes situated on frontolaterally directed, tuberculate protrusions; head with one pair of dorsal tubercles at mid-length and one pair at distal margin, almost cauliflower shaped; dorsal surface of body with small blunt tubercles; pleotelson with straight lateral margins except for blunt, apically acuminate tubercles. Antenna 1 longer and stouter than antenna 2. Bases of pereopods dorsally with small blunt spines.

Description (Figs 1–4)

Paratype female. *Pereonites* all very similar in length 4 longest and widest (see Fig. 1). *Pereonites* 5–7 becoming progressively narrower. *Coxae* of pereopods 1–7 dorsally visible, delimited by faint sutures, laterally rounded. *Dorsal surface* of body with blunt tubercles, except for frontal part of pleotelson. *Pleotelson* lateral margins straight, apex tapered at three-quarters length to form rounded point. *Uropods* slightly shorter than pleotelson medial length.

Antenna 1 (Fig. 2A) consisting of 3 peduncular and 3 flagellar articles; peduncle article 1 longest, proximally broadest, article 2 slightly shorter than 1, about as long as article 3, article 3 with 1 distal simple seta; all peduncular articles covered with short setae; flagellum article 1 forming short ring, with 2 lateral plumose setae; second flagellum article almost as long as peduncle article 2, with 3 distal simple setae and single aesthetasc; terminal flagellar article small and short, knob-like, with 4 aesthetascs.

Antenna 2 (Fig. 2B) consisting of 5 peduncular and 1 flagellar articles; article 1 broadest (damaged during dissection), article 2 slightly narrower than article 1 but as long as article 3, articles 2 and 3 with 1 lateral small spine and 1 distolateral simple seta, article 4 slightly longer than article 3, with small lateral spines and 1 distolateral simple seta, article 5 longest, with 3 simple setae and 3 plumose setae. Flagellum of 1 small, short article and 3 simple setae distally, with 3 apical simple setae (broken off).

