

The Bryological Times

Number 114

December 2004

Newsletter of the International Association of
Bryologists

CONTENT

IAB News

- Presidential nominees for the IAB 2
- IAB Conference Vienna 2005 – Hotel for bryologists 2

Research News

- A Moss genome project 3
- Synthesis of systematic resources 3

Techniques Column

- Distribution maps based on geographical coordinates 4
- Epiphytic bryophytes get environmental standard 5

Web News

- The Hedwig type catalogue 6
- “Bryologische Zeitschrift” on line 6
- A new edition of liverworts and hornworts checklist for sub-Saharan Africa 6

Literature Column

- Frahm & Frey: Moosflora 7
- Ceratolejeunea 7
- Proceedings of the St Louis Symposium published 8

Theses in Bryology Column

- Theses in Bryology 12 9

Bryological Times Contacts 15

Upcoming Meetings – Agenda 15

Annex: IAB ballot form

Dear IAB members,

I would like to call your attention to the ongoing elections of the International Association of Bryologists. After 18 years of outstanding service to the IAB, Dale Vitt will be stepping down as secretary-treasurer of the Association. The nomination committee chaired by Nancy Slack has been busy in trying to find candidates to fill this crucial executive position. In view of the multitude of tasks involved, it is proposed to split up this position between two persons. I am pleased to announce that Geert Raeymaekers, our active editor of *The Bryological Times*, is willing to stand for secretary of the IAB and Bianka Shaw for the treasurer position. On behalf of the association I would like to extend my most cordial thanks to Dale and Sandi Vitt for the excellent way in which they handled the business of the IAB over almost two decades and for having secured the Association with a sound financial basis. The Association will also be electing new officers for president, second vice president (currently Zen Iwatsuki) and five members of the Council. A ballot form with the candidates for these positions is being distributed to all our members together with this issue of *The Bryological Times*. Please vote! The results of the election will be announced at the upcoming IAB meeting in Vienna in July 2005.

Rob Gradstein, President

IAB



ISSN 0253-4738

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). Visit also our web site at <http://bryology.org>. The *Bryological Times* is issued 4 times per year.

IAB NEWS

Presidential nominees for the IAB

Dr. Janice Glime earned her Ph. D. at Michigan State University in 1968. Her bryological research began with examining the insect communities among stream bryophytes, then attempting to delineate the niche of various *Fontinalis* species, and has more recently branched into many areas of bryophyte ecology, including bogs and fens, geothermal areas, and physiological ecology. She has advised five Ph. D. students with bryological research or bryological components in their research and many M.S. students. She has served IAB as a member of the Council and as manager of Bryonet-L, the international email discussion list of the IAB. She has been an active member of the American Bryological and Lichenological Society, serving on the council, serves as American treasurer for the Journal of the Hattori Botanical Lab, and serves as reviewer for *Lindbergia*, *Hikobia*, *Journal of Bryology*, *The Bryologist*, and the *Journal of the Hattori Botanical Lab*. She is the author of over 100 published refereed papers, mostly on bryophytes and is currently working on a book on bryophyte ecology, to be co-authored with Heinjo During. If elected president of IAB, I will endeavor to get the membership more involved in IAB decision making and keep the IAB membership informed of activities and of opportunities within IAB, including conservation issues, herbarium needs, funding opportunities, and the need for all types of bryologists and bryological research worldwide.

Dr. Jeff Duckett has been professor of botany at Queen Mary, University of London since 1979. Previously he was a colleague of Paul Richards at Bangor and has also worked at University College London and at the University of Massachusetts. A member of IAB since its inception he is a regular speaker at bryological meetings worldwide. Past President (1992-3) of the British Bryological Society he has also served the Society as Bibliographer, Meetings' secretary and Council member and regularly leads field excursions. He is an Associate Editor of *Journal of Bryology* and has just finished a 10 year stint as Treasurer and Trustee of the New Phytologist Trust and a 4 year term as Academic Dean of Science at QMUL. His wide-ranging research interests in all groups of bryophytes have taken him to every continent (except Antarctica). Amongst his 160 publications are major contributions on spermatogenesis, the cytoskeleton, plastids, water and food-conducting cells, protonemal morphogenesis and the uses of novel morphological data in interpreting land plant phylogeny. His ongoing interests include in vitro strategies for bryophyte conservation, protonemata and moss systematics, desiccation biology and liverwort-fungus symbioses. He has collaborated with many bryologists around the world and, if elected to the Presidency, would be keen to foster integration between all areas of bryology.

IAB Conference Vienna 2005: book at the Nordbahn Hotel, reserved for bryologists

Every six years since its foundation 1969 at the 9th IBC in Seattle, the International Association of Bryologists (IAB) has held its biennial meetings in association with the International Botanical Congresses (IBC). Following this tradition the XVI World Congress of the International Association of Bryologists will be held at the XVII IBC, 18 - 23 July 2005, at the Austria Center in Vienna, Austria.

