



NEW RECORD OF COLONIAL ASCIDIAN *POLYCITOR CALAMUS* KOTT, 1992 OF THE FAMILY POLYCITORIDAE MICHAELSEN, 1904 FROM INDIAN WATERS

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ABSTRACT

Ascidians are common biofouling organisms found on almost all underwater marine structures and distributed from the lowest low tide level to the depth of the ocean. A biological resources study of ascidians conducted along Tuticorin coast in the year 2010-2011 showed the occurrence of the one more genera of ascidian as new record to Indian water. The survey reports the presence of *Polycitor calamus* of genus *Polycitor* and family Polycitoridae from the chank bed of Tuticorin coast. The total number of genera of the family Polycitoridae reported from Indian water could be raised from one to two. Characters for identification of the species *Polycitor calamus* is given with detailed descriptions and Camera Lucida sketches.

Key words: Aplousobranchia, Colonial ascidians, *Polycitor calamus*, Polycitoridae, Tuticorin.

INTRODUCTION

From India only one genera *Eudistoma* [1] of the family Polycitoridae [2] coming under the suborder Aplousobranchia [3] has been reported [4]. Aplousobranchs include colonial ascidians with the body divided into a thorax, abdomen and sometimes a postabdomen. The gut loop, gonads and heart are always entirely posterior to the branchial sac. All the genera coming under the family Polycitoridae have their zooids embedded in common test. The cloacal system is rudimentary or absent and with three or more than three rows of stigmata. Seven species of the genus *Eudistoma* - *Eudistoma viride* [5], *E. lakshmi* [6], *E. kaverium* [7], *E. constrictum* [8], *E. laysani* [9], *E. ovatum* [10] and *E. toetalensis* [11] has been collected and reported from the sea adjoining the south east coast of India from Tuticorin to Rameswaram. Though ascidians are macroscopic and conspicuous, only very few efforts to collect and report them have been made from India. In the present scenario of search for potent drug molecules from marine resources, it was felt that a survey of the sea adjoining Tuticorin coast was essential. Hence a biological resources study of ascidians was carried out for the presence of ascidians.

MATERIALS AND METHODS

The methodology suggested by Dr. Patricia Kott, Queensland Museum, Australia was followed for collection,

narcotization, preservation and identification [12]. Collections were done from trawl discards of chank beds from the Gulf of Mannar. The samples were narcotised with a few crystals of menthol and fixed in a mixture of 40% formaldehyde and sea water in the ratio 1:10. A dissecting microscope was used to observe the entire surface of the colony. The zooids of the individual colony was separated and accurately identified. Diagrams were drawn with the help of Camera Lucida for interpretation of the results. Identification upto the species level was carried out based on the key to identification of ascidians [13].

RESULTS AND DISCUSSION

The present survey adds one species *Polycitor calamus* [14] as new record of the genus *Polycitor* [15] to Indian waters. The diagnostic characters of the species have been described in detail with suitable plate and figures. The specimen has been submitted to the Museum of Department of Zoology, A.P.C. Mahalaxmi College for Women, Tuticorin, Tamilnadu, India with register number AS741.

Systematic position: Phylum: Chordata; Subphylum: Urochordata; Class: Ascidiacea; Order: Enterogona; Suborder: Aplousobranchia; Family: Polycitoridae; Genus: *Polycitor*; Species: *Polycitor calamus*.

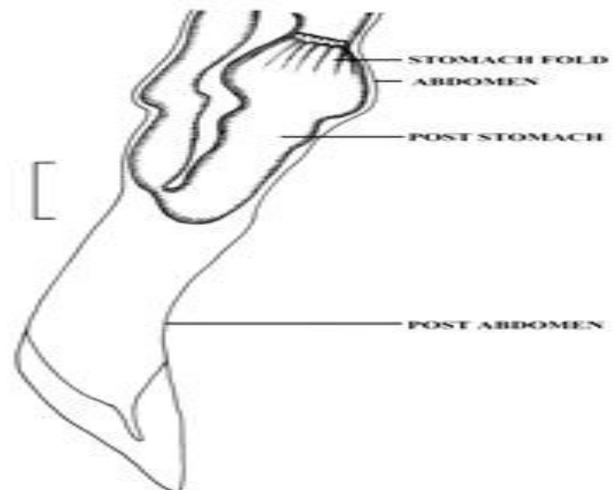
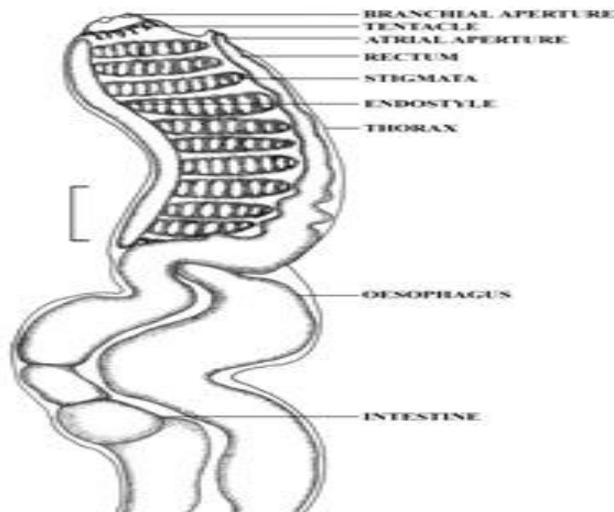
Polycitor calamus Kott, 1992
[Figure - 1 (A & B) Plate – 1]

Synonyms:*Polycitor calamus* [14]**Occurrence:** This species was collected from the trawl discards of chank bed - Vellapatti, Tuticorin District.**Distribution:** Australia, India.**External appearance**

The colonies are smooth, large, firm with mushroom shaped head attached to the basal stalk measuring 2 cm long. The stalk branches to give a tree like pattern. Colour of colony is opaque in life and preservative. The stalk is cylindrical and the base of the zooid bearing head overlaps. Number of zooids in each lobe varies from 5-6. They are arranged opening on the surface of the head. Test of the stalk is transversely wrinkled and translucent.

