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IX. A Small Collection made at Kushimoto and Koza, the Kii Peninsula

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Coral-inhabiting Crabs of the Family Haplocarcinidae from Japan
IX. A Small Collection made at Kushimoto and Koza, the Kii Peninsula

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Mr. Seiji NAGAI, an amateur collector in Wakayama Prefecture, kindly provided us with twenty-five specimens of the Haplocarcinidae collected at Kushimoto and Koza of the southern Kii Peninsula, Southwest Japan. They were referred to seven species of five genera, viz., *Cryptochirus coralliodytes* HELLER, a new species of *Cryptochirus*, *Favicola rugosa* (EDMONDSON), a new species of *Favicola*, *Pseudocryptochirus crescentus* (EDMONDSON), *Hiroia boissoni* (FIZE et SERÈNE) and *Fizesereneia stimpsoni* (FIZE et SERÈNE). These type-specimens of the new species are now preserved in the National Science Museum, Tokyo (NSMT).

Before going further, we wish to express our gratitude to Mr. S. NAGAI who kindly placed the specimens at our disposal for study. The junior author's cordial thanks are due to Dr. Ryôsuke ISHIKAWA of the Tokyo Metropolitan University for his continuous encouragement throughout the series of this study.

Genus *Cryptochirus* HELLER, 1861

Cryptochirus coralliodytes HELLER, 1861

Cryptochirus coralliodytes [sic] HELLER, 1861a, p. 19.

Cryptochirus coralliodytes HELLER, 1861b, p. 370, pl. 4 (33-39); HIRO, 1937, pp. 140-143, 147, 150-153, figs. 5, 6, pls. 4 (2, 3), 6 (7-9); UTINOMI, 1944, pp. 697-729, figs. 5 (B), 6 (A), 7 (A, D), 9, 11 (A, B), 12 (A), 13 (A), 15 (A, E), 16 (A, B), pls. 3 (5, 6), 4 (1, 2); FIZE & SERÈNE, 1957, p. 31, figs. 4, 5 (A, E), pls. 1 (3-6), 2 (1-3), 10 (A), 14 (A-H); SERÈNE, 1962, p. 31, figs. 1 (f), 2 (f), 3, 4 (a-c), 5 (H, h, L); SAKAI, 1976, p. 684, pl. 235 (4); TAKEDA & TAMURA, 1980b, p. 48, pl. 2. [lit.].

Material examined. Kushimoto, Wakayama Pref.; 4 ovig. ♀♀ (6.0×8.0, 5.1×6.9, 4.1×5.6, 4.4×5.6 mm), 1♂ (2.9×4.5 mm); Aug. 6-8, 1979.

Host. Many species of the Faviidae and *Merulina laxa* of the Merulinidae are known as the host corals. The specimens dealt herewith were collected from two unidentified species of the Faviidae.

Distribution. The type-locality is the Red Sea, and the geographical range is from South Africa to the Polynesia, Micronesia and Japan. In Japanese waters it is very common in the coral reefs of the Ryukyu and Ogasawara Islands, extending its range northward to Sagami Bay. Its distribution belongs to the typical Indo-West Pacific pattern, but there is no definite record from Australia and the Malay Archipelago.

1) Museum Associate

Cryptochirus grandis sp. nov.

[New Jap. name: Ô-kebuka-sango-yadorigani]

(Fig. 1; Pl. 1)

Description of holotype. Carapace much longer than broad and subquadrangular or rather elliptical, its anterior part being declivous obliquely downward; dorsum moderately convex as a whole and covered with short setae and conical granules which are spiniform on anterior half; gastric region weakly convex dorsally and defined anterolaterally by a very shallow furrow at each side, its posterior part being also shallowly separated from branchial region; hepatic region separated from branchial region by a shallow furrow, the outer end of which reaches to lateral border of carapace and forms a small notch; branchial region indistinctly subdivided into three parts; each anterolateral part of cardio-intestinal region separated from branchial region by a short deep furrow.

