Bull. Natn. Sci. Mus., Tokyo, Ser. A, **21**(2): 87–91, June 22, 1995

Emendatory Notes on *Lophoplax sextuberculata* TAKEDA et KURATA (Crustacea, Decapoda, Brachyura)

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Abstract One of six species of the goneplacid crab genus *Lophoplax* having some warty or nude areoletes on the carapace, *L. sextuberculata* TAKEDA et KURATA, 1984 from southern Japan, is redescribed on some additional specimens from off west coast of the Kii Peninsula, central Japan, and Ie-jima Island in the Ryukyu Islands. In all the specimens examined, six warty areolets are always distinct and sometimes strongly developed as a transverse row at the anterior part just like the holotype, but in some specimens there may be additional seven nude, smooth areolets arranged into two transverse rows, viz., four in the median row and three in the posterior row.

During the course of the joint study entitled "Rare crabs from the west coast of the Kii Peninsula, central Japan", the present authors encountered some specimens referable to the genus *Lophoplax* TESCH of the family Goneplacidae. The genus *Lophoplax* is, as mentioned later in detail, represented by six species having some smooth warty areolets on the carapace and some thickened callous ridges on the chelipeds. The number and nature of such warty areolets are characteristic of each species and the most important criteria to distinguish the species. At the first glance, the specimens at hand are without doubt close to *L. sextuberculata* TAKEDA et KURATA known from the Ogasawara Islands and southern Japan, but distinguished from it by the larger number of the warty areolets. However, the closer examination of some specimens of different size and the direct comparison of them with the type specimens revealed that the original description of *L. sextuberculata* is insufficient to depict the full knowledge about the species, leaving the individual variation out of consideration. Thus, the emendatory description is to be given in the following lines.

The type specimens of *L. sextuberculata* as well as the additional specimens are preserved in the National Science Museum, Tokyo (NSMT).

Family Goneplacidae

Genus *Lophoplax* TESCH, 1918

Lophoplax sextuberculata TAKEDA et KURATA, 1984

(Fig. 1)

Lophoplax sextuberculata TAKEDA & KURATA, 1984: 200, figs. 14–16.

Material examined. East of Tanega-shima I., south of Kyushu, ca. 70 m deep; Jun. 15–18, 1975; M. TAKEDA leg. — 1 ♂ (Paratype, NSMT-Cr 5396; 5.5 ×4.5 mm).

Takinoura Bay, Ani-jima I., Ogasawara Is., from stomach contents of *Parupenaeus pleurostigma* (BENNETT); Sept. 28, 1981; M. MASUDA leg. — 1 ♂ (Holotype, NSMT-Cr 8949; 8.2 ×6.2 mm), 2 ♂♂ (Paratypes, NSMT-Cr 8950; 5.2×3.8 mm).

Off Kirime, west coast of Kii Penin., Wakayama Pref., 80–100 m deep; M. MARUMURA leg. — 1 ♀ (NSMT-Cr 11490; 8.8×7.2 mm), Dec. 30, 1993; 1 ♀ (NSMT-Cr 11491; 8.4×8.1 mm), Nov. 22, 1994; 1 ♀ (NSMT-Cr 11494; 6.4× 5.5 mm), Dec. 4, 1994; 1 juv. (NSMT-Cr 11492; 4.0×3.3 mm), Feb. 16, 1995.

Ie-jima I., Ryukyu Is., ca. 70 m deep; Oct. 11, 1990; K. KASE leg. — 1 ♀ (NSMT-Cr 11493; 4.8×4.0 mm).

