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Seasonal Variation in the Abundance of *Noctiluca scintillans* in the Coast of Arthunkal, Southwest Coast of India

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Abstract: ***The seasonal variation in abundance of Noctiluca scintillans was investigated for one year during January – December 2015. A plankton net was used for collection and the collected samples were fixed in 4% neutral formaldehyde and placed in polythene vials for later sorting and identification. During the sampling period, the temperature and dissolved oxygen were recorded . The samples were examined under the microscope and Noctiluca cells were counted. High cell densities were recorded during September. No green or red water discoloration was observed. Increased number of N. scintillans cells could disrupt the traditional diatom-sustained food chain and it affects the health of an ecosystem.***

Keywords: *Noctiluca scintillans*, seasonal variation, abundance

1. Introduction

Noctiluca scintillans is a non-photosynthetic, non-toxic and bioluminescent species of dinoflagellates. It is a bloom-forming marine species, commonly found in coastal and eutrophic areas of the Arabian Sea.

The incidence of N. scintillans blooms and discolorations of water in the Indian seas have been reported by Prasad (1953) in Palk Bay. The increased frequency of appearance of blooms throughout the world in the recent past, is a result of a change in the marine planktonic ecosystems, mostly due to the anthropogenic activities in the coastal zone. *N. scintillans* is also associated with fish kills due to enhanced levels of ammonia in the sea water (Elbrachter & Qi, 1998). *Noctiluca scintillans* is also a phagotrophic species feeding on bacteria, detritus, protozoans, copepods, eggs of copepods and fish as well as phytoplankton (Strom, 2001). This paper addresses the abundance and distribution of *N. scintillans* along the Coast of Arthunkal.

2. Materials and Methods

Study Site: Arthunkal coast (9˚39’19” N; 76˚17’23”E)

Figure 1: Study site

Field sampling

The study was carried out along the coast of Arthunkal in Kerala, South West Coast of India. Sampling was carried out seasonally (January - December 2015) using a plankton net of mesh size 10µ. Samples were taken from two stations (Station I and Station II) in the euphotic zone representing the nearshore region and 1km distance from the shore region respectively. The samples were fixed in 4% neutral formaldehyde and placed in polyethene vials. They were examined under the microscope and the cells were counted. Subsurface water samples were collected in plastic bottles for subsequent chemical analysis. Dissolved oxygen and temperature were detected at the site itself. Dissolved oxygen was determined by Winkler’s method and the temperature was recorded with a thermometer.

3. Results and Discussion

N. scintillans (Fig. 2) was observed with maximum cell densities in September. High abundance occurred at Station I and low abundance at Station II. The high cell concentration was found during monsoon (1200 cells/L) at station I and low concentration occurred during pre-monsoon. Seasonal variation in abundance of *N. scintillans* in Station I and Station II is shown in fig.3. No green or red water discoloration was observed. At station I, temperature recorded the highest value during pre-monsoon (30.5°C) and low value in monsoon (25.5°C). In the case of dissolved oxygen the maximum value was obtained at station I (5.8 mg/l)and minimum at station II (4.2mg/l) . Seasonal variation of dissolved oxygen and temperature at Station I and II are given in Fig. 4 & 5. Increased number of *N. scintillans* cells could disrupt the traditional diatom-sustained food chain and it affects the health of an ecosystem.

Figure 2: Noctiluca scintillans

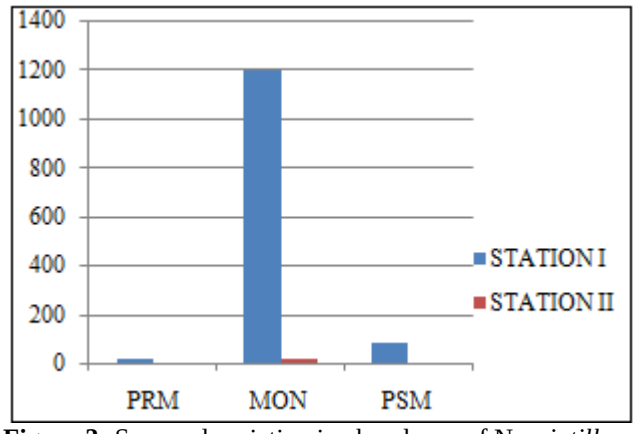

Figure 3: Seasonal variation in abundance of N. *scintillans* at Station I and II

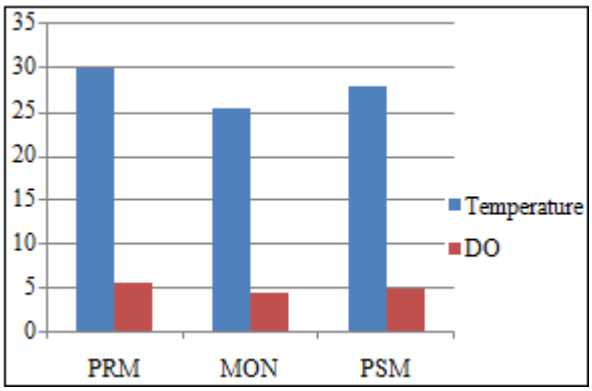

Figure 4: Seasonal variation of dissolved oxygen and temperature at Station I

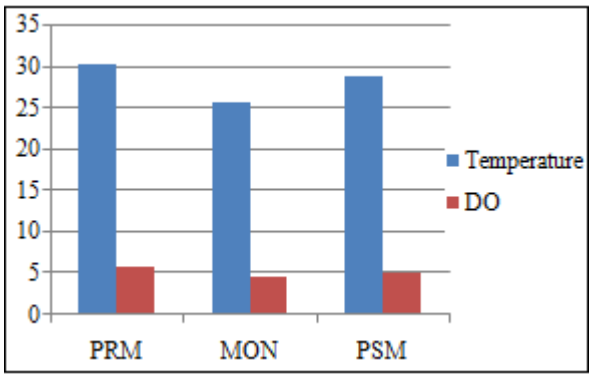

Figure 5: Seasonal variation of dissolved oxygen and temperature at Station II

4. Acknowledgements

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