RAFFLES BULLETIN OF ZOOLOGY Supplement No. **36**: 305–345
Date of publication: 6 August 2021
DOI: 10.26107/RBZ-2021-0042
http://zoobank.org/urn:lsid:zoobank.org:pub:1AF89C07-5EF6-46E6-9181-7400286475A8

A preliminary account of the Gastropoda (Mollusca) collected by the South Java Deep-Sea (SJADES) Biodiversity Expedition 2018

Siong Kiat **Tan**[1*] & Muhammad Masrur **Islami**[2]

Abstract. The South Java Deep-Sea (SJADES) Biodiversity Expedition 2018 sampled the deeper waters of the Sunda Strait and the slopes of the Sunda Trough off the southern coastline of West and Central Java. More than 60 families of gastropods, estimated to be in excess of 300 species, were collected during the expedition. Pending studies focusing on specific taxon groups or families, around a third of these, or 105 gastropod species from 51 families, are treated in this preliminary account, with remarks on their distribution, first records for Indonesia (of which 32 species are reported), synonymy, and other notes of interest. A provisional list of the superfamilies and families provides a brief overview of gastropod material collected by the expedition.

Key words. SJADES, Indian Ocean, deep water, molluscs, gastropods

INTRODUCTION

The South Java Deep-Sea (SJADES) Biodiversity Expedition 2018, or SJADES 2018, was a recent collaborative effort by the Research Center for Oceanography of Lembaga Ilmu Pengetahuan Indonesia (Indonesian Institute of Sciences [LIPI]), and the National University of Singapore (NUS), represented by the Lee Kong Chian Natural History Museum (LKCNHM) and Tropical Marine Science Institute (TMSI). This is the most recent ship-based expedition to survey the deep waters to the south of Java in over half a century (see Ng & Rahayu, 2021). Previous ships that have sampled at or near the SJADES track include *SMS Planet* (1906–1907), *Dana II* (1928–1930), *Albatross* (Sweden; 1947–1948), and *Galathea II* (1950–1952) (Weber-Van Bosse, 1904: map; Wüst, 1964; Van Aken, 2005; Glasby & Al-Hakim, 2017).

Aiming to investigate the biodiversity of the deep sea off southern Java, the two-week long expedition sampled a total of 63 stations, from the Sunda Strait to Cilacap (Banten to Central Java provinces), aboard the Indonesian research vessel *Baruna Jaya VIII*. Samples were collected from relatively shallow depths of around 100 m to the bathypelagic zone at more than 2,000 m deep (see also Chim et al., 2021). Compared with previous expeditions that covered a much larger area of what has been termed the Indo-Malay-Philippines Archipelago (see Glasby & Al-Hakim, 2017), the targeted and intense sampling efforts of the SJADES cruise provided a unique set of benthic samples from a poorly known area. Hitherto studies based on this cruise have already shown several non-molluscan taxa to be new records for Indonesia or new to science (e.g., Ahyong et al., 2020; Larson et al., 2020; Sidabalok et al., 2020).

Some 400 or more mollusc species of the classes Polyplacophora, Bivalvia, Gastropoda, Cephalopoda, and Scaphopoda were collected during the expedition. Without the benefit of experience and prior studies of the deep-water molluscs of the area, it will be some time before most of the mollusc material from this expedition can be adequately identified. Gastropods make up the overwhelming majority of the thousands of mollusc samples collected by the expedition. The process of sorting and identifying this material is, however, far from complete. To date, less than half of the gastropods have been identified to genus or species.

Pending detailed taxonomic treatments focusing on specific molluscan groups or formal descriptions of new taxa, this preliminary account aims to provide a partial record, and a first look at the gastropod diversity collected by the expedition. We illustrate and treat in some detail 105 gastropod species in 51 families, from different depths. Around 30% of these are new records for Indonesia, with a few notable range extensions. For the purpose of providing an overview of the composition of the gastropod material, a provisional list of the collected subclasses, orders, superfamilies, and families is also compiled.

MATERIAL AND METHODS

The material was identified based on available literature (see references cited herein for the respective species).

[1]Lee Kong Chian Natural History Museum, National University of Singapore, 2 Conservatory Drive, Singapore 117377; Email: nhmtsk@nus.edu.sg (*corresponding author)

[2]Center for Deep Sea Research, Indonesian Institute of Sciences (LIPI), Ambon, Indonesia 97233; Email: muha067@lipi.go.id

ISSN 2345-7600 (electronic) | ISSN 0217-2445 (print)

Current valid names and higher classification largely follow Bouchet et al. (2017) and MolluscaBase (MolluscaBase Eds., 2020). Synonyms and chresonyms are listed as encountered during the course of this study, and no attempt is made to provide complete lists. Species names prefixed with 'aff.' are used where our material shows affinity to the stated species, but is decidedly not conspecific; 'cf.' indicates comparison, and possible conspecificity, with the named species. Species recognised within a genus, but which have not been identified with any known or similar species are indicated by 'sp.'. Inverted commas around a genus name indicate tentative generic assignment that require verification. Other abbreviations used are: lv = live collected specimen; dd = 'dead' shell, either empty or occupied by hermit crab; SL = shell length; SW = shell width. In lots with multiple specimens, measurements of only the smallest and largest specimens are provided as indication of the size range in most instances. Only station codes and collecting depths are provided in the 'material examined' subsections to minimise superfluous information (for details of the collecting stations and methods and equipment used, see Chim et al., 2021). The SJADES material examined in this study is deposited in the Zoological Reference Collection (ZRC) of the LKCNHM, NUS, and the Reference Collection of LIPI Ambon (RCLA), Indonesia.

SPECIES ACCOUNT

Subclass Patellogastropoda

Superfamily Lottioidea

Family Pectinodontidae

Pectinodonta cf. *orientalis* Schepman, 1908
(Fig. 1A)

Pectinodonta orientalis Schepman, 1908: 96, pl. 2 fig. 8 (type locality: Indonesia, Sulawesi, Makassar Strait, 0°32′S, 119°8.5′E [after Marshall et al., 2016]); Sasaki, 2000a: 27, pl. 13 fig. 2; Marshall et al., 2016: 257–260, figs. 6K, L, 9A–F, 11, table 7.

Material examined. SJADES 2018: 1 dd (SL 23.0 mm), stn. CP10, 429–446 m; 1 dd (SL 13.4 mm), stn. CP26, 517–727 m; 42 dd, stn. DW32, 805–977 m; 4 dd (SL 18.6–20.5 mm), stn. CP47, 476–530 m.

Remarks. Based on our initial assessment, there are possibly more than one species of this genus amongst the material collected by the SJADES cruise. These are herein provisionally treated as a single species pending further taxonomic evaluation. Live examples were found on sunken wood.

Subclass Neomphaliones

Order Cocculinida

Superfamily Cocculinoidea

Family Cocculinidae

Cocculina cf. *oblonga* Schepman, 1908
(Fig. 1B)

Cocculina oblonga Schepman, 1908: 18, 19, pl. 1 fig. 5, pl. 8 fig. 9 (type locality: "3°27′.1 N, 125°18′.7 E" [Celebes Sea]).

Material examined. SJADES 2018: 1 dd (SL 9.5 mm), stn. CP37, 163–166 m.

Remarks. Only one specimen of this genus was thus far examined, which we consider tentatively to be *Cocculina oblonga*. Nevertheless, more than one species of this genus is possibly present in the yet unsorted material.

Subclass Vetigastropoda

Order Seguenziida

Superfamily Seguenzioidea

Family Seguenziidae

Seguenzia aff. *sumatrensis* Thiele, 1925
(Fig. 1C)

Seguenzia sumatrensis Thiele, 1925: 46, pl. 13 fig. 10 (type locality: Sumatra).

Material examined. SJADES 2018: 1 dd (SL ca. 5 mm), stn. DW32, 805–977 m.

Remarks. This species appears most similar to *Seguenzia sumatrensis* Thiele, 1925, but differs in having a more concave subsutural ramp, and six spiral ridges (versus four) on the basal side. Possibly rare as only one specimen was thus far examined, but there may be more specimens of this possibly undescribed species amongst the unsorted material.

Family Eucyclidae

Calliotropis infundibulum (R. B. Watson, 1879)
(Fig. 1D)

Trochus (*Margarita*) *infundibulum* R. B. Watson, 1879: 707, 708 (type locality: Marion Island [Prince Edward Islands] [designated by Cernohorsky, 1977]).
Solariella infundibulum – Smith, 1894b: 367, 368; 1904b: 3; Cernohorsky, 1977: 105, fig. 1.
Calliotropis infundibulum – Sasaki, 2000b: 59, pl. 29 fig. 25; Bouchet et al., 2008: 26; Vilvens & Swinnen, 2008: 24, 25; Zhang & Zhang, 2018: 15, 16, figs. 1–5.

Material examined. SJADES 2018: 1 dd (SL 9.8 mm), stn. CP22, 864–870 m; 7 dd (SL 8.9–21.7 mm), stn. CP24, 1,044–1,068 m.

Remarks. Originally described from Bermuda and Marion Island by R. B. Watson (1879), who noted the far and disjunct localities to be of interest, but the conspecificity was

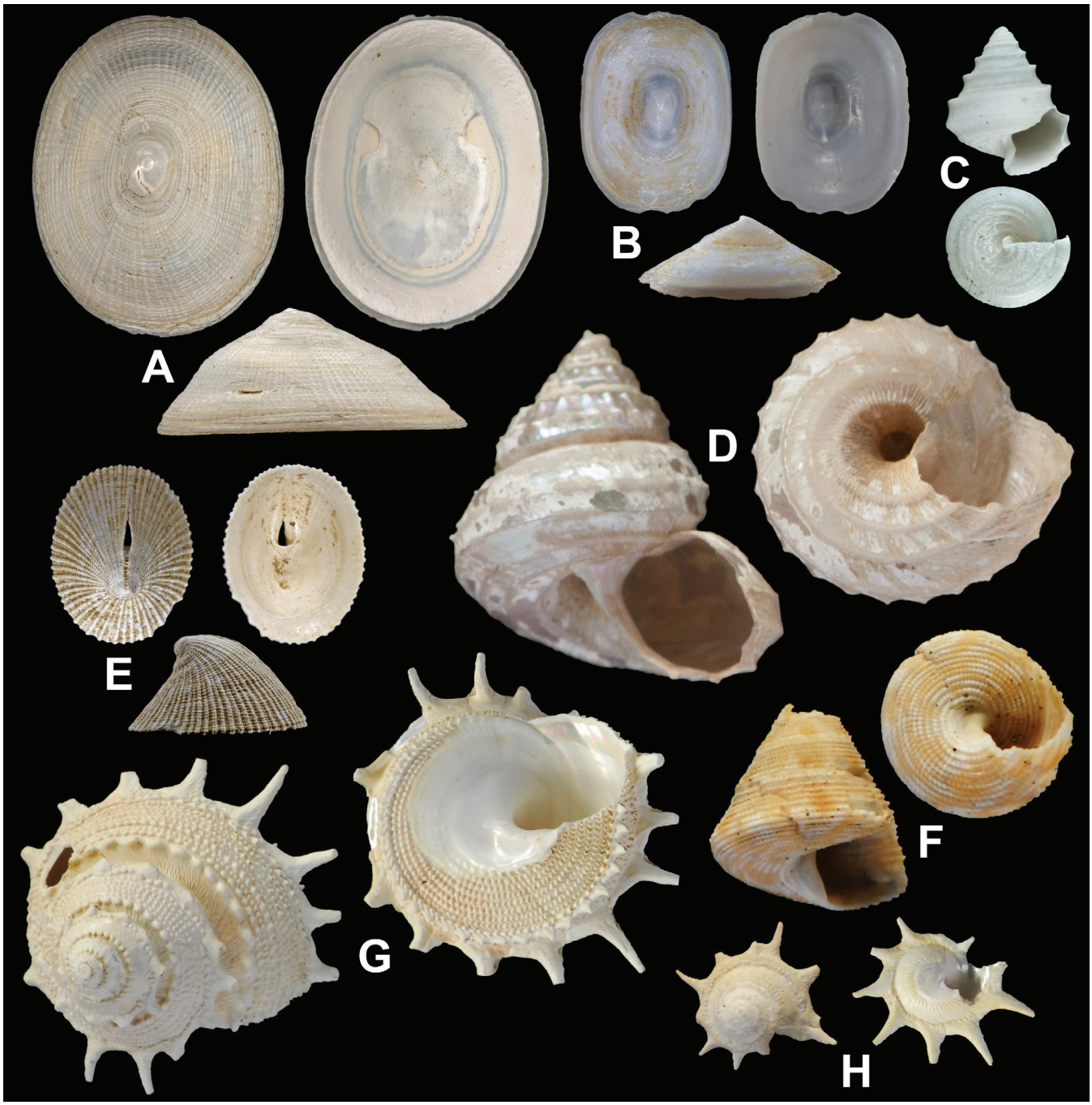

Fig. 1. A, *Pectinodonta* cf. *orientalis* Schepman, 1908 (SL 18.6 mm), stn. CP47; B, *Cocculina* cf. *oblonga* Schepman, 1908 (SL 9.5 mm), stn. CP37; C, *Seguenzia* aff. *sumatrensis* Thiele, 1925 (SL ca. 5 mm), stn. DW32; D, *Calliotropis infundibulum* (R. B. Watson, 1879) (SL 21.7 mm), CP24; E, *Puncturella* sp. (SL 7.6 mm), stn. DW06; F, *Astele* cf. *similaris* (Reeve, 1863) (SL 11.1 mm), stn. CP37; G, *Bolma henica* (R. B. Watson, 1879) (SL 21.7 mm), stn. CP08; H, *Guildfordia superba* Poppe et al., 2005 (SL 5.6 mm), stn. CP37.

doubted by Cernohorsky (1977) despite the morphological similarity. However, this species is currently accepted to be widely distributed from the western Atlantic to western Indo-Pacific (e.g., Vilvens & Swinnen, 2008, and references therein cited). Indo-Pacific records in the literature include the Gulf of Mannar, Andaman Islands, New Caledonia, and the South China Sea (Smith, 1894b, 1904b; Bouchet et al., 2008; Zhang & Zhang, 2018). This is possibly a first record of the species in Indonesia, albeit unsurprising considering its widespread occurrence.

Order Lepetellida

Superfamily Fissurelloidea

Family Fissurellidae

***Puncturella* sp.**
(Fig. 1E)

Material examined. SJADES 2018: 2 dd (SL 6.9–7.6 mm), stn. DW06, 266–294 m; 1 dd, stn. CP07, 379–409 m; 1 lv, stn. CP23, 559–571 m; 1 lv, stn. CP26, 517–727 m; 5 lv,

stn. CP27, 481–557 m; 2 lv, stn. CP33, 312–525 m; 2 lv, stn. CP48, 637–689 m; 7 lv, stn. CP50, 383–425 m; 14 lv, stn. CP51, 569–657 m.

Remarks. The specimens assigned to this genus appear to be represented by only one species among the SJADES material. We were however unable to identify the SJADES specimens with any known species at the time of writing. The SJADES material was collected from depths of between 266 and 689 m, with live specimens from 312–727 m, mostly on sunken wood.

Order Trochida

Superfamily Trochoidea

Family Calliostomatidae

***Astele* cf. *similaris* (Reeve, 1863)**
(Fig. 1F)

Zizyphinus similaris Reeve, 1863: unnumbered caption page to pl., pl. 5 fig. 322a, b (type locality: Lizard Island, Torres Straits).
Calliostoma similarae – Wilson, 1993: 63, pl. 10 fig. 16A, B.

Material examined. SJADES 2018: 1 dd (SL 11.1 mm [early whorls broken]), stn. CP37, 163–166 m.

Remarks. Apparently rare as only one specimen was collected. This species appears closest to *Astele similaris* (Reeve, 1863), but is narrower in profile, with more pronounced and narrower nodulose ribs. Wilson (1993) gives a distribution of Central Indo-West Pacific for *Astele similaris*, but we have not found any record of this species from Indonesia. If proven conspecific, *Astele similaris* will be a new record for Indonesia.

Family Turbinidae

***Bolma henica* (R. B. Watson, 1879)**
(Fig. 1G)

Turbo (*Calcar*) *henicus* R. B. Watson, 1879: 713, 714 (type locality: E. Matuka, Fiji).
Bolma henica – Beu & Ponder, 1979: 27–29, figs. 10a–h, 19a, b; Bouchet & Métivier, 1983: 10–12, figs. 9–11; Kreipl & Alf, 2008: 246, pl. 68 fig. 10.
Astralium henicus – Sasaki, 2000c: 97, 98, pl. 48 fig. 39.

Material examined. SJADES 2018: 1 dd (SL 21.7 mm [with drill hole]), stn. CP08, 425–442 m; 1 dd (SL 21.3 mm [all spines missing]), stn. CP10, 429–446 m; 1 dd (SL 18.0 mm), stn. CP34, 234–243 m.

Remarks. A wide-ranging species recorded from Japan to New Caledonia and westward to Madagascar and South Africa (Beu & Ponder, 1979; Bouchet & Métivier, 1983). Three geographical subspecies are recognised in Castelin et al. (2017), but it is not clear whether the SJADES material is closer to the nominotypical subspecies in Papua New Guinea or to *Bolma henica abyssorum* (Schepman, 1908) in the Philippines. Known depth records of this species vary between 100 and 600 m, with most known records between 250 and 500 m (Beu & Ponder, 1979; Bouchet & Métivier, 1983; Sasaki, 2000c). The SJADES material, none alive, were collected between 234 and 446 m.

***Guildfordia superba* Poppe et al., 2005**
(Fig. 1H)

Guildfordia superba Poppe et al., 2005: 4–6, fig. 1, pl. 1 figs. 1–3 (type locality: Balut Island, Philippines); Kreipl & Alf, 2008: 250, pl. 70 fig. 4a, b; Castelin et al., 2017: table 1.

Material examined. SJADES 2018: 1 dd (fragment), stn. CP34, 234–243 m; 2 dd (SL 5.5–5.6 mm), stn. CP37, 163–166 m.

Remarks. Only two small shells and a larger broken shell were collected. This species is thus far known only from the Philippines and South China Sea (Castelin et al., 2017), and the SJADES material is a first record for Indonesia.

Subclass Caenogastropoda

Superfamily Epitonioidea

Family Epitoniidae

***Cirsotrema rugosum* Kuroda & Itô, 1961**
(Fig. 2A)

Cirsotrema (*Elegantiscala*) *rugosum* Kuroda & Itô, 1961: 253, 254, 262, 263, pl. 16 fig. 8 (type locality: Tosa Bay, Japan); Tsuchida, 2000: 323, pl. 160 fig. 22; Nakayama, 2003: pl. 4 figs. 6–8; Lee & Wu, 2012: 9, 10, fig. 7a, b; Huang & Lee, 2016: 15.
Cirsotrema rugosum – Brown, 2008: 694, pl. 292 fig. 8.

Material examined. SJADES 2018: 2 lv (SL 49.2–69.7 mm [both missing apex]), stn. CP08, 425–442 m.

Remarks. Although herein identified as *Cirsotrema rugosum*, the SJADES specimens appear to have more crowded costae compared to specimens from Japan, Taiwan, and the Philippines (see Tsuchida, 2000, and other references herein cited). Our specimens represent a range extension to the eastern Indian Ocean, but it is uncertain if they could eventually prove to be a distinct, albeit closely related, Indian Ocean species. Our specimens were also collected from waters deeper than the bathymetric range of around 80–200 m known for the species (e.g., Tsuchida, 2000). Apparently uncommon in the area, only a pair of live specimens was collected.

***Eglisia tricarinata* A. Adams & Reeve, in Reeve, 1849**
(Fig. 2B)

Eglisia tricarinata A. Adams & Reeve, in Reeve, 1849: unnumbered caption page to pl., pl. 1 fig. 3 (type locality: China Seas); Adams & Reeve, 1848–1850: 49, pl. 12 fig. 8; Tsuchida, 2000: 323, pl. 160 fig. 17; Dharma, 2005: 98, pl. 24 fig. 13a,

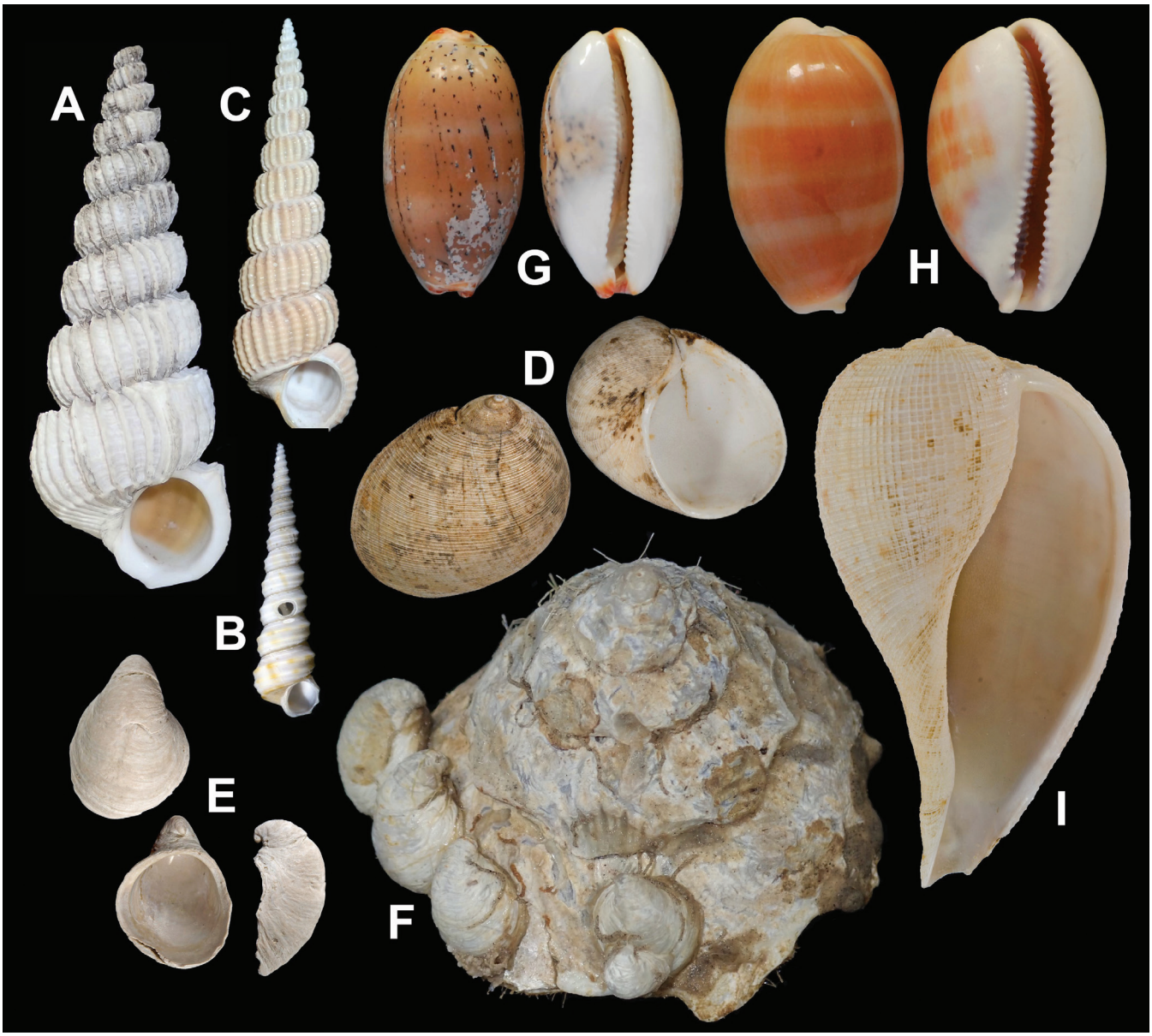

Fig. 2. A, *Cirsotrema rugosum* Kuroda & Itô, 1961 (SL 49.2 mm), stn. CP08; B, *Eglisia tricarinata* A. Adams & Reeve in Reeve, 1849 (SL 26.7 mm), stn. DW32; C, *Narvaliscala percancellata* (Nakayama, 2000) (SL 39.0 mm), stn. CP55; D, *Eunaticina inflata* (Tesch, 1920) (SL 20.8 mm), stn. CP47; E, F, *Malluvium lissum* (E. A. Smith, 1894): E, shell (SL 13.2 mm), stn. DW32, F, several individuals attached along the periphery of a *Xenophora pallidula* (Reeve, 1842), stn. CP39; G, *Luria isabella* (Linnaeus, 1758) (SL 22.3 mm), stn. DW16; H, *Lyncina carneola* (Linnaeus, 1758) (SL 31.9 mm), stn. DW16; I, *Ficus ficus* (Linnaeus, 1758) (SL 52.1 mm), stn. CP47.

b; Brown, 2008: 700, pl. 295 figs. 14, 15; Lee & Wu, 2012: 8, fig. 2; Huang & Lee, 2016: 15.

Material examined. SJADES 2018: 5 dd (SL 10.3–26.7 mm), stn. DW32, 805–977 m.

Remarks. A species with a wide-ranging Indo-West Pacific distribution, and apparently an inshore to shallow subtidal species found from the intertidal zone to around depths of 100 m (e.g., Tsuchida, 2000; Brown, 2008). Only a few small empty shells were collected, and might have originated from much shallower waters. Indonesian specimens from Madura Island, East Java, and Subi Island, West Kalimantan, are figured in Dharma (2005).

***Narvaliscala percancellata* (Nakayama, 2000)**
(Fig. 2C)

Amaea (*Clathroscala*) *subcancellata* Azuma, 1962: 134, 135, fig. 4 (type locality: "off Tosa …, Shikoku, Japan") (junior secondary homonym of *Scalaria subcancellata* d'Orbigny, 1852).
Amaea (*Narvaliscala*) *percancellata* Nakayama, 2000: 286, 287, fig. 29 (replacement name for *Amaea* [*Clathroscala*] *subcancellata* Azuma, 1962); Tsuchida, 2000: 325, 327, pl. 162 fig. 34.
Amaea percancellata – Brown, 2008: 712.
Narvaliscala percancellata – Huang & Lee, 2016: 20.

Material examined. SJADES 2018: 1 dd (SL 39.0 mm), stn. CP55, 378–379 m.

Remarks. Previously recorded from Japan, Taiwan, and the Philippines (e.g., Tsuchida, 2000; Brown, 2008; Huang &

Lee, 2016), the SJADES material represents a range extension of this species to the eastern Indian Ocean. Only one dead shell was collected from a depth of 200–450 m as observed by Tsuchida (2000) for this species.

Order Littorinimorpha

Superfamily Naticoidea

Family Naticidae

Eunaticina inflata (Tesch, 1920)
(Fig. 2D)

Sigaretus inflatus Tesch, 1920: 67, pl. 82 fig. 203a, b (type locality: Timor Island).
Eunaticina inflata – Saito, 2000: 257, pl. 128 fig. 36.
Sigaretotrema inflata – Hylleberg & Kilburn, 2002: 30.

Material examined. SJADES 2018: 2 dd, stn. CP07, 379–409 m; 1 dd (SL 16.1 mm), stn. CP08, 425–442 m; 1 dd (SL 20.8 mm), stn. CP47, 476–530 m.

Remarks. This species seems to be rarely treated in the literature. Described as a fossil taxon from Indonesia, prior records include the Gulf of Mannar and Japan (e.g., Saito, 2000; Hylleberg & Kilburn, 2002), suggesting a widespread Indo-West Pacific distribution. A few empty shells were collected from depths between 380 and 530 m during the expedition. Saito (2000) noted a depth range of 250–350 m for this species.

Superfamily Vanikoroidea

Family Hipponicidae

Malluvium lissum (E. A. Smith, 1894a)
(Fig. 2E, F)

Capulus lissus E. A. Smith, 1894a: 166, pl. 4 figs. 4–6 (type locality: Bay of Bengal).
Amalthea (*Malluvium*) *lissa* – Melvill, 1906: 81–83, figs. 1–4.
Malluvium lissum – Abbott & Dance, 1990: 72, unnumbered text fig.; Smith, 2003: 255.

Material examined. SJADES 2018: 1 dd, stn. DW06, 266–294 m; 7 dd (SL 11.5 mm [largest]), 12 lv, stn. CP07, 379–409 m; 6 lv, stn. CP08, 425–442 m; 1 lv (SL 7.8 mm), stn. CP23, 559–571 m; 2 dd (SL 11.0–13.2 mm), stn. DW32, 805–977 m; 1 dd (SL 13.7 mm), 40 lv, stn. CP39, 528–637 m; 1 dd (SL 16.7 mm), stn. CP45, 684–851 m; 1 dd (SL 7.9–13.3 mm), 17 lv, stn. CP47, 476–530 m.

Remarks. An apparently wide-ranging deep-water species with records from South Africa and the Persian Gulf and Gulf of Oman to the Western Pacific (e.g., Melvill, 1906; Abbott & Dance, 1990; Smith, 2003). The SJADES material was collected from depths between 266 and 977 m. Live specimens were from depths between 379 and 637 m, most of them attached on other gastropod shells that were either alive or dead. Numerous examples were found attached on shells of *Xenophora pallidula* (Reeve, 1842a) at stn. CP39, but these individuals have not been separated from the *Xenophora* shells and are not listed as part of the material examined herein.

Superfamily Cypraeoidea

Family Cypraeidae

Luria isabella (Linnaeus, 1758)
(Fig. 2G)

Cypraea isabella Linnaeus, 1758: 722 (type locality: "Mauritio, Madagascar"); Abbott & Dance, 1990: 95, unnumbered text fig.
Cypraea (*Luria*) *isabella isabella* – Hori, 2000a: 229, pl. 114 fig. 23; Dharma, 2005: 180, pl. 65 fig. 9a, b.
Luria isabella isabella – Lorenz & Hubert, 2000: 82, pl. 29 figs. 1–5, 9–11, 16–18.

Material examined. SJADES 2018: 1 dd (SL 22.3 mm), stn. DW16, 92–103 m.