Front moderately concave and armed with spinules; internal orbital angle obtuse and not protruded beyond external orbital angle; front-orbital border narrower than posterior border of carapace and about two-fifths the greatest breadth of carapace; supraorbital border deeply concave and armed with spinules, eyestalk being visible from above. Basal segment of antennule well developed and protruded beyond external orbital angle and eyestalk, being armed with several spinules along margins and on upper surface. Anterior part of lateral border of carapace armed with several spines. Third maxilliped as figured.

Both chelipeds rather slender and equal in size and shape; merus along its upper border a little shorter than twice its height; upper border of palm a little shorter than twice its height and longer than movable finger; fingers entire on cutting edges and tips scarcely crossing each other. First ambulatory leg longer and stouter than cheliped; merus distinctly compressed, and its upper distal end protruded upward; both borders of merus and upper borders of carpus and propodus fringed with dense longish setae and granules. Second leg shorter than the first and generally resemble the first. Third leg the shortest. Fourth leg a little shorter than the first and almost cylindrical, with sparse short setae.

Notes on allotype and paratypes. In the allotype male the left first walking leg is in the course of regeneration. The allotype male is smaller than, and considerably different from the holotype female. The internal orbital angle is strongly produced so as to be a sharp spine and almost attaining the same level as the external orbital angle. The median part of the gastric region is armed with a longitudinal row of large spines, which is accompanied with two large spines on each side. The anterior part of the lateral border of carapace is armed with three groups of large spines, which are deeply and widely separated from each other. Both chelipeds equal in size and shape, being comparatively stouter than those of female. Four walking legs are generally resemble each other and become shorter posteriorly. The abdomen is elongate and composed of seven segments, the first and second segments being visible

