

# The Bryological Times

Number 112

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## Newsletter of the International Association of Bryologists

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### Editorial

I am pleased to inform you that the Website of the International Association of Bryologists has been renewed and that it is accessible under [www.bryology.org](http://www.bryology.org). See page 4 for details.

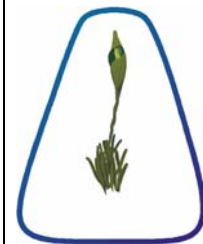
As you all know, the main goal of the IAB is to strengthen communication and collaboration among bryologists. Together with the new website, BRYONET and the Bryological Times, we have now three channels to communicate!

When the IAB-Council discussed the communication strategy of the association during the IAB-conference in Merida (Venezuela), I proposed to set up a network of national informants or contacts that could function as antennae to forward items for the Bryological Times. Several bryologists already agreed to be national contact points, their names can be found on page 16. I thank each of them for their commitment and am looking forward to hearing from others.

Geert Raeymaekers

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*IAB*



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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://www.devonian.ualberta.ca/iab/>. The Bryological Times is issued 4 times per year.

### The XV IAB World Congress on Bryology held at Mérida, Venezuela in 2004

Reported by B.C. Tan and B. O'Shea

What a wonderful treat and a great learning experience to be at the University of the Andes attending the XV World Congress on Bryology held from Jan 12-16! The five-day congress, postponed from 2003 to 2004 due to the political unrest in Venezuela, finally took place and is today a memorable landmark in the chronicle of IAB.

The congress organizers, Yelitza León and her capable crew, are to be lauded for a well-implemented program. This highlighted recent advances in Bryology under seven sessions: (1) molecular phylogeny, (2) taxonomy and evolution, (3) cell biology, ultrastructure and physiology, (4) function and morphology, (5) bryogeography, (6) floristic study in the Neotropics and (7) bryoecology. In addition, there were two pre-congress workshops focusing separately on the issue of bryophyte conservation and on the taxonomy and evolution of the Family Lejeuneaceae. Throughout the congress, there were three field trips organized for all participants to enjoy Mérida's natural landscape and to gain valuable first hand experience with the local bryophyte diversity as observed *in situ*. The excitements and bryological findings of the three field trips will be reported on separately.

Although a number of senior bryologists and IAB officials were absent from the Mérida conference, some 62 participants representing 26 countries and 5 continents attended the entire meeting. Only one participant from Singapore represented the Asian continent, while three who came all the way from Kenya and South Africa represented the African continent. As expected, the largest contingent of participants was from Central and South American countries owing to their geographical proximity and, perhaps, the Latino cultural ties. = The hosting Venezuelan colleagues, Yelitza León, Ms. Alicia Bohórquez, Ms. Maria Ussher, Ms. Francisca Ely, Ms Rosa Pabon, Mr. Ricardo Rico and Mr. Jimmy Morales, did their utmost to ensure the program run smoothly and to satisfy all the requests and needs of the foreign participants. Three kudos to our Venezuelan hosts for a difficult job well done!!

The Director of the University Botanic Garden, Juan C. Gaviria, officially opened the congress on Jan 12 (Monday). He claimed credit as, and expressed great pride in, being Yelitza's former botany teacher. His short and humorous speech was preceded by three welcoming messages delivered by Rob S. Gradstein, the incumbent president of IAB, the representative of the Dean's Office of Faculty of Arts and Sciences, Hugo Leiva, and the President of Sociedad de Latino Botanico (SLB), Inés Sastre. Other important personalia gracing the presidential table at the opening ceremony were Lic. Jhon Cruz, head of the Department of Biology, and Claudio Delgadillo, the incumbent vice-president of IAB.

The first formal lecture was delivered with gusto by Rob Gradstein who described vividly the many difficult expeditions undertaken by Mr. Richard Spruce more than a century ago along the upper reaches of the Amazon River in search for exotic and unique plants. The determination of Spruce in the face of the hardships he endured were shown to be matched with a significant number of fascinating

liverworts species collected by him that remain to be rare today in the region. Equally inspiring was the talk by Dennis Lamy, of the Natural History Museum in Paris, on the life and work of another 19<sup>th</sup> century bryologist, Camille Montagne.

The succeeding lectures covered molecular phylogeny, morphology and anatomy, physiology, mycorrhizal relationships of bryophytes, evolution of pleurocarpous mosses, classification of liverworts in general and the Lejeuneaceae in particular, and species diversity in *Asterella* and hornworts. For many of us, these were very informative and thought provoking. The lectures by Prof. Jeffrey Duckett and his team from UK and Italy have convincingly debunked the long-standing myth about the homology of "vascular tissues" found in bryophytes and tracheophytes. Of interest too was the introduction of two bioinformatic PC programs known as "Bryomonitor" and "Bryobrain". The former showed species identified and tested as indicators for the lowland rainforests in South America. The latter is a newly developed program for identification of bryophyte species in central Europe using an artificial neural networking system. Both PC programs were developed by Uwe Drehwald in Germany and are now available to the public at his personal website.

The five days of lectures went by quickly. The occasionally heavy lectures that are challenging to the inquisitive human mind were enlivened from time to time with delicious and aromatic coffee breaks, a bryoart exhibit, a soothing afternoon program of Latino songs rendered by Mr. Simón Rodríguez and Ms Olga Porras, a morning visit to the botanical garden of the university, the meetings of IAB council and the SLB group, and of course, the well designed and colourful poster session. One needs to find the first opportunity to read the published abstracts of the conference to realize how much new information on all aspects of bryology was presented at this congress.

To us, the highlight of the program was the formal dinner held in the evening of Jan. 15 (Thursday) at a posh hotel restaurant where a sumptuous banquet was offered to all participants. This time, the entire Venezuelan host team came elegantly dressed for the occasion. The local cuisine served was extremely tasty and there was a continuous flow of wine and friendly chatting to heat up the events. IAB President, Rob Gradstein, then made the much-awaited announcement of this year's IAB awards. In the end, only two awards were given. The Hattori Award for the best bryological publication went to Hans Kruijjer of Leiden Herbarium for his monograph on Hypopterygiaceae. The Richard Spruce Award went to Benito C. Tan at the National University of Singapore in recognition of research contributions and other accomplishments in the past 25 years of his career. After the party adjourned, a group of young, and not too young but energetic, members decided to maximize the evening hours by visiting a number of clubs to dance to the music of salsa.

Attending an international meeting has always been a valuable and memorable experience. One gets to renew old acquaintances, meet new colleagues, re-establish research contacts and plan for new collaboration, not to mention keeping abreast with the current information and research

trend. Furthermore, the Mérida congress provided us with such a unique opportunity to learn and admire the Latino and yet Venezuelan culture, and to appreciate, through personal interaction, the character and mindset of the local people. On several occasions while ordering food and while purchasing souvenirs and memorabilia in downtown Mérida, our insufficient knowledge of Spanish and our incorrect way of communication brought us unexpected, albeit amusing, frustrations. Yet, one can easily forget these hitches and, in the end, fall in love with the charm and warmth of the people.

On the last day of our field trip to the Sierra Nevada National Park in the Andean Mountains, we were very fortunate to witness the extended celebration of the Natividad (Paraduras) festivity and the staging of a colourful parade honouring the patron saint of paramo, San Benito.

Thanks to you again Yelitza, and to your staff and the administration of the Universidad de los Andes for hosting the Mérida congress with such generosity and hospitality..



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## Editorial guidelines for Merida-conference proceedings

Editorial Guideline Governing the Merida Proceedings to be published in vol. 97 (January 2005) of the Journal of the Hattori Botanical Laboratory. .

The proceedings of the XV IAB World Congress in Bryology, including the two pre-congress workshops on bryophyte conservation and the Family Lejeuneaceae, held from Jan 10-18, 2004, shall be published in vol. 97 of the Hattori Journal. An editorial committee consisting of Drs. Zen Iwatsuki, Rob S. Gradstein, Yelitza Leon and Benito C. Tan has been constituted to handle review and publication matters.

All manuscripts must be written in English and submitted on or before May 1 of this year. For division of editorial work, manuscripts by Latin-American authors shall be submitted first to the office of Dr. Yelitza Leon at the University of Andes in Merida. Other authors may submit manuscripts to Dr. Z. Iwatsuki at The Hattori Botanical Laboratory, 10-3 Mutsuna-shin-machi, Okazaki-shi, Aichi-ken, 444-0846 Japan.

Each manuscript shall not be longer than 10 printed pages of the journal (about 20 pages of double-spaced A4 paper),

including the literature citation, but excluding charts, tables and illustrations. Authors of manuscripts needing more space need to contact Dr. Zen Iwatsuki for special arrangements. For details of required journal formats please see "Information for Authors" at "<http://www7.ocn.ne.jp/~hattorib/>"

Manuscripts submitted shall consist of two hard copies with xeroxes of charts, tables and illustrations. These can be mailed or sent as electronic file c/o the email address of Dr. Yelitza Leon (for Latino-American authors) at "[yeltleon@ula.ve](mailto:yeltleon@ula.ve)", or Dr. Zen Iwatsuki (all other authors) at "[zen@sun-inet.or.jp](mailto:zen@sun-inet.or.jp)".

