

About This Issue

Inoculum is a good outlet for the publication of reports on issues, projects and events (mycological and otherwise) of interest to mycologists. Publication is good publicity for these activities and now that we are "online," *Inoculum* reaches an even wider audience. In this issue we learn about the mycological component of an All-Taxa Biodiversity Inventory project and a recent workshop on *Trichoderma*.

Your editor needs news of mycologists and meetings, articles on current issues and projects, references to Internet resources, and informal reviews of books that are not strictly mycological but are important in our work. [Ellen Farr]

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An ATBI—How to Find One and What to Do With It

by
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In June this year, 22 mycologists met in Costa Rica in order to plan the fungal component of an All-Taxa Biodiversity Inventory (ATBI) of the Guanacaste Conservation Area. This contribution is a hybrid between a personal account of the meeting, and an explanation of the need for and the reasoning behind such research.

An ATBI is designed to record the total diversity of living organisms within a designated area. It does not simply involve making a list of species found, but is rather an assessment of the number and value of organisms in the sample site. It is carried out for much the same reasons that shops undergo stock-taking, so that owners of the sample site can make informed decisions on its management. The value of the site can then be maintained and enhanced through sustainable development.

The valuation of the biotic components of the ATBI site is considerably more complex than assessing their financial value at a single point in time (e.g., the return on the timber of the site if it were to be felled). The value of the whole may be more than the sum of its parts, especially if sites are valuable for their ecotourism potential, or contain fruits or nuts which can be harvested on a continuing basis. Peters *et al.* (1989) made an assessment of the productivity of a stretch of Amazonian rainforest, and concluded that in pure financial terms sustainable exploitation of forest products was significantly more profitable than one-time logging. Especially for tropical sites, the potential for increasing the range of products which can be harvested sustainably may be significant. In addition to the known value of known species, the proportion of species in a tropical ecosystem which are either completely unknown or whose value is unknown is enormous.

Important Dates

September 15 — Deadline for
next *Inoculum*.
July 27–31, 1996 — MSA
Annual Meeting with
American Phytopathological
Society (Indianapolis)

For the fungi, probably less than 5% of species have received even rudimentary description, and of these less than 20% have been grown in culture and are thus even available for commercial exploitation (Hawksworth, 1991; Cannon & Hawksworth, 1995). We have no idea of the economic potential of 99% of all fungal species! Even well-known plant pathogens may have commercial value in non-agricultural industries. The proportion of isolates which result in commercially valuable products for the pharmaceutical industry, for example, is tiny—but the pool of isolates is enormous. The need to conserve as large a part of this diversity as possible has been repeatedly enunciated, and though valuing undeveloped products is difficult, the head-in-the-sand policy of ignoring their potential by destroying their habitats is foolish indeed.

The political value also of conserving biodiversity is considerable, especially with the increasing concern of the developed world for green issues. Trade between developed and developing countries may be greatly encouraged if consumers are confident that the products that they are purchasing are the results of responsible management, even if their purchases are not derived directly from natural ecosystems. The value of a site may be measured in other than financial terms, if its maintenance provides employment for local people and results in a greater appreciation of ecology and ecosystems by visitors, school groups, etc. Its existence may benefit surrounding communities, by mediating water relations and providing reservoirs of natural enemies for agricultural pests (Altieri, 1995).

There are plans for a number of ATBIs around the world (Rossman, 1994), but the one which is most far advanced is for an inventory of the Guanacaste Conservation Area (GCA), Costa Rica. The project is being developed under the auspices of the Institut Nacional de Biodiversidad

(INBio), an innovative government-funded body which oversees the country's natural biotic resources and plans their development and sustainable exploitation. The well-known tropical ecologist Dan Janzen has lived and worked in the GCA for many years, and is a prominent member of the planning team.

The Guanacaste reserve is on the western (Pacific) coast, close to the Nicaraguan border. It is large (around 115,000 hectares), and measures more than 80km from west to east. It contains coastal regions with mangroves, swamps and cliffs, seasonally dry forest, permanently wet forest, permanently very wet (cloud) forest and, to top it off, three volcanoes, one of which is not definitely extinct. Large areas have no trails at all and are almost completely unsurveyed by any naturalists, let alone studied for fungi. Based on admittedly rudimentary calculations, the area may well support in the region of 230,000 species, including 50,000 species of fungi.

