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Notes on two rare species of brachyuran crabs (families Matutidae and Parthenopidae) from Indonesian waters with new distribution records

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Notes on two rare species of brachyuran crabs (families Matutidae and Parthenopidae) from Indonesian waters with new distribution records

Nisfa Hanim[1], Ali Suman[2], Duranta Diandria Kembaren[3], Dyah Perwitasari[1], Yusli Wardiatno[4,5], Achmad Farajallah[1]

[1]Department of Biology, Faculty of Mathematics and Natural Sciences, IPB University, Kampus IPB Dramaga, Bogor, West Java, Indonesia
[2]Research Center of Fisheries Jakarta, Ministry of Marine Affairs and Fisheries, Jalan Pasir Putih, Ancol Timur, North Jakarta, Indonesia
[3]Research Institute for Marine Fisheries, Ministry of Marine Affairs and Fisheries, Cibinong, Bogor, West Java, Indonesia
[4]Department of Aquatic Resources Management, Faculty of Fisheries and Marine Sciences, IPB University, Kampus IPB Dramaga, Bogor, West Java, Indonesia
[5]Environmental Research Center, IPB University, Kampus IPB Dramaga, Bogor, West Java, Indonesia

Corresponding author: *Achmad Farajallah* (achamad@apps.ipb.ac.id)

Abstract

This research reports two species of brachyuran crabs that are rarely found from Indonesian waters. The latest report was more than one hundred years ago, and the study from Indonesia before that was not clear on information about both specimens and location details. This study was conducted in southern Aru Island and Malacca Strait using trawls during the cruise which was held by the Research Institute for Marine Fisheries, Ministry of Marine Affairs and Fisheries. Our findings were *Izanami reticulata*, a new record (family Matutidae) from southern Aru Island, and *Cryptopodia fornicata* (family Parthenopidae) from Malacca Strait. The two locations are close to the location where the species were found in previous studies, namely the Arafura Sea which is adjacent to the Aru Islands, and the Malacca Strait which is adjacent to Borneo. It is suspected that the presence of these two species in western and eastern Indonesia was due to their distribution during the pelagic larval stage through sea currents. This article also provides the specific habitat for both species which was unknown. In addition, this article contributes to strengthening Indonesia as a mega biodiversity country with an initial

compilation of the database of Brachyura in its waters.

Key Words: biodiversity, dispersal, elbow crab, marine, planktonic larvae, systematics

Introduction

The Infraorder Brachyura is part of Order Decapoda which has more than six thousand species inhabiting land and ocean (Ng et al. 2008). Study on Brachyura have been conducting intensely in almost all the world regions. However, research in Indonesia decreased after the great expeditions such as Rumphius Expedition (the 17th century), the Voyage of H.M.S. Challenger (1873–1876), Siboga Expedition (1899–1900), the Danish Expedition (1922), Snellius Expedition (1929–1930), Galathea Expedition (1950–1952), and Baruna Expedition (1965). Consequently, several groups of Brachyura have never been reported again more than two last decade as well as the genera of *Izanami* and *Cryptopodia*.

Izanami is a genus in the family Matutidae which was separated from *Matuta* since it has short lateral spines. This genus was only had two species, namely *Izanami reticulata* P. Müller & Galil, 1998 and *Izanami curtispina* T. Sakai, 1961 (Galil and Clark 1994). Both species are found in waters adjacent to Indonesia (Australia (Arafura Sea), Philippines, Japan, China Sea, Madagascar, and New Caledonia). Unfortunately, there was no report about their occurrence from Indonesia's marine territory. *Cryptopodia* (family Parthenopidae) has a restrict distributed in the Indo-West Pacific region, at depths of 10–30 m. It consists of twelve species (Ng and Chiong 1998), of which only four have been reported in Indonesian waters, namely *Cryptopodia angulata* H. Milne Edwards & Lucas, 1841 (the specific location was not mentioned,Yang 1979), *Cryptopodia collifer* Flipse, 1930 (Siboga Expedition, Flipse 1930), *Cryptopodia laevimana* Miers, 1879 (from Borneo, Miers 1879, and Ng and Chiong 1994), and *Cryptopodia fornicata* J.C. Fabricius, 1781 (Borneo, Miers 1884, and Irian Jaya, Flipse 1930). Most species were reported from Indonesia more than one century ago. Thus, it could say that the research on this genus was scarce conducting in Indonesia. This study was aimed to fill the gap studies on those genera.