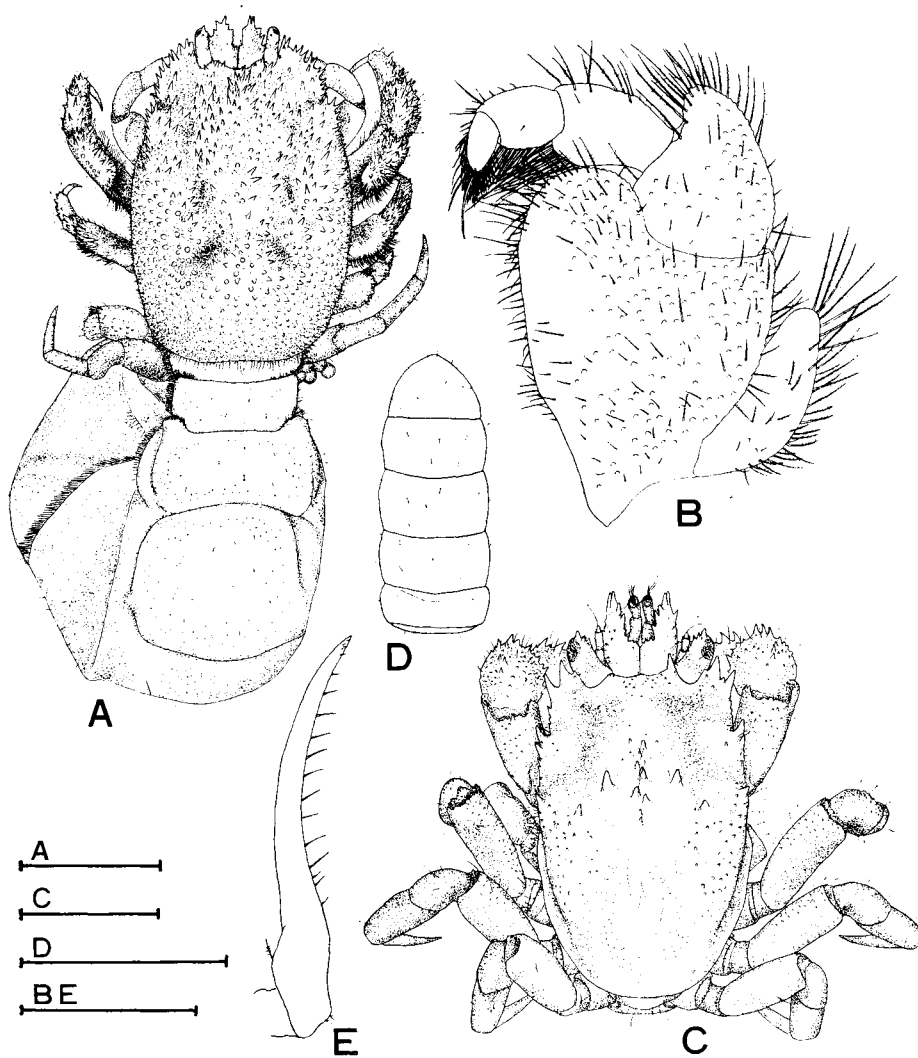


Fig. 1. *Cryptochirus grandis* sp. nov., ovig. ♀, holotype, NSMT-Cr 8551 (figs. A, B) and ♂, allotype, NSMT-Cr 8552 (figs. C-E).— A, C, entire animal; B, left third maxilliped; D, distal six segments of abdomen; E, left first pleopod in abdominal view. Scale for A=5 mm, B and E=1 mm, scales for C and D=2 mm.

in dorsal view. First pleopod is rather slender and fringed with sparse longish setae at its external surface.

The paratype three females are smaller than the holotype. The small notch on the anterior part of the lateral borders of carapase is rather indistinct.

Material examined. Kushimoto, Wakayama Pref., 5 m deep; 3 ovig. ♀♀ (holo-

type, NSMT-Cr 8551, 7.9×11.2 mm; paratypes NSMT-Cr 8553, 8554, 7.3×10.5 , 6.8×9.9 mm), 1 ♀ (paratype, NSMT-Cr 8555, 4.8×6.7 mm), and 1 ♂ (allotype, NSMT-Cr 8552, 3.0×4.8 mm); Aug. 6, 1979.

Host coral. The specimens were collected from *Platygyra gigantea* (YABE et SUGIYAMA) [Jap. name: Futomizo-nousango] of the family Faviidae.

Remarks. The female of the new species is very close to *C. coralliodytes rubrolineata* FIZE et SERÈNE, 1957, which was originally defined as a variety of *C. coralliodytes*. In reality it is almost impossible to show the definite differences without direct comparison or close reference to the original description and figures, but the male of the new species is apparently different from *C. coralliodytes* or its subspecies. In the new species the anterior part of the lateral border of carapace is armed with three groups of large spines and the dorsum is armed with a few number of large spines. On the contrary, in *C. coralliodytes* and its subspecies the anterior part of the lateral border is armed with spines of variable size without interruption, and there is no large spine on the dorsum at all.

Favicola rugosa (EDMONDSON, 1933)

Cryptochirus rugosus EDMONDSON, 1933, p. 6, fig. 1, pl. 1.

Troglocarcinus (Favicola) rugosus: FIZE & SERÈNE, 1957, p. 85, figs. 21, 22, 23 (A), 25 (A), 27 (A-C), pls. 5 (7), 6 (1-3), 10 (D, E); SERÈNE, 1962, p. 30, figs. 1 (c, d), 2 (c, d), 5 (A, a).

Favicola rugosa: TAKEDA & TAMURA, 1981a, p. 43, fig. 1, pl. 1.

Material examined. Kushimoto, Wakayama Pref.; 6 ovig. ♀♀ ($3.7 \times 5.6 \sim 5.5 \times 7.9$ mm), and 1 ♂ (3.1×5.1 mm); Aug. 6~8, 1979.

Host. All the host corals hitherto been recorded belong to the family Faviidae. The specimens dealt herewith were also collected from an unidentified species of the same family from littoral zone to ca. 3 m deep.

Distribution. This species is known from Washington, Palmyra and Rarotonga Islands in the Central Pacific, Viet-Nam, and Japan. In Japanese waters it was recorded by us (1981a) from the Ryukyu and Ogasawara Islands, and the Cape Muroto, Kôchi Prefecture.

Favicola plana sp. nov.

