

Some Records of Offshore Crabs (Crustacea, Decapoda, Brachyura) from the Ryukyu Islands

I. Families Cyclodorippidae, Homolidae, Raninidae, Leucosiidae, Inachidae and Parthenopidae

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Abstract Shallow- to deep-water crabs dredged by the late Mr. Seiji Nagai at the sea around the Ryukyu Islands, southwestern Japan, are recorded with some taxonomical notes and photographs. Of 22 species of the families Cyclodorippidae, Homolidae, Raninidae, Leucosiidae, Inachidae and Parthenopidae dealt with in the first part, *Ketamia nagaii* of the Cyclodorippidae is described as new to science. *Philyra* aff. *rectangularis* Miers, 1884 (Leucosiidae), and *Hyastenus subinermis* Zehntner, 1894 (Inachidae) are new to Japanese waters, and otherwise, *Krangalangia spinosa* (Zarenkov, 1970) (Cyclodorippidae) replaces the former record of *K. rostrata* (Ihle, 1916) from Japanese waters.

Key words: Shallow-water crabs, deep-water crabs, new species, crabs new to Japanese waters, Ryukyu Islands, West Pacific.

Introduction

In the Wakayama Prefectural Museum of Natural History is a large collection of crabs collected by the late Mr. Seiji Nagai himself around Japan. The preliminary list of the species was published by Marumura and Kosaka (2003), and the detailed taxonomic studies on the collection are still under way (Marumura and Takeda, 2004, 2009, 2012, 2015; Takeda and Marumura, 2010, 2014, 2019), but otherwise, a collection of shallow- to deep-water crabs from off some islands in the Ryukyu Islands (Fig. 1) has been donated by him to the Department of Zoology, the National Museum of Nature and Science, Tokyo (NSMT). They are preserved in 70% ethanol in good condition and important to depict the offshore carcinological fauna of the Ryukyu Islands.

Therefore, the individuals of all the species in the collection are recorded, with collection data, taxonomic notes, geographical and bathymetrical ranges in the present paper.

In the following lines, 22 species of the families Cyclodorippidae, Homolidae, Raninidae, Leucosiidae, Inachidae and Parthenopidae are dealt with as the first part of this study. One species of the Cyclodorippidae, *Ketamia nagaii*, is described as new to science, and *Philyra* aff. *rectangularis* Miers, 1884 (Leucosiidae) and *Hyastenus subinermis* Zehntner, 1894 (Inachidae) are new to Japanese waters. *Krangalangia spinosa* (Zarenkov, 1970) of the Cyclodorippidae replaces the former record of *Krangalangia rostrata* (Ihle, 1916) from Japanese waters.

The sizes of the carapaces are given in millimeter for all the specimens, and in some species the carapace breadth is measured with the lateral spines, tubercles or teeth and the carapace length

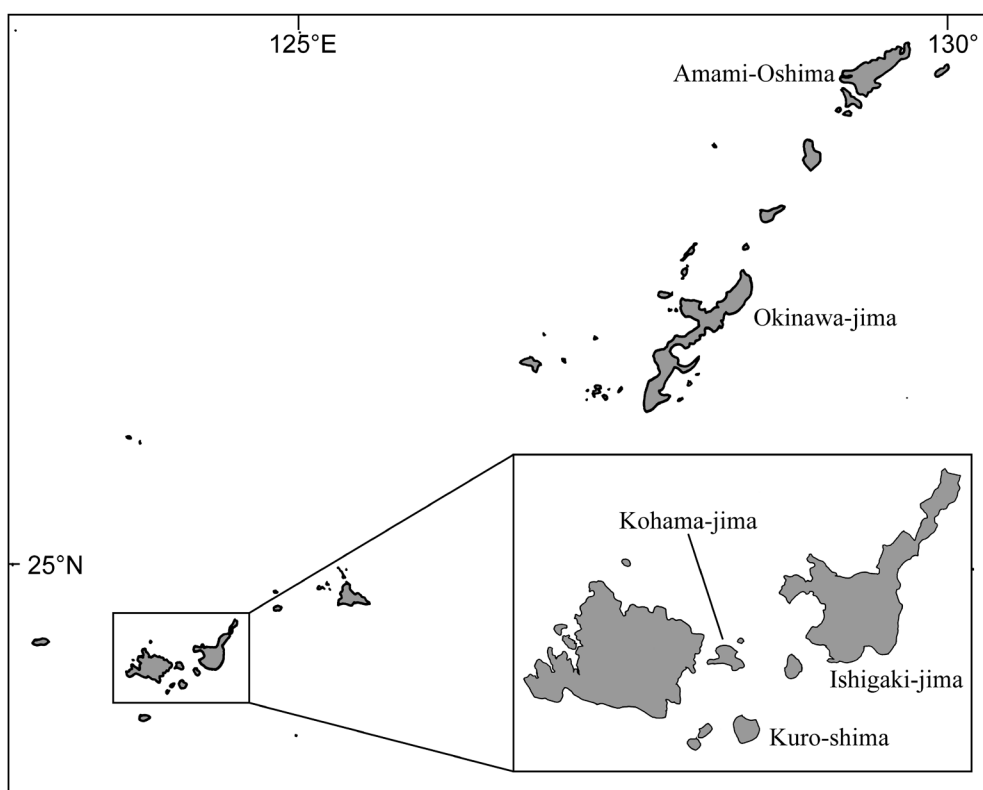


Fig. 1. Map of the Ryukyu Islands, with the enlarged Yaeyama Group.

with the rostrum. The breadth and length of the carapace are abbreviated as cb and cl, respectively, the length of the rostrum as rl, and the male first and second gonopods as G1 and G2, respectively.

Records of the Species

Family CYCLODORIPPIDAE

Ketamia handokoi Tavares, 1993

[Japanese name: Tavares-mame-heike]

(Figs. 2, 4C–D)

Material examined. West off Amami-Oshima I., 300m deep, 2-IV-1989, 1 ♂ (cb 7.7 × cl 7.5mm), NSMT-Cr 27387, 1 ♀ (cb 11.6 × cl 10.9mm), dead shell without abdomen, NSMT-Cr 27388.