Mrs Steinbauer from Austropa 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 Austropa Convention including the code "Bryo" on the form NOT via the official reservation site at www.ibc2005.ac.at ("Accommodation and Tours", "Hotel Reservation"). The location of the Hotel Nordbahn is indicated on the page "Location of Hotels" by the code number #63. The price is 92 € (single) and 105 € (double) incl. buffet breakfast. Further information on the hotel can be found at:

<http://vienna.com/wtv/english/Hotels/nordbahn/default.htm>

All participants are kindly requested to download the pdf-version and fill in the hotel and tour booking form. The pdf can be downloaded from:

<https://secure.austropa-interconvention.at/ei/07-IBC2.pdf>.

It is necessary to indicate the exact dates of your arrival and departure as well as the hotel desired. A two-night deposit payment (bank transfer or credit card) is required to secure the room reservation. Upon receipt of your order and payment a confirmation/voucher will be sent to you. The confirmation is to be presented at your hotel, and payment of the balance due is to be effected directly before departure. As a matter of principle the hotel's final invoice will be based on the number of nights booked in advance. On your departure the hotel will issue an invoice for the total amount due minus the pre-paid deposit.

For further details on registration, fees, location, accommodation etc concerning the IAB conference, see <http://www.ibc2005.ac.at>, or contact by e-mail: office@ibc2005.ac.at.

Dr. Wolfgang Wanek. University of Vienna,
wwanek@pflaphy.pph.univie.ac.at

RESEARCH NEWS

A Moss Genome Project

Great news! The US Dept. of Energy (Joint Genome Institute) has just selected our proposal to fully sequence the genome of *Physcomitrella*, under their Community Sequencing Program. The actual shotgun sequencing will be done at JGI in Walnut Creek, CA, but the full project will be an international collaboration involving several labs worldwide (including Brent Mishler and Ralph Quatrano in the US, David Cove and Andrew Cuming in the UK, Ralf Reski in Germany, and Mitsuyasu Hasebe in Japan). Additional collaborators welcome; details were discussed at Moss 2004 meeting in Freiburg, Germany (see:

www.plant-biotech.net/moss2004).

This will be the first non-Angiosperm land plant to be sequenced, and the resulting data (publicly available as the project unfolds) will facilitate all areas of bryophyte research. This will firmly place bryology on the map, and is a testament to the unusual degree of collaboration that exists among systematists, ecologists, physiologists, and molecular biologists working on these wonderful plants.

Brent Mishler and Ralph Quatrano, co-PIs

SYNTHESIS: Synthesis of Systematic Resources

Twenty of Europe's most prestigious natural history institutions, including museums and botanical gardens, have joined together to form SYNTHESYS. For the first time, Europe's globally important natural history collections and resources will be available in a coordinated way to scientists across Europe.

The SYNTHESYS project was initiated by CETAF (*Consortium of European Taxonomic Facilities*) www.cetaf.org as an *Integrated Infrastructure Initiative* www.cordis.lu/infrastructures/integra.htm and is supported in the scope of the European Community's specific programme *Structuring the European Research Area* http://www.cordis.lu/fp6/stepbystep/table_overview.htm of the

Sixth Framework Programme – the EU's main source of research funding. Please visit SYNTHESYS main web page www.synthesys.info for more information about the project.

The *partner institutions*, (see table below) will provide easy access to in total more than 337 million natural history specimens housed in their collections. SYNTHESYS will provide an opportunity for exchanging information and stimulating research in areas including biodiversity and the environment. These institutions will also co-operate in a number of network activities aiming at the coordination, accessibility and high-standard preservation of their collections. SYNTHESYS www.synthesys.info is a five-year project and is coordinated by The Natural History Museum in London.

20 Institutions

The Natural History Museum	London / UK
Royal Botanic Garden, Kew	Kew / UK
Royal Botanic Garden, Edinburgh	Edinburgh / UK
Museum National d'Histoire Naturelle	Paris / France
University of Copenhagen	Copenhagen / Denmark
Consejo Superior de Investigaciones Cientificas (Cientificas, Museo Nacional de Ciencias Naturales & Real Jardin Botánico)	Madrid / Spain
Naturhistoriska Riksmuseet	Stockholm / Sweden
University of Amsterdam	Amsterdam / The Netherlands
National Herbarium Nederland, Leiden	Leiden / The Netherlands
Centraalbureau voor Schimmelcultures, Utrecht	Utrecht / The Netherlands
National Natural History Museum Naturalis	Leiden / The Netherlands
Botanischer Garten und Botanisches Museum Berlin-Dahlem	Berlin / Germany
Museum für Naturkunde, de Humboldt-Universität Berlin	Berlin / Germany
Naturhistorisches Museum	Wien / Austria
Hungarian Natural History Museum	Budapest / Hungary
Museum and Institute of Zoology, Polish Academy of Sciences	Warsaw / Poland
Royal Belgian Institute of Natural Sciences	Brussels / Belgium
Koninklijk Museum voor Midden-Afrika	Tervuren / Belgium
National Botanic Garden of Belgium	Meise / Belgium

Who can apply for an EU-funded visit to a partner institute?

Scientists conducting their research in the member states of the European Community or in the associated states are

eligible for support. We are inviting applicants from: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, and United Kingdom.

