

REVIEWS

L.D. HARDER & S.C.H. BARRETT (eds.): **Ecology and Evolution of Flowers**. Oxford University Press, Oxford, United Kingdom, 2007. 370 pp. ISBN 978-0-19-857086-8. Price: USD 75.00.

Floral traits provide some of the most compelling examples of evolution by natural selection. With over 250,000 species of flowering plants currently known, an accumulation of case studies of individual species is not likely to provide a general explanation for the driving forces influencing flower shape. By focussing, instead, on the role of ecology on the evolution of reproductive diversity though, the authors of this book could come up with many new insights in the functional basis of floral diversity.

Floral biology is an exciting and dynamic research field and this book, written by leading internationally recognized researchers, reviews current progress in understanding the evolution and function of flowers. Chapters contain both new research findings and a synthesis of previous empirical research on floral evolution and theoretical frameworks. Major sections focus on functional aspects of floral traits and sexual systems, the ecological influences on reproductive adaptation, and the role of floral biology in angiosperm diversification.

This book is very useful for students taking courses in plant ecology, evolution, systematics, biodiversity and conservation. It will also be of interest to established botanists seeking a good and detailed overview of recent advances in floral biology.

BARBARA GRAVENDEEL

JON C. LOVETT, CHRIS K. RUFFO, ROY E. GERA & JAMES R.D. TAPLIN: **Field Guide to the Moist Forest Trees of Tanzania**. The Society for Environmental Exploration, London, 2006. 344 pp., illus. ISBN 1-873070-33-0. Price: GBP 19.99.

This 'Field guide' contains descriptions of 658 species of larger trees, taller than 10 m or wider than 20 cm, of Tanzania. The descriptions give scientific names and synonyms, local names, description of habit, leaves, flowers and fruits, ecology, distribution, uses and notes. For most genera at least one species is illustrated by a simple line drawing and a distribution map.

Although the volume is titled 'Field guide' there is little in the book to guide you: No keys, no family and genera descriptions are given. No list of spot characters is included. This book is only useful for those who know their tree species very well and just want to check an identification.

FRITS ADEMA

MONIKA SHAFFER-FEHRE (ed.): **A revised handbook to the Flora of Ceylon, volume 15, part B**. Science Publishers, Enfield (NH), USA, 2006. xxix + 616 pp. ISBN 1-57808-410-5. Price: USD 89.95.

This new volume of the Revised Handbook is a sequel to the earlier volume on ferns and fern-allies and contains the families Polypodiaceae to Woodsiaceae. As in part A the order of the treatments is alphabetical by family name. The introduction gives, apart from notes on the history of ferns and fern-allies and their study in Sri Lanka, a synopsis of families in a systematic arrangement. This introduction is followed by a key to the ferns and fern-allies of Sri Lanka facilitating the identification of families, genera and some species.

These introductory parts are followed by the family treatments by several well-known fern specialists. The family treatments include: family description, notes on taxonomy, keys to the genera, genus descriptions, keys to the species and species descriptions. All levels are provided with an ample selection of relevant literature. Species descriptions include also notes on ecology and distribution and specimens examined. The book ends with lists of new names and endemic species, a glossary and an index.

A useful addition to the knowledge of ferns and fern-allies of the flora of Sri Lanka.

FRITS ADEMA

H.A.M. VAN DER VOSSEN & G.S. MKAMILO (eds.): **Plant Resources of Tropical Africa 14. Vegetable oils**. PROTA Foundation, Wageningen/Backhuys Publishers/CTA, Wageningen, The Netherlands, 2007. 236 pp., illus. ISBN 90-5782-191-2 (book), 90-5782-192-9 (book + CD-Rom). **Ressources végétales de l'Afrique tropicale 14. Oléagineux (traduction)**. Fondation PROTA, Wageningen/Backhuys Publishers/CTA, Wageningen, Pays Bas, 2007. 260 pp., illus. ISBN 90-5782-195-0 (livre), ISBN 90-5782-196-7 (livre + CD-Rom). Price book: EUR 28 (Industrialized countries), EUR 14 (Developing countries); book + CD-Rom EUR 35 (Industrialized countries), EUR 17.50 (Developing countries).

