

## COURSE REPORT

### Ecological Mangrove Rehabilitation Training & Workshop

Dusun Puntondo, Desa Laikang, Kec. Mangarabombang, Kab. Takalar,  
Sulawesi Selatan, Indonesia  
August 26–29, 2014

**An event organized by:**

Yayasan Hutan Biru–Blue Forests (YHB)  
Environmental Leadership & Training Initiative (ELTI)



**Background:** Mangrove forests provide a wide array of environmental services, including functioning as a breeding ground and nursery for a variety of marine life, providing local communities with wood and non-timber forest products, sequestering carbon which mitigates climate change, and protecting the coastline from floods, storms, hurricanes, and tsunamis. Nevertheless, mangroves have been seriously depleted in recent years, particularly by the rapid spread of shrimp and fish ponds. Tanakeke, an island off the coast of South Sulawesi, which is the focus of this training, for example, lost over 70% (1200 ha converted to ponds of an original 1776 ha of mangrove forest) of its mangroves since the 1980s. Much of the aquaculture, however, has proven unsustainable in the long run with close to 80% of ponds having been abandoned.

ELTI is an initiative of:

**Yale** SCHOOL OF FORESTRY &  
ENVIRONMENTAL STUDIES

In collaboration with:



Smithsonian Tropical Research Institute



This training forms part of the Coastal Ecosystem Resilience (CER) project, which aims to increase the capacity of local communities in Tanakeke, particularly the five sub-villages (*dusun*) of Balangdatu, to manage the local mangrove and sea grass ecosystems. Goals of this project include the rehabilitation of approximately 100 hectares (ha) of abandoned shrimp and fish ponds back to mangrove forests, the evaluation and monitoring of the sea grass ecosystem, improvements in coastal management, as well as awareness raising in schools through an environmental education program. This project, which is being carried out from March 2014 until March 2017, was put in motion by the local government and Balangdatu village community, with facilitation by Blue Forests (YHB, formerly Mangrove Action Project - Indonesia), and support from the GoodPlanet Foundation and the Omega Program. The CER project builds on an earlier "Restoring Coastal Livelihoods" project, which was supported by Oxfam-Great Britain and the Canadian International Development Agency, through which 400 ha of mangroves were rehabilitated in other villages on Tanakeke.



The training focused on preparing the Balangdatu village community to conduct mangrove rehabilitation in its abandoned fish and shrimp ponds. The training applied the principles and six stages of ecological mangrove rehabilitation (EMR), an approach first developed in the United States by Roy R. ("Robin") Lewis III. EMR doesn't require planting since every year mangrove trees produce hundreds of thousands of fruits and seeds. If the hydrological conditions are appropriate and there is a ready source of propagules, mangrove seedlings will establish themselves and grow on their own, like they did previously. Mangroves are only planted if the natural dispersal is no longer adequate and only then after the local hydrology has been restored. The EMR approach thus avoids the expense associated with the needless raising of planting materials in a nursery. It also decreases failure due to human misjudgment or error, commonly seen in direct planting programs.

This training, which was the first collaboration between YHB and ELTI, also provided a unique opportunity to explore possibilities for further refining and scaling up capacity building and training on ecological mangrove rehabilitation in Indonesia and elsewhere in the region. Through the participation of several participants from the village of Bulili in Gorontalo, it also functioned a stepping stone in the potential rehabilitation of a large area of former mangroves in northern Sulawesi.



### Objectives:

- Facilitate participants to understand the problems facing mangroves in their region;
- Give an understanding of the importance of mangrove rehabilitation, especially in abandoned fishponds;
- Provide basic technical knowledge and skills on the six steps of the EMR implementation; and
- Facilitate the development of the village's own mangrove restoration and management plans.

### Contents

**Day 1:** The training was held at the Puntondo Environmental Education Center (PPLH Puntondo) near the ferry terminal to Tanakeke Island. Facilitation was provided by Yusran Nurdin and Ratna Fadilah (YHB). Following the opening of the training, participants were asked to draw upon their own knowledge and experience to outline the ecological functions of the mangroves in their village and the economic and environmental benefits that they derive from them. The participants were then divided into six groups, based on their *dusun* or sub-villages of origin, to discuss the changes that have affected their local mangroves in terms of the trees, the related biota, the mangroves as a source of livelihoods, and the protective functions of the mangroves, resulting from large-scale transformation of the mangroves into fish and shrimp ponds.