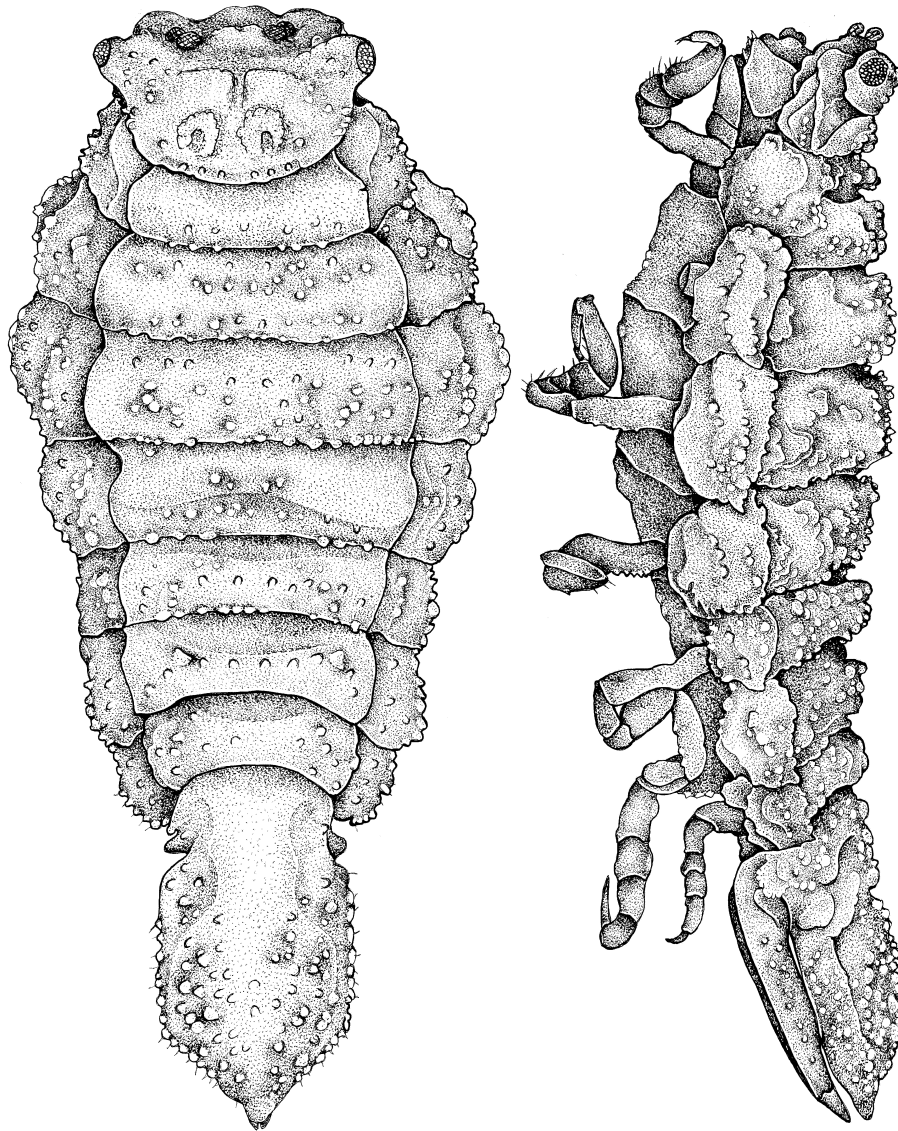


FIGURE 1. *Edotia tangaroa* sp. nov. female paratype, dorsal and lateral views, original drawings.

Mandibles conservative (not illustrated), both sides without palp. Pars incisivae asymmetrical, that of right mandible narrower than left mandible, with 3 strong chitinized teeth; lacinia mobilis of right mandible with 1 strong chitinized cusp, one seta-like structure and some simple basal bristles; pars molaris stout, with broad grinding surface and indented lower margin. Pars incisiva of left mandible with 4 chitinized cusps, lacinia mobilis with 4 teeth, smaller than pars incisiva, with 2 seta-like structures and some simple bristles. Pars molaris as in right mandible.

