

## BOOK REVIEW

*The Digital Seed Atlas of The Netherlands (Groningen Archaeological Studies 4)*, R.T.J. Cappers, R.M. Bekker and J.E.A. Jans. xxvi 502 pp., 4000 colour photos. Barkhuis Publishing, Eelde, The Netherlands. 2006. ISBN 9077922113. €145 (private individuals); €195 (institutions) (hardback) [prices include book and website access: [www.seedatlas.nl](http://www.seedatlas.nl)]

This atlas (which is produced as a book and a website) provides a photographic record of the seeds of plants that grow wild in The Netherlands. As a large proportion of the Dutch flora is shared by much of northern Europe, the atlas will be of relevance to a wide geographical area. The species covered include native plants, naturalized aliens and a few escaped cultivars, arranged according to the phylogenetic classification in Heukel's *Flora of the Netherlands*. Each of the 446 pages bears nine images measuring 8.0×5.5 cm. Many species are photographed from different angles, giving added information about their three-dimensional structure. Species with dimorphic seeds (such as *Asteraceae* with disc and ray florets) are represented by appropriate specimens. Purchasers of the book are provided with access to the corresponding website via their own password. This enables the user to browse through the images online, as well as to search for particular species by name. The website is managed by the Library of the University of Groningen.

For a great many species, the familiar 'seed' is technically a fruit (e.g. in the *Poaceae*, *Polygonaceae*, *Lamiaceae*, *Apiaceae* and *Asteraceae*), and they are correctly labelled as such. In other cases, the fruit and seed are shown separately. This is especially useful for the identification of species in certain families, such as the *Brassicaceae*, the seeds of which tend to be somewhat similar but the fruits are distinctive. All the photographs are numbered for easy reference.

Many Floras pay little attention to seed features in their descriptions of individual species. Perhaps they are considered too small for easy observation in the field. But, as this atlas shows, an examination of the seeds could be very useful in distinguishing closely related species. The subtle differences in the surface patterns of the various species of *Silene* are a case in point. Used alongside a conventional Flora, the Atlas would provide, at the very least, valuable additional information when confirmation of plant identification is needed.

This compendium of seed pictures will be of great value to a wide range of botanical specialists, whether taxonomists, ecologists, palaeobotanists or horticulturalists. Outside of the academic field, seed identification has applications in agriculture, forestry and even forensic science. In all these fields, a good reference collection of real specimens is, of course, indispensable. However, the Atlas would provide an additional resource, especially as a tool in providing a preliminary diagnosis.

It would be difficult for a complete beginner to make a confident identification of an unknown seed merely by browsing through the images. However, an experienced botanist could place most seeds in a family, thus reducing the scope of the search. I tested the Atlas with some seeds that I knew were from an umbellifer, and quickly ran it down to *Smyrniolum olusatrum*. However, species of *Apiaceae* have very distinctive 'seeds'. It would take a great deal more effort to identify a *Carex* 'seed'. The 211 pictures of *Carex* fruits shown in the Atlas all look discouragingly similar.

Photographs are not necessarily the best means of portraying biological material. Line drawings can often be more effective at representing significant detail, as shown by the superb craftsmanship in Stella Ross-Craig's *Drawings of British Plants* (1948–74), which includes wonderfully detailed pictures of seeds. Given the comparative limitations of photographs, the quality of most of those in the Atlas is good, with a high resolution of fine surface detail. However, there are a small number of the images that are somewhat blurred, with a corresponding loss of usefulness (e.g. 609 to 614, 719-B, 722, 1422-A). No doubt, individual photographs that are of poor quality can be replaced by better ones in future editions of the Atlas.

The compilation of this Atlas is a very worthwhile project, as well as a notable achievement. In addition to its scientific importance, the book is visually most attractive and a great pleasure to browse through. The sheer variety of the shapes (globes, discs, ovoids, cylinders, cigars, spindles,

clubs, flasks); the detail of the surface micro-relief (smooth, warty, grooved, pitted, wrinkled, reticulate, hairy, spiny); and the range of colours (black, brown, grey, buff, orange, red, purple) all go to make this a very striking collection of images. The authors are to be congratulated on the production of a work that is remarkable for its scope and usefulness.

Michael Fenner  
School of Biological Sciences  
University of Southampton, UK  
Email: M.Fenner@soton.ac.uk.

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