



International Society for Mangrove Ecosystems

ISME

Rehabilitates mangroves

Advises on how to plant mangroves

Promotes research and training on mangrove ecosystems

Compiles and disseminates mangrove information

for conservation, sustainable management and utilization of
mangrove ecosystems





Mangrove Ecosystems

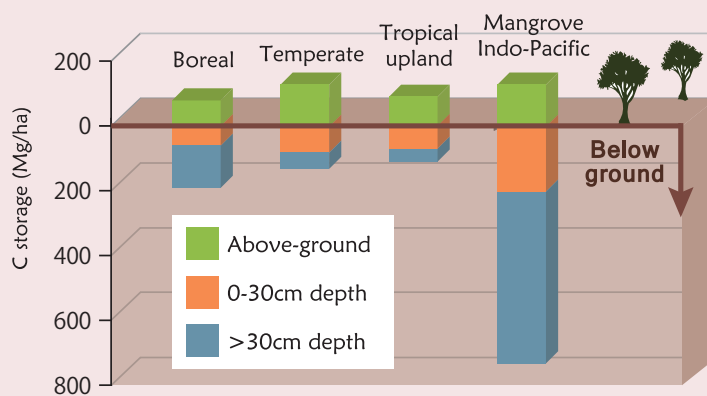
Mangroves are trees, shrubs, ferns and herbs that grow in the intertidal coastal zone of tropics and subtropics. Occurring in 123 countries and territories, and covering a total of 152,360 km², they represent less than 1% of tropical forests worldwide and less than 0.4% of the global total forest area.

Mangrove ecosystems are rich in biodiversity and provide a wide range of goods and services to human

communities living in coastal areas including wood and non-wood forest products, fisheries, medicines, recreation, ecotourism, bio-filtration, nursery grounds, coastal protection, and carbon sequestration. Mangrove forests are the most productive ecosystems known with high biomass accumulation especially below ground as one of blue carbon components. There has been an increasing interest in the important role of mangroves in the global carbon cycle.



Carbon storage of mangroves



Mangroves in the Indo-Pacific store 3 to 4 times more carbon especially below ground than boreal, temperate and tropical upland forests.



The Need for Conservation

Mangroves are utilized by local communities all over the world with understanding and appreciation of their values and benefits. However, the loss of mangrove habitat has severe impacts on local and often poor coastal communities, whose livelihood is dependent on forests and fisheries. **The loss of mangroves** is considerable and continuing at a rate of approximately 1% per year, which is **3 to 5 times higher than the overall rate of global forest loss**. The loss of world mangroves over the past few decades has mainly been caused by direct conversion of mangrove areas for urban and industrial development, and for aquaculture and agriculture.

