Progress Report on

# ECOLOGICAL MANGROVE RESTORARTION PROJECT

## IN THE AYEYARWADY DELTA. MYANMAR

**Mangrove Service Network – MSN**
**Yangon. Myanmar. July 2006**

# PROGRESS REPORT ON
# ECOLOGICAL MANGROVE RESTORATION PROJECT
# IN THE AYEYARWADY DELTA

Prepared by
Mangrove Service Network - MSN
YANGON, MYANMAR
30 June 2006

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**IN THE AYEYARWADY (Mangrove) DELTA**

Table of Contents


1. Background in Brief
2. Objectives of the Ecological Mangrove Restoration Project
3. Situation of Myanmar Mangroves.
4. Summary of the Project
5. Summarized working process of regular and Ecological Mangrove Restoration (E.M.R).
6. Activities to be carried out in 5 Years.
7. Construction of supply canals and land maintenance
8. Availability of local mangrove seeds/propagules in the project area
9. Attachments

    - Maps

    - Documented Photos

**PROGRESS ON**

**ECOLOGICAL MAGROVE RESTORATION PROJECT**

**IN THE AYEYARWADY (Mangrove) DELTA**

1. **Background in Brief**

Myanmar possesses 1900 km long costal line of Rakhine State, Ayeyarwady Division and Tanintharyi Division which are eastern coasts of Bay of Bengal. Like in other mangrove forests in the world reduction of area of mangrove forests as a result of forest degradation has been taking place in Myanmar coastal area. In Myanmar the major factors for disappearance of mangrove forests are as follows:

(a) Over extraction of fuelwood and charcoal

(b) Human settlement house hold

(c) Encroachment agricultural land

(d) Encroachment illegal traditional shrimp ponds

As per mentioned in Data for 1924 to 1984, Forest Dept. NFMI Project, MYA/85/008, in 1995 there are only 12.3% of mangrove remained in Ayeyarwady Delta from original land area of 1924.

Forest Department started mangrove plantation since 1981. Although F.D operated over 1000 acres of mangrove plantation annually, it is very small area compare to damaged area of the region. Later period, UNDP, FAO, JICA and other INGOs projects provided necessary assistance for mangrove conservation in Myanmar. During resent years, encroachment of illegal shrimp ponds has become a major problem for mangrove conservation work. On other side, degradation of mangrove habitats terrestrial as well as aquatic fauna are damaged across the region.

Mangrove Service Network (MSN) made a plan to implement collaboration with Forest Department a small project on Ecological Mangrove Restoration by necessary assistant of Mangrove Action Project (MAP). MAP Provided the technology by "Ecological Mangrove Restoration Technique" Vijayawada, A.P, INDIA. U Win Sein Naing and U Htay Lin who attended to the workshop took responsibility to implement the project.

**2. Objectives of the Ecological Mangrove Restoration Project**

- To observe the nature of mangroves regeneration in Ayeyarwady delta.
- To demonstrate Ecological Mangrove Restoration
- To promote mangrove conservation activities in the region.

## 3. Situation of Myanmar Mangroves.

Mangroves occurrence in 3 localities in Myanmar are as follows.

| State/ Division | Area (ha) | Remark |
|---|---|---|
| Rakkhine State | 64,777 | Coastal |
| Ayeyarwady Division | 177,328 | Coastal and delta |
| Tanintahryi Division | 140,081 | Coastal |
| **Total** | **382,186** | |

Coastal Mangroves

- Mangroves in Rakkhin and Tanintharyi are Coastal Mangroves
- Predominant species are *Rhizophora mucronata* and *Rhizophora apiculata*
- Association with *Bruguiera gymnorhiza, Heritiera fomes, Avicennia spp, Sonneratia alba, Xylocarpus spp,*

Inland Mangroves

- In Ayeyarwady delta mangroves colonize on the deposits of silts of rivers
- Predominant species are Heritiera fomes
- Association with *Excoecaria agallocha, Sonneratia caseolaris, Sonneratia apetala, Avicennia officinalis Bruguiera gymnorhiza, Ceriops decandra*

Common species

In 1992 Mr. Motohiko Kogo (UNDP / FAO Project) identified 29 mangrove species in Ayeyarwady delta. Until now about 89 species (not only mangrove) have been collected and being identified by Botanical Department at University of Yangon. (Appendix .I)

In the Ayeyarwady delta, (8) main rivers flow down into Adaman Sea and over 300 creeks are connected within area. The area can divided by (3) different zones based on water quality such as saline water zone, brachishwater zone, and freshwater zone.

