

# The Bryological Times

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## Newsletter of the International Association of Bryologists

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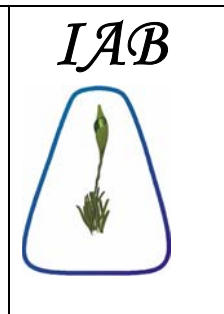
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Dear IAB members,

Thank you for your vote! The new council has now been elected and will be announced in the next issue. Please notice that the IAB will be meeting this summer at the XVII International Botanical Congress, which takes place in Vienna 17-23 July. There will be four symposia dedicated to bryology, organized by the Congress Committee (not by the IAB), furthermore a business meeting, a bryological dinner, and a post-congress excursion into the Alps. For further information see page 3 of this issue and [www.ibc2005.ac.at](http://www.ibc2005.ac.at)

See you all in Vienna!

Geert Raeymaekers



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The **International Association of Bryologists (IAB)** is an organisation open for all interested in bryophytes. For membership, contact Sandi Vitt, Department of Plant Biology, Southern Illinois Univ., Carbondale, IL 62901-6509, USA ([svitt@plant.siu.edu](mailto:svitt@plant.siu.edu)). Visit also our web site at <http://bryology.org>. The Bryological Times is issued 4 times per year.

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## OBITUARY

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### Helène Bischler-Causse (1932 – 2005)



We deeply regret to announce the death on 12. February 2005 of Helène Bischler-Causse, one of the world's leading hepaticologists and vice-president of the IAB during 1981-1987. Helène Bischler-Causse was born in Switzerland in 1932 and attended the University of Genève, where she obtained her PhD in 1957 on a dissertation dealing with a revision of the genus *Calypogeia* in Switzerland

She subsequently held research positions at the Universidad Nacional, Bogotá (Colombia) during 1956-1959, at the Conservatoire Botanique, Genève, during 1960-1961, and from 1961 onwards with the Centre National de la Recherche Scientifique (C.N.R.S.) at the Laboratoire de Cryptogamie du

Musée de l'Histoire Naturelle, Paris. Helène Bischler's research interest has been the systematics of liverworts, especially *Calypogeia*, Lejeuneaceae and Marchantiidae, and the ecology of Mediterranean liverworts. She did extensive field work in Colombia and in the Mediterranean area, and contributed to many floras. She introduced many research students from all over the world to liverwort studies and was the editor of *Cryptogamie, Bryologie-Lichénologie* for more than 30 years. She is a co-author of several volumes of *Index Hepaticarum* and published more than 120 scientific research papers and several books, including taxonomic monographs of the genera *Marchantia* and *Plagiochasma*, *Systematics and Evolution of the Genera of the Marchantiales* (1998), *Liverworts of the Mediterranean* (2004), and a treatment of the Marchantiidae for *Flora Neotropica* (in press). Together with Marie-Catherine Boisselier-Dubayle she did pioneering work on population genetics and molecular systematics of the liverworts (Bischler and Boisselier-Dubayle, 2000).

For her research, Helène Bischler-Causse was awarded the prize Plantamour-Prévost of the Université de Genève in 1953, the P. Bertrand prize of the Académie des Sciences, Paris in 1974, the Geneva Sayre award of the Harvard University in 1985, and the Hattori Prize of the International Association of Bryologists in 1995 for her monograph of the genus *Marchantia*.

#### Reference

H. Bischler and M. C. Catherine Boisselier-Dubayle. 2002. New approaches to the systematics of liverworts. *Nova Hedwigia* 70: 37-44.

#### Picture:

Helène Bischler at the IAB-Conference in Budapest (1985)

### Constant Vanden Berghen (1914 – 2004)



With great regret I have to announce of the death of Prof. Constant Vanden Berghen on 5 November 2004. Because of the problems with his eyesight, he had already largely turned from hepatics to the higher plants of Senegal when I arrived at the National Botanic Garden of Meise in 1981. Despite his age (born 21 May 1914) he came still very regularly to the Botanic garden, but bad eyesight and deafness did not permit him to do scientific work any longer. Bryologist know him from his important work on African hepatics. He had, however, very broad interests and published also important papers on the vegetation and phytogeography of Belgium. His teaching and publications in naturalist journals stimulated generations of students and naturalists.

Herman Stieperaere, email:  
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## Friederike Schaumann (1974-2004)



Friederike was born on July 19, 1974 in Berlin, where she also grew up. She visited the bilingual German-American high school, from where she retained a nice tiny American accent, and studied biology after maturation. Her masters thesis, which she finished under the supervision of Wolfgang Frey, was still non-bryological and dealt with endozoochorous dispersal of seeds, a

much neglected topic. Her results were later published in three papers. Friederike got first in contact with bryophytes in Chile in 2001, during field work for the Bryo Austral project, where she analyzed structure and strategies of terrestrial bryophyte communities for a PhD thesis and collected material for DNA studies. Apparently she had a special gift for bryology. With Wolfgang Frey, she determined not only all Chilean collections (in spite of the lack of adequate literature) but got also interested in the local European bryophytes, attended almost all field trips of the German bryological working group and joined many fieldtrips of the bryological working group in Bonn. By this way, she got soon a profound knowledge of the local bryophyte flora. In autumn 2003, two and a half years after the Chile fieldwork, she defended her PhD thesis, which was accepted for publication in the Bryophytorum Bibliotheca, and received a position as assistant botanist in the Institute of Systematic Botany in Berlin in the working group of Wolfgang Frey. However, besides her PhD thesis, she worked intensively on phylogeographic questions, especially generic circumscription, distribution and possible origin of species of Pallaviciniaceae. In the lab she had a special skill to squeeze small quantities of DNA from herbarium specimens, which others had given up. So she prepared not only her thesis but also four more publications on molecular topics. This was only possible by enormous efforts. She worked hard all the time and almost neglected herself. This was something with which she later explained her illness. In spring 2004, only eight months before her death, brain cancer was diagnosed. She had an operation, but some weeks after leaving the hospital, she again took part in the spring fieldtrip of the bryological working group of Germany in Frankonia, her face still marked by drugs. And in spite of some difficulties during her recovery, she was soon back to work. In September, she took part in the annual fieldtrip of the bryological working group of Central Europe in Füssen, in spite of two chemotherapies she had before, and a week later she gave a lecture at the Bryophylogeny symposium in Göttingen. This was her first participation in an international symposium and

her first chance to meet many colleagues from abroad. Almost nobody knew about her disease and nobody expected such a serious setback so soon. In October, she had a breakdown, was brought in the hospital, and had an operation without regaining consciousness. She died about three weeks later on October 31.

Friederike was known as very quite, very nice person. It is a hard fate that she had to leave us so soon, without earning the fruits of her hard work, just after the start of a promising scientific career. She will survive in her scientific work and in our memories.

Bryological publications by Friederike Schaumann (compiled by Michael Stech)

FREY, W. & SCHAUMANN, F. (2002): Records of rare southern South American bryophytes. Studies in austral temperate rain forest bryophytes 18. – Nova Hedwigia 74: 533-543.

SCHAUMANN, F. (2003): Terricolous bryophyte vegetation of Chilean temperate rain forests. Communities, adaptive strategies and divergence patterns. Dissertation, Institut für Biologie – Systematische Botanik und Pflanzengeographie, Freie Universität Berlin, 174 S. + Appendix.

SCHAUMANN, F., FREY, W., HÄSSEL DE MENÉNDEZ, G. & PFEIFFER, T. (2003): Geomolecular divergence in the Gondwanan dendroid *Symphyogyna* complex (Pallaviciniaceae, Hepaticophytina, Bryophyta). Studies in austral temperate rain forest bryophytes 22. – Flora 198: 404-412.

PFEIFFER, T., SCHAUMANN, F., HÄSSEL DE MENÉNDEZ, G.G. & FREY, W. (2004): Inter- and infraspecific relationships in the Gondwanan liverwort genus *Hymenophyton* Dumort. (Hymenophytaceae, Hepaticophytina). Studies in austral temperate rain forest bryophytes 23. – Australian Syst. Bot. 17: 407-421.

SCHAUMANN, F., PFEIFFER, T. & FREY, W. (2004): Molecular divergence patterns within the Gondwanan liverwort genus *Jensenia* (Pallaviciniaceae, Hepaticophytina, Bryophyta). Studies in austral temperate rain forest bryophytes 25. – J. Hattori Bot. Lab. 96: 231-244.

SCHAUMANN, F., FREY, W., PFEIFFER, T. & STECH, M. (2005): Molecular circumscription, intrafamilial relationships and biogeography of Pallaviciniaceae (Hepaticophytina, Bryophyta). Studies in austral temperate rain forest bryophytes 27. – Plant Syst. Evol. (accepted)

Jan-Peter Frahm: E-mail [Frahm@uni-bonn.de](mailto:Frahm@uni-bonn.de)

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## **IAB NEWS**

### **Program of the IAB meeting in Vienna, 17-23 July 2005**

The 16<sup>th</sup> meeting of the International Association of Bryologists will take place 18 - 23 July 2005 at the International Botanical Congress in Vienna, Austria Congress Center. The exciting program includes four symposia (arranged by the general congress committee), a bryological dinner with announcement of prizes and medals, and a 4-days fieldtrip into the Alps.

Congress registration, fees, location, accommodation, etc., see: <http://www.abc2005.ac.at> In Hotel Nordbahn 30 rooms have been reserved for bryologists (hotel reservation: <http://vienna.com/wtv/english/Hotels/nordbahn>, see also BT 115)

Local secretary of the bryology program is Dr. Wolfgang Wanek, [wolfgang.wanek@univie.ac.at](mailto:wolfgang.wanek@univie.ac.at) or [w\\_wanek@gmx.at](mailto:w_wanek@gmx.at)

#### **Bryological activities:**

#### **Tuesday 19. July, 16.30—18.30 h.: Symposium “Ecophysiology of Bryophytes”**

Organizers: Gerhard Zotz ([gerhard.zotz@unibas.ch](mailto:gerhard.zotz@unibas.ch)), Wolfgang Wanek ([wolfgang.wanek@univie.ac.at](mailto:wolfgang.wanek@univie.ac.at))

Keynote speaker: Michael C. F. Proctor

Topics will include new insights in the molecular mechanisms of desiccation tolerance (in comparison to desiccation tolerant vascular plants), comparative studies in hormone physiology of bryophytes and vascular plants, the physiological basis of habitat selection, and the implications of global change on the role of bryophytes in selected ecosystems.

#### **Wednesday 20. July, 16.30-18.30 h: IAB Council meeting**

#### **Thursday 21. July, 13.30—16.00 h.: Symposium “Population Dynamics of Bryophytes at the Local Scale”**

Organizer: Dale H. Vitt (e-mail: [dvitt@plant.siu.edu](mailto:dvitt@plant.siu.edu)), Katherine Frego ([frego@unbsj.ca](mailto:frego@unbsj.ca))

Keynote speaker: Dale Vitt

Topics include dispersal and establishment dynamics of bryophytes, environmental limiting factors, competition, and historical and stochastic events. Understanding the factors that control the local scale population distribution and structure are important in forestry management, rare species ecology, and in understanding patterning of plant diversity on the landscape scale.

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## **COUNTRY REPORTS**

### **Country report - SPAIN**

The first bryological exposition (to my knowledge) developed in Spain has been exhibited since October 2004 at the Museo de Ciencias Naturales de Álava (Vitoria, Spain). It is entitled “Mosses: the remembrance of water” and consists of a combination of photographs and explanatory texts about the morphology, physiology, ecology and usefulness of bryophytes. Subtitles as inspiring as “equal but different”, “a fascinating world at a tiny scale”, “green moss?”, “the small within the

#### **Thursday 21. July, 20.00 h: IAB dinner**

#### **Friday 22. July, 13.30—16.00 h.: Symposium “New Developments in Cellular and Molecular Biology of Bryophytes”**

Organizer: Ralf Reski ([ralf.reski@biologie.unifreiburg.de](mailto:ralf.reski@biologie.unifreiburg.de))

Keynote speaker: Ralph Reski

The moss *Physcomitrella patens* and other species of mosses are increasingly used as model systems to address basic botanical questions at the cellular and the molecular level. A project to sequence the whole genome of *Physcomitrella* is underway. Topics include cell and chloroplast division in mosses, gene regulation by light and hormones, and metabolic processes.

#### **Friday 22. July, 16.30—18.30 h: Symposium “Bryophyte Phylogeny based on Molecular Evidence”**

Organizer: Jonathan Shaw ([shaw@duke.edu](mailto:shaw@duke.edu))

Keynote speaker: Karen S. Renzaglia

Topics include 1. relationships among the bryophyte divisions, 2. hornwort phylogeny, 3. liverwort phylogeny, 4. moss phylogeny, 5. generic relationships within a selected family, 6. phylogeography of widespread “bryophytes”.

