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Miyake, Sadayoshi
Zoological Laboratory, Department of Agriculture, Kyushu University

Takeda, Masatsune
Zoological Laboratory, Department of Agriculture, Kyushu University

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Two new species of xanthid crabs from the Palau Islands*

Sadayoshi MIYAKE and Masatsune TAKEDA

Examining the crabs of the family Xanthidae from the Palau Islands depesited in the Zoological Laboratory, Kyushu University, the authors were able to record the following two new species which are designated as *Chlorodiella corallicola* sp. nov. and *Pilodius serenei* sp. nov. The former was obtained by dredging in rather shallow water, and the latter from the interrtidal zone of the coral flat reef.

The most important studies on the genus *Chlorodiella* were carried out by Forest and Guinot (1961). Those species of the genus seem to be very close each other, and at present about seven species are known from the Indo-Pacific regions. The genus *Pilodius* was extensively studied by Sérène and Nguyên van Luom (1958, 1959), Guinot (1958), and also Forest and Guinot (*loc. cit.*). Those studies revealed about fifteen species of the genus from the Indo-Pacific regions. Three species otherwise were recorded by Edmondson (1962) from the Hawaiian Islands.

Chlorodiella corallicola sp. nov.

(Figs. 1, 2)

Diagnosis: Frontal border thin, arched and weakly doubly rimmed. Anterolateral border with four teeth excluding external orbital angle; first three teeth somewhat depressed, and fourth one slightly compressed and acute. Merus of cheliped without spine or tooth on upper border. Each merus of ambulatory legs entire on upper border, and each dactylus spinulated on lower border, of which its tip is biunguiculate.

Description of holotype: The carapace is gently convex and glabrous; its dorsal surface is covered with short fine hairs and furnished with a row of longish silky hairs just behind the front; some shallow fullows are only faintly traceable on the median and anterolateral

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regions. The front is thin and weakly doubly rimmed, bearing no lateral lobule; each frontal lobe is arched, and separated from the supraorbital border by a shallow incision. The supraorbital border bears two notches, the lateral one being more distinct. The infraorbital border bears a rather deep incision just near the external orbital angle. The basal antennal segment is broadly touched with the ventral prolongation of the front and raised higher than the inner infraorbital angle.

The anterolateral border is cut into four distinct teeth excluding the external orbital angle; the first three of them are depressed and the fourth is somewhat compressed; the first is the smallest of the series, subtruncated but distinct, its anterior part being confluent with the external orbital angle; the second and the third are thin and subequal; the fourth is prominent and acute. The posterolateral border is nearly straight and rather strongly convergent. The posterior border is as wide as the front, being slightly concave in the middle.

The chelipeds are massive and distinctly unequal, the left one being larger. The merus is long, only one-third being concealed under the carapace; the upper border of the merus bears no spine nor tooth, but only granulated. The carpus is sparingly covered with short silky hairs on the outer surface, and armed with a subacute protuberance at its inner angle. The palm of the larger chela is heavy and entirely glabrous; the smaller palm is about half height of the larger one and somewhat granulated on the outer upper surface. Both fingers of the larger chela are toothed on the cutting edges and deeply hollowed at the tips; the immovable finger bears a prominent tooth near the proximal end; the fingers of the smaller chela are nearly as long as the smaller palm, the prehensile edges being only slightly and irregularly toothed.

The ambulatory legs are slender and sparingly covered with short hairs mixed with longish ones along the borders of the segments. Only the lower border of the dactylus is armed with several spinules beaded somewhat into two rows; the tip of the dactylus is strongly biunguiculate. The first pleopod is truncated at the tip and bears a cluster of stout setae as repesented in Fig. 2d-f.

Description of paratypes: In the larger male the third and fourth anterolateral teeth are capped each with a spinule. Unfortunately both chelipeds are missing. In the smaller male each third anterolateral tooth is not so depressed and subacute. The chelipeds are nearly like those of the holotype except for bearing two teeth on the immovable finger of the larger chela. Otherwise in both specimens the ornamentation and hairiness of the carapace and the armatures of each dactylus of the ambulatory legs are nearly same as those of the holotype.