The funds are made available for short visits (max 3 months) to utilize the collections and other facilities . Priority will be given to scientists who have not visited the institute before. .

The first deadline is 17th September. Calls and corresponding deadlines will be arranged at approximately 6-month intervals thereafter until 2008.

TECHNIQUES COLUMN

Distribution maps based on geographical coordinates

Who would not like to prepare dot maps of species based on geographical coordinates (latitude/longitude)? Today, geographical coordinates are easily obtained by GPS, and an exact location of a record by latitude/longitude is much more accurate than grid mapping.

This is, however, not so easy and therefore rarely done. There are internet addresses where you can input your coordinates and get a map back with your dots, however, the maps are usually world maps and very rough and therefore not usable for a country or a county. Usually, a precondition for dot-mapping is the possession of a GIS-program. These are, however, very expensive (for example, the well known program ArcView costs at least \$1500 and even university licences cost \$400), and furthermore much overloaded with functions, which one usually never needs, making the operation of the program difficult. I know only one program, which is some kind of mapping tool, which is so far available only for the Mac-world. This is the program IMAp, which can be downloaded from the zoology department of the university of Leuven, Belgium.

If you search for freeware GIS- programs, you land mostly at developer platforms (e.g. Free-Gis), from where you can download only source codes. There is, however, one fully operating free GIS-programme called DIVA-GIS. It can be downloaded for free from the homepage of a potato research institute in Peru. In fact, it is some kind of ArcView-clone but costs nothing. Since the operation of GIS-programs is not easy, I can give here some instructions how to get to a dot map within 10 minutes:

1. Unzip DIVA-GIS and install the program with setup.
2. Start DIVA-GIS and click new project. You will get a white screen. The problem with GIS is that you need base maps. Really good base maps for a small scale such as a state or a county are difficult to get. There are only few sources for free base maps. One is the NASA.
3. A GIS map consists of different layers for borders, rivers, cities etc. These layers are available in different formats (similar to picture graphics formats). DIVA-GIS uses the Shape-Format, which is used by ArcView, and which has become some kind of standard. Click „Layer“ in the menu bar and next „Add Layer“. One can load several layers at a time by clicking them and generate a map by this way. The whole can be saved as a „project“ and

every time you load the project you get this map with all layers.

4. How do I get the dots into the map? There are two ways, by a text file or a data base.
5. For each species (map) one needs a text file with the coordinates. The coordinates must be (in most GIS-programs) in decimal degrees. If you have the coordinates in UTM, degree-minutes-seconds or in national grids, they must be converted. There are various pages on the internet where calculators for conversion are available (usually online). The Text file must have a certain format, e.g. the data are separate by tab stops or semicolon, which are the usual output formats of database or spreadsheet programs. An example: two columns separated by tabstops:

Lat	Long
011.32051	049.39794
010.20344	050.10056

For coordinates west of Greenwich or south of the equator, a minus has to be added.

6. Such text files can be generated from database programs, since data are usually stored in fieldbook databases or similar. The requested species is filtered from the databases and next only the two fields for longitude and latitude are exported to a text file
7. This text file must be combined with a map. In DIVA-GIS „Data: Points (TXT) to Shapefile“ is clicked. Then one specifies the Input-File (your generated text file) and a name for the output file and clicks „Apply“. And automatically the dots appear on the map. The output file appears now in a bar at the left side of the screen. The field can be double-clicked and a window opens. If the symbol is clicked, one can change size, colour and form of the symbol. One can add now also other species (or collection period). These dots are again in a layer, which can be switched on and off.
8. The combination with a database works the same. In this case, the exported fields have to be combined.
9. A small disadvantage of DIVA-GIS is, that it cannot print the map. One can, however, save the project as bitmap file, which can be loaded by a graphics program and then printed, or the bmp-file can be incorporated in a text file of the word processor.

Jan-Peter Frahm, translated from Bryologische Rundbriefe 81, 2004

Epiphytic bryophytes get environmental standard

It has been known for more than 100 years that lichens are indicators for air quality. Since 40 years, this has been used for mapping zones of different sulphur dioxide or heavy metal emissions. Many different methods have been developed for that purpose with the result, that these studies cannot be compared. The society of German Engineers (Verein Deutscher Ingenieure, VDI) has therefore founded a commission (Effects of emissions on lower plants), which finished a method for lichen mapping 10 years ago. The VDI is developing standardized guidelines for many kinds of technical purposes. The effort to include lower plants into these standard methods was a great step towards the acceptance of lower plants as tools for environmental control, equally matched to measurements of chemical parameters in the air and the water.

This lichen method was used frequently in Germany since that time, and has recently been modified to react on the much lowered sulphur dioxide effects but strongly increased nitrogen effects. Meanwhile there exists a Europe-wide method, with the advantage that all results gained in different parts of a country, either in Hesse or Bavaria, either in Munich or in Cologne, can be compared. So the lichenologists are (again) much ahead. In 2001, Jan-Peter Frahm and Isabelle Franzen-Reuter were invited by the VDI to establish a similar guideline for epiphytic bryophytes. In the projects at Bonn university (mapping of the cities of Bonn and Duisburg, the industrial Ruhr-area, or even whole North-Rhine Westphalia, a state as large as the Netherlands), always lichens and bryophytes were equally included in the studies because it makes no sense to confine the studies to the one group of organisms and to exclude and overlook the other. Within 3 years, a bryophyte guideline was developed. In the meantime, the drafts were discussed with bryologists active in biomonitoring and tested in the field.

