

because there are two main and distinct audiences (managerial practitioners and researchers) at which the book is directed and their individual messages are sometimes inextricably mixed together. Thus, there is a danger that some parts are of little interest to one group or the other. This should not deter all readers from careful study of the book's contents, but rather requires them to be selective about where to focus attention in order to embrace the author's messages *in toto*.

The introductory chapter sets the scene for what follows and reaffirms the author's sensible intention to focus on empirical rather than process models. Chapters 2, 3 and 4 deal in turn with whole stand, size class and single tree together with tree list models respectively. I was personally disappointed that the Queensland experience with tree list modelling of tropical forest stands did not get an airing in chapter 4 among the mostly North American mixed forest examples.

Chapters 5 and 6 deal with topics particularly important to researchers, namely those of data requirements and model construction. There is much sage advice in both these chapters, although I would have welcomed a clearer separation of the more comprehensive data requirements for researchers from the reduced set needed by managers wishing to implement researchers' recommended methodologies. In constructing models, the strict rules of classical statistics may need to be stretched further in the interests of expediency than Dr Vanclay is prepared to recommend, provided, of course, that certain safeguards are always taken. The author evaluates the problem of quantifying site differences in chapter 7, in which he rightly creates an impression of unease regarding the forestry profession's unhealthy obsession with simplistic indices (so-called site index in particular), which reflect the performance of a crop rather than the intrinsic growing capabilities a site possesses.

Chapter 8 deals with tree diameter increment, chapter 9 with the perennially troublesome mortality and merchantability functions, and chapter 10 with regeneration and recruitment models. Queensland experience features in the last of these three, further elaboration of which I would have welcomed hearing about.

Chapter 11 on evaluating and re-calibrating models is one which both researcher and practitioner groups should study very carefully. This is a facet sadly neglected too often in routine research and management practice. It is indeed heartening to see the prominence accorded this topic in the book. Similarly, chapter 12 on implementing and using models enunciates some fine ideals, but ones such as

transparency of and ease of changing computer coding will wring wry smiles from those of us having to adjust to user-pays research.

The final chapter, chapter 13, speculates on future directions, always dangerous to an author in revealing his or her personal philosophy. Dr Vanclay makes a compelling case for his choice, but readers in general will express many different opinions. If nothing else, however, it reinforces the need for a much increased amount of research, together with enhanced awareness and articulation by forest managers. This book is surely worth reading if only to stimulate debate on where we should be heading with estimating growth and yield of mixed forest, be it tropical or temperate. I have thoroughly enjoyed the challenges that Dr Vanclay has thrown down, and also those in some interesting exercises he sets at the end of most chapters, particularly as I did not always agree with some of his recommended solutions. I strongly urge, therefore, researchers and practitioners in New Zealand to study and digest the contents of this book and hope that they will analyse carefully the many valuable messages it contains. We definitely need to.

A.G.D. Whyte

Ecology of the Southern Conifers

Ecology of the Southern Conifers. Edited by Neal J. Enright and Robert S. Hill. 1995 Melbourne University Press, Carlton South, Victoria, Australia. Hardcover. 342 pp including a 33 page list of references. \$NZ90. \$A80. The Southern Hemisphere's conifer flora holds a special interest for many foresters working in the region, even for those who mainly work with northern hemisphere conifers like radiata pine or Douglas-fir. Hence this book is welcomed. This book give us an excellent overview of the various families, genera and most of the species, with, as the name suggests, a strong ecological flavour. It is also an excellent reference for those who wish to catch up with the latest nomenclature or who are interested in the latest ecological thought.

Twenty-three researchers from six countries, some of them well known to New Zealand readers, have had input to this book. The book covers the origin, evolution and quaternary history of the southern conifers before looking at their ecology on a country or regional basis. Neal Enright from the University of

Melbourne and John Ogden from the University of Auckland conclude with a synthesis of the ecological concepts arising out of the regional studies and compare these concepts with northern hemisphere conifers and angiosperm trees.

Academic Treatise

This book is an academic treatise of the subject and so contains a lot of detail. But there is a lot of fascinating information within it which will intrigue the practising forester. For example, I did not know there was a parasitic conifer or that the tallest tropical tree is *Auracaria hunsteinii* with a maximum recorded height of 89 m. Many readers may not be aware that *Fitzroya cupressoides* (Alerce) in Chile has been aged at over 3600 years. Did you know that in October 1994 David Noble, a National Park employee, was abseiling in Wollemi National Park 200 km west of Sydney and discovered a new conifer? Known as the Wollemi pine, it appears to be more closely related to Cretaceous and Early Tertiary fossil plants such as the *Araucarioides* rather than either *Araucaria* or *Agathis*. There are only 24 mature trees – they grow to 40 m tall. The species was so recently discovered that it has not been possible to go into it in depth in this book, although it is mentioned.

Individual chapters differ in the depth and way they tackled their subjects. This is to be expected from a multi-authored book, particularly as the depth of research varies round the southern hemisphere. The chapter dealing with New Zealand was written by John Ogden and Glen Stewart and I found this was an excellent review of our species and of community dynamics. It is recommended reading, particularly if you have not been able to keep up with ecological thought in this country.

Excellent Coverage

In contrast, I was a little surprised that the authors of the chapters dealing with prehistoric aspects did not discuss or describe the role of continental drift in depth. However, overall the book's coverage is excellent and the reader ends up with a good overview of current knowledge.

Who should purchase this book? Obviously it is an important book for libraries, forest ecologists and other students of ecology. What about the practising forester? Well that depends on your interests. I am certainly pleased to have a copy on my bookshelf and consider it good value.

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