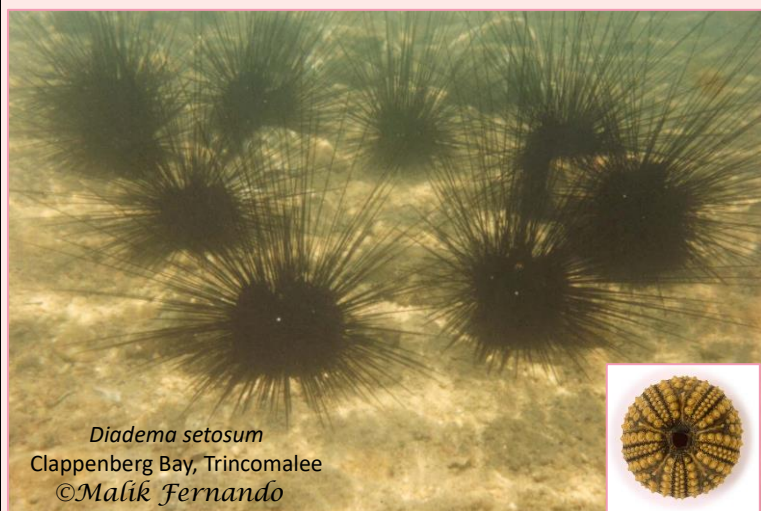


# Natural History Snippets

Brief reports by members based on their observations of nature



*Diadema setosum*  
Clappenberg Bay, Trincomalee  
©Malik Fernando

*D. setosum* is readily identifiable by its very long (to 20 cm), slender spines with sharp, hollow tips. Seen on sand bottoms, but also climbs up rocks and even up the supports of structures like jetties. The denuded test (5 cm diameter) is an attractive maroon with cream articulation bosses.

## Sea Urchins in Sri Lanka ECHINODERMATA, ECHINOIDEA

Sea urchins, sometimes referred to as sea pencils, are a Class (group) of animals in the Phylum Echinodermata (see Snippet # 13—Starfish for a description of phylum characteristics and the five classes). They have various body forms: regular echinoids have near-spherical skeletons (tests) with long or short spines that stick out, while irregular echinoids have egg-shaped or discoid tests with spines lying along the test, as they are adapted to a habit of burrowing in sand. A recent (2017) study identified 66 echinoid species and one subspecies belonging to 20 families in shallow Sri Lankan waters.<sup>1</sup>



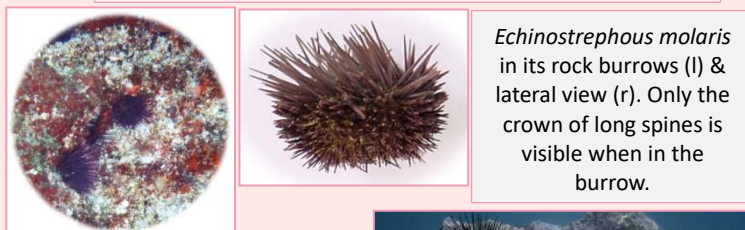
Shapes of tests: 1-regular; 2-irregular, a “heart urchin”; 3-irregular, a discoid “sand dollar”. All viewed from above.



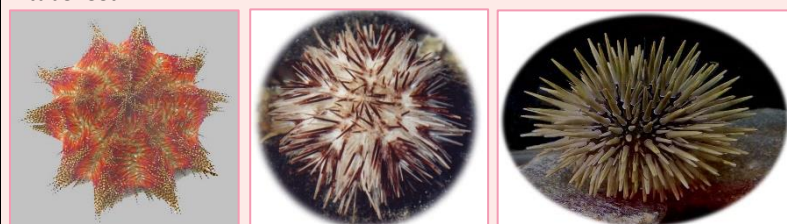
*Asthenosoma* sp.  
Dorsal & lateral

*Astropyga radiata*

*Asthenosoma* is well supplied with venomous spines, and occasionally collected for the aquarium trade; gregarious, on sand bottoms. *Astropyga* is also a soft bottom species that ‘walks’ rapidly on its lower spines. Most other sea urchins move slowly using their tube feet.



*Echinostrephous molaris* in its rock burrows (l) & lateral view (r). Only the crown of long spines is visible when in the burrow.



*Salmacis bicolor*

*Pseudoboletia maculata*

*Echinometra mathei*



*Stomopneustes variolaris* is a very common sea urchin found on rocky reefs, where it scrapes out shallow hollows. Also found exposed, where reef walkers can step on them, sometimes requiring surgical extraction of embedded spine tips. The underwater photo (r) in the shallows of the Wellawatte reef.



*Salmacis virgulata*

*Heterocentrotus mamillatus*

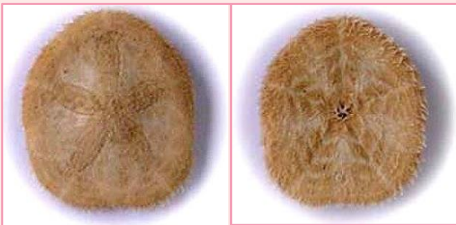
*Tripneustes gratilla*

*Toxopneustes pileolus* (l), its venomous pedicellariae (r).

