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Cyanobacterial Biodiversity in Natural Mangrove vegetation of Paravanar Estuary at Poondiyankuppam, Cuddalore Coast, South East Coast of India

[1]K. Sivakamasundari and [2,]*R. Rajendran

[1]Research scholar, Department of Microbiology, Research & Development centre, Bharathiar University, Coimbatore, Tamilnadu, India
[2]Department of Botany, Annamalai University, Annamalainagar, Tamilnadu, India

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ABSTRACT

Cyanobacteria are the largest, most diverse and widely distributed group of photosynthetic N_2 fixing prokaryotes. Cyanobacteria play a vital role in mangrove community food webs. The aerial root system of mangrove trees provides a hard substratum for the attachment of epiphytic algae such as diatoms and cyanobacteria. The paravanar estuary is open type estuary having semidiurnal tides with tidal extending up to a distance of about 10 km. The Poondiyankuppam village is located about 8 km from estuarine mouth. A total of 13 Cyanophycean members were identified. The identified genera were *Chroococcus turgidus*, *Phormidium molle*, *Merismopedia elegans*, *Oscillatoria salina*, *Oscillatoria curviceps*, *Oscillatoria perornata*, *Oscill atoria ornate*, *Oscillatoria minnesotensis*, *Spirulina subsalsa*, *Microcoleus acutissimu*, *Microcoleus chthnoplastes*, *Nostoc microscopicum*, *Nostoc carneum.* Kadalundi mangrove vegetation provides suitable niche for the growth of phytoplanktons like cyanobacteria. By documenting the cyanobacterial flora of mangrove ecosystems provides a solid foundation for scientific descriptions like ecology to begin the formulation of good management practice.

Key words: Mangrove, estuary, cyanobacteria,

INTRODUCTION

Cyanobacteria are the largest, most diverse and widely distributed group of photosynthetic N_2 fixing prokaryotes. Cyanobacteria are single - celled organisms that live in fresh, brackish, and marine water. Taxonomic studies on the Cyanophyceae are very scarce. Cyanobacteria play a vital role in mangrove community food webs. The aerial root system of mangrove trees provides a hard substratum for the attachment of epiphytic algae such as diatoms and Cyanobacteria (Kathiresan, 2000; Kathiresan and Bingham, 2001; Palaniselvam, 1995; Sakthivel, 2004). Phytoplanktons are an important component of mangrove ecosystem. Species richness in depend upon the primary source of water and salinity level as well as seasonal and daily environmental fluctuations. The majority phytoplanktons are washed into the mangroves from adjacent areas, including Open Ocean, fresh water and estuarine environments and 20% of species are occurring saline conditions are truly marine ecosystem. Phytoplanktons are an important component of mangrove ecosystem. Hence, the present investigation of the distribution and diversity of Cynobacteria in the mangrove vegetation Pravanar estuary located at Poondiyankuppam, Cuddalore coastal line.

MATERIALS AND METHODS

The Paravanar estuary (Fig. 1 and 2) is open type estuary having semidiurnal tides with tidal extending up to a distance of about 10 km. The Poondiyankuppam village is located about 8 km from estuarine mouth. The samples of cyanobacteria were collected from estuarine water, pneumatophores, shells and woods. The collected specimens were preserved in 4% formalin for further analysis. In this study the plankton samples were collected month of November 2014, using forceps, knifes and plankton nets (mesh size 42µm). The collected cyanobacterial samples were transferred to conical flasks containing BG 11 medium (Rippka *et al*., 1979). The cyanobacterial species were identified with the help of classical manuals (Geitler, 1932; Desikachary, 1959; Iyengar and Desikachary, 1981; Anand, 1989 and Biswal and Das, 2004).

