

Book Reviews

Fungi of Australia Vol. 1A, Introduction – Classification, 413 pp, 85 colour and black and white figures; Vol. 1B, Introduction – Fungi in the Environment, 405pp, 77 colour and black and white figures. Australian Biological Resources Study, Canberra (1996). CSIRO Publishing, PO Box 1139, Collingwood 3066, Victoria, Australia. Vol. 1A: ISBN 0 643 05802 8, hard cover; ISBN 0 643 05889 3, soft cover. Vol 1B ISBN 0 643 05935 0, hard cover; ISBN 0 643 05936 9, soft cover. Price for each part: hard cover \$A or US\$ 69.95, soft cover \$A or US\$ 54.95.

The fungal components of the Australian biota cannot be accommodated in the Flora of Australia, started in 1981, because the recent knowledge on fungal phylogeny and the splitting of fungi in separate kingdoms make their inclusion in such a series not appropriate. Therefore, on initiative of the Australian Biological Resources Study a major new series, Fungi of Australia, has been created following the blueprint of The Flora of Australia. Sixty volumes are planned to cover largely the whole fungal kingdoms. Vols. 1–4 will contain the introduction (Vol. 1), a bibliography of macrofungi (Vol. 2), keys (Vol. 3) and habitat-based taxonomic treatments (Vol. 4). Vol. 5 will describe the Protoctista, vol. 6 the Chromista, and vols. 7–60 the Eumycota. Ten volumes will be dedicated to the Ascomycota, 26 to the Basidiomycota, and 18 to the Fungi Anamorphici. Some orders of lichenised fungi are already treated in the Flora of Australia. Volume 2A is the first part of an annotated bibliography and synonymy of Australian macrofungi. The second and final part of this Bibliography (Vol. 2B) should be completed and published in 1998, whereas Vol. 4 is scheduled for the year 2000. Several projects are underway or in planning for Vol. 4, the habitat-based taxonomic studies. Funding is available for the preparation of the vols. 5–55 and it is hoped that several of them will be ready by the year 2000. The “fungi of Australia” is a long-term project that will depend heavily on available funding as well as specialists, as the Australian fungal flora is estimated to contain at least 250,000 species, of which only approximately 5% are already known.

The volumes 1A and 1B are now available and are indeed an excellent start for this series. Vol. 1A covers the classification of the fungi and includes keys to the fungal orders as well as a very complete general bibliography by J. Walker. Other chapters cover the history of taxonomic study of Australian fungi (T. W. May & I. G. Pascoe), the biology of fungi (I. Pascoe & W. Shipton), and their biogeography, (J. Walker). Fossil fungal records are dealt with by E. M. Truswell. A glossary compiled by C. A. Grgurinovic, abbreviations and an index conclude volume 1A. Volume 1B consists of 13 chapters by several authors. Six chapters are dedicated to ecological groups such as freshwater and marine fungi, plant parasites, wood decay, insect inhabiting and gut-inhabiting fungi. The other chapters summarise the impact of fungi on native and domestic animals and humans, respectively, and give valuable and detailed information on mycoses (I would never have imagined that crocodiles were so severely hit by *Fusarium solani*!), macrofungal poisonings, tox-

ins and the significance of fungi as food resource for mammals. In addition, a very interesting chapter on the aboriginal knowledge and use of fungi is included. This chapter will definitely be of great interest to ethnobotanists.

The various chapters present extensive reviews and give a large amount of detailed and well documented information of general interest. The work obviously focuses on the Australian situation but the chapters are so well written and address general topics, thus making them extremely useful to anybody involved in mycology teaching. The chapter on the history of classification shows the evolution of the various systematic concepts over the time starting before 1600. The development of fungal taxonomy is well described, and the reproduction of various schemes from the original publications makes it also easily understandable. The systematic groupings are based on several sources and take into consideration the most modern taxonomic treatments. It is the authors' aim to address a wide audience and therefore to provide identification keys with reliable, morphological characters. Many references are given to the orders keyed out; critical annotations and a list of not accepted names are also intended to help novices as well as experts.

The chapters on fungal biogeography, fossil records or mammal mycophagy, and of course on the aboriginal knowledge of fungi are surely more specific to Australia; they include, however, precious information for mycologists and ethnobotanists living on other continents as well.