All manuscripts received will be sent out for review and suggestions for improvement. Authors of accepted manuscripts will be duly informed after review to submit a clean final version of the corrected manuscript. Author(s) of each manuscript published in the proceedings will receive 30 free reprints as a token of appreciation from the Hattori Botanical Laboratory.

Zen Iwatsuki, Hattori Botanical Laboratory, Okazaki-shi, Japan

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## VISIT THE NEW IAB - WEBSITE

I am pleased to inform you that the Website of the International Association of Bryologists has been renewed and that is accessible under [www.bryology.org](http://www.bryology.org). The IAB website manager is Uwe Drehwald ([drehwald@t-online.de](mailto:drehwald@t-online.de)). Uwe would be grateful for suggestions for further improvement of the website. Please notice that the IAB membership directory is still under construction and should hopefully be available later this summer.

As all of you know, Bryonet is one of the core activities of the IAB. Indeed, strengthening of the communication among bryologists is our main goal. Besides BRYONET and maintenance of a Website, IAB activities include:

- publication of the quarterly newsletter The Bryological Times (editor: Geert Raeymaekers, [Geert.Raeymaekers@ecosystems.be](mailto:Geert.Raeymaekers@ecosystems.be))
- organization of World Conferences on Bryology, including many symposia, fieldtrips and educational workshops (next ones in Vienna, 20-27 July 2005, see July 2004 issue of The Bryological Times for detailed information!)
- providing research awards to student-members of IAB (upon announcement in The Bryological Times send application to IAB secretary-treasurer Dale Vitt, [dvitt@plant.siu.edu](mailto:dvitt@plant.siu.edu))

- awarding of prizes to IAB members for outstanding contributions to bryology
- offering of publications at reduced price to IAB members (see homepage)
- other activities to further the interests of bryology

I realize that some of you may not yet enjoy membership in the IAB. To all of those I would like to extend my most cordial invitation to join our association!! Cost of membership in IAB is only 11 US dollars per year; for persons living in countries where international transfer of money is difficult special payment arrangements are available. You may become a member TODAY (!) by writing to me or to our membership secretary, Sandi Vitt ([svitt@plant.siu.edu](mailto:svitt@plant.siu.edu)), or to any of the members of the IAB Council (see our website). Please make sure to send your full postal address together with your email address. Thanks!

With warmest greetings, and looking forward to see many of you at our 2005 meeting in Vienna!

Rob Gradstein  
IAB president

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## IAB-AWARDS

### Spruce Award for Dr. Benito Tan Hattori Prize for Dr. Hans Kruijer

The International Association of Bryologists (IAB) is happy to announce that Dr. Ben Tan (National University of Singapore) received the Association's 2004 Richard Spruce award. The prize, presented at the congress dinner of the recent IAB Conference held in Merida, Venezuela, was awarded for important contributions to bryology in the first 25 years of his career. Previous winners have been Frahm, Koponen and Buck.

At the same occasion Rob Gradstein, president of the IAB, awarded the 2004 Hattori prize to Hans Kruijer for his World Revision of the Hypopterygiaceae. Previous winners were Bischler, Churchill & Linares, Buck, and Paton. Our congratulations to both of these deserving bryologists!



Benito Tan receives the Spruce Medal Award from Rob Gradstein

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## Call for IAB Council nominations

The positions in the IAB council that will be filled at the coming election are the President, Second Vice-President, Secretary-Treasurer, and five councillors. Ongoing IAB executive until the Kuala Lumpur meeting in 2007 are C. Delgadillo M. as First Vice-President and M. Crosby, C. La Farge, J. Enroth, C. Sergio, and T. Hallingback as councillors. The outgoing executive with this election are R. Gradstein, President; Z. Iwatsuki, Second Vice-President; D.

Vitt, Sec.-Treasurer; and councillors B. Crandall-Stotler, E. De Luna, H. Deguchi, J. Glime, and R. Longton.

The IAB Council has appointed Dr. Nancy Slack as the chair of the nominations committee. If you would be willing to have your name put forward for any of these positions or if there is someone you would like to nominate, please notify Nancy by email at [slacknan@aol.com](mailto:slacknan@aol.com)

The deadline for nominations is 1 August 2004.

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## News from IAB-members

Dr. Lars Söderstrom is currently spending a one-year sabbatical leave at the University of Cape Town, South Africa, where he will work together with Terry Hedderson and students on a joint project around biodiversity, rarity, phylogeny and life history characteristics in the hepatic family Lophoziaceae. Together with the Cape Town team, he will collect material for life-history and phylogenetic studies in several parts of the world.

Lars Söderstrom has a special request: if anyone has recent material of any Lophoziaceae species that do not occur in Scandinavia or South Africa, we would be happy to receive some material for sequencing.

Current address: Lars Söderström, c/o Hedderson, Department of Botany, University of Cape Town, Private Bag, Rondebosch 7701, South Africa. Email: lars.soderstrom@bio.ntnu.no

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## CONFERENCE REPORT

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### "Molecular Systematics of Bryophytes: Progress, problems and perspectives" 6 - 7 September, 2003

DNA is increasingly serving as a source of characters from which inferences are made to address the relationships among populations, species or higher level taxa in bryophytes. In fact, the field of what is often called Molecular Systematics (in a broad sense) has, after a very slow start, experienced a literal explosion, with most of the 200 studies published within the last 6 years. If these studies have not always shed a brighter light on the hypotheses being tested, they should at least encourage us to reexamine assumptions we have made in the past, particularly assumptions of character homology and their states, and hence assumptions regarding trends in their evolution. After all, the field is still embryonic, and many hurdles had to be overcome for even amplifications and sequencing reactions to be routinely successful. Recognizing the significance of recent accomplishments, Dr. Peter Raven, Director of the Missouri Botanical Garden, asked us to organize a symposium, that would bring together most researchers whose contributions to the systematics of bryophytes are based, if only in part, on analyses of DNA data. The only previous occasion, on which "molecular" bryologists gathered for a symposium, was a meeting organized by the Green Plant Phylogeny Research Coordination Group, led by Brent Mishler, in Xalapa, Mexico. The outcome of this meeting was a series of collaborative projects, presented at the International Botanical Congress in St. Louis and, ultimately, published in the *Bryologist* (vol. 103; 2003). Collaboration implied not only intellectual interaction but less redundancy in sampling efforts. Five years after the meeting in Mexico, another chance to assemble an international group of scientists, driven by the same research interests, could only be welcomed by us, and everyone else involved in the field. The response was indeed overwhelming: virtually everyone invited attended, resulting in a symposium composed of nearly 30 presentations by bryologists from around the globe. The meeting, entitled "Molecular Systematics of Bryophytes: Progress, problems and perspectives", was held on September 6 & 7, 2003 at the Garden's main auditorium, and was attended by 70 systematists, including many students whose participation was encouraged through financial support from the Deep Gene Research Coordination

Network, headed by Dr. Brent Mishler (University of California, Berkeley).

The contributions (see insert) ranged from further elucidating the relationships among major lineages of the Bryophyta s. lat. and vascular plants, to phylogeographic studies in mosses. Most presentations focused on testing phylogenetic hypotheses within the hornworts, liverworts and mosses. The degree of participation and the diversity of studies reaffirmed that molecular characters are increasingly integrated into bryophyte systematics. Phylogenetic and phylogeographic inferences from DNA sequence data may be in conflict with hypotheses formulated on the basis of morphological character analyses, and additional efforts will be needed to distinguish between analytical artifacts and erroneous homology assumptions of either molecular or morphological characters.

The meeting proved highly successful with everyone attending, and particularly with students who gained a broad overview of the field, and were given an opportunity to interact with many senior bryophyte systematists. Virtually all studies will be published by the Missouri Botanical Garden Press, in a volume of Monographic Series in Botany. This volume will provide an overview of the different focal points of current systematic research in Bryology, as well as highlight the diversity of approaches applied and hypotheses investigated. We anticipate the publication to appear in the summer of 2004. We wish to thank Peter Raven for his leadership and support of bryology, as well as Brent Mishler for his continuous devotion to student participation at professional meetings. Both provided the resources that made this event possible and stimulating for everyone involved. Bernard Goffinet (University of Connecticut) and Robert Magill (Missouri Botanical Garden).

Bernard Goffinet

List of presentations made at the symposium "Molecular systematics of bryophytes: Progress, problems and perspectives" held at the Missouri Botanical Garden in St. Louis, on September 6&7, 2003. Entries preceded by an asterisk (\*) mark contributions to the proceedings of the conference.

