S. costatum needs a few hours of darkness for maximum growth.

In coastal and adjacent water bodies, the photosynthetic light duration is an unpredictable one. The phytoplankton of these habitats should be adapted to utilise with its maximum efficiency, the light available at short duration. The present investigation suggests that *S. costatum* and *T. fluviatilis* are adapted to variations in photoperiod.

66 Gandhi Street, Anupurpalayam Pudur, Tirupur-638 652.

SOUNDARI GURUSAMY

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DISEASES OF CHAETOGNATHS FROM THE ARABIAN SEA

ABSTRACT

Three different diseases, provisionally assigned as spot disease, swell disease and tail rot disease, were observed in chaetognaths *Sagitta enflata* Grassi and *S. bedotti* Bernaneck. The first two diseases showed high percentage of occurrence. The spot disease is caused by fungi and the tail disease is by bacteria. The cause of swell disease is not yet known. The present report on the disease of chaetognaths is recorded for the first time from the Arbian Sea.

KNOWLEDGE on the diseases of chaetognaths is very limited (Nagasawa and Marumo, 1984 ; Nagasawa and Nemoto, 1984). Nevertheless, studies on the diseases of fishes, decapod crustaceans and bivalves were made owing to the economic importance and hence information are available. However, general reviews on the parasites of chaetognaths (Hyman, 1959 ; Alvarino, 1964 ; Ghirardelli, 1969) contained no information about the diseases. Santhakumari (1986) recorded a ciliate parasite from Indian Coast. According to Kinne (1980) no marine organism seems to be completely free from potential disease agents and animals belonging to all systematic groups contain members which can act as agent or host.

Chaetognaths are important in the sense that they are exclusively carnivores and are the abundant group of the plankton community in the sea. *Sagitta enflata* and *S. bedotti* are the common species occur in large numbers in the coastal waters of India (Nair, 1972).

So far no work has been reported on the diseases of chaetognaths from Indian waters so the present report is worth recording.

Zooplankton samples were collected with Bongo net of 0.5 m mesh size and preserved in 4% formaldehyde solution in sea water. Chaetognaths were examined under the binocular microscope. Chaetognaths having diseases were separated and examined in detail.

A preliminary report is given here on three diseases, temporarily assigned as spot disease, swell disease and tail disease. Nagasawa and Nemoto (1984) described the tail disease.

Spot disease

The most common disease among two chaetognath species was the spot disease. The spots were almost round in shape and brownish in colour. The spots were found all over the body (Pl. I A). The spots were caused by the fungi. This infection was noticed both in *S. enflata* and *S. bedotti*. 12 per cent infection was noticed in this set of collection.

Swell disease

Certain areas of the body surface was projected outwards. These projections got enlarged and in many cases these were found in ruptured condition. The muscles were distorted as shown in Pl. I B. Upto 5 such swell areas were observed in a single specimen. This disease apparently seems to cause death of the animal. This disease was also noticed in both the species, but not as frequent as the spot disease. Instances of this disease was more pronounced in *S. bedotti*. The percentage of infestation was found to be 4.8.

Tail disease

A portion of the tail of some of *S. enflata* specimens were found to be opaque. Incidence of this disease was very low compared to the other two diseases. Nagasawa and marumo (1984) described it as bacterial disease from Japan waters. She observed that the bacteria infected specimens died within 24 days.

Observation on live material in the laboratory will be carried out in future and the details will be known about the exact cause of all these diseases.

The author is thankful to the Director, National Institute of Oceanography, Dona Paula, Goa for providing facilities.

National Institute of Oceanography,
Cochin-682 018, *Kerala.*

V. SANTHAKUMARI

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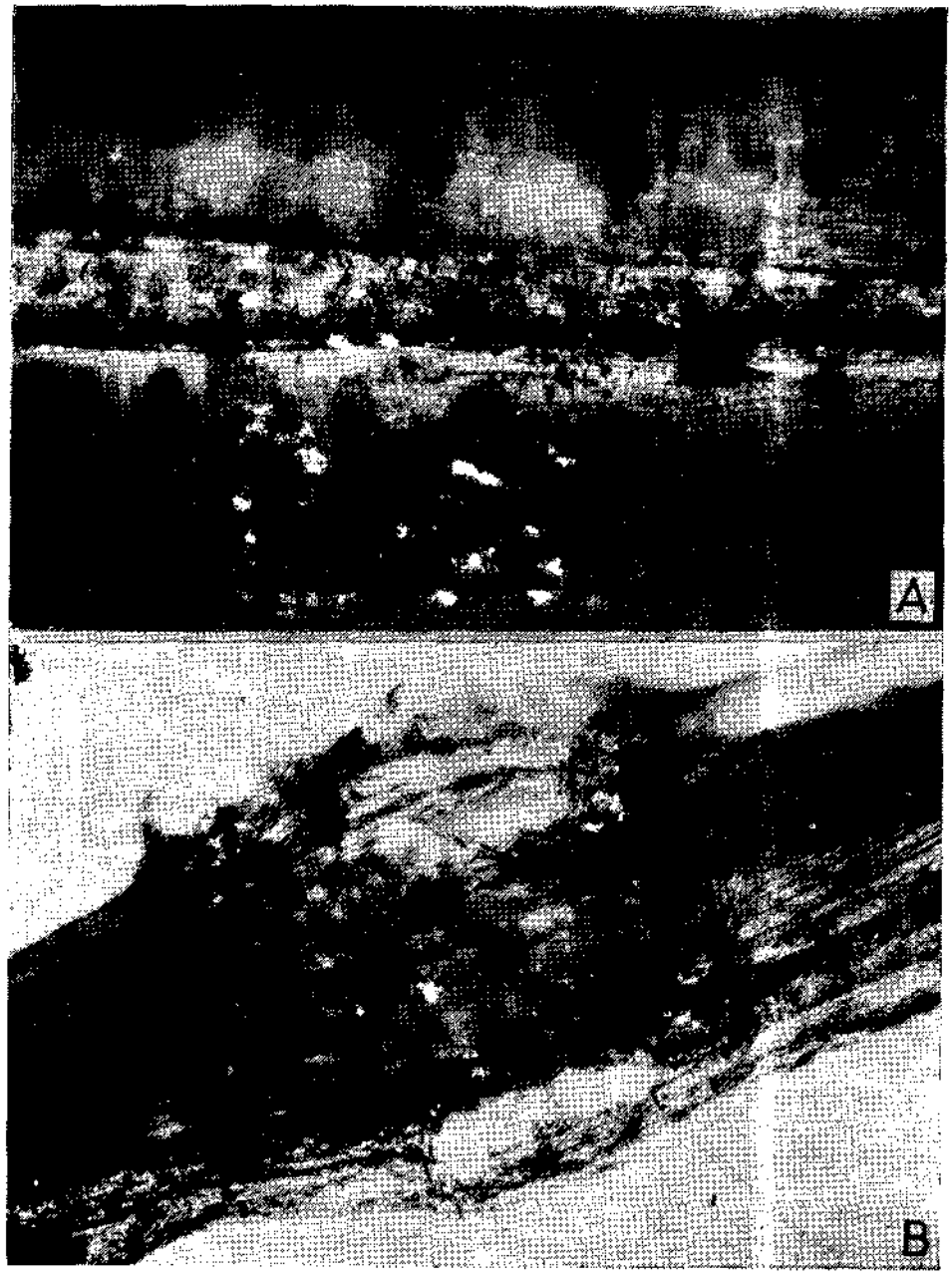

PLATE I A. Spot disease of *S. enflata* and B. Swell disease of *S. bedotti*.