

and that of the Trans Mexican Volcanic Belt, concluding that the similarity is higher with the former.

The fifth section in the book on plant diversity and humans includes two chapters. The first discusses the role of humans in the diversification of plants in Mexico. Interesting concepts are presented in this chapter, such as the study of possible correlations of cultural richness with species richness. The second and last chapter of this section presents the view of Hernández Xolocotzi on some aspects of plant domestication in Mexico. This presentation touches on the origin and evolution of some cultivars through the history of Mexico, effects and perceptions of occidental science and traditional agriculture, and methods to conserve this diversity. An appendix on representative plants domesticated in Mexico is an excellent addition to this chapter.

Finally, the last section presents a clearly written review of terrestrial habitats. Toledo and Ordóñez set the ground for conservation measures, since they provide information on biological richness and endemism together with the prominent land uses in six terrestrial habitats well represented in the country. In this manner, the status of knowledge of biodiversity presented in the previous sections is united with the information on human activities in the areas where this diversity occurs.

Although few typographical errors are found in the book, a criterion on the use of accents in Spanish is lacking. More disturbing are the maps presented, where details are impossible to read.

There is no doubt that this book is overall well conceived and executed. It is a solid step towards the presentation of accumulated knowledge of the Mexican biodiversity. Anybody interested in the ecology, taxonomy, evolution, conservation or biogeography of the Mexican biota should have this volume at hand. We can only hope that the example set by this volume will be followed by future productions of equal quality. It is evident throughout this book that a lot is known about the biodiversity of Mexico, but a long path still lays ahead of us; the ignorance in many groups is vast. This book reveals that areas of richness and endemism for one group do not always coincide with that of others. Declaring all the areas of richness and endemism of every group as protected would be impossible. Greater understanding of biodiversity and of its interaction with humans can only help in the search of the balance of human needs and maintenance of biodiversity in this fascinating country.

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*Giant Sequoia Groves of the Sierra Nevada: A Reference Guide.* By DWIGHT WILLARD. 1994. Self-published. P.O. Box 7304, Berkeley, California 94707. 372 pages.

This reference book on giant sequoia (*Sequoiadendron giganteum*) groves came about because in Dwight Willard's words, "I love sequoias." Relying on other reference materials, interviews, and personal visits to groves, Willard provides detailed information on 65 separate groves, emphasizing giant sequoia resources (location, grove characteristics, human use patterns, etc.) and natural values (noted/named trees, "other" forest, and water resources nearby). He also provides selected comments on fire history, management and research needs, and bibliographic references. Most grove descriptions are about 3½ pages long, with 12 pages in the book devoted to low quality xerox copies of USDA Forest Service or USGS quadrangle maps that show grove locations.



The book begins with an overview of the giant sequoia resource, although much of the information can also be found in Hartsveldt's (1975) "The Giant Sequoia of the Sierra Nevada" (which is infrequently cited by Willard). I was disturbed to find few other citations in the introductory material because over 3000 citations exist on giant sequoia, and appropriate credit is not given to previous researchers—especially in regards to the section on the "Physical and Biological Characteristics of the Sequoia and its Environment."

The five-page section on "Grove Management Issues" is overly simplified and leaves the impression that state and federal agencies follow one of three preservation strategies: (1) "Don't touch" management; (2) use of "controlled burning," or (3) low levels of commercial logging. I don't believe any of the three management approaches are used exclusively in any grove (by any agency). Here a discussion of ecosystem management with respect to sequoias would have been useful.

The strongest and largest portion of the book is Part 2, the grove descriptions. Here, 65 groves are described in a consistent format. The author admits (page 33) that much of the information on giant sequoia is fragmentary, unreliable, and difficult to verify. I looked more closely at the grove descriptions for three of the groves that I was most familiar with (the Big Stump, Muir, and Castle Creek groves) to assess the completeness of information offered by this reference book. The Big Stump grove is described very nicely. The description of the sequoia resources in the Muir grove missed one of the key features of the grove: the high proportion of trees in the middle size classes. The author draws attention to the larger size trees. The Castle Creek grove description claims that the grove has "virtually no scientific descriptive literature (as of May 1994)," while I am personally aware of several citations, including my own work (e.g., "Spatial patterns of giant sequoia *Sequoiadendron giganteum* in two sequoia groves in Sequoia National Park, California," *Canadian Journal of Forest Research* 23:120–132; 1993).

Part 3 of the book covers "selected other information" including the criteria for defining a "grove." Rundel ("An Annotated Checklist of the Groves of *Sequoiadendron giganteum* in the Sierra Nevada, California," *Madroño* 21:319–328, 1972) described 75 groves including isolated clusters. I preferred the longer list to the 65 groves presented by Willard because the naturally occurring small clusters may be important species range expansions in a metapopulation sense. I found "Willard's Classification of Sequoia Types" to be too teleological with terms such as "adolescent or juvenile," "young mature, or small giant," "mature" and "super giant." Age class and size class information is less ambiguous. I appreciated the author's efforts at summarizing historical logging efforts in all the groves because this has never been done. The "Selected Annotated Bibliography" listed many fine references but misses several recent and important scientific papers between 1990 and 1993. The metric system is avoided throughout the book.

In short, Willard's book falls short of being a solid scientific reference for giant sequoia groves, but it is an adequate reference for hikers and sequoia enthusiasts, and as one of many references for managers of giant sequoia groves. I admire anyone taking on the task of compiling information from such widely fragmented sources. The primary purpose of the book was to "encourage others to conduct more research, enjoy visits to the groves, and to participate in grove management planning so the giants of the Sierra Nevada forests in general can be better protected and enjoyed." Despite the issues I raise here, Willard's book is a step in the right direction.

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