The volumes have an attractive pale blue-green cover with a beautiful fungal painting by Katrina Syme. Each volume contains two sets of 8 colour plates composed of 4 photographs. Their quality is outstanding in every respect, be it contrast, colour, or reproduction of details. They illustrate some spectacular myxomycetes, macromycetes, some plant disease symptoms with its fungi, mycoses (I already referred to the impressive picture of *Crocodylus porosus* suffering from a *Fusarium solani* mycosis, but other informative and no less spectacular pictures can be found in the volumes), infected larvae, and most of the fungi used by the aborigines. The black and white figures, be they macro- or microphotographs, SEM pictures or line drawings are of the same excellent quality: informative, sharp and with good contrast. I have seldom seen such a high standard of illustrations. Headers showing on the left page the short title of the chapter and on the right the subject treated provide a good "navigation" in the text. The font size allows an easy reading, although sight-impaired readers may find it slightly small. Both parts have an index and the same list of abbreviations thus making it easy to use them independently. A supplementary glossary introduces new terms used in the second part.

The content and layout of these first two volume indicate that this series is planned very professionally and is likely to become a major standard reference in the mycological literature. This work is not only of interest to Australian mycologist. It is essential reading to mycologists world-wide, due to the wide covering of the general fungal topics and the large space reserved to the taxonomic treatments. To my knowledge this is the only planned series to cover the fungal kingdoms in such a thorough, scientific way. Although the title limits the coverage to Australian fungi, this will be without doubt a major contribution to the knowledge of fungi in general. Volumes 1A and 1B are certainly a successful accomplishment and the price asked for them is modest, considering the wealth of information they contain. I wish the editors that enough specialists, funding and time will be available to complete this ambitious, yet important task.

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Yu-Ming Ju & Jack D. Rogers. 1996. A Revision of the genus *Hypoxyton*. Mycologia Memoir No. 20. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, USA. ISBN 0-89054-214-7. Hard cover 365 pp., 10 plates with black and white photographs, 12 plates with line drawings, 3 tables. US: \$ 54.00, elsewhere \$ 68.00.

This revision, long overdue, is a traditional, classic taxonomic treatment of a large and complex genus. It starts with an introduction that describes the historical position of *Hypoxyton*. The introduction is then followed, as it could be expected, by a section on materials and methods, a description of the genus, its synonyms, as well as by a discussion of the characters of the teleomorph and anamorph.

The concept of the genus *Hypoxyton*, as outlined in Miller's world monograph (Miller, 1961) has proved to be much too broad. In the last few years whole sections of it have been removed: most of the taxa of the subsection *Primo-cinerea* now belong to *Nemania*, the species of the section *Applanata* have been placed in *Camillea* or *Biscaugniauxia*. The genus concept accepted by Ju & Rogers recognizes only the sections *Hypoxyton* and *Annulata*, in which species of Miller's subsection *Papillata* are included as well. The separation of the sections is based mainly on stomatal morphology, in particular on the presence or absence of carbonaceous tissue around the perithecia. The character of papillate or umbilicate ostioles is no longer considered and the authors now describe the ostiole's position as being above or below the stomatal surface. More specific is the discussion of the subgeneric taxa. The stomatal morphology of the two sections is beautifully illustrated with line drawings by Yu-Ming Ju. Some stomata with annulate ostioles are also depicted with the same high, artistic quality. Interesting thoughts on the evolution of *Hypoxyton* species, with hypotheses on stomatal differentiation and speciation, some remarks on the ontogeny, cytology, stomatal pigments and secondary metabolites, mainly based, however, on data from the literature, conclude the introductory part.

A dichotomous key to 40 xylariaceous genera followed by detailed instructions on how to record the characters needed for species identification leads to the taxonomic part of the book. The main characters used to distinguish species are stomatal pigments, granular incrustations under the stomatal surface, the colour of KOH extractable, soluble pigments. The dehiscence of the perispore in KOH, the perispore and epispore ornamentation are additional characters. The description of the colours is based on Rayner (1970). In the section *Hypoxyton* 62 taxa, 30 new species, 1 new variety, 6 new combinations and in the section *Annulata* 18 taxa, 4 new species and varieties as well as 3 new combinations are presented in a dichotomous key. Detailed descriptions of the taxa, as well as a brief discussion of each taxon are presented in alphabetical order within each section. An extensive annotated list to all published names of *Hypoxyton* replace the index.

