

(Brazil) and in the Argentine Andes. He concludes that the special habitats provided by the granite outcrops contribute significantly to mammalian diversity. The article on the plants illustrates the importance of conservation refuges. It is estimated that granite outcrops in Western Australia include 1 320–2 000 taxa of plants with up to 200 on any one outcrop. Given the significance of outcrops, effective management for conservation is essential. Outlining how this is to be achieved, was a difficult challenge. Management is covered within each chapter and in a chapter by A. R. Main. Here Main talks about the many values attached to the outcrops, which along with their distribution and isolation, makes management difficult. He suggests that co-operation between various groups interested in the outcrop is important.

Synthesising this information on granite outcrops and tackling some of the management issues, makes this an important edition of the Royal Society of Western Australia. Greater awareness of the value of outcrops is the first step to aid in their protection. It is hoped that this publication will encourage government and private land-holders to conserve these important places.

The Royal Society of Western Australia was founded in 1914. Its aim is to promote and foster science in Western Australia. Membership is \$40 for ordinary members and \$20 for associate members and is available through the secretary at the Western Australian Museum, Francis Street, Perth, Western Australia 6000.

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## Physiology of Woody Plants

Theodore T. Kozlowski and Stephen G. Pallardy,  
1997

Academic Press, San Diego

2nd Edition

411 pp. ISBN 0-12-424162-X

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RYAN GURNER<sup>1</sup>

PLANT physiology is the scientific study of how plants grow and respond to environmental factors and cultural treatments in terms of their physiological processes and conditions. This book aims to explain how physiological processes (such as photosynthesis, respiration, transpiration, carbohydrate, nitrogen and mineral relations) are involved in the growth of woody plants and how they are affected by the environment, in addition to explaining the mechanisms of the processes themselves.

Kozlowski and Pallardy maintain their prodigious output of textbooks on woody plants with this volume and two others recently published by Academic Press: *The Physiological Ecology of Woody Plants* (1991) and *Growth Control in Woody Plants* (1997). The second edition of *Physiology of Woody Plants* looks superficially similar to the 1979 first edition, but has changed considerably. There are 13 chapters, reduced from 17. The previous chapters on translocation and water transportation have been combined into transpiration and plant water balance. Chapters on physiology of seeds and seedlings, internal factors affecting growth, environmental and cultural factors affecting growth and the role of plant physiology do not reappear in this edition. This book covers some of the same ground as the other volumes, but is an update,

and specifically addresses the physiological processes influencing the growth of woody plants. The principal reason for the second edition is the avalanche of new information in many areas of plant physiology including translocation, stomatal opening, photorespiration, C4 photosynthesis, vegetative growth, mineral nutrition, plant hormones and more recently genetics.

The viewpoint of this book is somewhat different from that in most textbooks of plant physiology because it places strong emphasis on tree structure and on the interactions of trees and stands of trees with their environment. Considerable attention is devoted to environmental physiology, that is, to the effects of environmental factors on physiological processes. Thus the approach is more ecological than biochemical. The book is an illustration of how far we have come in understanding the structural-functional relationships of trees.

This volume has been written for use as a text by students and as a reference for researchers and growers who need to understand woody plant physiology. The second edition appears more useable as a textbook than the first, and as a text, it covers a mix of topics and format not provided by other books. Its strength remains in its structure and flow. Each chapter follows on from the one preceding, giving a consistent framework from which one can conceptualize tree growth models. The practical application of the issues and theories explained in the book adds a perspective lacking in most textbooks on plant physiology. The subject matter is interdisciplinary in scope and should be useful to a broad range of scientists, including foresters, agronomists, arborists, botanists, horticulturalists, plant breeders and plant ecologists.

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<sup>1</sup>School of Natural Sciences, Edith Cowan University, Joondalup, Western Australia, Australia 6027.