

Background information

## Eco Islands

**Model project  
for Small Island Environmental Rehabilitation  
for sustainable livelihood improvement and marine biodiversity  
conservation**

presented during the

**Workshop „Sustainable Development, natural Fibres for modern  
Technology, Subsistence and Biodiversity Improvement Projects in the  
Philippines“**

**March 11 to 17, 2002**



**European Nature Heritage Fund**

partners:



**The Workshop is staged with the kind support of:**

**DaimlerChrysler and Deutsche Lufthansa Airlines**

## **Workshop „Sustainable Development, natural Fibres for modern Technology, Subsistence and Biodiversity Improvement Projects in the Philippines“**

### **Background information**

#### **Problem**

The conservation of natural resources and biodiversity are essential components for sustainability. Biodiversity maintains the ecological integrity of the natural resource base, allows to provide basic necessities of food, genetic stocks for aquaculture breeding, as well as the requirements for small-scale industry. It provides an option for future economic development, but is compromised due to the irreversibility of species extinction which can result to loss of genetic strains and the various ecosystems.

In the Philippine archipelago with its 7107 islands even very small islands are presently inhabited due to the population pressure of the 72 Mio people and the 2.8% annual population growth. On small islands with its limited terrestrial resource base the effects of lack of income other than marine resources can develop to uncontrollable proportions, ending in the need to abandon the island.

Small island area are usually susceptible due to the lack of information about the cause and consequences of the destruction of marine resources like illegal fishing methods with dynamite, poison or destructive methods to drive the fish out of coral reef areas. These areas are also susceptible due to the encroachment of commercial fishing vessels depleting the fish stocks on a big scale. The underlying causes of widespread marine destruction in the coastal regions are social, economical and cultural in nature. Hence, any effort to conserve biodiversity and the natural resources, can only remain viable if people are active participants in the planning and decision-making process in the implementation of the project. The approach of the project should not be to do something for the people but with the people. In this way, a higher quality of life for marginal coastal people can be pursued, while at the same time preserving and enhancing the environmental conditions. Furthermore, when a community attained material progress without compromising life-support functions of the natural systems for the future generation as well, then this indicates that sustainable development is achieved.

#### **Challenge**

To reach the envisioned perspective of a sustainable development of small islands the communities needed to be convinced to participate from the very beginning. The proper information and continuing education of the target beneficiaries on the interconnecting aspects in marine ecosystem management was one of the main challenges. As a sustainable management strategy, it was aimed that the islanders eventually will become self-reliant and at the same time the surrounding marine coral reef areas with their tremendously rich biodiversity will have a chance to rehabilitate and play their fundamentally important functions as breeding and hiding ground for small fish, and on the long run as income-generating areas for eco-tourism.

#### **Project Goals**

The main goals and objectives of the project was to develop how to rehabilitate the environmental conditions of small tropical islands by protecting its marine resources from over-fishing and destruction by conserving the biodiversity through people's participation.

## Workshop „Sustainable Development, natural Fibres for modern Technology, Subsistence and Biodiversity Improvement Projects in the Philippines“

### Background information

The project therefore aimed towards community capability building through informal education of adults and information with direct guidance from the community development workers. It was envisioned that the island communities of the three involved islands, Apid, Mahaba and Digyo of the municipality Inopacan off the shore of Leyte Island in the Camotes Sea with their combined population of 603 people or 115 households, is capable of independently and sustainably managing their resources and do have a sustainable perspective of livelihood on these small islands.

- Environmental view

The three islands, Apid with 35.6 ha, Mahaba with 20.3 ha and Digyo with 3.5 ha are located off the shore of Inopacan, Leyte and are surrounded by previously beautiful coral gardens and reefs.

The islands are from time to time in the pathway of tropical depressions or Typhoons. El Nino –effects have great impact on the marine life due to the rising water temperatures of the sea with coral bleaching as one of the more serious effects.

The marine life forms are still the main source of food and income for the islanders. Two of the islands, Apid and Mahaba are uplifted former coral reefs with very rocky and meanwhile karstified parts of rocks, overgrown by shrubs and smaller trees. The beaches are white coral sand areas in those parts, sheltered from wave action. The third island, Digyo is a coral sand island with some stands of coconuts.

All these islands have no other freshwater source than rain water deposited in huge clay vessels or drums.

Land use on the island of Apid and Mahaba is multi-storey cropping with coconuts in combination with breadfruit, banana, pandanus and cassava.

- Biodiversity aspects

Generally, the Cuatro Islas can be characterized by relatively healthy reef formations and a rich associated fauna and flora. A total of 287 species of reef building corals can be found. This is more than 55% of the total number of coral species found in the Philippines. The highest number of genera was found in the surrounding waters of Apid island with 66, followed by Digyo with 64 and Mahaba with 63. Even coral species registered as rare, like *Anacropora spinosa* and *Montipora hispida* are abundant in some coral gardens around Mahaba Island. Due to typhoon patterns the most luxuriant growth of coral is always on the west sides of the islands, while the east sides show poor growth and many rubble fields. On some dropoffs large fish species are common, making this area very attractive for diving.

