

Occurrence of a New Hermit Crab of the Genus
Porcellanopagurus (Decapoda, Paguridae)
in the Sea Adjacent to the Palau Islands

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Synopsis

SUZUKI, H. and TAKEDA, M. 1987—Occurrence of a new hermit crab of the genus *Porcellanopagurus* (Decapoda, Paguridae) in the sea adjacent to the Palau Islands. *Proc. Japn. Soc. syst. Zool., Tokyo*, No. 36: 17-24.

A new species of pagurid hermit crab, *Porcellanopagurus belauensis*, is described from the Palau Islands. This is closely related to *P. japonicus* BALSS and *P. edwardsi* FILHOL, but is distinguished from them by the characteristic shape of the carapace and fourth to fifth legs.

During the ecological study of *Nautilus belauensis* SANDERS from the waters adjacent to the Palau Islands as part of the Special Research Grant of the Ministry of Education, Science and Culture, Japan (The Fifth Scientific Survey of the South Pacific, organized by the Kagoshima University Research Center for the South Pacific in 1986), a female hermit crab of the peculiar genus *Porcellanopagurus* FILHOL was found among the specimens obtained by trapping. This specimen has the short and symmetrical abdomen, and carries an entire half piece of bivalve shells on the back fitting the small abdomen to the inside depression of the shell.

The type species is *P. edwardsi* FILHOL, 1885 from New Zealand, which was studied in detail by FOREST (1951). Afterward, five species; *P. tridentatus*, *P. platei*, *P. japonicus*, *P. truncatifrons* and *P. nihonkaiensis*, were described in this century. The specimen from the Palau Islands is readily distinguished from the six known species by the characteristic shape of the carapace and fourth to fifth legs, and thus to be described as the seventh representative of the genus in the following lines. The sole specimen, the holotype, is deposited at the National Science Museum (Nat. Hist.), Tokyo (NSMT).

Family Paguridae

Genus *Porcellanopagurus* FILHOL, 1885

Porcellanopagurus belauensis sp. nov.

Type specimen. Holotype, female, NSMT-Cr 9362 (Length of shield

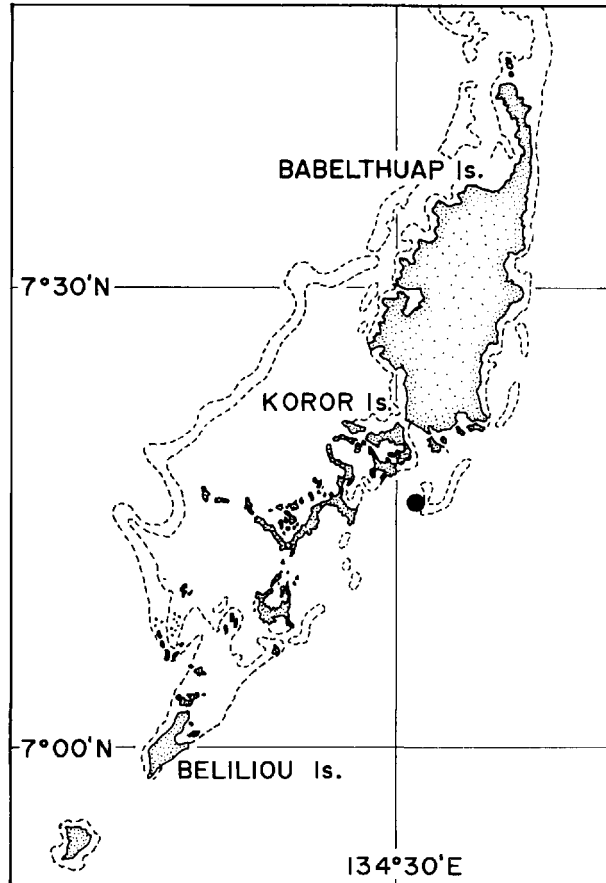


Fig. 1. Map of the Palau Islands to show the sampling station (solid circle) during the survey of the Fifth Scientific Survey of the South Pacific, organized by the Kagoshima University Research Center for the South Pacific in 1986.

with rostrum, 7.5 mm, greatest breadth of shield with lateral teeth, 11.5 mm); southeast off Koror, Palau Islands ($7^{\circ}15.8'N$, $134^{\circ}31.6'E$, 230 m deep), by trap; November 20, 1986.