Unfortunately, this bryophyte guideline cannot be directly combined with the lichen guideline, because the most recent lichen guideline calculates acidophytes and nitrophytes separately, which is not possible with bryophytes. On the other hand, we were free to iron out some methodological disadvantages of the lichen guidelines. For example, the lichens are only gathered within a frame of 5 fields of 10x10 cm, which are placed on all 4 sides (N,W,E,S) of a tree. And all species are weighted with the same factor. Finally, only grid mapping is possible and only of isolated trees. The bryophyte guideline differs in these respect:

An area of 0.5 m² is marked around a tree, which has to fulfil certain standards (size, shape, circumference, species). The tree can be situated either in a stand or isolated (but the results may not mixed). The cylinder around is divided in 5 parts (this is done with an expander, see picture). All species are noted and multiplied by the frequency in the five parts. Every species has a special indicator value, and the frequency is multiplied with the indicator value. All values are added and thus the tree gets its index. 6-10 comparable trees are studied by this way in an area, which can be a grid or a natural area (forest, park, cemetery). The average of all indexes of trees is the indicator index of the area. The same procedure is performed in other grids or natural regions. There is a scale of indicator indexes, which is divided in 5 classes with different colours. And the areas (grids, natural borders) are coloured on a map from green (undisturbed) to red (much disturbed).



The indicator values of species are arranged in a non-linear scale: 1,2,4,8, and 16. Trivial species get a value of 1 (*Hypnum cupressiforme*). Species confined to better environments get higher values, for example *Orthotrichum affine* 2, *O. obtusifolium* 4, *Frullania dilatata* 4, *F. tamarisci* or *Leucodon sciuroides* 8, and *Antitrichia curtipendula* 16. Species with negative impact get negative values, e.g. epiphytic *Tortula muralis* or *Grimmia pulvinata*, *Brachythecium rutabulum* or *Ceratodon purpureus* with 0,5. Unfortunately, biomonitoring with bryophytes has been much neglected in the past years. Even after the reduction of sulphur dioxide in large parts of the industrialized countries, it makes much sense. As studies in Germany revealed, epiphytic bryophytes can best be used for indication of ammonium emission from agriculture, nitrogen emission of industry and traffic, thus indicating environmental quality. Since bryophytes react also on a microclimatic scale, they can be used for parts of cities with higher temperature, lower temperature during night, higher air humidity, thus indicating life quality. Accordingly, the new index derived from epiphytic mosses was called "environmental quality index".
Jan-Peter Frahm

The Hedwig Types Catalogue

It is with great pleasure that I announce the availability of the on-line database Hedwig Types Catalogue on the CJB website <http://www.cjb.unige.ch/> (see under option - Base des Données) or directly at: <http://www.cjb.unige.ch/bd/hedwig/index.php> (French and English versions available - go to 'recherche' or 'search' for access to the database interface). The on-line database includes for each basionym with material present in G : 1) details on the protologue, 2) original label information, 3) image of the herbarium specimen/s, and 4) an indication of the current status of typification of the name. When material is not present in Geneva (G) the location of alternative material (if known), the typification or other relevant information is provided. A list of literature used is also available through this site.

This project was a collaboration between Michelle Price (Hedwig Type Catalogue database / images), and Raoul Palese and diploma student Laurent Kneubuehl (informatics: development, design and data integration), from Conservatoire et Jardin botaniques de la Ville de Genève (CJB).

The Hedwig herbarium collection (later known as Hedwig-Schwägrichen herbarium), based on its historical and nomenclatural significance, is arguably the most important collection of mosses in the world. Johannes Hedwig's 1801

publication, *Species Muscorum Frondosorum* (SMF), was designated as the starting point of moss names, except Sphagnaceae, during the International Botanical Congress in Brussels in 1910. Over 360 species were enumerated in SMF and although most were from Europe and/or North America, some species were tropical in origin. The Hedwig herbarium collection, at the Conservatoire et Jardin botaniques de la Ville de Genève, thus became an important repository of material critical for ensuring the correct application of nomenclature of mosses. A student of Hedwig - C.F. Schwägrichen - bought the Hedwig herbarium after the death of Hedwig (hence the title 'Hedwig-Schwägrichen herbarium') and continued adding to the herbarium while working on supplements to SMF. A catalogue of the Schwägrichen part of the Hedwig-Schwägrichen herbarium (Schwägrichen Types Catalogue) will be compiled at CJB starting in 2005.

The Hedwig Types Catalogue should be of use to bryophyte taxonomists and systematists world-wide. I also hope that it will contribute to the preservation of this important collection by centralising all information on the specimens, particularly on basionym lectotypifications, thereby decreasing necessity for repeated loans of the material.

