

Book review

Diatoms of Low Alkalinity Lakes in the Northeastern United States. Edited by K. E. Camburn & D. F. Charles. 2000. 152 pp. The Academy of Natural Sciences of Philadelphia, Special Publication 18. ISBN 0-910006-54-7. Price \$45.00 US.

This slim volume is a poignant reminder of how far the art and science of diatom taxonomy has progressed in the past two decades and how far we have yet to go before achieving the degree of certainty in identification enjoyed by macroscopic organisms. This is truly a field where proven application in applied studies far outruns the fundamental background in taxonomy, systematics, and biogeography. This is evident in the inception of the project that eventually led to this publication. As is documented in the introduction to this book, in the early 1980's it became evident that diatoms furnished the best tool to address the degree and rate of acidification of lakes. In the United States, anthropogenic acidification was of special concern in lakes of Northern New England, the Adirondack Mountain region of upper New York State, the upper Midwest, and northern Florida. At least partially in response to public concerns, The Electric Power Research Institute (EPRI) funded an extensive study titled 'Paleoecological Investigation of Recent Lake Acidification' (PIRLA). At the project's inception, it quickly became apparent that the available summary literature of the day was grossly insufficient to support confident identification of many taxa abundant in samples from low alkalinity lakes in the northeastern United States. Led largely by Dr. John C. Kingston and supported by Dr. Charles W. Reimer, investigators studying diatoms in the PIRLA project sought to remedy the lack of literature support by development of reference illustrations to foster internal consistency in their data. Not long after inception of the project, primary responsibility for production and distribution of these illustrations became the responsibility of the authors of this volume. The so-called 'PIRLA plates' were initially strictly internal

documents, but soon achieved wider, but still limited, distribution among diatomists because of their usefulness in identifying diatom species found in soft-water habitats in North America.

Diatoms of Low-Alkalinity Lakes in the Northeastern United States is largely a formalized and somewhat polished version of the original internal documents, produced nearly two decades after the project began. Although one might wish for an ideal world, where a firm taxonomic basis is established before large scale ecological projects which depend on such knowledge are initiated, the authors are certainly to be commended for their persistence in bringing this information to a generally available and useful form. Its origins are, for better or worse, clearly visible in its content and layout. In content, this book consists of a five-page introduction, a twenty-one page list of taxa, including species listed by reference and as well as those illustrated, including thirteen newly described taxa and one new combination. This is followed by a seven-page literature cited section, which includes both works cited in the text and a brief section on 'additional references relevant to PIRLA diatom taxonomy'. The meat of the book is contained in thirty-four photographic plates and three plates of electron micrographs. Ancillary information is provided in five tables listing:

1. the location and morphometric characteristics of one hundred sixteen Adirondack lakes.
2. general water chemistry characteristics of one hundred ten Adirondack lakes.
3. average concentration of major ions and aluminum in one hundred ten Adirondack lakes.
4. occurrence of diatom taxa in Adirondack lake surface sediments and sediment cores.
5. calculated abundance weighted mean and 'tolerance' values for the taxa treated to a number of chemical parameters.

This is followed by a list of synonyms. The authors choose to largely use the names that were in common

usage at the time the 'PIRLA Plates' were composed. Increased interest in diatom taxonomy during the past twenty years has resulted in a great deal of refinement, and concomitant changes in nomenclature. The authors have provided a cross-referenced list of taxa they consider synonyms but note, "This list is arbitrary and incomplete; no attempt was made in many cases to reference the original source of the taxonomic transfer".

The final section is an index of taxa listed, and the plate number where they are shown, if they are illustrated.

How does *Diatoms of Low-Alkalinity Lakes in the Northeastern United States* come off as a general circulation publication? In my opinion, not badly, ***so long as its history and origins are kept in mind.*** Readers will quickly note that the title is not entirely accurate. Although the title indicates only lakes in the northeastern United States, some of the illustrations come from lakes in Florida and the north central United States. I suspect this devolves from the larger geographic coverage intended in the original project. Why the authors decided to restrict this publication primarily to the northeast is not clear. Some of the studies carried out in areas other than the northeastern United States are provided in the addendum to the

references section titled 'Additional References – Relevant to PIRLA Diatom Taxonomy'. The photographic plates are somewhat variable, but generally of good, quality. Their layout is unconventional, similar to the original internally circulated document, and quite effective in presenting the taxa treated, although the amount of space wasted would certainly horrify most editors. SEM illustrations are few and variable in quality. It is unfortunate that the authors did not provide more SEM-level illustrations of the small and more difficult taxa. Descriptive verbiage is minimal, with little discussion, particularly in regard to helpful hints concerning morphology, or characters useful in distinguishing taxa. Most of this burden is referred to publications by other authors, which follow each name listed. The only descriptions given are for taxa described as new in this publication, and these are rather brief. Because of its structure and composition, *Diatoms of Low-Alkalinity Lakes in the Northeastern United States* will be most useful to readers who have considerable experience in diatom taxonomy, extensive familiarity with the primary literature, and access to a first class library. Those lacking these resources and expecting a more comprehensive and complete taxonomic treatment, as implied by the title, will be disappointed.

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