Holotype: ♂, Zoological Laboratory, Kyushu University (ZLKU), No. 1724, Ngarsmau, Babldáob I., Palau Is. (134° 33′ E, 7° 37′ N), 26 m deep,

Jul. 14, 1939, S. Miyake leg.

Paratypes: 2 ♂♂, ZLKU, No. 1619, data as for the holotype.

Measurements (in mm):

	Holotype	Paratypes	
Length of carapace	4.4	4.8	4.2
Breadth of carapace	6.6	7.2	6.3
Breadth of front	2.5	2.9	2.4
Fronto-orbital breadth	5.2	5.6	5.0

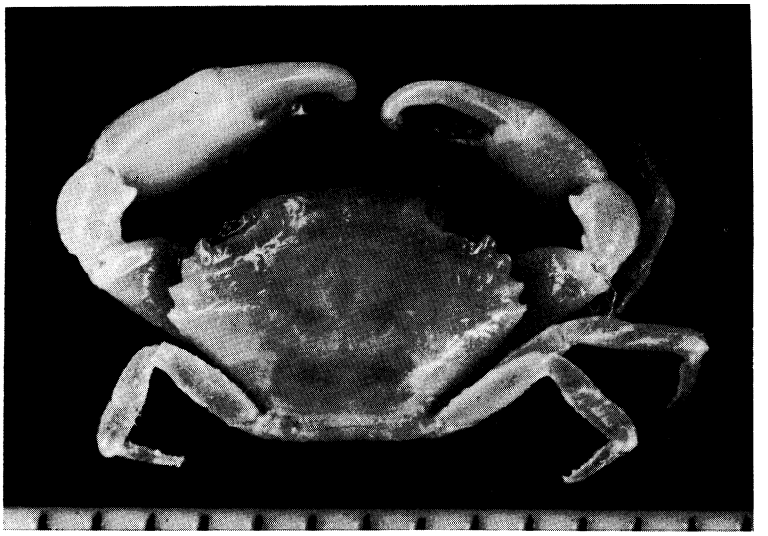

Fig. 1. *Chlorodiella corallicola* sp. nov., holotype.

Remarks: The present species is closely allied to *Chl. laevissima* (Dana, 1852), but readily distinguished by the following respects. (1) The anterolateral border is cut into distinct four teeth. (2) The front is thin and arched, being weakly doubly rimmed. (3) Each merus of the ambulatory legs is entire on the upper border. (4) The first male pleopod is truncated at the tip.

Thus the relationship of the new species to the known species may be realized by the following provisional key.

Key to the Indo-Pacific species of the genus *Chlorodiella*

1. Tuft of hairs on outer distal part of palm ..... *barbatus* (Borradaile)
- No tuft of hairs on outer distal part of palm. 2
2. Two spines on upper border of merus of cheliped...*bidentata* (Nobili)
- One spine on upper border of merus of cheliped or only protuberance in larger material.....3

- No spine, but granulated on upper border of merus of cheliped 4

3. Fourth (last) anterolateral tooth less prominent, and occasionally only vestigial in larger material ..... *cytherea* (Dana)
- Fourth (last) anterolateral tooth spiniform, worn out but distinct even in larger material..... 5

4. Carapace finely granulated and rather well sculptured ..... *miliaris* (A. Milne Edwards)
- Carapace glossy and ill-defined 6

