

Biodiversity Record: *Linuche* jellyfish medusae and scyphopolyps in the Singapore Strait

Iffah Iesa

Lee Kong Chian Natural History Museum, National University of Singapore, Singapore 117377, Republic of Singapore; Email: nhmii@nus.edu.sg

Recommended citation. Iesa I (2023) Biodiversity Record: *Linuche* jellyfish medusae and scyphopolyps in the Singapore Strait. Nature in Singapore, 16: e2023029. DOI: 10.26107/NIS-2023-0029

Subjects: Thimble jellyfish (medusae), *Linuche unguiculata* (Cnidaria: Scyphozoa: Coronatae: Linuchidae); Linuchid jellyfish (scyphopolyps), *Linuche* unknown species (Cnidaria: Scyphozoa: Coronatae: Linuchidae).

Subjects identified by: Iffah Iesa.

Location, date and time:

Medusae of *Linuche unguiculata* — Singapore Strait off the south-west coast of Singapore Island; 6 May 1987.

Scyphopolyps of *Linuche* sp. — Singapore Strait south of Semakau Landfill (1°11'10.1"N 103°46'22.5"E); 24 November 2022, 1319–1328 hrs.

Habitat: Marine. Coastal sea. The medusae of *Linuche unguiculata* were probably pelagic, and collected from the water column, likely near the surface. The scyphopolyps of *Linuche* sp. were found attached to a marine sponge obtained from the sea floor at a depth of 25–26 m.

Observers: The medusa of *Linuche unguiculata* were collected by C. M. Yang. The scyphopolyps of *Linuche* sp. were collected by Iffah Iesa, S. M. Hussin, J. W. L. Teo, K. Poh, C. P. S. Goh, J. X. Lim and C. Oei.

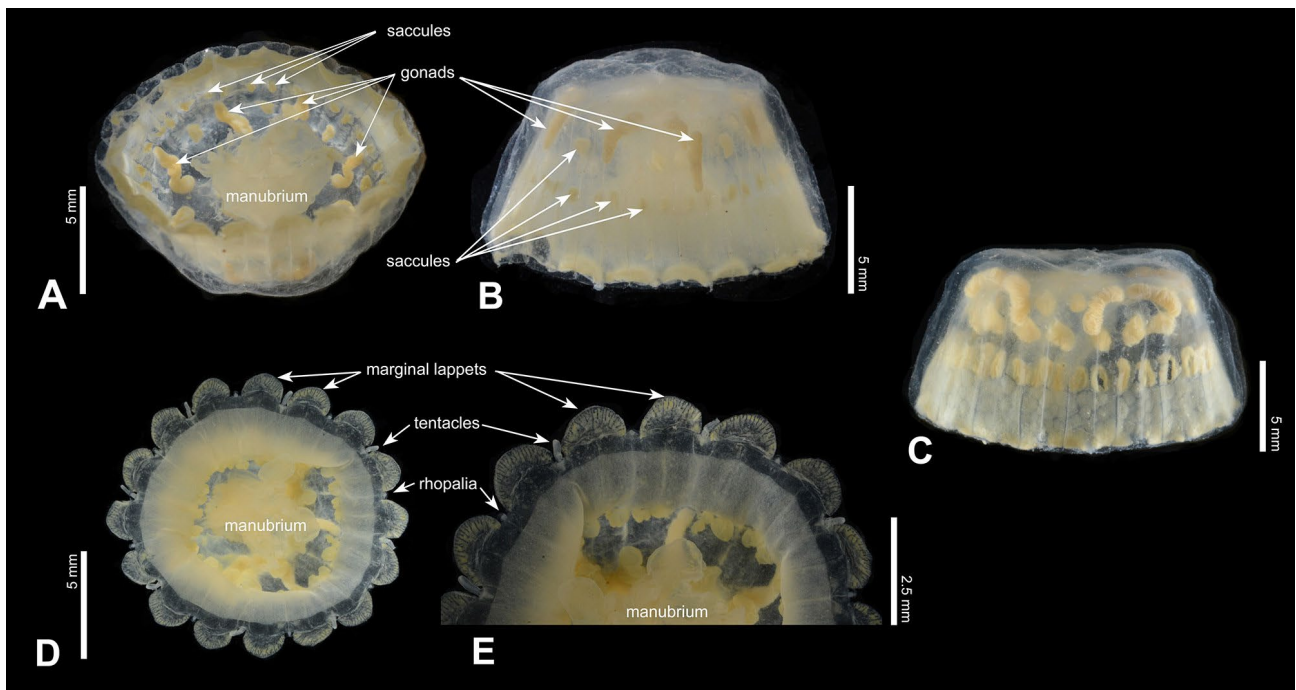


Fig. 1. *Linuche unguiculata* (ZRC.CNI.3015). A–B: Subumbrellar (A) and lateral (B) views of same individual with two rows of subumbrellar warts. C: Example of *Linuche* medusa with three rows subumbrellar warts. D–E: Subumbrellar views with close-up (E) of same individual showing marginal lappets, tentacles and rhopalia. (Photographs by: Iffah Iesa)

