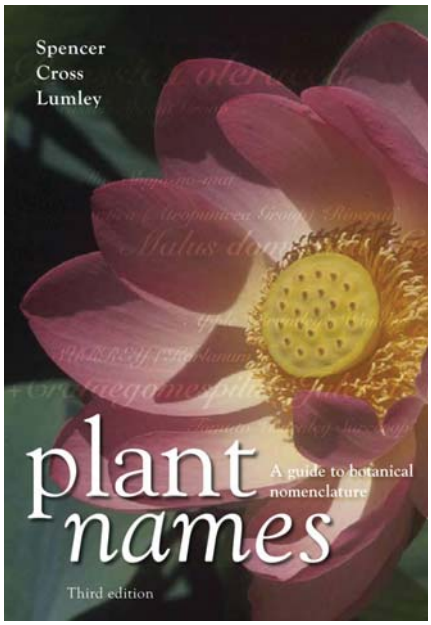
# Book Reviews

**Plant Names: A guide to botanical nomenclature**

By Roger Spencer, Rob Cross, and Peter Lumley
CSIRO Publishing
NZ$44.95
Reviewed by Andrew Maloy




Sixteen years ago I purchased the second edition of *Plant Names: A guide to botanical nomenclature* by Peter Lumley and Roger Spencer of the Royal Botanic Gardens, Melbourne and, until this third version appeared, it sat on a bookshelf within easy reach of my desk and was a book I often referred to. As a plain English guide to the use of plant names and how to write them correctly it was the best I had come across. Now there is the improved version, this third edition, with 162 pages compared to the previous 54 and many colour photos, tables, diagrams and drawings to explain and illustrate the text.

Botanical names can be daunting but in this relatively easy to follow book the authors work their way through the reasons for using botanical names, the conventions for writing them according to the relevant international codes of nomenclature and almost every question that could be asked about the whys and wherefores and rights and wrongs of plants names is, I believe, answered in this book.

The book is divided into four parts. The first relates to Wild Plants, describing how and why the binomial system using Latin names became the internationally accepted way of naming plants. The International Code of Botanical Nomenclature is explained along with the nested hierarchy of ranks and taxa, orders, families, genera, species, subspecies, varieties, forms and natural hybrids. Name changes, type specimens, describing new species and reclassifying species are also covered. The text becomes a little heavy going in some places here but can be justified for the sake of accuracy.

Part two covers Cultivated Plants and Cultigens and in doing so gets down to the nitty-gritty of plant names as most gardeners know them – our gardens are full of human-altered plants. The International Code of Nomenclature for Cultivated Plants is explained along with the terms cultigen and cultivar and all their ramifications. A chapter on Marketing Names (trade designations) describes how plant labels are an important component of plant marketing and looks at the issues of trade designations, trademarks and plant breeder's rights in the commercial reality of plant marketing. In their attention to detail the authors also include gene patenting and genetic engineering in the discussion.

Part three is entitled Using Plant Names. Clear, easy to follow examples show how to write plant names correctly, followed by a chapter on how to pronounce botanical names. Then there is a very short, but extremely useful chapter, Recommended Format for Nursery Plant Labels, which commences by saying "Plant labels in retail nurseries now carry a plethora of names of uncertain botanical and legal status that are as confusing to industry employees as they are to the general public". The authors proceed to identify issues and recommend ways to ensure retail plant labels are accurate and not misleading or deceptive.

Part four, Plant Name Resources, consists of a wealth of references to help the reader with finding and checking plant names. Books and websites are listed, along with floras and checklists of currently accepted plant names from around the globe, International Cultivar Registration Authorities (including the RNZIH for *Coprosma*, *Hebe*, *Heliohebe*, *Phormium* and *Pittosporum*) and many other useful resources.

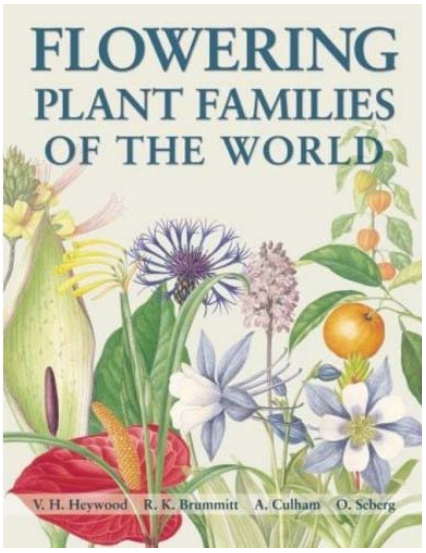
One very minor criticism I have of this fine piece of work is that while illustrated with beautiful photos many of them have no captions, leaving the reader wondering "what is that gorgeous plant?" or "where was that photo taken?"

