

Project Update: March 2019

School children awareness programmes



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Poster presentation at the International seagrass biology conference (2018)

Restoration of a fragmented seagrass habitat in Mannar, Sri Lanka

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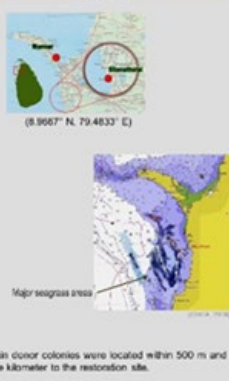
Introduction

More than 73% of the seagrass beds in the Gulf of Mannar have been removed by activities ranging from destructive fishing such as trawling, blast fishing, bottom set nets and pollution. The remaining seagrass beds are highly fragmented and greatly diminished in ecological structure and function. Therefore, existing seagrass beds need to be preserved and expanded.

Objectives

- Using short-term data to predict long-term outcomes of restoring seagrass in an area where seagrasses were present in the past
- Ensuring the long-term survival of seagrasses through local community support
- Raising awareness

Study site




(8.9667° N, 79.4833° E)

Major seagrass areas

Main donor colonies were located within 500 m and one kilometer to the restoration site.

Materials and methods

Project was carried out from January 2016 to May 2017. Restoration was done with *Halodule uninervis*, *Halophila ovalis* and *Cymodocea rotundata*. Peat pots (Forsica, 1994) were prepared of compressed coconut peat material with a surface area of 100 cm² and approximately 8 cm deep. Donor plugs were extracted at no less than 25 cm distance to minimize any effects on the donor community. Extracted plugs were extracted immediately into a peat pot and placed in a holding tray (~30 pots per tray). Prior to extruding a plug of seagrass, approximately ten grams of fertilizer was added to each pot. Sediment was loosened with a tree planting bar and the peat pots were totally buried in the bottom. Approximately, 800 seagrass plugs were transplanted at 1.0 m intervals covering an area of about 1000 m².




Beach clean-up and awareness programs to children and navy personnel was conducted in collaboration with Sri Lanka NAVY

Results

Items collected at the Beach Clean-up

plastic	19 kg
metal	17 kg
plastic bottles	27 kg
plastic cups	18 kg
glass bottles	1 kg
plastic bottles	11 kg



Beach clean-up with 100 people

Awareness program to children

Species diversity recorded:

Seven species of seagrasses were recorded in various depths from 1.5 m to 12 m in the donor seagrass beds

- Cymodocea rotundata* Asch. & Schweinf.
- Cymodocea serrulata* (R.Br.) Asch. & Magnus
- Syringodium isoetifolium* (Asch.) Dandy
- Halophila ovalis* (R.Br.) Hook.f.
- Halophila dicapnina* Oskar.
- Halodule uninervis* (Forsk.) Boiss.
- Thalassia hemprichii* (Ehrenb. ex Solms) Asch.

Average temperature, pH and salinity of the restoration site were 29.2 °C, 7.10 ppm and 34 ppt respectively. Only about 27% of *Cymodocea serrulata* survived by the end of 16 months while other two species indicated no signs of survival.

Survival rates of transplanted seagrasses

Seagrass species	Transplanted plugs	Survival rate after 3 months	Survival rate after 6 months	Survival rate after 16 months
<i>Cymodocea serrulata</i>	250	93%	33%	27%
<i>Halophila ovalis</i>	250	38%	50%	-
<i>Halodule uninervis</i>	500	-	-	-

Conclusion

Marine restoration represents a novel application of functional-structural modeling in Sri Lanka. Restoration of Gulf of Mannar seagrass beds can attract and benefit the fauna associated with them such as fishery species, dugongs, sea turtles and sea horses. Difficulties, failures and advantages of using peat pot method for restoration were recognized and attention will be given to use hessian bags for future transplantations. Hessian bags and threads will be used to wrap fertilizers around the roots of the extracted seagrass plants and bury them. Hessian bags are biodegradable and the cost for one unit (one transplant) is lower compared to peat pots. We wish to carry out research on this new method and improve it to transplant several species of seagrasses.

Community participation is the most important factor, as we believe, for any successful restoration and we will be conducting more clean-ups and educate more people on marine pollution. Local fisherman community agreed to protect the donor and restored seagrass beds and to protect the Dugongs if they come across any, during their fishing activities. However, we realized that signing an MoU and providing incentives would be a better way of helping the local community to protect the seagrass habitats and fauna such as Dugongs.

References


Forsica M.S., (1994) A guide to planting seagrasses in the Gulf of Mexico. Texas A&M University Sea Grant College Program, pp. 26.

Ocean Resources Conservation Association (2016) Increasing knowledge on seagrass habitats and Dugong distribution at selected sites in North Western Sri Lanka. Project progress report of Dugong and seagrass conservation project, LM5-2132.

Acknowledgements

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Beach Clean-up: August 2018 (In collaboration with Marine Environment Protection Authority)