Description of holotype. Shield apparently broader than long, widening posteriorly; surface roughened and areolated with wide, shallow furrows which are arranged symmetrically, being sparsely covered with scattered tufts or short rows of hairs; gastric region spacious and its anterior half divided into two parts by a median short incision; cardiac region rounded and convex dorsally for its posterior half. A stout transverse ridge on posterior region of shield (Fig. 2 a).

Rostrum prominent, rather even and produced at its middle so as

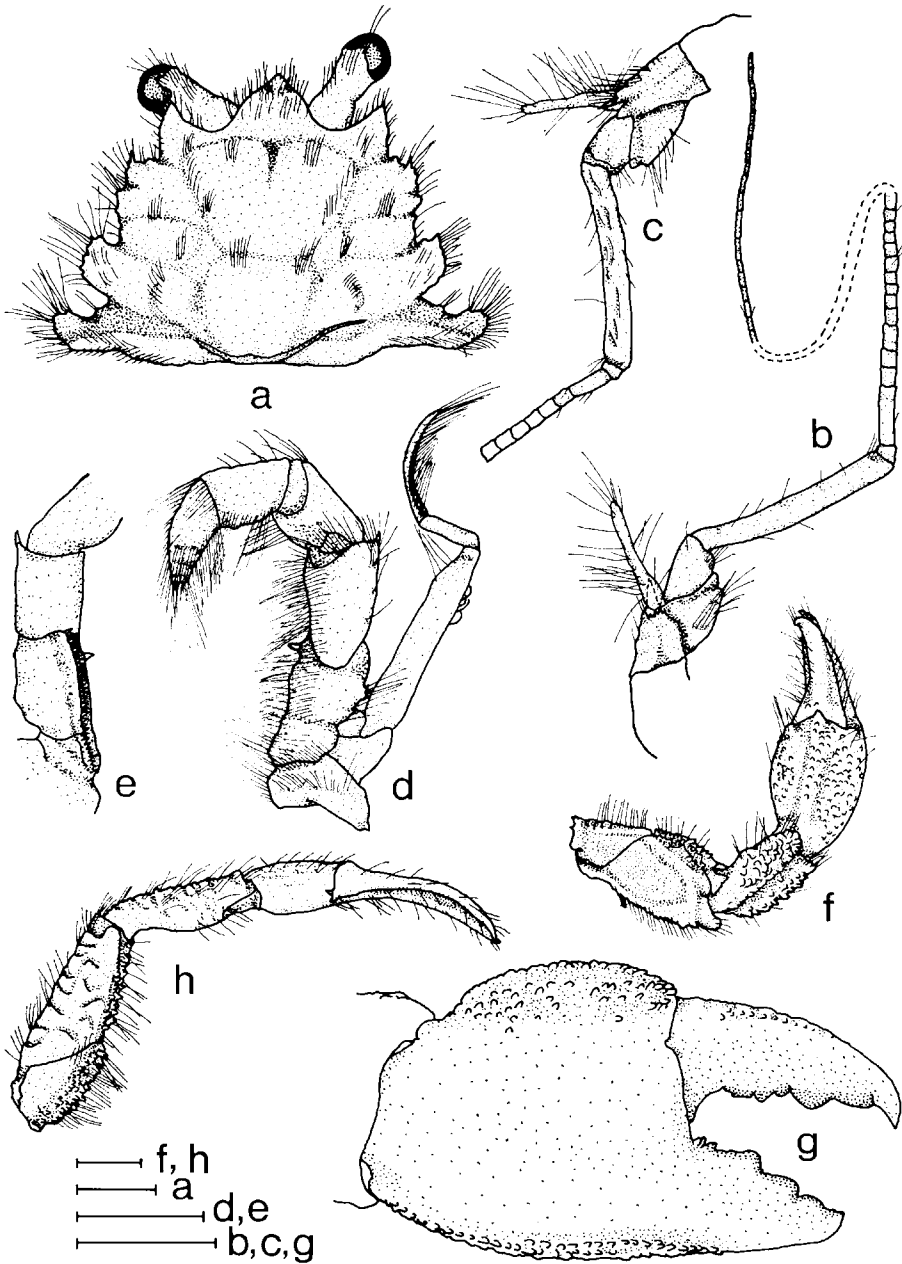


Fig. 2. *Porcellanopagurus belauensis* sp. nov., holotype, female. Carapace (a); inner view (b) and outer view (c) of left second antenna; outer view (d) and inner view (e) of left third maxilliped; right cheliped in upper view (f); distal two segments of right cheliped (g); left cheliped in upper view (h). Bars indicate 2 mm.

to be an obtuse triangular lobe. Supraorbital border deeply excavated for its most length, being about one-sixth the greatest breadth of carapace (distance between last lateral teeth of both sides); external orbital tooth stout with a spine at its anterior end, and its outer border is subparallel to median line.

First lateral tooth of shield deeply separated from external orbital tooth, and in dorsal view, subhepatic part is seen in the deep bight; outer border of first tooth almost longitudinal, and sinuate, being armed with a spinule at its anterior end; second lateral tooth strong, oblique and much protruded beyond first tooth, its border weakly sinuate; third lateral tooth transverse, further protruded beyond second tooth, curved forward at its end and subtruncated at its apex, and isolated by deep furrow from second tooth. Lateral borders of three teeth fringed with long hairs.

