

Socio-Ecological Vulnerability in Venezuelan Coasts: Integrating Ecological Data and Social Perceptions

HERRERA REVELES AT1, DE NÓBREGA JR1, CAMISOTTI H1, PEÑA C2, NIÑO R2, RODRIGUEZ A3, GINER S1, GRIFFON G1, LLANOS J4 Y RIVERO M4.

1 Instituto de Zoología y Ecología Tropical - Universidad Central de Venezuela, Caracas, Venezuela

2 Escuela de Biología – Facultad de Ciencias - Universidad Central de Venezuela, Caracas, Venezuela.

3 Postgrado en Ecología – Facultad de Ciencias - Universidad Central de Venezuela, Caracas, Venezuela.

4 PROGRAMA BUENA PESCA®, FUNDACIÓN COCINA PROPIA, Caracas, Venezuela.

Venezuelan marine-coastal zones, rich in biological and cultural diversity, are facing growing pressures from overfishing, unregulated tourism, socioeconomic crisis, and climate change. Their vulnerability is manifesting across scales, from the Caribbean Sea to local ecoregions, requiring approaches that integrate ecological data with social perceptions. Through bibliographic analyses and participatory research conducted between 2010 and 2025, we are developing a reference framework to examine socio-ecological vulnerability across scales, from regional systems to specific national ecoregions. Potential results show that, even in a context of generalized socioeconomic crisis (70% GDP decline; 90% households food insecurity) differentiated patterns are emerging, associated with tourism pressure (construction within MPA), loss of traditional fishing practices (mass migration exodus of fishers and changes of artisanal gear), scarcity of consumption alternatives reflected in critical perceptions of urban actors (food local shifts toward vulnerable species as substitutes), and the generation of mitigation strategies that arise collectively according to the resources available in each community. In parallel with trends observed in other regions of the Caribbean, findings suggest that a variety of market-based solutions and public policy instruments can contribute to addressing the marine environmental crisis; however, the applicability of these approaches is being conditioned by heterogeneous supply chain structures and actors whose perception of sustainability differs between Venezuelan ecoregions. Despite the difficulty of coordinating local and regional measures, conservation is requiring multiscale integration that recognizes regional diversity and promotes participatory sustainability strategies supported by the strengthening of social capital. In this sense, the transformation of scientific approaches into public policies is being achieved through the linkage between experimental sciences and social sciences, offering a replicable model that unites science and culture in the management of marine-coastal ecosystems and that provides direct implications for the Caribbean and other contexts of high vulnerability.