Fig. 1. A view of Paravanar estuary, Cuddalore, Tamil Nadu

Corresponding author: R. Rajendran
Department of Botany, Annamalai University, Annamalainagar, Tamilnadu, India

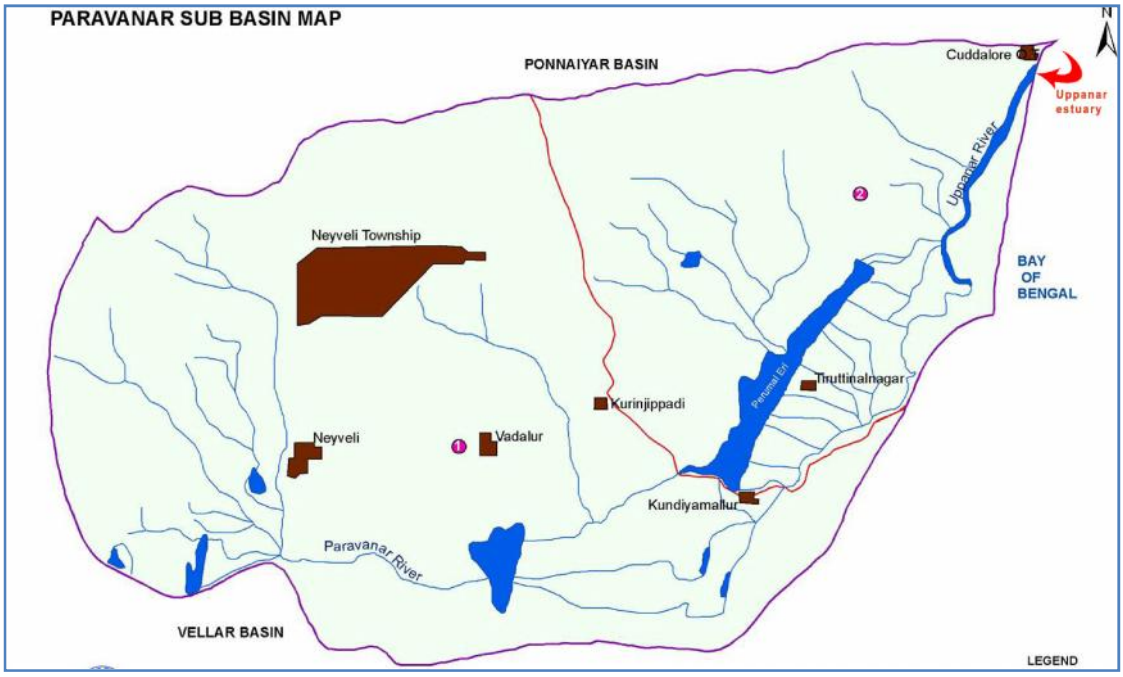

Fig. 2. Paravanar sub basin map

RESULTS AND DISCUSSION

Totally 13 species were recorded in mangrove ecosystem as follows

Chroococcus turgidus (Kutz) Nag.
Phormidium molle (Kutz) Gomont.
Merismopedia elegans A.Br.
Oscillatoria salina Biswas.
Oscillatoria curviceps Ag.ex Gomont.
Oscillatoria perornata Skuja *f.attenuata* Skuja
Oscillatoria ornate Kutz.ex Gamont var.Crassa Rao,C.B.
Oscillatoria minnesotensis Tilden
Spirulina subsalsa Oerst.ex Gomon
Microcoleus acutissimu Gardner
Microcoleus chthnoplastes Thuret ex Gomont
Nostoc microscopicum Carn.ex Born.et. Flah
Nostoc carneum C. Agardh ex Bornet & Flahault

These results revealed that the nutrients were influenced the plankton diversity. The similar type of results has also been reported (Subha and Chandra, 2005; Pingale and Deshmukh, 2005; Rani *et al*., 2005). The present results, influenced the nutrients values were recorded high level due to the observation of rain water runoff was made in monsoon session. In this reason the species diversity also recorded minimum numbers. Chellappa *et al*. (2004) was reported the collective dominance by the species of cyanobacteria was due to their capacity to grow in turbid water and low light intensity to maintain buoyancy and the capacity to grow exponentially in wet period in which nitrogenous nutrients were high. The daily water level fluctuations attributed to increase and decrease in phytoplankton diversity. Hence, the present study concluded inspire the fact that the cyanobacteria are omnipresent, the population dynamics are often influenced by the available nutrients and the physic chemical conditions of the marine ecosystem.

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