

Book Reviews

Bell, A. (2005). An illustrated guide to the coprophilous Ascomycetes of Australia. – CBS Biodiversity Series 3, Centraalbureau voor Schimmelcultures (eds.), Beeld & Visie, Barn, The Netherlands: 172 pp.

This is an amazing, wonderful, and motivational work on ascomycetes; after having paged through it, I can hardly imagine that there is any systematist interested in ascomycetes who would not want to own this CBS-issue. But now I have to explain shortly my enthusiasm:

Ann Bell's language is clear and concise, and so are the data presented. Because "... our visual system has the capacity to process huge amounts of information simultaneously ...", she favours "... the use of copious illustrations wherever possible, including illustrated keys." In 115 excellent figures – line drawings in black and/or coloured with watercolours (most of them filling the page) – all relevant macro- and micromorphological features of treated fungi are illustrated, also providing a visual glossary of all technical terms used. Both the text and the quality of figures mediate professionalism *and* passion for mycology.

This publication includes a short biography of the Major Harry Arthur Dade (1895–1978) and integrates his observations and annotated notes on the coprophilous ascomycetes of Australia into the further observations made by Ann Bell over a period of approximately three years.

From a total of 936 records of ascomata on 23, partly exotic dung types, 176 species of pyrenomycetes, discomycetes, and plectomycetes were identified. All genera are comprehensively described and keys to all the species observed are provided. Each species is illustrated, whereby all illustrations within a particular genus are drawn to the same scale for easier comparison. Ten new species are fully described in Appendix I: *Ascobulus dadei*, *Cercophora grandiuscula*, *C. recta*, *Fimetariella minuta*, *Mycoarctium sphaerosporum*, *Podospora fabiformis*, *P. ignota*, *Sporormiella albolanata*, *Strattonia oblectythiformis* (all by A. Bell & D.P. Mahoney), and *Strattonia grandis* A. Bell & N. Lundqvist.

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Adams G.C., Wingfield M.J., Common R. & Roux J. (2005). Phylogenetic relationships and morphology of *Cytospora* species and related teleomorphs (Ascomycota, Diaporthales, Valsaceae) from *Eucalyptus*. – Studies in Mycology 52: 147 pp.

Volume 52 of Studies in Mycology (SIM) is dedicated to a group of fungi which is causing canker on *Eucalyptus* species. The focus of the work summarised in this volume should be the discussion of a phylogenetical concept and a new terminology for the anamorph genus *Cytospora* and related teleomorphs.

The first 53 pages comprise a main description of the biology, ecology and pathology of *Cytospora* species from *Eucalyptus*. The discussion of possible practical impacts and recent phytopathologic research occupy numerous pages, e.g.

the economic maintenance of *Eucalyptus* plantations, host resistance and techniques for the isolation and virulence testing of isolates. An excessive historical overview over taxonomy and systematics is presented together with drawings and a descriptive compilation of locule forms, teleomorph and anamorph characters. The authors present numerous two coloured drawings for the illustration of terms concerning the morphology and anatomy of conidiomata and ascomata. In this context *Leucostoma*, *Valsella* and *Valseutypella* are proposed as synonyms of *Valsa*. A nomenclatural topic, the rejection of binomials of *Cytospora*, is discussed shortly. In this part also problems concerning the morphology of *Cytospora* are discussed. Moreover, infrageneric entities are discarded in favour of descriptive terms referring to locule forms, as phylogenetical analyses did not support the sections based on morphology. Phylogenetic analyses of ITS-sequences are discussed briefly.

In the second, mainly systematic part, covering 82 pages, 23 species of *Cytospora*, nine of them with *Valsa* teleomorphs, among them 11 new, and some "undetermined" species are presented. All are described thoroughly with illustrations of the teleomorphs on the original substrates, cultures, microscopic characters and cross sections of conidiomata and ascomata. The descriptions are completed by etymological statements, information on teleomorph – anamorph relations, physiologic characters like growth temperatures, host preferences, distribution and a short discussion. Keys are lacking.

Concerning the pathology of *Valsa* and *Cytospora* spp. the authors work out comprehensibly that the sum of stress factors weakening the host is crucial for the development of canker in *Eucalyptus*. Comparisons to the pathology of *Cytospora* in other plants are drawn and host preference and host resistance are described. The discussion of the role of stress factors is important especially when considering the spread of *Eucalyptus* spp. in non-endemic regions and the change of environments due to humans.

The repeated advice – not only by Adams *et al.* – saying that without sequencing identification is not or hardly possible may be of value; but it should not be overlooked, that fast, cheap and field applicable identification has still to be done by means of morphological characters and keys together with experience based upon them. The aim declared by the authors to enhance the identification and the setup of the larger part of the underlying volume, which is mainly morphologic work, is in a way contradicted by this statement.

