Maintenance and Monitoring of Restoration Sites

Final Report

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Submitted by the

Foundation for Ecological Research, Advocacy and Learning

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Contents

Executive Summary

This is the final report for the project entitled "Maintenance and Monitoring of Restoration Sites". The project ensured the continuation of maintenance for two mangrove, two tropical dry evergreen forest and one coastal sand dune site for the present year. It also ensured replacement planting in all the sites and sustained protection measures, both fencing and watching, as per the specific needs of the site. This included installation of new gates, re-enforcement of fencing and additional fencing in un-protected areas of the restoration plots.

A comprehensive evaluation of the sites was taken up based on the regular monitoring reports. This dictated the choice of species and number of plants that were replaced. Additional planting was undertaken in three of the sites as per the wishes of the eco-restoration committees. The mother nursery at FERAL which provided the planting material handed over the surplus saplings to the Auroville Botanical Gardens so they may be utilised for ongoing restoration and afforestation programmes in and around Auroville.

All the eco-restoration committees were formally handed over the complete charge of their respective sites. This involved the adoption of a formal resolution by the committees to take over the entire responsibility of maintenance and monitoring as well as to manage the infrastructure and equipment (pumps, pipes, vessels and implements) that were provided by the project for the intended purpose. The respective Panchayat Presidents were the signatory to the resolutions.

The table below provides a summary of the activities that were scheduled for the quarter, as per the Logical Framework of this project.

	GOAL				
	Sustenance of pilot restoration sites and identification of additional sites for large scale habitat restoration using established protocols.				
	OUTPUTS (EXPECTED OUTCOMES)	OVI/MILESTONES	MEANS OF VERIFICATION (MOV)	IMPORTANT ASSUMPTIONS/ RISKS	STATUS
	OBJECTIVE (PURPOSE)				
1	To maintain and protect the 6 restoration sites through established eco-restoration committees.				
1.a.	Regular watering of plants.	Saplings watered regularly in 2 TDEF and 1 CSD sites.	Animator's register	Water is available in auger wells.	Regular watering was undertaken at the sites for the entire period.
1.b.	Watching and protection of sites.	Five sites protected from grazing and trampling of saplings.	Field verification	Continued cooperation of the communities.	Regular watching was taken up.
1.c.	Replacing dead saplings.	Replanting of dead saplings in all 5 sites. Replanting of about 40,000 mangrove saplings at Kollathur.	Planting and nursery registers.	Availability of saplings in mother nursery and willingness of communities to re-plant or extend planting areas.	A total of 4,737 propagules were planted at Kollathur and 6,000 at M.T.Palai during the project period. Also 3,100 plants of TDEF species were planted at the TDEF and coastal sand dune sites. Additional 20,000 propagules collected and planted in M.T.Palai in December.
1.d.	Maintenance of fence, wells and pumps on site.	5 auger wells maintained, 3 pumps and existing fence regularly serviced and maintained.	Field verification	Cooperation of the community.	Regular maintenance of fences, auger wells and pumps at all sites. Infrastructure & equipment handed over to the eco-restoration committees.
1.e.	Maintenance of mother nursery	Saplings in mother nursery maintained and supplemented with locally available materials.	Nursery register.	Availability of planting material.	Surplus saplings transferred to Auroville Botanical Garden and Mother nursery closed.

	OBJECTIVE (PURPOSE)				
2.	To monitor sapling survival and growth in these sites to draw lessons about the restoration strategies followed.				
2.a.	Quarterly monitoring of environmental and ecological parameters.	Growth parameters and changes in soil and water parameters of pH, salinity/EC and benthic fauna measured.	Data and reports	Cooperation of the community.	Monitoring of all sites completed.
2.b.	Weekly monitoring of meteorological parameters.	Temperature, relative humidity and rainfall measured on a daily basis.	Registers	Regular measurements taken by the concerned school students/animators.	Monitoring completed. Meteorological stations handed over to interested schools or relocated to FERAL.
2.c.	Daily monitoring of site specific activities	Registers with details of number of labourers hired for watering/maintenance/planting.	Registers	Regular maintenance of the register by the animators.	All registers have been collected and copies made. Originals have been handed over to the restoration committees.
2.d.	Daily monitoring of nursery specific activities	Registers detailing materials, sapling survival and labour hired maintained	Registers		Nursery registers have been closed.
2.e.	Data collection from established monitoring plots.	Monitoring of sites continued	Reports and database	Conducive weather and cooperation during surveys	Monitoring completed.
2.f.	Analysis of data and reporting	Reports	Reports and database	Conducive weather and cooperation during surveys	Completed. Presented in previous quarter.
	OBJECTIVE (PURPOSE)				
	To provide appropriate administrative and financial support and reporting for the project.				
3a.	Administrative support	Financial reporting, accounts.	Regular financial statements.	Nil.	Administrative support concluded, final audited statements submitted.

