

# A New Genus and Species of Euxanthine Crab (Crustacea: Decapoda: Xanthidae) from Submarine Banks off the Izu Islands, Central Japan

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**Abstract** A new genus and species of euxanthine crab, *Pilomedaesus okutanii* gen. et sp. nov., is described from submarine banks off the Izu Islands, central Japan. The monotypic new genus *Pilomedaesus* can be distinguished from its congeners by the tomentose carapace and the combination of some morphological characters.

**Key words:** Decapoda, Brachyura, Xanthidae, *Pilomedaesus okutanii*, new genus, new species, Japan.

During the years of 1960–1974, Dr. Takashi Okutani of the Tokai Regional Fisheries Research Laboratory, Fisheries Agency, surveyed the benthic fauna of the submarine banks off the Izu Islands in central Japan by using the research vessel *Soyo Maru*. Of the extensive collections made, many mollusks of new species and new records for Japanese waters have been published (see Okutani, 1972, 1975). As for his decapod crustacean specimens, now preserved in the National Museum of Nature and Science, Tokyo (NSMT), some of the material has already been reported (Takeda and Galil, 1980, 2005; Ohe and Takeda, 1986; Takeda and Ng, 1997; Komatsu and Takeda, 2004; Takeda and Watabe, 2004). The Showa Memorial Institute, the National Museum of Nature and Science, Tsukuba, also conducted a zoological survey at Sagami Sea and adjacent seas, including the Izu Islands. This was done to elucidate the faunal change over the past 60 years since the field work and publications of the late Showa Emperor (see Takeda *et al.*, 2006a–c).

While sorting the crab specimens in the two above-mentioned collections, we found some

specimens of the Xanthidae previously unknown from Japanese waters, which were collected from some offshore banks in the Izu Islands. In this paper, they are described as a new genus and species, *Pilomedaesus okutanii* gen. et sp. nov.

All the specimens examined are preserved in the National Museum of Nature and Science, Tokyo, and the Showa Memorial Institute, National Museum of Nature and Science, Tsukuba, under the registration form of NSMT-Cr and NSMT-Cr S, respectively. Abbreviations used in the description, cb and cl, and G1 and G2, refer to the breadth and length of the carapace, and the first and second male gonopods, respectively.

## Taxonomy

Family **Xanthidae** MacLeay, 1838

Subfamily **Euxanthinae** Alcock, 1898

Genus ***Pilomedaesus*** gen. nov.

*Type species.* *Pilomedaesus okutanii* gen. et sp. nov., by monotypy.

*Diagnosis.* Carapace transversely ovoid; dorsal surface covered with tomentum, with regions

well defined, 4M indistinct; endostome without ridge; cheliped crested on dorsal surfaces of carpus and palm; major chela with molariform tooth on base of dactylus; dorsal margin of ambulatory merus crested; abdominal somites 3–5 fused but sutures separating somites discernible; G1 tapering, apex rounded without long setae; G2 short, distal segment sickle-shaped.

*Etymology.* The generic name is derived from the Latin *pilus* (=hair), in combination with the genus name *Medaesus* (generic name of an euxanthine crab), alluding to the tomentose carapace. Gender masculine.

*Remarks.* *Pilomedaesus* gen. nov. is similar to *Crosnierius* Serène and Vadon, 1981, and *Ladomedaesus* Štević, 2005 (Euxanthinae Alcock, 1898), as well as *Glyptocarcinus* Takeda, 1973, *Antrocarcinus* Ng and Chia, 1994, and *Cryptocarcinus* Ng and Chia, 1994 (Antrocarcininae Ng and Chia 1994) (see Ng *et al.*, 2008, for current xanthid classification), in the shape of their gonopods, i.e. the G1 is relatively stout, with a rounded apex which lacks long setae; and a G2 which is relatively short and has a sickle-shaped distal segment.

