

## BOOK REVIEW

# Pilbara Seed Atlas and Field Guide: Plant Restoration in Australia's Arid Northwest

Todd E. Erickson, Russell L. Barrett, David J. Merritt and Kingsley W. Dixon. xi + 295 pp.  
CSIRO Publishing, Clayton South, Victoria, Australia. 2016. ISBN 9781486305520. AU \$79.95 (paperback)

Where there's mining, there's restoration. Welcome to Australia's Pilbara, a thinly populated, summer rainfall region in the northwest – home of the iron ore industry and home to large-scale restoration. The Seed Atlas and Field Guide finalizes a 5-year collaboration with BHP Billiton Iron Ore, Botanic Gardens and Parks Authority and The University of Western Australia. The book fulfils a valuable mission – to document the seed biology of 103 species, most likely to be used in restoration and representing about 5.5% of the Pilbara flora (listed in Appendix D of the book).

The book's bulk (70%) is devoted to species accounts. The easy-to-use format quickly allows a person to (1) pictorially identify which landscape position(s) (lowland plains and wetlands to upland plateaus and waterways) a species grows and out-planting would occur, and (2) gauge flowering and fruiting periods by time plots. Information in the accounts are split by page: one side serving as a field guide and the other side as the seed atlas. In addition to common and indigenous names, the field guide provides a description, key identification features, similar species, distribution in Australia (mapped for the Pilbara), habitat, and flowering period. High-quality photographs capture the habit, leaves, flowers, fruits and seeds.

Of particular interest to readers of *Seed Science Research* will be the treasure-trove of seed data for each species. Listed is the timing of fruit/seed maturity, the appearance (colour, morphology) of the fruit/seed when ready to collect, and number of seeds per fruit and per gram as is the status of the fruit/seed (e.g. '...detach easily... when collected by hand...'). Cleaning techniques from hand collection (e.g. '...by upturning old flower stems...') and sieving to vacuum separation are spelled out. A nice feature is that percentages are specified: from purity and viability to pre-treatment results to germination tests. Embryo:seed ratio is given – varying from the rudimentary 0.08

(*Astrotricha hamptonii*, Araliaceae) to linear-coiled 2.98 (*Dodonaea coriacea*, Sapindaceae). When all of these data are combined with dormancy and embryo types, a complete picture is formed on a species' seed biology and on how seeds can be used effectively in restoration. Leafing through the accounts was pleasurable, especially exploring just one genus (like *Acacia*) and seeing the species diversity of pre-treatment requirements to overcome physical dormancy. Seed data are summarized in Appendix A.

About 15% of the book has chapters covering plant diversity of the Pilbara; seed collection, cleaning and storage procedures; seed dormancy and germination of arid zone species; and seed management for restoration. The chapters are well illustrated with call-out boxes focusing on specialized topics, such as developing mixes of seeds with common dormancy-breaking requirements or impact of seed quality on restoration planning. Noteworthy for seed biologists is Appendix B, which delivers a recipe thoroughly illustrated for preparation of smoke water and application of aerosol smoke. The rest of the book (15%) covers appendices, glossary (including germination-related terms), and index of common, indigenous and scientific names.

We've been honoured to review this book – a labour of love for the first author, Todd Erickson. We were at Kings Park when Todd initiated the project and followed his progress over time. In the end, the book serves as an essential practical guide for using seeds in Pilbara restoration. Moreover, it is an important benchmark – particularly for seed practitioners – in other areas of the world where restoration is a prominent feature of the landscape.

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