Eyestalk stout, short and only weakly constricted at middle, and bears some scattered tufts of hairs.

Basal segment of antenna (Figs. 2 b, c) armed with a spinule at its outer distal angle, and its inner angle developed forward as a long lobe to grasp the inner margin of second segment, a small prominence located at middle of anterior edge, and inner lobe separated by deep furrow from outer half; an antennal acicula of second segment sub-cylindrical, slightly longer than second segment, directed obliquely forward and obtuse at its apex, being provided with some setae on outer border and at its apex; third segment twice as long as the antennal acicula.

Distal five segments of third maxilliped (Figs. 2 d, e) subequal in length; ischium with a row of many horny spinules on its inner lower margin projecting to be laminate and an erect spine near distal extremity of inner surface; merus a little longer than ischium, its outer distal end being armed with an erect spine; following two joints sparsely hairy; dactylus tapering, blunt and densely hairy. Second segment of exopod elongate, abruptly narrowed near its summit, and bears a few long hairs on its inner margin, and four curved bristles on its outer border; terminal segment has a long marginal fringe.

Chelipeds heavy and very unequal; in right (larger) cheliped (Figs. 2 f, g), upper surface of carpus furnished with several transverse rugae and two longitudinal ridges, but upper and lower borders of palm granulose; inner margins of carpus and palm thick for their whole lengths; inner margin of merus spinulose; movable and immovable fingers armed with five and three teeth on their cutting edges, respectively. Left (small) cheliped (Figs. 2 h, 3 i) slender; ischium small,

