

## Biodiversity Record: New Singapore record of the swimming crab, *Lissocarcinus polybioides*

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**Subjects:** Swimming crab, *Lissocarcinus polybioides* (Crustacea: Decapoda: Brachyura: Portunidae);  
Knobbly sea star, *Protoreaster nodosus* (Echinodermata: Asteroidea: Oreasteridae).

**Subjects identified by:** J. C. E. Mendoza and Joelle C. Y. Lai (for crab) and Marcus F. C. Ng (for seastar).

**Location, date and time:** Johor Strait, Changi Point; 4 July 2023; 0419 hrs.

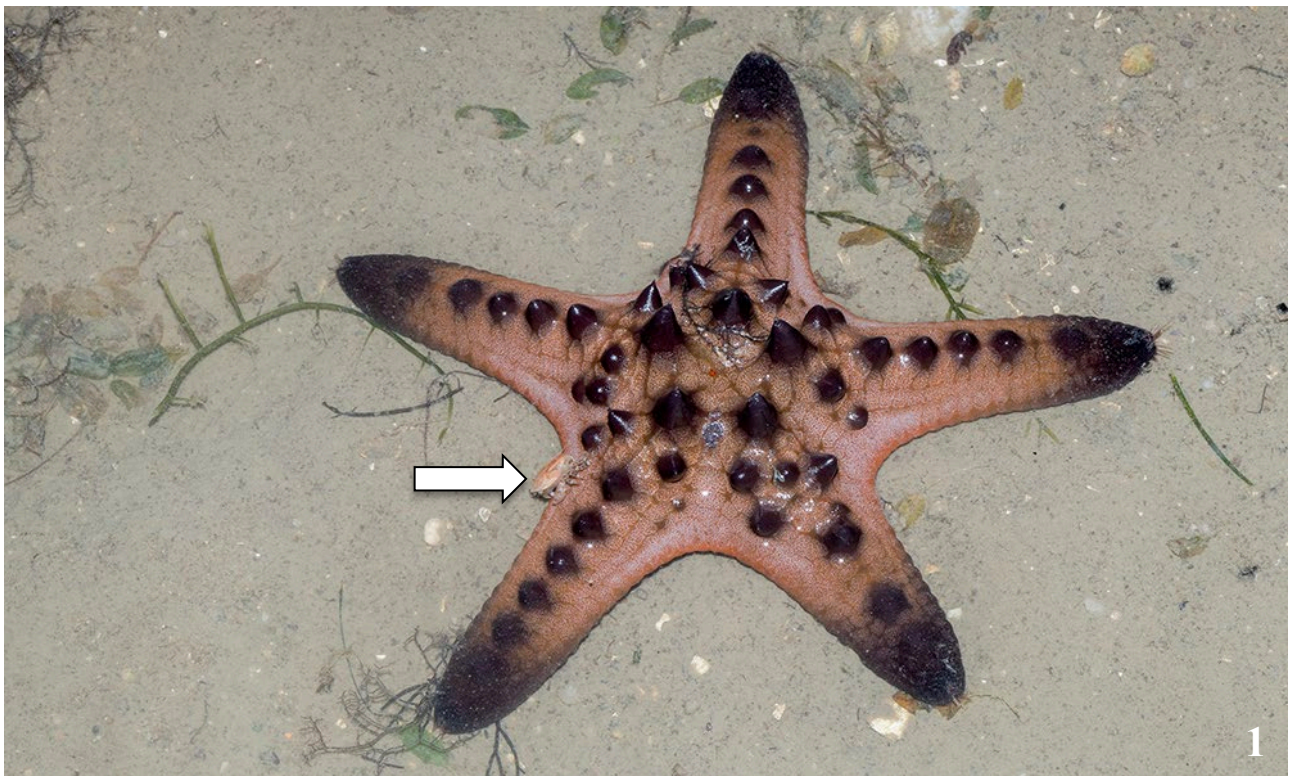


Fig. 1. Dorsal view of the knobbly sea star with the crab (indicated with arrow) on the base of one of its arms. Fig. 2. Frontal view of the crab. Fig. 3. Dorsal view of the crab. (Photographs by: Marcus F. C. Ng).

**Habitat:** Estuarine shore. On intertidal sand bar surrounded by seagrass at low spring tide (-0.1m), in water of about 15 cm depth.

**Observers:** Marcus F. C. Ng and Kong Man Jing.

**Observation:** A small swimming crab (carapace width 12–13 mm) was observed on the aboral surface of a medium-sized knobbly sea star of around 20 cm diameter. They were found on the far end of a sand bar during a low spring tide survey. The crab was reluctant to flee from the sea star and clung on to its host even when the star was moved to a nearby tidepool to permit clearer photography of both subjects.

**Remarks:** The crab appears to represent the first record of the genus *Lissocarcinus* in Singapore (see Ow-Yang, 1963; Ng et al., 2011, J. C. E. Mendoza, personal communication). It seems most likely to be *Lissocarcinus polybioides* due to its external colouration without strong patterns, median notch on the front of the carapace and also the host being a seastar (Apel & Spiridonov, 1998; Stephenson & Campbell, 1960; Rajan et al., 2012). Unlike most other members of the family Portunidae which are free-living, members of the genus *Lissocarcinus* may occur symbiotically with other invertebrates such as sea cucumbers, sand dollars, corals and sea anemones. The nature of this association is not clear, but is suspected to be non-mutual, with the crab obtaining the benefit of protection from predators. It is also thought to be non-obligatory, as the crabs may be found away from their hosts (Davie, 2021). The holotype of *Lissocarcinus polybioides* was found hiding in the internode of a piece of floating bamboo (Adams & White, 1849).

The most well-known representatives of the genus are *Lissocarcinus laevis* (the harlequin swimming crab), a strikingly marked species associated with sea anemones, and *Lissocarcinus orbicularis*, a variably patterned species often found on sea cucumbers (Humann & DeLoach, 2010). Crabs associated with echinoderms such as *Harrovia longipes* (see Tan, 2012), *Ceratocarcinus longimanus* (see Tan & Tan, 2014) and *Zebrida adamsii* (see Neo, 2017) are probably more well-known to divers surveying subtidal reefs, although local intertidal records exist (e.g. Choy et al., 2017; Thio, 2021). The present record suggests that closer scrutiny of echinoderms and other possible host organisms in Singapore waters, both intertidally and subtidally, are warranted to determine the presence and behaviour of these crabs.

Knobbly sea stars of various sizes are fairly commonly seen along the outer edges of the Changi shoreline during low tides, and many often play host to numbers of small brittle stars (*Ophiothela danae*) (personal observations). The featured observation appears to be the first record of a crab-sea star association on this site.

#### Literature cited:

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