[New Jap. name: Biwagaraishi-yadorigani]

(Fig. 2; Pl. 2)

Description of holotype. Carapace a little longer than broad and subquadrangular, its breadth being about five-sixths of its length; anterior part of carapace moderately declivous obliquely downward; dorsum moderately convex as a whole and covered with longish setae and granules; gastric region convex dorsally, being restricted antero-laterally by an oblique depression at each side; depressions of both sides combined to be Λ at anterior median part of gastric region just behind frontal margin; median

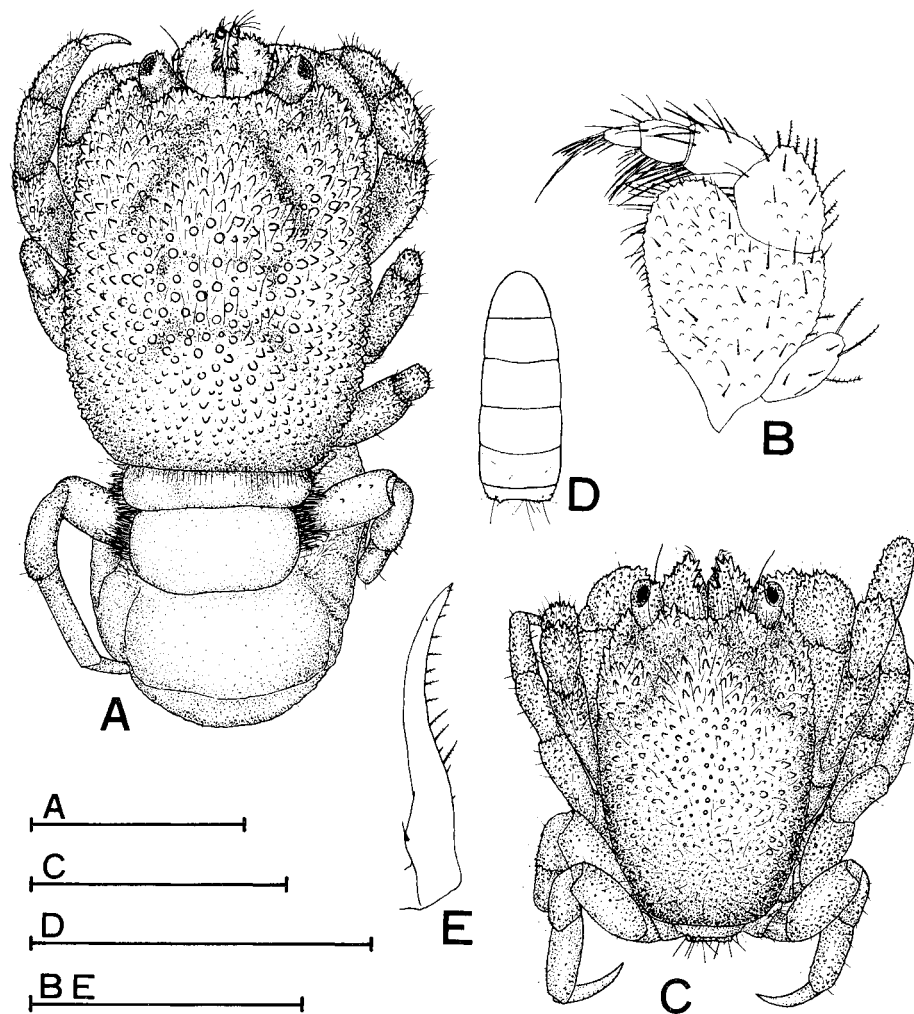


Fig. 2. *Favicola plana* sp. nov., ♀, holotype, NSMT-Cr 8556 (figs. A, B) and ♂, allotype, NSMT-Cr 8557 (figs. C-E).— A, C, entire animal; B, left third maxilliped; D, distal six segments of abdomen; E, left first pleopod in abdominal view. Scales for A, C, and D=2 mm, scale for B and E=1 mm.

part of gastric region separated from branchial region by a very shallow oblique furrow at each side; cardio-intestinal region separated from gastric region by a transverse shallow furrow.