Description. Carapace narrowly quadrate, slightly more than 3/4 as wide as long, nearly flattened laterally and posteriorly, weakly declivous anteriorly, being sparsely covered with longish stiff setae and short shaggy hairs for its whole surface except for 13 warty areolets arranged symmetrically; warty areolets arranged roughly into three transverse lines at anterior, median and posterior parts; anterior line composed of six raised, prominent areolets, viz., one on epigastric region, one on antero-external part of protogastric region, and one on hepatic region just inside of first anterolateral tooth of carapace; epigastric areolet slightly situated anteriorly than protogastric and hepatic ones; protogastric areolet similar to epigastric one in shape and size, but hepatic areolet slightly larger than epigastric and protogastric ones, elongated along anterolateral border of carapace; four warty areolets in median line rather elliptical transversely, and slightly larger than those of anterior line; one on posterior part of protogastric region almost equal in size and shape to, and anteriorly situated rather than mesobranchial region, so that, in dorsal view, median transverse line of four areolets appears to be convex anteriorly as a whole; three warty areolets along posterior border of carapace also elliptical in shape, median one on posterior part of intestinal region closest to posterior border, and thus posterior line of three areolets appears to be convex posteriorly; six areolets of anterior line

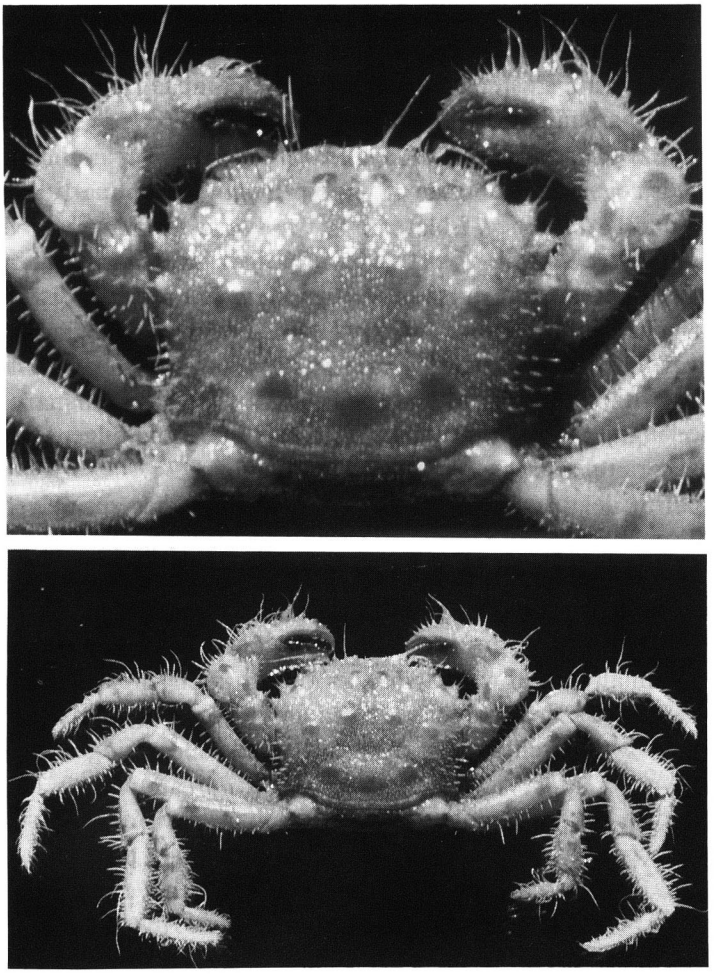

Fig. 1. *Lophoplax sextubererculata* TAKEDA et KURATA, ♀ (NSMT–Cr 11494; 6.4×5.5 mm).

always prominently convex dorsally, but in smaller specimens, other areolets of median and posterior lines indicated only by nude areas.

Front divided into two lobes by a median small notch, with a fringe of a line of long hairs; each lobe strongly produced anteriorly near median notch, weakly concave near orbit. Orbital width almost equal to length of each frontal lobe; supraorbital border transverse, with one small notch in median part and one close to external orbital tooth. Eyestalk retreated just into orbit, being provided with short hairs along its anterior margin.

