



## Mabberley's Plant-Book In 4th Iteration: A Super Condensed Knowledge on Plants

**D.S. Rawat<sup>1</sup> and Satish Chandra<sup>2</sup>**

<sup>1</sup>Department of Biological Sciences, College of Basic Sciences & Humanities, Govind Ballabh Pant University of Agriculture & Technology, Pantnagar- 263 145, Uttarakhand, India

<sup>2</sup>Department of Botany, Government Degree College, Tiuni- 248199, Dehradun, Uttarakhand, India

### Letter to the Editor

Mabberley's Plant Book has been an important botanical resource since 1987. It has been regularly revised to update the content and the 4th edition has been published in 2017. With more than 26000 entries it is the largest single hard copy document containing correct family and generic names (474 families, 13489 genera) of vascular plants, economically important common bryophytes, algae and numerous vernacular plant names. Firmly grounded on the highly cited previous editions, the 4th edition is also unparalleled in its coverage, reliability of information and expected to earn even more citations and applause.

Naming, identifying, classifying the plants and exploring their diversity and utilities have been the prime objectives of modern day plant sciences and the Mabberley's Plant-Book (Mabberley 2017) presents the concise account of the present day knowledge in this field. On account of its widest coverage of taxa, reliability of information, long persistence of more than three decades with updated reiterations, and being a printed document (thus not liable to change until next edition, a prerequisite in taxonomic literature) it commands high reputation in international scientific literature.

The book starts with 'Aa' which is an orchid and the genus was intentionally named so by Heinrich Gustav Reichenbach, a German orchidologist, to appear first in any list; and ends with another interesting generic name 'Zyzyxia', an Asteraceae member intentionally named so by John Lance Strother to appear in the last in any list. In between these two names there are listed more than 26000 entries, almost all the families and genera (474 families, 13489 genera) of vascular plants, economically important common bryophytes, algae, and numerous vernacular plant names. Thus in modern sense where the term 'Plant' is used for land plants or embryophytes (Simpson 2019) the coverage of book is far beyond 'Plants' by inclusion of algae in it. However, it is not a simple list of plant names; rather each name is supplemented with meticulously abbreviated information. Each family/ genus name is added with original author(s), closely allied taxon in same rank, systematic position, geographical distribution, latest published revision or important account available, characteristic features, economic uses and vernacular name(s) in trade. In case of 109 major families available infra-family classifications are provided while in case of larger genera available infra-generic classifications are given. Though, for the large

genus *Saxifraga* L. recent infra-generic classification by Tkach et al. (2015) is an exceptional omission.

Since 1987, Mabberley's Plant Book has been an important document and it has remained so by including newer changes in circumscription of genera, families, orders and overall classification of land plants in all its reiterations. This recent version utilizes Klaus Kubitzki's colossal work 'The Families and Genera of Vascular Plants' and follows mainly the fourth version of Angiosperm Phylogeny Group classification (APG IV 2016) but not 'ditto', as the seven families accepted in APG IV namely, Adoxaceae E. Mey. (here included in Viburnaceae Raf. to accept Nomenclature Change by ICN 2016), Altingiaceae Lindl. (in Hamamelidaceae R.Br.), Alzateaceae S.A. Graham, Penaeaceae Sweet ex Guill. (both in Crypteroniaceae A. DC.), Oncothecaceae Kobuski ex Airy Shaw (in Metteniusaceae H. Karst. ex Schnizl.), Tetracarpaeaceae Dumort. (in Haloragaceae R. Br.), Tetramelaceae Airy Shaw (in Datisceae Bercht. & J.Presl.) are not given but included in the families in parenthesis. In addition to this, four angiosperm families- Viburnaceae, Erythralaceae Planch. ex Miq., Taccaceae Dumort., and Thismiaceae J. Agardh are listed which are not given in APG IV. In all, within subclass Magnoliidae (=Angiosperms) there are 413 accepted families under 64 orders further classified under informal groups- Basal Angiosperms (though this term is not mentioned), Magnoliids, Monocotyledons, Eudicots, Core Eudicots, Rosids, Super Asterids, Chloranthales (between Magnoliids and Monocotyledons), and Ceratophyllales (between Monocotyledons and Eudicots).