**Situation of Mangroves in Myanmar**

- Before 1923 no forest management
- 1924 to1948 managed under Ring Fence Manual
- 1949 to1972 Insurgent period (no Forest Law enforcement)
- 1970 to 1992 Charcoal and Fuel wood produced for Yangon City, about 4 million population. No regard to working plan.
- 1993 Forest Department ban Charcoal and Fuel wood production
- 1995 Forest Department issued Community Forest Instruction (CFI)

**4. Summary of the Project**

Summary of data on the project is as follows:

Location : N-15˚48'16 Sec, E-94˚55'53 Sec (as of GPS reading)
: Block number (62), Pyinalan Reserve, Laputta Township, Ayeyarwady Division, Myanmar. A navigation mile from Laputta town is 30 and the approximate miles afar from the Andaman Sea is 3 miles

Area : (100) acres

Topography : Flat plain and (bare land mostly in old shrimp farms)

Soil pH : 5.3 - 5.5, clay

Annual rainfall : 120 inches (average) Mid May - End of September

Salinity : 27 ppt (in April), 30 ppt (in May), O-Bo Creek

Land elevation : Medium (Flat plain)

Tide indentation : The area included 30 acres of land flooded by tide less than 10 times/ month, 60 acres of land flooded by tide 20-30 times/month and the land flooded more 30 times flooded by tide is 10 acres.

Dominant species : *Ceriops decandra, Excoecaria agallocha* (in surrounding area)

Source of seeds/seedlings: available within one mile radius of the project site

Available seeds/seedlings: *Ceriops decandra, Excoecaria agallocha, Avicennia officinalis, Rhizophora spp: Xylocapus moluccenis, Soneratia apetala*

Project period : from January 2006 - to - December 2010

Implementing Agency: Mangrove Service Network - MSN

Coordinating Agency : Forest Department (Laputta Township)

**5. Summarized working process of regular and Ecological Mangrove Restoration (E.M.R).**

| Activities for Regular method | Activities for E.M.R method |
|---|---|
| 1. Setup a nursery<br>2. Seeds collection for nursery<br>3. Nursery management at least 1 year<br>4. Harvest & transport seedlings<br>5. Obverse land elevation and select suitable species for plantation<br>6. Set up a temporary plantation camp<br>7. Clear plantation site and demark for spacing | 1. Obverse land elevation and availability of seeds and propagules from surrounding area<br>2. Clear project site<br>3. Prepare lay out plan for canal digging<br>4. Dig canals for well running tidal water<br>5. Grow voluntary plant along canals (If necessary) |

| | |
|---|---|
| 8. Stakes collection and staking at 6'x6" space<br>9. Planting seedlings by man power<br>10. Patching seedlings<br>11. Survival counting<br>12. Assign staff for security | 6. Allow entering seeds, propagules along with high tide<br>7. Survey quarterly and record keeping |

