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You find the condensed 2nd
circular on p. 10

Conservation Column



Which are the worlds most endangered spe- cies?

Help the IAB/IUCN endangered bryophyte committee to identify
the world's most endangered species. *See page 2*

Bryophyte conservation gets unexpected help

See page 8

IAB's role in education

See page 9

ERRATA

In last issue of of Bryological Times the picture of
participants in the workshop on *Schistidium* (BT 103,
p. 8) is erroneously placed under the bryology course
in Mexico (p. 7). I apologize for this mistake.

Ed.

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

A CALL FOR NEW NOMINATION OF THE WORLD MOST ENDANGERED BRYOPHYTES!!!

*T. Hallingbäck, Swedish University of Agricultural Sciences, PO Box 7007,
SE-750 07 Uppsala, Sweden and B. C. Tan, Department of Biological Sciences,
National University of Singapore, Singapore, 119260.*

The standing Committee For Endangered Bryophytes of the International Association of Bryologists (IAB) calls for new nomination for the list of the world's most endangered bryophytes. With support from many IAB members and colleagues, the previous calls had resulted in the first IAB World Red List of Bryophytes, please see <http://www.dha.slu.se/guest/SSCBryo/WorldBryo.htm>.

Following the same procedures, the selection of new candidates for this list will be monitored closely by the IAB Committee for Endangered Bryophytes which consists of 9 members of international standing and expertise representing all major floristic regions of the world. Please see vol. 23 of *Bryological Times* (June 1997) for details in the selection processes.

Nomination to the most endangered bryophytes list must be based on the following three main criteria -

1. The species must be threatened worldwide.
2. The species must be confined to a threatened habitat.
3. The species must have a narrow distribution range.

Additional criteria for consideration will be whether the candidate is likely to be under-collected and whether the candidate has a unique morphology/biology or occupies a special evolutionary position among the bryophytes.

An expert, preferably a bryologist resident in the country or a regional authority, must sponsor all nominations in a fully justified written submission. The nomination should include the scientific name of the taxon, family classification, present distribution, habitat information, threats, and source information or literature. The deadline for the present round of submission will be the end of June this year.

To facilitate the initial screening of nominees, the IAB Committee for Endangered Bryophytes has asked Dr. Benito C Tan to take charge of the moss entries, and Dr. Jiri Váňa the hepatic and

Conservation Column



ed. Tomas Hallingbäck

hornwort candidates. Please submit your written nomination by regular post or via emailing to either Dr. Viri Váňa at Prague [vana@natur.cuni.cz] for hepatic and hornwort nominees, or Dr. Benito C. Tan in Singapore at [dbsbct@nus.edu.sg] for moss nominees. The IAB Committee also welcomes written corrections or suggestion for removal of any listed endangered taxa based on new information.

Dr. Jiri Váňa and Benito C. Tan will do the preliminary sorting. Together they will submit an updated report to the IAB Committee for Endangered Bryophytes for consideration in August. Meanwhile, opinions of experts on various geographical regions and taxonomic groups will be consulted to help evaluate the evidence submitted and to determine the endangered status of each of the nominees. The IAB Committee will apply the newly revised IUCN ranking or category for the taxon endangerment once a species is accepted into the IAB World Red List. The final list of the new and updated candidates will be presented to the next IAB congress for discussion and endorsement before submitting it to the IUCN Office for official inclusion in the IUCN 2002 Global Red List.

In as much as the habitats and survival of bryophytes the world over have been subjected to various degrees of threat and commercial exploitation, we urge all members of IAB to be alert to the situation by helping us collate the pertinent information about the most endangered bryophyte taxa around the world for public attention as well as for scientific documentation. Since the intensity of habitat destruction is most serious in the tropics, we need therefore the active participation of colleagues residing in the tropics or working on the tropical bryofloras. It is our duty and moral obligation to protect and help conserve the group of plants in which we find relevancy and beauty in our study, teaching and research. Without them, there will be no bryologist nor IAB as a professional community.

PROCEEDINGS HEDWIG SYMPOSIUM

A limited number of copies of the proceedings of the Hedwig Symposium, held in Göttingen in 1999 to commemorate the 200th year of death of the great bryologist Johannes Hedwig (1930-1799), are available from the publisher at the price of ca. DM 42,-. Please send orders to the publisher, gebr. Borntraeger Verlagsbuchhandlung, Johannesstrasse 3A, 701776 Stuttgart, Germany.

From the contents:

FRAHM - Life and Work of Johannes Hedwig

GEISSLER - The Hedwig herbarium and its importance

VITT - Moss classification 200 years after Hedwig

BISCHLER & BOISSELIER - New approaches to liverwort sys-

tematics

WISSEMANN, WAGENITZ - Bibliography and Biographies of Johannes Hedwig

S. R. Gradstein, Albrecht-von-Haller-Institut für Pflanzenwissenschaften, Abt. Systematische Botanik, Georg-August-Universität Göttingen, Untere Karaspüle 2, D-37073 Göttingen, Germany, email: sgradst@gwdg.de

S. R. Gradstein, Albrecht-von-Haller-Institut für Pflanzenwissenschaften, Abt. Systematische Botanik, Georg-August-Universität Göttingen, Untere Karaspüle 2, D-37073 Göttingen, Germany, email: sgradst@gwdg.de

Fang, Y.-M. & Koponen, T. 2001: A revision of *Thuidium*, *Haplocladium*, and *Claopodium* (Musci, Thuidiaceae) in China. *Bryobrothera* 6: 1-82. ISBN 951-96475-8-9. Finnish Bryological Society, Helsinki. Available from: Bookstore Tiedekirja, Kirkkokatu 14, FIN-00170 Helsinki, Finland; fax +358 9 635017, e-mail tiedekirja@pp.kolumbus.fi. Price FIM 100 + postage.

This revision recognizes 17 species of *Thuidium*, 5 of *Haplocladium* and 5 of *Claopodium* for China. One species of *Thuidium* is described as new to science. All accepted species are described in detail and illustrated in informative line drawings of good quality. Discussion after the formal taxonomic treatment focuses on the phytogeography of the taxa.

The quality of a “traditional” revision such as this can largely be measured by the workability of the identification keys; if they work, the authors have done a good job, if they don’t work, the whole publication is not worth much. The workability of the keys also reflects the “workability” of the employed species concepts.

I was able to test the keys, particularly that to the species of *Thuidium*, with specimens we collected in the autumn of 2000 in Hunan. The key works absolutely beautifully - identifying a good specimen will not take many minutes. This is cause for celebration since *Thuidium* can certainly not be considered an “easy” genus. Most of the credit must go to the author Fang, who is actually a plant physiologist and just a beginner in bryology. Papillae are taxonomically important characters in the Thuidiaceae, yet it is not always easy to discern especially small papillae or distinguish them from chloroplasts under a compound microscope. Mr. Fang invented a new technique: he dyed the specimens with dilute sulfuric solution. The papillae dye red and are thus easily distinguished from chloroplasts, which remain green. The technique should of course also work with other mosses that have papillose leaf cells.