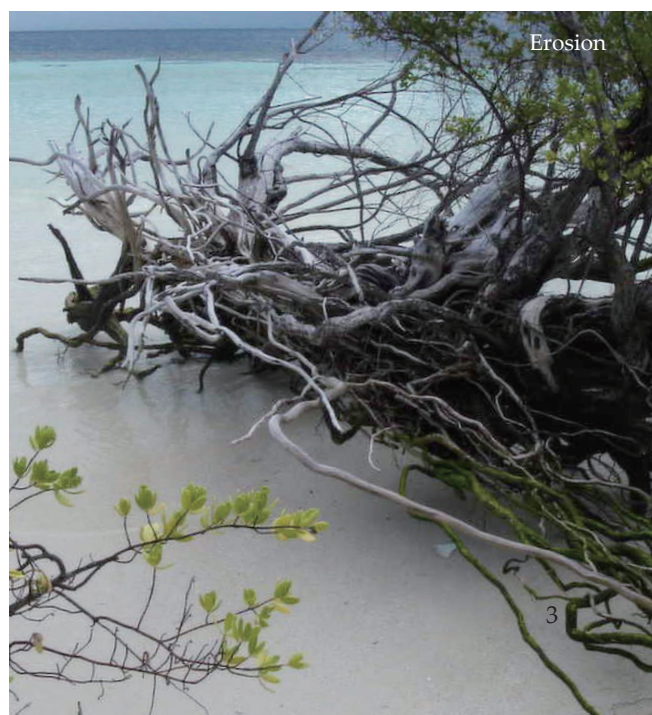
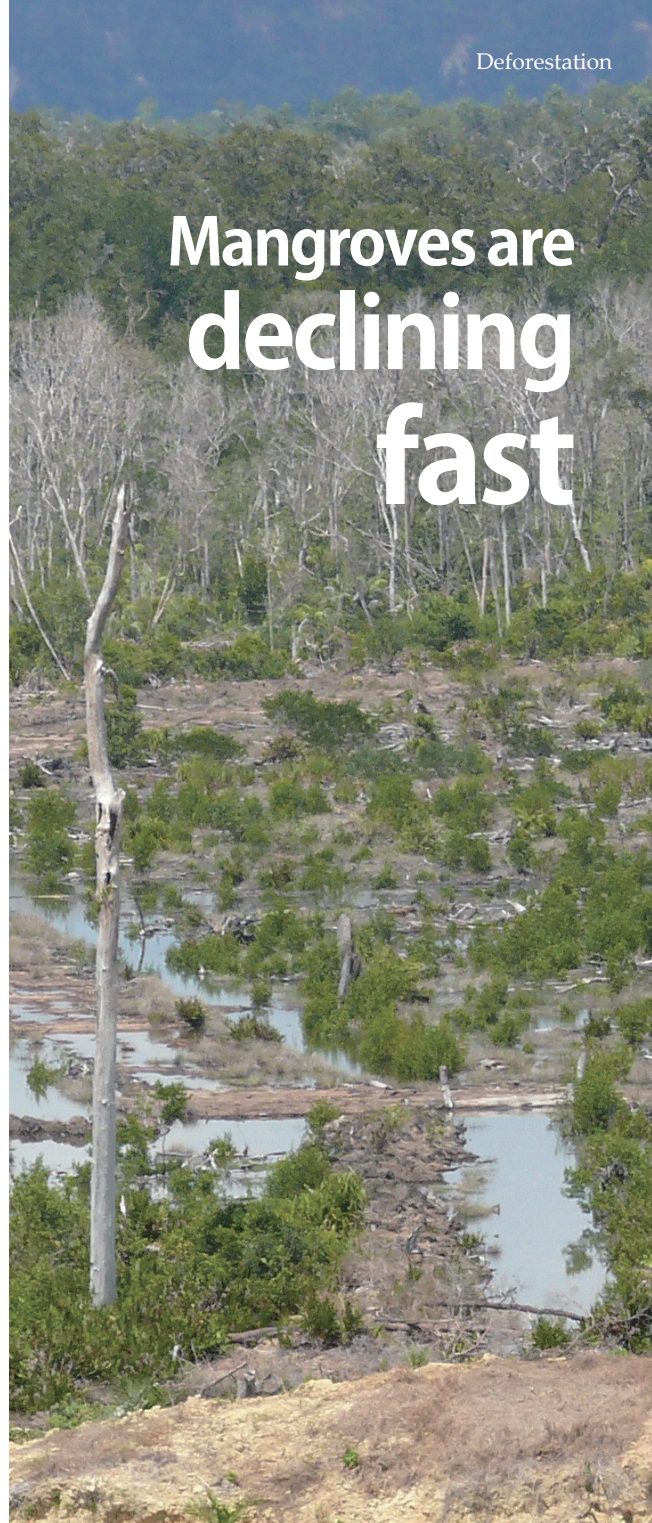
There is an urgent need for conservation and sustainable management of existing mangrove ecosystems and for rehabilitation of degraded mangrove forests.

The International Society for Mangrove Ecosystems (ISME) has been carrying out such activities in more than 30 countries in the Asia-Pacific, the Middle East, Africa and Latin America for over 30 years.

