

hence more persuasive books on the market.

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Seasonally Dry Tropical Forests

Stephen H. Bullock, Harold A. Mooney, and Ernesto Medina, editors. 1995. Cambridge University Press, Cambridge, United Kingdom, 450 pages, \$95.00, ISBN 0-521-43514-5.

Sufficient wet-season productivity to build up fuels, coupled with enough drought to facilitate fires: these are the factors whose juxtaposition has led to the greatest ecosystem conversion in the tropics—seasonally dry forest to rangeland and agriculture. Grazing, deforestation, and fire have led to the nearly unidirectional conversion of dry forest to derived savanna throughout the tropics. Nowhere has the imprint of people been more profound than the replacement of the tree-dominated dry-forest ecosystem by an herbaceous community; with that conversion we have suffered the loss of a significant portion of our evolutionary heritage. By the same token, the magnitude of the loss mirrors the need for restoration.

The product of a symposium held in Mexico (no date is given, but it probably occurred in the early 1990s judging by the dates of cited publications), this 18-chapter book is an attempt to compile existing knowledge and to identify gaps in our un-

derstanding of seasonally dry tropical forests. The emphasis is on neotropical and botanical issues (representing about two-thirds of the chapters and 22 of 27 contributors). Of the non-neotropical chapters, I was especially pleased by a synthetic overview of African dry forests (by Menaut, Lepage, and Abadie), as well as a crisp, informative summary of the dry forests of Thailand (by Rundel and Boonpragob).

Restoration cannot proceed without knowledge of the system to be restored, and this book is a good place to start looking for that information. Four regional treatments are followed by a paleobotanical treatment, a chapter on vertebrates (neotropical only, alas), life forms, physiological responses to drought, plant reproduction, and interactions between plants and herbivores. Next come five chapters dealing with larger-scale phenomena, such as biomass and productivity, nutrient cycles, the belowground system, nitrogen trace gas emissions, and forest conversion. The last chapter, on Mexican ethnobotany (by Bye), might well have come first; although it is one of the shortest in the volume, it clearly illustrates the utilitarian side of Mexican dry forests.

As is inevitable in multi-authored books, some contributions are better than others. One I would consider essential for a restoration ecologist is Gentry's *tour de force* on diversity and floristics. It contains his comprehensive data on pattern, vegetation structure, dispersal modes, and endemism, as well as his surprising assessments of the highest-priority

dry-forest conservation needs in the neotropics (western Mexico and eastern Bolivia). Another is the well-reasoned chapter (by Holbrook, Whitbeck, and Mooney) on drought responses of dry-forest trees. If Gentry's chapter is essential because of its comprehensiveness, this one is indispensable because of the questions it identifies and dissects. The emphasis is on mechanisms, both physiological and anatomical, linking an array of phenologies to environment. No simple task this, but one that is addressed thoughtfully and provocatively.

There are weak spots, of course: imperfect editing of the language of authors whose first language is not English (and a few whose first language is English); a few dreary chapters that are synthesis-free compilations, easily duplicated by anyone with access to the primary literature; too much Chamela and too little Africa (not to mention the absence of Australia); and nothing substantive by way of a global overview. But these defects are more than counterbalanced by lots of solid plant biology, good coverage of Mexico's dry forests, and the interjection of innovative ideas here and there (*e.g.*, in the synthesis chapter on nutrient cycles by Jaramillo and Sanford and the data-based chapter on trace gas emissions by Matson and Vitousek). Overall, this book will fill a need, and anyone contemplating restoration of tropical dry forest would do well to start here.

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