

A New Crab of the Family Pilumnidae (Crustacea, Decapoda), *Viaderiana kasei* from the Philippines

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Abstract A new crab species of the family Pilumnidae, *Viaderiana kasei*, is described based on the specimens from the sea off Balicasag Island, Bohol, in the Philippines. The new species is characterized most remarkably by the stout first and vestigial second anterolateral teeth of the carapace, the thick chelae, the extraordinary long third ambulatory leg, and the ambulatory meri and carpi unarmed with terminal spine. The genus *Viaderiana* is reviewed based on the literature.

Key words: Pilumnidae, *Viaderiana*, new species, Philippines.

Among the crabs obtained by Dr. T. Kase of the National Science Museum, Tokyo, from the fishermen at Balicasag Island, Bohol in the Philippines are two small specimens referred to the genus *Viaderiana* which has long been known as belonging to the family Goneplacidae but now in the Pilumnidae. The specimens at hand are seemingly close to *V. aranea* (Tesch) and to some related species due to having the long silky hairs covering the carapace, chelipeds and ambulatory legs, and the long ambulatory legs, especially the third pair, but close comparison with the description and figures revealed that there are some important characters to warrant the establishment of a new taxa specifically distinct from the known species. In the present paper, the new species is described under the name of *V. kasei*, which is dedicated to Dr. Tomoki Kase as our gratitude for the specimens placed at our disposal for study.

The holotype and paratype are preserved in the National Science Museum, Tokyo (NSMT), and the National Museum of the Philippines (NM), respectively.

Genus *Viaderiana* Ward, 1942

Viaderiana kasei sp. nov.

(Figs. 1–3)

Type specimens. Holotype male (NSMT-Cr 15637) and paratype male (NMCR-17023); Balicasag I., Bohol, Philippines, ca. 150 m deep, by bottom set-net for collecting shells; Sept. 1998; T. Kase leg.

Description of holotype male (Figs. 1A, B, 2A–F, 3). Breadth and length of carapace, 6.0 and 5.4 mm, respectively. Length of right third ambulatory leg along posterior margin, 21.2 mm (ischium+merus, 6.6; carpus, 3.5; propodus, 5.2; dactylus, 5.9).

Carapace nearly squarish, only slightly broader than long (ratio of breadth to length, 1.1), very weakly declivous anteriorly, nearly flattened laterally; surface ill-defined only with a shallow depression in front of each protogastric part and usual longitudinal and transverse furrow surrounding mesogastric part, being covered with very scant silky hairs; a transverse line of long silky hairs across frontal region. Frontal margin turned down, without distinct median notch or depression; its lateral end rounded, continuous

with supraorbital border, without interruption; inner part of supraorbital border nearly longitudinal in dorsal view, or rather concave, fringed with some long silky hairs continued from a row of hairs fringing frontal region; supraorbital border transverse for its main part, weakly convex forward just outside of median small notch or depression.

External orbital angle obtusely angulated at lateral end of supraorbital border, anterolateral border behind external orbital angle thick, hardly convex; first anterolateral tooth stout, weakly compressed, directed obliquely upward and forward, being tipped with a sharp granule; second anterolateral tooth minute, close to the first; posterolateral part of carapace continued to pleural region without distinct ridge; pleural margin nearly longitudinal, weakly convex outward in dorsal view.

Eyestalk thick with large cornea, not completely retreated into orbital fossa; extension onto cornea triangular, with some long silky hairs. Antennal flagellum remarkably long, ca. 3 times as long as orbital width, without accessory hairs. Infraorbital border concave close to external orbital angle so as to accommodate cornea; inner infraorbital angle produced forward, but obtuse.

Orbital hiatus filled with antennal basal segment; second segment just reaching to supraorbital angle, third segment and flagellum protruding from general contour of carapace.

Third maxilliped wide, completely closing buccal cavern; merus quadrate, ca. $2/3$ as long as ischium; distal three segments stout; exopod more than $1/3$, but less than $1/2$ as wide as ischium; its flagellum thin, but ca. $2/3$ length of exopod, and equal to length of exopod with distal hairs included.