#### **Sunday 24 – Thursday 28 July 2005: Bryological field trip “Mires and Bryophytes of the Central Alps”**

Fieldtrip leaders: G. M. Steiner, Harald G. Zechmeister, Robert Krisai

Excursion to a wide range of wetlands inhabited by a interesting range of bryophyte species in the Central Alps of Austria, mainly the area of Tamsweg, Styria. On the last day there will be a field trip to the Gollinger waterfall with some rare species (e.g. *Brotherella lorentziana*).

I want to draw your attention that Wolfgang Wanek, who organizes the IAB conference in Vienna, informed us that Mrs Steinbauer from Austropro Interconvention kindly agreed to reserve 30 rooms in the Hotel Nordbahn for Bryologists (“Bryo”) at IBC 2005 only. Participants will have to register by FAX to Austropro Convention including the code “Bryo” on the form NOT via the official reservation site at [www.abc2005.ac.at](http://www.abc2005.ac.at) (“Accommodation and Tours”, “Hotel Reservation”).

small”, “small is important”, “grow and multiply”, “hard types”, “living sponges”, or “a hundred ways to be moss without dying in the attempt” can give a global idea about its contents and the imagination of the authors. The exposition is a wonderful present of Patxi Heras and Marta Infante (Museo de Ciencias Naturales de Álava, Vitoria, Spain; e-mail: [bazzania@arrakis.es](mailto:bazzania@arrakis.es)), who have received the support of several institutions and other mainly Spanish bryologists. This

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initiative begins to fill a deep hole in Spanish bryology, which has grown spectacularly during the last 25 years in the scientific aspect but is still far from being popular out of the bryological community itself. Will we be able to correct this imbalance in the next 25 years?

Three new fascicles of the Project "Flora Briofítica Ibérica" (Iberian Bryophyte Flora) have been distributed among members of the Sociedad Española de Briología - Spanish Bryological Society (SEB). They include the genera *Sphagnum* (authored by Montserrat Brugues, Jesus Muñoz, Elena Ruiz and Patxi Heras), *Didymodon* (Juan Antonio Jimenez), *Tortella* (Felisa Puche) and *Pleurochaete* (Eugenia Ron, D. Gomez and E. Fernandez-Mendoza). Fascicles are available from the SEB for every person interested :

(<http://www.uam.es/informacion/asociaciones/SEB/>). They are free for SEB members, and for non-members the price is 10 € each fascicle.

The 5th European Bryophyte Conservation Conference was held in the Botanic Garden of Valencia from 21st to 23rd September 2004 (see report in the Conservation Column and the website of the SEB

(<http://www.uam.es/informacion/asociaciones/SEB/>).

The XIX Bryological Meeting was held on 4-6 June 2004 in Tragacete (province of Cuenca, central Spain). These meetings are encouraged by the SEB, and this one was organized by Ricardo Garilletei (Universidad de Valencia). As in previous Meetings, field trips were complemented by research presentations and the celebration of the General Assembly of the SEB. In this case, a previously underexplored zone was visited: the upper valley of the river Tajo (provinces of Guadalajara, Cuenca y Teruel). Pictures of the Meeting and summaries of the bryological contributions are available at the web site of the SEB.

The XX Bryological Meeting will be held on 4-6 February 2005 in San Sebastián, La Gomera (Canary Islands, Spain). Juana María González-Mancebo, Ana Losada-Lima and Jairo Patiño-Llorente (Universidad de La Laguna) will be the local organizers, and the National Park of Garajonay will be visited.

In 2004 the issues 24 and 25 of the SEB's Bulletin have been published. The SEB's President, Ricardo Garilletei, has acted as editor. Contents may be consulted at the web page of the SEB (see above).

Dr. Cruz Casas (Universidad Autónoma de Barcelona) has been the unquestionable leader of Spanish bryology. She is retired now but still active. I am pleased to inform that her biography has been recently published. The complete

reference is as follows: Duran, X. 2004. Creu Casas. Fundació Catalana per a la Recerca. Barcelona. ISBN: 84-89570-31-0 [in Catalan]. Her hard life since being the daughter of a gardener to become a professor of Botany at the Spanish university, passing through the Spanish Civil War, is worth to be known. Her career is a model of courage and patient work, especially considering her female condition in the traditionally male-dominated Spanish academic summits. She has received the most important honours of Catalonia, being supported by her more than 50 years of bryological dedication. Congratulations, Dr. Casas!

Vicente Mazimpaka (Universidad Autónoma de Madrid; vicente.mazimpaka@uam.es) has received a 3-year grant from the Spanish Ministry of Education and Science to study the taxonomy and systematics of the family Orthotrichaceae in Europe and the Mediterranean Basin. In Vicente's words: "the family Orthotrichaceae comprises 3 genera in Europe and the Mediterranean: *Orthotrichum*, *Ulota* and *Zygodon*. No modern revision of these genera at European continental level is available, and apart from some regional revisions (e.g. Lewinsky-Haapasaaari for Northern Europe, Lara and Cortini for Italy), most European and Mediterranean regions lack updated revisions as well. Thus, the characterisation and circumscription of several taxa are confused, the use of some characters currently given in keys is problematic, and ranges of several interesting taxa are incompletely known. By use of classical and modern techniques, this project aims at: contributing to solve the taxonomic and systematic problems that affect several groups within these genera, to achieve modern keys, descriptions and illustrations of species included in these genera, and to complete the range drawings of the most interesting species at European and Mediterranean levels". The research team is composed, together with Vicente Mazimpaka, by Francisco Lara, Ricardo Garilletei, Belen Albertos, Belen Estebanez, Isabel Draper, Lisa Pokorny, Rafael Medina and Graciela Calabrese. Go ahead, Autonomous Team!

Mobility news. Juan A. Jimenez (Universidad de Murcia) has obtained a postdoctoral grant from the SENECA Programme to continue his bryological research in the Missouri Botanical Garden. María Arroniz-Crespo (Universidad de La Rioja, Logroño) has completed a 3-month predoctoral research stay with the Group of Phytochemical Analysis of Prof. Hans Becker in the University of Saarland (Saarbrücken, Germany); her objective was to identify some ultraviolet-absorbing compounds found in the liverwort *Jungermannia cordifolia*.

See "Research Column" for information on graduate students.

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## RESEARCH NEWS

### News about bryology Graduate students around the world

**Beth Leary** ([bmleary@mtu.edu](mailto:bmleary@mtu.edu)) is a Ph. D. student working under the direction of Janice Glime in the Biological Sciences Department at Michigan Technological University, Houghton, MI 49931, USA, on the role of *Sphagnum* on nutrient cycling in a Jack pine regeneration forest. She is in her fourth year and hopes to complete her degree in spring 2006. She is using throughfall collectors with and without *Sphagnum* and in the open as well as under the canopy to determine the role of *Sphagnum* in trapping nutrients and releasing them at a different time.

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**Trisha Colling** ([trisha\\_colling@hotmail.com](mailto:trisha_colling@hotmail.com)) is a first-year M.S. student working under the direction of Janice Glime in the Biological Sciences Department at Michigan Technological University, Houghton, MI 49931, USA, and will probably look at the comparative role of various bryophytes in trapping precipitation and depriving the roots of rainfall during minor rainfall episodes.

**Henry Muchura**, ([h\\_muchura@yahoo.com](mailto:h_muchura@yahoo.com)) is a M.S student in the Department of Botany, University of Nairobi, Kenya and researches the "Bryodiversity of Mount Marsabit and its mist trapping ability". His research is funded by the GEF.

**Sébastien Leblond** defended on 30 November his PhD thesis "Pluridisciplinary study of metal transfer from atmosphere to mosses (*Scleropodium purum* (Hedw.) Limpr.) - Monitoring of a rural area (Vouzon, France). Muséum National d'Histoire Naturelle of Paris.

**Keeley Bignal** ([K.Bignal@sussex.ac.uk](mailto:K.Bignal@sussex.ac.uk)) obtained her doctoral degree at the University of Bradford, UK under the supervision of Prof. Mike Ashmore and Dr Alistair Headley. The title of her PhD thesis was "The effects of vehicle emissions on bryophytes and lichens". The studentship was funded by University of Bradford and NERC (Natural Environmental Research Council) under the URGENT (Urban Regeneration and the Environment) project. Keeley undertook controlled fumigations of lichens and bryophytes with diesel exhaust using solar domes based at the Centre for Ecology and Hydrology (CEH) in Bangor, Wales. The pollution climate was designed to reflect a busy roadside environment. In addition to this, transplanted lichens and bryophytes to different distances from a motorway at a mire and an oak woodland site were analysed. She plans to published her research data over the coming year, but a copy of the research data will be submitted to the NERC soon. Aspects of her research have already been published as: (1) Bignal K.L., Ashmore M.R. & Power S. (2004). The ecological effects of diffuse air pollution from road transport. Report no. 580, English Nature, Peterborough. (2) Ashenden T.W., Ashmore M., Bell J.N.B., Bignal K.L., Binnie J., Cape J.N., Caporn S.J.M., Carroll J., Davison A., Hadfield P., Honour S., Lawton K., Moore S., Power S., & Shields C. (2003) Impacts of vehicle emissions on vegetation. Conference Proceedings, Ninth International Conference on Urban Transport and the Environment in the 21st Century, Crete

**Erica Hooper** started her doctoral research at the Ecology and Evolution Group (Centre for Plant Sciences) of the University of Leeds (UK). She will be looking at the population genetics of *Physcomitrella patens* and its relatives. She would be pleased if one could identify wild populations of these species in the UK or abroad and if anyone could send her samples from sites where they have collected *Physcomitrella patens*, *Funaria obtusa*, or *Physcomitrium pyriforme*, for genetic analysis. Please contact E. Hooper at: Ecology and Evolution group/Centre for Plant Sciences, School of Biology, University of Leeds, UK, LS2 9JT, UK, Room 10.20/9.12, Mall Building Tel: +44 (0)113 3432854/0113 3433096

**Maria Arroniz-Crespo** ([maria.aroniz@daa.unirioja.es](mailto:maria.aroniz@daa.unirioja.es)) and **Saul Otero** ([saul.otero@daa.unirioja.es](mailto:saul.otero@daa.unirioja.es)) prepare their doctoral degree at the Universidad de La Rioja (Logroño) on the effects of ultraviolet radiation on aquatic bryophytes, within the Project REN2002-03438/CLI of the Spanish National Plan of Research and Development. Both students benefit from 4-year grants of the Spanish Ministry of Education and Science;

**Isabel Draper** ([isabel.draper@uam.es](mailto:isabel.draper@uam.es)), **Lisa Pokorny** ([lisa.pokorny@uam.es](mailto:lisa.pokorny@uam.es)) and **Rafael Medina** ([rafael.medina@uam.es](mailto:rafael.medina@uam.es)) prepare their doctoral degree at the Universidad Autónoma de Madrid; Isabel Draper is about to finish her study on the epiphyte bryophyte flora of Morocco; Lisa Pokorny is in her second year of study on the distribution and ecology of the Pyrenean populations of *Orthotrichum rogeri*; and Rafael Medina is beginning to work in the taxonomy of *Orthotrichum*, subg. *Pulchellum*. Isabel and Lisa benefit from 4-year grants of the Spanish Ministry of Education and Science, whereas Rafael is anxiously waiting for a positive answer to his application.

## Sabbatical leave

**Rob Gradstein** will be away from Göttingen and staying at the New York Botanical Garden during March-July 2005, in the framework his sabattical. While in New York, he hope to finish the treatment of the liverworts and hornworts for the "Guide to the Plants of Central French Guiana" (by S. Mori et al.). The work will be the companion volume to the treatment of the mosses, by Bill Buck, which appeared in 2003.

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## Bryophytes in forest ecosystems of Réunion Island

Claudine Ah-Peng<sup>1</sup>, Jacques Bardat<sup>2</sup>, Dominique Strasberg<sup>1</sup>

At present, bibliographies do not give a precise assessment of the bryological richness of the island. Nevertheless, Frahm (2003) estimated that for Réunion Island at least 376 Musci and 227 Hepaticae were present. Consequently, it becomes necessary to update these data and make some new inventories in a more systematic and coordinated manner.

Moreover, compared to other islands in the occidental Indian Ocean area, Réunion Island is characterized by the presence of well-preserved native ecosystem. Presently, 30 % of the surface is still covered by natural forests. A good knowledge of the specific and functional diversity is required for the conservation of primary vegetation.

The rôle of bryophytes in ecosystems is extremely variable. This is essentially related to the importance of the relative biomass in ecosystems. The relative biomass of bryophytes can be extremely low in open and dry environments, whereas it can be very significant in humid environments. However, in forest areas, they can play an important role in the circulation of water and dissolved nutrients, particularly due to their retention and storage abilities (Pócs, 1982).

