

## BOOK REVIEWS

### **Vernal pools, natural history and conservation.**

Elizabeth A. Colburn. ISBN 0-939923-92-0 (hard cover), ISBN 0-939923-91-2 (soft cover). McDonald and Woodward Publishing Company, 431-B East College Street, Granville, Ohio 43023 USA. 2004. 426 pp. \$39.95 (hard cover), \$29.95 (soft cover).

Over the past quarter century or so, the study of transient waters has gained increasing prominence as a sector of freshwater biology. This prominence stems partly from biodiversity issues, with the recognition that communities of amphibians and other organisms are dependent on these abused and disappearing wetland habitats, and partly from the realization that adaptations of aquatic invertebrates to the dry phase of transient water sites reveal some remarkable evolutionary transitions. This book deals with transient waters broadly classified as vernal pools, and its objective is to provide an authoritative synthesis of current knowledge of vernal pools, their natural history, ecology, and conservation in glaciated northeastern North America.

Certainly the time has come for a synthesis of this growing body of information and, on the whole, the book succeeds in meeting its objective. The first 3 chapters deal with physical characteristics of vernal pools and variations in the hydrological conditions that influence the wet phase. Chapters 4 through 12, the bulk of the book, outline biological features of the organisms adapted to alternating wet and dry phases, and chapter 13 deals with energy flow and other ecological topics. Chapter 14 is focused on protecting vernal pools, initiatives in which the author has been involved for much of her professional career. A useful Appendix provides an annotated list of the fauna of vernal pools and seasonal ponds in and near the glaciated area of northeastern North America.

Life-history strategies of the organisms that live in annual vernal pools reveal a wonderful array of ingenious ways in which natural selection has circumvented the dry periods. In bringing together the primary scientific literature, the book is a rich resource for biologists seeking information and references on investigations of vernal pools. Presentation of the information is

directed to a broad audience, including naturalists, environmentalists, and land managers. Because it reaches for this broad readership, the book is more likely to enlist popular recognition and support for the conservation of vernal pools, one of the author's objectives. For naturalists, the detailed accounts of amphibian life histories and the coverage of insects and other invertebrates in vernal pools cannot be duplicated in any other single reference. This book presents field biology at a fascinating level, and close at hand as well.

A fundamental issue in communication about vernal pools is their definition. As the author points out, transient waters are part of a continuum of standing-water habitats, and classification of categories within a continuum is a subjective procedure. Vernal pools are defined in this book as ranging "... from relatively short-lived, spring-filling pools that are normally dry by early summer, to waters that dry only occasionally, sometimes as rarely as once every ten years" (p. 8). Hence, a dry period followed by restoration of surface water is the essence of a vernal pool because the presence of predacious fish is rendered impossible or unlikely.

The first part of this definition would find agreement with the concept of vernal pools shared by most biologists, but vernal pools that dry up as infrequently as once every 10 y or so seem a logical stretch. This definition leads to the category "semi-permanent vernal pools", which seems ever so close to being an oxymoron. Indeed, the author seems to make no distinction between this category and semi-permanent pools or ponds because the terms appear to be used interchangeably. Broadening the concept of vernal pool to this extent substantially increases the number of species under consideration and blurs distinction of species that do survive the stringent annual cycle of these habitats. This broader definition leads to the conflict that a number of the organisms treated in the book as occurring in vernal pools, in fact, do not survive under typical vernal pool conditions. For example, we are told that ctenagrionid damselflies and leptocerid caddisflies, among others occurring in "semi-permanent vernal pools", are unable to tolerate the dry phase when it happens. This intolerance comes