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Prediction of Factors Affecting the Recovery of Harvested Mangrove Species in Rekawa Lagoon, Sri Lanka; *Lumnitzera racemosa* and *Exocaria agallocha*

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Abstract

In the Rekawa Lagoon, Sri Lanka, the mangrove ecosystem is under huge pressure due to anthropogenic activities, especially the cutting of mangrove species for various reasons. This study investigated the factors influencing the recovery and regeneration of cut mangrove species, with a specific focus on *Lumnitzera racemosa* and *Excoecaria agallocha*, those were not analyzed by past studies. Some of the species recorded during the study were *Bruguiera sp., Rhizophora sp., Avicennia sp., Aegiceras sp., Excoecaria sp.,* and *Lumnitzera sp.* However, this study obtained sufficient data only for *L. racemosa* and *E. agallocha*. The collection of data focused mainly on tree-specific parameters in order to minimize the effect of external environmental factors. The present analysis showed that the *Rhizophora mucronata* did not recover after being cut, while *E. agallocha* showed 100% recovery with all small and bigger trees sprouting new shoots. It simply indicates that this species has immense potential for regeneration after cutting. On the other hand, other species failed to show clear patterns of recovery and subsequent regeneration, as in the case of *E. agallocha*. Measurements were obtained for diameters at breast height (DBH), number of regenerated shoots, whether the cut stem is above or below DBH, total height of the regenerated shoots, and the height of the cut stem. Binary logistic regression analysis was used to determine the relationship of these factors with the recovery and regeneration of the species. No significant relationship ($p>0.05$) between recovery and all the measured factors was detected. However, the different pattern appeared for the *Lumnitzera racemosa* population, where smaller trees of DBH<7 cm had 100% recovery with regenerated shoots, while larger trees with DBH more than 7 cm could not produce any regenerated shoots after being cut and subsequently died. This reflects that the potential for recovery is higher for smaller trees. Whereas no measured variable revealed a significant relation with recovery across the different species, tree size was selected as the main factor of variation in regeneration success in *L. racemosa*. These results highlight the fact that consideration of tree size, recovery, regeneration patterns of tree species, and abundance of relevant species is important in the management of cut mangrove species for conservation and restoration purposes. It is recommended that further research be done in unearthing other components that could be of help in the recovery process for other mangrove species that have the potential to regenerate.

Keywords: *Recovery and regeneration, Mangrove cutting, Exocaria agallocha, Lumnitzera racemosa, Rekawa lagoon*