

# First Record of Leucosiid Crabs (Crustacea: Decapoda: Brachyura) from the Kermadec Islands, with Description of a New Species

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**Abstract** Three species of leucosiid crabs, *Ebalia humilis* Takeda, 1977, *E. jordani* Rathbun, 1906, and *E. webberi*, new species, are recorded from the Kermadec Islands, northern New Zealand. This is the first record of leucosiid crabs for the calcinological fauna of the Kermadec Islands. *Ebalia webberi* appears most similar to *E. sakaii* Takeda & Miyake, 1972 from Japan, but can be easily distinguished from *E. sakaii* by the shape of the carapace, cheliped, and male first pleopod.

**Key words:** Kermadec Islands, South Pacific, Brachyura, Leucosiidae, new species, new record.

## Introduction

Under the special project on Collection Building and Natural History Studies in Asia and the Pacific Rim, supported by the National Museum of Nature and Science (former National Science Museum, Tokyo), a collection of brachyuran crabs from the Kermadec Islands was taxonomically studied. The results of the identifications were summarized and presented at the Seventh Symposium of this project (Takeda and Webber, 2004), and a new spider crab of the genus *Achaeus* from the collection was described (Webber and Takeda, 2005). Subsequently 52 species in 17 families were reported by Takeda and Webber (2006), but some groups of crabs were left unidentified to species. In this paper, we report three species of leucosiid crabs, including one new species, and add these species to the calcinological fauna of the Kermadec Islands, New Zealand.

Measurements, given in millimeters (mm), are of the greatest carapace length (including the posterior lobe) and breadth, respectively. Pereiopods are measured along the outer margin

from ischium to dactylus. The specimens examined are deposited in the Museum of New Zealand Te Papa Tongarewa (NMNZ) and the National Museum of Nature and Science (NSMT).

## Taxonomy

Family Leucosiidae

*Ebalia humilis* Takeda, 1977

(Fig. 1A)

*Ebalia humilis* Takeda, 1977: 115, figs. 2 (A, B), 3 (B–D).

*Material examined.* Between Dayrell and Chanter Is. (29°15'S, 177°50.9'W), Herald Islets, Kermadec Is., New Zealand, 31–45 m, 1 ovig. ♀ (3.5×4.2), NMNZ CR. 011249, coll. RV *Acheron*, 11 Sep. 1976.

*Remarks.* The present specimen agrees with the original description in general morphology, but compared with the holotype, ovigerous female (NSMT-Cr 5489) from the Ogasawara Islands, southern Japan, the ornamentations of the carapace and chelipeds are weak. That is, tuber-

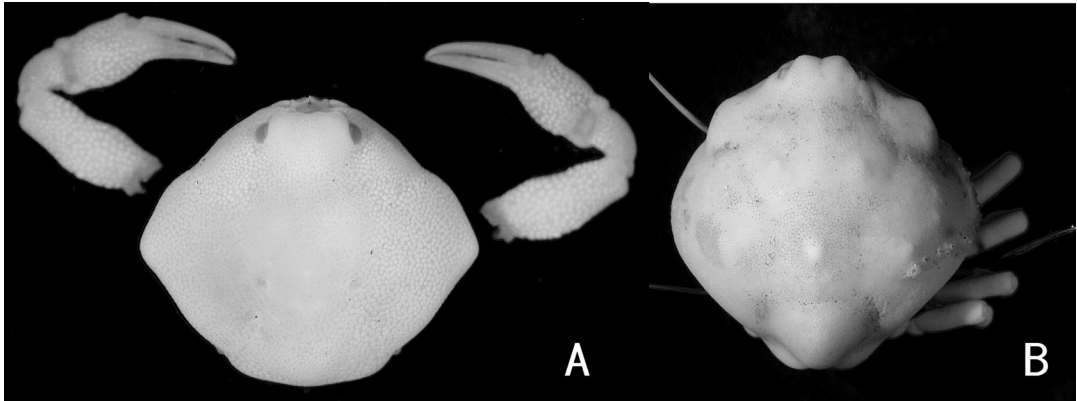


Fig. 1. A, *Ebalia humilis* Takeda, 1977, ovig. ♀ (3.5×4.2 mm; NMNZ CR. 011249). B, *Ebalia jordani* Rathbun, 1906, ♀ (15.4×15.7 mm; NMNZ CR. 011250).

cles on the pterygostomian region of the carapace and on the chelipedal merus are absent, and a projection on the metabranchial margin is weak. These differences are shared with the paratype, female (NSMT-Cr 5490), and may be a morphological feature of a full-grown female specimen.

