

## *Cyonomus dwi*, a new species of deep-water cyonomid crab from Indonesia (Crustacea: Brachyura)

Shane T. Ahyong<sup>1, 2</sup> & Peter K.L. Ng<sup>3</sup>

**Abstract.** A new species of cyonomid crab, *Cyonomus dwi*, is described from the Sunda Strait and is the sixth species of the genus to be recorded from Indonesian waters. The new species belongs to the *Cyonomus bathamae* species-group and most closely resembles *C. triplex* Ahyong, 2019 from southern Australia, *C. umitakae* Takeda, 1981 from Japan, and *C. valdiviae* Lankester, 1903 from East Africa, but differs in the ornamentation of the carapace and pereopods as well as proportions of the merus of maxilliped 3. An identification key to the Indonesian species of *Cyonomus* A. Milne-Edwards is provided.

**Key words:** Decapoda, Cyonomidae, Indonesia, Indian Ocean, SJADES

### INTRODUCTION

SJADES 2018, the joint Indonesian-Singaporean South Java Deep-Sea Biodiversity Expedition, sampled benthic habitats at depths of 92–2,355 m off the Indian Ocean coast of western to central Java and the Sunda Strait, Indonesia, resulting in a diverse collection of marine invertebrates and fishes, including decapod Crustacea (Ng & Rahayu, 2021; Mendoza et al., 2021).

Cyclodorippoid crabs collected by the SJADES expedition representing two families, Cyonomidae and Cyclodorippidae, were reported by Ahyong et al. (2020) and Ahyong & Mendoza (2021). An additional cyclodorippoid specimen from the expedition was recently found after the completion of sorting of various samples. The specimen represents a species of *Cyonomus* that is new to science, formally described herein.

### MATERIAL AND METHODS

Measurements and terminology follow Ahyong et al. (2009) and Ahyong (2019). Carapace length (cl) is measured along

the midline, from the tip of the rostrum to the posterior margin of the carapace. The postrostral carapace length (pcl) is measured from the base of the rostrum to the median posterior margin of the carapace, and the carapace width (cw) is the greatest width across the branchial regions. Antennular peduncle length is the extended length of all three articles combined. The holotype of the new species is deposited in the Museum Zoologicum Bogoriense, Indonesian Institute of Sciences, Cibinong (MZB).

### TAXONOMY

#### Superfamily Cyclodorippoidea Ortmann, 1892

#### Family Cyonomidae Bouvier, 1898

#### *Cyonomus* A. Milne-Edwards, 1880

#### *Cyonomus dwi*, new species

(Fig. 1)

**Type material.** Holotype: MZB, male (cl 2.8 mm, pcl 2.4 mm, cw 2.7 mm), station CP07, Sunda Strait, between Tabuan Island and Sumatra, Java, Indonesia, Indian Ocean, 5°44.678–44.917'S, 104°51.151–52.061'E, 379–409 m, coarse sand, gravel, rubble and wood, SJADES cruise, coll. *Baruna Jaya VIII*, 25 March 2018.

**Description of holotype.** Carapace rounded-subquadrate, slightly wider than long, lateral margins subparallel on anterior half, posterior half with swollen branchial margins; regions weakly indicated, cervical groove weakly indicated; lower pterygostomian region swollen; anterior and lateral surfaces with few long, fine setae, other surfaces at most sparsely setose. Anterolateral spine small, directed anteriorly; similar spine on lateral margin behind anterolateral spine.

Accepted by: Jose Christopher E. Mendoza

<sup>1</sup>Australian Museum Research Institute, Australian Museum, 1 William Street, Sydney NSW 2010, Australia; Email: shane.ahyong@austmus.gov.au; https://orcid.org/0000-0002-2820-4158

<sup>2</sup>School of Biological, Earth & Environmental Sciences, University of New South Wales, NSW 2052, Australia.

<sup>3</sup>Lee Kong Chian Natural History Museum, Faculty of Science, National University of Singapore, 2 Conservatory Drive, Singapore 117377, Republic of Singapore. Email: peterng@nus.edu.sg; https://orcid.org/0000-0001-5946-0608