Mangroves are declining fast



Sedimentation



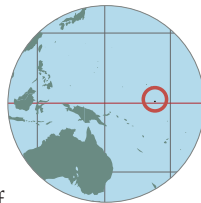
Erosion



Planting and Rehabilitation Projects

Mangrove Rehabilitation Project, Tarawa, Kiribati

Kiribati is one of several island countries of the Pacific facing the serious threat of sea-level rise. Since 2004, ISME has been implementing a mangrove rehabilitation project in Tarawa, Kiribati. The objective of this project is to introduce mangrove planting techniques to the local community and plant mangroves together with children for environmental education purpose.



The project is financed by Cosmo Energy Holdings Co., Ltd., Japan and implemented by ISME with strong support from the Ministry of Environment Lands and Agriculture Development, and the Ministry of Education, Youth and Sports of Kiribati.



Rehabilitation of Degraded Mangroves, Sabah, Malaysia

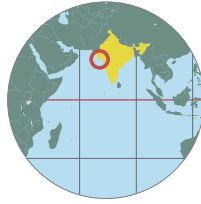
Funded by Tokio Marine & Nichido Fire Insurance Co., Ltd., Japan, since 2011, this project aims to rehabilitate degraded mangrove area in Sabah with mangrove and associated species. The project is carried out by the Sabah Forestry Department with technical advice from ISME in terms of site selection and preparation, and monitoring of survival and growth performance. The aims are not only reforestation, but also scientific research, training to establish appropriate afforestation/reforestation techniques, and environmental education to conserve biodiversity.



As of 2021, a total area of over 400 ha has been planted with more than 30 mangrove and associated species. Staff members of Tokio Marine & Nichido Fire Insurance Co., Ltd. also participated in the planting activities in September 2012 and August 2019.

Mangrove Plantation Project, Gujarat, India

Located at the estuary of Sabarmati near Vadgam in Gujarat, India, the project aims to establish mangrove plantations for coastal protection, to enhance mangrove biodiversity including habitats for endangered birds and to generate income for the local community, especially the womenfolk. This project is funded by Tokio Marine & Nichido Fire Insurance Co., Ltd., Japan, since 2009. As of 2021, a total of approx.



1,000 ha of *Avicennia marina* plantation have been established. Daheda Sangh, a local NGO, carries out the planting activities together with the local community. Headed by Prof. S. Baba, the Executive Director of ISME, the project is conducted in collaboration with Dr. Bharat Jethva as Technical Adviser.



Previous Mangrove Plantation Projects

Maldives The Republic of Maldives, consisting of some 1,190 small islands in the Indian Ocean, is exposed to the threats of sea-level rise. With supports from the Maldives Government, ISME implemented a planting project in several islands from 2000-2003 to help mitigate coastal erosion. From 2006 to 2009, another project was carried out to restore the coastal forests destroyed by the 2004 Indian Ocean Tsunami. Some coastal tree species including mangroves were raised in a nursery for planting along the coast together with local communities. The projects were funded by the Japan Fund for Global Environment.



Brazil In Bragança, Para State of the northern Brazil, construction of roads caused hydrodynamic changes in the coastal regions, and consequently, large areas of mangrove forests were degraded in the last two decades. Japan International Cooperation Agency (JICA) funded a three-year project (2005-2008) to restore the degraded mangrove forests and develop education materials to enhance public awareness of the importance of mangroves. The project was supported and participated by the local communities in Bragança, and collaborated with Federal University of Para (UFPA) - Bragança Campus, Museu Emilio Goeldi, and Mangrove Dynamics and Management (MADAM).



Other Projects

Eco-Tours for Japanese Children

From 2009 to 2019, ISME has organized environmental study tours in Iriomote, Japan, for elementary school children who have won prizes for their essays and paintings on the environment. Over a period of three days, the children gain knowledge and experience on the importance of nature and conservation of the environment. Activities include boat tour and kayaking through mangrove forests, learning fabric dyeing using mangrove bark, and snorkeling to see the underwater world. This project was funded by The Asahi Shimbun Company and Tokio Marine & Nichido Fire Insurance Co., Ltd., Japan. Due to the spread of the COVID-19, the Eco-Tour is suspended since 2020.



Training Courses

From 1995 to 2012, ISME has implemented two annual training courses funded by Japan International Cooperation Agency (JICA). The courses are *Conservation and Sustainable Management of Mangrove Ecosystems* since 1995 and *Environmental Education for Sustainable Development - Conservation of Coastal Ecosystems for Lives of Local Communities* since 2005.