*Distribution.* Ogasawara Islands and Kermadec Islands, occurring at depths of 31–84 m.

***Ebalia jordani* Rathbun, 1906**

(Fig. 1B)

*Ebalia jordani* Rathbun, 1906: 889, pl. 15(3).

Not *Ebalia jordani*: Yokoya, 1933: 121 (= *E. nudipes* Sakai, 1963).

*Material examined.* East of Chanter Islets (29°15.5'S, 177°50'W), Raoul I., Kermadec Is., New Zealand, 402–366 m, 1 ♀ (15.4×15.7), NMNZ CR. 011250, coll. RV *Acheron*, 28 Oct. 1975.

*Remarks.* This is the first record of this species since the original description, and extremely extends its geographical distribution from Hawaii to the South Pacific. The present specimen agrees well with the original description in general morphology, but the dactyli of ambulatory legs are distinctly setose. This character was not described and illustrated in the original description.

*Distribution.* Hawaiian Islands and Kermadec Islands, occurring at depths of 55–385 m.

***Ebalia webberi* sp. nov.**

(Figs. 2, 3)

*Material examined.* Holotype: ♂ (3.7×4.1), NMNZ CR. 011251, between Meteorological Station and Hutchinson Bluff (ca. 29°10'S, 177°50'W), Raoul I., Kermadec Is., New Zealand, beam trawl, 146–110 m, coll. RV *Acheron*, 4 Apr. 1973.

*Description.* Carapace (Fig. 2A) subrhomboidal in general outline, 1.1 times broader than long; upper surface convex dorsally, uniformly covered with acute granules, granules elongate around margin. Frontal region moderately produced, shallowly concave medially; margin divided into 4 lobes with shallow notches. Gastro-cardiac region raised, not divided from each other, with pair of tubercles on gastric region and tubercle on cardiac region; gastric tubercles directed dorsally; cardiac tubercle directed dorsally, about twice as large as gastric tubercles. Intestinal region protuberant, with subapex tubercle; margin triangularly projected beyond posterior lobes. Hepatic region weakly defined; margin not protruded from general outline of carapace. Pterygostomian margin diverged, obtusely angled at posterior 0.3 with small cluster of granules,

