

A New Species of the Lithodidae (Crustacea, Anomura) from Suruga Bay, Central Japan

By

Masatsune TAKEDA

Department of Zoology, National Science Museum, Tokyo

and

Suguru OHTA

Ocean Research Institute, University of Tokyo, Tokyo

In the course of systematic and ecological studies on the benthic animals from Suruga Bay, Central Japan, a fine stone crab was encountered. At first sight, it was clearly referable to *Paralomis* WHITE and readily distinguished from twenty-four known species of the genus by having the unusual feature with the crested borders of the carapace, chelipeds and ambulatory legs. However, the formation of the chelipeds and ambulatory legs were found to be unexpectedly similar to that of *Glyptolithodes cristatipes* (FAXON), a monotypical representative of the genus from off Peru and Chile. Although the specimen at hand seems to take an intermediate position between the two genera, it is without doubt specifically distinct from all the representatives of them.

In this paper the sole specimen deposited in the National Science Museum, Tokyo, is described in detail under the designation of *Paralomis cristata*.

***Paralomis cristata* sp. nov.**

[New Jap. name: Hiraashi-ezoibaragani]

(Pls. 1-3)

Material examined. Suruga Bay, off Osaki (between Heta and Toi) on the west coast of the Izu Penin., ca. 750 m deep; 1 ♂ (holotype), infested by a sacculinid parasite, NSMT-Cr. 6051; Feb. 1979; collected by the Seishin-Marui using crab-pot for commercial fisheries, and presented by Mr. M. IGARASHI. Length of carapace including median rostral lobe, 98.0 mm; the same to base of orbit, 89.0 mm; breadth of carapace including branchial crests of both sides, 95.5 mm.

Description of holotype. Carapace roughly triangular, or rather pentagonal in its contour, being thickly covered with vesiculous granules of variable, but small size; thus, carapace surface somewhat scaly in its appearance. Areolations fairly distinct, with convex gastric and cardiac regions. Gastric region longitudinal and convex from side to side; at anterior one-third in median line is a conical blunt granule of good

size directed forward and weakly upward; anterior part of gastric region from this granule suddenly sunken toward front; granules on posterior half of gastric region larger than those on anterior half, and among them are distinguishable two larger ones side by side at posterior one-third. Gastro-cardiac transverse furrow deep, with a longitudinal deep depression like a scar at each end. Cardiac region rounded and convex as a whole, and higher than gastric region, being obtuse at its summit, only with small granules of irregular shape. An oblique deep depression between gastric and branchial regions similar to, but smaller than longitudinal one outside of cardiac region; furthermore, obliquely in front of it is an oblique wart-like smooth granule. Carapace margin near this granule, or depression from hepatic margin toward branchial margin, armed with three (right) or four (left) depressed small teeth which are conical in dorsal view and thin in lateral view. Hepatic margin oblique and only weakly convex, its anterior end being produced to a thin, more or less angulated plate. Dorsal surface of branchial region widely depressed at its anterior part behind wart-like oblique granule between gastric and branchial regions, and rather convex and armed with a conical blunt granule of good size at its median part in a transverse line with cardiac region. Branchial margin oblique for anterior one-third, and longitudinal for posterior two-thirds; a conical thin tooth anteriorly, a similar one just at anterior one-third and a smaller one behind it, anterior one of the latter two forming a blunt angle so as to make a rather pentagonal appearance of carapace; a remarkable thin crest along whole length of posterior one-third; marginal part of crest bare without granules. Behind branchial region, an oblique prominence outside of indistinct intestinal region.

Front not spinose, being composed of two depressed, upper lateral lobes and one compressed, lower median lobe; upper lobes thin and separated by a wide V-shaped notch, tips being blunt; each lobe directed horizontally forward, but weakly upward laterally; lower median lobe markedly thin and blade-like in lateral view, but spini-form in dorsal view, being considerably protruded forward beyond upper lobes. Orbit narrow and small, and external orbital angle long and more or less depressed. Eyestalk armed with spinules of various size, a median distal one of which is the most prominent; cornea terminal and ventral. Antennal acicle depressed and expanded to considerable extent, being armed with strong spines on both sides; outer border with five depressed spines including distal one, proximal two of which are the largest; inner border with six (left) and five (right) smaller spines. Antennal flagellum about half as long as carapace.

