

REVIEWS

M. BRINK & G. BELAY (eds.): **Plant Resources of Tropical Africa. 1. Cereals and Pulses**. PROTA Foundation, Wageningen, Netherlands/Backhuys Publishers, Leiden, Netherlands, 2006. 298 pp., illus. ISBN 90-5782-170-2 (book only), 90-5782-171-0 (book + CD-ROM); **Ressources végétales de l'Afrique tropicale. 1. Céréales et légumes** (traduction). Fondation PROTA, Wageningen, Pays-Bas, 2006. 328 pp., illus. ISBN 90-5782-172-9 (livre), 90-5782-173-7 (livre + CD-ROM). Price/Prix: Book/livre: EUR 30 (Industrialized countries/Pays industrialisés), EUR 15 (Developing countries/Pays en développement); book + CD-ROM/livre + CD-ROM: EUR 38 (Industrialized countries/Pays industrialisés), EUR 19 (Developing countries/Pays en développement).

This new volume of the PROTA series treats the Cereals ((bread)grains) and Pulses (beans, peas). In total 72 species are treated: 49 cereals, of which 46 belong to the Gramineae and 23 pulses, all Leguminosae. The species treatments are preceded by an introduction explaining the contents of the treatments and the choice of species, and are followed by a list of cereals and pulses with other primary uses, references and indices to scientific and vernacular names.

The species treatments follow the well-known PROSEA/PROTA format, including names, synonyms and vernacular names, origin and distribution, production and uses, properties, botanical description and notes, ecology, management, genetic resources, etc. Usually one figure of the discussed species is provided and the distributions of the more common species are given in maps.

For a few euros more one can buy a CD-ROM which offers the species treatments in full with added colour pictures.

PROTA 1. Cereals and Pulses is a very useful book with a lot of information. I recommend this volume to everybody interested in growing, selling, buying and/or eating grains, beans and/or peas.

FRITS ADEMA

BRIAN R. JORDAN (ed.): **The Molecular Biology and Biotechnology of Flowering, 2nd ed.** CABI Publishing, Wallingford, UK, 2006. x, 404 pp., illus. ISBN 1-84593-042-8. Price: GBP 75 (USD 140).

This is a revised and updated version of 'The Molecular Biology of Flowering (1993)'. Major advances made in the last 13 years are incorporated, while the scope has been expanded to include commercial opportunities provided by biotechnology.

The Molecular Biology and Biotechnology of Flowering covers three themes: Regulation of Flowering, Flower Development, Fertilization and Gametophyte Development. The first part: External and Internal Regulation of Flowering discusses in three papers the responses of flowering to changes in day length in relation to genes that control initiation and timing of flowering; vernalization in connection to flower initiation, i.e. the response to changes in temperature; and regulation of flower development by signal transduction. The second part: Floral Development discusses in six papers the development of flowers from meristem to senescence. The so-called ABC model plays an important role as well as the recent expansion of this model with the SEP class of genes. The third part: Fertilization and Gametophyte Development discusses in four

papers fertilization, the various modes of self-incompatibility, stamen and pollen development, and apomixes. An index concludes the book.

As the title of the book indicates all chapters include sections which deal with genes involved in the discussed processes. Gene expression is an important topic in many chapters. All genes discussed in this book are summarized in a separate index. The Molecular Biology and Biotechnology of Flowering is especially of interest for Evo-Devo students; however, everyone with an interest in how flowers develop and function will find important data in this book.

FRITS ADEMA

JÜRGEN SCHULTZ: **The ecozones of the world, 2nd ed.** Springer, Berlin, 2005. 252 pp., illus. ISBN 3-540-20014-2. Price: EUR 96.25.

Dividing the world into regions with similar traits is an age-old game. Especially in Biogeography and Ecology several systems have been proposed, discussed and discarded. Nowadays things seem to be more settled with only few competing systems present. 'The ecozones of the world' fits nicely in this tradition. However, whether or not this is the last word about dividing the world into large ecological zones remains to be seen.

The book consist of two parts. A general part discusses the treatment of the ecozones and gives an overview of selected characteristics (Distribution, Climate, Relief and drainage, Soils, Vegetation and animals, Land use). And a second part called Regional sections: The individual ecozones. The discussion in the chapters of this second part is arranged in the order of the selected characteristics of the general part. Here these characteristics are discussed in more detail for each ecozone. The ecozones are: Polar subpolar zone (7), Boreal zone (8), Temperate midlatitudes (9), Dry midlatitudes (10), Subtropics with winter rain (11), Subtropics with year-round rain (12), Dry tropics and subtropics (13), Tropics with summer rain (14), Tropics with year-round rain (15). The division into ecozones is based mainly on climate, soil and vegetation. Animals are only briefly discussed, mainly in the section 'Vegetation and Animals'.

'The ecozones of the world' is a good introduction to the ecological division of the earth, especially for those with an interest in patterns and processes on a large scale.

The book is amply illustrated with figures, tables and diagrams, which, together with the text, provide a lot of information.

FRITS ADEMA

PETR SKLENAŘ, JAMES L. LUTEYN, CARMEN ULLOA ULLOA, PETER M. JØRGENSEN & MICHAEL O. DILLON: **Flora Genérica de los Páramos. Guía Ilustrada de las Plantas Vasculares.** Mem. New York Bot. Gard. 92: 1–499. ISBN 0-89327-468-2. Price: USD 85. (In Spanish with an English summary.)

This book gives a complete survey of the genera of vascular plants occurring in the páramo. Páramo is a grassland vegetation type occurring in the high elevations between 3000 and 5000 m in the W and NW part of S America (Venezuela, Colombia, Ecuador, N Peru) and adjacent Panama and Costa Rica. It is a vegetation type with many exciting growth forms like microphyllous plants, cushion plants, and rosulate plants. It is best known for its spectacular *Espletia* species (Asteraceae).