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## Session I: EVOLUTION OF LAND PLANTS

Qiu Y.-L.: Evolution of Land plants

\*Quandt D., M. Stech, K. Müller, W. Frey, K.W. Hilu & T. Borsch: Molecular evolution of the chloroplast trnL-F region in land plants.

\*Mishler B.D., A. Driskell, & D. G. Kelch. Getting to the bottom of the land plants: genomic characters vs. DNA sequence data, and compartmentalization vs. global analyses.

\*Szweykowska-Kulinska Z.: Organellar inheritance in liverwort and mosses.

## SESSION II: EVOLUTIONARY HISTORIES OF HORNWORTS AND LIVERWORTS

\*Duff J.: Molecular and morphological diversification in the hornworts, an ancient land plant lineage.

\*Davis C.: Molecular phylogeny of leafy liverworts.

\*He-Nygren X., I. Ahonen, A. Juslin, D. Glenný & S. Piippo: Phylogeny of the Jungermanniidae.

\*Yatsentyuk, S. P., N.A.Konstantinova, M. S.Ignatov, & A.V.Troitsky. Molecular Phylogenetic Study of Jungermanniales by Analyses of trnL-trnF Intron - Spacer Sequences of Chloroplast DNA

\*Forrest L. & B. Crandall-Stotler: A phylogeny of the simple thalloid liverworts (Jungermanniopsida, subclass Metzgeriidae) as inferred from the chloroplast genome.

\*Heinrichs J., H. Groth & M. Lindner: Molecular phylogeny and biogeography of the Plagiochilaceae.

\*Wilson R. & S. R. Gradstein: Molecular phylogeny of the Lejeuneaceae.

\*Schill D., D.G. Long, M. Moeller, & J. Squirrell: Molecular relationships of Lophoziaceae and Scapaniaceae.

Ahonen I.: The evolution in the liverwort order Porellales in the light of four molecular markers.

Wickett N. The consequences of achlorophyly on the structure and function of the chloroplast genome of *Cryptothallus mirabilis* (Aneuraceae)

Juslén A. Where are "basal" Jungermanniales? Evidence from molecular phylogeny of leafy liverworts.

## SESSION III: EVOLUTIONARY HISTORIES OF MOSSES

\*Shaw A.J., I. Melosik, I., & C.J. Cox. Patterns of peatmoss (*Sphagnum*) diversification inferred from molecular phylogenies.

Tsubota H., E. De Luna, D. Gonzalez & H. Deguchi: Molecular phylogeny and ordinal relationships of mosses based on large scale data set of rbcL sequences, with special reference to the Grimmiaceae and Seligeriaceae.

\*Hyvönen J. & S. Koskinen: Pogonatum (Polytrichales, Bryophyta) revisited.

LaFarge C.: Evolution of dwarf males in *Dicranum* and *Dicranoloma* (Dicranaceae).

\*Goffinet B., A. J. Shaw, C.J. Cox & S. Boles. Phylogenetic inferences in the Orthotrichoideae based on multigenomic characters.

Cox C.: Phylogeny and patterns of diversification in the Mniaceae s.l." i.e including Pohlia.

\*Bell N & Newton A.\*: The paraphyly of *Hypnodendron* and the phylogeny of related non-hypannaean pleurocarpous mosses inferred from chloroplast and mitochondrial sequence data.

Deluna E.: The limits of rbcL sequences in the inference of phylogenetic relationships among families of pleurocarps as estimated by parsimony, maximum likelihood and bayesian analyses.

\*Vanderpoorten A.: Molecular and morphological evolution in the moss genus, *Amblystegium*.

\*Huttunen S., M.S. Ignatov, & D. Quandt: Phylogenetic relationships of the Meteoriaceae, Brachytheciaceae and Lembophyllaceae.

Avilla D., E. DeLuna, A. E. Newton. The phylogenetic position of Thuidiaceae with respect to other pleurocarpous mosses inferred from rbcL and rps4.

## SESSION IV: PHYLODEMOGRAPHY AND PHYLOGEOGRAPHY

\*Skotnicki M.L., P. Selkirk & A. Mackenzie: Mosses Surviving on the Edge: Origins, Genetic Diversity and Mutation in Antarctica.

Hedderson T.: Phylogeography of an amphiatlantic disjunction - evidence for multiple histories in *Homalothecium sericeum*.

McDaniel S. & A.J. Shaw: Molecular population genetics of the delta-6 fatty acid desaturase gene in *Ceratodon purpureus*: functional and evolutionary implications.

\*Stech M. & J. Dohrmann: Interrelationships and biogeography of two Gondwanan/subantarctic *Campylopus* species, *C. pilifer* and *C. introflexus*.

Fisher K. A Case of the island syndrome in mosses: examples from the *S. involutus*

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# CONSERVATION NEWS

## IAB-IUCN Bryophyte Conservation Expert Group: proposed code of conduct for fieldwork.

The following code of conduct for fieldwork was drawn up during the IUCN - IAB conference in Merida, Venezuela (January 2004)

This code of conduct aims to create guidelines to improve and facilitate bryological research in an ethical context. There are several reasons why such guidelines are appropriate. Field research abroad provides opportunities to strengthen scientific collaboration between bryologists and conservation scientists and allows third-world countries to benefit from experience gained and from collected material. Secondly, conservation issues have to be taken into account. Countries have drawn up legislation and programmes to protect their biodiversity, and when conducting research abroad the rules and laws that apply to biodiversity and sustainable use of natural resources should be respected.

Finally, there are ethical and emotional grounds to protect nature for the benefit and use of future generations.

In the following, we briefly address some legal and administrative issues and list guidelines for preparing, implementing and completing research.

### I. Administrative and legal issues

Before collecting, obtain necessary permits and respect collection restrictions.

Before putting out permanent or long-term markings for studies, contact the land-owner (or appropriate authorities) to obtain permits whether necessary or not.

### II. Contact with local scientists

Before going abroad, inform the host country of the objectives (through formal requests, projects, etc.) of the research, contact local botanists for cooperation and make arrangements to the benefit of both parties. This could include:

- Providing training for botanists in visited countries with little experience in your field.
- Covering field costs including the costs of local collaborators who are related to the project.
- Obtaining research permits, arranging travel and providing facilities for work in the visited country by the local collaborators.
- Sending collected material to the visitors institution from the local collaborating institution with a full and valid custom declaration.

### III. During collecting and performing field experiments

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## The Francis Rose Reserve

The first of its kind in Europe, this 25 hectare large reserve situated in Kew's country garden in Sussex has been set aside for the protection of endangered bryophytes and some other threatened plant species. The reserve is named after Francis Rose who spent his life studying mosses and lichens. Dr. Francis Rose, is now 82 and lives in rural Hampshire. A former wartime radar scientist, he says that some of the plants in the new reserve have probably been in Britain since the last Ice Age, and are the oldest native species.

The new reserve with sandy outcrops will provide biologists with an ideal site for the reintroduction of rare species. Among the candidate species for reintroduction is *Orthodontium gracile*, now known at only 18 sites across Britain.

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## COUNTRY REPORT

### Bryological news from Spain

Bryology in Spain is developing more and more. These are some of the most remarkable events that have taken place recently.

The XVIII Bryological Meeting was held on 8-10 November 2003 in El Barco de Ávila (province of Ávila, central Spain). In recent years these meetings have been encouraged by the SEB (Sociedad Española de Briología - Spanish Bryological Society). Francisco Lara (Madrid), María Jesús Elías (Salamanca) and Juan Antonio Sánchez (Salamanca) organised this bryological meeting. As in previous meetings, field trips were complemented by research presentations (13 in this edition) and the celebration of the General Assembly of the SEB. Almost 20 bryologists explored the Sierra de Gredos and the results will be published in the Boletín of the SEB. A new executive of the SEB was elected: President (Ricardo Garilletei, Universidad de Valencia), Secretary (Felisa Puche, Universidad de Valencia), Treasurer (Marta Infante, Museo de Ciencias Naturales de Álava), and Member of the Directive (Belén Albertos, Universidad Autónoma de Madrid). Pictures of the Meeting are available on the web site of the SEB (<http://www.uam.es/informacion/asociaciones/SEB/>) and summaries of the 13 bryological contributions are included in the last issue of the SEB's Bulletin.

The XIV Cryptogamic Sciences Symposium was held on 17-19 December 2003 in Murcia. The Universidad de Murcia hosted the Symposium and the mycologist Mario Honrubia, presided the organizing committee. This kind of Symposium may be unique in the world since it traditionally joins scientists working

Do not put unnecessary pressure on plant populations, i.e. do not take more than you need for your research and teaching and leave enough for the population to recover. Respect conservation aspects and avoid working with threatened species unless they are the aim of the research.

