

# Mangroves for the Future

## Investing in Coastal Ecosystems

SMALL GRANT FACILITY – PHASE 2 (CYCLE 2)

SRI LANKA



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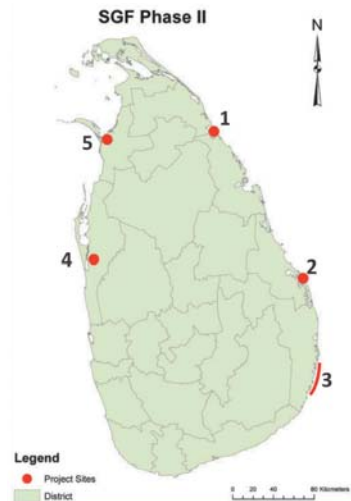
Mangroves for the Future (MFF) is a regional initiative that is being currently implemented in nine countries -Bangladesh, India, Indonesia, Maldives, Pakistan, Seychelles, Sri Lanka, Thailand and Viet Nam. This initiative has two objectives: strengthening the environmental sustainability of coastal development, and promoting investment in coastal ecosystem management. MFF provides a collaborative platform for the many countries, sectors and agencies tackling the challenges to coastal ecosystem conservation and livelihood sustainability, and is helping them to work towards a common goal.

MFF Sri Lanka National Steering Committee (NSC) is chaired by the Ministry of Environment and Renewable Energy on behalf of the Government of Sri Lanka. NSC provides overall guidance and technical oversight to the MFF Sri Lanka component, which is managed by IUCN, International Union for Conservation of Nature, Sri Lanka Country Office.

MFF Small Grant Facility (SGF) was launched to finance sustainable local level initiatives in coastal areas. Its main objective is to finance small projects supporting local community action for the restoration and management of coastal ecosystems and their use on a sustainable basis.

SGF Phase 1, and Cycle 1 of Phase 2 have been completed. Cycle 2 of Phase 2 commenced operations in January 2012 and was implemented in five critically important coastal areas, namely:

1. Kokkilai and Nayaru lagoons, and
2. Batticaloa Lagoon
3. Pottuvil to Panama coastal stretch
4. Puttalam Lagoon, and
5. Mannar



A project budget up to Rs 750,000/= was approved and this facility was open to national/local NGOs, CBOs, academic and scientific institutions, small scale businesses and enterprises. Ten grants were awarded under Cycle 2. A brief description of some of these projects is given below.

### Seasonal and spatial variation of physico-chemical parameters of Panama Lagoon

Located on the southeastern coast of Sri Lanka, Panama Lagoon is a barrier built wetland. Though little polluted presently, the lagoon is vulnerable to pollution due to recent developments in the region. Salt water intrusion from the ocean by subsurface flow through the barrier beach, and leaching of ions from lagoon bottom sediments could also be expected in this ecosystem. Therefore, studying the spatial distribution of water quality and salinity in the lagoon, to provide baseline information for future studies in the region, is essential.



The Ecological Association of Sri Lanka secured a grant to assess the seasonal and spatial variation of physico-chemical parameters of water in Panama Lagoon. The objective of the study was to evaluate the temporal and spatial variation of water quality and identify the potential risks to the Panama Lagoon.

Detailed information on water quality of the lagoon was gathered by measuring water quality and analyses of hydrological information (tidal levels, rainfall, etc.). Field samplings were carried out to measure parameters such as pH, salinity, turbidity, dissolved oxygen, alkalinity, hardness, chlorides, sulphates and fluorides. Bathymetric data were collected and a digital bathymetric map of the lagoon was prepared.

Information on fish harvests was collected to determine the seasonal variation of fish diversity. Sources of pollution in and around the lagoon were also identified.

This small grant project entered into a partnership with Linköping University of Sweden and secured additional funding from the Swedish Research Council under the Swedish Research Link programme. This new study will focus on reconstructing the monsoon variability in Sri Lanka during the Holocene epoch. Based on the MFF SGF project Panama Lagoon was selected as one of the three sampling locations for this study.



### **Mangrove species composition, diversity and related fishery in lagoon and estuarine systems in the Pottuvil-Panama coastal stretch**

Mangroves found in the Pottuvil to Panama coastal stretch have hardly been studied as yet. Therefore, to develop a long term conservation strategy it is important to record the species diversity and to identify threats to these mangrove systems.



