

The World's Largest Wetlands

Ecology and Conservation

During the past century, humans have destroyed approximately 50 percent of the world's wetlands. As wetlands shrink in area, their important functions decline too: there is reduced carbon storage, lower biological diversity, lower fish production, less available water during drought, higher flood levels in spring, and higher risk of water pollution. The world's largest wetlands have not been described, ranked, and compared previously. For the first time, an international team of scholars shares its understanding of the status, ecological dynamics, functions, and conservation needs of the world's largest wetlands.

LAUCLAN H. FRASER was recently appointed the Canada Research Chair in Community and Ecosystem Ecology at Thompson Rivers University. He has published over 25 scholarly papers and is on the editorial boards of *Applied Vegetation Science* and the *Ohio Journal of Science*. Dr. Fraser's research group examines the processes that organize plant communities and the functional consequences of different emergent patterns on ecosystem functions. His laboratory focuses on ecosystems that are among those most affected by anthropogenic and natural disturbances, namely freshwater wetlands and temperate grasslands.

PAUL A. KEDDY holds the Edward G. Schlieder Endowed Chair for Environmental Studies. Over his career Dr. Keddy has published more than a hundred scholarly papers on plant ecology and wetlands, as well as serving organizations including The National Science Foundation (NSF), The Natural Sciences and Engineering Research Council (NSERC), the World Wide Fund for Nature, and The Nature Conservancy. He has been recognized by the Institute for Scientific Information as a Highly Cited Researcher in the field of Ecology and the Environment. His current research examines the environmental factors that control wetlands, and how these factors can be manipulated to maintain and restore biological diversity.

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Edited by
LAUCLAN H. FRASER
AND PAUL A. KEDDY



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Preface

From the vast deltas of the Amazon and Volga, to the bogs of the arctic tundra, and the mosaic prairie potholes of North America, wetlands come in all shapes and sizes. Wetlands are the fragile interface between land and water. Human civilization has been inextricably linked to wetlands because of their economic and aesthetic value. Only recently has it been shown that wetlands perform very important functions in our environment. They have been described as “the kidneys of the landscape” because of their effect on hydrological and chemical cycles, and because they receive downstream wastes from both natural and human sources. They have been found to cleanse polluted waters, prevent floods, protect shorelines, and recharge groundwater aquifers. Wetlands are also referred to as “biological supermarkets” because of the numbers of species and the abundance of biomass they support. They play major roles in the landscape by providing habitat for a wide variety of flora and fauna. These generalizations apply whether one is describing the bottomland hardwoods of the Mississippi River valley, the Pantanal in South America, or the Sudd wetlands of the Upper Nile in Africa.

Approximately 50% of the world's wetlands have been lost. No country is isolated from the impacts of human overpopulation. Therefore we took a global perspective to ensure that the largest wetlands are understood and wisely managed. Little is known about some of the largest wetlands. The research that has been done is fragmented and published (if at all) in obscure journals. A global overview has never been presented in systematic and complete manner.

We brought together leading scientists from around the world to explore and discuss the world's largest wetlands in Quebec City, Canada at INTECOL 2000, The International Association of Ecology 6th International Wetland Symposium. This was not simply a descriptive assignment for each participant; the emphasis was on reviewing scientifically explored patterns and processes of each of the major wetlands of the world. We are most thankful to the contributors

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to this book who accepted our challenge and boldly wrote about these large wetlands.

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