UGC Sponsored
National Conference on
'Environment Management &Challenges for Sustainable Development'
Organized by M. D. College, Mumbai And
The International Society of Science And Technology, Mumbai
On 2nd and 3rd February, 2011

SPATIO-ECOLOGICAL APPROACH TO ENVIRONMENTAL MANAGEMENT OF THREE NERETIC ECOSYSTEMS ALONG MAHARASHTRA COAST, INDIA

Vishakha Shigala[1], Sudesh D Rathod[2], Poonam N. Kurve[3] and Nandini N. Patil[4]

B. N. Bandodkar college of Science, Thane, Maharashtra, India.

[1]vishakha.shingala@gmail.com, [2]sudesh_rathod@yahoo.co.in, [3]kurveng@yahoo.com, [4]nanda_p004@yahoo.co.in

ABSTRACT

Present attempt has been made to draw out a coherent approach to the management of the marine environment, including better reporting, which is particularly important and facilitates the ongoing conservational implementation. Ulhas river estuary (URE), district Thane, Gorai creek (GC), district Mumbai and coastal area near Alibaug (CANA), district Raigad were assessed for the intensity of impact on them due to various anthropogenic activities and their hydrological parameters to ordain their health status. The three ambient milieus face various human stresses viz. solid waste disposal, industrial and domestic waste water inlets, reclamation, bridge construction, sand dredging, stone quarrying and tourism and recreational activities, which were observed and analyzed using point method. Increase in nutrients such as phosphorus, nitrogen and silica occurs naturally in marine ecosystems by time, but human population growth has accelerated the accumulation of these nutrients many folds faster than what would occur naturally. High rates of nutrient input into estuaries can contribute to fish disease, growth of toxic and nontoxic algal blooms, low dissolved oxygen, and marked change in plankton and benthic community structure. Hydrological parameters included dissolved oxygen (DO) and nutrients in form of phosphates (PO_4-P), nitrates (NO_3-N) and silicates (SiO_3-Si) and were estimated to envisage the level of deterioration in the present study. Although the scales of problems vary, a common set of issues of potential stress factors have been identified that depicted that the limit of perturbation in an ecosystem is proportional to the intensity of human activities. Aforementioned stress factors imposed serious impact and had significant

consequences on the health of the ambient ecosystems. Intensity of human activities being highest at 'URE' owing to solid waste disposal, industrial and domestic waste water inlets, reclamation, bridge construction and sand dredging; fairly high at 'GC' due to reclamation and recreational activities and gentle at 'CANA' on account of encroachment, tourism and stone quarrying. Hypoxia and higher values of nutrients in the ambient water corroborated to higher anthropogenic activities at 'URE'; however 'GC' revealed normal DO but high nutrients whereas at 'CANA' the hydrological parameters were by and large remained to normalcy. The diversity of marine macroflora and fauna also exhibited the descending order as CANA>GC>URE**.** The present study revealed that the 'URE' was highly disturbed; 'GC' moderately and 'CANA' to a lesser extent.

Key Words: Spatioecology, Coastal areas, Human Impact, Ulhas river estuary, Gorai creek, Alibaug.