Observations: In the Zoological Reference Collection of the Lee Kong Chian Natural History Museum at the National University of Singapore, are two lots of preserved medusae herein identified as *Linuche unguiculata*. These are ZRC.CNI.3015 with 342 examples, and ZRC.CNI.3016 with 50 examples. These small, yellow-brown coronate medusae (example in Fig. 1) were obtained in a single collection event 35 years ago from the Singapore Strait off the

southwest coast of Singapore Island, and preserved in formalin. The specimens share the following morphological features: small cylindrical medusae (average bell height \times diameter: 10 \times 10 mm) with smooth exumbrella surface; 16 marginal lappets bluntly oval and short; 8 tentacles short and rounded; 8 adradial gonads, interspersed with saccules arranged in 2 or 3 rows that are not overlapping with gonads.

Scyphopolyps of an unknown species of *Linuche* were found attached to a crevice of a marine sponge (length 340 \times width 370 \times height 190 mm) (Fig. 2) collected from a dredge event off Semakau Landfill. These form a colony of 20 brown isodiametric tubes (height range: 4.49 to 10.05 mm; average diameter: 0.08 mm). No other individual or colony were found on the surface of the sponge. As the scyphopolyps were lightly bleached during the processing of the sponge, they are unsuitable for molecular work. They are preserved in 70% ethanol and deposited in the Zoological Reference Collection of the Lee Kong Chian Natural History Museum, and catalogued as ZRC.CNI.3017.

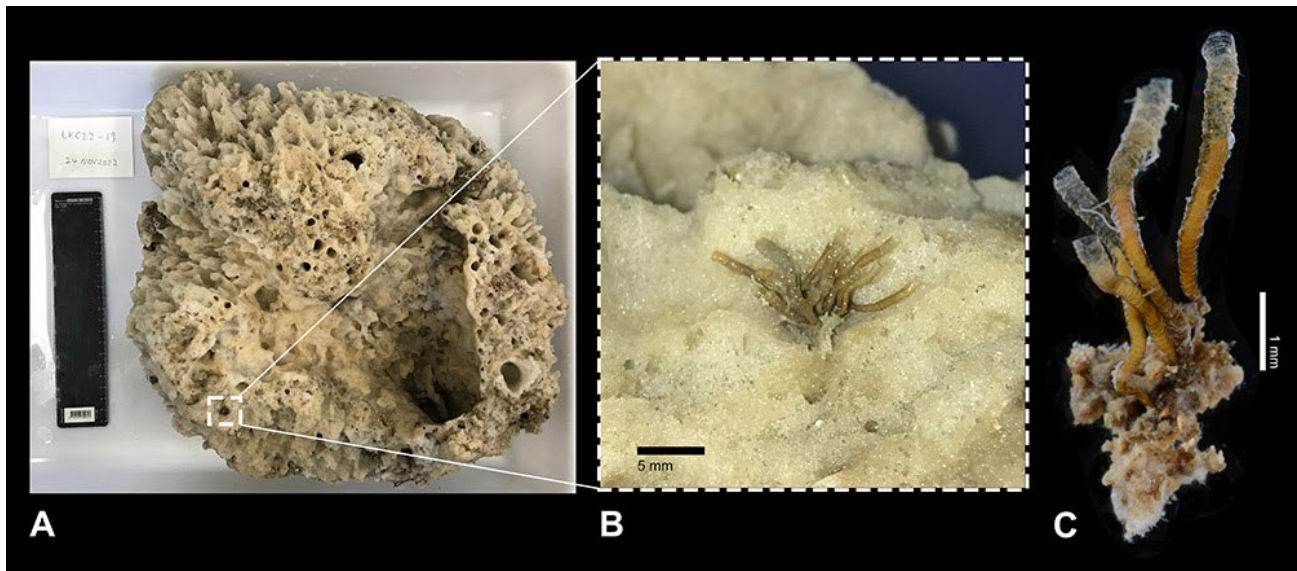


Fig. 2. Scyphopolyps (ZRC.CNI.3017) found on marine sponge. A: Large marine sponge (20-cm ruler for scale; length \times width \times height: 340 \times 370 \times 190 mm), dredged from 25–26 metres. B: Isodiametric *Linuche* scyphopolyps arranged in a stolonial colony found on marine sponge. C: Close-up of scyphopolyps attached to porifera substrate. (Photographs by: Iffah Iesa)