A total of 117 trainees from 38 countries of Africa, Middle East, Asia, Pacific, North and South America regions participated in the mangrove training course and a total of 84 trainees from 28 countries participated in the environmental education course.

Voice of Trainees

"The knowledge I gained from the mangrove training course enabled me to secure funding for implementation of sustainable management of the Chilaw Lagoon mangrove project."
Participant from Sri Lanka

"The training course on environmental education was very useful particularly from the perspective of changing the perception of our coastal communities towards sustainable development."
Participant from Indonesia

Mangrove Educational Books

Three mangrove educational books were published by ISME in March 2013, financially supported by International Tropical Timber Organization (ITTO). They were *Continuing the Journey Amongst Mangroves* by Barry Clough; *Structure, Function and Management of Mangrove Ecosystems* by Jin Eong Ong & Wooi Khoon Gong; and *Useful Products from Mangrove and other Coastal Plants* by Shigeyuki Baba, Hung Tuck Chan & Sanit Aksornkoae. The books were written, published, launched and distributed in commemoration of the retirement of Prof. Shigeyuki Baba from University of the Ryukyus.



Our Publications

World Atlas of Mangroves

The 2010 *World Atlas of Mangroves* was to revise and improve the accuracy of the original 1997 *World Mangrove Atlas* through analytical assessments of mangrove forest area and status at the regional and national levels. Published in English in July 2010, the revised atlas was written by Mark Spalding (TNC), Mami Kainuma (ISME) and Lorna Collins (TNC), with funding from the Government of Japan through ITTO. Partnership with FAO, UNEP-WCMC, UNESCO-MAB, UNU-INWEH and TNC and the inputs of more than 100 international mangrove researchers and organizations. The atlas constitutes the first truly global assessment of the state of mangroves, providing recent and reliable coverage of nearly 99% of the world's mangroves and a wealth of statistics on biodiversity,

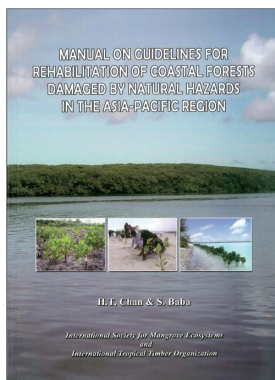
habitat area, loss and economic value. It contains 60 full-page maps showing locations of the entire world's mangroves.

The following organizations provided financial or in-kind contributions to the project: Government of Japan (the major funding source of the project); Thailand Environment Institute; Tokyo Marine and Nichido Fire Insurance Co., Ltd., Japan; Tropical Biosphere Research Center of University of the Ryukyus; and Wetlands International. The United States Department of State and the Government of Spain funded the publication of the French and Spanish versions of the atlas. Two versions, edited and translated by François Blasco, were published in 2011.



ISME/GLOMIS Electronic Journal is a peer reviewed on-line journal dedicated to inform mangrove scientists and the general public on scientific knowledge and issues related to the mangrove and associated ecosystems. The journal welcomes manuscripts with scientific merit reporting original fundamental or applied research on mangrove biology, ecology, forestry, fisheries, physiology, hydrology,

chemistry, pharmacology, management, conservation, rehabilitation and utilization. Manuscripts on environmental issues affecting the mangrove ecosystems e.g. climate change, sea-level rise, erosion, pollution and sedimentation are also be accepted. ISME members are strongly encouraged to submit manuscripts. A guide for authors and PDF copies of papers are available at <http://www.glovis.com>.



Manual on Guidelines for Rehabilitation of Coastal Forests Damaged by Natural Hazards in the Asia-Pacific Region

Manual on Guidelines for Rehabilitation of Coastal Forests Damaged by Natural Hazards in the Asia-Pacific Region by Hung Tuck Chan and Shigeyuki Baba was published in January 2009. The manual has introductory chapters on coastal forests (mangrove forests, beach and dune forests, and forests of coral islands), natural hazards (tsunamis, tropical cyclones, coastal erosion and

sea-level rise), and the protective roles of coastal forests. The main chapter provides an overview on concepts and rationale of rehabilitation, and rehabilitation efforts. The guidelines include the rationale for rehabilitation; choice of species; site selection and preparation; propagation and planting; monitoring and tending; and case studies.

