

The Indo-Pacific Pilumnidae XI  
An Unusual New Species of *Pilumnus*  
(Crustacea, Decapoda, Brachyura) from Japan

Masatsune Takeda<sup>1</sup> and Peter K. L. Ng<sup>2</sup>

<sup>1</sup>Department of Zoology, National Science Museum, 3–23–1 Hyakunincho, Shinjuku-ku, Tokyo 169, and Department of Biological Sciences, Graduate School of Science, The University of Tokyo, 7–3–1 Hongo, Bunkyo-ku, Tokyo 113, Japan

<sup>2</sup>School of Biological Sciences, National University of Singapore, Kent Ridge, Singapore 119260, Republic of Singapore

**Abstract** A new and unusual species of the genus *Pilumnus* Leach, 1815, is described from the Izu-Ogasawara Islands, southern Japan. *Pilumnus izuogasawarensis* sp. nov. is an atypical *Pilumnus* in having a relatively rounded carapace with smooth, poorly defined dorsal surface and low anterolateral teeth. In its general morphology, the new species resembles members of the genus *Viaderiana* Ward, 1942, but lacks the stout and strongly recurved male first pleopod and armed ambulatory meri present in members of this genus.

**Key words:** *Pilumnus izuogasawarensis*, new species, Crustacea, Brachyura, Japan.

### Introduction

The pilumnid crabs of Japan have been studied in detail and reported in five parts of a series of papers titled “Pilumnid crabs of the family Xanthidae from the West Pacific” by the first author (Takeda & Miyake, 1968, 1969, 1970, 1972; Takeda, 1974), but this series is here regarded as closed. During this period and since the last or fifth part, many additions and changes have been made to the Japanese pilumnid fauna (see Sakai, 1976, 1980; Takeda, 1977 a, b; Galil & Takeda, 1988; Ng, 1987, 1988; Davie, 1989). Most recently, Ng (1992) showed that *Pilumnus laciniatus* Sakai, 1980, was in fact a species of the genus *Globopilumnus* (Family Oziidae) and not a pilumnid at all.

Similarly, the second author has been involved in a series of papers on the Indo-West Pacific Pilumnidae, and ten parts have already been published or in press (see Ng & Dai, 1997; Ng *et al.*, 1997). This series will continue for some time as part of the second author’s ongoing revision of the Indo-West Pacific Pilumnidae.

The present paper, describing an unusual new species, here named *P. izuogasawarensis* from the offshore waters of the Izu-Ogasawara Islands, southern Japan, continues the series of the second author. The type specimens are deposited in the

National Science Museum, Tokyo (NSMT). All the measurements (in millimetres) are of the carapace width and length respectively.

Before starting the description and discussion of the new species, the authors would like to extend their thanks to Mr. Y. Kurata, previously Director of the Ogasawara Marine Center, and Dr. T. Okutani, previously Professor of the Tokyo University of Fisheries, who generously passed their valuable specimens to us for this study.

### Description

#### *Pilumnus izuogasawarensis* sp. nov.

(Figs. 1–2)

*Material examined.* Northeast of Ototo-jima Island, Ogasawara Islands, ca. 180 m depth, holotype male (11.6 by 9.4 mm), NSMT-Cr 12119, Feb. 8, 1976, *Fukusho-Maru* coll., Y. Kurata leg.; Kurose, submarine bank off Izu Islands, 130–190 m depth, paratype female (9.6 by 7.6 mm), NSMT-Cr 12120, Jul. 23, 1974, *Soyo-Maru* coll., T. Okutani leg.

