

Protective functions of coastal forests and trees against natural hazards

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Abstract

This paper argues that coastal forests and mangroves need to be restored and even created, to enhance the capacity of estuaries and coastal waters to provide ecological services to the human population living on its shores, as well as to protect the coast from wind damage, salt spray, coastal erosion, typhoons, and even in saving human lives during a tsunami. It is stressed that these coastal bioshields cannot provide complete protection; they must be part of regional plan to reduce the risk of loss of life, property and infrastructure to an acceptable level. A sacrificial zone within this bioshield must be incorporated in the management plan. The appropriate choice of vegetation depends on the severity of the natural hazards, the bathymetry, and the climate, the local land use, and the available options to survive extreme events. It is stressed that the solution to protecting the coast from natural hazards is not just local; it also involves the whole river catchment. Indeed vegetation must be used to protect the coastal population from landslides in the mountainous areas and along the river banks, and large dams must be operated so as to maintain the coarse riverine sediment flow necessary to prevent coastal erosion. Bioshields, including mangroves, provide important ecohydrological services such as creating self-scoured navigable channels, sheltering coastal seagrass beds and coral reefs from excess sedimentation, and enhancing fisheries; these are all resources that the human population living along tropical estuaries and coasts rely on for their livelihood and quality of life.