*Pilomedaesus* is similar to *Crosnierius* in the indistinct 4M and the absence of endostomial ridges in addition to the features of gonopods, but can be easily distinguished from *Crosnierius* by the tomentose carapace (vs. glabrous) and the discernible sutures between abdominal somites 3–5 (vs. completely fused with sutures only visible laterally) (cf. Serène and Vadon, 1981; Ng and Chen, 2005).

*Pilomedaesus* is also similar to *Ladomedaesus* in the visible sutures between abdominal somites 3–5, but can be distinguished by 1) the carapace is convex and tomentose (vs. flattened and glabrous), 2) the 4M is indistinct (vs. distinct), 3) the endostome has no ridges (vs. with distinct oblique ridges), and 4) the anteroexternal angle of third maxilliped merus is not auriculiform (vs. distinctly auriculiform) (cf. Manuel-Santos and Ng, 2007).

*Glyptocarcinus*, *Antrocarcinus* and *Cryptocarcinus* (currently placed in a separate subfamily,

Antrocarcininae Ng and Chia, 1994) are very close to each other and also superficially similar to *Pilomedaesus* in the indistinct 4M, the absence of endostomial ridges, the crested meri of ambulatory legs and the discernible sutures between abdominal somites 3–5, but differ in the flattened and glabrous carapace (vs. convex and tomentose in *Pilomedaesus*), the auriculiform anteroexternal angle of the third maxilliped (vs. not expanded), as well as the normal posterolateral margin (vs. with distinctive and deep grooves on the posterolateral margins and regions) (cf. Ng and Chia, 1994; Komatsu, unpublished data on *G. lophopus*).

Comparisons of the genera discussed are summarized in Table 1. These genera, although currently classified in two subfamilies, actually form a single clade in an unpublished molecular phylogenetic analysis (P. K. L. Ng and J. C. Y. Lai, personal communication). Until this study is published when the classification of these two subfamilies is reorganized, we retain *Pilomedaesus* in Euxanthinae for the time being.

#### *Pilomedaesus okutanii* sp. nov.

[New Japanese name: Kebuka-nokoha-ohigani]

(Figs. 1–4)

*Material examined.* Holotype: male (cb 14.6×cl 11.3 mm), NSMT-Cr 21446, Kurose Bank, Izu Islands, 33°22.0'N, 139°39.1'E, 150–190 m, RV *Soyo Maru*, st. D86, coll. T. Okutani, 19 June 1973.

Paratypes: 1 ovig. female (cb 12.9×cl 9.2 mm), NSMT-Cr 21447, same data as holotype; 2 ovig. females (cb 12.2×cl 9.2 mm, cb 13.5×cl 10.7 mm), NSMT-Cr 21448, Hyotanse Bank, Izu Islands, 34°18.7'N, 139°01.0'E to 34°22.5'N, 139°05.8'E, RV *Soyo Maru*, st. D1–5, coll. T. Okutani, 9 July 1968; 1 female (cb 10.9×cl 8.6 mm), NSMT-Cr 21449, Hyotanse Bank, Izu Islands, 34°19.4'N, 139°01.2'E to 34°22.0'N, 139°05.6'E, 115–200 m, dredge, RV *Soyo Maru*, st. D26–30, coll., T. Okutani, 10 July 1969; 2 males (cb 7.6×cl 5.9 mm, cb 8.7×cl 6.8 mm), 3 females (cb 9.5×cl 6.3–cb 11.9×cl 8.9 mm),

Table 1. Comparison of *Pilomedaeus* gen. nov. with its allied genera.

