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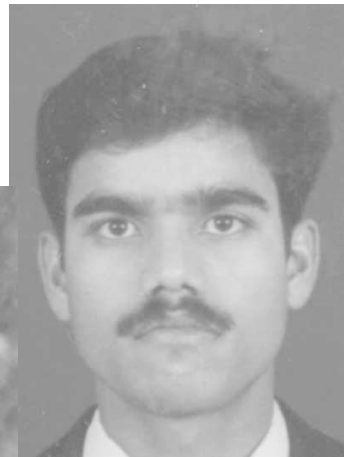
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IAB AND ITS ROLE IN EDUCATION

One of the missions in the strategic plan of IAB is to strengthen education. Rod Seppelt outlines how IAB can contribute to this process. *see page 9*

Student Profile



Two new students presents themselves, Suzanne Mills from Edmonton (left; p. 3) and Ajit Pratap Singh from Lucknow (above; p2).

THREATENED LIVERWORT LISTED

The liverwort *Pseudocephalozia paludicola* has been listed as threatened in Victoria, Australia. *Calomnium complanatum* will also be added within short, reports David Meager. *see page 7*

Theses in Bryology 4

Bill Buck continues to collect and present thesis. In this issue, 6 new theses are presented. *see page 6*

RECENT DEATHS

DR ILMA STONE 1913-2001

Australia has lost one of their greatest bryologists. Jessica Beaver writes a tribute to Ilma Stone who died on the 4th of July at an age of 87. *see page 8*

International Association of Bryologists (IAB) is an organisation open for persons all interested in bryophytes. For membership, contact Sandi Vitt, Dept. of Plant Biol., Southern Illinois Univ., Carbondale, IL 62901-6509, USA (svitt@ualberta.ca). Visit also our web site at <http://www.devonian.ualberta.ca/iab/>. Bryological Times is issued 4 times per year.

Student Profile

ed. Jennifer Doubt

Bryology Lesson #4: Bryophytes are soft, loving, and easy to collect in bulk, but hard and difficult to identify

Ajit Pratap Singh

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Bryological Focus

Floristic studies of liverworts and hornworts

Supervised by **Dr. Virendra Nath**

BACKGROUND

I was born and raised in Faizabad, Uttar Pradesh, India, and completed graduate and post-graduate degrees in botany at the K.S.P.G. College, Ayodhya, which is affiliated with Dr. R.M.L. University, Faizabad. During my M.Sc. I was interested in plant pathology, but my curiosity for floristic and fieldwork with cryptogams was piqued during my post-graduation, when I participated in an expedition to the Kathmandu Hills of Nepal to survey and explore bryophytes. During my 2 years of post-graduate work, I became familiar with techniques such as microtomy, chromatography, microscopy, and began to understand the importance of biodiversity conservation.

I was selected as a Junior Research Fellow at the National Botanical Research In-

Ajit Pratap Singh, Lucknow, India

stitute, Lucknow, where I now work under the supervision of the eminent Dr. Virendra Nath (Assistant Director). My project is sponsored by the New Delhi Department of Science and Technology. Within a short span of time, I made three adventurous field trips at altitudes up to 7000 ft in the dense forest of the Khasi and Garo Hills, North Eastern Himalayas, to collect liverworts and hornworts. Identification of specimens and ultrastructural studies are now in progress. The distribution of various taxa and their ecology will be investigated.

Future Plans

My current priority is to complete my Ph.D. work. I would also like to energize and strengthen liverwort and hornwort taxonomy, and I encourage taxonomists to pay greater attention to these unexplored fields, assuring its prosperity in the new millennium.

I look forward to further training in bryophyte taxonomy and biodiversity conservation strategies in my home country or overseas. I have a keen interest in getting a job in botany or biodiversity conservation, and secondly, in preparing bryophytic floras, particularly those of liverworts and hornworts of other bryogeographically rich territories.

On Bryology

All cryptogams are being ignored at basic and applied levels, particularly in India, where Eastern Himalaya and Western Ghats have the distinction of owning one of the world's twelve mega biodiversity regions. This bryogeographically rich country has only three main schools with few trained taxonomists, although active work is conducted at centres such as the National Botanical Research Institute, Lucknow University, Chandigarh University, Delhi University, and

the Botanical Survey of India. Sixty percent of India remains bryologically unexplored. Throughout the world, only a few people are devoted to bryology.

I think more attention in this field may lead to good solutions to problems resulting from urbanization, industrialization, and global warming. Because the bryophytes covering the earth retain moisture, efforts to maintain a friendly environment must include bryophyte conservation. In this regard, funding agencies, governments, and NGOs should play a major role in policy development for the conservation of rare and threatened bryophytes in situ and ex situ.

To advance and popularize bryology, bryologists worldwide should co-ordinate with each other by forming an active group represented by at least one or two bryologists from each country, for preparing and implementing an action plan to protect this fascinating branch of botany. I feel immense pride to be a member among you all in this esteemed IAB group.

Thesis Research

Diversity and distribution of hepaticae and anthocerotae (Bryophytes) in North Eastern Hills, Meghalaya

The major hills of the province "Khasi and Jaintia Hills" have a maximum altitude of about 7000 ft. As the region varies topographically, there is tremendous variability in climate, habitat, and ecology. Bryophyte diversity results from sudden changes in the genetic constituents of plants or their ecological niches, leading to modification or variation of their structural morphology and anatomy. Such factors enrich or decrease the number of species in a floristic region, making species rare, threatened, endemic, or common in distribution. This diversity increases the ambiguity among plants, creating immense confusion in assessing the exact taxonomic and phylogenetic positions of taxa.

The main objective of this study is to make critical and comprehensive studies of bryodiversity among liverworts and hornworts of Khasi and Jaintia Hills. A complete account of liverworts, with distribution maps, illustrations, habitat relationships, assessment of rare and threatened taxa, and the factors responsible for the depletion of important taxa from their original sites will be compiled. Ultrastructural studies are being carried out in order to understand significant details regarding phylogeny.



Elephant falls (right) is the most scenic and bryologically interesting site at Shillong in the Khasi hills of Meghalaya state.



Student Profile

ed. Jennifer Doubt

Bryology Lesson #5: There is an intuition involved in understanding bryophyte species. Perhaps this is why so many bryologists are artistic.

Suzanne Mills

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Bryological Focus

Boreal forest community ecology

Supervised by **Dr. Dale H. Vitt** and **Dr. S. Ellen Macdonald**

Background

I grew up in Sault Ste. Marie, Ontario, Canada. My early summers were spent camping along the North Shore of Lake Superior, appreciating the majestic coastline, collecting stones, flowers and berries.

I chose to study Wildlife Biology at McGill University (Montréal, Quebec) based on the number of field trips in the programme description. I soon realized that plants were more fascinating than animals and so I focused the latter half of my studies on botany.

My first botanical job focussed on the ecology of species in the genus *Carex*. Working for Dr. Marcia Waterway and Dr. Martin Lechovitz in this capacity I was able to teach myself the local flora while working – an amazing opportunity. I came to enjoy

Suzanne Mills, Edmonton, Canada

keying out *Carices* that were less understood. During the following summer as a field technician at the Bonanza Creek Long Term Ecological Research Site outside of Fairbanks, Alaska, U.S.A., I learned to identify some of the more rudimentary mosses. I returned to Canada to complete an undergraduate field project titled *The distribution and host specificity of smut fungus (Anthracoidea sp.) on Carex sp. in fens of Northern Quebec*. Looking at smut spores for days on end, I became familiar with microscope work – foreshadowing my future trajectory.