5. First and second anterolateral teeth distinct..... *nigra* (Forskål)

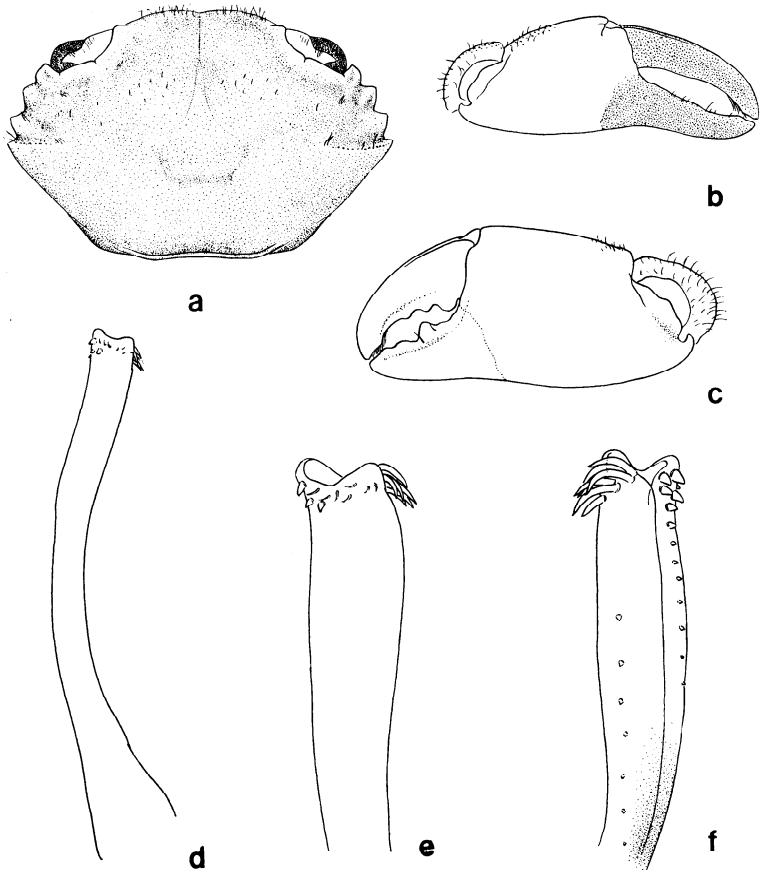

Fig. 2. *Chlorodiella corallicola* sp. nov., holotype.
a, Carapace, ca. ×7; b, smaller chela, ×7; c, larger chela, ×7; d, left first pleoped, ventral view, ×50; e, distal portion of the same, ventral view, ×100; f, the same, dorsal view, ×100.

- First and second anterolateral teeth confluent ..... *ohshimai* Miyake et Takeda

6. Fourth (last) anterolateral tooth distinct but less prominent than the third, and the second somewhat compressed. Front truncated and strongly doubly rimmed..... *laevissima* (Dana)
- Fourth (last) anterolateral tooth as prominent as the third, and the second somewhat depressed. Front thin, arched and weakly doubly rimmed ..... *corallicola* sp. nov.

Pilodius serenei sp. nov.

(Figs. 3, 4)

Diagnosis: Carapace very scantly provided with short fine hairs and some tufts of two or three long hairs; surface areolated; each areola not convex, thickly covered with granules of various size; 2M incompletely divided into two lobules by shallow fullow. Anterolateral border with four teeth excluding external orbital angle; first tooth less prominent, and following three ones subequal; each one tipped with a curved spinule, bearing some accessory granules. Black colour of male fingers extended back on to nearly half palm, or slightly more than half along its lower border. Ambulatory legs bordered with long hairs and armed with spines and spinules; dactyli biunguiculate at tips.

Description of holotype: The external angle of the basal antennal segment is prolonged into the orbit and thus shuts out the flagellum from the orbit. The antennal flagellum is fine and as long as the major diameter of the orbit. The carapace is moderately convex; the dorsal surface is divided into granulated areolae by the smooth, rather wide fullows; the granules of various size on the areolae become larger near the anterolateral borders. The areola 2M is incompletely subdivided by the shallow longitudinal fullow; those areolae are slightly covered with very short fine hairs, otherwise 2M and 5L are provided each with a tuft of two or three long hairs. The front is cut into two rounded lobes by a median U-shaped sinus; the lateral lobule is prominent, being separated from the frontal lobe by a wide notch and also from the supraorbital angle by a deep incision. The supraorbital border bears two notches and is bordered with granules, those granules on the lateral part becoming larger.

The anterolateral border is armed with four teeth excluding the external orbital angle which is produced and acute; the first tooth is the smallest of all, and composed of three granules, of which the middle one being the most prominent; in the following three teeth each of them is capped with a procurved spinule at the tip, being pro-

vided with some accessory granules; the anterior and posterior slopes of the second and third teeth are armed each with a spinule.