	<i>Pilomedaeus</i>	<i>Crosnierius</i>	<i>Ladomedaeus</i>	<i>Glyptocarcinus</i> <i>Antrocarcinus</i> <i>Cyrtocarcinus</i>
Carapace	convex and tomentose	flattened and glabrous	flattened and glabrous	flattened and glabrous
Dorsal surface	indistinct	indistinct	distinct	indistinct
4M	without channel	without channel	without channel	with channel
Posterolateral surface	without ridges	without ridges	with oblique ridges	without ridges
Endostome	not expanded	not expanded	auriculiform	auriculiform
Third maxilliped	with irregular short ridges	smooth	rugose or eroded	smooth or eroded
Anteroexternal angle of merus	crested	serrated or spinate	spinate	crested
Cheliped	with sutures	with partial sutures laterally	with sutures	with sutures
Carpus				
Ambulatory legs				
Merus				
Male abdomen				
Somites 3–5				

NSMT-Cr 21450, Kurose Bank, Izu Islands, 33°20.6'N, 139°36.7'E to 33°22.7'N, 139°41.0'E, 130–190 m, RV *Soyo Maru*, st. 4, coll. T. Okutani, 23 July 1974; 2 young males (cb 6.7×cl 5.3 mm, cb 7.2×cl 5.6 mm), 1 female (cb 13.2×cl 9.9 mm), 1 young female (cb 5.9×cl 4.4 mm), NSMT-Cr S 574, Kurose Bank, Izu Islands, 33°27.3'N, 139°42.6'E to 33°27.7'N, 139°42.4'E, 200–211 m, dredge, RV *Shin'yo Maru*, coll. H. Komatsu, 21 October 2003.

*Description.* Carapace (Figs. 1A, 2A, 4) ovoid, about 1.3 times broader than long (1.29 in holotype), convex anteriorly, slightly convex transversely. Dorsal surface evenly covered with tomentum, glabrous on front, with acute granules around lateral border of carapace; sparse, inconspicuous, rounded granules on proto-, metagastric and cardiac regions. Regions distinct in large males, indistinct in females and juveniles; shallow grooves separating meso- and protogastric regions, H-shaped groove separating gastric and cardiac regions; short, transverse, epigastric ridge weak; protogastric region indistinctly divided by shallow, longitudinal groove. Front about 0.3 times carapace width, projecting beyond inner supra-orbital tooth, weakly deflexed, divided by median V-shaped notch or short fissure; margin subtruncate; laterally with deep V-shaped notch; lateral angle well separated from orbit. Upper orbital border granulated, evenly concave; median and lateral fissures vestigial, but with small V-shaped notch. Lower orbital border evenly concave, with obtusely triangular inner lobe; vestigial lateral fissure, but with small V-shaped notch. Anterolateral margin convex, clearly separated from posterolateral margin by sharp angle, armed with 4 prominent, evenly separated, sparsely granulated, triangular teeth behind blunt exorbital angle; 1st to 3rd teeth gradually increasing in size, 4th larger than 1st, subequal to 2nd tooth. Posterolateral border almost straight in outline, convergent towards posterior carapace margin.

Ocular peduncle (Fig. 2D) short, dorsal extension onto cornea tongue-shaped, with small tubercle at anterior base of dorsal extension. Basal

