REVIEWS

Atlas of wood, bark and pith anatomy of eastern Mediterranean trees and shrubs.

Alan Crivellaro & Fritz Hans Schweingruber, xii + 583 pp., colour illus., 2013. Springer, ISBN 978-3-642-37234-6. Price EUR 83.29 / USD 109.00 (hard cover).

Are we facing diverging plant anatomical terminologies?

This is a beautifully produced atlas of the stem anatomy of twelve conifers, two *Ephedra* species (Gnetales), six more or less “woody” monocot species, and no less than 244 species of shrubby, lianescent, or arborescent dicotyledons, all collected from the Eastern Mediterranean island of Cyprus. For the first time full attention is paid to bark and pith anatomy, in addition to xylem anatomy. For each species there is a brief general plant description, for dicots and gymnosperms there are separate accounts of the twig anatomy (including young bark and pith) and stem anatomy, devoted entirely to the $\pm$ mature secondary xylem. For monocots with their primary structure a single stem-anatomical description is given. All are illustrated with nice colour photographs of the plant habit and of double-stained (safranin-astrablue) thin sections. For dicots and conifers the written descriptions are complemented with coded descriptions using modified versions of the IAWA Hardwood and Softwood Lists (IAWA Committee 1989, 2004). The introductory chapters describe material and methods, definition of anatomical features, and identification keys to species groups with a similar wood anatomy.

In this review I want to focus entirely on the definition of anatomical features used. Crivellaro and Schweingruber give a fully illustrated, modified IAWA Hardwood List. However, their illustrations demonstrate how their interpretation of some IAWA definitions is at odds with what the IAWA Committee intended. This discrepancy is most evident in the following examples. Feature 9, vessels exclusively solitary (90% or more) is turned into “vessels predominantly solitary” and as example *Pistacia atlantica* is used where only most earlywood vessels are solitary, but almost all of the narrow vessels are in elaborate multiples and clusters. Rather illogically, numerous species are credited with a combination of vessels predominantly solitary and vessels in short radial multiples (an impossibility for single specimens according to the IAWA definitions). Feature 20, intervessel pits scalariform, is illustrated with simple vessel-parenchyma pits in *Smilax*. Feature 67, parenchyma-like fibre bands, is illustrated with examples that do not show such bands convincingly (*Acer* and *Alhagi*). The apotracheal parenchyma distribution pattern features 75–77 are illustrated with species that do not comply with the IAWA definitions for these codes. The new features 89.1. and 89.2 (thin-walled marginal parenchyma and ring-shake) are an expression of the perfectly valid IAWA Feature 95 “unlignified parenchyma” (a feature which unfortunately is omitted in this atlas). Since some of these features are also used in the identification keys, one can imagine that the numerous wood anatomists who are used to the web-based ID tool InsideWood (which does strictly adhere to the IAWA Hardwood List definitions) will go astray trying the identification key for Eastern Mediterranean species. Readers are therefore advised not to use the xylem feature codes given for each dicot species in this atlas, since they may have a rather different meaning from the identical codes in InsideWood and the IAWA Hardwood List itself.

For bark and pith anatomy a new set of character states and definitions is proposed. It will be interesting to test the bark features in the forthcoming meeting of the IAWA Committee on Bark Terminology. It may well be that some features now codified are transient character states in the secondary phloem of the young, developing twigs studied here.

As a philosophical afterthought, we perhaps need to re-open the debate on standardisation of terminology 50 years after the publication of IAWA's Multilingual Glossary of Terms (IAWA Committee 1964), 25 years following the publication of the IAWA List of Microscopic features for Hardwood Identification (IAWA Committee 1989), 10 years after the emergence of its Softwood companion (IAWA Committee 2004), and in the current early phase of the IAWA Committee on Bark Anatomical Terms (2014/2015). The Schweingruber school trains more young plant anatomists during the popular summer schools than most other centres, and it is vital that our terminologies remain unified and unambiguous for generations to come.

Never mind these considerations, this Atlas is an extremely valuable addition to our knowledge on stem anatomical diversity in Mediterranean plants, and the authors are to be congratulated with its publication.

Pieter Baas

Wood properties of the global important tree species. Jiang Zehui (chief editor), xiii + 521 pp., illus., 2013. Science Press Beijing, China. ISBN 978-7-03-038738-7. Price RMB 220 / USD 95 (hard cover).

Just in time for presentation at the successful 8th Pacific Regional Wood Anatomy Conference in Nanjing last October, this updated and expanded English version of a compendium on Worldwoods that was first published in Chinese in 2001 is a very welcome addition to the literature on commercial timbers. It covers not less than 84 softwood species and 374 hardwood species, treated by geographical provenance: China (86 spp.), SE Asia and Pacific (133 spp.), Tropical America (75 spp.), Tropical Africa (63 spp.), Europe (51 spp.) and North America (50 spp.). For each species wood anatomical micrographs of transverse, tangential, and radial sections illustrate texts with information on common names, tree description and distribution, wood characteristics, wood anatomical features, wood properties and wood uses. The quality of the descriptions and illustrations is usually very good. The only weaknesses are some linguistic slips introduced in translation and the inclusion of a few images of some poor sections with broken vessel walls.

Although initially the Chinese version must have based its species selection on timbers available on the Chinese import market, the global relevance of this book is evident as it illustrates and gives attributes of commercial species that are not often included in other timber handbooks, and are based on specimens from Chinese collections that may deviate in properties of those tested for other manuals. The editor and numerous contributors are to be congratulated on making this important source of information now internationally available.

Pieter Baas

Anatomía de Maderas en Comunidades Rurales de Yucatán (in Spanish with English summary). Fidel A. Roig Juárez, José Villanueva Díaz, Juan J. Jiménez Osornio, W. John Hayden, Joséfina Barajas Morales & Brian H. Luckman, xii + 242 pp., colour illus., 2012. INIFAP, Mexico, ISBN 978-607-425-900-1. Book copies for libraries or laboratories are free of charge (except postage) on request from INIFAP (send mail to: José Villanueva Díaz (villanueva.jose@inifap.gob.mx)).