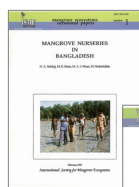
ISME Mangrove Ecosystems Occasional Papers

Occasional Papers No. 4

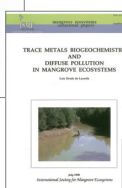
Published in May 2013, Occasional Papers No.4 comprised two papers: the first paper was on *Environmental Characteristics of Mangroves for Restoration in the Yucatan*

Peninsula, Mexico by Toyohiko Miyagi; the second paper was on *Silviculture Manual for Mangrove Restoration in the Yucatan Peninsula, Mexico* by Koichi Tsuruda.

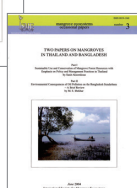
Earlier issues are;



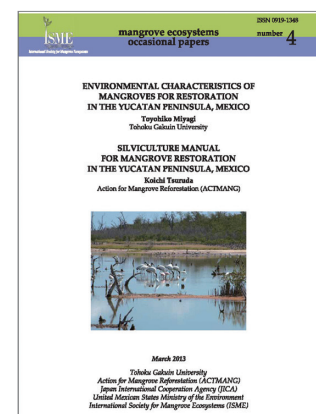
Occasional Papers No. 1 Mangrove Nurseries in Bangladesh



Occasional Papers No. 2 Trace Metals Biogeochemistry and Diffuse Pollution in Mangrove Ecosystems

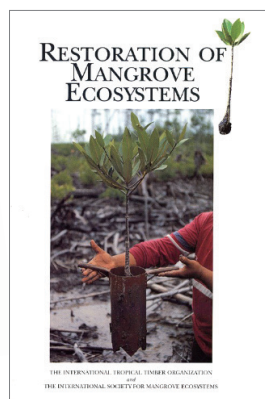


Occasional Papers No. 3 Two Papers on Mangroves in Thailand and Bangladesh

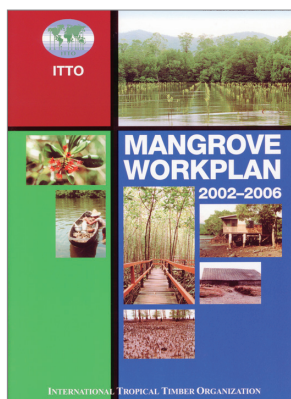




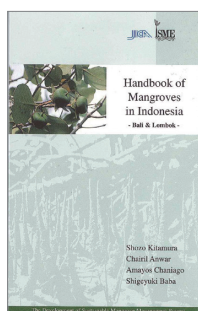
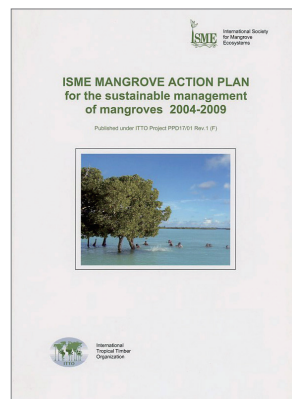
Other Publications



Restoration of Mangrove Ecosystems
(Technical manual)



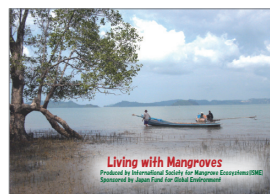
ITTO Mangrove Workplan developed with ISME (left)
and ISME Mangrove Action Plan (right)



Handbook of Mangroves in Indonesia
(Co-published with JICA)



What the Tides Bring (Thailand, 1996)



Living with Mangroves (Fiji, 1997)

- available in DVD to introduce life in mangroves

Please visit our website for further information.