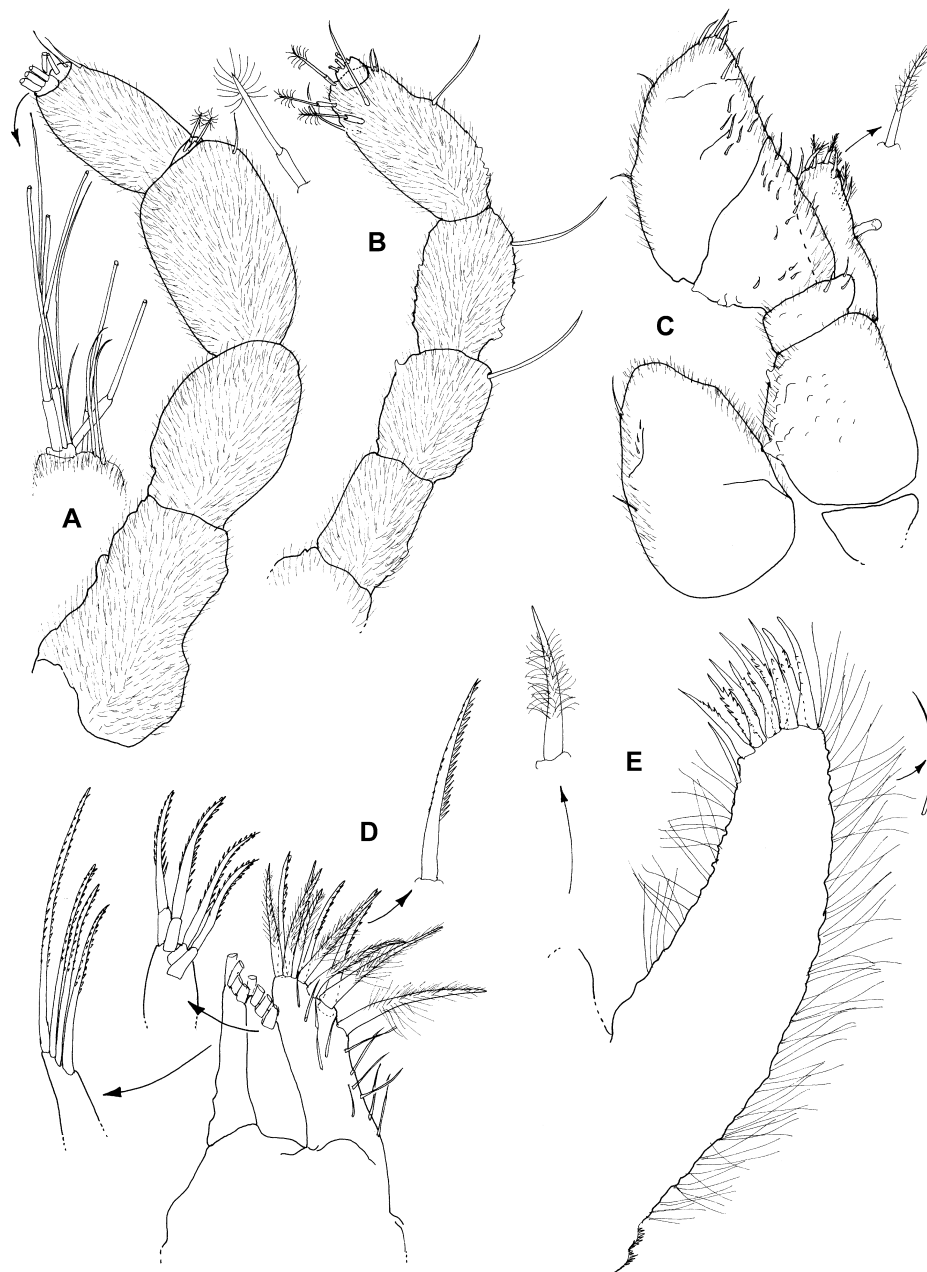


FIGURE 2. *Edotia tangaroa* sp. nov. female paratype, A, antenna 1; B, antenna 2; E, maxilla 1; D, maxilla 2; C, maxilliped.

Maxilla 1 mesial lobe (Fig. 2E) with 1 strong setulated seta (damaged in this specimen); lateral lobe with 9 strong denticulated robust setae (see detail in Fig. 2C).

Maxilla 2 lateral lobe (Fig. 2D) with 4 strong, densely serrate setae of different lengths; mesial lobe with 4 stout serrate, short and broad setae, proximally on broader base, distinctly serrate in upper two-thirds; mesial lobe with 2 rows of setae, one row with

7 setulated stout and long setae and one with 4 serrated more slender setae.

Maxilliped (Fig. 2C) palp 3-articulated, palp article 1 shortest, almost ring-like, article 2 trapezoidal, article 3 largest and distally rounded; palp articles mesially with short simple setae; epipod oval, distally narrower than proximally, with 2 simple setae and small setules, reaching to distal margin of palp article 1; endite long and slender, dorsally and mesially bearing 7 slender plumose setae, with 1 mesial coupling hook.

