

Social Forestry: Malaysia Experience

Aminuddin Mohamad

ABSTRACT

*Coastal line is an important feature to one's country. The very long coastal line of Malaysia is subjected to open sea and waves hitting the coastline. Some portion of the coastline is affected and damaged except for those having Mangrove forests along it. Some of the coastline in the states of Kedah and Johor have been destroyed and retreat inland. Steps have been taken by the Forestry Department Peninsular Malaysia to plant species of Mangrove together with other coastal species like *Casuarina equisetifolia* in order to reduce the impact of the damage. This paper tends to highlight the long term social forestry program undertaken by the Forestry Department in order to reduce the damage to the coastline.*

Keywords: *Coastal line, Mangrove forest*

Introduction

Mangrove forests are very important tropical coastal tidal ecosystems and grow on nutrient-rich muddy substrates that are low in oxygen and that undergo variations in salinity. The important functional role of mangrove forest communities and their transitional position between marine and terrestrial environments have led to these ecosystems being the object of study within a variety of scientific disciplines such as biology, ecology, geology, oceanography and pedology. However, scientists, including pedologists, often refer to the substrate on which mangrove vegetation develops as soil (Corredor et al., 1999, Clark et al., 1998 and Tam and Wong, 1998). The soil is always an important component in the system comprising the lithosphere, the atmosphere and the biosphere. Soil properties reflect the varying nature of the interactions within this system. Soil is essential for many human activities if we understand how soil has been developed and how it is affected by changes in the system, particularly those in the biosphere caused by our manipulation of vegetation and soil. Soils are vital resources in every country of the world. Increasing population pressures and demands for food, fibre and timber emphasize the need for careful management. In order for sustainable system of land management to be adopted, the effects in soil properties must be measured and the data obtained correctly interpreted (Rowell, 1996).

Towards the end of December 2004, there was an occurrence of Tsunami off the coast of Sumatera, Indonesia and devastated the many life forms including humans and trees. Lives have been lost. The areas included coastline of Malaysia, South Thailand, Sri Lanka and other surrounding areas. From then on, many countries including Malaysia have started the massive planting along the coastline coastal species such as Mangrove species, Nyireh (*Xylocarpus granatum*) and Rhu (*Casuarina equisetifolia*). This activity is also to safeguard the possible erosion of coastline by the high waves from the sea. This paper will highlight the activities conducted by the Forestry Department Malaysia in planting millions of mangrove plants over the years since 2005.

Malaysia's Experience – Activities.

Planting Activities

At the beginning of 2005, Government of Malaysia through various Ministries and Agencies started the initiatives of planting Mangrove species and other coastal species in the country. Started with a total of only 169 ha distributed all over the country planting a total of 476 602 seedlings in 2005 and by 2011 it had risen to a total of 2342.95 ha and a total of 6,060,366 seedlings planted (Table 1). The largest areas planted are in the state of Sabah, followed by Perak, Sarawak, Kedah with the least being in Malacca (Photo 1). A total of 1,117,175 seedlings planted in Sarawak and 1,095,946 seedlings planted in Perak. From the areas planted, 94.3% were planted with Mangrove (Bakau) species, followed by *Casuarina equisetifolia* (Rhu Pantai) 3.3% and other species. 2.4%. Other species to include palms like Nyireh (*Xylocarpus granatum*) and Nipah (*Nypa*

fruticans) , Gelam (*Melaleuca cajuputi*), Kelat Jambu Laut (*Eugenia macrophylla*) Bintangor Laut (*Callophyllum innophyllum*) and Tembusu (*Fragrea fragrans*).

Extension Work

Extension work has been carried to involve the local communities by encouraging them to plant the seedlings. This is carried out through various NGO's and sponsoring agencies like Bank Islam Malaysia. School children are also organised to make trips on weekends to plant the trees.

Monitoring and Evaluation

Routine checks on areas planted were conducted by state forestry department and also by Forest Research Institute Malaysia and the research committee involving various agencies and bodies. The committee will have to report to the main committee and in turn will report to the Minister of the agency concerned for the progress made thus far. This has become the Key Performance Index of the Minister since the start of the planting. Pictures as shown showed that the growth performance of the species planted over the years taken from the same spot.