Remarks: Three species of thimble jellyfish of the genus *Linuche* are currently recognised: *Linuche unguiculata*, *Linuche aquila* and *Linuche draco* (Collins et al., 2022). However, the close resemblance of the medusa of all three species to each other render morphological identification difficult, and some taxonomists regard *Linuche aquila* and *Linuche draco* as synonyms of *Linuche unguiculata* (Jarms & Morandini, 2019). In Singapore, *Linuche unguiculata* var *aquila* was reported in April of an unknown year as observed by Mayer (1917), and *Linuche draco* was noted to occur by Ng et al. (2011 as *Linergeres draco*). The identification of the species on those records cannot be verified for they were not supported by specimens or illustrations. On the medusae specimens collected in 1987 (Fig. 1) that are herein featured, the arrangement of their subumbrellar warts (two to three rows of gonads and saccules) resemble that of *Linuche unguiculata* (see Bigelow, 1928). The present record thus confirms the occurrence of *Linuche unguiculata* in Singapore.

The *Linuche* scyphopolyps featured here appears to be the first time this sessile jellyfish life stage obtained in Singapore is reported and illustrated in literature. Periderm polyps are known to belong to three possible scyphozoan families from the order Coronatae: Linuchidae, Nausithoidae and Atorellidae; chitinous scyphopolyps from families Nausithoidae and Atorellidae are solitary while those in Linuchidae are colonial (Jarms, 1997). Requiring hard substrate to attach to, coronate polyps can be found on inorganic (e.g. rocks) and organic (e.g. shells and corals) surfaces. Association of scyphopolyps with various sponges from the class Demospongiae has also been observed especially for *Nausithoe punctata*, *Nausithoe racemosa* and *Nausithoe marginata* (see Jarms et al., 2002). The arrangement of polyps in question are stolonial and characteristic of the genus *Linuche*. The species of polyps, however, cannot be confidently attributed until life cycle studies have been conducted with observation of medusae. Further dissection and molecular analyses would be useful as well.

All three swimming life stages of the thimble jellyfish *Linuche unguiculata* (medusae, ephyrae, and larvae) have the ability to cause seabather's eruption (or ocean itch), a reaction presented as painful rash and blisters (usually under swimsuit or fabric) from discharge of venom from nematocysts, after swimming in the ocean (Puertas et al., 2001).

Acknowledgement: The author is grateful to A. C. Morandini for his advice and guidance in the identification of the subjects.

Literature cited:

- Bigelow HB (1928) Scyphomedusae from the Arcturus oceanographic expedition. *Zoologica*, 8: 495–524.
- Collins AG, Jarms G & Morandini AC (2022) World List of Scyphozoa. *Linuche* Eschscholtz, 1829. World Register of Marine Species. <https://www.marinespecies.org/aphia.php?p=taxdetails&id=206292> (Accessed 2 December 2022)
- Jarms G (1997) The polyps of Coronatae (Scyphozoa), a review and some new results. In: Den Hartog JC (ed.) Proceedings of the 6th International Conference on Coelenterate Biology. Nationaal Natuurhistorisch Museum, Leiden, pp. 271–278.
- Jarms G & Morandini AC (2019) World Atlas of Jellyfish. Hamburg: Dölling und Galitz Verlag, 816 pp.
- Jarms G, Morandini AC & Silveira FL da (2002) Cultivation of polyps and medusae of Coronatae (Cnidaria, Scyphozoa) with a brief review of important characters. *Helgoland Marine Research*, 56: 203–210.
- Mayer AG (1917) Contributions to the biology of the Philippine Archipelago and adjacent regions: Report upon the Scyphomedusae collected by the United States Bureau of Fisheries steamer *Albatross* in the Philippine islands and Malay Archipelago. Smithsonian Institution United States National Museum Bulletin 100, 1: 181–222.
- Ng PKL, Corlett RT & Tan HTW (eds.) (2011) Singapore Biodiversity: An Encyclopaedia of the Natural Environment and Sustainable Development. Editions Didier Millet and Raffles Museum of Biodiversity Research. National University of Singapore, 552 pp.
- Puertas LS, Ramos ME, Aramburo C, Cotera EPH & Burnett JW (2001) One *Linuche* mystery solved: all 3 stages of the coronate scyphomedusa *Linuche unguiculata* cause seabather's eruption. *Journal of the American Academy of Dermatology*, 44: 624–628.