Materials and methods

Sampling collection was conducted in July 2015 in Malacca Strait and November 2018 in southern Aru Island during the cruise research instigated by the Research Institute

for Marine Fisheries, Ministry of Marine Affairs and Fisheries. Two specimens were collected from each location using trawl gear in the morning (8–11 am local time, UTC +7, in Malacca Strait, and UTC +9 in southern Aru Island). Samples from both locations were preserved in formalin and ethanol 96%, respectively. All four specimens were deposited in Biosystematics and Animal Ecology Laboratory, Departement of Biology, IPB University, with specimen number: A1 (male), A2 (female) (southern Aru Island), and K40 (male) and K66 (female) (Malacca Strait). Specimens were photographed using a Canon camera (PowerShot SX430 IS) for species of *Izanami* and Nikon COOLPIX B700 for species of *Cryptopodia*. Systematic writing followed Galil and Clark (1994) and Ng and Chiong (1998).

Results and Discussion

Family Matutidae De Haan,1835

Class Malacostraca Latreille, 1802
Ordo Decapoda Latreille, 1802
Infraordo Brachyura Linnaeus, 1758
Superfamily Calappoidea De Haan, 1833
Family Matutidae De Haan,1835
Genus *Izanami* Galil & P.F. Clark, 1994

Izanami reticulata (P. Müller & Galil, 1998), new record
Figure 1

> *Matuta inermis* Miers, 1884: pp 256-257, fig. C, Plate XXVI (type locality Albany Island, Torres Strait).
> *Izanami inermis* (Miers, 1884): Galil and Clark, 1994: pp 28-31, figs 5c-d, Pl.10a-b

Examined material. Indonesia. 1 male, CW = 25.5 mm, CL = 26.3 mm, and 1 female, CW = 24.3 mm, CL = 24.4 mm; southern Aru Island waters; 06°59.363'N, 134°3.693'E; 27 m depth; 12 Nov 2018; D.D Kembaren leg.

Diagnosis The anterolateral surface of carapace granulated, frontal median lobe (rostrum) bifid (Fig. 1A, C)

Description. Carapace circular, the measures of its length and width are similar. The surface of the carapace is rough (granulated, particularly in the anterolateral region), six tubercles present; tubercle in the cardiac region is the longest (1,45 mm in female and 1,36 mm in male), and placed between two other smaller tubercles right and left. The carapace is smooth posteriorly. The anterolateral margin of the carapace has three small teeth, not including the inner orbital lobes, and is tuberculated. Posterolateral teeth are rudimentary (very short). The frontal region of the carapace with three lobes; the median lobe (rostrum) is bifid, and two lateral lobes are arranged horizontally (Fig. 1A, C).

The measurements of both chelipeds are similar, 60 mm. Merus is short and slightly slender, smooth. The carpus is short and swollen, tuberculated. There is a tuberculate ridge in the upper margin of the carpus and a sharp tooth at the angle, the palm is slightly longer. Its upper margin is tridentate, the size of the is diminishing distally. Merus and carpus of walking legs (I–III) granulated anteriorly.

Abdomen. In a male, telson is slightly longer than width (Fig. 1B), whereas in a female is an isosceles triangle in shape (Fig. 1D). The penultimate segment is the widest, in both male and female (Fig. 1B, D).

Distribution. Australia (Arafura Sea), Philippines, New Caledonia (Galil and Clark 1994)

Remarks. *Izanami reticulata* was identified for the first time in 1884 by Miers with its type locality in North Australia (Albany Island, Torres Strait) and the scientific name was *Matuta inermis*. They were also reported from its adjacent waters (Thursday Island and Prince of Wales Island, Arafura Sea) by Miers 1884. This species was found in Southern Aru Island in Indonesia waters, which is located near the Arafura Sea.

