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BULLETIN

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PATRON

HER EXCELLENCY THE RIGHT HONOURABLE JEANNE SAUVE,
P.C., C.C., C.M.M., C.D., GOVERNOR GENERAL OF CANADA

PATRON

SON EXCELLENCE LA TRES HONORABLE JEANNE SAUVE,
C.P., C.C., C.M.M., C.D., GOVERNEUR GENERALE DU CANADA

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NEWS FROM THE SECTIONS

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Systematics & Phytogeography Section

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CALL FOR NOMINATIONS - EXTERNAL AWARDS 1989

The CBA/ABC invites its entire membership to make nominations for the following two Awards by other organizations. All nominations will be considered by the CBA/ABC Awards Committee, and one name for each award will be submitted to the appropriate organization, assuming sufficient merit for endorsement of the nomination by the Association. All nominations should be as strong as possible.

Biological Council of Canada Gold Medal

The Gold Medal Award of the BCC is made annually to a member of a constituent society who has made outstanding contributions to the advancement of biology in Canada. Such contributions are not intended to be solely in scholarship; significant service in national agencies, institutions and societies will also be recognized.

The individual societies are expected to forward nominations from their members to the BBC Gold Medal Committee, and this is taken as endorsement of the nominee(s) by the Society. Nominations for the Award must be submitted in writing, and will stand for 3 years, although they should be revised annually and may be renewed.

A nomination for the Gold Medal must contain a citation drawing attention to all the achievements that should be considered by the Gold Medal Award Committee, with stress laid on those of particular significance. This must be accompanied by an up-to-date curriculum vitae (information about graduate students and post-doctoral fellows supervised is important), and a list of publications. It is not necessary to have extra letters of support from individuals.

John and Alice Tyler Ecology/Energy Prize

This international prize is awarded to individuals or organizations for outstanding achievements benefitting mankind. Nominees can be associated with any field of science. The term "organization" includes universities, foundations, corporations or other types of organizations.

Prizes are awarded for the protection, maintenance, improvement and understanding of ecological and environmental conditions anywhere in the world; or for the discovery, further development, improvement or understanding of known or new sources of energy.

Nominations must include the name and address of the nominee (or administrative office of an organization), summary of accomplishment, detailed description of the contribution (including publications or other evidence), and 3 letters of recommendation plus the names of 3-5 further referees. Nominations will stand for 2 years.

Please submit nominations for either of these Awards to the Chairman of CBA/ABC Awards Committee before December 31, 1988, with all necessary documentation:

Dr. R.L. Peterson
Department of Botany
University of Guelph
Guelph, Ontario
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A NEW AGENDA FOR SYSTEMATICS: THE PERSONAL COMPONENT

Note: Freek Vrugtman (Curator of Collections, Royal Botanical Gardens, Hamilton, Ontario) requested the reprint of this article originally published in the "ASC NEWSLETTER" of February 1988 (Vol. 16 No. 1).

In 1951, when Reed Rollins delivered his address "Taxonomy Today and Tomorrow" at the annual meeting of the American Society of Plant Taxonomists (Rollins 1952), the field of systematics was very different from what it is today. It is not so much that the field of inquiry has changed from within (e.g., Rollins discussed, among other things, "What is a species?"), but more that our world has changed. Over the intervening decades, the world has quickly, but quietly, catapulted systematics from a low to a high profile role within the biological sciences and society as a whole. Rampant destruction or endangerment of the earth's biota, particularly in the tropics, has placed systematists squarely in the forefront of the conservation of biodiversity. So relatively sudden has this role changed that, while most of our colleagues are aware of it, few have grasped the full implications. In fact, individually and as a group, we are mostly unprepared for the change and are not quite sure how to deal with it.

A new agenda for systematics is in the making. Just as the future of science as a whole has recently been the focus of discussion (Sigma Xi 1987), systematics is on the verge of assuming a new importance and vitality. As a profession, we began to look seriously at our state and fate in the United Stated and Canada in the late 1960's and early 1970's. The report "America's Systematics Collections: a National Plan" (Irwin et al., 1973) was an important early step in this assessment. That landmark publication makes clear and unequivocal statements about the role of systematics in science and society. For example, the report quotes E.O. Wilson: "Most of the central problems of ecology today can be solved only by reference to details of organic diversity. Even the most cursory ecosystem analyses have to be based on sound taxonomy."