Chelipeds thick, unequal in size and shape, right cheliped being larger; merus trigonal, with inner, upper and lower surfaces wholly truncated, smooth; three margins of merus armed, each with a series of sharp granules; upper margin crested, outer margin rather serrated. Both carpi similar to each other, covered with conical granules of good size, thickly fringed with long silky hairs;

inner angle of each carpus produced to a long tubercle. Both chelae compressed, covered with sharp granules and long silky hairs only on upper part of each palm and proximal upper part of movable finger of smaller chela; outer surfaces of palm and both fingers smooth and shiny without granules and hairs; palm and fingers of right (larger) chela rather short and high, with distinctly stout fingers; both fingers sharply and rather irregularly toothed, with distal halves of fingers and cutting edges dark-colored.

Ambulatory legs remarkably long, slender, fringed with long silky hairs mainly along anterior margins of distal three segments and short dense hairs along posterior margins of distal two segments; third pair the longest of all, more than 3 times as broad as carapace; meri of first two pairs armed with 5 conical granules along main parts of both margins; meri of last two pairs and other segments of all pairs unarmed.

Abdomen seven-segmented, with a mat of short hairs. First pleopod of typical pilumnid type, with only spines of moderate length close to tip of pleopod and a line along seam of shaft; distal beak strongly curved, with opening only at tip.

Notes on paratype male (Fig. 1C, 2G). Breadth and length of carapace, 3.6 and 2.8 mm, respectively. Length of left third ambulatory leg along posterior margin, 20.4 mm (ischium + merus, 4.1; carpus, 1.7; propodus, 2.6; dactylus, 3.0). The left first and fourth, and right first ambulatory legs are detached, and the right second ambulatory leg is missing.

The paratype male is smaller than the holotype male, but the first pleopod seems to be developed into the adult form. The ambulatory legs are proportionally more slender than in the holotype. The armature of the anterolateral margin of the carapace is close to, but more or less sharper than, that of the holotype. The chelae are unequal, but not much like in the holotype; palms of both chelae are granulated and hairy also along the lower margin as well as the upper margin. These differences are probably due to the small size of the specimen. The armature and

