

Climate Change Effects on Seaflower Biosphere Reserve Fishery Resources

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Abstract

Climate Change (CC) is a global phenomenon with differentiated impacts. Its effects are felt in marine and terrestrial ecosystems and organisms, and in the most vulnerable economies and societies. CC is altering the ocean's chemistry, initiating cascading socioenvironmental impacts. The fisheries sector is the most affected. In the Western Caribbean's Archipelago of San Andrés, Providencia and Santa Catalina, identified as having the highest climatic risk, these impacts are pronounced. This study comprehensively reviews existing knowledge on climate change effects on fishery resources and incorporates fishers' perceptions through two rounds of surveys in 2019 and 2022. The findings reveal significant consequences for fishery resources, including alterations in biological properties and species distribution, loss of critical coastal fish breeding habitats, reduced fisheries productivity, and increased local and cross-border conflicts over fish resources. Especially, after the destructive impact of Hurricane Iota (2020), fishers shifted their hazard perception, elevating hurricanes as a significant threat alongside drought. These evolving perceptions emphasize the need for comprehensive policy strategies to address multiple hazards and their interactions, aligning with fishers' priorities and enhancing the resilience of the fishing sector. This research underscores the urgency of ecosystem-based and co-management policies, alternatives for artisanal fishers, and heightened climate risk perception.

Keywords: Marine fishery resources. Climate risk management. Fisheries management. Fishers' perception. Seaflower Biosphere Reserve.

Ocean changes and **SEAFLOWER FISHERIES**



ADAPTATION STRATEGIES, INTEGRATING SCIENTIFIC AND LOCAL KNOWLEDGE

1. Participatory ecosystem approach for the co-management of shared natural resources.
2. Alternatives for artisanal fishers.
3. Education to raise awareness and inform the population about climate.
4. Promote vulnerability studies to stimulate adaptation actions.
5. Strengthening the Marine Protected Areas.

EFFECTS ON FISHERIES

1. Loss of coastal fish breeding habitats: coral reefs, seagrasses, and mangroves.
2. Change in fish distributions and growth; queen conch and spiny lobster reduce calcification.
3. Decline in fish and shellfish productivity in traditional fishing areas.
4. Increase in invasive species, diseases, and algal blooms.
5. Changes in biological properties of marine organisms.
6. Reduced fisheries productivity, reduced fishing operations, and higher adaptation costs.
7. Greater risk in coastal operations and food security.
8. Increased local and cross-border conflicts over fishing resources.