Despite this and similar statements, the essential link of systematics to environmental problems continues to elude many people who should know better. Hoagland (1987) relates a shocking example. A major official in a national conservation organization told her recently that systematists are "Johnny-come-latelies" to the study of biological diversity and that our interest in such things was merely opportunistic! Clearly, one of our tasks is to educate scientists in other professions about what it is we do. If we can't make ecologists understand, we don't have a chance with economists.

The importance of making voucher specimens is another case in point. This basic and essential activity continues to be ignored by some scientists and is symptomatic of their lack of appreciation for systematics. In a recent issue of BIOTROPICA, a paper appeared on seed germination experiments in Hedyotis (Rubiaceae) conducted in Singapore (Tan & Corlett 1987). According to the authors, at least 15 species of the genus occur in Singapore; they report the results of germination experiments in nine of these species. Nowhere in the paper are vouchers mentioned. If vouchers exist, the authors should be asked to submit a follow-up note indicating what they are and where they are deposited. If they don't exist, then the journal has simply wasted two and a half pages with non-verifiable data. The ASC Council on Collections has developed guidelines for designating voucher specimens (Knutson 1987), and this is a step in the right direction.

While systematists have ever increasingly service-related responsibilities these days, they have fewer resources at their disposal to meet the new demands. Funds for collections maintenance and acquisition, support personnel, computers, research, and equipment are becoming increasingly more scarce, and the situation is not likely to change without some encouragement. As Hoagland (1987) summed up, "We cannot expect others to speak for systematics if we do not." The ASC has taken the lead in trying to turn the situation around, and much commentary on the subject has appeared in this Newsletter recently (e.g., Edwards 1984, Stuessy 1984, Davis 1987a and 1987b, and Kim 1987). Most of these articles were based on symposia held at ASC national meetings.

Other important steps in this effort are the move of ASC headquarters from Lawrence, Kansas to Washington, D.C. and the ties that have been strengthened between ASC and NSF, and with TANSI. The proposal to form an umbrella organization for systematists (Stuessy 1984), perhaps called the American Federation for Systematic Biology, should be given serious consideration at a national conference on systematics in a changing society. Consider how much political clout the American Medical Association gives to doctors; we could have the same with an American Federation for Systematic Biology that worked in conjunction with ASC. Stuessy (1984) has estimated that the potential membership for such an umbrella organization could be nearly 10,000 people. Our success in implimenting a new agenda for systematics depends in part on our ability to speak out in a single, loud voice on relevant national policy issues.

Our individual actions can also have a positive impact on forging a new agenda for our profession. If American scientists have been characterized by strong individualism (Sigma Xi 1987), then systematists are traditionally among the most individualistic. With a few notable exceptions, we tend to work and publish alone. This perhaps has as much to do with the nature of systematics as it does with the type of people who are drawn to the profession.

In any case, the new agenda for systematics must involve collaboration to degrees most of us are not accustomed to, because the whole of science and its funding opportunities are shifting from competition to cooperation (Sigma Xi 1987). We ought to take advantage of our residual individualistic energies in order to advance the profession. It is with this "personal component" in the restructuring of our profession that I am here concerned.

My thinking on this issue has been greatly influenced by two papers of Daniel Janzen (1986, 1987) in which he argues that tropical biologists should make personal sacrifices in behalf of conservation of the remaining fragments of the natural world: "If biologists want a tropics in which to biologize, they are going to have to buy it with care, energy, effort, strategy, tactics, time, and cash" (Janzen, 1986).

He advocated more individual involvement: "If 100,000 biological academics and researchers in the United States were to put an average of 20 percent of their time and funds into the conservation of neotropical biodiversity during the next five years, the game would be closed. If we suppose an average annual income of $25,000, this resource of $500 million plus 20,000 man-years per year would provide enough energy, purchase power, and endowment to solve virtually all neotropical conservation problems." In the same paper, he declared, "If there is not a free and aggressive infusion of new action, thought, and material resources into the war to save tropical biodiversity, there will not be any tropics for the next generation to argue about (Janzen, 1987).