*Description.* (Male holotype). Carapace appears rounded, broader than long, convex fore and aft; dorsal surface of carapace relatively smooth, almost glabrous, densely and uniformly covered with short stiff setae and with numerous but scattered long, non plumose setae (denser on anterior and lateral parts of carapace); protogastric, mesogastric and cardiac regions indistinctly demarcated by longitudinal and transverse shallow furrows. Anterolateral margin arcuate, with 3 low, widely separated tubercle-like teeth, with rounded tips, last one smallest; external orbital angle small, very acute, sharp, followed posteriorly by 2 small, rounded granules almost on upper part of subhepatic region; epimeral surface weakly convex and can be seen when carapace is viewed dorsally, not hidden by anterolateral teeth. Posterolateral margin gently convex, slightly longer than anterolateral margin; branchial regions lined with low, oblique striae. Frontal margin sinuous, with deep V-shaped median cleft; outer lobe separated from inner lobe by shallow, V-shaped cleft. Supraorbital margin gently sinuous, lined with small, bead-like granules; infraorbital margin also lined with similar granules and fringed with stiff setae for entire lengths with sub-acute inner angle. Posterior margin of epistome separated into 4 lobes by shallow clefts; 2 median lobes broadly triangular in shape, lateral ones unevenly convex. Third maxilliped with exopod reaching distal edge of merus; anterolateral angle of merus rounded, not expanded; inner margin of ischium uneven, but not lined with sharp serrae; ischium with shallow but distinctly oblique median sulcus.

Chelipeds slightly unequal in size and shape (right larger), densely covered with long, silky setae; outer surfaces strongly granular, merus armed with strong tubercles on upper margins with median tubercle largest, spiniform and directed anteriorly, ventral margin with numerous small granules; outer surface of carpus granuliform,

