

Newsletter of the Mycological Society of America

— In This Issue —

Pyreno Pursuit: A Mycoblitz to Discover the Diversity of Pyrenomycetes in the Great Smoky Mountains National Park	1
MSA Business	4
Mycological News	6
Mycologist's Bookshelf	7
Mycological Classifieds	16
Calendar of Events	19
Mycology On-Line	20
Sustaining Members	22

— Important Dates —

April 15 Deadline:

Inoculum 57(3)

July 29-August 2, 2006:

MSA/CPS/APS Meeting,
Québec City, Québec,
Canada

August 21-26, 2006:

8th International
Mycological Congress,
Cairns, Australia

Please send the editor notices about upcoming important events.

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Pyreno Pursuit: A Mycoblitz to Discover the Diversity of Pyrenomycetes in the Great Smoky Mountains National Park

By Andrew N. Miller

The first pyrenomycete mycoblitz was held in the Great Smoky Mountains National Park (GSMNP) September 5-9, 2005. Pyrenomycetes represent one of the largest groups of fungi, but are also one of the most poorly known, most likely due to their small size (usually <1mm diameter) and cryptic nature. An All Taxa Biodiversity Inventory (ATBI) is currently underway in the Park and the sampling of fungi, especially microfungi, is vital to ensure a complete and thorough survey of all of the Park's organisms. Pyreno Pursuit was the first attempt to bring together experts to inventory the diversity of pyrenomycetes in the GSMNP. The objective of this study was to inventory pyrenomycete fungi during a week-long mycoblitz to assess their diversity, abundance, distribution, and host specificity in the GSMNP. Collecting occurred throughout the Park at various elevations to sample a wide variety of habitats ranging from pine-oak forests to hardwood coves to northern red oak forests. Locations included Alum Cave, Big Creek, Cades Cove, Greenbrier, Purchase Knob, and Sugarlands Visitor Center.

Participants included Dr. Sabine Huhndorf and her student, George Mugambi, (Field Museum, Chicago, IL), Dr. Andrew Miller and a student, Huzefa Raja, (Illinois Natural History Survey and University of Illinois Urbana-Champaign, Champaign, IL), Dr. Jack Rogers (Washington State University, Pullman, WA), Dr. Amy Rossman and her post-doc, Dr. Mikhail Sogonov, (USDA, Beltsville, MD), and Dr. Larissa Vasilyeva (Far East Branch of the Russian Academy of Sciences, Vladivostok, Russia).

All collections were entered into a database of pyrenomycetes of GSMNP. This database includes historical records gathered from L.R. Hesler's lifetime list of Park fungi and from herbarium records from BPI. This week-long mycoblitz produced a total of 226 collections comprising 91 species and resulting in 65 (71%) new

Continued on following page

Park records and three new species to science. A checklist of all species collected during this mycoblitiz will soon be posted on the Discover Life in America website (discoverlifeinamerica.org). It is anticipated that in the near future web-based identification guides and species pages will be created for each species discovered in the Park. The second annual Pyreno Pursuit mycoblitiz is currently being planned for May 14-28, 2006.

Acknowledgments: This mycoblitiz was fund-

ed through a Discover Life in America Grant (DLIA2005-11), while Vasilyeva's travel was supported through a NSF BS&I Grant (DEB-051558), both to ANM. A special thank you is given to Dr. Ed Lickey (University of Tennessee, Knoxville) for his assistance in the identification of numerous host plants.

Questions or comments should be sent to Andrew Miller, Illinois Natural History Survey, Center for Biodiversity 1816 S. Oak St., Champaign, IL 61820. Email: amiller@inhs.uiuc.edu.

Photo 1: Mycoblitiz participants at Purchase Knob (from left to right) front row: Mikhail Sogonov, Huzefa Raja; back row: George Mugambi, Andrew Miller, Sabine Huhndorf, Jack Rogers, Amy Rossman, Larissa Vasilyeva.



Photo 2: *Cercophora "rubrotuberculata"*, a new species to science found at Big Creek.



Photo 3: *Xylaria longipes* growing on a hardwood log.



Photo 4: Huzefa and George looking at a specimen.



Photo 5: Jack and Larissa working in the lab.

(All photos by Andrew Miller except Photo 4, which is by Mikhail Sogonov.)

MSA Travel Awards to IMC8: Announcement and Call for Applications

We are very pleased to announce a call for applications for International Travel Awards for this year (details below and on the web at www.msafungi.org). MSA Executive Council has approved \$4000 (in total) in support of travel by graduate students and postdoctoral fellows to **the EIGHTH INTERNATIONAL MYCOLOGICAL CONGRESS (IMC8) in Cairns, Australia, August 20-26th, 2006**. These awards are given to graduate students or postdoctoral fellows.

Application deadline: Received by March 15th, 2006.

Eligibility: An applicant (1) must be an MSA member, (2) must be presenting a paper or poster at IMC8 and (3) must be a graduate student or postdoctoral fellow.

Documents required:

- (1) A cover letter requesting consideration for an MSA International Travel Award to IMC8. Provide telephone number and, if available, fax and email addresses, and include information on any past MSA Travel Award(s). Please also provide a brief budget outline for your costs in attending the meeting. If matching funds are available from the applicant's institution, provide an address that can be used to officially verify the receipt of an award.
- (2) Abstract of paper or poster (please note which type of presentation).
- (3) Curriculum vita.
- (4) A one page description of the research project, including an explanation of how this award will further the applicant's research/study.
- (5) A letter of support from the applicant's major professor addressing the student's abilities and potential and briefly summarizing the student's current research.

To apply: All documents listed above should be sent by email to the MSA Secretary. The application documents should be in PDF or WORD format and included as one or more attachments to a *single email message*. (The only exception permitted will be made for the letter of support from the applicant's professor, which may be sent as an attachment to a separate email message directly from the professor, within the same deadline.)

Dr. Faye Murrin, MSA Secretary
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(Phone: 709-737-8018)

MSA BUSINESS

From the President's Corner . . .

Dear Friends and Colleagues,

How quickly the year progresses! The MSA Annual Meeting with the American Phytopathological Society (APS) and the Canadian Pathological Society (CPS) in Québec City, July 29 - Aug. 2, 2006 is now less than six months away and preparations are in full swing with local organizers **Linda Kohn** and myself, working with Meeting Manager **Paula Trenda** and Director of Meetings **Betty Ford** at APS. MSA Council will meet on Friday, July 28, the day before the official opening of the meeting. The Foray, being organized by **Don Ruch**, is to be held on Saturday. Look for excellent collecting in the context of the locally rich history of amateur and professional mycology. The Opening Plenary Session on Sunday will feature three lectures of broad scope, each sponsored by a participating society. **Jeff Townsend** (University of Connecticut) is the MSA-sponsored lecturer. The Program Committee, chaired by **Tom Bruns**, has lined up four MSA symposium sessions: Fungal Movement: Contemporary Experimental Analysis, Bacterial Symbionts of Fungi, Diversity of Zoosporic Fungi, and Population and Species Divergence, each of which includes international participation from a diversity of research fields. As usual, the MSA will have numerous contributed paper sessions, plus posters. **David Geiser** (Pennsylvania State University) has kindly set up the abstract submission web site for all MSA sessions (abstract submissions for CPS and APS sessions are separate). The Social and Auction will be held on Tuesday evening in a venue adjacent to similar, but separate, activities for APS and CPS members. We welcome APS and CPS members to our auction! Inexpensive housing at Laval University will be available with transportation to the meeting. Students please submit your applications for MSA Mentor Travel Awards.

The mid-year MSA Executive Council meeting will be held at the Glen Erin Inn, Mississauga, Ontario, Canada, March 4. Early March can be an "interesting" time to travel in Ontario, so please think good thoughts about favorable flying weather for Secretary **Faye Murrin** (St. John's, Newfoundland), Treasurer **Karen Snetselaar** (Philadelphia), Vice President **Don Hemmes** (Hilo, Hawaii) President Elect **Greg Mueller** (Chicago), and Past President, **David J. McLaughlin** (St. Paul). Along



**James Anderson,
MSA President**

with the Executive Council, **Don Natvig** (Albuquerque, New Mexico), Editor-in-Chief, *Mycologia* and **Jeff Stone** (Corvallis, Oregon) Managing Editor, *Mycologia* will be present. There are two issues that will surely figure prominently at this mid-year meeting and beyond. First, the main ongoing MSA priorities are publishing *Mycologia* and *Inoculum*, holding annual meetings, and awarding prizes and fellowships. Of these, the main expense by far is that for printing *Mycologia*. If open-access policy in the US moves to the point where journals with federally-funded research must be available to readers without cost, then our present model for publishing *Mycologia* might become unsustainable. In contemplating

new strategies for publishing *Mycologia*, we must move with caution, as any new direction in publishing will carry risks. Merely maintaining the status quo, however, also carries risks. As a publisher of *Mycologia*, the MSA urgently needs to begin making informed plans. The other pressing issue is that MSA membership is either declining gradually or remaining flat. We need a concerted effort to reverse the recent trend and actually increase our membership. In increasing membership, it would undoubtedly help to make annual MSA meetings a higher priority for the thousands of de-facto mycologists worldwide who do not belong to the MSA. For example, involving the burgeoning fungal genetics community in annual meetings could help enormously. Continued geographic collaborations on annual meetings, like our joint meeting with the MSJ in Hilo last summer, will also help. Clearly it is time for a joint meeting with the Latin American Association of Mycology.

For their insights and suggestions for the present and future of the MSA, I thank the Blue Sky Committee, **Dave Geiser**, **Steve Harris**, **Rick Kerrigan**, **Francois Lutzoni**, **Michelle Momany**, **Karen Snetselaar**, **Joey Spatafora**, and **John Taylor**. MSA members please continue to send your suggestions to me or to any member of MSA Council.

On behalf of the MSA, I congratulate The Mycological Society of Japan on its 50th Anniversary to be celebrated at its annual meeting in Chiba, Japan, June 3-4, 2006. Here's to a future of productive collaboration between the MSA and the MSJ!

MSA Secretary Email Express

MSA Council approved three motions since my last report, all dealing with expenditures associated with IMC6.