The illustrations are reduced to a minimum and not all new taxa are fully illustrated. One photographic plate illustrates the perispore types to be found on *Hypoxyton* ascospores. Nine plates illustrate stomata, but the plates are dedicated mainly only to the new species. The line drawings include one plate showing special ascospore features and 7 other plates present a selection of anamorphs.

This revision follows the system used in Miller's monograph and throughout the book reference is made to the names, descriptions, illustrations used by Miller (1961). The black and white photographs, unfortunately, also use the same soft grey tones found in Miller. Sometimes they lack contrast and thus convey only little information, as the Figs 13B *H. olivicolor* or 13C, D, *H. chathamense*, two new species.

Exact reference to the colour chart is essential for success in using the long keys. The key to the species of the section *Hypoxyton* contains 36 character pairs

and ends up with 4 subkeys, one of them again leading to 3 subgroups. The key to one subgroup still has 22 character pairs. The successful use of the keys, in my opinion, requires some experience with Xylariaceae in general and *Hypoxylon* in particular. Such a situation reflects of course the complexity of the genus, in which many closely related species are present. I should have liked to find in this otherwise very complete treatise a table presenting the species according to stromatal pigments and soluble pigments. Such an overview would have been helpful to allow one to cross check identifications.

Some decisions taken in defining the systematic position of some species, such as the reduction of *H. moravicum* to synonymy with *H. cercidicola* is debatable. I also find it peculiar that only *Alnus* is given as a host for *H. fuscum* and only *Betula* for *H. multiforme*, considering that some European literature indicates a wider host range for both species. The endophytic life style of some *Hypoxylon* species is also only very briefly mentioned. The lack of an index does not allow to retrace names occurring in the species discussions or in the general chapters. I also would have preferred a more extensive use of font sizes and styles to allow one a better "navigation" in the text. Only the Latin names are in italic and boldface, thus making it difficult to pick up at once which paragraphs contain synonyms, descriptions, material examined, discussion. A justified printing block would also have made the text more attractive. Such is a pitfall of "camera ready" copy.

Of course it is easy to criticize individual aspects of such a comprehensive book. They do not, however, diminish its enormous value. This volume is the result of many years of study of numerous herbarium specimens, fresh collections and type materials. The data have been analysed accurately, so that firm conclusions on the genus and species characters could eventually be drawn. The genus concept of *Hypoxylon* and adjacent genera, often discussed at meetings and among mycologists, has been "officially" redefined and most information published since Miller's monograph has been summarised. Without doubt, this revision is a must for all mycologists who work with xylariaceous fungi or who want to identify some of the most common and conspicuous ascomycetes found in forests.

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References

- Miller, J. H. 1961. A monograph of the world species of *Hypoxylon*. University of Georgia Press, Athens, USA, 158 S.
Rayner, R. W. 1970. A mycological colour chart. Commonwealth Mycological Institute, Kew and British Mycological Society, 34 S. + Tables I and II.

Wagenitz, Gerhard. 1996. Wörterbuch der Botanik: Morphologie, Anatomie, Taxonomie, Evolution, 532 S, 10 Abb. Gustav Fischer Verlag Stuttgart, ISBN 3-437-35180-X, DM 36.80, OeS 269,-, SFR 35.50.

Der Schwerpunkt dieses botanischen Lexikons in Taschenbuchformat liegt in der Erläuterung der behandelten Begriffe nach Berücksichtigung ihres historischen Zusammenhanges. Rund 4000 Stichworte der Botanik und einige ausgewählte Fachausdrücke der Mykologie aus den Bereichen Morphologie, Anatomie, Cytologie, Taxonomie und Evolutionsforschung werden kurz definiert, unter gleichzeitiger Angabe ihrer entsprechenden englischen und französischen Aus-

drücke. Gewissenhaft wird auf die geschichtliche Herkunft verwiesen, insbesondere wird angegeben, wer den Begriff eingeführt hat. Zahlreiche Literaturzitate verweisen auf vertiefende Werke. Knapp 400 Seiten sind für die Definitionen reserviert. Auf drei Seiten wird die Geschichte der botanischen Terminologie, bis ins 16. Jahrhundert zurückreichend, behandelt. Weiter folgt ein Verzeichnis der Quellenwerke aus den verschiedenen Epochen. Ein Register, das die Bedeutung von Wörtern und Wortbestandteilen lateinischer und griechischer Herkunft erklärt, das Literaturverzeichnis sowie ein englisches und französisches Register mit den entsprechenden deutschen Fachausdrücken beschliessen das Buch.