The general aim of this three year project is first to evaluate **the bryological diversity** in tropical insular forest ecosystems, responding to a lack of knowledge on dynamics and diversity of the species living in indigenous habitats. This project also aims at evaluating the impact of fragmentation, habitat degradation and introduction of allocthonous species on bryophyte communities. Comparative studies will be carried out between indigenous primary habitats and their diverse stages of disturbance (natural or human).

Further, this project aims at putting the bryophyte flora of Reunion Island in a biogeographical context, by comparing bryophyte diversity of Réunion Island with that of neighbouring islands in the Mascarene area.

Another objective of this work concerns the estimation of the bryological richness associated to diverse cormophytic communities, which are structuring the major vegetation of the island. In this case, particular attention should be paid to the **organization and the spatial distribution of bryophyte communities** in the studied ecosystems, in order to define and to specify the behaviour of species (auto- ecology).

This research program is integrated into national issues on conservation of natural biological resources. In the long term, this work can be integrated into a broader program, in order to obtain a better knowledge on bryological diversity and ecology of species in the West Indian Ocean area (Réunion, Comores, Seychelles, Mauritius, Madagascar).

### References

Frahm, J.-P. (2003). "Manual of tropical bryology." *Tropical Bryology* **23**: 195.

Pócs, T. (1982). Tropical forest bryophytes. *Bryophyte Ecology*. A. J. E. Smith. London-New-York, Chapman & Hall: 59-104.

1. Université de la Réunion, Faculté des Sciences, UMR C53 Peuplements végétaux et bio-agresseurs en milieu tropical, BP 7151, 97 715 Sainte- Clotilde Messag. cedex 9, France

2. Muséum National d'Histoire Naturelle, Département Régulations, Développement et Diversité moléculaire, USM 505 « Ecosystèmes et Interactions toxiques », Equipe Bryophytes et Bioindication, C.P. 39, 57, rue Cuvier, 75 231 Paris Cedex 05, France

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## Bryophyte collections of Réunion at the National Botanic Garden of Belgium

When he died in 2000, Theo Arts had been working for several years on the bryophytes of Réunion, an island that he visited frequently with his wife. He had planned the publication of a Bryophyte flora of Réunion, a project that he expected to be finished by 2010. He left an extensive herbarium collection, many beautiful drawings, and several unfinished manuscripts. Ida Bruggeman-Nannenga is now finishing his paper on the genus Fissidens. However, a manuscript with additions to the bryoflora of Reunion and 'Part 1: Bryaceae (Musci)' of his flora remain unfinished.

Bryologists wanting to consult this documentation or the collections from Reunion of the late Frère Maurice Onraedt (1904–1998) are welcome.

Note that SYNTHESYS (an initiative by CETAF) allows EC-FP6 funding for European researchers in need of visiting the herbarium BR and its facilities (Contact: [degreef@BR.FGOV.BE](mailto:degreef@BR.FGOV.BE))

(See also message from Irene Bisang below)

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## SYNTHESIS

Following the information in the latest issue of the Bryological Times (N) 114 of December 2004), we inform you that the second call for applications is now open, with a deadline on 18 March. You find the application form at <http://www.synthesys.info>. We hope you will take the chance to apply for a supported visit to NRM's extensive and scientifically important collections and/or state-of-the-art analytical facilities (<http://www.nrm.se/synthesys/>). Please

note that a contact with a staff member at NRM needs to be established prior to submission to discuss details of the planned visit, and a supporting statement by a senior peer, who knows both you and your work first-hand, must be submitted in due time.

Irene Bisang

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## FREE PODIUM

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### Sporogonites, an early ancestor of Takakia?

ILLUSTRATIONS. The advantage of newsletters is that it is (hopefully) allowed to speculate, something, which serious journals do not allow (anymore, in the past, the journals were full of speculations with phylogeographic or phylogenetic contents). And one point which is almost totally matter of speculation is the origin of bryophytes, since the oldest known fossils already resemble extant taxa (except maybe some groups of bryophytes such as *Protosphagnum*, which got apparently extinct in the meantime). And although the classical hypothesis of the palaeobotanists such as Wettstein was, that bryophytes developed from algae, and ferns from bryophytes, (in accordance with Haeckel's law that the phylogeny repeats the ontogeny), it is today undoubted that at least the mosses and hornworts had tracheophytic ancestors (from which they got stomata, cuticles or vessels). However, there is no idea how these ancestors looked like. There are early tracheophytes such as *Sciadophyton* which had Marchantialean gametophores, but it is hard to believe that there is a phylogenetic relationship between Marchantiaceae and such plants.

Recently the famous retired palaeobotanist Schweitzer from Bonn University contacted me to discuss the possible bryological character of some fossils from the Devonian. He showed me illustrations of *Sporogonites exuberans*, known from Norway, Belgium, Wales, France and Germany. The fossils consist of separate Sporophytes with sporangia, which have no contact with the rest of the plant but are fragments which were washed together. The "setae" are about 7 cm long and 0,5 mm wide with a central line (conducting tissue?), the "capsules" are elliptical, 6-7 mm long and 3 mm wide and have an acuminate tip. The base of the "capsules" (lower 3 mm) is furrowed and consists of parenchymatic cells, thus resembling an apophysis. Spores are in the upper part, but not in the centre (where a columella can be postulated). The upper part is 1-1.5 mm long and conical, resembling an operculum, but there is no indication that this "operculum" was dehiscent. But how were the spores released? Something which apparently was not recognized before is, that the illustrations of *Sporogonites* show a sinuose curved line on the sporangium. This reminded me much at the opening mechanism of the capsules of *Takakia*. And even if *Takakia* has not directly derived from *Sporogonites*, both share the same opening

mechanism of the sporangium, which must be regarded as very original and this mechanism may have persisted until *Takakia*. Although not knowing much about the gametophyte of *Sporogonites*, it may perhaps even belong to the Takakiopsida...

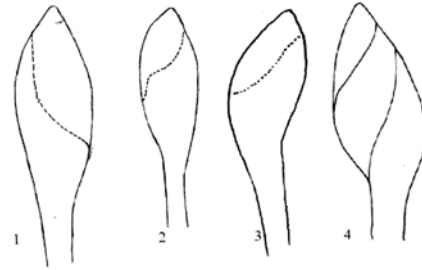


Fig.: 1-2. Sporangia of *Sporogonites exuberans* (drawn from Schweitzer 1983). 3-4. . Sporangia of *Takakia*, 3. closed, 4 open. (drawn from Smith & Davison 1993).

There was much discussion about the systematic placement of *Sporogonites*, and although the majority of palaeobotanists as well as the bryologists placed it in the bryophytes and not Rhyniophyta, this slit in the sporangium may support once more the position in the bryophytes. Considering the presence of "fern-like" structures in *Takakia* such as the apical meristem, *Sporogonites* may be a representative of a common ancestor of the ferns and bryophytes and *Takakia* has kept such characters.

Schweitzer, H.-J. 1983. Die Unterdevonflora des Rheinlandes, 1. Teil. Palaeontographica Abt. B 189: 1-138.  
Smith, D.K., Davison, P.G. 1993. Antheridia and sporophytes in *Takakia ceratophylla* (Mitt.) Grolle: evidence for reclassification among the mosses. J. Hattori Bot. Lab. 73: 263-271.

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### Bryophytes and Global Change

Global Change is a meteorological fact. During the past hundred years, the temperatures in Central Europe raised almost 1°C. The highest increase was since 1985. This sounds not much, but one has to consider that a decrease of 4.5° would, for instance, cause a new Ice Age. More important is that the mean monthly temperatures in winter raised by 1.5 – 3°C, that means frost frequency decreased. As everybody in Central Europe knows from own experience, ice skating during winter on frozen rivers and lakes got a rare experience. According to meteorologists, the water temperature of the Atlantic Ocean raised by 0.5°C. And the

water temperature of the oceans is the motor of atmospheric circulation. The warmer water caused a higher frequency of anticyclones. These anticyclones came more often and stronger (disastrous storms) over Central Europe, caused the continental cyclone to stay in the east, brought higher amounts of water (warmer air keeps more humidity), raising the precipitation (locally different, more in the mountains) between 10 and 40%, especially in winter times.

Do plants react to this phenomenon? Of course, they did all the time, else we would still live in a tundra in Central Europe. They reacted by changes of their ranges. Principally,



a range is never constant but oscillates at the border (see arctic and alpine tree lines). This includes bryophytes, too. In contrast to flowering plants, bryophytes can react very fast to ecological changes. Short life cycles, spore banks in the soil, easy methods of dispersal by spores or gemmae over long distances allow them to react to changes within a year. There were long discussions about which bryophytes were able to disperse over long distances with the result that only those with small spores should be able. As outlined in my textbook (Frahm 2001), this goes back to a wrong translation of a German text. The statement that only spores < 30 µm are able for long distance dispersal is referred to Schmidt (1918), but he had stated that such spores are lifted up into the air by warm air (like dust in a warm living room) and no wind. And it is no doubt that larger spores can be dispersed by stronger winds. And if big insects are blown even over oceans, spores will do the same. Also the experience shows that sterile species such as *Tortula pagorum* are dispersed over large distances by their gemmae, which are 100 µm large.

But if plants react to climate changes (no doubt) and if bryophytes do this very easily, why do we hear so little about this phenomenon? In a series of papers (Frahm & Klaus 1997, 2001, Frahm 2003), I mentioned that more than 40 species of bryophytes were recorded as new to Central Europe over the past 20 years. And these are no boreal species, of course, but Atlantic or Mediterranean species. In ecology, we have this law of habitat consistency. If a species requires a minimal mean annual temperature of 4°C, it occurs only in regions with higher temperature. If the temperature raises outside the present range, the species extends. And if a species such as *Sematophyllum substrumulosum* occurs in SW-France at the northernmost point of its range and is now found in the Netherlands, we have to conclude that the ecological conditions in the Netherlands are now as in SW-France before. This is in accordance with the fact that the 3.5°C isotherm shifted 400 km to the east in the past years. And spore dispersal can be very easy. Apparently there are permanent showers of bryophyte spores everywhere, also of species which do not occur in the region.. Petterson (1940) filtered from rain water of one day in a meteorological station in Finland 2000 spores of mosses from 14 species, amongst 278 spores of *Alcina brevirostris*, a species not present in Finland. So spores seem to be distributed all the time much over the borders of their present ranges. They come down – and do not germinate because of unfavourable conditions. If, however, the conditions change, the spores germinate..... Therefore it is not surprising that already in the past, the records of *Cryphaea heteromalla*, *Tortula pagorum*, *Bryum torquescens*, *Lepidozia cupressina* and others in Central Europe were made in phases with positive temperature anomalies – and these species disappeared again when the climate got unfavourable (Frahm & Klaus 2001).

This outline of basic ecological facts may sound trivial, but in my experience, many bryologists neglect or even contradict the effects of changes, although the fact that a change of ecological conditions causes a change of species is trivial.

By this way we got in Central Europe species such as *Tortula vahliana*, *T. canescens*, *T. subpapillosissima*, *T. princeps*, *T. brevissima*, *Crossidium aberrans* and others in Central Europe from the Mediterranean and species such as *Fissidens rivularis*, *F. celticus*, *F. moguillonii*, *Lejeunea lamacerina*, *Frullania microphylla*, *Lophocolea fragrans* and others from western Europe. Other species (*Funaria pulchella*, *Pottia mutica*, *Pterygoneurum lamellatum*, *Scleropodium cespitosum* and others) extended their ranges considerably to the north or east.

The same changes (invasion of species from the south and west) are also found amongst the lichens in Central Europe. A major point of criticism is that all these species were simply overlooked. That can be the case in one or the other species. But 40 species cannot have been overlooked and some of the new records concern famous spots of bryological interest, which were frequently visited over the time.



Fig. 1. *Dicranm scoparium*

The changes do not only concern the invasion of new species but also morphological changes of species. For instance, since a couple of years, *Hypnum andoi* grows pendent from branches in the Vosges-Mountains, France, like Meteoriaceae in the tropics. The ultimate change was observed, when *Dicranum scoparium* was seen to form "moss balls" on branches similar to moss balls of Dicranaceae (*Dicranoloma billardierei*, *Campylopus* spp.) in rain forests. In the year 2002, when the mossballs of *Dicranum* were observed, the 2400 mm annual precipitation was measured in this region (normally 1800 mm before). These are amounts of rain as in rain forests (with the difference that the humidity in tropical rain forests is even less because of the higher temperatures!) and it could be that these different growth forms are caused by higher precipitation and start to develop at more than 2000 mm rain..



Based on the experiences of the last years, the Society of German Engineers (Verein Deutscher Ingenieure, VDI) plans to develop a guideline to make use of the ability of lichens and bryophytes to indicate climate changes. The VDI has in

the past developed guidelines for mapping epiphytic lichens and bryophytes as indicators for environmental quality.