- (1) MSA Executive Council Poll 2005b-13: In response to a request by Wieland Meyer, Chair of the IMC8 Organizing Committee, \$1,000 was allocated in support of colleagues from developing countries to attend IMC8 in Cairns, Australia, 2006.
- (2) MSA Executive Council Poll 2005b-14: A total of \$4000 was approved in support of MSA International Travel Awards (to students and postdoctoral fellows who are MSA members) for IMC8 in Cairns, Australia. (See the announcement in this issue of *Inoculum* and the Society website for further details if you are interested in applying; also see new award guidelines below)
- (3) MSA Executive Council Poll 2006-1: The Society approved up to \$3000 in support of a joint reception with the British Mycological Society to be held in Cairns Australia at IMC8

MSA Executive Council also approved Guidelines for MSA International Travel Awards, which included the following.

- MSA Council may approve expenditures of up to \$4000 in one fiscal year (Aug-July) for the financial support of students and postdoctoral fellows who are MSA members to attend international scientific meetings.
- Eligible meetings include those held by societies with which the MSA is formally associated; at present eligible societies include only IUMS and IMA. Under special circumstances, ALMS may also be considered as long as there is a memorandum of understanding in effect between ALMS and the MSA.
- (Societies *not* included are those identified in the MSA roster as sister/allied societies, as these are for informa-

tion and site linking purposes only; nor other societies holding more specialized meetings).

- Awards are generally for \$500 each.
- Meetings for which travel awards will be announced will be identified at the beginning of the fiscal year (August) and announcements will be sent out with the general awards announcements in the fall.
- Funds so allocated shall be drawn from the unrestricted endowment and/or operating funds and shall be limited to the availability of such funds in the year requested.
- Other considerations may follow those for the Mentor Travel Awards.

New Members: The MSA extends a warm welcome to new (or returning) members: New memberships will be formally approved by the Society at the Annual Meeting, 29 July - 2 August 2006, Québec City, Québec, Canada.

Australia: Marlien Van Der Merwe

Canada: Alan Taylor

France: Philippe Callac

Ireland: Salem O Abosriwil

United States: Sarah B Clark, Sydney Everhart, Michael A Fidanza, Romina Orietta Gazis, Jason Alexander Jackson, Joan Johnson, Luis C Mejia, William Raymond Rittenour, Rajiv Sahay, Nicholas Blake Simpson, Jason Slot, Benjamin E. Wolfe, Levi Yafetto.

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Change of Address

Send all corrections of directory information, including email addresses, directly to Allen Press

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Vox (800) 627-0629 (US and Canada)
or (785) 843-1221
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Email krose@allenpress.com

Note: Members may also submit directory corrections via the form included in the MSA directory via the MSA Home Page: www.msafungi.org

MYCOLOGICAL NEWS

Norman Borlaug Fellow Presents Results in Costa Rica

Ms. Enith Rojas, Smithsonian Tropical Research Institute (STRI), Barro Colorado Island, Panama, and Dr. Gary Samuels, USDA-ARS, Systematic Botany & Mycology Laboratory (SBML), Beltsville, MD, attended the Norman E. Borlaug International Science and Technology Fellows Program for Central America workshops held on January 19-20, 2006 at CATIE, Turrialba, Costa Rica. This meeting brought together the approximately 20 Central American Borlaug Fellows for 2005. Ms. Rojas gave a presentation on her research with leaf endophytes in Panama, with emphasis on 'next steps' and she and Dr. Samuels participated in discussions about the Borlaug Fellows program. Ms. Rojas plans to work with Dr. Samuels in Beltsville for six weeks starting in early March. During this time she will further characterize the cacao leaf endophytes that are being used in experimental studies in Panama by Dr. Allen Herre, STRI. Ms. Rojas was selected as one of five Borlaug Fellows to participate in the Inagural Riley Memorial Lecture Series in February 28-March 4, 2006. This event is sponsored by the USDA Norman E. Borlaug International Science and Technology Fellows Program, the Riley Memorial Foundation, The National Agricultural Library, and the International Agriculture Office of Texas A&M Agriculture, Texas A&M University System. The meeting will acknowledge the legacy of Dr. Charles V. Riley, a prominent 19th century agriculturalist who possessed a vision for enhancing success of agriculture through new scientific knowledge.

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Dr. Pedro Ferreira, Director of CATIE, Dr. Gary Samuels, USDA-ARS, Systematic Botany & Mycology Laboratory, Beltsville, MD, Ms. Enith Rojas, Panama, and US ambassador to Costa Rica, Mark Langdale.

Dr. Dilantha Fernando Recieves Award

Dr. Dilantha Fernando, Associate Professor Department of Plant Science University of Manitoba was recently awarded the prestigious **University of Manitoba 2004 Merit Award for outstanding Research and Service**.

The award recognizes Dilantha's exceptional contributions as a researcher in the field of biological control and epidemiology of plant pathogens of canola and wheat, and the training of post doctoral scientists and graduate students. Dilantha works on the management of fungal pathogens of canola and wheat. Dilantha was also conferred



the title of **Honored Professor** during his recent visit to Inner Mongolia Agriculture University, Inner Mongolia University, and Inner Mongolia Academy of Agricultural Sciences in Huhhot, Inner Mongolia, P.R. China. During his visit to Inner Mongolia from August 7-21, 2005, Dilantha conducted a workshop on Sclerotinia disease management in sunflower in Linhe City, and gave lectures at the two universities and at the agriculture academy. Dilantha's trip was sponsored and paid for by the government of P.R. China under the International Research Partnership program. While Dilantha is actively involved in several scientific societies and committees, he presently holds the positions of Treasurer of the Canadian Phytopathological Society, and the Chair, Workshops of the American Phytopathological Society. He earned his B.S (Hons) degree from the University of Peradeniya, Sri Lanka, M.S degree from the University of Kelaniya, Sri Lanka and the Ph.D. degree from Oregon State University, Corvallis, Oregon, under the supervision of Dr. Robert G. Linderman.

MYCOLOGIST'S BOOKSHELF

Eight books are reviewed below. Fourteen new books have been received since the last Mycologist's Bookshelf. In this issue I'd like acknowledge the cadre of mycologists who have volunteered to review books. It is truly heartening to know the fine people who write these reviews if only through email communication. Thank you so much! All requests for books to review should be sent to Dr. Amy Rossman at arossman@nt.ars-grin.gov.

Die Pilzflora des Ulmer Raumes

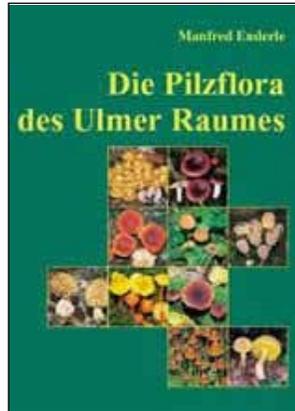
Die Pilzflora des Ulmer Raumes. (translated: The Fungus Flora of the Ulm Area/Southern Germany). 2004. M. Enderle. Süddeutsche Verlagsgesellschaft Ulm, Germany, www.suedvg.de, 521 pp. incl. numerous color illustrations. Price: €24.50.

This is a difficult book to categorize. At first glance, it seems to be a field guide, but it isn't. As the title suggests, the main text consists of a listing of the fungi that have been recorded from the Ulm area of southern Germany. The text is augmented with extensive introductory material such as typically found in a field guide, plus a summary of edible and toxic fungi, and a mycologist's photo gallery. In my experience, it is a unique combination of features and, thus, hard to pigeon-hole.

The Ulm area encompasses 16, 132-km², contiguous topographic quadrats in a 4 x 4 array (2112 km² total area) centered on the cities of Ulm and Neu-Ulm, which lie along the Danube River near the border between Baden-Württemberg and Bavaria. Compiling a list of the fungal species of this area has been an ongoing endeavor of the Arbeitsgemeinschaft Mykologie Ulm (Mycological Study Group of Ulm) since its founding in 1976 by Enderle, and this compilation clearly has been his pet project.

The introductory sections include: what is a mushroom: life-styles and occurrence of mushrooms; collecting and identifying mushrooms; microscopic examination of mushrooms; material and methods; mycological history of the Ulm area which began in the early 1700s; founding and activities of the Arbeitsgemeinschaft Mykologie Ulm; study area description (quadrat designations); geology, soils, vegetation, weather, and climate of the Ulm area; nature and fungus conservation including Red List species; nomenclature and systematics; new taxa described in this book; glossary; abbreviations; legend for figures; list of specialists for various taxa; and a list of taxa for which Enderle is author or co-author.

The floristic part lists 2681 species (2823 total taxa) of fungi in a broad sense. For instance, 94 of them are Myxomycetes. There is a variety of different entry styles, some consist simply of



attributions to other published sources. Others list specific collections by Enderle or other collectors. Some have extensive descriptive information, good to excellent quality color photos, or good quality line drawings of macro- and microfeatures. The color photos usually are of the less common species, or ones not often illustrated elsewhere. For example, included are 15 conocybes and 30 psathyrellas, but no boletes or russulas, and only one lactarius and amanita each. Photos of representative habitats of the Ulm area also are scattered throughout this and other sections.

The floristic list is followed by green- and red-margined pages with short descriptions and good color photos of 50 edible and poisonous fungi found in the Ulm area. Most have rather wide distributions and so this section would be useful far beyond the study area. Also included are ten rules to provide guidance for those who would hunt mushrooms for the table and, for those who fail to properly heed those rules, a list of sources for help in case of mushroom poisoning.

The final section consists of black-and-white photos of local and visiting mushroom hunters and mycologists, German and otherwise, such as Reinhard Agerer, Marcel Bon, Bruno Cetto^(†), Gro Gulden, Egon Horak, German Krieglsteiner^(†), Meinhard Moser^(†), and Roy Watling. An extensive reference list and the index conclude the book. Fluency in German certainly will help you get the most out of the book, but much of value can still be gleaned without it.

So who's the likely audience? Clearly for anyone interested in fungi and living in or near the Ulm area, it's a must-have. I suspect that a search of the MSA roster would reveal that very few of our members are in that group. For most of us, living in North America, it's less obvious why one would need this book. However, its comprehensive listing of taxa would make it a candidate for comparative biodiversity assessments, the large number of good photos of little brown mushrooms would make it useful for students of *Conocybe* and *Psathyrella*. The mycologist photo gallery is of interest for attaching faces to European mycologists who might only be names to many of us. The price is low enough that such users, and others, should consider indulging in this perhaps not essential, but high-quality and nice-to-have, volume.