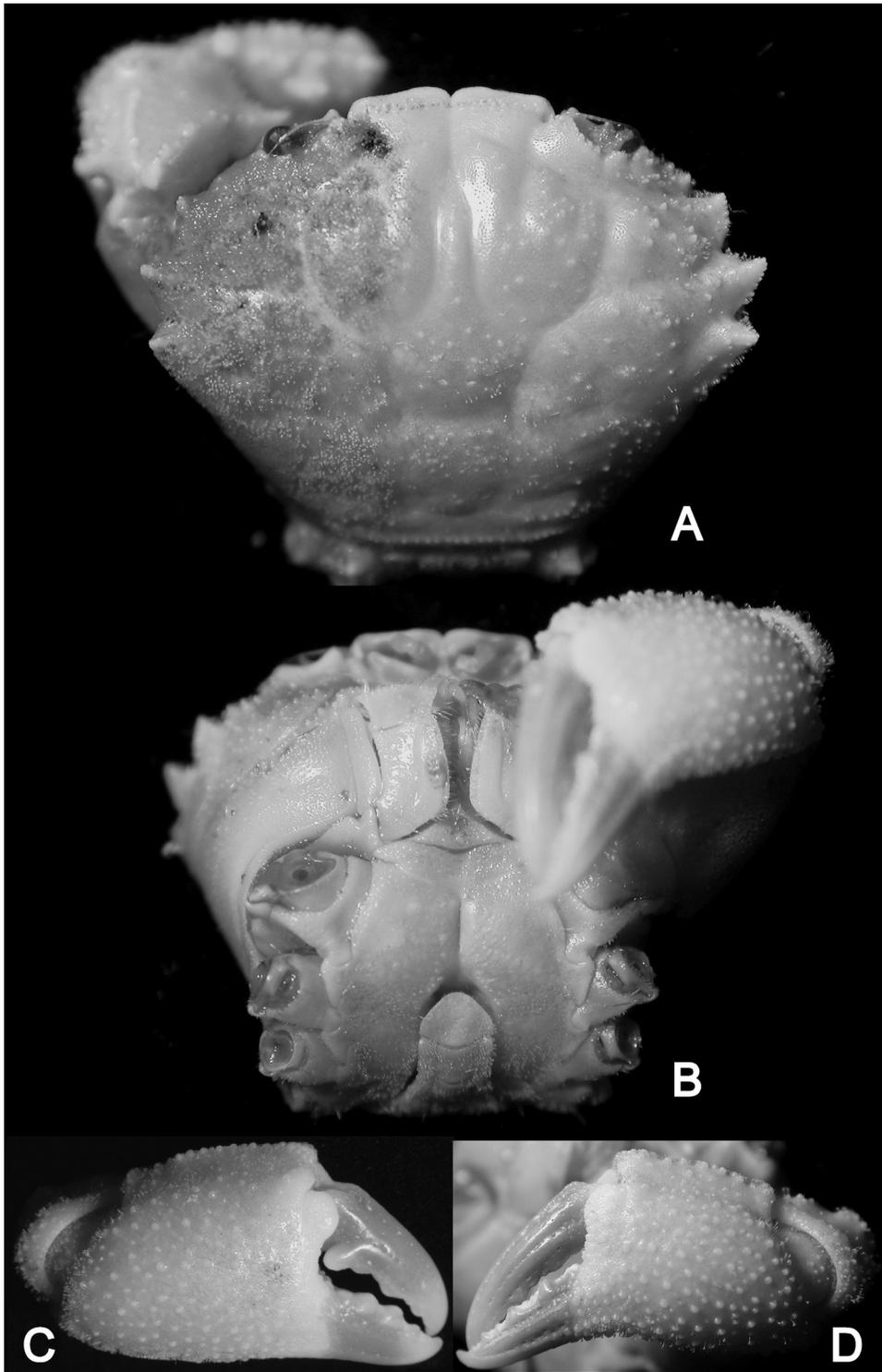


Fig. 1. *Pilomedaesus okutanii* gen. et sp. nov., holotype male (cb 14.6×cl 11.3 mm), NSMT-Cr 21446. A, carapace, dorsal view; B, same, ventral view; C, right chela, outer view; D, left chela, outer view.