**6. Activities to be carried out in 5 Years. (2006-2010)**

| Year | Activities to be taken | Responsibility |
|---|---|---|
| 2006 | • frequent meetings and discussions with concerned party (District Forest Department of the Ayeyarwady Division)<br>• preliminary survey and preparation of bench-mark data<br>• arrange equipments and supplies of construction materials to be used in the site<br>• earth works and construction of canals<br>• regeneration of mangrove species available locally<br>• quarterly surveys on progress of the project implementation (with submission of data records and reports) | MSN + FD<br>MSN + FD<br>MSN<br>MSN<br>MSN + FD<br>MSN |
| 2007 | • regeneration of mangrove species available locally<br>• quarterly surveys on progress of the project implementation (with submission of data records and reports)<br>• public awareness raising | MSN + FD<br>MSN + FD<br>MSN + FD |
| 2008 | • regeneration of mangrove species available locally<br>• quarterly surveys on progress of the project implementation (with submission of data records and reports)<br>• public awareness raising | MSN + FD<br>MSN + FD |
| 2009 | • regeneration of mangrove species available locally<br>• quarterly surveys on progress of the project implementation (with submission of data records and reports)<br>• public awareness raising | MSN + FD<br>MSN + FD<br>MSN |
| 2010 | • quarterly surveys on progress of the project implementation (with submission of data records and reports) | MSN |

| | | |
|---|---|---|
| | • submission of final report and handover to Forest Department FD | MSN |

**7. Construction of supply canals and land maintenance**

MSN team ( U Win Sein Naing and U Htay Lin) survey 2 times before construction work of canals and land maintenance started. During the survey period the survey team observed the following items. (See: "Project Location map")

(a) Site selection

(b) Vegetation

(c) Land elevation

(d) Measure land, water quality

(e) Seed source

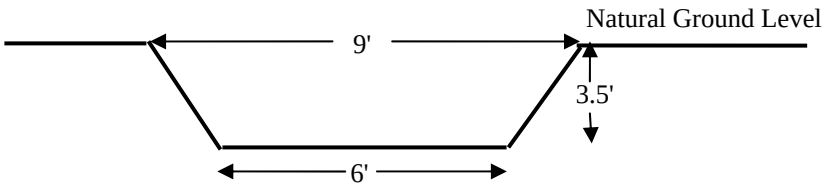
The construction work was started at last week April, 2006 to end of May, 2006. Before starting construction, detail measuring for the whole area and maintain lay out design for canal digging. 3 main canals (total length 2,400 R.ft) and 18 secondary canals ( total length 4,607 R.ft) are constructed with local people. The dimensions of canals are as following;

(a) Main Canal width (top) 9', 6' (bottom) x depth 3.5'

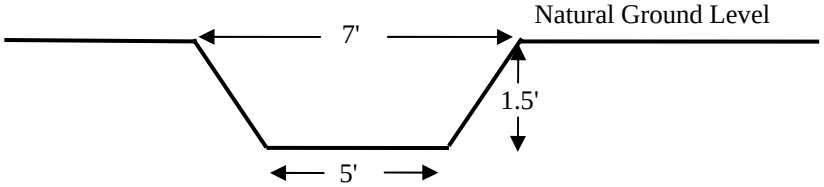
(b) Sub- Canal width (top) 7', 5' (bottom) x depth 1.5'

All constructed canals and lay out design are shown in the map of "layout design of HMR project site".