The planning process for the Guanacaste ATBI has been protracted. An important early step was an NSF-sponsored workshop in Philadelphia during which a preliminary macro-budget was set by representatives of the major groups of organisms, in order that international funding agencies could be approached formally (Janzen & Hallwachs, 1994). The plans are now in their second phase, having received initial funding primarily from the Norwegian Government. During this period, groups of experts on sampling and identification of specific major groups will visit the reserve and formulate collection, isolation and identification protocols. In June this year, a 22-strong team led by Amy Rossman (USDA, Beltsville) spent ten days in the GCA planning the fungal inventory. The group was roughly evenly split between Costa Ricans and North Americans, and included a Mexican, a Cuban and four Europeans. A virologist accompanied us as an

“outgroup” member, to ensure that we took proper account of interactions between organism groups, and to keep our feet somewhere near the ground. [See her account of the event on p. 4.]

Our remit was to make plans for the sampling of fungal species and processing of specimens, cultures and information, and to produce an estimate of the costs of an exercise within the seven-year time frame of the project. The project proper will follow a two-year pilot phase, during which sampling protocols will be tested and staff trained. The inventory will be designed to answer the following four questions: What's there? What is its name? How can I find it again? and What can I do with it? We were asked first to produce a plan which would, as far as possible, include a complete fungal inventory (i.e., of all species), with the aim of calculating the true costs of such an endeavour. This is no idle exercise, as it attempts to place a value on taxonomists' work, an issue which has been discussed recently in *Inoculum* (Townes, 1993). We were also asked to produce a “reality” plan and budget, based on the likely amount of money available. One of the primary objectives of INBio and the Costa Rican government is to promote capability-building in biodiversity initiatives among its people, so it was important to make plans which allowed Costa Rican nationals to develop and adopt prominent roles, rather than employing a neo-colonial approach by importing all the necessary expertise. One of the principal ways in which this will be achieved is the development of a large team of “para-taxonomists,” who will be largely local people with modest educational qualifications, but who will have undergone intensive training in collection and preparation of specimens and cultures. Another important part of the project will be the training of staff to become competent in fungal systematics, through practical demonstrations of species delimitation, pro-

duction of descriptions etc. It will be much more important to teach them how to decide whether two collections represent separate species, rather than loading them with two hundred years' worth of systematic history.

The first day was spent meeting the rest of the team. An introduction and tour of the impressive facilities of INBio was also arranged. In the afternoon, we set off on a five-hour coach journey north from the Costa Rican capital of San José to Guanacaste. Those of us with limited experience of the tropics were warned of the dangers of consorting too closely with various elements of the Conservation Area's biodiversity. These included jaguars, mountain lions, tapirs, crocodiles, snakes (some of them lethal), spiders, scorpions, killer bees, various biting beetles, chiggers, blackflies and mosquitoes (especially large ones with striped legs, the carriers of Chagas' disease). They didn't mention those in the original invitation! I put my faith in my travel health insurance policy and bravely continued.

Days were spent divided between visiting various areas of the GCA in order to get a proper appreciation of the diversity and of sampling difficulties, and in formulating plans for the funding proposal. Our hosts Dan Janzen and Winnie Hallwachs spent a great deal of time with us, providing invaluable ecological back-up, coffee, soft drinks, beans and rice (and rice and beans), and trying in vain to persuade us against all our mycological collecting instincts that rushing into the undergrowth and rooting under rotten logs might uncover more than we bargained for. Dan and Winnie live for much of the year in the GCA, conforming to everyone's stereotype of tropical bug-hunters by living in the midst of a caterpillar rearing station and keeping a pet porcupine.

