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BOOK REVIEW

Dodson, Stanley. 2005. *Introduction to Limnology*. McGraw-Hill, New York. ISBN 0072879351. US\$90.31. [Also available as a downloadable Digital Textbook of 11MB, US\$ 40.64.]

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Lack of fresh water during droughts and abundance of water in floods have never been experienced, either directly or indirectly, with such intensity as today. "Water can be sinister or beautiful, dangerous or life saving, valuable or costly, private property or a common resource" (p. 299). This duality in the meaning and value of fresh water is the leitmotiv of "Introduction to Limnology" by Stanley Dobson, a freshwater ecologist teaching classes in limnology at the University of Wisconsin, Madison, USA.

The book has the format of a manual directed at introductory level classes. Every chapter ends with a "Study Guide" section comprised of practical questions, lists of major concepts, vocabulary, specific examples, reminders of special contributions of individual limnologists, additional readings, and links to relevant websites. At the end of the volume, 40 pages are devoted to "Field and Laboratory Exercises". Those pages emphasize a hypothesis-testing approach in a natural history context and include examples of simple experimental design; low-tech sampling and observation techniques; and simple methods for making, interpreting, and reporting results and observations. The textbook is also accompanied by a website with valuable resources for both instructors and students.

Much attention is directed towards the usage of technical words; that is particularly useful to enhance the scientific vocabulary of students and of the other readers. Several crossword puzzles may help them to digest and remember the correct terminology. Definitions and comparisons among apparent synonymies are interspersed in the text. For instance, a review of common names of water bodies is provided (pp. 12-13), briefly describing lentic and lotic systems. The distinctions between graphical models for the trophic structure of an ecosystem and those for food webs of a community are clearly explained (p. 211). Tables are also particularly clear and useful; for example, the relationships between the kind of food eaten, where the food occurs, and the morphological and behavioral specializations fish use to capture food are summarized in a table (pp. 126-127), and examples of common groups of aquatic plants are provided along with their general appearance and habitat (p. 138).

Several chapters are particularly well structured. They are easy to read and understand, and precise and up-to-date in content. Crustaceans, and in particular, branchiopods are analyzed from different points of view: taxonomy and diversity, external structure and anatomy, habitat, behavior,

feeding preference, life cycle and diapause, and economic importance and management. The author carefully outlines the controversial issues. For instance, when introducing branchiopod classification, he observes that, while morphological characters suggest the branchiopods are divided into eight orders, comparisons of taxa using molecular techniques reveal the eight orders are not closely related in an evolutionary sense (p. 95). The importance of several malacostracans for ecosystem function is stressed (pp. 108-109) and the risks produced by their overexploitation emphasized. We learn that the removal of freshwater shrimp from tropical and subtropical streams can induce changes of the entire ecosystem as algae and aquatic macrophytes become much more abundant. Some introduced decapods, such as the rusty crayfish expanding into the lakes of northern North America, are viewed as nuisances and ecological disasters.

The book is obviously directed to the several courses in limnology in the USA and Canada. This is why the case studies provided and the problems discussed are mostly restricted to the North American region. I would welcome a new edition that might extend the use of this manual to other geographical and social contexts. There is an urgent need in Europe for good manuals to fulfill the needs of the ever-increasing number of curricula in limnology in our universities.

The book is also an informative lecture for all the other "citizen limnologists," such as environmentalists, naturalists, water resource managers, educators, and conservationists. These people may learn here about the efforts paid by a large number of scientists to lay the bases of limnology as a scientific discipline. From the introductory chapter we discover that the term limnology was first proposed by the French-speaking Swiss scientist François-Alphonse Forel in 1892 as "the oceanography of lakes." With time the interests of limnologists have been extended to all "inland waters" (1922), including lakes, streams, and wetlands, but often modern definitions are a reflection of limnologists' ideas and interests with emphasis ranging from energy flows to chemical and physical processes. The present shape of limnology is that of an "eclectic, multidisciplinary science, drawing upon many different areas of science including geography, geology, chemistry, physics, mathematics and statistics, and various biological disciplines, including taxonomy and systematics and all branches of ecology" (p. 4). The complexity of this scientific discipline in its "normal" phase is reflected everywhere in the book that shows limnology as a communal effort of scientists working within different, but complementary fields.

In the end, the author underlines the urgent need to bridge the gap between academic science and nature management. It becomes explicit in the final message of the book that the only way we have to optimize the many disparate uses and services of lakes and streams is to find the proper degree of integration among limnological knowledge, political skill, cultural wisdom, and an appreciation of aquatic life.