A significant contribution to Chinese bryology!

Johannes Enroth

Muñoz, J. & Pando, F.: A World Synopsis of the Genus *Grimmia* (Musci, Grimmiaceae). *Monogr. Syst. Bot. Missouri Bot. Garden* 83: 1-133. Missouri Botanical Garden Press, 2000. ISBN 0-915279-92-4, ISSN 0161-1542.

This world synopsis recognises 71 species of *Grimmia*. Intraspecific taxa are not recognised, although, as I understand, quite a few of the species are fairly variable. This is essentially a nomenclatural synopsis, and infrageneric classification is not dealt with at all. What is provided is a list of the accepted species, their synonyms with full bibliographic references and protologues, the species’ geographic ranges (based entirely on examined specimens, not mapped), and lectotypifications of no less than 131 names. And, of course, a more-than-welcome identification key to the species. Taxa excluded from *Grimmia* are listed separately, as are also “Names with type material not seen” by the authors. The latter list includes many *nomina nuda* in addition to validly published names. In fact, *nomina nuda* cannot have types, so the title cited above is a bit unfortunate. Indeed, in the synonymy the authors cite for *nomina nuda* “Original material” rather than types. However, in my opinion *nomina nuda* could have been listed separately from validly published names throughout.

Revising a notoriously difficult genus such as *Grimmia* on a worldwide basis is certainly no piece of cake. The nomenclatural-

geographical synopsis is a most useful contribution to bryologists working in any part of the world, and especially for those in the “Holarctic”, which is clearly the main distribution area of *Grimmia*. It seems to me that the author Muñoz is doing very good work and progressing well. However, I find comments such as “NN [in his taxonomic judgement] blindly followed NN” unwarranted, particularly because the former NN lives with us on the same planet and may find such expressions insulting. Nobody benefits or gets any credit.

Does the key work? Yes, it works well with sporophyte-bearing specimens, but I was unable to identify a recently collected Chinese specimen without sporophytes. The authors are fully aware of this problem, because there are notes in the key: “Not all sterile specimens can be identified with confidence” and “Sterile or poor specimens of the following three taxa are impossible to name”.

This is inconvenient, but then again, this is not the best possible world we are living in. Or is it?

Johannes Enroth

Infante, M. 2000: Las hepáticas y antocerotas (Marchantiophyta y Anthocerotophyta) en la Comunidad Autónoma del País Vasco. — *Guineana* 6: 1—345. Paperback. Universidad del País Vasco. Itxaropena, S.A. Guineana can be

ordered by e-mail luxedito@lg.ehu.es. 4000 Ptas + shipping charges.

The book has a lengthy abstract both in Spanish and English: The liverworts and hornworts (Marchantiophyta and Anthocerotophyta) in the Autonomous Community of the Basque Country (Spain). Geography, topography, geology, climate, vegetation, bioclimatic areas, and human impact on the area are treated, as well as the history of previous study and the methodology used in the present work. The largest part naturally consists of the catalogue of hepatics and hornworts with an introduction to the systematics, the arrangement of the catalogue, and the catalogue itself (p. 30—237). For every taxon, the accepted name and synonyms, distribution in the Basque Country or sometimes in the Iberian Peninsula, distribution maps, literature references for the Basque Country, ecology, phenology, and total range are given. The ecology part is prominent for each species, giving information on altitudes, rainfall, temperatures, zones, vegetation, and accompanying species. Each species is mapped for the Basque Country and the maps also display precipitation in the area. Descriptions are provided for 23 taxa that have been studied for the whole of Iberian Peninsula, and these are mapped for the whole of Spain. All literature records and 5500 specimens of 156 taxa were studied for the book. Lophoziaaceae and Lejeuneaceae are best represented in the area.

The long discussion deals with the composition of the hepatic flora compared to that of the Iberian Peninsula in total, and with distribution of the taxa in different regions. It also gives novelties for the Country, indicating taxa introduced to the Iberian Peninsula, emphasizes the rare taxa, and speaks on the ecological demands of all the taxa, i.e. altitude, precipitation and temperature, bioclimatic zones and regions, substrates, vegetation formations, reproduction, and chorology. The taxa are divided into nine phytogeographical elements. The book also indicates hotspots of hepatic and hornwort diversity in the Basque Country, lists all the studied material (p. 275—331), and provides a long list of

Continued on page 4

Literature

Column



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references.

The nomenclature employed differs in some cases from that commonly used. *Marsupella aquatica* (Lindenb.) Schiffn. is treated as a variety of *M. emarginata* (Ehrh.) Dumort., *Chiloscyphus pallescens* (Ehrh. Ex Hoffm.) Dumort. is accepted as a separate taxon from *C. polyanthos* (L.) Corda, *Lophocolea bidentata* (L.) Dumort. and *L. heterophylla* (Schrad.) Dumort. are kept under *Lophocolea*, and *Leiocolea turbinata* (Raddi) H.Buch under *Leiocolea*, to mention a few less-commonly accepted concepts. The nomenclature mostly follows Grolle & Long (2000), rather than Schumacher & Váňa (2000).

The book is a meticulous work for which hepatics and hornworts of the area were studied in manifold aspects. It gives useful information especially on ecology and provides all the data on the hepatics and hornworts of the Basque Country. Descriptions for all the taxa instead of only 23 would have increased its value even more. The book is in Spanish, but that will certainly favour the local bryological enthusiasts and nature conservationists. For them, however, descriptions and illustrations would have been important.

References

- Grolle, R. & Long, D. 2000: An annotated check-list of the Hepaticae and Anthocerotae of Europe and Macaronesia. *J. Bryol.* 22: 103–140.
Schumacher, R. Váňa, J. 2000: Identification keys to the liverworts and hornworts of Europe and Macaronesia (distribution and status). 1st. edition. Documents de la Station scientifique des Hautes-Fagnes n° 31. 160 p.

Sinikka Piippo

Schumacher, R. & Váňa, J. 2000: Identification keys to the liverworts and hornworts of Europe and Macaronesia (distribution and status). 1st. edition. Documents de la Station scientifique des Hautes-Fagnes n° 31. 160 p. Paperback with metal spiral binding, or CD-Rom 25 EURO in EU, 26 EURO in Europe outside EU, 27 EURO for the rest of the world. Simple paperback copies for institutes etc. 20 EURO incl. postage when 10 copies ordered. Can be ordered from Prof. Dr. R. Schumacher, 620, Becco, B-4910 Theux, Belgium, rschumacker@ulg.ac.be.

The work is dedicated to Marie-Anne Libert, a hobby bryologist from 1782–1865, and Patricia Geissler who “disappeared too soon in the flower of life”. It is compiled with the special help of A. C. Bouman, G. Dirkse, R. Düll, S. Fontinha, R. Grolle, N. Hodgetts, S. Jovet-Ast, R. B. Pierrot, T. Pócs, C. Sérgio, M. Sim-Sim, R. Skrzypczak, E. Urmi, and C. Wastiaux.