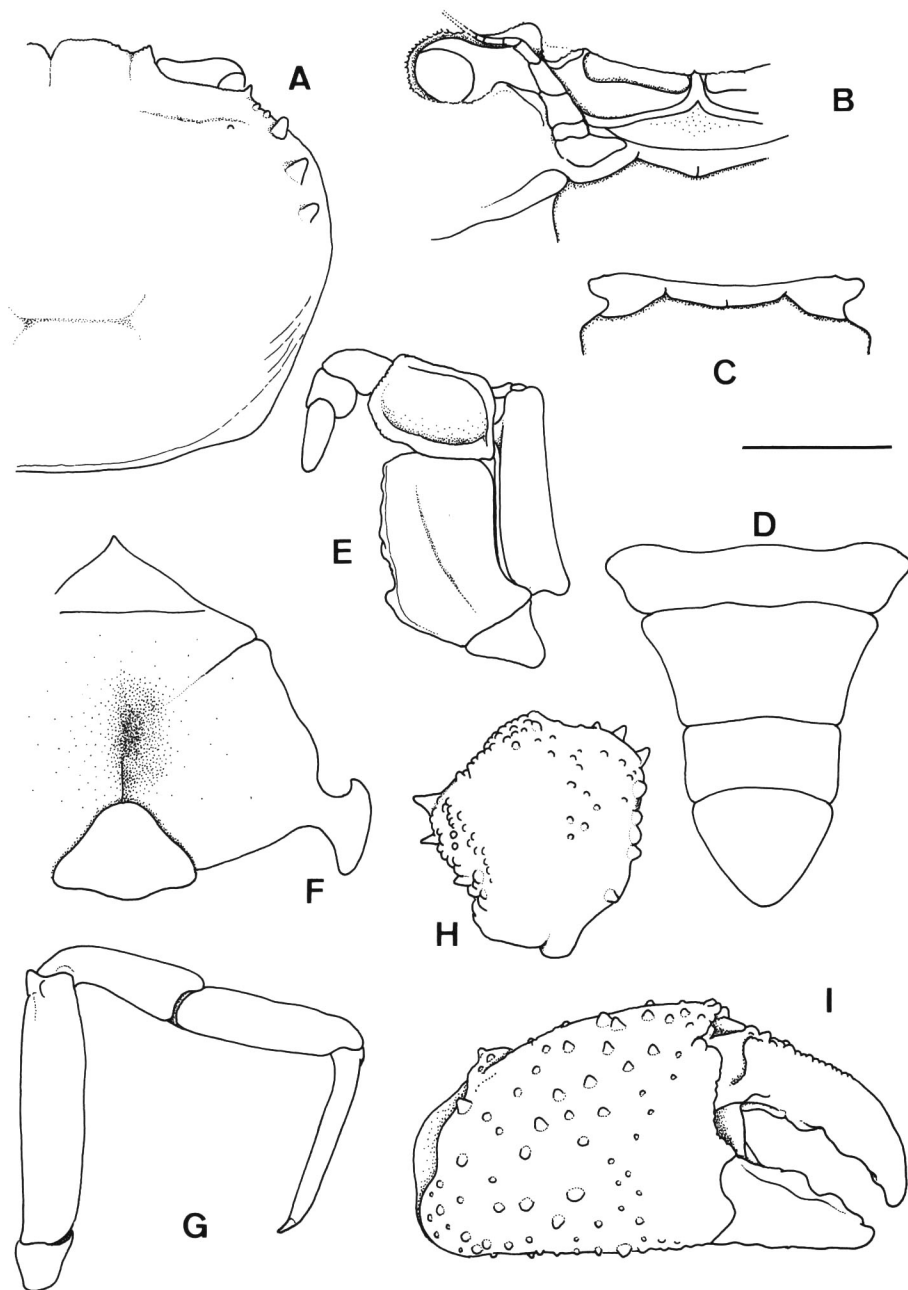


Fig. 1. *Pilumnus izuogasawarensis* sp. nov., holotype, male. A, Carapace, denuded; B, frontorbital region in ventral view; C, anterior margin of buccal frame; D, distal four segments of abdomen; E, left third maxilliped, denuded; F, anterior part of thoracic sternum; G, right first ambulatory leg, denuded; H, carpus of right cheliped in dorsal view; I, right chela in outer view. Scale bar represents 3 mm for A and G-I; 2 mm for B-D and F; 1.5 mm for E.

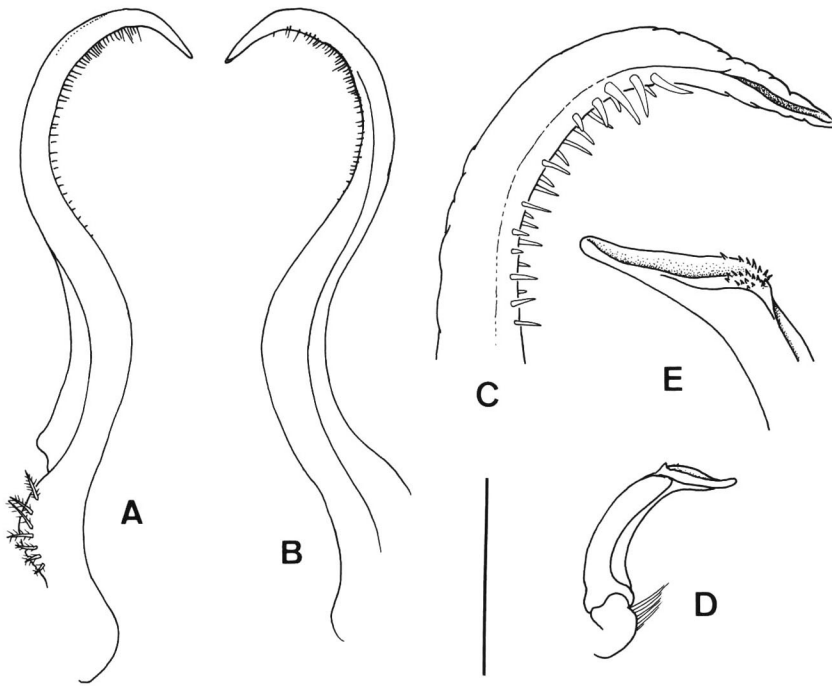


Fig. 2. *Pilumnus izuogasawarensis* sp. nov., holotype, male. Left first (A–C) and second (D–E) pleopod. Scale bar represents 1 mm for A–B, D; 0.4 mm for C, E.

with several strong spines, on inner and outer margins but no distinct teeth; fingers of chela shorter than palm, cutting edges with broad, blunt teeth; teeth and tips of smaller chela relatively sharper. Ambulatory legs setose, elongated, slender; surfaces smooth; dorsal and ventral margins of merus unarmed but with blunt distal terminal tooth of dorsal margin.

Anterior thoracic sternites smooth; suture between sternites 1 and 2 not discernible; suture between sternites 2 and 3 deep, but become shallower at edges; suture between sternites 3 and 4 incomplete. Abdomen triangular as a whole; telson with lateral margin gently convex; 5th segment about twice length of 6th segment. Male first pleopod slender, very sinuous; distal part not lined with spines or setae, strongly tapering. Male second pleopod very short, with distal part cup-like, with very short distal segment.