The question is now, is this effect of the climate change on bryophytes only restricted to Central Europe? I assume not. Because of the origin of the whole change in the Atlantic Ocean, Central Europe may be more affected than other regions in the world, but the changes are surely not confined to Europe. One has only to look closer and with more regard to this phenomenon. When I was in the New York State in 2001, I found in the Adirondacks *Sematophyllum marylandicum*, a species which was formerly only known from the coastal areas, and *Entodon cladorrhizans*, which was previously found not as high up. From collections of the Californian bryologists, I identified *Dicranella hilariana* and *Atractylocarpus stenocarpus*, species which were now collected around San Francisco but which were known before only as far north as Mexico. So the effects of the climate change are apparently everywhere, but hardly noticed. So bryologists should make use of the fact that bryophytes are such good and fast reactors of changes, which is a great advantage of bryophytes as compared to flowering plants. So far as I know, bryophytes are included only in Austria in a project (called GLORIA) on the effects of the global change on the mountain flora.

Frahm, J.-P. 2001. Biologie der Moose. Heidelberg (Spektrum) 357 pp.

Frahm, J.-P. 2003. Weitere Auswirkungen des Klimawandels auf die Moosflora. Limprichtia 22: 147-155.

Frahm, J.-P., Klaus, D. 1997. Moose als Indikatoren von Klimafluktuationen in Mitteleuropa. Erdkunde 51: 181-190.

Frahm, J.-P., Klaus, D. 2001. Bryophytes as indicators of recent climatic fluctuations in Central Europe. Lindbergia 26: 97-104.

Petterson, B. 1940. Experimentelle Untersuchungen über die euanemochore Verbreitung der Sporenpflanzen. Acta Bot. Fennica 25: 1-102.

Schmidt, W. 1918. Die Verbreitung von Samen und Blütenstaub durch die Luftbewegung. Österr. Bot. Zeitschr. 67: 313-328.

Legends:

Fig. 1: *Hypnum andoi* growing pendant from twigs of spruce trees in the Vosges-Mountains, France. This "tropical" phenomenon has never been observed in Central Europe and showed up since 1995. It is interpreted as a reaction to increased humidity, precipitation, higher temperatures in winter or higher nitrogen fertilization-effects by reduced acid rain.

Fig. 2: "Moss ball" of *Dicranum scoparium* on twig of a spruce tree in the Vosges-Mountains, France. Such phenomenon was – to my knowledge - never observed before in Europe but a common effect in temperate and tropical montane rain forests. Both effects, moss balls and pendent life form, originate not without cause but have reasons. If they have not been observed before, there must have been ecological changes causing these morphological changes

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## CONFERENCE NEWS

### Successful Bryophylogeny 2004 symposium in Göttingen

The Second International Symposium on Molecular Systematics of Bryophytes "Bryophylogeny 2004" was successfully held during 10-12 September 2004 at Albrecht von Haller Institute of Plant Sciences of the University of Göttingen, Germany, under the chairmanship of the President of our Association, Dr. S. Robbert Gradstein. The symposium was organized by Professor Gradstein and his able co-organizers Dr. Jochen Heinrichs and Miss Rosemary Wilson as a follow-up of the first symposium on molecular phylogeny held in St. Louis in 2003 (see the proceedings edited by Goffinet, Hollowell & Magill, 2004, announced in BT 114: 8). It is no exaggeration saying that the symposium already started in full gear at the welcome party in the "Orangerie" of the Old Botanical Garden during the evening of the first day. The meeting hall was beautifully and intellectually decorated by the Exhibition entitled "The System of Plants - 250 years after Linnaeus," showing how plant systematics had developed since Linnaeus towards molecular phylogeny, and was filled with lively bryological conversation and camaraderie of the delegates, which included about 90 participants from 15 nations.

The plenary session was held on Saturday 11th of September in the lecture hall of the institute. The opening address given by Professor Gradstein was followed by welcome greetings from Professor Christiane Gatz, Director of the Albrecht von Haller Institute of Plant Sciences and Head of the Department of Plant Physiology, who cordially provided us with a lively pictorial overview of the institute.

During the morning session, we heard three lectures on the phylogeny of the land plants: 1) On the role of morphology, DNA sequences, and comparative genomics (by B. Mishler), 2) Bryophytes and other land plants: the mitochondrial perspective (by M. Groth-Malonek, T. Rein, M. Polsakiewicz & V. Knoop), and 3) Toward a generic level phylogeny of the mosses (by A.J. Shaw, C.J. Cox & B. Goffinet).

During the afternoon session there were seven oral contributions, including 1) Molecular phylogenetic relationships of Jungermanniidae based on rbcL sequences, with special reference to *Mizutania riccardioides* (by H. Tsubota & H. Deguchi), 2) Evolutionary trends in liverworts, a phylogenetic approach based on multiple gene sequences and morphology (by S. He-Hygrén, A. Juslén, I. Ahonen, D. Glenny & S. Piippo), 3) Evolutionary trends in the Metzgeriidae (by B. Crandall-Stotler, L. Forrest & R. E. Stotler), 4) Molecular phylogeny of Pallaviciniaceae (by F. Schaumann), 5) Origin and subdivision of *Plagiochila* in tropical Africa (by J. Heinrichs, M. Lindner & H. Groth), 6) Organellar inheritance in mosses. Analysis of chloroplast trnALys (UUU) gene encoding maturase protein within intron (by K. Jankowiak & S. Szwejkowska-Kulińska), 7) First evidence for bryophyte survival during the last glaciation in Central Europe (by J. P. Frahm & D. Quandt).

During the coffee breaks we had a chance to admire the 14 poster presentations. I want to list them here in full to give an idea of the breath of topics currently undertaken in molecular-phylogenetic research in the world (even when I

run the risk of taking too much precious space of this newsletter!). They were:

1. Taxonomic position of *Nipponolejeunea* (Steph.) Hattori (by Ahonen, I.), 2. Cryptic speciation in *Herbertus* (Herbertaceae, Jungermanniopsida): Range and morphology of *Herbertus sendtneri* inferred from nrITS sequences (by Feldberg, K., H. Groth, R. Wilson & J. Heinrichs),
3. Systematics and biogeography of Calymperaceae and the *Syrhobodon involutus* complex (by Fisher, K.M.),
4. The systematic position of *Metzgeriopsis pusilla*, an enigmatic thalloid member of the Lejeuneaceae (by Gradstein, S.R., A.L. Ilkiu-Borges, R. Wilson & J. Heinrichs),
5. Phylogeny of the moss genus *Pleurochaete* (Pottiaceae, Musci) (by Grundmann, M., H. Schneider, S.J. Russell & J.C. Vogel),
6. The genetic basis of protonemal growth rate variation in *Ceratodon purpureus* (Hedw.) Brid. (by McDaniel, S.F. & A.J. Shaw),
7. The use of ITS sequences on the systematics and phylogenetic inferences of bryophytes (by Ricca, M., T. Azevedo & A. Séneca),
8. *Pedinophyllum interruptum* (Jungermanniopsida: Plagiochilaceae): small molecule systematics based on 3-prenylbenzic acid derivative and related chromenes (by Rycroft, D.S., W.J. Cole, H. Feld & J. Zapp),
9. The coldest mosses in the world – evolution and survival in Antarctica (by Skotnicki, M., A. Mackenzie & P. Selkirk),
10. The loss of *rpoA* from the moss plastid genomes: Is it a general occurrence in mosses? (by Sugita, M. & C. Sugiura),
11. Fingerprinting bryophytes (by Virtanen, V., H. Korpelainen, K. Kostamo & M. Pohjamo),
12. First steps towards a genetic map of *Physcomitrella patens*: high genetic variability in the genus based on molecular analyses (by Von Stackelberg, M., S.A. Rensing, R. Reski & G. Schween),
13. Molecular phylogeny of the genus *Didymodon* (Pottiaceae) based on nrITS sequence data (by Werner, O., J.A. Jimenez & R.M. Ros), and
14. The relationships and molecular evolution of *Cryptothallus mirabilis* (by Wickett, N. & B. Goffinet).



After the poster presentations, the participants walked to the Old Town Hall ("Altes Rathaus"), a historical monument of the Middle Ages in the centre of the town of Göttingen, where a reception was held in our honour. We received warm welcome greetings from Mr. Wilhelm Gerhardy, mayor of Göttingen, in the solemn atmosphere of the hall's interiors with old panels of emblems of the Hansa Towns. The participants greatly enjoyed the pleasant conversations in a fragrance of tradition and German wine. The subsequent congress dinner in the "Ratskeller," in the basement of the Old Town Hall, served as "the evening venue" to develop further discussions and exchange information; each participants enjoyed its own favourite German dish.

In the morning of the third and last day we heard the

following six lectures: 1) The evolution of the *rpoA* (cpDNA) region in mosses (by B. Goffinet, C.J. Cox & A.J. Shaw), 2) Key innovation or adaptive radiation – why are the pleurocarps so diverse? (by A.E. Newton), 3) Phylogeny of Polytrichales reoptimized (by J. Hyvönen), 4) Molecular phylogeny of the Trichostomoideae (Pottiaceae) based on nrITS sequence data (by O. Werner, R.M. Ros & M.

Grundmann), 5) Molecular relationships, biogeography, and evolution of Gondwanan *Campylopus* species (Dicranaceae, Bryopsida) (by M. Stech & D. Wagner), and 6) The evolution of endemism within a monophyletic complex of mosses with contrasting distribution pattern (by A. Vanderpoorten & B. Goffinet). After the closure of the symposium, many participants rushed to the MOSS 2004 conference which took place at the University of Freiburg in southern Germany (about 5 hours by train from Göttingen) from 12 to 15 September.

During the Bryophylogeny symposium in Göttingen, many of the participants crowded the lobby for group discussions. During the breaks, coffee, soft drinks and snacks were graciously served by self-sacrificing students with friendly, charming smiles. It is my personal impression that the symposium went very well, was very well organized, and was rich in scientific content. I believe all participants very much enjoyed the presentations, which covered diverse fields of phylogeny and taxonomy based on molecular data. Another impression of mine was that many lively questions and comments were made by outstanding and distinguished bryologists with backgrounds in traditional taxonomy or morphology, may be more so than by the young students trained in the modern molecular methods. We also noted

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some overlap (or even competition) of research interests in particular phylogenetic groups, revealing us the "hot spots" of molecular phylogenetic approaches in bryology and demonstrating, at the same time, how the fruits of traditional taxonomy are being appreciated in modern molecular research.

Lastly on behalf of all the participants, I would like to thank the organizers, Dr. Robbert Gradstein, Dr. Jochen Heinrichs and Miss Rosemary Wilson, and all the other people involved in this symposium for their kind invitation and the hearty hospitality we received during this event, which was financially supported by Akademie der Wissenschaften Göttingen, Deep Gene, Deutsche Botanische Gesellschaft, Deutsche Forschungsgemeinschaft, International Association

of Plant Taxonomists, Land Niedersachsen, and Universität Göttingen as sponsors. The proceedings of the symposium will appear May 2005 in the journal TAXON 54 (2).

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P.s. Very tragically we received the news that one of the symposium lecturers, Dr. Friederike Schaumann from Berlin, died of a brain tumour shortly after the event, in October 2004.

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### V<sup>th</sup> Meeting of the Bryological Working Group (Italian Botanical Society)

This meeting was organized by Prof. M. Aleffi, Prof. M. Privitera and Dr. M. Puglisi at the Botany Department of the University of Catania (Sicily, Italy). It was held on 18 June of the current year. The title of the meeting was "Cytological, ecological and phytogeographical aspects of Bryophytes in Italy". During the meeting the 34<sup>o</sup> volume of Braun-Blanquetia "Bryological studies in honour of Carmela Cortini Pedrotti" was presented too.