Future Plans

I am torn: I enjoy working in the outdoors and with bryophytes, but I can't ignore my deep concern about Canada's social and environmental welfare. I would like to believe that by studying bryophytes I could influence something in a positive way, but recent decisions on Canadian environmental issues make it clear that scientists are given little authority. I would like to delve into environmental policy, either within or outside of government. The scarcity of full time work in bryology also makes this a more realistic goal. Of course, I will always collect and appreciate bryophytes.

On Bryology

After almost two years at the microscope, I feel that bryology may be more of an art than a science. There is an intuition involved in understanding bryophyte species. Perhaps that is why so many bryologists are artistic. Bryologists are also genuine, passionate people - this is what I love most about bryology.

I think that more taxonomic bryology should be done. However, I can see how

my present feelings only follow a natural progression - becoming frustrated by difficult groups encountered through survey work, it is easy for anyone to crave a deeper understanding of systematic relationships.

Thesis research

The distribution of bryophyte species diversity in the boreal forest in relation to microsite and moisture availability at three scales in conifer dominated forest stands

Due to increased public awareness, protecting biological diversity is becoming an important forest management goal. Monitoring bryophyte species diversity would be facilitated if easily measurable criteria representing bryophyte species diversity exist. Predictors of bryophyte species diversity are scale dependent. Unique physiography may be an important predictor of diversity at a regional level, however at a smaller scale, substrate and microclimate are the more likely suspects.

The objective of my research is to understand how substrate availability and microclimate affect the distribution of bryophyte species diversity in the boreal forest at different scales.

My study site was located in upland boreal mixed wood in northern Alberta. I used a nested sample design to determine bryophyte species richness at three scales: stand (n=3); mesosite, 25 x 25 m plots to capture within stand variation (n=18); and microsite, structural elements of the boreal forest providing unique substrates for moss colonization (n=371). Microsites included logs, trees, undisturbed forest patches, stumps and disturbed patches. At the mesosite level I measured light, soil moisture, soil ph, surface moisture and temperature.

I found 70 moss species and 16 liverwort species. A significant amount (42%) of the total variation in species richness was due to substrate type. Species richness was highest in logs, followed by stumps, trees and undisturbed patches. Species diversity (Shannon-Weiner) patterns were more complex because mesosite and stand differences affected the species diversity of different substrate types. With further analysis I hope to examine the extent of the relationship between habitat and community composition in the boreal forest, and establish some predictors of bryophyte species richness and diversity.



Me (right) and field site in northern Alberta (above)

Hallingbäck, T. & Hodgetts, N. (compilers): Mosses, Liverworts and Hornworts. Status Survey and Conservation Action Plan for Bryophytes. IUCN/SSC Bryophyte Specialist Group. IUCN, Gland, Switzerland and Cambridge, 2000. X + 106 pp. Soft cover. Available from: IUCN Publications Service Unit, 219c Huntingdon Road, Cambridge CB3 0DL, UK. Fax: +44 1223 277175, e-mail: info@books.iucn.org (<http://www.iucn.org>).

This much-desired Action Plan was written by an impressive international group of well-known bryologists: René Belland (Canada), Patricia Geissler (Switzerland), S. Rob. Gradstein (Germany), Tomas Hallingbäck (Sweden), Nick Hodgetts (U.K.), Celina Matteri (Argentina), Brian O'Shea (U.K.), Tamás Pócs (Hungary), Geert Raeymaekers (Belgium), Wilfred Schofield (Canada), Cecilia Sérgio (Portugal), Lars Söderström (Norway), Heinar Streimann (Australia), Benito Tan (Singapore), Edwin Urmi (Switzerland), and Jiří Váňa (Czech Republic). Such a specialist group practically seeps with knowledge of the world's tropical as well as temperate bryophyte floras.

The Action Plan contains eight chapters: 1) Introduction, 2) Classification and Number of Bryophytes, 3) The Importance of Bryophytes, 4) Threats to Bryophytes, 5) Key Habitats and their Specific Threats and Recommendations, 6) Regional Overviews, 7) Conservation Measures, and 8) Recommendations. The chapters are followed by seven appendixes, which include *inter alii* the actual Red List and IUCN Red List Categories.

In chapter 2, Wilf Schofield presents a very concise, clear and "laypublic friendly" account of the classification of bryophytes and the differences among the main classes of bryophytes, supported by excellent photographs. The following chapter deals with ecological roles, economic and medicinal uses, as well as cultural and aesthetic qualities (e.g. uses in gardening) of bryophytes. This chapter makes very nice reading. Figure 3.4., of a *Scapania* sp., looks a bit strange - the contours of the leaves are drawn on the picture.

Chapter 4 emphasizes a general lack of bryophyte conservation awareness. This, of course, is part of a larger syndrome of ignorance or perhaps even indifference of decision-makers in many countries, and certainly not least in the tropical ones. In chapter 5 the fact that protecting bryophytes means protecting habitats is made very clear. Recommendations for actions are given separately for forests, cliffs and rocks, tundra etc.

The Regional Overviews in chapter 6 cover Australasia (Streimann), E and SE Asia (Tan), Sub-Saharan Africa (O'Shea, Pócs & Hodgetts), Southern South America (Matteri), Tropical America including Mexico (Gradstein & Raeymaekers), Europe including Macaronesia (Hodgetts) and North America (Schofield). The main regions not covered are Siberia, the Middle East, the Indian subcontinent and North Africa. Each overview discusses main threats and current state of knowledge and gives region-specific recommendations for conservation. Where appropriate and the knowledge allows, "hot spots" or centres of bryophyte diversity are indicated. Chapter 7 discusses different conservation measures, such as habitat vs. species approaches, in bryophyte conservation. The short yet important chapter 8 emphasizes what can be achieved through additional fieldwork and research, how it could be ensured that bryophyte conservation is considered in daily political decision making, and how to increase the awareness among conservation organisations and the general public.

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This Action Plan should certainly be in the library of each and every bryologist. Bryophytes may be small in size but – well, as the IUCN Plants Officer Wendy Shram puts it in the Foreword: "If we can't save what must be considered true survivors - these tenacious little green things that cling to trees and rocks, and survive in the most inhospitable of environments - then what hope have we for saving the rest?". This also very aptly crystallizes the need for and significance of this Action Plan.

The book is dedicated to the memory of Dr. Patricia Geissler.

Johannes Enroth

Bednarek-Ochyra, H., Váňa, J., Ochyra, R. & Lewis Smith, R. I. 2000: The liverwort flora of Antarctica. XVI + 236 pp. Softcover. ISBN 83-85444-74-2. Polish Academy of Sciences, W. Szafer Institute of Botany, Cracow. Advertised price: US\$ 35,00 (plus US\$ 3.75 for handling and postage). Available from Publishing Office, W. Szafer Institute of Botany, Polish Academy of Sciences, ul. Lubicz 46, PL-31-512 Kraków, Poland. E-mail: ed-office@ib-pan.krakow.pl; fax (48 12) 421 97 90.