Remarks. The original figures of the holotype male (10 × 11 mm) from Kai Island seem to

be somewhat schematic and the description is rather short and not thorough (Tavares, 1993: 303, fig. 17). Both specimens at hand, the smaller male and larger female (dead shell), differ from the holotype in the seemingly wider, subcircular appearance of the carapace. However, it is difficult to find the differences at the specific level in the carapace dorsal granulation and areolation and the frontorbital formation. The following is the descriptive notes on the specimens from the Ryukyu Islands for the subsequent identification.

Carapace (Fig. 2A, D) subcircular in general outline, covered with minute granules of equal size and short soft hairs; mesogastric, cardiac and intestinal regions demarcated by a pair of longitudinal submedian shallow furrows; protogastric region hardly distinct, with an oblique furrow branched from posterior part of longitudinal furrow to a notch of supraorbital margin. Frontorbital region weakly raised dorsally as a whole,



Fig. 2. *Ketamia handokoi* Tavares, 1993. A–C: Male (cb $7.7 \times$ cl 7.5 mm), NSMT-Cr 27387. D: Dead shell of female (cb $11.6 \times$ cl 10.9 mm), NSMT-Cr 27388.

distinct from carapace dorsal surface; inner two thirds of each supraorbital margin oblique, nearly straight, fringed with a series of spinules throughout its length; no front, but a deep V-shaped notch between both supraorbital margins instead; a distinct slit at outer one third of supraorbital margin; external orbital angle developed as a sharp tubercle directed obliquely outward, attaining level of half way of inner part of supraorbital margin. Carapace lateral margin not forming distinct edge, weakly convex as a whole, but divided into anterior and posterior parts at small epibranchial tubercle; posterior part one and a half times longer than anterior part; epibranchial tubercle weakly directed dorsally and anteriorly, covered with some subsidiary granules.

Both chelipeds (Fig. 2B) equal, not heavy, covered with minute granules and soft hairs; outer margin of carpus and upper margin of palm distinctly serrated with minute granules and

tubercles. Two ambulatory legs and posterior two subdorsal legs covered with longer and denser hairs, without special armature. G1 and G2 short, stout, with long hairs at distal part of G1, as in Figs. 2C and 4C–D.

Distribution. Known from off Kai Island, Indonesia, 214–221 m deep (Tavares, 1993), and off Amami-Oshima Island, 300–310 m deep (Tavares, 2000; this study).

***Ketamia nagaii* sp. nov.**

[New Japanese name: Nagai-mame-heike]
(Figs. 3, 4A)

Material examined. South off Amami-Oshima I., 250 m deep, 29-III-1989, 1 ♀ (cb $4.5 \times$ cl 4.5 mm), holotype, NSMT-Cr 27389.

Southeast off Kuro-shima I., 120–150 m deep, 15-III-1990, 1 ♀ (cb $4.3 \times$ cl 4.3 mm), paratype, NSMT-Cr 27390.

Diagnosis. Small species, close to *Ketamia*

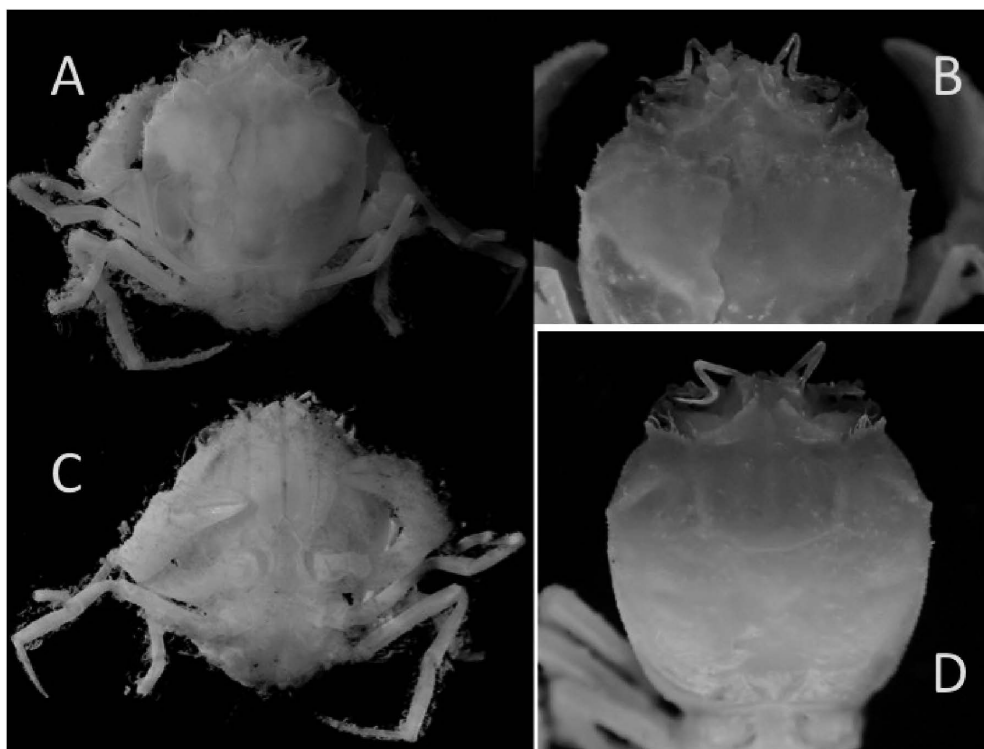


Fig. 3. *Ketamia nagaii* sp. nov. A–C: Female (cb 4.5 × cl 4.5 mm), holotype, NSMT-Cr 27389. D: Female (cb 4.3 × cl 4.3 mm), paratype, NSMT-Cr 27390.

limatula Tavares, 1993, from Indonesia. Carapace smooth without granules and hairs, but with an indistinct, granulated oblique ridge from a small, inconspicuous epibranchial tubercle toward supraorbital notch. Supraorbital margin fringed with a line of small granules for its inner part, sharply serrulated along its outer part. Eyestalk with a terminal spinule close to cornea.

Description of holotype. Carapace (Fig. 3A–B) somewhat damaged, with a submedian longitudinal crack and a small hole at left side. Carapace subcircular, smooth for most part without granules and hairs, armed with a small epibranchial tubercle at anterior one third of lateral margin; a smaller spinule at median part between epibranchial tubercle and external orbital tooth of left side; a short weak ridge with cluster of granules running obliquely forward from epibranchial tubercle toward supraorbital notch; supraorbital margins of both sides leave a deep V-shaped notch at median frontal part, fringed with a line

of small granules for its inner part, armed with some sharp spinules along its outer part (Figs. 3B, 4A); outer part of supraorbital margin slightly narrower than inner part, separated by a narrow, but distinct notch from inner part. External orbital angle developed as a sharp, weakly curved tubercle. Eyestalk elongated, but embedded in orbit, with a sharp spinule at anterior distal part over cornea (Fig. 4A).

