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Crabs from the East China Sea, VI

A Collection from off the Danjo Islands made by the R/V Hakuhô Maru Cruise KH–74–3

By

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During 35 days from July 19 to August 22, 1974, the cruise KH–74–3 was carried out by R/V Hakuhô Maru of the Ocean Research Institute, University of Tokyo, for the research entitled "Studies on the benthic animal communities in the Kuroshio Current and its adjacent waters." In the course of planning this cruise three stations were selected at the entrance into Suruga Bay for the preliminary deep water trawling operation, six stations in Tosa Bay for collecting the deep water benthos showing the bathymetrical zonation, and then four stations at the south of the Danjo Islands in the East China Sea for the research on the elements derived from the warm current. In these stations 3 m beam trawl was to be used, and otherwise two stations were selected in Tosa Bay for the operation of otter trawl. After some changes of these stations due to weather and bottom conditions, the trawling operations by 3 m beam trawl were made three times in the deep water off Suruga Bay, seven in Tosa Bay from the shallow to deep water exceeding 4,000 m, and five at the continental shelf and slope in the East China Sea, and otherwise the otter trawl was used twice in Tosa Bay.

Table 1. Stations 10–13 for 3 m beam trawl.

Station	Date	Time	Position	Depth (m)	Speed (kt)
10	5–VIII–1974	12^{00} (ca. 5 min)	31°18.3′N, 128°35.4′E	460–512	1.5
11–1	5–VIII–1974	18^{44}–19^{52}	31°15.7′N, 128°20.6′E—31°17.5′N, 128°22.1′E	364–369	1.5
11–2	5–VIII–1974	22^{27}–23^{41}	31°19.2′N, 128°21.3′E—31°16.5′N, 128°21.3′E	347–365	2.0–4.0
12	6–VIII–1974	01^{53}–03^{00}	31°19.6′N, 128°14.1′E—31°20.7′N, 128°16.0′E	176–199	1.5
13	6–VIII–1974	11^{16}–12^{23}	31°36.9′N, 127°06.5′E—31°38.5′N, 127°08.8′E	110–110	1.5

The decapod crustaceans form one of the major invertebrate groups obtained, indicating the interesting benthic communities as a whole. Since the materials from Tosa Bay and the East China Sea belong to the different source of faunas, they will be

separately reported. It may be otherwise advisable that all the decapod crustaceans are included in each report, but this paper dealing with the materials from the East China Sea is concerned with the detailed systematics of crabs and only with the list of the other species and a brief discussion on some prawns and galatheids for consideration of the fauna in question.

The author is greatly indebted to Dr. Masuoki HORIKOSHI, Dr. Hiroshi MUKAI and Mr. Suguru OHTA of the Ocean Research Institute, University of Tokyo, and Dr. Taiji KIKUCHI of the Amakusa Marine Biological Laboratory, Kyushu University, for sorting out these decapod crustaceans. The holotype male of a new species which is dedicated to Dr. M. HORIKOSHI is deposited in the National Science Museum, Tokyo.

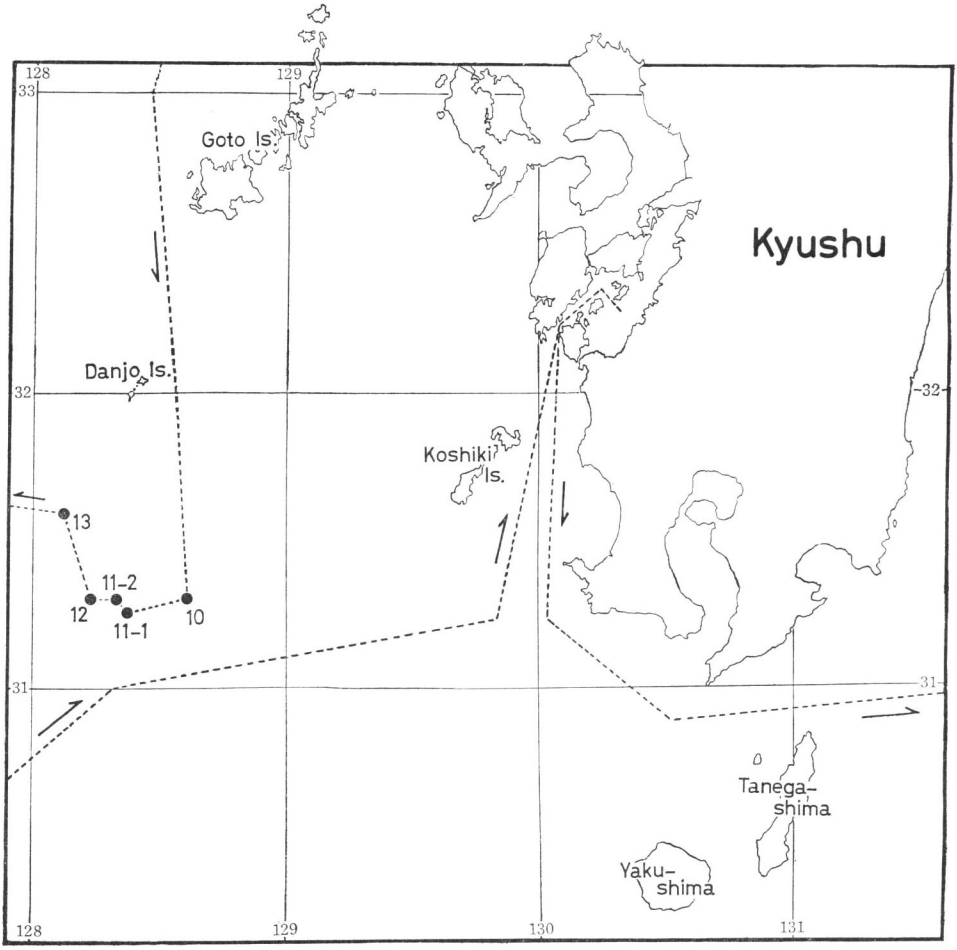

Fig. 1. Parts of trail of Hakuhô Maru Cruise KH-74-3, indicating trawling stations in the East China Sea.

Family Raninidae

Genus *Ranilia* H. MILNE EDWARDS, 1837

Ranilia horikoshii sp. nov.

(Figs. 2, 3; Pl. 1, fig. 1)

St. 12, 1 ♂ (holotype, NSMT–Cr. 4982), 20.3×24.3 mm.

Carapace ovate or rather obconical in its outline, strongly convex laterally and evenly so longitudinally; its dorsum closely and finely granular without any ridges or regions, its granulation being distinct for unaided eye toward anterior surface and more or less scaly toward posterior surface; dorsum otherwise ornamented with scars or rugosities of irregular shape disposed symmetrically in its median part. Front-orbital border with seven teeth with a shallow surrounding depressions; median rostral tooth markedly sharp and rather strongly curved obliquely upward; its dorsal margin convex with lateral linear depressions extending a little posteriorly as faint impressions; frontal lower surface developed into a thick plate as a septum of orbits; three orbital teeth on either side closely approach each other, being directed obliquely inward; these three teeth not spiniform, but conical with sharper outer and inner ones; distance between tips of outer and inner teeth only slightly narrower than that between frontal and inner ones. Anterolateral tooth stout and rather depressed, being weakly directed outward. A faint depression at some distance behind this anterolateral tooth; a furrow originating from anterior corner of buccal cavern runs toward this part and then as a faint line along posterolateral border of carapace toward its posterior border.

Eye-peduncle depressed and tightly embedded in a space beneath orbital border, anterior border being covered with minute granules and a shaggy tomentum; cornea small, and chiefly terminal and dorsal in its position. Antennae bears large basal segments fringed with dense shaggy hairs, while antennules are much smaller and entirely concealed by them. Third maxilliped slender with merus subequal to ischium in length and breadth; ischium smooth with an oblique row of hairs not reaching its inner border, its distal median part deeply concave; merus markedly uneven with depressions and bristles of various lengths, being densely fringed with plumose hairs.