A total of 20 indicator reef fish species particularly the so-called Butterfly fish species, *Chaetodon* sp., are frequently seen on the reefs

In the waters of the islands frequently noteworthy fauna can be observed:

- Long snouted Spinner and Fraser's Dolphins and the short-finned Pilot Whale
- The Green turtle and the Hawksbill Turtle is also present and on Digyo island was an egg laying ground at one of the sandy beaches. Unfortunately this sand was collected to be now the resting place for tourists in one of the Intercontinental Hotels on Cebu Island.
- Grey Reef Shark, Whitetip Reef Shark, Blacktip Reef Shark and Treasure Shark can also occasionally be observed

## **Workshop „Sustainable Development, natural Fibres for modern Technology, Subsistence and Biodiversity Improvement Projects in the Philippines“**

### **Background information**

- Stingrays of medium size and spotted eagle rays are also present
- The very rare coconut crab, *Birgus latro* is reported from Didyo Island
- The fruit bat *Pteropus hypomelanus* is also using the islands as resting place

- Social economical aspects

The Cuatro Islas is an important fishing ground not only for the local fisherfolks, but also for small-scale fisherfolks and commercial fishing boats from Leyte and neighboring islands. The use of destructive fishing methods and an increasing number of commercial fishing boats led to the destruction of the coral reefs. Fish catch therefore did not anymore meet the livelihood requirements of the local people before 1993.

In 1993 the Small Islands Environmental Rehabilitation and Livelihood Project, started by the GTZ. Presently this essential project is supported by EURONATURE. At each island marine sanctuaries were established and policed by the local fisherfamily communities. This, in combination with strict enforcement laws and profound education and involvement of the local communities in all the efforts an increase of the fish stock and a coral cover improvement could be reached. For example, in 1994 the coral covered area around Apid Island was 20% , in 1998 it was 45%.

Continuous improvement of the reef conditions was expected. However, the 1997-98 El Nino event, with water temperatures of 20-31 degrees Celsius for many month, led to coral bleaching and caused the death of many hard and soft corals. In addition, an outbreak of the coral-polyp-eating Crown- of –Thorn starfish, *Acanthaster planci*, resulted in heavy denudation of the reef, particularly around Apid island.

Due to the fact that 76% of the total income of the islanders derives from fishing, this was a very serious threat to the islanders. Only through alternative income –generating measures, like Harvesting and processing of pandan leaves (Screw Pine) and weaving of mats and pillows even for the natural product market abroad, hog fattening activities and boat construction saved the islanders from major disturbances of the their subsistence economy.

- Sustainability aspects

The combination of marine conservation efforts in form of marine sanctuaries, enforcement of the fishery laws, the creation of alternative income-generating operations and the continuous organization and educational efforts have produced a sustainable basic income and an improvement of the biodiversity of the coral reef areas. To assure a continuous protection of the islands´ marine resources independent of political conditions it was recommended to protect the entire area as seascape under the National Integrated Protected Area System. This was declared law in the year 2000 by the Department of Environment and Natural Resources .

- Transferability aspects

The system of community –based conservation efforts and creation of alternative livelihood projects is a show-case how a very fragile coral reef environment and the sustainable income for the respective islanders on a small tropical island can be reached. This method can be transferred to any other similar set up and is already transferred to other areas of the Philippines like Mindanao and Bohol.

**Workshop „Sustainable Development, natural Fibres for modern Technology, Subsistence and Biodiversity Improvement Projects in the Philippines“**

**Background information**

**Chances and Perspectives**

The Small Island Rehabilitation approach is offering good chances to all the smaller tropical islands to combine two important aspects:

- The generating of a sustainable income from local fishery for the people
- The rehabilitation or conservation of endangered coral reef environments

If it is possible to support the capacity building of island communities in form of organizational and educational efforts and combining it with the delegation of enforcement power to the local fishermen communities substantial and far-reaching the improvements can be achieved.

Particularly the strengthening of the women by enabling them to produce alternative income by using local fiber material for the production of natural goods like mats and other handicrafts is a crucial effort for the improvement of the livelihood of the islanders. In addition projects for men as alternative to fishing, like growing of natural fiber producing plants , like the screw pine, or setting up eco-tourism enterprises , the perspectives of a decent living on beautiful tropical islands are promising.

Prof. Dr. Friedhelm Göltenboth  
Project Co-ordinator

Claus-Peter Hutter  
President

**EURONATURE**

European Nature Heritage Fund  
Bahnhofstraße 35  
D – 71638 Ludwigsburg  
Tel.: ++49 (0)7141 92 03 21  
Fax: ++49 (0)7141 90 11 83  
E-mail: [ludwigsburg@euronatur.org](mailto:ludwigsburg@euronatur.org)  
Internet: [www.euronatur.org](http://www.euronatur.org)

**University of Hohenheim**

Center for Agriculture in the Tropics and Subtropics  
Garbenstr. 13, 70593 Stuttgart  
Tel.: ++49 (0)7473 21 176  
Fax: ++49 (0)7473 92 23 45  
E-mail: [goltenfr@uni-hohenheim.de](mailto:goltenfr@uni-hohenheim.de)  
Internet: [www.uni-hohenheim.de](http://www.uni-hohenheim.de)

March 2002