Family Parthenopidae MacLeay, 1838

Class Malacostraca Latreille, 1802
Ordo Decapoda Latreille, 1802
Infraordo Brachyura Linnaeus, 1758
Superfamily Parthenopoidea MacLeay, 1838
Family Parthenopidae MacLeay, 1838
Subfamily Parthenopinae MacLeay, 1838

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Genus *Cryptopodia* H. Milne Edwards, 1834

Cryptopodia fornicata (J.C. Fabricius, 1781)

Figure 2

Cancer fornicata Fabricius, 1781: pp 502

Cryptopodia pentagona Flipse, 1930: pp 67-68, fig 42

Examined material. Indonesia. 1 male, CW = 66,6 mm, CL = 37,8 mm, and 1 female, CW = 66,8 mm, CL = 41,0 mm; Malacca Strait; 02°54.444'N, 100°47.094'E; ca. 25.7–31.9 m depth; 1 Jul 2015; D.D Kembaren leg.

Diagnosis Branchial, cardiac, and gastric regions are strongly inflated (Fig. 2A, C), and lateroventral carapace depression is deep (Fig. 2B, D).

Description Carapace is broader than long, > 1.5 × its length, pentagonal. The lateral sides of the carapace have wide expansions concealing all ambulatory legs. The anterolateral margin of the carapace is denticulated (Fig. 2A, C). The posterolateral margin is crenulated, and can be seen more clearly in the male (Fig. 2B). The posterior margin of the carapace is nearly straight (Fig 2C, D), but slightly concave in male specimens (Fig. 2A, B), crenulated. Branchial, cardiac, and gastric regions are elevated and form a shallow triangular indentation in the center of the carapace (Fig. 2A, C). Mesobranchial and metabranchial ridge granulated. The rostrum is broader than long, triangular in females (Fig. 2C, D), whereas more rounded in males (Fig. 2A, B). The surface of the ventral carapace is smooth, with deep lateroventral carapace depression (Fig. 2B, D).

The right cheliped is slightly larger than the left. The anterior facet of the merus consists of three prominent teeth of equal size, denticulated. The distal part of the posterior facet of the merus has a wing-like expansion, which is denticulated. The carpus is small. Anterior margin of the dorsal facet of palm has a slight expansion, and is denticulated. The posterior margin of the dorsal facet of the palm has five prominent teeth (Fig. 2A–D).

Ambulatory legs slender, the first pair is the longest, and the next diminish in size. Merus with setae (Fig 2B, D).

Abdomen granulated, in both male and female, telson triangular (Fig. 2B, D).

Distribution. Indonesia (Borneo; reported by Miers 1884), Irian Jaya (Flipse1930); both confirmed as *Cryptopodia fornicata* by Ng and Chiong (1998); Singapore, Philipina, Thailand, Japan, Malaysia, China (Ng and Chiong 1998).

Remarks. *Cryptopodia fornicata* was confirmed as the correct name for *Cryptopodia queenslandi* Rathbun, 1918 and *C. patula* Chiong & P.K.L. Ng, 1998 (Ng and Chiong 1998). It was reported firstly in Borneo, Indonesia as *Cryptopodia fornicate* by Miers (1884), but Ng and Chiong (1998) stated (when they reexamined the specimens) that the specimen from Borneo could be *Crptopodia fornicata* because there were no reports about its related species (*Cryptopodia queenslandi* and *C. patula*) from there. They also confirmed that *Crytopodia pentagona* reported by Flipse (1930) from Irian Jaya was *Cryptopodia fornicata*.

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Figure legends

Figure 1. **A**. *Izanami reticulata* (dosal view, male).
B. *Izanami reticulata* (ventral view, male)
C. *Izanami reticulata* (dorsal view, female)
D. *Izanami reticulata* (ventral view, female)

Figure 2. **A**. *Cryptopodia fornicata* (dosal view, male)
B. *Cryptopodia fornicata* (ventral view, male)
C. *Cryptopodia fornicata* (dosal view, female)
D. *Cryptopodia fornicata* (ventral view, female).

