

BOOK REVIEW

Gary E. Dillard. 1999. *Common Freshwater Algae of the United States: An Illustrated Key to the Genera (Excluding the Diatoms)*. J. Cramer in der Gebr. Borntraeger Verlagsbuchhandlung, Berlin. 173 pages; illus. ISBN 3-443-50026-9. Price not indicated.

Professor Gary E. Dillard put together this book after many years of teaching courses on the biology of algae at Western Kentucky University. His students were required to identify genus algae from field collections. He found that students had difficulty using published keys and descriptions because of their lack of familiarity with the technical terms used in these keys to describe algal morphology. He set out to produce this "user friendly" manual, which avoids as much as possible discipline specific language. His goal has not been fully accomplished; there is still much technical jargon in the book. The beginning student is unlikely to be familiar with terms such as lorica, epicone, hypcone, dendroid colony, and others found throughout this manual. A simple glossary would have been a most useful addition. Yet, this is the first simplified key to freshwater algae to be published since Prescott's *How to Know the Freshwater Algae* (1978), which today is hard to obtain.

The book starts with a statement of purpose and a definition of "algae" as representing a heterogeneous assemblage of oxygenic photoautotrophs that lack tissue differentiation and contain chlorophyll a. Based on this definition, algae include prokaryotic groups (the cyanobacteria and chloroxybacteria) as well as a wide variety of phylogenetically unrelated eukaryotic groups. In this section the traditional and modern systems of classification are briefly mentioned. Since the purpose of the book is to act as a key to identify algae only to the generic level, Dillard did not find it necessary to place the genera into higher categories (division, classes, orders). By doing this he also avoids discussing the recent dramatic and sometimes confusing changes in algal classification. This first section of the book calls attention to the extensive bibliography for those readers interested in phylogenetic relation-

ships among the algae or in proceeding to species identification.

The next section, on algal habitats and collection methods, describes how to obtain qualitative samples with, for example, plankton nets or artificial substrates, for the purpose of conducting a survey of algal forms. There is no description of standard quantitative methods.

The rest of the book is divided into nine sections where genera are grouped by artificial characteristics such as presence of flagella. By this system phylogenetically related taxa may not cluster together. The sections are I: Charales, plant-like genera; II: unicellular flagellated genera; III: unicellular, non-flagellated genera; IV: colonial, flagellated genera; V: colonial non-flagellated genera; VI: unbranched filamentous genera; VII: branched filamentous genera; VIII: pseudoparenchymatous genera; and IX: coenocytic or sac-like genera. Within each section, the dichotomous keys to the genera are easy to follow, and each genus is illustrated with a detailed drawing. This manual excludes diatoms and many genera that occur largely in soil or aerial habitats.

Although the title of the book indicates that it deals with algae "of the United States," most genera of algae are cosmopolitan in distribution and the book can find users worldwide. There is a growing global demand for identification of freshwater algae. This demand is no longer restricted to academic circles and phyecology classes. Identification of algae is a skill valued by drinking-water utilities whose operators are concerned with the presence of possible taste-, odor-, or toxin-producing species in their source water. It is also valued by environmental regulatory agencies that use algae as water quality indicators. Recently the U.S. Environmental Protection Agency (EPA) has added algae to its "Candidate Contaminant List" (CCL). This will increase the demand for the identification of algae. Like the students enrolled in the author's algae class, most people needing to identify common freshwater algae lack knowledge of the technical jargon. Many of them currently use "picture keys," particularly color charts available

from the EPA that even have species names (not just genera) often associated with a picture. This commonly leads to misidentifications since the important diagnostic features are not learned when one does not follow a written key. The publication of this manual is

timely. It will be useful to anyone needing to identify common freshwater algae to genus.

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