Front moderately concave and armed with spinules; internal orbital angle obtuse and not protruded beyond external orbital angle; front-orbital border nearly as long as posterior border of carapace and about three-fifths of greatest breadth of carapace; supraorbital border concave and armed with spinules, basal part of eyestalk being

visible from above. Basal segment of antennule well developed and exceeded beyond external orbital angle and eyestalk, being armed with several spinules along margins and on upper surface.

Lateral border of carapace armed with granules except for short part near posterior end. Third maxilliped as figured.

Both chelipeds equal in size and shape, not stout; merus along its upper border nearly as long as twice its height; upper border of palm a little longer than its height, but shorter than movable finger; fingers entire on cutting edges.

First ambulatory leg a little longer and stouter than cheliped; both borders of merus and upper borders of carpus and propodus covered with longish setae and granules. Second leg shorter than the first and generally resembles the first. Third leg the shortest. Fourth leg nearly as long as the first, being almost cylindrical with sparse short setae. Abdominal appendages with three pairs; the first biramous, with a rudimentary exopod at its base; the second and third uniramous.

Notes on allotype. The allotype male is much smaller than the holotype female. The dorsum is more indistinctly demarcated. Both chelipeds are equal in size and shape, comparatively stouter than those of female. The abdomen is elongate and composed of seven segments, two proximal segments being visible in dorsal view. The first pleopod is rather slender and fringed with sparse longish setae at its external surface.

Material examined. Koza, Wakayama Pref., 30 m deep; 1 ♀ (holotype, NSMT-Cr 8556, 2.9 × 3.6 mm) and 1 ♂ (allotype, NSMT-Cr 8557, 1.7 × 2.5 mm).

Host coral. The specimens were collected from *Cyathelia axillaris* (ELLIS et SOLANDER) [Jap. name: Futari-biwagaraishi] of the family Oculinidae.

Remarks. The shape of the male abdomen and the feature of the female abdominal appendages show without doubt that this species belongs to the genus *Favicola*. However, the carapace of this species is more depressed than those of the other species in the same genus.

In addition, this species is easily distinguished by the different nature of sculpture of the carapace and the comparatively wide and quadrated carapace of female.

Pseudocryptochirus crescentus (EDMONDSON, 1925)

Cryptochirus crescentus EDMONDSON, 1925, p. 33, fig. 6, pl. 1 (B, C); 1933, p. 16, pl. 4 (C, D).

Cryptochirus granulatus SHEN, 1936, p. 23, pl. 2.

Pseudocryptochirus crescentus: UTINOMI, 1944, pp. 697–729, figs. 5 (D), 6 (D), 7 (C, F), 10, 11 (H), 12 (C), 14 (B), 15 (C, G), 16 (C, D), pls. 4 (7–10), 5 (3); GARTH & HOPKINS, 1968, pp. 40–46, figs. 1, 2; TAKEDA & TAMURA, 1981b, p. 17, fig. 1, pl. 2.

Troglocarcinus (Troglocarcinus) crescentus: FIZE & SERÈNE, 1957, p. 62, figs. 10, 11 (C, D), 12 (B), pls. 3 (4–7), 5 (2), 11 (B).

Material examined. Kushimoto, Wakayama Pref., 10 m deep; 1 ovig. ♀ (2.6 × 3.2 mm) and 1 ♂ (1.5 × 1.8 mm); Oct. 26, 1979.

Host. The host corals are many species of *Pavona* of the Agariciidae, and the

specimens dealt herewith were also collected from an unidentified species of *Coscinastrea* of the same family.

Distribution. This species is known from Johnston and Christmas Islands in the Central Pacific, Viet-Nam, Indonesian waters, and Japan, and Clipperton Island and the Baja California in the East Pacific. In Japanese waters it is not uncommon in the Ryukyu Islands and also known from the Cape Manazuru in Sagami Bay.

***Hiroia boissoni* (FIZE et SERÈNE, 1955)**

(Fig. 3; Pl. 3)

Troglocarcinus boissoni FIZE & SERÈNE, 1955a, p. 376, fig. 1 (D).

Troglocarcinus (Troglocarcinus) boissoni: FIZE & SERÈNE 1957, p. 69, figs. 11 (E), 13-15, 20 (A, B); pls. 4 (1, 2), 5 (4), 12 (C), 16 (A-D).