1. Cross section view of main canal




2. Cross section view of secondary canal

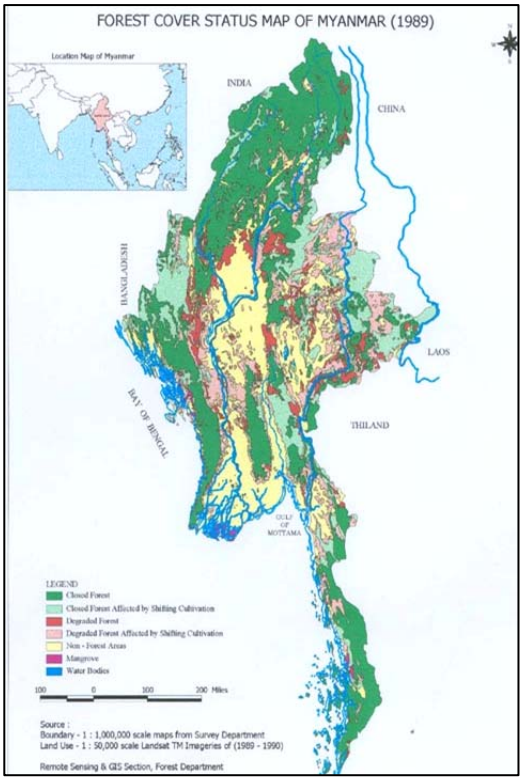


**8. Availability of local mangrove seeds/propagules in the project area**

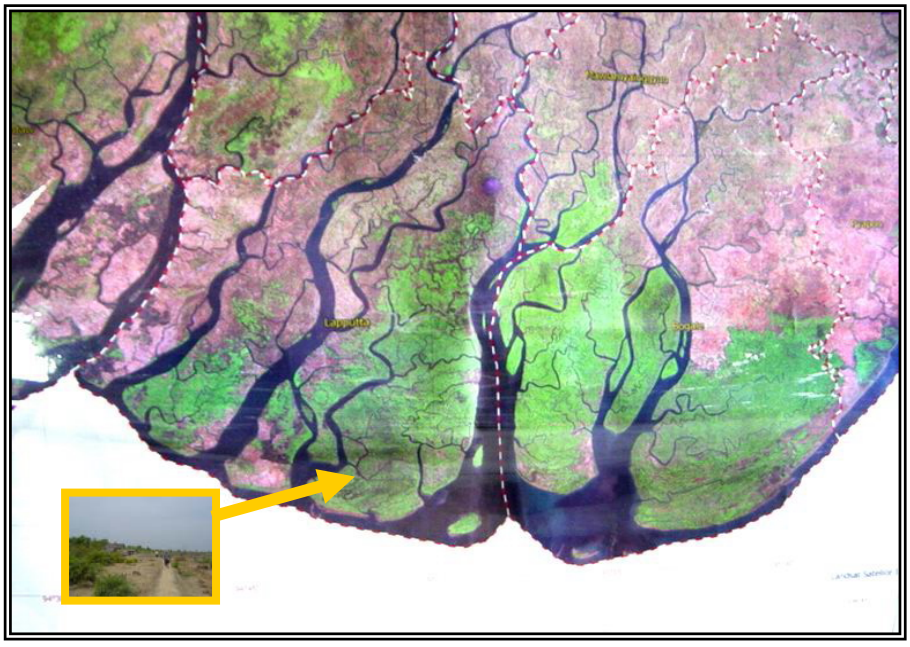
| Name of Species | Mature time | Distance from project site to seed source | Presence/absence of propagules in the project site |
|---|---|---|---|
| *Avicennia Marina* | Aug - Sept | less than 1 kilo-meter | Yes ☐ No ☑ |
| *Avicennia Officinalis* | Aug - Sept | less than 1 kilo-meter | Yes ☐ No ☑ |
| *Avicennia alba* | Aug - Sept | less than 1 kilo-meter | Yes ☐ No ☑ |
| *Ceroips decandra* | Apr - June | less than 1 kilo-meter | Yes ☑ No ☐ |
| *Brugurera gymnorhiza* | All Year | less than 1 kilo-meter | Yes ☑ No ☐ |
| *Rhizophora apiculata* | March - June | less than 1 kilo-meter | Yes ☑ No ☐ |
| *Rhizophora mucronata* | March - June | less than 1 kilo-meter | Yes ☑ No ☐ |
| *Kandelia candel* | All Year | less than 1 kilo-meter | Yes ☑ No ☐ |
| *Xylocurpus granatum* | May - June | less than 1 kilo-meter | Yes ☐ No ☑ |