Both chelipeds large and equal in size and shape; merus stout with many transverse short rows of depressed granules fringed with bristles; carpus moderately compressed with short rows of granules on its outer upper surface and with many conical granules on the upper surface, its distal end being produced into a conical tooth; palm distinctly compressed and high with short oblique rows of hairs; both borders rather thin throughout their lengths, each with a fringe of hairs; distal part of palm forms a cutting edge with thin irregular border, while immovable finger proper is small and sharply hooked; movable one strongly curved and sickle-shaped, without distinct teeth.

Ambulatory legs with fringes of long superimposed hairs; second pair the longest, first and third subequal, and last one a little shorter and dorsal in position. In first

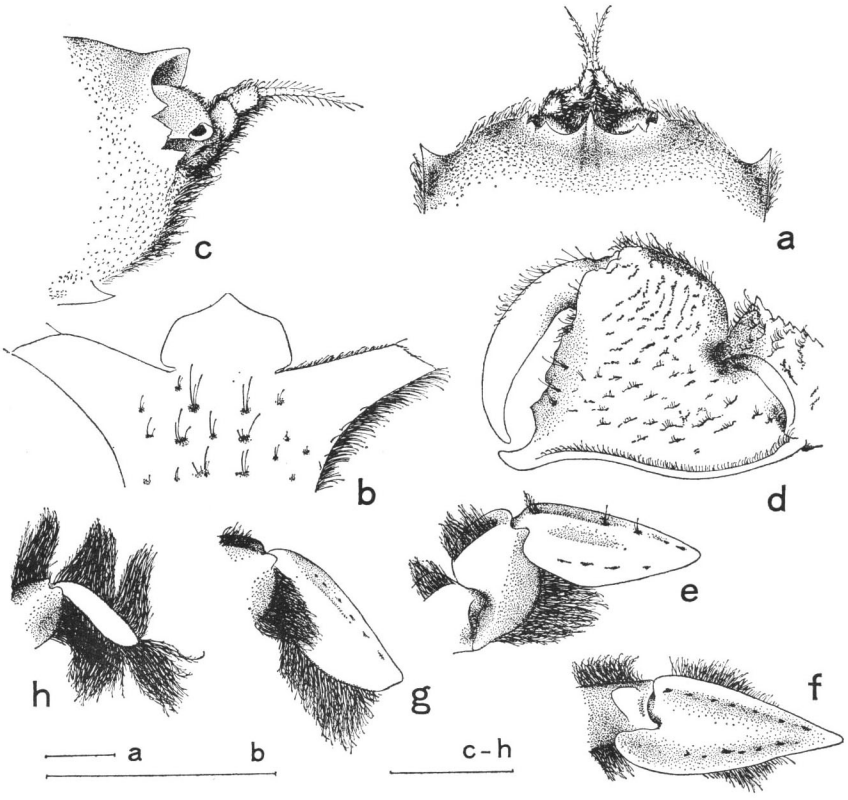

Fig. 2. *Ranilia horikoshii* sp. nov., ♂, holotype. —— a, c, Anterior part of carapace in dorsal and lateral view, respectively; in c eye-stalk dragged out. b, Anterior part of thoracic sternite. d, Left chela. e–h, Dactyli of first to fourth ambulatory legs. Scales represent 5 mm.

pair ischium in its ventral view with a crest, and each of upper border of carpus and propodus also with a thin crest; crest of carpus distinctly angulated at its distal end; in both segments a fringe of hairs arises from a longitudinal ridge along upper crest; dactylus typically hatchet-shaped with convex lower border. Second pair bears no sharp crest; dactylus also hatchet-shaped and tapering rapidly, its surface representing a different plane against other segments due to twisted articulation with propodus; distal anterior part of propodus truncated to form a small flat surface together with dactylus. Third pair stouter than the precedings; posterior border of merus more or less distinctly excavated; carpus with a long outgrowth at its posterior end; propodus about half of carpus, its anterior border being thin as well as that of carpus; dactylus obliquely truncated distally and more or less hatchet-shaped rather than elongate quadrate. Carpus of last pair markedly expanded anteriorly as a thin lobe; dactylus comparatively long, with nearly straight outer border, its tip being not sharp.

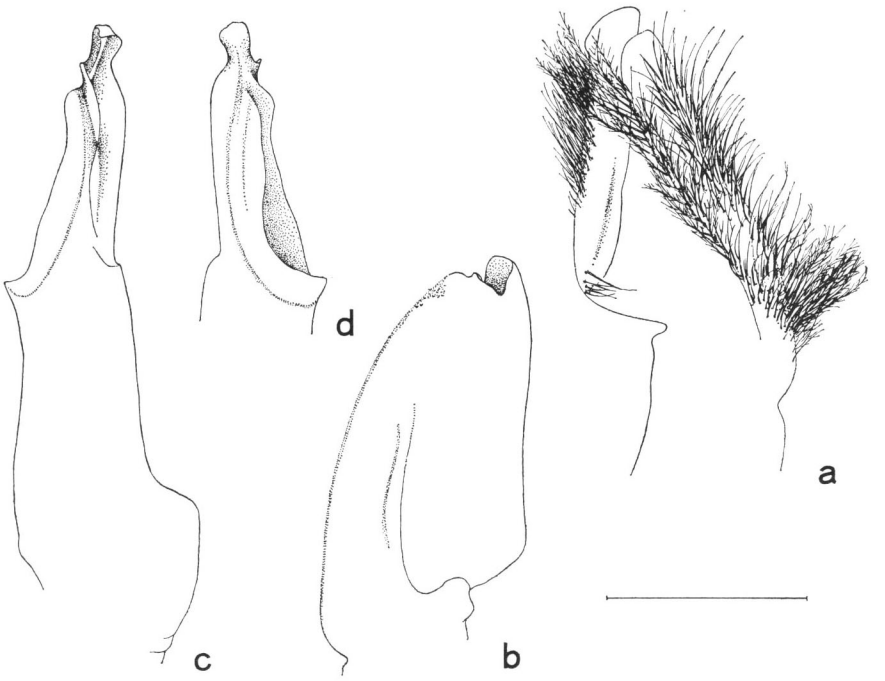

Fig. 3. *Ranilia horikoshii* sp. nov., ♂, holotype. —— a, b, Left first pleopod in sternal and dorsal view, respectively; in b hairs removed. c, d, Left second pleopod in sternal and dorsal view, respectively. Scale represents 2 mm.

Carapace, chelipeds and ambulatory legs uniformly brick red with symmetrical white scars or rugosities on median part of dorsum. Color of appendages somewhat pale.

The genus *Ranilia* referred to the subfamily Notopinae has hitherto been represented by altogether six species, viz., *R. muricata* H. MILNE EDWARDS and *R. constricta* (A. MILNE EDWARDS) from the Atlantic coast of America, *R. angustata* STIMPSON and *R. fornicata* (FAXON) from the Pacific coast of America, *R. orientalis* SAKAI from Japan, and *R. atlantica* (STUDER) from the Atlantic coast of Africa, the first of which is the type-species. SERÈNE and UMALI (1972) suggested that the Japanese species represents a genus distinct from *Ranilia* together with *Notopus ovalis* (HENDERSON) from off the Kei Islands and Western Australia and *N. misakiensis* SAKAI from Japan. The latter two species are really close to *R. orientalis* in the general appearance of the carapace and without doubt generically distinct from *N. dorsipes* (FABRICIUS) which may be a monotypical representative of the genus. A female of *R. orientalis* is now in the author's disposal by the courtesy of Dr. Yukio NAKASONE of the University of the Ryukyus, to whom the author's cordial thanks are extended. Although the above

authors mentioned the differences of the dactyli of the ambulatory legs in *R. orientalis*, without the direct comparison of the specimens it seems to be difficult to justify the separation of the Indo-West Pacific species as a whole from the Atlantic and East Pacific representatives. Three known and one new Indo-West Pacific species are therefore tentatively referred to the present genus.