Work didn't finish until late at night (put away those violins...) and the prospect of a 6:30 breakfast was much more inviting after being woken

regularly at five by parrots doing what parrots like to do best. We were divided into groups to formulate our plans; these included teams for fungi associated with living plants, wood, soil and rock, water and animals. Furious two- to ten-fingered keyboarding into portable PCs was punctuated by frequent discussion sessions, not to mention ribald comments on the practicalities (not to mention ethics) of some of the animal group's proposed sampling protocols. Despite occasional frustrations caused by overlap between the groups and differences in approach, a reasonably complete working draft was produced by the end of the stay, which was edited further during a final day back at INBio in San José.

The final budget for a complete fungal inventory, based on a working estimate of 50,000 species of fungi in the GCA, was around US\$25 million. This sounds enormous, but the difficulties of sampling and the vast number of specimens generated mean that perhaps 100 staff would need to be recruited, and the budget for (dried) agar alone runs to well over US\$1 million. A mere 1.8 million slants were planned for the endophyte work alone—along with the invention of an automated pouring system! Not surprisingly, a complete culture collection facility was also planned. Even with that large budget, almost all the work would be done by well-trained Costa Rican nationals, with international experts involved only in putting names to ready-prepared descriptions and illustrations of fungi which could not be identified without major library and reference collection facilities.

Even this team of dedicated fungal systematists and ecologists had to come down to earth eventually, and we reluctantly accepted that the chances of obtaining funding of US\$25 million to make an inventory of the fungi alone are not good. We therefore also made plans for a much-

reduced inventory, primarily by reducing the area sampled.

Funding agencies will look carefully at the potential outputs of the ATBI project before committing funds. It is therefore important to identify a wide range of products which can be developed from the inventory process. We suggested the following list of potential outputs, benefiting both local people (owners of the diversity) and the global community.

Educational: field guides for fungi, either for use locally or elsewhere; books, interactive CD-ROMs, etc. documenting diversity, ecology and natural history; local and regional education programmes for interested amateurs, college and university students through field trips and lectures; training of local experts in identification.

Social: development of environmental sensitivity; recognition of the value of diverse ecosystems in water management, natural enemy reservoirs, etc.; education in the benefits and risks of biological control strategies; fungal cultures for bioremediation of polluted areas; forensic science use of "corpse finder" mushrooms.

Ecotourism: field guides and picture books for visitors; educational material on fungal natural history; museum exhibits.

Agricultural: cultivation of edible mushrooms; organisms and products for food processing, such as better fermentation organisms and vegetarian sources of food processing enzymes; products for improved livestock feeds through delignification; improved plant nutrition through fungal (e.g., mycorrhizal) associations; improved seed germination through fungal associations, (e.g., orchid culture); control of plant diseases through better knowledge of fungal vectoring; potential biocontrol agents for plant and animal disease.

Research community: a realistic measure of species richness in relation to the diversity of flora and fauna groups; testing of sampling protocols; a procedural model for assessing diversity in other geographic areas, and for other potential inventory projects; a more fundamental understanding of evolution, especially coevolution of antagonistic and mutualistic associations; new and refined methods for collection, enumeration and identification of fungal taxa; identification guides, databases and diagnostic keys; definition and resolution of systematics of critical groups; publication of descriptions of new and poorly-known taxa; development of living and dried collections.

Industrial: organisms for biological control, promotion of plant growth, and regeneration of disturbed areas; environmental indicators; natural products, including antibiotics, cosmetics, dyes, products for food processing, enzymes, and novel metabolites; methods for rapid identification of microorganisms, including emerging disease agents; bioassays for specific metabolites.

As no-one would believe me if I tried to deny it, I'll admit now that the trip was a memorable experience, both for the visions of the rain forest and for the excitement of working as part

of an international team. I shall remember watching spider monkeys in the canopy watching us, and standing still in the cloud in the cloud forest listening to a million insects, punctuated by the booming calls of howler monkeys. Our appreciation of the various environments was immeasurably increased by the encyclopaedic ecological knowledge of Dan Janzen, even when trustingly wading thigh-deep after him into the crocodile swamp. His airy statement that the largest one was only ten feet long didn't entirely reassure us!

