*Myctophum* in the family Myctophidae. Among the myctophids, *Diaphus watasei* was the most dominant species. *Diaphus garmani* was recorded for the first time from the Indian waters (Fig. 4). The identified species of the family Myctophidae includes *D. watasei, D. thiollierei, D. garmani, Myctophum obtusirostre* and *M. fissunovi.* Length frequency studies of *D. watasei* was carried out. A total of 90 samples of *D. watasei* were examined and the $S_L$ ranged from 7 to 13 cm with a prominent mode at 10 cm. Gut content analysis of *D. watasei* (n = 86) revealed that stomach of most of the fishes were empty.

Fig. 4. *Diaphus garmani*, 54 mm LS

In the present study, information on landings of myctophids as a major component in the by-catch of deepsea shrimp trawlers was confirmed. Most of the species obtained were benthopelagic and are available significantly during early morning and late evening which provide information on biology and species compositions. *D. watasei* was the most dominant species observed during the study. Based on the observations of the present study, it is suggested that bottom trawling survey along with midwater trawling should be carried out in order to estimate the actual biomass of myctophids in the Arabian Sea.

## Preliminary studies on the growth in captivity of *Spirastrella inconstans* (Dendy) collected from the intertidal region of Palk Bay, south-east coast of India

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Marine sponges are rich sources of bioactive metabolites that can be used as lead compounds to treat various diseases. Although concerted efforts resulted in the development of many new bioactive compounds from marine sponges, only very few compounds have reached the clinical trial stage. One of the reasons for this, as cited by many workers is that many of the sponge bioactive metabolites are highly toxic, thus leading to a low therapeutic index. However, the second major reason is the 'supply problem'. Collection of large quantities of sponge biomass from the wild becomes a pre-requisite for obtaining sufficient amounts of metabolites from natural populations. Consequently, the natural populations may not be able to sustain such heavy exploitation.

Although chemical synthesis of the target compounds is a more direct method to overcome the issue of over-exploitation of wild population, many natural products are not amenable to chemical synthesis due to the complexity of their chemical structure. Therefore, the second option is to produce large quantities of the target species through suitable aquaculture techniques which would ensure a steady supply of material. This would also ensure the protection of depleting natural stocks.

In India, studies on sponge aquaculture is still at infancy. Preliminary studies on the growth of selected species would provide baseline information for future strategic research planning to develop innovative culture techniques for potential marine sponges.

In this backdrop, an attempt was made to understand the growth behaviour of one of the potential sponge species, *Spirastrella inconstans* which is found distributed in the Gulf of Mannar and Palk Bay,

south-east coast of India. Studies by earlier workers have proved that *S. inconstans* from Krusadi Island exhibited diuretic activity. They have also shown that *S. inconstans* var. *digitata* from Rameswaram exhibited antiviral activity against *Encephalomyocarditis* virus.

**Systematic position of the candidate species**

Phylum : Porifera
Class : Demospongiae
Order : Hadromerida
Family : Spirastrellidae
Genus and Species : *Spirastrella inconstans* (Dendy)

**Salient characteristic features of *Spirastrella inconstans* selected for study**

*Spirastrella inconstans* is found commonly distributed in the intertidal region of Palk Bay and Gulf of Mannar. The colonies of the same species look morphologically different. Some are massive, while others are digitate forms having finger-like projections. The basal portion is found partly buried in sand and during extreme low tides, the upper portion of the animal often lie exposed (Fig. 1). The colouration is pale yellow internally and brown externally, when alive. In massive forms, the oscules are found scattered, while in digitate forms, the oscules are found mainly in the terminal portion. The diameter of the oscules range from 1.5 to 3.0 mm.

