



# Mangroves

forests worth their salt



Intro



S. Baba

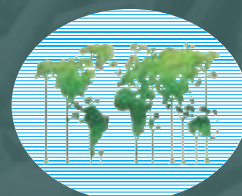


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In October 1998, Hurricane Mitch whipped across Central America, killing thousands of people, wrecking homes and devastating agricultural economies. In the Gulf of Fonseca on the Pacific coast of Honduras, Mitch brought a deluge of rain that caused flooding, landslides and debris flows and buried large areas of mangrove forest under a thick layer of mud.

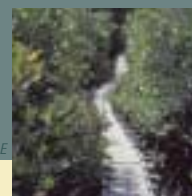
Mitch wasn't the first hurricane to visit the Gulf of Fonseca, nor will it be the last. Mangroves are robust ecosystems that form a natural line of defence against the ravages of the ocean, but even they are vulnerable to the power of a hurricane; Mitch devastated vast tracts, with potentially serious long-term ecological and social consequences for Honduras. International assistance was needed to help repair the country's battered coastlines. The International Tropical Timber Organization (ITTO) was one organization able to respond with urgency.

## ITTO and mangroves

ITTO is an intergovernmental body dedicated to the sustainable development and conservation of tropical forests. From its base in Yokohama, Japan, ITTO brings together 56 countries and the European Community to develop sustainable forest management policies and finance new initiatives.

As well as developing guidelines for forest management, ITTO helps tropical countries devise and implement sustainable forest policies and practices. It also partners local agencies in studies, field projects, workshops and other activities across Africa, Latin America, the Caribbean and the Asia-Pacific region. More than 500 projects, pre-projects and activities valued at over US\$240 million have so far been funded.

While much of its work focuses on rainforests, ITTO recognizes that tropical mangrove forests also need urgent protection. An important part of its mission therefore is to promote the conservation, rehabilitation and sustainable management of mangroves and their genetic resources. Local communities that depend on mangroves—such as the 400,000 Hondurans in regions bordering the Gulf of Fonseca—are among the first to benefit. The broader benefits of healthy and productive mangrove ecosystems are global.



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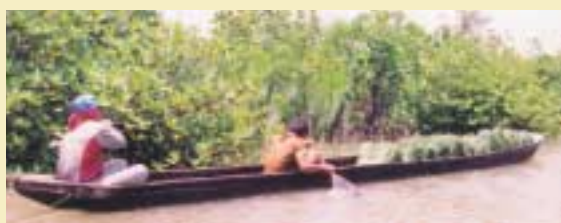




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## Life in the mangroves

Mangrove forests occupy about 17 million hectares of tropical coast worldwide: across Africa, Australia, Asia and the Americas. They are one of the Earth's most productive and biologically diverse habitats, yet among its most threatened.



Mangrove forests provide a verdant link between land and sea. These meandering communities of salt-adapted trees, shrubs, palms and ferns protect coastlines by absorbing the energy of storm-driven waves and wind and regulate estuarine and coastal water quality through sedimentation and nutrient uptake. Mangrove plants and soils protect corals and seagrass beds by preventing siltation and by absorbing pollutants contained in urban and industrial effluents.

Specially adapted trees with lush canopies and heights of up to 30 metres provide the basic architecture of the mangrove forest. The roots

of these trees are adapted to tidal ebbs and flows, exposed to the air at low tide and often submerged at high tide; they take in oxygen, filter out salt and trap sediments and debris otherwise lost to the sea. Other traits that enable mangrove trees to thrive in this challenging environment include salt-excreting leaves in species of the genera *Avicennia*, *Aegiceras* and *Acanthus*, and fruits that germinate and grow roots and shoots before dropping from the tree, aiding their establishment in the sediments beneath.

The mangrove forest is an extraordinary and diverse ecosystem. It is a hatchery, a nursery, a feeding ground and a sanctuary, a place that teems with life. Live and decaying mangrove leaves and roots provide nutrients that nourish plankton, algae, shellfish, fish, crabs and shrimp. Many of the fish caught commercially in tropical regions spend some time in the mangroves or depend on food chains linked to these coastal ecosystems.