A project on such a scale will depend heavily on the good-will of the international systematic scientific community. This means you too! Offers of informed assistance will be gratefully received, providing that volunteers work within the framework of the project. There will be opportunities for visiting the GCA and helping with the survey work, but participants will be strongly encouraged to collaborate with the scientific teams by training them in their own specialities, rather than working on their own. Read your copies of *Inoculum* to hear of further developments!

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An Outsider Looks In On Mycologists In Action

by

**Marilyn Roossinck, The Outgroup Virologist
The S.R. Noble Foundation, Plant Biology Division
Ardmore, OK**

To inventory all fungal taxa in a 110,000-hectare region in the tropics; that is the task of the fungal Taxonomic Working Group (TWIG) of the all taxa biodiversity inventory (ATBI) being conducted in the Guanacaste Conservation Area (GCA) in north-western Costa Rica; a task that brought 20 mycologists, a lichenolo-

gist, and one "outgroup" virologist together in the dry forests of Sector Santa Rosa of the GCA, in the Guanacaste province of Costa Rica for an intensive week of discussions, writing, and field trips. The GCA is an area of diverse habitats and vegetation zones, beginning at the Pacific Ocean, and extending over a large area of primary

and regenerating dry forest, up to the cloud forests of the volcanic range, and down to the Caribbean foothill rain forests. It is an area of rugged and exquisite beauty, of color and mist, of crashing Pacific surf and the primeval cries of the howler monkey.

It was a week of scientific endeavor as well as a fascinating ex-

periment in sociology and group dynamics. Twenty-two scientists from around the world, headed up by Amy Rossman of the USDA, were housed closely together in the dormitories at Santa Rosa, eating together, working together, sleeping together, catching scorpions together. Amazingly, the process seemed to work. Although there wasn't always agreement, there was cooperation, and in the end a document was produced that outlined in extensive detail the steps required to accomplish the task.

Days of discussion and debate were interspersed with trips over rugged jeep trails to the rain forests and cloud forests in the region. To an outsider, a walk in the forest with a group of mycologists is a very unusual experience. All eyes were on the ground, and many "oohs and aahs" resounded throughout the understory of tall vegetation. A specimen, once found, was plucked from the leaves and mud, or the fallen log, and stored in a paper bag for later drying. No apparent thought was given to the ankle deep mud, or the trails that turned into rivers with the afternoon torrential rains, or even to the poisonous snakes lurk-

ing among the leaves and debris. Fortunately no one was bitten by anything more serious than chiggers.

The popular mushroom usually generated little interest among this group, but the mycologists fell into ecstasy over some odd little orange bulbous thing, and delightedly mulled over a molded fruit for some 15 minutes. For a few there were profound spiritual experiences, like the discovery of fruiting bodies on top of a bulldozed and abandoned leaf cutter ant nest. For others just digging in the dirt seemed to bring about deep contentment (reminiscent of the Peanuts character "Pigpen").

Between field trips, long days were spent in the conference center, days of discussing protocols for sampling and analysis, debating issues like how many fungal species would really be found (a bazillion was probably the most accurate estimate), writing a draft proposal, and estimating the required budget for such a huge project. In the background throughout the workshop Dan Janzen and Winnie Hallwachs, the driving forces behind the ATBI, were there to offer exten-

sive information on the GCA, its numerous habitat and vegetation zones, and its natural history. They were also there to interject a note of reality when budget figures became astronomical. Carlos Mario Rodriguez, the coordinator of the ATBI and its interactions with the Instituto Nacional de Biodiversidad (INBio), made sure things kept moving, both in the conference room and on the "roads" to the field. Ana Margarita Silva arranged the housing needs, and kept everyone well stocked in sodas and candies (glucose is essential for brain activity!). In the end a very thorough document was drawn up on the sampling and analysis of fungal species from all the habitats of the GCA, and pilot projects were outlined to begin the enormous task of the inventory of all fungal taxa.

Living so closely together with a group of strangers quickly results in a feeling of family and for this virologist it was a sad few days back in San José when one by one they all went back to their other lives. I may never see any of them again, but I will never forget them or my week as an honorary fungologist.

