

## Book Reviews

Crous, P. W. & U. Braun (2003). *Mycosphaerella* and its anamorphs: 1. Names published in *Cercospora* and *Passalora*.– CBS Biodiversity Series 1: 1–571; ISBN 90-70351-49-8.

The Centraalbureau voor Schimmelcultures (CBS) has launched a new periodical, the “CBS Biodiversity Series”, intended to be a publication forum for voluminous monographs and checklists on filamentous fungi. “*Mycosphaerella* and its anamorphs” is its first issue.

More than 3,000 names are compiled in this volume. For this book 5,720 names published in *Cercospora* and *Passalora* s. l. were checked resulting in alphabetical lists by epithet for 659 recognised names in *Cercospora*, for 281 epithets in *C. apii* s. l., for ca. 550 accepted names in *Passalora*, and for ca. 100 excluded *Passalora* names. Basionyms and synonyms are provided. A total of 455 taxonomic novelties, such as nom. nov., comb. nov., and 31 new species are proposed, the latter beautifully illustrated by line drawings. The species lists are preceded by a critical overview on the cercosporoid genera and generic complexes such as *Cladosporium*, *Ramularia*, *Pseudocercospora*, only to name a few. A dichotomous key to the recognised true 4 cercosporoid genera and one to cercosporoid and morphologically similar genera are provided. Accepted names are annotated with information on hosts, distribution, critical comments, and relevant literature. Several pages of references, index to fungal names by host genera and an index to the nomenclatural novelties conclude the book.

The book represents a collection of the first results of an international project on the genus *Mycosphaerella* and its various anamorphic genera. The project aims to elucidate host specificity and speciation of this economically important genus. Future contributions should include molecular biology, checklists of other cercosporoid genera and the corresponding link of names with specimens, cultures, and sequence data. The authors, undoubtedly the most knowledgeable experts of cercosporoid fungi, have gathered important information on this fungal group. Numerous visits to various botanical and mycological libraries, herbaria, as well as examination of *Cercospora*-types and other authentic specimens were the pre-requisites to compile this list. Molecular analyses were used to clarify some species and generic concepts within *Cercospora* s. l. Serious, consistent and detailed research stands behind the whole work.

As the number of published names in *Cercospora* and *Passalora* suggests, an update and a critical revision of them were highly needed. Therefore, this book is certainly a milestone in the taxonomy and systematics of this fungal group. Moreover, it is also an outstanding example of modern bioinformation research, using synergies of experts and international networking. The intention to publish the checklist also on the net will ensure its continuous update, at the same time making it available to a broad public.

As usual for CBS publications the paper and the hardcover are of good quality and the issue is carefully edited.

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Guarro, J., R. C. Summerbell & R. A. Samson (eds., 2002). Onygenales: the dermatophytes, dimorphics and keratin degraders in their evolutionary context. – *Studies in Mycology* 47: 1–220.

A book dedicated to the Onygenales, a very important group of Ascomycetes comprising several human pathogens and a number of opportunistic antagonistic symbionts is bound to attract not only mycologists but also medical professionals and interested biologists. Thus, this new collection of research papers, published in the series edited at the Centraalbureau voor Schimmelcultures, will certainly be an important reference in all research work related to the taxonomy and biology of fungi causing mycoses in humans and other animals.

Clearly the contributions contained in the book are not directed to beginners in the field. Professionals working in medical mycology or the general mycologists will most likely not profit fully from the wealth of information presented here. Rather, only specialists will be able to appreciate the collection of details relating mainly to molecular phylogeny of this fungal group.

The book opens with a very short (actually, too short) review of the phylogeny of Onygenalean fungi written by J. Guarro and J. Cano. This review contains essential data on the Onygenales. I would actually have preferred to see here a more detailed compilation of the taxonomy and biology of the group, as this would have provided a better introduction to the more specialised contributions that are presented in the body of the volume. A brief description of all genera, perhaps complemented by a dichotomous or synoptic key to the genera (including those described in the book and therefore new to science), would have provided invaluable help to those interested in this fascinating fungal group.

The following chapters focus mainly on the molecular taxonomy of Onygenalean genera. On the other hand, morphological and other biochemical aspects (e.g. the very interesting chapter on FISS polysaccharides as evolutionary indicators for Plectomycetes by Ahrazem & al.) are considered as well in a few papers. It is a merit of this book to combine molecular, biochemical and morphological data to provide the reader with a comprehensive view of the genera treated. Clearly, polyphasic taxonomy is becoming the state-of-the-art methodology in the taxonomic and phylogenetic treatment of fungi.