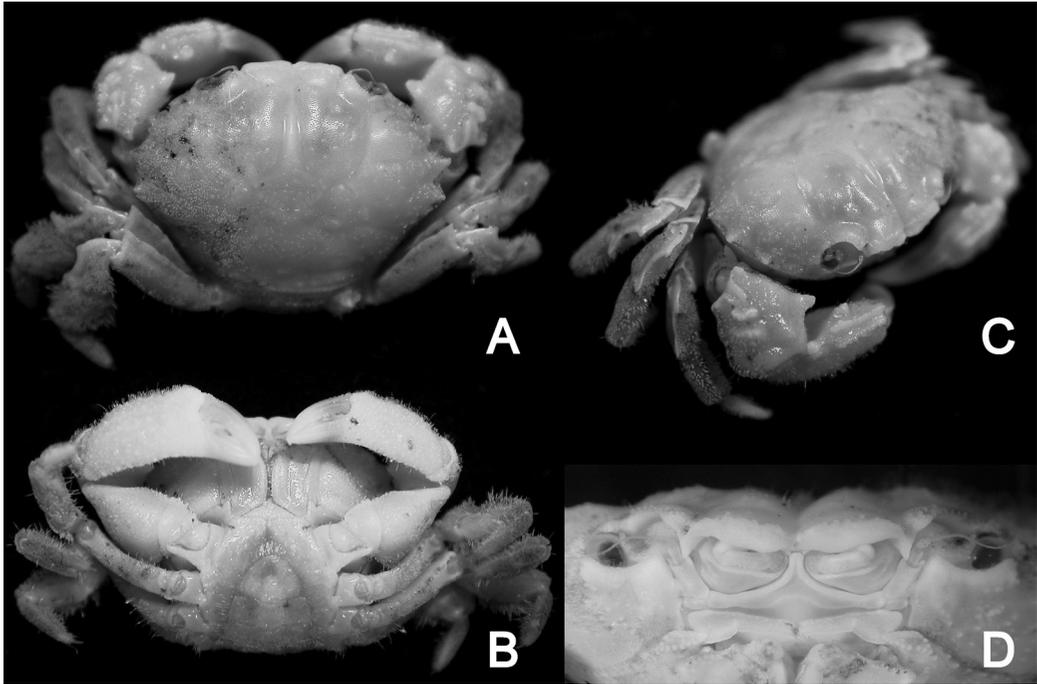


Fig. 2. *Pilomedaesus okutanii* gen. et sp. nov., paratype female (cb 13.2×cl 9.9 mm), NSMT-Cr S 574. A, carapace, dorsal view; B, same, ventral view; C, same, anterolateral view; D, frontal region, ventral view.

segment of antennule swollen, crested on anterior and lateral margins; flagellum folding slightly obliquely. Basal antennal segment robust, smooth, touching front, occupying entire space between antennular fossa and internal suborbital angle; flagellum length almost equal to orbital width.

Third maxilliped (Fig. 3A) wide merus 0.7 times as long as width, about 0.5 length of ischium; surface granulate. Ischium rectangular, about 1.5 times longer than wide; surface smooth; with stout setae along mesial margin.

Chelipeds (Figs. 1C, D, 2A–C) robust, moderately large, covered with short tomentum except on carinae of carpus and palm and on fingers; palm height about 0.5 length of palm including fixed finger. Merus short, broad, carinate on dorsal margin, armed with distal triangular lobe separated from dorsal carina. Carpus produced into triangular tooth at inner angle; upper surface armed with some short irregular carinae, carinae sometimes furnished with rounded granules.

Palm sparsely granulated on outer surface; dorsal surface with 2 parallel longitudinal carinae; inner surface granulated as in outer surface. Dactylus weakly curved, with molariform tooth on base of cutting edge in major chela. Fixed finger with some large, low triangular or rounded teeth. Fingers brown, getting pale in distal 0.3, without extension onto palm.

Ambulatory legs (Fig. 2A–C) medium in length, stout, covered with short tomentum except on carinae of merus and carpus; first pair longest, slightly longer than second pair. Merus with dorsal margin carinate in distal 0.7, produced into triangular tooth at distal end, with 2–4 spinules in proximal 0.3. Dorsal margin of carpus entirely carinate, with 2 triangular teeth on proximal 0.3 and distal end; posterior surface with row of median granules. Propodus subcylindrical. Dactylus straight, subconical, terminating in acute chitinous recurved tip.

