

RECORD OF *PYROSOMA ATLANTICUM* (PYROSOMIDAE, ASCIDIACEA)
FROM THE BAY OF BENGAL

K. J. PETER*

National Institute of Oceanography, Dona Paula-403 004, Goa.

ABSTRACT

During the 21st cruise of R.V. *Gaveshani* in the Bay of Bengal in August 1977, a big colony of *Pyrosoma*, about 100 cm long and 50 cm wide, was located in the surface layers of water about 320 km off Kakinada. A portion of a similar colony was collected in the plankton net about 200 km south east of this station. The colony was incomplete and partly damaged due to the cyclonic weather conditions. However, the species could be identified as *Pyrosoma atlanticum*. The earlier records and description of the species are discussed.

Pelagic tunicates (pyrosomes, salps and doliolids) from the Indian Ocean are known from the records of the H.M. *Challenger* (Hardman, 1888) and John Murray (Swell, 1953) expeditions. The Plankton Atlas (IOBC, 1973) and Rao, Sakhivel and Rahim (1973) have also given the general distribution pattern of the *Pyrosomidae* in the Indian Ocean, based on the collections made during the International Indian Ocean Expedition (1960-1965). The taxonomy and distribution of *Pyrosomidae* have been studied by Berrill (1950) and Swell (1953). Godeaux (1973) recorded 4 species of *Pyrosoma*, namely, *P. atlanticum*, *P. acherniosum*, *P. verticillatum* and *P. spinosum* from certain isolated regions of the Ocean. The first 3 of these species have been collected along with some salps, doliolids and oikopleurans by *Vityaz* during IIOE from south eastern part of the Indian Ocean (Bhavanarayana, 1972). From the Bay of Bengal region, the records available are that of a damaged colony of *P. atlanticum* collected off False Point, Orissa, by Nagabhushanam (1960) and another tetrazoid colony reported from the western part of the bay by Bhavanarayana and Ganapati (1972).

During the 21st cruise of R.V. *Gaveshani* in the Bay of Bengal large colonies of *Pyrosoma* were observed and these are reported here.

Pyrosomes are the only colonial pelagic tunicates and are reported to occur below a certain depth. These colonies grow to a very large size and are often collected in trawl or plankton net, as small colonies, or as part of a bigger colony. Each colony is formed of thousands of individual zooids embeded in the wall of a gelatinous cylindrical tubular structure sealed at one end. Some of the species are reported to be highly luminous.

A big colony of *Pyrosoma* about 100 cm long and 50 cm wide was found floating horizontally in the surface layers of water at station No. 672 (17°00'N-86°30' E) at 2315 hrs on 24.8.1977. All attempts to collect the animal were unsuccessful due to the cyclonic weather in the sea with 5 m high waves and wind speed of about 30 knots. However, on 26.8.1977 from station 676 (15°00'N-86°00'E) a partly damaged colony of *Pyrosoma*

* Present Address : Pelagic Fisheries Project, Cochin-682 018.†

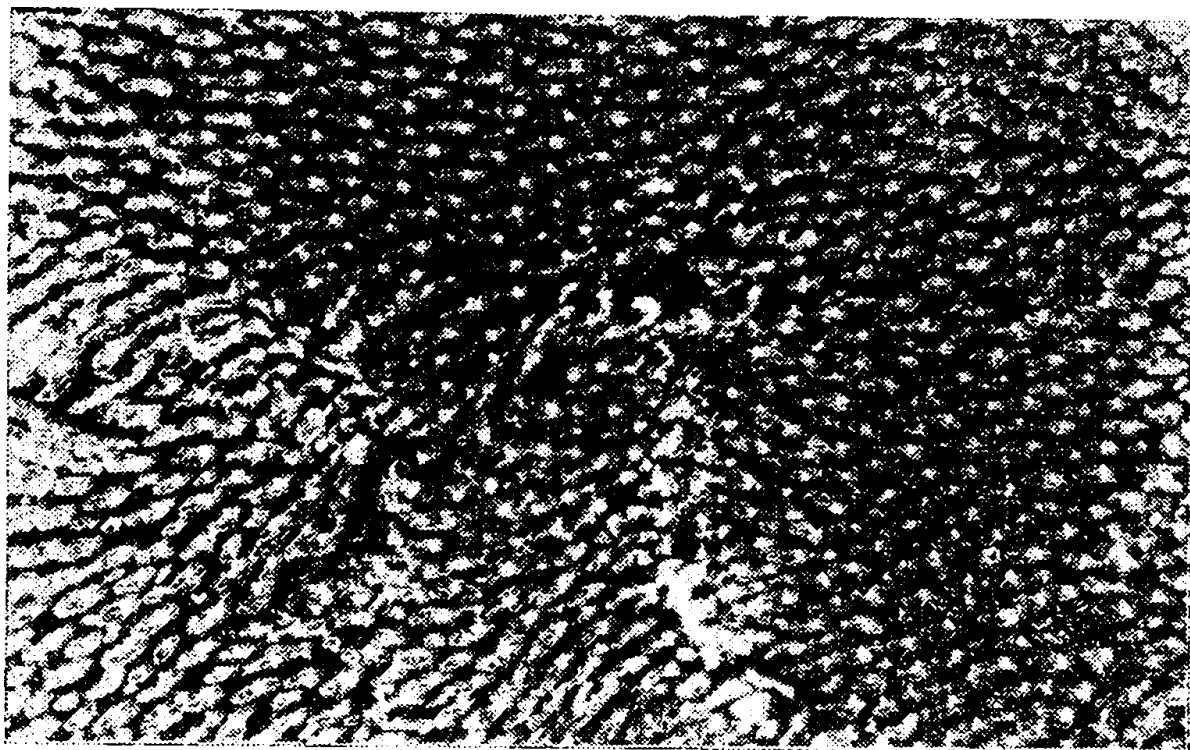


Fig. 1. A portion of the colony of *P. atlanticum*.