Remarks. Only an empty shell of this species was recovered from the shallowest station of the expedition. This species occurs from the intertidal zone to depths of around 35 m (Hori, 2000a), and could have originated from even shallower depths. It is a wide-ranging species distributed throughout the Indo-West Pacific (Abbott & Dance, 1990; Lorenz & Hubert, 2000).

Lyncina carneola (Linnaeus, 1758)
(Fig. 2H)

Cypraea carneola Linnaeus, 1758: 719 (type locality: Asia).
Cypraea (*Lyncia* [sic]) *carneola carneola* – Hori, 2000a: 227, pl. 113 fig. 11, 1 unnumbered text fig.
Lyncina carneola carneola – Lorenz & Hubert, 2000: 68, pl. 24 figs. 1–12, pl. 25 fig. b, pl. 107 fig. 21.
Cypraea (*Lyncina*) *carneola* – Dharma, 2005: 180, 346, pl. 65 fig. 8a–d, pl. 138 fig. 5a, b.

Material examined. SJADES 2018: 1 dd (SL 31.9 mm), stn. DW16, 92–103 m; 1 dd (SL 10.0 mm), stn. DW32, 805–977 m.

Remarks. Only empty shells that we consider likely to have originated from shallower areas were collected during the expedition. This species ranges from the Indian Ocean to Southeast Asia and northwards to Japan, and is known to be a shallow-water species that inhabits the intertidal zone to a depth of 35 m (Hori, 2000a; Lorenz & Hubert, 2000). Recent specimens from East Kalimantan and Nusa Tenggara, and fossils from Java are figured in Dharma (2005).

Superfamily Ficoidea

Family Ficidae

***Ficus ficus* (Linnaeus, 1758)**
(Fig. 2I)

Murex ficus Linnaeus, 1758: 752 (type locality not stated).
Ficus subintermedia – Abbott & Dance, 1990: 117, unnumbered text fig. (not *Pyrula subintermedia* d'Orbigny, 1852); Okutani, 2000d: 279, pl. 138 fig. 1 (not *Pyrula subintermedia* d'Orbigny, 1852).
Ficus ficus – Dharma, 2005: 192, 358, pl. 71 fig. 15a, b, pl. 144 fig. 4a, b.

Material examined. SJADES 2018: 2 dd (SL 30.9, 34.0 mm), stn. CP37, 163–166 m; 1 dd (SL 52.1 mm), stn. CP47, 476–530 m.

Remarks. Only a few empty shells of this shallow-water species were collected. Living populations are probably restricted to much shallower depths, as a range of 10–50 m is noted for this species in Okutani (2000d). Recent Indonesian specimens from Seribu Islands and Haruku Island, as well as fossils from Bojong, West Java, are figured in Dharma (2005).

Superfamily Stromboidea

Family Strombidae

***Dolomena abbotti* Dekkers & Liverani, 2011**
(Fig. 3A)

Dolomena abbotti Dekkers & Liverani, 2011: 111–113, pl. 1 figs. 4, 6, pl. 2 figs. 10–12 (type locality: off Phuket Island, west Thailand).
Strombus (*Dolomena*) *labiosus* – Dharma, 2005: 72, pl. 11 fig. 12 (not *Strombus labiosus* Wood, 1848).

Material examined. SJADES 2018: 1 dd (SL 35.0 mm [early apical whorls and anterior part broken]), stn. CP07, 379–409 m; 1 dd (eroded), stn. CP08, 425–442 m.

Remarks. Only two weathered specimens of this species were collected. Although recovered from more than 300 m deep, both are likely to have originated from much shallower waters. This species is largely known from depths of less than 100 m (see Dekkers & Liverani, 2011).

Family Rostellariidae

***Rimellopsis powisii* (Petit de la Saussaye, 1840)**
(Fig. 3B)

Rostellaria powisii Petit de la Saussaye, 1840: 326, 327 (type locality: "côtes de la Chine"); E. A. Smith, 1906: 171.
Tibia powisi – Okutani, 2000a: 181, pl. 90 fig. 1.
Rimellopsis powisii – Kronenberg, 2008: 512, pl. 201 fig. 1a, b.

Material examined. SJADES 2018: 1 dd (35.8 mm [fragment]), stn. CP37, 163–166 m.

Remarks. This species is only represented by a fragment, a body whorl. A bathymetric range of 60–183 m is known for specimens from Japan, the Philippines, and the Andamans (Smith, 1906; Okutani, 2000a; Kronenberg, 2008).

***Rostellariella* cf. *delicatula* (G. Nevill, 1881)**
(Fig. 3C)

Rostellaria delicatula Nevill, 1881: 262 (type locality: off Cheduba, Arrakan Coast [Myanmar]); Melvill & Standen, 1905: 161–163, pl. 2.
Tibia (*Rostellariella*) *delicatula* – Dharma, 2005: 78, pl. 14 fig. 4.
Rostellariella delicatula – Kronenberg & Dharma, 2005: 47, 48, fig. 1A, B.

Material examined. SJADES 2018: 1 dd (SL 26.4 mm), stn. CP02, 257–281 m; 7 dd (broken juvenile shells and fragments), stn. DW06, 266–294 m; 1 dd (SL 40.3 mm [juvenile]), stn. CP07, 379–409 m; 1 dd (SL 11.2 mm), stn. DW32, 805–977 m; 1 dd (fragment), stn. CP34, 234–243 m; 3 lv (SL 130.2–135.7 mm [rostrum slightly broken in shortest specimen]), stn. CP56, 183–255 m.

Remarks. Live adult specimens, with a fully formed and thickened outer lip, were obtained from one station, trawled from mud sediment in relatively shallow depths of around 180–260 m. Compared to specimens from the Andaman Sea in the ZRC, the SJADES specimens are more than twice as large, relatively slender, with a narrower aperture and a longer rostrum, and bear conspicuous spiral ribs on the early whorls. Although the spiral bands and outer lip denticles are known to vary from three to five, specimens with five denticles are notably rare (see Melvill & Standen, 1905). It is thus noteworthy that the SJADES specimens appear to consistently bear five denticles and corresponding spiral bands, compared to the normally four in other populations. Further study could thus prove the SJADES species to be distinct. Except for an odd record from Vietnam, the distribution of this species is largely restricted to the Indian Ocean (see Kronenberg & Dharma, 2005, and references therein cited). Prior records of this species from Indonesia include a "juvenile" specimen measuring 115 mm from Bengkulu, Southwest Sumatra, that is probably identical to the SJADES material (see Dharma, 2005); and more typical forms from the Arafura Sea (see Kronenberg & Dharma, 2005).

Family Xenophoridae

***Onustus exutus* (Reeve, 1842a)**
(Fig. 3D)

Phorus exutus Reeve, 1842a: 160, pl. 215 figs. 9, 10 (type locality: China [given in Reeve, 1843–1845]); Reeve, 1843–1845: unnumbered caption page to pl., pl. 2 fig. 7a, b.
Xenophora (*Onustus*) *exuta* – Ponder, 1983: 62–63, figs. 11b, 13f, 14q, r, 31i–k, 41; Dharma, 2005: 96, pl. 23 fig. 8a, b.
Tugurium exutum – Abbott & Dance, 1990: 74, unnumbered text fig.
Stellaria (*Onustus*) *exutus* – Okutani, 2000b: 203, 205, fig. 10.

Material examined. SJADES 2018: 1 dd, stn. DW06, 266–294 m; 13 dd (some broken) (SW 29.6 mm [largest]), 2 lv, stn. CP37, 163–166 m; 1 dd (SW 59.9 mm), stn. CP56, 183–255 m.

Remarks. This species is known to be widely distributed in the Central Indo-Pacific, including tropical Western Australia,

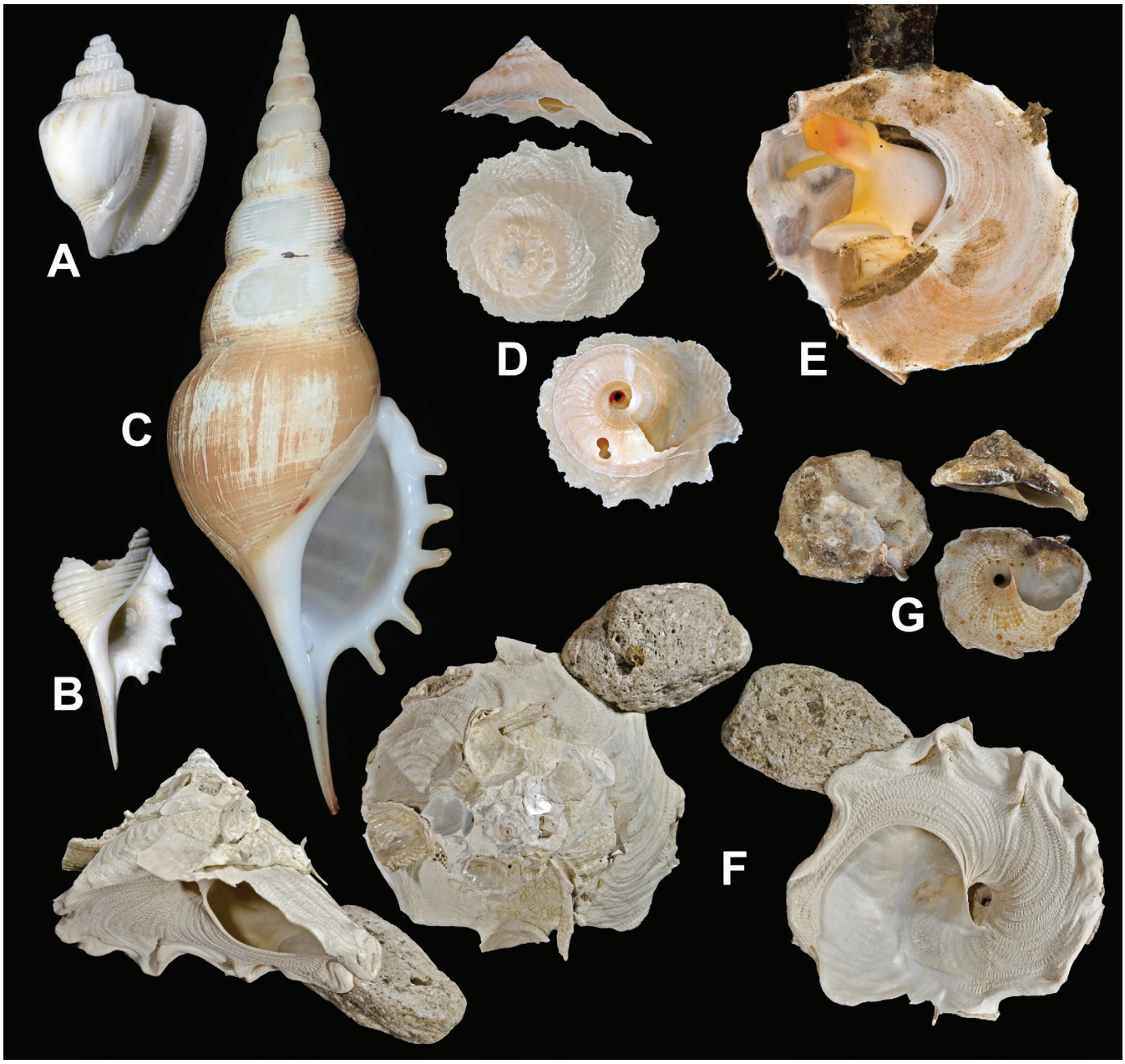

Fig. 3. A, *Dolomena abbotti* Dekkers & Liverani, 2011 (SL 34.8 mm), stn. CP07; B, *Rimellopsis powisii* (Petit de la Saussaye, 1840) (35.8 mm), stn. CP37; C, *Rostellariella* cf. *delicatula* (G. Nevill, 1881) (SL 135.4 mm), stn. CP56; D, *Onustus exutus* (Reeve, 1842) (SW 29.6 mm), stn. CP37; E, F, *Xenophora pallidula* (Reeve, 1842): E, live animal (SW ca. 50 mm), F, shell (SW 53.2 mm), both stn. CP23; G, *Xenophora solarioides* (Reeve, 1845) (SW 20.6 mm), stn. CP08.

with records from Japan, Indonesia, Australia, and Papua (Ponder, 1983). A bathymetric range of around 18–350 m is known for this relatively shallow-water species (Ponder, 1983; Okutani, 2000b). The SJADES material was collected from 163–255 m, live ones from around 163–166 m.

Xenophora pallidula (Reeve, 1842a)

(Figs. 2F, 3E, F)

Phorus pallidulus Reeve, 1842a: 160, pl. 214 fig. 4 (type locality: Coast of Japan [given in Reeve, 1843]); 1843: 162, 163; 1843–1845: unnumbered caption page to pl., pl. 1 fig. 4.

Xenophora pallidula – Watson, 1886: 464, pl. 28 fig. 6; Abbott & Dance, 1990: 75, unnumbered text fig.; Okutani, 2000b: 203, pl. 101 fig. 1.

Xenophora (*Xenophora*) *pallidula* – Ponder, 1983: 41–43, figs. 9c, 14c, d, 23j–m, 36.

Material examined. SJADES 2018: 1 dd (SW 24.3 mm [excluding foreign objects]), stn. CP03, 283–398 m; 20 dd (SW 43.8 mm [largest, excluding foreign objects]), 88 lv, stn. CP07, 379–409 m; 1 dd (SW 42.5 mm), stn. CP10, 429–446 m; 1 dd (SW 44.1 mm [excluding foreign objects]), stn. DW17, 448–469 m; 7 dd (SW 7.4–45.8 mm [excluding foreign objects]), stn. CP20, 325–362 m; 1 dd (SW 53.2 mm [excluding foreign objects]), stn. CP23, 559–571 m; 2 dd (SW 48.6–50.4 mm), stn. CP27, 481–557 m; 2 dd, stn. CP34, 234–243 m; 10 dd (some broken), 47 lv, stn. CP39, 528–637 m; 2 dd, stn. CP45, 684–851 m.

Remarks. Many specimens of this species were collected from 234–851 m during the expedition, including more than 100 live examples. However, live ones were collected in good numbers from only two stations (CP07 and CP39), at depths between 379 and 637 m, suggesting that they congregate or occur commonly only in certain areas or conditions. This species is reported to be found mostly on continental slopes, in depths between 50 and 1,050 m, throughout the Indian Ocean to central Indo-Pacific, from southern Japan south to eastern Australia (Ponder, 1983; Okutani, 2000b). Prior records from Indonesia include West Sumatra, Selat Bali, Sebuku (Kalimantan), and South Sulawesi (Ponder, 1983).

***Xenophora solarioides* (Reeve, 1845 [in 1843–1845])**
(Fig. 3G)

Phorus solarioides Reeve, 1845 (in 1843–1845): unnumbered caption page to pl., pl. 3 fig. 8 (type localities: "Island of St. Nicolas and Zebu, Philippines"); A. Adams & Reeve, 1848–1850: 50, pl. 17 fig. 6.
Xenophora solarioides – Watson, 1886: 464; Abbott & Dance, 1990: 74, unnumbered text fig.; Okutani, 2000b: 203, pl. 101 fig. 6.
Xenophora (*Xenophora*) *solarioides solarioides* – Ponder, 1983: 47–49, figs. 10a, 12b, 14e, 27a–j, 37.
Xenophora solarioides solarioides – Dharma, 2005: 96, pl. 23 fig. 2a, b.

Material examined. SJADES 2018: 1 dd (SW 20.6 mm), stn. CP08, 425–442 m.

Remarks. Only an old empty shell of this species was detected amongst the xenophorid specimens examined for this study. It is likely to have originated from much shallower waters as this species is known to inhabit the subtidal zone to depths of around 170 m (Ponder, 1983; Okutani, 2000b). Numerous records from Indonesia are known of this common Indo-West Pacific species (e.g., Ponder, 1983; Dharma, 2005).

Superfamily Tonnoidea

Family Bursidae

***Bufonaria* cf. *crumena* (Lamarck, 1816)**
(Fig. 5A)

Ranella crumena Lamarck, 1816: pl. 412 fig. 3 (type locality not stated).
Bufonaria (*Bufonaria*) *crumena* – Beu, 2005: 9, 10, figs. 1–5.
Bufonaria crumena – Dharma, 2005: 194, 352, pl. 72 fig. 5a, b, pl. 141 fig. 9a–d.

Material examined. SJADES 2018: 1 dd (SL 14.1 mm), stn. DW32, 805–977 m; 2 dd (SL 16.2–17.3 mm), stn. CP37, 163–166 m.

Remarks. Only a few small empty shells of this species were found. No larger specimens were available for comparison and confirmation of the identification. *Bufonaria crumena* occurs throughout the Indian Ocean, including the Gulf of Arabia to South Africa, but not in the Red Sea (Beu, 2005). In Indonesia, it has been recorded from southwest Sumatra and East Java, and fossils are quite common at some Miocene and Pliocene localities in Java (Beu, 2005; Dharma, 2005). The SJADES material could have originated from shallower waters as this species appears to be common in the shallow subtidal waters along the southern coasts of Java, where specimens appear to be common on beaches, apparently discarded by the local fishermen (S. K. Tan, pers. obs.).

Fig. 4. *Echinophoria wyvillei* (R. B. Watson, 1886) (SL 110.5 mm), stn. CP38.

***Bursina gnorima* (Melvill, 1918)**
(Fig. 5B)

Bursa gnorima Melvill, 1918: 138, pl. 4 fig. 1 (type locality: Jask, Gulf of Oman).
Bursina gnorima – Beu, 2005: 25, 26, figs. 39–41.

Material examined. SJADES 2018: 2 dd (SL 5.9–10.4 mm), stn. DW32, 805–977 m; 1 dd (SL 25.6 mm [anterior slightly broken]), stn. CP33, 312–525 m; 3 lv (SL 27.7–54.8 mm), stn. CP56, 183–255 m.

Remarks. This species is known from the northern Indian Ocean, Gulf of Arabia, and throughout the central western Pacific including Indonesia (Beu, 2005). Identification of the small specimens from stn. DW32 remains tentative. They are here considered to probably be juveniles of this species, only because the shells are more elongate than the specimens herein identified as *Bufonaria* cf. *crumena* (Lamarck, 1816; see above).

Family Cassidae

Echinophoria wyvillei (R. B. Watson, 1886)
(Fig. 4)

Cassis (*Bezoardica*) *wyvillei* R. B. Watson, 1886: 408, pl. 14 fig. 13 (type locality: "Lat. 12° 43′ S., long. 122° 9′ E. Philippines" [off Tablas Island, after Abbott, 1968]).
Phalium (*Echinophoria*) *coronadoi wyvillei* – Abbott, 1968: 100, 101, pls. 80–82.
Phalium coronadoi wyvillei – Abbott & Dance, 1990: 112, unnumbered text fig.
Echinophoria wyvillei – Okutani, 2000c: 277, pl. 276 fig. 20; Beu, 2008: 373–380, figs. 32, 33.

Material examined. SJADES 2018: 1 lv (SL 110.5 mm), stn. CP38, 290–295 m.

Remarks. A species that has been recorded from Japan, Taiwan, the Philippines, Indonesia, Australia, Solomon Islands, New Caledonia, Vanuatu, Tonga, and Fiji (Abbott, 1968; Beu, 2008, and references therein cited). A bathymetric range of around 200–600 m is known for this species (Okutani, 2000c; Beu, 2008). Apparently rare in the area, only one specimen was collected throughout the expedition from depths of around 290 m.

Galeodea alcocki (E. A. Smith, 1906)
(Fig. 5C)

Morio alcocki E. A. Smith, 1906d: 170 (type locality: off Coromandel Coast, India); Schepman, 1909: 124, pl. 10 fig. 6.
Galeoocorys nipponica Sakurai & Habe, in Habe, 1961a: 43, pl. 20 fig. 1.
Oocorys alcocki – Abbott & Dance, 1990: 115, unnumbered text fig.
Galeodea (*Galeoocorys*) *nipponica* – Okutani, 2000c: 273, pl. 135 fig. 3.
Galeodea alcocki – Beu, 2008: 291–295, fig. 12.

Material examined. SJADES 2018: 1 dd (broken), stn. CP07, 379–409 m; 1 dd (SL 84.6 mm), stn. CP20, 325–362 m; 1 lv, stn. CP22, 864–870 m; 1 lv (SL 77.1 mm), stn. CP33, 312–525 m; 1 lv (SL 82.6 mm), stn. CP50, 383–425 m; 1 dd (broken), stn. CP 51, 569–657 m.

Remarks. This species has been recorded from the Bay of Bengal to Indonesia, northwestern Australia, the Philippines, and southern Japan, at depths of around 200–500 m (Beu, 2008). A live specimen taken from muddy sediment in depths between 864 and 870 m (i.e., stn. CP22) may be the deepest record for this species thus far. The rest of the material is from depths between 312 and 657 m.

Galeodea leucodoma Dall, 1907
(Fig. 5D)

Galeodea leucodoma Dall, 1907: 166, 167 (type locality: off Kagoshima, Japan); Okutani, 2000c: 273, pl. 135 fig. 1; Beu, 2008: 308–312, fig. 16.
Morio granulosa Schepman, 1909: 123, 124, pl. 10 fig. 4 (type locality: "7° 19'.4 S., 116° 49'.5 E").
Galeoocorys leucodoma – Abbott & Dance, 1990: 115, unnumbered text fig.

Material examined. SJADES 2018: 3 lv, stn. CP18, 1,060–1,073 m; 7 dd, 27 lv, stn. CP22, 864–870 m; 4 dd, 11 lv, stn. CP25, 876–937 m; 2 lv, stn. CP28, 957–1,022 m; 1 dd (SL 39.4 mm), stn. CP33, 312–525 m; 1 lv (SL 39.9 mm), stn. CP35, 603–686 m; 3 lv, stn. CP48, 637–689 m.

Remarks. This species occurs throughout the western Pacific archipelagos, and has been previously recorded from the Tanimbar Islands in eastern Indonesia, and closer to our sampled sites, from northwestern Australia (Beu, 2008). A bathymetric range of 100–500 m is given for this species in Okutani (2000c), and Beu (2008) noted that small specimens are abundant in depths of 400–900 m in eastern Indonesia. This species is apparently rather common in the area as a good number, including many live specimens, were recovered from depths between 600 and 1,100 m during the expedition.

Semicassis bisulcata (Schubert & Wagner, 1829)
(Fig. 5E, F)

Cassis bisulcata Schubert & Wagner, 1829: 68, 69 (type locality not stated).
Phalium (*Semicassis*) *bisulcatum* – Abbott, 1968: 126–131, pls. 106–114.
Phalium bisulcatum – Abbott & Dance, 1990: 112, unnumbered text fig.
Semicassis bisulcata – Beu, 2005: 51–53; Dharma, 2005: 198, 354, pl. 74 fig. 9a–d, pl. 142 fig. 1a–c.

Material examined. SJADES 2018: 1 lv (61.3 mm), stn. CP02, 257–281 m; 1 dd (SL 29.0 mm), stn. DW16, 92–103 m; 2 dd, stn. CP37, 163–166 m; 1 dd (SL 44.9 mm), stn. CP55, 378–379 m.

Remarks. This species is widely distributed in the Indo-West Pacific, with many records across the Indonesian Archipelago, including Miocene, Pliocene, and Pleistocene fossils from Java, Sumatra, Ceram, and Timor (Abbott, 1968; Beu, 2005; Dharma, 2005). Presumably more common in the intertidal to shallow subtidal regions, only a few specimens were collected from depths ranging from 92 to 380 m during the expedition. The only live specimen was collected from clayey mud sediment, 257–281 m deep. Two distinct forms were collected, but are herein treated as a single species following Abbott (1968) and Beu (2005).

Family Cymatiidae

Gyrineum bituberculare (Lamarck, 1816)
(Fig. 5G)

Ranella bitubercularis Lamarck, 1816: 4, pl. 412 fig. 6 (type locality: Bohol, Philippine islands [designated by Beu, 1998]).
Gyrineum bituberculare – Beu, 1998: 38–42, figs. 6l, m, 8a–k, 9a–j; Dharma, 2005: 200, pl. 75 fig. 3a, b.

Material examined. SJADES 2018: 1 dd (SL 12.7 mm), stn. DW16, 92–103 m.

Remarks. Only one small specimen of this species was seen amongst the sorted cymatiids: an empty juvenile shell, but

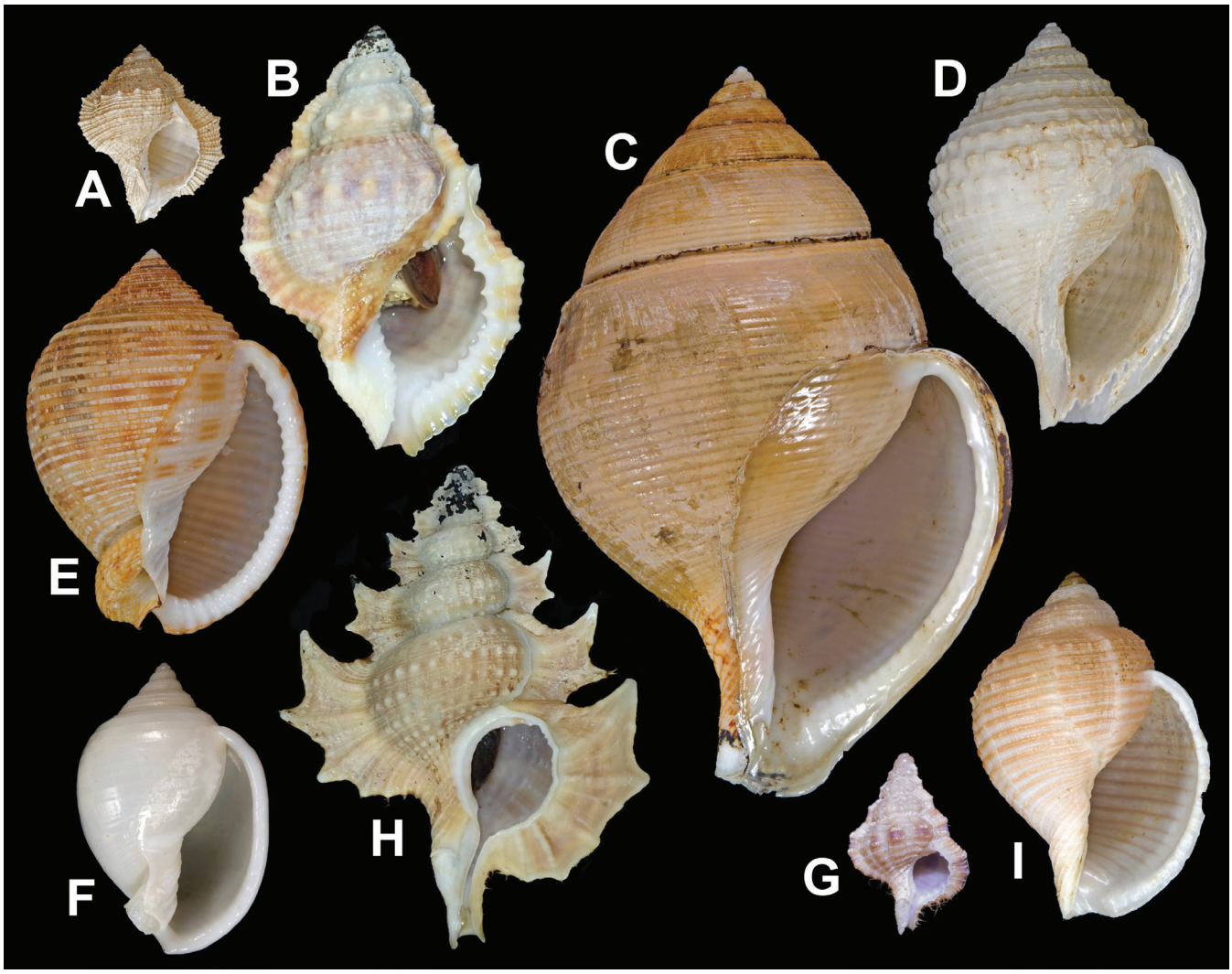

Fig. 5. A, *Bufonaria* cf. *crumena* (Lamarck, 1816) (SL 17.3 mm), stn. CP37; B, *Bursina gnorima* (Melvill, 1918) (SL 54.8 mm), stn. CP56; C, *Galeodea alcocki* (E. A. Smith, 1906) (SL 84.6 mm), stn. CP20; D, *Galeodea leucodoma* Dall, 1907 (SL 48.4 mm), stn. CP25; E, F, *Semicassis bisulcata* (Schubert & Wagner, 1829): E (SL 44.9 mm), stn. CP55, F (SL 29.0 mm), stn. DW16; G, *Gyrineum bituberculare* (Lamarck, 1816) (SL 12.6 mm), stn. DW16; H, *Gyrineum perca* (Perry, 1811) (SL 61.3 mm), stn. CP56; I, *Eudolium bairdii* (Verrill & S. Smith in Verrill, 1881) (SL 38.3 mm), stn. CP22.

nevertheless in good condition with periostracal hairs still intact. This species occurs throughout the Western Pacific to Torres Strait and northwestern shelf of Western Australia, and to southern India (Beu, 1998). Specimens from Karimata Strait are figured in Dharma (2005).

***Gyrineum perca* (Perry, 1811)**
(Fig. 5H)

Biplex perca Perry, 1811: unnumbered caption page to pl., pl. 4 fig. 5 (type locality: Sagami Bay, Honshu, Japan [designated by Beu, 1998]); Beu, 1998: 28–31, figs. 1, 4a–e, g–i, 6c.