Mangrove forests are prime nesting and feeding sites for hundreds of bird species and offer well-stocked 'arrival and departure' facilities for hundreds of migratory species on their flights across oceans. Mangroves also harbour lizards, snakes, sea turtles and estuarine crocodiles and mammals such as tigers, sea lions, manatees, monkeys, wild pigs, deer, bats and fishing cats.





## Threatened

For centuries, mangrove forests have sustained the traditional cultures of coastal populations as a source of fish and game, firewood, fodder for livestock, medicines and tannins. Moreover, they have supported the development of industries that use them as a source of raw materials for paper, chipboard, charcoal and construction.

In recent decades, though, the global mangrove estate has diminished; mangrove forests are being lost at an estimated 100,000 hectares a year. Some of this loss takes place to provide space for commercial-scale shrimp ponds, agriculture and salt pans and some for the development of new ports, urban centres and tourist resorts. Even when

not destroyed, mangroves can be degraded by over-use and natural disasters such as Hurricane Mitch to the point that their sustainability is in doubt.

The clearing and degradation of mangroves can have wide-ranging consequences. Fish stocks become depleted; the livelihoods of many coastal residents, once dependent on healthy coastal ecosystems, are threatened. Environmental problems such as soil salinization, erosion and land subsidence arise, seagrass beds and coral reefs are destroyed and biodiversity is lost.

*Mangrove forests are being lost at an estimated 100,000 hectares a year worldwide*







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## New approaches

New approaches to mangrove management are clearly needed.

ITTO believes that the responsible use and trade of resources from sustainably managed forests are part of the solution to deforestation and forest degradation, particularly when local communities are among the primary beneficiaries.

To this end, ITTO has made significant investments in mangrove-related, community-based projects in the tropics. These undertake research in and raise awareness about mangrove forests, promote cooperation and rehabilitation, and demonstrate mangrove conservation and sustainable use.



ITTO

ITTO has also funded the establishment of an international network for the conservation and sustainable use of mangrove forest genetic resources, the creation of a manual for mangrove ecosystem restoration, the publication of a highly regarded world mangrove atlas, and the establishment of a mangrove database known as GLOMIS—the Global Mangrove Database and Information System.



ITTO

*With good management, mangroves can produce a sustainable supply of timber for fuelwood and manufacturing*

## National capacity-building

ITTO's portfolio of field-based mangrove projects is broad. Implemented in partnership with local, national and international organizations—both governmental and non-governmental—it includes mapping, inventory and land-use planning to support the allocation of a national permanent forest estate in Gabon and Venezuela, mangrove restoration and sustainable management in Thailand, Egypt and Congo, and maintaining mangrove-based fisheries as part of sustainable mangrove use in Panama.

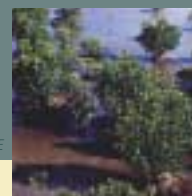
In Colombia and southern Honduras, ITTO projects are helping to promote and demonstrate the sustainable uses of mangrove forests and techniques for restoring and maintaining ecosystem productivity and health. Both projects have involved resource assessment, forest planning, community



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education, ecosystem rehabilitation and plantation establishment, and social and biological research.

Colombia's ITTO project has earmarked 35 mangrove management units along the Pacific and Caribbean coasts for preservation, rehabilitation or production. More than 50 mangrove restoration sites have been established to compare the survival and growth of mangrove species; community nurseries are producing seedlings and refining planting techniques; and monitoring systems are recording growth conditions.

Communities trained by the project in mangrove husbandry have embarked on pilot projects to replant mangroves on degraded lands, reopen silted channels and re-establish fisheries, and ancestral knowledge on mangrove forest harvesting is being revived. The project is also generating new information about the mangroves; for example, wildlife surveys have revealed several species that had not previously been recorded on the Colombian Caribbean coast, some that are new to the country and some that are possibly new to science.

