

## *Palk Bay Center, an institution in Tamil Nadu*

The Palk Bay Centre in South India is dedicated to environmental education aimed at both children and adolescents as well as adults. As a coastal research field station with appropriate training programs, the PBC is also counseling center for coastal ecology and socio-economy of the northern Palk Bay. On the agenda are trainings for disaster management or trainings for alternative sources of income, especially for women in the region.



A report by Vedharajan Balaji

### **Strengthening Mangrove Education**

Based on the feedback from last year students who expressed their interest to know about sea shells of Palk Bay, we have initiated sea shell bank at Palk Bay Centre. The preserved shells includes gastropods and bivalves. The tiny mangrove shells were collected separately and displayed from small glass bottles. Big shells are stored in wooden boxes and displayed on the blue backgrounded shell table during student visits. The students are encouraged to handle and touch the shells with the guidance of our staff, in order to ensure a maximum exposure to its shape, colour and unique surface patterns by themselves. Our weekly shell collection will be continued.

Practically, it is an additional session that we

can offer to the students. Our team is also studying the local names, natural habitats in the nearshore and offshore areas through fisher interviews which will be developed into GIS mapping of Sea Shell Habitats in Palk Bay in few years.

### **Sharing Knowledge - Mangrove Workshop**

The workshop venue was organized in a government mangrove forest area. More than 50 persons were participated in workshop. which includes forest officials, NGO representatives, fisherman, and local activists. Three presentations dealt with the mangroves in Jakarta, the importance of mangrove conservation and mangrove plantation techniques. Mangroves in Jakarta are fragmented and faced threats from corporate companies but there are initiatives to protect these areas. Reforestation techniques are well developed and supported by government and community. Mangrove plantation in Jakarta will

help to declare the land rights for conservation, and to protect further occupation by private companies. The restoration efforts lead to single species dominance that replacing existing high biodiversity of the Jakarta mangroves.

#### The art of writing an EU application

This constructive learning experience is important for our organization to learn how to convey our concepts and ideas of marine conservation to European Commission by understanding their



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The students learned about mangrove basic ecology, adaptations, benefits and threats



Optical devices provide completely new insights.

terminology, format and Log Frame Analysis. We have a number of concepts related to dugongs, seagrass beds and associated sustainable fishery, and this training is an eye opener that helped to know how to convert the concept into successful proposals.

#### Monitoring Planted Mangroves

In October 2011, about OMCAR Foundation organized several women self help group members to teach mangrove plantation techniques as well as planting mangroves in the village locality. As a follow up of this successful participatory event, our staffs continuously monitoring the planted mangroves in Agni and Ambuliar Estuaries.

Mangrove seedlings exposed extreme sunlight, salt and flood in Palk Bay, which decides the number of surviving seedlings every year. Our follow up studies in both estuaries were conducted in February 2012, which is after four month after the plantation. Our study revealed that the survival rate of mangrove seedlings in Agni estuary was 57%, where as in Ambuliar estuary was 52%. Our field observations indicated that the average survival rate of mangrove seedlings in both estuaries was due to two factors. The canal side mangrove plantations were exposed to unexpected flood in January 2012 due to cyclone, where as in the seedlings in Ambuliar Estuary were covered by algal and seagrass deposits which washed ashore from the sea by heavy winds.

However, the rest of the survived seedlings showed good growth with strong stems, dense and fresh green leaves. OMCAR will replace the dead seedlings by transplanting *A.marina* seedlings from the nursery in the last three months of the current year.

#### Caring Mangrove Seedlings

Mangrove nursery located in mangreen site has been continuously producing seedlings since the start of this project. The nursery raised seedlings have reached several coastal areas of Palk Bay for mangrove restoration. OMCAR Foundation has been refining its nursery raising techniques to make it as cost effective, highly productive and

to be tolerant against different seasons.

During summer the nursery raised seedlings are exposed to high temperature, water scarcity and increase in salinity. Our staffs make comfort by providing coconut roofs, regular watering and manual removal of harmful insects. In monsoon, the seedlings are exposed to flood, algal deposition and crabs. Our team transplant the seedlings before monsoon to the restoration sites, so the nursery raised seedlings escape from monsoon flood and algal coverage.

