

Preface

Compared to other ecosystems, wetlands have received an exceptional amount of attention. Wetlands are valuable as sources, sink and transformers of a multitude of chemical, biological and genetic materials. They stabilize water supplies, clean polluted waters, protect shorelines, and recharge groundwater aquifers. They have increasingly become recognized for their unique ecological functions in the environment and are the focus of increased research by scientists and study programs by schools, communities, and nature centers. On the other hand, the idea of using constructed wetlands for wastewater treatment has been encouraging because of their environmental friendliness and enhancement on landscape quality. Consequently, interest in wetlands extends from students in landscape architecture and environmental engineering programs to the real world of public officials, developers, and private citizens.

Wetland management requires an understanding of the scientific aspects of wetland balanced with legal institutional and economic realities. This book consists of comprehensive information of wetland's importance, functions, conservation and management strategies, which will be beneficial to environmental professionals in different fields for formulating wetland conservation policy and conducting environmental research. The latest and advanced information and management techniques of using constructed wetland for wastewater treatment are also included in this book.

This book is the product of the Croucher Advanced Study Institute on Wetland Ecosystems in Asia: Function and Management held in March 2003 at Hong Kong Baptist University, attended by a selected number of specialists and practitioners, to review the major problems involved in wetland management, and how they can be solved, against a background of situations in Asian countries. The Asian region contains some of the world's largest and diverse seagrass beds and about half of the approximately 50 seagrass species known world-wide occur along Asian coasts. These seagrass beds, mainly via the detritus food chain, support a very productive community of fish and invertebrates, especially mollusks and crustaceans, many of which are of commercial importance. The South-East Asian peat swamp forests cover nearly 30 million hectares compared to only one

million hectares in Amazonia. Asia's major rivers (a wetland habitat) are some of the world's largest and most of the rivers of Asia have extensive floodplain wetlands. The region also contains the world's largest contiguous area of mangroves – the Sundarbans in Bangladesh, and the country with the world's largest expanse of mangroves – Indonesia. It is also global center for mangrove diversity and evolution. In terms of freshwater ecosystems, the swamp forests of South-East Asia are not only among the largest and the best developed in the world, but are botanically among the most diverse, while exhibiting a high degree of endemism.

Unfortunately, wetlands throughout Asia are under threat, destruction and degradation continues unabated. Analysis showed that of nearly 1,000 wetlands considered to be of international importance for socio-economic or biodiversity values in Asia, as many as 56% were considered to be moderately or seriously threatened, while only 15% were threatened. In addition, only about 10% of these internationally important wetlands are currently totally protected, while a further 15% is partially protected.

To date, in South-East Asia, 5 countries have developed their own National Wetland Policy or Wetland Action Plan or National Wetland Strategy. They are Indonesia, Philippines, Vietnam, Thailand and Cambodia. This book discussing different wetland management strategies in Asia will act as a reference book for environmental professionals in other Asian countries to formulate conservation policy for their own countries.

The book consists of 4 sessions: I. Natural Wetland Systems and Their Functions; II. Wetland Biogeochemistry; III. Wetland Management Strategies in Asia and IV. Constructed Wetlands. The basic information of natural wetland systems is introduced in Session I. More scientific discussion about the biogeochemistry of wetland can be found in Session II. In Session III, wetland management strategies of different Asian countries, including Malaysia, the Philippines, Vietnam, Thailand and Hong Kong are discussed. Although only Asian experience has been shared, past experience shows that there is a body of general rules applicable to different wetland systems of different countries. The latest and advanced information and management techniques of constructed wetlands can be found in Session IV which will be useful for environmental managers and engineers working on constructed wetland projects.

We hope that this book will not only be beneficial to environmental professionals for formulating wetland conservation policy and conducting environmental research, but it will also serve as a reference book for students of undergraduate and graduate courses on ecology and conservation.