Contents on p. 1 list titles different from the actual ones, a small and unimportant flaw. The book includes an introduction to the history and present state of knowledge of the European and Macaronesian liverworts and hornworts and to the main morphological and biological features of the plants, including life cycles and morphology with characters of the different orders. A conspectus of liverwort and hornwort classification for Europe and Macaronesia is provided, giving divisions, classes, orders, families, and genera with species numbers, in total 459. The chapters of the book are short, which makes it easier to read, especially since the printing is fairly small. More illustrations would have been necessary to illuminate the morphology better. For beginners the keys are not that simple without additional explanations of morphological characters or other guidebooks. Some morphological characters used in the book are not explained at all.

There is also a chapter on general methodology, giving information on the basic equipment necessary for studying liverworts,

collecting them and keeping collections safe (whatever “safe” means), identification, i.e. preparing the material and microscopic slides, measurements, using the keys etc. This part of the book is clearly written for beginners.

The book gives keys to three levels: a general key to the orders or isolated genera and species (1 p.); keys from orders to genera and isolated species (16 p.), and keys to species, the last one naturally making up the majority of the book. In generic keys there are notes “between the lines” not to waste time with hopeless cases, such as trying to separate sterile species of *Mannia* and *Asterella*, how to separate *Dumortiera* from *Pellia* etc., and hints for identifying the genera of Marchantiales.

The largest part of the book goes under the title Keys from genera to species with taxonomic annotations, nomenclature, synonyms and useful references to literature, descriptions and illustrations (86 p.). Genera are in alphabetical order. Each genus includes some taxonomic annotations, nomenclature of the genus, species and infraspecific taxa, the most important synonyms, and the basionym. Each species or infraspecific taxon has a list of countries where it occurs, and conservation status of the taxon according to the Red Data Book of European bryophytes. Illustrations are missing except for very few exceptions, but space is provided for the reader to add them her/himself. Also this section warns of several pitfalls and gives many useful hints.

Some nomenclature differs from that used by some other researchers: *Pleurocladula albescens* (Hook.) Grolle var. *islandica* (Nees) L. Söderstr. & Váňa, and *Blepharostoma trichophyllum* (L.) Dumort. var. *brevirete* Bryhn. & Kaal. are accepted, *Chiloscyphus coadunatus* (Sw.) J.J. Engel & R.M. Schuster is kept instead of *Lophocolea bidentata* (L.) Dumort. or *Chiloscyphus latifolius* (Nees) J.J. Engel & R.M. Schuster. *Lophocolea* is treated as *Chiloscyphus*, and *Barbilophozia* and *Lophozia* are kept separated but *Leiocolea* united with *Lophozia*. *Chiloscyphus pallescens* (Ehrh. Ex Hoffm.) Dumort. is treated as a synonym of *C. polyanthos* (L.) Corda. I guess these matters will remain forever as matters of opinion. Small mistakes are present, but this is natural in a work like this. According to the Finnish files, *Calypogeia fissa* (L.) Raddi occurs in Finland, but not according to the present book. Literature is not exhaustive, but the list of accepted names and synonyms with 34 pages is, including basionyms underlined.

The book is not “dry”, which is remarkable for a work like this. I especially liked the comment “also be aware that, even for professional or well-experienced hepaticologists, some collections are impossible to identify with certitude: in doubtful cases, put a question mark in front of your identification. If the material is very bad, do not hesitate to put it in your garbage bin and try to collect better material later at the same place!”. Hepatics are often extremely variable, and poor and small collections cause only frustration to any hepaticologist, especially if the collection has no proper habitat recordings. Warnings given in connection with some genera and taxa are very useful. They further emphasize the feeling that there are hepaticologists compiling the book who have so much experience that they can - without fear of losing their faces - say “these taxa are impossible to separate” in this or that state. This work with simple outlooks is a must for hepaticologists, especially those studying European taxa. It is a useful addition to the already existing floras and to be used with them.

Sinikka Piippo

British Red Data Books: Mosses and Liverworts. Compiled and edited by J. M. Church, N. G. Hodgetts, C. D. Preston & N. F. Stewart. 2001. 168 pp., with colour photographs and distribution maps. ISBN 1-86107-522-7. Published by and available from: Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough PE1 1JY, U.K. Price ca. 18 £ + postage.

This most welcome publication provides an authoritative account of the general ecology and importance of the British bryophytes and presents precise and detailed information on all threatened species of the country. The contents include: 1) Introduction, 2) Preparation of the Red Data Book, 3) Habitats of the red list bryophytes and their conservation, 4) Conservation action and legislation; 5) The international context, and 6) Species accounts. These are followed by seven Appendices: 1) The IUCN criteria, 2) The British species assigned to IUCN threat categories, 3) Bryophytes protected by legislation, 4) List of European red list species in Britain, 5) Red list, data deficient and lower risk (near threatened) species, 6) Glossary, and 7) Localities mentioned in the text. A list of references concludes the book.

The species accounts cover pages 29 through 140. Liverworts (40 species, including hornworts) and mosses (135 species) are treated separately and, most practically, in alphabetical order. In addition to scientific names, each specific title also includes the English name (if specified in Wildlife and Countryside Act 1981), and conservation status in Britain and in Europe. A "pen portrait" describes each species and its habitat and distribution in Britain. Distribution maps are provided for species whose known distribution differs clearly from that provided in the three Atlases by Hill, Preston and Smith. The total number of hectads (10 km x 10 km grid squares) in which the species is known is given as well as that for the records from 1970 onwards.

I am delighted by the fact that the species accounts, although arranged according to a clear and practical pattern, are not strictly schematic, which is very reader-friendly. One could perhaps question the usefulness of the "pen portraits" for the laypublic, but I think the species must inevitably be described one way or the other. As an example of a brief species description may be cited that of *Cynodontium fallax*: "This cushion-forming moss has green leaves that become crisped when dry. Microscopic characters of the leaves and sporophyte distinguish it from other species of *Cynodontium*". One could add that microscopic characters also distinguish it from a 50-odd other species in addition to its congeners. But this is how many bryophytes are, and there is nothing we can do about it!

Taxonomic advances inevitably cause significant changes in the Red Data Lists. A good example in Britain is *Hedwigia ciliata*, believed to be common only less than ten years ago. Now we know that the common one is *H. stellata* Hedenäs, while *H. ciliata* is rare and only recorded in seven hectads since 1970. The latter, of course, is very common in the Nordic countries while the distribution of *H. stellata* still remains poorly known.

Most of the 16 colour photos are great, especially those by R. D. Porley and L. Gill. Some of the photos, however, are fairly poor technically; *Thamnobryum angustifolium* is over-exposed and *Sematophyllum demissum* slightly out of focus.