Janzen's reasoning is obviously applicable to systematists, regardless of whether we work on temperate or tropical organisms. We systematists must get personally involved in conservation on several levels. For starters, we should join the Society for Conservation Biology and actively support its activities and journal (Conservation Biology).

There is a tendency for systematists not to get involved in social or political issues, even when those issues could directly affect them or their work. For example, in a recent Survey of North American Systematists and Systematic Resources a total of 23,000 systematists were canvassed, but only 2850 responded (Edwards 1984). Apathy of this sort has got to change. Every systematist must assume a share of the responsibility by tying his or her work in some way to conservation problems. For those of us at ease in making public presentations or writing popular articles, we should devote some time to that. It would be easy enough for each of us to develop a short slide show, using examples from our favorite organisms, of how systematics relates to other sciences and to solving society's problems, particularly the problems of declining biodiversity.

One way I have found to combine my work in systematic botany with conservation of neotropical forests is through ethnobotany (Boom 1984). General collecting can be carried out in an ethnological context and a great deal of information may be obtained about indigenous uses of organisms that have potential uses in our society as new foods, drugs, fuels, etc. But more importantly, these data can be used to support arguments for conserving the environment, and in so doing, preserving the rights of indigenous people to continue to live on their land in their traditional ways if they so desire. The general collections contribute to the floristic knowledge of the region. Given the rate at which indigenous groups are becoming culturally or physically extinct, it would be difficult to think of a more worthwhile expenditure of time and money for this generation of field botanists. Any group of organisms can be studied in an ethnological setting; a Venezuelan friend of mine studies ethnoichthyology.

Those of us who do field work in developing countries (where much of the biological extinction is currently going on) must really take to heart some of the common sense advice on ethics that is needed to enhance international collaboration (e.g., Pearson 1985; Herrera-Mac-Bryde 1986). But we need to go beyond these rules of behavior to develop a view that has as one of its primary goals the enhancement of systematics in developing countries. Local systematists can accomplish much more for conservation in their own countries than can foreigners. This means spending money and time in acquiring equipment, books, journals, and in training students through classes given in the host country and back at the systematists' home institution.

Along with these realigned priorities must come an understanding from those who evaluate a systematist's scholarly performance. Tenure is not often granted just because someone has been a nice guy! Publications are the usual criterion and we simply won't have as many of them if we spend more of our time in non-research activities. University and museum administrators will eventually have to use broader criteria in making personnel decisions, taking into account the new scientific and social reality inherent in a more collaborative research agenda. However, initially, younger systematists may have to take some risks.

We did not come into the field of systematics because we put a very high priority on financial security. If we do not have the courage to do what must be done to foster research in a collaborative professional environment, then perhaps we are in the wrong profession. We must overcome what for most of us is probably a dislike for

politics and social questions and spend time on issues that are now as important to systematics as is the description of new species or the counting of chromosomes. Although our world no longer allows the academic luxury of the 1950's when systematists could live out their lives im metaphorical ivory towers, many of us don't yet recognize that. Some within our professional community may not like it, but nevertheless we are faced with such serious problems that only drastic actions, taken in unison and individually, can give us the support we need to carry out the new agenda of systematics.

Because time is so short, we cannot rely on funding agencies and politicians to come to the obvious conclusion on their own that systematics deserves much greater support. If we have any chance at all of saving much of what remains of our natural environment, we must take the initiative ourselves. We must involve ourselves now in conservation efforts. We must rise to the occasion and take the lead in biodiversity issues; there is no other group of scientists more qualified to do so. But most importantly, let us work to convey to others who don't have a systematics background why it is that we are so intrigued by biotic diversity and have chosen to devote our lives to studying it. To the extent that we can convey this perspective to the rest of society, we will succeed in conserving and managing viable ecosystems in perpetuity.