Sternal surfaces, abdomen, chelipeds and ambulatory legs (Fig. 3C) hairy, with short soft tomentum. Chelae minutely granulated, slender, indistinctly toothed along cutting edges, without space between both fingers. Two pairs of ambulatory legs and two pairs of subdorsal clawed legs slender as usual.

Notes on paratype. The paratype female (Fig. 3D) lacks both chelipeds, the last subdorsal leg of left side and all the legs of right side. The carapace is complete, agreeing well with the holotype in the smooth and weakly areolated

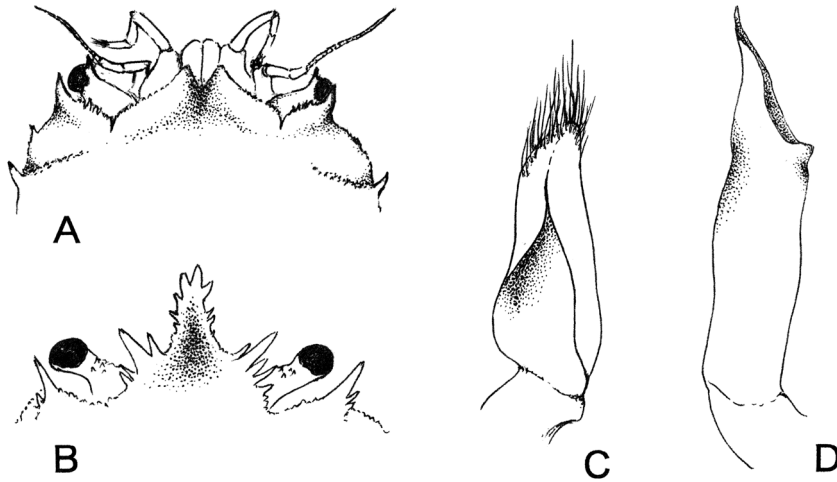


Fig. 4. A: *Ketamia nagaii* sp. nov., female (cb 4.5 × cl 4.5 mm), holotype, NSMT-Cr 27389. Frontotropical region in dorsal view. B: *Krangalangia spinosa* (Zarenkov, 1970), male (cb 4.3 × cl 4.4 mm), NSMT-Cr 27391. Frontotropical region in dorsal view. C–D: *Ketamia handokoi* Tavares, 1993, male (cb 7.7 × cl 7.5 mm), NSMT-Cr 27387. G1 in ventral view (C) and G2 in sternal view (D).

dorsal surface. The oblique ridge running from the epibranchial tubercle toward the supraorbital notch is distinct, but the epibranchial tubercle is not spiniform, but obtusely tuberculiform. Otherwise, it is noted that there is no additional spinule in front of the epibranchial tubercle. The armature of the supraorbital margin is quite similar to that of the holotype.

Remarks. In both specimens the carapace is smooth and shining, without hairs and granules (Fig. 3A–D), differing from the granulated and hairy carapace of *Ketamia handokoi* Tavares, 1993, from Kai Island, 214–221 m deep (Tavares, 1993), and Amami-Oshima Island, 310 m deep (Tavares, 2000). This species is otherwise different from *K. handokoi* in having 1) the epibranchial tubercle, which is small, obtuse and placed at anterior one third of the lateral margin against the submedian part of the lateral margin, 2) the granulated weak ridge from the epibranchial tubercle toward the supraorbital notch, 3) the supraorbital margin fringed with some distinct spinules for its outer part, and 4) the sharp terminal spinule of the eyestalk.

This species may be closer to *Ketamia limatula* Tavares, 1993, from Ambon Island, Indonesia, 15–20 m deep, rather than to *K. handokoi*,

due to the subcircular, smooth and naked carapace. However, this species is also differentiated from *K. limatula* by the same characters mentioned above to distinguish *K. handokoi*.

***Krangalangia spinosa* (Zarenkov, 1970)**

[Japanese name: Togari-mame-heike]

(Figs. 4B, 5F)

Material examined. Southeast off Kuroshima I., 550–600 m deep, 15-III-1992, 1 ♂ (cb 4.3 × cl 4.4 mm), NSMT-Cr 27391.

Remarks. Takeda and Moosa (1990: 55, fig. 3, pl. 2 fig. F) recorded *Cyclodorippe rostrata* Ihle, 1916, from the Flores Sea, considering that *C. (Cyclodorippe) spinosa* Zarenkov, 1970, is synonymous with *C. rostrata*, with comments on the variable armature of the carapace and front. However, Tavares (1993) concluded, after the direct comparison of the type specimens of both species, that *C. spinosa* is valid, and erected a new genus *Krangalangia* for the two species and an additional new species, *K. orstom*. The original figures of *C. spinosa* are schematic, but the detailed figures of the frontotropical region of both species are represented by Tavares (1993). According to this contribution (Figs. 15a vs 15c),

C. rostrata differs from *C. spinosa* in the rostrum being distinctly narrower and constricted at its base, and the external orbital spine directed nearly forward, not obliquely outward as in *C. spinosa*. Although the figure of the male carapace given by Takeda and Moosa (1990) seems to be elaborate, it is difficult to decide at present whether the Flores Sea specimens are really identified as *C. rostrata* or *C. spinosa*. As Tavares (1993) mentioned, the rostrum and the supraorbital spines may be considerably variable in the length, thickness and direction. It may be better to record that the rostrum and supraorbital spines of the present male are close to the figure of the lectotype female of *K. rostrata* given by Tavares (1993: Fig. 15a) than the figure (Fig. 15d) of the paratype male in the same work. In the present male, the rostrum is weakly widened toward to base, armed with several spinules along each lateral margin, distal two or three of which are larger than the others (Fig. 4B); the inner supraorbital angle is armed with a prominent spine directed dorsally and obliquely outward (Figs. 4B, 5F); the inner part of supraorbital margin is nearly longitudinal or weakly directed posterolaterally, and margined with some spinules of about half as long as the inner supraorbital spine (Fig. 4B); the external orbital spine is suberect, as long as, but stouter than, the inner orbital spine. The epibranchial spine is much shorter than the external orbital spine, but larger than the subhepatic and pterygostomian spinules. In the present male, the left cheliped is missing. In the right cheliped the outer surfaces of the carpus and palm are armed with conical or slightly elongated and well-spaced, sharp granules or tubercles; the inner margin of the carpus is armed with some equidistant spines; the palm is armed with four strong spines on the distal part of its upper margin, agreeing quite well with the figure (Fig. 15d) of *K. spinosa* given also by Tavares (1993).