Two mangrove sites were planted during the PTEI project, unfortunately both these sites were raided by cattle and in addition, the Ediyanthittu estuary dried up during the summer of 2008 killing not only the saplings planted by PTEI but also those planted by other agencies on the opposite bank of the estuary. Thus the gains made during the initial phase were lost. This extension allowed us to make another attempt at restoration of mangroves. We took additional measures in order to minimise damage due to grazing at both the sites. At Kollathur the planting was limited to water logged areas which are not frequented by cattle while at M.T. Palai the fence was strengthened and a cattle guard installed at the gate.

The reduction in number of propagules planted was on account of the inability to protect saplings at Kollathur due to repeated damage to the fence as reported earlier. The number of propagules planted in M.T.Palai was increased to compensate for this, however given the limitation of space and the truncation of the project period [1] we fell short of the initial target by about 10,000 propagules.

Kollathur

A total of 4,737 saplings were planted during the year at Kollathur to compensate for the saplings that had been grazed by cattle in the earlier attempt. This was done in areas that are waterlogged during most of the year and therefore less accessible to grazing cattle. The species composition and numbers of saplings plated are presented in table 2.1. Photographs of the activities are presented in figure 2.1.

Table 2.1: Number of saplings of different species planted at Kollathur.

Sl.No.	Species	Number planted	Source
1.	*Rhizophora mucronata*	520	Mother Nursery
2.	*Rhizophora apiculata*	100	Mother Nursery
3.	*Bruguera gymnorhiza*	1225	Mother Nursery
4.	*Bruguera cylindrica*	2392	Mother Nursery
5.	*Rhizophora apiculata*	500	M.T.Palai
	Total	4,737	

[1] The initial closing date was March 2010 which permitted collection of propagules during the months of January and February when they are most numerous.

(a) The saplings were brought in on bullock from the main road.

(b) Women SHG members planting the saplings.

Figure 2.1: Kollathur mangrove site.

Malathirukazhipalayam (M.T. Palai)

A total of 5,500 propagules which were collected locally and an additional 500 saplings from the mother nursery were planted at the site. Additional 20,000 propagules of various species are being locally collected and planted this month. The details of the same are presented in table 2.2. Sectioning and de-silting of the fishbone channels (9 main channels covering 2.8 ha.) was undertaken prior to and along with the planting work. While the planting involved SHG members, the de-silting and sectioning involved men labourers from the village.

Table 2.2: Number of saplings of different species planted at M.T.Palai.

Sl.No.	Species	Number planted	Source
1.	*Rhizophora mucronata*	100	Mother nursery
2.	*Rhizophora apiculata*	150	Mother nursery
3.	*Bruguera cylindrica*	250	Mother nursery
4.	*Rhizophora apiculata, Rhizophora mucronata and Avicenia marina*	25,500	Locally collected
	Total	25,500	

This project is one of the few successful examples of restoration of TDEF sites. While various attempts have been made by other organisations, the ability of the PTEI project to solicit support from the community was unique and enabled fairly large regions to be refforested. It is significant that community owned and controlled TDEF sites are increasingly rare along the coast due to conversion to other land use and encroachments. This project has provided a valuable protocol and strategy for the conservation of such community owned forests.