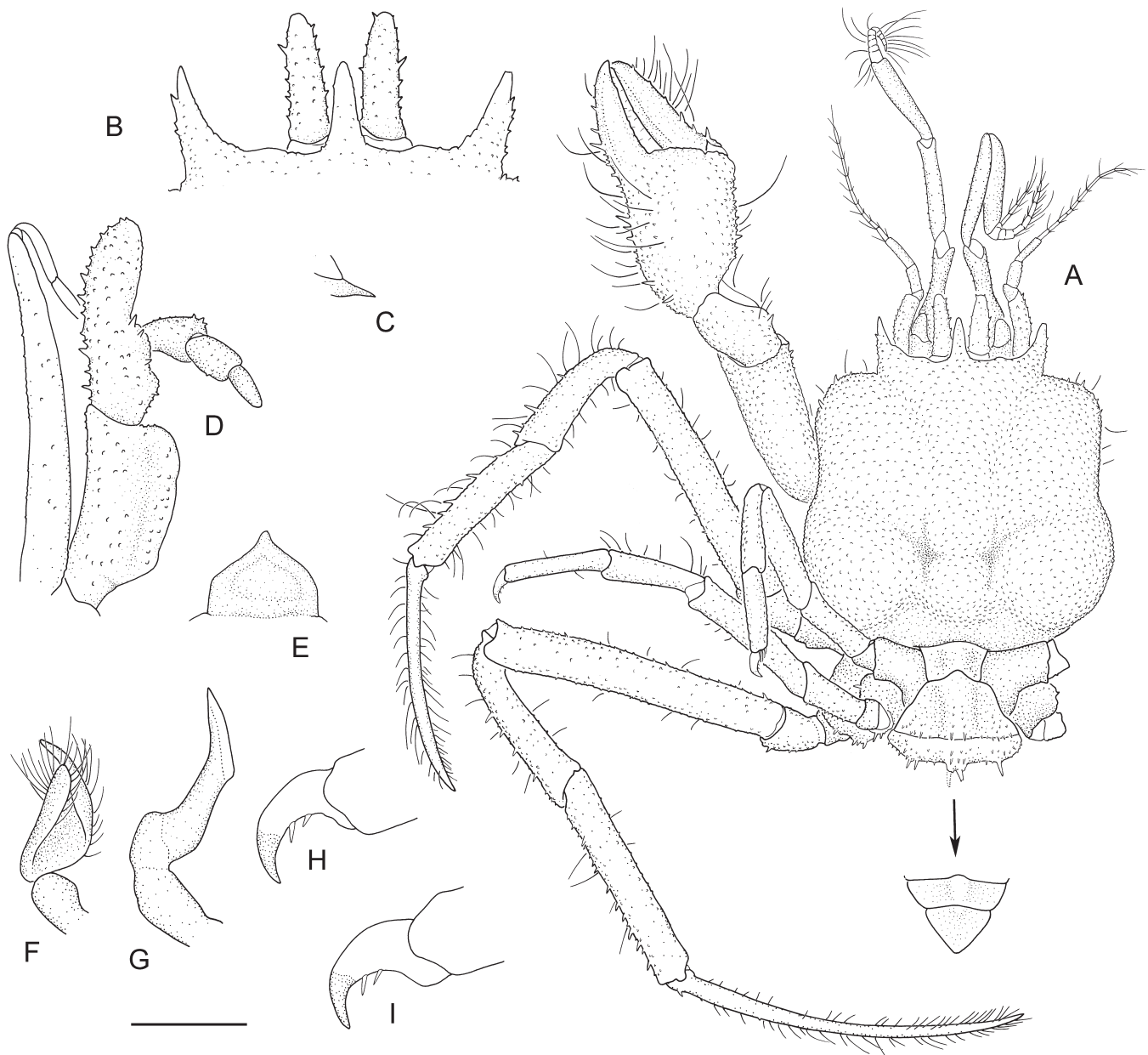


Fig. 1. *Cymonomus dwi*, new species, male holotype, cl 2.78 mm, pcl 2.41 mm, cw 2.69 mm, MZB: A, dorsal habitus; B, fronto-orbital region, dorsal view; C, right epistomial spine mesial to base of antenna, ventral view; D, right maxilliped 3, external view; E, thoracic sternite 3, ventral view; F, right G1, pleonal view; G, right G2, pleonal view; H, left P4 dactylus, dorsal view; I, left P5 dactylus, dorsal view. Scale: A = 1.0 mm; B–G = 0.5 mm; H, I = 0.25 mm.

Anterior carapace margin mesial to anterolateral spines with short, acute granules, margin approximately transverse, slightly sloping inwards at base of outer orbital processes. Dorsal and lateral surfaces covered with minute granules. Fronto-orbital margin (excluding rostrum and lateral projections) slightly advanced beyond anterolateral margins; 0.67 anterior carapace width; outer orbital processes sharply triangular, elongate, subparallel, directed anteriorly, situated below plane of rostrum, dorsally granular, laterally spinulate, apex acute, as long rostrum. Rostrum length exceeding half-length of eyestalks; 0.15 pcl; slender, tapering, sparsely granular; slightly inclined ventrally.

Eyestalks subparallel, slender, tapering, ventrally flattened, slightly movable, not fused to carapace, reaching anterior half

of antennular peduncle article 1; dorsal surface and margins granulate, sparsely spinose; cornea apparently vestigial, not pigmented. Epistome smooth; with spine mesial to base of antenna.

Antennular peduncle 1.06 pcl; articles 1 and 2 minutely granulate; article 3 smooth. Antennal articles granulate or minutely spinular.

Maxilliped 3 ischiobasis subquadrate, surface and margins sparsely granulate; shallow longitudinal sublateral groove; ischium and basis demarcated by scarcely visible, faint shallow groove. Merus as long as ischiobasis; length 3.06× width (excluding spines); tapering distally to rounded apex; surface and margins granulate, spinulate. Palp articulating

slightly proximal to merus midlength. Propodus and carpus spinulate. Dactylus unarmed. Exopod sparsely granulate, distally reaching apex of endopod merus.