was collected in a vertical haul of HT net from 200 m. The colony was preserved in 10% formalin and later identified as *P. atlanticum*. The soft gelatinous transparent mass was 50 cm long, 30 cm wide and 6 mm thick. A portion of the colony of 5 cm × 5 cm was found to have a volume of 5 ml and comprised of 520 individual zooids of size ranging from 0.5 mm to 5.5 mm (Figs. 1 & 2). There was no definite pattern in the arrangement of the zooids of different sizes.



Fig. 2. A single zooid of the colony of *P. atlanticum*, 5.5 mm.

The distribution of *Pyrosoma* in the Indian Ocean (IOBC, 1973) showed that their maximum concentration occurs in the equatorial region. Although present in lesser numbers in the Bay of Bengal and west Australian Sea, Rao, Sakhivel and Rahim (1973) reported that pyrosomes were represented in only 16% of the IIOE collections and attributed their distribution to various hydrographical and geographical factors. Among the 3 species of *Pyrosoma* recorded from the Bay of Bengal, *P. atlanticum* is reported to be common.

The presence of different size of zooids in the colony indicates their capacity for budding and thus building up large colonies like the giant colony of *P. spinosum* of 13.76 m (45 ft) in length and 0.91 m (3 ft) diameter reported from south-east Australian

Record of Pyrosoma atlanticum from the Bay of Bengal

waters by Griffin and Yaldwyn (1970). The colony recorded by Nagabhushanam (1960) measured only 110 mm long and 15 mm wide. Bhavanarayana (1972) and Bhavanarayana and Ganapati (1972) did not mention the size of the colonies collected. The present colonies from both stations appear to be only parts of some bigger colonies probably broken off due to the rough weather conditions.

Berrill (1950) remarked that species of *Pyrosoma* were not found normally in the coastal waters except where the continental shelf was narrower or when there was an incursion of oceanic waters of the shelf area. He observed common pelagic forms in the upper 500 m and also at depths of 3000 m. Swell (1953) suggested that *P. atlanticum* is most common at sub-surface layers. Benthic forms were obtained by Miller (1959, 1971) from depths exceeding 5000 m. Fournier's (1973) record of colonies of *Pyrosoma* from south west of island of Oahu was from 750 m. Godeaux (1972) was of the opinion that to a limited extent there was stratification according to the size of the colonies, the older ones being in the deeper layers. Probably, this may be one of the reason why larger colonies are not commonly recorded, except during rough weather, which brings these animals to the surface layers. According to him, the Indian Ocean records were quite insufficient for arriving at any similar conclusion.

ACKNOWLEDGEMENT

I am grateful to Dr. S.Z. Qasim, Director and Dr. M.J. George, Head, Biological Oceanography Division for going through the manuscript critically. Thanks are also due to Shri P. Dhandapani, Zoologist, Zoological Survey of India, Calcutta, for identifying the species and my colleagues on board R. V. *Gaveshani* for all the help.

REFERENCES

- Berrill, N. J., 1950. *The Tunicata*. Ray Society, London, p. 1-354.
- Bhavanarayana, P.V., 1972. On the occurrence of pelagic tunicates in the south eastern part of Indian Ocean. *Current Science*, 41 (20): 750.
- Bhavanarayana, P. V. and P. N. Ganapati, 1972. Distribution of pelagic tunicates in the western part of Bay of Bengal. *Proceedings of the Indian Academy of Sciences*, B.75 (1):1-14.
- Fournier, R. O., 1973. Studies on pigmented micro-organism from aphotic marine environment: III. Evidence of apparant utilisation by benthic and pelagic *Tunicata*. *Limnology and Oceanography*, 18(1): 38-43.
- Godeaux, J., 1972. Tunicers pellagiques de l' Ocean Indian. *Journal of the Marine Biological Association of India*, 14 (1): 263-292.
- Griffin, D.J.G. and J.G. Yaldwyn, 1970. Giant colonies of pelagic tunicates (*Pyrosoma spinosum*) from south-east Australia and Newzealand. *Nature*, 266 : 464-465.
- Herdman, W. A., 1888. Report upon the *Tunicata* collected during the voyage of H. M. *Challenger*, 27(76): 1-166.
- Indian Ocean Biological Centre, 1973. International Indian Ocean Expedition Plankton Atlas. N. K. Panikkar (Ed.), UNESCO/NIO, 4(2).
- Miller, R. H., 1959. *Ascidiacea*. *Galathea Reports*, 1 : 189-209.
- Miller, R. H., 1971. The biology of ascidians. *Advances in Marine Biology*, 9 : 1-100.

- Nagabhusanam, A. K., 1960. Observation on some pelagic tunicates in the western part of Bay of Bengal. *Journal of the Marine Biological Association of India* 2(2) : 263-264.
- Rao, T. S. S., M. Sakthivel and S. V. M. Abdul Rahim, 1973. Disjunct distribution of pyrosomids in the Indian Ocean. *Current Science*, 42(19) : 688-689.
- Swell, R. B. S., 1953. Pelagic *Tunicata*. *John Murray Expedition, Scientific Reports*, 10 : 1-90.