References. Boom, B.M. 1984. Amazonian Indians and the forest environment. Nature 314: 324. **Davis, G.M.** 1987a. ASC Washington Initiative. ASC Newsletter 15: 30-33. _ 1987b. The ASC-TANSI relationship. ASC Newsletter 15: 50. **Edwards, S.R.** 1984. The systematics community; priorities for the next decade. ASC Newsletter 12: 37-40. **Ehrenfeld, D.** 1987. Editorial. Conservation Biology 1: 6-7. **Herrera-Mac-Bryde, O.** 1986. Third world perceptions of "scientific imperialism": myths and needs for conservation, research, and education. ASC Newsletter 14: 66. **Hoagland, K.E.** 1987. ASC, systematics, and conservation biology. ASC Newsletter 15: 37. **Irwin, H.S., W.W. Payne, D.M. Bates,** and **P.S. Humphrey** (eds). 1973. America's systematics collections: a national plan. ASC. **Janzen, D.H.** 1986. The future of tropical ecology. Ann. Rev. Ecol. Syst. 17: 305-324. _ 1987. Editorial. Conservation Biology 1: 9596. **Kim, K.C.** 1987. The systematics community: priorities for the next decade. ASC Newsletter 15: 53-55. **Knutson, L.** 1987. ASC Council on Collections: 1987 report. ASC Newsletter 15: 2930. **Pearson, D.L.** 1985. United States biologists in foreign countries: the new ugly Americans? Bull. Ecol. Soc. Amer. 66: 333-337. **Rollins, R.C.** 1952. Taxonomy today and tomorrow. Rhodora 54: 1-19. **Sigma Xi.** 1987. A new agenda for science. New Haven: Sigma Xi, 47pp. **Stuessy, T.F.** 1984. The organizational development of the systematic biology community. ASC Newsletter 12: 49-53. **Tan, H.T.W. & R.T. Corlett.** 1987. Seed germination in Hedyotis species (Rubiaceae). Biotropica 19: 286-288.

Brian M. Boom
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CENTRE FOR INSECT IDENTIFICATION FORMED IN MICHIGAN

Lansing, Mich... A new organization has been formed to provide accurate and timely identifications of insects and other terrestrial arthropods over a much broader spectrum than is currently available. At the same time, the company will return the desired information to the customer within a promised schedule according to Gregory A. Dahlem, founder and director of the firm.

Named The Center for Insect Identification, the company is also distinctive in that it is a commercial venture in this field.

Determinations of specimens will be accomplished using a network of systematic entomologists from across the United States and Canada. Each entomologist is a specialist in a particular group of insects. The company claims this structure will permit it to make accurate and fast identifications on a cost effective basis.

A corollary objective of the Center is the establishment of a voucher collection which will contain series of specimens as permanent reference material to substantiate the organims that provided a basis for a given piece of research or for a specific project. The voucher system will offer the qualities of standardization and centralization and will be housed as a separate unit in the entomological collection at Michigan State University.

The basic service offered by the Center will be a routine identification with a written report to the customer within four weeks. Rapid identifications - with a report by telephone within five working days - will be available upon request at an additional cost. Other services include placing the specimens in the voucher system. Previously identified specimens may also be placed in the voucher system.

Of special interest to non-systematists is the option of submitting a number of specimens so that personnel at the Center can select the specimen that is best preserved and of the proper sex to facilitate accurate identifications.

Full details concerning the services offered are available by writing to The Center for Insect Identification, P.O. Box 26245, Lansing, MI 48909.

Missouri Botanical Garden News Release

UPDATING OF "FLORA OF MISSOURI" UNDER WAY

The updating of Missouri Botanical Garden Curator Dr. Julian Steyermark's "Flora of Missouri", the primary reference book on plants found in the state, is well under way. George Yatskievych, a Missouri Department of Conservation botanist, is officed at the Garden full-time and has begun rewriting the manual. The project is a joint effort between the Garden and the Department of Conservation.

Both organizations have a strong interest in the plants of Missouri and have goal of completing the revisions by August 1993. Steyermark completed his "Flora" in 1963. Since then, many more plants have been found in the state, and names or classifications have changed. The updated version will be an important reference for plant conservation efforts.

The joint project is unique in that while Yatskievych is technically a botanist in the Natural History Section of the Department of Conservation, he works in the Garden's research department and has access to its library, herbarium and data processing center. He also receives Garden staff and volunteer support and advice.

While Yatskievych will preserve many of Steyermark's original comments, he will also make several changes that include adding short written descriptions for each plant species and updating the illustrations.

In addition to his "Flora of Missouri" revision duties, Yatskievych is also helping with two other major projects of the Garden, that of Flora of North America and Flora Mesoamericana.