All in all this is a book I am sure will, like its predecessor, stand the test of time and is an ideal text for those to whom a good understanding of and the correct use of plant names is important.

**Available from Manaaki Whenua Press**

**Flowering Plant Families of the World**

By V.H. Heywood, R.K. Brummitt, A. Culham, and O. Seberg
Kew Publishing, Kew
Hardback, 424 pages, 250 × 320mm, Canada, 2007
ISBN 978-1-84246-165-5
NZ$110.00
Reviewed by Peter Heenan




This book is a valuable addition to the library of anyone interested in flowering plants, whether they be a gardener, student, amateur botanist, or with a stronger scientific background. It contains a wealth of information on distribution,

morphology and anatomy, habitat, classification, important genera, economic uses, and key literature. This book is the successor to the well-known *Flowering plants of the world* (Heywood, 1978), an essential botanical reference for nearly three decades. Although both books appear alike in that they have a similar layout and use many of the same illustrations, the majority of the text in *Flowering plant families of the world* has been totally rewritten.

This book has an excellent layout that includes a brief introductory section, an overview of the classification used, and an excellent glossary. The main part of the text comprises the family treatments and these are presented in alphabetical order for each of the two major groups of flowering plants, the dicotyledons and monocotyledons. Each family entry is divided into four sections: distribution, description, classification, and economic uses. In addition, many of the larger or better known families have an introductory paragraph. The descriptions contain, by necessity, a great deal of invaluable technical information that may be difficult to read for many, but the sections on distribution, classification, and economic uses are clearly written, easily read, and contain a wealth of information.

A major difference from the *Flowering plants of the world* (Heywood, 1978) is that this new book includes details of 506 families, whereas its predecessor had only 306. This increase in family number is primarily due to the new book following a system of classification proposed by the Angiosperm Phylogeny Group (APG II, 2003) as modified by Soltis et al. (2005). In comparison, the 1978 *Flowering plants of the world* was based on the Stebbins system of family classification. Although this new book is based on the APG II system that accepted 457 families, it includes another 49 families considered by the authors to be worthy of recognition.

The authors claim in the introductory pages that they have "refrained from offering a new system of classification or a further modification of APG II" (p. 8) and "it is not our intention to present a new system of classification but to provide a synthesis of the latest information" (p. 10). However, by formally treating 506 families, accepting an additional 49 families to the APG II, and presenting arguments for the families they accept or reject, they have surely implied an alternative system. The classification adopted in this book is unique and, despite the authors' protestations, will almost certainly come to be regarded as an alternative system of family classification.

Since the publication of *Flowering plants of the world* in 1978, knowledge of the relationships of flowering plants has changed considerably as new information has come to hand on anatomy, morphology, and in particular phylogenetic relationships based on DNA sequence data. A real strength of this book is that it incorporates much of this new information, but in doing so it also compares traditional and recent views on relationships. If the authors disagree with an alternative classification to their own they usually provide an overview of the other classification and their reasons for not following it. A good example of this is provided in the discussion of the Scrophulariaceae, although the introductory comments to this family read more like a medical condition than scientific debate: "A family in the throes of dismemberment and reassimilation, with consequent major disruption of internal parts" (p. 300). This notion is further reflected in the discussion for the Scrophulariaceae where the debate considers the cladistics school of thought in accepting only monophyletic families or the alternative and "only logical solution" of accepting paraphyletic taxa. As noted in the book's introduction (p. 9), the use of taxonomic "rank is a matter for taxonomic decision and preference and ultimately consensus".

The distribution maps for each family are very small but are appropriate for the type of information they convey. However, in regard to New Zealand plants several errors were detected. These include, for example, New Zealand not having shading to indicate the Nyctaginaceae (*Pisonia brunonia*) being indigenous. On the other hand, New Zealand is erroneously shaded as having indigenous species of Celastraceae, Lythraceae, Najadaceae, Smilacaceae (*Rhipogonum* is now in Rhipogonaceae – note the spelling with an 'h'), and Vitaceae. Shading of New Zealand also occurs for the monocotyledons Asphodelaceae and Colchicaceae and this raises another issue. Due to recent changes in the circumscription of families, particularly in the monocotyledons, it is often difficult to know what genera are currently included in a particular family; the book does not include a comprehensive list of genera and their family placements. In the case of Colchicaceae the New Zealand species is probably *Iphigenia novaezelandiae*. However, for the reader interested in New Zealand plants there is no indication of what indigenous genera may now be included in the Asphodelaceae and Colchicaceae, or are these perhaps errors. In contrast, some of the maps are very accurate. For example, the Lauraceae map includes the upper South Island being shaded, which represents the distribution of *Beilschmiedia tawa*.