Books like this are, of course, highly valuable because ideally they can make bryology and the work of bryologists known to the laypublic and political decision-makers. But they make valuable and intriguing reading also to professional bryologists like myself. Before reading this book I had no idea that species such as

Brachythecium starkei and, especially, *Paraleucobryum longifolium* are endangered in Britain. In southern Finland the latter is all over the place! I was also more than surprised by the stark contrast in the habitat ecology of some species in Britain and Finland. *B. starkei*, for example, grows in Finland almost exclusively in shady spruce forests on relatively acidic soils and bases and stumps of spruce, but in Britain "all sites for *B. starkei* are associated with rocks that are moderately to strongly base-rich". I wonder if we are talking about the same species at all...

Johannes Enroth

Zarnowiec, J.: A taxonomic monograph of the *Drepanocladus aduncus* group (Bryopsida: Amblystegiaceae). Łódź Technical University, Bielsko-Biala Branch, 2001. 248 pp., 82 illustrations, 17 tables. ISBN 83-87087-13-0. Available from: Wydawnictwo Politechniki Łódzkiej Filii w Bielsku-Białej, ul. Willowa 2, Bielsko-Biala, PL-43-309 Poland; tel./fax (033)815-70-71.

This work revises the so-called *Drepanocladus aduncus*-group, which before the study comprised the highly variable species *D. capillifolius*, *D. polycarpus* and *D. aduncus*. The author adds a fourth species, *D. stagnatus*, distributed mainly in Western Europe but also having two localities along the western coast of Greenland.

All taxonomic characters employed are treated in detail (some illustrated in high-quality SEM-micrographs) and their value is commented upon. The bulk of the book (pp. 55–218) consists of a formal taxonomic part dealing with the four recognized species. As might be expected, each species has an extensive synonymy, since various authors have described a plethora of infraspecific taxa not recognized by Zarnowiec. The detailed specific descriptions are accompanied by line drawings that are among the best I have ever seen in any bryotaxonomic work. Habits and their great variability are presented in nice colour photographs. The specific discussions as well as taxonomic and nomenclatural notes are really extensive and illuminating. Distribution maps, based on the examined exsiccata and other specimens, are presented for all species. The lists of specimens could perhaps be slightly simpler – in my opinion collecting dates are usually redundant, if the specimens have unambiguous collecting numbers. It is another question whether it is advisable or necessary to cite every single specimen examined. Perhaps it would suffice just to cite selected, representative specimens. Under *Drepanocladus aduncus*, for example, the specimen list now runs about 11 pages long.

The taxa excluded from the *D. aduncus*-group are also treated and commented upon, but of course not described in detail or illustrated. Zarnowiec has placed these taxa under *Drepanocladus sendtneri*, *D. sordidus*, *D. longifolius*, *Warnstorfia exannulata*, *W. fluitans*, and *Limprichtia cossonii*.

Since I am not very familiar with the *Drepanocladus aduncus*-group, I cannot really judge Zarnowiec's taxonomic concepts but willingly leave that to colleagues. What I can without hesitation say is that the study is admirably meticulous, apparently authoritative and a fine piece of essentially "traditional" herbarium taxonomy. The results are further reinforced by biometrical and statistical analyses of the measured characters, based on a hundred specimens for each species. I appreciate the fact that Zarnowiec makes it very clear when he disagrees with previous – especially more recent – concepts, and he also clearly states why he disagrees. Impressive work, Dr. Zarnowiec!

Johannes Enroth

THESES IN 5 BRYOLOGY

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.

Albertos, Belén. 2001. Estudio biogeográfico de los briófitos epífitos del noroccidente peninsular. Tesis Doctoral, Universidad Autónoma de Madrid, Madrid, Spain. [xvi] 349 pp. + 2 plastic maps. In Spanish. Current address of author: Departamento de Biología (Botánica), Facultad de Ciencias, Universidad Autónoma de Madrid, E-28049 Madrid, Spain.

This doctoral dissertation examines the biogeography of epiphytic bryophytes of the northwestern Iberian Peninsula. For the study, 81 taxa of epiphytic bryophytes were found, including numerous new provincial records for Lugo, Orense and Zamora. A number of the taxa were regarded as facultative epiphytes. One species, *Orthotrichum consimile*, is considered in danger of extinction within Spain. The long-standing problem of *Ulota bruchii* vs. *U. crispera* is readdressed and both taxa are recognized. The biogeographic patterns of the species are analyzed. Many taxa can be considered as bioindicators of climatic zones.

Beaucourt Le Barzic, Nathalie. 2000. Ecofisiología de la producción en briófitos acuáticos. Tesis Doctoral, Universidad de La Rioja, Logroño, Spain. [vii] 219 pp. + 69 tabs. on 21 pp. In Spanish. Current address of author unknown.

This doctoral thesis examined the various basic physiological processes of *Fontinalis antipyretica* and *F. squamosa* through an annual cycle. The chemical content of the water was determined, and the concentration of these elements for each of the species. The concentrations of the mineral elements varied with the seasons, but the characteristics of the water had little impact on these temporal variations. Chlorophyll concentrations in the two species were comparable to terrestrial bryophytes and vascular plants. Similarly, levels of photosynthesis and respiration are similar to lichens and other mosses. Growth of the two species was found to occur throughout the year but varied by season. *Fontinalis antipyretica* was found to have a higher metabolic capacity than that of *F. squamosa*, accounting for its broader ecological niche.

Costa, Denise Pinheiro da. 1995. Musgos do Município de Nova Friburgo, Rio de Janeiro, Brasil. Dissertação de Mestre em Botânica, Universidade de São Paulo, São Paulo, Brazil. viii + 326 pp. In Portuguese with English abstract. Current address of author: Jardim Botânico do Rio de Janeiro, Rua Pacheco Leão 915, CEP 22460-030 Rio de Janeiro - RJ, Brazil <dcosta@jbrj.gov.br>.

This master's thesis treats 153 moss taxa in 31 families and 74 genera within the municipality of Novo Friburgo of the state of Rio de Janeiro, Brazil. Of these, 21 are reported for the first time for the state. Newly reported for Brazil are *Bartramia halleriana*, *Entodon hampeanus*, *Hookeriopsis falcata*, *Lepidopilum pringlei* and *Leucolema cruegerianum*. The largest genus is *Campylopus*

with 15 species. The species are keyed and described, and the specimens examined are cited. 95 of the taxa are illustrated. The phytogeographical patterns of the species are analysed.

Costa, Denise Pinheiro da. 1999. Metzgeriaceae (Metzgeriales, Hepatophyta) no Brasil. Tese de Doutor em Ciências, Universidade de São Paulo, São Paulo, Brazil. x + 261 pp. In Portuguese. Current address of author: Jardim Botânico do Rio de Janeiro, Rua Pacheco Leão 915, CEP 22460-030 Rio de Janeiro - RJ, Brazil <dcosta@jbrj.gov.br>.

