

Marine Ecosystem Services for Climate Change Adaptation and Mitigation Strategies in the Seaflower Biosphere Reserve: Coastal Protection and Fish Biodiversity Refuge at Caribbean Insular Territories

Julián Prato,2*, Adriana Santos Martínez1,2, Amílcar Leví Cupul-Magaña3, Diana Castaño1, José Ernesto Mancera Pineda2,5, Jairo Medina2,8, Arnold Hudson6, Juan C. Mejía-Rentería2,7, Carolina Velásquez11, Germán Márquez10, Diana Morales-de-Anda3, Matthias Wolff9 and Peter W. Schuhmann4**

Abstract

Insular and coastal territories like those in the Seaflower Biosphere Reserve are exposed to strong winds, waves, storms, and hurricanes. In November 2020, Hurricanes Eta and Iota, provided a costly reminder of the risks facing Seaflower's people and ecosystems. Coral reefs and mangroves are natural shields, reducing wind and wave strength during normal and extreme conditions. These coastal protection ecosystem services (ES) are vital for human safety and well-being, and become more important given the heightened vulnerability of low-lying insular islands to climate change impacts. These ecosystems also provide biodiversity refuge ES for fishes and shellfish, key for food security and resilience to global challenges like hurricanes, sea level rise and global warming. Despite their importance, these valuable ecosystems are threatened by anthropogenic pressures, jeopardizing the survival and well-being of islanders; their restoration and recovery requires improved management and decision-making, and heightened societal awareness of our dependence on marine ecosystems and their potential as climate change adaptation solutions. We identify ES provided by coral reefs and mangroves, interdisciplinary management tools, and recommendations to motivate society and decision-makers to expand efforts for the protection, restoration, and use of these ecosystems as Nature-based Solutions for climate change adaptation and mitigation in Seaflower.

Keywords: Coastal management. Climate change. Ecosystem-based adaptation. Marine ecosystem services. Nature-based Solutions.

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