This new PROTA volume treats plant species which yield oils or fats. A short introduction gives general remarks on choice of species, plant names, origin and geographic distribution, properties, description, management, genetic resources, references. This section is followed by the alphabetical treatment of the species. In total 46 species of 37 genera of 22 families are treated in full. Each species treatment gives details about names, origin and distribution, uses, production and trade, properties, description, other botanical information, growth and development, ecology, propagation and planting, management, diseases and pests, harvesting, handling after harvesting, genetic resources, breeding, prospects, references. The book is concluded by a chapter on oil plants with other primary uses, literature (references) and indices. Most treatments are illustrated with a line drawing and a distribution map.

As with the other volumes of the PROTA series this new volume is nicely printed in a clear layout. Vegetable oils/Oléagineux contains a wealth of information on plants yielding oils and fats. Recommended to all people with an interest in oils and fats, ethnobotany, etc.

FRITS ADEMA

YVONNE C.F. SU & RICHARD M.K. SAUNDERS: **Monograph of Pseuduvaria (Annonaceae)**. Systematic Botany Monographs 79, 2006. 204 pp., illus., 3 colour plates. ISBN 978-0-912861-79-1. Price: unknown.

This book provides a first-rate treatment, the first comprehensive one ever, of *Pseuduvaria*, a genus of Annonaceae ranging from southern Myanmar and northern Thailand in the north-west to New Guinea and northern Australia in the south-east. *Pseuduvaria* comprises 52 species, 16 of which are new species or new combinations published in this monograph. With five new combinations published earlier (Su & Saunders 2001; Su et al. 2005), this has led to a considerable expansion of the genus in recent years.

In Annonaceae systematics, the circumscription of genera is no easy undertaking. Systematists working in the family aren't exactly spoiled with clades that are easy to

recognize morphologically. Character homology is difficult to assess, with many characters demonstrating high levels of homoplasy. Clear synapomorphies for genera, not to speak of more inclusive clades, are virtually absent. Rather, genera are characterised by unique combinations of characters states. These general features of genera are even more emphasized in the so-called short-branch clade, one of the major clades in the family containing around 700 species, predominantly from Asia. Within this short-branch clade, considerable amounts of DNA sequence data from conventional plastid regions are required to retrieve well-supported monophyletic genera with molecular phylogenetic techniques, and to resolve relationships among genera (Pirie et al. 2006). It is against this background that Su & Saunders early on in the monograph discuss the generic limits of *Pseuduvaria*, which belongs in the short-branch clade. Other genera that are important to consider, given taxonomic history and morphological characters, are the Asian genera *Orophea* and *Mitrephora*. All three genera have inner petals that form a mitriform dome. Published molecular phylogenies don't help the authors very much in identifying well-supported monophyletic genera. Only the inclusion of *Petalolophus* in *Pseuduvaria* (Su et al. 2005) is supported by phylogenetic evidence, i.e. the former is nested within the latter genus (Mols et al. 2004). What remains unjustified in the delimitation of *Pseuduvaria* is the fact that both *Pseuduvaria* and *Mitrephora* have never been demonstrated to be monophyletic. Mols et al. (2004) found poorly supported *Pseuduvaria* and *Mitrephora* clades and a well-supported *Orophea* clade, all with limited species sampling, however. The indecisiveness of these phylogenetic results doesn't exclude, for example, the possibility of any of the three genera being paraphyletic with respect to any or both of the other two. Given that lack of resolution, the authors wisely, but implicitly, decide to stick to the delimitation of *Pseuduvaria* as adopted by authors of several recent publications. I think it would have been instructive if this decision and the arguments leading to it would have been written down explicitly. You have just read the only nitpicking remark of this review. The monograph is comprehensive in all other aspects. The introduction covers a multitude of morphological and anatomical aspects of *Pseuduvaria*, including leaf anatomy, inflorescence architecture, anatomy of secretory glands on the inner petals, palynology, and seed morphology and anatomy. The characters are described meticulously, which makes the monograph a valuable contribution to our knowledge of Annonaceae morphology and anatomy, and to the assessment of homology of various characters. Ecological aspects that are dealt with include habitat and distribution, pollination biology and fruit and seed dispersal. This monograph does more than comprehensively reporting all the taxonomically relevant data related to *Pseuduvaria*. Many observations by the authors are first published here and nicely illustrated with drawings, light micrographs or scanning electron micrographs. The thoroughness with which these data are put into a general framework of Annonaceae systematics makes the monograph very valuable for workers in Annonaceae. I find the synthetic aspect of the monograph impressive, and it reads as a guide for further exciting research on patterns and processes within *Pseuduvaria*, which I think is an attribute of high quality monographs. Ideas for research proposals abound in the part that supplements the taxonomic treatment. One such phenomenon that cries out for further study is the evolution of dioecy and monoecy, which both are unusual breeding systems in Annonaceae. Another example would be the significance of petal morphology (shape, glands, colour), or the occurrence of long peduncles in nine species from New Guinea, for pollination biology.