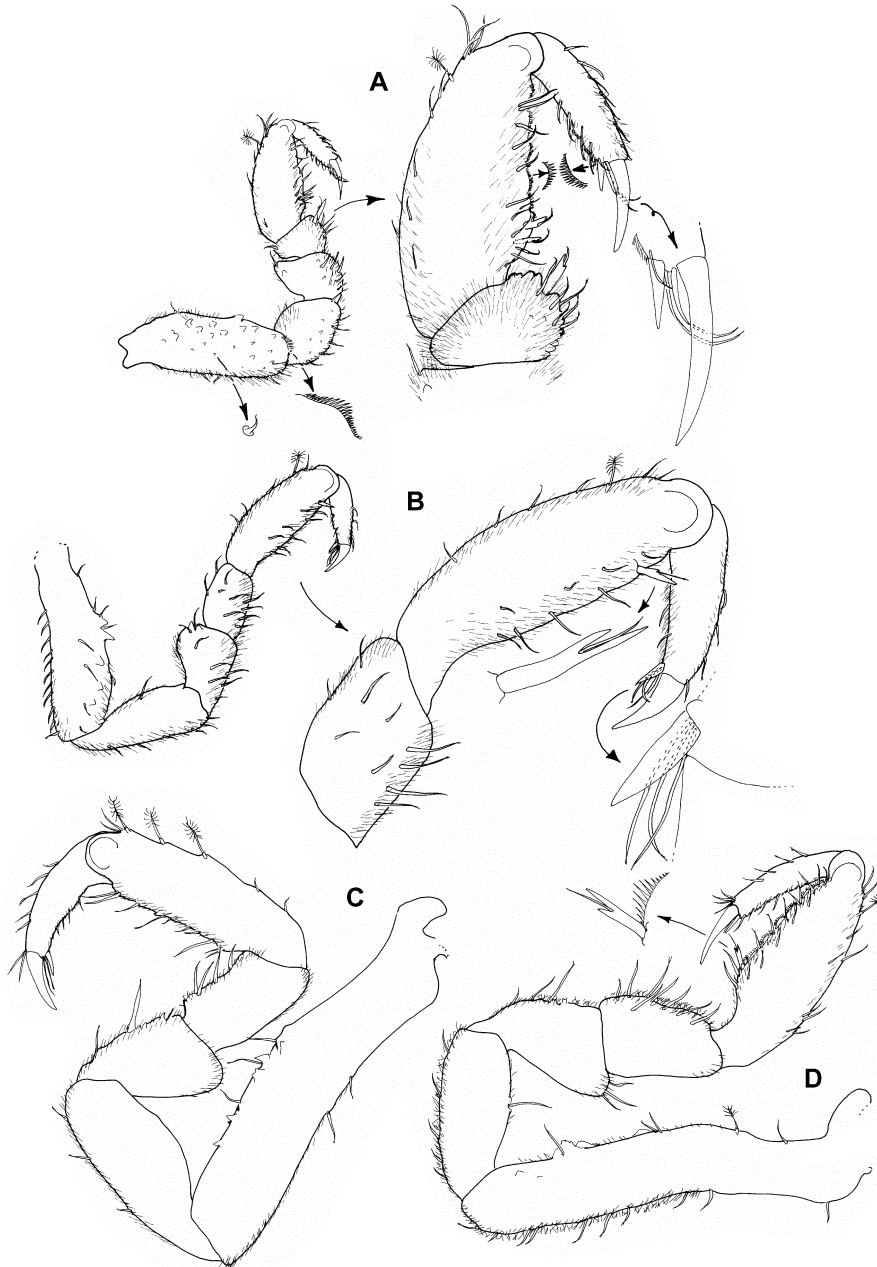


FIGURE 3. *Edotia tangaroa* sp. nov. female paratype, A, pereopod 1; B, pereopod 7; C, pereopod 5; D, pereopod 2.

Pereopod 1 (Fig. 3A) basis longer than combined lengths of ischium, merus and carpus, dorsal margin with short blunt spines, ventral margin with setules and distolateral cuticular comb; ischium about 0.4 times as long as basis, ventral margin with setules and 5 simple setae; merus 0.8 times as long as ischium, distodorsal margin with simple seta and ventral margin with 5 simple setae as well as setules; carpus short, distoventral margin with 1 strong sensory robust seta and 5 simple setae; propodus subchelate, dorsal margin with 10 simple setae and 1 distodorsal plumose seta, ventral margin with 11 simple setae and 2 basal sensory setae, dorsally and ventrally some simple setules as well as row of cuticular combs in upper two-thirds of propodus; dactylus (excluding claws) about 0.5 times as long as propodus, with 2 robust distal claws, dorsal claw 3 times as long as ventral claw, with 2 simple setae between claws, ventral margin with simple seta and cuticular comb present at base of ventral claw, dorsal and ventral margins with simple setae and short setules, with cuticular combs in distal half.

Pereopod 2 (Fig. 3D) similar to pereopod 1, dorsal and ventral margins of all articles with simple setules; ischium almost half as long as basis, slender; merus similar to that of pereopod 1 distodorsal margin with 3 long simple setae, ventral margin with 3 long setae; carpus quadrangular, about as long as merus, with fewer setules, without stout sensory seta, ventral margin with 7 simple setae; propodus subchelate, ventral margin with 15 simple setae and 1 basal robust sensory setae and cuticular combs, dorsal margin with 9 simple setae and 1 distodorsal plumose seta; dactylus (excluding claws) about 0.5 as long as propodus.

Pereopod 5 (Fig. 3C) longer and more slender than pereopods 1, 2 and 7. General appearance of setation of articles similar to other pereopods, dorsal and ventral margins with simple setules; basis longest article, almost twice as long as propodus, dorsal margin with 5 small blunt spines and 3 simple setae, ventral margin with 2 simple setae; ischium and propodus about subequal in length, ischium ventral margin with 3 simple setae; merus about as long as carpus, dorsal margin distally protruded, ventral margin with 2 simple setae; carpus ventral margin with 4 simple setae; propodus dorsal margin with 4 dorsal simple setae and 3 distodorsal plumose setae, ventral margin with 10 simple setae; dactylus similar to that of pereopods 2 and 7, without cuticular comb. Pereopod 6 (not illustrated) similar to pereopod 5.

