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Coastal ecosystem response to shoreline armoring

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The industrialization and urbanization along the coastline are historically wide spread and proliferation of coastal armoring as coastal defense in response to various coastal processes like tidal inundation, sea level rise, erosion, etc. The global sprawl of coastal armoring like groins, caissons, sea walls and breakwaters has extensively modified coastal seascapes with limited knowledge about their ecological impacts. These coastal armors attracted and supported assemblages of macro algae, invertebrates and grouped as epibiota. The environmental impact includes changes in the habitat type, water flow pattern, sedimentation pattern, increase steepness near coast, formation of homogeneous topography with manmade slopes and support lower biodiversity than natural habitats. This self-sustained ecosystem encountered with 224 species comprising 67 classes of epibiotic assemblages shall be the contributors to coastal bio diversity. This includes protected biota like corals and sponges requisite conservation prospective. Although similarities exist between assemblages on natural and manmade structures, patterns of species distribution are generally modified in the latter. This change in species diversity leads to shifts in community composition of epibiota and often extraneous to the native characteristics of the area. Patterns of epibiota recruitment on these armors may reduce interspecific competition leads to non-native biota settlement. Around 18 non-native species recruitment may be considered as bio-pollution. The natural function of environmental degradation acts on coastal armors was established by the growth of certain epibiotic macro algae utilizes calcium content from the basic manufacturing ingredients of coastal armors and degrades the submerged structures. Hence, the requisite for future durability assessment of coastal armoring may include this ecological factor also. Thus, coastal defense structures act as functional novel habitat and enhance coastal biodiversity. This has been established by yearlong studies on 217 coastal structures at 84 stations along 1076 km long Tamil Nadu state, Indian coastal stretch of Bay of Bengal Sea.

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