

## **Avoiding haphazard restoration of mangrove habitats: an evidence synthesis for a better ecosystem-based management**

**M.I.U. Manikarachchi<sup>1\*</sup> and K.H. Niroshana<sup>2</sup>**

*<sup>1</sup>Department of Fisheries and Marine Sciences, Ocean University of Sri Lanka, Mahawela Rd, Tangalle*

*<sup>2</sup>Department of Oceanography and Marine Geology, University of Ruhuna, Wellamadama, Matara, Sri Lanka*

Mangrove restoration is popular in the coastal regions as a way of mitigating habitat degradation and biodiversity conservation. However, most of these projects are implemented in a haphazard manner, leading towards project failures. In Sri Lanka, evaluation studies on mangrove restoration suggest that future interventions shall be controlled and guidelines on best practices shall be widely available. Complimenting that, this study pools information through a qualitative systematic review on the best practices of mangrove restoration for better decision-making in ecosystem-based management. Key information from primary research articles (n=22) has been gathered by indexing. Evidence is unavailable to confirm that there are negative impacts from haphazard restoration, but project failures. Restoration sites should be away from areas of coastal erosion, climate and weather impacts (36%). Restoration projects associated with aquaculture development are more likely to be successful compared to an isolated plantation (5%). Mangroves planted in ecologically engineered areas grow to be more complex with higher species richness (5%). Mangroves have different tolerance to factors such as planting season, topography, soil condition, salinity and tidal inundation, hence species selection according to their preference is important (10%). Some mangrove species thrive in successional systems and their diversity is at the highest level when there is an intermediate ecological disturbance. Therefore, deliberate interventions are needed to facilitate that. Increasing population size by both natural and artificial regeneration is recommended to surpass the invasion by foreign species. Level of community inputs drives political support for successful restoration projects. Coastal managers shall be provided with basic knowledge on the practices of coastal restoration for successful results. It is recommended to monitor the progress of previous restoration projects and transfer information to guide successful future projects. Overall, mangrove restoration shall be considered as a process within a socio-ecological system, which needs to be embedded into policy level.

**Keywords:** best practices, socio-ecological systems, habitat restoration, mangroves

*\*Corresponding author- email: ImaliM@ocu.ac.lk*