Female paratype. The female specimen, an adult, agrees with the male holotype in almost all key, non-sexual characters. On the right anterolateral margin, the last tooth is very low and almost undiscernible, although on the left side, this tooth is well developed. The absence of the last tooth on the right side is probably due to damage. The anterolateral teeth of this female specimen, when present, however, are generally sharper, relatively stronger and curve gently anteriorly as well. The subdis-

tal dorsal tooth of the ambulatory meri is also distinct and sharper, in contrast to the blunter and broader tooth on the meri of the holotype male.

*Remarks.* *Pilumnus izuogasawarensis* sp. nov. differs from all known congeners in its peculiar carapace shape and armature of the anterolateral margin. The carapace shape appears almost rounded, the dorsal surface is smooth with the regions poorly demarcated, the frontal median cleft is deep and broad, and the three anterolateral teeth (excluding the external orbital tooth) are granuliform or spiniform in structure. This combination of characters is atypical for members of the genus *Pilumnus sensu lato* (see Balss, 1933; Takeda & Miyake, 1968).

In fact, *P. izuogasawarensis* bears a close superficial resemblance to members of the genus *Viaderiana* Ward, 1942, with regards to the general carapace shape as well as the long ambulatory legs (see Ng, 1987). It is perhaps closest to *Viaderiana rotumanus* (Borradaile, 1900), but differs clearly in having granuliform to spiniform anterolateral teeth (vs. lobiform teeth) and unarmed ambulatory meri. In members of the genus *Viaderiana*, the anterolateral teeth are also usually very low, so that the last anterolateral tooth is strongly reduced, vestigial or almost absent (Ng, 1987). *Pilumnus izuogasawarensis*, however, certainly cannot be referred to *Viaderiana* as currently defined, because its male first pleopod is relatively slender (not stout), the distal part of the male first pleopod is more or less straight (not strongly recurved), and the dorsal margins of the ambulatory meri are smooth (not armed with spines or teeth of varying degrees) (see Serène, 1971; Ng & Tan, 1984; Ng, 1987; Dai & Yang, 1991).

*Pilumnus izuogasawarensis* also resembles *P. woodmasoni* Deb, 1987, which was described from a single male from Tuticorin in India. *Pilumnus woodmasoni*, however, is certainly not a true *Pilumnus* and must also be referred to *Viaderiana*, following Ng (1987). *Viaderiana woodmasoni* is in fact very close to *P. rotumanus*, and there is a good likelihood that the two species are synonyms.

In any case, the placement of *P. izuogasawarensis* in *Pilumnus* must be regarded as tentative until the genus *Pilumnus* can be revised. As it now stands, the genus *Pilumnus* is still very heterogeneous.

## References

- Balss, H., 1933. Beiträge zur Kenntnis der Gattung *Pilumnus* (Crustacea Dekapoda) und verwandter Gattungen. *Capita Zool.*, **4** (3): 1–47, pls. 1–7.
- Borradaile, L. A., 1900. On some crustaceans from the South Pacific. Part IV. The crabs. *Proc. zool. Soc. Lond.*, **1900**: 568–596, pls. 40–42.
- Dai, A. Y. & S. L. Yang, 1991. Crabs of the China Sea. 21+608 pp., 74 pls. China Ocean Press, Beijing.
- Davie, P. J. F., 1989. A re-appraisal of *Heteropanope* Stimpson, and *Pilumnopeus* A. Milne Edwards (Crustacea: Decapoda: Pilumnidae) with descriptions of new species and new genera. *Mem. Qld Mus.*, **27**: 129–156.
- Deb, M., 1987. Description of seven new species of one new record of Pilumnidae: Xanthidae: Decapoda: Crustacea from India. *Bull. zool. Surv. India*, **8**: 299–312.

