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# OCCURRENCE OF AN ENTEROPNEUST HEMICHORDATE IN THE MANGROVE SWAMP OF SUNDERBANS, INDIA.

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ABSTRACT

The paper deals with an enteropneust hemichordate of the genus *Saccoglossus* invented for the first time from any tropical mangrove environment like deltaic Sunderbans of West Bengal. All together eighteen specimens have been collected so far from the midlittoral mudflat of Prentice Island since November 1981. Detailed morphological description of the hemichordate worm and its habitat environment have been communicated.

## INTRODUCTION

During a cruise on board R. V. Sagarputra for an intensive survey of the mangrove swamps of deltaic Sunderbans for the macrobenthic fauna, a hemichordate worm was unearthed on 15 November, 1981 from the midlittoral mudflat of Prentice Island. Subsequently 17 more worms of different size have been collected from the same Island spread over an area of about two kilometers. This is a first record of an enteropneust hemichordate from any tropical mangrove environment.

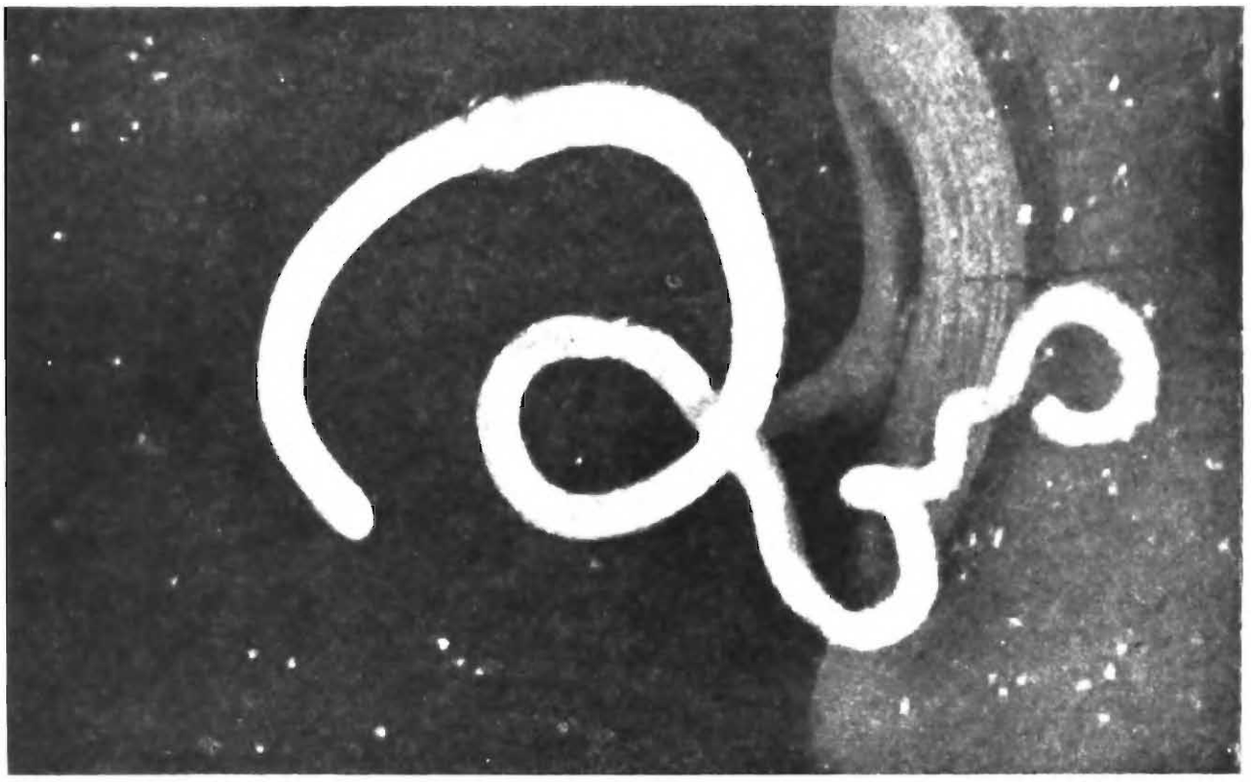
So far seven species of enteropneusts have been reported from the Madras coast by different workers (Menon, 1904 ; Ramanujam, 1935 ; Kuriyan, 1949 ; Sundara Rao and Ranga Rao, 1949; Rao, 1953, 1954 ; 1955a, b, c ; Balasubrahmanyan, 1959). These are *Saccoglossus bournei* (Menon, 1904) ; *S. madrasensis* Rao, 1955 ; *Glandiceps coramandelicus* Menon, 1904 ; *G. stiasnyi* Rao, 1953 ; *Glossobalanus elongatus* Spengel ; *G. minutus* (Kowalevsky), and *Ptychodera flava* Eschscholtz.