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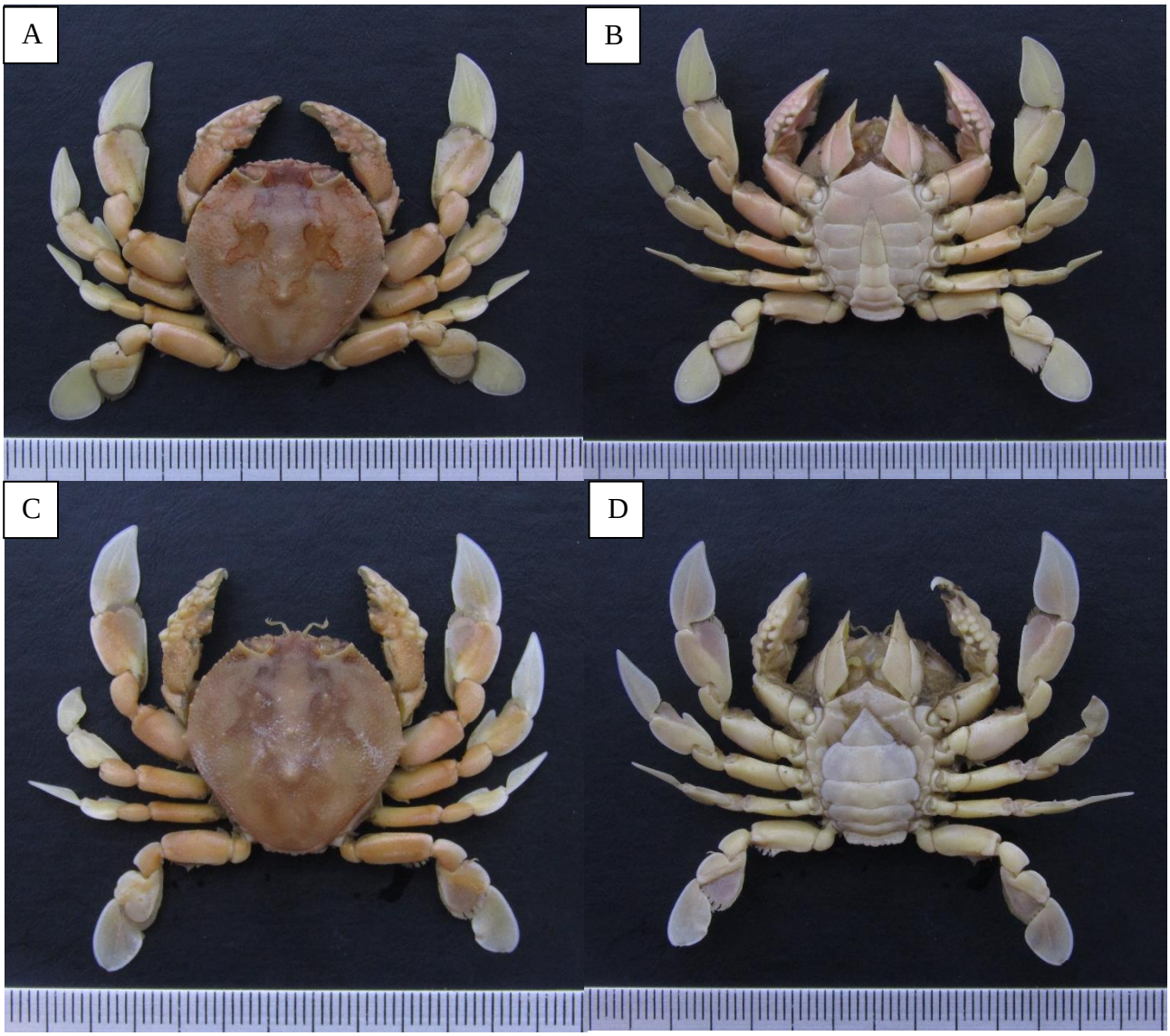

Figure 1. Izanami reticulata, male, dorsal view (A), ventral view (B), female, dorsal view (C), ventral view (D)