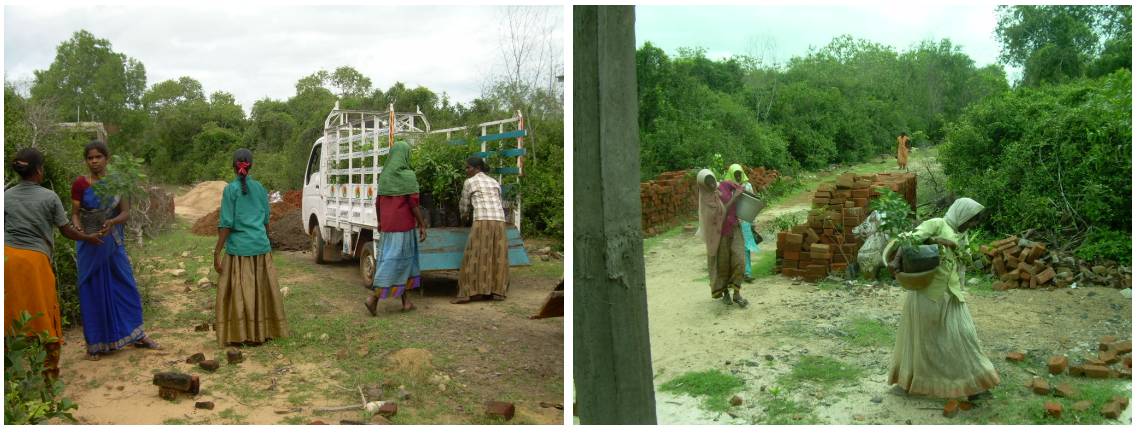
The total number of dead saplings replaced during this phase was a true reflection of the survival rates (based on the replanting that was done in the entire planting site) and were below of 30% for Vadagram and below to 20% for Kothattai implying a survival rate exceeding 70% and 80% respectively. The replanting, which included additional areas, compensated for this mortality and will hopefully result in a filling of gaps in the refforested areas.

Vadagaram

A total of 925 saplings of various species (table 3.1) were planted in this quarter, coinciding with the North East monsoon. As is the norm, women self help groups who had representation in the eco-restoration committee were hired as labourers for the work which was supervised by the committee.

Table 3.1: Species and number of saplings planted at Vadagaram.

Sl.	Species Name	No.
1	Glycosmis mauritiana	250
2	Hardwickia binata Roxb	100
3	Azadirachta indica	75
4	Cormona retusa	75
5	Aglaia elagnoidea	125
6	Drypetes sepiaria	75
7	Psilanthus wightianus	100
8	Suregada angustifolia	50
9	Chionanthus zeylanica	75
	Total	925



(a) Saplings being unloaded from the van. (b) Saplings being carried to the planting area.

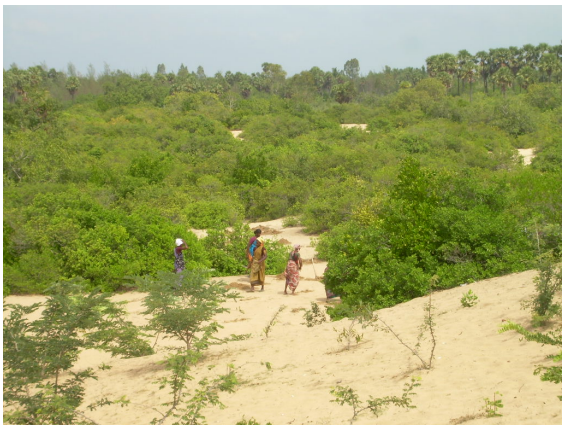
Figure 3.1: The final round of planting at Vadagaram.

Kothattai

A total of 1,700 saplings were planted to replace dead plants and extend the planting area marginally. An additional 25 saplings were planted in the village school compound as per the wishes of the Panchayat. The mix of species and the numbers plated have been provided in table 3.2.

Table 3.2: Species and number of saplings planted at Kothattai.

Sl.No	Species	Numbers
	TDEF Site	
1	Glycosmis mauritiana	300
2	Walsura trifoliata	400
3	Aglaia elagnoidea	200
4	Cormona retusa	150
5	Calophyllum iniphyllum	100
6	Hardwickia binata Roxb	300
7	Murraya paniculata	250
	School	
1	Terminalia catappa	10
2	Ceasalpinia sp.	15
	Total Kothattai	1725



(a) A view of the TDEF site, the saplings in the foreground were planted during the PTEI project. Women in the background are filling in the gaps between existing plants.

(b) Getting soaked is part of the job while planting in TDEF sites. Planting usually starts one week into the monsoon and continues regardless of the rain.

Figure 3.2: The final round of planting at Kothattai.

South Pogainallur remained the most successful intervention of this project, as well as the earlier PTEI intervention. This is to the credit of the site animator and the support provided by the Panchayat president who took it as an opportunity to stabilise their dune system which serves as a protection to the entire village. The area under the plantation was increased this year and the few saplings that had died were replaced. Survival of saplings on this site exceeded 90% thanks to the total protection from grazing and regular watering over the past few years. Details of the species and numbers planted have been provided in table 4.1.

Table 4.1: Species and numbers of saplings planted at S.Pogainallur.