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MYCOLOGIST'S BOOKSHELF

Röhrlinge und Blätterpilze in Europa

Röhrlinge und Blätterpilze in Europa. 2005. E. Horak. Elsevier, Spectrum Akademischer Verlag, Verlagsbereich Biologie, Chemie und Geowissenschaftern, Dr. Ulrich G. Moltmann, Slevogtstrs. 3-5, 69126 Heidelberg, Germany, email: info@s-f-g.com. ISBN 3-8274-1478-4 (cloth). 555 pp. Price: €40.00 plus postage (approximately \$50.00 at the early 2006 exchange rate)

While Manfred Enderle's book (reviewed above) is difficult to categorize, this one is easy. For years, students of European macrofungi have relied on two comprehensive sets of keys to help them identify their collections, namely *Flore Analytique des Champignons Supérieurs* by Robert Kühner & Henri Romagnesi and *Die Röhrlinge und Blätterpilze* by Meinhard Moser. The latter volume, originally published in 1953, was most recently revised in 1983, the same year in which an English translation of the 4th (1978) edition appeared (Moser 1983). Thus, at the time of his unexpected and unfortunate death in 2002, a revision was due and Moser was contemplating a 6th edition.

With Dr. Moser's passing, the task of the 6th edition fell to one of his former students, Dr. Egon Horak. Like Moser, Dr. Horak has a broad knowledge of the macrofungi, both taxonomically and geographically, and is well known and highly regarded throughout the world. Although Dr. Horak used the 5th edition as a starting point, this volume is not simply an updating and minor revision of the previous edition. It is, in many respects, a new work reflecting the new author's taxonomic viewpoints and, thus, was given a new, albeit similar, title.

As mentioned above, this book is easy to categorize. It's a large set of keys to the Polyporaceae *p.p.*, Boletales, Agaricales, and Russulales of Europe. It's not, and wasn't intended to be, exhaustive in its coverage, in part because of page limitations. However, it still covers over 2900 species. The focus is on central Europe; most arctic/alpine and mediterranean species are not included. The contents include the Foreword; a systematic outline of the included genera; advice on how to use the book; glossary; lists of abbreviations and symbols used in the text, sources of illustrations and specialist literature, and authors' names; references; keys to orders and genera; keys to species; a list of the new genera, species, and combinations in the book; six plates (including 60 line-drawing figures of spores, basidia, cystidia, and pileipellis elements); and the index.

The bulk of the text (486 of the 555 pages) is devoted to the keys. Their organization and numbering scheme,

hierarchical, with from one to five digits, for example 3.7.6.4.1 for a portion of *Psathyrella*, which is genus 3.7.6, will be familiar to those who have used the earlier editions, including the English version of the 4th edition. As in the earlier editions, all of the descriptive information is contained in the key leads, and there are no separate descriptions. In most cases, the final lead contains abbreviated references for illustrations and more detailed descriptions. Some also include one or a few synonyms, but these are not extensive lists with few comments reflecting taxonomic opinions and philosophy.

The included species mostly are ones that are familiar to Dr. Horak, and he examined many type collections during preparation of the manuscript. He endeavored to incorporate the large advances that have been made in European macrofungus systematics during the past two decades, but tempered this with a fairly conservative approach to genus names, not including many recently proposed ones that are based primarily on molecular data. His logic is that most users of the book will be using traditional macro- and micromorphologic characters and that it makes sense to recognize familiar genus concepts based on those features.

The book is attractive and well put together. However, it contains a large number of minor errors such as missing headings, missing bits of text, incorrect page references, and so forth that can make for annoying distractions when using the keys. Apparently most of these crept in during the production phase when it was too late for Horak to catch them.

How useful will this book be for those of us in North America? If you are identifying macrofungi and have a good command of German, then this will be a useful tool to help fill the void until we have comprehensive keys of our own. If your German isn't all that good, then you might be better off sticking with the English 4th edition and the *Nordic Macromycetes* series, at least until an English version of this book is available. Although there apparently is some discussion of a translation, we might have to wait until the next edition for it to happen.

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Moser, M. 1983. *Keys to Agarics and Boleti (Polyporales, Boletales, Agaricales, Russulales)*. Roger Phillips, London, UK.

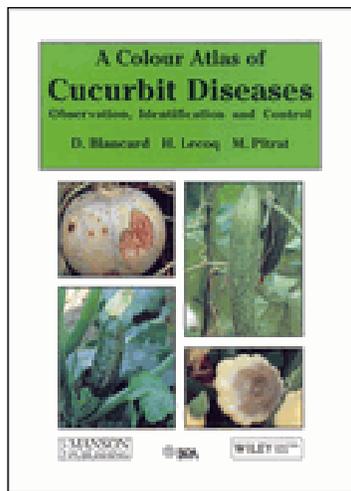
MYCOLOGIST'S BOOKSHELF

Compendium of Bean Diseases & Colour Atlas of Cucurbit Diseases

Compendium of Bean Diseases, Second Edition. 2005. H.F. Schwartz, J.R. Steadman, R. Hall & R.L. Forster. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, ISBN 0-89054-327-5, 109 pp. Price: \$55.00.



A Colour Atlas of Cucurbit Diseases. Observation, Identification and Control. 2005, first published 1996. D. Blancard, H. Lecoq & M. Pitrat. Translated from French. Originally published by Manson Publishing. Available from APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, ISBN 1-8774545-15-4. 304 pp. Price: \$159.00.



Just as those mycologists specializing in microfungi must know the basics of mushroom identification, sooner or later a colleague or neighbor will bring you their sick tomato plant and you will need to help them solve the problem. That's when you should turn to the extremely useful *Compendia of Plant Diseases* published by the American Phytopathological Society or similar books such as this *Colour Atlas of Cucurbit Diseases*.

Each Compendium is multiedited, multiauthored and thus represents the expertise of many professional plant pathologists specializing in diseases of that specific crop. This latest one, *Compendium of Bean Diseases, Second Edition*, has four editors and 20 contributors. Each compendium follows a similar format, specifically an Introduction about the crop itself, followed by the diseases according to major category such as Infectious Diseases and Noninfectious Diseases. Within each major category the diseases are listed logically such as Fungal Diseases of Subterranean Parts, Fungal Diseases of Aerial Parts, Diseases Caused by Bacteria, and so forth. Within each cat-

egory such as Fungal Diseases of Subterranean Parts, the individual diseases are presented with an introduction e.g. Aphanomyces Root and Hypocotyl Rot, followed by Symptoms, Causal Organism, Disease Cycle and Epidemiology, Management, and Selected References. Included are illustrations of diseased plant tissues and microscopic characteristics of the causal organisms. Mycologists can be reassured of their important to plant pathology—fungi are usually the most damaging of the organisms causing plant diseases.

The *Compendium of Bean Diseases* is one of the larger APS Compendia with excellent color illustrations placed throughout the volume. This edition is up-to-date with, for example, mention of the introduction via hurricane of soybean rust into the United States in September, 2004. A short introduction reviews the history of common bean (*Phaseolus vulgaris* L.), the third most important legume crop after soybean and peanut. The scientific names of organisms are accurate for the most part and the short morphological descriptions useful. The final section provides a diversity of abiotic diseases such as Air Pollution, Sunscald, Wind and Sand Damage and Mineral Deficiencies and Toxicity. This volume is an extremely useful, authoritative account of problems than afflict the production of common bean.

The book on cucurbit diseases is a translated version of a book published in 1996 in French as *Maladies des Cucurbitacées* in 1991. Cucurbits include a number of high cash-value crops such as melons, watermelons, and cucumbers. The book is divided into two major sections: the first is subdivided into plant part affected and color coded, thus diseases on leaves are in the green section, etc. The second major part concerns each causal organism with a synopsis and descriptions. Unlike the *Compendium*, there are no references associated with each causal organism. This book has more of a diseases-for-dummies feel to it with hints for disease diagnosis such as illustrations of the diseased crop in the field, specific location of the disease on the plant, and symptom definitions with illustrations such as shriveled leaves versus wrinkled, bubbled leaves. Such specific disease symptom definitions are useful. This book is profusely illustrated with relatively little prose and lacks the short morphological descriptions of the causal organisms found in the APS Compendia. The emphasis is on diagnostics with shorter undocumented sections on disease control and management. To mycologists faced with a sick cucurbit crop, this book would be a welcome guide to disease problems.

— Amy Rossman
Book Review Editor

MYCOLOGIST'S BOOKSHELF

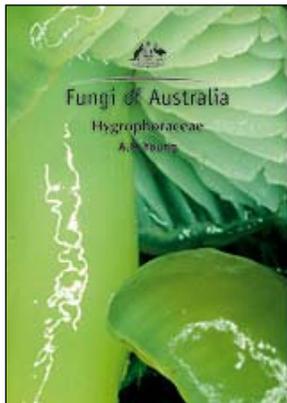
Fungi of Australia: Hygrophoraceae

Fungi of Australia: Hygrophoraceae. 2005. A.M. Young. CSIRO Publishing/Australian Biological Resources Study, Melbourne, www.publish.csiro.au, ISBN 0 643 09195 5. 179 pp. Price: \$135.00 AUD (ca. \$102.00 USD).

In this first monograph in the *Fungi of Australia* series, the known Hygrophoraceae of the Island Continent includes 92 species and infra-specific taxa. The family is introduced with a “brief” but comprehensive coverage of its general taxonomic history and research in Australia; a discussion of its ecology, biogeography and conservation; and a detailed exposé of the macro- and microcharacters as used in the book. Each species is illustrated by clear, simple but informative line drawings. Sixty excellent color figures, termed “plates” but with several to a page, showcase the bright, attractive characteristics of the family. Seven pages of outline maps illustrate the known distribution of each species. An appendix presents eight new combinations and one new species written to satisfy the International Code of Botanical Nomenclature, followed by a glossary, seven pages of bibliography, three pages of abbreviations and contractions used in the text, and an index to taxa. Dichotomous keys are presented for genera, subgenera and species. The species descriptions are in a traditional format. Length and width measurements of spores and basidia are given as the range, mean and Q. Microscopic characters of all tissues are satisfyingly detailed.