The chelipeds are rather stout and not quite unequal, the right one being larger. The merus is thickly covered with granules and its upper border is furnished with a row of sharp granules of good size. The carpus is roughened by rounded and conical granules of various size; its inner angle is armed with two spiniform granules of good size. The larger palm is covered with truncated granules of various size on its outer upper and outer proximal surfaces, those granules being more or less beaded to some longitudinal series; the remainder of the surface is slightly punctate but smooth. The smaller palm is nearly like the larger one, the granules being slightly more prominent. The fingers of the larger chela are rather stout and deeply hollowed at the tips. Each cutting edge of both fingers bears three teeth, the proximal one or two being somewhat molar-like. The prehensile edges of the smaller chela are only slightly but sharply toothed proximally. In both chelae the black colour is extended back on to the palm nearly half, or slightly more than half mainly along the lower border.

The ambulatory legs are rather sparingly covered with short setae and long hairs mainly along the borders, and are armed with spines and spinules on the upper borders and surfaces. Each merus is armed with seven to eight spines on the upper border and with some small spines on the lower border; in the posterior two pairs the spines on the lower borders are not prominent and granuliform. Each carpus of the first two pairs is armed with three rows of spines and spinules, while the following two pairs with two rows, those spines on the upper borders being prominent and becoming sharper distally. Each propodus is also armed with about two rows of some spinules on and along the upper border; its lower border is provided with a subterminal spine. Each dactylus is armed with some spines, its tip being strongly biunguiculate; its upper border is provided with numerous semitransparent spinules. The first pleopod bears a transparent beak at the tip as represented in Fig. 4d.

Description of paratype: The areolation and granulation of the carapace is nearly like that of the holotype. The disposition of scant hairs on the dorsal surface is quite same as in the holotype. The median sinus of the front is shallow and narrow. Of four anterolateral teeth the first is armed with a prominent spinule at the middle. The basal antennal segment is also prolonged into the orbit, but somewhat incompletely shuts out the flagellum from the orbit. The chelipeds are also not quite unequal, the right one being larger. The inner angle of the carpus is armed with two curved spines. The granulation of both chelae is more accentuated than in the holotype. Nearly entire outer surface of the

smaller palm is covered with conical granules of various size. The black colour of the immovable finger is extended back slightly less than half the palm in the larger chela, nearly half in the smaller chela. The armatures of the ambulatory legs are nearly like those of the holotype.

Fig. 3. *Pilodius serenei* sp. nov., holotype.

Holotype: ♂, ZLKU, No. 2979, Ngadarák Reef, Palau Is. (134° 28′ 30″ E, 7° 17′ 30″ N), May 22-31, 1939, S. Miyake leg.

Paratype: 1 ♂, ZLKU, No. 2980, data as for the holotype.

Measurements (in mm):

	Holotype	Paratype
Length of carapace	7.5	6.0
Breadth of carapace including lateral spines	11.2	8.9
Breadth of front	3.7	3.0
Fronto-orbital breadth	7.5	6.0

Remarks: Up till now about eighteen species have been recorded into the present genus. Sérène and Nguyên van Luom (1958) separated the genus into three groups mainly based on the armatures of the anterolateral borders. This species is referable to the "Group II," in which the anterolateral spines are provided with granules, or occasionally with accessory spinules. In that group the younger material of *P. pilumnoides* (White, 1847) may somewhat resemble the present species, if the numerous short black setae are removed. Even if so, the present species is

recognized by the different areolation of the dorsal surface and the first male pleopod.