Wie schon der Titel andeutet, werden vor allem botanische Begriffe erläutert. Es ist sicher ein sehr praktisches Nachschlagewerk, vor allem wenn Texte gelesen oder für den Unterricht vorbereitet werden. Es gibt meines Wissens in der deutschsprachigen Literatur kaum ein solch kurzes, prägnantes Werk, das die Ursprünge der Begriffe und ihre Bedeutung, sowie die heutige Verwendung in den verschiedenen Disziplinen in leicht zugänglicher Form darstellt und zugleich auf die originalen und vertiefenden Werke hinweist. Es wird auch auf die verschiedentliche Anwendung des gleichen Begriffes in verschiedenen Fachbereichen deutlich verwiesen, wie zum Beispiel „Lamelle“ bei den Basidiomyceten, bei Biomembranen und bei Moosen oder „Haustorium“ bei parasitischen Cormophyten, Pilzen und Flechten, Bryophyta oder in der Embryologie der Pteridophyta und Angiospermen.

In dieser Hinsicht schliesst das Buch sicher eine Lücke, findet man doch viel Information auf engem Raum, ohne zahlreiche Lehrbücher nachschlagen zu müssen. Dazu tragen auch das französische und englische Register bzw. die Angabe der entsprechenden französischen und englischen Übersetzungen der Stichworte bei, weil meistens solche spezialisierten, botanischen Fachausdrücke den Rahmen jedes üblichen Wörterbuches sprengen. Ich bin auch sicher, dass sich das Verzeichnis der Wörter und Wortbestandteile lateinischer und griechischer Herkunft als sehr wertvoll erweisen wird, weil die Ausbildung von Naturwissenschaftlern in der Philologie nicht mehr selbstverständlich ist.

Für den Mykologen ist dieses Buch allerdings eher unvollständig. Manche Definitionen mykologischer Begriffe sind stark vereinfacht. Der Begriffskomplex um die Conidie und ihrer Entstehung entspricht zum Beispiel nicht vollständig der modernen Auffassung. „Dimorphismus“ ist nur in Zusammenhang mit Blütendimorphismus erwähnt und das häufige Vorkommen dieser Erscheinung bei Pilzen ist vergessen worden. Allgemeine Begriffe, die in der Botanik als auch in der Mykologie gültig sind, wie die Terminologie der Kladistik, können aber hier nachgeschlagen werden. Die Definitionen der „Fungi“, Pilze, und der „Mykologie“ stützen sich aber auf veraltete Literaturangaben ab. Unter diesen Begriffen wird erst von einer Tendenz, die Pilze als eigenes Reich aufzufassen, gesprochen. Bereits 1983 wurden aber die Pilze als eigenes Reich erfasst (Ainsworth & Bisby's Dictionary of Fungi, 1983, 1996). Es ist auch wenig verständlich, wieso als Quellenangabe bei Pilzen und Flechten das im deutschen Sprachraum führende Lehrbuch von Müller & Löffler (Mykologie, Thieme, 1992) nicht erwähnt wird.

Die Leserschaft, die mit diesem Lexikon angesprochen werden soll, ist aber sicher nicht der Vollblutmykologe, sonder der Botaniker, der sich gelegentlich mit Pilzen oder Flechten auseinandersetzt. In dieser Hinsicht erfüllt es seinen Zweck, die mykologische Grundausrüstung einfach, aber korrekt und kompetent zu erläutern.

Wer den Begriffen in der Botanik auf den Grund gehen möchte, ist sicher von diesem Lexikon angesprochen. Der robuste plastifizierte Einband und das handliche Format laden geradezu zu einem häufigen Gebrauch ein. Auch der Preis steht in einem vernünftigen Verhältnis zur gebotenen Information und Ausführung.

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Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Sydowia](#)

Jahr/Year: 1997

Band/Volume: [49](#)

Autor(en)/Author(s): Anonymus

Artikel/Article: [Book Reviews. 101-105](#)