Australia abounds in mycological novelties, as illustrated for the Hygrophoraceae by the color plates. Some Aussie species macroscopically mimic species in other genera: *Entoloma*, *Inocybe*, *Laccaria*, *Omphalina*, *Russula*, and *Tricholoma*. Nothing seems sacred in Australian mycota! Sixty-eight of the 92 taxa in the book are regarded as endemic. Dr. Young described most of them, the result of his vigorous interest in the family. Only one species of *Hygrophorus*, two of *Camarophyllus*, and eight of *Humidicutis* appear—all the others are placed in *Hygrocybe*.

Welcome as this contribution is, it is still a work in progress. The distribution maps show that most taxa are known only from the SE mainland coast. Only four or five have been found more than 50 km inland, and those principally in mesic, sheltered forests and woodlands. I would not dispute the author's generality that cool temperatures and extended high humidity are needed for fruiting, but my collecting experience in dry sclerophyll woodlands of New South



Wales and Victoria has convinced me that these habitats are replete with undescribed fungi that fruit only in years when weather conditions are right—they have not often been right in recent years of drought. I bet that plenty of Hygrophoraceae will eventually be found in dry woodlands, if only collectors can hit it right. Let us hope that Tony Young and others will find more of those elusive inland taxa.

The keys feature objective characters for the most part, although some couplets are ambiguous. For example, couplet 7 for species in *Hygrocybe* subgen. *Hygrocybe* gives this choice:

7. Lamellae and stipe bright cherry-red slowly fading to yellow. *H. cerasinomutata*

7. Lamellae and stipe yellow with reddish or orange tints at most. 8

How do you know if a specimen in hand, yellow with reddish tints, has faded from red to yellow or was never red in the first place? The problem becomes more exasperating when the second choice of couplet 7 leads you to couplet 8, where the first choice is “Lamellae and stipe bright red.” Come again? You had just chosen the yellow lamellae and stipe of couplet 7! The author gives color chip coordinates from his color atlas in the descriptions of the species in question, but a reasonably diligent search failed to inform me what atlas he used. Moreover, in his opening paragraph on taxonomic characters, he reminds us that color can vary greatly between and within individual taxa. Surely some less ambiguous characters could be used to separate those taxa in the key.

That experience induced me to randomly select a half dozen species and run them through the keys as though the descriptions were specimens in hand. Most worked fine, but I found a few minor discrepancies between keys and descriptions. For example, couplet 6 of the key to species in subg. *Hygrocybe* notes ascending lamellae for some taxa. To be sure what the author meant, I consulted the glossary, which defines “ascending” only in reference to hyphae. Then I checked the introductory section on characters of lamellae: the term is not mentioned. Or, couplet 3 of subg. *Cuphophyllus* calls for white, cream-colored or pale to dark brown lamellae “with yellow or orange tints.” I had selected *H. watagensis* as my test species. No mention is made in the description of “yellow or orange tints.” It keyed out if I ignored the “yellow or orange.” These complaints may seem pedantic, but they can be irritating or even misleading to users of a key. While I am venting, I wish book editors would put page numbers for each taxon in keys to subgenera and higher taxa. If I'm paying 135 Australian bucks for a book, I shouldn't have to look up the page number for a genus in the index and pencil it in the key. Sure, I know it's a layout and printing problem, but some publishers can pull it off, why not all?

Continued on following page

MYCOLOGIST'S BOOKSHELF

Hygrocybe species diversity provided the justification for creation of the Lane Cove Bushland Park, a site nestled in a high density residential area of Sydney (see <http://sydneyfungalstudies.org.au/lanecove.htm>). The reserve was proposed by the Sydney Fungal Studies Group with taxonomic leadership by author Young. At least 27 members of the genus occur on less than a half hectare, which is the holotype locality for five species and one variety, all described by Dr. Young and all regarded as rare endemics. I know of no other tract formally preserved on the grounds of concentrated species diversity of a single genus, certainly not in North

America. All the species in Lane Cove Bushland Park are described and illustrated in this book.

Dr. Young and the Australian Biological Resources Study are to be congratulated for this excellent and attractive addition to knowledge of Australia's unique mycota. Let us hope that more such monographs will appear soon.

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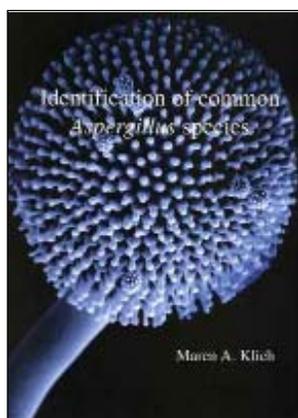
Identification of Common *Aspergillus* Species

Identification of Common *Aspergillus* Species. 2002. M. A. Klich. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/index.htm. 116 pp. Price: €45.00.

Have you ever found yourself lost while driving? Its ok, you can admit it. It happens to everyone. You're driving along when BAM! You suddenly realize that all of that familiar scenery is gone and now all that you are left with is street after street that look the same and before you know it you've managed to spend the next hour of your life going in complete circles. Then you think to yourself, it sure would be nice to have a good map, or better yet a GPS unit. Unfortunately,, these are not always available so you pull into the closest gas station and sheepishly ask for directions and, with any luck, you arrive at your destination.

In my laboratory the other day I had a similar experience. Before you laugh yourself silly, I did not get lost in my own lab. I found myself lost while attempting to speciate a culture of *Aspergillus*. I had run through the familiar texts within the lab and then it happened. All that familiar territory was gone and I was faced with a dilemma. Here I was lost without a map and this time the guy at the gas station who has been so helpful in the past was not around to help. That was when I decided I needed a map or better yet a GPS unit. I got my hands on a copy of *Identification of Common Aspergillus Species* by Maren Klich.

The primary goal of this book is, according to the preface, to provide a morphologically based system for the identification of the common *Aspergillus* species. In addition the author generously includes several uncommon species to demonstrate the complexity and enormity of the genus *Aspergillus*. There are nearly 200 accepted species of *As-*



pergillus; this book takes on 45 of the more common species providing an excellent reference text for the microbiology laboratory or for anyone with an interest in the morphology of the *Aspergillus* species.

The book is in a spiral bound format with good quality paper. The book begins with an introduction to *Aspergillus* species including their economic and medical importance, systematics, morphological features of importance for identification, learning to recognize morphological features, media and incubation, using this book, hints for making observations, and using the key. After the introduction there is an identification key, species descriptions, literature cited, Appendix 1-a table of major characteristics of *Aspergillus* species, Appendix 2-a data sheet that can be used to record macroscopic and microscopic characteristics, and finally an Index.

The real strength of this book lies in the fact that it includes over 270 photographs and electron micrographs, an identification key, 36 color plates, and a list of formulas to prepare your own growth media. The species are listed alphabetically and each description contains the following information: colony diameters, colony colors and textures, microscopic characteristics, distinguishing features, taxonomic references, common synonyms/related species, notes, habitats, and major mycotoxins. In addition to the descriptive information each species has five to six photographs and electron micrographs. Although not in color, these images include photos of the colonies, conidial heads, conidia and other distinctive features. The images also include scanning electron micrographs (SEMs) in order to give a more three dimensional view than can be photographed through a light microscope.

After using this reference text for almost a year I classify this as a must have book for any mycology/microbiology laboratory. The great part about this book is that I don't find myself getting lost when identifying *Aspergillus*. Now, if I could just say the same thing about driving around town.

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MYCOLOGIST'S BOOKSHELF

Fungi of the Antarctic: Evolution under Extreme Conditions

Fungi of the Antarctic: Evolution under Extreme Conditions. 2005. G.S. de Hoog (ed.). Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/simonline/index.htm. *Studies in Mycology* 51: 1-79. Price: €40.00.

Like most folks, when it comes to life in the Antarctic, I know very little. But, like most mycologists, I am keenly aware that fungi are known to occur in just about every corner of the Earth and Antarctica is no exception. But just barely. Despite being at the very limits of where organisms can eke out a living, Antarctica does support members of the Fifth Kingdom. And, as elsewhere, the fungi there can be found in aquatic environments and terrestrially. "Aquatic" here means they're covered with ice most of the time. And by "terrestrial," I don't mean *on* the surface of rocks, I mean *in* the rocks.

Just a few paragraphs into *Fungi of the Antarctic: Evolution Under Extreme Conditions*, I quickly realized there is much to be learned about Antarctic mycology. If you're a neophyte or expert this book is a great place to turn for information.

Basically *Fungi of the Antarctic* is an assemblage of two research papers authored by several experts in the field. The first paper, "Fungi at the edge of life: cryptoendolithic black fungi from Antarctic desert," discusses the terrestrial fungi that occur there. Interestingly, fungi of the Antarctic are more apt to occur within porous rock, typically sandstone, rather than on the surface as lichens would in much of North America. This is because the microclimatic conditions just under the surface of rocks are somewhat buffered thermally and not subjected to such wide thermal fluctua-