Among the known species the general formation of the carapace, orbital and buccal regions, chelipeds and ambulatory legs well coincides with, but is without doubt distinct from, each other. The new species is readily distinguished from the eight known species by having the supraorbital border with three conical teeth close to each other, by the different shape of the dactyli of the ambulatory legs, especially the subtruncated one of the third pair, and by having the degenerated eye. The last feature is surprising among the genera of the Notopinae, in which the eye-peduncle is usually slender with the large terminal cornea and freely retreated in the deeply excavated orbit. It may be rather close to that of the genus *Cyrtorhyna* MONOD of the Ranininae. This characteristic genus with curious formation of the chelipeds and ambulatory legs, which is represented by *C. granulosa* MONOD from Gold Coast in the Atlantic coast of Africa and *C. balabacensis* SERÈNE from the Sulu Sea, is without doubt one of the representatives of the Ranininae, in which the male first pleopod bears a long shaft contrary to the primitive foliaceous pleopod of the Notopinae to which the genus *Ranilia* is referred.

Family Latreilliidae

Genus ***Latreillia*** ROUX, 1828

Latreillia valida DE HAAN, 1839

Latreillia valida DE HAAN, 1839, p. 107, pl. 30 (1); BALSS, 1922, p. 114; SAKAI, 1936, p. 57, pl. 4 (2); 1965, p. 17, fig. 1 (c), pl. 9.

Latreillia pennifera ALCOCK, 1899 b, p. 168; 1901, p. 71, pl. 7 (27); GORDON, 1950, p. 229; BARNARD, 1950, p. 344, fig. 65 (h, i).

St. 12, 1 ♂, 1 ovig. ♀.

Following BALSS (1922) the Indian Ocean species is now admitted to be congeneric with the early known West Pacific species. GORDON (1950) and SAKAI (1965) showed that the lengths of the propous and plumes of the last leg acting as the balancer are fairly variable probably according to the developmental stages.

This species is widely distributed in the Indo-West Pacific waters from Japan through the Philippines, the Kei Islands and the Bay of Bengal to South Africa. In Japan it ranges from Tokyo Bay to Kyushu, extending its range in the Japan Sea northward to off Niigata Prefecture. Its bathymetric range is from 50 to 350 m.

Family Leucosiidae

Genus *Ebalia* LEACH, 1817

Ebalia tuberculosa (A. MILNE EDWARDS, 1873)

Persephona tuberculosa A. MILNE EDWARDS, 1873, p. 262.
Phlyxia granulosa HASWELL, 1879, p. 54, pl. 6 (3).
Ebalia tuberculosa: MIERS, 1886, p. 306, pl. 25 (1); RATHBUN, 1923, p. 134, pl. 35 (1, 2); SAKAI, 1937, p. 111, fig. 11; 1965, p. 28, pl. 13 (2); BARNARD, 1950, p. 368, fig. 70 (h–k).
Ebalia salamensis DOFLEIN, 1904, p. 47, pl. 16 (1–3).
Nursia scandens STEBBING, 1920, p. 247, pl. 26 (A).
Nursia postulans STEBBING, 1921, p. 461, pl. 18 (A).
Ebalia japonica RATHBUN, 1932, p. 37.

St. 11–2, 1 ♂.

This small species is so markedly variable in the dorsal granulation and tuberculation as has been described under various names. It is well known that the intestinal region is always strongly convex, and of the six dorsal tubercles the median gastric and two branchials are often obsolete. In the specimen at hand the median gastric tubercle is smaller than the protogastric, but distinct, and two branchials are only indicated by the low mounds. The male abdomen is composed of five pieces with the fused fourth to fifth terga. The male first pleopod was represented by SAKAI (1937) and BARNARD (1950), the second one being small as represented also by the earlier author.

This species is widely distributed in the Indo-West Pacific waters from Japan and the Hawaiian Islands to Australia and South Africa. In Japan, it is rather commonly found along the entire coasts of Honshu, Shikoku and Kyushu. Its bathymetric range is from 40 to 550 m.

Genus *Randallia* STIMPSON, 1857

Randallia eburnea ALCOCK, 1896

Randallia eburnea ALCOCK, 1896, p. 197; SAKAI, 1934, p. 289, pl. 18 (4); 1937, p. 132, fig. 22; 1965, p. 42, pl. 17 (1); TYNDALE-BISCOE and GEORGE, 1962, p. 87, fig. 7 (7); TAKEDA, 1973, p. 32, fig. 3 (E, F).
Randallia japonica YOKOYA, 1933, p. 130, fig. 46.

St. 13, 1 ♂.

This beautiful species is readily distinguished from *R. trituberculata* SAKAI recently described from Sagami Bay and Tosa Bay by having only one tubercle at the middle of the lateral border of the carapace instead of three. The male first pleopod was represented by TYNDALE-BISCOE and GEORGE (1962) and TAKEDA (1973).

The type-locality is the Laccadive Islands, the geographical range being extended toward Australia and Japan. In Japan it is rather commonly known from Sagami Bay to the western side of Kyushu, but restricted to off Yamaguchi Prefecture in the

Japan Sea. Its bathymetric range is from 35 to 210 m.

Family Majidae

Genus *Rochinia* A. MILNE EDWARDS, 1875

Rochinia pulchra (MIERS, 1886)

(Fig. 4 a, b)

Anamathia pulchra MIERS, 1886, p. 26, pl. 4 (1).
Anamathia liverorii WOOD-MASON, 1891, p. 260.
Scyramathia pulchra: ALCOCK, 1895, p. 202; RATHBUN, 1911, p. 250.
Rochinia pulchra: SAKAI, 1938, p. 278, fig. 35, pl. 37 (4).

St. 11–1, 5 ♂♂, 1 ovig. ♀, 5 ♀♀, 2 ♀♀ infested by rhizocephalids.
St. 11–2, 1 ♂, 1 ♂ infested by a bopyrid, 1 ovig. ♀, 2 ♀♀.
St. 12, 1 ovig. ♀, 1 ♀ infested by a rhizocephalid.

This species is readily distinguished from the congeners by having twenty long spines on the carapace. Those spines arise from the papillate bases, but only the outer side of each hepatic spine behind the postocular cup is truncated to form a triangular flat surface. The rostral horns are about two-thirds as long as the carapace in the male and about a half in the female, being horizontal, weakly curved outward distally and divergent at angle of about 45°. The true rostrum is developed as a triangular thin lobe. The curled hairs are restricted to the rostral horns and the branchial regions, but most of the specimens are more or less camouflaged with a sort of sponges on the dorsal surface.