- Galil, B. & M. Takeda, 1988. A revision of the genus *Glabropilumnus* (Crustacea, Decapoda, Brachyura). *Bull. natn. Sci. Mus., Tokyo*, (A), **14**: 67–90.
- Ng, P. K. L., 1987. The Indo-Pacific Pilumnidae II. A revision of the genus *Rhizopa* Stimpson, 1858 and the status of the Rhizopinae Stimpson, 1858 (Crustacea: Decapoda: Brachyura). *Indo-Malayan Zool.*, **4**: 69–111, pl. 1.
- Ng, P. K. L., 1988. The Indo-Pacific Pilumnidae V. Three new species of *Pilumnus* Leach, 1815 (Crustacea: Decapoda: Brachyura) from Singapore, Vietnam and Japan. *Indo-Malayan Zool.*, **5**: 295–306, pls. 1–2.
- Ng, P. K. L., 1992. The Indo-Pacific Pilumnidae VIII. *Pilumnus laciniatus* Sakai, 1980 — A senior synonym of *Globopilumnus multituberosus* Garth & Kim, 1983 (Crustacea: Decapoda: Brachyura). *Crustaceana*, **63**: 221–222.
- Ng, P. K. L. & A.-Y. Dai, 1997. The Indo-Pacific Pilumnidae IX. Description of a new genus and species (Crustacea: Decapoda: Brachyura) from Hong Kong. *Asian mar. Biol.* (In press).
- Ng, P. K. L., A.-Y. Dai & S.-L. Yang, 1997. The Indo-Pacific Pilumnidae X. New species and records from the Spratle Islands, South China Sea (Crustacea: Decapoda: Brachyura). *Raffles Bull. Zool.*, **45** (In press).
- Ng, P. K. L. & L. W. H. Tan, 1984. The Indo-Pacific Pilumnidae I. Description of four new species of the genus *Pilumnus* Leach, 1815 and definition of a new genus, *Bathypilumnus*. *J. Singapore natn. Acad. Sci.*, **13**: 13–19.
- Sakai, T., 1976. Crabs of Japan and Adjacent Seas. xxix+773 pp., 251 pls. Kodansha Ltd., Tokyo.
- Sakai, T., 1980. On new or rare crabs taken from Japanese and central Pacific waters. *Res. Crust.*, **10**: 72–84, pl. 5.
- Serène, R., 1971. Observations préliminaires sur des Brachyours nouveaux ou mal connus du Sud-est Asiatique (Crustacea Decapoda). *Bull. Mus. natn. Hist. nat., Paris*, (2), **42**: 903–918.
- Takeda, M., 1974. Pilumnid crabs of the family Xanthidae from the West Pacific. V. Definition of a new genus, with description of its type-species. *Bull. natn. Sci. Mus., Tokyo*, **17**: 215–219.
- Takeda, M., 1977 a. Crabs from shallow waters off Mage-jima Island, southwest Japan. *Bull. natn. Sci. Mus., Tokyo*, Ser. A, **3**: 73–89.
- Takeda, M., 1977 b. Crabs of the Ogasawara Islands, V. A collection made by dredging. *Mem. natn. Sci. Mus., Tokyo*, (10): 113–140, pls. 12–17.
- Takeda, M. & S. Miyake, 1968. Pilumnid crabs of the family Xanthidae from the West Pacific. I. Twenty-three species of the genus *Pilumnus*, with description of four new species. *Ohmu*, **1**: 1–60, pls. 1–4.
- Takeda, M. & S. Miyake, 1969. Pilumnid crabs of the family Xanthidae from the West Pacific. II. Twenty-one species of four genera, with descriptions of four new species. *Ohmu*, **2**: 93–156.
- Takeda, M. & S. Miyake, 1970. Pilumnid crabs of the family Xanthidae from the West Pacific. III. Descriptions of two new species of the genus *Pilumnus*. *Ohmu*, **3**: 37–44, pl. 1.
- Takeda, M. & S. Miyake, 1972. Pilumnid crabs of the family Xanthidae from the West Pacific. IV. A new *Pilumnus* in the collection of the National Science Museum, Tokyo. *Ohmu*, **3**: 57–62, pl. 2.
- Ward, M., 1942. Notes on the Crustacea of the Desjardins Museum, Mauritius Institute with descriptions of new genera and species. *Mauritius Inst. Bull.*, **2**: 49–108, pls. 5–6.