Michelle Price
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"Bryologische Zeitschrift" on line

I was informed by our colleague Heidemarie Nowak-Krawietz from the Botanical Museum in Berlin, that the bryological journal "Bryologische Zeitschrift" is available online. The "Bryologische Zeitschrift" was edited by Leopold Loeske between 1916 and 1918. Because of the First World War, the journal never got a wide distribution. There is apparently no library outside Germany, where this journal is available, and I personally know no other place than the library in Berlin, which has a complete set.

Several years ago, Timo Koponen drew my attention on this rare journal. Therefore I proposed Heidi Nowak to digitize

the journal. This has been done now and the "Bryologische Zeitung" is available online under: <http://www.bgbm.org/BGBM/library/online-bibliothek.htm> or <http://www.bgbm.org/BGBM/library/bryol-z-1916-18.htm> There are many contributions by Loeske, Györfy, Warnstorf, Mönkemeyer, Paul and others, but (of course) all in German. I guess the bryological community will be very thankful for this initiative and it could be an example for other libraries.

Jan-Peter Frahm

A new edition of the liverworts and hornworts checklist for sub-Saharan Africa

A new edition of the liverworts and hornworts checklist for sub-Saharan Africa is now available, and replaces edition 1 (February 2002). The new checklist is published as: Wigginton, M.J. 2004. Checklist and distribution of the liverworts and hornworts of sub-Saharan Africa, including the East African Islands (edition 2). *Tropical Bryology Research Reports* 5: 1-102. (ISSN 1468-8158).

The document can be downloaded free of charge from the Tropical Bryology Research website <http://www.tropicalbryologyresearch.co.uk/> as an Acrobat Reader (.pdf) or a Microsoft Word 97 (.doc) document, both in zipped format. It can be found via the 'TBR Reports' button. A printed version is also available at GBP 15 (USD 24), including worldwide postage). Details can be found on the website.

In the checklist, the distribution by country or other geopolitical area is provided for each of the 1071 liverwort and hornwort taxa currently accepted in sub-Saharan Africa. All country records are supported by at least one literature reference, and the number of taxa reported from each country is given. Synonyms with their owning taxa are intercalated alphabetically in the list. The main

changes in edition 2 include i) the provision of literature sources for all synonymy, ii) about 40 additions and 10 removals of accepted names, iii) about 175 changes to synonymy.

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LITERATURE COLUMN

Frahm, J.-P- & Frey, W.: Moosflora

Frahm, J.-P- & Frey, W.: Moosflora, 4. Auflage. 538 pp., 108 Abbildungen, soft covers, ISBN 3- 8001-2772-5. Verlag Eugen Ulmer, Stuttgart 2004. Contact: info@ulmer.de, www.ulmer.de. Advertised Price 24,90 euro + handling and postage

The 3rd edition of Frahm & Frey's Moosflora came out in 1992, so this update is very necessary and welcome. The general organization of the book has remained very similar, but recent advances in bryophyte classification are taken into account in the book. On p. 13, a short account of the bryophytes conserved in Germany is added, and also some additional literature references after *Floristische Moosliteratur für Deutschland* (p. 27). The list of author names, starting on p. 18, should have been revised more thoroughly to consistently follow the current practices (= Brummitt & Powell's recommendations). For example, Schust. has been changed to R.M.Schust., but Fleisch. has not been changed to M. Fleisch. or C. Müll. to Müll. Hal.

Numerous taxa have been added, but the illustrations are exactly the same as before, so the added taxa are not illustrated. Some other improvements have also been made, such as including an identification key to "*Racomitrium heterostichum* agg."; of the taxa treated here at least *R. sudeticum* is in my mind a very distinct species. *Scorpiurium* is not a monotypic genus as is stated on p. 486, but has three species (Mastracci 2001, Ignatov & Huttunen 2002), all occurring in Europe. I tried to track possible nomenclatural novelties, which was difficult, because they are not listed or otherwise indicated anywhere. I found just one new combination: *Hedwigia ciliata* var. *stellata* (Hedenäs) J.-P. Frahm – here too I disagree, for *H. stellata* is a nice species rather than just a variety of the admittedly variable *H. ciliata*.

In the light of some recent, fairly massive taxonomical / nomenclatural changes – or proposals for such to be considered – in the European mosses (e.g., Ignatov & Huttunen 2002, Ochyra et al. 2003), there will also in the future be a need for updated editions of this and other floras. Although I made some minor critical remarks above, the present flora is certainly valuable to interested laymen as well as professional bryologists in Europe, especially in the German speaking countries. Of course, it would be nice to have also the illustrations updated, but I understand the complications with that – no money, nobody has the time... Well done dear Professors!

Johannes Enroth

Ignatov, M. S. & Huttunen, S. 2002: Brachytheciaceae (Bryophyta) – a family of sibling genera. *Arctoa* 11: 245–296.
Mastracci, M. 2001: Taxonomic status of *Thamnum cossyrense* and *T. cossyrense* var. *melitense* (Bryopsida). *Annales Botanici Fennici* 38: 45–46.