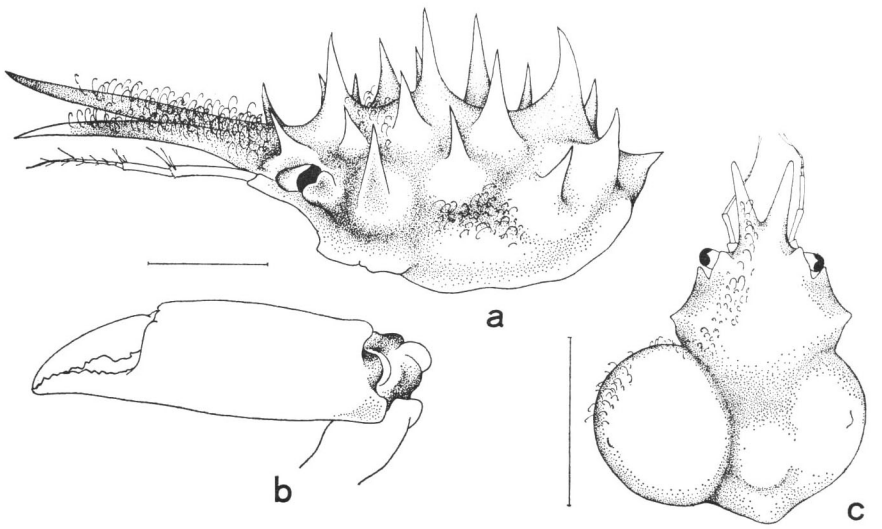

Fig. 4. a, b, Carapace and left chela of *Rochinia pulchra* (MIERS), ♂. c, Carapace of *Pugettia* sp., juvenile infested by a bopyrid. Scales represent 5 mm.

This species is rather rare, ranging from the vicinity of the Kii Peninsula through the Philippines and the Andaman Sea to the Seychelles. The recorded bathymetric range is from 60 to 1,000 m.

Genus *Pugettia* DANA, 1851

Pugettia sp.

(Fig. 4 c)

St. 11–2, 1 juv. infested by a bopyrid.

Carapace pyriform with evenly convex gastric, cardiac, branchial and intestinal regions. Branchial region only with a granular prominence. Rostral horns about one-third as long as carapace proper. Preocular tooth blunt and not spiniform. Postocular tooth not distinctly separated from conical hepatic one, forming together an incomplete wing with deeply excavated anterior half of its lower surface. Second and third segments of antenna slender.

In this juvenile specimen with 8.5 mm in median line of the carapace, the left branchial region is heavily deformed by a bopyrid parasite. It is distinctive in some features as shortly remarked above, but cannot be identified with certainty among fifteen Indo-West Pacific species, eleven of which are known from the Japanese waters. It is without doubt close to *P. minor* ORTMANN and some related species, differing from *P. incisa* (DE HAAN) which has a complete wing with the fused postocular and hepatic teeth. *P. minor* may be briefly characterized by the combination of the features that the branchial and intestinal regions are armed each with a tubercle, each of the gastric and cardiac regions also bears a small protuberance, the postocular tooth is cupped and distinctly isolated from the strong hepatic tooth, and the second and third segments of the antenna are flattened as rightly figured by TAKEDA (1973). The species at hand is readily distinguished from *P. minor* by these features and otherwise differs from *P. similis* RATHBUN, *P. elongata* YOKOYA and *P. marissinica* TAKEDA et MIYAKE also by having no distinct branchial tubercle. As for only the formation of the incomplete wing with the postocular and hepatic teeth indistinctly defined, this species may be nearest to *P. elongata*. Since the specimen at hand is small and parasitized, it would be better to defer from giving a trivial name for this species in spite of some noteworthy differences until the adult specimens are to be available.

Family Portunidae

Genus *Ovalipes* RATHBUN, 1898

Ovalipes iridescens (MIERS, 1886)

Platyonychus iridescens MIERS, 1886, p. 202, pl. 17 (2).

Ovalipes iridescens: YOKOYA, 1933, p. 174; LEENE, 1938, p. 2; SAKAI, 1939, p. 376, pl. 42 (4); GRINDLEY, 1961, Durban Mus. Novit., **6**, p. 129, fig. 2; STEPHENSON and REES, 1968 b, p. 235,

figs. 1 (G), 2 (F), 3 (F), 4 (F), pls. 36 (D), 40 (A), 41 (A), 42 (G); STEPHENSON, 1972 a, p. 130.

St. 12, 2 ♂♂, 1 ♀, 3 juv.

This rare beautiful species was fully described and figured by STEPHENSON and REES (1968 b) and referred to the *iridescens* subgroup which comprises otherwise only *O. molleri* (WARD) and makes up Group B together with the *ocellatus* subgroup. This species is very remarkable in having the striae on the pterygostomial region, a pair of the ovate areas of membraneous cuticule on the posterior part of the carapace and a series of several strong spines on the upper borders of the palm and movable finger. It is readily distinguished from the other representative of this subgroup by having three frontal teeth instead of four. The male first pleopods of both species were figured by the above authors.

There is no difficulty in identifying the juvenile specimens with about 15 mm in carapace breadth, but the anterolateral and frontal spines are proportionally much longer and the membraneous parts of the carapace are not at all developed.

Records of this species are rather few, and it is known from the widely separated localities, viz., South Africa, Victoria in Australia, the Banda Sea, and Tosa Bay in Japan. Recently, the author had a good chance to examine some fresh specimens from off Midway in the Central Pacific and South Africa. They are much larger than, but certainly congeneric with, the East China Sea specimens, so that the geographical range is further extended to the Central Pacific. Its recorded bathymetric range is from 80 to 400 m, and it is always found in the deeper water than *O. punctatus* (DE HAAN).

Ovalipes punctatus (DE HAAN, 1835)

Corystes (*Anisopus*) *punctata* DE HAAN, 1835, p. 44, pl. 2 (1).
Ovalipes punctatus: SAKAI, 1939, p. 374, pl. 42 (3); 1965, p. 112, pl. 50 (3); STEPHENSON and REES, 1968 b, p. 217, figs. 1 (A), 2 (A), 3 (A), 4 (A), pls. 35 (A), 38 (A, B), 42 (A).

St. 13, 12 ♂♂, 8 ♀♀.

STEPHENSON and REES (1968 b) divided the genus *Ovalipes* into two groups, each with two subgroups. This species referred to the *punctatus* subgroups makes up Group A together with the *georgei* subgroup. The subgroup in question contains otherwise *O. australiensis* STEPHENSON et REES, *O. catharus* (WHITE), *O. elongatus* STEPHENSON et REES and *O. trimaculatus* (DE HAAN). Except for the last species which is widely distributed in the cool waters of the Southern Hemisphere, each species has the restricted distribution. This species is readily distinguished from *O. australiensis* by having the finely granulated carapace and from the others by the coarse granulation of the carinae on the outer surface of the palm and the deep striae on the under surface of the palm. The male first pleopods of these species were represented by the above authors, being slightly different from each other in the curvature of the shaft and the detail of the distal part.

Although this species has hitherto been known as having the world-wide distribution, it is now restricted to the Japanese and Chinese waters. It is a common inhabitant of the Japanese waters from Hakodate Bay to Kyushu along both coasts, being obtained by the trawlnet in the shallow water from 15 to 65 m. The present record extended the bathymetric range down to 115 m.

Genus ***Parathranites*** MIERS, 1886

Parathranites orientalis (MIERS, 1886)

Lupocyclus (*Parathranites*) *orientalis* MIERS, 1886, p. 186, pl. 17 (1).
Parathranites orientalis: ALCOCK, 1899 a, p. 17; SAKAI, 1939, p. 376, pl. 43 (a); 1965, p. 113, pl. 51 (1); BARNARD, 1950, p. 148, fig. 29 (i–l); STEPHENSON, 1961, p. 97, figs. 1 (B), 2 (H), pls. 1 (2), 4 (B).

St. 12, 1 ♂.

The genus *Parathranites* is represented by this widely distributed species and two Hawaiian species. Records of occurrences are rather few, but this species is well established due to some important contributions cited above. The male first pleopod is represented by BARNARD (1950) and STEPHENSON (1961).

This species is widely distributed in the Indo-West Pacific waters from Japan through the Malay Archipelago to the east coast of Australia and across the Indian Ocean to South Africa. It is not uncommon in the Japanese waters from Sagami Bay to Kyushu, extending the geographical range northward to off Fukui Prefecture in the Japan Sea. This species is a rather deep water inhabitant, being recorded from 60 to 300 m.