The taxonomic treatment is well prepared, with several keys (to flowering specimens, to fruiting specimens, and separate keys for seven main phytogeographical regions) significantly adding to the utility of the monograph. Some 40 % of the species are illustrated with fine drawings, prepared by Helen Ngai, and flowers and/or fruits of 11 species are illustrated by colour photographs. For each species, the conservation status is recommended. The authors discuss the limitations of assessing conservation status from herbarium specimens only and point at the necessity of fieldwork surveys. Nevertheless, based on herbarium specimens no less than 30 species are exposed to some degree of threat, seven of which are critically endangered. It points at the need to quickly move forward with the cataloguing and description of tropical plant species. How wonderful would it be if all that describing would be done in fine monographs such as this one? Perhaps it suffices to say that I give this monograph to my students as a work of reference.

References:

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LARS CHATROU

A.J.G. WILSON (ed.): **Flora of Australia. Volume 2, Winteraceae to Platanaceae.** ABRS, Canberra/CSIRO Publishing, Melbourne, 2007. xviii, 486 pp., illus., colour illus., maps. ISBN 978-0-643-05967-2 (hard cover), 978-0-643-05968-9 (soft cover). Price: AUD 140 (hard cover), 120 (paper cover).

This new volume of the Flora of Australia publishes the accounts of 24 families by in total 28 authors. The families treated are: Winteraceae (p. 1–10), Himantandraceae (p. 11–13), Eupomatiaceae (p. 13–17), Austrobaileyaceae (p. 17, 18), Annonaceae (p. 18–57), Myristicaceae (p. 57–62), Trimeniaceae (p. 62–65), Monimiaceae (p. 65–91), Atherospermataceae (p. 91–103), Idiospermaceae (p. 103–105), Lauraceae (p. 106–223), Hernandiaceae (p. 224–232), Piperaceae (p. 232–244), Aristolochiaceae (p. 244–258), Nelumbonaceae (p. 258, 259), Nymphaeaceae (p. 259–275), Cabombaceae (p. 275–278), Ceratophyllaceae (p. 287–289), Ranunculaceae (p. 290–357), Berberidaceae (p. 357–362), Menispermaceae (p. 362–386), Papaveraceae (p. 386–400), Fumariaceae (p. 400–412), Platanaceae (p. 412–414).

We have praised the whole set up of this series several times and this volume is no exception to the high standards of earlier volumes. Volume 2 is beautifully illustrated by line drawings and colour photographs. It is a useful addition to our knowledge of the ‘primitive’ families treated here. Recommended for everybody with an interest in Australian plants.

FRITS ADEMA