Marumura and Kosaka (2003) recorded *Kranglangia* [sic] *rostrata* with new Japanese name but without comment, in the list of the Nagai Collection in the Wakayama Prefectural

Museum, based on the specimens from off the Kii Peninsula, 400m deep, and southeast of Kuro-shima Island, 550–600m deep. The male examined at present is, without doubt, the duplicate specimen of them. Two male and one female specimens from off Shionomisaki, southernmost place of the Kii Peninsula, are also comprised in the present Nagai's collection.

Distribution. Australia, Chesterfield, New Caledonia, Wallis et Futuna Is., and the Philippines, 479–1223 m deep (Ahyong and Ng, 2011). The present record of *K. spinosa* (Zarenkov) replaces the precedent record of *K. rostrata* (Ihle) from Japanese waters by Marumura and Kosaka (2003) (Kuro-shima I., 550–600m, and Kii Penin., 400m deep).

Xeinostoma sakaii Tavares, 1993

[Japanese name: Maru-mame-heike]
(Fig. 5B)

Material examined. West off Amami-Oshima I., 250m deep, 2-IV-1989, 1 ♀ (cb 5.1 × cl 4.7mm) infested by a *Sacculina*, NSMT-Cr 27392.

Remarks. Sakai (1976) identified the specimen from Japanese waters as *X. euechir* Stebbing, 1920, after direct comparison with the male syntype from South Africa and figured its carapace and right cheliped. Although he noticed some discrepancies between the specimens from Japanese and South African waters, but considered that they are not specific, Tavares (1993) gave a new name, *X. sakaii* to the specimens from Japanese waters.

Sakai (1971) gave the Japanese name “Africa-mame-heikegani” to *X. euechir* recorded from Japanese waters which was, as mentioned above, named *X. sakaii* by Tavares (1993), but the Japanese name was renamed “Maru-mame-heikegani” by Sakai (1976).

Distribution. Previously recorded from the Pacific coast of central Japan (Sakai, 1971, 1976; Marumura, 1985; Tavares, 2000; Marumura and Kosaka, 2003), off Amami-Oshima Island (Tavares, 2000; this study), and the Philippines, 100–

200 m deep (Serène and Vadon, 1981; Ah Yong and Ng, 2011).

Family HOMOLIDAE

Latreillopsis hispinosa Henderson, 1888

[Japanese name: Toge-mizuhiki]

Material examined. West off Amami-Oshima I., 150 m deep, 2-IV-1989, 1 ♂ (cb $7.5 \times$ cl 9.5 mm), NSMT-Cr 27393.

Remarks. In the specimen at hand, the anterior median part of the carapace is somewhat damaged, but there is no problem for the identification.

Distribution. From Japan to South Africa through the Philippines, Indonesia and the Andamans, 50–250 m deep. Takeda and Komatsu (2005) recorded this species from off Amami-Oshima Island, ca. 150 m deep.

Family RANINIDAE

Notosceles serratifrons (Henderson, 1893)

[Japanese name: Nokoba-asahi]

Material examined. West off Amami-Oshima I., 200 m deep, 2-IV-1989, 2 ♂♂ (cb $7.7 \times$ cl 13.5 mm; cb $8.4 \times$ cl 14.5 mm), NSMT-Cr 27394.

Remarks. Takeda and Komatsu (2005), Takeda and Manuel-Santos (2006) and Komatsu (2011) referred this species not to the genus *Raninoides* H. Milne Edwards, 1837, but to the genus *Notosceles* Bourne, 1922, against Sakai (1976) and following Goeke (1981, 1985).

Distribution. From Sagami Bay, Japan to Western Australia and off India, 20–210 m deep. Takeda and Komatsu (2005) recorded this species from the sea off Amami-Oshima Island, 195–210 m deep.

Family LEUCOSIIDAE

Ebalia cryptocnemoides

Takeda and Miyake, 1972

[Japanese name: Usuheri-ebalia-modoki]

Material examined. Southeast off Kuroshima I., 120–150 m deep, 15-III-1990, 1 ♀ (cb

$5.2 \times$ cl 4.5 mm), NSMT-Cr 27395.

Remarks. This species is characteristic in having the carapace fringed with a thin lamelliform expansion, being generally close to *Cryptocnemus obolus* Ortmann, 1892. As mentioned in the original description (Takeda and Miyake, 1972), however, the chelipeds are crested along both margins, and the ambulatory legs are short and entirely concealed beneath the carapace in *C. obolus*. The duplicate specimen has been recorded in the list of the Nagai's Collection of the Wakayama Prefectural Museum by Marumura and Kosaka (2003).

Distribution. The original description was based on a male from the Tsushima Strait in the north of Kyushu, 105 m deep. The other known localities are off Shionomisaki, Wakayama Prefecture, 160 m deep, and the Ryukyu Islands (Off Yamato Vill., Amami-Oshima I., 300 m deep; Off Kuroshima I., 150 m deep; Southeast off Kumejima I., 180 m deep) (Marumura and Kosaka, 2003).

Ebalia hayamaensis Sakai, 1963

[Japanese name: Hayama-ebalia]

Material examined. South off Ishigaki-jima I., 80–100 m deep, 10-III-1990, 1 ♀ (cb $5.2 \times$ cl 4.0 mm), NSMT-Cr 27396.

Remarks. This characteristic species is described and figured by Sakai (1963, 1965a, 1976), and listed by Marumura and Kosaka (2003) in the Nagai Collection of the Wakayama Prefectural Museum. The G1 and G2 were represented by Komatsu (2011: Fig. 8J–L). The carapace dorsal and lateral tuberculation is fully useful for discrimination of this species from the other *Ebalia* species.

Distribution. Restricted to Japanese waters, being recorded from Sagami Bay, the Ogasawara Islands, off the Kii Peninsula, and off Ishigaki-jima Island, 65–124 m deep.