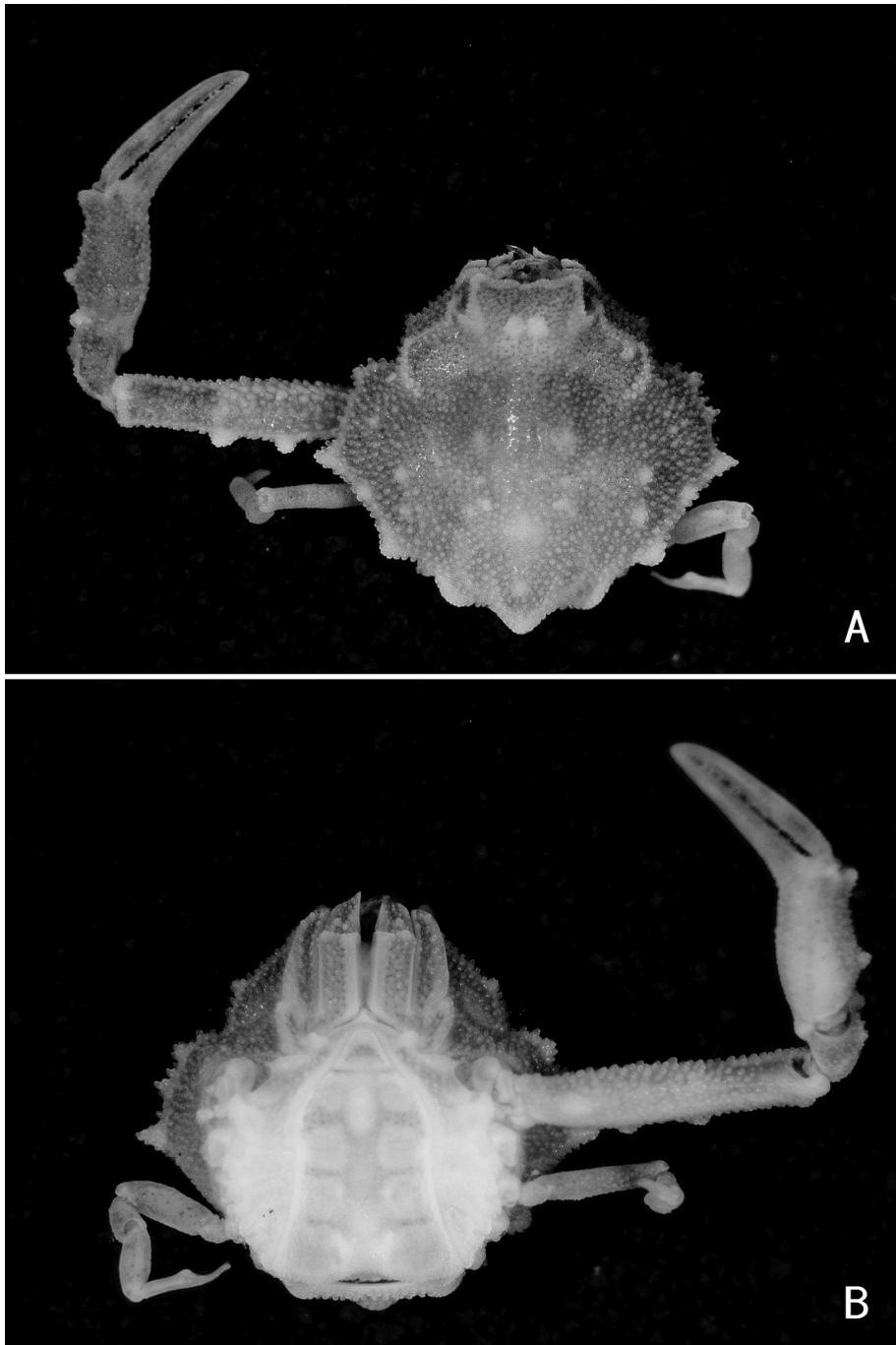


Fig. 2. *Ebalia webberi* sp. nov., holotype, ♂ (3.7×4.1 mm; NMNZ CR. 011251). A, B, dorsal and ventral views, respectively.

forming right angle with branchial margin. Branchial region sloping antero-laterally, with 3 small clusters of granules on mid portion; margin roundly convex in anterior half, obliquely convergent in posterior half, with acute triangular projection on midlength and right-angled triangular projection on posterior 0.2. Posterior margin separately bilobed, lobes obtusely triangular with rounded tip.

Ocular peduncle very short. Orbit with 2 straight fissures on dorsal roof, with V-shaped notch on infraorbital margin; orbital hiatus closed with second segment of antenna. Antennule folded into slightly oblique fossa; basal segment occupying ventral 0.6 of fossa, not covered with granules. Antennal basal segment transversely ovate, second segment subrectangular. Afferent channel with V-shaped notch on anterior margin.

Mandible well calcified, cutting edge triangular in outline, pointed medially; endopod palp 3-segmented. Maxillule: endopod small, triangular. Maxilla: coxal and basal endites missing; endopod triangular, with rounded tip; exopod (scaphognathite) longitudinally expanded into oval structure, entirely fringed with short, plumose setae. First maxilliped: exopod bearing flagellum with some weakly plumose, terminal setae. Second maxilliped: exopod bearing flagellum with some terminal setae; exodite absent. Third maxilliped (Fig. 3a, b) covered with acute granules of various sizes; basis fused with ischium, but with remnant suture on internal surface; ischium subsquamate; merus gently bent dorsally *in situ*, as long as ischium along mesial margin; propodus and dactylus with distally denticulate setae along distal and inner margins, respectively; exopod subsquamate, scarcely tapering distally, rounded at tip, fringed with short plumose setae on lateral margin; internal exopodal ridge scarce, with moderately long setae along ridge; epipod reduced, not well calcified; podobranch absent.

Cheliped (Fig. 3c) slender, 1.9 times as long as carapace, covered with granules of various sizes; coxal condyle stilliform; merus subcylindrical,

with two triangular projections on outer margin; carpus convex; palm convex dorsally, arcuate on inner margin, with triangular projection on proximal 0.3 of outer margin; fingers slender, finely dentate on both cutting edges, without gap when closed; movable finger about 1.4 times as long as palm.