I detected only one major error, this being the rather unfortunate omission of the Stackhousiaceae, including the New Zealand species *Stackhousia minima*. On pages 11 and 93 the Stackhousiaceae is indicated as being an accepted family, this being in contrast to its recent placement as a subfamily of Celastraceae. However, in the index and the main body of the text the Stackhousiaceae entries are missing.

It is apparent when reading the book that a considerable number of families have only 1–3 genera and/or very few species, and that some of these account for a number of the families that are additional to those recognised by APG II. An interesting family placement of this type and of relevance to a New Zealand reader includes *Samolus* being placed in the monogeneric Samolaceae, whereas in APG II (2003) it was in the Theophrastaceae and prior to that in the Primulaceae (Webb et al., 1988). Other New Zealand genera that are the only genus in their family include *Coriaria*, *Corynocarpus*, *Donatia*, *Griselinia*, *Pennantia*, *Quintinia*, *Rhipogonum*, *Tetrachondra*, and *Xeronema*. There are a number of other New Zealand genera that have also been assigned to very small families. Included among these are the enigmatic Hectorellaceae, comprising the New Zealand endemic *Hectorella* and the Kerguelen Island

endemic *Lyallia*. The relationships of these two genera have been problematic for many years and they are included in the Hectorellaceae by *Flowering plant families of the world*. However, highlighting the speed with which new information can come to hand, a very recent phylogenetic study using three gene regions has shown they belong with the Portulacaceae and they are now included there as the subfamily Hectorelleae (Applequist et al., 2006).

This book is very readable and highly informative, containing an absolute wealth of up-to-date facts and figures on the flowering plants of the world. It would make a valuable addition to the library of any plant enthusiast.

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**Available from Touchwood Books**

**Natural History of Rangitoto Island: Hauraki Gulf, Auckland, New Zealand**

Edited by Mike D. Wilcox
Published by Auckland Botanical Society Inc. 2007
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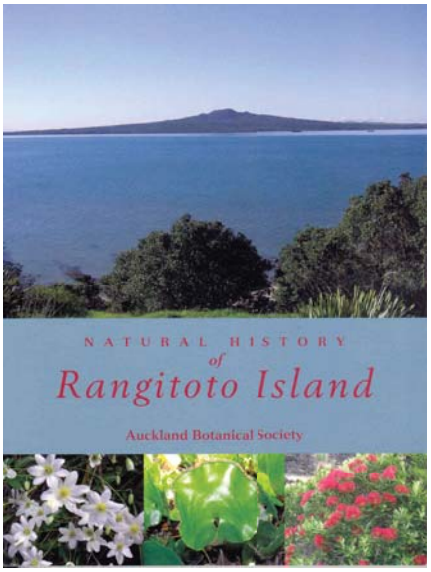


This extremely attractive 14 chapter natural history covers everything from vertebrates and invertebrates to vegetation patterns, plants, and fungi found on the Hauraki Gulf's most iconic island, Rangitoto.
An impressive line-up of authors has been brought together by the Auckland Botanical Society to achieve this task; the book has been ably edited by Mike Wilcox and dedicated to society pioneers Crookes, Cranwell, and Millener. A brief introduction by Wilcox covers the vital background information including geology, history, and previous botanical studies. This chapter is preceded by a fine series of location maps including a particularly stunning aerial photograph of the whole island. I would have liked to have seen here an introductory section on the nutrient status of the parent material (basalt lava), its weathering characteristics, and consequences for soil fertility so crucial for plant succession discussed later in Chapter 4.

Chapters 2 'Vertebrate fauna' and 3 'Invertebrate fauna' begin the trend apparent throughout the book of comprehensively documenting all that is known about the biota of the island. Needless to say, different groups have been subject to different levels of survey and inventory, and reliance on published information varies. The general approach though of trying to canvas the range of species found and to include where possible information on ecology and habitat or pointers for identification is successful, albeit demanding on retaining interest levels throughout each chapter.

Chapter 4 'Vegetation patterns' (pp. 41–58) is understandably, because of Rangitoto's importance as a succession study site, the longest chapter in the book. The importance of crevice colonisation and the establishment of the ubiquitous vegetation patches and their coalescence into continuous forest are well covered, based on the research of Whiting and Julian, in MSc and PhD theses, respectively, undertaken at the University of Auckland. Variations in vegetation across the island are discussed and depicted in a vegetation map, but the text and map are not well connected. The lack of explicit height definitions for short and tall pohutukawa patches is problematic both for understanding the sequence of species enrichment of patches (patches expand radially as well as in height with a highly predictable assemblage of species relating to patch size) and in practical use of the map provided. The suggestion by Atkinson (1960) that ash distributed over the lava flow flanks accounts in part for the pattern of vegetation is not addressed, and Millener's opinion on the age of the oldest trees remains, as noted, untested by adequate tree ring data.