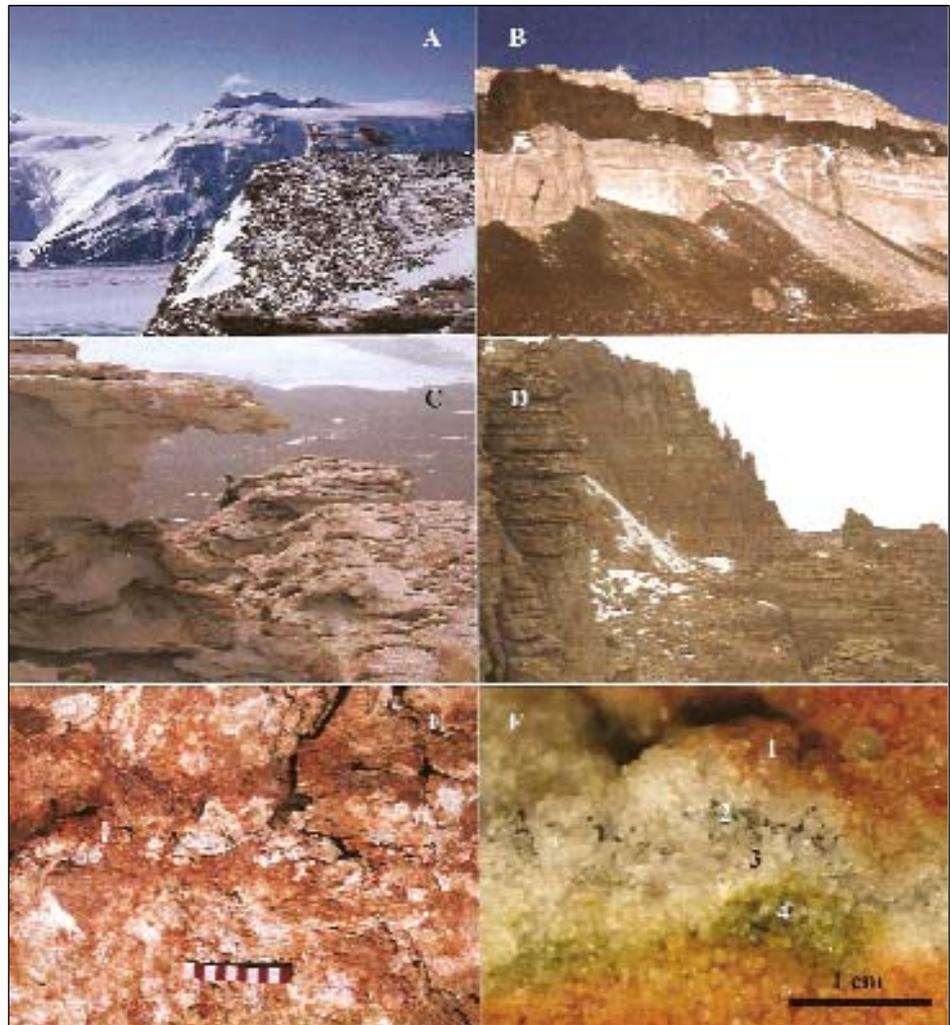


tions as the sterile surfaces of Antarctic rocks. In addition to physiological and growth habits in culture, the authors determined the phylogenetic positions for these curious fungi based on DNA sequence analysis.

The second paper, entitled "Evolution, taxonomy and ecology of the genus *Thelebolus* in Antarctica," covers the fungi that dominate the aquatic regions of the continent, at least so far as is known. Fungi of this genus worldwide are typically found in association with mammal dung, and often in cold climates. In Antarctica, species of *Thelebolus* seem to have moved into birds as their animal host. In the environment, they form pink mycelial mats on the bottom of frozen lakes.

The authors of both papers hypothesize on the possible course of evolution for these fascinating organisms. But why study Antarctic fungi? Aside from describing some new species, which both groups have done herein, and some un-

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MYCOLOGIST'S BOOKSHELF

common lifestyles, what's to be gained from investigating fungal life—or any life, for that matter—on the Seventh Continent? Possibly, quite a bit! Of course, there is always interest in extremophiles as a source of novel antimicrobials or other important biomolecules. Where would we be without DNA polymerases isolated from thermophiles? But there are some other “far out” reasons to explore life in the Antarctic. Some of the harsh Antarctic deserts are among the Earth's closest analogues to that of Martian environments. Martian exploration and the search for life there are popular these

days. Although the consensus is that Mars is inhospitable to life as we know it currently, it is thought that the Red Planet may have been more permissive in the past. The possibility that life is preserved there in a resting form cannot be ruled out. Thus, trying to determine the limits of life on Earth is a logical area of study.

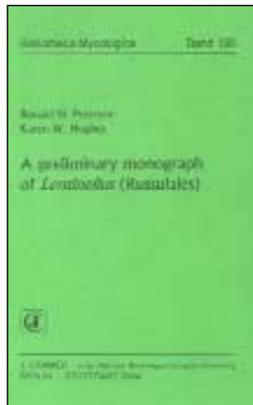
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A Preliminary Monograph of *Lentinellus* (Russulales)

A Preliminary Monograph of *Lentinellus* (Russulales). 2004. R.H. Petersen & K.W. Hughes. *Bibliotheca Mycologica* 198: 1-268. www.schweizerbart.de/pubs/series/bibliotheca-mycologica-59.html. Price: €80.00.

The present volume is a specialist's work. The genus *Lentinellus* was erected in 1879 by Karsten to include stipitate, agaricoid or omphaloid basidiomata and excluded pleurotoid forms, which were placed in *Hemicybe*. Saccardo did not recognize *Lentinellus* and placed Karsten's genera in *Lentinus* Fr. However, Singer recognized seven species. Recently (1999) Moreau *et al.* published a floristic monograph of European *Lentinellus*. The three chapters of the monograph reviewed here by Petersen & Hughes recognize 24 species within the genus, which they place in the Lentinaceae. The first chapter is a biogeographic survey with presentation of morphological descriptions, ability to interbreed (biological species concept) and occasional reference to nucleic acid sequences across species (phylogenetic species concept *sensu* Taylor). This chapter includes a dichotomous key to the species organized by micromorphological and geographical data; the latter seems strange to include as a key character. A synoptic key might have been more useful. Macromorphological variation within most of the species is quite high and can mislead the unwary. The diagrammatic representation of intercollection compatibilities is an exceptionally clear and useful depiction of the authors' fertility experiments; crosses among single basidiospore isolates show most species have a tetrapolar mating system.

The second chapter presents full descriptions of the type specimens. Because several of these collections are in poor



condition, the uniformity of their annotation should retard further deterioration, thus this chapter should prove useful to whoever may choose to monograph the genus in the future.

The third chapter presents cladistic analyses of the genus based on ITS sequences of the large ribosomal subunit for 15 biological or morphological *Lentinellus* taxa; 11 were clearly delineated. With the full data set, the PAUP program was limited to 10,000 trees and 10,000 equally parsimonious trees were obtained. While most taxa show strong congruence among the various species concepts, some taxa are problematic in this regard. The authors invoke several possible explanations for the disagreements: slower evolution of ITS sequences than genes affecting morphology; mutation in developmental genes with pleiotropic effects that leave ITS sequences unaffected; rare hybridization events followed by introgression of the ITS sequences into one of the parent populations. For several clades, correlations are derived between geographic and ITS sequence data. As with many studies based on single gene families, this contribution can only present tentative topologies for the observed diversity and will best serve as an indicator for groups that require further study.

The data presented in this volume are generally clear and of high quality. My only quibbles have to do with: 1) placement of the legend for the well-reproduced color plates was at the end of chapter 1, nearly 100 pages from the plates themselves; and 2) the unitless terms E and E_m , found in several tables and that presumably represent ellipsoidity of spores are undefined. Again, this is a specialist's monograph; it will be of interest to taxonomists working within the Russulales, but few others. It should find its place in mycological libraries and herbaria.

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MYCOLOGIST'S BOOKSHELF

Recently Received Books

- **Diseases of Trees and Shrubs, Second Edition.** 2005. W.A. Sinclair & H.H. Lyon. Cornell University Press, P.O. Box Box 6525, Ithaca, NY 14851, www.cupserv.org, ISBN-13: 978-0-8014-4371-8. 660 pp. plus CD. Price: \$85.00. *Review in progress.*
- **Forest Canopies (Second Edition).** 2004. M.E. Lowman & H.B. Rinker. Elsevier Academic Press, Burlington, MA 01803, www.elsevier.com, ISBN: 0-12-457553-6. 517 pp. Price: \$79.95. *Review needed.*
- **Fusarium Mycotoxins: Chemistry, Genetics and Biology.** 2006. A.E. Desjardins. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, http://www.shopapspress.org. ISBN: 09-89054-335-6. 268 pp. Price: \$89.00. *Review needed.*
- **The Genus *Gymnopilus* (Fungi, Agaricales) in the Czech Republic with Respect to Collections from Other European Countries.** 2005. J. Holec. Acta Musei Nationalis Pragae, Series B., Historia Naturalis 61: 1-52. Available from the author (jan.holic@nm.cz) or Myris Trade Company (myris.myris.cz).
- **Growing Gourmet and Medicinal Mushrooms, Third Edition.** 2000. P. Stamets. Ten Speed Press, Box 7123, Berkeley, CA 94797, www.tenspeed.com. ISBN-10: 1-58008-175-4, 574 pp. Price: \$45.00. *Review needed.*
- **Hypocreales of the Southeastern United States: An Identification Guide.** 2006. G.J. Samuels, A.Y. Rossman, P. Chaverri, B.E. Overton & K. Poldmaa. CBS Biodiversity Series 4. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/index.htm. ISBN-10: 90-70351-59-5, 144 pp including 102 color plates. Price: €70.00. *Review needed.*
- **The Identification of Fungi: An Illustrated Introduction with Keys, Glossary, and Guide to Literature.** 2006. F. Dugan. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, www.shopapspress.org. ISBN 0-89054-336-4, 182 pp. Price: \$65.00. *Review needed.*
- **An Illustrated Guide to the Coprophilous Ascomycetes of Australia.** 2005. Ann Bell. CBS Biodiversity Series 3. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/index.htm. ISBN: 90-70351-580, 172 pp. including 32 black & white plates and 66 color plates. Price: €55.00. *Review needed.*
- **The Missing Lineages. Phylogeny and Ecology of Endophytic and Other Enigmatic Root-associated Fungi.** 2005. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/index.htm. Studies in Mycology 53: 1-262. Price: €55.00. *Review needed.*
- **Monograph of the Genus *Hemileia* (Uredinales).** 2005. A. Ritschel. Bibliotheca Mycologica 200: 1-132. www.schweizerbart.de/pubs/series/bibliotheca-mycologica-59.html. ISBN 3-443-59102-7. Price: €55.00. *Requested from publisher.*
- **Mycelium Running. How Mushrooms Can Help Save the World.** 2005. P. Stamets. Ten Speed Press, Box 7123, Berkeley, CA 94797, www.tenspeed.com. ISBN-13: 978-1-58008579-3 (Paperback). 339 pp. Price: \$35.00. *Review needed.*
- **Phylogenetic Relationships and Morphology of *Cytospora* Species and Related Teleomorphs (*Ascomycota*, *Diaporthales*, *Valsaceae*) from *Eucalyptus*.** 2005. G.C. Adams, M.J. Wingfield, R. Common & J. Roux. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/index.htm. Studies in Mycology 52: 1-147. Price: €55.00. *Review in progress.*
- **Revised Synopsis of the Hyaloscyphaceae.** 2004. A. Raitviir. Estonian Agricultural University Institute of Zoology and Botany. Scripta mycologica 20. ISBN 9985-9293-3-0. 133 p. Available from the author (ain@zbi.ee) or from Edizione Candusso di Candusso Massimo (maxcandusso@libero.it).