### Mangrove Ecology Student Lab

PBC needed an additional room to set up its marine ecology education lab for student visitors. Ground floor of PBC has not enough space to perform LCD shows, display of field research equipments and analysis of planktons. From the remaining construction materials of PBC construction, we organized local villagers for covering the side walls, windows and doors in the first floor. Shell collections will be displayed in the laboratory that presently has 5 microscopes, a sea water refractometer, pH meter, soil pH probe, basic glasswares, thermometer, handheld anemometer, GPS, solar light and an underwater camera. We aim to improve the equipments as well as interior of the laboratory in future.

### Changes in time-lapse

We have carried out an investigation in a restoration area in the north of Palk Bay and then compared the growth in size of the naturally mangrove forest with the trees we planted. To measure the height of restored and natural trees transects were laid parallel to the restoration canals. Height of mangrove species was measured using a measuring iron rod, photographs were taken subsequently and in each significant height groups and individuals. Google earth satellite images were used to compare the area of presence of mangroves between 2003 and 2011 years.

Both GIS and groundtruthing analysis confirmed that the mangroves are successfully restored by Tamil Nadu Forest Department in the study area. The study also confirmed that the natural



On the first floor of the center, additional space was created.



The maintenance of fences to protect the plantations from grazing is important but labour intensive.

mangrove regeneration adjacent to restoration canals is greatly enhanced and healthy. The restoration can be extended to other parts of the Muthupet Mangrove Forest in future. Distance between the existing feeder canals can be used for the establishment of new interlinked restoration canals. Yearly maintenance and desiltation of restoration canals is recommended that will enhance the seed dispersal and water exchange.

### Planning insitu Conservation

Based on our experience in Palk Bay, mangrove restoration is not just about mangroves in a coastal strip, and it actually need a micro level spatial planning including various spatial components. It is important to educate the people about how wisely they can manage their coastal village land resources for protection, drinking, water source for agriculture and traditional assets like sacred groves.

With this intention, OMCAR Foundation has practised its first participatory microplanning

event at PBC. The village leader and women self help group of local village were invited, who were guided by the professional Microplanning trainer Dr. Gunasekar.

This training was important to OMCAR Foundation and people as we got a new project from Ministry of Science and Technology Government of India in April 2012 entitled as “Participatory GIS Mapping of Landuse pattern and Mangroves in coastal villages of Thanjavur District”.



Women self help group of local village attended the first participatory microplanning event at PBC.



A participant learning a new variety of preparing shrimps to sell in local market, while others tasting the crab soup.

### Welcoming students

38 Students and 4 teachers of Sethubhava Chattram government higher secondary school have attended Palk Bay Mangrove ecology training programme in March 2012. In the first session the students learned about mangrove basic ecology, adaptations, benefits and threats through an LCD presentation delivered by OMCAR director. The second session includes solar energy, solar cooking and solar lights, ecofriendly paddle pump.

It is the last school visit for this academic year, and we are looking forward to increase the number of students upto 2000 in the forthcoming academic year which starts from June 2012.

In July, 53 pupils participated our monthly Marine Awareness Event. In August, there were 58 students from different schools, in December, once again 25 students.

### Adding value to Fishes... - Fisher women training

Several species of delicious fishes are sold in local market immediately after catch or after using unhygienic salt preservation method. Fisher women are not have adequate preservation facilities are not able to increase the value of the caught fishes. A two days training enhanced their fish marketing skills. A professional trainer was invited, who is an expert in cooking different varieties of food from locally available crabs, fishes and shrimps.

In the second day, the participants learned about cooking for fifty school children. As Palk Bay Centre receives students continuously, there is a need for a team of cooking persons. By involving local women as a cooker for Palk Bay Centre, OMCAR ensures the participation of local community in PBC environmental awareness activities and provides income to the fisher women. It reduces the food price, better quality than commercial food orders and also quantity can be improved after the feedback from each student group.

### Understanding Seagrass Conservation

An insitu experimental seagrass transplanation research was conducted in the areas adjacent to Mangreen site. Three species of seagrasses such as Halodule pinifolia, Cymodocea serrulata and Enhalus acoroides were collected from the wild and transplanted into the plots fixed on the shallow seafloor, adjacent to already exiting seagrass beds. The growth and survival of each species have been monitored every month. The study will be completed next year.