Genus ***Charybdis*** DE HAAN, 1835

Charybdis (***Gonioneptunus***) ***bimaculata*** (MIERS, 1886)

Goniosoma variegatus var. *bimaculata* MIERS, 1886, p. 191, pl. 15 (3).
Gonioneptunus subornatus ORTMANN, 1893, p. 79, pl. 3 (9).
Charybdis (*Gonioneptunus*) *bimaculata*: ALCOCK, 1899 a, p. 69; SHEN, 1932, p. 81, figs. 46, 47, pl. 4 (3); LEENE, 1938, p. 126, figs. 70, 71; STEPHENSON, HUDSON and CAMPBELL, 1957, p. 504, figs. 2 (J), 3 (K), pls. 3 (4), 4 (H), 5 (A).
Gonioneptunus whiteleggei WARD, 1933, p. 380, pl. 23 (1, 2).
Charybdis (*Gonioneptunus*) *africana* SHEN, 1935, p. 405, figs. 1, 2 (a).
Charybdis bimaculata: SAKAI, 1939, p. 410, figs. 10, 11, pls. 45 (3), 82 (2); 1965, p. 120, pl. 58 (4).
Gonioneptunus africanus: BARNARD, 1950, p. 164, fig. 31 (d–i).

St. 13, 1 ♂, 5 ♀♀.

This species may be a monotypical representative of the subgenus *Gonioneptunus* in which the antennal flagellum stands in the upper part of the orbital hiatus, although the validity of *Ch. africana* SHEN from South Africa remains uncertain. This feature characteristic of the subgenus in question is shared with *Ch. padadiana* WARD and the juveniles of *Ch. feriatus* (LINNAEUS) which are referred to the subgenus *Charybdis*,

but the former species known only from an incomplete female was considered to be a juvenile of the certain described species by STEPHENSON (1972 b). The male first pleopod was represented by SHEN (1932), LEENE (1938), SAKAI (1939) and STEPHENSON, HUDSON and CAMPBELL (1957).

This species is one of the commonest portunids in the West Pacific along the continent, Australia and the eastern Indian Ocean, being recorded from 47 to 439 m. In Japan it is commonly found along the entire coasts of Honshu, Shikoku and Kyushu.

Charybdis (*Charybdis*) *miles* (DE HAAN, 1835)

Portunus (*Charybdis*) *miles* DE HAAN, 1835, p. 41, pl. 11 (1).
Charybdis (*Goniosoma*) *miles*: ALCOCK, 1899 a, p. 62; CHOPRA, 1935, p. 486, fig. 13; SHEN, 1937, p. 123, fig. 13.
Charybdis (*Gonioneptunus*) *investigatoris* ALCOCK, 1899 a, p. 70.
Charybdis (*Charybdis*) *miles*: LEENE, 1938, p. 38, figs. 10–13; STEPHENSON, HUDSON and CAMPBELL, 1957, p. 500, figs. 2 (H), 3 (I), pls. 2 (3), 4 (F); STEPHENSON and REES, 1968 a, p. 92, figs. 1 (A, E), 2 (A), pl. 1 (A).
Charybdis miles: SAKAI, 1939, p. 405, pl. 46 (a); 1965, p. 123, pl. 61.

St. 13, 1 juv.

This juvenile specimen with 23.3 mm in carapace breadth agrees well with the figure of the young given by LEENE (1938), differing from the adult in having the narrower carapace with the obtuse frontal and sharp anterolateral teeth. In the more smaller specimen figured by CHOPRA (1935), the frontal teeth may be more obtuse and the first anterolateral tooth is less clearly notched, while in the adult the carapace is rather ovate with the sharp frontal and rather conical anterolateral teeth. The characteristic pigmentation is always distinct even in the juvenile specimens. The male first pleopod is represented by the above authors, STEPHENSON, HUDSON and CAMPBELL (1957) and STEPHENSON and REES (1968 a).

This species referred to the subgenus *Charybdis* is rather commonly known from Japan through the Malay Archipelago to Queensland and then to the Gulf of Oman, its bathymetric range being from 15 to 135 m. In Japan it ranges from Sagami Bay to Kyushu along the Pacific coast.

Family Xanthidae

Genus *Actumnus* DANA, 1851

Actumnus forficigerus (STIMPSON, 1858)

Pilumnus forficigerus STIMPSON, 1858, p. 36; 1907, p. 68, pl. 8 (6).
Actumnus forficigerus: SAKAI, 1939, p. 528, fig. 51 (b), pl. 99 (4); 1965, p. 155, pl. 76 (4); TAKEDA and MIYAKE, 1968, p. 557, fig. 2 (b–d); 1969 a, p. 114, fig. 5 (d–f).

St. 13, 1 ♀.

As mentioned by TAKEDA and MIYAKE (1968), the long silky hairs on the carapace

and chelipeds and the granules of the chelipeds each tipped with a procurved horny spinule are characteristic of this species. The male first pleopod was represented by TAKEDA and MIYAKE (1968, 1969 a), its tip being short and strongly recurved toward the base.

This species is a common inhabitant of the Japanese waters from Sagami Bay to the East China Sea and the Ogasawara Islands. Its bathymetric range is from 35 to 200 m.

Family Goneplacidae

Genus *Carcinoplax* H. MILNE EDWARDS, 1852

Carcinoplax longimana longimana (DE HAAN, 1835)

(Pl. 2, fig. 1; Pl. 3, fig. 1)

Cancer (Curtonotus) longimanus DE HAAN, 1835, p. 50, pl. 6 (1).
Carcinoplax longimanus japonicus: DOFLEIN, 1904, p. 115, pl. 36.
Carcinoplax longimanus: SAKAI, 1939, p. 555, pl. 101; 1965, p. 166, pl. 81; TAKEDA and MIYAKE, 1968, p. 563, fig. 5 (a–e).

St. 13, 5 ♂♂, 14 ♀♀.

This species is commonly trawled up from the fine sandy mud bottom of the Japanese waters from Hakodate Bay to the East China Sea along both coasts, bathymetrically ranging from 30 to 150 m. The changes of the cheliped length following the growth were dealt with by YAMASHITA (1965), and the first and second male pleopods were represented by TAKEDA and MIYAKE (1968). In the Indian Ocean this species has hitherto been recorded from 95 to 110 m in the Gulf of Martaban and the Andaman Sea by ALCOCK (1900), and from 55 to 235 m off South Africa and Portuguese East Africa by STEBBING (1910), BARNARD (1950) and KENSLEY (1969). DOFLEIN (1904) otherwise recorded four young specimens from Great Nicobar Island at the depths of 226 m under a new subspecific name, *C. longimana indica*. According to BARNARD (*op. cit.*), however, the institution of this subspecific name seems scarcely necessary in view of the growth changes.

Recently, two large males from South Africa were brought to the author for identification together with *Ovalipes iridescens* of the Portunidae mentioned elsewhere and some other species. They were directly compared with the males in the present collection. A close comparison of these specimens and the original description and figures of the Indian Ocean subspecies revealed that both populations are distinct from each other probably on the subspecific rank. It is well known in this species that the shape of the carapace is variable according to the developmental stages as well as the male chelipeds, but two males at hand from South Africa are readily distinguished from the Japanese materials by having the carapace seemingly narrower and by that the branchial regions of both sides are rather swollen and form the greatest breadth. In Table 2 are given the measurements concerning the greatest breadth and

Table 2. Measurements (in mm) of some males of *Carcinoplax longimana*. Males from South Africa are indicated by boldface.