Material examined. SJADES 2018: 4 dd (SL 26.4–43.7 mm), 5 lv (SL 18.4–54.3 mm), stn. CP02, 257–281 m; 7 dd, 38 lv, stn. CP07, 379–409 m; 11 lv (SL 34.2–49.8 mm), stn. CP08, 425–442 m; 1 dd (broken), stn. CP10, 429–446 m; 1 dd (SL 15.0 mm), stn. DW19, 172–182 m; 9 dd (SL 20.0–44.5 mm), 12 lv (SL 21.0–42.9 mm) stn. CP20, 325–362 m; 1 lv (SL 41.5 mm), stn. CP23, 559–571 m; 1 dd (SL 7.7 mm), stn. DW32, 805–977 m; 1 dd (broken), stn. CP34, 234–243 m; 1 lv (SL 20.4 mm), stn. CP38, 290–295 m; 1 lv (SL 50.5 mm), stn. CP55, 378–379 m; 2 lv (SL 46.4–61.3 mm), stn. CP56, 183–255 m. Japan: 1 ex. (SL 59.9 mm) (ZRC.MOL.11512), off Kanaya, Uraga Strait, Chiba Prefecture, coll. Apr. 2001; 1 ex. (SL 57.6 mm) (ZRC.MOL.9638), Suruga Bay, Shizuoka, Honshu, coll. 2017.

Remarks. This species is moderately common in the area surveyed by the expedition, with a good number of specimens collected. Our specimens are nevertheless determined to be *Gyrineum perca* with reservations. Comparisons with specimens from Japan showed the SJADES material to be broader and more squat in appearance, with more inflated whorls and a relatively short spire, suggesting an affinity to *Gyrineum bozzettii* (Beu, 1998), although the sculptural details are closer to *Gyrineum perca* (see Beu, 1998). The SJADES material could also be interpreted as intergrades between the two species, thus requiring further study for a taxonomic resolution. Beu (1998) considers *Gyrineum bozzettii* to probably be widely distributed in the westem and

northern Indian Ocean. Its range would be extended to the eastern Indian Ocean if the SJADES specimens are proven to be *Gyrineum bozzettii*. The distribution of *Gyrineum perca* is known to be from the Western Pacific to north Western Australia (e.g., Beu, 1998; Okutani, 2000e). Our specimens were obtained from depths between 172 and 977 m, live ones from between 183 and 571 m.

Family Tonnidae

***Eudolium bairdii* (Verrill & S. Smith, in Verrill, 1881)**
(Fig. 5I)

Dolium biardii Verrill & S. Smith, in Verrill, 1881: 299 (type locality: 39°58′N, 71°13′W, off Barnegat, New Jersey).
Morio lineata Schepman, 1909: 124, pl. 10 fig. 5 (type locality: "3° 27' S., 131° 0'.5 E. … Ceram Sea").
Eudolium bairdii – Marshall, 1992: 33–35, figs. 10–19, 22, 31–36, 38; Beu et al., 2008: 104.

Material examined. SJADES 2018: 1 dd (fragment), stn. CP20, 325–362 m; 1 dd (SL 38.3 mm), 2 lv, stn. CP22, 864–870 m; 2 dd, stn. DW32, 805–977 m; 1 lv (SL 55.5 mm), stn. CP39, 528–637 m; 1 dd, stn. CP47, 476–530 m; 1 dd (fragment), stn. CP51, 569–657 m; 1 dd (broken), stn. CP55, 378–379 m; 1 dd (broken), stn. CP58, 505–564 m; 1 lv (SL 41.9 mm), stn. CP59, 579–659 m.

Remarks. This is a very wide-ranging species distributed in the Atlantic, Mediterranean, and throughout the Indo-West Pacific, in depths ranging from 17 to 823 m (Marshall, 1992; Beu et al., 2008). Our specimens were collected from 325–977m. Live specimens were from depths between 528 and 870 m.

Order Neogastropoda

Superfamily Buccinoidea

Family Belomitridae

***Belomitra brachytoma* (Schepman, 1913a)**
(Fig. 6A)

Surcula brachytoma Schepman, 1913a: 424, pl. 24 fig. 11 (type locality: Timor Sea).
Belomitra brachytoma – Kantor et al., 2012: 28–32, figs. 11, 15, 16.

Material examined. SJADES 2018: 1 dd (SL 62.1 mm), stn. CP25, 876–937 m.

Remarks. This species has been recorded from Taiwan to Indonesia, the Philippines, and Solomon Islands, in depths ranging from 365 to 1,140 m (Kantor et al., 2012). The SJADES material represents the westernmost record of this species and extends its known range towards the Indian Ocean. Previous Indonesian records are from the Timor and Arafura Seas (e.g., Schepman, 1913a; Kantor et al., 2012). It is probably rare in the area as only one specimen of this species was seen in the material thus far sorted.

Family Buccinidae

***Preangeria dentata* (Schepman, 1911)**
(Fig. 6B)

Tritonidea dentata Schepman, 1911: 303, pl. 19 fig. 8 (type locality: "West of Kwandang-bay-entrance" [North Sulawesi]).
Preangeria dentata – Vermeij, 1998: 27, fig. 1; Raven, 2016: 95, pl. 5 fig. 2.

Material examined. SJADES 2018: 1 dd, 3 lv, stn. CP07, 379–409 m; 1 lv, stn. CP08, 425–442 m; 1 lv (SL 26.4 mm), stn. CP10, 429–446 m; 1 dd (SL 23.6 mm), stn. CP20, 325–362 m; 1 dd (SL 27.7 mm), CP27, 481–557 m; 2 dd (SL 12.8, 30.2 mm), stn. CP34, 234–243 m; 2 dd (SL 24.5–29.5 mm), 1 lv (SL 17.4 mm), stn. CP50, 383–425 m; 1 lv, stn. CP56, 183–255 m.

Remarks. Hitherto recorded from south Taiwan, the Philippines, Sulawesi, and New Caledonia (Vermeij, 1998; Raven, 2016), this species' presence in the SJADES material represents a range extension to the eastern Indian Ocean. Our specimens were collected from depths between 183 and 600 m, well within the bathymetric range of 50–786 m reported for this species (Vermeij, 1998; Raven, 2016).

Family Colubrariidae

***Metula* cf. *inflata* (Houbrick, 1984)**
(Fig. 6C)

Acamptochetus inflatus Houbrick, 1984: 421–423, fig. 1 (type locality: off Lubigon, Bohol, Philippines).
Metula inflata – Hylleberg & Kilburn, 2002: 37; Fraussen, 2008: 36, pl. 313 fig. 9.

Material examined. SJADES 2018: 1 dd (SL 23.6 mm), stn. CP20, 325–362 m; 1 dd, stn. CP27, 481–557 m; 3 dd (SL 39.9 mm [largest specimen]), stn. CP34, 234–243 m.

Remarks. Only a few empty shells of this species were obtained by the expedition, from depths between 230 and 560 m. From a search of the literature, our shells are very close in size and sculpture to *Metula inflata*, but have a less inflated body whorl and more inflated spire whorls so the profile is slightly different compared to the holotype figured in Houbrick (1984). However, the SJADES material is within the distributional range of *Metula inflata*, which is from the Gulf of Mannar to the Andaman Sea and eastwards to the Philippines (Houbrick, 1984; Hylleberg & Kilburn, 2002).

Family Columbellidae

***Euplica turturina* (Lamarck, 1822)**
(Fig. 6D)

Colombella turturina Lamarck, 1822: 296 (type locality not given).
Euplica turturina – Drivas & Jay, 1990: 168, fig. 8; Dharma, 2005: 102, pl. 26 fig. 18a, b; deMaintenon, 2008: 346, fig. 7; Monsecour & Monsecour, 2018: 121, pl. 1 figs. G, H.

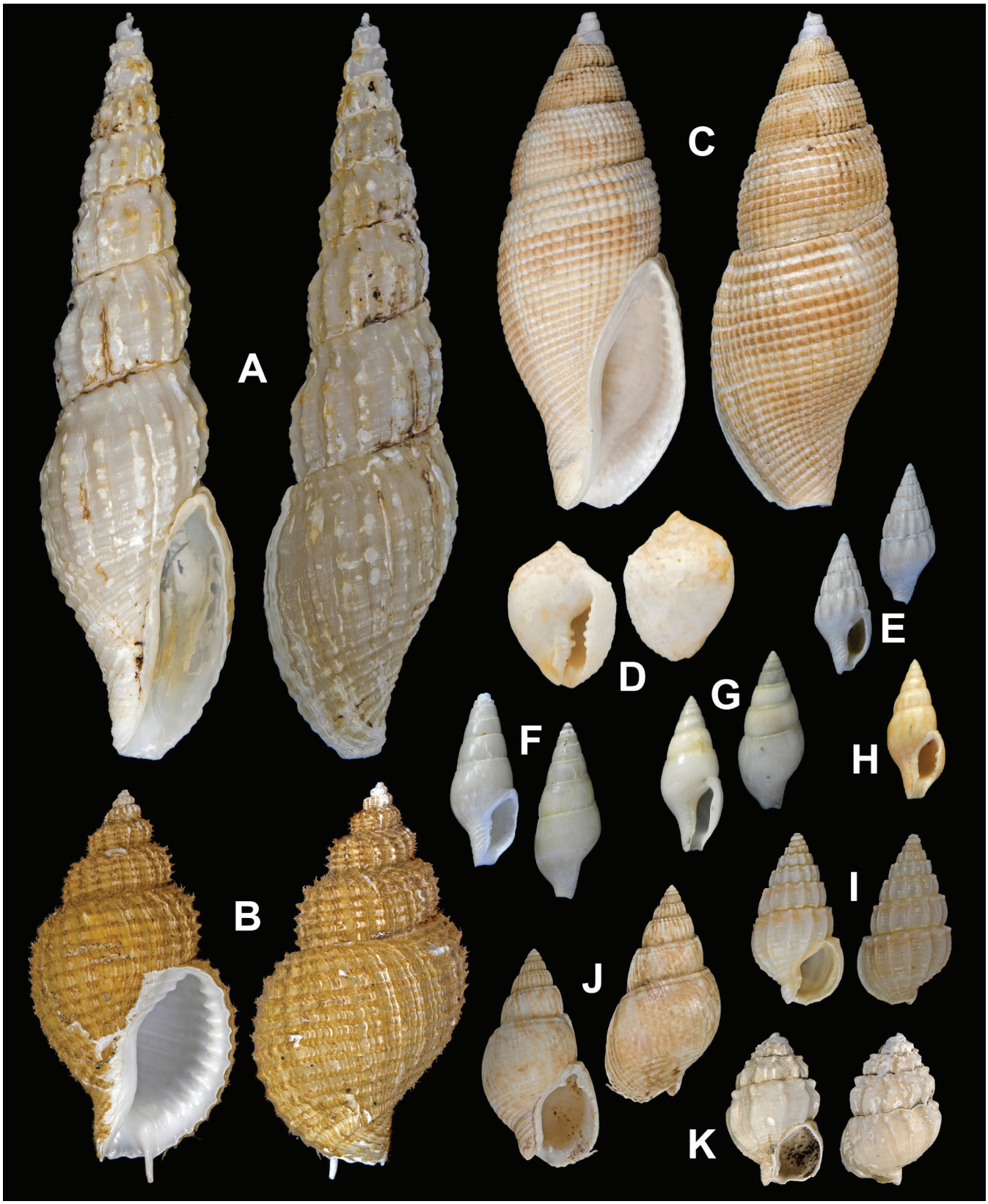

Fig. 6. A, *Belomitra brachytoma* (Schepman, 1913) (SL 62.1 mm), stn. CP25; B, *Preangeria dentata* (Schepman, 1911) (SL 30.2 mm), stn. CP34; C, *Metula* cf. *inflata* (Houbrick, 1984) (SL 39.9 mm), stn. CP34; D, *Euplica turturina* (Lamarck, 1822) (SL 10.6 mm), stn. DW16; E, *Indomitrella* sp. (SL 9.7 mm), stn. DW06; F, *Mitrella* cf. *intermissalineata* K. Monsecour & D. Monsecour, 2016 (SL 13.2 mm), stn. CP51; G, *Mitrella* sp. (SL 10.8 mm), stn. CP59; H, *Sulcomitrella humerosa* K. Monsecour & D. Monsecour, 2018 (SL 8.8 mm), stn. DW06; I, *Nassarius babylonicus* (R. B. Watson, 1882) (SL 11.4 mm), stn. DW17; J, *Nassarius* aff. *psila* (R. B. Watson, 1882) (SL 16.2 mm), stn. DW32; K, *Nassarius dilutus* (E. A. Smith, 1899) (SL 10.4 mm), stn. CP62.

Material examined. SJADES 2018: 1 dd (SL 10.6 mm), stn. DW16, 92–103 m.

Remarks. A species that is widely distributed throughout the Indo-West Pacific, north to southern Japan, and east to Hawaii and French Polynesia (deMaintenon, 2008). Only one empty shell of this common species was collected from the shallowest station of the expedition.

Indomitrella sp.
(Fig. 6E)

Material examined. SJADES 2018: 12 dd (SL 8.0–9.7 mm), stn. DW06, 266–294 m; 5 dd (SL 8.4–10.5 mm), stn. CP07, 379–409 m; 1 dd (SL 10.7 mm), stn. DW32, 805–977 m.

Remarks. Several specimens of this undetermined species were obtained from depths between 266 and 977 m. We were not able to find a good match for our material at the time of writing. Its shell sculpture slightly resembles *Indomitrella haziersensis* Drivas & Jay, 1990, but the shell is distinctly stouter and lacks a subsutural ridge.

Mitrella cf. *intermissalineata* K. Monsecour & D. Monsecour, 2016
(Fig. 6F)

Mitrella intermissalineata K. Monsecour & D. Monsecour, 2016: 323, figs. 6I, J, Q (type locality: New Caledonia).

Material examined. SJADES 2018: 2 dd (SL 12.3–13.4 mm), stn. CP23, 559–571 m; 4 dd (SL 9.2–11.9 mm), stn. DW32, 805–977 m; 2 dd (SL 11.4–11.6 mm), stn. CP47, 476–530 m; 6 dd (SL 11.3–13.2 mm), stn. CP51, 569–657 m; 2 dd (SL 12.5–13.3 mm), stn. CP59, 579–659 m.

Remarks. The shell profile and general sculpture of our specimens agree reasonably well with *Mitrella intermissalineata* K. Monsecour & D. Monsecour, 2016, a species thus far known only from New Caledonia. However, the pattern of beige axial lines associated with this species is not present in our specimens, which are also generally larger than *Mitrella intermissalineata*, and from deeper depths of around 500–900 m. Further study is needed to determine if our specimens are conspecific. The species described from New Caledonia was collected from depths of between 200 and 320 m (Monsecour & Monsecour, 2016).

Mitrella sp.
(Fig. 6G)

Material examined. SJADES 2018: 1 dd (SL 10.8 mm), stn. CP59, 579–659 m.

Remarks. This unidentified species is apparently rare. Only one empty shell was thus far found in the material.

Sulcomitrella humerosa K. Monsecour & D. Monsecour, 2018
(Fig. 6H)

Sulcomitrella humerosa K. Monsecour & D. Monsecour, 2018: 144, pl. 5 figs. S, T (type locality: French Polynesia, Marqueses, Hiva Oa Island).

Material examined. SJADES 2018: 5 dd (SL 4.9–8.8 mm), stn. DW06, 266–294 m.

Remarks. This recently described species is known only from the Marquesas, French Polynesia. Our SJADES material is thus a first record for Indonesia. The specimens are, however, identified as this species with some reservation; they are not as distinctly shouldered, hence their spire profile differs from the holotype figured in Monsecour & Monsecour (2018). They were found in only a single station during the expedition, well within the bathymetric depth of 163–413 m known for this species (see Monsecour & Monsecour, 2018).

Family Nassariidae

Nassarius babylonicus (R. B. Watson, 1882)
(Fig. 6I)

Nassa babylonica R. B. Watson, 1882: 366, 367 (type locality: "Lat. 9° 26′ N., long. 123° 45′ E. Philippines").
Nassa (*Aciculina*) *babylonica* – Watson, 1886: 185, 186, pl. 11 fig. 8.
Nassa turrifera E. A. Smith, 1895: 5, pl. 1 fig. 6 (type locality: Off Coromandel coast [India]).
Nassarius (*Profundinassa*) *babylonicus* – Cernohorsky, 1984: 173, 174, pl. 36 figs. 1–4.
Profundinassa babylonica – Tsuchiya, 2000b: 449, pl. 223 fig. 55.

Material examined. SJADES 2018: 6 dd (SL 6.7–13.4 mm), 9 lv, stn. CP07, 379–409 m; 1 dd (SL 11.4 mm), stn. DW17, 448–469 m; 6 dd, 16 lv, stn. CP23, 559–571 m; 14 dd (SL 8.5–14.2 mm), stn. DW32, 805–977 m; 2 lv, stn. CP35, 603–686 m; 1 lv, stn. CP44, 970–1,013 m; 4 dd (SL 7.5–13.9 mm), stn. CP51, 569–657 m.

Remarks. A widespread Indo-West Pacific species, with records from east and southeast Africa to Japan and eastern Australia (Cernohorsky, 1984). Tsuchiya (2000b) gives a bathymetric range of 400–800 m, while Cernohorsky (1984) states a range from the subtidal to 1,786 m deep. This species is moderately common in the SJADES material collected from depths between 379–1,013 m.

Nassarius aff. *psila* (R. B. Watson, 1882)
(Fig. 6J)

Nassa psila R. B. Watson, 1882: 364, 365 (type locality: off Raine Island, Torres Straits).
Nassa (*Alectryon*) *psila* R. B. Watson, 1886: 179, pl. 11 fig. 4.
Nassarius (*Alectrion*) *psila* – Cernohorsky, 1984: 63, 64, pl. 2 figs. 9, 10.

Material examined. SJADES 2018: 3 dd (SL 9.5–11.7 mm), stn. DW32, 805–977 m; 2 dd (SL 16.2 mm [1 broken, not measured]), stn. CP37, 163–166 m.

Remarks. The overall shell shape and colouration of our specimens resemble those of *Nassarius comptus* (A. Adams, 1852 [in 1852–1853]), but the subsutural groove and suture differ, making our material more akin to *N. algidus* (Reeve, 1853 [in 1853–1854]). The latter is, however, a much larger species with somewhat different shell pattern and prominent sutural nodules (see Cernohorsky, 1984), which are absent in our specimens. The shell pattern of the SJADES specimens also resembles *Nassarius tangaroai* Kool, 2006, but that species is relatively slenderer with weaker axial ribs around the first three whorls. As far as we can determine at the moment, our specimens appear to be closest to *Nassarius psila* because of their distinct subsutural groove, prominent axial ribs in the early teleoconch whorls that are crossed by spiral striae, and sutural gemmules. Further study is needed for a taxonomic resolution. No live specimen of this species was collected.

Nassarius dilutus (E. A. Smith, 1899)
(Fig. 6K)

Nassa diluta E. A. Smith, 1899: 243, 244 (type locality: off Colombo, Sri Lanka [restricted by Cernohorsky, 1984]); Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 11 fig. 3, 3a.
Nassarius (*Profundinassa*) *dilutus* – Cernohorsky, 1984: 174, 175, pl. 36 figs. 6–9.
Profundinassa diluta – Tsuchiya, 2000b: 449, pl. 223 fig. 56.

Material examined. SJADES 2018: 1 dd (SL 10.4 mm), stn. CP62, 1,623–1,630 m.

Remarks. This species is widely distributed from East Africa to India, Japan, and the Arafura Sea (Cernohorsky, 1982). Only a single empty shell of this species was seen from one of the deeper stations in the Sunda Strait. Although Cernohorsky (1982) stated that it occurs from the subtidal to a depth of 1,788 m, it is probably a deep-water species as most of the known material in the literature were collected from more than 900 m deep (e.g., Smith, 1899; Cernohorsky, 1984). The bathymetric range of 600–1,200 m given for this species by Tsuchiya (2000b) seems more plausible. Our only specimen came from depths of more than 1,600 m.

Superfamily Volutoidea

Family Cancellariidae

Nipponaphera habei Petit, 1972
(Fig. 7A)

Nipponaphera funiculata – Habe, 1961b: 434, pl. 24 fig. 13 (not *Cancellaria funiculata* Hinds, 1843b).
Nipponaphera habei Petit, 1972: 103; Hasegawa, 2000a: 581, pl. 289 fig. 6; Dharma, 2005: 134, pl. 42 fig. 6; Verhecken, 2008: 820, pl. 705 fig. 5.

Material examined. SJADES 2018: 1 dd (SL 13.3 mm [anterior chipped]), stn. DW32, 805–977 m.

Remarks. Only a single empty shell was recovered, which probably originated from much shallower waters as depth ranges of 10–120 m have been reported for this species (e.g., Hasegawa, 2000a; Verhecken, 2008). A specimen from Maluku is figured in Dharma (2005).

Sydaphera cf. *fulva* (Y. C. Lee & Lan, 2002)
(Fig. 7B)

Cancellaria (*Sydaphera*) *fulva* Y. C. Lee & Lan, 2002: 22, fig. 2a–d (type localities: "[O]ff Nan-Fang-Au [and] off Tiao-Yu-Tai Island" [northeastern Taiwan]).

Material examined. SJADES 2018: 1 lv (SL 36.7 mm), stn. CP10, 429–446 m; 1 lv (SL 33.3 mm), stn. CP20, 325–362 m; 1 lv (SL 50.6 mm), stn. CP55, 378–379 m; 4 lv (SL 27.1–44.9 mm), stn. CP57, 223–269 m; 2 dd (1 fragment), 2 lv (SL 50.6, 57.0 mm), stn. CP58, 505–564 m.

Remarks. Several specimens of this species were collected from depths between 223 and 564 m, most of them alive. The shells are very similar to the types of *Sydaphera fulva* figured in Lee & Lan (2002), but our specimens seem to differ in having more crowded axial ribs that are crossed by relatively stronger spiral cords, which result in a more prominently nodulose sculpture. However, the figures in Lee & Lan (2002) do not show enough detail of the shell sculpture for a confident assessment, and the species does not seem to have been treated by subsequent authors (see also Verhecken, 2011). Further study is needed to evaluate whether the SJADES material is within the range of variation exhibited by *Sydaphera fulva* or it is a closely related but distinct species.

Family Marginellidae

Cryptospira tricincta (Hinds, 1844a)
(Fig. 7C)

Marginella tricincta Hinds, 1844a: 76 (type locality: Makassar Strait).
Cryptospira tricincta – Dharma, 2005: 150, 330, pl. 50 fig. 10a, b, pl. 130 fig. 11a–c; Wakefield, 2010: 10–12, figs. 9–22, 27–29, 38, 73, 77, 78, 233–236, 241–253.

Material examined. SJADES 2018: 1 dd (slightly broken subadult specimen), stn. CP07, 379–409 m; 1 dd (SL 20.0 mm), stn. CP37, 163–166 m.

Remarks. The distribution of this species is rather restricted, from the Sunda Shelf to Taiwan and eastward to the Sulu Sea, at depths of 10–100 m (Wakefield, 2010). Only a couple of empty shells were collected during the expedition.

Superfamily Muricoidea

Family Muricidae

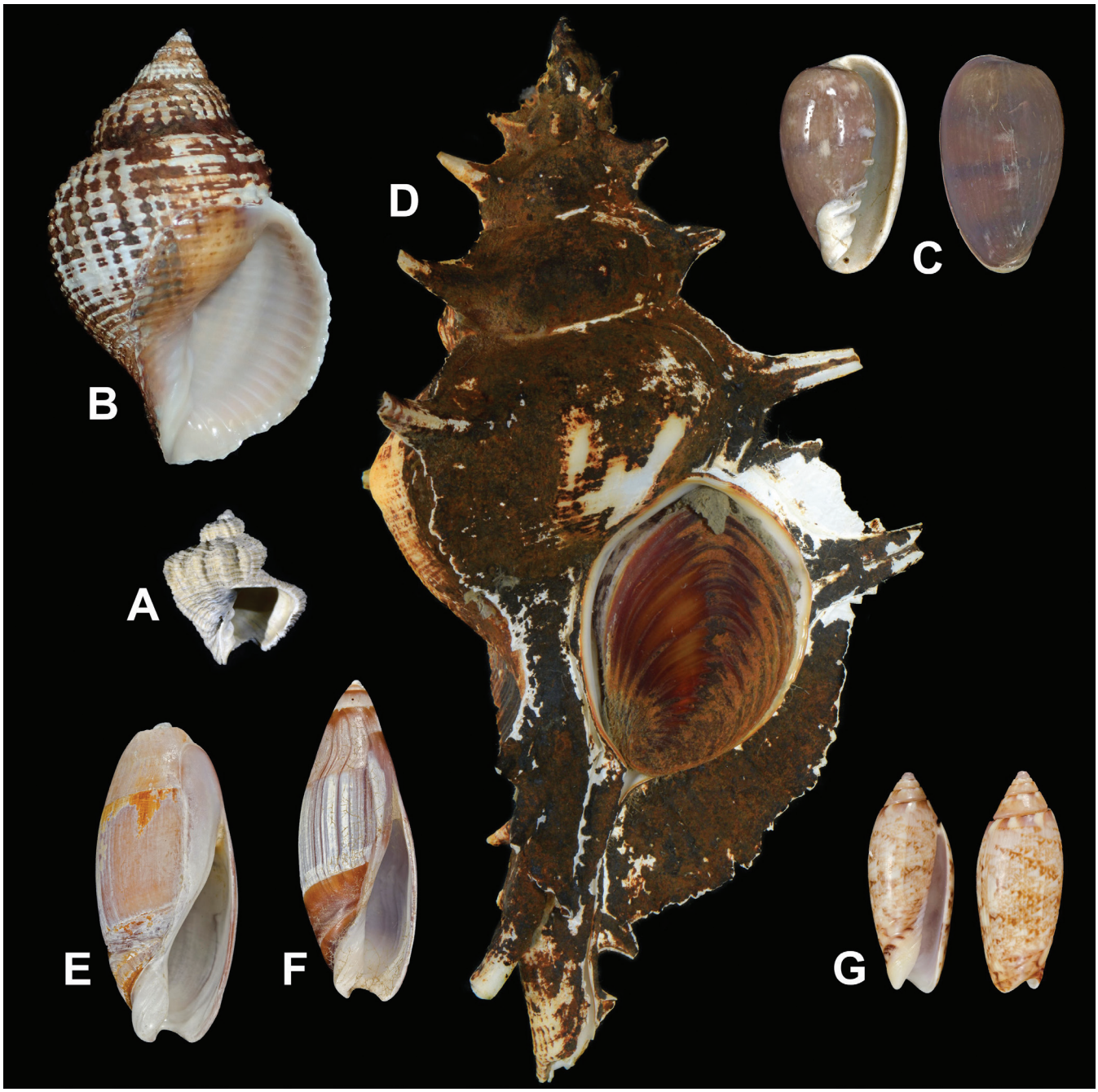

Fig. 7. A, *Nipponaphera habei* Petit, 1972 (SL 13.3 mm), stn. DW32; B, *Sydaphera* cf. *fulva* (Y. C. Lee & Lan, 2002) (SL 44.9 mm), stn. CP57; C, *Cryptospira tricincta* (Hinds, 1844) (SL 20.0 mm), stn. CP37; D, *Siratus alabaster* (Reeve, 1845) (SL 126.8 mm), stn. CP55; E, *Turrancilla alcocki* (E. A. Smith, 1906) (SL 34.2 mm), stn. CP22; F, *Turrancilla glans* (E. A. Smith, 1899) (SL 34.0 mm), stn. CP07; G, *Oliva semmelinki* Schepman, 1890 (SL 22.7 mm), stn. DW16.

***Siratus alabaster* (Reeve, 1845 [in 1845–1849])**
(Fig. 7D)

Murex alabaster Reeve, 1845 (in 1845–1849): unnumbered caption page to pl., pl. 10 fig. 39 (type locality: Island of Cagayan, Province of Misamis, Island of Mindanao).

Siratus alabaster – Abbott & Dance, 1990: 134, unnumbered text fig.; Tsuchiya, 2000a: 371, pl. 184 fig. 29; Houart, 2014: 85, 86, pl. 79 figs. A–H.

Chicoreus (*Siratus*) *alabaster* – Dharma, 2005: 164, pl. 57 fig. 1.

Material examined. SJADES 2018: 1 lv (SL 55.8 mm), stn. CP20, 325–362 m; 1 lv (SL 126.8 mm), stn. CP55, 378–379 m.

Remarks. This well-known species is distributed from Japan to Papua New Guinea and Indonesia (e.g., Tsuchiya, 2000a; Dharma, 2005; Houart, 2014). Apparently rather uncommon, only two live specimens were obtained. A bathymetric range of 50–200 m is given in Tsuchiya (2000a), but the SJADES specimens were from deeper depths of 325–379 m.

Superfamily Olivoidea

Family Ancillariidae

Turrancilla alcocki (E. A. Smith, 1906)
(Fig. 7E)

Ancilla alcocki E. A. Smith, 1906: 172 (type locality: Andaman Island).
Ancilla alcockii – Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 20 figs. 5, 6.

Material examined. SJADES 2018: 3 dd (SL 31.9–40.8 mm), 2 lv (SL 27.4–29.6 mm), stn. CP22, 864–870 m; 1 dd (SL 31.4 mm), 9 lv (SL 34.5 mm [largest]), stn. CP23, 559–571 m; 1 lv (SL 20.4 mm), stn. CP25, 876–937 m; 1 dd (SL 31.4 mm), 1 lv (SL 37.8 mm), stn. CP33, 312–525 m; 1 lv (SL 26.5 mm), stn. CP35, 603–686 m; 2 lv (SL 29.9–31.3 mm), stn. CP47, 476–530 m.

Remarks. It appears that little has been published on this species since its description. It is no doubt a deep-water species. A depth of 378 fathoms (ca. 691 m) was reported for the type material (Smith, 1906). Our specimens were obtained from depths between 312 and 937 m, and represent a first record of this species from Indonesia.

Turrancilla glans (E. A. Smith, 1899)
(Fig. 7F)

Ancilla glans E. A. Smith, 1899: 246 (type locality: Andaman Islands); Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 11 fig. 6, 6a.
Turrancilla glans – Kantor et al., 2017: 500, fig. 6V.