Chelipeds heavy, but not long, the left being slightly smaller than, but quite similar in its formation to the right. Lower outer border of ischium strongly crested, with a fringe of short soft hairs. Median part of lower outer border of merus with a strong crest which is separated into two parts by a median depression; upper border also strongly crested; this crest curving toward distal end of inner surface, bearing some small irregular indentations at proximal part and a small, but distinct one at subdistal part; just at distal end of inner surface is a high plate-like lobe which is distinctly isolated from distal end of crest of upper border; its upper margin with a small indentation, and

summit of upper margin rather angulated; distal margin of merus just along articulation with carpus also crested. Carpus surprisingly crested on inner, distal and outer borders, and nearly flattened on its upper surface; inner crest dentate, and outer border truncated and crest thus made entire and directed obliquely upward. Palm not inflated; upper border rather thin and armed with some serrated teeth; some teeth each with a tuft of setae. Both fingers with tufts of setae; fingers of larger chela with three molar-like teeth.

Ambulatory legs long, depressed and thickly covered with microscopical granules; tufts of setae on propodi and dactyli. Only first leg of right side somewhat different from others in armature probably due to regeneration; both borders of merus, carpus and propodus armed with serrated teeth; upper surface of carpus with a blunt tooth at median proximal part and a median longitudinal, uneven ridge. Armature of other legs similar to each other. Both borders of meri armed with several thin teeth of variable shape and size; upper surface of last merus with a longitudinal line of thin teeth on its proximal half. Crest of anterior border of carpus cut into three; a longitudinal line of three thin teeth on upper surface; in first carpus distal two teeth rather confluent and ridge-like as a whole, while in last carpus teeth are small. Propodus markedly depressed, and its anterior border with three plates of characteristic shape; distal sharp angle with a small tuft of setae; posterior border serrated. Dactylus with two rows of tufts of setae on anterior border and with one on posterior border, being armed with two indistinct teeth on proximal part of anterior border.

Abdomen thickly covered with verrucose granules of variable, but small size and of irregular shape; second segment dimpled on either side of median line; marginal plates of third to fifth segments markedly subdivided.

Remarks. In 1974 the senior author enumerated eighteen species of *Paralomis*, but then he was unaware of the presence of a Russian paper by BIRSTEIN and VINOGRADOV (1972), in which two new species, *P. longidactyla* and *P. spinosissima* from the Southwest Atlantic were described. Afterwards, *P. inca* from off Peru, *P. seagranti* and *P. haigae* from off Guam, and *P. pacifica* from the Emperor Seamount Chain off Midway Island were described by HAIG (1974), ELDREDGE (1976) and SAKAI (1978), respectively. As a result, the genus *Paralomis* is at present known by twenty-four species.

The species of *Paralomis* can be separated into two groups based on the feature with or without spiny armature on the carapace. The new species lacking spines or spiniform tubercles is somewhat similar to *P. verrilli* (BENEDICT) in the carapace contour, but quite distinct from it and all the other species of the genus in having the crested borders of the branchial regions, front, chelipeds and ambulatory legs.

As mentioned before, the chelipeds and ambulatory legs with the crested borders are nearly identical with those of *Glyptolithodes cristatipes* (FAXON). In this East Pacific species, the rostrum is short and conical, with the ventral process not visible in the dorsal view, and the cardiac region narrow and sunken in a deep fossa enclosed by a crescentic ridge on each branchial region. These features originally considered to be

generic are not applied to the new species. The rostrum with two upper depressed and one lower compressed lobes and the developed cardiac region in the new species suggest the systematic place in *Paralomis*. It is noted that in the new species, the marginal plates of the third to fifth abdominal segments of the male are more subdivided than in *G. cristatipes*. Due to the discovery of the present new species with some puzzling combination of features, the generic validity of *Glyptolithodes* based on the form of the rostrum, ambulatory legs, cardiac region and abdomen became somewhat obscure. It is, however, difficult without specimens at present to discuss on the systematic status of *Glyptolithodes*, and thus the new species is rather tentatively referred to *Paralomis*.