8th ANNUAL CONFERENCE OF THE ASSOCIATION OF ZOOLOGICAL HORTICULTURE

The Association of Zoological Horticulture (AZH) is holding its 8th Annual Conference, September 11 through September 15, 1988, at The Arizona - Sonora Desert Museum in Tucson, Arizona, U.S.A.

Post Conference Tours will be available. For information and registration, contact:

George Montgomery or Meg Quinn
c/o Arizona-Sonora Desert Museum
2021 North Kinney Road
Tucson, Arizona 85743

The Association of Zoological Horticulture is an international, non-profit organization dedicated to the advancement of Horticulture in Zoological Parks and Aquariums.

ETNOBOTANICA - 92

The "1992 Ethnobotanic Congress" organized by the Corboda Botanic Garden distributed its first circular. The agreement for the celebration of this Congress was adopted at the IV Latinamerican Congress of Botany held in Medellín, Colombia in 1986 and is sponsored by several international agencies and organizations.

This preliminary information gives a detailed account of the aims of the Congress, analyses the ethnobotanic results that have developed since 1492 and the consequences that the transport and exchange of economic plant species have had on America and Europe.

An International Organization Committee (still not complete) will define and establish the general themes to be included in the Congress. The following people have already accepted to form part of this Committee: Prof. J.I. Cubero Salmerón (Universidad de Córboda, Spain); Dr. J. Esquinas Alcázar (F.A.O. Rome, Italy); Dr. V.M. Toledo (U.N.A.M., México); Dr. G.T. Prance (Director Inst. of Economic Botany, New York Botanical Garden, U.S.A.); Dr. Barbara Pickersgill (University of Reading, U.K.); Dr. E. Forero (Director of Research, Missouri Botanical Garden, U.S.A.); Prof. A. Gómez Pompa (University of California at Riverside, U.S.A.); Dr. Concepción Sáenz Laín, (Nat. Mus. of Natural Science, Madrid, Spain); Prof. J.V. Maroto Borrego (Univ. Politécnica de Valencia, Spain); Prof. V.H. Heywood (Prof. of Botany, IUCN Conservation Monitory Center, Royal Botanic Gardens, Kew, U.K.); Prof. V. Sotés (Univ. Politécnica de Madrid, Spain.).

1992 will mean for Spain and especially for Andalusia a place of encounter for people from many nations. For this as well as for the aforementioned reasons we have started the organization of the Congress at such an early date.

If you are interested in receiving future circulars, please contact:
ETNOBOTANICA-92 - Apdo. 3.029 (Jardín Botánico de Córboda)
Telfs.: 20 00 18 - 20 00 77
14080 - CORDOBA (ESPAÑA)

NOTICE OF PUBLICATION

Pryer, K.M., and G.W. Argus, eds. 1987. Atlas of the Rare Vascular Plants of Ontario. Part 4. National Museum of Natural Sciences, Ottawa.

The National Museum of Natural Sciences in Ottawa has now published the fourth and final installment of Argus, G.W., K.M. Pryer, D.J. White, and C.J. Keddy, eds. 1982-1987. Atlas of the Rare Vascular Plants of Ontario. Four parts.

National Museum of Natural Sciences, Ottawa. (looseleaf). The publication of Part 4 of the Atlas concludes a project that was initiated with Part 1 in 1982 (Argus, G.W., and D.J. White, eds.), and followed by Part 2 in 1983 (Argus, G.W., and D.J. White, eds.), and Part 3 in 1984 (Argus, G.W., and C.J. Keddy, eds.).

During this project approximately 1000 candidate species were studied. From these a total of 542 species in 91 families were deemed rare and are included in the Atlas. More than sixty contributors were involved in the project and provided their expertise in preparing the species accounts. Each rare species account in the Atlas includes: scientific and common names, Ontario dot maps based on verified herbarium specimens, North American range maps derived from various published literature sources, habitat, rare status elsewhere, and pertinent notes and references.

The Atlas is available from:

Rare and Endangered Plants Project
Botany Division
National Museum of Natural Sciences
P.O. Box 3443, Station "D"
Ottawa, Ontario K1P 6P4
Canada

To cover postage and handling: In Canada: $5; Foreign: $6 US. Cheque or money order payable to The Receiver General for Canada. A limited number of the earlier parts are still available and will be included for new recipients of the Atlas.