Ceratolejeunea. (Flora Neotropica)

Dauphin, G. L.: *Ceratolejeunea*. – Flora Neotropica Monograph 90. – 86 pp. 26 line drawings. 13 maps. 5 tables. 2003. The New York Botanical Garden Press. ISBN 0-89327-452-6 (paper back). Order No. FLN 90. \$ 28.00

This is the 90th monographic publication of Flora Neotropica, covering a taxonomic revision of the liverwort genus *Ceratolejeunea* of tropical America. 23 species including one new species are recognized, one new combination is made and 52 names are synonymized in the treatment. As stated in the Introduction, the genus *Ceratolejeunea* stands out as

one of the most natural genera within the family Lejeuneaceae, and this publication was aimed to fill the gap in the literature, and to provide a means of determination of *Ceratolejeunea* species and a phylogenetic hypothesis of the relationship between them. Almost 60 years have passed since the previous generic treatment on *Ceratolejeunea* in the area was published (Fulford 1945), which makes this new treatment very welcome. However, questions arise, such as on what basis the classification of *Ceratolejeunea* was established, and what is indeed the genus *Ceratolejeunea*.

The monograph contains eight main chapters: Introduction, Historical survey, Morphology and anatomy, Distribution and ecology, Conservation, Classification and phylogeny, Systematic treatment, and Doubtful names and excluded taxa. There is no chapter like Materials and methods, in which readers could get an idea of how this study was made, and on which methods the conclusions rely.

The chapter Historical survey provides an overview on the taxonomic history of *Ceratolejeunea*, so that readers could get a glimpse of the development of the genus and the diagnostic characters applied to the genus. It seems that previous works by various authors on neotropical *Ceratolejeunea* were a good basis for completing this monograph; the lack of revision of many species published in the genus, and the variability of diagnostic characteristics used in early studies certainly made this publication necessary.

In the chapter Morphology and anatomy, various characters, like sporeling, merophytes, stem anatomy, branching, leaves, ocelli, lobules, underleaves and rhizoids, vegetative reproduction, sex distribution, androecia, gynoecia, sporophytes, and growth habit are discussed. Six good SEM pictures of sporophytes are provided. Based on the author's observations, a number of taxonomic information on most of the above mentioned characters are novel. The author states that four types of lobules occur in *Ceratolejeunea*, but in fact five types are listed. Dividing the lobules to these types seems to me not appropriate, because I can hardly see differences between the "normal type" and the "spherical type" in the illustrations, and the criteria of the "reduced type" are not in consistence with that for other types.

In the chapter Distribution and ecology, a map and two tables well demonstrate the geographical ranges, altitudinal distribution, main habitats and substrate preferences of the species of *Ceratolejeunea*. This part is very informative, and with these geographical and ecological factors, their impact on morphology and adaptation could have been addressed.

I found the chapter Classification and phylogeny hard to understand. The phylogenetic analysis is conducted with the maximum parsimony method using 20 morphological characters, and 23 species and two outgroup species. In Table V, the data matrix shows, however, that 23 characters are converted to character states. The detailed heuristic search strategy is not mentioned. Figure 6, the strict consensus tree, is unnecessarily provided, because as stated by the author, in Figure 5, a single, most parsimonious tree (A), is shown already. According to tree A of Figure 5, *Ceratolejeunea* is actually unresolved, and one of the outgroup species, *Lejeunea flava* is clustered together with nine *Ceratolejeunea* species. It is untenable to claim that *Ceratolejeunea* is a natural genus based on this analysis. In tree B of Figure 5, *Lejeunea flava* is forced to be outside of the *Ceratolejeunea* clade.

In the chapter Systematic treatment, two subgenera, subgenus *Ceratolejeunea* with four species and subgenus *Caduciloba* with 19 species, are recognized. Characters used to distinguish the two subgenera are the underleaf and perianth features. Characters of ocellus, lobule, leaf, underleaf and perianth are used to delimit the species of the genus. It seems that most of the morphological characters of the genus, such as lobule, ocellus, underleaf and perianth vary, the only stable and distinctive character being the thickened and dark pigmented cell wall. Each species is provided with a detailed description, good illustration, and a distribution map.

In summary, despite of some technical and analytical flaws, I consider this monograph to be useful to both professionals and students working with the tropical liverwort family Lejeuneaceae. The book gives a good basis for a future world-wide taxonomic revision on the genus *Ceratolejeunea*.

Reference

Fulford, M. H. 1945: Studies on American Hepaticae VI. *Ceratolejeunea*. – *Brittonia* 5: 368-403.

Xiaolan He-Nygrén

Proceedings St Louis Symposium published

I am delighted to announce that the proceedings of last year's meeting in St. Louis focusing on the phylogeny of bryophytes are now available from the Missouri Botanical Garden. The title "Molecular Systematics of Bryophytes" edited by Goffinet, Hollowell and Magill can be purchased on line at

<http://www.mbgpress.org/index.php?task=id&id=00125>.

A table of content of this 448 page volume of the Monograph in Systematic Botany from the Missouri Botanical Garden Series (vol. 98) can be viewed at this page.