Plate 1. Colony of *Polycitor calamus***Internal appearance**

Zooids are completely embedded in the test and measure 12 mm long with 3 mm thorax, 9 mm abdomen. Branchial and atrial siphons are close together. Branchial siphon is short with a circular opening bordered by six lobes. Atrial aperture is situated opposite to the first row of stigmata with six lobes. Branchial sac is narrow, elongate and cylindrical. There are no sphincter muscles in the branchial and atrial siphon. Number of oblique muscles is present in the thorax which extends to the abdomen along the ventral and dorsal side. No transverse muscles were observed in the thorax. At the base of the branchial siphon there are about 10-12 long coiled and 12-15 short stumpy tentacles. Prebranchial area is narrow. Neural gland opens as a circular opening in the peritubercular area. Stigmata are in 11 rows of 10 per row. They are long and rectangular in the middle of the branchial sac and narrows towards the dorsal and ventral side. Endostyle extends from anterior end of branchial sac to the posterior end. Dorsal languets are small and pointed. Oesophagus is long and cylindrical in shape. Small pear shaped stomach is in the posterior end of the abdomen. The stomach has 10 shallow longitudinal parallel folds in the anterior end reaching up to the middle. A short duodenum is present. Rectum is long and opens by the anus at the base of the atrial siphon. Posterior end of abdomen is short with a pointed tip. No gonads or larvae were observed in the single colony studied.

Figure 1. *Polycitor calamus*, A. thorax, B. abdomen. Scale: A & B - 0.22 mm**Remarks**

The genus *Polycitor* is being reported for the first time from Indian water. The colony resembles *Polycitor calamus* Kott, 1992 in all respects except for differences like size, colour of the colony, lesser number of rows of stigmata, number per row and stomach folds.

REFERENCES

1. Caullery M. Recherches sur la famille des Distomidae. *Bulletin Scientifique de la France et de la Belgique*, 42, 1909, 1-59.

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2. Michaelsen W. Revision der kompositen Styeliden oder Polyzoinen. *Mitteilungen aus dem Naturhistorischen Museum Hamburg*, 21(2), 1904, 1-124.
3. Lahille F. Sur la classification des tuniciers, *Comptes rendus hebdomadaires des Seances de l'Academie des Sciences*, Paris. 102, 1887, 1573-1575.
4. Renganathan TK. New record and redescription of a rare colonial ascidian, *Eudistoma viride* Tokioka, 1955 from the Indian waters. *Geobios new Reports*, 3, 1984, 49-51.
5. Tokioka T. Ascidiens from the Palao Islands (II). *Publications of the Seto Marine Biological Laboratory*. 5(1), 1955, 43-57.
6. Renganathan TK. *Eudistoma lakshmi* n.sp. a colonial ascidian from Tuticorin Coast of India. *Geobios new Reports*, 5(2), 1986, 163-164.
7. Meenakshi VK. Occurrence of a new species of colonial ascidian - *Eudistoma kaverium* sp. nov. and four new records of *Eudistoma* to Indian coastal waters. *Indian Journal of Marine Sciences*, 31(3), 2002, 201-206.
8. Kott P. The Australian Ascidiacea Part II, Aplousobranchia (1). *Memoirs of Queensland Museum*, 29(1), 1990, 1-266.
9. Sluiter CP. Tunicaten aus dem Stillen Ocean. *Zoologische Jahrbucher (Systematik)*, 13, 1900, 1-35.
10. Herdman WA. Report on the Tunicata collected during the voyage of HMS. Challenger during the years 1873-76. Pt.II, Ascidiacea compositae. *Report on the Scientific Results of the Voyage of HMS Challenger*, 14(38), 1886, 1-425.
11. Millar RH. Ascidiens from the Indo-West Pacific region in the Zoological Museum, Copenhagen (Tunicata, Ascidiacea). *Steenstrupia*, 3(20), 1975, 205-336.
12. Kott P. The Australian Ascidiacea. Part I, Phlebobranchia and Stolidobranchia. *Memoirs of Queensland Museum*, 23, 1985, 1-440.
13. Meenakshi VK. Biology of a few chosen ascidians. Ph. D., thesis, Manonmaniam Sundaranar University, Tirunelveli. 1997, 1-125.
14. Kott P. The Australian Ascidiacea Part III, Aplousobranchia (2). *Memoirs of Queensland Museum*, 32(2), 1992, 375-620.
15. Renier SA. Prospetto della classe dei Vermi pp. xv-xxvii (Padua), *fide* Porro, C. 1840, Nota per una Bibliografia Malacologie, series III Geografica no. 1-4, p. i-iii and numbered columns, 1804, 27-130.