Trichoderma/Gliocladium Workshop

by

B. Lumsden, J. Lewis and G. Samuels

The Fifth International *Trichoderma/Gliocladium* Workshop took place at Beltsville, Maryland, on April 18–20, 1995. This series of workshops, which is held biennially, was initiated by the Biocontrol of Plant Diseases Laboratory (BPDL) at Beltsville in 1985 in response to the increased research on isolates of these genera in biological control studies. The present workshop, organized by Robert D. Lumsden and Jack A. Lewis of the BPDL and Gary J. Samuels of the Systematic Botany and Mycology Laboratory, ARS, was attended by 74 participants from 35 countries repre-

senting government, industry and academic organizations. The program consisted of 49 papers and posters, a panel discussion on the progress of commercialization of *Trichoderma/Gliocladium* biological control agents, and a wrap-up session led by Gary Harman, Cornell University, Geneva, NY.

The discussion topics covered included: Biosystematics and Ecology led by Gary J. Samuels, USDA, Beltsville; Molecular Biology and Genetics led by Matteo Lorito, University of Naples, Italy; Physiology

and Enzymology led by Merja Penttilä, Biotechnology and Food Research, VTT, Finland; Growth Promotion and Biocontrol of Diseases led by John M. Whipps, Horticulture Research International, Wellesbourne, U.K.; and Production and Delivery of Products led by Jacov Eyal, W. R. Grace & Co., Columbia, MD; and a panel discussion of The Process of Commercialization led by Thomas Stasz, TGT, Inc., Geneva, NY. Although recent data in these areas were presented, the workshop emphasized discussion, of which there was an ample amount. The major areas of

impact that were discussed included new products and formulations for the control of soilborne, foliar, and storage diseases. The use of molecular techniques to manipulate and characterize strains and species of *Tricho-*

derma and the use of PCR-fingerprinting and DNA sequence analysis have become indispensable to the taxonomy of *Trichoderma*. Recommendations were made that, because of recent DNA sequencing

analysis, *Gliocladium virens* should more correctly be called *Trichoderma virens*. Publications should use both names in juxtaposition, e.g., *G. virens* = *T. virens*. The next workshop is planned for Helsinki, Finland in 1997.

MSA Business and Mycological News

New Address for *Mycologia*

Editorship of *Mycologia* is in the process of changing hands to a new Editor-in-Chief. From this date forward all submissions should be made to the following address:

David H. Griffin, Editor-in-Chief
Mycologia Editorial Office
College of Env. Sci. and Forestry
350 Illick Hall
One Forestry Drive
Syracuse NY 13210-2788
<griffin@mailbox.syr.edu>

News of Mycologists

I wish to inform you that I plan to retire from active teaching at the end of the current academic year (July 1, 1995). I expect to continue my affiliation with the University as an Emeritus member of the newly formed Department of Biological Sciences, working on Hyphomycetes, the "black mildews," and whatever else is of interest. I can be reached by telephone at 401-792-2630, or through the departmental secretary at 401-792-2630. Mail should be addressed to Department of Biological Sciences, Ranger

Hall, University of Rhode Island, Kingston, RI 02881.

Prior to joining the faculty of the University of Rhode Island, I held positions with the Research Department of the United Fruit Company, Norwood, MA, The NIAID (NIH), Bethesda, MD, The American Type Culture Collections, Rockville, MD, and the University of Hawaii, Honolulu, HI.

Roger D. Goos.

Mycology Online

Finding Mycological Information

Remember to check the Smithsonian Natural History Gopher Server (nmnhgoph.si.edu) for copies of *Inoculum*, an up-to-date directory of MSA members and a link to the MSA Bulletin Board. Look on the Botany menu for the "Mycological and Lichenological Information" submenu. You can also start from the Smithsonian Natural History Web Server, <<http://nmnhweb.si.edu/>>, and look for the Natural History Gopher link under "Other Natural Science Resources."

Send news for immediate distribution to the MSA Bulletin Board. Submit news as an e-mail message to <msa-news@huh.harvard.edu>.

