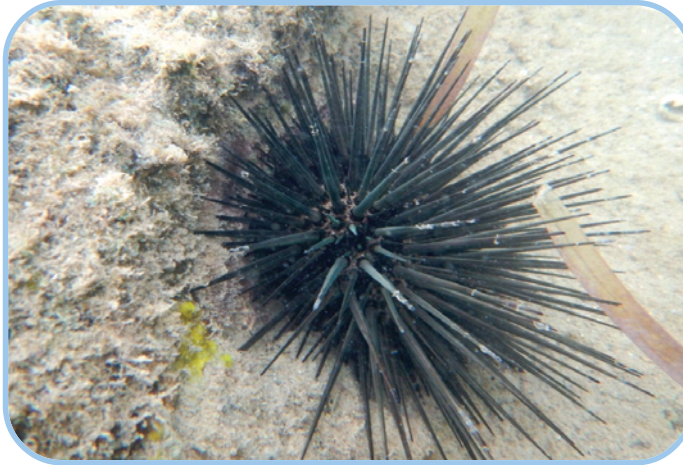


Stomopneustes variolaris (Lamarck, 1816)

R. Saravanan, B. Johnson and Loveson L. Edward

IDENTIFICATION

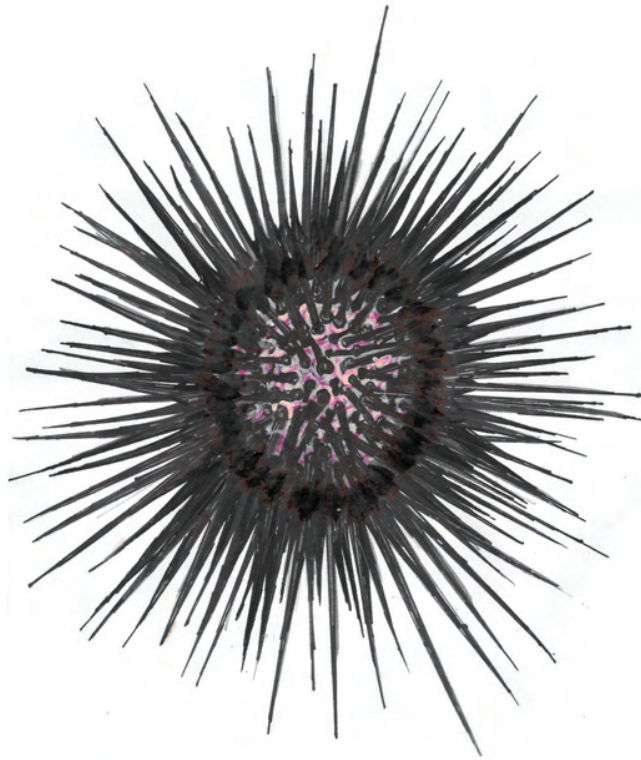
Order	: Stomopneustoida
Family	: Stomopneustidae
Common/FAO Name (English)	: Slate pencil sea urchin



Local names: Samudra chokaro (**Gujarati**); Mahal (**Marathi**); Kadalacille (**Kannada**); Kadal chena (**Malayalam**); Kadalkutchi, Moorai, Muttankani, Kadal mulleli (**Tamil**); Samudra cinnavadu (**Telugu**)

MORPHOLOGICAL DESCRIPTION

This sea urchin is characterized by compound ambulacral plates of arbacioid type; primary spines long, stout, pointed; imperforate and non-crenulate primary tubercles; and a deep undulating groove between the inter-ambulacral series. The spines are sharp and generally black in colour, sometimes a blue-greenish tinge. They can be recognized by a zig-zag pattern on the upper face. The oral face is clear. The juveniles are clear and often with asymmetrical spines, caused by their habit of digging into soft rocks.



PROFILE

GEOGRAPHICAL DISTRIBUTION

This sea urchin is distributed in the tropical Indo-Pacific region; from the Red Sea to Polynesia; tropical, Indo-West Pacific region; east coast of Africa to south Pacific Islands. It is also distributed in south-east Arabia, west India, Pakistan, Maldives, Ceylon, Bay of Bengal, East Indies, north Australia, China, south Japan and South Pacific Islands. In India, it has been recorded along Tamil Nadu (Gulf of Mannar, Mandapam, Chennai coast and Kanyakumari), Andaman and Nicobar Islands (North Reef Island), Andhra Pradesh (Vishakhapatnam) and Lakshadweep (Minicoy, Chettalatt and Kilttan).

HABITAT AND BIOLOGY

It is found in rock pools, crevices, bores and overhangs. It is benthic, reef associated in coastal area. However, larvae are pelagic. It prefers shady areas with constant water circulation, however avoiding direct wave action. The shrimp *Athanas indicus* is a symbiont with this sea urchin. This sea urchin is an herbivore feeding on algae. Members of the class Echinoidea are gonochoric with

external fertilization and egg brooding. Embryos develop into planktotrophic larvae (echinopluteus). This larval stage lasts for several months after which they sink to the bottom and adhere on the ground using their tube feet. They then metamorphose into young sea urchins. It is available in the depth range of littoral waters, near 18 m. It is found in benthic ecology and inshore waters.

PRODUCTION SYSTEMS

BREEDING IN CAPTIVE CONDITIONS

The induced spawning and larval rearing protocols for *S. variolaris* has been perfected for the purpose of studying the larval morphology and developmental biology by most workers, but commercial seed production and raising larvae for aquaculture purposes has not started globally.

LARVAL REARING

Information not available

NURSERY REARING

Information not available

GROW-OUT

Information not available

FOOD AND FEEDING

Information not available

DISEASES AND CONTROL MEASURES

Parasitic infection by *Mecomerinx luculenta* and *Pseudanthessius luculentus* has been recorded in slate pencil sea urchin.

PRODUCTION, MARKET AND TRADE

PRODUCTION

Information not available

MARKET AND TRADE

The sea urchin gonad is a valuable product in international markets. The sea urchin gonads contain the carotenoid echinenone, which lends colour to the gonads. The colour levels of the sea urchin gonads influence their market value. The greater demand for sea urchin increased the fishing effort and leads to decrease in global catch of sea urchins. This has led to the practice of culturing sea urchins. The fishermen of the Kanyakumari districts and Karwar region are involved in wild harvest of sea urchins to cater to the needs of tourist industry and also for medicinal purposes.

CHALLENGES TO MARICULTURE

Research and development is needed in breeding and seed production, larval rearing protocols and diet studies of this species. Recent works are focused on combination of algal feed and prepared diets to improve the desirable gonad colour (bright yellow orange). Such studies are important since the types of feed available influence the morphology, growth and duration of the larval development.

FUTURE PROSPECTS

The demand for sea urchin and its aquaculture is mainly based on its edible part which is its gonads, and the price depends on the colour and quality of these gonads. Advancement of techniques for broodstock development, larval rearing and grow out will tremendously increase the availability of roe obtained from this species for supply to international markets. Hence sea urchin aquaculture in India has good scope if commercial scale seed production of this species is taken up.

SUGGESTED READING

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