***Ebalia scabriuscula* Ortmann, 1892**
[Japanese name: Samehada-ebalia]

Material examined. West off Amami-Oshima I., 120m deep, 2-IV-1989, 1 ♀ (cb $6.8 \times$ cl 6.4 mm), NSMT-Cr 27397.

Remarks. Chen (1989) decidedly pointed that some parts of the specimens recorded from Japan by Yokoya (1933) and Sakai (1937, 1976) really belong to *Ebalia glans* (Alcock, 1896) which is distributed in the West Pacific and the eastern Indian Ocean.

Distribution. Japanese waters, ranging from Sagami Bay to the west of Kyushu, the East and South China Seas, and the Philippines, 65–658 m deep. New to the Ryukyu Islands.

***Nursilia sinica* Chen, 1982**
[Japanese name: Chugoku-osate-kobushi]

Material examined. West off Amami-Oshima I., 150m deep, 2-IV-1989, 1 ♂ (cb $6.0 \times$ cl 5.6 mm), 2 ♀ ♀ (cb $7.4 \text{ mm} \times$ cl 7.0 mm; left carapace margin damaged $\times$ cl 6.3 mm), NSMT-Cr 27398.

Remarks. The genus *Nursilia* is at present known by three species, *N. dentata* Bell, 1855, *N. tonsor* Alcock, 1896, and *N. sinica* Chen, 1982, which were fully described in Chinese and finely illustrated by Chen (1982: 268–270, fig. 1, pls. 1–2), and Chen and Sun (2002: 312–318, figs. 137–139, pl. 10 fig. 2), and the G1s of *N. tonsor* and *N. dentata* were illustrated by Zarenkov (1969). Takeda and Miyake (1970) identified the specimens from the East China Sea as *N. dentata*, and then Takeda and Miyake (1972) identified a male specimen also from the East China Sea as *N. tonsor*. There is no doubt that both specimens from the East China Sea belong to the same species, and as indicated by Chen and Sun (2002), should be referred to *N. sinica* instead of *N. dentata* and *N. tonsor*.

Other than minor differences in tuberculation of the carapace dorsal surface, the most distinctive clue to distinguish the three known species is the branched tip of G1, viz., the outer and inner

branches are subequal in length in *N. sinica*, the inner branch is about half as long as the outer branch in *N. tonsor*, and the inner branch is much shorter, with the outer branch strongly bent outward in *N. dentata*.

Takeda and Miyake (1972) described as “It is highly probable that the specimen from the strait between Katanoshima and Oshima recorded by Stimpson (1907) as *N. dentata* is really referable to the present species [*N. tonsor*].” Katanoshima and Oshima may be, as recorded by Sakai (1976), Kogoshima and Amami-Oshima Island in the south of Kyushu, Japan. In the list of the Nagai Collection in the Wakayama Prefectural Museum, all of the three species were recorded by Marumura and Kosaka (2003): *N. dentata*—Oshima Passage, Amami-Oshima I., 80m deep; *N. sinica*—Off Shionomisaki, Wakayama Pref., 100m deep, and southeast off Kume-jima I., 120m deep; *N. tonsor*—Off Yamato Vill., Amami-Oshima I., 150m deep, and southeast off Kuro-shima I., 150m deep. It is difficult at present to decide whether both of *N. dentata* and *N. tonsor* are really included in the carcinological fauna of Japan.

Distribution. Definitely known from the East and South China Seas, 100–174m deep. The occurrence in Japanese mainland and the Ryukyu Islands should be reconfirmed.

***Philyra* aff. *rectangularis* Miers, 1884**
(Fig. 5C–D)

Material examined. North off Okinawa-jima I., 25m deep, 6-XII-1990, 1 young ♂ (cb $4.6 \times$ cl 5.2 mm), NSMT-Cr 27399.

Remarks. The male specimen at hand is young, with all the chelipeds and ambulatory legs are missing. In this specimen the carapace (Fig. 5C–D) is somewhat rhomboidal, rather depressed as a whole, with the distinctly granulated dorsal surface and anterior and lateral margins. The mesogastric and intestinal regions are developed each as a stout tubercle, and a smaller but distinct tubercle is at each posterior branchial region. The carapace is margined with a plate

behind the intestinal tubercle; the plate is truncated to be straight, with the obtusely angulated lateral ends.

The present specimen agrees with *Philyra rectangularis* described by Miers (1884: 546, pl. 49 fig. A) based on the specimens from the Seychelles, which was most stressed in the original description on the rhomboidal carapace with the developed, straight posterior margin of the carapace. However, the gastric and branchial regions are not so strongly developed as far as the original figure concerned, although there seems to be a weak ridge between the posterior branchial and gastric regions. In the original description, it was noted that *P. tuberculosa* Stimpson, 1858, from Hong Kong resembles to *P. rectangularis* in having the similar posterior margin of the carapace, but differs in the tuberculated branchial, gastric and intestinal region. The original figure of *P. tuberculosa* is small and difficult to get the decisive distinguishing characters. According to Sakai (1937, 1976), Dai and Yang (1991) and Chen and Sun (2002), however, *P. tuberculosa* from Taiwan and China is characteristic in having the rhomboidal carapace and different from some related species in having the globular contour of the carapace, with distinct posterior margin.

Galil (2009) revised the genus *Philyra* and established some new genera, but 27 species including *P. rectangularis* were remained as pending further revision. *Philyra tuberculosa* is not in the list, but also in the text, although *P. tuberculosa* is counted as a valid species by Ng *et al.* (2008).

Distribution. *Philyra rectrangularis* is described on a single female from the Seychelles, western Indian Ocean, 7–21 m deep.

***Praebebalia fujianensis* Chen and Fang, 2000**

[New Japanese name: Tenaga-ebalia-modoki]

(Fig. 5E)

Material examined. West off Amami-Oshima I., 100 m deep, 2-IV-1989, 1 ♀ (cb 4.0 × cl 3.7 mm), NSMT-Cr 27400.

Remarks. The specimen agrees with the specimens from Amami-Oshima Island identified as *Praebebalia fujianensis* by Takeda and Komatsu (2005) and Takeda (2008). Galil (2001a) restricted the genus *Praebebalia* to accommodate only four species, *P. extensiva* Rathbun, 1911, *P. septemspinosa* Sakai, 1983, *P. madagascariensis* Galil, 2001, and *P. magna* Galil, 2001. However, the other 10 species of *Praebebalia* known to the date were excluded from the genus, with no suggestion for appropriate genus to be referred.