Material examined. SJADES 2018: 12 dd (SL 34.5 mm), stn. CP07, 379–409 m; 2 dd (SL 22.2–24.0 mm), 2 lv (SL 23.4–35.2 mm), stn. CP10, 429–446 m; 1 lv (SL 42.6 mm), stn. CP33, 312–525 m; 1 lv (SL 41.9 mm), stn. CP39, 528–637 m; 2 lv (SL 25.8–26.2 mm), stn. CP50, 383–425 m; 4 lv (SL 33.5–47.9 mm), stn. CP55, 378–379 m.

Remarks. This species, which is a new record for Indonesia, seems to have been scarcely treated since its description. Other than the type locality, this species was recorded by Kantor et al. (2017) from the Philippines. Some specimens with an eroded apex resemble *Turrancilla apicalis* (Ninomiya, 1988), but these are provisionally regarded to be conspecific pending further study. A bathymetric range of 312–637 m was recorded from our material.

Family Olividae

Oliva semmelinki Schepman, 1890
(Fig. 7G)

Oliva semmelinki Schepman, 1890: 196 (type locality: Larantuka Strait, near Flores); 1891: pl. 9 fig. 4a, b; van Osselaer et al., 1994: 30, 33, 39; Sargent & Petuch, 2008: 496, pl. 543 figs. 8, 9.

Material examined. SJADES 2018: 6 dd (1 fragment) (SL 14.5–22.7 mm), 1 lv (SL 21.7 mm), stn. DW16, 92–103 m.

Remarks. Several specimens of this species were obtained in only one station, which is incidentally the shallowest, dredged from sediment composed mainly of gravel and sand. It is noted to occur only on coral sand at the bottom of reefs, in depths of 35–70 m, at Hansa Bay, Papua New Guinea (van Osselaer et al., 1994), while depths of 60–150 m were noted for specimens from the Philippines (Sargent & Petuch, 2008). This species is seldom mentioned in the literature and appears to be rather restricted in distribution in the Philippines, Indonesia, and Melanesia (Sterba, 2003). Our material may be the westernmost record of the species thus far.

Superfamily Conoidea

Family Borsoniidae

Bathytoma aff. *atractoides* (R. B. Watson, 1881)
(Fig. 8A)

Pleurotoma (*Genota*) *atractoides* R. B. Watson, 1881: 407–409 (type locality: "Lat. 9° 26′ N., long. 123° 45′ E. Philippines"); 1886: 301, pl. 20 fig. 8.
Bathytoma atractoides – Sysoev & Bouchet, 2001: 292–294, figs. 84–96.

Material examined. SJADES 2018: 1 dd (SL 36.0 mm), stn. CP02, 257–281 m; 15 dd (SL 21.7–33.3 mm), stn. CP07, 379–409 m; 3 dd (SL 27.5–37.0 mm), stn. CP10, 429–446 m; 5 lv (SL 32.0–56.3 mm), stn. CP12, 615–698 m; 1 dd (SL 37.7 mm), stn. DW19, 172–182 m; 2 dd (SL 21.9–29.9 mm), stn. CP20, 325–362 m; 4 dd (SL 32.0–39.5 mm), stn. CP22, 864–870 m; 1 lv (SL 40.9 mm), stn. CP26, 517–727 m; 11 lv, 5 dd (SL 24.7–49.0 mm), stn. CP33, 312–525 m; 1 lv (SL 59.7 mm), stn. CP34, 234–243 m; 1 dd (SL 53.1 mm), stn. CP45, 684–851 m; 3 dd (SL 27.7–48.1 mm), stn. CP47, 476–530 m; 2 dd (SL 26.5–30.1 mm), stn. CP55, 378–379 m; 4 lv (SL 31.5–44.4 mm), stn. CP56, 183–255 m; 7 lv (SL 22.0–35.9 mm), stn. CP57, 223–269 m; 2 dd (SL 31.6–52.9 mm), stn. CP58, 505–564 m.

Remarks. Despite the application of this species name, none of our specimens appear to be a good match to the original illustration of the species in Watson (1886). Although provisionally treated here as a single variable species (sensu Sysoev & Bouchet, 2001), distinctly different forms were noted, so it is possible that the SJADES material comprises more than two species. A resolution of this difficult group would probably require a combination of molecular and morphological analyses (see Puillandre et al., 2010). A wide bathymetric range of 172–870 m is recorded for the SJADES material thus far examined.

Bathytoma oldhami (E. A. Smith, 1899)
(Fig. 8B)

Pleurotoma (*Bathytoma*) *oldhami* E. A. Smith, 1899: 238 (type locality: off Travancore coast, in 360 fathoms); 1904a: 459.

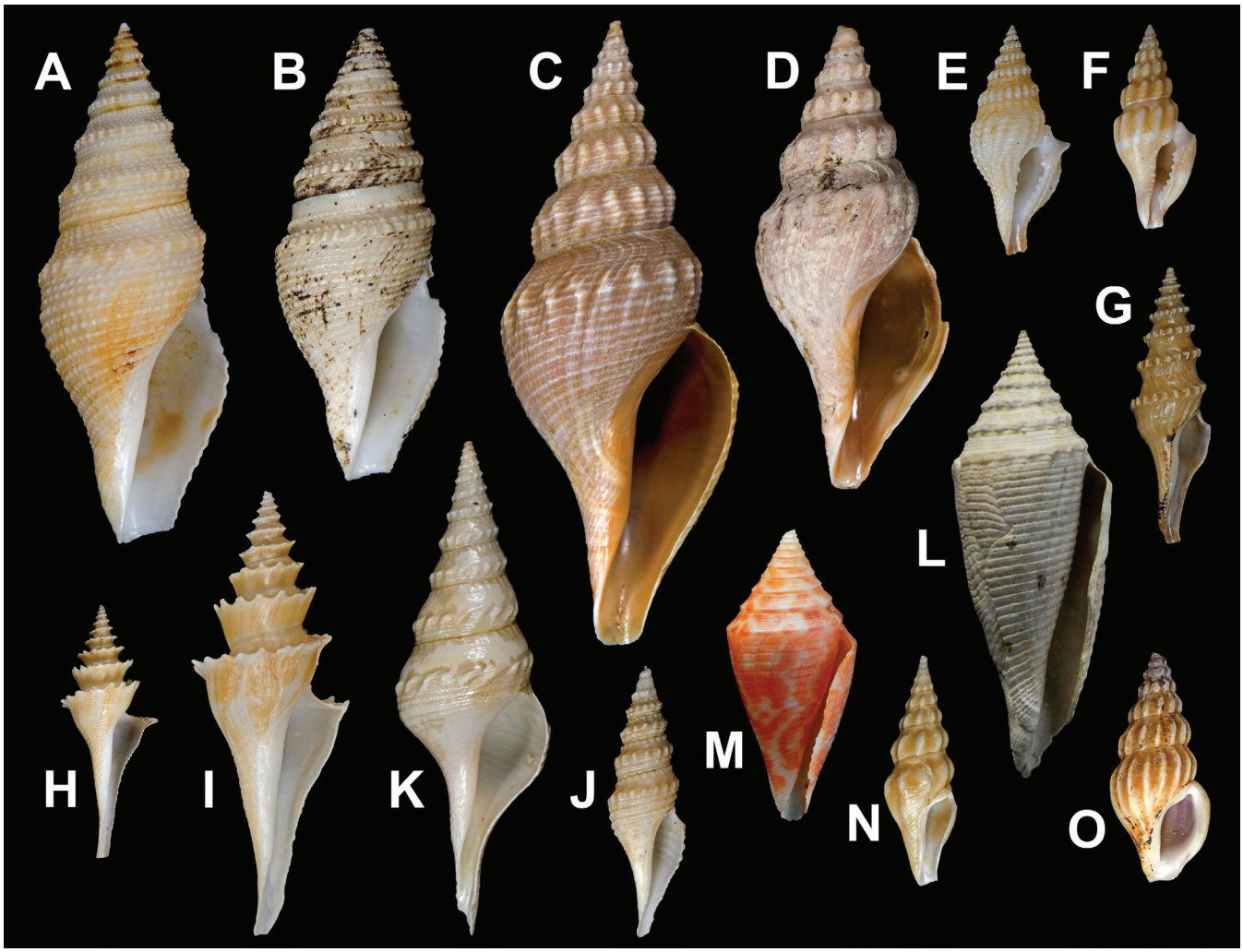

Fig. 8. A, *Bathytoma* aff. *atractoides* (R. B. Watson, 1881) (SL 53.1 mm), stn. CP45; B, *Bathytoma oldhami* (E. A. Smith, 1899) (SL 45.8 mm), stn. CP23; C, D, *Borsonia symbiotes* (Wood-Mason & Alcock, 1891): C (SL 69.3 mm), stn. CP22, D (SL 47.6 mm), stn. CP22; E, *Glyphostoma lyuhrurngae* K. Y. Lai, 2005 (SL 21.7 mm), stn. CP20; F, *Glyphostoma* aff. *candidum* (Hinds, 1843) (SL 14.2 mm), stn. CP37; G, *Pagodaturris molengraaffi* (Tesch, 1915) (SL 28.2 mm), stn. CP20; H, *Cochlespira pulchella* (Schepman, 1913) (SL 24.2 mm), stn. CP20; I, *Cochlespira travancorica* (E. A. Smith, 1896) (SL 40.4 mm), stn. CP20; J, *Comispira* cf. *compta* Kantor et al., 2018 (SL 27.1 mm), stn. CP23; K, *Sibogasyrinx* cf. *pyramidalis* (Schepman, 1913) (SL 46.3 mm), stn. CP47; L, *Conasprella orbignyi* (Audouin, 1831) (SL 45.9 mm), stn. CP20; M, *Conus praecellens* (A. Adams, in H. Adams & A. Adams, 1853) (SL 30.9 mm), stn. CP37; N, *Drillia* sp. (SL 18.9 mm), stn. DW17; O, *Horaiclavus* sp. (SL 21.6 mm), stn. CP07.

Pleurotoma oldhami – Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 9 fig. 2, 2a.
Bathytoma (*Parabathytoma*) *oldhami* – Sysoev, 1996: 20, figs. 7, 92, 93.

Material examined. SJADES 2018: 2 dd (SL 45.6–47.9 mm), stn. CP22, 864–870 m; 1 dd (SL 45.8 mm), stn. CP23, 559–571 m; 1 dd (SL 54.5 mm), stn. CP25, 876–937 m; 1 dd (SL 45.7 mm), stn. CP33, 312–525 m; 1 lv (SL 54.4 mm), stn. CP55, 378–379 m; 1 dd (SL 54.1 mm), stn. CP58, 505–564 m.

Remarks. Little is known about this species as it is seldom treated by modern authors. Prior records are from southern India and the Maldives, in depths between 494 and 660 m (Smith, 1899; Sysoev, 1996). The SJADES material was obtained from depths between 312 and 937 m, and represents a significant range extension and the first record of this species in Indonesia.

Borsonia symbiotes **(Wood-Mason & Alcock, 1891)**
(Fig. 8C, D)

Pleurotoma symbiotes Wood-Mason & Alcock, 1891: 444, 445, fig. 13a, b (type locality: Laccadive Sea).
Pleurotoma (*Surcula*) *symbiotes* – Smith, 1894a: 161, pl. 3 figs. 7, 8.
Pleurotoma (*Surcula*) *subcorpulenta* E. A. Smith, 1894a: 161, 162, pl. 3 fig. 6 (type locality: "Off Colombo, Ceylon, lat. 6° 32′ N., long. 79° 37′ E").
Surcula symbiotes – Schepman, 1913a: 421, 422.
? *Comitas symbiotes* – Powell, 1969: 275, 276, pl. 221 fig. 4.
? *Comitas symbiotes subcorpulenta* – Powell, 1969: 276, pl. 221 fig. 5.

Material examined. SJADES 2018: 2 dd (SL 47.6–69.5 mm), stn. CP22, 864–870 m; 3 dd (SL 25.2–32.2 mm), stn. CP23, 559–571 m; 1 dd, 18 lv (SL 25.0–61.0 mm), stn. CP24, 1,044–1,068 m; 1 dd (SL 33.5 mm), stn. CP26, 517–727 m; 1 dd (SL 29.8 mm), stn. CP27, 481–557 m; 3 dd (SL

34.5–37.9 mm), stn. CP44, 970–1,013 m; 3 lv (35.4–56.3 mm), stn. CP48, 637–689 m.

Remarks. Shells of all live specimens collected and examined are similarly covered with *Epizoanthus* as noted by Wood-Mason & Alcock (1891). The majority of our specimens agree better with *Pleurotoma* (*Surcula*) *subcorpulenta* E. A. Smith, 1894a, which is proposed for shells that are more rotund in appearance, but our specimens show gradations and variations in shell colour and morphology, and were not clearly separable. We therefore consider E. A. Smith's taxon to be synonymous, albeit somewhat tentatively. This species has been recorded from India to the Flores Sea, at 704–1,907 m deep (Smith, 1894a; Schepman, 1913a). Our material was from depths of between 481 and 1,068 m.

Family Clathurellidae

Glyphostoma lyuhrurngae K. Y. Lai, 2005
(Fig. 8E)

Glyphostoma lyuhrurngae K. Y. Lai, 2005: 1–4 (not seen); Poppe, 2017: 530, pl. 1565 figs. 2, 3.

Material examined. SJADES 2018: 2 dd (SL 18.3–21.7 mm), stn. CP07, 379–409 m; 1 dd (SL 21.7 mm), stn. CP20, 325–362 m.

Remarks. Based on Poppe (2017) and images found online, this species appears identical to *Glyphostoma lyuhrurngae* K. Y. Lai, 2005. However, we were unable to obtain the paper with the original description of *Glyphostoma lyuhrurngae* for confirmation at the time of writing. If correctly identified, this would be the first record of this species in Indonesia and a significant range extension to the eastern Indian Ocean. *Glyphostoma maldivica* Sysoev, 1996, is closely related, but that species appears to be more squat, and the subsutural slope has a different sculpture. Only three specimens were thus far examined, trawled from 325–409 m deep.

Glyphostoma aff. *candidum* (Hinds, 1843a)
(Fig. 8F)

Clavatula candidia Hinds, 1843a: 42 (type locality: Magnetic Island, coast of Veragua).

Material examined. SJADES 2018: 1 dd (SL 14.2 mm), stn. CP37, 163–166 m.

Remarks. This species is probably rare as only one specimen from a relatively shallow station has been found in the material sorted to date. We were unable to classify this species with any congener from this region known to us. Superficially, it closely resembles *Glyphostoma candidum* (Hinds, 1843a). However, because that species was described from the Pacific coast of Central America, the likelihood of our material being conspecific is extremely low. Further work will be necessary to determine if it could possibly be undescribed.

Family Clavatulidae

Pagodaturris molengraaffi (Tesch, 1915)
(Fig. 8G)

Pleurotoma molengraaffi Tesch, 1915: 28, pl. 77 figs. 54–56 (type locality: Timor).
Lucerapex molengraaffi – Powell, 1964: 287, 288, pl. 220 figs. 3, 4, pl. 221 figs. 1, 2; Sysoev, 1996: 19, figs. 77, 78.
Pagodaturris molengraaffi – Kantor et al., 2018: 60, figs. 7A–D, 8A, B.

Material examined. SJADES 2018: 1 dd (SL 25.1 mm), stn. DW06, 266–294 m; 1 dd (SL 28.6 mm), stn. CP20, 325–362 m.

Remarks. This species has been hitherto recorded from the Maldives to Borneo, Timor, Celebes, and the Philippines, between 464–1,022 m deep (e.g, Powell, 1964; Kantor et al., 2018). The SJADES material was collected from shallower depths of 266–362 m.

Family Cochlespiridae

Cochlespira pulchella (Schepman, 1913a)
(Fig. 8H)

Ancistrosyrinx pulchella Schepman, 1913a: 421, pl. 27 fig. 6 (type locality: "Channel between Makjan and Halmahera [and] 159. 0°59′.1S., 129°48′.8E. Halmahera-sea").
Cochlespira pulchella pulchella – Powell, 1969: 398, pl. 308; Olivera & Sysoev, 2008: 786, pl. 688 fig. 5.

Material examined. SJADES 2018: 1 dd (SL 22.5 mm), stn. DW06, 266–294 m; 1 dd (SL 21.4 mm), stn. CP07, 379–409 m; 1 dd (SL 24.2 mm), stn. CP20, 325–362 m; 1 dd (SL 19.8 mm), stn. CP37, 163–166 m.

Remarks. This species has been recorded from the Philippines, Borneo, and Indonesia, at depths ranging from 60 to 635 m (Powell, 1969; Olivera & Sysoev, 2008). The SJADES specimens, collected from 163–409 m, appear to represent the westernmost record of the species thus far, and a first record of the species in the eastern Indian Ocean.

Cochlespira travancorica (E. A. Smith, 1896)
(Fig. 8I)

Pleurotoma (*Ancistrosyrinx*) *travancorica* E. A. Smith, 1896: 368 (type locality: "Off coast of Travancore, lat. N. 9°34′57″, long. E. 75°36′30″ ..."); Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 7 fig. 1, 1a.
Pleurotoma (*Ancistrosyrinx*) *travancorica* var. *granulata* E. A. Smith, 1904a: 459 (type localities: "off Travancore [and] off Andaman Islands").
Ancistrosyrinx travancorica var. *granulata* – Schepman, 1913a: 420.
Cochlespira travancorica travancorica – Powell, 1969: 396, pl. 307.
Cochlespira travancorica – Sysoev, 1996: 7, fig. 25.

Material examined. SJADES 2018: 2 dd (SL 28.4–34.1 mm), stn. CP03, 283–398 m; 2 dd (SL 35.2–40.4 mm), stn. CP20, 325–362 m; 4 dd (SL 13.7–28.2 mm), stn. CP23,

559–571 m; 2 dd (SL 27.4–42.4 mm), stn. CP26, 517–727 m; 1 dd (SL 32.0 mm), stn. CP27, 481–557 m; 2 dd (SL 43.2–49.0 mm [larger missing much of body whorl]), stn. CP33, 312–525 m.

Remarks. This species has thus far been recorded from East Africa, India, Andaman Islands, South Sulawesi, and Sulu Archipelago, in depths of 338–743 m (Powell, 1969; Sysoev, 1996). The SJADES material were collected from depths between 283 and 727 m. The spiral cords at the base of the body whorl and rostrum vary from rather smooth to distinctly granulated, which confirms Powell's (1969) suspicion that Smith's (1904a) var. *granulata* is synonymous. The "spiral liration in the concavity of the whorls near the dentate keel" described by Smith (1904a) is also variably present in the SJADES specimens.

Comispira cf. *compta* Kantor, Fedosov & Puillandre, 2018
(Fig. 8J)

Comispira compta Kantor et al., 2018: 54, 55, figs. 2F–K, 3C, D (type locality: Bismarck Sea, Papua New Guinea, Dogreto Bay, 3°18′S, 143°02′E).

Material examined. SJADES 2018: 3 dd (SL 29.8–34.3 mm), stn. CP20, 325–362 m; 4 dd (SL 23.2–33.8 mm), stn. CP23, 559–571 m; 1 dd (SL 27.9 mm), stn. CP47, 476–530 m.

Remarks. This species appears to be most similar to *Comispira compta* Kantor et al., 2018, described from Papua New Guinea and recorded from the Solomon Islands and the Philippines at depths of 440–538 m (see Kantor et al., 2018). Our specimens differ in having a less angular shoulder, more elongate peripheral knobs, and 2–3 spiral cords between the periphery and the suture on the teleoconch whorls. If shown to be conspecific with *Comispira compta*, this record will be a range extension to the eastern Indian Ocean and a new record for Indonesia. However, because of the aforementioned differences, we are more inclined towards regarding this as a closely related congeneric species. Our specimens were from depths between 325 and 571 m.

Sibogasyrinx cf. *pyramidalis* (Schepman, 1913a)
(Fig. 8K)

Surcula pyramidalis Schepman, 1913a: 423, pl. 27 fig. 10 (type locality: 10°48′.6S., 123°23′.1E. Timor-sea).
Leucosyrinx pyramidalis – Powell, 1969: 343, pl. 264 figs. 1–5.
Sibogasyrinx pyramidalis – Kantor et al., 2018: 57, 58, figs. 5A–D, 6A, B.

Material examined. SJADES 2018: 2 dd (SL 46.3–58.2 mm), stn. CP47, 476–530 m.

Remarks. This species has thus far been recorded from Sulawesi and Timor Sea, the South China Sea, and the Philippines (Schepman, 1913a; Powell, 1969; Kantor et al., 2018). However, the peripheral keel on the teleoconch whorls of both SJADES specimens examined are located slightly away from the suture, and the subsutural crenulations are relatively indistinct (see e.g., Powell, 1969; Kantor et al., 2018). Until more specimens are examined, the significance of the observed differences is uncertain.

Family Conidae

Conasprella orbignyi (Audouin, 1831)
(Fig. 8L)

Conus orbignyi Audouin, 1831: 20, pl. 20 (type locality: China); Röckel et al., 1995: 264, 265, pl. 56 figs. 1–8.
Conus (*Asprella*) *orbignyi* — Hori, 2000b: 613, pl. 305 fig. 131.

Material examined. SJADES 2018: 2 dd (SL 27.4–27.8 mm), stn. DW06, 266–294 m; 6 dd (SL 19.8–38.8 mm), stn. CP07, 379–409 m; 2 dd (SL 37.1–45.9 mm), stn. CP20, 325–362 m.

Remarks. A widely distributed species with apparently disjunct populations, known from eastern Africa to Japan and Australia, and occurring in depths between 50 and 550 m (Röckel et al., 1995; Hori, 2000b). The SJADES material, collected from 266–409 m, appears to be the first record of this species in Indonesia and the eastern Indian Ocean.

Conus praecellens (A. Adams, in H. Adams & A. Adams, 1853 [in 1853–1854])
(Fig. 8M)

Leptoconus praecellens A. Adams, in H. Adams & A. Adams, 1853 (in 1853–1854): 252 (type locality: China Seas [given in A. Adams, 1854]).
Conus praecellens A. Adams, 1854: 119; Röckel et al., 1995: 257–258, pl. 54 figs. 1–12, 14 (fig. 13 not *Conus praecellens* [see Monnier & Tenorio, 2017]); Moolenbeek et al., 2008: 42, pl. 3 fig. 22.
Conus (*Conasprella*) *praecellens* – Hori, 2000b: 615, pl. 306 fig. 142.
Turriconus praecellens – Monnier & Tenorio, 2017: 39, text fig. 6, pl. 2 fig. 6.

Material examined. SJADES 2018: 2 dd (SL 22.1–26.3 mm), stn. DW16, 92–103 m; 2 dd (SL 25.8–30.9 mm), stn. CP37, 163–166 m.

Remarks. This species is widely distributed from the Indian Ocean to the western and southern Pacific, and occurs between 10 and 400 m deep (Röckel et al., 1995; Hori, 2000b; Moolenbeek et al., 2008). The specimens obtained during the expedition were from relatively shallow stations less than 200 m deep.

Family Drilliidae

Drillia sp.
(Fig. 8N)

Material examined. SJADES 2018: 1 dd (SL 18.9 mm), stn. DW17, 448–469 m.

Remarks. This yet undetermined species was separated from the unsorted material to illustrate a representative of the family.

Family Horaiclavidae

***Horaiclavus* sp.**
(Fig. 8O)

Material examined. SJADES 2018: 1 dd (SL 15.3 mm), stn. DW06, 266–294 m; 18 dd (SL 14.5–24.2 mm), stn. CP07, 379–409 m; 1 dd (SL 21.5 mm), stn. DW32, 805–977 m.

Remarks. This species does not match any species known to us, and is possibly undescribed. The shell form and sculpture resemble *Horaiclavus julieae* Stahlschmidt et al., 2018, and to a lesser extent, *H. madurensis* (Schepman, 1913a), but our specimens are uniformly buff in colour, with white axial ribs that tend to be eroded in larger specimens. This species was collected from depths between 266 and 977 m.

Family Pseudomelatomidae

***Comitas arcana* (E. A. Smith, 1899)**
(Fig. 9A)

Pleurotoma (*Surcula*) *arcana* E. A. Smith, 1899: 239, 240 (type localities: "off Andaman Islands, in 185 fath. [and] off Travancore coast, in 360 fath."); Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 9 fig. 6, 6a.
? *Comitas arcana* – Powell, 1969: 272, pl. 219 figs. 6, 7.

Material examined. SJADES 2018: 4 dd (SL 26.4–32.0 mm), stn. CP13, 1,259–1,268 m; 1 lv (SL 28.9 mm), 8 dd, stn. CP18, 1,060–1,073 m.

Remarks. This species is thus far known only from the Andaman Islands and southern India (Powell, 1969), hence the SJADES material could represent a new record for Indonesia. However, *Comitas paupera* (R. B. Watson, 1881), described from the Arafura Sea and subsequently recorded from the Gulf of Oman and Gulf of Aden, is very similar to *C. arcana* (E. A. Smith, 1899), and could prove to be synonymous. Although the two species are quite distinct based on the original illustrations, Sysoev (1996) showed that *C. paupera* is very variable, and our specimens also agree well with one of the paralectotypes and forms of *C. paupera* figured in Sysoev (1996). Adding to the confusion, *C. curviplicata* Sysoev, 1996, could be within the range of variation of a single variable species if *C. paupera* and *C. arcana* were to be synonymised. Nevertheless, it is probably preferable to maintain the aforementioned as distinct until the taxonomic issues can be satisfactorily resolved in a future revision of the genus. The SJADES material are from depths between 1,060 and 1,268 m.

***Comitas eurina* (E. A. Smith, 1899)**
(Fig. 9B)

Pleurotoma (*Surcula*) *eurina* E. A. Smith, 1899: 239 (type locality: "off South India, in 430 fath."); 1904a: 458; Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 9 fig. 4, 4a.
Comitas eurina – Powell, 1969: 268, pl. 217 figs. 4, 5; Cernohorsky, 1987: 131, figs. 19, 20.

Material examined. SJADES 2018: 2 dd (SL 48.6–56.0 mm), stn. CP22, 864–870 m; 1 dd (SL 48.5 mm [apex broken]), stn. CP25, 876–937 m.

Remarks. Compared to the species herein identified as *Comitas melvilli* (Schepman, 1913a), this species has a more robust shell, shorter anterior canal, and coarser spiral sculpture. At the moment, we are unsure if the aforementioned diagnostic characters could eventually prove to be unreliable (see also remarks under *Comitas margaritae* and *Comitas melvilli*). This record fills a gap between the previous known localities of Madagascar, South India, and Si Amil Island in the Celebes Sea (see Powell, 1969; Cernohorsky, 1987). However, Cernohorsky's (1987) record from Madagascar requires verification, and could be a different species. This species is technically a first record for Indonesia since Si Amil Island is a Malaysian locality.

***Comitas kirai* Powell, 1969**
(Fig. 9C)

Comitas kirai Powell, 1969: 279, 280, pl. 223 figs. 4–6 (type locality: Kii, Japan); Hasegawa et al., 2000: 633, pl. 315 fig. 71; Hasegawa & Okutani, 2011: 125.

Material examined. SJADES 2018: 11 dd (SL 22.5–41.7 mm), stn. CP20, 325–362 m; 1 dd (SL 43.6 mm), stn. CP45, 684–851 m.

Remarks. This is a new record for Indonesia, and constitutes a significant range extension for a species previously known only from Japan and Pratas Islands in the South China Sea, in depths ranging from 50 to 700 m (Powell, 1969; Hasegawa et al., 2000; Hasegawa & Okutani, 2011). It is generally rare in the sampled area, although several specimens were recovered in one haul.

***Comitas margaritae* (E. A. Smith, 1904a)**
(Fig. 9D)

Pleurotoma (*Surcula*) *margaritae* E. A. Smith, 1904a: 458 (type locality: off Andaman Islands, 405 fathoms); Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 14 fig. 2, 2a.
Comitas margaritae – Powell, 1969: 268, 269, pl. 217 figs. 1, 2.

Material examined. SJADES 2018: 1 dd (SL 59.2 mm), stn. CP22, 864–870 m.