Detailed morphological analysis of the worm confirms its identity as a member of the genus *Saccoglossus* Schimkewitsch, 1892.

*Materials* : 18 examples. Prentice Island (Sunderbans, 24 Parganas), B. Singh and A. Choudhury, 15 November, 1981, unregistered, at S. D. Marine Biological Research Institute, Sagar Island.

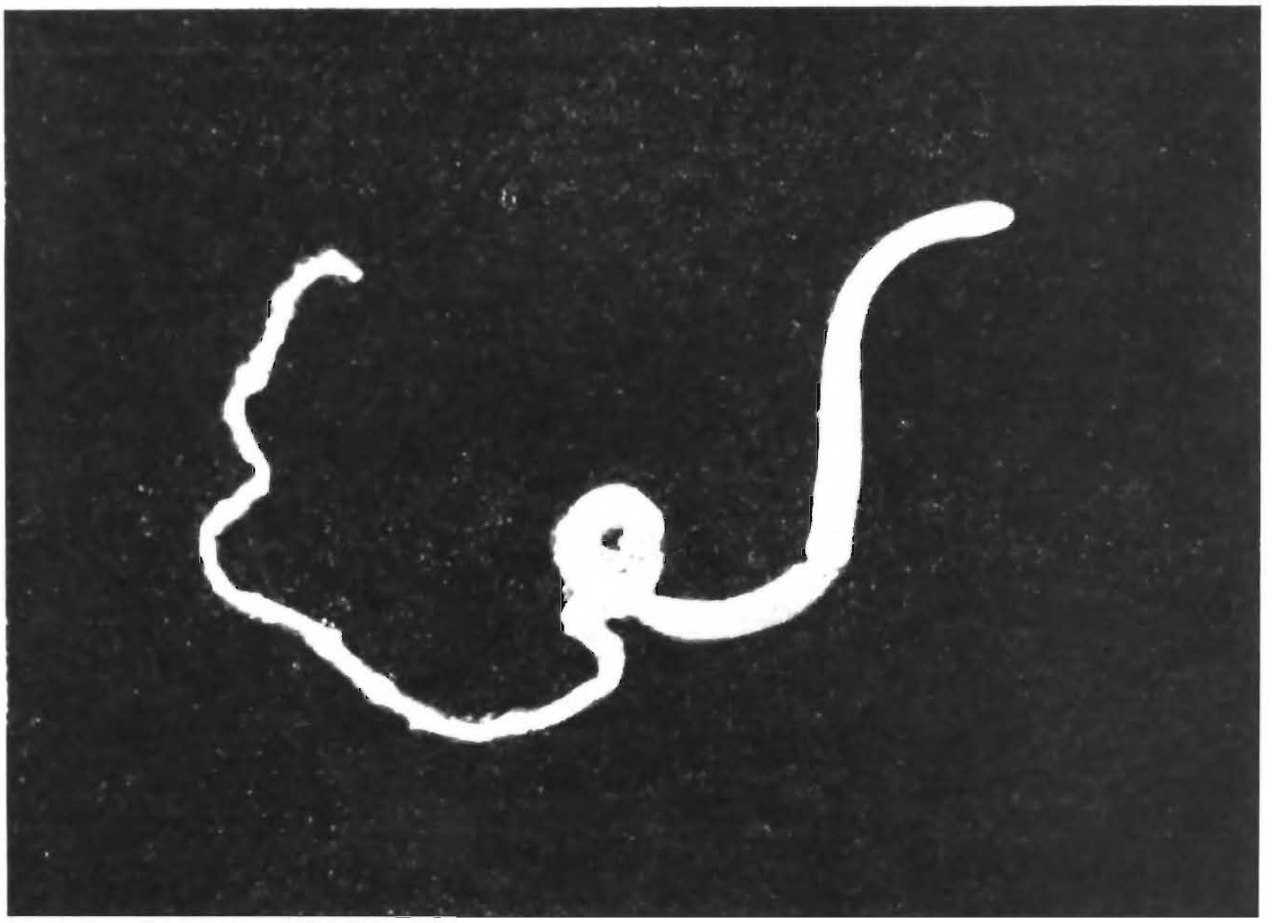
*Physiography* : Prentice Island, a small fraction of the virgin mangrove forest area of Sunderbans, lies between 21.43° to 21.46°N latitude and 88.18° to 88.19°E longitude. It is a typical estuarine delta bordered on all sides by the Saptamukhi river waters and experiences tidal interplay twice in 24 hours.