Abstracts Online

The abstracts of the 1995 MSA meetings are available on the Smithsonian Natural History Gopher Server (see above) and are indexed along with this year's issues of *Inoculum*. You can search on any word in the title or the abstract.

Ellen Farr

URLs Briefly Noted

<<http://www.helsinki.fi/~rlampine/botany.html>>

Pointers to botanical information on the Internet. Has a good section for mycology.

<<http://www.igc.apc.org/igc/www.myco.html>>

EcoNet (Institute for Global Communications) has a mushroom home page which includes a link to *The Spore Print*, the journal of the Los Angeles Mycological Society.

Calendar of Events

Items will remain on the calendar until the information is out of date. After the initial detailed announcement, the item will be shortened and given a reference to the issue of *Inoculum*

where the full announcement last appeared. See the MSA Bulletin Board for more details about items marked with an asterisk.

August 29–September 5, 1995. A Symposium on Foliicolous Cryptogams. Eger, Hungary. Contact: Dr. Edit Farkas, Institute of Ecology and Botany, Hungarian Academy of Sci-

ences, H-2163 Vácrátót, Hungary. (*Inoculum* 45(4): 17).

August 29–September 2, 1995. British Mycological Society in Association with the British Society for Plant Pathology. **The Downy Mildew Fungi** (first European Meeting) Gwatt Conference Center, CH-3645 Gwatt, Thunersee, Switzerland. (*Inoculum* 46(1)).

September 3–7, 1995. **12th Congress of European Mycologists**, Wagenin-gen, Netherlands. Contact: Dr. Thomas Kuyper, Biological Station, Kampsweg 27, 9418 PD, Wijster, Netherlands.

September 7–9, 1995. Antigenic Peptides, Glycobiology and Vaccines (**Immunology in Medical Mycology Workshop**), Big Sky, Montana. Contact: Sheri Gardner, Extended Studies Office, 204 Culberston Hall, Montana State University, Bozeman, MT 59717. Phone: 406-994-5240. Fax: 406-994-6546. <uxssg@msu.oscs.montana.edu>. (*Inoculum* 45(4): 15).*

September 14–17, 1995. **The Third International Symposium on Cutaneous Fungal, Bacterial, and Viral Infection and Therapy**. Hyatt Regency Hotel, San Francisco, CA. Contact: Office of Continuing Medical Education, Room MCB-630, University of California, San Francisco, CA 94143-0742. Registration Information: 415-476-5808. Program Information: 415-476-4251, Fax: 415-476-0318.

September 15–16, 1995. **A Medical Mycology Workshop** will be presented in conjunction with the ICAAC Meeting in San Francisco. Contact: Dr. Bernard Jilly, National Laboratory Training Network - Pacific Office, California Department of Health Services, 2151 Berkeley Way, Room 803, Berkeley, CA 94704. Phone: 510-540-3991. Fax: 510-540-2320.

September 15–17, 1995. **42nd Charles Peck Mycological Foray**. Vanderkamp Center, Cleveland, NY. Contact Jim Worrall or C. J. K. Wang (see MSA Directory).

September 18–22 1995. The Environmental Monitoring and Assessment Program's (EMAP) **First North American Workshop on Monitoring for Ecological Assessment of Terrestrial and Aquatic Ecosystems**, Mexico City. Contact: Dr. Sidney Draggan, Environmental Monitoring and Assessment Program [8205], U.S. EPA, 401 M Street, SW, Washington, DC 20460. <draggan.sidney@epamail.epa.gov>

September 29–October 1, 1995. **Symposium on Integrated Microscopy**, Madison, Wisconsin. Contact: IMR, University of Wisconsin-Madison, 1675 Observatory Drive, Madison, WI 53706. <imradmin@calshp.cals.wisc.edu>.

Consult the Web site for additional information: <<http://www.bocklabs.wisc.edu/imr/imr.html>>. (*Inoculum* 46(3)).