### IV. After the work

1. Material and data collected should be shared between the project collaborators. This includes:

- Depositing named duplicates (including types) of collected material in the host country.
- Publishing the results jointly and properly acknowledging all people who have assisted and contributed to the field work.

on the different cryptogamic groups: algae, fungi, lichens, bryophytes and pteridophytes. In the bryological section, around 30, mainly Spanish bryologists, made 18 presentations. The next Symposium will probably be held in Bilbao and, as usual, is open to all cryptogamists.

Three new fascicles of the Project "Flora Briofítica Ibérica" (Iberian Bryophyte Flora) have been distributed among members of the SEB. The genera studied belong mainly to Pottiaceae (*Eucladium*, *Gymnostomum*, *Gyroweisia*, *Hymenostylium*, *Leptobarbula*, *Hennediella* and *Tortula*), but the first non-pottiaceous genus of the Project has been also studied (*Andreaea*). Fascicles are available from the SEB for every person interested.

The 5<sup>th</sup> Congress of Bryophyte Conservation, organized by ECCB (European Committee for the Conservation of Bryophytes) with the collaboration of the SEB, will take place in Valencia on 21-23 September, immediately after the 4<sup>th</sup> Planta Europa Conference. Information on the Congress is available in [http://www.plantaeuropa.org/home\\_page.htm](http://www.plantaeuropa.org/home_page.htm). The SEB offers grants to five young researchers presenting any communication to the 5<sup>th</sup> ECCB Congress. These grants will cover registration fees. Applicants must be doctoral students working on their PhD in Europe. Affiliation to the SEB is not necessary to apply for these grants. Applicants must write to the Secretary of the SEB (Dr. Felisa Puche, e-mail: [m.f.puche@uv.es](mailto:m.f.puche@uv.es)), including the completed pre-registration form, name, nationality, address of the University

or Research Centre where the doctorate is being done, research interest and title of the communication.

This and other news items may be found on the SEB's webpage (see above), including how to become a member of the SEB. The last section inaugurated in this webpage incorporates humorous bryological investigations; the first contribution deals with the new genus *Bryochuscum*.

Two new theses on bryology have recently been presented in Spanish universities. The one by Graciela Calabrese was

introduced at the University of Salamanca and revised the genus *Zygodon* in southern South America, while the one by Juan Antonio Jiménez was presented at the University of Murcia and treated the genus *Didymodon* in the Mediterranean basin, Macaronesia and southwestern and central Asia. At least 10 theses are currently underway in Spain by young bryologists, dealing with all the major topics in contemporary bryology: floristics, taxonomy, molecular biology, ecology, ecophysiology and so on. This influx of interest from a new generation bodes well for Spanish bryology.



In these sad days after the brutal terrorist attack perpetrated on March 11<sup>th</sup> in Madrid, the Spanish Universities have expressed their solidarity with the victims and their families. Universities are historically committed to justice and freedom, and they have dedicated their efforts to ensure that life prevails over death, righteousness over force, and coexistence over violence. As individuals, as citizens and as university people, we make a call to the firm defense of life, freedom and democracy. Pain, silence, tears are valuable gestures in these sad moments, but we also know the power of the word. Do not be silent against terrorism.

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## APPLIED BRYOLOGY

### Utilizing bryophytes in criminal investigations – a research project in Finland .... and a request for collaboration

Viivi Virtanen<sup>1</sup>, Helena Korpelainen<sup>2</sup>, Kirsi Kostamo-Liusvaara<sup>2</sup> and Maria Pohjamo<sup>2</sup>

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Genetic fingerprinting methods are widely used in forensic studies, in rape and murder cases for example, but mainly for identification and relatedness testing of humans. However, non-human DNA has been used extremely rarely. In Finland in 2001, we were involved in a criminal investigation in which the fingerprinting of bryophytes was used to provide evidence in a murder case (Korpelainen & Virtanen 2003). The goal was to link the bryophyte material found on the suspect with bryophyte patches located at the crime scene. Instead of species-specific microsatellite markers we had to use other fingerprinting methods since we had no previous genetic information on the bryophyte species studied.

Inspired by that investigation, and after receiving a two-year grant from the National Technology Agency of Finland, we initiated a project (led by Helena Korpelainen) in spring 2003 to design species-specific microsatellite markers for a group of globally common bryophyte species to be used for forensic applications. In addition, our second goal is to develop a new, faster method for finding specific microsatellite markers. Bryophytes are convenient for forensic investigations as many of them are clonal and common, their fragments can easily become attached to, e.g., shoes and clothes, and the DNA can be analyzed quite long after the plant has been fragmented. We propose that in the future, genetic profiling of clonal plants in combination with phylogenetic and vegetation studies could be a useful tool for forensic investigations, specifically in cases when no human DNA is available.

Twenty-one bryophyte species were selected for the study with 12 taxa of primary importance: *Aulacomnium palustre* (Hedw.) Schwägr., *Brachythecium albicans* (Hedw.) Schimper, *Climacium dendroides* (Hedw.) F. Weber & D.

Mohr., *Dicranum polysetum* Sw., (Hedw.) Schimp., *Hylocomium splendens* (Hedw.) Schimp., *Plagiochila asplenoides* (L.) Dumort., *Plagiomnium cuspidatum* (Hedw.) T. J. Kop., *Pleurozium schreberi* (Willd. ex Brid.) Mitt., *Ptilidium ciliare* (L.) Hampe, *Racomitrium microcarpon* (Hedw.) Brid., *Rhytidiadelphus squarrosus* (Hedw.) Warnst., and *Sphagnum fuscum* (Schimp.) H. Klinggr. In total a minimum of 20 specimens from the whole distribution area of each taxon are included in the analyses to evaluate global genetic variation pattern. Every specimen contains 10-20 shoots collected from one patch, which should be a genetically identical clone if the plant is breeding asexually.

The taxa of secondary importance, to be included in the analyses if the schedule allows, are *Brachythecium reflexum* (Starke) Schimp., *Ceratodon purpureus* (Hedw.) Brid., *Pogonatum urnigerum* (Hedw.) P. Beauv., *Polytrichum juniperinum* Hedw., *Racomitrium lanuginosum* (Hedw.) Brid., *Rhizomnium punctatum* (Hedw.) T. J. Kop., *Rhytidiadelphus triquetrus* (Hedw.) Warnst., and *Sphagnum girgensohnii* Russ.

Colleagues around the world have been most helpful, and we have already received specimens, e.g., from the Czech Republic, Estonia, Germany, Ireland, the Netherlands, Norway, Russia and Sweden. However, we are still in need of specimens from outside Europe. Normal, quite fresh herbarium specimens are wanted along with the collecting data: latitude in degrees, country, locality, substrate, date, and collector. If anybody is willing to send any specimen of the above-mentioned taxa until autumn 2004, please contact [viivi.virtanen@helsinki.fi](mailto:viivi.virtanen@helsinki.fi).

References:



## LITERATURE COLUMN

Editor: Johannes Enroth

### Hedwig's "Species Muscorum" on CD

Frahm, J.-P. (ed.) 2002: Joannis Hedwig 1801. *Species muscorum frondosorum descriptae et tabulis aeneis LXXVII coloratis illustratae. Opus posthumum supplementum scriptum a Friderico Schwaegrichen, Lipsiae.* pp. 1-353 pl. 1-77, and: Joannis Hedwig 1811-1842. *Species muscorum frondosorum descriptae et tabulis aeneis coloratis illustratae opus postumen supplementum scriptum a Friderico Schwaegrichen. Vol. 1-4. Lipsiae.* — Digital Facsimile Edition, The University Library Bonn, ISBN 3-00-009885-2. — Available from: Jan Peter Frahm, Meckenheimer Allee 170, D-53115 Bonn; Fax: 0228-733120; e-mail: [frahm@uni-bonn.de](mailto:frahm@uni-bonn.de)

It was to be expected that sooner or later the classical bryological works would become available in diskette form. This method of distributing rare literature began years ago in other fields of botany. A natural selection for the first reproduction was Hedwig's *Species muscorum*, the starting point for the nomenclature of mosses, and its four supplementary volumes. Every worker doing serious revisionary or monographic work with mosses is obliged to consult these works frequently. In addition to these, the diskette contains a short preface and an article by J.-P. Frahm, *The life and work of Johannes Hedwig*, reproduced from *Nova Hedwigia* 70: 1-13 (2000).

Belonging to the older generation of bryologists not well-trained to use computers, I hesitated to try the diskette (I have the original works easily available). The first attempt was unsuccessful. For some still unknown reason the computer refused to cooperate, although the Acrobat Reader was installed. With another computer the texts opened without problems. I first tried to use the "search" function, but many repeated attempts failed. A telephone call to my son however saved the day; since the pages were scanned, they are actually photographs and separate words cannot be searched. That was disappointing, but I quickly learned to scroll page by page to find the species descriptions and corresponding coloured illustrations. However, this takes more time than if you have the book in your hands.