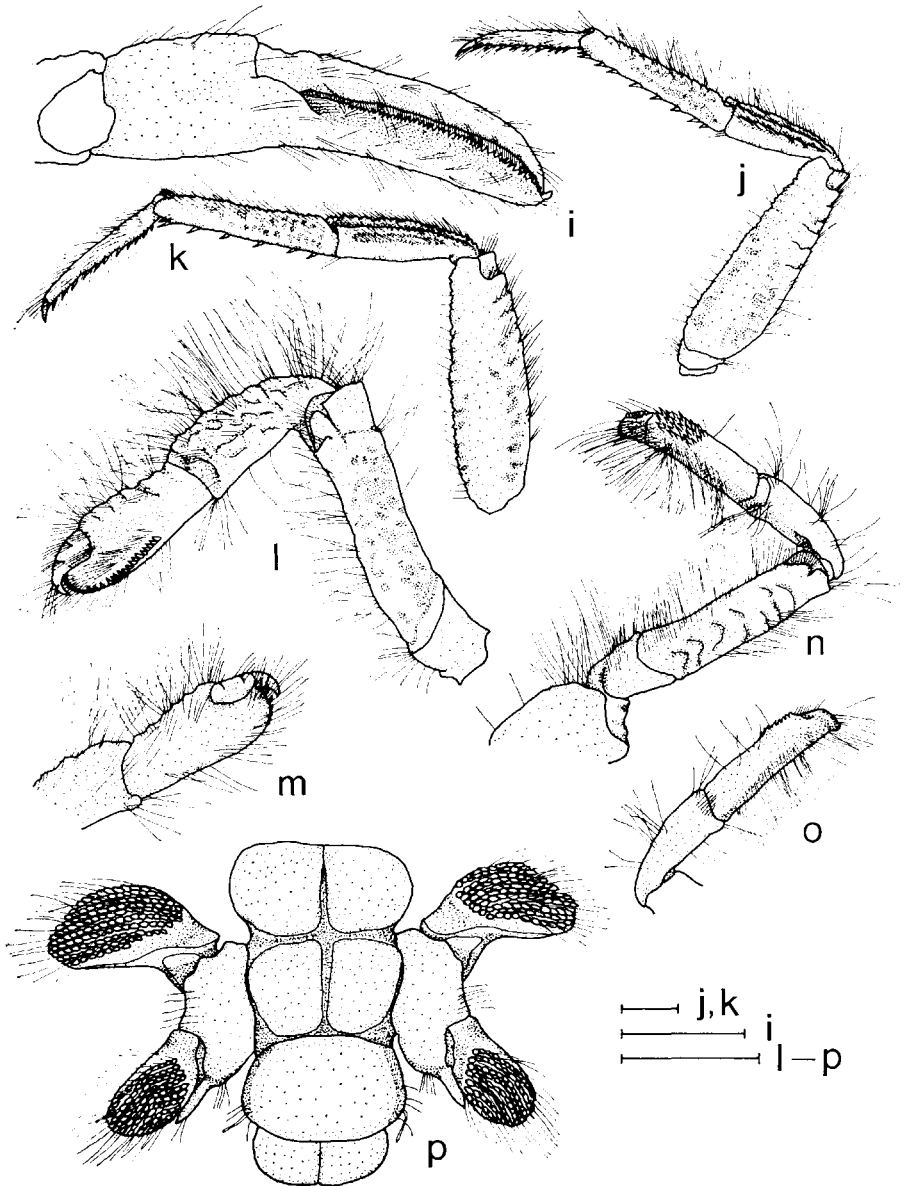


Fig. 3. *Porcellanopagurus belauensis* sp. nov., holotype, female. Distal two segments of left cheliped (i); left second leg (j); left third leg (k); left fourth leg (l); distal two segments of left fourth leg in ventral view (m); left fifth leg (n); distal two segments of left fifth leg in posterior view (o); uropods (p). Bars indicate 2 mm.

and its inner border spinulose; merus rather compressed and widened distally, and its inner margin armed with some spinules; carpus depressed and nearly as long as merus, slightly widening distally, its upper surface uneven and roughened with several faint rugae; fingers as long as carpus, with cutting edges finely denticulated.

Ambulatory legs slender and hairy. Second and third pairs (Figs. 3 j, k) nearly equal in length, but the third is in reality barely longer; upper border of merus not distinct, but lower border distinctly bicarinate and granulose; upper border of carpus with a longitudinal ridge; in second leg, lower border of propodus armed with ten equidistant horny spines, three of them stood abreast at its distal end, and lower border of dactylus with nine; in third leg, lower border of propodus with seven equidistant spines, two of them paired at distal end, and lower border of dactylus with eleven.

Fourth pair of legs (Figs. 3 l, m) small, but stout and hairy; propodus widened and spatulated; its lower border fringed with a row of horny curved spines, its distal end being elongate fairly beyond articulation with dactylus which is talon-like and curved dorsally; upper borders of propodus and carpus being roughened.