	1	2	3*	4**	5†	6	7
Breadth of carapace	52.4	53.3	**56.2**	58.3	**61.5**	61.7	65.5
Length of carapace	40.9	40.4	**45.7**	44.6	**49.3**	48.0	49.7
Breadth/length	1.28	1.32	**1.23**	1.31	**1.25**	1.29	1.32

* Represented in pl. 2, fig. 3.
** Pl. 2, fig. 1; pl. 3, fig. 1.
† Pl. 2, fig. 2; pl. 3, fig. 2.

length of the carapace. The small differences of the ratio between the carapace length and breadth in two South African males seem to be meaning. They are quite well agreeable with the sketch of the half carapace given by BARNARD (*loc. cit.*) and probably congeneric with the original photographs of the Indian Ocean subspecies. In the Japanese population the front is in general not strongly protruded forward as a plate, differing markedly from those photographs in which it is otherwise noteworthy that the orbit is very small and the fingers are deep blackish brown. Even if the notable growth changes occur and the male first and second pleopods are not markedly different from each other, the subspecific name must be now resurrected.

Discussion

The vicinity of the Danjo Islands forms a northern part of the marginal zone of the vast continental shelf in the East China Sea, bearing a characteristic oceanographic condition due to the complex sedimentary and topographical situations. Although this area as well as the adjacent main part of the East China Sea is an important fishing ground, there is no conspicuous report on the distribution and biomass of the benthic animal communities except for a preliminary report on the benthological survey in the Hakuhô Maru Cruise KH–68–2 by HORIKOSHI *et al.* (1971). As regards the knowledge of the offshore carcinological fauna in question, there are only some papers on the crabs by TAKEDA and MIYAKE (1968, 1969 b, c, 1970, 1972), who recorded 107 species of 16 families from the wide range of the East China Sea and by MIYAKE (1936) dealing three species from off the Danjo Islands, and on the caridean shrimps by FUJINO and MIYAKE (1970). It must be otherwise noted that several decapod crustaceans from off the Koshiki-jima and Gotô Islands collected by S. S. Sôyô Maru were included in a voluminous report by YOKOYA (1933), which is one of the important papers to know the general distributions of the decapod crustaceans in the Japanese waters. In addition to a new species of the Raninidae, *Pugettia* sp. and *Rochinia pulchra* of the Majidae and *Ovalipes punctata* of the Portunidae are not found in the above papers. The new species which was described as the ninth species of *Ranilia* with some systematic problems is characteristic in having the degenerated corneae, being indicative of the nature of sea bed.

It is well known that the distributions of marine benthic animals are generally

restricted by the sedimentary and topographical situations and the oceanographical conditions including the water current and depths, and that in certain places the topography may be primarily responsible rather than the oceanography and in some places *vice versa*. While the continental shelf is in general a plateau descending slowly toward the steep marginal slope situated usually at the depths of about 150 m and represented by the shallow water system with the diversified animals and seaweed, as briefly accounted by HORIKOSHI (1970) the deep water system is divided into the bathyal, abyssal and hadal zones with the peculiar faunas. The depth of the boundary between the bathyal and abyssal zones has come to be recognized at the depth of 3,000 m. Based on the plankton the bathyal zone is generally subdivided into two subzones, viz., meso-pelagic and bathy-pelagic zones with some characteristic crustaceans and fishes, their boundary being about 500 to 700 m. On the other hand, it has been also considered to be subdivided into two subzones based on some benthos groups such as the mollusks dealt with by OKUTANI (1968), who mentioned that the 1,000 m-line is considerably significant as the faunal boundary and called the shallower fauna, the archibenthal, and the lower fauna, the abyssal one. According to him, for the zone shallower than 1,000 m the upper faunal boundary seems to lie at around 450 m or

Table 3. List of species obtained.

Species	Stations				
	10	11–1	11–2	12	13
Raninidae					
Ranilia horikoshii sp. nov.				1 ♂	
Latreilliidae					
Latreillia valida DE HAAN				1 ♂, 1 ovig. ♀	
Leucosiidae					
Ebalia tuberculosa (A. MILNE EDWARDS)			1 ♂		
Randallia eburnea ALCOCK					1 ♂
Majidae					
Pugettia sp.			1 juv.		
Rochinia pulchra (MIERS)		5 ♂♂, 7 ♀♀, 1 ovig. ♀	2 ♂♂, 2 ♀♀, 1 ovig. ♀	1 ♀, 1 ovig. ♀	
Portunidae					
Charybdis bimaculata (MIERS)					1 ♂, 5 ♀♀
Ch. miles (DE HAAN)					1 juv.
Ovalipes iridescens (MIERS)				2 ♂♂, 1 ♀, 3 juv.	
O. punctatus (DE HAAN)					12 ♂♂, 8 ♀♀
Parathranites orientalis (MIERS)				1 ♂	
Xanthidae					
Actumnus forficigerus (STIMPSON)					1 ♀
Goneplacidae					
Carcinoplax longimana (DE HAAN)					5 ♂♂, 14 ♀♀

so, as the catch of the mollusks from a depth of 450 m was quite different from those below it. It must be mentioned that PÉRÈS (1967) proposed the subdivisions of the bathyal zone into three faunal subzones.

Considering the present trawling stations in reference to such topographical situations, St. 13 corresponds to the continental shelf plateau, and St. 10, 11 and 12 to the upper part of the slope. The crab samples are summarized in Table 3, and it is at first remarkable that no species was obtained from St. 10 and that the species in common were not found in each of St. 11, 12 and 13 except for *Rochinia pulchra* of the Majidae which was collected from St. 11 and 12.

Six species of four families from St. 13 are all well known, and this fact may indicate that the shelf plateaus down to 100 or 150 m are rather exploited and also that the crabs inhabiting there are in general the shallow water inhabitants with the wide distributions. There is no doubt that these crabs from St. 13 represent the faunal zone distinct from that of the continental slope. On the other hand, as already mentioned elsewhere, although only one majid species is common in St. 11 and 12, both stations probably belong to one faunal zone distinct from that of the shelf plateau as well as from that of the lower slope represented by St. 10. It is notable that *Ovalipes punctatus* of the Portunidae was recorded from St. 13 and *O. iridescens* from St. 12, both indicating the clear contrast about the bathymetrical zonation. Although *Latreillia phalangium* DE HAAN of the Latreilliidae, which is common in the shelf plateau around Japan, is not comprised in the present collection, it may represent another good example of such zonation together with the deeper inhabitant, *L. valida*, which was obtained from St. 12.

On the contrary to the zonation about the bathymetrical distribution mentioned above, the distributions of the crabs are also strongly controlled by the bottom nature, as clearly indicated by *Carcinoplax longimana* of the Goneplacidae from St. 13, which is well known to be restricted to the fine sandy mud. Even if the bottom samples are analyzed, the correlation between the bottom nature and the crab distribution may not be definitely indicated unlike in the case of this species. The trawling operation is reasonably effective only in the sandy, shelly or muddy flats, and in fact the samples obtained are experientially known to be the inhabitants of such flats in spite of the absence of detailed data. The fact that the new species of the Raninidae has the degenerated corneae is noteworthy as a result of the adaptation to the muddy flat. The continental slope is in general said to have rather a hard floor with mixture of stone or rock, being represented by a characteristic fauna. Unfortunately, this problem cannot be definitely discussed at present because of the small collection without detailed data about the bottom nature.

For reference the author examined the other decapod crustaceans obtained together. The specimens are now in the author's disposal, but their numbers are not always agreeable with the records in the field note. The species are as follows.

St. 10. *Nephrops japonicus* TAPPARONE-CANEFRI, 1 ♂—Nephropsidae; *Munida andamanica* ALCOCK, 1 ♀, and *Munida* sp., 1 ♂—Galatheidae; *Parapagurus* sp., 1 ♂—

Parapaguridae.