October 22–25, 1995. **International Workshop on Interdisciplinary Harmonization of Terminology Used in Describing Spore-forming Microorganisms**, Santa Maria Imbaro, Italy. If you are interested but unable to attend, consider participating in the substance of the workshop by e-mail or fax. Contact: Micah I. Krichevsky, Chair, Bionomics International, 12221 Parklawn Drive, Rockville, MD 20852. Phone: 301-881-2804. Fax: 301-881-1625. <micahk@helix.nih.gov>. (*Inoculum* 46(3)).

October 25–28, 1995 **The 22nd annual Natural Areas Conference**, sponsored by the Arkansas Natural Heritage Commission (state agency) and the Natural Areas Association, will be held in the University of Arkansas Center for continuing education, Fayetteville, Arkansas. Concurrent meetings will include: Eastern USA Ancient Forest Symposium, Association for Biodiversity Information, and USFS Bottomland Hardwood Symposium. Contact: Harold Grimmert, Suit 1500, 323 Center St., Little Rock, Arkansas 72201. <Harold@dah.state.ar.us>.

1996. **An international workshop on the filamentous fungus *Monascus*** will be organized in Toulouse (France) at the beginning of 1996. Mycologist colleagues can express their interest by e-mail. Philippe J. Blanc <blanc@insa-tlse.fr>.

Mycological Classifieds

Read the Mycological Classifieds for announcements of courses, employment opportunities, positions wanted, and mycological goods and services offered or needed.

Mycological Goods and Services

Mold Identification Services. We identify fungal molds for industry, agriculture and academia. Information is available via e-mail at mi-

crobe@peak.org or by writing Cascade Research Associates & Abbey Lane Laboratory, P.O. Box 1665, Philomath, OR 97370 USA. Steven Carpenter

Positions Available

Postdoctoral Research Associate Position Available Kansas State University beginning 1 October 1995. This is a full-time, 12-month position, with annual reappointment contingent

upon continued funding and satisfactory performance. Responsibilities: Conduct research in genetics of *Fusarium moniliforme* using appropriate classical, molecular or population genetic approaches and designed in collaboration with the principal investigator. Ph.D. in genetics, microbiology, plant pathology or related field is required and experience with fungal/microbial genetics and/or molecular biology strongly preferred. Send application, including tran-

script(s) and resume, and have three letters of reference sent to: Dr. John F. Leslie, Department of Plant Pathology, 4002 Throckmorton Plant Sciences Center, Kansas State University, Manhattan, Kansas 66506-5502 USA. Phone: 913-532-1363. Fax: 913-532-2414. <JFL@PlantPath.pp.KSU.edu>. Application Deadline: 15 September 1995.

A Ph.D. Research Assistantship position is available starting from September 1995 at Michigan Technological University to work on molecular biology of mycorrhizal symbiosis. Candidates should have a MS degree in plant pathology or related field with relevant experience in fungal/plant molecular biology. Send your inquiries including a cover letter outlining your research experience, CV and names of three references to Dr. G.K. Podila, Dept. of Biological Sciences, Michigan Technological University, Houghton, MI 49931, Phone: 906-487-3068, Fax: 906-487-3167. <gkpodila@mtu.edu>.

Immediate Opening For A Graduate (Ph.D.) Student. Montana State University has an opening for a **graduate student in their Medical Mycology Predoctoral Training Program**. See details of program in *Inoculum* 46(2). Contact: Jim E. Cutler, Ph.D., Director, MMPTP, Department of Microbiology, Montana State University, Bozeman, MT 59717. Phone: 406-994-2373. Fax: 406-994-4926. <umbjc@gemini.oscs.montana.edu>.

Assistant/Associate Professor(s) of Plant Pathology, University of Kentucky. Applications are invited for two tenure-track faculty positions focusing

on fundamental research concerning plant-pathogen interactions. See details in *Inoculum* 46(3). Contact: Dr. David A. Smith, Department of Plant Pathology, S-305 Agricultural Science Building-North, University of Kentucky, Lexington, KY 40546-0091. Phone: 606-257-3901. Fax: 606-323-1961. <dsmith@ukcc.uky.edu>.