According to the foreword by Prof. Tamas Pocs: "There are few comprehensive treatments of the bryoflora of entire continents. Although the bryoflora, and especially the liverwort flora, of Antarc-

tica has very few species, it has remained the least known continent from this respect until now." The first three liverworts were published by Stephani in 1901, based on the three specimens collected in 1897–1899 by E. Racowitza during the Belgian Antarctic Expedition. Hence the present book is a celebration of 100 years of liverwort studies in Antarctica. Botanical exploration, however, has been carried out in Antarctica for over 170 years.

50 liverwort taxa have been reported from the Antarctica in the course of the hepaticological work being done there. According to the present book, several accounts proved to be uncritical, and examination of voucher specimens reduced the number of taxa. During the course of the study all available historical collections and specimens deposited in major herbaria were revised. Examination of type collections of species described from Antarctica was important to establish the true identity of the taxa. After careful revision of all available specimens, the authors concluded that Antarctic hepatics nowadays comprise 27 species in 19 genera and 12 families. The species dealt with in the book are *Anthelia juratzkana* (Limpr.) Trevis., *Barbilophozia hatcheri* (A. Evans) Loeske, *Cephalozia badia* (Gottsche) Steph., *Cephalozia hispida* R. M. Schust., *C. varians* (Gottsche) Steph., *Clasmato-colea rigens* (Hook. f. & Taylor) J. J. Engel, *Cryptochila grandiflora* (Lindenb. & Gottsche) Grolle, *Evansianthus georgiensis* (Gottsche) R. M. Schust. & J. J. Engel, *Herzogobryum atrocapsillum* (Hook. f. & Taylor) Grolle, *H. teres* (Carrington & Pearson) Grolle, *Hygrolembidium isophyllum* R. M. Schust., *H. ventrosum* (Mitt.) Grolle, *Lepidozia chordulifera* Taylor, *Lophocolea lenta* (Hook. f. & Taylor) Gottsche *et al.*, *Lophozia excisa* (Dicks.) Dumort., *L. cf. groenlandica* (Nees) Macoun, *Marchantia berteriana* Lehm. & Lindenb., *M. polymorpha* L., *Metzgeria decipiens* (C. Massal.) Schifff., *Pachygllossa dissitifolia* Herzog & Grolle, *P. fissa* (Mitt.) Herzog & Grolle, *P. spegazziniana* (C. Massal.) Herzog & Grolle *var. exilis* Herzog & Grolle, *Riccardia georgiensis* (Steph.) Hässel, *Roivainenia jacquinotii* (Mont.) Grolle, *Scapania gamundiae* R. M. Schust., *S. obcordata* (Berggr.) S. W. Arnell, and *Triandrophylloides subtrifidum* (Hook. f. & Taylor) Fulford & Hatcher. There

Continued on page 5

Literature

Column ed. Johannes Enroth

is still some doubt of the status of some of the species since all the specimens were not available for the study of the authors, e.g. *Marchantia polymorpha* and *Evansianthus georgiensis*. The status of *Lophozia groenlandica* remains uncertain.

The aim of the book was to provide descriptions and illustrations of all hepatic species now known from Antarctica, as well as keys for their identification. The first chapter is an Introduction, and it presents the biogeographical zones, climate and geology of the area. Chapter 2 deals with the history of the hepaticological investigations, and Chapter 3 with ecology and conservation. Chapter 4 is an account of the diversity and phytogeography and gives general features of the hepatic flora, phytogeographical elements and discusses the origin of the liverwort flora. Chapter 5 presents the aims and objectives, provides the arrangement of the flora, gives keys to genera and finally deals with all the class Marchantiopsida in 154 pages. Additionally the book has a glossary, list of cited literature, index to scientific names, and the author presentations at the end. One new lectotype is proposed, for *Cephalozia antarctica* Douin, and a new name, *Hygrolembidium* R. M. Schust. subgen. *Hygrolembidiellopsis* R. M. Schust. ex Bedn.-Ochyra *et al.* is given. Eight new synonyms are presented.

The classification in the book follows the old tradition and neglects the new ideas based on DNA. *Lophocolea* is accepted as an independent genus. Keys to genera are practical, taxonomic descriptions are careful, two maps and lists of specimens are presented for almost every species, representing distributions both regionally and globally. Ecological information, all type information, taxonomic and nomenclatural notes going to the roots of the species history, differentiation, reproduction in Antarctica, and literature records for Antarctica are given under each species. Descriptions and discussions are presented for families, genera and species; both formal and informal sections for all these categories. Even the figures 2—9, 13—20 showing the habitats of the hepatics are highly illuminating. The book is user-friendly in its wide contents, giving background for each unit and providing the basis for unique features of Antarctica.

The tables are also informative. There is a list of accepted liverwort taxa arranged chronologically according to their first published report. A table is presented in which the taxa are arranged according to the regions of Antarctica, giving additional data on frequency, fertility and geographical elements. Geobotanical zones and mean temperatures are presented in separate tables. In the history of hepatic study even a chronological synopsis of species recorded from 1901 to 2000 is provided, with original determinations, current status, and publication references. The only thing I find unnecessary in the book is the list of illustrations.

The Antarctic hepatic flora is divided into four major phytogeographical elements: south temperate (40.7 %, with 4 subcategories), subantarctic (33.3 %, with 4 subcategories), bipolar (22.3 %) and pan-continental (3.7 %). These figures are very different from those of mosses presented in the previous book by Ochyra (1998), according to which the majority of the mosses are bipolar (49.2 %).

The moss flora of King George Island, Antarctica (Ochyra 1998) dealt with 61 moss species in a total of 278 pages. That book was a very meticulous work (see Koponen 1999) but the present one is even more of that in its thoroughness. According to Tamas Pócs' words in the foreword: "I am convinced that both the bryological community and non-specialist naturalists will benefit greatly from this very detailed and easily manageable monograph". I think many of us will whole-heartedly join Professor Pócs' congratula-

tions to the authors on publishing this meticulous work, for it is a landmark in hepaticology.

References

- Koponen, T. 1999: Book review of Ochyra, R. 1998, The moss flora of King George Island, Antarctica. — *Ann. Bot. Fennici* 36: 159—160.
Ochyra, R. 1998: *The moss flora of King George Island, Antarctica*. — XXIV + 278 pp. W. Szafer Institute of Botany, Cracow.

Sinikka Püppo

Parra Cuspoca, J. D., Posada Garcia, J. A. & Posada, R. C. 1999: Guía Ilustrada de los Briofitos del Parque ARVÍ (Piedras Blancas). - Medellín, Corantioquia, Universidad de Antioquia. ISBN 958-96639-1-5. Paperback. 176 pp., color photographs. Available from: corantioquia@interpla.net.co.

This book is a popularised bryophyte flora of a conservation area, Parque Regional Arví, covering a total of 8 300 hectares in the northern parts of Colombia. It is written entirely in Spanish, which renders it impossible for me to evaluate the bulk of the text, and I am sorry for that. However, it is written for local people, and that is something I am not at all sorry about!

The book starts with a general account of bryophytes, including their life cycle, a comparison of thalloid vs. leafy forms, and distinctions from some pteridophytes that somewhat resemble bryophytes. The classification of bryophytes and some aspects of their ecology in the region are also dealt with and the reader is advised how to study these plants. A glossary and line drawings of growth habits, leaf shapes etc. are appended.