St. 11–1. *Munida andamanica* ALCOCK, 1 ♀—Galatheidae; *Parapagurus monstrosus* ALCOCK, 2 exs.—Parapaguridae.

St. 11–2. *Parahaliporus sibogae* (DE MAN), numerous exs.—Penaeidae; *Munida andamanica* ALCOCK, 1 ♀, and *Munida* sp., 1 ♀—Galatheidae.

St. 12. *Metapenaeus ensis* (DE HAAN), 1 ♀, *Parahaliporus sibogae* (DE MAN), 10 exs., and *Solenocera depressa* KUBO, 25 exs.—Penaeidae; *Plesionika ensis* (A. MILNE EDWARDS), 10 exs., *P. martia* A. MILNE EDWARDS, 300 exs., *Heterocarpus sibogae* DE MAN, 1 ovig. ♀, and *H. woodmasoni* ALCOCK, 1 ovig. ♀—Pandalidae; *Nephrops japonicus* TAPPERONE-CANEFRI, 1 juv.—Nephropsidae; *Munida andamanica* ALCOCK, 1 ♀—Galatheidae; *Dardanus arrosor* (HERBST), 2 exs., and *Paguristes* aff. *acanthomerus* ORTMANN, 1 ex.—Diogenidae.

St. 13. *Parapenaeus lanceolatus* KUBO, 20 exs.—Penaeidae; *Nephrops thomsoni* BATE, 3 exs.—Nephropsidae; *Ibacus ciliatus* (VON SIEBOLD), 1 ex.—Scyllaridae.

A male and a female of *Munida* sp. from St. 10 and 11–2 represent together a single species. Three females of *Munida andamanica* from St. 11–1, 11–2 and 12, or three of four specimens obtained, are infested each by a rhizocephalid, and otherwise three of ten specimens of *Parahaliporus sibogae* from St. 12 are heavily deformed due to the infection by bopyrids.

Among these samples, the penaeid prawn, *Parahaliporus sibogae*, which has a short rostrum and the enormously long antennal flagellum, was the most dominant in number, more than 600 specimens being captured at St. 11–2 and ten at St. 12. The latter station also yielded 300 specimens of the pandalid prawn, *Plesionika martia*, among of which ten specimens identified as *P. ensis* were found. Although the specimens of *Munida andamanica* are small in number, they were obtained from all the stations of the so-called continental slope. This species seems to be characteristic in the association with a species of the same genus in St. 10 and 11–2, even if it cannot be definitely said that both species cohabit. They share at least the similar habit and habitat, and the same is also said on two cases of the pandalid prawns, *Plesionika martia* and *P. ensis*, and *Heterocarpus sibogae* and *H. woodmasoni*. Finally, it is briefly mentioned that two species of the Nephropsidae which are commercially important, *N. japonicus* from the deep water and *N. thomsoni* from the shallow water, may indicate the similar condition as two crab species of *Ovalipes*, representing the zonation about the bathymetrical distribution.

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Explanation of Plates 1–3

Plate 1

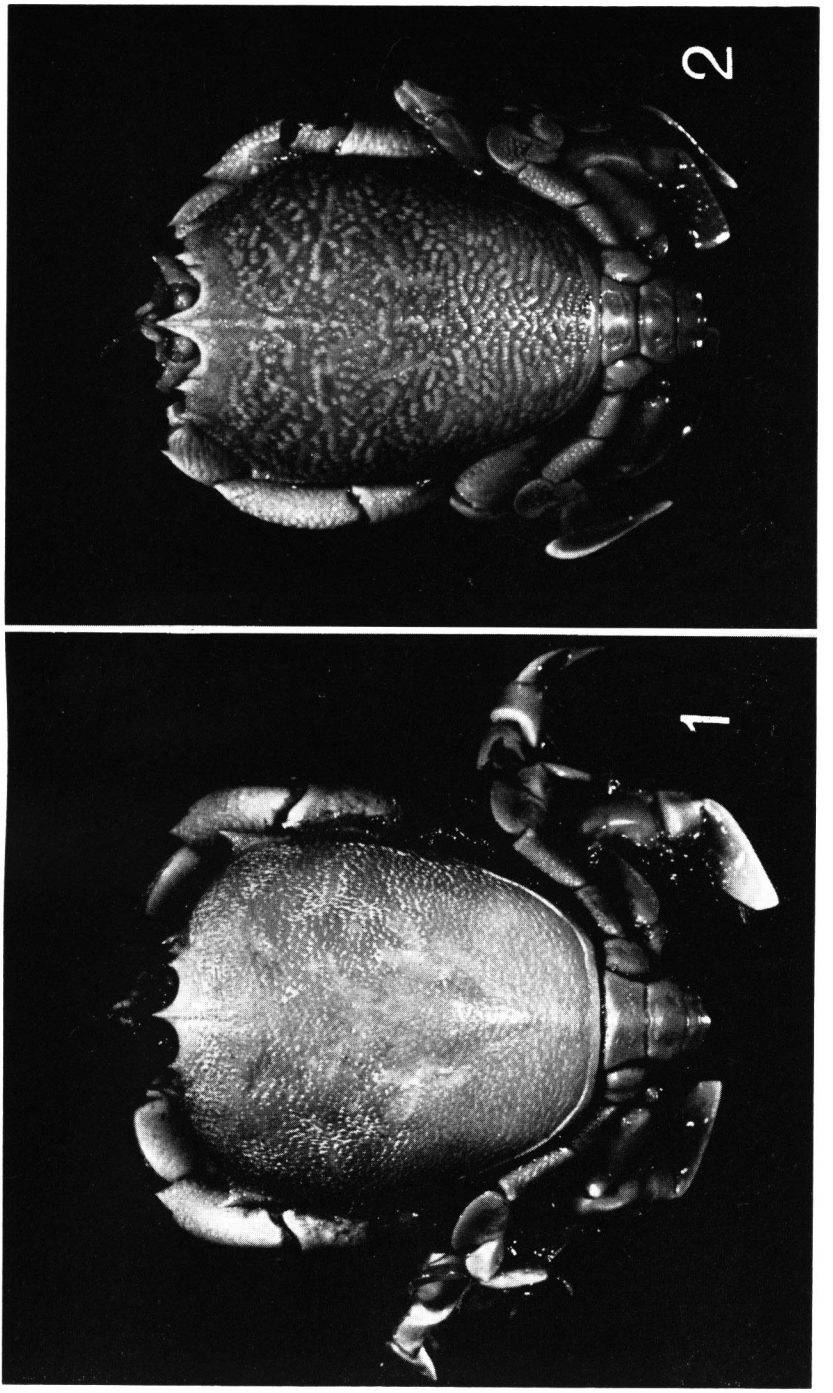
Fig. 1. *Ranilia horikoshii* sp. nov., ♂, holotype, from St. 12. 20.3×24.3 mm.
Fig. 2. *Ranilia orientalis* SAKAI, ♀, from Okinawa. 17.5×23.5 mm.

Plate 2

Fig. 1. *Carcinoplax longimana longimana* (DE HAAN), ♂, from St. 13. 58.3×44.6 mm.
Figs. 2, 3. *Carcinoplax longimana indica* DOFLEIN, ♂♂, from South Africa. 2, 61.5×49.3 mm; 3, 56.2×45.7 mm.