Pereopod 7 (Fig. 3B) longer and more slender than pereopods 1–4. General appearance of setation of articles similar; basis, ischium and propodus long and slender, basis longest, dorsal margin with 1 blunt spine, 9 dorsal and lateral simple setae, ventral margin with row of 11 simple setae, 5 dorsal and 4 ventral setules ischium, dorsal margin with numerous simple setules and 3 distodorsal and 5 ventral simple setae; merus about as long as carpus, dorsal margin distally protruded, with 2 distodorsal, 1 lateral and 5 ventral simple setae; carpus with 2 dorsal, 4 lateral and 4 ventral simple setae; propodus with 6 dorsal simple setae, 1 distodorsal plumose seta, 8 lateroventral or ventral simple setae and 1 distoventral deeply incised sensory seta; dactylus similar to pereopods 1–4, but dorsal and ventral margins with fewer simple setae, without cuticular comb.

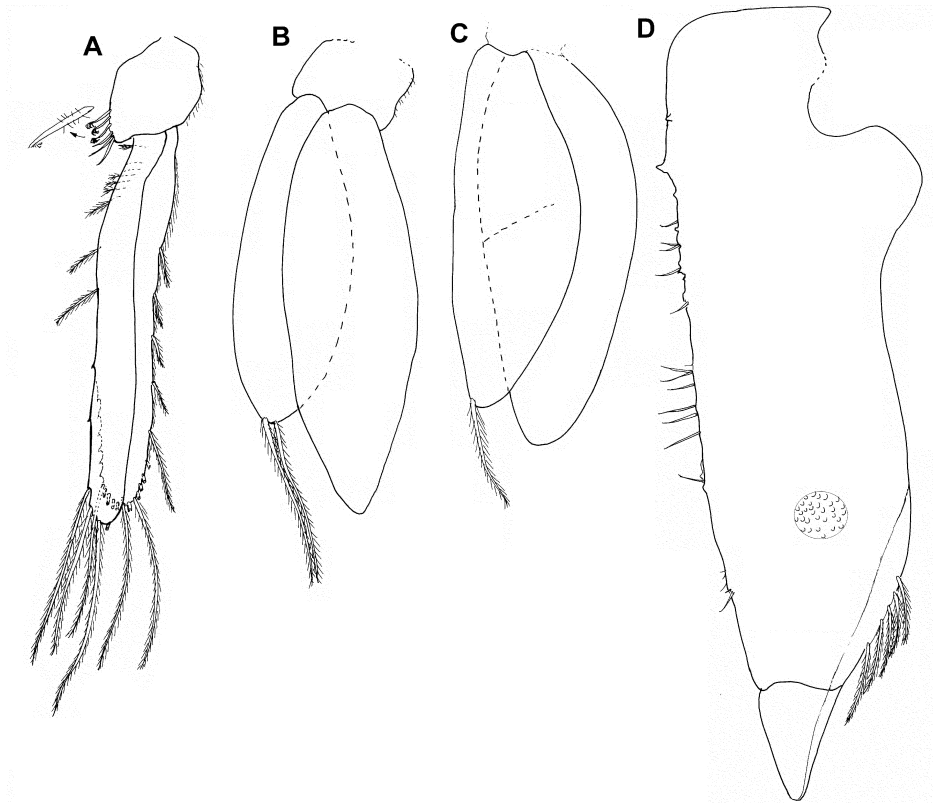


FIGURE 4. *Edotia tangaroa* sp. nov. female paratype, A, pleopod 1; B pleopod 4; C, pleopod 5; D, uropod.

Pleopod 1 (Fig. 4A) sympod with 3 simple and 3 coupling setae; exopod 0.95 endopod length, laterally, distally and mesiodistally with plumose setae; endopod mesially and distally with plumose setae. Mesial margin of exopod parallel to endopod.

Pleopod 4 (Fig. 4B) sympod almost quadrangular; endopod 0.8 exopod length, with 2 distal plumose setae; exopod with acute tip, without setae.