The specific treatments are in alphabetical order and comprise a description followed by notes on ecology, geographic distribution, and comments or discussion. Most of the species are illustrated by color photographs of their natural habitats, a close-up, and often also a micrograph of a leaf, leaf apex etc. Forty-eight species of mosses and 13 of hepatics are treated. Of course, this covers only a small part of the flora, but I think the selection gives the laypublic a good general idea of the variability and diversity of bryophytes in a tropical rainforest. Producing popularised guides such as the present one should be encouraged — also financially — especially in the tropics, and therefore I value this small book very highly. Some of the taxonomic concepts employed are not strictly up-to-date, but that is insignificant; or do you think the layman should by all means be aware that Plagiomnium belongs in the Plagiomniaceae rather than in the Mniaceae, where it is placed in this book?

Johannes Enroth

FOURTEENTH ANNUAL BLOMQUIST BRYOLOGICAL FORAY

The Fourteenth Annual Blomquist Bryological Foray will be held October 5-7 at Buckhorn Lake State Resort Park in Leslie County, Kentucky. Several lodge rooms have been reserved, with prices ranging from \$50.00-60.00 per night. Meals will be available at the lodge dining room. Field trips are still in the planning stage, but collecting will be done in the Daniel Boone National Forest. For further information, please contact Molly McMullen, Cryptogamic Herbarium, Department of Biology, Box 90338, Duke University, Durham NC, 27708-0338, USA. Telephone: (919) 660-7300; e-mail mmcm@duke.edu

THESES IN BRYOLOGY

4

ed. Bill Buck

As reported in *The Bryological Times* (99: 17. 1999), the International Association of Bryologists has decided to begin a repository of bryological theses. These theses will be housed in the Library of The New York Botanical Garden. They will be available via interlibrary loan. The NYBG Library online catalog (CATALPA) may be viewed at: <http://www.nybg.org/bsci/libr/Catalog.html>. As theses arrive, bibliographic data and a brief synopsis will be published in this column (see examples below). Bryological theses for any degree, covering any aspect of bryology in any language, will be included. Please send theses to Bill Buck at the address above. Please refer to the preliminary notice (cited above) for information on financial assistance from IAB for reproduction of theses.

Gunnarsson, Urban. 2000. Vegetation changes on Swedish mires: Effects of raised temperature and increased nitrogen and sulphur influx. Dissertation, Ph.D. Uppsala University (Comprehensive Summaries of Uppsala Dissertations from the Faculty of Science and Technology 561). 25 pp. + 5 independently paginated papers (Wetlands 18: 133-141. 1998; Journal of Vegetation Science 11: 277-286. 2000; New Phytologist 147: 17 pp. In press; 2 unpublished manuscripts, "Nitrogens fertilization reduces *Sphagnum* production in bog communities" 24 pp. + "Growth and interspecific competition in *Sphagnum* after temperature, nitrogen and sulphur treatments on a boreal mire" 16 pp.). In English. Current address of author: Department of Plant Ecology, Evolutionary Biology Centre, Uppsala University, Villavägen 14, SE-752 36 Uppsala, Sweden.

This doctoral dissertation examines the effect of industrialization on two Swedish mire systems. The main objectives of the study were to find how changes in climate and deposition of nitrogen and sulphur can change the vegetation of mire ecosystems and the growth of *Sphagnum* species. Two main approaches were applied: re-investigation of two mires studied 40-50 years ago, and experimental manipulation. The plant species diversity decreased on one site, but remained the same at the other. The experimental addition of nitrogen for 3-4 years reduced *Sphagnum* growth.

Jiménez Fernández, Juan Antonio. 2000. Flora y vegetación briofítica terrícola y saxícola del Jbel Bouhalla (Cordillera del Rif, Marruecos). Tesina de Licenciatura, Universidad de Murcia, Murcia, Spain. [viii] 134 pp. In Spanish. Current address of author: Departamento de Biología Vegetal, Facultad de Biología, Univ. de Murcia, Campus de Espinardo, 30100 Murcia, Spain.

This master's thesis examines the floristics and phytosociology of the bryophytes of the Jbel Bouhalla in the Cordillera del Rif in Morocco. In total, 108 taxa of mosses and 13 taxa of hepatics were found at the site, including *Brachythecium bellicum*, a new species currently in press (*Nova Hedwigia*). Twelve taxa are new for continental Africa: *Acaulon mediterraneum*, *Claopodium whippleanum*, *Eurhynchium schleicheri*, *Fissidens sublimbatus*, *Gymnostomum lanceolatum*, *Hedwigia stellata*, *Orthotrichum cupulatum* var. *baldacci*, *Schistidium brunnescens* ssp. *griseum*, *S. crassipilum*, *Scorpiurium sendtneri*, *Seligeria acutifolia* and *Thamnobryum maderense*; and additionally 6 taxa are new for Morocco: *Barbula enderesii*, *Bryum dunense*, *Campyliadelphus chrysophyllus*, *Fissidens dubius*, *Hedwigia ciliata* var. *leucophaea* and *Pseudoleskeella catenulata*. Fourteen bryophyte communities are recognized for the area, which is primarily of limestone bedrock. Described as new are the alliance *Cheilothe-lion chloropi* and the association *Pleuridio subulati-Acauletum mediterranei*.

Long, David Geoffrey. 2000. Revision of the liverwort genus *Asterella* P. Beauv. (Marchantiales, Aytoniaceae) in continental Eurasia, Malesia and Japan. Ph. D. Thesis, Trinity College, Dublin, Ireland. xii + 307 pp. In English. Current address of author: Royal Botanic Garden, Edinburgh EH3 5LR, Scotland. <d.long@rbge.org.uk>.

This doctoral thesis monographically treats the 16 species (one with 2 subspecies) of *Asterella* in continental Eurasia, including Macaronesia and the Middle East, as well as Malesia and Japan. This is reduced from the 69 names described from the study area. Much of the work is based on the author's personal field work in Bhutan and adjacent Himalayan regions. Much of the taxonomy is based on spore characters, and SEM photographs are provided for spores of the taxa. There is additional and extensive information on the morphology of the genus. For the two species which were successfully counted, chromosome numbers in the genus are $n=9(8+m)$. There are extensive pairs of keys (based on material with mature spores and on vegetative material), divided into different geographical regions. For each species there are a list of synonymy, morphological description, distribution maps, and extensive notes. Examined specimens are collected in an appendix. Phylogenetic reconstruction is attempted using parsimony analysis of 19 morphological characters. *Asterella* is seemingly paraphyletic due to sister genera nested within it.

Sunberg, Sebastian. 2000. The ecological significance of sexual reproduction in peat mosses (*Sphagnum*). Dissertation, Ph.D. Uppsala University (Comprehensive Summaries of Uppsala Dissertations from the Faculty of Science and Technology 581). 37 pp. + 5 independently paginated papers (Journal of Vegetation Science 10: 549-560. 1999; Journal of Bryology 20: 1-16. 1998; New Phytologist 148: 105-116. 2000; 2 unpublished manuscripts, "Sporophyte production and spore dispersal phenology in *Sphagnum* - the importance of summer moisture and patch characteristics" 24 pp. + "Habitat requirements for establishment of *Sphagnum* spores" 23 pp.). In English. Current address of author: Department of Plant Ecology, Evolutionary Biology Centre, Uppsala University, Villavägen 14, SE-752 36 Uppsala, Sweden.