Chelipeds (pereopod 1) equal in size and ornamentation, with long fine setae. Merus finely granulate, minutely spinose distomesially. Carpus granulate, with short mesial spine. Propodus palm surfaces sparsely granulate, minutely spinulate, dorsal and ventral margins spinose, extending onto pollex. Dactylus longer than dorsal palm length; dorsal margin spinose; outer surface with faint longitudinal carina, occlusal surfaces of dactylus and pollex smooth or irregularly crenulate, with slight gape when fingers closed.

Pereopods 2 and 3 sparsely setose, sparsely granulate; propodus and carpus extensor margins acutely granulate and with widely spaced spines, flexor margins unarmed or minutely spinose; merus extensor and flexor margins acutely granulate and with short spines; dactylus broadly curved, unarmed on P2, with small proximal spine on P3, without distinct longitudinal rib. Pereopod 3 longest, merus 1.10 pcl; dactylus slightly shorter than combined length of propodus and carpus.

Pereopods 4 and 5 finely granulate, sparsely spinose; longer than pereopod 3 merus; propodus distoextensor margin unarmed; dactylus markedly shorter than propodus, falcate, with corneous apex and 2 obliquely inclined, corneous spines on flexor margin. Pereopod 5 merus, when folded against carapace, reaching anterior one-third of carapace.

Thoracic sternite 3 pentagonal, width 0.76× length; lateral proximal margins subparallel; surface irregular, minutely granulate. Margins of sternites 4 and 5 smooth.

Pleon granulate, spinose, most prominent on somites 2 and 3, very sparsely ornamented on somites 4 and 5. Pleotelson without trace of demarcation between somite 6 and telson; triangular; margins slightly straight; apex blunt; width 1.36× length.

Gonopod 1 distal article cannulate, forming copulatory tube, with long distal setae. Gonopod 2 with articles fused; distomesial margin slightly hollowed, apex acute.

**Etymology.** Named for our friend and colleague, Dwi Listyo (“Yoyo”) Rahayu, one of the Chief Scientists on the expedition (SJADES 2018), for her numerous contributions to carcinology. The name is used as a noun in apposition.

**Remarks.** *Cyonomus dwi*, new species, belongs to the *Cyonomus bathamae* group, which is characterised by having the outer orbital processes inclined anterolaterally, straight rather than curved eyestalks, and the anterolateral margins curving inwards at the base of the outer orbital processes (Ahyong, 2019). Of the species in the *C. bathamae* group, *C. dwi* is morphologically closest to those species having slightly movable eyestalks and a rostrum that is as long as the outer orbital processes, namely *C. triplex* Ahyong, 2019 (southern Australia, 367–539 m; Ahyong, 2019), *C.*

*umitakae* Takeda, 1981 (Japan, 219–500 m; Ahyong & Ng, 2017), and *C. valdiviae* Lankester, 1903 (East Africa, 518–638 m; Ahyong, 2014); all species occurring in outer shelf to upper slope depths. *Cyonomus dwi*, which is also from upper slope habitats, differs from each of these species in the proportionally more slender maxilliped 3 merus (length: width 3.1 versus 2.3–2.6), the longer maxilliped endopod (meral apex reaching level of apex of exopod versus falling short of the apex) and the shape of the lateral margins of the carapace, being straight in the anterior half and convexly swollen along the branchial margins, versus straight or evenly convex in the other species. The new species can be further distinguished from *C. triplex* by the finely granular surface of the carapace (spinular on the anterior half of the carapace in *C. triplex*), and from *C. umitakae* and *C. valdiviae* by the much less prominent ocular and cheliped spines, as well as the arrangement of spines on pereopods 2 and 3 (compare Fig. 1A with Ahyong & Ng, 2017: fig. 6A, Ahyong, 2014: fig. 3A).

Six species of *Cyonomus* are now known from Indonesian waters: *C. chani* Ahyong & Ng, 2017; *C. dianae* Ahyong, 2018; *C. hakuhoae* Takeda & Moosa, 1990; *C. indicus* Ihle, 1916; *C. java* Ahyong, Mitra & Ng, 2020; and *C. dwi*. They can be distinguished in the key below.

**Distribution.** Currently known only from the Sunda Strait, Indonesia; 379–409 m.

**Key to Indonesian species of *Cyonomus***

- 1. Rostrum reaching well beyond eyes..... *C. indicus*
- Rostrum not reaching beyond eyes.....2
- 2. Rostrum distinctly shorter than outer orbital processes.....
- ..... *C. hakuhoae*
- Rostrum as long as or longer than outer orbital processes....3
- 3. Eyestalks subparallel, slightly movable..... *C. dwi*
- Eyestalks strongly divergent, fixed, immovable.....4
- 4. Eyestalks thick stocky, length about 3× width ..... *C. java*
- Eyestalks slender, length at least 4× width .....5
- 5. Carapace with prominent anterolateral spine; rostrum slender, length more than triple width ..... *C. dianae*
- Carapace without anterolateral spine; rostrum short, triangular, length less than twice width ..... *C. chani*

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