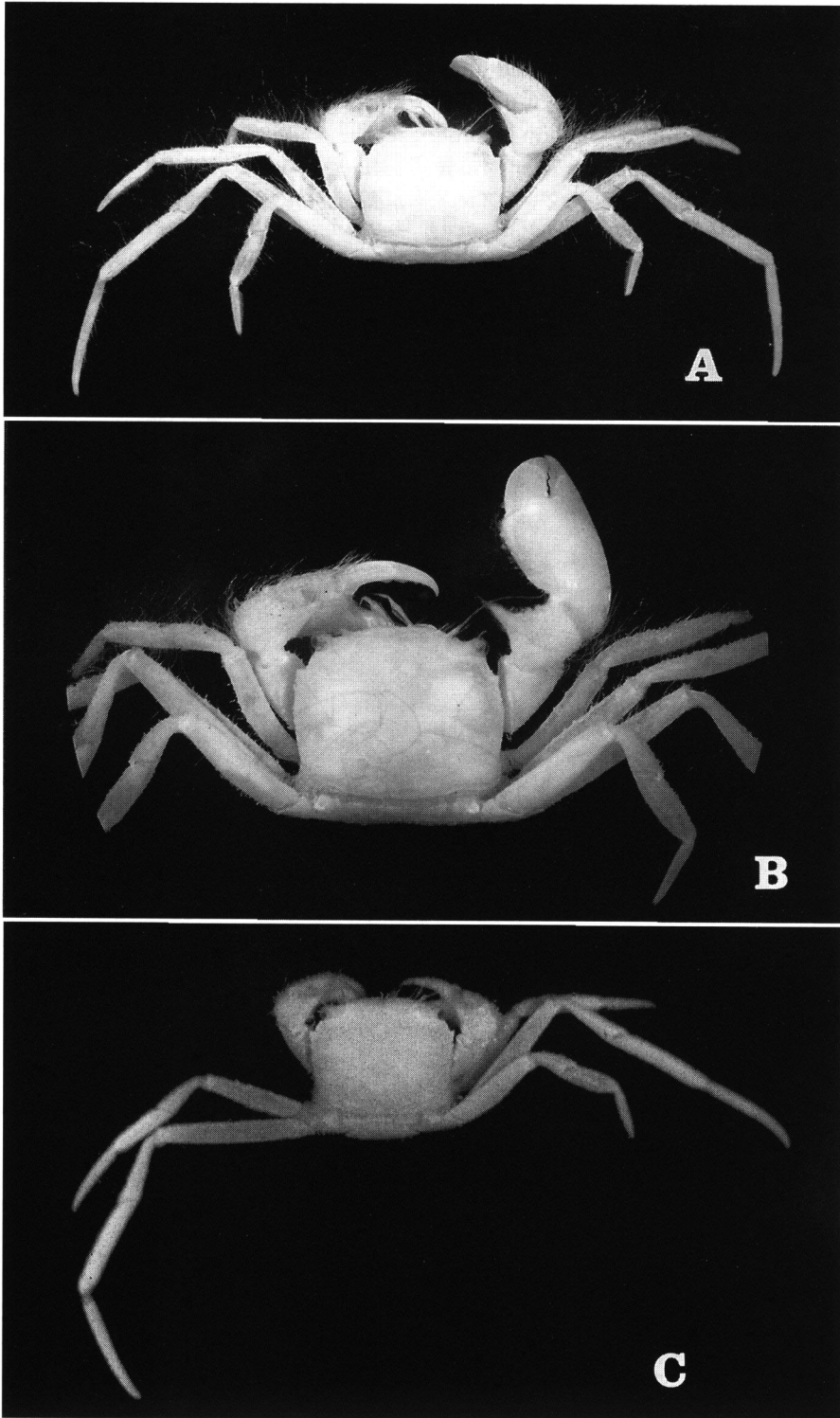


Fig. 1. *Viaderiana kasei* sp. nov., holotype male (A, B) and paratype male (C).

hairiness of the margins of the chelipeds and ambulatory legs agree with those of the holotype.

Etymology. The new species is named after Dr. Tomoki Kase, palaeomalacologist of the National Science Museum, Tokyo, who kindly provided us with many crustacean specimens from Balicasag Island in the Philippines.

Remarks. Ward (1942) established the genus *Viaderiana* to accommodate *V. typica* from Mauritius characterized by having the long flexible hairs, two well-developed frontal lobes, long antennae, and very long ambulatory legs. The type species was compared with *Litochira* [sic] *quadrispinosa* Zehntner, 1894, which was later