Distribution. Known only from the East China Sea (Chen and Fang, 2000; Takeda and Komatsu, 2005), 86–290 m deep.

***Praebebalia longidactyla* Yokoya, 1933**

[Japanese name: Yubinaga-ebalia-modoki]

Material examined. West off Amami-Oshima I., 200 m deep, 2-IV-1989, 2 ♀ ♀ (cb 4.7 × cl 4.9 mm; cb 5.1 × cl 5.1 mm), NSMT-Cr 27401.

Remarks. Marumura and Kosaka (2003) recorded two males and two females from off Shionomisaki, Wakayama Prefecture in the list of the Nagai's Collection in the Wakayama Prefectural Museum, and Takeda and Komatsu (2005) dealt with one male, one female and one ovigerous female from off Amami-Oshima Island (Daiyu Maru stns. 02-05 and 04-06, ca. 520 and 364–335 m deep, respectively). This small species having the long chelipeds with the fingers shorter than the palm is otherwise referred to Yokoya (1933), Sakai (1976, 1983), Takeda and Miyake (1970), and Nagai (1992). As shortly mentioned in the remarks for the precedent species, Galil (2001a) excluded this species from the genus *Praebebalia*.

Distribution. Japan from Suruga Bay to the west of Kyushu, and the East China Sea, 113–520 m deep.

***Pseudophilyra punctulata* Chen and Ng, 2003**

[Japanese name: Minami-kobushi-modoki]

Material examined. West off Okinawa-jima I., 25 m deep, 6-XII-1990, 1 young ♂ (cb

4.2 × cl 5.0 mm), 1 young ♀ (cb 4.1 × cl 4.4 mm), NSMT-Cr 27402.

Remarks. Some differences between *P. tridentata* Miers, 1879, and two closely related species, *P. punctulata* Chen and Ng, 2003, and *P. parilis* Komai, Shimetsugu and Ng, 2019, were enumerated by Komai *et al.* (2019) based on the direct comparison of the specimens. *Pseudophylla tridentata* differs from the two close congeners in that 1) the frontal part of the carapace is more strongly produced with a proportionately narrower frontal margin, 2) the lateral lobes on the frontal margin are distinctly produced, 3) the carapace dorsal surface is relatively smoother and less punctate, 4) the mesogastric median ridge and hepatic elevations on the carapace are more prominent, 5) the lateral margin of the carapace is nearly smooth or microscopically granular, 6) the male thoracic sternite 4 is finely granular anterolaterally, and 7) the cheliped palm is more robust. The specimens at hand are so small and rather young that all the differences are not always comparable, but referable to *P. punctulata* rather than the two comparable species. It is remarkable in these young specimens that the frontal region is much narrower and protruded forward in the female than in the male.

Distribution. Originally described on a pair of specimens from Singapore (Chen and Ng, 2003), and later, reported by Komai *et al.* (2019) from Iriomote-jima and Ishigaki-jima Islands in the southern Ryukyu Islands, Bohol in the Philippines, and Phuket in Peninsular Thailand.

***Raylilia mirabilis* (Zarenkov, 1969)**

[Japanese name: Minami-toge-kobushi]

Material examined. South off Ishigaki-jima I., 90–100 m deep, 10-III-1990, 1 ♂ (cb 7.2 × cl 6.7 mm), NSMT-Cr 27403.

Remarks. The genus *Raylilia* is characterized by having the tuberculated carapace, the slender and long chelipeds, and the dilated distal part of the male G1. The congeneric four species including this species were well represented by Galil (2001b). Takeda and Komatsu (2005) recorded

an ovigerous female from off Amami-Oshima Island, 52–46 m deep, and the male from the Ishigaki-jima Island recorded in this paper is a duplicate specimen with the male reported by Marumura and Takeda (2004).

Distribution. The known geographical range is from off Amami-Oshima Island to New Caledonia, 26–187 m deep.

***Toru granuloides* (Sakai, 1961)**

[Japanese name: Ibonashi-kobushi]

Material examined. West off Amami-Oshima I., 200 m deep, 2-IV-1989, 1 young ♂ (cb 6.2 × cl 6.0 mm), NSMT-Cr 27404.

Remarks. The monochrome and color photographs were finely represented by Galil (2003) and Komatsu (2011), respectively.

Distribution. From Japan to Vanuatu, Fiji and New Caledonia, 50–550 m deep. New to the Ryukyu Islands.

Family INACHIDAE

***Achaeus akanensis* Sakai, 1938**

[Japanese name: Akane-achaeus]

Material examined. West off Amami-Oshima I., 120 m deep, 2-IV-1989, 1 ovig. ♀ (cb 4.0 × cl 5.2 mm), 1 ♀ (cb 3.1 mm × cl 4.3 mm), NSMT-Cr 27405; Same locality and date, 150 m deep, 1 ♂ (cb 3.4 mm × cl 4.5 mm), 1 ovig. ♀ (cb 3.4 × cl 4.5 mm), NSMT-Cr 27406.

Remarks. This species is most characteristic in having a prominent preocular spine, with the short neck, and the remarkably slender ambulatory legs, with the sickle-shaped ambulatory dactyli of last two pairs. This species is correctly keyed out in the key made by Griffin and Tranter (1986).

Distribution. Japan—Off Izu Peninsula and Kii Peninsula, Pacific coast of Honshu, central Japan, 10–60 m deep (Sakai, 1938); Off Ishigaki-jima Island and Kume-jima Island, southern Ryukyu Islands, 90–100 m deep (Marumura and Kosaka, 2003). Griffin (1976) recorded this species from southern Luzon and the Sulu Archipel-

ago in the Philippines, 29–66 m deep, for the first time from outside of Japan. The bathymetric range was extended down to 150 m deep.

***Achaeus robustus* Yokoya, 1933**

[Japanese name: Bungo-achaeus]

Material examined. West off Amami-Oshima I., 200 m deep, 2-IV-1989, 2 ♂♂ (cb 3.5 × cl 5.3 mm; cb 3.2 mm × cl 4.5 mm), 2 ♀♀ (cb 3.1 × cl 4.5 mm; cb 5.2 × cl 6.5 mm), NSMT-Cr 27407.