Pteridophytes are divided in to five subclasses (Lycopodiidae, Equisetidae, Ophioglossidae, Marattiidae, Polypodiidae), 14 order, 49 families, a treatment similar to contemporary

Pteridophyte Phylogeny Group classification (PPG I 2016) in order and families except lacking two monogeneric families *Didymochlaena* ceae Ching ex Bing Zhang & Liang Zhang (genus *Didymochlaena* Desv. shown in Hypodematiaceae Ching) and Nephrolepidaceae Pic.Ser. (genus *Nephrolepis* Schott. shown in Lomariopsidaceae Alston). 'Gymnosperms' are given under four subclasses- Ginkgoideae, Cycadidae, Pinidae and Gnetidae (total 4 orders, 12 families) and this treatment at family level is similar to recent treatment in Gymnosperm Database (Earle 2021). Different classifications were followed to arrange the orders and families of these two groups while overall arrangement of vascular plants (traditional Pteridophytes, Gymnosperms and Angiosperms) follows Chase and Reveal (2009). This scheme of classification followed by Mabberley is another step towards the acceptance and popularization of Angiosperm Phylogeny Group classification (APG IV 2016).

All the vascular plants listed here are classified into 10 subclasses, 82 orders, 474 families, 13,489 genera, and about 302,240 species. The numbers of genera and species mentioned in this book are closer to the numbers given by contemporary Christenhusz and Byng (2016) (86 orders, 452 families, 13,467 genera, 308,312 species) but differ considerably from preceding The Plant List (2013) (465 families, 13,467 genera, 316,143 species) or contemporary COL (2017) (351365 species).

This document also provides interesting information to the scholars of Botany; such as- there is only one monotypic subclass (i.e. Ginkgoideae), two monotypic orders (i.e. Ginkgoales, Amborellales), 37 monotypic families (31 in Angiosperms, 3 each in Pteridophytes and Gymnosperms) and 108 monogeneric families (18 in Pteridophytes, 6

in Gymnosperms, 84 in Angiosperms) in vascular plants. Nearly 43% (124,350) species and 40% (5,334) genera of Angiosperms are restricted to 10 large families, namely Compositae Giseke, Leguminosae Juss., Gramineae Juss., Labiatae Juss. (Mabberley has preferred older alternative names), Rubiaceae, Araceae Juss., Orchidaceae Juss., Euphorbiaceae Juss., Melastomataceae Juss., Myrtaceae Juss. There are 70 large genera which have more than 500 species and these genera contribute more than 23% species of land plants. Accordingly, ten largest genera, all belonging to Magnoliidae (Angiosperms) are – *Astragalus* Tourn. ex L., 2850 spp.; *Carex* L., 2100 spp.; *Piper* L., 2000 spp.; *Euphorbia* L., 1900 spp.; *Miconia* Ruiz & Pavon., 1900 spp.; *Begonia* Tourn. ex L., 1800+ spp.; *Bulbophyllum* Thouars. 1800 spp.; *Peperomia* Ruiz & Pavon. 1600 spp.; *Anthurium* Schott. 1500 spp.; *Dendrobium* Sw., 1500 spp.; together containing 18,950 species, almost equivalent to Angiosperm flora of India.

This enormous information is updated by inclusion of 1,400 new entries in the preceding 3rd edition but kept portable by meticulous abbreviations, smaller font size, use of quite thin paper and specific size (233x123x40mm) in hard bound (Fig. 1). These abbreviations may feel uncomfortable (super condensed!) to a naive reader hampering the pace of perusing but for economy of space it can be compromised and overcome by frequent use. Price wise, hardbound document is meant for libraries but paperback edition is highly affordable personally, at a price less than one-fifth of hard bound and easily available with online traders.

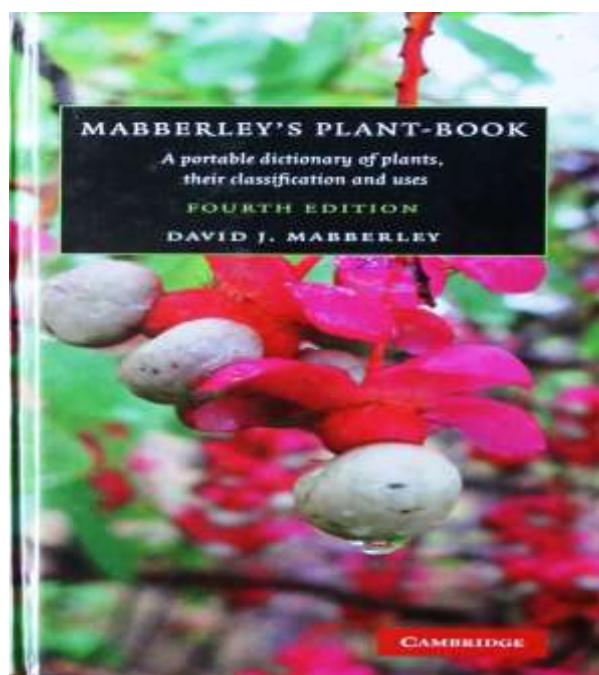
Out of the 31 new names (new combinations) used in the book, for Indian perspective, *Causonis trifolia* (L.) Mabb. & J.Wen, *Dracaena trifasciata* (Prain) Mabb., *Hibiscus roxburghianus* (Wight) Mabb., *Polytoca gigantea* (J. Koenig)

Mabb., *Vincetoxicum indicum* (Burm.f.) Mabb. are important cases being described from, or common in India.