When monographing, old books are necessary to solve and check the nomenclature. Usually this means that the worker has five or more books open on the desk simultaneously. I got an imaginative vision of a laboratory with tens of computers, each of them showing one necessary page. This vision collapsed quickly; the computer-printer printed what I needed. I am glad to say that I now have Hedwig's *Species muscorum* and the supplements in an easily accessible form in my home library. Many thanks to you, professor Jan-Peter Frahm!

After consulting *Index Muscorum*, every careful bryologist must check the original literature for typification and to correct the nomenclature. This implies checking the various combinations made by earlier authors. One soon learns that the following works are necessary to consult more often than some others: Jaeger & Sauerbeck (1870-1879), Paris (1984-1898, 1900; ed. 2, 1903-1906), Brotherus (1901-1909; ed. 2, 1924, 1925), and Fleischer (1904-1923). All, save Brotherus (1901-1909) and Paris (both editions), are available as facsimile editions (given below). I would desire to have at least Paris's *Index bryologicus* in facsimile, or

preferably on diskette, and so copied that searching the names and epithets would be possible. Of course, any bryologist would desire other works, such as *Bryologia Europaea* (Bruch et al. 1849-1855) in inexpensive and space-saving form in his home library. In the library of the Botanical Museum, University of Helsinki, I have found that many old books, such as *Bryologia Javanica* (Dozy & Molkenboer 1854-1870) do not tolerate the continuous use and photocopying by the staff and visitors. If these classical works were available as cheap diskettes, this would save those treasures from destruction.

I can warmly recommend this CD to all "moos-taxonomists" [sic!].

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Schwaegrichen, Lipsiae. pp. 1-353 pl. 1-77. (2nd Indian Reprint 2002, Bishen Singh Mahendra Pal Singh, Dehra Dun).

Jaeger, A. & Sauerbeck, F. 1870–1879: Genera et species muscorum systematice disposita seu adumbratio florum muscorum totius orbis terrarum accedunt 'Musci cleistocarpi' et 'Enumeratio fissidentacearum' 1, 2. — xvi, 1662 pp. (Facsimile edited and prefaced by William C. Steere).

Paris, E. G. 1894–1898: Index bryologicus sive enumeratio muscorum hucusque cognitorum adjunctis synonyma

distributioneque geographica locupletissimis quem conscripsit E. G. Paris. — 5 vols. Paul Klincksieck. Parisii.

Paris, E. G. 1900: Index bryologicus. Supplementum primum. — 1 vol. Genève et Bale, Georg & Cie, Lyon (même maison).

Paris, E. G. 1903–1906: Index bryologicus sive enumeratio muscorum ad diem ultimam anni 1900 cognitorum adjunctis synonymia distributioneque geographica locupletissimis. Editio secunda. — 5 vols. A. Hermann, Paris.

Timo Koponen.

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## **NEW PUBLICATIONS**

### **A new key to the European species of the Amblystegiaceae.**

Hedenäs, L. 2003. The European species of the Calliergon-Scorpidium-Drepanocladus complex, including some related or similar species. *Meylania* 28: 1-116. (ISSN 1018-8142).

This is a completely reworked and updated version of the earlier 'Field and microscope keys to the Fennoscandian species of the Calliergon-Scorpidium-Drepanocladus complex, including some related or similar species', which is no longer available. Besides the Calliergon-Scorpidium-Drepanocladus complex, the genera Breidleria, Calliergonella, Campylium, Campyliadelphus, Cratoneuron, and Palustriella are included in the key. Despite the title of the key, all species of these genera that are recognised by the author worldwide are included, either in the main keys or they are mentioned under the most closely related European species. However, the exclusively extra-European species are treated in less detail than the ones occurring in Europe.

The price of the issue of *Meylania* with the key is 20.- CHF or 15.- Euro + postage (Switzerland 1.10 CHF; Europe 2.70 Euro; Rest of the world 3.70 Euro). Orders should be sent to: Bruno Bagutti Talstrasse 9 CH-3122 Kehrsatz Switzerland, e-mail: [bruno-bagutti-kehersatz@bluewin.ch](mailto:bruno-bagutti-kehersatz@bluewin.ch)

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### **Catalogue of Australian liverworts and hornworts**

This catalogue, published as Flora of Australia Supplementary Series No. 21, lists 150 genera and 869 accepted species and infraspecific taxa of liverworts and hornworts from the eight States and mainland Territories of Australia. Genera and species are listed alphabetically, and c. 1100 synonyms that have been applied to Australian specimens are inserted under the appropriate species name. Nomina nuda, names of uncertain application and those reported in error from Australia are appended. Each species entry is accompanied by a list of post-1982 literature that

provides locality details, descriptions, identification keys and/or habitat information.

This work completes a modern trio of catalogues on the Australian lichen and bryophyte floras, together comprising more than 5,000 taxa and representing a significant component of the national biota.

Soft cover, 138 pages. Includes bibliography and an index of synonyms and excluded names. Price A\$25 (incl. surface mail worldwide & G.S.T. in Australia). To order, please contact Dr. Pat McCarthy: [patrick.mccarthy@ea.gov.au](mailto:patrick.mccarthy@ea.gov.au)

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### **Checklist of mosses of sub-Saharan Africa**

A new version of the moss checklist for sub-Saharan Africa is now available (version 4), which is being published as: O'Shea, B.J. 2003. Checklist of the mosses of sub-Saharan Africa (version 4, 12/03). *Tropical Bryology Research Reports* 4: 1-182. The checklist can be directly downloaded from: <http://www.oshea.demon.co.uk/tbr/> by clicking on the 'TBRR' button, and then selecting the fourth 'download' button. PDF and MS Word versions are provided. A printed and bound version (A4 size) is also available at GBP 15, or USD 24 (including worldwide postage) - see the website for details.

This new version lists 2791 accepted taxa, 4010 synonyms and annotations, and 664 literature references, and includes all relevant literature published up to the end of November. It replaces version 3, published in 1999. The additional 50 pages over version 3 are caused mainly by the large number of synonyms now included and by the 210 new references. All feedback is welcome.

Brian O'Shea

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## Mosses, Liverworts and Hornworts of Kenya

By Min S. Chuah-Petiot

This is the first illustrated identification guide to the mosses, liverworts and Hornworts of Kenya. Keys to families and genera are provided. Over 300 species are presented each species having a description accompanied by line drawings of the characteristic parts. Ecology, distribution and a selected bibliography of particular relevance to Kenya and Africa are included.

For details and order, contact [petiot@wananchi.com](mailto:petiot@wananchi.com). The book can also be purchased as follows: (1) Librairie Rene

Thomas, 28 rue des Foss's Saint-Bernard 75005, Paris, France e-mail: [librairie.thomas@wanadoo.fr](mailto:librairie.thomas@wanadoo.fr) - credit card payments accepted; (2) Versandbuchhandlung Andreas Kleinsteuber, Rhode-Island-Allee 3, D-76149 Karlsruhe (Germany), [info@kleinsteuber-buch.de](mailto:info@kleinsteuber-buch.de) (only Mastercard), (3) via Koeltz, [koeltz@t-online.de](mailto:koeltz@t-online.de) Accept VISA, American Express, Master/Eurocard.

Min Petiot, e-mail [petiot@wananchi.com](mailto:petiot@wananchi.com)

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## Catalogue of Polish Mosses

Census Catalogue of Polish Mosses; R. Ochrya, J. Aarnowiec, H. Bednarek-Ochrya; Biodiversity of Poland - Vol. 3; (2003) ISBN: 83-85444-84-X.; pp. 372; Institute of Botany of the Polish Academy of Sciences; this book is available at 35,00 EUR per copy (without postage).

The present work is an attempt to meet the long-felt need for a standard work on the nomenclature and distribution of Polish mosses.

The catalogue contains 700 species, eight subspecies and 87 varieties, comprising 207 genera and 55 families.

In contrast to the former treatment of Polish mosses, we have relegated many varieties to synonymy as we believe a good many of them are mere habitat modifications which do not merit taxonomic recognition or for which suitable studies confirming their status are not available.

With a few exceptions, we studied the voucher collections upon which the Polish records of the taxa concerned are based. Special attention has been paid to locate old records made by German bryologists such as J. Milde, K. G. Limpricht, H. von Klinggräff, C. Warnstorf and F. Koppe in

the Sudetes, Silesia, West Pomerania and East Prussia. Locating these specimens was not always an easy task since they are scattered in various herbaria throughout Europe, but certainly the bryological herbaria in the Hungarian Natural Museum in Budapest and in the Natural History Museum of Wrocław University are the prime sources of collections of K. G. Limpricht and J. Milde. Also, the herbaria at B, HAL, JE, POZG, TOR, STU, S and W are important for tracing many voucher collections.

