

ISME/GLOMIS Electronic Journal

*An electronic journal dedicated to enhance public awareness
on the environmental importance of mangroves and associates*

Coastal rehabilitation project in the Maldives

The Republic of Maldives consists of 26 atolls with 1190 low-lying coral islands (Godfrey, 2007). Most of the atolls are enclosed by coral reefs with shallow lagoons and deep channels (Jagtap & Untawale, 1999). The soil is young, shallow and composed mainly of coral gravel and sandy loam with some surface humus. It is alkaline, high in calcium content, low in nutrient content and poor in water retention. Human population is about 330,000, and the main economic sectors are tourism and fisheries (FAO, 2006).

Common mangrove species found in the Maldives are *Rhizophora mucronata*, *Bruguiera cylindrica* and *Lumnitzera racemosa* (Jagtap & Untawale, 1999; Selvam, 2007). Coastal tree species include *Terminalia cattapa*, *Hibiscus tiliaceus*, *Thespesia populnea*, *Calophyllum inophyllum*, *Pemphis acidula*, *Pongamia pinnata*, *Barringtonia asiatica* and *Scaevola taccada*.

Many of the coral islands of the Maldives were in the direct path of the 2004 tsunami about three hours after the earthquake (Srinivas & Nakagawa, 2008; FAO, 2006). The tsunami left 83 people dead with 5% of the population made homeless. The comparatively low human casualty was attributed to protection by the surrounding reefs. Most of the damage was on coastal infrastructure including villages, harbours and resorts. There was some damage to coastal vegetation but erosion and sea water intrusion were extensive. Economic sectors adversely affected were tourism, fisheries and agriculture. The tsunami displaced more than 10,000 people with three islands totally evacuated (Naseer, 2007). Madifushi was one of the islands left uninhabited (Fig. 1).



Fig. 1. House on Madifushi damaged by tsunami

With support from the local government, ISME has conducted a coastal rehabilitation project in the Maldives from 2006 to 2008. Funded by the Japan Fund for Global Environment, the project was aimed at rehabilitating coastal forests in the wake of the 2004 tsunami, severe coastal erosion and anticipated sea-level rise.

Located on Boli Mulah, Dhiggaru and Maduvvari islands of the Mulaku Atoll, the planting project involved womenfolk (Fig. 2), students (Fig. 3a) and children (Fig. 3b) participating in all activities of fruit collection, seed processing, nursery technique and planting in the field. The project had attracted participation of international volunteers (Fig. 4).



Fig. 2. Womenfolk planting the beach with *Terminalia cattapa*



Fig. 3. Students planting trees in their school compound (a) and children filling up nursery bags with soil (b)

Major species planted were *T. cattapa* (Fig. 5), *C. inophyllum* (Fig. 6) and *B. asiatica*. Nurseries of these species were successfully established. Forest soils for nurseries on Dhiggaru and Maduvvari had to be transported from Madifushi which was also a good site for seed collection. On Boli Mulah, the forest soils are suitable for nursery use.



Fig. 4. International volunteers participating in the coastal planting project in the Maldives



Fig. 5. Nursery of *Terminalia cattapa* seedlings

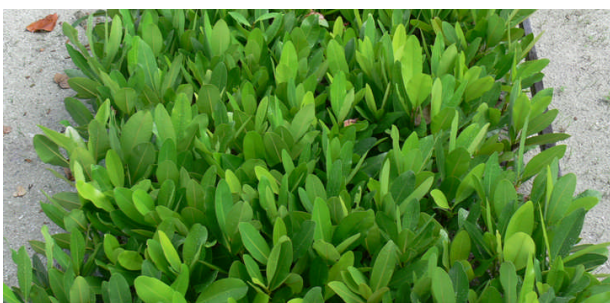


Fig. 6. Nursery of *Calophyllum inophyllum* seedlings

On Dhiggaru, 1000 seven-month-old seedlings of *T. cattapa* were planted on a beach of coral sand. Although most of the seedlings were washed away by strong waves during high tide, the remaining seedlings grew healthily after five months (Fig. 7a). Planting trials showed promise as the seedlings were neither watered nor fertilized. Future planting will include the use of stakes to anchor the seedlings. Results of initial planting trials of other species showed that seedlings of *B. asiatica* had outstanding growth (Fig. 7b).

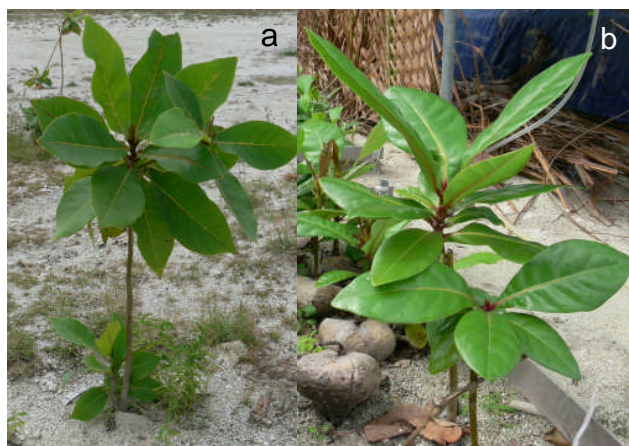


Fig. 7. Healthy seedlings of *Terminalia cattapa* (a) and *Barringtonia asiatica* (b)

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