Altogether 91 plates with colour illustrations of colonies, fruit-bodies, natural substrates, microscopic characters as well as black and white pictures and two coloured drawings of excellent quality are presented. Studies in Mycology 52 is an essential compendium of *Cytospora* from *Eucalyptus* and its pathologic significance. Possibly the discussion of the phylogenetic analyses and its practical and nomenclatural impact could have been more detailed. At last this volume contributes to the view, that only exact descriptions and the use of accurate systematic entities will enable us to understand fungi, their functional morphology, ecology and pathology.

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Summerbell R.C., Currah R.S. & Sigler L. (2005). The missing Lineages. Phylogeny and ecology of endophytic and other enigmatic root-associated fungi – Studies in Mycology 53: 262 pp.

This book provides an interesting insight into the intricacy of root-associated fungi. In the first article a new anamorphic genus, *Meliniomyces* Hambleton &

Sigler, is introduced. Three species are described based on their cultural characters and supported by DNA data. Their role as mycorrhizal partners is discussed as well as their taxonomic position within the "*Hymenoscyphus ericae* aggregate". The next article presents the new genus *Leohumicola* N.L. Nickerson, Hambleton & Seifert. On the base morphology and DNA data four species are described. A key to *Leohumicola* and similar genera is presented together with a key to the species of *Leohumicola*. Two new species of *Cryptosporiopsis* from roots of ericaceous hosts are introduced on the next few pages and again morphological descriptions are completed by DNA data. The next three articles dealing with *Oidiodendron* provide data on morphology, phylogeny and catabolic profiles, the latter gathered by Biolog FF MicroPlates™. The influence of differences in growth sites on the population of root-associated fungi is tenor of the next interesting paper. Root endophytic fungi of two dominating heathland plants a the grass *Deschampsia flexuosa* and the heather *Calluna vulgaris* are compared in the ecologic study on the following pages. A merit to conservation is given by the next paper of this amazing book: starting with studying protocorm mycobionts of a threatened orchid, the paper presents a technique to culture mycotrophic orchid seedlings to the green leaf stage. To enlighten the ecologic role of dark septate endophytic fungi is aim of the penultimate report. This paper raises more questions than it can answer but nevertheless it provides valuable thought-provoking impulses for future research. The book closes with an excellent review on endophytic and saprotrophic fungi associated with ectomycorrhiza.

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Mostert A., Groenewald J.Z., Summerbell R.C., Gams W. & Crous P.W. (2005). Taxonomy and Pathology of *Togninia* (Diaporthales) and its *Phaeoacremonium* Anamorphs – Studies in Mycology 54: 115 pp.

The genus *Togninia* (Diaporthales, Togniniaceae) is monographed along with its *Phaeoacremonium* (Pm.) anamorphs. Species of *Phaeoacremonium* are vascular plant pathogens causing wilting and dieback of woody plants. The most prominent diseases in which they are involved are Petri disease ("black goo") and esca, which occur on grapevines and are caused by a complex of fungi, often including multiple species of *Phaeoacremonium*. To complete their study, not only the plant pathogens but also those species of *Phaeoacremonium* causing human mycoses are treated. The species are described on the basis of cultural and morphological characters. Furthermore, DNA data derived from partial sequences of the actin and β -tubulin genes throw light on the taxonomy of this group of fungi.

Based on both, morphological and molecular data several new species are described. The dichotomous key for the identification of *Phaeoacremonium*-like fungi and the genera related to *Togninia* will become an indispensable tool for mycologists and plant pathologists working with these fungi. For those researchers, trusting more in molecular methods 23 species-specific primers, including 20 primers targeting the β -tubulin gene and three targeting the actin gene for the 22 species of *Phaeoacremonium* are provided.

Overall this book gives an excellent example of a modern approach to taxonomic questions.

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Bolay, A. (2005). Les Oïdiums de Suisse (Erysiphacées). – *Cryptogamica Helvetica* 20: 1 – 176, ISSN 0257-9421.

The book provides an up to date overview on the systematics of the powdery mildews of Switzerland. The examined specimens originate from the authors collections made between 1954 and 2004 and are preserved in the Conservatory and Botanical garden of the city of Geneva (G). Among the 122 species of powdery mildew described in the book, three new species are proposed: *Erysiphe caricae* U. Braun & Bolay, *Erysiphe scholzii* U. Braun & Bolay and *Oidium vincae* Bolay.

The detailed descriptions of the species include morphological characteristics as well as symptoms of the host plant. The worldwide distribution, the known hosts and history of the different species in Switzerland are discussed and supported by extensive reference lists. Line drawings with special attention on the anamorphic stages complete the text.

All species are adapted to the new systematic concept based on molecular data. This leads to an increase from eight to ten genera occurring in Switzerland and a change of more than 60 % of the generic names. For new records for Switzerland a discussion if they are invaders or they have simply been overlooked can be found at the end of the descriptions.

Most welcome, identification keys in French and in English are presented: The first key is based on the host plant families. Subsequently, anatomical and morphological characters keys out either the teleomorph or the Oidium stage of the Swiss Erysiphaceae.

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