One of the main objectives is to provide a list of genera and species, including subspecies and varieties, of all moss taxa that have ever been reported from Poland. The catalogue also includes a list of excluded taxa and of all the synonyms that have been used for mosses in the present territory of Poland. The next goal is to provide the correct orthography and author citation for all taxa recognized in the work and to present their systematic arrangement following the modern standards of moss classification. Finally for the first time, the Polish nomenclature of mosses has been reviewed and set in order.

The book can be ordered by e-mailing to: [ed-office@ib-pan.krakow.pl](mailto:ed-office@ib-pan.krakow.pl)

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## A new Irish bryophyte book

**The distribution of bryophytes in Ireland by David T. Holyoak was published on 12 December 2003. Large format (A4), 564 pp. + 8-page colour section. ISBN 0-9545285-0-6. Hardback with searchable CD-ROM.**

Ireland has one of the richest bryofloras in Europe with a wealth of Atlantic bryophytes shared only with western Scotland. Its bryophytes are among the most important elements of the island's flora because ca. 51% of European liverworts occur and the moss flora is almost as rich. Irish bryophyte distribution is constantly changing as development and agricultural intensification continue to destroy bryophyte habitats, some introduced species are spreading, and some native species may be responding to recent climatic changes. In order to provide a sound basis for Irish

bryophyte conservation, it is important to distinguish not only reliable from unreliable records, but also the very old records from modern ones, and to document extinctions.

Throughout the past century the Census Catalogues maintained and published by the British Bryological Society have provided the record of bryophyte distribution not only for Britain but also for the vice-counties of Ireland. The records are regarded as authoritative because all of the modern additions to the Census Catalogues are based on checked voucher specimens, most of which are now housed in NMW.

The need for a detailed review of vice-county records of Irish bryophytes is apparent to all who have attempted to trace the

source of a record. Other than the bare lists in the Census Catalogues, no overall index of the records or corrections has appeared. This book aims to fill this need for each moss and liverwort species, subspecies and variety from each of the vice-counties of Ireland, based largely on the data from the BBS records.

It also presents a brief history of bryology in Ireland since 1896, with notes on all the BBS Excursions held there, and an extensive bibliography of the more important modern literature on Irish bryophytes. The accompanying CD-ROM contains all the records from the text in a searchable format, allowing lists of records to be generated for each vice-county, locality, year, collector or publication.

Any profits from sales of the book will be used by the BBS to

encourage field recording of bryophytes in Ireland by amateur bryologists.

The book is £45 + postage/packing, but the following charges apply: For British Bryological Society members: £23 UK & Ireland (incl. postage/packing); £31 (\$65, 50 euros) other destinations (incl. postage/packing & handling)

For others: £45 (\$95, 70 euros) + postage/packing. Booksellers get a 25% discount on 2+ copies.

Checks in sterling must be drawn on a UK bank. Orders should be sent with a check to the Publisher: Broadleaf Books, 35 Cardiff Road, Dinas Powys, Vale of Glamorgan, CF64 4DH, U.K. Tel.:+ 44 (0)29 2051 3382; email: [broadleafbooks2@aol.com](mailto:broadleafbooks2@aol.com) Visa payments are not accepted.

## WEB-NEWS

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### Type Catalogues about Bryophytes in Herbaria: addition

Gabriella Kis. Research Group for Bryology of the Hungarian Academy of Sciences at the Eszterházy College, Eger, Pf. 222. 3301-Hungary  
E-mail: [kisgabi@ektf.hu](mailto:kisgabi@ektf.hu)

#### (Herbarium, University of Göttingen

<http://www.gwdg.de/~sysbot>

The fast-growing Herbarium of the University of Göttingen houses about 800.000 specimens of dried plants from all parts of the world, including about 150.000 specimens of bryophytes, and is among the largest such institutions in Germany. In the past few years, numerous collections from the Neotropics have been added to the Göttingen herbarium, including about 80.000 specimens of bryophytes. With financial support from the Global Biodiversity Facility Germany (GBIF-Germany) and the Lindemann foundation,

some of the most important collections of the Göttingen herbarium have recently been put on the Internet.

The type collection database, containing about 8.000 type specimens of vascular plants and bryophytes, is now accessible online at

<http://www.gwdg.de/~sysbot/Typen/default.htm>. The

neotropical bryophyte collections of GOET are currently posted at <http://www.gwdg.de/~sysbot/Moos/default.htm>.

Finally, the Index of Collectors, including names, dates, and a short biography of most collectors represented in the Göttingen herbarium, is available under

[http://www.gwdg.de/~sysbot/index\\_coll/default.htm](http://www.gwdg.de/~sysbot/index_coll/default.htm)

VISIT THE NEW IAB-WEBSITE AT

[WWW.BRYOLOGY.ORG](http://WWW.BRYOLOGY.ORG)

## THESES IN BRYOLOGY

Editor: Bill Buck

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://www.nybg.org/bsci/libr/Catalog.html>. As theses arrive, bibliographic data and a brief synopsis will be published in this column (see examples below). Bryological theses for any degree, covering any aspect of bryology in any language, will be included. Please send theses to Bill Buck at the address above. Please refer to the preliminary notice (cited above) for information on financial assistance from IAB for reproduction of theses

**Ah-Peng, Claudine. 2003. Mise au point d'un outil diagnostique basé sur l'utilisatin de la mousse aquatique *Fontinalis antipyretica* Hedw. en culture pour l'estimation de la qualité des cours d'eau. Diplome de Recherches Technologiques, Université de Lille 2. [iv] 178 + 26 pp. In French with English summary. Address of author: Département Régulations, Développement et Biodiversité Moléculaire, Museum National d'Histoire Naturelle, 12, rue Buffon, 75231 Paris cedex 05, France. E-mail: [ahpengc@mnhn.fr](mailto:ahpengc@mnhn.fr).**

This thesis for a technological research diploma in engineering of health and environment looks at the use of a culture of *Fontinalis antipyretica* as a biomonitor of water quality. The optimization of the culture permitted the definition of the optimal parameters to obtain biomass quickly and to avoid contamination. The culture was subsequently contaminated with cadmium to determine the efficiency of uptake and the level of saturation. Finally, cultivated mosses were placed in streams in four sites in northern France for five months in order to determine the levels of uptake of 13 trace metals. All were accumulated except copper. The data

indicate that *Fontinalis* is a useful biomonitor for most heavy metal contaminants in water.

**Allen, Bruce Hampton. 1980. Peristome variations in the genus *Fissidens*: An SEM study. Master's thesis, Pennsylvania State University. ix + 43 pp. In English. Address of author: Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299. E-mail: [bruce.allen@mobot.org](mailto:bruce.allen@mobot.org).**

This master's thesis, the peristomes of 19 species of *Fissidens* in two subgenera and nine sections were examined with the SEM. The purpose of the study was to determine if, within *Fissidens*, variations in the peristome do exist and if so whether these variations can be correlated with gametophytic variations on which the infrageneric taxa are based. It was concluded that some peristome types found in *Fissidens* correlated with gametophytic variation but others do not.

**Dohrmann, Joana. 2003. Molekulare Systematik und Biogeographie von *Campylopus pilifer* Brid. (Dicranaceae, Bryopsida). Diplomarbeit, Institut für Biologie, Freien Universität Berlin, Germany. VIII + 106 pp. + 6 unpagged appendices. In German. Address of author unknown.**

This equivalent of a master's thesis examines *Campylopus pilifer* on a worldwide basis using ITS1 and ITS2 as molecular markers. *Campylopus introflexus* was also examined because it was determined to be the nearest relative. Within *C. pilifer*, two groups of molecularly defined populations were discovered, a New World group and an African-European-Arabian group. Data are also presented on hybridization of *C. pilifer* with *C. introflexus*.

**Fuller, Carol A. 1986. The bryophytes of Ha Ha Tonka State Park, Camden County, Missouri. M.S. Thesis, Southwest Missouri State University, Springfield, MO, U.S.A. vii + 69 pp. In English. Address of author: not known.**

This master's thesis presents a survey of the bryophytes found in a state park in central Missouri, conducted between April 1985 and March 1986. The park contains a gorge with the source of Ha Ha Tonka Spring, with a dolomite and sandstone bedrock. Nine hepatics and 77 mosses were found.

**Guerke, Wayne R. 1972. A floristic and ecological study of the Hepaticae and Anthocerotae of the Florida Parishes, Louisiana. M.S. Thesis, University of Southwestern Louisiana, Lafayette, LA. [x] 138 pp. In English. Address of author: not known.**

This master's thesis is a study of the hepatics and anthocerotae of an eight parish (county) area in southeastern Louisiana. The flora consists of 77 species in 38 genera. Phytogeographically, the hepatics seem to be represented by three elements, an eastern North American element, an indigenous Coastal Plain element, and a Neotropical element.