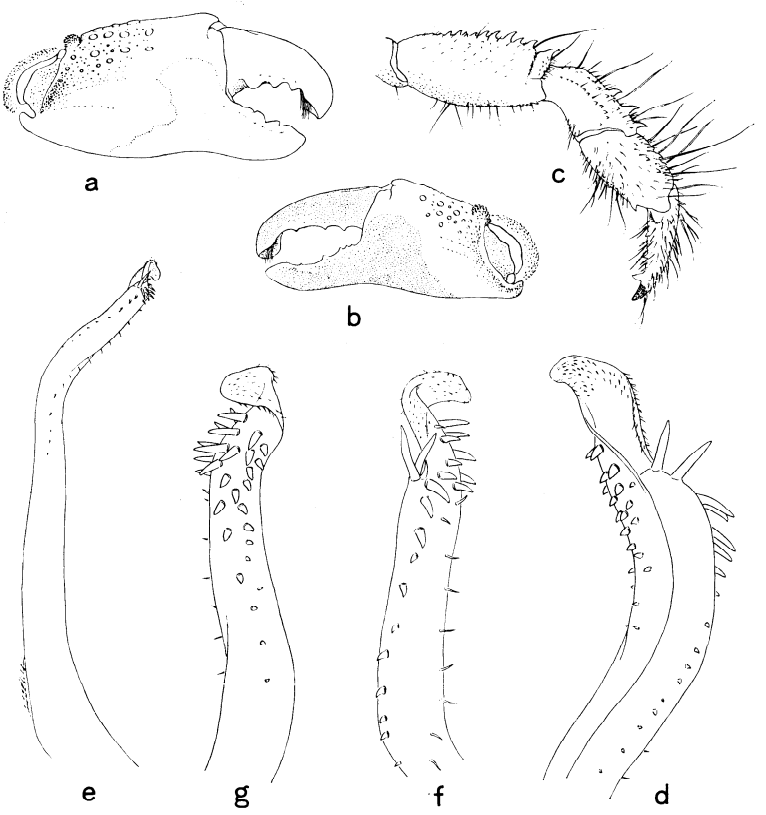

Fig. 4 *Pilodius serenei* sp. nov.

a, Larger chela, ca. ×4.5; b, smaller chela, ca. ×4.5; c, right third ambulatory leg, ×6; d, distal portion of right first pleopod of holotype, ventri-inner view, ×88; e. right first pleopod of paratype, dorsal view, × 35; f, distal portion of the same, dorsi-outer view, ×88; g, the same, ventral view, ×88.

From the other viewpoint, all the members of the genus may be roughly separable into two groups; one with less hairly carapace and the other with the carapace thickly covered with short setae or long hairs, or both. For having less hairy carapace and some other charracters e.g.armatures of the anterolateral borders, the present species is allied to *P. aberrans* (Rathbun, 1906) and *P. spinipes* Heller, 1861. In the former species it is said that the fingers are sharply pointed at the tips, while

in the latter species the spines and spinules on both the carapace and the chelipeds are more accentuated, and the black colour of the fingers is not extended on to the palm.

The present authors have the great pleasure of dedicating this species to Dr. R. Sérène of the National Muscum, Malaysia.

Literature

Adams, A. and A. White, 1848. Crustacea. The Zoology of the Voyage of H. M. S. Samarang. London, pp. i-viii, 1-66, pls. 1-13.

Alcock, A., 1898. Materials for a carcinological fauna of India. No. 3. Brachyura Cyclometopa. Part 1. The famly Xanthidae. J. Asiat. Soc. Bengal, vol. 67, pt. 2, no. 1, pp. 67-233.

Balss, H., 1934. Die Krabben der Reise J. W. Harms' nach der Christmas-Insel und dem Malaiischen Archipel. Zool. Anz., vol. 106, no. 10, pp. 225-237.

——, 1938. Die Dekapoda Brachyura von Dr. Sixten Bocks Pazifik-Expedition 1917-1918. Göteborgs Kungl. Vet.-och Vitterh. Samh. Handl., ser. B, vol. 5, no. 7, pp. 1-85, pls. 1-2.

Borradaile, L. A., 1900. On some crustaceans from the South Pacific. Part IV. The Crabs. Proc. zool. Soc. London, 1900, pp. 568-596, pls. 40-42.

Dana, J. D., 1852. Crustacea. United States Exploring Expedition during the years, 1838, 1839, 1840, 1841, 1842. vol. 13, pt. 1, pp. i-viii, 1-685.

Edmondson, C. H., 1962. Xanthidae of Hawaii. Occ. Pap. Bernice P. Bishop Mus., vol. 22, no. 13, pp. 215-309.

Forest, J. and D. Guinot, 1961. Crustacés Décapodes Brachyoures de Tahiti et des Tuamotu. Expédition française sur les récifs coralliens de la Nouvelle-Calédonie. Volume préliminaire, pp. i-xi, 1-195, pls. 1-18.

Gordon, I., 1934. Crustacea Brachyura. Résultats scientifiques de voyage aux Indes Orientales Néerlandaises de LL. AA. RR. de Prince et la Princesse Léopold de Belgique. Mém. Mus. R. Hist. nat. Belgique. hors-série, vol. 3, fasc. 15, pp. 1-78.

