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Book review

Forest canopies. 1995. M. D. Lowman and N. M. Nadkarni (eds). Academic Press, San Diego. ISBN 0-12-457650-8 (hbk). US\$69.95.

Research on forest canopies has been booming for the past two decades. The major reasons for this are the increased possibilities of access to the canopy and a general interest in tropical rain forest conservation. Interests also in the last few years in non-tropical old-growth forest has increased considerably. This, however, is almost completely omitted in this book as most of the contributions are on tropical rain forest canopies.

The book consists of four parts. The first part on the structure and function of tree canopies consists of four papers. The starting paper on canopy access techniques gives a good overview of the methods available and is very nicely written. Parker writes on forest canopy structure (and microclimate) and Hallé on tree canopy structure. The 'function' in the title of this part is restricted to physical mechanisms of exchange of heat and mass between canopy and atmosphere, in my view too restricted.

Part two deals with organisms in tree canopies and consists of twelve papers, seven on animals (e.g. arthropods, ants, lizards, small mammals, mites) and five on plants (e.g. vascular and nonvascular epiphytes, hemiepiphytes, vines). The paper on arthropod biodiversity is very interesting as it focusses both on different methods and on results. Erwin argues for more standardization of techniques. I missed a chapter on birds and a chapter on primates in the canopy although both subjects are briefly touched upon. The vast literature on both birds and primates would have warranted more attention to these groups. Another conspicuous group of animals not touched upon in this book are bats. The paper by Walter & O'Dowd is a masterpiece: written like a screenplay they break a lance for more attention to little creatures in the canopy (mites in their case).

Many of the chapters are overviews on the subject and specialists will not find much new material. For instance, information on vascular epiphytes is very well known. On the other hand, Benzing presents a very nice table on the major questions still to be answered. I found the review on the nonvascular epiphytes very interesting: these plants surely deserve more research. In his chapter on vines Putz stresses the lack of information on the role of vines in treetops.

Part three is on processes in the canopy and consists of extensive and good review chapters on photosynthesis, on herbivory, on reproductive biology and on the role of epiphytes in nutrient cycling. Part four is on human impact on canopy research. The body of that is in fact a chapter on ethnobotany and economic botany of host dependent plants. Another chapter deals with the how and why of plant collections from the canopy. Perry gives his personal view on tourism and economics of the canopy. The book ends with a summary of the role of canopy science in research and education.

In general this book is very informative with nice reviews and clear overviews on special topics. I enjoyed reading it and I am convinced that most readers will be very satisfied. The amount of literature is enormous and up-to-date. Many chapters could be used for educational purposes. Some subjects are, however, virtually absent. Apart from the animal groups indicated above there is nothing on canopy gap dynamics, nothing on application aspects (e.g. manipulations of the canopy in forestry, conservation), hardly anything on modeling. Putz warns against too much arboricentrism in studying canopy biology. The compilers of the book listened carefully: only very few chapters deal directly with trees. As there is no forest without trees, I feel trees should have received more attention than that.

We may wonder how the selection of authors was made. Out of a total of 31 authors 22 were from the USA, two from Canada, five from Australia, one from Mexico, one from France. This surely looks narrow and biased. Is there no canopy research being done by people from other countries?

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