Remarks. This species is very similar, and possibly synonymous, to *Comitas eurina* (E. A. Smith, 1899), which does not differ significantly in terms of shell morphology. Although the slight differences may possibly be attributable

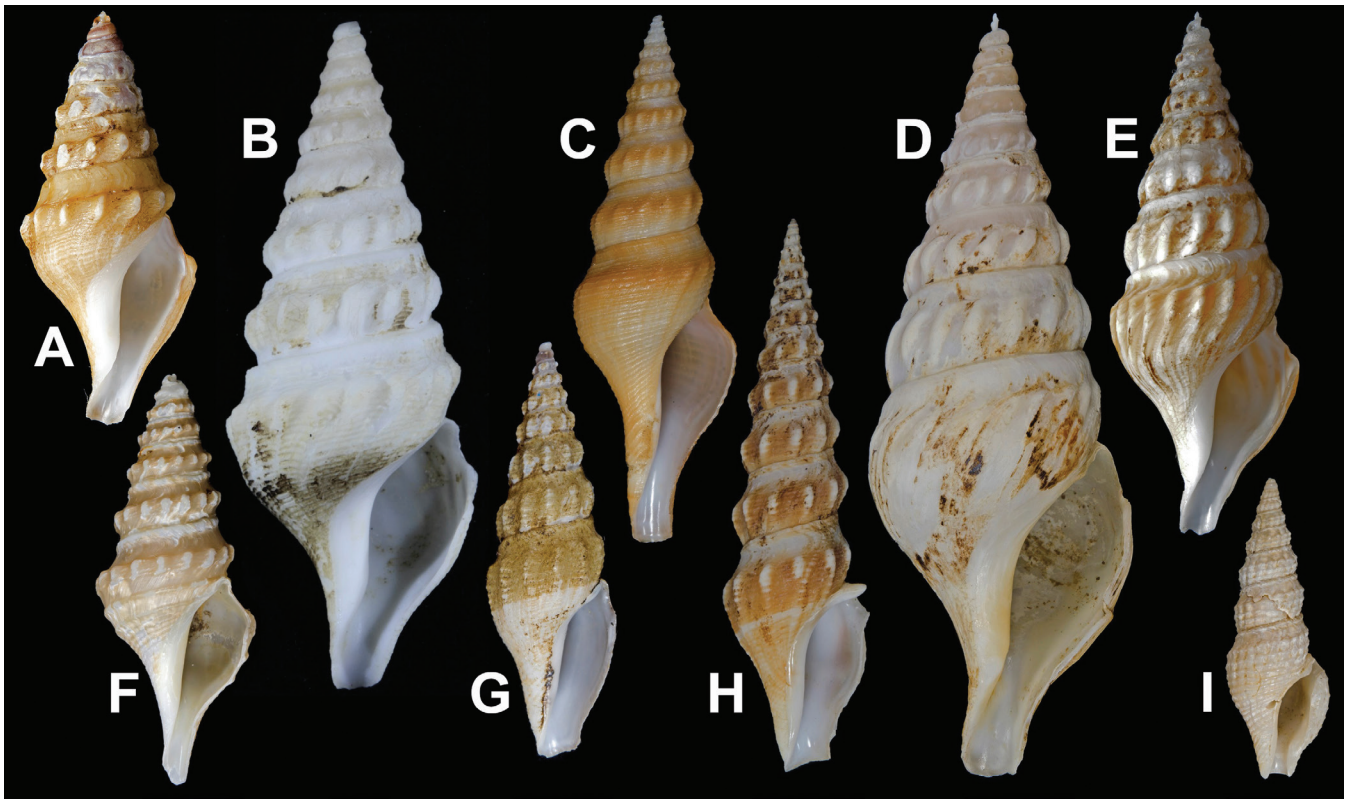

Fig. 9. A, *Comitas arcana* (E. A. Smith, 1899) (SL 32.0 mm), stn. CP13; B, *Comitas eurina* (E. A. Smith, 1899) (SL 48.6 mm), stn. CP22; C, *Comitas kirai* Powell, 1969 (SL 41.7 mm), stn. CP20; D, *Comitas margaritae* (E. A. Smith, 1904) (SL 59.2 mm), stn. CP22; E, *Comitas melvilli* (Schepman, 1913) (SL 41.5 mm), stn. CP25; F, *Comitas subsuturalis* (von Martens, 1901) (SL 31.0 mm), stn. CP24; G, *Inquisitor indistinctus* Sysoev, 1996 (SL 35.5 mm), stn. CP23; H, '*Inquisitor*' sp. (SL 43.0 mm), stn. CP20; I, *Otitoma* sp. (SL 20.4 mm), stn. CP45.

to intraspecific variation, this species is here provisionally accepted as valid until enough specimens can be examined for comparison and verification. The type material was collected from around 740 m deep; ours was from 864–870 m.

Comitas melvilli (Schepman, 1913a)
(Fig. 9E)

Surcula melvilli Schepman, 1913a: 122, pl. 27 fig. 7 (type localities: "5° 53.8 S., 132° 48.8 E. Near Kei-islands ... [and] 10° 46.6 S., 123° 23.1 E. Timor-sea").
Comitas melvilli – Powell, 1969: 269, 270, pl. 217 figs. 6, 7.

Material examined. SJADES 2018: 8 dd (SL 23.2–35.5 mm), stn. CP13, 1,259–1,268 m; 4 lv (SL 37.7 mm [largest]), 3 dd (23.8–33.0 mm), stn. CP18, 1,060–1,073 m; 15 dd (SL 59.3 mm [largest]), stn. CP22, 864–870 m; 4 exx., stn. CP24, 1,044–1,068 m; 2 lv, 3 dd (SL 40.4–42.5 mm), stn. CP25, 876–937 m; 1 dd (SL 32.9 mm), stn. DW32, 805–977 m.

Remarks. Our specimens generally agree well with the original description and figures of *Comitas melvilli* (Schepman, 1913a), but spire height, length of the anterior canal, axial sculpture, and overall shape to a lesser extent, were found to be quite variable, and some specimens approach *Comitas thisbe* (E. A. Smith, 1906), which mainly differs in having a shorter spire (see Powell, 1969). We are of the opinion that *Comitas thisbe*, described from a unique specimen collected from around 1,986 m deep off eastern Sri Lanka, is in all probability synonymous, and would have priority if shown to be. However, considering the confused taxonomy, it would be practical to recognise all the forms as distinct pending a taxonomic revision of this group, which includes the apparently sympatric *Comitas eurina* (E. A. Smith, 1899) and *Comitas margaritae* (E. A. Smith, 1904a) included herein. *Comitas melvilli* has thus far been reported only from Banda and Timor Seas, in depths of 560–918 m (Schepman, 1913a). Bathymetric range recorded for the SJADES material is between 805 and 1,268 m.

Comitas subsuturalis (von Martens, 1901)
(Fig. 9F)

Pleurotoma (*Brachytoma*) *subsuturalis* von Martens, 1901: 16 (type locality: "Ost-Afrika, 1°49′ N. Breite, 45°29′ O. Länge, in 1134 m Tiefe"); 1902: 239.
Surcula obtusigemmata Schepman, 1913a: 424–425, pl. 27 fig. 12 (type localities: "76.4°22′.1 S., 180°16′.9 E. Makassar-strait. 2029 M. ... [and] Channel between Makjan and Halmahera. 472 M. ... [and] 5°46′.7S., 134°0′E. Arafura-sea. 1788 M.").
Comitas obtusigemmata – Powell, 1969: 284, 285, pl. 227 figs. 1, 2.
Comitas subsuturalis – Powell, 1969: 285, pl. 226 figs. 3, 4; Sysoev, 1996: 7, figs. 31–40.

Material examined. SJADES 2018: 1 dd (SL 30.4 mm), stn. CP13, 1,259–1,268 m; 10 dd (SL 23.7–31.0 mm), stn. CP24, 1,044–1,068 m.

Remarks. This species was initially identified as *Comitas obtusigemmata* (Schepman, 1913a), but our specimens fall well within the variations of *Comitas subsuturalis* shown by Sysoev (1996), and we found no notable conchological differences to distinguish *Comitas obtusigemmata* from *Comitas subsuturalis*. We therefore agree with Sysoev (1996) that they are probably synonymous, and herein treat them as such. The SJADES material is within the distributional range now known to be from the Indian Ocean eastwards to Indonesia and the South China Sea, with a bathymetric range of 494–2,029 m (Powell, 1969; Sysoev, 1996, 1997). The SJADES material was obtained from depths between 1,044 and 1,268 m.

***Inquisitor indistinctus* Sysoev, 1996**
(Fig. 9G)

Inquisitor indistinctus Sysoev, 1996: 12, figs. 3, 11, 54, 55 (type locality: Maldive Islands).

Material examined. SJADES 2018: 1 lv (SL 31.3 mm), 7 dd (SL 40.2 mm [largest]), stn. CP18, 1,060–1,073 m; 3 dd (SL 24.6–37.9 mm), stn. CP22, 864–870 m; 7 dd (SL 18.9–35.5 mm), stn. CP23, 559–571 m; 2 dd, stn. CP24, 1,044–1,068 m; 4 dd (SL 25.5–45.2 mm), stn. CP27, 481–557 m; 1 dd (SL 52.4 mm), stn. CP47, 476–530 m.

Remarks. Our material is identified as this species with some uncertainty. While the shell characteristics agree well with the original description of *Inquisitor indistinctus*, the types seem to be relatively slimmer in comparison. This species does not seem to have been treated by subsequent authors, so the extent of their intraspecific variation is not known, and the types will have to be examined for confirmation. If correctly identified, this will be the first record for Indonesia and a range extension for a species thus far known only from the Maldives. The type material was collected from 494 m deep, while ours were from depths between 476 and 1,073 m.

'*Inquisitor*' sp.
(Fig. 9H)

Material examined. SJADES 2018: 2 dd (SL 42.8–44.5 mm), stn. CP10, 429–446 m; 1 dd (SL 43.0 mm), stn. CP20, 325–362 m.

Remarks. A few specimens of this interesting species were separated from the yet unsorted material. The unidentified species is tentatively assigned to this genus pending further study.

***Otitoma* sp.**
(Fig. 9I)

Material examined. SJADES 2018: 1 dd (SL 20.4 mm), stn. CP45, 684–851 m.

Remarks. Only a single specimen of this species was separated for the purpose of illustrating a representative of the genus. We were unable to classify it with any species known to us at the time of writing. There is also at least one other congeneric species, but it is not treated herein.

Family Raphitomidae

***Buccinaria jonkeri* (Koperberg, 1931)**
(Fig. 10A)

Ootoma jonkeri Koperberg, 1931: 49, pl. 1 fig. 13 (type localities: Nono Fatoe Fekoe & Toi Oesapi Söka, Timor, Indonesia [after Bouchet & Sysoev, 1997]).
Neptunea (*Ootoma*) *jonkeri* – Beets, 1943: 5–7, fig. 6.
Buccinaria jonkeri – Bouchet & Sysoev, 1997: 102–107, figs. 2, 4, 21–36; Hasegawa et al., 2000: 657, pl. 327 fig. 188.

Material examined. SJADES 2018: 1 dd (SL 21.5 mm), stn. CP07, 379–409 m; 1 dd (SL 24.6 mm), stn. CP08, 425–442 m; 1 dd (SL 25.5 mm), stn. CP10, 429–446 m; 1 dd (SL 20.5 mm), stn. DW17, 448–469 m; 2 dd (SL 23.8–29.6 mm), stn. CP18, 1,060–1,073 m; 1 dd (SL 30.8 mm), stn. CP27, 481–557 m; 1 dd (SL 32.6 mm), stn. CP33, 312–525 m; 2 dd (SL 23.8–27.1 mm), stn. CP47, 476–530 m; 2 dd (SL 18.7–19.0 mm), stn. CP56, 183–255 m.

Remarks. This species was originally described based on fossils from Timor, and living populations were subsequently recorded from Indonesia, Taiwan, Japan, and the Philippines, 100–600 m deep (Bouchet & Sysoev, 1997; Hasegawa et al., 2000). A wide bathymetic range of 183–1,073 m was recorded for the SJADES material.

***Buccinaria martini* (Koperberg, 1931)**
(Fig. 10B)

Ootoma martini Koperberg, 1931: 50, pl. 1 fig. 14a, b (type locality: Nono Fatoe Fekoe and Toi Oesapi Söka, Timor, Indonesia [after Bouchet & Sysoev, 1997]).
Buccinaria martini – Bouchet & Sysoev, 1997: 109–112, figs. 3, 43–51; Hasegawa et al., 2000: 657.

Material examined. SJADES 2018: 1 dd (SL 27.1 mm), stn. CP18, 1,060–1,073 m; 25 dd (SL 21.4–29.8 mm), stn. CP23, 559–571 m; 2 dd, stn. DW32, 805–977 m; 2 dd (SL 24.0–27.5 mm), stn. CP33, 312–525 m; 1 dd (SL 27.1 mm), stn. CP47, 476–530 m; 1 dd (SL 23.6 mm), stn. CP58, 505–564 m; 1 dd (SL 32.8 mm [apex eroded]), stn. CP62, 1,623–1,630 m.

Remarks. This species is distributed around Japan, Philippines, and Indonesia, with recorded bathymetric ranges of 200–1,244 m (Bouchet & Sysoev, 1997). The SJADES specimens examined were from depths between 312 and 1,630 m.

***Buccinaria urania* (E. A. Smith, 1906)**
(Fig. 10C)

Pleurotoma (*Bathytoma*) *urania* E. A. Smith, 1906: 164 (type localities: off Coromandel coast, and off south of Andaman Islands); Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 21 fig. 5, 5a.

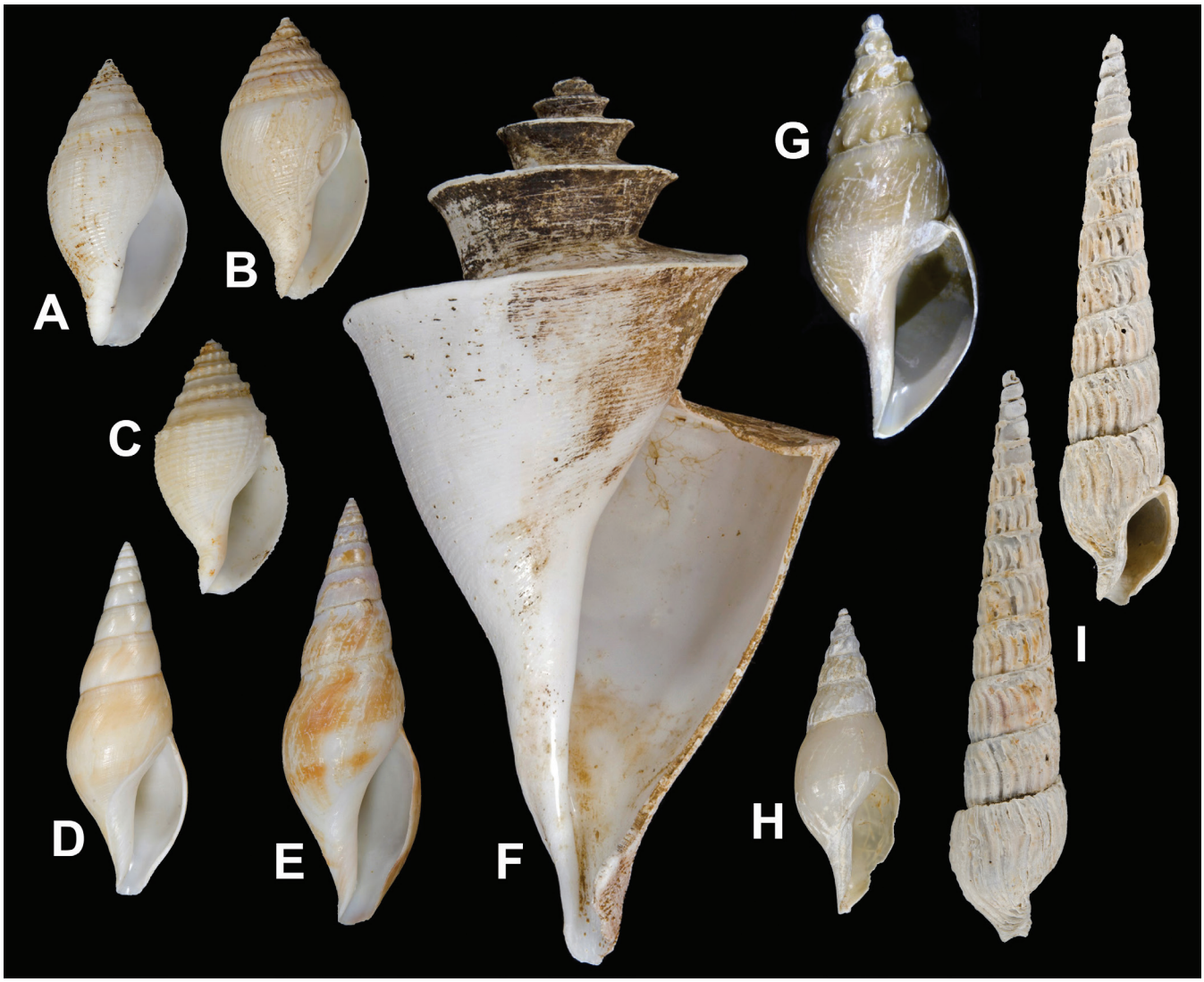

Fig. 10. A, *Buccinaria jonkeri* (Koperberg, 1931) (SL 24.6 mm), stn. CP08; B, *Buccinaria martini* (Koperberg, 1931) (SL 24.1 mm), stn. CP33; C, *Buccinaria urania* (E. A. Smith, 1906) (SL 23.0 mm), stn. CP24; D, E, *Leiosyrinx matsukumai* Bouchet & Sysoev, 2001: D (SL 27.5 mm), stn. DW32, E (SL 37.2 mm), stn. CP33; F, *Thatcheria mirabilis* Angas, 1877 (SL 79.6 mm), stn. CP33; G, *Typhlosyrinx praecipua* (E. A. Smith, 1899) (SL 36.8 mm), stn. CP24; H, *Typhlosyrinx supracostata* (Schepman, 1913) (SL 29.9 mm), stn. CP28; I, *Pellifronia jungi* (K. Y. Lai, 2001) (SL 50.6 mm), stn. CP59.

Buccinaria urania – Bouchet & Sysoev, 1997: 97–100, figs. 5–15; Hasegawa et al., 2000: 657, pl. 327 fig. 187.

Material examined. SJADES 2018: 1 dd (SL 19.6 mm), stn. CP07, 379–409 m; 1 dd (SL 25.1 mm), stn. CP13, 1,259–1,268 m; 4 dd (SL 21.7–23.4 mm [largest broken apex]), stn. CP18, 1,060–1,073 m; 1 dd (SL 17.4 mm), stn. CP20, 325–362 m; 1 dd (SL 21.2 mm), stn. CP22, 864–870 m; 1 dd (SL 23.0 mm), stn. CP24, 1,044–1,068 m; 1 dd (SL 23.3 mm), stn. CP59, 579–659 m.

Remarks. This species is distributed from the Bay of Bengal to the Philippines and southern Japan, in depths around 300–800 m (Bouchet & Sysoev, 1997; Hasegawa et al., 2000). Prior Indonesian records from the Arafura Sea were reported by Bouchet & Sysoev (1997), who revised the genus. Our specimens were from depths between 325 and 1,268 m.

Leiosyrinx matsukumai Bouchet & Sysoev, 2001
(Fig. 10D, E)

Leiosyrinx matsukumai Bouchet & Sysoev, 2001: 1708–1710, figs. 4, 42–48 (type locality: the Philippines, north of Lubang I., 13°55′N, 120°29′E, 326–330 m).

Material examined. SJADES 2018: 53 lv, 61 dd (SL 32.5 mm [largest intact]), stn. CP07, 379–409 m; 21 lv, 12 dd (SL 16.6–33.1 mm), stn. CP08, 425–442 m; 4 dd, stn. CP10, 429–446 m; 2 dd (SL 18.3–26.4 mm), stn. DW17, 448–469 m; 22 dd (SL 30.1 mm [largest]), stn. CP23, 559–571 m; 1 dd (SL 27.5 mm), stn. DW32, 805–977 m; 2 dd (SL 29.7–37.2 mm), stn. CP33, 312–525 m; 11 lv, 12 dd (SL 21.4–34.1 mm), stn. CP47, 476–530 m; 2 dd (SL 26.7 mm [intact specimen]), stn. DW60, 161–256 m.

Remarks. This species is hitherto recorded from Taiwan and the Philippines, at depths of 330–640 m, thus the SJADES

record represents a first for Indonesia. The closely related *Leiosyrinx apheles* Bouchet & Sysoev, 2001, described from the Makassar Strait and occurring sympatrically with this species in the Philippines, was not noted in our material. A bathymetric range of 161–977 m was recorded for our material.

***Thatcheria mirabilis* Angas, 1877**
(Fig. 10F)

Thatcheria mirabilis Angas, 1877: 529, pl. 54 fig. 1a, b (type locality: seas of Japan); Wells, 1985: 217, 218, figs. 1, 2; Abbott & Dance, 1990: 243, unnumbered text fig.; Hasegawa et al., 2000: 619, pl. 308 fig. 1; Bouchet et al., 2011: 285, fig. 9V.

Material examined. SJADES 2018: 1 dd (SL 79.6 mm [apex missing, outer lip broken]), stn. CP33, 312–525 m.

Remarks. Only a single empty shell of this well-known species was obtained by the expedition. This species inhabits depths of 160–400 m and has been recorded from Japan, Taiwan, the Philippines, Solomon Islands, and northwestern Australia (Wells, 1985; Hasegawa et al., 2000; Bouchet et al., 2011), but our specimen may represent the first record from Indonesia.

***Typhlosyrinx praecipua* (E. A. Smith, 1899)**
(Fig. 10G)

Pleurotoma (*Surcula*) *praecipua* E. A. Smith, 1899: 239 (type locality: off Travancore coast, in 360 fathoms); Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 9 fig. 5, 5a.
Typhlosyrinx praecipua – Powell, 1969: 360, 361, pl. 272 figs. 2, 3; Bouchet & Sysoev, 2001: 1698, figs. 8–13.

Material examined. SJADES 2018: 2 dd (SL 37.7 mm, 36.9 mm [apical whorls broken]), stn. CP24, 1,044–1,068 m.

Remarks. Previously recorded from the Gulf of Aden, India, and Sri Lanka, in depths of 658–1,270 m (Bouchet & Sysoev, 2001), the SJADES material represents a range extension of this species to the eastern Indian Ocean. However, *Typhlosyrinx supracostata* (Schepman, 1913a), described from Flores Sea, is very similar looking. The distinguishing conchological characters of *Typhlosyrinx praecipua* are the slightly lower spire and stronger, more nodulose axial ribs compared to *Typhlosyrinx supracostata*, but examination of more material could show them to be forms of a single species (see also Bouchet & Sysoev, 2001). We have thus far seen only two specimens from a single station that are identifiable as this species.

***Typhlosyrinx supracostata* (Schepman, 1913a)**
(Fig. 10H)

Surcula supracostata Schepman, 1913a: 422, 423, pl. 27 fig. 8 (type locality: "7°24′S., 118°15′2 E. Flores-sea. 794 M.").
Typhlosyrinx supracostata – Powell, 1969: 361, pl. 272 figs. 4–7; Bouchet & Sysoev, 2001: 1699–1702, figs. 14–22.

Material examined. SJADES 2018: 2 dd (SL 37.4–44.4 mm), stn. CP22, 864–870 m; 1 dd (SL 29.9 mm [outer lip broken]), stn. CP28, 957–1,022 m; 2 dd (SL 46.6–47.2 mm), stn. CP35, 603–686 m.

Remarks. This species is thus far known only from Indonesia and the Philippines (see Bouchet & Sysoev, 2001), but is recognised as distinct from the specimens herein identified as *Typhlosyrinx praecipua* with some doubt (see remarks under that species). Our specimens were from 603–1,022 m deep.

Family Terebridae

***Pellifronia jungi* (K. Y. Lai, 2001)**
(Fig. 10I)

Terebra jungi K. Y. Lai, 2001: 14, 15 (type locality: Pratas Island, South China Sea); Terryn, 2007: 36, 37, pls. 33, 62; Terryn & Sprague, 2008: 10, figs. 5–12.
Pellifronia jungi – Terryn & Holford, 2008: 44, 45, pl. 19 fig. 5; Castelin et al., 2012: 22, 33, 35, tables 1, 3, figs. 2A, 7A; Fedosov et al., 2020: 5, 6, fig. 2A–C.

Material examined. SJADES 2018: 1 lv (SL 27.9 mm), stn. CP26, 517–727 m; 1 dd (SL 27.0 mm), stn. CP27, 481–557 m; 1 lv (SL 53.0 mm), stn. CP33, 312–525 m; 1 dd (SL 50.6 mm), stn. CP59, 579–659 m.

Remarks. This species is a first record for Indonesia. It has so far been recorded from the Pratas or Tungsha Islands, the Philippines, Mozambique, Madagascar, Vanuatu, Wallis and Futuna Islands, Solomon Islands, and New Caledonia (Terryn, 2007; Terryn & Sprague, 2008). However, it is not clear if the western Indian Ocean records are still valid because specimens from Mozambique were recently described as the closely related *Pellifronia brianhayesi* (Terryn & Sprague, 2008). A bathymetric range of 312–727 m was recorded for our specimens, and it is reported to occur on continental slopes between 150 and 850 m (Terryn, 2007).

Family Turridae

***Cryptogemma aethiopica* (Thiele, 1925)**
(Fig. 11A, B)

Pleurotoma (*Gemmula*) *aethiopica* Thiele, 1925: 208, 209, pl. 22 fig. 25 (type locality: "0°27,4′ südl. Br., 42° 47,3′ östl. L., ... Ostafrika").
Pleurotoma (*Gemmula*) *fusiformis* Thiele, 1925: 210, pl. 22 fig. 24 (type locality: "Nias-Süd-Kanal, 0° 15,2′ nördl. Br., 98° 8,8′ östl. L., 614 m Tiefe").
Gemmula thielei Finlay, 1930: 47 (nom. nov. for *Pleurotoma* (*Gemmula*) *fusiformis* Thiele, 1925, preoccupied by *Pleurotoma fusiformis* J. de C. Sowerby, in J. Sowerby, 1823).
Pinguigemmula luzonica Powell, 1964: 278, pl. 215 figs. 3, 4 (type locality: off Menor Island, Luzon, Philippines); Hasegawa et al., 2000: 629, pl. 313 fig. 51.
Pinguigemmula philippinensis Powell, 1964: 278, 279, pl. 215 figs. 5, 6 (type locality: off Santiago, Luzon, Philippines); Wilson, 1994: 193, pl. 39 fig. 8.
Gemmula (*Pinguigemmula*) *philippinensis* – Cernohorsky, 1987: 128, figs. 13, 14.

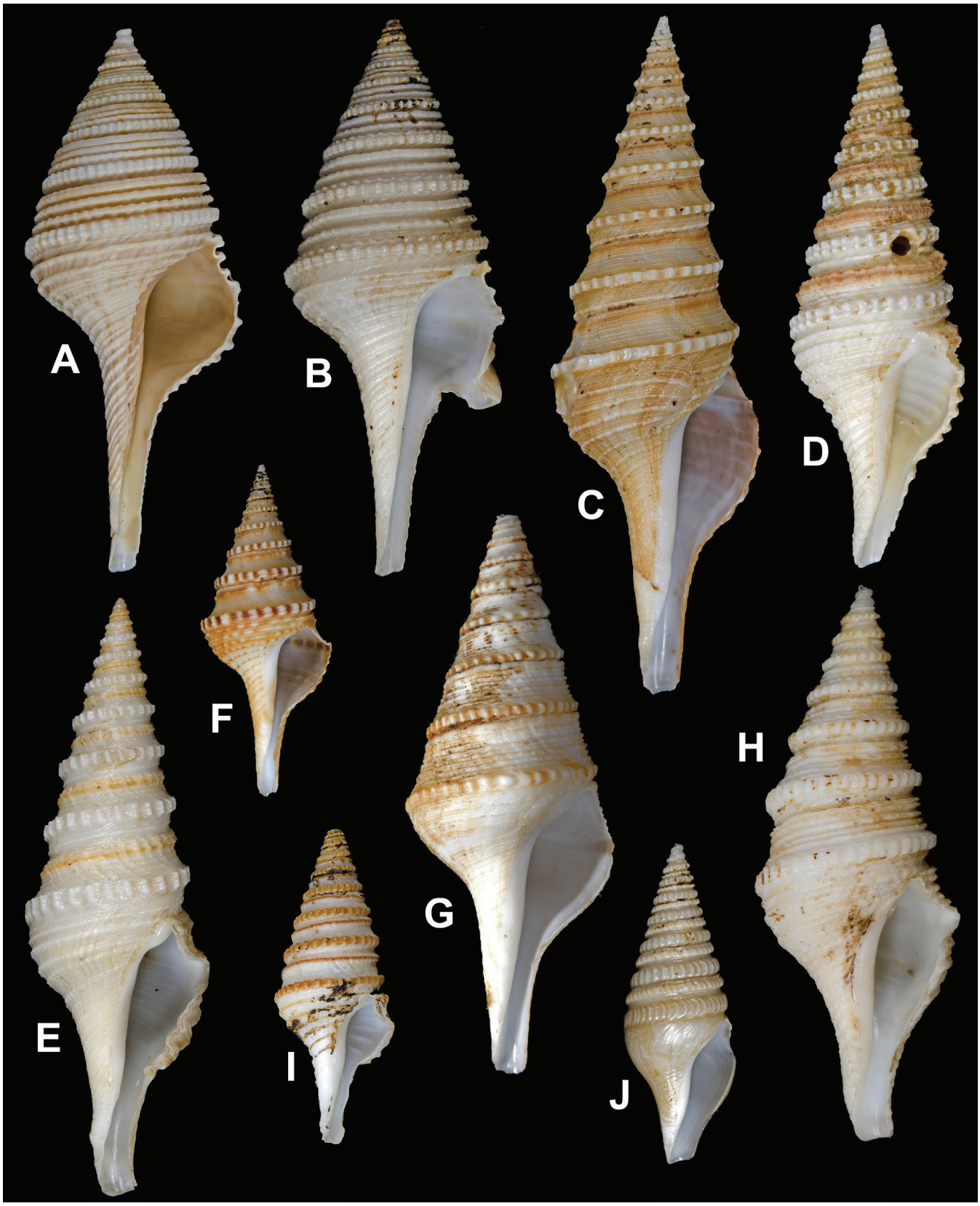

Fig. 11. A, B, *Cryptogemma aethiopica* (Thiele, 1925): A (SL 43.7 mm), stn. CP27, B (SL 45.1 mm), CP23; C, *Cryptogemma powelli* Zaharias et al., 2020 (SL 65.9 mm), stn. CP07; D, *Gemmula congener* (E. A. Smith, 1894) (SL 43.7 mm), stn. CP37; E, *Gemmula diomedea* Powell, 1964 (SL 53.5 mm), stn. CP20; F, *Gemmula kieneri* (Doumet, 1840) (SL 36.2 mm), stn. CP20; G, *Gemmula sibogae* (Schepman, 1913) (SL 46.7 mm), stn. CP51; H, *Gemmula sibukoensis* Powell, 1964 (SL 47.6 mm), stn. CP27; I, *Gemmula* aff. *sogodensis* Olivera, 2005 (SL 32.2 mm), stn. CP02; J, *Gemmuloborsonia karubar* Sysoev & Bouchet, 1996 (SL 33.5 mm), stn. CP23.