**Hilton, Teresa L. 1979. The bryophytes of Roaring River State Park, Barry County, Missouri. M.A. Thesis, Southwest Missouri State University, Springfield, MO, U.S.A. viii + 62 pp. In English. Address of author: not known.**

This master's thesis presents a survey of the bryophytes found in a state park in southwestern Missouri, conducted between May 1987 and July 1979. The park contains the

source of Roaring River Spring, and has a limestone bedrock. Sixteen hepatics and one anthocerotae were found as well as 111 taxa of mosses.

**Kirmaci, Mesut. 2002. Subice Dağı karayosunu florasi [Bryophyte flora of Subice Mountain]. Yüksek Lisans Thesis, Adnan Menderes Üniversitesi, Aydın, Turkey. VI + 97 pp. In Turkish with English abstract and summary. Address of author: Adnan Menderes Üniversitesi, Fen-Edebiyat Fakültesi, Biyoloji, Böl. 09100 Kapez/Aydın, Turkey. E-mail: [mkirmaci@adu.edu.tr](mailto:mkirmaci@adu.edu.tr).**

This equivalent of a master's thesis studied the bryophyte flora of Subice Mountain in the Menderes Massif in southwestern Turkey. On the basis of 305 collections, 105 moss species (in 17 families and 45 genera) and ten hepatics (in eight families and nine genera) and one anthocerotae were found. Acrocarps contributed 68.6% of the moss flora, with pleurocarps the remaining 31.4%. The Pottiaceae and Brachytheciaceae were the most commonly encountered families. Species that prefer moist habitats are considered endangered because of increased aridity of the area.

**Magill, Robert. 1971. A taxonomic study of the Davis Mountains moss flora. M.S. Thesis, Sul Ross State University, Alpine, TX. vi + 164 pp. In English. Address of author: Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299, U.S.A. E-mail: [bob.magill@mobot.org](mailto:bob.magill@mobot.org).**

This master's thesis examines the mosses from the Davis Mountains in western Texas. The bedrock is primarily volcanic in origin. About 70 taxa of mosses are reported, with Pottiaceae having the most abundant representation.

**Majestyk, Piers. 2003. A revision of the moss genus *Erythrodonium* (Entodontaceae). Ph.D. dissertation, City University of New York. ix + 111 pp. In English. E-mail address of author: [pmajestyk@nybg.org](mailto:pmajestyk@nybg.org).**

This doctoral dissertation revises *Erythrodonium*. From the previously recognized 15 species, eight are accepted here. Synonymy, descriptions, distribution maps and illustrations are provided for each species. Molecular and morphological data were analyzed in an attempt to better understand the phylogenetic relationships within the genus and family. The use of *trnL-trnF* and ITS failed to provide resolution.

**Marin, Martha Lourdes. 1981. Distribution and evolutionary significance of chlorophyllous and non-chlorophyllous spores in the Musci. M.S. Thesis, University of Southwestern Louisiana, Lafayette, LA. Vi + 52 pp. In English. Address of author: not known.**

This master's study surveyed 120 species of mosses and reviewed the literature to determine the frequency and habitat preferences of those with green vs. non-green spores. Green spores were found to be much more common than non-green ones (87%), with a similar frequency reported in the literature. All epiphytic mosses had green spores. Non-green spores were found in taxa on drier and disturbed soils as well as on rock.

**Noble, Sarah Marie. 2003. The bryophytes of Falls Branch Falls, Cherokee National Forest, Monroe County, Tennessee, USA. M.S. Thesis, University of Tennessee, Knoxville, TN, U.S.A. xv + 157 pp. In English. Address of author: Department of Systematics and Biodiversity,**

**University of Alabama, Box 870345, Tuscaloosa, AL 35487-0345, U.S.A. E-mail: [noble001@bama.ua.edu](mailto:noble001@bama.ua.edu).**

This master's thesis inventories the bryophytes of the riparian, spray and other wet zones of Falls Branch Falls along Falls Branch of Citico Creek in southeastern Tennessee. The study found 79 mosses, 65 hepatics, and one anthocerot. There were 76 new country records for Monroe County. Phytogeographically, the flora ranged from narrow Southern Appalachian endemics to cosmopolitan taxa. The flora was analyzed using cluster analyses, which sorted the taxa into 11 categorical clusters along environmental gradients. Substrate preferences were also noted and analyzed.

**Ódor, Péter. 2002. The importance of coarse woody debris for bryophyte vegetation of semi-natural beech forests [A korhadó faanyag jelentősége természetközeli bükkösök mohavegetációjában]. Ph.D. Thesis, Loránd Eötvös University, Budapest, Hungary. 31 pp. + copies of five articles (see below for details). In English with Hungarian summary. Address of author: Department of Plant Taxonomy and Ecology, Loránd Eötvös University, H-1117 Budapest, Pázmány Péter Sétány 1/C, Hungary. E-mail: [ope@ludens.elte.hu](mailto:ope@ludens.elte.hu).**

This doctoral thesis consists of five investigations concerning the bryophyte vegetation of semi-natural beech forests in the Kékes North Forest Reserve in Hungary and the effects of coarse woody debris on it. Twenty hepatics and 48 mosses were found at the site. The substrate specificity and interspecific relationships of the species were studied. The bryophyte vegetation in the near-natural stands was significantly more diverse than in nearby managed forests, in large part because of the presence of dead wood in the near-natural forest. Vascular plant diversity is also higher in the near-natural forest, but apparently light rather than substrate diversity is the cause. The bryophytes were evaluated to determine preference for different phases of decomposition of the dead wood. In addition to the 31 page synopsis, there is also a 10 page expanded English summary. Appended are five articles: Ódor, P. 2000. Description of the bryoflora and bryophyte vegetation of Kékes North Forest Reserve in Mátra Mountains (N-Hungary). *Kitaibelia* 5(1): 115-123.— Ódor, P. & T. Standovár. 2002. Substrate specificity and community structure of bryophyte vegetation in a near-natural montane beech forest. *Community Ecology* 3: 39-49.— Ódor, P. & T. Standovár. 2001. Richness of bryophyte vegetation in near-natural and managed beech stands: the effects of management-induced differences in dead wood. *Ecological Bulletins* 49: 219-229.— Standovár, T., P. Ódor, R. Aszalós & L. Gálhidy. Spatial diversity of ground layer vegetation as a sensitive indicator of forest naturalness. 18 pp.— Ódor, P. & A. F. M. van Hees. Preferences of dead wood inhabiting bryophytes to decay phase, log size and habitat types in Hungarian beech forests. 35 pp.

**St. Hilaire, Lisa R. 1994. Conifer seedling distribution in relation to microsite conditions in a central New York forested minerotrophic peatland. M.S. Thesis, State University of New York, College of Environmental Science and Forestry, Syracuse, NY, U.S.A. viii + 81 pp. In English. Address of author: 14 Prospect St., Augusta, ME 04330, U.S.A. E-mail: [lisasaint@gwi.net](mailto:lisasaint@gwi.net).**

This master's thesis addressed how microsite conditions may affect tree regeneration in a forested minerotrophic peatland in central New York State. The objectives were to 1) determine the microsite associations, especially the bryophyte component, of four tree seedlings, *Abies balsamea*, *Thuja occidentalis*, *Tsuga canadensis* and *Pinus strobus*; and 2) determine if different bryophyte substrates affect germination and first-year survival of the trees. Principal components analysis revealed that seedling groups

overlap in habitat, but separate from random sites based on a second axis related to microtopography. Germination experiments indicated that *A. balsamea* and *P. strobus* germinate better on *Hypnum imponens* than on *Hylocomium splendens* and *Sphagnum girgensohnii* in the field, but not in the greenhouse. First-year survival differed little on the different mosses. The bulk of the thesis was published in *Canadian Journal of Forest Research* 25: 262-269 (1995).

**Su, Yong-ge. 1988. Revision of the genus *Homaliodendron* (Neckeraceae) of Southeast Asia. M.S. Thesis, Southwest Missouri State University, Springfield, MO, U.S.A. vii + 63 pp. In English. Address of author: not known.**

This master's thesis recognizes three species of *Homaliodendron* from eastern Asia, from India to Japan: *H. flabellatum*, *H. papillosum* [sic, *H. rectifolium*] and *H. scalpellifolium*. Fifteen species and three varieties are treated as new synonyms of these three species. Five species are excluded from the genus, being moved to *Porotrichum*, *Neckeropsis* and *Homalia*. The previously described sections of the genus are not retained.