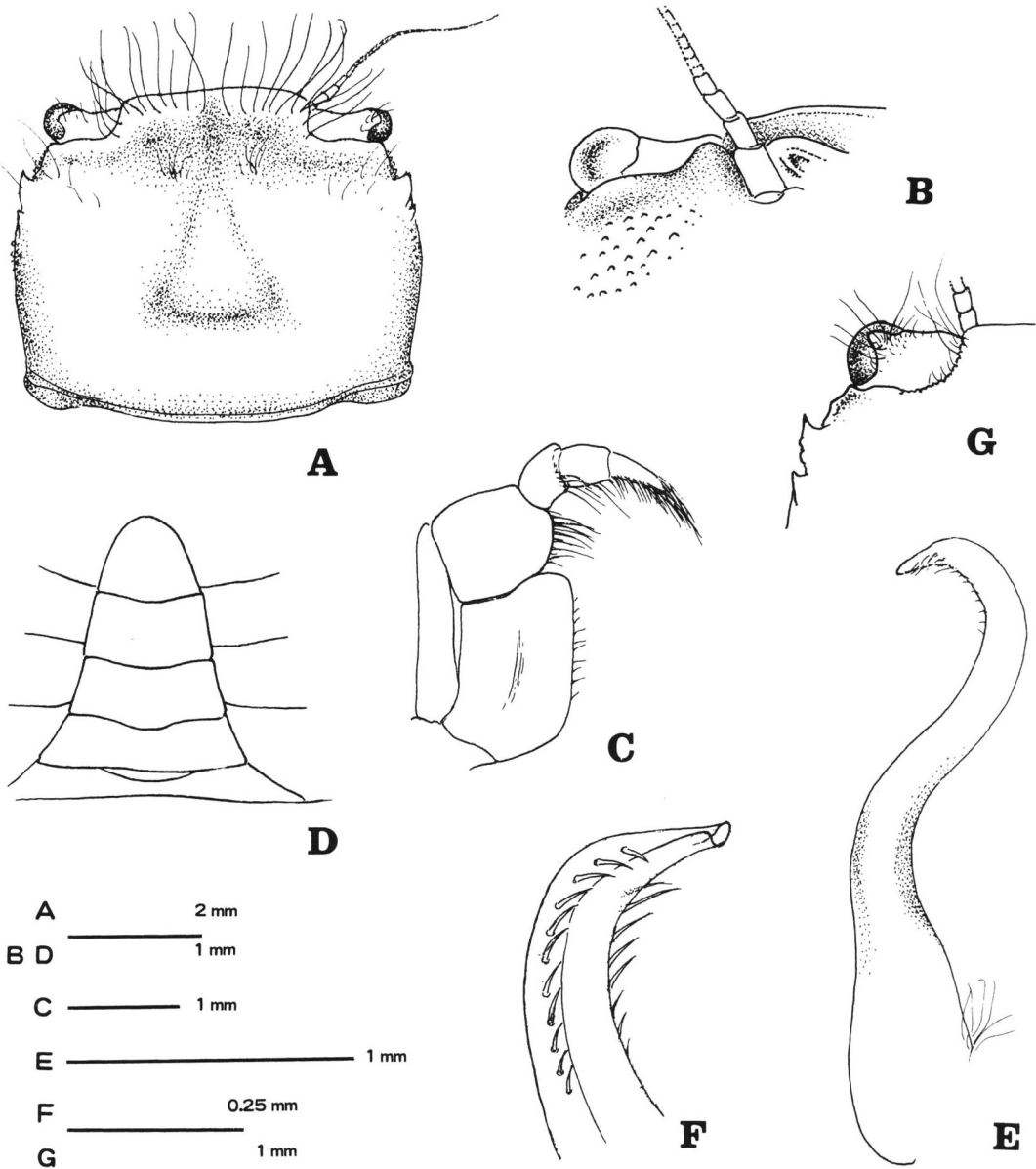


Fig. 2. *Viaderiana kasei* sp. nov., holotype male. A, carapace; B, right orbital region in ventral view; C, right third maxilliped; D, distal five segments of abdomen; E, left first pleopod in sternal view; F, distal part of left first pleopod in abdominal view.

transferred to the genus *Heteropilumnus* by Sakai (1939).

Serène (1971), Takeda (1971) and Ng (1987) discussed the systematic status of some species of *Viaderiana*. Serène (1971) recognized *V. typica* and *Litocheia quadrispinosa*, and also *L. affinis* Tesch, 1918, *Pilumnus longipes* A. Milne Edwards, 1873, *P. elegans* de Man, 1888, and *P. tae-niola* Rathbun, 1906 as the species of *Viaderiana*. He also noted that *Pilumnus cursor* A. Milne Edwards, 1873, *P. spinicarpus* Grant & McCulloch, 1906, *P. striatus* de Man, 1888, *P. neglectus* Balss, 1933, *P. turgidulus* Rathbun, 1911, and *P. rotumanus* Borradaile, 1900 also resembled *Viaderiana*. As for these species, Ng (1987) considered that *P. striatus* and *P. rotumanus* were included in *Viaderiana* together with

P. demani Ng & Tan, 1984, and tentatively referred *Speocarcinus celebensis* Tesch, 1918 to *Viaderiana*. Takeda (1971) was of opinion that *L. affinis*, *L. aranea* Tesch, 1918, *L. beaumonti* Alcock, 1900, and *L. quadrispinosa* were included in *Viaderiana*.

In the revision of the genus *Litocheira* Kinahan, 1856, Türkay (1975) excluded all the species but *L. bispinosa* Kinahan, 1856, and *L. glabra* Baker, 1906, the former of which is the type species, and synonymized the genus *Brachygrapsus* Kingsley, 1880 with *Litocheira*. The monotypical species of *Brachygrapsus*, *B. laevis*, is thus known as a synonym of *L. bispinosa*. According to him, *L. amakusae* Takeda & Miyake, 1969 and *L. amoyensis* Gordon, 1930 are transferred to the genus *Heteropilumnus*, and