Pinguigemmula thielei – Wilson, 1994: 193, pl. 39 fig. 7.
Cryptogemma aethiopica – Zaharias et al., 2020: 546, 547, fig. 9.

Material examined. SJADES 2018: 1 dd (SL 45.1 mm), stn. CP23, 559–571 m; 1 dd (SL 43.7 mm), stn. CP27, 481–557 m; 2 dd (SL 31.2–37.0 mm), stn. CP33, 312–525 m; 2 lv, 2 dd (SL 38.5–49.5 mm), stn. CP39, 528–637 m; 2 dd (SL 34.4–42.5 mm), stn. CP47, 476–530 m; 3 lv, 1 dd (SL 43.3–48.9 mm), stn. CP48, 637–689 m.

Remarks. The SJADES material was initially thought to comprise at least two distinct species, but are now accepted to be merely morphological variants (see Zaharias et al., 2020). This wide-ranging species has been recorded from East Africa to the Central Indo-Pacific in depths ranging from 200 to 850 m (e.g., Powell, 1964; Hasegawa et al., 2000; Zaharias et al., 2020). Our material was obtained from between 312 and 689 m deep.

Cryptogemma powelli Zaharias et al., 2020
(Fig. 11C)

Cryptogemma powelli Zaharias et al., 2020: 549, 550, fig. 11 (type locality: New Caledonia, southwest of Ile des Pins, 22°48′S, 167°15′E, 449–465 m).

Material examined. SJADES 2018: 1 dd (SL 65.9 mm), stn. CP07, 379–409 m; 2 dd (SL 30.0–34.1 mm), stn. CP10, 429–446 m; 7 dd (SL 26.3–66.9 mm), stn. CP20, 325–362 m; 1 dd (SL 32.3 mm), stn. CP34, 234–243 m; 2 dd (SL 53.3–61.1 mm), stn. CP55, 378–379 m; 1 dd (SL 32.9 mm), stn. CP57, 223–269 m.

Remarks. Although the known range of this species is from East Africa to the South China Sea, Bismarck Archipelago, and New Caledonia (Zaharias et al., 2020), there appears to be no prior record from Indonesia, making the SJADES material a new record. A bathymetric range of 400–600 m was mentioned in Zaharias et al. (2020). Our specimens were from 223–446 m.

Gemmula congener (E. A. Smith, 1894a)
(Fig. 11D)

Pleurotoma congener E. A. Smith, 1894a: 160, 161, pl. 3 figs. 4, 5 (type localities: Bay of Bengal, 128 fathoms; west of Colombo, Ceylon, 142–400 fathoms).
Pleurotoma (*Gemmula*) *congener* – Schepman, 1913a: 403.
Gemmula congener congener – Powell, 1964: 251, 252, pl. 191 figs. 1–4.
Gemmula (*Gemmula*) *congener* – Cernohorsky, 1987: 123, 124, figs. 1–5; Li & Li, 2008: 3–5, pl. 1 fig. 1.

Material examined. SJADES 2018: 1 dd (SL 39.0 mm), stn. CP03, 283–398 m; 1 dd (SL 43.7 mm), stn. CP37, 163–166 m.

Remarks. This species is distributed from east Africa to the Atlantic, Mediterranean, and throughout the Indo-West Pacific, in depths ranging from 17 to 823 m (Marshall, 1992; Beu et al., 2008). Only two specimens identifiable as this species were thus far examined. However, it would be premature to state that this species is uncommon as numerous *Gemmula* remain to be sorted and identified.

Gemmula diomedea Powell, 1964
(Fig. 11E)

Gemmula congener diomedea Powell, 1964: 253, 254, pl. 191 figs. 5, 6 (type locality: 198 fathoms, off Malocot, West Luzon Island, Philippines).
Gemmula diomedea – Wilson, 1994: 192, pl. 39 fig. 9; Olivera et al., 2008: fig. 2.

Material examined. SJADES 2018: 4 dd (SL 35.5–43.6 mm), stn. CP02, 257–281 m; 1 dd (SL 53.5 mm), stn. CP20, 325–362 m; 3 dd (SL 35.8–53.9 mm), stn. CP26, 517–727 m; 1 dd (SL 57.2 mm), stn. CP27, 481–557 m; 1 dd (SL 52.2 mm), stn. CP57, 223–269 m.

Remarks. This species does not appear to have been previously recorded from Indonesia. Prior records were from the Philippines and northwestern Australia (Powell, 1964; Wilson, 1994). The occurrence of this species near Hainan Island in the South China Sea requires confirmation (see Li & Li, 2008). The SJADES material thus far examined were collected from 223–727 m deep.

Gemmula kieneri (Doumet, 1840)
(Fig. 11F)

Pleurotoma kieneri Doumet, 2016: 1, 2, pl. 10 (type locality: "des mers de la Chine").
Pleurotoma (*Gemmula*) *kieneri* – Schepman, 1913a: 403.
Gemmula kieneri – Powell, 1964: 246, 247, pl. 186 figs. 2, 3; Olivera, 2005: 7, 8, fig. 3 (top row).
Gemmula (*Gemmula*) *kieneri* – Kilburn, 1983: 569–572, figs. 7, 13, 37, 38, 40; Cernohorsky, 1987: 126, figs. 9, 10; Li & Li, 2008: 9, 10, pl. 1 fig. 4.

Material examined. SJADES 2018: 1 dd (SL 36.2 mm), stn. CP20, 325–362 m; 1 dd (SL 47.8 mm), stn. CP56, 183–255 m.

Remarks. Only two smallish specimens of this species have been separated from the SJADES material to date. This species is distributed from South Africa, Madagascar, and India, eastwards to the South China Sea, Japan, the Philippines, and Australia (Powell, 1964; Kilburn, 1983; Cernohorsky, 1987); and has been previously recorded from several Indonesian localities, in depths of 61–462 m, by Schepman (1913a). Our material was trawled from depths between 183 and 362 m.

Gemmula sibogae (Schepman, 1913a)
(Fig. 11G)

Pleurotoma (*Gemmula*) *sibogae* Schepman, 1913a: 404, pl. 26 fig. 2 (type locality: channel between Makjan & Halmahera).
Gemmula sibogae – Powell, 1964: 258, pl. 196 figs. 6, 7.

Material examined. SJADES 2018: 1 dd (SL 61.0 mm [apex broken]), stn. CP10, 429–446 m; 1 dd (SL 32.3 mm), stn.

CP23, 559–571 m; 1 dd (SL 61.1 mm [apex broken]), stn. CP33, 312–525 m; 1 dd (SL 46.7 mm), stn. CP51, 569–657 m.

Remarks. Only three specimens from the partially sorted conoidean material were observed. The smaller specimens agree very well with the illustration and description in Schepman (1913a), but identification of the larger specimens is tentative because the shells are quite eroded. One or more could turn out to be the species here identified as *Gemmula sibukoensis* Powell, 1964. Interestingly, our larger specimens appear to match well with the original figure of *Pleurotoma valdiviae* Thiele, 1925, which is currently accepted to be a junior synonym of *Gemmula martini* (Tesch, 1915) after Powell (1964). A taxonomic resolution would probably require a revision of this group.

Gemmula sibukoensis Powell, 1964
(Fig. 11H)

Gemmula sibukoensis Powell, 1964: 258 (type locality: S.E. of Mabul Island, Sibuko Bay, Borneo).

Material examined. SJADES 2018: 2 dd (SL 62.6–71.3 mm), stn. CP23, 559–571 m; 1 dd (SL 47.5 mm), stn. CP27, 481–557 m; 1 dd (SL 51.2 mm), stn. CP33, 312–525 m.

Remarks. This current known distribution of this species is from the Philippines, Celebes Sea, and Maluku, in depths of around 91–885 m (Powell, 1964). The SJADES material was collected from between 312 and 571 m, and represents a notable range extension to the eastern Indian Ocean.

Gemmula aff. *sogodensis* Olivera, 2005
(Fig. 11I)

Gemmula sogodensis Olivera, 2005: 7–10, fig. 3 (bottom row) (type locality: Sogod, Cebu, Philippines).

Material examined. SJADES 2018: 1 dd (SL 32.2 mm), stn. CP02, 257–281 m; 2 dd (SL 28.5–29.3 mm), stn. CP20, 325–362 m; 1 dd (SL 45.3 mm), stn. CP51, 569–657 m; 1 dd (SL 27.4 mm), stn. CP56, 183–255 m.

Remarks. The shell form and colour pattern of this species is very close to those of *Gemmula sogodensis* Olivera, 2005, and also *Gemmula damperierana* Powell, 1964. However, the profile of the whorls is more similar to *Gemmula murrayi* Powell, 1964, which differs by its longer and relatively slimmer anterior canal. Species delimitation of several similar congeners, including but not limited to the aforementioned species, is equivocal, and whether this species is undescribed or a mere form of a known species requires further study. The bathymetric range recorded for our material was between 183 and 657 m.

Gemmuloborsonia karubar Sysoev & Bouchet, 1996
(Fig. 11J)

Gemmuloborsonia karubar Sysoev & Bouchet, 1996: 80–82, figs. 4A, B, E (type locality: Tanimbar Islands, Arafura Sea).

Gemmula stupa Y. C. Lee, 2001: 7–9 (type locality: Northeast Taiwan [after Y. C. Lee, 2011]); 2011; Cheng & Lee, 2011: 29, 32, fig. 3.

Material examined. SJADES 2018: 1 dd (SL 29.3–36.7 mm), stn. CP23, 559–571 m; 1 lv (SL 32.6 mm), stn. CP35, 603–686 m; 1 lv (SL 36.3 mm), stn. CP39, 528–637 m; 1 lv (SL 42.5 mm), stn. CP51, 569–657 m.

Remarks. Little information is available on this distinctive species as it does not seem to have been treated by subsequent authors. A similar species was subsequently described from Taiwan as *Gemmula stupa* Y. C. Lee, 2001. However, we found no appreciable differences between *Gemmula stupa* and *Gemmuloborsonia karubar* Sysoev & Bouchet, 1996, and thus consider them synonymous. The synonymy would imply a known distribution of this species from Japan, Taiwan, and the South China Sea to the Arafura Sea (e.g., Sysoev & Bouchet, 1996; Cheng & Lee, 2011; Lee, 2011), and this is now extended to the eastern Indian Ocean by the SJADES material. A range of 552–620 m is given in Bouchet & Sysoev (1996), and around 300–400 m in the South China Sea by Cheng & Lee (2011). Our material was obtained from depths of 559–686 m.

Subclass Heterobranchia

Superfamily Architectonicoidea

Family Architectonicidae

Architectonica modesta (Philippi, 1849)
(Fig. 12A)

Solarium modestum Philippi, 1849: 171 (type locality not given).
Architectonica (*Architectonica*) *modesta* – Garrard, 1978: 513, 514, fig. 1 (7–9).
Architectonica modesta – Bieler, 1993: 78–80, pl. 1 fig. E, 57, 62, 63; Dharma, 2005: 204, pl. 77 fig. 3a, b.

Material examined. SJADES 2018: 1 dd (SW 9.2 mm), stn. DW32, 805–977 m.

Remarks. A species with a wide geographical distribution, with records from eastern Africa throughout the Indian Ocean to the West and Central Pacific (Garrard, 1978; Bieler, 1993). Only a single small empty shell was collected, which probably originated from much shallower waters. Most known live records and depths are from between 1 to 125 m (see Garrard, 1978; Bieler, 1993).

Discotectonica acutissima (G. B. Sowerby III, 1914)
(Fig. 12B)

Solarium acutissimum G. B. Sowerby III, 1914: 36, pl. 2 fig. 9 (type locality: Kii, Japan).
Architectonica (*Discotectonica*) *acutissima* – Garrard, 1978: 517, 518, figs. 1 (16–18), 2 (19–21).
Discotectonica acutissima – Bieler, 1993: 130–134, figs. 105–107; Hasegawa, 2000b: 693, pl. 345 fig. 12.

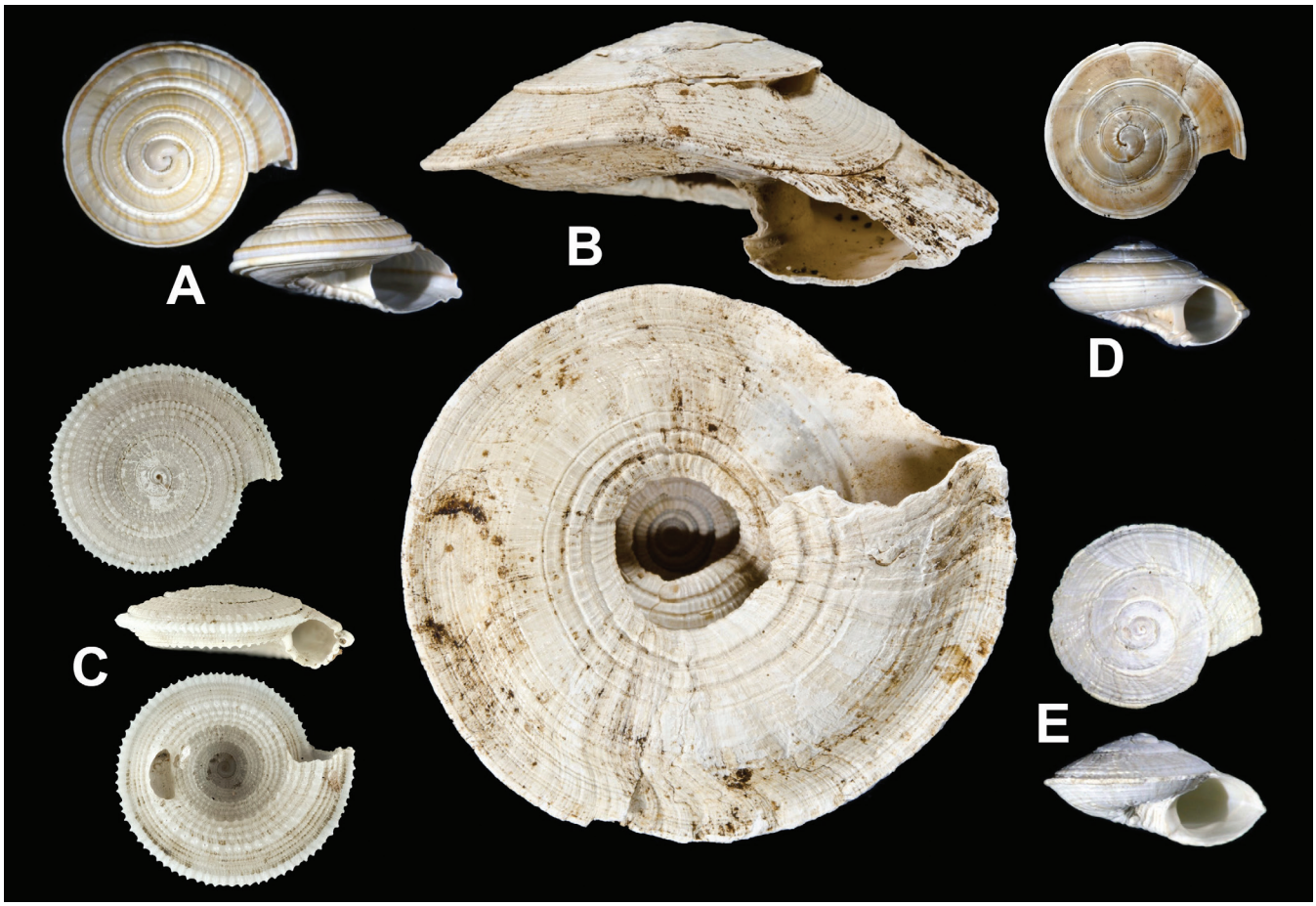

Fig. 12. A, *Architectonica modesta* (Philippi, 1849) (SW 9.2 mm), stn. DW32; B, *Discotectonica acutissima* (G. B. Sowerby III, 1914) (SW 28.5 mm), stn. CP34; C, *Granosolarium asperum* (Hinds, 1844) (SW ca. 10 mm), stn. DW16; D, *Psilaxis oxytropis* (A. Adams, 1855) (SW 7.7 mm), stn. CP34; E, *Solatisonax supraradiata* (von Martens, in von Martens & Thiele, 1904) (SW 9.3 mm), stn. CP23.

Material examined. SJADES 2018: 1 dd (SW 28.5 mm), stn. CP34, 234–243 m.

Remarks. This species is probably rare in the area as only one rather aged specimen was collected. Although initially identified as this species with some hesitance, there is no other similar species that it can possibly be confused with. The SJADES specimen possibly represents the first record of this species in the eastern Indian Ocean. Its current known distribution is from eastern Australia to the Philippines and Japan (Garrard, 1978; Bieler, 1993). Depth records for this species are between 50 and 200 m (Bieler, 1993; Hasegawa, 2000b).

Granosolarium asperum (Hinds, 1844b)
(Fig. 12C)

Solarium asperum Hinds, 1844b: 23 (type locality: Makassar Strait).
Torinia aspera – Thiele, 1925: 302, pl. 21 figs. 6, 7.
Granosolarium asperum – Bieler, 1993: 143–148, figs. 7, 115–121.
Glanosolarium asperum – Hasegawa, 2000b: 695, pl. 346 fig. 14.

Material examined. SJADES 2018: 1 dd (SW ca. 10 mm), stn. DW16, 92–103 m.

Remarks. A wide-ranging species found throughout the subtropical and tropical Indian Ocean to central Pacific (Bieler, 1993). Only one empty shell was collected by the expedition. Most live records are stated to be from between 50 and 100 m, but records between 35 and 380 m are known (Bieler, 1993; Hasegawa, 2000b).

Psilaxis oxytropis (A. Adams, 1855)
(Fig. 12D)

Philippia oxytropis A. Adams, 1855: 317 (type locality: New Caledonia).
Philippia (*Psilaxis*) *oxytropis* – Robertson, 1970: 77–79, fig. 2.
Psilaxis oxytropis – Bieler, 1993: 125–128, pl. 3 figs. B–F, 97–99, 101–103; Hasegawa, 2000b: 693, pl. 345 fig. 11.

Material examined. SJADES 2018: 1 dd (SW 7.7 mm), stn. CP34, 234–243 m.

Remarks. This species is distributed from the western Indian Ocean to the western and central Pacific (Bieler, 1993). Only a single faded specimen was collected, which could have originated from much shallower depths. Live records are thus far known only from shallow waters of around 15 to 85 m (Robertson, 1970; Bieler, 1993).

***Solatisonax supraradiata* (von Martens, in von Martens & Thiele, 1904)**
(Fig. 12E)

Solarium supraradiatum von Martens, in von Martens & Thiele, 1904: 118, pl. 4 fig. 16 (type locality: "Indischer Ocean … bei den Nikobaren, 7° 48′ N. Br., 93° 7′ O. L.").
Solatisonax supraradiata – Bieler, 1993: 168–171, figs. 136, 139–142; Hasegawa, 2000b: 695, pl. 346 fig. 19.

Material examined. SJADES 2018: 1 dd (SW 9.3 mm), stn. CP23, 559–571 m.

Remarks. A widespread species with records from eastern Africa to the western Pacific, and possibly to the eastern Pacific (Bieler, 1993). A bathymetric range of 105–805 m is reported for this species, with live records from 193–510 m (Bieler, 1993). Apparently rare in the area, only a single empty shell was collected.

Infraclass Euthyneura

Superfamily Acteonoidea

Family Acteonidae

***Acteon* cf. *ionfasciatus* Valdés, 2008**
(Fig. 13A)

Acteon ionfasciatus Valdés, 2008: 593, figs. 1C–F, 3 (type locality: Philippines, 11°58′N, 121°06′E).

Material examined. SJADES 2018: 1 dd (SL 15.9 mm), stn. CP03, 283–398 m; 2 dd (SL 21.0–26.2 mm), stn. CP20, 325–362 m.

Remarks. Only a few empty shells of this species were collected. Valdés (2008) described this species as brownish, with a wide, pale violet spiral band around the centre of the body whorl, but did not provide colour illustrations. Our specimens are a pale brownish white, but have a conspicuous band above the periphery of the body whorl, and a lighter band more anteriorly, separated by a pale area of about the same width in the middle, reminiscent of *Japonactaeon siebaldii* (Reeve, 1842b). That species however, has a conspicuous umbilicus, a prominent white subsutural band, and different spiral sculpture (see Hori, 2000c; Valdés, 2008). The sculpture of the SJADES specimens also seems to be coarser, with wider punctuated spiral grooves, compared to the holotype of *Acteon ionfasciatus* figured in Valdés (2008). However, other shell characteristics appear to agree reasonably well, so we are unsure if the aforementioned differences are merely intraspecific variation. *Acteon ionfasciatus* was previously recorded from the Philippines, New Caledonia, and the Kai Islands of Indonesia, and the only documented live specimen was obtained from depths of 760–820 m in the Philippines (Valdés, 2008). The SJADES material would extend its geographical range westwards to the eastern Indian Ocean if proven to be conspecific.

Family Aplustridae

***Rictaxiella* aff. *debelius* Poppe et al., 2011**
(Fig. 13B)

Rictaxiella debelius Poppe et al., 2011: 73, 74, pl. 1 figs. 3–5 (type locality: Mactan, Philippines).

Material examined. SJADES 2018: 1 dd (SL 8.8 mm [missing spire]), stn. DW06, 266–294 m.

Remarks. Only a single broken shell of this species, which looks aged and devoid of colouration, was examined. *Rictaxiella debelius* Poppe et al., 2011, seems closest to our specimen, but that species is slimmer in profile, and has a narrower aperture. *Rictaxiella choshiensis* Habe, 1958, is rather more rotund, and seems to differ in having a straight columella.

Superfamily Ringiculoidea

Family Ringiculidae

***Ringiculopsis foveolata* (Yokoyama, 1928)**
(Fig. 13C)

Ringicula foveolata Yokoyama, 1928: 23, pl. 1 fig. 1 (type locality: "Shikō, Kōshun, Takao" [Kaohsiung, Taiwan]).
Ringiculospongia foveolata – Kuroda, 1961: 138–141, fig. 6.
Ringiculospongia nipponica Kuroda, 1961: 140, 141, fig. 5 (type locality: Enshû-nada, Pacific side of Japan).
Ringiculopsis nipponica – Hori, 2000d: 739, pl. 368 fig. 10.
Ringiculopsis foveolata – Hasegawa & Okutani, 2011: 130, 131; Chaban et al., 2018: 200, 210, 211.

Material examined. SJADES 2018: 4 lv, stn. CP23, 559–571 m; 1 lv (SL 10.2 mm), stn. CP25, 876–937 m; 1 lv (SL 8.8 mm), stn. CP27, 481–557 m; 5 dd, stn. DW32, 805–977 m; 1 dd (SL ca. 10 mm), stn. CP34, 234–243 m; 1 dd (SL 8.7 mm), stn. CP47, 476–530 m; 3 dd (SL 8.0–8.5 mm), 1 lv (SL 8.0 mm [subadult]), stn. CP51, 569–657 m; 1 dd (SL 8.9 mm), stn. CP59, 579–659 m.

Remarks. Hitherto the known distribution of this monotypic species is from eastern to southeastern Japan and the East China Sea (e.g., Kuroda, 1961; Hori, 2000d; Chaban et al., 2018), with fossils known from southern Taiwan (Yokoyama, 1928; Kuroda, 1961). The SJADES material represents an apparently disjunct and significant range extension of this species to the eastern Indian Ocean. Hori (2000e) stated a bathymetric range of 100–500 m, presumably for Japanese material, and 606–607 m as reported by Chaban et al. (2018) for material from the East China Sea. Our specimens were collected from depths between 476 and 977 m, live examples from 481 to 937 m.

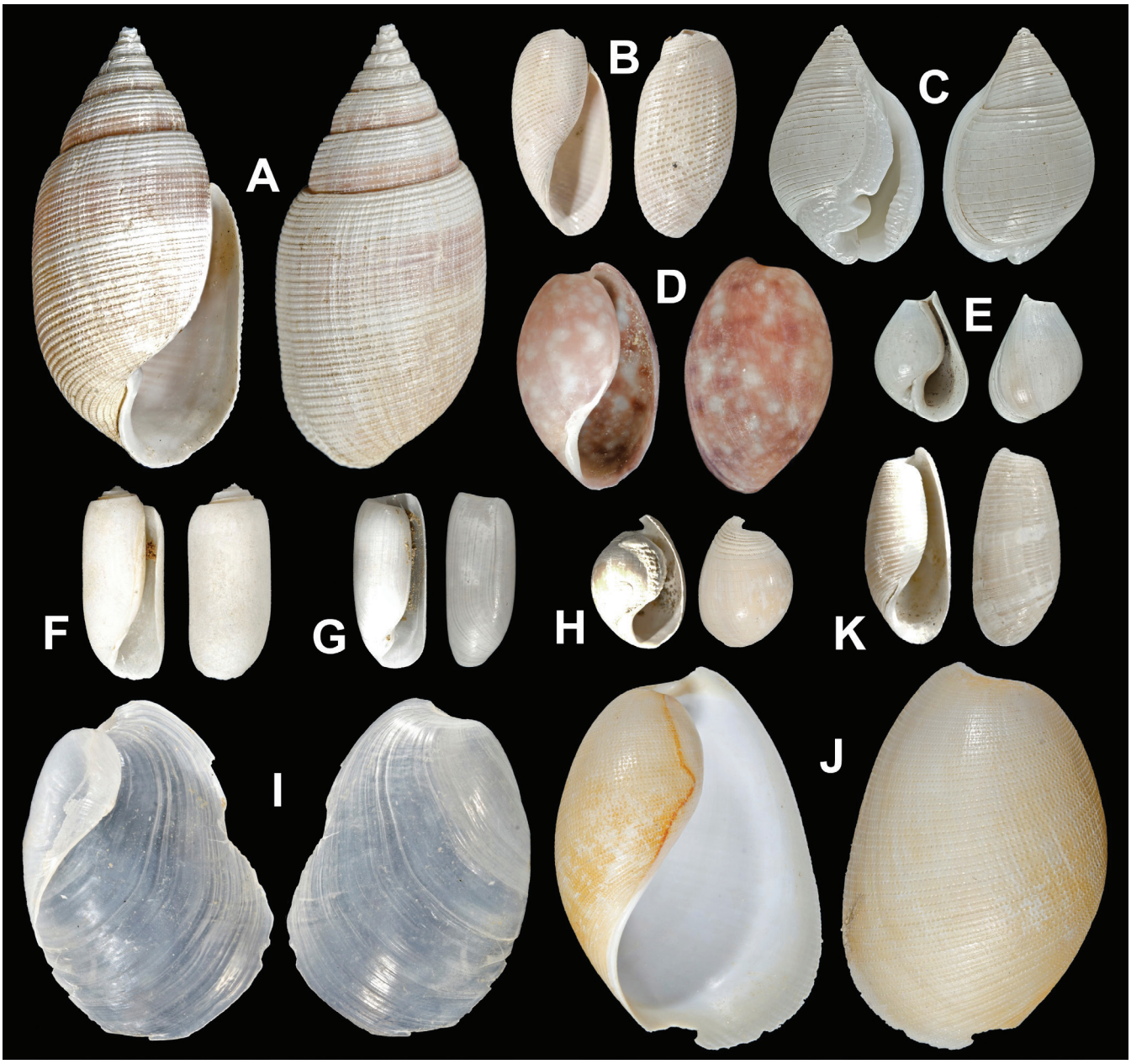

Fig. 13. A, *Acteon* cf. *ionfasciatus* Valdés, 2008 (SL 26.2 mm), stn. CP20; B, *Rictaxiella* aff. *debelius* Poppe et al., 2011 (SL 8.8 mm), stn. DW06; C, *Ringiculopsis foveolata* (Yokoyama, 1928) (SL ca. 10 mm), stn. CP34; D, *Bulla* cf. *ampulla* Linnaeus, 1758 (SL 9.3 mm), stn. DW32; E, *Pyrunculus pyriformis* (A. Adams, 1850) (SL ca. 4 mm), DW06; F, *Acteocina decorata* (Pilsbry, 1904) (SL 7.4 mm), stn. DW06; G, *Cylichna involuta* (A. Adams, 1850) (SL 6.2 mm), stn. DW32; H, *Alacuppa supracancellata* (Schepman, 1913) (SL 6.0 mm), stn. DW06; I, *Philine* sp. (SL 19.1 mm), stn. CP37; J, *Scaphander cancellatus* von Martens, 1902 (SL 22.4 mm), stn. CP22; K, *Scaphander* aff. *ceylanicus* E. A. Smith, 1904 (SL 7.6 mm), stn. DW06.

Order Cephalaspidea

Superfamily Bulloidea

Family Bullidae

***Bulla* cf. *ampulla* Linnaeus, 1758**
(Fig. 13D)

Bulla ampulla Linnaeus, 1758: 727 (type locality: Mauritius [restricted by Malaquias & Reid, 2008]); Hori, 2000g: 759, pl. 377 fig. 2; Dharma, 2005: 206, 360, pl. 78 fig. 13a, b, pl. 145 fig. 8; Malaquias & Reid, 2008: 500–517, figs. 25A, 26A–J, 28A, B, 29A, B, 30A–C, 31A–C, 32A, B, 33A–D, 35A–H, 37A–C, 38.

Material examined. SJADES 2018: 3 dd (SL 7.6–9.3 mm), stn. DW32, 805–977 m.

Remarks. Only three empty shells were obtained in a single station. All are juveniles, which make ascertaining their identities difficult. These shells are likely to have originated from much shallower waters as this species is known to occur from the intertidal to depths of around 15 m (Hori, 2000g; Malaquias & Reid, 2008). See Malaquias & Reid (2008) for a recent comprehensive treatment of this family.