Soon to be published:

Argus, G.W., and K.M. Pryer. 1988. The Rare Vascular Plants of Canada - Our Natural Heritage. National Museum of Natural Sciences, Ottawa.

Approximately 1000 species are on this list. For each species the following information is included: scientific name, references, global status, national status, provincial and/or territorial status, and U.S. state status. A Canadian priority rank is assigned to each of the species and, when available, the COSEWIC (Committee on the Status of Endangered Wildlife in Canada) status is provided. A North American map accompanies every species to indicate its known distribution by province and/or territory and state. This list will be published in cooperation with the Nature Conservancy, Arlington, Virginia. Those who are interested in being placed on a mailing list should write to the above address. The cost of this publication is uncertain at this time.

International Organization of Plant Biosystematists (IOPB)

The first circular on the IOPB-1989 Symposium "Biological Approaches and Evolutionary Trends in Plants" is now available from the Chairman of the Symposium, Dr. Shoichi Kawano, Department of Biology, Faculty of Science, Kyoto University, Kyoto 606, Japan. The Symposium will be held in Kyoto July 10-14, 1989. Subtitles include: "Biology and Evolution of Weeds and Weed-Crop Complexes", "Molecular Approaches in Plant Biosystematics", "Population Biology and Life History Evolution": (1) "Reproductive Biology of Plants", (2) "Demography and Life History Evolution of Plants". Time will be available for poster presentations. One day will be devoted to a field trip.

MYCOLOGY IN CANADA

The Mycology Section is cataloguing mycologists and their research in the various regions of Canada. Degree sought is in brackets after researcher's name.

I. Atlantic Provinces (compiled by Chris Lucarotti, Mt. Saint Vincent Univ., Halifax)

AGRICULTURE CANADA

Research Station, St. John's, Newfoundland.

Michael C. Hampson (Plant Pathology) - germination and viability factors in the fungus Synchytrium endobioticum (causal agent of potato wart disease); the interaction of S. endobioticum with soil amendments in a study of biological control of wart disease.

Research Station, Kentville, Nova Scotia.

Nancy L. Nickerson (Ph. D., Plant Pathology) - epidemiology and control of fungal diseases of small fruits; biology and taxonomy of fungi on Rubus and Vaccinium.

Research Station, Charlottetown, Prince Edward Island.

Michael Celetti (Plant Pathologist-Mycologist) - Research project on the ecology and population levels of soil borne fungi in soils cropped with different sequential crops used in rotation with potatoes. A strong emphasis on the enumeration and identification of Fusarium species, Verticillium albo atrum, V. dahliae, V. nigresens, Colletotricum coccodes, Rhizoctonia solani, R. cerealis, Phoma sp., Bipolaris sorokiniana, Dreschlera sp., Sclerotinia sclerotiorum, Botrytis cinerea, Alternaria sp., Helminthosporium sp., Pseudocercosporella sp., Gaeumannomyces graminis and nematodes isolated from soil. This research also addresses the population dynamics, relationships and yearly variations of soil borne organisms in soil as the cultivated crops change from year to year in the fields under investigation.

CANADIAN FORESTRY SERVICE

Fredericton, New Brunswick.

Doug Strongman - pathogens of insects; fungal, bacterial, insecticidal biochemicals from fungi; fungal ecology.

Laszlo P. Magasi - Forest Insect and Disease Survey. Not directly involved in mycological research but deals with distribution, damage, control of forest pathogens.

Sharon E. Pond (M. Sc.) - Forest Insect and Disease Survey. Responsible for identification of cultures of forest fungi and for the maintenance of the Fredericton Stock Culture Collection (FSC-).

UNIVERSITIES

Acadia University, Wolfville, Nova Scotia.

Darryl W. Grund (Biology) - study of North American species of Inocybe (Fr.)Fr.

Nancy Mackinnon (M. Sc. student) - a survey of the species of Tricholoma occurring in Nova Scotia.

Kenneth A. Harrison (Biology) - The Hydnaceae of North America.

Dalhousie University, Halifax, Nova Scotia.