Table 1: Cumulative Physical achievement since 2005 till 2011 on the no of seedlings planted and area covered

State	2005		2006		2007		2008		2009		2010		2011		Cumulative 2005- 2011	
	area	No of seedling s	area	No of seedling s	area	No of seedlings	area	No of seedlings	area	No of seedlings	area	No of seedling s	area	No of seed lings	area	No of seedl
Johore	64	189150	12	37094	31	80800	42	131250	18	11250	13.2	23100	17	45275	198	517919
Kedah	3	18000	11	53000	41	220000	90	530862	77.9	465200	42.90	222201	0	0	265.8	1509263
Kelantan	11.3	14300	10.49	33833	14.4	50283	22.06	62221	23	45664	8	7430	1	625	90.25	214356
Melaka	0	0	0	0	0	0	8.50	10500	2	1000	2.5	5750	0	0	13	17250
N.Sembilan	0	0	0	0	6.5	30151	34.5	58365	15.3	67127	14.15	61	0	0	70.45	216643
Pahang	4	1600	11.3	7627	30.6	15888	25.55	14109	16.6	10373	17.55	10406	2	1250	107.6	61253
Perak	31	167100	16	90000	18	72800	69	147300	65	238671	55	255076	50	125000	304	1095946
Perlis	2	10000	2.3	12104	5	18200	8.79	44336	4.66	9649	4.55	3600	3	11111	30.3	109000
Penang	9.2	25000	10	53388	4.5	18450	10.6	38670	14.30	32916	14.20	40299	3.5	6702	68.20	215425
Selangor	40	48000	10	60000	12.5	37000	25	81000	33	101588	37.5	90900	8	7750	166	426238
Terengganu	4.8	3452	5.36	3059	14.4	9216	18.35	11704	13.08	8176	12.71	14056	0.78	490	69.48	50153
Sabah	0	0	15	166665	186.0	420465	200.84	223165	157.43	189087	115.90	117793	0	0	675.17	1117175
Sarawak	0	0	10	22220	35	77770	64.4	153638	88.6	176732	90.70	79385	0	0	286.7	509745
TOTAL	169.3	475602	113.45	538990	398.9	1051023	620.29	1507120	526.87	1357433	428.86	930995	85.28	198203	2342.95	6060366

Source: Annual Report Forestry Department Peninsular Malaysia 2011

Issues and Problems

Some of the issues faced in undertaking such big projects were coastal deterioration. The coastline tends to be eroded away by the strong waves hitting the area. Some of the seedling got carried away as shown in the following pictures. Other issues faced are strong winds that can break the branches or stem of the planted species.

Vandalism is another factor that can fail the project as in some areas the locals are not aware of the activities undertaken by the forestry department. Steps were taken to reduce such problems through talks to the chieftain and other local committees.

Another issue is the mismatching of the areas planted. There are occurrences of *Caladium* species at the areas planted. Some areas are inundated with acidic soil and therefore cannot plant the wanted species.

Grazing of cows and goats along the coast can be another big issue as some of the planted Rhu Pantai (*Casuarina equisetifolia*) species are eaten and grazed by these animals.

Outcome

The immediate outcomes by undertaking such projects can provide extra jobs to the locals through the establishment of more nurseries and contracting jobs in the planting of the species.

The Intermediate outcomes though will increase the areas of for eco-tourism, increase the awareness of the public on the importance of planting the species. By doing this therefore can increase the biodiversity.

The end outcome after the project hopefully will stabilize the coastal areas and increase the protected coastal line by having more buffer zones. This in the long run will increase the carbon stock and provides corridor for flora and fauna to the areas.

Conclusion

The physical planting achievement of the projects showed that such projects can be achieved with the help of all those concerns through the planting of more than 6 million seedlings. In most areas, more than 80% of the planted seedlings survived and replanting has been carried out especially those affected by grazing animals.

References

- Annual Report Forestry Department Peninsular Malaysia (2011).
- Clark M. W., McConchie D., Lewis D. W., and Saenger P.(1998). Redox stratification and heavy metal partitioning in *Avicennia*-dominated mangrove sediments: a geochemical model. *Chemical Geology* 149 (1998) 147-171.
- Rowell D. L.(1994). *Soil Science: Methods & Applications*. Department of Soil Science, University of Reading.
- Tam N. F. Y., and Wong Y. S.(1998). Spatial variation of heavy metals in surface sediments of Hong Kong mangrove swamps. *Environmental Pollution* 110 (2000) 195-205.

Aminuddin Mohamad