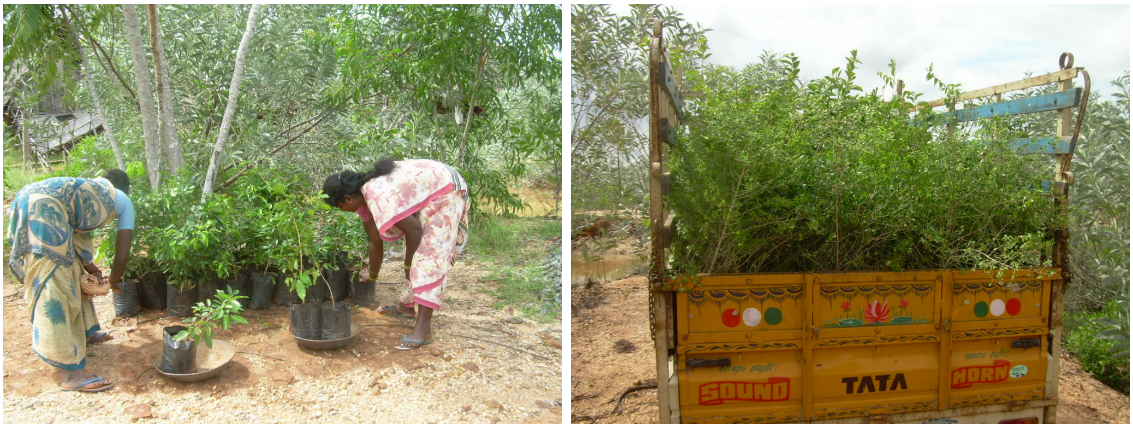
Sl.No.	Species	Numbers
1	Pongamia pinnata	150
2	Calophyllum iniphyllum	150
3	Terminalia arjuna	75
4	Thespesia populnea	75
	Total	450

(a) The animator at South Pogainellur was the single most important reason for the success of the site.

(b) Women carrying plants up the tall dune from the road head.

Figure 4.1: Final round of planting at S.Pogainallur.

The conclusion of this project has also seen the closing of the mother nursery. Surplus saplings at the nursery were distributed to the Auroville Botanical Gardens and planted around the FERAL campus itself which now boasts of a small TDEF patch. This project has provided FERAL with the installed capacity to re-build a nursery at very short notice and we hope to be able to use this infrastructure in the near future for other restoration efforts.



(a) Saplings readied for loaded into the van.

(b) Setting out for the TDEF site.

Figure 5.1: The last batch of saplings leave the mother nursery. The nursery employed women from self help groups facilitated by FERAL.

Looking Ahead

The second phase of the PTEI project started at the end of 2006. The present effort to sustain activities at the restoration sites allowed a constant interaction with the communities for a period of nearly 3 years. This allowed the project to achieve and ensure the following:

1. Constant protection and maintenance of sites so that saplings have been established and attained a height of up 3 metres.

2. Repeated interaction with the concerned community representatives and broad consensus in the villages that the sites need to be protected from grazing and removal of plants.

3. Replanting of dead saplings and of areas that were damaged by cattle after initial planting efforts. This allowed the project to overcome earlier setbacks and consolidate existing efforts.

All three of these achievements have ensured that the project has been handed over to the eco-restoration committees at a time when they are best equipped to sustain the project. Perhaps the biggest lacuna in these efforts has been the inability to provide a formal policy framework that would sustain and extend similar activities in other representative habitats. Even though this was not part of the stated objectives of this project, its absence limits the direct impact of the project to the specific restoration sites.

Coastal habitats cannot be seen in isolation. They depend on external flows of biological and material inputs such as flows of water, sediment, pollinators and dispersers. The extent and complications involved in their restoration therefore requires a long term and sustained policy advocacy effort. This was initiated as part of this project through the production of a documentary on the status of coastal habitats and further through an illustrated document on the lessons learnt under the PTEI. We hope that this effort elicits some interest in the target group and intend to reach out to the concerned audience over the coming months and years.

The lack of a policy framework for the protection of small patches of community owned habitats remains the largest challenge. Further work is required in the identification of such areas and working out a strategy by which they can be provided sustained support in the form of restoration inputs, protective measures and equitable sharing of the goods and services they provide. Such patches of habitat can provide valuable stepping stones for highly mobile and migratory species as well as sanctuaries and breeding grounds for others. These biodiversity islands can help in the dispersal and expansion of native coastal habitats and need to be part of an overall restoration plan for coastal areas.