On the other hand, it is remarked at present that the new species has a certain resemblance to *Lopholithodes diomedae* (FAXON) from the East Pacific which was originally referred to *Echinocerus* WHITE (= *Lopholithodes* BRANDT), then transferred to *Paralomis* by the same author in 1895 and now known in this combination after DEL SOLAR (1972) and HAIG (1974). According to the fine figure given by the original author in 1895, it is primarily different from the present new species in having the toothed anterolateral border of the carapace and the serrated anterior borders of the carpi and propodi of the second and third ambulatory legs. There remains some doubts in referring it to *Lopholithodes*, the type-species of which is *L. mandtii* BRANDT from the temperate North Pacific.

Acknowledgements

Thanks are extended to the experienced fisherman, Mr. Morinosuke IGARASHI, and his son, Haruhisa, for providing us with the interesting stone crab described herein and numerous precious specimens. Thanks are also due to Dr. J. C. YALDWYN of the National Museum of New Zealand, who kindly examined the holotype specimen at our museum during his visit and gave us useful opinion. The photographs were taken by Mr. Akihiro OOSATO.

Literature

- BIRSTEIN, T. A., and L. G. VINOGRADOV, 1972. Craboids (Decapoda, Anomura, Lithodidae) of the Atlantic sector of the Antarctic, South America, and South Africa. *Zool. Zh.*, **51**: 351–363. (In Russian with English summary.)
- DEL SOLAR, E. M., 1972. Addenda al catálogo de crustáceos del Perú. *Inf. Inst. Mar Perú*, (38): 1–21.
- ELDRIDGE, L. G., 1976. Two new species of lithodid (Anomura, Paguridea, Lithodidae) crabs from Guam. *Micronesica*, **12**: 309–315.
- FAXON, W., 1893. Reports on the dredging operations off the west coast of Central America to the Galapagos, to the west coast of Mexico, and in the Gulf of California—by the U. S. Fish Commission steamer "Albatross," during 1891. VI. Preliminary descriptions of new species of Crustacea. *Bull. Mus. Comp. Zool., Harvard Coll.*, **24**: 149–220.
- 1895. Reports on an exploration off the west coast of Mexico, Central and South America, and off the Galapagos Islands — by the U. S. Fish Commission steamer "Albatross," during 1891. XV. The stalked Crustacea. *Mem. Mus. Comp. Zool., Harvard Coll.*, **18**: 1–292, pls. A–H,

J, K, 1-57.

HAIG, J., 1974. Observations on the lithodid crabs of Perú, with description of two new species. *Bull. Soc. Calif. Acad. Sci.*, **73**: 152-164.

SAKAI, T., 1978. Decapod Crustacea from the Emperor Seamount Chain. *Res. Crust.*, **8** (Suppl.): 1-39, pls. 1-4.

TAKEDA, M., 1974. On three species of the Lithodidae (Crustacea, Anomura) from the Central Pacific. *Bull. Natn. Sci. Mus., Tokyo*, **17**: 205-214, pls. 1-3.

Explanation of Plates 1–3**Plate 1**

Paralomis cristata sp. nov., holotype. Carapace breadth, 95.5 mm.

Plate 2

Paralomis cristata sp. nov., holotype. Carapace in dorsal (A) and lateral (B) views.

Plate 3

Paralomis cristata sp. nov., holotype. A, B: Frontal region in dorsal (A) and lateral (B) views.
C: Ambulatory legs of left side. D: Abdomen.