Pleopod 5 (Fig. 4C) sympod almost quadrangular; endopod 0.9 exopod length, with 1 distal plumose seta, exopod without setae.

Uropod (Figs 1, 4D) covered with tubercular structures on mesial surface, outer covered with simple setae; distocaudal margin with 5 plumose setae.

Male. *Eyes* situated on broader protrusions than in female. *Body* with frontomedial protrusions smaller than in holotype and paratype females, less tubercles on the dorsal side of the body than paratype female.

Antenna 2 distally with simple setae, fewer setules than in female paratype. *Pereopod 1* of similar shape to female, but with fewer setae and shorter basis.

Pleopod 1 very similar to that of female, except exopod with only lateral and distal plumose setae. *Pleopod 2* with appendix masculina 1.4 as long as endopod, distal one-third

abruptly narrowed; endopod long and slender; exopod 0.8 as long as endopod, but 1.5 as broad as endopod.

Variation: The paratype male (Fig. 5A, C–F) and paratype female (Figs 1–4) have fewer dorsal tubercles on the head, and eyes on more blunt protrusions than in the female holotype (Fig. 5B).

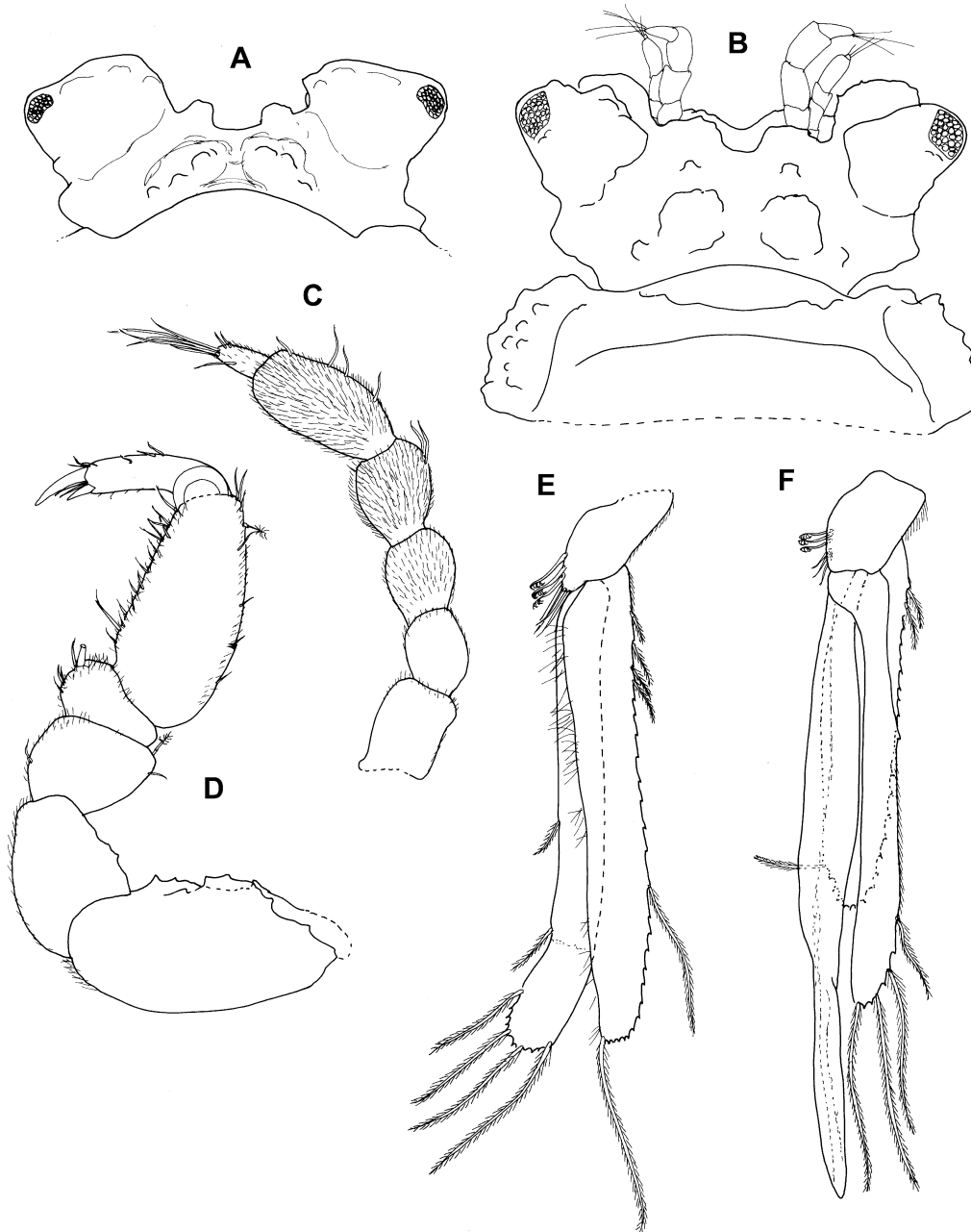


FIGURE 5. *Edotia tangaroa* sp. nov. A, head of male paratype; B, head of female holotype; C–F male paratype; C, antenna; D, pereopod 1; E, pleopod 1; F, pleopod 2.

Remarks

E. tangaroa **sp. nov.** can be readily identified by two characters: the blunt tubercles, which are irregularly placed over the dorsal surface of the body and by antenna 1, which is slightly longer and more stout than antenna 2. In this respect, *E. tangaroa* is most similar to *E. pulchra* Brandt, 1990, as the latter is the only other species characterised by tubercular ornamentation on the apical part of the pleotelson. In comparison, the lateral margins of the pleotelson of *E. pulchra* are straight, and the pleotelson shorter than that of *E. tangaroa*, and this species also bears blunt broad spines dorsomedially on all pereonites as well as a pair of two blunt spines on the head, which are absent in *E. tangaroa*.

Distribution

Known only from the Ross Sea; at depths of 84 to 410 metres.