The meeting started at 10.00 a.m. with the communication of C. Cortini Pedrotti, regarding the additions to the check-list of the Italian mosses, recently signalled by different Authors (e. g. *Gymnostomum lanceolatum*, *Schistidium pulchrum*, *Schistidium lancifolium*) or cited in litteris. The following communication is by A. Cogoni, F. Flore and C. Adamo on some new and interesting findings of Sardinian bryoflora; among these, *Cryphaea heteromalla*, *Dicranella heteromalla*, *Pseudotaxiphyllum elegans*, *Fissidens fontanus*, *Grimmia hartmanii*, *Tortula israelis* are new regional records; moreover, the occurrence of *Petalophyllum ralfsii* is confirmed. S. Cipollaro, R. Tacchi and C. Colacino presented the preliminary results of a study regarding the bryoflora of the Fagus-Abies community of Mt. Motola (National Park of Cilento and Vallo di Diano, S Italy); the number of species reported is 62, including four new records for S Italy (*Isopterygiopsis pulchella*, *Orthotrichum lyellii*, *O. pallens*, *Schistidium apocarpum*). C. Colacino & M. Sabovljevič presented a preliminary check-list of the bryoflora of Albania within its political boundaries; it consists of 318 specific and infraspecific taxa based on literature reports from 1888 on, representing the first check-list for the bryophytes of this country. P. Campisi, M. G. Dia and P. Aiello talked about the analysis of the bryophyte diversity in main habitat types of Sicily. The greatest floristic richness has been found in maquis and garigues (169 taxa), but considerable is also the number of taxa in urban areas (147) and, as to forest formations, in beech woods (113). Peatlands and springs have the most characteristic bryoflora, showing the highest incidence of exclusive taxa (86,6%); rare taxa reach 50% of bryoflora in mountain summits and 23,7% in fumaroles. R. Tacchi presented an analysis of the bryophyte diversity of the "Montagna di Torricchio" Nature Reserve (C Italy). Here the data obtained by a method of "biodiversity estimation and monitoring in protected areas" (the BioProtect Project) for assessment of bryophyte diversity are compared with those obtained through traditional species survey over the course of several years, in order to objectively evaluate both methodologies.

In the afternoon, the meeting continued with a group of phytogeographical and phytosociological contributions. A.

Carratello talked about the phytogeographical considerations on the bryoflora of some circum Sicilian islets (Aegades archipelago). On the basis of bibliographic data, review of herbarium specimens and personal collections, a total of 158 specific and infraspecific taxa are reported, with some species new for the Sicilian territory (*Ditrichum pusillum*, *Scleropodium cespitans*, *Fossombronia echinata*). M. Privitera and M. Puglisi presented a communication about the Sicilian floristic and vegetational accounts worthy of protection. They are some Circum-Tethyan and Xerothermic-Pangaeian species (e. g. *Grimmia capillata*, *Pseudocrossidium replicatum*), as well as some alpine (e. g. *Brachythecium collinum*, *Desmatodon latifolius*), tropical (*Calymperes erosum*, *Trematodon longicollis*), and endemic taxa (*Rhynchostegium strongylense*, *Campylopus pilifer* ssp. *vaporarius*). As regards the bryovegetation, some associations of the phytosociological classes Racomitrietea heterostichi and Cladonio-Lepidozietea reptantis, found on the summit of the volcano Etna, as well as some of the class Campylopodetea vaporarii, occurring on fumarole habitat, are noteworthy. The following communication, by M. Puglisi, regards the outlines of the bryophyte vegetation from the Aspromonte massif (S Italy). The numerous associations cited are referred to the phytosociological classes Platyhypnidio-Fontinaletea antipyrethicae, Barbuletea unguiculatae, Cladonio-Lepidozietea reptantis, Ceratodontopolytrichetea piliferi, Racomitrietea heterostichi, Grimmietea anodontis, Neckeretea complanatae, Frullanio dilatatae-Leucodontetea sciuroidis; moreover, some communities of the classes Adiantetea and Montio-Cardaminetea are discussed too.

S. Giordano talked about the genetic variability, expressed as haplotype number, in urban and extra-urban populations of the moss *Leptodon smithii*; it was found higher in the extra-urban sites, where higher levels of frequency and cover were also observed. As to the urban sites, there was a lower haplotype number, and it is particularly interesting that about 70% of gametophytes analysed in the two urban sites, showed identical haplotypes, that markedly decreased intra-specific biodiversity in the two populations. On the whole, the genetic variability seems to be directly related to the size of each population, and inversely related to environmental disturbance. The last talk was given by A. Petraglia on the growth, net primary production, spatial density and population structure of the chionophilous moss *Polytrichastrum sexangulare* at the Gavia Pass (Rhaetian Alps, N Italy). Correlations between some measured variables were calculated; regression curves were plotted for some significant correlations. Results confirm that the trend

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of annual growth decreases with increasing of spatial density recorded for some other species of mosses and liverworts.

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## Report of the 33rd Annual Meeting of Bryological Society of Japan

The 33rd Annual Meeting of the Bryological Society of Japan was held on 20-22 August 2004 in the Obihiro Centennial City Museum, Obihiro, Hokkaido with 64 participants. As the head of the organizing committee Dr. Hiroshi Kanda (National Institute of Polar Research) presided over the meeting, which was favourably proceeded according to the program. The program and the events are summarized as follows.

August 20 (Friday): council meeting.

Council meeting was held on the first day, August 20, at the Hokkaido Hotel where all participants stayed there together during the meeting.

August 21 (Saturday): general lectures, posters, open lecture, general meeting, banquet.

Eight lectures and eight posters were presented from the various fields of bryology covering molecular phylogeny, morphology, geography, physiology, ecology, taxonomy, and monitoring. An open lecture entitled "Roles of bryophytes in changing environments" was presented by Dr. Kensuke Nabeta (Obihiro University of Agriculture and Veterinary Medicine) and Dr. Hiroshi Kanda as special program of this meeting. It was timely. The abstracts (in Japanese) can be

available in the Bryological Research vol. 8, no. 10 (2004). General meeting included reports from council, changes of the Society's rules, etc. I heard surprisingly that the number of the member reached 398! Banquet was begun by opening speech of Dr. Hironori Deguchi, president of the society, and we enjoyed dinner and talking.

August 22 (Sunday): field excursion.

The participants moved by chartered buses and private cars to "Toyokita-gensei-kaen," natural forest situated at seashore of the Pacific Ocean, Uraho-cho. Notable taxa observed in the forest were subalpine mosses such as *Polytrichum juniperinum*, *Hylocomium splendens*, *Hypnum lindbergii*, *Sanionia uncinata*, etc. This excursion was open to non-member of BSJ, mainly citizen of Obihiro, which was planned by the Obihiro Centennial City Museum. We pleasantly observed plants in the field and took lunch in fresh air.

The next meeting (the 34th) will be held on August 2005 at the Fukui General Botanic Garden, Fukui Prefecture.

Masanobu Higuchi, e-mail: [higuchi@kahaku.go.jp](mailto:higuchi@kahaku.go.jp)  
The Bryological Society of Japan: <http://sc1.cc.kochi-u.ac.jp/~bryosoc/>

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## CONSERVATION COLUMN

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### Successful workshop on first official red list of endangered Chinese bryophytes

A historical workshop with the Chinese bryologists took place in December of 2004 in Shanghai to discuss and produce the first official red list of the most endangered Chinese bryophytes. The meeting was held from Dec 13 to 17 at the Shanghai Normal University, with Profs. Cao Tong and Zhu Rui-Liang as the two main organizers. The workshop was attended by 16 resident Chinese bryologists and six invited foreign guests, namely, Drs. Z. Iwatsuki from Japan, B.C. Tan from Singapore, T. Hallingbäck from Sweden, Xiao-Lan He-Nygrén from Finland, M. Richardson from UK, and Mr. Uwe Swartz from Germany. A group picture of the attending participants was taken to commemorate the workshop occasion (see picture).

With a large and diverse bryoflora of more than 3,000 species and occupying a strategic geographical position in Continental Asia, China has, to date, no official red list of endangered bryophytes published for protection consideration. Hence, it is of great conservation significance that a workshop, with the main goal to identify and document the most endangered bryophytes in China today, was carried out after more than a year of planning and preparation. The Shanghai workshop was funded by the Shanghai Normal University, the International Association of Bryologists (IAB), the IUCN Bryophyte Commodity Group, the Botanic Gardens

Conservation International (BGCI), the Tan Chin Kee Foundation, and the Office of Lady Yuen Peng McNeice (Singapore).

The Shanghai workshop consists of two components, namely, two separate half-day sessions of talks at the opening and closing programs which were opened to public and attended each time by more than 30 students and professionals from the bryological and university circles in Shanghai, and a two-days closed door session identifying the endangered bryophytes in China. Four lectures with a theme relevant to the workshop (see appendix 1) were given at the opening program in the morning of Dec 13 after the brief welcome speech delivered by the President of Shanghai Normal University, Prof. Yu Li-Zhong, and followed by encouraging words from the IAB President, Prof. R. Gradstein, read in proxy by IAB Vice-President, Prof. Z. Iwatsuki. Another three lectures on the ecology, phylogeny and conservation of bryophyte diversity in China were likewise given at the closing program. The climax of the workshop came with the reading of the names of chosen members of the first red list of endangered Chinese bryophytes by Prof. P.-C. Wu from the Institute of Botany of the Academia Sinica in Beijing.

The birth of the first official red list of endangered Chinese bryophytes has not been easy. Being a group of least economically important plants, the need and necessity to protect the threatened bryophytes in China have been overlooked. Past attempts to assess and decide on the listing as a group effort at a national meeting have not received attention and support. Consequently, the timely approval of a project proposal to this effect submitted by Cao Tong and B.C. Tan at the IAB meeting held in Mérida, Venezuela in January of 2004 was a big breakthrough.

In order to assure the success of the workshop, in June of 2004 the two Chinese organizers sent out the formal invitation to all active bryologists/colleagues in China, Hong Kong and Taiwan, announcing the event and outlining the goals of the workshop. Together with the invitation were copies of the IUCN criteria and screening procedures adopted worldwide for the selection of endangered plants and animals. These IUCN documents were translated into Chinese language and mailed out to serve as reference materials. The workshop participants also were requested beforehand to submit by November a list of no more than 15 names of what they have perceived individually to be the most endangered bryophytes in China today based on their knowledge and field observation. These pre-workshop assignments done by the participants formed the basis of a lively and lengthy discussion during the workshop.

Before the start of the closed-door session, the 16 Chinese participants first agreed to a set of modified IUCN principles and criteria to follow in choosing the candidates for the first red list of Chinese bryophytes. After much debate and sometimes heated exchanges of opinions, the resulting consensus was to exclude from the consideration, for the time being, (1) new species that were published recently within the past five years (unless the taxon has been well investigated), (2) species that have not been revised taxonomically for decades, and (3) species with controversial taxonomic problem or of doubtful taxonomic status. In retrospect, the workshop was a fruitful exercise of intellectual, objective, and at times revealing, discourses about the known bryophyte distributions in China, causes of their habitat endangerment, and what need to be done after the production of the first official red list.

After the successful conclusion of the workshop, the Chinese participants were taken on a sight-seeing tour to witness the fast changing urban landscape of modern day Shanghai City, which includes a visit to the famous Shanghai shopping district along the Nanjing Road, while the foreign participants were invited to go on a one day field trip to look at indigenous bryophytes at the nearby West Tianmu Nature Reserve. This forest reserve, not only is famous for its many ancient

Buddhist temples, but also is known worldwide for its highly publicized individual trees of Chinese species of *Cryptomeria* dated more than 1,000 years old, and an alleged wild population of *Ginkgo biloba* in China today.

As proclaimed at the closing ceremony of the workshop, the



first red list of endangered Chinese bryophytes consists of 82 species (50 mosses, 31 liverworts, and one hornwort) in 75 genera and 41 families. Of these, 36 are classified as critically endangered (CR), 29 as endangered (EN), and 17 as vulnerable taxa (VU), following the modified IUCN criteria. The list includes several Chinese and regional endemics with narrow ranges, as well as those of high and

unique bryological interests. They are *Andreaea morrisonensis*, *Ascidiota blepharophylla*, *Buxbaumia punctata*, *Cheilolejeunea gaoi*, *Dicranum mammillosum*, *Diphyscium satoi*, *Distichophyllum carinatum*, *D. meizhii*, *Ditrichopsis gymnostoma*, *Horikawaea redfearnii*, *Horikawaella rotundifolia*, *Hypnum shensianum*, *Kurzia sinensis*, *Macromitrium fortunatii*, *Neotrichocolea bissetii*, *Oedipodium griffithianum*, *Orthomitrium tuberculatum*, *Pseudopterobryum tenuicuspis*, *Scaphophyllum speciosum*, *Sciariomiopsis sinensis*, *Takakia ceratophylla*, *T. lepidozoides*, *Trichocoleopsis tsinlingensis* and *Xenochila integrifolia*, to name a handful. In addition, a separate list of 25 species of bryophytes that are deemed endangered at present, but with insufficient data, was also formulated for further consideration. The complete report of the first Chinese red list, with detailed information on the taxonomy, local distribution, ecology, and habitat endangerment, as well as relevant literature citations, will be published separately in a bryological journal. The list will also be submitted through channels to the Beijing office of national committee on the conservation and protection of Chinese endangered plants/flora for official recognition.

Indeed, the Shanghai workshop is now a historical landmark in bryology in China. It has contributed, in a small but meaningful way, to the international effort pioneered by IAB and IUCN to protect the surviving bryophyte diversity of the world. But the birth of the red list in a country, or for that matter, in a region, is but the first critical step towards achieving the final goal. This comment was mentioned repeatedly by the speakers at the workshop. Indeed, much work is still needed to generate public awareness and to mobilize all the available local, national and international resources to fight to save the Chinese and the world bryophytes from meeting their extinction.