This doctoral dissertation treats the genus *Metzgeria* in Brazil. A total of 26 species and two varieties are recognized. Eight species and seven varieties are synonymized, and six species are reported new to Brazil. A single new combination is proposed, *M. albinea* var. *angusta* (Steph.) Costa. A cladistic analysis, based on morphological data, found most of the traditionally recognized infrageneric taxa to be artificial. All species are described, illustrated, and mapped within Brazil. The distribution of the species within Brazil is analyzed.

Dauphin L., Gregorio. 2000. The genus *Ceratolejeunea* Jack & Steph. (Hepaticae: Lejeuneaceae) in tropical America. Dissertation des Doktorgrades, Georg-August Universität zu Göttingen, Göttingen, Germany. 106 pp. + 5 tables + 28 figures. In English. Current address of author unknown.

The 100+ names in tropical American *Ceratolejeunea* are reduced to 23 species in two subgenera, subg. *Ceratolejeunea* with four species and subg. *Caduciloba* with 19 species. One new species, *C. minuta*, is described from French Guiana and adjacent Brazil, and a new combination, *C. dussiana* (Steph.), is proposed. Morphological descriptions, distributional and ecological data, keys and illustrations are provided for the species. A phylogenetic analysis is also presented.

García Álvaro, M^a Angélica. 1999. Contenido de nutrientes minerales y composición pigmentaria fotosintética en briófitos acuáticos: Una perspectiva ecofisiológica. Tesis Doctoral, Universidad Pública de Navarra, Pamplona, Spain. [vi] 332 pp. In Spanish. Current address of author unknown.

This doctoral thesis determined the changes in concentrations of seven mineral elements (N, P, K, Ca, Mg, Fe, Na) in aquatic bryophytes. The primary study organism was *Rhynchostegium (Platyhypnidium) riparioides*, but two species of *Fontinalis* as well as *Jungermannia cordifolium* and *Pellia endiviifolia* were also studied. In all analyses, N, Ca and K were the most abundant elements, and the levels found were comparative to those in other aquatic bryophytes. The elemental concentrations varied by the season, being lowest in the spring. In a study of *Fontinalis antipyretica* and *F. squamosa*, the concentrations of the most mobile elements (N, P, K) were found most concentrated in the

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apical portions of the plants, whereas the concentrations of the least mobile elements (Ca, Mg, Fe) were concentrated in the basal portions. This study confirmed the use of aquatic bryophytes as bioindicators of contaminated water, with *Rhynchostegium* being a good indicator of eutrophic conditions, and *Fontinalis* of salinization. The understanding of ecophysiological processes permits a better understanding of the bioindication studies.

Goffinet, Bernard. 1997. Circumscription and phylogenetic trends in the Orthotrichales (Bryopsida). Ph.D. Thesis, University of Alberta, Edmonton, AB, Canada. [x] 184 pp. In English. Current address of author: Department of Ecology and Evolutionary Biology, U-3043, 75 North Eagleville Road, University of Connecticut, Storrs, CT 06269-3043, U.S.A. <goffinet@uconnvm.uconn.edu>.

This doctoral examines the limits and relationships of the Orthotrichales and the Orthotrichaceae. The Microtheciaceae are excluded from the order, and the Helicophyllaceae are tentatively excluded. Use of the chloroplast gene *rbcL* suggests that the Rhachithecaceae and Erpodiaceae are haplolepidous and should be excluded from the Orthotrichales. Similarly, *rbcL* data suggest that *Amphidium* and *Drummondia* are haplolepidous and should be excluded from the Orthotrichaceae. *Kleioweisiopsis*, *Trigonodictyon*, as well as *Octogonella* and *Uleastrum* are excluded from the Orthotrichaceae and transferred to the Ditrichaceae, Grimmiaceae and Rhachithecaceae, respectively. *Pleurozygodontopsis* is synonymized with *Zygodon*. Twenty-two genera, including two new ones (*Bryomaltaea* and *Matteria*), and a reinstated one (*Codonoblepharon*) are accepted within the Orthotrichaceae, in two subfamilies and four tribes. The sister-group to the Orthotrichales, here reduced to just the Orthotrichaceae, is suggested to be the Bryales.

Infante Sánchez, Marta. 2000. Las hepáticas y antocerotas (Marchantiophyta y Anthocerotophyta) en la Comunidad Autónoma del País Vasco. Doctoral thesis, Universidad del País Vasco, Vitoria, Spain. 309 pp. In Spanish with English abstract. Published as Guineana 6: 1-345. 2000. Current address of author: Botánica, Museo de Ciencias Naturales de Álava, Siervas de Jesús 24, 01001 Vitoria, Spain <bazzania@arrakis.es>.

The Autonomous Community of the Basque County, occupying 7482 km², is a mountainous region of Spain, about 75% of which has a limestone bedrock. The catalog contains 156 taxa, with the Lophoziaaceae and Lejeuneaceae being the best represented. *Cephaloziella elegans* and *C. rubella* are confirmed for Spain. The species are analyzed in regard to their distribution at different elevational ranges, and their phylogeographic affinities are calculated. Interestingly, the areas with the highest diversity include those small areas with acidic bedrock.

Marková, Ivana. 1999. Epifytická a epixylická společenstva mechorostů v lesním komplexu Pomoraví. Diplomová práce, University Palackého, Olomouc, Czech Republic. [vi] 72 pp. + 71 pp. appendices + 11 pp. color photographs + 3 unpaginated maps. In Czech. Current address of author: Borovičky 167, CZ-544 01 Dvůr Králové nad Labem, Czech Republic <ivanka.markova@ladymail.cz>.

This master's thesis deals with the epiphytic and epixylic bryophytes in the Pomoraví forest community in the Czech Republic. The relationship between the ecological characteristics of fallen logs vs. standing trees and composition of epixylic vs. epiphytic bryophyte communities in the alluvial forest was stud-

ied. Sixty-six bryophyte species were found (10 hepatics and 56 mosses). Ten species occurred only on fallen logs, and 16 species only on standing trees; 21 species occurred on both types of substrates. For each fallen log, data on 17 physical, chemical and phytosociological characteristics were collected. To explore the relationship between composition of epixylic bryophyte communities and environmental factors, canonical correspondence analysis was used. It was determined that decay stage and texture of wood, percent of bark remaining *in situ*, and the slope of the fallen log were the most important factors that influenced species composition and their succession on fallen logs. For each tree, data on 10 physical and phytosociological characteristics were collected. The composition of epiphytic bryophyte communities was influenced by diameter of trunk, height on trunk and slope of trunk. Significant differences were found in the frequency of bryophyte species between the protected reserve and the managed forest.

Rohrer, Joseph Raphael. 1985. A phenetic and phylogenetic analysis of the Hylocomiaceae and Rhytidiaceae with a revision of the genera. Ph.D. dissertation, University of Michigan, Ann Arbor, MI, U.S.A. vii + 185 pp. In English. Current address of author: Department of Biology, University of Wisconsin-Eau Claire, Eau Claire, WI 54702-4004, U.S.A. <jrohrer@uwec.edu>.