Etymology

Named for NIWA's research vessel, the R.V. *Tangaroa* (*Tangaroa* also being the Māori God of the sea); noun in apposition.

Annotated list of *Edotia* species

1. *E. acuta* Richardson, 1900; Nova Scotia to Woods Hole, western North Atlantic; 188 m (Richardson, 1905).
2. *E. chilensis* (Nicolet, 1849); Chile.
3. *E. bilobata* Nordenstam, 1933; Falkland Islands, South Atlantic, 36–341m.
4. *E. corrugata* Sheppard, 1957; Falkland Islands, 104–207m.
5. *E. dahli* Menzies, 1962; at 32–41°S, Chile, 'on small stones, 24–60 m.
6. *E. doellojuradoi* Giambiagi, 1925; Chile.
7. *E. lilljeborgi* Ohlin, 1901; Patagonia.
8. *E. lyonsi* (Menzies & Kruczynski, 1983); Florida, USA.
9. *E. magellanica* Cunningham, 1871; Patagonia, 65 m.
10. *E. montosa* (Stimpson, 1853); northeastern USA, western North Atlantic, 45–50 m (Richardson, 1905).
11. *E. oculata* Ohlin, 1901; Falkland Islands 100–219 m.
12. *E. oculopetiolata* Sheppard, 1957; Antarctic Peninsula and South Shetland Islands, 18–391 m.
13. *E. pulchra* Brandt, 1990; Antarctic Peninsula, Weddell Sea, 191–473 m.
14. *E. samariensis* Müller, 1988; Caribbean Colombia, from tropical seagrass beds, 1–3 m.
15. *E. sublittoralis* Menzies & Barnard, 1959; California, USA, 13–64 m.
16. *E. tangaroa* **sp. nov.**; western Ross Sea, 84–410 m.
17. *E. transversa* Menzies, 1962; at about 41°S, Chile, 100 m.

18. *E. triloba* (Say, 1818); northeastern USA, western North Atlantic, shallow, in seagrass, to about 1.5 m (Richardson, 1905).
19. *E. tuberculata* Guérin-Méneville, 1844; **type species**; Southern Ocean, 75–310 m; The type locality is Malvinas, or the Falkland Islands, stated as 'les îles Malouines' by Guérin-Méneville; Spamer & Bogan (1992, 1994) gave the type locality as Maldives, apparently misreading Guérin-Méneville's hand-written label. Wägele (1991) includes *E. tuberculata* of Nordenstam (1933) as a misidentification of *E. oculopetiolata*, but without discussion; Brandt (1990) makes no such judgement and redescribed and illustrated both species.

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