This doctoral dissertation demonstrated that *Sphagnum* spores can form a spore bank and have the ability to germinate and contribute to moss establishment whenever suitable conditions occur. The results suggest that spore production is important for explaining the wide distribution of *Sphagnum* species in nutrient-poor wetlands and that initial recruitment from spores predominates in *Sphagnum* after disturbance or formation of suitable habitats. Experiments showed that the addition of phosphorus-containing substrates, such as fresh plant litter or dung, resulted in spore establishment on bare, moist peat. Spore number per sporophyte ranged among *Sphagnum* species from 18,500 to 240,000,

with an increased number of spores correlating with a decrease in spore size. Spores kept refrigerated up to 13 years retained high germination rates.

Virtanen, Viivi. 2000. Taxonomic studies of the Bartramiaceae (Bryopsida). Academic dissertation, University of Helsinki. Publications in Botany from the University of Helsinki 31: 1-34 + 4 independently paginated papers (Acta Bot. Fennica 156: 49-62. 1996; Bryologist 100: 324-348. 1997; Acta Bot. Fennica 165: 1-15. 1999; 1 unpublished manuscript, "Generic taxonomy of Bartramiaceae (Bryopsida) based on morphology and chloroplast gene *rbcL* sequence data" 33 pp.). In English. Current address of author: Department of Ecology and Systematics, Division of Systematic Biology, P.O. Box 47, FIN-00014 University of Helsinki, Finland <viivi.virtanen@helsinki.fi>.

This doctoral dissertation looks at generic boundaries within the Bartramiaceae, using both morphological and molecular data. The generic definitions presented by Griffin & Buck (1989) are confirmed, with *Catoscopium* being excluded from the family. However, the generic inclusions of the Griffin & Buck subfamilies are altered. The family is treated to the species level for Papua New Guinea, with extended coverage for *Breutelia* into Southeast Asia and Oceania.

Vital, Daniel Moreira. 1980. Erpodiaceae (Musci) do Brasil. Dissertação do Grau de Mestre, Universidade Estadual de Campinas "UNICAMP", Campinas, Brazil. vii +135 pp. In Portuguese with English summary. Current address of author: Seção de Briologia e Pteridologia, Instituto de Botânica, Caixa Postal 4005, 01061-970 São Paulo - SP, Brazil <dvital@smtp-gw.ibot.sp.gov.br>.

This master's thesis treats the Erpodiaceae of Brazil. Two genera, *Erpodium* and *Aulacopilum*, are represented. Six species were found, *Erpodium coronatum*, *E. glazioui*, *E. beccarii*, *E. biseriatum*, *E. pringlei* and *Aulacopilum glaucum*, the latter four newly reported for Brazil. All species are keyed, described, illustrated and mapped within Brazil. The worldwide distribution of the 25 species of the family, based primarily on literature, is also mapped.

THREATENED LIVERWORT LISTED

The liverwort *Pseudocephalozia paludicola* has been listed as threatened in the state of Victoria (Australia) under the state's Flora and Fauna Guarantee Act. This gives it and its habitat special protection, and requires an action plan for its conservation to be drawn up.

This is the first bryophyte to be listed under the Act - a major step forward in the recognition here of the group as 'real' plants worthy of protection.

The moss *Calomnion complanatum* has also been approved for listing and will shortly be added to the schedule of threatened species. Nominations for listing of a further 12 species are in progress. If anyone is interested in the process, drop me a line. Nominations can be made by any person, whether they live in Australia or not.

Another point of interest to hepatophiles is that *Pedinophyllum monoicum* has been found in Australia, in undisturbed Nothofagus rainforest near Melbourne, Victoria.

I would also like to hear from anyone currently working on the genus *Aneura*. Reply directly to me, please.

David Meagher, MELU, dmeagher@a1.com.au

BRYOLOGY AND LICHENOLOGY

TRAINING COURSE ANNOUNCEMENT

The Department of Botany, University of Nairobi, Kenya is organizing its Third Tropical African Bryology and Lichenology Training Course from 9th July to 21st July 2001

The program:

Lectures on the various aspects of Tropical African Bryology and Lichenology: a survey of current status of bryological and lichenological exploration in Africa, systematics and classification of tropical mosses, liverworts and lichens, their biology, morphology, ecology, biodiversity, conservation; techniques of field collection and research; identification and management of a cryptogamic herbarium; importance and biomonitoring of tropical cryptogamic biodiversity. Field trip and laboratory work will provide 'hands on' experience in the understanding and identification of these plants.

Scholarships are available for suitably qualified African candidates.

Details:

Min S. Chuah-Petiot, Department of Botany, University of Nairobi, Box 14576, Nairobi, Kenya, Fax: 254-2-44 98 45, e-mail: petiot@wananchi.com

BRYOLOGY COURSE IN MEXICO

A course in bryology will be offered at the Baylor University Chapala Ecology Station in the town of Ajijic, near Guadalajara, Jalisco, Mexico from July 5-August 8, 2001. This course is designed for anyone interested in studying the biology of bryophytes. The collection and identification of bryophyte specimens from various habitats near the field station will be the main focus of the course. Credit may be earned through Baylor University or the Universidad Autónoma de Guadalajara. For additional information refer to the field station web site, <http://www.baylor.edu/~ces>, or contact course instructor, Dr. Ann E. Rushing (Ann_Rushing@baylor.edu and Department of Biology, Baylor University, Waco, TX 76798).



RECENT DEATHS

A TRIBUTE TO DR ILMA STONE, 1913–2001

Dr Ilma Grace Stone died in Melbourne, Australia, on the 4th January, at the age of 87. With the deaths in recent years also of Jim Willis, David Catcheside and George Scott, bryology in Australia has come to the end of an era. Ilma was known throughout the bryological world for her taxonomic research, especially on the tiniest of mosses, such as Ephemeraceae, Archidiaceae, members of the Pottiaceae, and the micro-*Fissidens*. She published 70 papers during her career, initially on ferns, and then on mosses, beginning with her Ph.D. study of *Mittenia plumula*. Her Ph.D. was undertaken as a 'mature student' after 20 years away from botany raising her family. Ilma was active in research until her death, with an amazing 11 papers published after her 80th birthday. In addition to her taxonomic papers, she was widely known for the superb book "Mosses of Southern Australia", written in collaboration with George Scott, and beautifully illustrated by Celia Rosser. As a beginner in New Zealand, 2000 km away across the Tasman Sea, this work was immensely helpful to me, and I still use it. A considerable part of the credit for the healthy state of bryology in Australia today, with many young bryologists now active, must go, I believe, to this book.

Ilma's particular skills included acute powers of observation, both in the field and at the microscope, and an excellent memory. Combined with a passion for the plants these made her a highly competent bryologist. I was privileged to collaborate with her on studies of the genus *Fissidens* for the last 12 years of her life. Many bryologists beyond Australia will remember Ilma and her husband Alan from the 1981 Sydney Botanical Congress. They accompanied the wonderful pre-congress bryophyte excursion

from Melbourne to Sydney, organised by George Scott and Pat Selkirk, travelling in their own car, and providing valuable local knowledge, both bryological and otherwise. In her lifetime Ilma travelled only a little outside Australia. Trips to Britain in 1972 and 1978, with time at the BM, were warmly remembered in her later life. She became an honorary member of the British Bryological Society in 1982, and received an enthusiastic accolade from Paul Richards, on behalf of the Society, on the occasion of her 80th birthday (Richards 1993). The genera *Stonea* R.H. Zander and *Stoneobryum* D.H. Norris & H. Robinson, as well the species *Macromitrium stoneae* Vitt & Ramsay and *Syrrophodon stoneae* W. Reese have been named in her honour.