Family Retusidae

***Pyrunculus pyriformis* (A. Adams, 1850)**
(Fig. 13E)

Bulla pyriformis A. Adams, 1850: 589, pl. 125 fig. 128 (type locality: China Seas).
Retusa semen Thiele, 1925: 271, pl. 43 fig. 17 (type locality: Zanzibar Channel).
Pyrunculus obesus Habe, 1950: 13, pl. 2 fig. 12 (after Valdés, 2008).
Retusa (*Pyrunculus*) *pyriformis obesa* – Hori, 2000f: 747, pl. 371 fig. 5.
Pyrunculus pyriformis – Valdés, 2008: 744–747, figs. 79A–D, 80.

Material examined. SJADES 2018: 1 dd, stn. DW06, 266–294 m.

Remarks. Only one empty shell of this wide-ranging Indo-Pacific species was seen amongst the SJADES material thus far. Elsewhere, live specimens are reported to inhabit depths of 100–200 m (Hori, 2000f; Valdés, 2008), while empty shells have been collected at depths between 90 and 959 m (Valdés, 2008).

Family Tornatinidae

***Acteocina decorata* (Pilsbry, 1904)**
(Fig. 13F)

Bulla voluta Quoy & Gaimard, 1833 (in 1832–1833): 359, 360, pl. 26 figs. 33–35 (type locality: Guam) (junior primary homonym of *Bulla voluta* Gmelin, 1791).
Tornatina decorata Pilsbry, 1904: 37, pl. 5 fig. 51 (type locality: China Seas); Cernohorsky, 1978: 83, 84, figs. 38–40.
Tornatina sumatrana Thiele, 1925: 351, pl. 44 fig. 3 (type locality: Padang, Sumatra).
Retusa gaimardi Finlay, 1927: 520 (replacement name for *Bulla voluta* Quoy & Gaimard, 1833).
Acteocina decorata – Hori, 2000e: 745, pl. 371 fig. 5.
Acteocina voluta – Valdés, 2008: 706–709, figs. 59A–D, 60A, B, 61.

Material examined. SJADES 2018: 2 dd (SL 6.6–7.4 mm), stn. DW06, 266–294 m.

Remarks. This species has a wide geographical distribution, with records from Gulf of Suez to Japan and Fiji (Valdés, 2008). Only two empty shells were collected from amongst mud and clay sediment at a single station.

Superfamily Cylichnoidea

Family Cylichnidae

***Cylichna involuta* (A. Adams, 1850)**
(Fig. 13G)

Bulla involuta A. Adams, 1850: 595, 596, pl. 125 fig. 151 (type locality: China Seas).
Eocylichna involuta – Hori, 2000e: 743, pl. 370 fig. 19.
Cylichna involuta – Valdés, 2008: 656, 657, figs. 30F, G, 31C, D, 32B, 33.

Material examined. SJADES 2018: 1 dd (SL 6.2 mm), stn. DW32, 805–977 m.

Remarks. This species has been reported from China and Japan, Indonesia, as well as the southern Pacific islands (Hori, 2000e; Valdés, 2008). Thus far, only one empty shell of this species was present amongst the SJADES material. The shell characteristics of our specimen agree well with specimens figured in the literature (see references herein cited), but it seems slightly shorter and more rotund in proportion. Hori (2000e) notes a depth range of 66–95 m, but Valdés (2008) recorded depths of 182–491 m, with live specimens in 320–408 m. Our empty shell was obtained from more than 800 m deep, but could have originated from shallower depths.

Superfamily Philinoidea

Family Alacuppidae

***Alacuppa supracancellata* (Schepman, 1913b)**
(Fig. 13H)

Atys (*Alicula*) *supracancellata* Schepman, 1913b: 470, pl. 32 fig. 4 (type locality: "6°4.1′N, 120°44′E" [Sulu Sea, Philippines]).
Sabatia ovata Habe, 1952: 75, figs. 11, 12 (type locality: Tosa Bay, Japan); Hori, 2000e: 743, pl. 369 fig. 12.
Sabatia supracancellata – Valdés, 2008: 690–692, figs. 47, 49E, 52A, B.

Material examined. SJADES 2018: 1 dd (SL 4.4 mm), stn. CP03, 283–398 m; 2 dd (SL 6.0–6.3 mm), stn. DW06, 266–294 m.

Remarks. This species is probably widely distributed throughout the Indo-West Pacific, with records from east Africa to Japan, Philippines, and Indonesia (Valdés, 2008). Only a few small empty shells of this species were obtained from depths between 266 and 398 m, well within the 192–535 m range thus far documented for the species (Schepman, 1913b; Valdés, 2008).

Family Philinidae

***Philine* sp.**
(Fig. 13I)

Material examined. SJADES 2018: 1 dd (broken), stn. DW16, 92–103 m; 1 dd (SL 19.1 mm), stn. CP37, 163–166 m.

Remarks. Only two empty shells, one broken, were obtained. We are thus far unable to classify the shells with any known species with confidence.

Family Scaphandridae

***Scaphander cancellatus* von Martens, 1902**
(Fig. 13J)

Scaphander cancellatus von Martens, 1902: 244 (type locality: Pulau Nias, west side of Sumatra); von Martens & Thiele, 1904: pl. 5 fig. 19, 19a.

Material examined. SJADES 2018: 2 dd (SL 21.7–21.9 mm), stn. CP03, 283–398 m; 1 lv, stn. CP07, 379–409 m; 1 dd (slightly broken), 1 lv, stn. CP20, 325–362 m; 25 dd (some broken) (SL 14.3–28.9 mm), 10 lv, stn. CP22, 864–870 m; 3 lv, stn. CP23, 559–571 m; 1 dd (SL 23.7 mm), stn. CP24, 1,044–1,068 m; 10 lv, stn. CP25, 876–937 m; 1 dd (SL 26.5 mm), stn. CP27, 481–557 m; 1 dd (SL 23.3 mm), 1 lv, stn. CP28, 957–1,022 m; 16 dd (SL 23.2–33.3 mm), 3 lv, stn. CP33, 312–525 m; 2 lv, stn. CP35, 603–686 m; 1 lv, stn. DW46, 540–654 m; 8 dd, 3 lv, stn. CP47, 476–530 m; 1 dd (juv.) (SL 5.3 mm), stn. CP50, 383–425 m; 6 dd, stn. CP51, 569–657 m; 2 dd (SL 19.9–25.7 mm), stn. CP55, 378–379 m; 1 dd, stn. CP58, 505–564 m; 2 dd (19.4–27.7 mm), stn. CP59, 579–659 m.

Remarks. A good number of specimens were collected during the expedition, but the material is identified as this species with uncertainty as they are also very similar to *Scaphander subglobosus* Schepman, 1913b, described from Flores and Ceram Seas. According to Schepman (1913b), *Scaphander subglobosus* has a larger, much more convex shell, coarser sculpture, a more curved columella and convex peristome. However, there is considerable variation in the aforementioned shell characteristics among the SJADES material (see also Valdés, 2008), and some of our specimens can be considered intergrades between *Scaphander cancellatus* and *Scaphander subglobosus*. All of our specimens are therefore regarded to be a single variable species pending further study. Bathymetric range for the SJADES material is between 283 and 1,068 m, live specimens from 325–1,022 m.

***Scaphander* aff. *ceylanicus* E. A. Smith, 1904b**
(Fig. 13K)

Scaphander ceylanica E. A. Smith, 1904b: 5 (type locality: off south coast of Ceylon); Annandale & Stewart, 1909: unnumbered caption page to pl., pl. 16 fig. 2, 2a.

Material examined. SJADES 2018: 1 dd (SL 7.6 mm), stn. DW06, 266–294 m; 7 dd (SL 5.1–10.2 mm), stn. DW32, 805–977 m.

Remarks. This species appears to be closest to *Scaphander ceylanicus* and has similarly whitish punctate striae as described by Smith (1904b). However, the SJADES specimens bear several prominent spiral keels along the edges of the grooves at the posterior end of the shell, which was neither mentioned by Smith (1904b) nor illustrated in Annandale & Stewart (1909). Only empty shells of this species were obtained, from dredge samples between 266 and 977 m.

DISCUSSION

Some 300 species of gastropods of 68 families were collected during the expedition (see Table 1), of which 32 species appear to be reported from Indonesian waters for the first time. Members of the superfamily Conoidea, comprising around a dozen families, are clearly the most diverse with possibly more than 100 species collected. The Buccinoidea is also well represented by at least 50 species in half a dozen families, the most speciose being the Nassariidae. More than 20 nassariid species were collected, but relatively few were represented by live examples. Other superfamilies with around or more than 10 species are the Cypraeoidea, Tonnoidea, and Muricoidea. However, it should be noted that the estimates include hundreds of lots that have not yet been classified to putative genera or species, so the eventual numbers may vary considerably. More families than listed are also expected to be present because a portion of the gastropod material remain unsorted, and the provisional compilation is merely presented to provide a rough overview. Additional treatments of the SJADES material will no doubt be necessary to verify and elucidate the species composition and numbers mentioned.

It should be noted that families such as the estuarine and intertidal Neritidae, the freshwater Ampullariidae, and terrestrial Ariophantidae are considered to have clearly originated from beyond the sampled areas, and are thus not considered here and excluded from the estimates. Nevertheless, we consider it prudent to mention the presence of the material, which is no less interesting. The holoplanktonic gastropods are especially numerous. They were found at most stations with a good haul of bottom sediments, and represented by at least 15–20 species. A number of specimens were collected, and could prove to be a useful resource for future studies.

This preliminary treatment covers merely around a third of the gastropod material, but we have already discovered a good number of first records, range extensions, and a few possibly undescribed species. Notably, 30% of the species listed above are first or probable new records for Indonesia. These are *Calliotropis infundibulum* (R. B. Watson, 1879); *Astele* cf. *similaris* (Reeve, 1863); *Guildfordia superba* Poppe et al., 2005; *Narvaliscala percancellata* (Nakayama, 2000); *Malluvium lissum* (E. A. Smith, 1894a); *Metula* cf. *inflata* (Houbrick, 1984); *Mitrella* cf. *intermissalineata* K. Monsecour & D. Monsecour, 2016; *Sulcomitrella humerosa* K. Monsecour & D. Monsecour, 2018; *Nassarius* aff. *psila* (R. B. Watson, 1882); *Sydaphera* cf. *fulva* (Y. C. Lee & Lan, 2002); *Turrancilla alcocki* (E. A. Smith, 1906); *Turrancilla glans* (E. A. Smith, 1899); *Bathytoma oldhami* (E. A. Smith, 1899); *Glyphostoma lyuhrurngae* K. Y. Lai, 2005; *Comispira* cf. *compta* Kantor, Fedosov & Puillandre, 2018; *Conasprella orbignyi* (Audouin, 1831); *Comitas arcana* (E. A. Smith, 1899); *Comitas eurina* (E. A. Smith, 1899); *Comitas kirai* Powell, 1969; *Comitas margaritae* (E. A. Smith, 1904a); *Inquisitor indistinctus* Sysoev, 1996; *Leiosyrinx matsukumai* Bouchet & Sysoev, 2001; *Thatcheria mirabilis* Angas, 1877; *Typhlosyrinx praecipua* (E. A. Smith,

Table 1. Provisional list of families of gastropods collected by the South Java Deep-Sea Biodiversity Expedition (SJADES) 2018. An asterisk indicates that the family is not treated in the species accounts. Assessment and comments on the number of species in each family are based on a combination of identified material and morphospecies from partly sorted material.

Higher classification	Superfamily	Family	Remarks
Subclass Patellogastropoda	Lottioidea	Pectinodontidae	Possibly more than 2 species.
Subclass Neomphaliones	Cocculinoidea	Cocculinidae	Probably more than 1 species.
Subclass Vetigastropoda			
Order Seguenziida	Seguenzioidea	Seguenziidae	At least 2 species.
		Eucyclidae	At least 3 species.
Order Lepetellida	Fissurelloidea	Fissurellidae	Possibly more than 3 species.
Order Trochida	Trochoidea	Calliostomatidae	At least 1 species.
		Colloniidae*	More than 2 species.
		Solariellidae*	Possibly more than 3 species.
		Trochidae*	At least 1 species.
		Turbinidae	At least 2 species.
Subclass Caenogastropoda			
(Order unassigned)	Cerithioidea	Siliquariidae*	More than 2 species.
		Turritellidae*	Possibly 2 species.
	Epitonioidea	Epitoniidae	More than 8 species.
Order Littorinimorpha	Naticoidea	Naticidae	Around 6 species.
	Triphoroidea	Triphoridae*	Probably more than 3 species.
	Vanikoroidea	Vanikoridae*	At least 1 species.
		Eulimidae*	More than 3 species.
		Hipponicidae	At least 1 species.
	Cypraeoidea	Cypraeidae	Around 9 species.
		Ovulidae*	2 species.
		Triviidae*	At least 2 species.
	Ficoidea	Ficidae	1 species.
	Stromboidea	Strombidae	1 species.
		Rostellariidae	2 species.
		Xenophoridae	3 species.
	Tonnoidea	Bursidae	2 species.
		Cassidae	4 species.
		Cymatiidae	3 species, including a fragment of an unidentified *Ranularia*.
		Tonnidae	1 species.
Order Neogastropoda	Buccinoidea	Belomitridae	At least 1 species.
		Buccinidae	Possibly more than 10 species.
		Colubrariidae	At least 3 species.
		Columbellidae	Around 10 species.
		Fasciolariidae*	Probably some 10 species.

Higher classification	Superfamily	Family	Remarks
		Nassariidae	More than 20 species.
	Volutoidea	Volutidae*	Possibly at least 1 species.
		Cancellariidae	Around 5 species.
		Marginellidae	1 species.
		Cystiscidae*	1 species thus far sorted, probably a *Persicula*.
	Muricoidea	Muricidae	Possibly more than 15 species.
	Turbinelloidea	Costellariidae*	At least 3 species.
	Mitroidea	Mitridae*	Probably more than 5 species.
	Olivoidea	Ancillariidae	At least 2 species.
		Olividae	At least 4 species.
	Conoidea	Borsoniidae	Probably more than 6 species.
		Clathurellidae	At least 2 species.
		Clavatulidae	At least 1 species.
		Cochlespiridae	Possibly some 10 or more species.
		Conidae	Around 10 species.
		Drilliidae	At least 1 species.
		Horaiclavidae	Probably more than 2 species.
		Mangeliidae*	At least 1 species.
		Pseudomelatomidae	More than 10 species.
		Raphitomidae	Probably more than 10 species.
		Terebridae	Around 5 species.
		Turridae	Possibly more than 20 species.
Subclass Heterobranchia	Architectonicoidea	Architectonicidae	Around 8 species.
Infraclass Euthyneura	Acteonoidea	Acteonidae	At least 3 species.
		Aplustridae	At least 2 species.
Superorder Ringiculimorpha	Ringiculoidea	Ringiculidae	At least 3 species.
Order Cephalaspidea	Bulloidea	Bullidae	1 species.
		Retusidae	At least 1 species.
		Tornatinidae	At least 1 species.
	Cylichnoidea	Cylichnidae	At least 3 species.
	Philinoidea	Alacuppidae	At least 1 species.
		Philinidae	1 species.
		Scaphandridae	At least 2 species.
	Pyramidelloidea	Pyramidellidae*	Probably more than 3 species.

1899); *Pellifronia jungi* (K. Y. Lai, 2001); *Cryptogemma powelli* Zaharias et al., 2020; *Gemmula diomedea* Powell, 1964; *Gemmula sibukoensis* Powell, 1964; *Discotectonica acutissima* (G. B. Sowerby III, 1914); *Acteon* cf. *ionfasciatus* Valdés, 2008; *Rictaxiella* aff. *debelius* Poppe et al., 2011; and *Ringiculopsis foveolata* (Yokoyama, 1928). Details are noted in the remarks under the respective species. However, it is difficult to affirm with certainty in more than a few cases, usually because of uncertainty with species identification or other taxonomic issues. Also, the distributional data for most species are scattered in the vast literature, and there is yet no available comprehensive inventory or database of the Indonesian malacofauna for ready reference. Based on the material that has been classified thus far, many species have previously been reported as components of the malacofauna of the Western Pacific regions of Japan, the Philippines, and the South China Sea. Nevertheless, a number of species are previously known only from the Western Pacific, thus our observations represent significant range extensions, such as for the species *Comitas kirai* Powell, 1969, and *Ringiculopsis foveolata* (Yokoyama, 1928). Ostensibly, this suggests that many of these species are more widely distributed than current records indicate, but it must be noted that taxonomic verification is needed for some of them.

Even though it is clear that more work is needed to clarify many of the taxonomic issues discussed herein, the aforementioned possibly undescribed species include the species listed in the species accounts as *Seguenzia* aff. *sumatrensis* Thiele, 1925; *Cirsotrema rugosum* Kuroda & Itô, 1961; *Sydaphera* cf. *fulva* (Y. C. Lee & Lan, 2002); *Rostellariella* cf. *delicatula* (G. Nevill, 1881); *Glyphostoma* aff. *candidum* (Hinds, 1843a); *Comispira* cf. *compta* Kantor, Fedosov & Puillandre, 2018; *Sibogasyrinx* cf. *pyramidalis* (Schepman, 1913a); *Horaiclavus* sp.; *Gemmula* aff. *sogodensis* Olivera, 2005; *Acteon* cf. *ionfasciatus* Valdés, 2008; *Rictaxiella* aff. *debelius* Poppe et al., 2011; and *Philine* sp. No new species are herein proposed as the work to verify if these are merely variants or closely related distinct species is still ongoing. Attempting a more definitive discussion on these would be premature at this stage.

Although it would be ideal to have a comprehensive checklist documenting all of the species collected by the expedition, this is not possible at this point in time as the taxonomic work is still in progress and could take many years to complete. It is also expected that most future treatments are likely to focus on selected taxonomic groups. Thus, the main purpose of this preliminary account is to showcase the diversity of the gastropod material collected by the expedition, by showing examples across the different orders and subclassses, which still significantly increases our knowledge of the malacofauna of the sampled area. The expedition results suggest that our knowledge of the Indonesian malacofauna, and biodiversity in general, is still poorly known. This is probably unsurprising considering the vastness of the Indonesian archipelago. A complete understanding of the biodiversity in the region may never be fully obtained even after many more expeditions and more than a few lifetimes' worth of sampling efforts, but we hope that this preliminary account contributes a small step towards a better understanding of it. It is also hoped that the emphasis on the yet unsorted and unidentified material would inspire further studies and possible collaborations on the SJADES material.

ACKNOWLEDGEMENTS

The SJADES 2018 was a joint Indonesia–Singapore expedition funded by NUS and LIPI, and supported by the respective Ministries of Foreign Affairs under the RISING 50 programme to promote bilateral cooperation. We would like to express our sincere thanks to the chief scientist Dwi Listyo Rahayu and the Indonesian team from LIPI, comprising Aditya, Dharma Arif Nugroho, Ernawati Widyastuti, Hadiyanto, Ismiliana Wirawati, Nurul Fitriya, Praditya Avianto, Riyana Subandi, Selvia Oktaviyanti, Supono, and Teguh Peristiwady; and the team from NUS comprising Iffah Iesa, Jose Christopher E. Mendoza, Muhammad Dzaki Safaruan, Rene Ong, and Tan Heok Hui from LKCNHM, and Chim Chee Kong, Chuar Cheah Hoay, Gan Bin Qi, Lim Swee Cheng, Samantha Tong, and Tan Koh Siang from TMSI, led by Peter Ng. Help with photography of specimens by Rene Ong (LKCNHM) and Daniel Tala (LIPI) has been much appreciated, and we benefitted from the guidance and tips on Photoshop given by Iffah Iesa (LKCNHM). Martyn Low (LKCNHM) kindly provided information and references on historical expeditions. We are also immensely grateful for the expertise and help from the consultant scientists Bertrand Richer de Forges (Institut de Recherche pour le Développement/IRD-NOUMEA, retired), Chan Tin-Yam, Yang Chien-Hui (both National Taiwan Ocean University), and Lin Chia-Wei (National Museum and Marine Biology Aquarium, Taiwan). The professionalism and support of the captain and crew of the *Baruna Jaya VIII* were crucial to the success of the expedition. The expedition and collection of samples were made under the research permit RISTEKDIKTI 80/SIP/FRP/E5/Dit.KI/III/2018.

LITERATURE CITED

Abbott RT (1968) The helmet shells of the world (Cassidae). Part 1. Indo-Pacific Mollusca, 2: 7–202.

Abbott RT & Dance SP (1990) Compendium of Seashells. 4th Edition. Odyssey Publishing, California, ix + 411 pp.

Adams A (1850) Monograph of the family Bullidae. Thesaurus Conchyliorum, 2: 553–608, pls. 117–125.

Adams A (1852–1853) Catalogue of the species of *Nassa*, a genus of gasteropodous Mollusca, belonging to the family Buccinidae, in the collection of Hugh Cuming, Esq., with the description of some new species. Proceedings of the Zoological Society of London, 19: 94–114.

Adams A (1854) Descriptions of new species of the genus *Conus*, from the collection of Hugh Cuming, Esq. Proceedings of the Zoological Society of London, 21: 116–119.

Adams A (1855) Descriptions of twenty-seven new species of shells, from the collection of Hugh Cuming, Esq. Proceedings of the Zoological Society of London, 22: 311–317.

Adams A & Reeve LA (1848–1850) Mollusca. In: Adams A (ed.) The Zoology of the Voyage of H.M.S. Samarang; Under the Command of Captain Sir Edward Belcher, C.B., F.R.A.S.,

F.G.S., During the Years 1843–1846. Reeve and Benham, London, x + 87 + [ii] pp., 24 pls.

Adams H & Adams A (1853–1854) The Genera of Recent Mollusca; Arranged According to Their Organization. Volume 1. John Van Voorst, London, 484 pp.

Ahyong ST, Mitra S & Ng PKL (2020) Cymonomid crabs from southwestern Indonesia and redescription of *Cymonomus andamanicus* Alcock, 1905. Raffles Bulletin of Zoology, 68: 62–69.

Angas GF (1877) Descriptions of a new genus of gasteropodous Mollusca from Japan, and of a new species of *Bullia* from Kurachi. Proceedings of the Zoological Society of London, 1877: 529–530, pl. 54.

Annandale N & Stewart FH (1909) Illustrations of the Zoology of the Indian Marine Survey Ship Investigator Under the Command of Commander W. G. Beauchamp, R. I. M.: Mollusca. Superintendent Government Printing, Calcutta, 24 pls.

Audouin V (1831) Cone. *Conus*. Linné. C. de D'Orbigny. *C. Orbignyi* Aud. Magazin de Zoologie, 1: 20, pl. 20.

Azuma M (1962) Descriptions of five new species of Japanese Epitoniidae. Venus, 22: 130–135.

Beets C (1943) Gastropodengruppen *Ootoma* und *Eosipho* im indopacifischen gebiet. Basteria, 8: 2–8.

Beu AG (1998) Résultats des Campagnes MUSORSTOM, 19. Indo-West Pacific Ranellidae, Bursidae and Personidae (Mollusca: Gastropoda): A monograph of the New Caledonian fauna and revisions of related taxa. Mémoires du Muséum national d'Histoire naturelle, 178: 1–255.

Beu AG (2005) Neogene fossil tonnoidean gastropods of Indonesia. Scripta Geologica, 130: 1–186.

Beu AG (2008) Recent deep-water Cassidae of the world. A revision of *Galeodea*, *Oocorys*, *Sconsia*, *Echinophoria* and related taxa, with new genera and species (Mollusca, Gastropoda). Tropical Deep-Sea Benthos, 25. Mémoires du Muséum national d'Histoire naturelle, 196: 269–387.

Beu AG & Ponder WF (1979) A revision of the species of *Bolma* Risso, 1826 (Gastropoda: Turbinidae). Records of the Australian Museum, 32: 1–68.

Bieler R (1993) Architectonicidae of the Indo-Pacific (Mollusca, Gastropoda). Abhandlungen des Naturwissenschaftlichen Vereins in Hamburg, (NF) 30: 1–376.

Bouchet P, Héros V, Lozouet P & Maestrati P (2008) A quarter-century of deep-sea malacological exploration in the South and West Pacific: Where do we stand? How far to go? Tropical Deep-Sea Benthos, 25. Mémoires du Muséum national d'Histoire naturelle, 196: 9–40.

Bouchet P, Kantor YI, Sysoev A & Puillandre N (2011) A new operational classification of the Conoidea (Gastropoda). Journal of Molluscan Studies, 77: 273–308.

Bouchet P & Métivier B (1983) The genus *Bolma* (Mollusea: Gastropoda) in the bathyal zone of New Caledonia, with description of a new species. Venus, 42: 8–12.

Bouchet P, Rocroi J-P, Hausdorf B, Kaim A, Kano Y, Nützel A, Parkhaev P, Schrödl M & Strong EE (2017) Revised classification, nomenclator and typification of gastropod and monoplacophoran families. Malacologia, 61: 1–526.

Bouchet P & Sysoev A (1997) Revision of the recent species of *Buccinaria* (Gastropoda: Conoidea), a genus of deep-water turrids of Tethyan origin. Venus, 56: 93–119.

Bouchet P & Sysoev A (2001) *Typhlosyrinx*-like tropical deep-water turriform gastropods (Mollusca, Gastropoda, Conoidea). Journal of Natural History, 35: 1693–1715.

Brown L (2008) Epitoniidae. In: Poppe GT (ed.) Philippine Marine Mollusks. Volume 1. Conchbooks, Hackenheim, pp. 694–712, pls. 292–301.

Castelin M, Puillandre N, Kantor YI, Modica MV, Terryn Y, Cruaud C, Bouchet P & Holford M (2012) Macroevolution of venom apparatus innovations in auger snails (Gastropoda; Conoidea; Terebridae). Molecular Phylogenetics and Evolution, 64: 21–44.

Castelin M, Williams ST, Buge B, Maestrati P, Lambourdière J, Ozawa T, Utge J, Couloux A, Alf A & Samadi S (2017) Untangling species identity in gastropods with polymorphic shells in the genus *Bolma* (Mollusca, Vetigastropoda). European Journal of Taxonomy, 288: 1–21.

Cernohorsky WO (1978) The taxonomy of some Indo-Pacific Mollusca: Part 6. Records of the Auckland Institute and Museum, 15: 67–86.

Cernohorsky WO (1984) Systematics of the family Nassariidae (Mollusca: Gastropoda). Bulletin of the Auckland Institute and Museum, 14: 1–356.

Cernohorsky WO (1987) Taxonomic notes on some deep-water Turridae (Mollusca: Gastropoda) from the Malagasy Republic. Records of the Auckland Institute and Museum, 24: 123–134.

Chaban EM, Kano Y, Fukumori H & Chernyshev AV (2018) Deep-sea gastropods of the family Ringiculidae (Gastropoda, Heterobranchia) from the Sea of Okhotsk, Kuril–Kamchatka Trench, and adjacent waters with the description of three new species. Deep-Sea Research Part II, 154: 197–213.

Cheng YP & Lee CY (2011) One new bathyal turrids [sic] (Gastropoda: Turridae) from South China Sea. Bulletin of Malacology, Taiwan, 35: 25–32.

Chim CK, Wirawati I, Avianto P, Richer de Forges B, Chan TY & Tan KS (2021) SJADES 2018 biodiversity research cruise: Methodology and station data. Raffles Bulletin of Zoology, Supplement 36: 17–22 .

Dall WH (1907) Descriptions of new species of shells, chiefly Buccinidae, from the dredgings of the U.S.S. Albatross during 1906, in the northwestern Pacific, Bering, Okhotsk and Japanese Seas. Smithsonian Miscellaneous Collections, 50: 139–173.

Dekkers AM & Liverani V (2011 ["2010"]) Redescription of *Strombus labiosus* Wood, 1828 (Gastropoda: Strombidae) with description of a new species. Gloria Maris, 49: 107–119. [Published 20 January 2011]

deMaintenon M (2008) Results of the Rumphius Biohistorical Expedition to Ambon (1990). Part 14. The Columbellidae (Gastropoda: Neogastropoda) collected at Ambon during the Rumphius Biohistorical Expedition. Zoologische Mededelingen, 82: 341–374.

Dharma B (2005) Recent & Fossil Indonesian Shells. Conchbooks, Hackenheim, 424 pp.

d'Orbigny A (1852) Prodrome de Paléontologie. Stratigraphique universelle des animaux mollusques et rayonnés faisant suite au cours élémentaire de paléontologie et de géologie stratigraphique. Troisième volume. Victor Masson, Paris, 189 pp.

Doumet E (1840) G. Pleurotome: *Pleurotoma*: Lamarck. Mollusques. Magasin de Zoologie, Series 2: 1–2, pl. 10.

Drivas J & Jay M (1990) The Columbellidae of Réunion Island (Mollusca: Gastropoda). Annals of the Natal Museum, 31: 163–200.

Fedosov AE, Malcolm G, Terryn Y, Gorson J, Modica MV, Holford M & Puillandre N (2020) Phylogenetic classification of the family Terebridae (Neogastropoda: Conoidea). Journal of Molluscan Studies, 85: 359–388.

Finlay HJ (1927) New specific names for austral Mollusca. Transactions of the New Zealand Institute, 57: 488–533.

Finlay HJ (1930) Invalid molluscan names. No. 1. Transactions of the New Zealand Institute, 61: 37–48.

Fraussen K (2008) Buccinidae. In: Poppe GT (ed.) Philippine Marine Mollusks. Volume 2. Conchbooks, Hackenheim, pp. 36–58, pls. 313–324.

Garrard TA (1978) A revision of Australian Architectonicidae (Gastropoda: Mollusca). Records of the Australian Museum, 31: 506–585.

Glasby CJ & Al-Hakim I (2017) History of collection and discovery of polychaetes (Annelida), including a bibliography, from the Indo-Malay-Philippines Archipelago and surrounding seas. Raffles Bulletin of Zoology, 65: 545–558.

Gmelin JF (1791) Caroli a Linné Systema naturae per regna tria naturae. Edition decima tertia. Tom. I. Pars VI. Georg Emanuel. Beer, Lipsiae, 3021–3910 pp.