Applications will be accepted until August 31, 1995, or until suitably qualified candidates are found.

A post-doctoral fellowship position (University of Hong Kong) is available for application immediately, as early as 1 Sept., 1995 for a recent Ph.D. to conduct research works in the molecular biology of basidiomycetous fungi fruiting body development.. Please send curriculum vitae and names of three references to: Dr. H.S. Kwan, Dept. of Biology, Science Centre, The Chinese University of Hong Kong, Shatin, N.T., Hong Kong. <b097709@hp720a.csc.cuhk.hk>.

Publications Available

Science & Biodiversity Policy now available. Compiled from speeches given at the AIBS 1994 Annual Meeting, this 96-page stand-alone supplement contains important information about the many aspects of biodiversity and public policy. Authors include Hal Mooney, Thomas Lovejoy, Jane Lubchenco, Kent E. Holsinger, Quentin D. Wheeler, Monica G. Turner, Frank W. Davis, W. Franklin Harris, Lance H. Gundersen, Jerry F. Franklin, Louisa Willcox, and H. Ronald Pulliam. An excellent teaching resource, topics covered include the role of science in formulating policy decisions and the public's

understanding of biodiversity. Single copies are available for \$10.50; bulk orders are available at a discount. For more information about the issue contact Dr. Julie Ann Miller, 202-628-1500 x243; to order contact Genevieve Clapp, 202, 628-1500 x251.

Publications Wanted

Bruce Horn needs a copy of: Kornerup, A., and J. H. Wanscher. 1978. *Methuen handbook of colour*. Third Edition. Eyre Methuen, London. [Bruce Horn, National Peanut Research Laboratory, 1011 Forrester Drive, S.E., Dawson, Georgia 31742. Phone: 912-995-7410.]

Book Wanted: I would like to buy a used copy of *Manual of the Penicillia*, 1949, by Raper, Thom & Fennel. If you have one for sale or know where I could obtain a copy, please e-mail at microbe@peak.org or write me at: Cascade Research Associates, P.O. Box 1665, Philomath, OR 97370 USA Steven Carpenter.

Reference Materials Needed

I have just returned from Russia and encountered a pervasive belief that edible mushrooms could spontaneously become poisonous due to air pollution. I would like to send Moscow University and other schools I visited as much information as possible about airborne and ground contamination of mushrooms. Can anyone help with references? I prefer to get photocopies mailed directly to P.O. Box 7634, Olympia, WA. 98507, USA. My thanks to all. Paul Stamets.

Change of Address

Allen Press now handles such MSA membership services as maintaining the MSA mailing list, preparing mailing labels, and processing membership applications and renewals. Send all corrections of directory information (including e-mail addresses) directly to Allen Press. MSA's contact at Allen Press, Karen Hickey, can be reached by any of the following:

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Between 1 June 1994 and 31 May 1995 MSA received \$16,290 in gifts to various endowed funds. The total contributed to all funds in the last three years now stands at \$58,172. As a result, the Society has been able to offer 13 graduate travel awards of \$150 each for the San Diego meetings as well as one \$1,000 Martin/Baker senior research award and one \$500 M.P. Backus graduate research award. These are in addition to the Alexopoulos Prize and the A.H. and H.V. Smith awards which were established prior to reorganization of the MSA endowment funds.

While the society's efforts at speedy fund-raising must be counted a success, saving money is slow business, and our present needs greatly exceed funds provided by interest on the current endowment. For example, 28 applications for travel grants to the San Diego meetings were received for the 13 awards available; each award should be doubled to make any real difference in the ability of students to attend our meetings. Thus, a quadrupling of funds in the graduate travel endowments alone would be a reasonable goal, and that does nothing to address numerous other unmet needs painfully evident now—e.g., costs for sending complete sets of *Mycologia* to impoverished third world institutions, travel grants for Latin American mycologists, and more numerous and substantial research grants for young mycologists. The health of our society twenty years hence will depend in part on how effectively we cement allegiances with young mycologists now. Modest but appropriately targeted grants of cash speak most eloquently for MSA's concern for a future generation of fungal biologists.

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