Description. Carapace much longer than broad and subquadrangular; anterior part of carapace being moderately declivous obliquely downward; dorsum moderately convex as a whole and covered with setae and granules which are more or less spiniform on anterior part; gastric region Λ -shaped anteriorly, convex dorsally, being confluent posteriorly with cardio-intestinal region and separated from branchial region by a furrow at each side.

Front moderately concave and armed with spinules; inner half of supraorbital border swollen upward; front-orbital border about half as long as the posterior border of carapace and about two-fifths the greatest breadth of carapace; supraorbital border concave and armed with spinules. Basal segment of antennule well developed and exceeded beyond external orbital angle and eyestalk, being armed with several spinules along margins and on upper surface. Third maxilliped as figured.

Both chelipeds equal in size and shape, rather slender; merus along its upper border a little longer than twice its height; upper border of palm a little longer than its height and nearly as long as movable finger; both fingers each with an indistinct blunt tooth at proximal part of cutting edge. First ambulatory leg nearly as long as cheliped; merus distinctly compressed and upper border shorter than twice its height; both borders of merus and upper borders of carpus and propodus covered with dense longish setae and granules. Second leg shorter than the first and generally resemble the first. Third leg the shortest. Fourth leg a little longer than the first and almost cylindrical with sparse short setae and small granules.

Male. Much smaller than female. Lateral borders of carapace strongly convergent posteriorly, and internal orbital angle armed with a spine. Dorsum more sparsely covered with granules. Both chelipeds equal in size and comparatively stouter than those of female. Abdomen suboval and composed of seven segments, first and second segments being visible in dorsal view. First pleopod rather slender and fringed with sparse longish setae at its external surface.

Material examined. Kushimoto, Wakayama Pref., 10 m deep; 1 ovig. ♀ (4.8 × 7.1 mm) and 1 ♂ (2.6 × 3.6 mm); Aug. 7, 1979.