*H. mamillatus* lives in rocky habitats and is protected under the FFPO, the other three are sand dwellers. *T. pileolus*, the Flower urchin, is venomous, with discs of membrane covering its 3-armed pincers (pedicellariae).

<sup>1</sup>Gayashan Arachchige et al, 2017. A review of previous studies on the Sri Lankan echinoid fauna, with an updated species list, *Zootaxa* 4231 (2): 151–168.

Jayakody, S.J., 2012. Provisional Checklist of Sea Urchins in Sri Lanka. In: The National Red List 2012 of Sri Lanka.

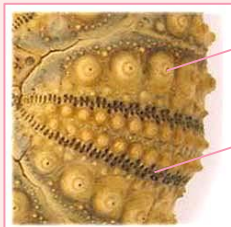


*Jacksonaster depressum* from Colombo, Degal Meda (reef), 24 m on sand. Dried specimen with spines intact. 26 x 22 mm. Dorsal (l), ventral (r).



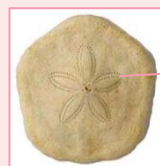
The irregular echinoids have mostly been collected as denuded tests lying on sand bottoms. Only 2 species—*Jacksonaster depressum* and *Lovenia elongata* have been collected alive. Gayashan Arachchige (2019) has determined that at present, the diversity of irregular echinoids from Sri Lanka stands at 37 species representing 11 families in four orders.<sup>2</sup>

*Lovenia elongata* from Trincomalee, 1 m on sand bottom. Dried specimen with a few of the long spines that lie along the test surface.

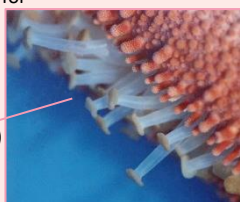


Tubercles for spines, regular echinoid

Ambulacrum, with openings for tube feet



Tube feet 'Petals' (of starfish) = ambulacra of irregular echinoid



All echinoderms possess tube feet that are arranged in radial bands called 'ambulacra': those of the star fishes on the underside of the arms, in the regular sea urchins along the sides, and in the irregular ones they form 'petals' on the dorsal aspect, where they are used for respiration.



*Peronella macroproctes* 24 mm



*Sculpsitechinus auritus* 28 mm



*Echinodiscus bisperforatus* 80 mm

The flattened irregular echinoids are commonly called 'sand dollars'—see the lateral view of *C. humilis*. They range in shape from almost circular to oval and sub-pentagonal. The petals, consisting of five-elements that vary in shape, occupy the upper surface. Genital pores appear as tiny black dots in the centre—4 in *Peronella* and 5 in *Clypeaster*. The *S. auritus* illustrated is a live collected specimen with its tiny spines intact, pink in colour; they can grow to 80 mm in the antero-posterior axis.



*Brissus latecarinatus*  
Dorsal (l), ventral (r) 63 x 46.7 mm

The irregular 'heart urchins' or 'sea potatoes' are generally egg-shaped, some nearly spherical. The petals are asymmetrical, the mouth or 'peristome' is ventral and (usually) 'D-shaped', the anus posterior. They possess fascioles in various combinations: belts of fine spines designed to create water currents over the surface of these animals that burrow in sandy substrates. The types of fascioles present are important in distinguishing the various genera.



*Clypeaster reticulatus* 50 mm



*Clypeaster humilis*  
Dorsal & lateral views 80 mm



*Echinoneus cyclostomus*  
Dorsal (l), ventral (r), with central peristome 58 x 54.5 x 40 mm



*Lovenia elongata*  
Dorsal (l), posterior (r)



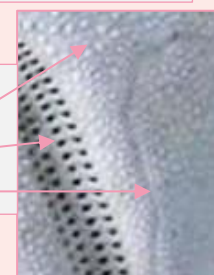
37.7 x 30 x 16 mm



*Schizaster gibberulus*  
Dorsal (l), posterior (r)



35 x 30 x 23 mm



Enlarged image showing details  
Articular tubercles for spines  
Ambulacrum with paired pores for tube feet  
A fasciole



*Metalia dicrana*  
52 x 42 x 25 mm



*Nacospatangus altus*  
40 x 32 x 17 mm



cf. *Prymnaster investigatoris*  
19 x 16 mm



*Echinolampas ovata*  
57 x 50.7 x 37 mm

<sup>2</sup>Gayashan Arachchige et al, 2019. Taxonomy and distribution of irregular echinoids (Echinoidea: Irregularia) from Sri Lanka, *Zootaxa* 4541(1):1-100.

Photography by Malik Fernando. Specimens from his collection of sea urchin tests, mostly collected while SCUBA diving. *S. gibberulus* collected by Sri Lal Perea. For more information visit: <https://docmalikfern.files.wordpress.com/2021/01/3.-irregular-heart-urchins-1.pdf>