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THESES IN BRYOLOGY

THESES IN BRYOLOGY 12

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.

Agnew, Shirley. 1958. A study in the experimental taxonomy of some British *Sphagna* (section *Cuspidata*), with observations on their ecology. Ph.D. thesis, University of Wales. [vii] 174 pp. + 46 tabs. + 22 figs. + 12 pls. In English. Address of author: Painter Herbarium, Botany Department, University of Wales, Aberystwyth SY23 3DA, Cardiganshire, Wales, U.K. E-mail: unknown.

This doctoral thesis examined *Sphagnum recurvum*, *S. cuspidatum*, *S. pulchrum*, *S. amblyphyllum*, *S. fallax* and *S. serratum* in Britain. Anatomical and morphological characters were analyzed statistically. The species were grown under various conditions in the field and in the laboratory to see how the environment could effect the expression of characters. Although many characters were environmentally variable, the shapes of stem and branch leaves and the anatomy of the stem cortex appeared to be taxonomically useful. It was decided that *S. cuspidatum*, *S. pulchrum* and *S. recurvum* should be recognized.

Allen, Bruce Hampton. 1985. A revision of the Dicnemonaceae (Musci). Ph.D. dissertation, University of Cincinnati, Cincinnati, Ohio, U.S.A. xii + 442 pp. In English. Current address of author: Missouri Botanical Garden, P.O. Box 299, St. Louis, MO 63166-0299, U.S.A. E-mail: bruce.allen@mobot.org.

The doctoral dissertation examines the Dicnemonaceae from both the familial and species levels. The family is characterized by precocious endosporic germination, massive three-dimensional protonemata, specialized leaf nematogens, weak expression of a costa, and a derived haplolepidous peristome. Of the original five genera in the family, only two are retained there, *Dicnemon* and *Eucamptodon*. *Dicnemon* is confined to Australasia and is treated as being composed of five sections, 13 species and one variety. *Eucamptodon* occurs in Australasia and southern South America and is reduced to two species and one variety. *Eucamptodon inflatus* is placed in the newly erected *Pulchrinodus* and positioned in the Pterobryaceae.

Calabrese, Graciela Mabel. 1995. Flora muscinal de Puerto Blest y alrededores (Parque Nacional Nahuel Huapi, Argentina). Thesis for Licenciado en Ciencias Biológicas, Universidad Nacional del Comahue, S. C. de Bariloche, Argentina. vi + 243 pp. In Spanish with English abstract. Current address of author: Real Jardín

Botánico, C.S.I.C., Plaza de Murillo, 2, 28014 Madrid, Spain. E-mail: calabrese@ma-rib.csic.es.

This equivalent of a bachelor's thesis presents the results of a survey of the mosses of an area within Nahuel Huapi National Park in west-central Argentina in the southwestern part of Prov. Neuquén and western Prov. Río Negro at ca. 41°S, 72°W. A total of 62 species in 47 genera were found, of which 37 species were new records for the area. All species are keyed, described and illustrated. Additionally, information on the substrate preference, geographical distribution, altitudinal location and life form is presented, along with specimens examined. The results from this thesis formed the basis of the following publication: Calabrese, G. M. & C. M. Matteri. 1999. Los musgos (Bryophyta) de Puerto Blest y alrededores (Parque Nacional Nahuel Huapi, Argentina) I. Lista comentada de las especies. *Revista Mus. Argentino Ci. Nat. n.s.* 1(1): 23–48.

Calabrese, Graciela Mabel. 2003. Revisión del género *Zygodon* Hook. & Taylor (Orthotrichaceae) en el extremo sur de Sudamérica. Doctoral thesis, Universidad de Salamanca, Spain. [xii] 435 pp. In Spanish. Current address of author: Real Jardín Botánico, C.S.I.C., Plaza de Murillo, 2, 28014 Madrid, Spain. E-mail: calabrese@ma-rib.csic.es.

This doctoral thesis provides a taxonomic revision of *Zygodon* in southern South America, in particular in the Andino-Patagonian and Fuegian regions. From the original 20 taxa cited from the region, 13 are recognized, including one new species and one new combination. All species are keyed, illustrated (including SEM photographs of the peristomes), described and mapped. Eight names are newly lectotypified and 13 names are placed in synonymy. The taxa recognized for the area are *Z. bartramioides*, *Z. chilensis*, *Z. hookeri* var. *hookeri*, *Z. h.* var. *leptobolax*, *Z. intermedius*, *Z. jaffuelii*, *Z. magellanicus*, *Z. menziesii*, *Z. obtusifolius*, *Z. papillatus*, *Z. pentastichus*, *Z. pichinchensis* and *Z. reinwardtii*. The most important characters for separating taxa are the various characters of the areolation (especially the degree of papilosity), the twisting of the seta, and the differentiation of the basal laminal cells. It was concluded that *Bryomaltaea*, *Codonoblepharon* and *Stenomitrium* were best included within *Zygodon*. *Zygodon* is divided into three subgenera, subg. *Codonoblepharon*, subg. *Obtusifolium* and subg. *Zygodon*, the latter with sect. *Zygodon* and sect. *Stenomitrium*.