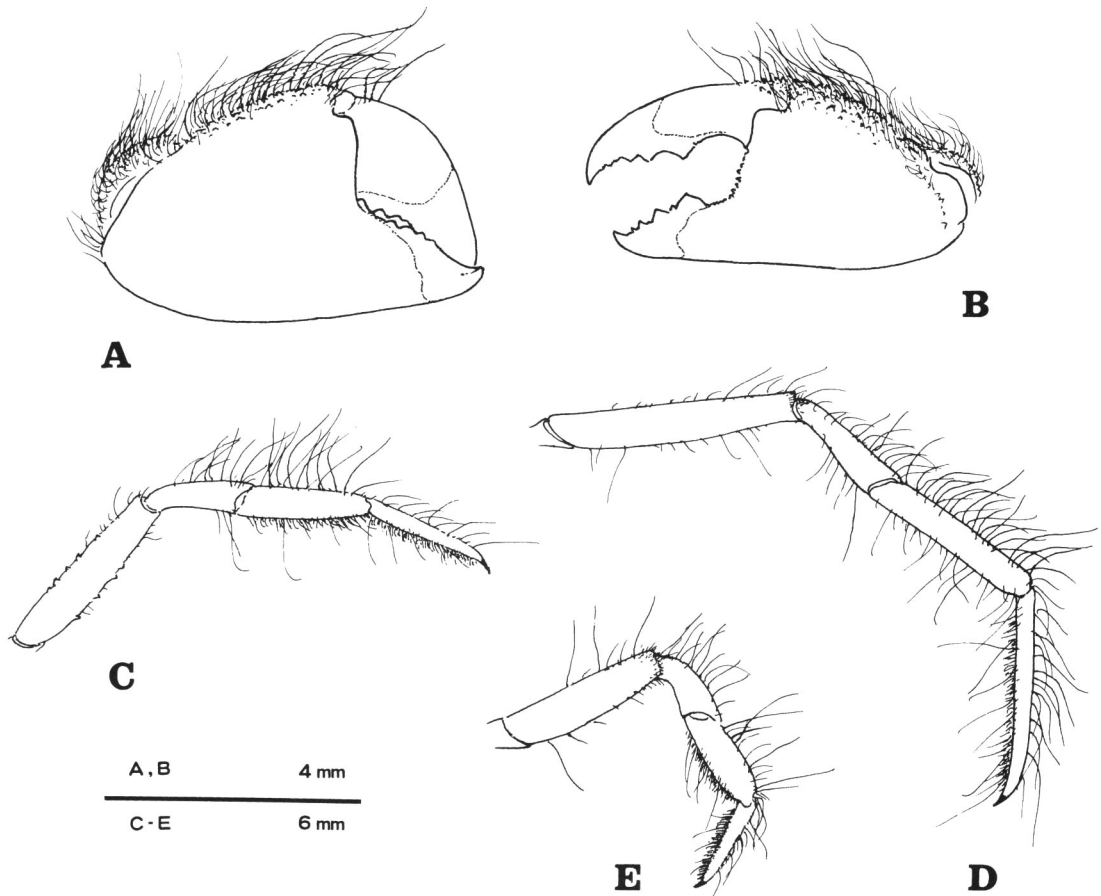


Fig. 3. *Viaderiana kasei* sp. nov., holotype male. A, B, chelae; C-E, right second, third and fourth ambulatory legs.

Litocheira inermis Borradaile, 1903 should be transferred to the genus *Ptychognathus* of the family Grapsidae and reduced to a synonym of *P. pusillus* Heller, 1865. As rightly discussed by him, *Brachygrapsus kensleyi* Miers, 1885, which was treated as a species of *Litocheira* by Miers (1886) and some subsequent authors, is now known as *Euchiropsus*, and *Litocheira sculptimana* Tesch, 1918 is to be transferred to the genus *Ralumia*.

Chiefly based on the difference of the male first pleopod, Türkay (1983) established a new genus *Georgeoplax* for *Litocheira glabra*. The genus *Litocheira* is therefore monotypically represented by *L. bispinosa*.

Two species of *Litocheira* recently described from the South China Sea, *L. xishaensis* Song, 1987, and *L. nanshensis* Dai, Cai & Yang, 1994, should be also included in *Viaderiana*, although their specific distinction from *V. quadrispinosa* is not always clear from their original descriptions.

The genus *Viaderiana* is mainly composed of the species hitherto been referred to *Litocheira* and *Pilumnus*, and still there may be some additional species from *Pilumnus* and related genera. At present, however, as a conclusion from the literature survey mentioned above, the following species are decidedly referred to *Viaderiana*, being arranged in chronological order; *longipes* (A. Milne Edwards, 1873); *elegans* (de Man, 1888); *striata* (de Man, 1888); *quadrispinosa* (Zehntner, 1894); *beaumonti* (Alcock, 1900); *rotumana* (Borradaile, 1900); *taeniola* (Rathbun, 1906); *affinis* (Tesch, 1918); *aranaea* (Tesch, 1918); *celebensis* (Tesch, 1918); *typica* Ward, 1942 (type species); *demani* (Ng & Tan, 1984); *xishaensis* (Song, 1987), comb. nov.; *nanshensis* (Dai, Cai & Yang, 1994), comb. nov.

