

## Book review

### Population Biology of Grasses

Edited by G.P. Cheplick. Published by Cambridge University Press, April 1998. 399 A5 Pages. Price \$US85; £UK50. ISBN 0-521-57205-3 (hardcover).

This volume is based on a symposium of the same title held in San Diego, California in August 1995. The delegates believed, and I agree, that an update of this field was required. Unfortunately, the topics eventually covered are not fully representative. If bamboos are included, then the much underrated sedges would also have provided interesting comparative material from a group of plants that are structurally and ecologically similar.

There are 14 chapters in 3 sections, plus an introductory chapter by Anthony Bradshaw. The latter reads like a learned Society Lecture that has been slipped in afterwards without professional editing. This is unfortunate because the ideas it contains are challenging and relevant. Editorial standards for the other chapters were much higher. There are few typographic errors, the references are consistently structured, the typeface is large and clear while the tables, figures and photos are generally easy to understand. The index is very complete and has the names of every species mentioned in the text and tables.

In the preface, the editor sees the book's goal as an update of "an analysis of the role of genetic variation and phenotypic plasticity in shaping life history traits. From an ecological perspective, the widespread nature of the interactions of other plants and fungi . . . underscores the importance of the impact of biotic factors on the population biology of grasses." Scientists experienced in the field would notice the obvious omissions from the big picture that is intended. Thus, novices in the field should regard this book as a good start and then look elsewhere for more on their particular special interest. Its value is often in drawing a reader's attention to new publications that they may have missed while their work was focussed in a different area.

I found there was a very strong emphasis throughout on temperate grasses, especially in detailed topics such as genetics, seed germination and fungal interactions. Thus, readers from the tropics will find only ideas and general relevance in most of the quoted examples. Often the detailed research knowledge quoted is poorly

linked to any practical exploitation of population biology of grasses for food and landscape function. For example, does the consistent use of irrigation and fertilisers on seed production plots over many generations shift the emphasis of breeding systems away from traits such as cleistogamous (non-opening) flowers that are potentially useful in harsh environments?

Chapters that particularly appealed to me for their novelty or appropriateness were those dealing with: (i) grass interactions with endophytes and arbuscular mycorrhiza; (ii) tussock morphology and physiology; and (iii) sex expression. These all neatly show why generalisations based on data for other species can sometimes be misleading because there are "hidden" factors at work which are easily overlooked or underrated. I would like to have seen more about cyclical dormancy in buried seeds in Chapter 2 and some mention of the effect of smoke on seed germination.

Chapters that I found difficult to appreciate included the ones on: (a) nitrogen nutrition of *C<sub>3</sub>* grasses; (b) allozymes (no definition given or findable in dictionaries); and (c) Japanese bamboos. The chapter on seed dispersal made no mention of mud on animals' feet as an important vector and the content of other chapters often understated the importance of soil factors in grass population biology. Likewise, the chapter on interplant competition made scant reference to the way taprooted plants use soil resources differently from fibrous rooted grasses in a mixed sward.

In general, the book is a useful but expensive update on some aspects of grass population biology. Some chapters are quite comprehensive in coverage but unadventurous in the interpretations given. Discerning readers would question some claims made or quoted in the book *e.g.* *Heteropogon contortus* has a persistent seedbank (p.47), *Dactylis glomerata* is rhizomatous (p.193), root:shoot ratios are typically 6:1 in grasslands (p.232) and an endophyte supplies most or all of the nitrogen requirements of sugarcane (p.255). Normal publisher's details about the book, along with a list of authors and contents, can be found on the www under Cambridge University Press or other major internet booksellers.

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