

P. A. Thomas and J. Packham: Ecology of Woodlands and Forests: Description, Dynamics, and Diversity

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Alejandro A. Royo

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Thomas and Packham's *Ecology of Woodlands and Forests* is a welcome addition to the current selection of general forest ecology texts. This wide-ranging book provides an account of forest structure worldwide, surveys the evolution of forest communities, discusses important ecological relationships among forest organisms, and describes a range of positive and negative human impacts on forests. The authors accomplish this daunting task by providing examples throughout the narrative of variations in life-history strategies and ecosystem properties, and compare these features across ecosystems and throughout geologic time. This approach serves the book well, particularly in its aim to be an introductory text.

The book is divided into a preface and 11 chapters. The introductory chapter sets the stage for the rest of the book by identifying the characteristics of woodlands and forests, reviewing a range of ecosystem and ecological properties, defining general forest types, and providing examples of regional forest classification systems. Chapter 2 provides a welcome summary of the importance of forest soils and their impacts on ground vegetation and root systems which, as the authors rightly point out, are typically given only cursory treatment in most ecology texts. Chapters 3 and 4 review plant life-forms and how abiotic and

biotic constraints (e.g., light limitation) shape plant growth and reproductive strategies. Chapter 5 covers various biotic interactions found within forests including insect pests, mycorrhizal associations, fungal pathogens, and mammalian herbivory. Chapter 6 attempts to describe patterns of genetic and organismal diversity as well as the mechanisms responsible for the evolution and maintenance of diversity. The book proceeds to describe nutrient processes and energy flow in Chapters 7 and 8, providing several examples from the Hubbard Brook Ecosystem Study. Chapter 9 begins with an account of forest change through geologic time (from the Silurian to the present) and ends with descriptions of succession, gap-phase dynamics, and disturbance factors. The penultimate and final chapters cover anthropogenic impacts on forest communities, discussing the agents of forest change and forest decline. I found these two chapters particularly rewarding and appreciated the well thought-out overview of the importance of forest resources and the role of sustainable silviculture in meeting those resource needs.

Given the broad nature of this survey it is understandable, but nevertheless disconcerting, that some topics are comprehensively reviewed while other fundamental topics are treated only superficially. For example, soils, decomposition, and nutrient flow are given excellent exposure across three chapters. In stark contrast, biodiversity is covered in an ineffectual and disjointed 32 page chapter; a noteworthy lapse given the urgency of current global biodiversity losses.

A. A. Royo (✉)
Forestry Sciences Laboratory, USDA Forest Service,
335 National Forge Road, Irvine 16329, USA
e-mail: aroyo@fs.fed.us

Of particular concern is the superficial discussion on mechanisms of species coexistence. In this two page section, the authors briefly mention niche partitioning and non-equilibrium processes, then refer readers to other textbooks for ‘further development of these complex arguments.’ More disappointingly, ideas informing this very topic are embedded in other chapters (e.g., Janzen-Connell hypothesis in Chap. 4; disturbance/patch dynamics in Chap. 9) forcing the reader to consult a range of sections to obtain the information. While organizing such a diverse set of topics into neat subject headings is certainly challenging, thoughtful editing may have alleviated some of this discontinuity. Similarly, topics within the far-ranging discussions in chapters occasionally lack cohesiveness. Perhaps the most egregious examples are the portions of the text in various chapters ostensibly reserved for discussions on mammalian impacts on plants. These sections, almost without exception, focus instead on the evolution, distribution, morphology, and behavior of the mammals; making little, if any, linkage back to their impacts on plant communities.

Despite these shortcomings, *Ecology of Woodlands and Forests* remains a useful text. It contains a

large quantity of information covering an impressive range of topics. This reviewer particularly enjoyed the many examples used to illustrate basic concepts and emphasize the relatedness in structure and function across disparate forest ecosystems. The book also achieves a good balance between citing relevant, seminal work with more recent cutting edge references; approximately 42% of the literature citations were published since 2000. Either alone or with additional readings to remedy limited coverage of key aspects, the paperback edition could be particularly useful for an introductory course in forest ecology and serve as a reasonably priced, accessible alternative to pricier, more densely packed textbooks such as Barnes et al. (1998) and Kimmins (2003).

References

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- Kimmins JP (2003) Forest ecology: a foundation for sustainable forest management and environmental ethics in forestry, 3rd edn. Prentice Hall