Plate 3

Fig. 1. *Carcinoplax longimana longimana* (DE HAAN), ♂ represented in Pl. 2, fig. 1, enlarged.
Fig. 2. *Carcinoplax longimana indica* DOFLEIN, ♂ represented in Pl. 2, fig. 2, enlarged.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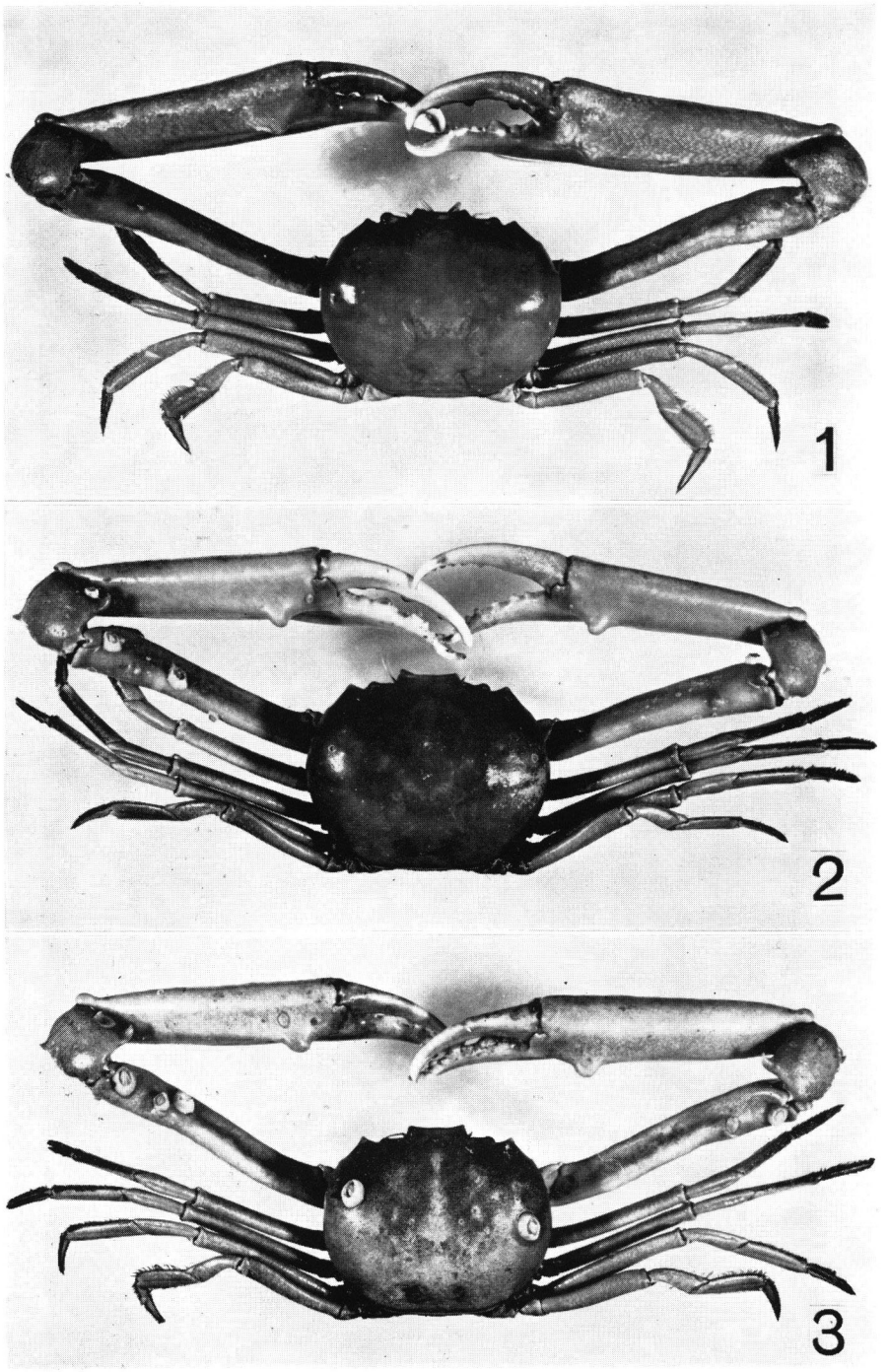
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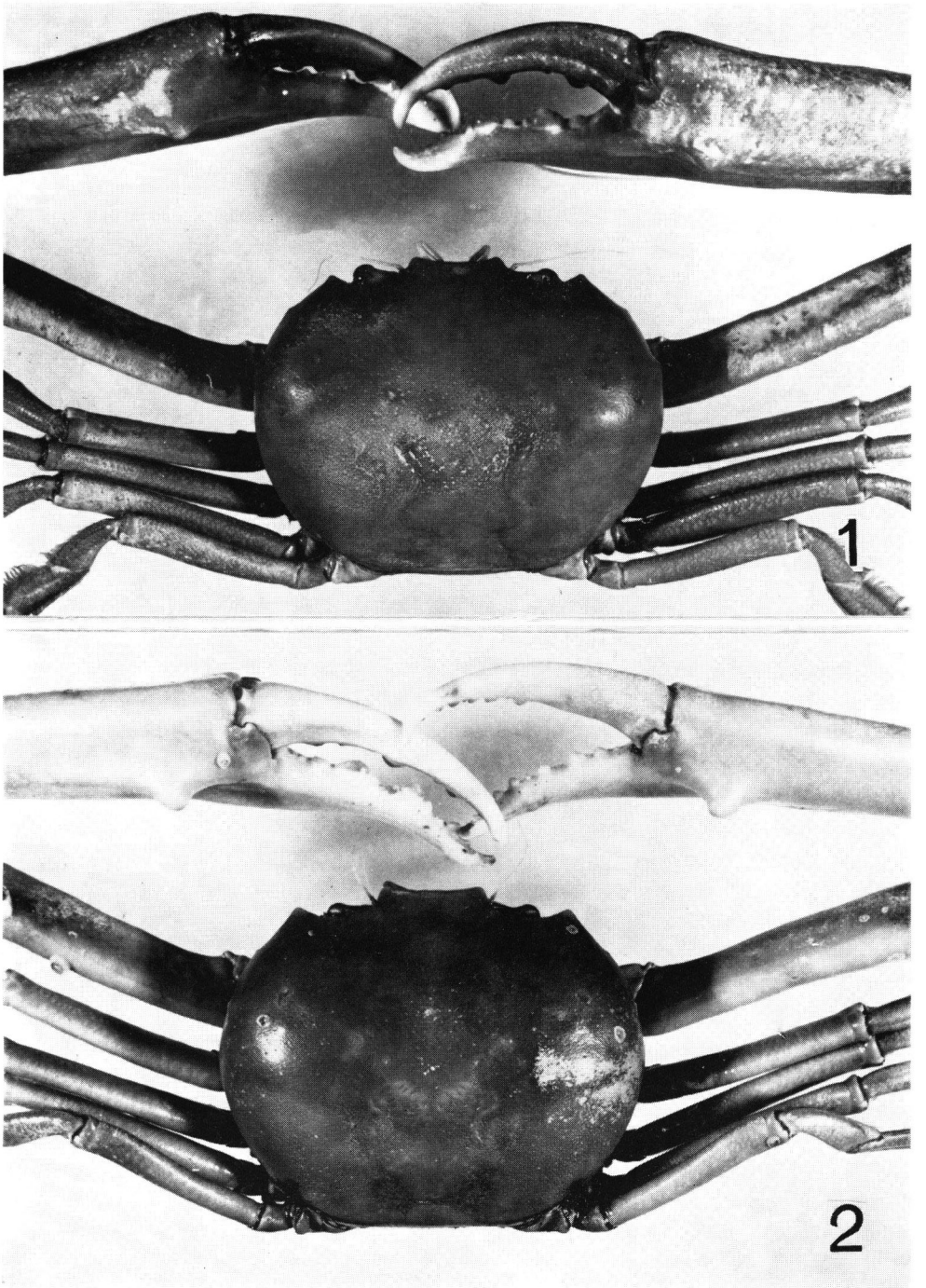
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