Previously Listed Books

- **Biodiversity of Fungi: Inventory and Monitoring Methods.** 2004. G.S. Mueller, G.F. Bills, & M.S. Foster (eds). Elsevier Academic Press, Burlington, MA, www.elsevier.com, ISBN 0-12-509551-1. 777 pp. Price: \$99.95. *Review in progress.*
- **Common Mushrooms of the Talamanca Mountain, Costa Rica.** 2005. R.E. Halling & G.M. Mueller. The New York Botanical Garden, 200th St. & Kazimiroff Blvd., Bronx, New York 10458-5126 USA, www.nybg.org/bcsi/spub, ISBN 0-89327-460-7. Price: \$19.95. *Review needed.*
- **A Colour Atlas of Cucurbit Diseases. Observation, Identification and Control.** 2005, first published 1996. D. Blancard, H. Lecoq, & M. Pitrat. Translated from French. Originally published by Manson Publishing. Available from APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, ISBN 1-8774545-15-4. 304 p. Price: \$159.00. Hardcover. *Reviewed in this issue.*
- **Compendium of Bean Diseases, Second Edition.** 2005. H.F. Schwartz, J.R. Steadman, R. Hall & R.L. Forster. APS Press, 3340 Pilot Knob Road, St. Paul, MN 55121, aps@scisoc.org, ISBN 0-89054-327-5, 109 pp. Price: \$55.00. *Reviewed in this issue.*
- **Evolutionary Genetics of Fungi.** 2005. J. Xu (ed.) Horizon Scientific Press, 270 Madison Ave. New York, NY 10016, email: spoomam@taylorandfrancis.com. ISBN 1-904933-15-7. 345 pp. Price: \$173.00. *Review in progress.*
- **Flora Agaricina Neerlandica. Volume 6.** 2005. M.E. Noordeloos, Th. W. Kuyper, & E.C. Vellinga. CRC Press, 6000 Broken Sound Parkway, NW, Suite 300, Boca Raton, FL 33487, orders@crcpress.com. ISBN 9-0541-0496-1, 310 p. Price: \$59.95. *Requested from publisher.*
- **The Fungal Community: Its Organization and Role in the Ecosystem, Third Edition.** 2005. J. Dighton, J.F. White, Jr. & P. Oudemans. CRC Press, 6000 Broken Sound Parkway, NW, Suite 300, Boca Raton, FL 33487, USA, email: orders@crcpress.com. ISBN 0-8247-2355-4, c. 936 p. Price: \$139.95. *Requested from publisher.*
- **Fungi of Australia. Hygrophoraceae.** 2005. A.M. Young. Australian Biological Resources Study, Canberra, CSIRO Publishing, Melbourne, www.publish.csiro.au. Also available from Antipodes Books, Silver Spring, MD, www.antipodesbooks.com. ISBN 0-643-05890-7, 188 pp. plus 60 color photographs, 51 illustrations, 92 maps. Price: Au\$135.00. *Reviewed in this issue.*

Continued on following page

MYCOLOGIST'S BOOKSHELF

- **Fungi: Experimental Methods in Biology.** 2005. R. Maheshwari. CRC Press, 6000 Broken Sound Parkway, NW, Suite 300, Boca Raton, FL 33487, orders@crcpress.com. ISBN 1-57444-468-9. ca. 350 p. Price: \$149.95. *Review needed.*
- **Fungi of the Antarctic: Evolution under Extreme Conditions.** 2005. G.S. de Hoog. Studies in Mycology 51: 1-79. Centraalbureau voor Schimmelcultures, P.O. Box 85167, Utrecht, The Netherlands. www.cbs.knaw.nl/publications/simonline/index.htm. *Reviewed in this issue.*
- **The Fungi of New Zealand Ngā Harore o Aotearoa. Volume 4. Fungi on Trees and Shrubs in New Zealand.** 2005. P.D. Gadgil. Fungal Diversity Press, Centre for Research in Fungal Diversity, The University of Hong Kong, Pokfulam Road, Hong Kong SAR, China. www.fungaldiversity.org/fdp/fdp.htm ISBN 962-86765-9-8, 437 pp. Price: \$80.00. *Reviewed in Nov-Dec 2005.*
- **Handbook of Industrial Mycology.** 2005. Z. An. CRC Press, 6000 Broken Sound Parkway, NW, Suite 300, Boca Raton, FL 33487, orders@crcpress.com. ISBN 0-8247-5655-X, 784 p. Price: \$169.95. *Requested from publisher.*
- **Insect-Fungal Associations: Ecology and Evolution.** 2005. F.E. Vega & M. Blackwell (eds). Oxford University, Oxford, United Kingdom, www.oup.com/us, ISBN 0-19-516652-3, 333 pp. Price: \$49.50 (hardbound). *Review in progress.*
- **Introduction of Biodeterioration, Second Edition.** 2004. D. Allsopp, K. Seal & C. Gaylarde. Cambridge University Press, New York, NY, uk.cambridge.org/, 237 pp. Price: \$75.00 hardback, \$34.99 paperback. *Review in progress.*
- **Mushrooms: Cultivation, Nutritional Value, Medicinal Effect, and Environmental Impact, second Edition.** 2004. S.-T. Chang & P.G. Miles. CRC Press, 6000 Broken Sound Parkway, NW, Suite 300, Boca Raton, FL 33487, orders@crcpress.com. ISBN 0-8493-1043-1. 480 p. Price: \$159.95. *Requested from publisher*
- **Mycobacterium Molecular Microbiology.** 2005. T. Parish (ed.). Horizon Scientific Press, 270 Madison Ave. New York, NY 10016, spooram@taylorandfrancis.com. ISBN: 1-904933-14-9, 351 pp. Price: \$173.00. *Review needed.*
- **Die Pilzflora des Ulmer Raumes.** (translated: The Fungus Flora of the Ulm Area/Southern Germany). 2004. M. Enderle. Süddeutsche Verlagsgesellschaft Ulm, Germany, www.suedvg.de, 521 pp incl. numerous color illustrations. Price: €24.50. *Reviewed in this issue.*
- **A Preliminary Monograph of *Lentinellus* (Russulales).** 2004. R.H. Petersen & K.W. Hughes. Bibliotheca Mycologica 198: 1-268. www.schweizerbart.de/pubs/series/bibliotheca-mycologica-59.html. Price: €80.00. *Reviewed in this issue.*
- **Röhrlinge und Blätterpilze in Europa.** 2005. E. Horak. Elsevier, Spectrum Akademischer Verlag, Verlagsbereich Biologie, Chemie und Geowissenschaftern, Dr. Ulrich G. Moltmann, Slevogtstr. 3-5, 69126 Heidelberg, Germany, info@s-fg.com. Price: €40.00 plus postage. *Reviewed in this issue.*
- **Sporidesmium, Endophragmiella and related genera from China.** 2005. W. Wu & W. Zhuang. Fungal Diversity Press, Centre for Research in Fungal Diversity, The University of Hong Kong, China, www.hku.hk/ecology/mycology/FDP.html, ISBN 962-86765-5, 168 pp. Price: \$60.00. *Reviewed in Nov-Dec 2005.*
- **Systematic Botany of Flowering Plants. A New Phylogenetic Approach to Angiosperms of the Temperate and Tropical Regions.** 2004. R.-E. Spichiger, V. Savolainen, M. Figeat, & D. Jeanmonod. Science Publishers, Inc. Enfield, NH 03748, www.scipub.net. ISBN 1-57808-315-X (Hardback), ISBN 1-57808-373-7 (Paperback). 413 pp plus CD. Price: \$58.00. *Review in progress.*

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A Unique Comprehensive Mycological CD-ROM

In light of my distinguished colleague, George Barron's account of his Lab. Teaching mycological CD (and I have no doubt it's a fine piece of work, since he is both a world-ranking mycologist and a superb photomicrographer), perhaps I may be permitted to give an introduction to my own CD-ROM about fungi. This has been a-building for the past 10 years, and now contains about 540 Megabytes of mycological information, with about 5,000 illustrations, including various video sequences and animations (Version 4.2).

This CD is unique in that it covers the entire spectrum of mycology, from an introductory discussion of the seven widely recognized Kingdoms (two containing fungi), and the concept of biodiversity, to a look at some of the latest revelations of molecular biology - I'll go into that a bit later, and an extensive glossary with many sound files to aid pronunciation of arcane terms.

How did this all come about? When I retired from University teaching in 1994, the technology for building your own website was just becoming available. Since I now had a little time on my hands, I thought 'Why not?' and proceeded to do it. Now I know that Microsoft is famous for its bloatware, and according to many computer-savvy people is essentially the Great Satan. Nevertheless, I was working on a PC running Windows, and naturally gravitated to a Microsoft program called Front Page, which supposedly made it easy to build your own web site. And lo, it was so.

Once that had happened, the technology for burning your own CD-ROMs appeared, and likewise proved irresistible. I began to render my textbook *The Fifth Kingdom* into html (again using Front Page), and to accompany the text with all those lovely colour illustrations you simply can't put in books because they are far too expensive to print. I also managed to build a number of animations illustrating fungal processes, and borrowed a couple more from colleagues. In addition, I found that I could insert short segments of video that I had taken in various parts of the world, and some of these seemed to enliven the presentation.

Originally, the Chapter numbers exactly matched those of my textbook, *The Fifth Kingdom*, but before long some of the Chapter 'pages' became so large that I had to subdivide them. Chapter 4, about the ascomycetes and their anamorphs, had to be split up into 4a and 4b. Then the basidiomycetes, about which so much information and so many pictures are available, had to be divided into four parts.