Ambulatory legs (Figs. 2, 3d) of moderate length, covered with minute granules except dactyli, granules along margins acute, sparsely furnished with short plumose setae; coxal condyles rounded; meri, carpi, and propodi subcylindrical; dactyli subconical, smooth, with inconspicuous dactylo-propodal locks on proximal ends of dorsal surfaces.

Thoracic sternites (Fig. 3e): 1st to 4th sternites fused with each other, with partial suture between 3rd and 4th sternites, covered with acute granules of various sizes; 5th to 8th sternites covered with vesicular granules, separated from each other by medially interrupted sutures; episternites not divided; abdominal cavity reaching nearby anterior end, roundly concave on distal part so as tip of first pleopod fit into this concavity; median fissure absent.

Abdomen (Figs. 2B, 3f) covered with vesicular granules of various sizes; 1st segment short, transversely subrectangular, concealed beneath carapace for most part; 2nd segment very short, transversely subrectangular, medially interrupted; main fused section composed of 3rd to 5th segments, elongate trapezoidal, weakly constricted at distal 0.4, with large, acute triangular tooth nearby distal margin, tooth directed ventrally; telson triangular.

Male first pleopod (Fig. 3g, h) robust, roundly dilated and translucent in distal half, with 2 acute processes on sternal surface. Male second pleopod (Fig. 3i) short, about 0.5 times as long as first one, subcylindrical, crested; distal joint tubular, laterally pointed

*Etymology.* This species is dedicated to Mr. R. Webber of the Museum of New Zealand Te Papa Tongarewa, who takes responsibility for the management of the calcinological collections.