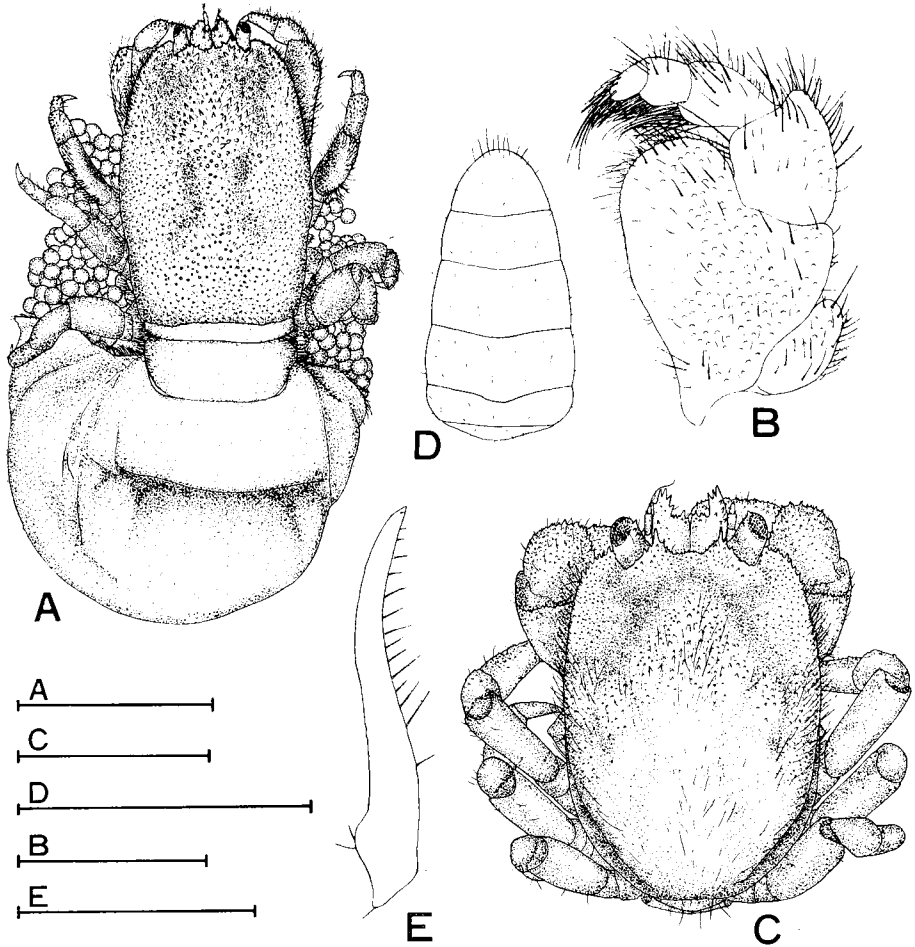


Fig. 3. *Hiroia boissoni* (FIZE et SERÈNE), ovig. ♀ (figs. A, B) and ♂ (figs. C-E).— A, C, entire animal; B, left third maxilliped; D, distal six segments of abdomen; E, left first pleopod in abdominal view. Scale for A=5 mm, scales for C and D=2 mm, B and E=1 mm.

Host coral. The host corals originally recorded are *Echinophyllia aspera* (ELLIS et SOLANDER) [Jap. name: Kikka-sango] and *Oxypora lacera* VERRILL [Togehana-sango] of the family Pectinidae, *Merulina ampliata* (ELLIS et SOLANDER) [Sazanami-sango] and *M. vaughani* VAN DER HORST of the Merulinidae. Our specimens were also collected from *E. aspera*.

Remarks. It is not difficult to identify this species due to having the characteristic sculpture and contour of carapace. It may be remarked that the lateral border of carapace in the specimens at hand is reasonably less convex than in the original figure.

Distribution. Hitherto known from Nhatrang, Viet-Nam.

Fizesereneia stimpsoni (FIZE et SERÈNE, 1955)

(Fig. 4; Pl. 4)

Troglocarcinus stimpsoni FIZE & SERÈNE, 1955b, p. 380, fig. 1 (C).*Troglocarcinus (Mussicola) stimpsoni*: FIZE & SERÈNE, 1957, p. 116, fig. 31 (E), pls. 5 (14), 7 (3, 4), 12 (D), 18 (E-H).

Description. Carapace moderately depressed dorso-ventrally, subquadrangular and longer than broad; anterior part of dorsum almost completely divided into two large concave, smooth parts side by side by a median longitudinal ridge; posterior margin of each side of concavity almost parallel to posterior border of carapace, being fringed with a few spinules and dense soft hairs; posterior part of dorsum flattened and covered with sparse setae and minute granules; cardio-intestinal region anterolaterally restricted by a short furrow at each side.

Front shallowly concave and fringed with spinules and setae, bearing a low median projection. Internal orbital angle not protruded beyond external orbital angle; supraorbital border deeply concave and armed with spinules. Front-orbital border narrower than posterior border of carapace and about one-half the greatest breadth of carapace. Basal segment of antennule well developed and exceeded beyond external orbital angle and eyestalk, being armed with several spinules along margin and on upper surface. Third maxilliped as figured.

Both chelipeds rather slender, equal in size and shape, and hidden under carapace for their most parts in natural position; merus along its upper border nearly as long as twice its height; upper border of palm a little longer than its height and nearly as long as movable finger; both fingers each with an indistinct blunt tooth at proximal part of cutting edge and tips scarcely crossing each other.

First ambulatory leg longer and stouter than cheliped; merus compressed and not longer than twice its height; both borders of merus and upper borders of carpus and propodus covered with dense longish setae and granules. Second leg shorter than the first and generally resemble the first. Third leg the shortest. Fourth leg a little shorter than the first and almost cylindrical with sparse short setae and small granules. Abdominal appendages with three pairs, the first biramous with a rudimentary exopod, and the second and third uniramous.

Material examined. Kushimoto, Wakayama Pref., ca. 2 m deep; 1♀ (3.1×4.2 mm); Aug. 8, 1979.

Host coral. The host coral recorded by the original authors is *Acanthastrea echinata* (DANA), and our specimen was also collected from an unidentified species of the same genus.

The opening of pit is elliptic. The pit is not deep, about one and a half times as long as the carapace.