A full list of Ilma's publications may be found in two issues of the Australian Bryological Newsletter: No. 29, a special issue to commemorate the occasion of her 80th birthday, and in No. 43, in which the papers published after her 80th birthday are given. A formal obituary is being prepared for the Journal of Bryology.

Our sympathy goes to Alan, and to their family, now three generations.

References:

- Richards P. (1993) Ilma Stone's eightieth birthday: a tribute from the British Bryological Society. *Australian Bryological Newsletter* 29: 5.
Scott, G.A.M. & Stone I.G. (1976) *The Mosses of Southern Australia* Academic Press, London.

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WORKSHOP ON THE GENUS *SCHISTIDIUM*

This workshop, conducted by Hans H. Blom (University of Trondheim), took place in Murcia (Spain) on the 12th to 16th September 2000. Besides the bryologists of the University of Murcia, other participants were Montserrat Brugués and Elena Ruiz (Barcelona), Beatriz Huarte and Ruth Juaristi (Navarra), Jesús Muñoz (Madrid), Roy Perry (Cardiff), Tony Smith (Bangor), Andreas Solga (Bonn) and Marko Sabovljevic (Belgrade).

The workshop included three intense days of laboratory work and a 2-day field trip. During the lab periods, Hans usually gave us a lecture on some topics relating to the genus and then we worked in the lab with our *Schistidium*. The first day Hans spoke about the world distribution of the genus and the state of knowledge in each continent. In the next talk he explained the morphological characters, both sporophytic and gametophytic, he used in his book (Blom, 1996) and their variability. Afterwards we began testing his keys and descriptions with our specimens. During the second day he spoke about the ecological differentiation of the European species, and the lab work was focused on the aquatic species of the genus. The third day was devoted to *Schistidium* phytogeography, and, again, we worked on our specimens.

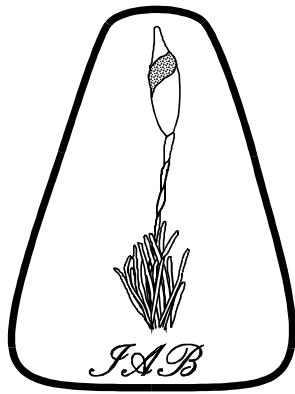
It was nice over these three days to share the laboratory with an interesting and diverse group of bryologists. On the fourth and fifth days of the workshop we had the field trip to the Sierra Nevada. Unfortunately only seven people could participate because of the return trip arrangements. We visited the highest part

of the Veleta Peak (3100 m). The bedrock here is siliceous metamorphic rocks, and the uppermost areas are almost completely devoid of vegetation due to strong winds, occasionally over 250 km/h. Our main aim was to collect *Schistidium occidentale*, which has been recently recorded from the area (Casas, 2000). Another interesting species we looked for was *Schistidium cinclidodonteum*, which has not yet been found in Spain although we think it is likely to occur since it has been collected in a very similar habitat in Morocco (Ros et al, in press). Unfortunately, we did not find it. Nevertheless we found *S. rivulare* to be common, and we also collected *S. confertum*, even though this taxon seems to be more rare in the area. Some problematic material has also been found, that according to Hans should be studied more deeply. We had very nice weather, which is not that common in the Veleta area, so we could work and enjoy the superb landscape of this interesting and poorly known mountain system in southern Spain.

We all thank Hans for this interesting and helpful workshop on *Schistidium* that has made us understand a little bit better this difficult genus and also for his patience with the group.

References

- Blom H.H. 1996. A revision of the *Schistidium apocarpum* complex in Norway and Sweden. *Bryophytorum Bibliotheca* 49: 1-333.
Casas C. 2000. El género *Schistidium* Bruch & Schip. en España. *Boletín de la Sociedad Española de Briología* 16: 1-9.
Ros R.M., Cano M.J & Guerra J. In press. Bryophyte checklist of Northern Africa. *Journal of Bryology* 21: 207-244.



INTERNATIONAL ASSOCIATION OF BRYOLOGISTS AND ITS ROLE IN EDUCATION

The Mission of the International Association of Bryologists, as an International society, is to strengthen Bryology by encouraging interactions among all persons interested in Bryophytes.

In Edmonton, Alberta, Canada, on 4-5 December, 1999, Rob Gradstein, Dale Vitt, Lars Söderström, Norton Miller and Bill Buck met in a Strategic Planning Session for the IAB Council, to formulate a Strategic Plan for the period 2000-2008. Nine strategic goals were identified.

This paper discusses progress to date in developments relating to one of the goals.

Goal 4: Initiate new educational opportunities for Bryologists.

- A: Development and implement a series of Workshops on current topics in Bryology.
- B: Develop an educational networking program for Bryologists.
 - i. Compile a list of laboratories willing to host bryological interns.
 - ii. Initiate an "IAB Intern" Program
- C: Write a series of regular "Status and Trends" documents.

In particular, as the responsible Council member, I wish to summarise progress relating to Goal 4B:

Developing an educational networking program

- Initially, I sought through BRYONET,
- input from research scientists and laboratories potentially willing to host interns.
 - input from potential interns regarding what aspects of an educational program they would like to have available through an internship or through workshops.

Input from research scientists:

There are many institutions where Bryological courses are taught or where Bryology forms a significant component of general Biology courses.

There are also many practising Bryologists working both in University

campuses and other forms of research institute, such as Herbaria and Museums. Many of these researchers already make available time, funding resources, and laboratory or herbarium facilities for the use and benefit of students.

A continually updated inventory needs to be prepared, listing

- suitably placed researchers
- their institutions
- their country
- the areas of expertise
- specific research interests

Input from potential "students"

Specific needs identified by potential users of the inventory include the following:

- classical taxonomic methodology
- developmental morphology (including techniques of studying developmental anatomy)
- molecular genetics techniques
- molecular genetics of morphogenesis
- genetic techniques using electrophoresis
- ecophysiology
- ecology and ecological methods
- tropical bryology
- illustrative techniques

Field and Laboratory workshops/courses

There are periodically announced field and laboratory based courses dealing with specific topics or themes. For example, the Tropical Bryology course offered by University of Helsinki; the Ecology course offered in New York. The existing workshops or courses seem, however, to cater more for restricted audiences (for example, the Helsinki course in Tropical Bryology is primarily for European Union participants).

BRYONET, as it is now in part sponsored by IAB, is a useful medium for advertising such workshops and courses. Sufficient lead time is paramount in order that potential participants may seek funding.

A continually updated inventory needs to be prepared listing

- courses and workshops offered
- course or workshop details
- contact personnel
- costs for participants

- Requests for workshops included
- tropical bryology in the Americas
 - molecular genetic methods

Funding

One way of dealing with funding costs is through Graduate Studentships sought by and funded to supervising scientists.

Funding for potential students to attend workshops is, however, difficult to obtain.

Questions concerning to the funding process related to:

- how will funding provided by IAB be allocated
- how will potential recipients of funds be selected
- will funds cover travel, accommodation and living expenses

To make the maximum use of potential IAB funds to foster an educational scheme there will be a need to maximise the number of potential students and projects for the available funds.

One suggestion I received for a way of potentially minimising costs to IAB would be to sponsor workshops in different countries i.e., the specialists travel to suitable venues in particular countries to conduct workshops.

