Bull. zool. Surv. India, 6 (1-3) : 297-299, 1984

ON THE HABITAT AND MORPHOLOGY OF *MACOMA* (*PSAMMOTRETA*) *ALA* (HANLEY) (MOLLUSCA : BIVALVIA, TELLINIDAE)

K. C. Bose[1] and A. Dey[2]

ABSTRACT

In this paper observations on the ecology and morphology of an Indian Tellinid, *Macoma* (*Psammotreta*) *ala* collected from Beyt island, Gujarat, India, are reported. The bivalve was found to be restricted to the sub-littoral sandy shore, rich in organic debris. Its complete burrowing activity takes only 90 to 120 seconds. In buried condition it remains in unique vertical position. Morphological and anatomical structures were observed to be in line with the general pattern of lamellibranch with certain unique features. The pallial muscles have distinct shape and are useful in the identification of the species. These muscles consist of two compact bundles of transversely running fibres which stretch diagonally between the shell valves running through one another in the middle of their length. The anterior portion of the gill lacks outer demibranch, the inner demibranch extending over the pericadium. Gonads are embedded in foot.

Introduction

Our knowledge of the habits and habitat of Tellinids is far from satisfactory. Except for a few works like those of Fraser (1932), Stephen (1928, 1932), Yonge (1949), Holme (1950, 1961), and Subrahmanyam *et al* (1949) there have been no attempt to study the ecology of this group particularly in India. This perhaps may due to the difficulty in the collection of the bivalve. In this paper a brief account given of the habits, habitat and morphology of *Macoma* (*Psammotreta*) *ala* Hanley, which was collected from Beyt Island, Gujarat.

Material and Methods

The living specimens brought from the field were kept in an aquarium containing sand and sea water from the same place. The burrowing activity was observed and the time taken for burrowing was recorded with the help of a stop watch. A few specimens were dissected to study the anatomy.

Habits and Habitat

The animals locally known as *Kadila* are found in sublittoral zone of fine and coarse sand especially where there is organic debris. They are found at a depth of 5 to 15 cms., at an average density of 10 nos/sq. m.

The shells are 17.6 to 26.2 mm. in length and 12.45 to 19.16 mm. in width. When the animal is placed on sand, the foot soon protudes and extends forward. The anterior end enters the sand, while the posterior end remains directed upwards. Once it is in contact with the sand, the foot is jerked repeatedly. When the animal is completely buried, it lies in vertical position, the siphons are extended, up to 4-5 cms above the sand level. The time

Address : 1. Ranchi University, Ranchi.
2. Zoological Survey of India, Calcutta.

taken for the entire process from the first extrusion of the foot to its final disappearance under the sand is 90 to 120 seconds. When the animals are placed upside down with the dorsal side downwards they remain inactive for a long time and then they attempt to tilt the body with the help of foot. If they succeed, then the burrowing activity starts, otherwise they remain completely inactive,

General Anatomy

The mantle is a thin and transparent structure covering the whole visceral mass., united dorsally and fused posteriorly. Ventrally in the region of cruciform muscles it is thickened at its edge. The foot is large and ventrally compressed, extending from the anterior adductor and posterior adductor muscles to the base of inhalent siphon. The musculature is well developed. The anterior adductor and posterior adductor muscles are large and well developed. The pedal retractors are inserted into the foot. The foot and viscera possess many interesting muscle fibres while posteriorly special siphonal and cruciform muscles are present. The pallial muscles have distinct shape, which are useful in the identification of the species. Besides these cruciform muscles are present which are characteristic of members of Tellinacea. These muscles consists of two compact bundles of transversely running fibres which stretch diagonally between the shell valves running through one another in the middle of their lengths.

The ctenidia and palps are paired structures situated in the mantle cavity. The labial palps are trigonal and larger than the ctenidia. The ctenidium consists of a very large inner and a smaller, upturned outer demibranch. The gill is unique. Its anterior portion lacks the outer demibranch and the inner demibranch extends dorsally and superficially over the pericardium. Centrally and along most of the ctenidial length the outer demibranch is present and consists of a single dorsally upturned lamella.

The siphons are two, separate, elongated and well developed structures. The tip of the inhalent siphon is bordered by six blunt lobes and that of the exhalent siphon is constricted.

The oesophagus is straight and enters the stomach anteriorly. The stomach is globular anteriorly and extended posteriorly. The style sac is united with the midgut which is long and coiled. The midgut terminates at the beginning of the rectum and passes through the pericardium. The rectum transverses the ventricle, passes through the pericardium continues around the dorsal surface of the posterior adductor mucles and terminates by the anus near opening of the excurrent siphon. The kidney lies between the heart and the posterior adductor mucles. The pericardium is located dorsally between the kidney and digestive diverticula. The heart consists of two large paired, thin walled auricles connected with muscular ventricle which is transvered by the rectum. The nervous system is similar to that in lamellibranches. The gonads are pained branched structures which are embedded in the foot and surround style sac and midgut.

Acknowledgement

The authors are grateful to Dr. B. K. Tikader, Director, Zoological Survey of India for the working facilities offered and Dr. N.V. Subba Rao, Superintending Zoologist, for encouragement and valuable suggestions.

References

Fraser, J. H. 1932. Observations on the Fauna and constitutents of an Esturine Mud in Polluted area. *J. Mar. biol. Ass. U. K.*, **18** : 69-85.

Holme, N. A. 1950. Population dispersion in *Tellina tenuis* de Costa. *J. mar. biol. Ass. U. K.*, **29** : 267-280.

Holme, N. A. 1961. The bottom fauna of the English Channel. *Ibid.* **41** : 397-461.

Holme, N. A. 1961. Notes on the mode of life of the Tellinidae (Lamellibranchia). *Ibid.*, 699-703.

Stephen, A. C. 1928. Notes on the biology of *Tellina tenuis* de costa. *Ibid.*, **15** : 683-702.

Stephen, A. C. 1932. Notes on the biology of some Lamellibranchs in the Clyde Area. *Ibid.*, **18** : 51-58.

Subrahmanyam, T. V., Karandikar, K. R., Murti, N. N. 1949. The marine Pelecypoda of Bombay. *J. Univ. Bombay*, **15** (5) : 50-81.

Yonge, C. M. 1949. On the structure and adaptations of the Tellinacea, deposit feeding Eulamellibranchia. *Phil. Trans. R., Soc. Lond.*, (609) : **234** B : 29-76.