Sponsoring Institutions: Shanghai Normal University; The Botanical Society of China (BSC), the International Association of Bryologists (IAB), Botanical Gardens Conservation International (BGCI), The Tan Chin Kee

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Foundation, The office of Lady Yuen Peng McNeice Office (Singapore)

Programme:

Dec 13 (Monday)

- 9-9.15 am – Welcome Speech by President of Shanghai Normal University  
9.15-9.30 am – Welcome Remarks by IAB President, Prof. Zen Iwatsuki.  
9.30-9.45 am – The Shanghai workshop: its significance, procedures and goals by Prof. Cao Tong, Shanghai Normal University.  
9.45-10 am – A Role for Botanic Gardens in the Conservation of Chinese Bryophytes by Dr. Mark Richardson, Director, Asia and Middle East Programme of Botanic Gardens Conservation International, United Kingdom.  
10-10.30 am – Threatened bryophytes of Japan: how we made Red Data Book? by Prof. Zen Iwatsuki, The Hattori Botanical Laboratory, Okazaki Branch, Japan.  
11-11.30 am – The IUCN categories on endangered bryophytes – the European experience by Tomas Hallingbäck, Swedish University of Agricultural Sciences, Sweden; IAB Chairman of Committee on World Endangered Bryophytes  
2-6 pm – Closed-door workshop on the selection of most endangered Chinese bryophytes; participation by invitation.

Dec 14 (Tuesday)

Closed-door workshop on the selection of endangered Chinese Bryophytes; participation by invitation.

Dec 15 (Wednesday)

9-12 noon: Closed-door workshop on the selection of endangered Chinese bryophytes; participation by

invitation.

- 2-5.30 pm – Closing program (open to public)  
2-2.30 pm – The biodiversity and conservation of mosses in Karzt Formation in Guizhou Province of China by Prof. Zhang Zhao-Hui, Guizhou Normal University, Guiyang City, China  
2.30–3 pm – A phylogenetic prospective on the evolution of liverworts by Dr. Xiaolan He-Nygrén et al., Botanical Museum, Finnish Museum of Natural History, University of Helsinki, Finland  
3- 3.30 pm – Selection of hotspots of bryophytes diversity for protection by Prof. Benito C. Tan, Department of Biological Sciences, National University of Singapore, Singapore  
4- 4.30 pm – Announcement of the first official Red List of endangered Chinese bryophytes by Prof. Wu Peng-Chen, Institute of Botanical Research, Xiangshan, Beijing.  
4.30-5 pm – Open Forum and Discussion  
5-5.15 pm – Closing Remarks by Prof. Cao Tong, Shanghai Normal University and Tomas Hallingbäck  
5.30 pm – End of workshop

B.C. Tan, Tong Cao, Rui-Liang Zhu and T. Hallingbäck

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## The 5th European Bryophyte Conservation Conference

The 5th European Bryophyte Conservation Conference was held in the Botanic Garden of Valencia from 21st to 23rd September. It was organized by the ECCB and Dr. Felisa Puche from the University of Valencia who kindly and so efficiently arranged all the logistic support that was needed. Thirty seven bryologist from thirteen countries met in Valencia and the proportion of young students was very encouraging. Most of the participants came from Spain (14 people), Portugal (6 participants) and Great Britain (4 participants), but Norway, Switzerland, Hungary, Sweden, France, Belarus, Estonia, Bulgaria, Belgium and even South Africa were represented in the conference.



During the Meeting, 13 posters and 12 oral communications were presented. Most contributions (10 in total) were related to studies on several threatened species: Habitat Directive bryophytes in Sweden, *Pohlia bolanderi* and *Goniomitrium seroi* in Spain, *Buxbaumia viridis* and *Orthotrichum rogeri* in the Pyrenees, *Didymodon glaucus* in England, *Neckera pennata* in Estonia, several species from Bulgaria, *Sphagnum fimbriatum* and *Anastrophyllum* species in Europe. The second main topic (8 contributions) was that of important areas and habitats for bryophytes. The interest of certain habitats such as dead wood in beech forest of Centre Europe, bogs in France, *Juniperus thurifera* trunks in Spain and *Quercus* woodlands in Portugal were analysed in six different contributions, while two more had to do with important areas

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for bryophytes in Hungary and Morocco. Two contributions were about Red Lists in the Iberian Peninsula and Eastern Europe, one was about the effects of man management in La Palma's forest (Canary Islands) and another one on the reliability of current knowledge on bryophytes in Madrid region (Spain).

During the Round Table session, the Important Plant Areas project was discussed. The most controversial problem was that of finding suitable criteria for the proposal of interesting areas. The convenience of collaborating with Planta Europa to include information on bryophytes for the identification of IPAs or working separately to make a different proposition of IPAs for bryophytes was also discussed. At the EECB business meeting the idea of becoming an formal association was presented.

Felisa also prepared an excursion to the Natural Reserve "Carrascal de la Font Roja", one of the best examples of warm and humid Mediterranean forest with well developed strata of both shrubs and climbers. The [guide to the field trip](#) summarised the vascular flora and included a complete list of the bryophytic flora of the place.

Spanish meal scheduling was hard to bear for some of the participants but Felisa's arrangements for coffee (and horchata!) breaks made things easier. The weather was nicely warm and favoured the walks throughout the Botanic Garden and Valencia city in the evenings.

The Spanish Bryological Society had the pleasure to grant five Ph D students for coming to the meeting: Pierre Goubé (France), David Cortés (Colombia), Cristiana Vieira (Portugal), Susana Rams (Spain) and Jairo Patiño (Spain).

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## WEB NEWS

### The Bryophyte Flora of North America

The Bryophyte Flora of North America (North of Mexico) web site has a new URL:

<http://www.mobot.org/plantscience/bfna/bfnamenu.htm>.

Please add this to your list of links and delete the one for [ridgwaydb.mobot.org](http://ridgwaydb.mobot.org). The new server replaces the old one, which was originally intended for other purposes.

Much of interest has been mounted on the BFNA Web site in the past year. See the posting page for a summary: <http://www.mobot.org/plantscience/bfna/posting.htm>. A list of all treatments published on line to date with links to them is at <http://www.mobot.org/plantscience/bfna/SUMMARY.htm>.

I thank the many authors who have contributed to date to this major work. The first volume (most of the acrocarpous mosses and certain introductory chapters) is due to be finished in 2005 with publication in early 2006.

The BFNA is part of the Flora of North America (North of Mexico) <http://hua.huh.harvard.edu/FNA/>, a 30-volume identification manual of all known green land plants. About 1 in 3 species is illustrated. The inclusion of the bryophytes in a major botanical work is unusual and an important opportunity for us.

R. Zander. E-mail: [richard.zander@mobot.org](mailto:richard.zander@mobot.org)

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### Botany 2005 Abstract Submission site is now open

The Abstract submission site is now open and can be found at <http://2005.botanyconference.org/engine/login.php?next=abstract>. The overall submission format has changed slightly. Six presentation options are available, and each presentation requires an abstract (CONTRIBUTED PRESENTATIONS: Oral Paper, Poster, Discussion Session, Education Forum Session; INVITED PRESENTATIONS: Symposium or Colloquium Presentation, Special Lecture). Please see the notification via the link listed below. We've made the process simpler and hopefully a more enjoyable experience. Please

let us know what you think. Your feedback is most appreciated ([wdahl@botany.org](mailto:wdahl@botany.org)).

The deadline for abstract submissions is April 1, 2005 (the abstract submission process will open January 5, 2005). All abstracts and the final program will be available online at the BOTANY 2005 web site prior to the conference, and hard copies will be distributed on-site to all conference registrants. The "CALL fro ABSTRACTS" can be found at: [http://www.botany.org/newsite/reporting/Call\\_for\\_Abstracts\\_\(2005\).pdf](http://www.botany.org/newsite/reporting/Call_for_Abstracts_(2005).pdf). Registration for the meeting is now open as well.

Nancy Slack. E-mail: [slacknan@aol.com](mailto:slacknan@aol.com)



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## TECHNIQUES COLUMN

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### Legendary German handlens available again, now with 20% discount

Until a year ago, I had only heard rumours about the existence of a spectacular hand lens. There shall be somebody who owns one, and another Swiss bryologist was able to buy the last one and for an extraordinary price. As I was informed, there was a company in Wetzlar (a town in Central Germany, famous for its optics, for instance Leitz), which produced a unique hand lens, which was called Weinschenk loupe (after the inventor) or botanists loupe, which was, however, no longer produced. My attempts to locate the company were, however, in vain. A friend of mine, Norbert Stapper, was able to get the name of the company and got to know that the son of the previous owner of this company had taken up the production again, but alas, the first set of hand lenses was immediately sold out. In autumn 2003, a second batch of loupes was produced and I was finally able to get one.



Fig. 1. The Weinschenk handlens

This loupe has received the status of a cult object. First of all it is because of the unique construction. It consists of two lenses, one 10x and one 20x. If the smaller is folded over the

large, one gets a magnification of 28x. Then it is very light and has a weight of only 65 g. And at least, it has a superb quality. It is manufactured by hand, the mounting alone takes almost two hours. The lenses consist of triplets with extreme high quality, which are sharp to the edge, and are manufactured by this company (not in, sorry, Taiwan). So this is some kind of Rolex amongst the hand lenses. And it lasts for ever. The lenses are waterproof, no problems during rain as with lenses, which are simply screwed in the body, because the triplets are cemented. But quality has its price.... The standard version costs 298.—Euro. The owner of the company, well aware of the cult status of his product, agreed, however, in a phone call with me to give members of the IAB a special discount of 20%, valid to end of March 2005. Order can be directed to Industrie-Optik Fischer, Friedenstr. 26a, D 35578 Wetzlar, Germany, [info@iof-wetzlar.de](mailto:info@iof-wetzlar.de). Please note with your order "20% bryologists discount".

So this is not only a chance to hear about this unique tool but perhaps also to buy one or to give it to somebody. This is something which everybody hasn't got,

and at present I know only of very few bryologists in Central Europe who got one so far.

J.P. Frahm.

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## LITERATURE COLUMN

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### Illustrations of African mosses

**De Sloover, J. L. 2003. Illustrations de mousses africaines. (Scripta Botanica Belgica 28: 1-224). Meise, Jardin Botanique National de Belgique. ISBN 90-72619-595 / ISSN 0779-2387.**

During many years Jean Louis De Sloover published the series 'Note de bryologie africaine', in which numerous African moss taxa were fully treated and illustrated. In many cases this was the first time these mosses were comprehensively treated. The illustrations from this fourteen-part series are now compiled together with another 104, so far unpublished, plates of African mosses. In total 211 plates illustrate 188 species, the great majority exotic to most bryologists working in temperate areas. For each species the name and in a few cases synonyms are provided. The latter are only included when the current name could otherwise be misunderstood, or when De Sloover had used an older name in his original publication. For each illustration there is also a legend explaining the details of the drawing, a reference to the earlier publication, when relevant, and data about the illustrated specimen.

The quality of the drawings is superb, and even for bryologists who have not got African bryophytes as their primary interest it will be a pleasure to leaf through the book to study the pictures. It is clear that the drawings were made by gifted persons (J. L. De Sloover (few), Ch. Vandycke & Guy Poncelet), partly under the guidance of a person with a good eye for how mosses really look. For bryologists who are interested in Africa, this book provides a good overview of the structural diversity of African mosses. Considering the scarce and scattered high quality illustrations of African mosses this is therefore an excellent introduction for those who visit this continent to do bryology for the first time.

[Lars Hedenäs]

## Liverwort and hornwort flora of West Africa

M.J. Wigginton (ed.). 2004. E.W. Jones's Liverwort and hornwort flora of West Africa. *Scripta Botanica Belgica*, Miscellaneous documentation published by the National Botanical Garden of Belgium. Volume 30: 443 p. ISBN 90-72619-61-7.

Eustace Wilkinson Jones, 1909-1992, was lecturer at the Forestry School, Oxford University. But, reading Jeff Duckett and Roy Perry's bibliographical portrait in one of the introductory chapters of the flora, Eustace Jones combined his expertise in forest ecology with a keen and particular interest in bryology, which was generated when his grandfather showed him the startling reflection in a cave from the protonema of *Schistostega pennata*. In 1947, Eustace Jones together with Paul Richards and Pat Brenan set foot in Nigeria as part of the Cambridge Botanical Expedition to southwest Nigeria and the British Cameroons (now part of Cameroon). This was the start of Jones's hepaticological journey through Africa. Over the years, Eustace Jones collected hepatics extensively during his forestry work in Africa, revised many groups, including difficult genera such as *Lophocolea*, *Plagiochila*, *Radula* and *Lejeunea* and published between 1952 and 1990 over 70 bryological papers; of which over forty were devoted to African hepatics (most of these were published in the *Transactions of the British Bryological Society* and the *Journal of Bryology*). He worked for many years on a hepatic flora of West Africa, but died before he could complete it, leaving a comprehensive draft manuscript.