The project, also implemented by the Ecological Association of Sri Lanka, aimed to gather baseline information on the mangroves associated with lagoons in the Panama to Pottuvil stretch.

Surveys of mangrove communities, using belt transects, were carried out in the Goda Oya estuary in Kudakalli, Heda Oya estuary in Sahastrawela, Ragambwela Creek, and Pottuvil Lagoon. Maps showing the distribution of mangroves in these sites were prepared and the extents of

mangroves were calculated. Threat factors were also recorded. A detailed survey of the food-fish species caught and fishing methods used in the Pottuvil Lagoon was carried out.



The unique mangrove patch discovered in Sahastrawela was brought to the attention of the Forest Department (FD) and Coast Conservation & Coastal Resources Management Department, through the NSC. FD is in the process of declaring this mangrove patch as a Reserved Forest.

The knowledge generated from this study was shared with the community to make them aware of the importance of these ecosystems.

### Studying species diversity and distribution patterns of seagrass from Kalpitiya to Thalaimannar

Information on species composition and distribution pattern of seagrass communities on the western coast of Sri Lanka is scarce. In Phase 2, Cycle 1, 14 sites in Puttalam Lagoon were studied by the Department of Oceanography and Marine Geology of the University of Ruhuna. The present study covered the geographic area from Kalpitiya to Thalaimannar.



Seagrass distribution mapping was done according to the Seagrass Watch Manual using the Geographic Positioning System (GPS). Exact position of each selected site was obtained using remote sensing. Mapping was carried out using line transects in 14 selected areas.

Eight seagrass species, belonging to six genera, were recorded in this study. In addition to assessing species composition and distribution, the substrate composition was also studied. These findings will fill the knowledge gap and strengthen the current information base that is essential to properly manage this ecosystem.



It was evident that these valuable ecosystems, like most others, were threatened by a range of human actions such as pollution (untreated effluents from shrimp farms) and harmful fishing practices (push and pull nets).

The general public has hardly any knowledge on seagrass meadows, their economic and ecological values and their importance to livelihoods. Therefore, sharing the findings from these studies would help to bridge this gap.

It was revealed that there is no common forum in Sri Lanka for scientists who work on seagrasses and the study recommends that a 'Sri Lanka Seagrass Forum' be established.



### Re-introducing traditional fishing gear for Mud Crab Fishery in Kokkilai Lagoon

Kokkilai Lagoon is well known for Mud Crabs (*Scylla serrata*) and many families in the area depend on mud crab fishery. At present, most of them use nylon nets (sometimes even monofilament nets) to catch mud crabs. This invariably results in damage to their claws, especially the most valuable chelipeds, and also bycatches of small crabs (less than 350 g) and untargeted aquatic fauna. Since the export market is for live undamaged crabs (minimum weight 350 g), there is no market value for dead crabs; damaged crabs sell at around half price. Moreover, crabs damage the nylon nets and fishermen need to spend considerable time mending these nets whose durability has also been greatly reduced.

On the other hand, traditional crab traps are known to be capable of selectively catching mud crabs and avoiding unwanted bycatches. Therefore, this project, implemented by Sewalanka Foundation, planned to provide traditional crab gear/traps for mud crab fishermen around Kokkilai Lagoon to encourage selective crab fishing,

Two awareness programs were conducted for 32 crab fishermen around Kokkilai Lagoon on mud crabs and their life cycle, coastal ecosystems in the area, importance of sustainable harvesting of mud crabs, and importance of target fishery. Materials required to assemble 3,200 crab traps were distributed to 32 fishermen (100 per fisherman) and followed up with demonstrations on how to fabricate the traps. The beneficiaries are now using these traps and the average monthly income per fisherman before and after using traps is Rs 6,000 and Rs 10,000 respectively. The beneficiaries were also trained in record keeping.



### Improving the living standards of 20 fisher families in Naguleliya Village

Naguleliya is a remote coastal village in Arachchikattuwa DS Division in the Puttalam District. The village occupies a strip of land 1 km long and 200 m wide, on the Muthupanthiya land projection between Chilaw Lagoon and the Indian Ocean.

