

First Report of Sea Urchin Genus *Echinometra* from Konkan Coast of India

Advait C. Ghatpande^{*1}, Arun N. Chandore²

¹Department of Zoology, Janata Shikshan Mandals College, Alibag, Raigad, Maharashtra, India

²Department of Botany, Abasaheb Marathe Arts And New Commerce, Science College, Rajapur, Ratnagiri, Maharashtra, India

ABSTRACT

The spiny skinned echinoderm member sea urchins are intertidal zone shore dwellers with special ecological role in shallow sub-tidal environment. This paper reports the first record of common rock boring urchin *Echinometra* genus from Konkan coast of India. The specimen was collected from the Konkan coastal region at Devgad coast and identified using standard available literature. It is characteristic shallow water inhabitant of Western Atlantic Ocean, Caribbean Sea and Indo-West Pacific region.

Keywords: Sea Urchin, Konkan coast, *Echinometra*, Devgad.

I. INTRODUCTION

Sea urchins are spiny skinned Echinoid Echinoderms inhabiting varied intertidal to deep marine environment up to ~5000 meter depth. [1] These are well known for their use as model organism in scientific research and food delicacy with medicinal benefits. [2] Genus *Echinometra* has circumtropical distribution in shallow water of up to 20 m depth occurring from Japan to Australia, north south and Mexico to Gulf of Suez, east west boundaries. [3] The tropical shores of Western Indian Pacific region also host high species diversity of sea urchins. [4] India has more than 765 species of recorded Echinoderms covering 28 families, 79 genera, 150 species of Echinoids. Earlier work in India reports various sea urchin species including *Echinometra* genus from the shores of India but none reported the *Echinometra* from western Indian Konkan coast. [5, 8-11] Therefore the present article reports the first record of *Echinometra* genus from Konkan coast of India.

II. METHODS AND MATERIAL

The Specimen sample was collected from rocky shore of Devgad beach, part of western Indian Konkan coast during fishing visit in the month of January 2018. Digital images were taken at the site during the period of sampling to record their natural habitat. Specimens were brought to the laboratory and used for detail observation for understanding morphological characteristics. The specimens were dry preserved and identified using standard available taxonomic key resources. [6]

III. RESULTS AND DISCUSSION

Sea urchin classification till genus *Echinometra* is based on following morphological details,

A. Sub-Class – *Euechinoidea* Bronn, 1860

Key to the Sub-class:

Test composed of just 10 columns of plates, Ambulacral plating typically compound with multiple elements fused together.

B. Infra-Class – *Carinacea* Kroh and Smith 2010

Key to the Infra-class:

Echinoides with presence of keeled teeth.

C. Super Order – Echinacea Claus, 1876

Key to the Super Order:

Rigid test with ten buccal plates around the mouth and solid spines.

D. Order – Camarodonta Jackson 1912

Key to the Order:

Ambulacral plate compounding with lowest element enlarged, pore zones uniform from apex to peristome, lantern with keeled teeth.

E. Infra-Order – Echinidea Kroh and Smith 2010

Key to the Infra-order:

Ambulacra typically trigeminate or polygeminate with pore pairs arranged as vertical arcs, interambulacral plates with relatively sparse or reduced tuberculation.

F. Family – Echinometridae Gray 1855

Key to the Family:

Test circular or ovate in outline, Ambulacra trigeminate or polygeminate, buccal notches extremely feeble, single asymmetrical lateral tooth on narrow tubular blade of globiferous pedicellariae.

G. Genus – Echinometra Gray 1825

Key to the Genus:

Apical disc hemicyclic, Test oval in outline with long axis passing through ocular 1 and genital 3, Ambulacral plating polygeminate with 5 to 7 pore pairs to a compound plate, arranged in arcs in the type species, arcs separated by adradial secondary tubercle, Spines stout and pointed usually little less than the test diameter at their longest.

Though genus Echinometra is having eight species, but two of them are still undescribed. [7] The morphological characteristics are presently insufficient for clear classification of given specimen into precise species. Therefore we are reporting presence of this urchin at genus level. Further in detail biochemical, anatomical, gonadal spicule studies and pore pair ratio details are required for precise species level identification.

Morphological Characteristics

Test: Rigid spherical to ovoidal in outline, well ornamental convex aboral region. Test showing five pairs of ambulacral and interambulacral plates. [Fig - 1]

Test Colour: Faint purple to greenish brown.

Peristome: Roughly circular in outline with feeble buccal notch.

Spines: thick, brown pointed with purple tinge at base. [Figure 2]

IV. CONCLUSION

Being away and undisturbed from pollution the kokan coast is rich in diverse algae vegetation providing feeding ground for organisms like sea urchins. Further detail study of these Echinometran may provide new aspects in the Echinoid biodiversity. The species level identification of present sea urchins is a critical task as it require in depth biometric, anatomical, biochemical and molecular approaches. Thus integrated scientific taxonomical approaches will fulfil the need of clear species identification.

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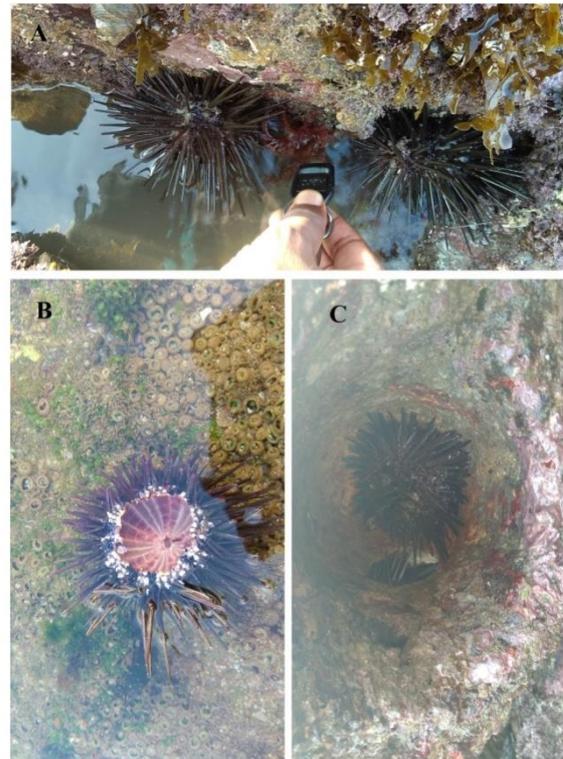


Figure 1. Sea Urchin *Echinometra*: A. Natural habitat of rock boring urchin; B. Inner ambulacral plating structures in natural habitat; C. Rocky niche with burrowing habit of rock boring urchin.



Figure 2. Sea Urchin *Echinometra*: Photos showing test diameter, spine length and morphology.