David Long initiated the production of the flora and managed it in its early years, Martin Wigginton then coordinated the production of the flora and took up the editorial work to bring the manuscript in line with recent taxonomic opinions, to illustrate all taxa, and to revise the text so as to achieve consistency in terminology and format. Several hepaticologists offered their contribution (among others, David Long, Rob Gradstein, Roy Perry, S.M. Perold, Jiri Vana, and A.J. Harrington). The production of "E.W. Jones's liverwort and Hornwort Flora of West Africa" became also an exemplary international collaboration between institutions, when Herman Stieperaere offered the National Botanical Garden of Belgium's generous support to publish the Flora as part of the series "Scripta Botanica Belgica" and to involve the Botanical Garden's illustrator, Omer Vande Kerckhove in

the illustration of about fifty species, for which adequate illustrations of west-African material were not available.

What we have now is a unique result, the first fully illustrated and complete identification guide to the hepaticae of West Africa, covering the coastal states from Mauritania to Cameroon and Rio Muni (ex Equatorial Guinea), the Gulf of Guinea Islands, as well as Mali, Burkina Faso and Niger.

The flora provides a bibliographical portrait of Eustace W. Jones, a detailed morphological description of the thallose liverworts, the leafy liverworts and the hornworts, based in part upon the introductory chapter of the "Guide to the Bryophytes of Tropical America" (Gradstein et al. 2001). Then, there is a highly readable chapter on collecting and processing bryophytes (Brian O'Shea), which I would like every beginning bryophyte collector to read. A.J. Harrington provides a brief history of liverwort collecting in West Africa: the table indicating the liverwort taxa recorded from countries in West Africa (pg 26), clearly demonstrates the poverty of the flora in the dry tropics (e.g. Burkina Faso: 0 taxa, Mali: 1 taxon recorded!), the unevenness in the of recording in the countries of the humid tropics (e.g. Cameroon 230 taxa, Ivory Coast, 95 taxa recorded) and the subsequent chapter on

the distribution and habitats in West Africa also point out that several areas remain under-collected. The authors are fully aware of this as the keys sometimes lead to taxa (mentioned in brackets) that may occur in the area covered by the flora.

The main body of the flora is however the keys and descriptions of the 30 families, 84 genera and 297 species of liverworts and hornworts recorded from the region. The keys are dichotomous and the alternatives are clearly formulated, leaving little doubt and making it easy – even for the muscologists – to use. I was particularly pleased with the description of the genera. Here, the authors also give apart from the morphological description of the gametophyte and sporophytes, (in smaller characters) a more informative but very useful description of the genus: information on the

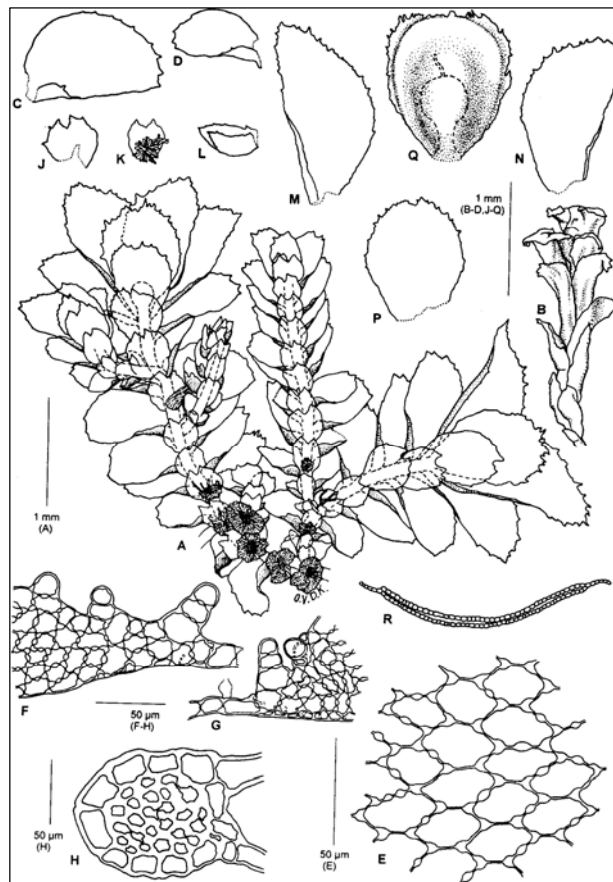


Fig. 1 *Caudalejeunea africana*

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typical characteristics (based upon field or lab experience), morphological variability, ecology and on necessary observations to make before identifying the species.

All species have been illustrated. Most illustrations have been carefully copied from existing literature. Hence, there is some variability in the drawing style, but always the line drawings are of high quality, in particular those made by Omer Van de Kerkhove. (see e.g. fig 1. *Caudalejeunea africana*), but also those of recently deceased Belgian botanist, Constant Vanden Berghen (*Frullania*).

The entire flora is carefully typeset, printed on high-quality paper, comes in a hard-cover and has an excellent format (18 \* 25 cm): this all makes it sturdy and easy to use on a

work table, which is often covered with papers, convolutes, forceps, and other floras.

This flora is without doubt a major contribution to tropical-Africa bryology and an important instrument to further hepaticological research in tropical Africa. I can only highly recommend this new flora, and certainly; if you plan to visit West Africa, order this book, since it will allow you to contribute to the hepaticological inventorying of an area where during the last two decades, little bryological exploration took place.

Price: 42 Euro excl. postage (21 Euro outside Europe).  
To order, contact [sales@br.fgov.be](mailto:sales@br.fgov.be)  
(UK only: [Broadleafbooks1@aol.com](mailto:Broadleafbooks1@aol.com)).

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## Moss Flora of the Middle European Russia. Vol. 2. Fontinalaceae–Amblystegiaceae

Ignatov, M. S. & Ignatova, E. A.: Moss Flora of the Middle European Russia. Vol. 2. Fontinalaceae–Amblystegiaceae. (In Russian). KMK Scientific Press Ltd., Moscow, 2003. (Arctoa Vol. 11, Suppl. 2: 612–960). Hardback, ISBN 5-87317-149-1.

Abstract of this second part: "Second volume of "Flora..." includes 174 species and 8 varieties of pleurocarpous mosses, occurring in the middle part of the European Russia (North and Caucasus are not included, whereas most part of the Ural is included). Each species is characterized in respect of its morphology, ecology and distribution, and is illustrated based on collections from the area. Peristome structure is shown in SEM pictures for each family. The Latin descriptions of new taxa and list of nomenclatural novelties are given on p. 942".

The first part (see Bryological Times 111) covered families from Sphagnaceae to Hedwigiaceae. The geographical area covered by this flora ("Middle European Russia") ranges from

the western border of Russia (eastern border of the Baltic countries, Belarus and Ukraina) in the west to the Urals in the east, and from Rostov and Kalmykia regions in the south to Arkangelsk, Komi and Perm in the north.

The new taxa include: Catosciopiales, *ordo nov.*; Heterocladiaceae, *fam. nov.*; Antitrichiaceae, *fam. nov.*; Scorpidiaceae, *fam. nov.*; Pseudoleskeellaceae, *fam. nov.*; *Hygrohypnella*, *gen. nov.* (type *Hygrohypnella ochracea*); *Rhytidiastrum*, *gen. nov.* (type *Rhytidiastrum squarrosum*).

For ordering information please contact Michael Ignatov: [arctoa@eignatova.home.bio.msu.ru](mailto:arctoa@eignatova.home.bio.msu.ru)

Johannes Enroth

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## Field Guide to Liverwort Genera of Pacific North America

W. B. Schofield: Field Guide to Liverwort Genera of Pacific North America. University of Washington Press: ISBN: Paper: 0-295-98194-6; Price: Paper: \$25.00. Illustrations by Patricia Drukker-Brammall and Muriel Pacheco

Field Guide to Liverworts of the North Pacific Coast is the first comprehensive guide to liverworts and hornworts from southernmost California to Alaska. Small and insignificant to the casual eye, liverworts and hornworts are sometimes confused with mosses and lichens. Yet botanically they are quite distinctive and under a hand lens, these plants can assume a surprising elegance.

The book describes representative species of each genus in the Pacific Coastal region, and explains how to collect and identify liverworts with the naked eye or aided by a 12x hand lens. Keys are provided to assist the collector in deciphering and identifying genera. The book introduces the role of liverworts in vegetation, their distribution patterns, and a history of collecting in the region. Graceful and informative line drawings accompany detailed discussions of each genus. A substantial glossary and comprehensive checklist are included.

This useful guide to genera found abundantly in the region will be welcomed not only by the professional field botanist,

but by the enterprising amateur naturalist who wishes to discover these bryophytes' unusual beauty and fascinating variety.

"Will Schofield is one of the most respected bryologists in North America. He has produced a comprehensive study of liverworts of the North Pacific region. Each liverwort genus is illustrated by an excellent, full-page scientific drawing that will make recognition easy. The substantial glossary is invaluable. This book is one of a kind - and one of high quality." - Arthur R. Kruckeberg, author of The Natural History of Puget Sound Country.

W. B. Schofield is professor emeritus of botany at the University of British Columbia. He is the author of *Introduction to Bryology* and *Some Common Mosses of British Columbia* and co-author of *An Evolutionary Survey of the Plant Kingdom and Plant Diversity: An Evolutionary Approach*.

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## "Archive of Bryology"

Some time ago I distributed the news that the "Archive of Bryology", originally planned as a disk journal in the Eighties, was resurrected as internet journal. So far, two volumes have been available. Now a third volume has been added: this is the first part of a planned longer series called "A guide to bryological hotspots in the world". The first part covers the Azorean islands Pico and Terceira. The pdf file has 476 Kb, has 8 pages plus 30 colour pictures of rare Azorean bryophytes.

The 4<sup>th</sup> volume is in preparation. It will be a help file for the identification of Chilean bryophytes by Frank Müller.

You get access to the Archive of Bryology by going to [www.bryologie.uni-bonn.de](http://www.bryologie.uni-bonn.de), leave the start page by clicking into the screen, leading to the main page, clicking "Zeitschriften" in the menu bar and then "Archive for Bryology" on this page. Please consider to make contributions to this unique kind of journal, and also especially to this hotspot-series. I will add some localities from Germany soon, allowing bryo-tourists to find interesting places. There are often manuscripts, which have no chance to get published in journals but can easily be made available on the internet by this way.

Jan-Peter Frahm

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## Mosses collected by H. Handel-Mazzetti in China in 1914-1918

Bryobrothera vol. 8, containing one article: Cao, T. & Koponen, T. 2004: Musci in "Symbolae Sinicae; an annotated checklist of mosses collected by H. Handel-Mazzetti in China in 1914-1918, and described by V. F. Brotherus in 1922-1929. - Bryobrothera 8: 1-34, was published on 30.11.2004. It is available from Bookstore Tiedekirja, Kirkkokatu 14, FIN-00170 Helsinki, Finland. E-mail: [tiedekirja@tsv.fi](mailto:tiedekirja@tsv.fi)

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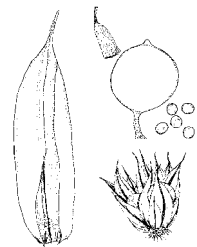
## Annotated Catalogue of Portuguese Bryophytes

I inform you that for Portugal I have recently published the Annotated Catalogue of Portuguese Bryophytes. LISBOA-2003. PORTUGALIAE ACTA BIOLOGICA. VOL. 21(1-4): 5-230. 2003. All bryophyte taxa are listed for Portugal based on a critical assessment of literature data. Each distribution record, supported by the correspondent geographic unit (provinces) is presented. For different provinces literature references are listed in chronological order. In addition, two lists (mosses and liverworts-hornworts) of known synonyms are provided. This annotated catalogue can be used as a checklist of the known bryophyte taxa in

Portugal. All data can be used to select areas for bryophyte conservation.

Please read also Sérgio, C., Araújo, M. & Draper, D. 2000 : Portuguese bryophytes diversity and priority areas for conservation. – *Lindbergia* 25:116-123.

Cecília Sérgio



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## New checklist of southern African Bryophytes

This new checklist of the bryophytes of the Flora of Southern Africa region (Namibia, Botswana, South Africa, Swaziland and Lesotho) has appeared in volume 14 in the *Strelitzia* series of the South African National Biodiversity Institute (formerly the National Botanical Institute). The bryophyte list forms part of a checklist of all the indigenous and naturalised plants of southern Africa. The literature citation for the book as a whole is: Germishuizen, G & Meyer, N.L. (eds) 2003. *Plants of southern Africa: an annotated checklist*. *Strelitzia* 14. National Botanical Institute, Pretoria.