Similar activities are taking place in Honduras's Gulf of Fonseca, where about 50,000 hectares of mangrove fringe the region's sheltered coastal shores and the tidal estuaries of five major river systems. Through an ITTO project, communities here are being shown how to establish and manage fuelwood and timber plantations as a means of easing pressure on mangrove resources and providing alternative sources of income. Demonstration plots are being assessed to determine the best fuelwood species, and technical assistance is being given to landholders. Assistance





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is also being given to improve community planning and environmental management at a municipal level, and to rehabilitate degraded mangrove forest, particularly in areas affected by Hurricane Mitch.

### **An information base**

The mangrove database GLOMIS is an important element in ITTO's awareness-raising efforts. It is run from Okinawa, Japan by the International Society for Mangrove Ecosystems and supported by four regional centres in Brazil, Fiji, Ghana and India.

The project catalogues and provides access to information about mangrove ecosystems ranging from the taxonomy of mangrove species to the value of mangrove ecosystems to coastal communities and their role in global climate change. Consolidating this information enables the status of mangrove ecosystems, including

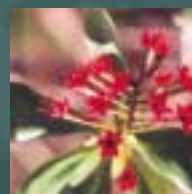
their economic and ecological values, to be better quantified and the knowledge to be shared between organizations and regions.

Other ITTO projects with a global reach include evaluations of the economic and environmental values of mangrove forests and their conservation status, and the establishment of international networks to support the sustainable management of mangrove ecosystems and mangrove forest genetic resources. Regionally, ITTO has gathered information in Latin America and Africa to create regional programs for the sustainable use, conservation and management of mangrove forests, and has assessed the value and status of mangroves in Thailand, Malaysia, Indonesia and the Pacific. Three books have been produced to enhance public awareness of the importance of mangrove ecosystems and to outline mangrove planting, restoration and management techniques.



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## Looking forward



*ITTO's Mangrove Workplan*, which spans 2002–06, directs the Organization's work on mangroves and also guides those member nations seeking support from the Organization for mangrove management, conservation and rehabilitation projects. Activities are grouped into six areas:

- conservation and sustainable management: projects in this area help to assess the status and management of mangrove ecosystems and support member countries to implement sustainable mangrove management through establishing protected areas and buffer zones and rehabilitating degraded areas;
- mangrove information and awareness: these activities aim to improve existing mangrove information databases such as GLOMIS, updating the World Mangrove Atlas, publishing mangrove information in local languages, and conducting assessments, monitoring and mapping studies to fill gaps in mangrove information;
- socioeconomic aspects: ITTO member nations are encouraged to assess the contribution of mangroves to local communities and the impacts of human activities on mangrove ecosystems. Traditional systems of mangrove knowledge and management, and wood and non-wood products and services from mangroves will be documented;
- mangrove ecosystem function and health: research in this area aims to improve understanding of mangrove ecosystems and assess the health of mangrove species

and their habitat. This includes studying the effects of climate change and sea level rise, the ecological impacts of wood harvesting and other human actions on different types of mangrove ecosystems and innovative technologies for reducing the adverse impact of human uses;

- cooperation and capacity building: training and fellowships offered through the ITTO Fellowship Program aim to increase awareness, understanding and skills relating to mangrove ecosystems. In coming years ITTO will help member nations establish national mangrove committees and raise the capacity of extension workers, government officials and local community leaders to manage mangrove systems. Networking will be promoted between government authorities, national and international bodies, local communities, the private sector, and non-government organizations; and
- policies and legislation: member nations are encouraged to formulate and enforce appropriate laws and policies on mangroves and to analyse existing laws and policies and their impacts.

With the ITTO Mangrove Workplan now widely disseminated and strong partnerships in place with diverse mangrove-related organizations, ITTO is well placed to increase its assistance to mangrove-dependent communities such as those affected by Hurricane Mitch.

**The ITTO Mangrove Workplan can be found at [www.itto.or.jp](http://www.itto.or.jp) and the GLOMIS database at [www.glomis.com](http://www.glomis.com). For information on ITTO's project program please contact the Executive Director at the address below.**



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