Guinot, D., 1958. Sur une collection de Décapodes Brachyoures (Portunidae et Xanthidae) de l'ile Mayotte. II. Xanthidae. Bull. Mus. Hist. nat. Paris. sér. 2, vol. 30, no. 1, pp. 84-93, no. 2, pp. 175-183, no. 3, pp. 276-284.

——, 1964. Crustacés Décapodes Brachyoures (Xanthidae) des campagnes de la Calypso en Mer Rouge (1952), dans le Golfe Persique et à l'ile Aldabra (1954). Mém. Mus. Hist. nat. Pris. sér. A, Zool., vol. 32, no. 1, pp. 1-108, psl. 1-12.

Heller, C., 1861. Beiträge zur Crustaceen-Fauna des rothen Meeres. Sitzb. math.-naturw. Cl., K. Akad. Wiss. Wien, vol. 43, pt. 1, pp. 297-374, pls. 1-4.

Klunzinger, C. B., 1913. Die Rundkrabben (Cyclometopa) des Roten Meeres. Abh. Kais. Leop.-Carol. Deutsch. Akad. Naturf., vol. 99, no. 2, pp. 97-402, pls. 5-11.

Laurie, R. D., 1915. Reports on the marine biology of the Sudanese Red Sea. XXI. On the Brachyura. J. Linn. Soc. London, Zool., vol. 31, pp. 407-475, pls. 42-45.

Milne Edwards, A., 1873. Recherches sur la faune carcinologique de la Nouvelle-Calédonie. Part 2. Nouv. Arch. Mus. Hist. nat. Paris, vol. 9, pp. 155-332, pls. 4-18.

Miyake, S. and M. Takeda, 1967. On some rare xanthid crabs from the Ryukyu Islands, with description of a new species. J. Fac. Agr., Kyushu Univ., vol. 14, no.

2, pp. 293-302.

Rathbun, M. J., 1906. The Brachyura and Macrura of the Hawaiian Islands. U. S. Fish Comm. Bull. for 1903. pt. 3, pp. 827-930, pls. 1-24.

——, 1907. Reports on the scientific results of the expedition to the tropical Pacific ..... by U. S. Fish Commission Steamer "Albatross" ..... IX, X. The Brachyura. Mem. Mus. comp. Zool. Cambridge, vol. 35, no. 2, pp. 23-74, pls. 1-9.

——, 1911. The Percy Sladen Trust Expedition to the Indian Ocean in 1905. vol. 3, no. 11. Marine Brachyura. Trans. Linn. Soc. London, ser. 2, Zool., vol. 14, pt. 2, pp. 191-261, pls. 15-20.

Sakai, T., 1936. Report on the Brachyura collected by Mr. F. Hiro at Palao Islands. Sci. Rep. Tokyo Bunrika Daigaku, sec. B, vol. 2, no. 37, pp. 155-177, pls. 12-14.

——, 1939. Studies on the Crabs of Japan. IV. Brachygnatha, Brachyrhyncha. Tokyo, pp. 365-741, pls. 42-111.

Sérène R. and Nguyên van Luom, 1958. *Chlorodopsis* du Viêt-Nam (Brachyura). Ann. Fac. Sci. Saigon, pp. 87-148, pls. 1-4.

——, 1959. Note additionelle sur les espèces de *Chlorodopsis* (Brachyures). *ibid.*, pp. 301-340, pls. 1-3.

Stimpson, W., 1907. Report on the Crustacea (Brachyura and Anomura) collected by the North Pacific Exploring Expedition 1853-1856. Smiths. misc. Coll., vol. 49, pp. 1-240, pls. 1-26.

Ward, M., 1934. Notes on a collection of crabs from Christmas Island, Indian Ocean. Bull. Raffles Mus., no. 9, pp. 5-28, pls. 1-3.

——, 1936. Crustacea Brachyura from the coasts of Queensland. Mem. Queensland Mus., vol. 11, pt. 1, pp. 1-13, pls. 1-3.

——, 1941. New Brachyura from the Gulf of Davao, Mindanao, Philippine Islands. Amer. Mus. Nov., no. 1104, pp. 1-15.