Fig. 1. A view of *Spirastrella inconstans* lying partially exposed during low tide in Palk Bay

**Collection and identification**

The specimens of *S. inconstans* were collected from Palk Bay (Mandapam region) in July 2007 and transported live to Cochin. The spicule characteristics from different regions of sponge body were studied in detail for confirming the species identity. The analysis revealed the presence of two types of spicules *viz*., i) Tylostyles : 150.01–567.86 µm x 2.04–21.92 µm and ii) Spirasters : 6.86–24.81 µm x 0.81–3.36 µm (Fig. 2).

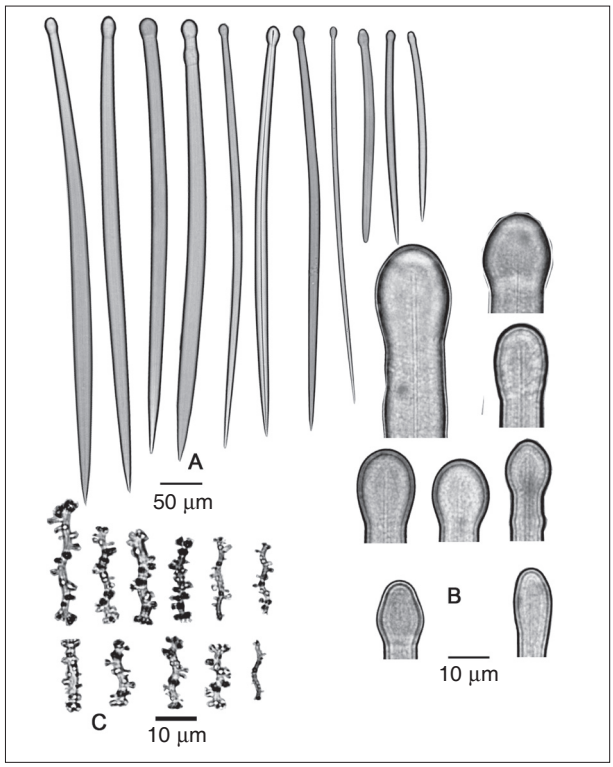
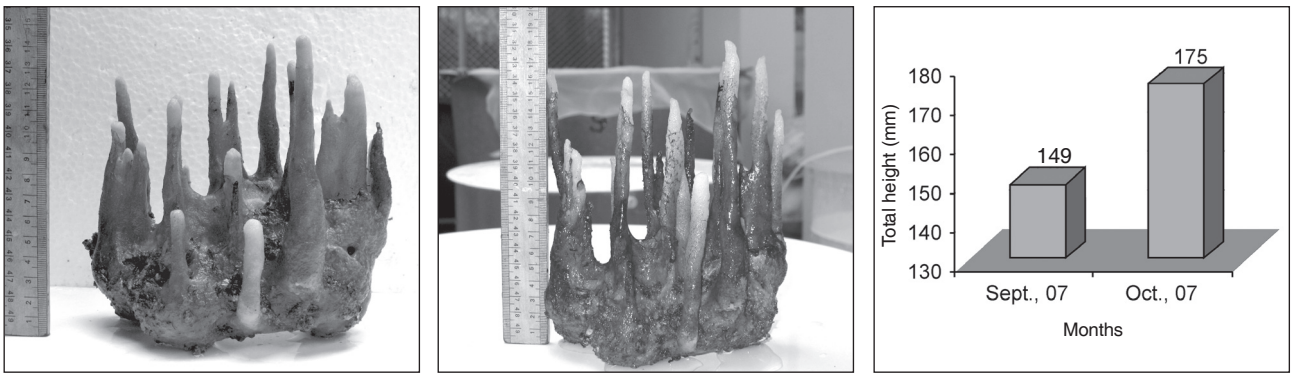