This doctoral dissertation was published in two significant papers in the Journal of the Hattori Botanical Laboratory: "A phenetic and phylogenetic analysis of the Hylocomiaceae and Rhytidiaceae" (59: 185-240. 1985) and "A generic revision of the Hylocomiaceae" (59: 241-278. 1985). Based on numerical phenetic analyses, 12 genera are recognized in the Hylocomiaceae (which also incorporates the Rhytidiaceae), *Hylocomiastrum*, *Hylocomium*, *Leptocladia*, *Leptohymenium*, *Loeskeobryum*, *Macrothamnium*, *Neodolichomitra*, *Orontobryum*, *Pleurozium*, *Rhytidiadelphus*, *Rhytidiopsis* and *Rhytidium*. Each genus is described, illustrated, and discussed.

Stech, Michael. 1999. Molekulare Systematik haplolepidier Laubmoose (Dicrananae, Bryopsida). Inaugural-Dissertation, Freie Universität Berlin, Germany. VII + 114 pp. + 5 appendices (on 29 pp.) + 3 pp. In German. Current address of author: Institut für Biologie, Systematische Botanik und Pflanzengeographie, Freie Universität Berlin, Altensteinstraße 6, D-14195 Berlin, Germany <mstech@zedat.fu-berlin.de>.

This doctoral dissertation deals with the molecular phylogeny of the haplolepidous mosses of the suborder Dicrananae. In particular, emphasis was given to the systematic placement of the Dicranaceae; the differences between the Dicranaceae, Dicnemonaceae, Ditrichaceae, Leucobryaceae and Aongstroemiaceae; and the relationship between the Dicranales and Fissidentales. The genetic loci used to evaluate these problems were *trnL-trnF* and ITS2. 76 taxa were sequenced. Novel relationships included the dismemberment of the Paraleucobryoideae, indicating that the costal anatomy was independently arrived at least twice in the subfamily. The Dicranoideae and Campylopodioideae are monophyletic, but *Campylopodium* clustered with *Microdus* in the Dicranoideae. *Kiaeria* is transferred to the Rhabdoweisioideae. The Dicnemonaceae are considered a subfamily of the Dicranaceae, and *Pulchrinodus* is excluded from the alliance, confirming Allen's original placement. The Leucobryaceae is dismembered, with *Leucobryum* clustering with the Campylopodioideae, but *Octoblepharum* with the

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Calymperaceae. Within the Fissidentaceae, *Octodiceras* is molecularly very close to *Fissidens bryoides*, and not worthy of generic segregation. For some taxa, e.g., *Blindia*, the two genes gave conflicting data.

Vanderpoorten, Alain. 2000. Hydrochemical determinism and molecular systematics in the genus *Amblystegium* (Musci). Application to the biomonitoring of surface waters. Dissertation de docteur en sciences agronomiques et ingénierie biologique, Faculté Universitaire des Sciences Agronomiques de Gembloux, Gembloux, Belgium. [v] 99 pp. + 44 pp. sequence data. In English. Current address of author: Department of Biology, Box 90338, Duke University, Durham, NC 27708-0338, U.S.A. <alain@duke.edu>.

This doctoral dissertation examined *Amblystegium* s.l. (e.g., including *Hygroamblystegium* and *Leptodictyum*) both as an example of aquatic mosses for use in biomonitoring, and from a phylogenetic perspective using molecular data. Correlative investigations and culture experiments indicated that ammonium nitrogen is one of the best factors explaining the segregation of aquatic bryophyte assemblages in large river hydrosystems. Based primarily on ITS data, *Amblystegium* s.l. and even the Amblystegiaceae are shown to be polyphyletic, indicating that these taxa are based on a series of convergent characters found in aquatic mosses.

BRYO AUSTRAL - PROJECT CONTINUED

The German Bryo Austral project started in 1998 with fieldwork in New Zealand. It has been continued in February/March 2001 with six-weeks fieldwork in southern Chile. Participants were Wolfgang Frey and Friederike Schaumann (University of Berlin) and Jan-Peter Frahm and Rolf Blöcher (University of Bonn).

The aim of the project is the study of temperate rainforests, their epiphytic and terrestrial bryophyte communities, zonation along latitudinal and altitudinal transects, and especially the genetic differentiation within gondwanic species.

The fieldwork in New Zealand has resulted so far in more than a dozen publications with main emphasis on molecular studies focussing on taxonomic, systematic and phytogeographical problems.

Fieldwork in Chile was carried out in Magellan, Patagonian and Valdivian forests between 37° and 51° S lat. to determine the degree of correspondence between the bryoflora and vegetation in Chile and New Zealand, both of which were part of the Gondwanan continent but separated more than 80 million years ago. The comparison is based on species composition, bryophyte communities and general characteristics of the ecological conditions and definitions of temperate rainforests. A special focus is the molecular comparison of species occurring disjunctively in New Zealand and Chile to determine whether the taxa have been separated for the past 80 million years or have genetic interchange by long distance dispersal.

Wallace, Marilyn Helene. 1970. Developmental morphology and sexual dimorphism in *Homalothecium megaptilum* (Sull.) Robins. Thesis for Doctor of Philosophy, Washington State University, Pullman, WA, U.S.A. xiii + 87 pp. In English. Current address of author (Marilyn H. Barker): 8754 Cross Pointe Lp., Anchorage, AK 99504, U.S.A. <afmh@uaa.alaska.edu>.

This doctoral dissertation studied the developmental differences between male and female plants in *Homalothecium megaptilum*. The vast majority of males were dwarf, but one in 200 was normal-sized. Female plants only bear archegonia, but may have several hundred males epiphytic on it. The rare normal-sized male plants do not have epiphytic dwarf males on them. Sex expression is determined at the spore stage, but there is no morphological heterospory. Male dwarfism is not genetically controlled, but results from growth conditions. It is postulated that female plants release a substance that inhibits growth of the male plant.

Yip, Kwok Leung. 2000. A revision of the genus *Pleuridium* (Musci). Ph.D. Dissertation, University of Cincinnati, Cincinnati, OH, U.S.A. [vii] vi + 266 pp. In English. Current address of author: University Herbarium, 1001 Valley Life Sciences Building #2465, University of California at Berkeley, Berkeley, CA 94720-2465, U.S.A. <yipkl@sscl.berkeley.edu>.

This doctoral dissertation is a worldwide monograph of *Pleuridium* (Ditrichaceae). The genus is divided into two sections, sect. *Pleuridium* (9 spp.) and sect. *Sclerostomum* (12 spp.). The species are keyed, described, mapped, and illustrated. *Pleuridium sinensis* (Broth.), *Ditrichopsis tenue* (Mitt.) and *Cleistocarpidium japonicum* (Deguchi, Matsui & Z. Iwats.) are proposed as new combinations. The genus *Churchillia* is erected for *Pleuridium lindigianum* (from Colombia), and *Delgadillia* is proposed to accommodate *Pleuridium aurantiacum* (from Mexico). Extensive new synonymy is proposed.

