

## BOOK REVIEWS

### THE PINES OF MEXICO AND CENTRAL AMERICA

by Jesse P. Perry Jr.

Timber Press Inc., Oregon. 1991. 221 pages. ISBN 0-88192-174-2. US\$35.95.

This book is a compendium of 40 years of Jesse Perry's dedicated field observation of the pines of this region, of his collections from them, and of his terpene analyses of many of them. Perry organises the sequence of presentation in a hierarchy that seems to him to be the best current taxonomic "fit". These little-known populations of pines present an abundance of taxonomic problems. For example, the recently described *Pinus rzedowskii* has a combination of traits normally restricted to one or the other of the two major subgenera, the hard (Diploxylon) and soft (Haploxylon) pines; similarly, Perry found it appropriate to place *P. pseudostrobus* and two of its *formas* in Subsection Pseudostrobus, but two *varieties* of this "species" in a different Subsection, Oaxacana.

Chapter 1 includes a section on the paleohistory, origins, and migration routes of pines in and to this region, followed by a section on current pine distributions and regional climates. These are presented in appropriate detail with cogent summaries. Chapter 2, on the classification of this region's pines, is well illustrated by good drawings of taxonomically useful traits. Insights to the turbulent taxonomic history of these pines appear in several NOTES AND COMMENTS about particular species, varieties, and formas in Chapter 3.

Chapter 3, which is about 70% of the book, describes about 70 species, varieties, and formas of these native pines in detail, with briefer notes on a few more. English and Spanish common names are listed for most of them. The keys provided, plus detailed information in each taxon's description, should serve to identify most mature trees, but trees lacking cones may prove difficult.

The book is technically of high quality, with good editing and clear printing. Good illustrations accompany most taxon descriptions, usually including close-ups of mature bark, needles, twigs, cones, and seeds, and a whole-tree picture, the latter providing the bonus of a photo-tour of the regions in which the pines occur. The range maps show regions where each pine taxon is native, but they do not usually provide detailed distributions within such regions. The narratives that accompany the maps provide some distributional detail tied to local variation in geology and ecology.

Most taxon descriptions in Chapter 3 include a WHERE TO FIND section. As Perry comments, there may be better places to find them, and the trees he found may no longer exist in the locations listed, but these are the locations where he made his observations and collections. The directions to them seem detailed and clear, and he includes advice as to appropriate season for visits and equipment needed. A nice feature of his WHERE TO FIND notes is a listing of pine associates at each location, so that one will know in advance which pines must be identified and sorted out there.

Perry's NOTES AND COMMENTS include information on recent exploitation and population extirpation, as well as on the usefulness of each taxon for timber, pine nuts, fuel, horticulture, and other purposes. He also identifies areas where hybridisation and introgression among these taxa may be occurring. The book includes a Selected Bibliography of 141 references to relevant publications, and a good index providing access to information on places, species, and traits.

For those interested in pines, the book is a delightful read. It provides a shopping list both for visits to native pines in the region from northern Mexico to Nicaragua, and for pines from this region that might be useful for planting elsewhere, including the two southern populations of *P. radiata*. The final three chapters are a powerful statement describing the extent, the importance, and the root causes of forest destruction in this region. Jack Duffield's Foreword concludes thus: "It is hoped that this book will assist in the efforts under way to conserve the rich but precarious diversity of the pines of Mexico and Central America".

W. J. Libby

### PROCESS MODELING OF FOREST GROWTH RESPONSE TO ENVIRONMENTAL STRESS

by R. K. Dixon, R. S. Meldahl, G. A. Ruark, and W. G. Warren

Timber Press Inc., Oregon. 1990. 447 pages. ISBN 0-88192-152-1. US\$54.95.

Concern over the possible harmful effects of man-induced environmental change on the productivity and health of ecosystems is increasing. The topic of this conference "Forest Growth: Process Modeling of Response to Environmental Stress" (held at Gulf Shores, Alabama, April 1988) is therefore of considerable general interest, with some 120 conference participants providing a mostly North American perspective.

The papers are grouped under five headings covering (1) Metabolism and Growth, (2) Structure and Function, (3) Model Structure and Evaluation, (4) Tree and Stand Growth Modeling, and (5) Modeling Responses to Environmental Stress. Expectations are raised, and often justifiably, as the book includes good review and technical papers covering the topics of light interception, photosynthesis, and growth allocation, and papers of a more conceptual nature addressing the area of model development in forest systems. The book is nicely bound, and includes an index.

There are, however, some important omissions. The word "health" surprisingly is not found in the index, and also hardly features in any of the chapters, yet defoliation, top die-back, and tree death are globally evident signs of ecosystems under stress. Furthermore, while "genetics" appears in the index, none of the chapters provides insights on how genetic variation, which is clearly the basis for any evolutionary response to environmental change, could be incorporated into our thinking.

What lesson did I learn from this book? It is clear that our eco-physiological knowledge is still very limited, especially when questions arise concerning tree health and stress in