L.C. Vining (Biology) - elucidation of the biosynthesis of mollisin, a chlorinated polyketide metabolite of Mollisia caesia. Nuclear magnetic resonance spectroscopy is used to locate ^{13}C and ^{2}H labels and thereby distinguish between potential one-chained and two-chained precursors of mollisin.

Kegian Yang (M. Sc. student) - molecular cloning of DNA encoding phytase production in Aspergillus ficcum. Phytase is of potential interest as an adjuvant in animal feeds but industrial production is hampered by the low productivity of natural fungal isolates. The goal of this project is to clone the phytase structural gene in an alternate host under control of a strong promoter and an appropriate signal sequence for excretion.

William F. Walker (Biochemistry) - gene organization in fungi; molecular approach to phylogenetics within the fungi.

Memorial University of Newfoundland, St. John's, Newfoundland.

Richard Nolan (Biology) - biochemical aspects of protoplast morphogenesis in Entomophaga aulicae; membrane receptor sites on protoplasts of A. aulicae; use of Entomophaga aulicae as a biocontrol agent for the eastern hemlock looper.

Mount Allison University, Sackville, New Brunswick.

Felix Baerlocher (Biology) - Ecology, physiology and taxonomy of aquatic hyphomycetes; interactions between fungi and invertebrates in freshwater and saltwater habitats; effects of pollutants (acid precipitation, heavy metals, PCP) on aquatic food webs.

Stephen Armstrong (M. Sc. student) - uptake of organic nutrients by the epilithic layer in streams.

Mount Saint Vincent University, Halifax, Nova Scotia.

Christopher Lucarotti (Biology) - Chytridiomycete pathogens of dipteran insects, especially Coelomomyces stegomyiae parasitization of Aedes aegypti.

Nova Scotia, Agricultural College, Truro, Nova Scotia.

A. Bruce Gray (Biology) - Mycotoxigenic molds in feed grains: An evaluation of the effects of host variety and storage on mycotoxigenic molds and mycotoxins in feed grains. Mycotoxigenic molds in silage: The identification of molds found in silage and their assay for mycotoxin production. Seed-borne pathogens in cereals: An evaluation of the effects of various intensive cereal management practices on seed-borne fungi in cereal grains.

M. Glen Sampson (Biology) - Potential of selected fungi as mycoherbicides on difficult to control weeds. Phytotoxin production by plant pathogenic fungi. Weeds as sources of inoculum for pathogens occurring on cereal crops. Interference of herbicide activity in quackgrass by leaf spotting fungi.

Saint Francis Xavier University, Antigonish, Nova Scotia.

David Garbary (Biology) - population ecology of Mycosphaerella ascophyllii (Ascomycetes) in relation to its host Ascophyllum nodosum (Phaeophyta).

University of New Brunswick, Fredericton, New Brunswick.

Norman J. Whitney (Biology and Forestry) - Marine Mycology - the identification of fungi in the Bay of Fundy and Northumberland Strait, their physiological activities including interference competition, the isolation and identification of secondary metabolites with antagonistic properties and the ecological significance of the various aspects; Fungal Diseases of Plants-resistance in potatoes to Verticillium wilt and Lophodermium needle-cast disease on conifers; Endophytes and Epiphytes of Conifers - collection and identification of fungi which are toxic to spruce budworm and isolation and identification of the toxins; Bioethics - research on dialogue between scientists and theologians on ethical issues in genetic medicine and science in general.

Catherine L. Clark (M. Sc.) - Toxicity of endophytic fungi from conifer needles to the eastern spruce budworm.

John Johnson (Ph. D.) - Investigation of toxin production, interference competition, conifer specificity and needle cell reaction of endophytic fungi of conifer needles.

Kelvin Lynch (Ph. D.) - Epidemiology and control of European canker in apples.

Shawn Price (M. Sc.) - Hybridization and cultivation of Pleurotus ostreatus.

Tom Rand (Ph. D.) - Taxonomy, epidemiology and pathology of fish-parasitic fungi, especially Ichthyophonus spp., from Scotian Shelf yellowtail flounder.

Ralph Simpson (M. Sc.) - Shoot blight of red pine: a disease survey of the Maritime Provinces and some aspects of the biology of the causal organism Sirococcus conigenus.

OFFICERS OF CBA/ABC 1987-1988

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