**Day 2:** The day started with one spokesperson for each group reporting back about the results of their discussions from the previous day. Afterwards, Ben Brown (YHB) gave a presentation on the six step EMR process, which focuses on 1) understanding the autecology of the mangrove species, 2) discerning the hydrology of the area, 3) determining the disturbance affecting the site, 4) choosing an appropriate site based on social and ecological considerations, particularly security of tenure and community support, 5) designing the rehabilitation program, and 6) monitoring the site to ensure that the rehabilitation effort is achieving the desired results. Muhammad Nur Akhzan (YHB) then led an exercise to teach participants how to read a tide table—an important skill for working in mangroves. Afterwards, participants were broken into four groups and taken to a former mangrove area that had been turned into fish and shrimp ponds, where they were asked to identify the mangrove species



and interpret what was going on in the landscape in terms of human transformations, plant recolonization, and other social and ecological dynamics. During the site visit, each group was also supplied with a camera and instructed to take photos of ecological phenomena that they found noteworthy. Once back at the training center, each group selected their four most interesting photos and provided interpretations for the rest of the participants. The day ended with the showing of two short films about mangrove rehabilitation.

**Day 3:** The morning started with instructions on methods for conducting an ecological and hydrological survey in the neighboring aquaculture pond. Because the tides in the area diverged from that shown in the local tide schedule, that portion of the training had to be delayed until the afternoon. Instead, the participants worked on a drawing exercise in which each group first used satellite images to draw maps of their sub-villages' land use patterns from an aerial perspective, indicating what they look like currently and what they were like in the past. After lunch, the groups returned to the nearby aquaculture ponds and conducted the survey exercise, in which they marked the elevation and zonation of different tree species by using a transect linking the lowest tree in the tidal frame to an area higher up in the mangrove. The groups then worked together to draw the output from the transect and presented their transect diagrams to the entire group.

**Day 4:** The final day of the training started with an exercise in which the facilitators reviewed the process of the training. In order to consolidate their knowledge, all of the participants were then asked to remark on what they had learned from the three previous days of the training. Afterwards, Ben Brown gave a presentation about the process of restoration that was implemented in the neighboring villages of Tanakeke, particularly emphasizing the work that had been done to rehabilitate the hydrology of the site. The training participants then returned to their groups, based on their *dusun*, in order to draw a map of what they hoped the landscape in their own sub-village area would be like in the future, including the areas of aquaculture ponds that would be restored. Afterwards, Pangestuti Astri (ELTI) provided an explanation of the ELTI leadership program as an opportunity that the villagers could take advantage of while finalizing the plans for their sub-villages. Participants were then given directions and began organizing land use plans, identifying the activities, goals, resources needed, other parties to involve, and the time needed for implementation. The training ended with presentations of the action plans and an evaluation of the training.



**Participants:** The EMR training was attended by 27 participants from the five sub-villages of Balangdatu, and a representative from the local office of the Ministry of Marine Affairs and Fisheries. There were also 3 participants from the village of Bulii in the province of Gorontalo who were invited to join the training to orient themselves to the EMR process for eventual implementation in their region.

**Field trip:** Immediately after the training (i.e., August 30–31), David Neidel and Pangestuti Astri from ELTI joined YHB staff for a visit to Tanakeke Island in order to get a better understanding of the past and present mangrove rehabilitation projects on the island. They first visited the 3-year old restoration site at Lantangpeo and then walked around the abandoned shrimp and fish ponds of Balangloe, one of the sub-villages of Balangdatu, accompanied by the sub-village head and several other participants from the newly completed training.

**Follow-up:** ELTI staff will continue to follow the progress of the mangrove rehabilitation program on Tanakeke and explore possibilities for further engagement with the village of Bulili in Gorontalo. A Leadership Program application focused on enhancing alternative livelihoods for the five sub-villages of Balangdatu is expected in the near future. During the course of the training, ELTI and YHB staff discussed the possibility of working together to develop an online training focused on mangrove rehabilitation; plans are being developed to bring that to fruition. They also discussed the potential for developing a facility near a good example of ecological mangrove rehabilitation to serve as a long-term training site.

---

*This event was made possible thanks to GoodPlanet Foundation, Omega Program and the Arcadia Fund.*