Pleasingly, many common Indian names like 'Gul-mohar', 'Mahogany', 'Deodar', 'Dhak', 'Champa', 'Bela' 'Amla' have been included and many other may appear in future editions. For the Indian readers there are few disappointments too as some Indian contributions are over sighted. *Hellenia speciosa* (Koenig) Govaerts (= *Cheilocostus speciosus*) is given as the correct name (page 429) while this combination was published by S. Dutta earlier to Govaerts and accordingly the correct combination is *Hellenia speciosa* (Koenig) S. Dutta (<https://www.ipni.org/n/60469691-2>). Being published very close to his book, Mabberley has probably not followed the splitting of *Arenaria* s.l. genus and consequently *Shivparvatiya* Pusalkar & D.K. Singh (<https://www.ipni.org/n/77147988-1>) and *Himgiria* Pusalkar & D.K. Singh (<https://www.ipni.org/n/77147995-1>) are not mentioned despite being correct generic names. However, such minor omissions are ignorable at the level of such a huge work and certainly not undermine the value of this book.

Overall, the fourth edition of 'Mabberley's Plant Book' is a huge botanical resource in portable format. It is unparalleled in its coverage, reliability of information and inclusion of new available data on correct plant names, their classification and economic importance. It is a must have document in Indian libraries of botanical institutions and must read literature for botanists particularly, plant taxonomists in India. Reviews/ revisions or other important references given with families and genera are usually not known to a new worker in plant taxonomy and, therefore, are extremely useful to start

work on any plant group. It is expected that this book will earn even more citations (436 already on Research Gate) in botanical writing in general and writings of plant taxonomy in particular as compared to its earlier versions which were also the highly cited resources. The author Dr David John Mabberley, a veteran botanists, renowned taxonomist and nomenclaturist, deserves utmost appreciations for bringing another (4th ed.) masterpiece reiteration of his successful series of 'Mabberley's Plant Book.



**Figure 1.** Mabberley's Plant Book

## References

1. APG IV. "An update of the Angiosperm Phylogeny Group classification for the orders and families of flowering plants: APG IV." *Botanical Journal of the Linnean Society* 181 (2016): 1– 20. Print and Online.
2. Chase, M.W. and Reveal, J.L. "A phylogenetic classification of the land plants to accompany APG III". *Botanical Journal of the Linnean Society*, 161 (2009): 122–127. Print and Online.
3. CoL. "Catalogue of Life 2017: Annual Checklist". <<https://www.catalogueoflife.org/annualchecklist/2017/browse/tree?fdadee9ef241c673ce457ed1be3e9cde>> (2017) accessed on 19 August, 2021. Online.
4. Christenhusz, M.J.N. and Byng, J.W. "The number of known plant species in the world and its annual increase". *Phytotaxa*, 261 (2016): 201–217. Print and Online.
5. Earle, C.J. The Gymnosperm Database. <<https://www.conifers.org/zz/gymnosperms.php>> (2021) accessed on 19 August, 2021. Online.
6. Mabberley, D.J. *Mabberley's Plant-Book A portable dictionary of plants, their classification and uses.* (2017) Cambridge University Press, Cambridge, UK. 1102pp. Print.
7. PPG I. "A community derived classification for extant lycophytes and ferns. *Journal of Systematics and Evolution*". 54.6 (2016): 563–603. Print and Online.
8. Simpson, M.G. "Plant Systematics". (2019) 3rd ed., Academic Press, Elsevier. Print.
9. The Plant List. "The Plant List 2013 Version 1.1". (2013) <<http://www.theplantlist.org/>> accessed on 19 August 2021. Online.
10. Tkach, N., Roser, M., Miehle, G., Muellner-Riehl, A.N., Ebersbach, J., Favre, A. and Hoffmann, M.H. "Molecular phylogenetics, morphology and a revised classification of the complex genus *Saxifraga* (Saxifragaceae)". *Taxon* 64 (2015): 1159 –1187. Print and Online.

**Source of support:** Nil; **Conflict of interest:** Nil.

**Cite this article as:**

Rawat, D.S. and Satish, C. "Mabberley's Plant-Book In 4th Iteration: A Super Condensed Knowledge on Plant" *Annals of Plant Sciences*.10.10 (2021) pp. 4289-4293.

DOI: <http://dx.doi.org/10.21746/aps.2021.10.10.2>