External orbital tooth rounded at its apex, followed by three tubercular anterolateral teeth tipped with short hairs and one or two granular posterolateral teeth; first two teeth prominent, subequal to each other, while third tooth is

similar to, but about half as large as precedings; two posterolateral teeth or granules very small and equidistant with anterolateral teeth, posterior one being sometimes vestigial. Posterolateral border of carapace only weakly inclined, slightly longer than anterolateral; an oblique callous ridge on epimeral wall from base of anterior granular tooth.

Chelipeds covered with setae of various lengths; distal part of upper border of merus distinctly thickened, isolated by a transverse deep furrow margined with a thick callous ridge; carpus with two longitudinal, subparallel callous ridges on its median and outer parts; in some specimens median one indistinctly divided into two at its basal third; palm not inflated, with upper margin rather thickened; fingers longer than upper border of palm, dark-colored for each distal third and cutting edge, with sharp tips; cutting edges with several small sharp teeth along their whole lengths; upper inner margin of each movable finger with a series of several small granules along proximal two thirds.

Ambulatory legs comparatively long, slender, rather sparsely fringed with longish stiff setae along both margins; second and third pairs subequal in length, as long as 1.5 times of carapace breadth; first and fourth pairs subequal and slightly shorter than second and third pairs; distal margin of each merus of first three pairs thickened as a ring; upper surfaces of carpi of first two pairs weakly raised longitudinally, each with a shallow furrow along upper margin.

Color in life. Carapace, chelipeds and ambulatory legs grayish brown, with dark reddish brown blotches on warty areolets and callous ridges. Warty areolets reddish brown for their halves or two thirds. Ambulatory legs also with dispersed reddish brown blotches of irregular shape and variable sizes. Color in life will be reproduced in TAKEDA and MARUMURA (in press).

Remarks. TAKEDA and KURATA (1984) noted that *Pseudocryptochoeloma symmetrinudus* EDMONDSON should be transferred to the genus *Lophoplax* because of eight prominent nude areas symmetrically arranged on the carapace. This feature characteristic of the genus *Lophoplax* is really distinct even in the original, somewhat diagrammatic figure of the holotype male (6.5 and 5 mm in breadth and length of carapace, respectively) (EDMONDSON, 1951).

Up to the present, in addition to *L. symmetrinudus* mentioned above, the following five species are referred to the genus *Lophoplax*: *L. sculpta* (STIMPSON, 1858) from the Ryukyu Islands, *L. bicristata* TESCH, 1918 from the Strait of Makassar and the northwest of the Kei Islands in Indonesian waters, *L. takakurai* SAKAI, 1935 from Japanese mainland, *L. teschi* SERÈNE, 1971 from the South China Sea, and *L. sextuberculata* TAKEDA et KURATA, 1984 from the Ogasawara Islands and the vicinity of Tanega-shima Island in the south of Kyushu, Japan.

The additional specimens at hand are without doubt very close to *L. sextuberculata*, to which the general formation of the carapace, chelipeds and

ambulatory legs is extremely similar in most respects. In *L. sextuberculata* the anterior partin front of the gastric region is traversed by only six warty areolets corresponding to anterior line of areolets in the specimens at hand, the carapace having no additional areolets.

Re-examination of the type specimens revealed that in each specimen obtained from stomachs of the Ogasawaran fishes the dorsal surface is very smooth except for the anterior row of warty areolets partly due to the damage by weak digestion, but in the paratype male from Tanega-shima Island the posterior part is in reality ornamented with seven nude areolets just like the specimens from off the Kii Peninsula. In the small specimen from the Ryukyu Islands it is almost impossible to locate the areolets. Seven areolets into two transverse lines on the posterior part are sometimes distinct and convex dorsally and sometimes indicated only by the absence of setae, or quite indistinct in the smaller specimens. Thus, there may be some individual differences as for the development of the areolets on the posterior part, but it is concluded that *Lophoplax sextuberculata* is characterized by having 13 areolets, not 6 mentioned in the original description and scientific name.

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