Remarks. This species is different from the other two representatives of the genus, *F. heimi* (FIZE et SERÈNE, 1955) and *F. ishikawai* TAKEDA et TAMURA, 1980, in the structure of the concavities of carapace. In this species the concavities are almost

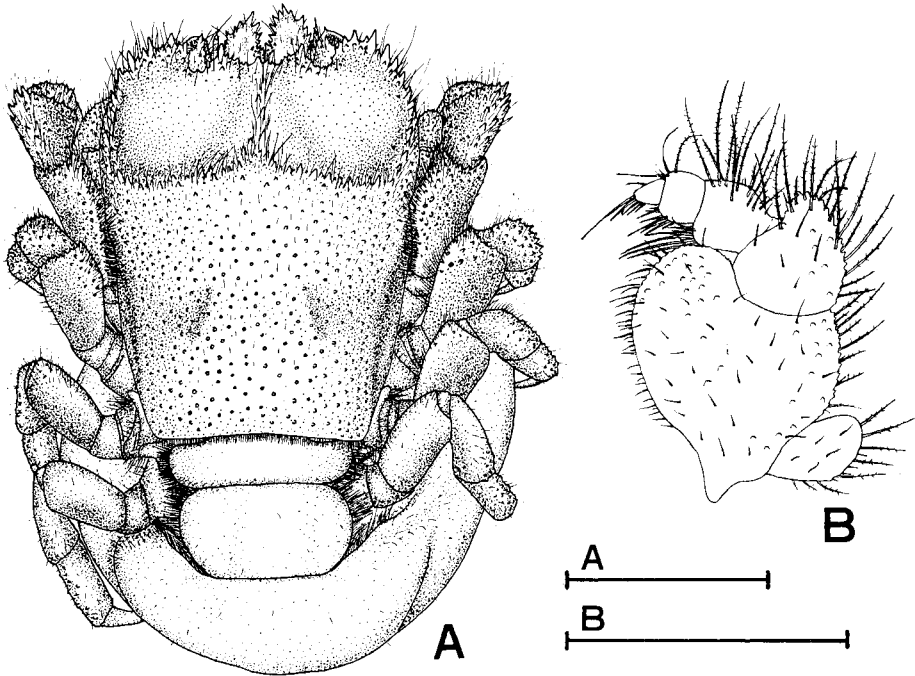


Fig. 4. *Fizesereneia stimpsoni* (FIZE et SERÈNE), ovig. ♀.— A, entire animal; B, left third maxilliped. Scale for A=2 mm, B=1 mm.

perfectly divided into two by a median ridge, but in the two species in question the concavities are rather imperfectly divided. In addition, in *F. heimi* the carapace is roughly hexagonal and the widest at the posterior ends of the concavities of both sides, while the carapace of this species is nearly subquadrangular and regularly narrowing posteriorly.

Distribution. Hitherto known from Nhatrang, Viet-Nam.

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Explanation of Plates 1-4**Plate 1**

Figs. A-D. *Cryptochirus grandis* sp. nov.— A, B, ovig. ♀, paratype (NSMT-Cr 8554). Breadth 6.8 mm, length 9.9 mm. C, D, ♂, allotype (NSMT-Cr 8552). Breadth 3.0 mm, length 4.8 mm.

Plate 2

Figs. A-D. *Favicola plana* sp. nov.— A, B, ♀, holotype (NSMT-Cr 8556). Breadth 2.9 mm, length 3.6 mm. C, D, ♂, allotype (NSMT-Cr 8557). Breadth 1.7 mm, length 2.5 mm.

Plate 3

Figs. A-D. *Hiroia boissoni* (FIZE et SERÈNE).— A, B, ovig. ♀. Breadth 4.8 mm, length 7.1 mm. C, D, ♂. Breadth 2.6 mm, length 3.6 mm.

Plate 4

Figs. A-D. *Fizesereneia stimpsoni* (FIZE et SERÈNE).— A, B, ♀ staying in pit of *Acanthastrea* sp. C, D, the same ♀. Breadth 3.1 mm, length 4.2 mm.