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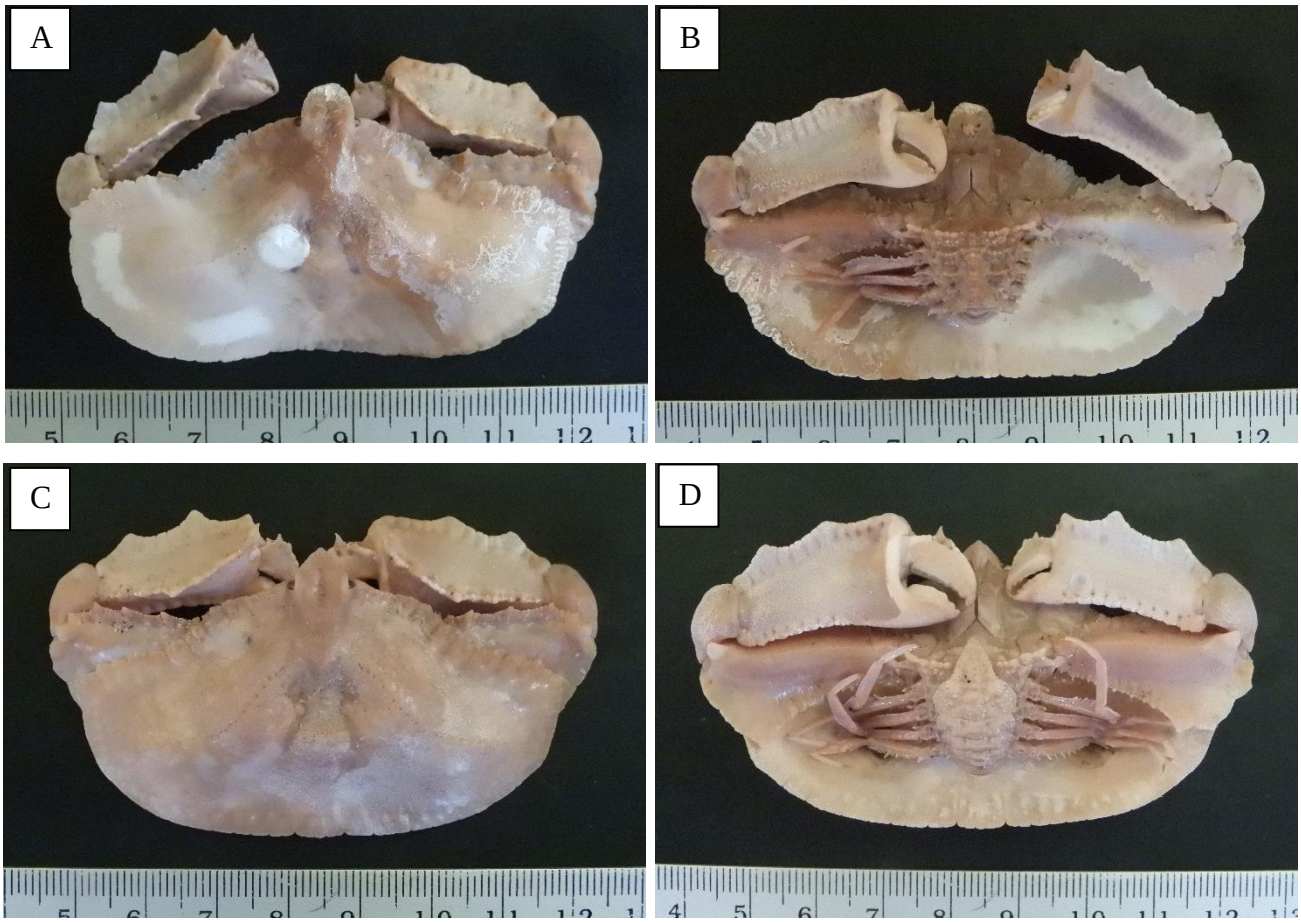

Figure 2. Cryptopodia fornicata, male, dorsal view (A), ventral view (B), female, dorsal view (C), ventral view (D)