The páramo vegetation described in this book comprises 127 families and 540 species of vascular plants. The most important families occurring in the páramo are Asteraceae (113 genera, 973 spp.), Poaceae (47 genera, 231 spp.), followed by Scrophulariaceae (14 genera, 140 spp.). As the book, unfortunately, does not follow the most recent APG classification, but the older Cronquist (1981) classification, *Calceolaria* (65 spp.), the most important genus in the Scrophulariaceae as formerly circumscribed, has not yet been transferred to Calceolariaceae. The most important cryptogamic families in the páramo are Lycopodiaceae (3 genera, 69 spp., the largest genus is *Huperzia* with 60 spp.) and Elaphoglossaceae (only *Elaphoglossum* with 65 spp.).

The book has one general dichotomous, indented key to all 127 families. For each family a short description and a black-and-white illustration are given, notes on the overall distribution, number of genera and species in the páramo are also given. For each family a key to the genera is provided and a list of the most important literature is given. In some families, e.g. Asteraceae, an additional key to the tribes is added and for some of the largest families, like Asteraceae and Poaceae, a plate illustrating the terminology is provided. The book also includes an illustrated, very useful glossary of the most important terms used.

When going through all (alphabetically arranged) families it is interesting, as a lowland neotropical plant taxonomist, to come across families and genera like *Berberis* (with no less than 32 spp.!), Bignoniaceae (with just one species), the poorly known and unplaced family Columelliaceae, *Hypericum* (56 spp.), *Juncus* (16 spp.), many representatives of Rosaceae (e.g. *Lachemilla* with 34 spp. and the woody genus *Polylepis* (10 spp.)), to mention just a few.

This work, in which many plant taxonomist (certainly over 100) participated, is an absolute must for everyone interested in the páramo. In the past, with only Vareschi's 'Flora de los páramos de Venezuela' (1970) available, it was very difficult to identify plants from the páramo to family or genus. Now, with this splendid and nicely executed book in our hands, it makes life for someone interested in the flora of the páramo much easier.

PAUL MAAS

JOHN D. THOMPSON: **Plant evolution in the Mediterranean**. Oxford University Press, Oxford, UK, 2005. 293 pp., (colour) illus. ISBN 0-19-851533-2. Price: GBP 75.

Areas with a Mediterranean climate have since long been known as biodiversity hotspots and the Mediterranean is no exception. The area around the Mediterranean Sea is rich in endemic species, a prime requirement for a 'Hotspot'.

Plant evolution in the Mediterranean attempts to integrate the diverse and scattered literature on the diversity of plants in the Mediterranean Basin. Central in the discussion is differentiation among and within species in the present-day flora. An important topic in this discussion is the role of geographical and climatological history and the resulting spatial environmental variation in the evolution of endemism. The various chapters in this book deal with diversity, evolution, ecology, adaptation, dispersal and reproduction.

The book is aimed at students and researchers in several fields of plant biology: phylogeny, ecology, biogeography, population biology and systematics and as a text-

book should find its way to university teachers, especially in the Mediterranean region. However, the book can also be recommended as a starter to everybody interested in Mediterranean floras.

FRITS ADEMA

J. TULLOCK: **Growing hardy orchids**. Timber Press, Portland, Oregon, USA, 2005. 244 pp., illus. ISBN 0-88192-715-5. Price: GBP 20.

Most of the books on gardening warn to avoid even attempting to grow native orchids in wildflower gardens. This book suggests that most hardy orchids are no more challenging to grow than an ordinary rose. Anyone who attempted to grow orchids knows that this requires substantial horticultural skills, though, and I think it is a bit of an oversimplification to state that with this book anyone can raise these plants successfully.

Contrary to what a lot of gardening books still say on this matter, many laboratories and mail-order houses nowadays offer nursery propagated hardy orchids. The list of suppliers at the end of the book is very handy in this respect. And that is good news for preserving species by propagating them away from their native habitats which is generally known as *ex situ* conservation.

The author provides several examples where neither law nor tinkering with the marketplace much affected biodiversity preservation, but preserving habitat and species within a local community worked very well once people were given the tools and incentives for this. Home gardens sometimes have an unanticipated role to play here. In Great Britain, the population of European yellow lady's slipper dwindled to just one wild plant. With the help of seeds and pollen provided by British gardeners, the species has a chance to survive.

What I missed in this book was a chapter on the possibility of introgression of genetic material of introduced plants from different geographical origins into locally occurring wild populations. The author only very briefly mentions that the University of Tennessee for this reason initially gave no permission to relocate plants of lady's slippers growing in a construction site on their property. As the author lists several tropical species of i.e. *Cypripedium*, *Pogonia*, and *Spiranthes* that are very likely to produce viable offspring once crossed with their temperate relatives also listed, I think a bit more information could have been provided about the potential risks of unplanned hybridisations.

To prevent disappointments, more caution could have been given about the use of hardiness zones as well. It is well known that widespread species usually adapt to local habitat requirements and seed stocks from specific areas are therefore not always so easy to grow elsewhere.

I can recommend this book to anyone who is interested in growing hardy orchids, though, as I think it brings together a lot of – previously scattered – information about basic growing requirements of 104 species of hardy orchids. I think this book is useful, not only for botanists like me that need to create large pools of plants for research, but also for hobbyist gardeners that would like to contribute to preserving threatened orchids, although the author rightly emphasizes that no garden can of course substitute an unmolested habitat.

BARBARA GRAVENDEEL