There are currently 25 'Chapters', split up into 32 major html pages, with a number of smaller subsidiary pages interpolated wherever I deemed it necessary - this is the nice thing about html, it gives you such freedom to add interesting tidbits. Let me give you a few examples. (1) I didn't want to complicate the treatment of the Aphyllophorales (Chapter 5a) too much, so added an extra page to explain 'How we define genera in the Polyporaceae'. I show the value of such features as hyphal systems (monomitic, dimittic or trimitic), degradative enzymes (white rot or brown rot), presence or absence of clamps on generative hyphae, the kinds of cystidia produced, reactions of spores with Melzer's reagent (amyloid or dextrinoid), and the size, shape, ornamentation and walls of basidiospores, and how these now allow us to recognize about 100 genera of polypores (21 of which are characterized in an accompanying table). (2) The relatively detailed treatment of the *Clavicipitales* in Chapter 4b has a pictorial appendix showing a selection of the superb paintings from the famous (but hard to come by) Japanese book by Shimizu and Kobayasi. (3) The discussion of *Erysiphales* has an extra page of illustrations from the fine monograph by Dr. Zheng Ru-Yong. (4) A discussion of the recent redispositions of most species of *Coprinus* in *Coprinopsis*, *Coprinellus* and *Parasola* on molecular grounds.

Chapter 25, which is not in the book at all, is titled: BUT HOW DO YOU ACTUALLY DO MYCOLOGY? and deals with many topics: photography - collecting - large fungi

Continued on following page

Introductory Mycology MycoAlbum CD-ROM

The MycoAlbum CD has undergone significant improvements since the Hilo meeting. There are about 150 more illustrations for a total of 1050 annotated illustrations (most at 1024 x 768 pixels), plus numerous corrections to the scripted material. Also, there is now an Instructor's version of the album supplemented with an IMAGE ONLY album of 700+ non encrypted images at 800 x 600 pixels accessible for power point presentations. Several hundreds of genera are used to illustrate features of biological or structural importance. For a listing of these genera see the following URL: www.uoguelph.ca/~gbarron/MISC2006/albumgen.htm. Those members who bought a pre-release version of the album at the Hilo auction can have a **free** copy of the final version (including image album) if they contact me directly.

For undergraduate and graduate students, the MycoAlbum CD is available for \$15 plus shipping (\$5). For mycologists, plant pathologists and other professional biologists, the cost is \$25 plus shipping. For those who need access to images for lectures, quizzes etc., there is an Instructor's version containing additionally a non encrypted image album of 700+ downloadable images at 800 x 600 pixels. The **instructors** version costs \$35 plus shipping. See my website at www.uoguelph.ca/~gbarron/ for details on ordering and further information. Personal checks acceptable from MSA members.

George Barron, University of Guelph

MYCOLOGICAL CLASSIFIEDS

- microscopic fungi- preservation and documentation - microscopy - describing and illustrating a fungus - culturing and media - molecular techniques used in fungal taxonomy - how we come up with research problems in mycology - and finally, careers in mycology (it could happen to you!)

May I invite you to take a look at my web site, where you can take a partial tour of the CD-ROM at: www.mycolog.com/fungicd.htm and www.mycolog.com/fifthtoc.html.

A few of the Chapters are up in full (e.g., Chapters 1, 3a, 3b, 4a, 4b), but most are represented only by a limited selection of pictures.

The whole thing is potentially very useful in teaching, since the pictures can be shown on a large screen with the aid of a digital projector. If the instructor wants the students to have personal copies of the CD-ROM, they can obtain these for far less than the average textbook costs, and with minimal shipping costs.

I will close by inviting those charged with teaching mycology courses to look at this tool and see how it might make their lives simpler, and those of their students more interesting.

Bryce Kendrick
bryce@mycolog.com

2006 Mycology and Lichenology Seminars at Humboldt Institute

In support of field biologists, modern field naturalists, and students of the natural history sciences, Eagle Hill offers specialty seminars and workshops at different ecological scales for those who are interested in understanding, addressing, and solving complex ecological questions. Seminars topics range from watershed level subjects, and subjects in classical ecology, to highly specialized seminars in advanced biology, taxonomy, and ecological restoration. Eagle Hill has long been recognized as offering hard-to-find seminars and workshops which provide important opportunities for training and meeting others who are likewise dedicated to the natural history sciences.

Eagle Hill field seminars are of special interest because they focus on the natural history of one of North America's most spectacular and pristine natural areas, the coast of eastern Maine from Acadia National Park to Petit Manan National Wildlife Refuge and beyond. Most seminars combine field studies with follow-up lab studies and a review of the literature. Additional information is provided in lectures, slide presentations, and discussions. Seminars are primarily taught for people who already have a reasonable background in a seminar program or in related subjects, or who are keenly interested in learning about a new subject. Prior discussions of personal study objectives are welcome.

Lichens and Lichen Ecology

May 21 - 27, 2006

Dr. David Richardson (david.richardson@SMU.CA)

Dr. Mark Seaward (m.r.d.seaward@bradford.ac.uk)

Advanced Mycology: Field and Lab Studies

June 18 - 24, 2006

Dr. Donald H. Pfister (dpfister@oeb.harvard.edu)

Lichens for Naturalists

July 2 - 8, 2006

Dr. Fred C. Olday (folday@panax.com)

Crustose Lichens: Identification Using Morphology, Anatomy, and Simple Chemistry

July 16 - 22, 2006

Dr. Irwin M. Brodo (ibrodo@mus-nature.ca)

Slime Molds: Taxonomy and Ecology of Myxomycetes

July 23 - 29, 2006

Dr. Steven L. Stephenson (slsteph@uark.edu)

The Fruticose Lichen Genus Usnea in New England

September 3 - 9, 2006

Dr. Philippe Clerc (philippe.clerc@cjb.ville-ge.ch)

Intermediate Mushrooms for Naturalists

September 10 - 16, 2006

Dr. Rosalind Lowen (Roz.lowen@gmail.com)

Dr. Lawrence Leonard (lleonar1@maine.rr.com)

Development of Electronic Natural History Identification Guides

October 2 - 6, 2006 (Monday and Friday are travel days)

Fred SaintOurs (fred.saintours@comcast.net)

Syllabi are available: For more information, please contact the Humboldt Institute, PO Box 9, Steuben, ME 04680-0009. 207-546-2821. Fax 207-546-3042. E-mail - office@eaglehill.us. Online registration and information - www.eaglehill.us. **Joerg-Henner Lotze**, office@eaglehill.us, www.eaglehill.us.

MYCOLOGICAL CLASSIFIEDS

Interactive Key to Hypocreales of Southeastern U.S. On Line

At the 2004 MSA meeting in Asheville, NC, a workshop was held on the Hypocreales of the Great Smoky Mountains National Park for which an identification guide was prepared. Limited copies were available and quickly disappeared. Since then, this revised and expanded guide has been published as CBS Biodiversity Series No. 4 (Samuels et al. 2006). This publication includes 101 taxa of Hypocreales with plates of illustrations that include macro- and microphotographs and descriptions. Emphasis is on the genera *Hypocrea* with 33 species and *Hypomyces* with 23 species in the Hypocreaceae as well as 11 species in the Bionectriaceae, 32 species in the Nectriaceae and two species in the Clavicipitaceae. In addition, these descriptions and illustrations with an interactive key



are available at the website of the Systematic Botany & Mycology Laboratory:

nt.ars-rin.gov/taxadescriptions/keys/HypocrealesSEIndex.cfm.

This interactive system links the species name resulting from the interactive key with descriptions and illustrations to data about plant host, geographic distribution and literature in associated databases. Additional online keys with descriptions and illustrations available at SBML include: *Hypomyces* and *Trichoderma* in the Hypocreales and Rust Fungi, *Ravenelia* and Rusts on Legume Hosts.

G.J. Samuels, A.Y. Rossman, P. Chaverri, B.E. Overton & K. Poldmaa. 2006. *Hypocreales of the Southeastern United States: An Identification Guide*. CBS Biodiversity Series 4. 1-144.

Amy Rossman
amy@nt.ars-grin.gov

Field Mycoloy Course Offered in North Carolina

July 10-21, 2006. Fleishy Fungi of the Highlands Plateau, Highlands Biological Station, Highlands, North Carolina. The Southern Appalachian Mountains are world-renowned for their incredibly rich diversity of fleshy fungi. Participants will be introduced to the fleshy ascomycetes and basidiomycetes that occur on the Highlands Plateau during peak mushroom season. Emphasis will be placed on analysis of macro- and micromorphological features in the identification of taxa. The daily routine consists of morning lectures on systematics, ecology, and phylogeny of fleshy



fungi followed by field trips until early afternoon. Collections will be examined and identified after returning from the field, providing an opportunity to assemble an impressive collection of fleshy fungi for classroom instruction and research. Housing is available at the station for \$40-60 per week (with linen). The station does not serve meals but a fully equipped kitchen is available with grocery stores and restaurants available in town. Three semester hours of advanced undergraduate credit is available from Western Carolina University or UNC-Chapel Hill. Tuition is \$400. For additional information contact Dr Andrew S Methven, Department of Biological Sciences, Eastern Illinois University, Charleston, IL 61920; phone (217) 581-6241; Email: asmethven@eiu.edu or Dr James Costa, Executive Director, Highlands Biological Station, 265 N. Sixth Street, Highlands, NC 28741; phone (828) 526-2602; Website: www.wcu.edu/hbs

Mold Testing and Identification Services Available

Identification and contamination control for buildings, food technology, animal and plant diseases. ASTM & Mil-Spec testing for fungal resistance of materials. 10% discount for regular and sustaining MSA members. Please contact Steve Carpenter at microbe@pioneer.net or voice mail at

541.929.5984. Surface mail send to Abbey Lane Laboratory, LLC, PO Box 1665, Philomath, OR 97370 USA. For more information see www.pioneer.net/~microbe/abbey-lab.html

MYCOLOGICAL CLASSIFIEDS

Postdoctoral Fellowship Available at National Taiwan University

A postdoctoral research position is available from February 2006 to July 2007 at Department of Plant Pathology and Microbiology, National Taiwan University, Taipei 10617, Taiwan. The fellowship annual salary is \$660,000-720,000 NTD, commensurate with experience and qualifications. The position will remain open until filled. The obligation of the post doctorate fellow will focus work on cloning,

characterization, and gene expression from fungi with bio-control potential. Personnel with doctorate degree in life science, particularly, with experience on gene cloning, are encouraged to apply. Applicants should send Curriculum Vitae, latest publications and list of two references to **Dr. S.S.Tzean** via email address [sst@ntu.edu.tw](mailto:ss@ntu.edu.tw). The prospective applicant will be contacted shortly upon evaluation.