The seagrass restoration site selection is important. Increased algal coverage caused by eu-

trophication and shoreline pollution will be the main threat to the seagrass restoration. Presence of mangroves are being an advantage of natural growth of seagrass beds, so seagrass restoration can be carried out as an additional field work with mangrove restoration in suitable locations. It is easy to restore the seagrass beds adjacent to all the mangreen sites, if the human induced disturbances will be regulated such as shore seine operation.

#### World Environment Day at PBC

OMCAR Foundation has organized world environment day programme at PBC, here local villagers and students have participated. Students have received free seedlings of avenue trees to plant in their schools, where teachers and women have received fruit yielding trees such as mango. Each person received two seedlings which has been produced at PBC nursery.

#### World Environment Day Rally

In the same day, OMCAR Foundation has participated in a rally with local voluntary organizations and school students. The rally started from Governement Boys Higher Secondary School and completed at Municipality office after walking through the town for about 2km. The students raised slogans for reducing the use of plastic bags, planting trees in the town. Several tree saplings were donated to the public on the way of the rally.

#### Mangrove education beyond PBC

As PBC is not able to offer its non profit mangrove education service to all the students in a school, OMCAR team decided to reach a maximum number of schools this year by conducting monthly mangrove exhibition in schools.

OMCAR team displayed banners, plankton collected from mangrove waters in microscopes, sea shells collected from local coastal area, mud crabs collected from mangreen sites, mangrove seedlings brought from omcar nursery and roots and leaves brought from mangreen sites. The students were interested to see plankton specimen for the first time.

#### Sea Otter Habitat in Muthupet Mangroves

It has been informed by local research institutes that the sea otters of Muthupet Mangrove Reserve Forest area were locally extinct. However, local fishers reported that they rarely found sea otters in this area. Sea otters were widely distributed in the muthupet lagoon and mangrove creeks two decades ago. Due increasing fishing activities, pollution, boat trafficking and conflict with local fishers lead to the disappearance of their population from most of the areas. OMCAR team visited



Seagrass transplanation research was conducted.



Big shells are stored in wooden boxes and displayed on the blue backgrounded shell table.

several villages in order to find the last known populations of seaotters and fortunately, we could find a small population of sea otters near Muthuepet mangrove reserve forest. We were not able to take close shots of sea otters, but confirmed their presence by direct observation.

#### IUCN International Award for Vedharajan Balaji

In August 2012, Vedharajan Balaji gets the IUCN International Award for initiatives to marine conservation and environmental awareness in Palk Bay. IUCN Young Professional Award for Environ-

mental Awareness and Communication is given to Dr.V.Balaji during World Conservation Congress held at Jeju South Korea in September 2012. Two IUCN official presentations and thirteen personal meetings/presentations on our project activities were delivered during IUCN World Conservation Congress.

#### Star Turtle Habitat near Mangreen Sites

Local fishers informed the rare sightings of star turtles located adjacent to our Mangreen site in Agni estuary islet. This islet is known for its wild plants, herbs and untouched micro wild life habitat. Due shrimp farms, private encroachments and growing exotic trees, the nature of this islet is under threat.

In July 2012, we could identify a small population of star tortoises. An official letter was written to District Forest Officer to stop further encroachments and shrimp farming. This report was reached at exactly when the private land owner was trying to get official permission for the construction of the resort, which now stopped.

#### Mangrove Nursery work in Keezhathoddam

Mangrove Nursery is one of the continuous project work of our project. This year we planned to raise 5,000 mangrove seedlings. However, this target was not easy to reach in one month of field work due to lack of rainfall. The mangroves did not produce good seeds, so our team has to wait for October to December 2012 to full the nursery.

#### Plantation Sites in Sambaipattinam

Mangrove seedlings that have been raised in the past 12 months at OMCAR nursery were transported by boat into mangrove plantation site at Sambaipattinam village. The village has a manmade canal. For the first time this village is equipped with Rhizophora mangroves. Time lapse photos were taken during and after the plantation.

#### Backyard Mangrove Nursery

3,000 seed pockets were given to women self help groups to empower woman participation in mangrove restoration. A backyard nursery was arranged at each interested participant's house, dividing the total number of pockets into six

units. They will grow mangroves at their home for five months. Then the seedlings will be returned to OMCAR mangrove nursery. This method creates a participatory responsibility on the planted mangroves from each village community.

#### Period:

since June 2004

#### Funding 2012:

16.000 Euro

#### Project partner:

Organization for Marine Conservation,  
Awareness and Research OMCAR

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