DAWSONIA SUPERBA HAS FRIENDS AMONGST ROADING ENGINEERS

An item in the New Zealand Automobile Association magazine, tells of the efforts of local roading engineers, who have conserved the moss *Dawsonia superba* where it grows alongside a forest highway. Transit New Zealand (the organisation responsible for New Zealand's roading network) has been awarded an international environmental award at a roading conference in Miami, USA. A key feature of the project is the bridges that have been built over the roots of the forest's ancient kauri trees, *Agathis australis*. But the small plants were not forgotten: 'A giant moss - the tallest in the world - that stands by the road was saved, native orchids have been re-established, and carnivorous plants that eat sandflies have been planted on the wayside'.

Dr Jessica Beever

A further study will be carried out in southern Brazil in August 2001, where the epiphytic bryophyte vegetation on tree fern trunks will be compared with that of New Zealand, again with regard to species composition as well as genetically.

Frahm@unui-bonn.de

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.

One of these was to:

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.

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.

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; introductory courses offered by members of the British Bryological Society. Some existing workshops or courses seem 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. This column will, hopefully, widen the potential audience to include those who either do not subscribe to BRYONET or have no ready Internet access available to them.

Sufficient lead time is vital if the maximum potential audience is to become informed.

A continually updated inventory needs to be prepared listing:

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

In my initial survey, requests for workshops included:

- tropical bryology in the Americas
- molecular genetic methods
- techniques for sectioning and embedding bryophytes for histological examination

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.

The purpose of this column is to provide potential students with information that may lead to participation in graduate programs, research initiatives, etc., and also to determine and publicise the needs of potential "students" – whether they be undergraduate, graduate or, indeed, informed or interested non-professionals.

I am therefore soliciting voluntary contributions (offers and requests) for the column before I pressure people to provide information.

Rod Seppelt.

WORLD CONFERENCE OF BRYOLOGY

The IAB Meeting – Lucknow, India
January 23-30, 2002

The meeting of the International Association of Bryologists (IAB) is held biannually in different parts of the world. In the year 1997 the meeting was held in Beijing, China and the last one was held at St. Louis, USA in 1999. During the Beijing meeting it was decided that next IAB meeting 2002 would be held at National Botanical Research Institute (NBRI), Lucknow (India). NBRI considers it as a rare privilege to hold the IAB meeting 2002. The focal theme of this meeting is "World Conference of Bryology, 2002". NBRI is an internationally reputed plant science research center working under the umbrella of Council of Scientific & Industrial Research (CSIR), an autonomous R & D organization established by the Govt. of India. The world conference of Bryologists offers an unique opportunity to the world bryologists to come together to share their views, discuss and debate about the various problems and constraints confronted by the Bryologists of the world particularly in inventorizing, conserving and sustainable utilizing the bryophytic flora, which is one of the most neglected components of the precious plant biodiversity of our planet Earth.

It is hoped that this conference will be able to evolve strategies and formulate globally coordinated programmes for conservation and sustainable utilization of this precious group of plants.

The venue of the Conference (NBRI) is situated at Lucknow, the capital city of State Uttar Pradesh of India, which is located 500 Km. south east of Delhi. Lucknow is directly connected by air with New Delhi (1 hr flight), Mumbai (2 hrs flight), Calcutta (2-1/2 hrs flight) and Sharjah (U.A.E.). It is also connected with nearly all the major cities of India by rail and road. Lucknow is a city endowed with graceful Nawabi culture, new and old traditions and unique archaeological monuments. It is also known as city of gardens and parks, with rich heritage of religion and philosophy, history and culture, Lucknow is a storehouse of memories, where history breathes. Lucknow is famous for its Chikan embroidery work which is unique in world.

N.B.R.I. is situated at Sikandar Bagh, about 12 Km from Amausi Airport and 6 Km from Charbagh Railway station. It was established in 1953. The major R & D programmes of the Institute are : 1. Plant Biodiversity & Conservation Biology, 2. Botanic Garden & Floriculture, 3. Biotechnology & Plant Physiology, 4. Molecular Biology & Microbiology, 5. Biomass Biology & Environmental Sciences, Genetics & Plant breeding and Agrotechnology 7. Natural Product development. The plant Biodiversity & Conservation Biology group has full fledged divisions in lower plants such as Bryology, Pteridology and Lichenology.

Symposia:

- Systematics of Hepatics
- Population Biology of Bryophytes
- Biogeography of East Asian Mosses

Broad Areas for Presentations

1. Systematics, Biodiversity, and Conservation
2. Reproductive Biology and Morphogenesis



3. Physiology and Biochemistry
4. Morphology, Anatomy, and Ultrastructure
5. Cytology and Genetics
6. Environmental Pollution and Ecology
7. Molecular Biology

Scientific Programme

January 22, 2002

Evening- Registration

January 23, 2002

Registration

Inauguration, Keynote Address – Timo Koponen, Finland
(Bridal Award Winner)

Symposium I - Systematics of Hepatics

Executive Meeting of IAB

January 24, 2002

Symposium II - Population Biology of Bryophytes

Lead Lectures by Indian delegates

Contributory research papers

Poster presentation

January 25, 2002

Symposium III - Biogeography of East Asian Mosses

Contributory research papers

Oral presentation

IAB Business Meeting

Conference Banquet

January 26, 2002

Republic day of India, Flag hoisting

A glimpse of Republic Day

Field trip to Local area

January 27, 2002

Symposium IV/ Lead Lectures

Valedictory meeting/ Discussion

January 27-30, 2002

Field trip to Nainital and neighbouring bryologically rich areas.

Last date for submission of Abstract :

Abstract of the research paper(s) alongwith Registration Form should reach the Organising Secretary WCB -2002 not later than **31st October, 2001.**

Field Trip:

A plant excursion trip to Nainital (Kumaon Hills) and neighbouring areas will also be arranged to witness the Bryophytes in their natural home which is one of the important bryogeographical zones of India. Nainital is a beautiful hill station set around a mountain lake at a height of 1938 m. This charming township was discovered over a hundred years ago. Tiny villas and ancient bungalows dot the mountain sides and colourful Yatch boats sail-

ing on Naini Lake add profound beauty to this hill station in a special way. As the sun sinks behind the mountains, myriad reflections of twinkling lights transform Nainital into a fairy land by night. There are several interesting places in Nainital to visit like Naina peak, Dorothy seat, Hanumangarhi, Kilbury and Khurpatal etc.

An amount of **US \$ 350** (per person) will also be paid with Registration fee to join the above excursion. Tour cost includes travel, boarding and lodging, sightseeing etc. for 3 days & 2 nights.

Delegates may board train for Delhi directly from Kathgodam railway station, 35 km. from Nainital.