Fig. 2. Spicule characteristics of *Spirastrella inconstans*

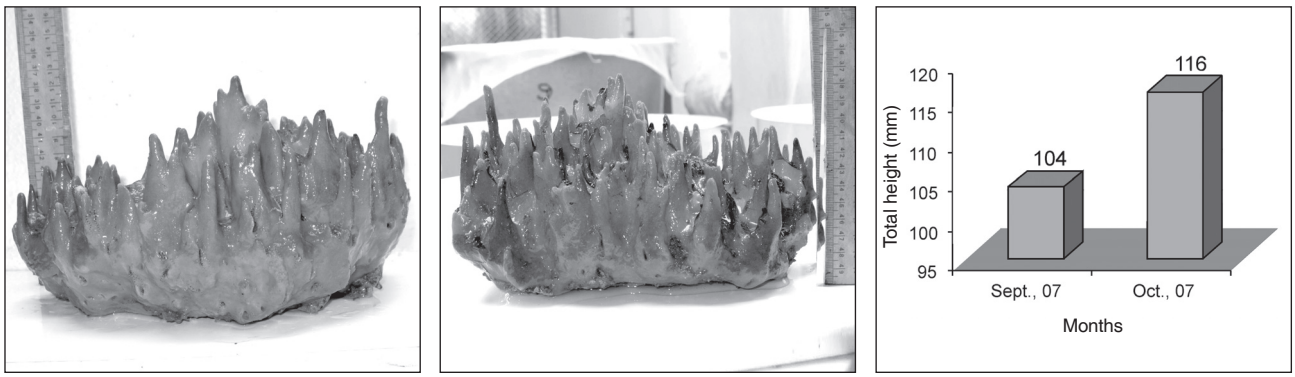
**Growth in captivity**

Three live specimens of *S. inconstans* (designated here as A, B and C) were maintained live in 2 t capacity FRP tanks. Filtered seawater having a salinity of 33-35 ppt was used. Water temperature ranged from 26.0–29.7 °C while pH ranged from 7.78 to 7.96. Microalgae was provided once a day in the morning hours. All the three specimens were found to survive well in captivity and showed good growth. The growth increment for a period of one month from 15th September to 15th October, 2007 is presented in this paper. The growth in terms of increment in height is mentioned. Specimen A showed an increase in growth from 149 mm to 175 mm in a span of one month (Fig. 3), while specimen B showed a growth increment of 12 mm (104 to 116 mm) (Fig. 4) during the same period. Specimen C showed an increase in growth from 121 to 132 mm in one month period (Fig. 5).




15th September 2007 15th October 2007

Fig. 3. Growth of *Spirastrella inconstans* (Specimen A)




15th September 2007 15th October 2007

Fig. 4. Growth of *Spirastrella inconstans* (Specimen B)

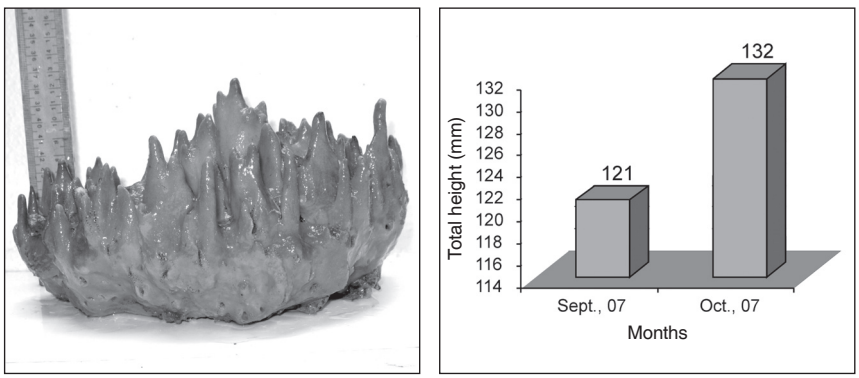



Fig. 5. Growth of *Spirastrella inconstans* (Specimen C)

The present study demonstrated that some of the sponges can thrive well in culture systems, which is a pre-requisite for any propagation programme. There is a need to develop suitable cost-effective culture techniques for large biomass production of potential sponge species which would enable a steady supply of materials required for pharmaceutical industries. Farming of potential species would also minimise the pressure of over-harvest from the wild.