Fifth pair of legs (Figs. 3 n, o) subdorsal, slender, and hairy; upper margin of propodus spinulose at its anterior half; dactylus short, thick, with numerous rasp-like teeth at upper border of the blunt extremity.

Uropods (Fig. 3 p) subequal, strongly calcified; in outer ramus, rasp oval with nine to ten rows of scales; in inner ramus, rasp with seven to nine rows of scales. Telson barely longer than broad, with a weak transverse ridge.

Remarks. As already mentioned, the genus *Porcellanopagurus* is composed of six Pacific species, *P. edwardsi* FILHOL from New Zealand, *P. tridentatus* WHITELEGGE from New South Wales, Australia, *P. platei* LENZ from the Juan Fernandez Islands, *P. japonicus* BALSS from Japanese waters, *P. truncatifrons* TAKEDA from the Ogasawara Islands and *P. nihonkaiensis* TAKEDA from the Sea of Japan. The Chilean species is really close to the New Zealand species and its validity is not always distinct as discussed by BALSS (1930), BENNETT (1932) and FOREST (1951). These species are so small and rare that the records of occurrence are few. Apart from the original descriptions, the recent contributions to *Porcellanopagurus* are only those of FOREST (1951) on *P. edwardsi* and MIYAKE (1978) on *P. japonicus*. The occurrence of the new species in the waters adjacent to the Palau Islands is outstandingly interesting from the systematic and biogeographical viewpoints because

the previous records of *Porcellanopagurus* were restricted to Japanese waters and the South Pacific.

The new species is the closest congener of *P. japonicus* and *P. edwardsi*, but distinguished from them by the third protruded and curved lateral tooth (entirely spinous in *P. japonicus*; only transversely protruded in *P. edwardsi*), the elongated spatulated propodus of fourth leg (chelated in *P. edwardsi*; not spatulated in *P. japonicus*).

The shield of the new species may be somewhat similar to those of *P. edwardsi* and *P. japonicus*, having the thick lateral teeth. In New Zealand species, the ambulatory legs are stout, with scaly sculpture, but the legs of the new species are slender and hairy, without scaly sculpture. The second ambulatory leg of *P. japonicus* is slender and hairy like in the new species, being armed with seven spinules, two of them paired at distal end, on lower margin of propodus and six on dactylus, but in the new species the propodus and dactylus of the second leg have ten (three of them stood abreast at distal end) and nine spinules, respectively.

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摘 要

鈴木広志 (鹿児島大学水産学部)・武田正倫 (国立科学博物館)——パラオ産カイガラカツギ属ヤドカリの1新種.

昭和61年度文部省特定研究として鹿児島大学南方海域研究センターにより実施されたオセアニア海域における水陸総合学術調査の一環として、パラオにおいてトラップによるオウムガイの生息調査が行なわれた。その際、共存生物として採集された甲殻類資料中に、ホンヤドカリ科カイガラカツギ属 *Porcellanopagurus* のヤドカリ1個体が見出された。採集地点はパラオ・コロール島南西、水深 230 m の外礁部斜面である。この属には従来 6種が知られている。

パラオ産の標本は、相模湾から東シナ海にかけて分布するカイガラカツギ *P. japonicus* BALSS とニュージーランド南方海域に分布する *P. edwardsi* FILHOL に近い。しかし、甲の側縁最後歯が横に著しく突出し、かつ前方に湾曲する(カイガラカツギでは突出するが先端が尖り、*P. edwardsi* では先端が前方に湾曲することがない)。第4脚の前節

は伸長してへら状を呈する（カイガラカツギでは前節の伸長が認められず、*P. edwardsi* では缺状を呈する）。*P. edwardsi* は鱗状の隆起を歩脚に備えるが、本標本の歩脚は比較的滑らかである。また本標本では第2歩脚の前節後縁には10個の小棘があり、そのうち先端の3個が並列しているのに対し、カイガラカツギでは7個の小棘が並び、そのうち先端の2個が並列している。結果として、パラオ産の標本はカイガラカツギあるいは *P. edwardsi* に近縁の別種と考えられ、*P. belauensis* という学名を与えた。

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