Travel

Delegates may directly contact our authorized travel agent at: SITA WORLD TRAVEL

Raj Chambers 29/9, Rana Pratap Marg, Lucknow - 226 001

Phone : 91-0522-209611-13, 205548 -49, Fax : 91-0522-209611-13

Email: arun@travel.sitaindia.com or biztrav.lko@travel.sitaindia.com

com

Accommodation

Reservations for accommodation in Standard Hotels of categories A and B will be made after receiving the travel schedule and hotel charges from participants. This should be done as early as possible in view of the busy conference season during the month of January. Accommodation in N.B.R.I. Guest House will also be available to a limited number of delegates. The cost includes transportation to and from the Conference venue.

Standard Hotel Category A

Single Bed Room \$100 US

Double Bed Room \$150 US (\$75 US per person)

Standard Hotel Category B

Single Bed Room \$60 US

Double Bed Room \$80 US (\$40 US per person)

Guest House

Double Bed Room \$30 US (\$15 US per person if shared)

Registration Fees (including lunch, dinner and banquet expenses):

Category	Foreigners (US \$)		Indians (Rs.)	
Regular Fee	*150	200	*1800	2000
Students	*75	100	*1000	1200
Accompanying person		75		900

* Early registration fee before 31st October, 2001.

To register complete the Registration Form and mail along with the Registration Fee to: Dr. Virendra Nath, Organizing Secretary, WCB - 2002 National Botanical Research Institute, Rana Pratap Marg, Lucknow - 226 001 (India). The registration fee may be paid by a Bank Draft only in favour of **World Conference of Bryology, Lucknow** payable at Lucknow, India. Delegates from countries viz. Nepal, Bhutan, Bangladesh, Maldives, Sri Lanka, and Pakistan may send their Registration Fee in Indian Rupees through a Bank Draft drawn at any authorized Bank in their respective countries.

Please register before 30th November, 2001. You can receive a full second circular and additional information from Conference Secretariat

Dr. Virendra Nath, Organising Secretary

WCB - 2002 National Botanical Research Institute,

Rana Pratap Marg,

Lucknow - 226 001 (India)

Phones : Office : +91- (O) 522-205831-35 Ext. 234

Residence : +91- (R) 522-323523

Fax : 91 - (O) 522-205836/ 205839

Email : nbri@sancharnet.in

or

drvirendranath2001@rediffmail.com

TAYLORIA MIRABILIS WITH FLIES

Flies visiting capsules of Splachnaceae have rarely been photographed. By chance I got such a shot. During fieldwork for the German BRYO AUSTRAL project we worked in a *Nothofagus-pumilio*-forest at about 600 m altitude in the Torres de Paine National Park in southern Chile. There we found tufts of a splachnaceous moss growing on humus on the forest floor, which Aune Koponen identified from a picture as *Tayloria mirabilis* (Card.) Broth. When I filmed the moss with a video camera, the sun broke through the canopy and warmed the air so that the white apophyses of *Tayloria* started to smell, attracting some flies. These flies scurried over the sporophytes, powdering their feet with ripe spores. Unfortunately they disappeared with the sun, so that I could not make shots with a camera. So I loaded the picture from the videotape on a computer, which resulted in this technically not so perfect, but nevertheless unique, picture.

Jan-Peter Frahm, Botanisches Institut, Meckenheimer Allee 170, 53115 Bonn, Germany.



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

Editors

Lars Söderström, Dept of Botany, Norw. Univ. Sci. & Techn., N-7491 Trondheim, Norway. FAX +47 73596100. Email: Lars.Soderstrom@chembio.ntnu.no

Terry Hedderson, Botany Dept, Univ. Cape Town, Private Bag, 7701 Rondebosch, South Africa. FAX +27 021 650 4041. Email: thedders@botzoo.uct.ac.za

Regional Editors

N. America: René J. Belland, Devonian Bot. Gdn, Univ of Alberta, Edmonton, AB T6G 2E1, Canada. e-mail: rbelland@gpu.srv.ualberta.ca

Latin America: Inés Sastre-De Jesús, Dept of Biol, Univ of Puerto Rico, P.O. Box 5000 Mayagüez, Puerto Rico 00681-5000. Email: I_sastre@rumac.upr.clu.edu

C & E Asia: Cao Tong, Inst of Appl Ecol, Chinese Acad of Sci, P.O. Box 417, 110015 Shenyang, Liaoning, P.R. China. Fax: +86 2423 843313. Email: IFP@iae.syb.ac.cn

SE Asia: Ben Tan, Dept of Bot, School of Biol Sci, National Univ of Singapore, Singapore 119260. Email: dbsbt@nus.edu.sg

Australia and Oceania: Ray Tangney, Dept of Bot, Univ of Otago, PO Box 56, Dunedin, New Zealand. Fax. +64 3 479 7583. Email: ray@phyton.otago.ac.nz

Column Editors

Conservation column: Tomas Hallingbäck, Threatened Species Unit, Swedish Agric Univ, P.O. Box 7007, S-75007 Uppsala, Sweden. Fax: +46 18 673480. Email: tomas.hallingback@dha.slu.se

Literature column: Johannes Enroth, Dept Ecol & Syst, P. O. Box 7, FIN-0014 Univ of Helsinki, Finland. Fax: +358 9 191 8656. Email: johannes.enroth@helsinki.fi

Student profiles: Jennifer Doubt, Dept Biol Sci, Univ of Alberta, Edmonton, AB T6G 2E9, Canada. Email: jdoubt@gpu.ualberta.ca

Theses in Bryology: William R. Buck, Inst of Syst Bot, NY Bot Gdn, Bronx, NY 10458-5126, U.S.A. E-mail: bbuck@nybg.org

Tropical Bryology Column: Tamás Pócs, Eszterházy Teachers' College, Dept of Bot, Eger, Pf. 43, H-3301 Hungary, e-mail: colura@gemini.ekt.hu

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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

2001

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

September 7-9. BBS AGM & Symposium, National Museum & Gallery of Wales, Cardiff. Local Secretary: Roy Perry, 35 Cardiff Road, Dinas Powys, Vale of Glamorgan, CF64 4DH. Tel./Fax +44 (0)29 20513382; e-mail alanrperry@aol.com

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

2002

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.

NEW LIMPRICHTIA VOLUMES

This small German bryological journal was introduced to publish masters theses produced in Germany in the field of bryology. Since 1993, 15 theses dealing with field-bryology (bryosociology, bioindication, mapping, ecological topics) were published (of course all in German) and made available for the public through libraries and also subscribers. Since last year, volumes with several smaller contributions have also been produced, vol. 14 with 10 contributions to German bryology and vol. 17 (just in print) with 12 contributions on 240 pages, dealing with floristic accounts, new records, taxonomic remarks and biographies of bryologists. A list of all available volumes with prices can be found on our homepage: www.uni-bonn.de/bryologie/.

Jan-Peter Frahm, Botanisches Institut, Meckenheimer Allee 170, 53115 Bonn, Germany.