I was pleased to see very good and comprehensive treatments of *Arachnomyces* (Gibas & al.), *Gymnoascus* (Solé & al.), and *Aphanoascus* (Cano & al.). In all three papers, the presence of good keys will provide much needed practical guidance in the identification of species belonging to these rather difficult genera. The molecular work performed on the three genera has also somewhat clarified the phylogenetic relationships among related species.

Several new taxa are described: *Auxarthron concentricum* Solé, Cano & Guarro and *A. chlamydosporum* Solé, Cano & Guarro (Solé & al.); *A. filamentosum* Sigler, Hambleton & Flis and *A. alboluteum* Sigler & Hambleton (Sigler & al.); *Chlamydosauromyces punctatus* Sigler, Hambleton & Paré is a new species in a new genus is described by Sigler & al.; the order Arachnomycetales with the family Arachnomycetaceae is described as new by Gibas & al., along with the new species *Onychocola gracilis* Gibas, Sigler & Currah and the new combination *Onychocola sclerotica* (Guarro, Gené & De Vroey) Gibas, Sigler & Currah; Solé & al. describe *Gymnoascus armeniacus* Solé, Cano & Guarro and the genus *Testudomyces* Solé, Cano & Guarro with the species *T. verrucosus* Solé, Cano & Guarro; along with several new combinations in *Aphanoascus*, Cano & al. describe *A. cubensis* Cano & Guarro and *A. pinarensis* Cano & Guarro; *Castanedomyces australiensis* Cano, Pitarch & Guarro gen. et sp. nov. is introduced by Cano & al., along with *Pseudoamauroascus australiensis* Cano, Solé & Guarro; two new species are described by Udagawa & Uchiyama in *Mallochella*, *M. endodonta* Udagawa

& Uchiyama and *M. transmutans* Udagawa & Uchiyama; two new species of *Chrysosporium*, *C. submersum* Vidal & Guarro and *C. minutisporosum* Vidal & Guarro are introduced by Vidal & al. and finally Caldusch & al. describe *Oidio-dendron myxotrichoides* Caldusch, Gené & Guarro, a species with gymnothecium-like sporodochia.

The book is well edited, with pictures of excellent quality. A good index allows the reader to quickly find all taxonomic entries easily. I am sure this publication will be the starting point of additional research work on this fascinating fungal group, and will provide a good help to workers involved in the research of dermatophytes and other medically important fungi.

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Hsieh, W. H., C. Y. Chen & C. L. Wang (2000). Taiwan ascomycetes – Pyrenomycetes and loculoascomycetes. – Chinagraphics, Taichung, Taiwan, 244pp; ISBN 957-744-308-7; in Chinese.

This book contains descriptions, either original or translated from English, of ascomycetes collected from the Taiwan Island over the past 10 years. Seventy-five species belonging to 48 pyrenomycetous genera and 68 species in 46 loculoascomycetes genera are described and illustrated by microphotographs and line drawings. Three species of *Anthostomella* are described as new, fourteen taxa are reported for the first time from this area. For each taxon synonyms and information on the anamorph or reference to the respective publications are provided together with the relevant literature.

A short introduction focuses on ascomycete morphology and development. In a brief chapter the methods for specimen examination and sectioning techniques used are outlined. Alphabetical lists for the pyrenomycetes and loculoascomycetes serve as a quick guide to the taxa treated, referencing also the herbarium number of the specimen studied. The main body consists of the species descriptions arranged strictly alphabetically. Host and fungus indices close the book.

The book is clearly addressed almost exclusively to Chinese speaking students, indigenous mycologists and members of plant health authorities, as it is written in Chinese. It aims to introduce them more easily to the subject of fungal taxonomy omitting additional difficulties related to foreign language competences. It makes an important contribution to the knowledge of fungal diversity in Taiwan and it will be useful also to non-Chinese speaking people, as the illustrations, photographs as well as line drawings are of excellent quality. Measurements, fungal names and references cited are in Roman type, an English summary is provided.

The paper and the soft cover are of good quality and allow one a frequent use. The style is consistent. The absence of an identification key to the species treated, however, is unsatisfactory. I really miss, however, an impressum in English, to allow researchers an easy citation of the book in non-Chinese publications. This is a serious shortcoming, because I am sure it will get diffused, as mycological biodiversity research in this area is very active. Fortunately, the full citation of this book, as reported above, is provided by the authors in one of their publications.

