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KEDDY, PAUL A. 2000. **Wetland ecology: Principles and conservation.** Cambridge University Press, xiv + 614 p. US\$52.95, paper. ISBN 0-521-78367-4.

Up until the 1970s, ecologists regarded wetlands as edaphic curiosities that failed to fit into a larger pattern of climatic control. Studies were restricted to their special attributes—the importance of marshes to waterfowl, the value of swamps to wildlife, and the contribution of peat bogs to our understanding of climatic history—or as places to consider how species are distributed along environmental gradients. When Lindeman developed the trophic-dynamic concept, the fact that the “lake” he studied was dominated by a floating mat was incidental. Indeed, society’s main interest in wetlands was to convert them into croplands as fast as possible! In the contiguous 48 U.S. states, the halfway point of wetland loss was being approached about the time that Congress passed the Clean Water Act in 1972. Within a few years of that landmark legislation, economic incentives for draining wetlands had been replaced by bureaucratic disincentives. The rush to protect wetlands was, however, a classic case of environmental policy outstripping the capacity of science to answer even the most rudimentary ecosystem questions, e.g., how wetland boundaries should be defined, what hydrological and ecological properties are critical to their functioning, and what economic tradeoffs are incurred when wetlands are converted to alternative land uses, either wetter or drier. This information vacuum led to the development of wetland science.

In the middle 1980s, a number of universities started offering wetland ecology courses. The resulting demand for a textbook was satisfied in 1986, when W. J. Mitsch and J. G. Gosselink published the first edition of “Wetlands,” an instant success, in large part because it was comprehensive and targeted North American readers. Two more editions of this book have been published, and it remains today the 500 lb (227 kg) gorilla of wetland ecology. One could argue, however, that any academic field for which there is only one dominant textbook is hardly legitimate or mature. That is why it is so refreshing to see Paul Keddy’s contribution, which not only doubles the number of available texts but does so in a way that is not redundant. The difference between these two books could not be more profound (excluding citations by the authors, of the 1,587 references in Mitsch and Gosselink and the 823 in Keddy, only 105 overlap). Keddy is both thorough and insightful in his treatment of the literature, and I found myself frequently scurrying to the references to discover what I had missed during the past decade.

The book begins with the “Properties of Wetlands,” where the stage is set by presenting an amazingly simple classification of six wetland types—swamps, marshes, bogs, fens, wet meadows, and shallow water—based almost exclusively on the response of plant life forms to water level depths and fluctuations. This is one of the best explanations that I have ever read and is used later to explain the importance of hydrology to zonation.

The core of the book is organized around six themes that Keddy believes control wetland biology: hydrology, fertility, disturbance, competition, herbivory, and burial. The last is unique, I believe, and is yet another example of Keddy’s capacity to cast ordinary processes in a new light. Although there is little treatment of ground and surface water hydrology or nutrient cycling as separate topics, this information is integrated into the ecological roles that these factors play in structuring plant communities. Later in the book,

Keddy points out that hydrology and fertility (i.e., eutrophication) are the principal alterations causing changes in wetlands worldwide.

The book closes with three chapters collectively titled “The Path Forward.” He introduces assembly rules in the context of conservation and restoration and the use of functional categories for marsh plants and wetlands as a way to simplify the complexity of ecosystems. He also identifies two perspectives on conservation: (1) a functional ecosystem approach that perceives wetlands as “living machines” managed to serve the needs of society and (2) a community/biodiversity approach that perceives wetlands as interacting groups of species that we can assume are beneficial to society. Rather than presenting these as mutually exclusive viewpoints, he argues that they complement one another and are useful in revealing the roles of wetlands at both local and global scales. These models for viewing communities and ecosystems are not specific to wetlands. In fact, this section of the book has more to do with the general approaches and challenges of biological resource management than it does with wetland ecology. Resource managers in any field could benefit from this structure and logic. Unfortunately, the need for good judgment in management decisions—something that Keddy emphasizes—cannot be achieved simply by reading his book. He also chides researchers who continue to do studies without clearly defined goals, lest “we . . . clog the literature with all sorts of haphazard measurements on miscellaneous factors in wetlands scattered here and there with no discernible order.”

Throughout the book, Keddy maintains a global view (in so doing, one becomes acutely aware of the small amount of research being done on wetlands in China and Southeast Asia) and maintains readers’ attention by embellishing topics with stories about specific wetlands, such as the Pantanal, and offering vignettes of cultural, historical, and even biblical sources relevant to wetland ecology. I was pleasantly surprised to see him cast F. E. Clements in a favorable light; nowadays, community ecologists are more likely to point out Clements’ hyperactive use of metaphors than they are to recognize him for his influential contributions to ecological theory.

The only real disappointment is the small size of the pages, which results in some figures appearing several pages beyond where they are cited; this awkward format is apparently standard fare for the “Cambridge Studies in Ecology” series. The frequency of mislabeled figures and mistaken units of measure is a bit excessive, even for a first edition. Keddy’s emphasis of herbaceous wetlands over forested ones, lake margin work over estuarine and riverine, and community ecology over physiological and ecosystem scales might appear biased to some; I choose to view them as attributes that represent what the author can best contribute to the field.

In contrast to outdated perceptions of wetlands as ecological curiosities, it is now clear that they are the fabric that binds together increasingly fragmented landscapes. In addition to their hydrological and biogeochemical importance, wetlands contribute disproportionately to biodiversity within the larger landscape of increasing human occupation and alteration. Keddy helps us to more fully understand these connections. Every wetland ecologist must read this superb volume.

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