Habe T (1950) Ringiculidae and Retusidae in Japan. In: Kuroda T (ed.) Illustrated Catalogue of Japanese Shells. Volume 2. Malacological Society of Japan, Tokyo, pp. 17–24.

Habe T (1952) Descriptions of new genera and species of the shell-bearing opisthobranchiate molluscs from Japan (Cephalaspidea, Tectibranchia). Venus, 17: 69–77.

Habe T (1958) On the shell-bearing opisthobranchiate molluscan fauna from off Choshi, Chiba Pref., Japan. Annotationes Zoologicae Japonenses, 31: 117–120.

Habe T (1961a) Coloured Illustrations of the Shells of Japan, Volume 2. Hoikusha, Osaka, ix + [2] + 182 pp., 66 pls.

Habe T (1961b) Description of four new cancellariid species, with a list of the Japanese species of the family Cancellariidae. Venus, 21: 431–441, pls. 23, 24.

Hasegawa K (2000a) Family Cancellariidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 581–585, pls. 289–291.

Hasegawa K (2000b) Family Architectonicidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 691–701, pls. 344–349.

Hasegawa K & Okutani T (2011) A review of bathyal shell-bearing gastropods in Sagami Bay. Memoirs of the National Museum of Nature and Science, Tokyo, 47: 97–144.

Hasegawa K, Okutani T & Tsuchida E (2000) Family Turridae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 619–667, pls. 308–332.

Higo S, Callomon P & Goto Y (1999) Catalogue and Bibliography of the Marine Shell-Bearing Mollusca of Japan. Elle Scientific Publications, Yao, Osaka, 939 pp.

Hinds RB (1843a) On new species of *Pleurotoma*, *Clavatula*, and *Mangelia*. Proceedings of the Zoological Society of London, 11: 36–46.

Hinds RB (1843b) Description of ten new species of *Cancellaria*, from the collection of Sir Edward Belcher. Proceedings of the Zoological Society of London, 11: 47–49.

Hinds RB (1844a) Descriptions of Marginellae collected during the voyage of H.M.S. Sulphur, and from the collection of Mr. Cuming. Proceedings of the Zoological Society of London, 12: 72–77.

Hinds RB (1844b) Description of new species of shells. Proceedings of the Zoological Society of London, 12: 21–26.

Hori S (2000a) Family Cypraeidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 225–241, pls. 112–120.

Hori S (2000b) Family Conidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 597–619, pls. 297–308.

Hori S (2000c) Family Acteonidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 733–735, pls. 365–366.

Hori S (2000d) Family Ringiculidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 737–739, pl. 368.

Hori S (2000e) Family Cylichnidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 741–745, pls. 369–371.

Hori S (2000f) Family Retusidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 747–748, pls. 371–372.

Hori S (2000g) Family Bullidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, p. 759, pl. 377.

Houart R (2014) Living Muricidae of the World. Muricinae: *Murex*, *Promurex*, *Haustellum*, *Bolinus*, *Vokesimurex* and *Siratus*. Conchbooks, Harxheim, 197 pp.

Houbrick RS (1984) A new "*Metula*" species from the Indo-West Pacific (Prosobranchia: Buccinidae). Proceedings of the Biological Society of Washington, 97: 420–424.

Huang CW & Lee YC (2016) Checklist of the family Epitoniidae (Mollusca: Gastropoda) in Taiwan with description of a new species and some new records. Biodiversity Data Journal, 4: e5653.

Hylleberg J & Kilburn RN (2002) Annotated inventory of molluscs from the Gulf of Mannar and vicinity. Phuket Marine Biological Center Special Publication, 26: 19–79.

Kantor YI, Fedosov AE, Puillandre N, Bonillo C & Bouchet P (2017) Returning to the roots: Morphology, molecular phylogeny and classification of the Olivoidea (Gastropoda: Neogastropoda). Zoological Journal of the Linnean Society, 180: 493–541.

Kantor YI, Fedosov AE & Puillandre N (2018) New and unusual deep-water Conoidea revised with shell, radula and DNA characters. Ruthenica, 28: 47–82.

Kantor YI, Puillandre N, Rivasseau A & Bouchet P (2012) Neither a buccinid nor a turrid: A new family of deep-sea snails for *Belomitra* P. Fischer, 1883 (Mollusca, Neogastropoda), with a review of recent Indo-Pacific species. Zootaxa, 3496: 1–64.

Kilburn RN (1984) Turridae (Mollusca: Gastropoda) of southern Africa and Mozambique. Part 1. Subfamily Turrinae. Annals of the Natal Museum, 25: 549–585.

Kool HH (2006) *Nassarius tangaroai* spec. nov., from the Marquesas Archipelago (Gastropoda, Caenogastropoda, Nassariidae). Basteria, 70: 97–100.

Koperberg EJ (1931) Jungtertiäre and Quartäre Mollusken von Timor. Amsterdam, University of Amsterdam, xii + 165 pp., 3 pls.

Kreipl K & Alf A (2008) Turbinidae. In: Poppe GT (ed.) Philippine Marine Mollusks. Volume 1. Conchbooks, Hackenheim, pp. 240–260, pls. 65–75.

Kronenberg GC (2008) Rostellariidae. In: Poppe GT (ed.) Philippine Marine Mollusks. Volume 1. Conchbooks, Hackenheim, pp. 512–514, pls. 201–202.

Kronenberg GC & Dharma B (2005) New distributional records for four species of Stromboidea (Mollusca: Gastropoda) from Australasia. The Beagle, Records of the Museums and Art Galleries of the Northern Territory, 21: 47–51.

Kuroda T (1961) On the Japanese species of the genera *Microglyphis* and *Ringiculospongia*. Venus, 21: 135–141.

Kuroda T & Itô K (1961) Molluscan shells from southern Kii. Venus, 21: 243–267, pls. 16–18.

Lai KY (2001) A new species of Terebridae from the South China Sea. Memoir, Malacological Society of Taiwan, 1: 14–15.

Lai KY (2005) A new species of *Glyphostoma* from Taiwan (Gastropoda: Turridae). Bulletin of Malacology, Taiwan, 29: 1–4.

Lamarck [JBPA] (1816) Tableau encyclopédique et méthodique des trois règnes de la nature. Vers, coquilles, mollusques et polypiers. Tome troisième. Veuve Agasse, Paris, 16 pp., pls. 391–488.

Lamarck [JBPA] (1822) Histoire naturelle des animaux sans vertèbres, présentant les caractères généraux et particuliers de ces animaux, leur distribution, leurs classes, leurs familles, leurs genres, et la citation des principales espèces qui s'y rapportent; précédée d'une Introduction offrant la détermination des caractères essentiels de l'Animal, sa distinction du végétal et des autres corps naturels; enfin, l'exposition des principes fondamentaux de la Zoologie. Tome septième. L'auteur, Paris, 711 pp.

Larson HK, Jaafar Z, Tan HH & Peristiwady T (2020) *Platygobiopsis hadiatyae*, a new species of deepwater gobiid from Indonesia (Teleostei, Gobiidae, Gobiinae). Raffles Bulletin of Zoology, 68: 14–18.

Lee YC (2001) Two new bathyal turrids (Gastropoda: Turridae) from West Pacific. Memoir, Malacological Society of Taiwan, 1: 7–9.

Lee YC (2011) Rare Deepwater Molluscs of Northeast Taiwan (1): Turrids. Lanyang Museum E-newsletter, 80. http://enews.lym.gov.tw/content.asp?pid=39&k=212 (Accessed 28 January 2021). [In Mandarin Chinese]

Lee YC & Lan TC (2002) Two new bathyal cancellariids (Gastropoda: Cancellariidae) from Taiwan. Memoir, Malacological Society of Taiwan, 2: 21–24.

Lee YC & Wu WL (2012) Taiwan Mollusca Fauna: Epitoniidae. Biodiversity Research Center, Academia Sinica, Taipei, iv + 100 pp.

Li BQ & Li XZ (2008) Report on the turrid genera *Gemmula*, *Lophiotoma* and *Ptychosyrinx* (Gastropoda: Turridae: Turrinae) from the China seas. Zootaxa, 1778: 1–25.

Linnaeus C (1758) Systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. Tomus I. Editio decima, reformata. Laurentii Salvii, Holmiae, 823 pp.

Lorenz F & Hubert A (2000) A Guide to Worldwide Cowries. 2nd Edition. Conchbooks, Hackenheim, 584 pp.

Malaquias MA & Reid DG (2008) Systematic revision of the living species of Bullidae (Mollusca: Gastropoda: Cephalaspidea), with a molecular phylogenetic analysis. Zoological Journal of the Linnean Society, 153: 453–543.

Marshall BA (1992) A revision of the recent species of *Eudolium* Dall, 1889 (Gastropoda: Tonnoidea). The Nautilus, 106: 24–38.

Marshall BA, Puillandre N, Lambourdiere J, Couloux A & Samadi S (2016) Deep-sea wood-eating limpets of the genus *Pectinodonta* Dall, 1882 (Mollusca: Gastropoda: Patellogastropoda: Pectinodontidae) from the tropical West Pacific. Tropical Deep-Sea Benthos, 29. Mémoires du Muséum national d'Histoire naturelle, 208: 235–265.

Melvill JC (1906) *Capulus lissus*, Smith, as type of a proposed new subgenus (*Malluvium*) of *Amalthea*, Schumacher. Proceedings of the Malacological Society of London, 7: 81–84.

Melvill JC (1918) Descriptions of thirty-four species of marine Mollusca from the Persian Gulf, Gulf of Oman and Arabian Sea, collected by Mr. F. W. Townsend. Annals and Magazine of Natural History, Series 9, 1: 137–158, pls. 4–5.

Melvill JC & Standen R (1905) *Rostellaria delicatula* Nevill. Notes upon its distribution and limits of variation. Journal of Conchology, 11: 161–163, pl. II.

MolluscaBase Eds. (2020) MolluscaBase. http://www.molluscabase.org (Accessed 23 September 2020).

Monnier E & Tenorio MJ (2017) New cones from north-west Madagascar (Gastropoda: Conidae). Xenophora Taxonomy, 17: 32–40.

Monsecour K & Monsecour D (2016) Deep-water Columbellidae (Mollusca: Gastropoda) from New Caledonia. Tropical Deep-Sea Benthos, 29. Mémoires du Muséum national d'Histoire naturelle, 208: 291–362.

Monsecour K & Monsecour D (2018) Columbellidae (Mollusca: Gastropoda) from French Polynesia. Gloria Maris, 56: 118–151.

Moolenbeek RG, Röckel D & Bouchet P (2008) New records and new species of cones from deeper water off Fiji (Mollusca, Gastropoda, Conidae). Vita Malacologica, 6: 35–49.

Nakayama T (2000) Descriptions of a new subgenus, fourteen new species, and three substituted names of Epitoniids from Japan (Gastropoda: Epitoniidae). Venus, 59: 277–292.

Nakayama T (2003) A review of northwest Pacific epitoniids (Gastropoda: Epitoniidae). Monographs of Marine Mollusca, 6: 1–143.

Nevill G (1881) Description of a new species of *Rostellaria*, from the Bay of Bengal. Journal of the Asiatic Society of Bengal, 50 (Part 2): 262.

Ng PKL & Rahayu DL (2021) The first Indonesia–Singapore deep-sea expedition: South Java Deep-Sea (SJADES) Biodiversity Expedition 2018. Raffles Bulletin of Zoology, Supplement 36: 1–16.

Ninomiya T (1988) A new subgenus and five new species of the Ancillinae (Gastropoda: Olividae) from southwestern Australia, Japan and Taiwan. Venus, 47: 141–153.

Okutani T (2000a) Family Strombidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 181–187, pls. 90–93.

Okutani T (2000b) Family Xenophoridae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, p. 203, pl. 101.

Okutani T (2000c) Family Cassidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 273–279, pls. 135–138.

Okutani T (2000d) Family Ficidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, p. 279, pl. 138.

Okutani T (2000e) Family Ranellidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 285–291, pls. 141–145.

Olivera BM (2005) Evaluation of Philippine *Gemmula* I. Forms related to *G. speciosa* and *G. kieneri*. Science Dilliman, 17: 1–14.

Olivera BM, Hillyard DR & Watkins M (2008) A new species of *Gemmula*, Weinkauff 1875; evidence of two clades of Philippines species in the genus *Gemmula*. Philippine Science Letters, 1: 11–15.

Olivera BM & Sysoev A (2008) Turridae. In: Poppe GT (ed.) Philippine Marine Mollusks. Volume 2. Conchbooks, Hackenheim, pp. 764–786, pl. 688.

Osselaer C van, Bouillon J, Ouin JM & Tursch B (1994) Studies on Olividae. XVIII. The distribution of *Oliva* species and the variation of their colour patterns in Hansa Bay (Papua New Guinea). Apex, 9: 29–46.

Perry G (1811) Conchology, or the Natural History of Shells; Containing a New Arrangement of the Genera and Species. Illustrated by Coloured Engravings Executed From the Natural Specimens, and Including the Latest Discoveries. W. Miller, London, 4 + [61 unnumbered pages of plate captions] + [1] pp., 61 pls.

Petit RE (1972) The cancellariid genus *Nipponaphera* Habe, 1961. Venus, 31: 103–105.

Petit de la Saussaye S (1840) Description de deux espèces de coquilles nouvelles, appartenant aux genres *Rostellaria* et *Murex*. Revue Zoologique, par la Société Cuviérienne, 1840: 326–327.

Philippi RA (1849) Centuria tertia testaceorum novorum. Zeitschrift für Malakozoologie, 5: 161–176.

Pilsbry HA (1904) New Japanese marine Mollusca: Gastropoda. Proceedings of the Academy of Natural Sciences of Philadelphia, 56: 3–37, pls. 1–6.

Ponder WF (1983) A revision of the recent Xenophoridae of the world and of the Australian fossil species (Mollusca, Gastropoda). Australian Museum Memoir, 17: 1–67, 74–126.

Poppe GT (2017) Philippine Marine Mollusks. Volume 5. Conchbooks, Harxheim, 628 pp., pls. 1316–1600.

Poppe GT, Tagaro S & Dekker H (2005) Discovery of a new *Guildfordia* (Gastropoda, Turbinidae) near Balut Island, south of Mindanao, the Philippines. Visaya, 1: 4–10.

Poppe GT, Tagaro SP & Chino M (2011) Two new *Rictaxiella* (Gastropoda: Bullinidae) from the Philippines. Visaya, 3: 76–82.

Powell AWB (1964) The family Turridae in the Indo-Pacific: Part 1. The subfamily Turrinae. Indo-Pacific Mollusca, 1: 227–346.

Powell AWB (1969) The family Turrinae in the Indo-Pacific: Part 2. The subfamily Turriculinae. Indo-Pacific Mollusca, 2: 215–415.

Puillandre N, Sysoev AV, Olivera BM, Couloux A & Bouchet P (2010) Loss of planktotrophy and speciation: Geographical fragmentation in the deep-water gastropod genus *Bathytoma* (Gastropoda, Conoidea) in the western Pacific. Systematics and Biodiversity, 8: 371–394.

Quoy JRC & Gaimard JP (1832–1833) Zoologie. In: Dumont D'Urville JSC (ed.) Voyage de découvertes de l'Astrolabe exécuté par ordre du Roi, pendant les années 1826-1827-1828-1829, sous le commandement de M. J. Dumont d'Urville. Volume 2 & Atlas. Tastu, Paris, pp. 1–686, pls. 1–26.

Raven JGM (2016) Notes on molluscs from NW Borneo. 3. A revision of *Taurasia* (Gastropoda, Muricidae) and *Preangeria* (Gastropoda, Buccinidae) with comments on *Semiricinula* from NW Borneo. Vita Malacologica, 15: 77–104.

Reeve LA (1842a) Conchologia Systematica, or Complete System of Conchology: In Which the Lepades and Conchiferous Mollusca are Described and Classified According to Their Natural Organization and Habits. Volume 2. Longman, Brown, Green and Longmans, London, 337 pp., 300 pls.

Reeve LA (1842b) Monograph of the genus *Tornatella*, a small group of pectinibranchiate mollusks of the family Plicacea, including descriptions of seven new species from the collection of H. Cuming, Esq. Proceedings of the Zoological Society of London, 10: 58–62.

Reeve LA (1843) On the genus *Phorus*, a group of agglutinating mollusks of the family Turbinacea. Proceedings of the Zoological Society of London, 10: 160–163.

Reeve LA (1843–1845) Monograph of the genus *Phorus*. Conchologia Iconica, 1: unpaginated text, pls. 1–3.

Reeve LA (1843–1846) Monograph of the genus *Pleurotoma*. Conchologia Iconica, 1: unpaginated text, pls. 1–40.

Reeve LA (1845–1849) Monograph of the genus *Murex*. Conchologia Iconica, 3: unpaginated text, pls. 1–37.

Reeve LA (1849) Monograph of the genera *Mesalia* and *Eglisia*. Conchologia Iconica, 5: unpaginated text, pl. 1.

Reeve LA (1853–1854) Monograph of the genus *Nassa*. Conchologia Iconica, 8: unpaginated text, pls. 1–29.

Reeve LA (1863) Monograph of the genus *Zizyphinus*. Conchologia Iconica, 14: unpaginated text, pls. 1–8.

Robertson R (1970) Systematics of Indo-Pacific *Philippia* (*Psilaxis*), architectonicid gastropods with eggs and young in the umbilicus. Pacific Science, 24: 66–83.

Röckel D, Korn W & Kohn AJ (1995) Manual of the Living Conidae. Volume 1: Indo-Pacific Region. Verlag Christa Hemmen, Germany, 517 pp.

Saito H (2000) Family Naticidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 251–267, pls. 125–132.

Sasaki T (2000a) Family Acmaeidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, p. 27, pl. 13.

Sasaki T (2000b) Family Trochidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 55–83, pls. 27–41.

Sasaki T (2000c) Family Turbinidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 89–101, pls. 44–50.

Schepman MM (1890) Description of a new species of *Oliva*. Notes from the Leyden Museum, 12: 196.

Schepman MM (1891) [Figs. for Schepman, 1890. Description of a new species of *Oliva*]. Notes from the Leyden Museum, 13: pl. 9.

Schepman MM (1908) The Prosobranchia of the Siboga Expedition. Part I. Rhipidoglossa and Docoglossa. Siboga Expeditie, 49a: 1–107, pls. 1–9.

Schepman MM (1909) The Prosobranchia of the Siboga Expedition. Part II. Taenioglossa and Ptenoglossa. Siboga Expeditie, 49b: 107–231, pls. 10–16.

Schepman MM (1911) The Prosobranchia of the Siboga Expedition. Part IV. Rachiglossa. Siboga Expeditie, 49d: 247–363, pls. 18–24.

Schepman MM (1913a) The Prosobranchia of the Siboga Expedition. Part V. Toxoglossa, with a supplement. Siboga Expeditie, 49e: 365–452, pls. 25–34.

Schepman MM (1913b) The Prosobranchia, Pulmonata and Opisthobranchia Tectibranchiata of the Siboga Expedition. Part VI. Pulmonata and Opisthobranchia Tectibranchiata, Tribe Bullomorpha. Siboga Expeditie, 49f: 443–494, pls. 31–32.

Schubert GH & Wagner JA (1829) Neues Systematisches Conchylien-Cabinet von Martini-Chemnitz, angefangen von Martini und Chemnitz. Zwölfter Band. Erste Abtheilung. Bauer und Raspe, Nürnberg, xii + 196 pp., pls. 214–237.

Sidabalok CM, Wong HPS & Ng PKL (2020) Description of the supergiant isopod *Bathynomus raksasa* sp. nov. (Crustacea, Isopoda, Cirolanidae) from southern Java, the first record of the genus from Indonesia. ZooKeys, 947: 39–52.

Smith BD (2003) Prosobranch gastropods of Guam. Micronesica, 35–36: 244–270.

Smith EA (1894a) Natural history notes from H.M. Indian Marine survey steamer 'Investigator,' Commander C.F. Oldham, R.N. Series 2, No. 10. Report upon some Mollusca dredged in the Bay of Bengal and the Arabian Sea. Annals and Magazine of Natural History, Series 6, 14: 157–174, pls. 3–5.

Smith EA (1894b) Natural history notes from H.M. Indian Marine survey steamer 'Investigator,' Commander C.F. Oldham, R.N. Series 2, No. 10. Report upon some Mollusca dredged in the Bay of Bengal and the Arabian Sea. Appendix. Annals and Magazine of Natural History, Series 6, 14: 366–368.

Smith EA (1895) Natural history notes from H.M. Indian Marine survey steamer 'Investigator', Commander C.F. Oldham, R.N. Series 2, No. 19. Report upon the Mollusca dredged in the Bay of Bengal and the Arabian Sea during the season 1893-94. Annals and Magazine of Natural History, Series 6, 16: 1–19, pls. 1–2.

Smith EA (1896) Natural history notes from H.M. Indian Marine survey steamer 'Investigator,' Commander C.F. Oldham, R.N. Series 2, No. 22. Descriptions of new deep sea Mollusca. Annals and Magazine of Natural History, Series 6, 18: 367–375.

Smith EA (1899) Natural history notes from H.M. Indian Marine survey steamer 'Investigator,' Commander T.H. Heming, R.N. Series 3, No. 1. On Mollusca from the Bay of Bengal and the Arabian Sea. Annals and Magazine of Natural History, Series 7, 4: 237–251.

Smith EA (1904a) Natural history notes from H.M. Indian Marine survey steamer 'Investigator,' Commander T.H. Heming, R.N. Series 3, No. 1. On Mollusca from the Bay of Bengal and the Arabian Sea. Annals and Magazine of Natural History, Series 7, 13: 453–473.

Smith EA (1904b) Natural history notes from H.M. Indian Marine survey steamer 'Investigator,' Commander T.H. Heming, R.N. Series 3, No, 1. On Mollusca from the Bay of Bengal and the Arabian Sea. Annals and Magazine of Natural History, Series 7, 14: 1–14.

Smith EA (1906) Natural history notes from R.I.M.S. 'Investigator'. Series 3, No. 10. On Mollusca from the Bay of Bengal and the Arabian Sea. The Annals and Magazine of Natural History, Series 7, 18: 157–174.

Sowerby GB III (1914) Descriptions of fifteen new Japanese marine Mollusca. Annals and Magazine of Natural History, Series 8, 14: 33–39, pl. 2.

Sowerby J (1825) The Mineral Conchology of Great Britain; or Coloured Figures and Descriptions of Those Remains of Testaceous Animals or Shells, Which Have Been Preserved at

Various Times and Depths in the Earth. Volume 4. Longman and Co. and Sherwood and Co., London, 160 pp.

Stahlschmidt P, Poppe GT & Tagaro SP (2018) Descriptions of remarkable new turrid species from the Philippines. Visaya, 5: 5–64.

Sterba GHW (2003) Olividae: Fibel der Schalen (Mollusca, Neogastropoda). G.H.W. Sterba, Markkleeberg, Germany, 168 pp.

Sysoev AV (1996) Deep-sea conoidean gastropods collected by the John Murray Expedition, 1933–34. Bulletin of the Natural History Museum of London, Zoology, 62: 1–30.

Sysoev A & Bouchet P (1996) Taxonomic reevaluation of *Gemmuloborsonia* Shuto, 1989 (Gastropoda: Conoidea), with a description of new recent deep-water species. Journal of Molluscan Studies, 62: 75–87.

Sysoev A & Bouchet P (2001) New and uncommon turriform gastropods (Gastropoda: Conoidea) from the South-West Pacific. Tropical Deep-Sea Benthos, 22. Mémoires du Muséum national d'Histoire naturelle, 185: 271–320.

Terryn Y (2007) Terebridae: A Collectors Guide. Conchbooks, Hackenheim & Naturalart, Gent, 59 pp., 65 pls.

Terryn Y & Holford M (2008) The Terebridae of the Vanuatu archipelago with a revision of the genus *Granuliterebra* Oyama, 1961. Visaya, Supplement 3: 6–118.

Terryn Y & Sprague J (2008) *Terebra brianhayesi* sp. nov., a new deep water terebrid from Mozambique. Gloria Maris, 47: 8–13.

Tesch P (1915) Paläontologie von Timor, V. Lieferung. Jungtertiäre und Quartäre Mollusken von Timor. I. Teil. Schweizerbart'sche Verlagsbuchhandlung, Nägele & Sproesser, Stuttgart, 134 pp., pls. 73–95.

Tesch P (1920) Paläontologie von Timor, VIII. Lieferung. Jungtertiäre und Quartäre Mollusken von Timor. II. Teil. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, pp. 41–121.

Thiele J (1925) Gastropoden der Deutschen Tiefsee-Expedition. II Teil. Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem Dampfer "Valdivia" 1898-1899, 17: 35–382, pls. 13–46.

Tsuchida E (2000) Family Epitoniidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 321–343, pls. 159–170.

Tsuchiya K (2000a) Family Muricidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 365–421, pls. 181–209.

Tsuchiya K (2000b) Family Nassariidae. In: Okutani T (ed.) Marine Mollusks in Japan. Tokai University Press, Tokyo, pp. 439–451, pls. 218–224.

Valdés Á (2008) Deep-sea "cephalaspidean" heterobranchs (Gastropoda) from the tropical southwest Pacific. Tropical Deep-Sea Benthos, 25. Mémoires du Muséum national d'Histoire naturelle, 196: 587–792.

Van Aken HM (2005) Dutch oceanographic research in Indonesia in colonial times. Oceanography, 18: 30–41.

Verhecken A (2008) Cancellariidae. In: Poppe GT (ed.) Philippine Marine Mollusks. Volume 2. Conchbooks, Hackenheim, pp. 816–824, pls. 703–707.

Verhecken A (2011) The Cancellariidae of the Panglao Marine Biodiversity Project 2004 and the Panglao 2005 and Aurora 2007 deep sea cruises in the Philippines, with description of six new species (Neogastropoda, Cancellarioidea). Vita Malacologica, 9: 1–60.

Vermeij GJ (1998) The systematic position of *Tritonidea dentata* Schepman, 1911 (Gastropoda, Prosobranchia: Buccinidae). Basteria, 62: 25–34.

Verrill AE (1881) Notice of the remarkable marine fauna occupying the outer banks off the southern coast of New England, No 2. American Journal of Science, 3rd Series, 22: 292–303.

Vilvens C & Swinnen F (2008) New records of *Calliotropis* (Gastropoda: Chilodontidae) from central eastern Atlantic. Novapex, 9: 17–32.

von Martens E (1901) Neue meer-conchylien von der Deutschen Tiefsee-Expedition. Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin, 1901: 14–26.

von Martens E (1902) Einige neue arten von meer-conchylien aus den Sammlungen der Deutschen Tiefsee-Expedition. Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin, 1902: 237–244.

von Martens E & Thiele J (1904) Die beschalten gastropoden der Deutschen Tiefsee-Expedition 1898-1899. In: Chun C (ed.) Wissenschaftliche Ergebnisse der Deutschen Tiefsee-Expedition auf dem dampfer "Valdivia" 1898-1899. Volume 7. Gustav Fischer, Jena, pp. 1–180, pls. 1–29.

Wakefield A (2010) A revision of the genus *Cryptospira* Hinds, 1844 (Caenogastropoda: Marginellidae). Novapex, 11 (Hors-série 7): 1–55.

Watson RB (1879) Mollusca of H.M.S. 'Challenger' Expedition. IV. Trochidae continued, viz. the genera *Basilissa* and *Trochus*, and the Turbinidae, viz. the genus *Turbo*. Journal of the Linnean Society, Zoology, 14: 692–716.

Watson RB (1881) Mollusca of H.M.S. 'Challenger' expedition. Part VIII. Journal of the Linnean Society, Zoology, 15: 388–412.

Watson RB (1882) Mollusca of H.M.S. 'Challenger' expedition. Part XIII. Zoological Journal of the Linnean Society, 16: 358–372.

Watson RB (1886) Report on the Scaphopoda and Gasteropoda collected by H.M.S. Challenger during the years 1873–76. Report on the scientific results of the Voyage of H.M.S. Challenger during the years 1873–76. Zoology, 15: 1–756, pls. 1–50.

Weber-Van Bosse MA (1904) Een jaar aan boord H. M. Siboga. E. J. Brill, Leiden, xi + 335 pp., 20 pls., frontispiece, map.

Wells FE (1985) *Thatcheria mirabilis* in Northwestern Australia. Journal of Molluscan Studies, 51: 217–218.

Wilson BR (1993) Australian Marine Shells: Prosobranch Gastropods. Part 1. Odyssey Publishing, Western Australia, 408 pp.

Wilson BR (1994) Australian Marine Shells: Prosobranch Gastropods. Part 2. Odyssey Publishing, Western Australia, 370 pp.

Wood W (1828) Supplement to the Index Testaceologicus; or A Catalogue of Shells, British and Foreign. Richard Taylor, London, lv + [1] + 59 pp., 8 pls.

Wood-Mason J & Alcock A (1891) Natural history notes from H.M. Indian Marine survey steamer 'Investigator,' Commander R.F. Hoskyn, R.N., commanding. Series 3, No. 1. On the results of deep-sea dredging during the season 1890–91. Annals and Magazine of Natural History, Series 6, 8: 427–452.

Wüst G (1964) The major deep-sea expedition and research vessels, 1873–1960. A contribution to the history of oceanography. Progress in Oceanography, 2: 1–52, pls. 1–12.

Yokoyama M (1928) Mollusca from the oil-field of the island of Taiwan. Imperial Geological Survey of Japan Report, 101: 1–112, 18 pls.

Zaharias P, Kantor YI, Fedosov AE, Criscione F, Hallan A, Kano Y, Bardin J & Puillandre N (2020) Just the once will not hurt: DNA suggests species lumping over two oceans in deep-sea snails (*Cryptogemma*). Zoological Journal of the Linnean Society, 190: 532–557.

Zhang SQ & Zhang SP (2018) Two deep-sea *Calliotropis* species (Gastropoda: Calliotropidae) from the western Pacific, with the description of a new species. The Nautilus, 132: 13–18.