Effects of Solid Waste on the Colonization of Organisms Associated to Coastal Mangrove Forests

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Mangrove ecosystems play an important role in maintaining marine life, stabilizing coastal environments and sustaining human well-being. However, mangroves are constantly threatened by human activities such as logging, overfishing, and pollution. A less studied type of pollution is the accumulation of solid waste, in particular plastic, which could take hundred of years to decay. This type of waste could accumulate around mangrove roots, affecting the colonization of the species associated with this ecosystem. To test solid waste effects on mangroves, we studied how mangrove colonizing species respond to the accumulation of plastics waste in Almirante Bay, Bocas del Toro, Panama. Specifically, we compared the abundance and diversity of colonizing organisms by placing random quadrants on contaminated and uncontaminated sites. We found that the abundance and diversity of organisms (e.g., crustaceans and mollusks) is ~ 3.4 times higher at sites without plastics (77.5 %) than at sites with obvious accumulation of plastics (22.5 %). These results indicate that the diversity of organisms associated with mangrove ecosystem could be drastically altered by plastic waste pollution. Although more work is needed to better understand the implications of solid waste pollution at larger scales, or study reveal in simple way how human activities affect the function of mangrove ecosystems. These findings might have important implications for managing and conserving mangroves across the tropics.