

**ECOLOGICAL HEALTH
OF INDIAN SUNDARBANS
AND ITS MANAGEMENT**

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By

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Contents

<i>Acknowledgements</i>	<i>vii</i>
<i>About the Book</i>	<i>ix</i>
1. Indian Sundarbans: An Overview	1
2. Health of Indian Sundarban Mangrove Flora	20
3. Ecosystem Services of Mangrove Associate Flora	32
4. Abiotic and Biotic Components of Indian Sundarban Mangroves	47
5. Threats to Indian Sundarban Mangrove Ecosystem	105
6. Conservation of Mangrove Ecosystem in Indian Sundarbans	131

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About the Book

If anybody ever happens to visit a coastal area or estuarine stretch, unique vegetation at the land – sea interface is observed with some peculiar features like pneumatophores, stilt roots, viviparous germination etc. These are called mangroves. Mangroves stepped on this blue planet about 114 million years ago in the Indo-Malaysian area and later spread to other regions of the tropics. Due to their peculiar reproductive strategy of viviparous germination, propagules dropped from their mother plants and floated in the aquatic phase and gradually swayed to America, reached at Central and South America during the Cretaceous period and lower Miocene epoch between 66 and 23 million years ago. Today, the best habitat of mangroves is the Indo-Pacific region.

The mangrove ecosystem offers several ecosystem services, which are essential to run the wheel of civilization as well as to support the livelihood of people living and dependent on the coastal resources. The conservation of mangroves is fundamental to all marine biological processes, for maintenance of biodiversity and ecosystems and for primary and secondary productions that support human needs. Competition for limited resources has intensified with human population growth in coastal regions and the diversion of mangroves for economic activities and livelihoods has been experienced globally. It is important to state that such threatened ecosystems can no longer provide their optimum biological functions and regulate services that sustain coastal economic production and livelihoods. Today the rapid pace of urbanization, intense industrial activities, aquaculture and unplanned tourism has deteriorated the mangrove ecosystem to a great extent. We are not very much aware of the loss we will face in future not only in terms of fishery, timber, honey, wax and various economically important products, but also in terms of ecosystem stability, protection against sea level rise and erosion, natural disaster etc.

The present book has critically presented the data bank for each type of mangrove resources not merely in the form of text description, but also through case studies that are the outcomes of research projects and pilot programmes carried out in different parts of the world. For a long time there was a need felt for this type of book on mangroves and more specifically Sundarban mangroves for common people. This would reduce the communication gap at different levels. Hence while writing this book we tried to by pass hard core scientific terminologies, concepts and models related to mangroves. We hope that the present book would answer at least some of the doubts of common readers on this unique halophytic vegetation of the planet Earth.

ABOUT THE AUTHOR



Dr. Abhijit Mitra, Associate Professor and former Head, Dept. of Marine Science, University of Calcutta (INDIA) has been active in the sphere of Oceanography since 1985. He obtained his Ph.D as NET qualified scholar in 1994. Since then he joined Calcutta Port Trust and WWF (World Wide Fund), in various capacities to carry out research programmes on environmental science, biodiversity conservation, climate change and carbon sequestration. Presently Dr. Mitra is serving as the advisor of Oceanography Division of Techno India University, Kolkata. He has to his credit about **358** scientific publications in various National and International journals, and **29** books of postgraduate standards. Dr. Mitra is presently the member of several committees like PACON International, IUCN, SIOS etc. and has successfully completed about **16** projects on biodiversity loss in fishery sector, coastal pollution, alternative livelihood, climate change and carbon sequestration. Dr. Mitra also visited as faculty member and invited speakers in several foreign Universities of Singapore, Kenya, Oman and USA. In 2008, Dr. Mitra was invited as visiting fellow at University of Massachusetts at Dartmouth, USA to deliver a series of lecture on Climate Change. Dr. Mitra also successfully guided **21 Ph.D students**. Presently his domain of expertise includes environmental science, mangrove ecology, sustainable aquaculture, alternative livelihood, climate change and carbon sequestration.



Dr. Harekrishna Jana is presently serving as faculty member in the Department of Microbiology in Panskura Banamali College under Vidyasagar University, Midnapur, West Bengal (India). He started his career in the field of Marine Science since 1996. He worked in the rigorous region of Indian Sundarbans and has wide range of experience in exploring the floral and faunal diversity as well as microbial ecology of Sundarbans. He has published about **30** scientific papers in peer reviewed journals and contributed chapters in several books on biodiversity, environmental science and livelihood development. Dr. Jana is presently a member of Biotech

Research Society of India. He also attended about 75 National and International seminars to present his findings on marine environment. He is also the recipient of Young Scientist Award from Central Calcutta Science and Culture for Youth in 2012. His areas of research include aquaculture, environmental microbiology, food microbiology, phytoplankton diversity, climate change and mangrove ecology.



Dr. Tanmay Ray Chaudhuri, an officer of Indian Police Service, worked extensively on pollution and ecological balance in Indian Sundarbans. During his association in United Nations, he had travelled extensively in Africa, Europe and south-east Asia. Despite being a highly decorated officer of Indian Police Service and recipient of many awards including three UN Medals for his contribution in re-structuring civil-war affected countries in Europe and Africa, Dr. Ray Chaudhuri always showed his

keen interest in different research projects in the lower Gangetic delta region, especially on Sundarban mangrove ecosystem. His expertise in the environmental chemistry, geography, topography, ecology, biodiversity and sociology of Indian Sundarbans is an asset to any research work on Indian Sundarbans. He has published **10** scientific papers in different national and international journals and is serving as important member of many on going research projects in Indian Sundarbans.