Introduction to Food- and Air-Borne Fungi Course Planned in Ottawa

The course will be held from 12-16 June 2006. Ottawa, Canada. More than 100 mould and yeast species common in indoor air and on food will be examined, including important species of *Penicillium*, *Aspergillus*, *Fusarium*, *Trichoderma*, *Stachybotrys*, *Cladosporium*, *Mucor*, *Rhizopus*, *Alternaria* and *Scopulariopsis*. This 5 day course is appropriate for those interested in food spoilage, indoor air quality, industrial hygiene, mycotoxins, pharmaceuticals, biodeterioration, etc. Instructors: Robert A. Samson and Jos Houbraken, Centraalbureau voor Schimmelcultures. Keith A. Seifert and

John Bissett, Agriculture and Agri-Food Canada. For more information, please contact Keith A. Seifert, Biodiversity Theme (Mycology & Botany), Eastern Cereal and Oilseed Research Centre, 960 Carling Ave., Agriculture and Agri-Food Canada, Ottawa, Ontario K1A 0C6 CANADA. Phone: 613-759-1378. Fax: 613-759-1701. Email: seifertk@agr.gc.ca or visit the course web site at www.indoor-mold.org (under courses).

Keith Seifert
seifertk@agr.gc.ca

CALENDAR OF EVENTS

Event dates and descriptions (**bold**) precede event locations (*italic*), contacts (plain font), and Email/Websites (**bold**, no brackets). Those wishing to list upcoming mycological courses, workshops, conventions, symposia, and forays in the Calendar should submit material formatted as shown below and include complete postal/electronic addresses.

2006 (March 15-17)

**Advances in Research on Toxigenic Fungi
and Mycotoxins in South America
Ensuring Food and Feed Safety
in a Myco-Globe Context**

Villa Carlos Paz, Córdoba Province, Argentina
www.argentinamycoglobe.com

2006 (August 21-26)

8th International Mycological Congress

Cairns, Australia
Wieland Meyer, Chair
Ceri Pearce, Vice-Chair

www.sapmea.asn.au/imc8

2006 (July 29 - August 2)

MSA/CPS/APS Meeting

Québec City, Québec, Canada
Centre des Congrès de Québec

NOTE TO MEMBERS:

**If you have events to
announce, please notify
Inoculum editor Richard
Baird so they can be listed
in the *Calendar of Events*.**

rbaird@plantpath.msstate.edu

MYCOLOGY ON-LINE

Below is an alphabetical list of websites featured in *Inoculum* during the past 12 months. Those wishing to add sites to this directory or to edit addresses should email <rbaird@plantpath.msstate.edu>. **Unless otherwise notified**, listings will be automatically deleted after one year (at the editors discretion). * = New or Updated info (most recent *Inoculum* Volume-Number citation)

Ascomycota of Sweden
www.umu.se/myconet/asco/indexASCO.html

Australasian Mycological Society Website
for Introductory Fungal Biology (53-4)
bugs.bio.usyd.edu.au/mycology/default.htm

Authors of Fungal Names (54-2)
www.indexfungorum.org/AuthorsOfFungalNames.htm

Bibliography of Systematic Mycology
www.speciesfungorum.org/BSM/bsm.htm

British Mycological Society (54-1)
britmycolsoc.org.uk

Cordyceps Website
www.mushtech.org

Corticoid Nomenclatural Database (56-2)
phyloinformatics.org

Coverage in Ukraine of Higher Fungal Ranks (56-2)
www.cybertruffle.org.uk/lists/index.htm

Cybertruffle's Fungal Valhalla (56-2)
www.cybertruffle.org.uk/valhalla/index.htm

Dictionary of The Fungi Classification
www.indexfungorum.org/names/fundic.asp

Distribution Maps of Caribbean Fungi (56-2)
www.biodiversity.ac.psiweb.com/carimaps/index.htm

Distribution Maps of Georgian Fungi (56-2)
www.cybertruffle.org.uk/gruzmaps/index.htm

Distribution Maps of Ukrainian Fungi (56-2)
www.cybertruffle.org.uk/ukramaps/index.htm

Electronic Library for Mycology (56-2)
www.cybertruffle.org.uk/cyberliber/index.htm

European Powdery mildews (52-2)
nt.ars-grin.gov

Fun Facts About Fungi (55-1)
www.herbarium.usu.edu/fungi/funfacts/factindx.htm

Funga Veracruzana (53-6)
www.uv.mx/institutos/forest/hongos/fungavera/index.html

Hadrianus Junius Stinkhorns (52-2)
www.collectivesource.com/hadrianus

Index of Fungi
www.indexfungorum.org/names/names.asp

ING (Index Nominum Genericorum) Database (52-5)
ravenel.si.edu/botany/ing/ingForm.cfm

Interactive Catalogue of Australian Fungi (52-1)
www.rbgmelb.org.au/fungi/

Interactive Key, Descriptions & Illustrations
for *Hypomyces* (52-6)
nt.ars-grin.gov/taxadescriptions/hypomyces/

Interactive Key to *Hypocreales* of Southeastern
United States (57-2)
nt.ars-rin.gov/taxadescriptions/keys/HypocrealesSEIndex.cfm

ISHAM: the International Society
for Human and Animal Mycology
www.isham.org

Mycologia On-Line (53-3, page 18)
www.mycologia.org

Mycological Progress (52-3)
www.mycological-progress.com

The Myconet Classification of the Ascomycota
www.umu.se/myconet/Myconet.html

Mycosearch web directory/search engine (51-5)
www.mycosearch.com

Mushroom World [new Korean/English site in 2001] (51-6)
www.mushworld.com

NAMA Poison Case Registry (51-4)
www.sph.umich.edu/~kwcee/mpcr

Pathogenic Fungi From South Africa (52-4, page 29)
nt.ars-grin.gov/fungalDATABASES/southafrica
or **www.saspp.co.za/**

Plant-associated Fungi of Brazil (54-2)
nt.ars-grin.gov
(Select Search Fungal Databases, option 3, Host-Fungus
Distributions)

Pleurotus spp.
www.oystermushrooms.net

Rare, Endangered or Under-recorded Fungi in Ukraine (56-2)
www.cybertruffle.org.uk/redlists/index.htm

Registry of Mushrooms in Art Website
[members.cox.net/ mushroomsinart/](http://members.cox.net/mushroomsinart/)

Searchable database of culture collection
of wood decay fungi (56-6, page 22)
www.fpl.fs.fed.us/rwu4501/index.html

Species of Glomeromycota Website (55-3)
www.amf-phylogeny.com

Systematics of the Saprolegniaceae (53-4)
www.ilumina-dlib.org

Tripartite Similarity Calculator (55-1)
www.amanitabear.com/similarity

U.S. National Fungus Collections (BPI)
Complete Mushroom Specimen Database (57-1, page 21)
www.ars.usda.gov/ba/psi/sbml

Website for the mycological journal *Mycena* (56-2)
www.mycena.org/index.htm

inoculum

The Newsletter
of the
Mycological
Society of America

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Mycological Society of America

The Mycological Society of America Sustaining Members 2006

*The Society is extremely grateful for the continuing support of its Sustaining Members.
Please patronize them and, whenever possible, let their representatives know of our appreciation.*

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Fax: (860) 441-5719
Email: ing.kae.wang@pfizer.com

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Fax: (920) 748-3034

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Genencor Internation, Inc.

Attn: Michael Ward
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Knoxville, TN 37950
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Ph: (865) 558-6819
Fax: (865) 584-3203
Email: emirico@msn.com

Fungal & Decay Diagnostics, LLC

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9350 Union Valley Rd.
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burdsall@fungaldecay@aol.com

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113 Hwy. 24
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Ph: (972) 272-2588
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Email: unicornbag@aol.com

Novozymes Biotech, Inc.

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1445 Drew Ave.
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Email: wendy@wtynovozymes.com

You are encouraged to inform the Sustaining Membership Committee of firms or foundations that might be approached about Sustaining Membership in the MSA. Sustaining members have all the rights and privileges of individual members in the MSA and are listed as Sustaining Members in all issues of *Mycologia* and *Inoculum*.

An Invitation to Join MSA

THE MYCOLOGICAL SOCIETY OF AMERICA

2006 MEMBERSHIP FORM

(You may apply for membership on-line at <http://msafungi.org>)

(Please print clearly)

Last name _____ First name _____ M.I. _____

Dept./Street _____

Univ./Organization _____

City _____ State/Prov. _____ Country _____ ZIP _____

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TYPE OF MEMBERSHIP

- Regular** **\$98** (includes *Mycologia* and MSA Newsletter, *Inoculum*)
- Student** **\$50** (includes *Mycologia* and MSA Newsletter, *Inoculum* — Must include endorsement from major professor or school)
- Family** **\$98** + **\$20 for each additional family member** (fill out form for each individual)
(includes one copy of *Mycologia* and two copies of *Inoculum*)
- Life Member** **\$1,500** (one-time payment; includes *Mycologia* and *Inoculum*)
- Sustaining** **\$278** (benefits of Regular membership plus listing in *Mycologia* and *Inoculum*)
- Associate** **\$50** (includes only *Inoculum*)
- Emeritus** **\$0** (benefits of Regular membership except *Mycologia*; \$50 with *Mycologia*)
- Online Only** **\$98** (does not receive *Mycologia* or *Inoculum*)

AREAS OF INTEREST

Mark most appropriate area(s)

- Cell Biology – Physiology** (including cytological, ultrastructural, metabolic regulatory and developmental aspects of cells)
- Ecology – Pathology** (including phytopathology, medical mycology, symbiotic associations, saprobic relationships and community structure/dynamics)
- Genetics – Molecular Biology** (including transmission, population and molecular genetics and molecular mechanisms of gene expression)
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