SINGH & CHOUDHURY PLATE I



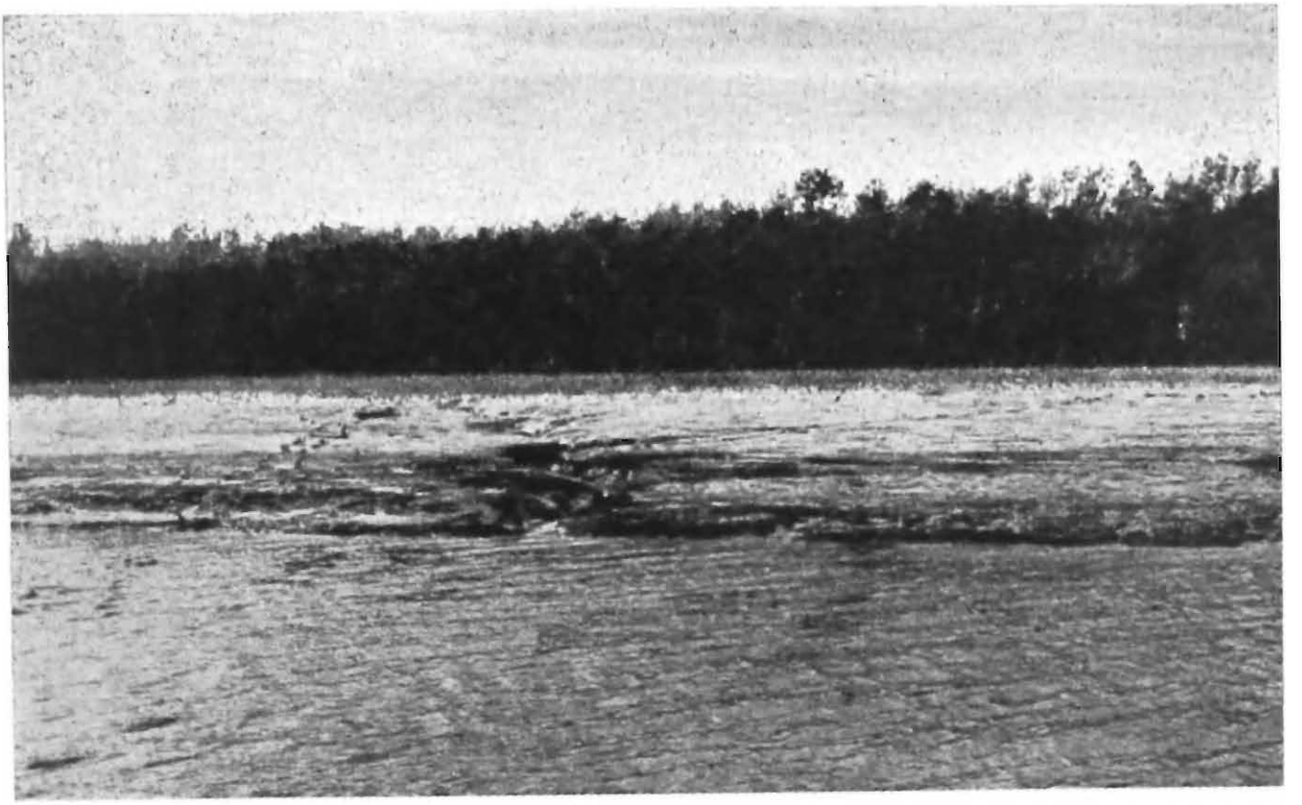
An adult male Hemichordate worm *Saccoglossus* sp.

SINGH & CHOUDHURY PLATE II



An adult female Hemichordate worm, *Saccoglossus* sp.

SINGH & CHOUDHURY PLATE III



Littoral mudflat of Prentice Island the favourite habitat of. the Hemichordatb worm. exposed during low tide.