The new species is characterized most remarkably by having the unarmed external orbital angle, the strong, more or less compressed second anterolateral tooth of the carapace, the stout chelae with the thick and high fingers, and the long ambulatory legs unarmed with the terminal spine on each merus and carpus. The anterolateral teeth are spiniform in most species, or tuber-

culiform in some species, the chelae are rather slender, and the ambulatory legs are long, but shorter than those of the new species, and often armed with a terminal spine on each merus and carpus. In some species, e.g. *V. aranea*, the ambulatory legs are slender, and the third pair attains to 2–2.5 times as long as the carapace, but in the new species the third pair exceeds 3 times as long as the carapace.

Literature

- Alcock, A., 1900. Materials for a carcinological fauna of India. No. 6. The Brachyura Catometopa, or Grapsoidea. *J. Asiat Soc. Bengal*, **69**: 280–456.
- Borradaile, L. A., 1900. On some crustaceans from the South Pacific. Part IV. The crabs. *Proc. Zool. Soc. London*, **1900**: 568–596, pls. 40–42.
- Dai, A., Y. Cai & S. Yang, 1994. Studies on the crabs (Crustacea: Brachyura) in the northern part of Nansha Islands. *Mem. Beijing Nat. Hist. Mus.*, **54**: 1–20. (In Chinese and English.)
- Man, J. G. de, 1888. Bericht über die von Herrn Dr. J. Brock in indischen Archipel gesammelten Decapoden und Stomatopoden. *Arch. Nat.*, **53**: 215–600, pls. 7–22a.
- Miers, J. E., 1886. Report on the Brachyura collected by H. M. S. Challenger during 1873–1876. *Rep. Sci. Res. Voy. H. M. S. Challenger; Zool.*, **17**: i–L, 1–362, pls. 1–29.
- Milne Edwards, A., 1873. Recherches sur la faune carcinologique de la Nouvelle-Calédonie. Part 2. *Nouv. Arch. Mus. Hist. Nat.*, Paris, **9**: 155–332, pls. 4–18.
- 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.
- 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.
- Rathbun, M. J., 1906. The Brachyura and Macrura of the Hawaiian Islands. *Bull. U. S. Fish Comm.*, **23**: 827–930, pls. 1–24.
- Sakai, T., 1939. *Studies on the Crabs of Japan. IV. Brachygnatha, Brachyrrhyncha*. Yokendo Co. Ltd., Tokyo, pp. 365–741, pls. 52–111, pp. 1–23.
- Serène, R., 1971. Observations préliminaires sur des brachyours nouveaux ou mal connus du sud-est Asiatique (Crustacea Decapoda). *Bull. Mus. Nat. Hist. Nat.*, Paris, (2), **42**: 903–918.

- Song, Y., 1987. A new species of *Litocheira* (Decapoda: Goneplacidae) from the Xisha Islands, Guandong province, China. *Oceanol. Limnol. Sinica*, **18**: 126–129. (In Chinese and English.)
- Takeda, M., 1971. New and rare crabs from the Palau Islands. *Micronesica*, **7**: 185–213. (Actual date of issue: 20 July, 1972.)
- Tesch, J. J., 1918. The Decapoda Brachyura of the Siboga Expedition. II. Goneplacidae and Pinnotheridae. *Siboga-Exp.*, **39c**: 149–295, pls. 7–18.
- Türkay, M., 1975. Zur Kenntnis der Gattung *Euchiropsus* mit Bemerkungen zu *Brachyropsus* und *Litocheira* (Crustacea: Decapoda). *Senckenbergiana Biol.*, **56**: 103–132.
- Türkay, M., 1983. *Georgeoplax*, new genus for *Litocheira glabra* Baker, 1906 (Crustacea: Decapoda: Brachyura). *Mem. Austr. Mus.*, **18**: 101–105.
- 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.
- Zehntner, L., 1894. Crustacés de l'Archipel Malais. Voyage de MM. M. Bedot et C. Pictet dans l'Archipel Malais. *Rev. Suisse Zool.*, **2**: 135–214, pls. 7–9.