There are 20 fisher families, with a total population of 86, living in poverty in Naguleliya, a village devoid of any infrastructure facilities. Most of the fisher people engage in lagoon fishing as they cannot afford to invest in fishing gear needed for fishing in the sea. Fisher families receive a fair



income during the fishing season but due to their illiteracy and lack of household management skills, most resources are wasted.

This project, implemented by Wilpotha Women's Savings Effort, focused on building people's economic power by promoting income generation activities, self-help development programmes, and

formation of a community-based organization for sustainability and collective action to overcome their burning issues.

A socio-economic survey was carried out in the village and the results were presented to the villagers to raise their awareness and mobilize the formation of a women's organization. Skills development training was provided as follows: 12 women on dress making; another 12 on fabric painting; and another 17 on dry fish and jadi production. Five women were trained in keeping accounts and maintaining books/reports. Twenty women were trained in home gardening and all were provided with tools and vegetable seeds; another 20 women were provided with 100 coconut seedlings and shown how to plant and care for the seedlings.

Two important workshops were conducted: one on household management and responsibilities, and gender sensitization for 30 women; and another on environment and mangrove protection for all 20 families to raise awareness on environmental hazards and the advantages of using energy saving hearths. The 20 families were provided with energy saving hearths and trained on how to use them.



The project facilitated the formation of a women's society, named Rosa Kusum Fisher Women's Society. This society is very active and looks after the interests of the 20 families in Naguleliya.



**Market expansion of *Aloe vera* value-added products to enhance the income of fisher women**

The majority of fisher families in the Kalpitiya peninsula is highly dependent on coastal resources. However, with the depletion of these resources they are exposed to a vulnerable situation. Lack of land-based livelihood opportunities and abject poverty make them highly

dependent on the ecosystems. In order to increase their household incomes they extract more and more resources from the reef and lagoon ecosystem using destructive methods. Hence, it is important to focus on diversifying fisher folk livelihoods that are environmentally sustainable and are not capital intensive.

In a former MFF SGF project, the Marine and Coastal Resources Management Foundation (MCRCF) successfully introduced an *Aloe vera* beverage to Kalpitiya town; a tricycle was used to make retail sales within the town. The current project implemented by MCRCF expanded the marketing area beyond the Kalpitiya town by using an improved motorized mobile selling unit. The processing unit was also improved and the beverage was popularized through posters and brochures to ensure a higher income for the *Aloe vera* cultivators in Kalpitiya.

### Diversification of livelihoods of coastal fisher folk in Panama through *Aloe vera* cultivation, processing and marketing

Lack of proper infrastructure facilities and inability to invest in modern fishing gear and crafts to harvest the deep sea resources, fishermen in Panama rely mainly on near shore fishery resources. The post-tsunami rehabilitation process and increase of small fishing crafts further aggravated the pressure on the limited resources in the near shore and Panama Lagoon areas. Hence, to reduce the dependency on near shore coastal resources, this project, implemented by Marine and Coastal Resources Management Foundation (MCRCF), introduced *Aloe vera* cultivation, beverage production and marketing as supplementary income generating activities for the fisher community in Panama.



Awareness programmes on coastal resources and the importance of livelihood diversification were conducted for about 26 fishermen and fisherwomen. From about 15 fishing families identified through the fisheries societies, eight beneficiaries were selected as *Aloe vera* growers to establish eight gardens. The eight beneficiaries received *in-situ* training on *Aloe* cultivation and 400 plants each for cultivation. An *Aloe vera* beverage processing unit was established at Arugam Bay and a promotion campaign was conducted among hoteliers to popularize the beverage.



## Fish preservation by dehydration as an optional livelihood for fisher women in Panama

The community in Panama is one of the most marginalized tsunami and conflict-affected coastal communities. Their main income is from fisheries and agriculture, which are both seasonal. During the high yield season their fishery production fetches a low price, and at times it even goes waste. This project implemented by the Green Movement of Sri

Lanka introduced a preservation mechanism for excess harvest to 30 women beneficiaries from Abeysinghapura and Shastrawela villages.

Two batches of women were trained in the production of high quality dehydrated fish products. They were provided with equipment for processing and dehydrating fish and received training on operating and maintaining the equipment. The products were introduced to the market after testing for microbial contamination and their nutritional value, and determining expiry dates.



The women are now able to process fish rapidly and under hygienic conditions, unlike the conventional method. Their dehydrated fish products contain less salt than other dried fish available in the market.



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