During highest high tide water level rises upto 4.5 meters innundating the deeper part of the island which is criss-crossed by smaller, repeatedly ramified tidal creeks. Vegetational cover of the island is dominated on all sides by *Avicennia marina* and *A. alba* in the tidal zones followed by *Acanthus ilicifolius*, *Bruguiera gymnorhiza* and *Cereops decandra* in the ridges. Exposed slopes of the island is sparsely populated with *Suaeda maritima*, *S. nudiflora* and a saline grass *Porteresia coarctata*.

*Habitat* : The Hemichordate worm inhabits the midlittoral zone of the estuarine mudflat on the eastern flank of the Prentice Island just near the forest edge. Worms remain completely burried 10 to 20 cm deep in the muddy substratum in association with other infauna viz., Nemertins, Polychaetes, Actiniarians, rajor calms and other bivalves, Crustaceans like crabs and shrimps etc. During low tide exposure, among the several pores which become prominent on the substratum surface, no specific design for the pore of hemichordate worm or any of its excreta pattern could so far been identified.

**Soil texture** (Following Wentworth's scale) : The sediment in which the hemichordate worm resides, consists of about 24.59% medium silt and clay, 21.72% coarse silt, 50.26% very fine sand, 1.57% fine sand, 1.53% medium sand and 0% coarse sand.

Hydrology of the interstitial water (November 1981) :

| | |
|---|---|
| Salinity | — 23.0%. |
| Temperature | — 24°C |
| pH | — 7.1 |
| D. O. | — 0.9 ml/L |

*Description* : Body is long and vermiform and characteristically divisible into three distinct zones, viz., proboscis, collar and trunk. Length of the larger specimens so far unearthed ranges between 13.5 and 19.5 cm. Proboscis colour is creamy white, collar is light orange and the trunk is yellowish, in the branchial sector in particular.

Proboscis is highly extensible, measuring upto 5.4 cm in the largest living specimen and bears median longitudinal groove or depression throughout its length, both dorsally and ventrally.

Behind the proboscis is the collar, a broad and plain band-like structure without having any wavy margin at its proximal rim. Length of the collar in the largest worm is 4 mm and the diameter is 3.5 mm. Mouth aperture is situated at the anterior end of the collar on the ventral side of the proboscis stalk and is preceded by the preoral ciliary organ at the base of the latter.

Trunk is of variable length in different specimens and in very few cases complete animals could be unearthed as the posterior trunk section is very fragile which gets detached because of the mud-load gut. It measures 14.5 cm in one preserved specimen from behind the collar to the vent which is terminal in position. Entire length of the trunk bears a conspicuous median dorsal groove formed by the right and left elevated and slightly incurved genital ridges or wings. Mid-dorsal line of the trunk wall is slightly convex bearing the impression of the dorsal epidermal nerve cord. Proximal part of the trunk is recognised as the branchial sector because of the presence of paired branchial pores on each side in this region, inbetween the genital ridge and the middorsal wall of the body. Exact extent of the region can only be determined through micro-anatomical study. Distal part of the trunk is gradually

tapered and is dominated by the genital ridges or wings, as is evident from the visibly mature eggs in the gravid females, arranged dorsolaterally in the genital wings ending posteriorly. On the ventral side of the trunk, the proximal part of the body wall is slightly concave, but in the distal sector it is first flattened and then markedly convex. The midventral body wall also shows the impression of ventral epidermal nerve cord.

## DISCUSSION

The literature survey of enteropneust hemichordates indicates the existence of fourteen species of the genus *Saccoglossus* including one from India (Horst, 1939 ; Brambell and Cole, 1939 ; Brambell and Goodhart, 1941). Burdon-Jones and Patil (1960) are responsible for reducing this number to twelve valid species by synonymising *S. cambrensis* and *S. serpentinus* with *S. ruber*, all from British Isles.

Out of the seven species of enteropneusts reported so far from India, no published account on the description of *S. madrasensis* and *Glandiceps coramandelicus* is available. Moreover, there is some confusion left over the actual authorship for the species *G. coramandelicus*. A meticulous examination of the twelve *Saccoglossus* spp. reported so far, including *S. bournei* ( Menon, 1904 ) from India, indicates that the enteropneust specimen communicated in this paper by the present authors is different from the other members of the genus. Though this hemichordate material has been discovered from a unique habitat of mangrove mudflat of Sunderbans ecosystem, the authors refrain from attributing the animal with a new species identity pending further study and intend to denote it for the present as *Saccoglossus* sp.

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