Comments about species which are 'normally' epiphytic growing on the lava somewhat over-represent the view that species have a single lifestyle or strategy. In the case of northern rata (*Metrosideros robusta*) in particular, the lifestyle varies considerably.

Taking a broader successional view, northern rata is an earlier coloniser of debris flows, slip faces and, in this instance, lava flows; later in a succession it establishes epiphytically although it is best described as a hemi-epiphyte. While the abundance of terrestrial northern rata is a feature of Rangitoto, it is also characteristic in other volcanic landscapes, probably the most spectacular example being found in the Hangatahua (Stony River) catchment of Egmont National Park. Similarly, the common albeit localised rupestral occurrence of puka (*Griselinia lucida*) in other parts of the North Island is not admitted. Differences between the lava flow vegetation and the scoria cone and crater habitat are well elucidated, and the chapter concludes with a detailed account of the vegetation and species of the island's 16 km shoreline.

Chapters 5–14 deal with the plants (vascular plants 5–8; non-vascular plants 10 and 11), lichens (12), fungi (13), and algae/seaweeds (14) systematically by way of taxonomic and/or life form grouping. A list of vascular plants complete with authorities and relevant statistics is presented as Chapter 9, while lists of non-vascular species, lichens, fungi and algae (seaweeds), are contained within their relevant chapter. Each of these chapters provides an overview of the group to varying detail and then focuses on particular species selected by the author because of their prominence on Rangitoto or for other reasons such as a special adaptation or feature of interest. Obviously, it is impossible to describe every organism, but the selection offered whets the appetite and encourages the reader to take a greater interest in being able to identify or understand a wider range of the biota present on the island.

I particularly liked the brief but effective accounts of mosses, liverworts and hornworts, fungi, lichens, and algae (seaweeds) which were self-contained to the extent that they could be read without having to scan the whole book and also because the writing style was lively enough to maintain the reader's interest. Some chapters may have been improved if the approach taken in Chapter 11 (liverworts and hornworts) was followed with the size of flora indicated early without having to check this out in the accompanying species list. Although most lists do give a total (e.g., lichens), or subtotal by major group (e.g., fungi and algae), the moss and lichen and hornwort lists do not provide summary data.

All chapters in the book are extremely well illustrated with a good selection of high quality colour photographs of species, growth forms, and habitats.

As is the usual case, vascular plants take the greater proportion of the book with four chapters devoted to ferns (Chapter 5), conifers and dicots (Chapter 6), orchids and other monocots (Chapter 7), exotics (Chapter 8) and, as already noted, a comprehensive vascular species list (Chapter 9). The ferns are particularly well illustrated, and native conifers and dicots have a valuable table giving flowering times which will help the reader wishing to see the spectacular flowering of kohurangi (*Brachyglottis kirkii*) among other species. The native orchids and monocots chapter notes that of eight species of epiphytic orchids found in New Zealand, four grow on Rangitoto, but the Chapter 9 species list includes five such species. *Astelia*, such an important ground cover, is rightfully given prominence in text and photographs, enabling the reader to discern the difference between *A. banksii* and *A. solandri*. However, given the close intermingling of species, I suspect that hybridism is more common than realised and may (rarely) even include intergeneric crosses with *Collospermum*.

The exotic vascular flora is numerically dominant (354 exotic species versus 228 native species) and therefore deserves its full chapter treatment (Chapter 8). The history of weeds is covered first then the focus shifts to environmental weeds and their control, followed by other introduced plants. The question of how the exotic plants arrived is superficially dealt with, given the comprehensive species list available, for example, what is the proportion of wind dispersed versus bird dispersed or human assisted species. The discussion for the species list (Chapter 9) necessarily duplicates some information already presented but also adds additional material strongly pertinent to earlier chapters; for example, the origin of the introduced plants not addressed in the previous chapter.

The book ends with an epilogue clarifying and summarising the features that make Rangitoto so special (16 bullet points are listed). While a few of the points could be debated, as an example of a restored rare (*sensu* Williams et al., 2007) coastal recent lava ecosystem, it is unmatched elsewhere in New Zealand and seems to me more closely akin to ecosystems of the island of Hawaii (Clarkson and Juvik, 1991). This book greatly assists the process of helping New Zealanders truly appreciate Rangitoto's ecology and biodiversity and will hopefully encourage botanical groups elsewhere to complete similarly comprehensive natural history guides for their own sites of special interest.

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