Closing remarks

I would like to thank those research scientists and potential students who responded to my postings on BRYONET and have thus provided input to this preliminary paper.

At least in North America, through the National Science Foundation and its PEET grants, funds for this type of educational initiative could be available. There may be other major sources of funding, for example in Europe, but I received very little input from the European region.

Like all initiatives, the end result is only as good as the input.

Much further input is required from potential host institutions and researchers as well as potential students.

Hopefully this IAB initiative will provide the mechanism and the encouragement for much greater interchange between the world's bryologists.

*Rod Seppelt (for IAB Council). 14
March 2001*

CALL FOR AUTHORS FOR ORPHANED GENERA IN THE BRYOPHYTE FLORA OF NORTH AMERICA

Richard H. Zander, Buffalo Museum of Science, 1020 Humboldt Parkway, Buffalo, NY 14214-1293 USA

The Bryophyte Flora of North America will consist of volumes 27, 28 and 29 of the Flora of North America, a compendium of biodiversity information about the flowering plants, conifers, ferns and allies, and bryophyta for the continent north of Mexico. A total of 79 bryologists are participating in developing taxonomic treatments of genera, in some cases several genera or even whole families. The first volume will consist of introductory chapters and the acrocarpous mosses up to subclass Bryidae (i.e. up to page 103 in W. Buck and B. Goffinet's classification of mosses in A. J. Shaw and B. Goffinet "Bryophyte Biology" 2000, Cambridge Univ. Press). Many genera are presently "Provisionally Published" on the BFNA Web site (<http://www.nybg.org/bsci/bfna/bfnamenu.html>).

There are 31 genera presently lacking assigned authors, and these are listed below. The BFNA Editorial Committee asks that any bryologists interested in doing one or more of the treatments of these "orphaned" genera to please send their names and a short proposal to the Lead Editor of the BFNA, Richard Zander (rhzander@sciencebuff.org) indicating their willingness to do the work in a reasonable time, their qualifications for doing the work, and the fact that a workplace in a herbarium is available for them. An instruction manual and complete guidelines will be provided each new author, and one of the ten Taxon Editors will be assigned and available for special aid. Applicants are expected to have access to standard optical equipment and library resources. As is the case with other volumes of the FNA, no funds are available for stipends, travel, or other expenses that applicants might incur.

The BFNA Editorial Committee (S. Bartholomew-Began, M. Crosby, P. Davison, D. Horton, N. Miller, W. Reese, R. Stotler, B. Thiers, D. Vitt, R. Zander) encourages authors to submit the manuscripts for the first volume within one year, that is, before Jan. 2002. We need to have most manuscripts submitted, reviewed and edited by mid-2002 in order to meet expectations of the United States National Science Foundation, which is funding the illustration and technical editing of the first volume. If we

can demonstrate that the first volume will be completed on time, funds to support critical illustration and technical editing of the second and third volumes will probably be made available.

The second and third volumes will comprise the remainder of the mosses, the anthocerotales and the hepaticae. We expect to complete these by 2007. The Bryophyte Flora of North America North of Mexico (its full name) will treat (descriptions and keys) all taxa of bryophyta in the continental United States, Canada, and Greenland, mapping the distribution of all species, and illustrating one species in three. The taxonomic treatments are expected to be synopses, not extensively detailed or monographic in scope, but sufficient to summarize what is known and allow identification (see the published volumes for examples). The BFNA is not intended as an atlas of bryophyte distribution, and the maps need only show general distribution. The illustrations will focus on rare or previously poorly illustrated species, and will be done by P. M. Eckel based on slides, material and instructions communicated by the authors.

This is the largest and most extensive project devoted to bryophyta for North America north of Mexico. The information, as a summary of what is known about the biological diversity of the bryophyta, will be of immense use to taxonomists, biogeographers, teachers, students, and conservation organizations. The BFNA Edi-

torial Committee welcomes the participation of bryologists worldwide.

Genera of bryophyta needing authors for the Bryophyte Flora of North America as of Feb. 28, 2001:

Anacamptodon – Campyliaceae
Archidium – Archidiaceae
Arctoa – Dicranaceae
Barbilophozia – Jungermanniaceae
Brachelyma – Fontinalaceae
Callicladium – Hypnaceae
Ceratodon – Ditrichaceae
Dichelyma – Fontinalaceae
Discelium – Disceliaceae
Distichium – Ditrichaceae
Ditrichum – Ditrichaceae
Eccremidium – Ditrichaceae
Fabronia – Fabroniaceae
Fontinalis – Fontinalaceae
Geothallus – Sphaerocarpaceae
Homomallium – Hypnaceae
Kiaeria – Dicranaceae
Leptodictyum – Amblystegiaceae
Myrinia – Myriniaceae
Oncophorus – Dicranaceae
Physcomitrium – Funariaceae
Pylaisiella – Hypnaceae
Radula – Radulaceae
Rhabdoweissia – Fontinalaceae
Saelania – Ditrichaceae
Sphaerocarpus – Sphaerocarpaceae

NEW CURATOR OF HERBARIUM GÖTTINGEN (GOET)

Jochen Heinrichs (email: jheinri@gwdg.de) has been appointed Curator of the Herbarium of the University of Göttingen (GOET), Germany. His research focuses on monographic studies in the family Plagiogchilaceae (Hepaticae) and on the genus *Hieracium*. He is currently writing up his dissertation on *Plagiogchila* sect. *Superbae* and allied taxa in the Neotropics and is publishing the series *Bryophyta Exsiccata Generis Plagiogchilae*.

The University herbarium houses almost 800.000 specimens (including ca. 150.000 bryophytes and lichens) of worldwide origin, with emphasis on South America, SW Asia and Europe. Exchanges are welcome in vascular plants, brophytes, and lichens, especially of tropical origin. The rich collections of types at GOET (ca. 12000 thus far registered) have been databased and detailed information on the type specimens is available on the INTERNET via the Website of the Herbarium: <http://www.gwdg.de/~sysbot>

BRYOLOGICAL NEWS FROM THE INSTITUTE OF APPLIED ECOLOGY, CHINESE ACADEMY OF SCIENCES, SHENYANG, CHINA

(1) The herbarium reconstructed

The Herbarium at the Institute, especially the bryophyte herbarium, was reconstructed in 2000 with the support of about 5 million Chinese yuan (more than 600,000 US dollars) from The Chinese Academy of Sciences. The bryophyte herbarium has moved from the fourth floor to its new place on the third floor with double the space previously available. In addition, all existing cabinets will be replaced by new metal ones. The research facilities, including laboratories, a library and offices, have been greatly improved. We welcome bryologists from all over the world to visit and work at our institute.

(2) Members of the Bryological research group

Prof. Cao Tong, Prof. Gao Chein, Dr. Wu Yunhaun (She got her Ph.D degree in June 2000, working on Amblystegiaceae), Technician Yan Yuhuai, five Ph.D students, two Post Doctoral fellows and a visiting scholar.

(3) Main research projects

1. Editing of Bryoflora of China, vol 10 and 11 (Hepaticae), supported by National Nature Science Foundation of China.

2. Studies on key areas and taxa of bryophyte biodiversity in China, supported by

the Chinese Academy of Sciences.

3. Systematics and geographic distribution of the genus *Ptychomitrium* in the world, supported by National Nature Sciences Foundation of China.