# MAPS

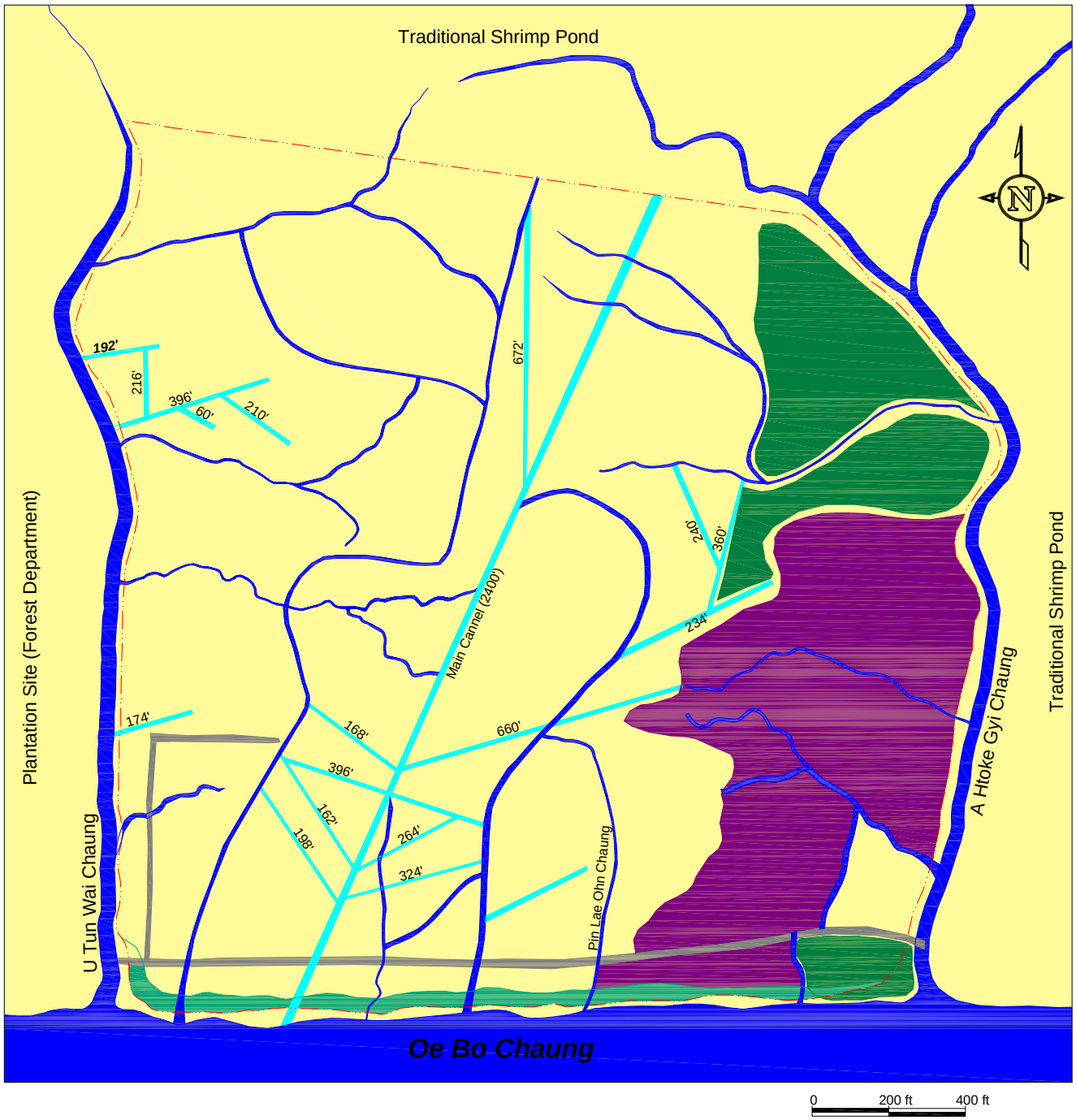
## Myamar forest cover map




**Location map of project site**



# LAYOUT DESIGN OF HMR PROJECT SITE
## LAPUTTA TOWNSHIP, AYEYARWADDY DIVISION,
## MYANMAR




### LEGEND

- Ceriop decandra
- Phoenix Paludosa
- Rhizophoia
- Embarkment
- Natural Shrimp Pond Area
- Cannel
- Natural Stream
- Research Area Bdry

# Photo Record for HMR Project

Some remaining mangrove  trees along river bank

Mangrove Forest in the project area were degraded due to encroachment of shrimp ponds

Seed sources within surrounding area of project site ( within 1 km)

## Survey Team before canal digging


## Canal digging in the project area