Male thoracic sternum (Fig. 1B) relatively narrow, smooth, tomentose as on carapace; telson

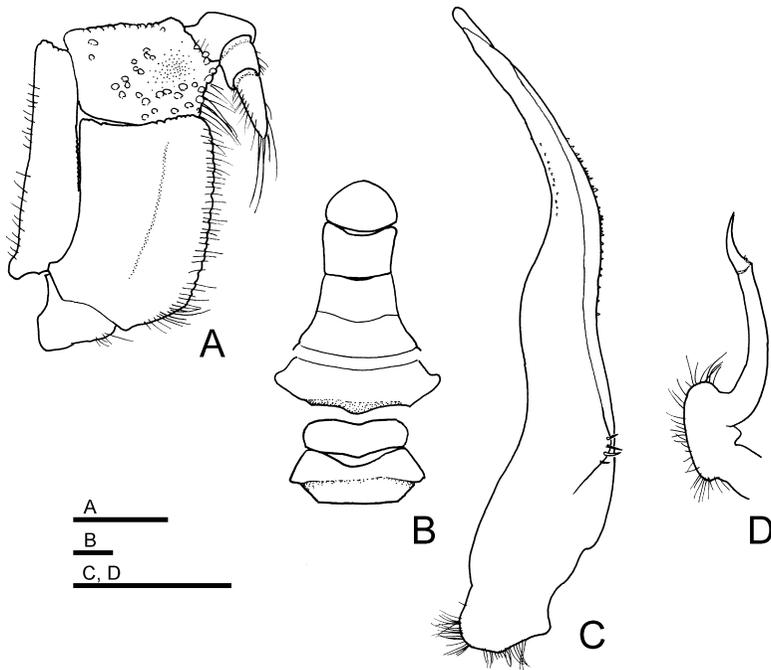


Fig. 3. *Pilomedaesus okutanii* gen. et sp. nov. A, paratype female (cb 13.2×cl 9.9 mm), NSMT-Cr S 574; B–D, holotype male (cb 14.6×cl 11.3 mm), NSMT-Cr 21446. A, right third maxilliped, ventral view; B, abdomen, ventral view; C, right G1, abdominal view; D, right G2, abdominal view. Scales: 1 mm.



Fig. 4. *Pilomedaesus okutanii* gen. et sp. nov., paratype female (cb 13.2×cl 9.9 mm), NSMT-Cr S 574.

reaching slightly beyond suture between sternites 4/5; sternite 4 with median longitudinal suture; median longitudinal suture extending from sternite 7 to 8. Suture between sternites 1/2 completely absent; suture between sternites 2/3 complete; suture between sternites 3/4 vestigial, present on lateral 0.2, marked as shallow furrow on mesial part; sutures between sternites 4/5 and 5/6 medially interrupted; sutures between sternites 6/7 and 7/8 complete.

Female thoracic sternum (Fig. 2B) relatively narrow, not granulate, tomentose as on carapace; telson reaching to half length of sternite 4; sutures as in male.

Male abdomen (Figs. 1B, 3B) relatively narrow, not granulate, tomentose as on carapace; somites 3–5 fused but sutures separating somites discernible. Somites 1 and 2 subequal in width, transversely rectangular. Somites 3–5 trapezoidal, lateral margins concave. Somite 6 rectangular, about 1.5 times wider than long. Telson triangular with rounded tip, about 0.8 times as long as sixth somite, about 1.5 times wider than long.

G1 (Fig. 3C) compressed, weakly curved laterally, tapering, with several spinules along distal part of mesial and lateral borders; apex rounded, with aperture. G2 (Fig. 3D) relatively short, about 0.3 times as long as G1; distal segment sickle-shaped, with line of very short setae on proximal part of mesial surface.

*Etymology.* The specific name is dedicated to Dr. Takashi Okutani who provided us the specimens.

*Remarks.* The present new species superficially resembles pilumnoid crabs in the tomentose and convex carapace and the granulated outer surface of chelipedal palm, but can easily be recognised as a xanthoid in the fused somites 3–5 of the male abdomen as well as structures of the G1 and G2.

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