4. Genetic biodiversity of the bryophyte taxa endemic to China and East Asia, supported by Chinese Academy of Sciences.

(4) Main publications in 2000

1. Gao, C. & T. Cao(eds.) 2000. Flora Yunnanica tom 17. (Bryophyta, Hepaticae, Anthocerotae). 650 pp. Science Press, Beijing.(52 families, 118 genera and 604 species from Yunnan, south west China)

2. Cao, T. 2000 Grimmiaceae in Li, X. J. (ed.) Flora Bryophytorum Sinicorum vol. 3. pp.1-80. Science Press, Beijing.

3. Gao C. 2000. Splachnaceae and Oedipodiaceae in Li, X. J. (ed.), Flora Bryophytorum Sinicorum vol 3. PP. 114-137. Science Press, Beijing.

4. Guo, S. L. & T. Cao. 2000. Two new synonyms of *Ptychomitrium sellowianum* (C. Muell.) Taeg. (Musci). Journal of Bryology 22: 67-69.

5. Cao, T. & S. L. Guo. 2000. A study on bryophytes biodiversity in the main ecosystems in Changbai Mountain. Chinese Biodiversity 8(1): 50-59.

6. Cao, T., Y. M. Zhang & J. Yu. 2000. Outline of the activities and advances of bryological research in China during 1990's. Bryological Times 100: 9; 101: 6-7.

7. Cao, T. & Y. M. Zhang & J. Yu. 2000. Current Chinese bryological literature (IV). Tropical Bryology 18: 15-36.

8. Guo, S. L. & T. Cao. 2000. Typification of

Ptychomitrium polyphyllum (Musci) and its comparison with *P. gardneri*. Journal of Bryology 22: 143-145.

9. Guo, S. L. & T. Cao 2000. *Ptychomitrium mamillosum* (Ptychomitriaceae), a new species from China. Journal of Bryology 22:239-240.

10. Cao T., S. L. Guo & C. Gao 2000. Ordination analysis on relationship between bryophytes distribution and climate factors. Chinese Journal of Applied Ecology 11(5): 680-680.

11. Gao C., Cao, T. & X. Fu. 2000. Type of spore dispersal of mosses in relation to evolution system. Acta Botanica Yunnanica 22(3): 268-276.

12. Guo, S. L. & T. Cao. 2000. Applying canonical correspondence analysis to study niche differentiation of species of Polytrichaceae in Changbai Mountain. Bulletin of Botanical research 20(3): 286-293.

13. Guo S. L. & T. Cao. 2000. Studies on community distribution patterns of epiphytic bryophytes in forest ecosystems in Changbai Mountain. Acta Phytocologica Sinica 24(4): 442-450.

14. Zhao, J. C., Lai, M. J. & T. Cao. 2000. *Disphyscium satoi* Tuzibe (Bryopsida; Diphysciaceae) discovered in China. Arctoa 9: 109-110.

15. Guo S. L. & T. Cao. 2000. Studies on relationship of epiphytic bryophytes and environmental factors in forest ecosystems in Changbai Mountain. Acta Ecologica Sinica 20(6): 922-931.

16. Lui, Y. D. Li, J., Chen, J. & T. Cao. Net photosynthetic rate of two species of wintering host mosses for gullaphis and its response to light, temperature and water content. Chinese Journal of Applied Ecology 11(5): 687-692.

Cao Tong, E-mail: ctong@iae.syb.ac.cn

INFORMATION REQUESTED!

A BRYOPHYTE CHECKLIST OF LORRAINE (FRANCE)

The *Conservatoire et Jardin Botanique de Nancy* (France) is currently patronizing the making of an **annotated bryophyte checklist of the Lorraine region**, in order to update, correct and complement the compilation by Bizot & Gardet (1931, 1935) and some earlier work by Friren and Koppe (i.a., see Werner 1990). The checklist will cover not only the Lorraine plateau, but the entire *région Lorraine* (departments of Moselle, Meurthe-et-Moselle, Meuse and Vosges); the western side of the Vosges mountains, however, (mostly Département des Vosges) is to be excluded, but not the *Vosges du Nord*, where elevation is only around 400 m. The recent literature will be referred to and some critical specimens in the old herbaria - if still available - will be checked; field work is planned

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- Bizot M & Gardet C, 1931 – Muscinées du Plateau Lorrain; 1ère partie: hépatiques lorraines. *Mém. Soc. Sci. Nancy* 5 (3): 262-281.
Bizot M & Gardet C, 1935 – Muscinées du Plateau Lorrain; 2. *Sphagnales*.
3. *Bryales*. *Mém. Soc. Sci. Nancy* 6 (3): 77-150.

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Mahévas T, 2000 – Contribution à l'étude de la bryoflore Lorraine. *Cryptogamie, Bryol.* 21: 247-256.

Werner J, 1990. – La flore bryologique des environs de Sierck-les-Bains (Lorraine) et son intérêt phytogéographique. *Cryptogamie, Bryol. Lichénol.* 11: 255-266.

The Bryological Times, founded in 1980 by S. W. Greene (1928-1989) is a newsletter published for the *International Association of Bryologists*. Items for publication are to be sent to the Editors or Regional Editors, **except** for those for the regular columns, which may go **direct** to the column editors

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Diary

The diary is open for all bryological events. Please send information, preferably by email, to the editor.

Courses

July 9-21. Course on Bryology and Lichenology in Nairobi, Kenya (see BT103:7). Contact person: Min S. Chuah-Petiot, Department of Botany, University of Nairobi, Box 14576, Nairobi, Kenya, Fax: 254-2-44 98 45, e-mail: petiot@wananchi.com

Meetings

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April 4-11. BBS Spring Meeting on the Isle of Wight. Leader: Mrs Lorna Snow, Ein Shemer, Upper Hyde Farm Road, Shanklin, Isle of Wight, PO37 7PS. Tel. 01983 863704 e-mail: snow@shemer.freeseerve.co.uk

June 24-27. Planta Europa 3. Conference on Conservation of Plants in Europe including session on lower plants and fungi. Information from conference@plantaeuropa.org or http://www.plantlife.org.uk/html/partnership_planta_euro.htm

July 1-2. The 4th European Conference on the Conservation of Bryophytes held in Průhonice near Prague, Czech Republic. Information and registration: Jiří Váňa, Department of Botany, Charles University, Benátská 2, CZ-128 01 Prague, Czech Republic. email: vana@natur.cuni.cz

July 14-18. NBS Excursion and Annual Meeting, Finse, Norway. More information later.

September. Changing Wetlands: new developments in wetland science. Sheffield. Details from http://www.shef.ac.uk/~g/wetlands

October 5-7, 2001. Annual Blomquist Bryological Foray. Contact person: Molly McMullen, Cryptogamic Herbarium, Department of Biology, Box 90338, Duke University, Durham NC, 27708-0338, USA. Phone: (919)-660-7300. Fax: (919) 660-7293. e-mail: mmcm@duke.edu

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January. IAB Meeting in Lucknow, India. Details will be announced in a coming issue of the Bryological Times.

August 13-23. Third International Symposium on the Biology of *Sphagnum*, Uppsala—Trondheim. Information från Håkan Rydin, Dep of Plant Ecol, Evol Biol Centre, Uppsala Univ, Villavägen 14, SE-752 36 Uppsala, Sweden tel: +46 18 471 2854, fax: +46 18 55 34 19, e-mail address: hakan.rydin@ebc.uu.se. See also BT 102 p. 1.