Remarks. The identification of these specimens followed Takeda (1973) and Griffin and Tranter (1986). The carapace contour is roughly triangular in both sexes, but more exactly so in the females. The carapace dorsal surface is rather sparsely covered with long curled setae, and subdivided into the convex gastric, cardiac and branchial regions, without distinct granules and tubercles. In these rather small specimens, the rostrum is divided into two, each lobe of which is armed with sharp short tubercles, and the supra-orbital margin is armed with a series of spinules.

Distribution. Previously known from Japan, the East China Sea, Indonesian waters and north Western Australia, 30–121 m deep. In Japan, this species was originally reported from the Bungo Strait between Shikoku and Kyushu (Yokoya, 1933), and later Marumura and Kosaka (2003) reported from off Kushimoto, southernmost place of the Kii Peninsula (30 m deep), the Oshima Passage between Amami-Oshima and Kakeromajima Islands (80 m deep), and southeast off Kume-jima Island (180 m deep).

***Hyastenus subinermis* Zehntner, 1894**

[New Japanese name: Kotoge-tsunogani]

(Fig. 5A)

Material examined. Off Naha, Okinawa-jima I., 60–70 m deep, 4-XII-1990, 1 young ♀ (cb 3.7 × cl 6.0 mm without rostral spines, rl 2.5 mm), NSMT-Cr 27408.

Remarks. This small species was first well depicted by Griffin and Tranter (1986) as *Hyaste-*

nus trispinosus Rathbun, 1916, who suggested its possible synonymy with *H. subinermis* Zehntner, 1894. Later, Loh and Ng (1999) thoroughly reviewed the two species on the direct comparison of the holotypes of both species and definitely concluded that both species are synonymous with each other. The holotype of *H. subinermis* was really a juvenile female contrary to the original description, with weaker carapace armature and narrower carapace contour than in the adult male of *H. trispinosus*. The present young specimen agrees well with the photographs of *H. subinermis* given by Loh and Ng (1999), and keyed out to *H. subinermis* in the key prepared by Windsor and Ah Yong (2013).

Distribution. Previously recorded from the Sulu Archipelago, Ambon, Irian Jaya and Singapore, from coral reef to 33 m deep. The geographical and bathymetric ranges were extended north to the Ryukyu Islands and down to 70 m deep. New to Japan.

***Pleistacanthoides simplex* (Rathbun, 1932)**

[Japanese name: Hime-harisenbon]

Material examined. West off Amami-Oshima I., 200 m deep, 28-V-1989, 1 ♂ (cb 4.3 × cl 6.9 mm without rostral spines), 1 ♀ (cb 4.8 × cl 5.9 mm), NSMT-Cr 27409.

Remarks. This small species is armed with many short spines and a pair of spiniform rostrum longer than the dorsal spines. According to Sakai (1938), the genus *Pleistacanthoides* Yokoya, 1933, is synonymous with *Pleistacantha* Miers, 1879, and *Pleistacanthoides nipponensis* Yokoya, 1933, is synonymous with *Pleistacantha simplex* Rathbun, 1932. Ng and Richer de Forges (2012), however, re-evaluated the genus *Pleistacanthoides* as distinct from *Pleistacantha*, and recognized *P. simplex* (Rathbun, 1932 (= *P. nipponensis* Yokoya, 1933)) from Japan, and two new species, *P. cameroni* from the Philippines and *P. piccardorum* from Vanuatu and Papua New Guinea.

Distribution. West Pacific from Japan to Indonesian waters, 60–540 m deep. Griffin and