GLOMIS

Global Mangrove Information and database System

GLOMIS is a searchable on-line mangrove database that was developed by ISME and funded by ITTO from 1997-2006. The idea was developed in 1996 as the very first tool of its kind that allows for easy access to mangrove-related information received around the world. The data were collected from ISME's four regional centers (Malaysia, Fiji, Ghana and Brazil) as well as Okinawa headquarters. More than 8,400 records were disseminated through the internet and a stand-alone CD-ROM.

<http://www.glovis.com/>





Brief History of ISME

The International Society for Mangrove Ecosystems (ISME) was formed in August 1990 during its Inaugural General Assembly held at the Yokohama Conference Centre in Yokohama, Japan. The occasion was graced by Their Imperial Highnesses Prince and Princess Hitachi. The following are key historical events of the society:

- 1990, 8 Inauguration
- 1991, 3 Affiliated to the International Council of Scientific Unions (ICSU) and the International Association for Biological Oceanography (IABO)
- 1992, 6 The Charter for Mangroves submitted to the Secretary General of UNCED, as an annex of the World Charter for Nature
- 1992, 10 Certified as a Foundation by the Japanese Law
- 1994, 1 Given the Roster Consultative Status in the United Nations Economic and Social Council (ECOSOC)
- 1999, 12 Awarded the Certificate of Commandment by the Environment Agency (Ministry of Environment, Japan) in recognition of achievements of the society in research, conservation and rehabilitation of mangroves, which contributed to the mitigation of global warming
- 2003, 10 Registered as a Non-Profit Organization (NPO) under the Japanese Law to Promote Specified Non-profit Activities
- 2007, 10 Commended the Letter of Appreciation by JICA



ISME General Assemblies

In the past, ISME held General Assemblies once in three years. According to the Revised Statutes 2011, ISME will hold future assemblies once in four years. The following table shows the history of general assemblies and elected presidents of ISME:



The Eighth General Assembly of ISME (Sandakan, Sabah, 2011)

General Assembly	Date and Venue	President
First	August 1990, Yokohama, Japan	Dr. M. S. Swaminathan (India)
Second	June 1993, Okinawa, Japan	Prof. Sanga Sabhasri (Thailand)
Third	August 1996, Hat Yai, Thailand	Prof. Sanga Sabhasri
		Dr. Marta Vannucci (Acting)
Fourth	September 1999, Bali, Indonesia	Prof. Aprilani Soegiarto (Indonesia)
Fifth	August 2002, Ho Chi Minh City, Viet Nam	Prof. Aprilani Soegiarto
Sixth	August 2005, Kuala Lumpur, Malaysia	Prof. Salif Diop (Senegal)
Seventh	August 2008, Bangkok, Thailand	Prof. Salif Diop
Eighth	September 2011, Sabah, Malaysia	Prof. Sanit Aksornkoae (Thailand)

ISME Executive Committee

The Executive Committee (EC) comprises the President, Vice-Presidents, Treasurer and Executive Director.

President	Prof. Sanit Aksornkoae (Thailand)
Vice-President	Prof. François Blasco (France)
Vice-President	Prof. Norman Duke (Australia)
Treasurer	Dr. Hung Tuck Chan (Malaysia)
Executive Director	Prof. Shigeyuki Baba (Japan)

ISME Secretariat

Since the formation of ISME in August 1990, the Secretariat of ISME has been located at the Faculty of Agriculture, University of the Ryukyus in Okinawa, Japan.



Prof. Sanit (President of ISME) addressing the International Workshop on Mangrove Conservation in India

A map showing countries where members reside



Our members are from 94 countries/regions

ISME Membership

The Society is supported by membership. As of 2023, membership of ISME stands at over 1,300 individual members and 49 institutional members from 94 countries/regions.

Anyone is welcome to join ISME. Your membership and contributions will support ISME's mangrove conservation activities. The annual membership for individuals is JPY2,000. Life membership is JPY20,000 while annual institutional membership is JPY25,000.

Donations are appreciated to help ISME protect our precious mangroves!

ISME MISSION

Through international cooperation, the Society collects, evaluates and disseminates information on mangrove ecosystems for the conservation, rational management and sustainable utilization of mangroves.



Sunrise from a mangrove shore in Kiribati



International Society for Mangrove Ecosystems

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Mangroves and Their World
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