**Thomas, Patricia Eggee. 1974. Hepaticae of the Interior Highlands, North America. M.A. Thesis, Southwest Missouri State University, Springfield, MO, U.S.A. v + 121 pp. In English. Address of author: not known.**

This master's thesis complements Paul Redfearn's Mosses of the Interior Highlands, treating a region of the central United States in southern Missouri, northwestern Arkansas, eastern Oklahoma, and southernmost Illinois (as well as a portion of one county of southeastern Kansas). Fifty-five genera and 137 species of hepatics are recorded. One species, *Metzgeria crassipilis*, and one forma, *Marchantia polymorpha* fo. *aquatica*, are new to the region. A key to the taxa, a brief habitat summary for each species, a table of distributional data, and a survey of the literature are included. Twenty-nine taxa are illustrated.

**Timme, Steve Lee. 1982. The phytosociology of the bryophytes at La Petite Gemme Prairie, Polk County, Missouri. M.S. Thesis, Southwest Missouri State University, Springfield, MO, U.S.A. vii + 46 pp. In English. Address of author: Theodore M. Sperry Herbarium, Biology Department, Pittsburg State University, Pittsburg, KS 66762-7552, U.S.A. E-mail: [slt@pittstate.edu](mailto:slt@pittstate.edu).**

This master's thesis is a study of the phytosociology of the bryophytes of a tallgrass prairie preserve in southwestern Missouri, and was made between June, 1980, and May, 1981. Nine species were collected from five sample areas. Statistical comparisons and index of similarity values suggested that two bryophytic communities exist, one dominated by *Campyllum hispidulum* and the other by *Bryoandersonia illecebra*.

**Withey, Alison. 1996. Systematic studies of the Spiridentaceae (Musci). Ph.D. Dissertation, Duke University, Durham, NC, U.S.A. xii + 211 pp. In English. Address of author: not known.**

This doctoral dissertation focused on the phylogenetic relationships of the Spiridentaceae to other mosses, and on the species relationships within the family. In the higher level study, molecular (*rbcl*) and morphological data were analyzed. Because of the pivotal position of the family, the origins of pleurocarpy were investigated, with *rbcl* data indicating at least two independent origins. The Spiridentaceae were found to be monophyletic and sister to the Cryptopodaceae. Only a single genus is recognized in the family, with *Franciella* being synonymized with *Spiridens*. Eight species are recognized in the genus. Each species is

briefly described and illustrated, and a key provided. A short

discussion of dispersal and biogeography is provided.

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## UPCOMING EVENTS

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### Flora Malesiana Meeting in the Philippines in September, 2004

The 6th International Flora Malesiana Symposium will be held in the Philippines from Sept 20-24 at the University of the Philippines, Los Banos campus. The five-day FM symposia series is held at three-year intervals and provides a forum for botanists to report their scientific research findings and progress on particular plant groups, or on floral diversity, ecology and conservation within the Malesian region.

For this year symposium, there will be a special afternoon session on the non-vascular Malesian cryptogams to be organized by Dr. Benito C. Tan at the National University of Singapore. Interested colleagues who would like to share their research outputs on the Malesian bryophytes are invited to submit a title and a short abstract to the session organizer at the email address ([dbsbct@nus.edu.sg](mailto:dbsbct@nus.edu.sg)) before April 15.

Registration fees for the entire symposium is US\$310 for professionals and US\$200 for students.

There will also be pre-, mid-, & post-symposium field trips to Palawan Island from September 14-19, to the summit of the famous Philippine botanical mountain, Mt. Makiling, on September 22 (one day), and to the eastern slopes of the Sierra Madre Mountains near the Pacific coastal town of Palanan in Isabela Province, Luzon Island, on September 25 to October 2.

For more information, especially the accommodation, please contact: Dr Edwino S. Fernando Makiling, Center for Mountain Ecosystems, The University of the Philippines - Los Baños College, 4031 Laguna, The Philippines. E-mail: [secretariat@floramalesiana6.ph](mailto:secretariat@floramalesiana6.ph)

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### 2004 Advanced Bryology Seminars at the Humboldt Institute on the coast of Maine, USA!

#### BRYOPHYTES AND BRYOPHYTE ECOLOGY

May 30 - June 5

Emphases - learning about bryophytes from an ecological viewpoint through field studies of bryophyte communities of coniferous and deciduous forests, bogs, and shoreline; review of field and laboratory identifications, methods of community analysis; project on Sphagnum-dominated bogs. DR. NANCY G. SLACK - Prof., The Sage Colleges (NY); extensive publications on bryophyte ecology, bogs and fens, epiphytes, species diversity; author, Field Guide to the New England Alpine Summits.

#### ADVANCED SPHAGNUM FIELD STUDIES

June 13 - 19

Emphases - field studies of 35-40 species of Sphagnum in the area; field trips to a variety of peatlands to develop a sense of ecology of each species; evening lab identifications; samples of ecologically important N. American species not

found in ME; discussion of new N. American treatment. RICHARD ANDRUS - Prof., Binghamton U. (NY); co-author Sphagnaceae of N. America; described several new N. American species, with several more in preparation; teaches variety of environmental studies and field biology courses, e.g., tropical ecology and freshwater wetlands.

#### PHOTOGRAPHY THROUGH THE MICROSCOPE AND CLOSE-UP PHOTOGRAPHY

July 11 - 17

Emphases - lectures, demonstrations, exercises, field collection of specimens; individualized studies by arrangement encouraged; principles and techniques for old and new equipment; For more information, please contact the Humboldt Institute, PO Box 9, Steuben, ME 04680-0009. 207-546-2821. Fax 207-546-3042. E-mail - [office@eaglehill.us](mailto:office@eaglehill.us). Online registration and information - <http://www.eaglehill.us>

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### MOSS 2004

The 7. Annual Moss International Conference will be held from September 12th through 15th, 2004 in Freiburg, Germany.

Please visit [www.plant-biotech.net/moss2004](http://www.plant-biotech.net/moss2004) for detailed information and registration. The annual moss meeting is a gathering of the groups working with the model plant *Physcomitrella patens* as well as other scientists interested

in bryophytes in general. Topics cover molecular biology, phylogeny and physiology of mosses.

The conference features invited lectures as well as talks and posters by the participants. During the conference, an international moss genome project will hopefully be launched.

Ralf Reski, Freiburg University: [ralf.reski@biologie.uni-freiburg.de](mailto:ralf.reski@biologie.uni-freiburg.de)

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### ECCB - Valencia 2004

The European Committee for Conservation of Bryophytes (ECCB) holds its 5th Conference on Bryophyte Conservation this year in Valencia, Spain, 21-23 September 2004. This is immediately after the 4th Planta Europa meeting. There will be two days of symposia and 1 day of excursion. More information will follow shortly. Information will also soon be

posted on the Planta Europa 4 web page <http://www.nerium.net/plantaeuropa/index.htm>.

Lars Söderström  
Chairman of ECCB

**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 country contacts except for those for the regular columns, which may go direct to the column editors.

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#### UPCOMING EVENTS

##### 2004

**July 31 – August 5:** The 2004 ABLs meeting, Snowbird, Utah. The meeting will include field trips for bryologists and lichenologists. For suggestions for symposia, workshops, and field trips, please contact Nancy Slack (email: [slackn@sage.edu](mailto:slackn@sage.edu)) and include "Snowbird" in subject line.

**June 13-19:** Dick Andrus will conduct a field-oriented course in Sphagnum at Eagle Hill, Maine (USA) See [www.eaglehill.us](http://www.eaglehill.us) as Advanced Sphagnum Field Course.

**June 18:** Bryological Working Group of the Societa Botanica Italiana: "Cytological, ecological and phylogeographical aspects of Bryophytes". Catania (Italy). Contact: Dr. Maria Privitera [privitera@ambox.dipbot.unict.it](mailto:privitera@ambox.dipbot.unict.it)

**September 6-8:** Conference on the Systematics of Pleurocarpus Mosses of the British Bryological Society in Cardiff, U.K. Organizers: Angela Newton and Ray Tagney, email: [angn@nhm.ac.uk](mailto:angn@nhm.ac.uk)

**September 10-12:** Bryophylogeny 2004, second internal symposium on Molecular Systematics of Bryophytes, Göttingen, Germany. For information see [www.gwdg.de/~sysbot](http://www.gwdg.de/~sysbot), or contact the organizers: Rob Gradstein, Jochen Heinrichs and Rosemary Wilson, email: [jheinri@gwdg.de](mailto:jheinri@gwdg.de)

**September 12-15:** Moss 2004 conference on the Molecular Biology and Physiology of Physcomitrella patens and other model bryophytes in Freiburg, Germany. Organizer Ralph Reski, [www.plant-biotech.net/moss2004](http://www.plant-biotech.net/moss2004)

**September 21-23:** 5th European Bryophyte Conservation Conference (ECCB 5): Valencia (Spain). This is immediately after the 4th Planta Europa meeting. Contact: [ECCB-meeting@uv.es](mailto:ECCB-meeting@uv.es),

##### 2005

**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).

##### 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.

**Production:** Geert Raeymaekers, Ecosystems LTD

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