*Remarks.* *Ebalia webberi*, new species, is

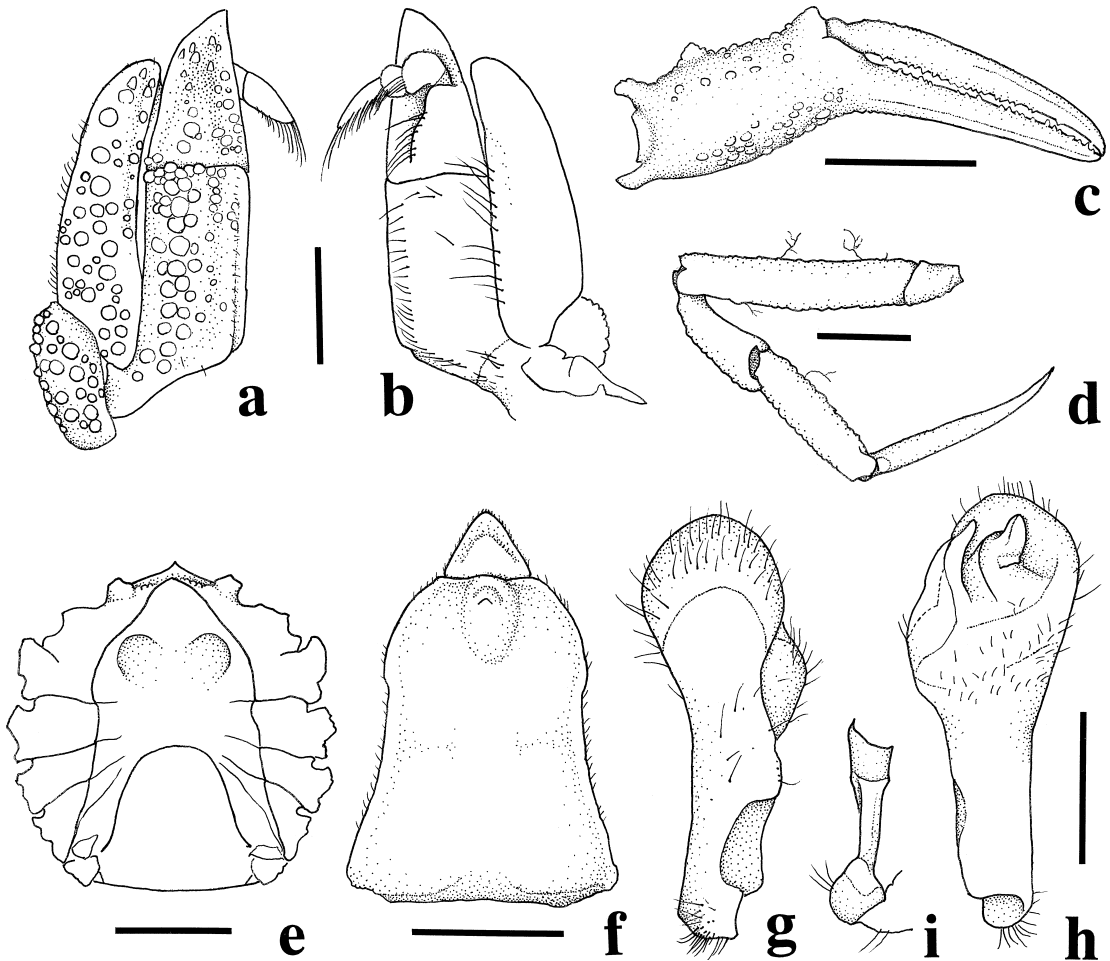


Fig. 3. *Ebalia webberi* sp. nov., holotype, ♂ (3.7×4.1 mm; NMNZ CR. 011251). a, b, right third maxilliped, external and internal views, respectively; c, left chela, dorsal view; d, left fourth ambulatory leg, dorsal view; e, male thoracic sternites, ventral view; f, abdomen (first and second segments omitted), ventral view; g, h, right first pleopod, external and internal views, respectively; i, right second pleopod, external view. Scales for a, b, d, g–i=0.5 mm; scales for c, e, f=1 mm.

most closely resembles to *E. sakaii* Takeda & Miyake, 1972 in the ornamentation of the carapace, but can be distinguished from *E. sakaii* by that the dorsal surface of carapace is covered with acute granules (flat-topped granules in *E. sakaii*), projections of the branchial margin of the carapace and the chelipedal palm are weak (distinct in *E. sakaii*), the male sternum roundly concave (not concave in *E. sakaii*), the male first pleopod roundly dilated in distal part (distally acute in *E. sakaii*), and the distal joint of the male second pleopod is tubular (filiform in *E.*

*sakaii*).

*Ebalia webberi* is also similar to *E. dimorphoides* Sakai, 1963, but readily distinguished from *E. dimorphoides* by that the male first pleopod is robust (slender in *E. dimorphoides*) and the male second pleopod is 0.5 times as long as first pleopod (as long as first pleopod in *E. dimorphoides*).

*Distribution.* Known only from the Kermadec Islands, occurring at depths of 110–146 m.

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### Literature

- Rathbun, M. J., 1906. The Brachyura and Macrura of the Hawaiian Islands. *Bulletin of the United States Fish Commission*, **23**: 829–930, pls. 821–824.
- Sakai, T., 1963. Description of two new genera and fourteen new species of Japanese crabs from the collection of His Majesty the Emperor of Japan. *Crustaceana*, **5**: 213–233.
- Takeda, M., 1977. Crabs of the Ogasawara Islands, V. A collection made by dredging. *Memoirs of the National Science Museum, Tokyo*, (10): 113–140, pls. 112–117.
- Takeda, M. and S. Miyake, 1972. New crabs from the sea around the Tsushima Islands. *Bulletin of the National Science Museum, Tokyo*, **15**: 253–265.
- Takeda, M. and R. Webber 2004. Crabs from the Kermadec Islands. Seventh Symposium on Collection Building and Natural History Studies in Asia and the Pacific Rim. Abstracts, p. 4. National Science Museum, Tokyo.
- Takeda, M. and R. Webber, 2006. Crabs from the Kermadec Islands in the South Pacific. *In*: Y. Tomida, T. Kubodera, S. Akiyama and T. Kitayama (eds.), Proceedings of the Seventh and Eighth Symposia on Collection Building and Natural History Studies in Asia and the Pacific Rim. *National Science Museum Monographs*, (34): 191–237.
- Webber, R. and M. Takeda, 2005. A new spider crab of the genus *Achaeus* (Crustacea, Decapoda, Brachyura) from the Kermadec Islands. *Bulletin of the National Science Museum, Tokyo*, Series A, **31**: 45–50.
- Yokoya, Y., 1933. On the distribution of decapod crustaceans inhabiting the continental shelf around Japan, chiefly based upon the materials collected by S. S. Soyo-Maru, during the year 1923–1930. *Journal of the College of Agriculture, Tokyo Imperial University*, **12**: 1–225.