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Læssøe, T. & J. H. Petersen (2003). MycoKey 1.0. Keys to 528 genera of Basidiomycota from Northern Europe. Product available through <http://www.mycokkey.com>. Shareware, 54 (Approx. \$ 62). ISBN: 87-984481-6-1

System requirements: A fast CD-ROM drive or 330 MB hard disk space for installation. Windows XP or 98 SE with Quicktime 5 and 768 × 1024 pixels screen; Macintosh: Optimised for OS X, at least 600 × 800 pixels screen.

During more than two decades computer programs have been used to aid biologists in the identification of biological specimens and during the last few years a few attempts have been made also in mycology to introduce the use of computer keys for the identification of fungi.

Common to most programs is the use of computer versions of synoptic keys. MycoKey has been already available since a few years on the Net (<http://www.mycokkey.com>) as a synoptic key to basidiomycetes. The first official release provided for review is expanded as compared to the Internet version, and includes descriptions, notes and references to basidiomycota known to occur in the northern part of Europe. Excellent photographs (unfortunately only of the macroscopic characters) are provided for all species treated in the key.

The key can be used both in a novice as well as advanced mode. In the novice mode only the more common genera and only easy-to-handle characters are listed. In this mode, according to the authors, children more than 10 years old should be able to get to a result. The advanced mode includes all genera and characters, including those microscopic features.

I have tested the software on both a G4 733 MHz Mac running System 10.3.1 (Panther), equipped with a Pioneer SuperDrive and a flat panel screen, as well as on a Laptop running Windows XP Professional. In both cases the key starts from the CD as well as from the harddisk – but the performance from the CD is unacceptably slow (even if I was using a 24x CD-ROM). A good performance, on the other hand, was seen after copying the content of the whole CD to a directory on the harddisk and starting the program from there. I would thus definitely not recommend using the program from the CD. Under both OS the software (developed using 4D as a database) was remarkably stable.

The key's construction is quite straightforward and indeed the use of the key in novice mode is very simple. As expected, however, in the novice mode I never could reach an unequivocal identification, but the key reduced the number of possible genera to a manageable size. The quick access to the very good pictures allowed me to get to reasonable guesses.

In the expert mode, the situation is somewhat less favourable. It takes some time to explore the key and to understand how it works. On the other hand, the help buttons are very useful and provide good advice. After a few runs, I was able to get to satisfactory identifications.

The user interface is not exactly intuitive (I would have loved to find a small user's guide in the form of a .pdf or readme file, also to provide some information on the installation method), but the user can find a complete and useful introduction in the welcome page.

This is a good step forward in the use of computers in taxonomy. I am looking forward to seeing the methods offered by Artificial Intelligence techniques being used to improve fungal identification. So far the synoptic key and the dichotomous key are still the tools which allow mycologists to attempt the identification of a fungus to genus or to species. The use of either type of key, however, presents specific problems. While the synoptic key is comparatively free of any kind of

weighting of characters by the author; the choice of the hierarchical line of the identification steps within a dichotomous key is mainly subjective and can often lead to wrong decisions depending upon the accuracy of the choice and the skills of the user.

On the other hand the morphological and physiological characters used can be either ill-defined or not very accurate, most of them being subjectively defined by the taxonomist: particularly with a dichotomous key a considerable amount of information is presented in the form of disjunctive (OR), conjunctive (AND) or even mixed (AND/OR) sorting or by subjectively defined frequencies of occurrence (rarely, often, etc.).

The identification of a fungus is thus a task which can offer considerable problems to the inexperienced mycologists, ecologists, plant pathologists, or food microbiologists. The availability of a computer-assisted way of overcoming these difficulties making use of appropriate AI techniques such as the naïve credal classifier or other identification methods would be of considerable interest to most biologists, who are confronted during their work with the identification of fungi.

I believe that this new software may be of interest in particular to hobby mycologists who want to get familiar with basidiomycetous genera. Definitely the key is worth the modest price asked and the information provided is very valuable – the quality of the pictures is excellent and the references to each genus very useful. I am not particularly happy with the user interface, which appears to me to be overly crowded and not very intuitive. I think it would be worthwhile to revisit it and take the Internet version as an example – actually I found the use of the version in the net to be simpler, and fast too.

In general, however, I believe that the authors have produced a very useful tool that will find its place in the computer of hobby as well as professional mycologists as a valuable source of information.

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