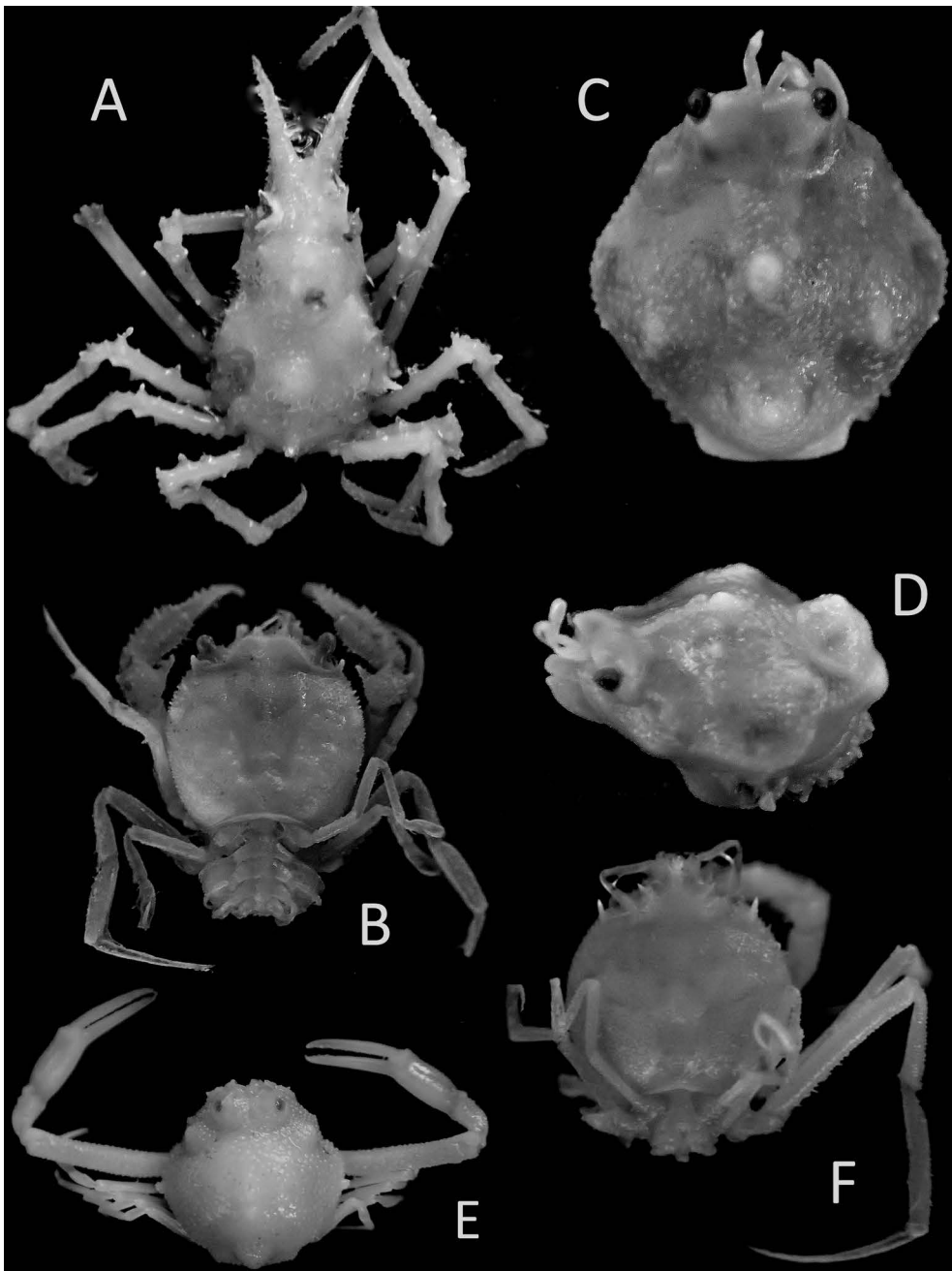


Fig. 5. A: *Hyastenus subinermis* Zehntner, 1894, young female (cb $3.7 \times$ cl 6.0 mm without rostral spines), NSMT-Cr 27407. B: *Xeinostoma sakaii* Tavares, 1993, female (cb $5.1 \times$ cl 4.7 mm) infested by a *Sacculina*, NSMT-Cr 27392. C–D: *Philyra* aff. *rectangularis* Miers, 1884, young male (cb $4.6 \times$ cl 5.2 mm), NSMT-Cr 27399. E: *Praebebalia fujianensis* Chen and Fang, 2000, female (cb $4.0 \times$ cl 3.7 mm), NSMT-Cr 27400. F: *Krangalangia spinosa* (Zarenkov, 1970), male (cb $4.3 \times$ cl 4.4 mm), NSMT-Cr 27391.

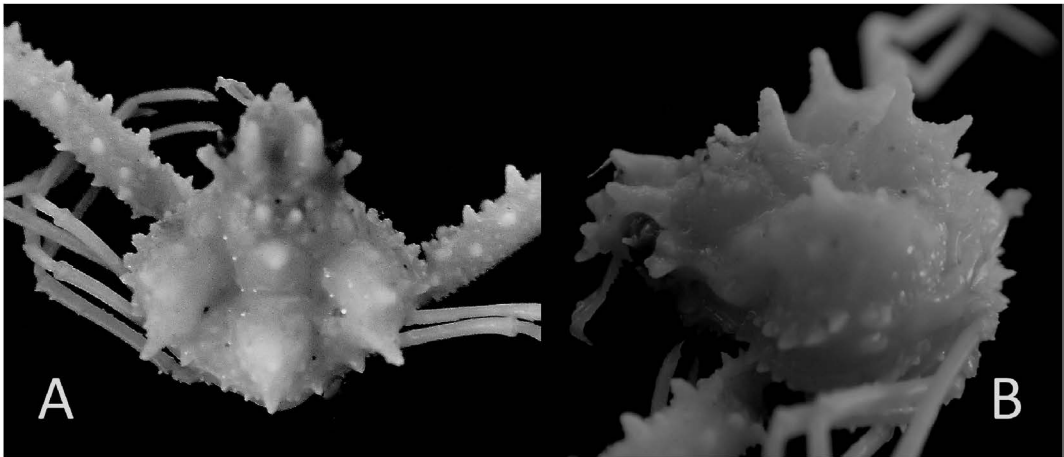


Fig. 6. A–B: *Rhinolambrus cybelis* (Alcock, 1895), male (cb $9.3 \times$ cl 10.0 mm with rostral tooth), NSMT-Cr 27410.

Tranter (1986) recorded this species from the Sulu Sea and Indonesian waters first for the outside of Japanese waters.

Family PARTHENOPIDAE

***Rhinolambrus cybelis* (Alcock, 1895)**

[Japanese name: Ceylon-hishigani]

(Fig. 6)

Material examined. West off Amami-Oshima I., 100 m deep, 2-IV-1989, 1 ♂ (cb $9.3 \times$ cl 10.0 mm with rostral tooth), NSMT-Cr 27410.

Remarks. According to Takeda *et al.* (2019), four of 13 known *Rhinolambrus* species are recorded from Japanese waters. This characteristic species having the somewhat papillate branchial and cardiac regions tipped with strong tubercles (Fig. 6) has been first introduced to the carcinological fauna of Japan by Sakai (1965b) as *L. (R.) sternospinosus*, and later by Sakai (1980) from off Ishigaki-jima Island and by Marumura (1985) from off Shirahama, southwest coast of the Kii Peninsula. According to Tan and Ng (2007), *Lambrus (Rhinolambrus) sternospinosus* Flipse, 1930, and *Rhinolambrus gracillimanus* Ward, 1942, are synonymous with this species.

The present male examined has the same collecting data with a male recorded in the list of the

Nagai Collection of the Wakayaka Prefectural Museum of the Natural History (Marumura and Kosaka, 2003).

Distribution. The known localities outside of Japan are Indonesia, the Andaman Sea and Sri Lanka, 25–155 m deep.

***Pseudolambrus beaumontii* (Alcock, 1895)**

[Japanese name: Kobu-hishigani]

Material examined. West off Amami-Oshima I., 120 m deep, 2-IV-1989, 1 ♂ (cb $7.9 \times$ cl 7.2 mm), 1 ♀ (cb $8.4 \times$ cl 8.1 mm), NSMT-Cr 27411; South off Amami-Oshima I., 120 m deep, 2-IV-1989, 1 ♀ (cb $8.2 \times$ cl ca. 7.6 mm) infested by a *Sacculina*, NSMT-Cr 27412.

Remarks. Ng and Rahayu (2000) published the photographs of the syntype male and ovigerous female of *Pseudolambrus beaumontii* (Alcock, 1895) for comparison with a new congeneric species, *P. sundaicus* from Indonesia. The specimens at hand having the hepatic margin of the carapace distinctly separated from both of the external orbital tooth and the carapace branchial margin agree well with the syntypes, and also with the figures given by Sakai (1938, 1965a, 1976) and Komatsu (2011).

Distribution. Distributed in the West Pacific from Japan southwards to the Torres Straits, and

otherwise known from the Cocos Keeling Islands and Aldabra Island in the Indian Ocean, from coral reef to 100 m deep. The known localities in the Ryukyu Islands are Yoron, Ishigaki and Zamami Islands, 90–100 m deep.

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