The moss (Bryophyta) part of the list was compiled by J. van Rooy while the liverworts (Hepatophyta) and hornworts (Anthocerotophyta) were compiled by S.M. Perold. As previously the list contains accepted names, recent synonyms, literature references and updated regional distribution (within southern African countries and the new provinces of South Africa). However, the annotations have expanded significantly to include data on life cycle, life form, height (or length) of plant and altitude range.

Order *Strelitzia* 14, and other publications of the South African National Biodiversity Institute from: SANBI Bookshop, Private Bag

## Evansia, new editor

Larry St.Clair has agreed to take on the editorial duties of *Evansia*, a bryological journal published by the ABLs and this is as of volume 22 (2005). He is working closely with the current editor Bob Magill to provide a smooth transition for both authors and subscribers. Manuscripts can now be sent to Dr. St.Clair, 193 MLBM, Department of Integrative Biology, Brigham Young University, Provo UT 84602-0200, USA.

## THESES IN BRYOLOGY

### THESES IN BRYOLOGY 13

As reported in a previous issue of The Bryological Times (99: 17. 1999), the International Association of Bryologists has decided to begin a repository of bryological theses. These theses are being housed in the Library of The New York Botanical Garden. They are available via interlibrary loan. The NYBG Library online catalog (CATALPA) may be viewed at: <http://librisc.nybg.org/screens/opacmenu.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.

**Bowman, Keith C. 2003. The bryophyte flora of Fall Creek Falls State Park, Van Buren and Bledsoe counties, Tennessee, U.S.A. M.S. thesis, University of Tennessee, Knoxville. vii + 171 pp. In English. Address of author: 1111-2E Colvin Street, Syracuse, NY 13210, U.S.A. E-mail: [Kkeith\\_76@yahoo.com](mailto:Kkeith_76@yahoo.com).**

This master's thesis documents the bryoflora of a state park in east-central Tennessee, which straddles the Cumberland Plateau and Eastern Highland Rim physiographic provinces. It is an area of limestone outcroppings with waterfalls, caves and sinkholes. A total of 228 taxa were collected. The phytogeographic affinities of the taxa were analyzed and distributed among six categories.

**Buryová, Blanka. 2004. Morphological and genetic variation in selected species of the genus *Philonotis* (Bartramiaceae, Bryopsida). Ph.D. dissertation, Charles University, Prague, Czech Republic. 86 pp. + 9 photographic plates. In English with Czech acknowledgments. Address of author: Blanka Shaw, Department of Biology, Box 90338, Duke University, Durham, NC 27708-0338, U.S.A. E-mail: [blanka@duke.edu](mailto:blanka@duke.edu).**

This doctoral dissertation examines *Philonotis* in Europe. The first chapter is a taxonomic treatment of the nine European species of the genus, including a key to the species. The second chapter is a "Morphometrical investigation of *Philonotis fontana*, *P. caespitosa*, *P. tomentella* & *P. capillaris*." The data provide information about patterns of morphological variation in nature and how to design the most effective sampling plan for future studies. The next chapter is "Patterns of phenotypic plasticity in *Philonotis fontana*," examined both field-collected and laboratory-grown collections. This is followed by the chapter on "Genetic variation in two closely related species of *Philonotis*." Here, *P. fontana* and *P. caespitosa* are studied using allozymes, and confirmed the recognition of *P. caespitosa*. Finally, "Clonal structure, habitat age, and conservation value in the

mosses *Philonotis marchica* and *P. calcarea* in Kotouč quarry (Czech Republic)" is presented.

**Loskotová, Eva. 2004. Biodiverzita a ekologie mechorostů ve vybraných I. zónách NP Šumava. Master's thesis (Diplomová práce), Charles University, Prague, Czech Republic. 8 + iv + 125 pp. In Czech. Address of author: Department of Botany, Charles University, Benátská 2, CZ-128 01 Praha 2, Czech Republic. E-mail: [loskotova@centrum.cz](mailto:loskotova@centrum.cz).**

This master's thesis concerns the biodiversity and ecology of bryophytes in selected areas of Šumava National Park. Two river valleys were examined, Povydrří and Křemelná, and 170 and 150 species were found, respectively. Sixty-three species are newly reported for the national park. The primary substrate is acidic rock with basic substrates only secondary. For each species, the local ecology is given as well as distribution within the study region. The species are analyzed ecologically.

**Zales, William Milton. 1973. A taxonomic revision of the genus *Philonotis* for North America, north of Mexico. Ph.D. dissertation, University of British Columbia, Vancouver, BC, Canada. vi + 166 pp. In English. Address of author (retired): Prairie Hills, 15384 North Ridge Road, Westfield, IA 51062-8649, U.S.A. E-mail: not known.**

This doctoral dissertation, never published, revises *Philonotis* for North America, north of Mexico, exclusive of Greenland. All but two of the recognized taxa were seen in the field. Numerous collections were cultured in a uniform environment to determine the stability of taxonomically diagnostic morphological characters. The position of the papillae and prorulae on the leaf cells, the structure of the marginal leaf cells, and to some degree the leaf shape and leaf cell shape were found to be stable characters that are not modified by the environment. All other morphological characters examined were determined to be ecophenic and not useful to segregate taxa. Even smooth and papillose rhizoids were found on the same stem. The revision recognized seven

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species and two varieties: *P. glaucescens* [now usually called *P. uncinata*], *P. longiseta*, *P. sphaerocarpa*, *P. marchica*, *P. capillaris*, *P. fontana* var. *fontana*, *P. fontana* var. *americana*, *P. fontana* var. *pumila* and *P. yezoana* (new to North America). Chromosome counts of n=6 for *P.*

*glaucescens* and n=12 for *P. longiseta* are new reports. Keys, descriptions, illustrations and distribution maps are provide for all taxa.

William B. Buck. E-mail: [bbuck@nybg.org](mailto:bbuck@nybg.org)

## FIELD COURSES

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### Sphagnum course in Maine

For the past two summers I have taught a field-oriented course on Sphagnum at the biological field station (Humboldt Field Research Institute) at Eagle Hill in Maine. Located on the coast about an hour due east of Bangor, Eagle Hill has a rather amazing array of peatlands within no more than 20 miles. The course has been attended by a variety of people, including academics, consultants and interested amateur botanists. Most of the attendees have had some experience with peat mosses but there has been accommodation for several inexperienced people. In each of the sessions we found 42 species and when the lists are combined we found a total of 48 species. With apologies to Trondheim, this may

be the most sphagnologically diverse area in the world. If we add two other species found previously but not seen during the June courses, there are 50 species within a few miles of the station. Identification and characterization of sections and species was done using a variety of treatments as well as a key to Maine species prepared for the course.

Furthermore, the accommodations and food are excellent at Eagle Hill. The course will not be taught in 2005 but hopefully will be offered again in subsequent years. Many other field oriented biology course are taught here also. Details may be found at <http://www.eaglehill.us>

### Field course in Bryology.

Dr. Janice Glime will be teaching a 1-week course in field bryology at Michigan Technological University, (2-7 May 2005) taking advantage of the bryological diversity of the Keweenaw Peninsula Michigan. Contact J.M. Glime: e-mail: [jmglime@mtu.edu](mailto:jmglime@mtu.edu).

## VACANCIES

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### Visiting scholar – Plant Biology

The Department of Plant Biology, Southern Illinois University Carbondale invites applications for a one-year Visiting Scholar position to work on monographic and phylogenetic studies of liverworts. Qualifications for the position include the following: a Ph.D. in Botany or Plant Biology, a strong research background in the molecular systematics of liverworts, including expertise in their collection and identification, DNA sequencing, alignment and phylogenetic analysis. Duties of the position are to collect and analyze molecular data for a broad spectrum of liverworts, prepare manuscripts for publication, participate in an international symposium on bryophyte evolution, and assist in the training of students in molecular techniques. Applications must include a curriculum vitae, statement of research goals and experience and names of two persons able to provide reference letters, and should be sent to Dr. Dale H. Vitt, Chair, Department of Plant Biology, Southern Illinois University, Carbondale, IL 62901-6509. Information about the university and department can be found at <http://www.science.siu.edu/plant-biology>. Review of applications will begin February 10, 2005 and will continue until the position is filled. SIUC is an affirmative action/equal opportunity employer that strives to enhance its ability to develop a diverse faculty and staff and to increase its potential to serve a diverse student population. All applications are welcomed and encouraged and will receive consideration.

### Post-doc and sabbatical fellowships

I am pleased to announce that the National Evolutionary Synthesis Center (NESCENT) calls for proposals for up to 10 Post-doctoral and 5 Sabbatical fellowships. .

Post-doctoral and Sabbatical Fellowships will support ambitious, synthetic research on any aspect of evolutionary biology and relevant disciplines. Sabbatical applicants should take note of our full-salary "targeted sabbatical" program to attract individuals interested in developing community computational infrastructure for evolutionary biology, and for evolutionists from Minority Serving Universities. Note that these fellowships are open to fellows of ALL nationalities and that research projects should be carried out primarily on-site. We will begin reviewing applications on February 1, 2005 and stop accepting applications on March 1, 2005. The starting dates will be before September 2005

Proposals can include any type of synthetic project, but should not include time at the bench or in the field. Projects can be entirely theoretical and may involve developing analytical methods and software. Projects can also be purely empirical, synthesizing data from literature, existing databases, new databases built with NESCENT help, visits to museums or other data centres and co-operating laboratories any where in the world. For information and for details about applications: see [www.nescent.org](http://www.nescent.org)

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**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 in The Bryological Times 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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**Production:** Geert Raeymaekers, Ecosystems LTD

**UPCOMING MEETINGS**

**2005**

**February 25 - 27:** British Bryological Society. Taxonomic Workshop 2005 at Anglia Polytechnic University (APU), Cambridge. Subject Amblystegiaceae. Contact Chris Preston ([cdpr@ceh.ac.uk](mailto:cdpr@ceh.ac.uk)).

**May 2 – 7.** Dr. Janice Glime will be teaching a 1-week course in field bryology at Michigan Technological University, taking advantage of the bryological diversity of the Keweenaw Peninsula. Contact: [jmglime@mtu.edu](mailto:jmglime@mtu.edu)

**May 12 – 17.** The Second Annual Howard Crum Bryology Workshop will be held in Vermont. Information and registration: see

<http://hometown.aol.com/dallard/index.html>. Contact: Dorothy J. Allard at [dallard@aol.com](mailto:dallard@aol.com)

**June 26 - July 2.** Bryophytes and Bryophyte Ecology. At the Humboldt Field Research Institute, Steuben, Maine. Learning about bryophytes from ecological viewpoint through field studies of bryophyte communities of coniferous and deciduous forests, bogs, and shoreline; review of field and lab identifications, methods of community analysis; project on Sphagnum-dominated bogs. Instructor: Dr. Nancy G. Slack, Russel Sage College, NY. For more information, contact the Humboldt Institute. e-mail: [office@eaglehill.us](mailto:office@eaglehill.us). website: <http://www.eaglehill.us>

**July 18 – 23:** Bryology at the 2005 International Botanical Congress in Vienna. In 2005 the International Association of Bryologists will meet at the XVII International Botanical Congress, which takes place 18-23 July 2005 in Vienna. For information, contact Wolfgang Wanek. [wolfgang.wanek@univie.ac.at](mailto:wolfgang.wanek@univie.ac.at).

**August 12 – 17:** American Bryological and Lichenological Society will meet at the Austin Hilton, Texas as part of [Botany 2005](#), the annual meeting of the Botanical Society of America.

**August 14 – 20.** Bryophytes and Lichens for Naturalists Emphases. At the Humboldt Field Research Institute, Steuben, Maine. Introductory course for people involved in natural history inventory, interpretation, and teaching. Instructor: Dr. Fred Olday (College of the Atlantic, ME). For more information, contact the Humboldt Institute. e-mail: [office@eaglehill.us](mailto:office@eaglehill.us). website: <http://www.eaglehill.us>

**September 16 - 18.** The 30th Andrews Foray at the Delaware Water Gap National Recreation Area, northeast Pennsylvania. Information & registration: <http://www.cs.rpi.edu/~ingallsr/andrewsforay.html> or Bill Olson at [bolson@maserconsulting.com](mailto:bolson@maserconsulting.com)

**September 18 – 22.** British Bryological Society. Annual General Meeting and Symposium. Bangor, Wales. Information: consult website of the BBS: <http://www.britishbryologicalsociety.org.uk/>

**2007**

**IAB meeting in Kuala Lumpur, Malaysia.** Contact the local organizers: Dr. Haji Mohamed and Dr. Amru N. Boyce, Fac. of Science, University of Malaysia, Kuala Lumpur 50603