Edwards, S. R. 1976. An investigation of the ecology of Thursley West Bog, with special reference to *Sphagnum* zonation and its cause. B.Sc. thesis, Chelsea College of Science and Technology, University of London. 33 pp. In English. Current address of author: The Manchester Museum, Manchester University, Oxford Road, Manchester M13 9PL, England. E-mail: mzfses@mail1.mcc.ac.uk.

This bachelor's thesis examines a wet-heath bog in southern England in the southwest quarter of Sussex. The primary purpose was the production of a vegetation map of the bog (presented as Fig. 8). Additionally, the thesis confirms the hypothesis that mineral nutrition is a prime factor in *Sphagnum* zonation. Finally, there is photographic

documentation of polysety in *Sphagnum denticulatum*. In such circumstances the spores are smaller than when a single pseudopodium is produced.

Edwards, S. R. 1976. A taxonomic revision of two families of tropical African mosses. Ph.D. thesis, University College of North Wales, Bangor. xv + 165 pp. + 46 pls. In English. Current address of author: The Manchester Museum, Manchester University, Oxford Road, Manchester M13 9PL, England. E-mail: mzfses@mail1.mcc.ac.uk.

This doctoral thesis revises the Polytrichaceae (excluding *Polytrichum*) from tropical Africa and the Calymperaceae from west tropical Africa. In the Polytrichaceae, *Pogonatum*, *Oligotrichum* and *Psilopilum* were studied. Fifteen species and two varieties are described and illustrated. *Pogonatum microstomum* is newly reported from Africa. In the Calymperaceae, 12 species and two subspecies are recognized in *Calymperes*, *Syrrophodon* and *Thyridium*. A revision of *Calymperopsis* is appended. For both families, but especially the Calymperaceae, a number of new characters were used to define the species.

Goffinet, Bernard. 1989. La végétation épiphytique de la hêtraie du Rurbusch. Bases écologiques nouvelles pour la gestion de la Réserve forestière. Thesis for Licencié en Sciences Botaniques, Université de Liège, Belgium. [iii] 57 pp. In French. Current address of author: Department of Ecology and Evolutionary Biology, U-3043 75 North Eagleville Road, University of Connecticut, Storrs, CT 06269-3043, U.S.A. E-mail: goffinet@uconnvm.uconn.edu.

This thesis examines the epiphytic vegetation, bryophytic and lichenological, in a reserve in eastern Belgium, on the German border. Microclimatological conditions were found to be critical in determining the vegetation because the atmosphere was dry during the day and humid at night. A Braun-Blanquet methodology was used. Three types of epiphytic vegetation were found: an initial pioneering type, primarily dominated by lichens, a vegetation dominated by bryophytes, and a vegetation dominated by lichens. Tree trunks would either ultimately be dominated by bryophytes or lichens, but the branches were typically dominated by lichens because of the humidity levels.

Groeneveld, Elisabeth. 2002. Le *Polytrichum strictum* comme stabilisateur de substrat et plante compagne pour les sphaignes dans la restauration des tourbières exploitées par aspirateur. M.Sc. Mémoire, Faculté des Sciences de l'Agriculture et de l'Alimentation, Université Laval, Laval, Québec, Canada. xiii + 133 pp. In French with English abstract. Current address of author: not known.

This master's thesis examined the revegetation of post-harvested peatlands, which are limited by a harsh microclimate and an instable substrate. *Polytrichum strictum* is a pioneer moss that is thought to ameliorate the microclimate and stabilize the substrate, thus permitting the growth of *Sphagnum* and other peatland plants. It was determined that *Sphagnum* grows better in proximity to the *Polytrichum* on two restored peatlands. This association is explained by favorable microclimatic conditions within the *P. strictum* carpet. It was found that within the *Polytrichum* carpet that irradiance is reduced, temperature fluctuations are diminished, and the water content of *Sphagnum* is increased in comparison to bare peat. Furthermore, the *Polytrichum* stabilized the substrate by reducing frost heaving, enhancing the survival of experimentally

transplanted *Abies balsamea*. The use of companion plants such as *P. strictum* is recommended as an aid to peatland restoration.

Gunnarsson, Urban. 2000. Vegetation changes on Swedish mires: Effects of raised temperature and increased nitrogen and sulphur influx. Ph.D. dissertation, Uppsala University, Sweden. 25 pp. + 5 reprints/manuscripts. Available at: <http://publications.uu.se/theses/>.

In English with Swedish summary. Address of author: Department of Plant Ecology, Evolutionary Biology Centre, Uppsala University, Villavägen 14, SE-752 36 Uppsala, Sweden. E-mail: urban.gunnarsson@ebc.uu.se.
The main objectives of this doctoral dissertation are to find how changes in climate and deposition can change the vegetation of mire ecosystems and the growth of *Sphagnum* species. Two mires (in central and southern Sweden), previously investigated 40–50 years earlier, were re-investigated and experimentally manipulated. Plant species diversity had decreased in one of the two re-investigated mires but the total number of species was unchanged in the other, although the species composition had. In the one with decreased diversity an acidification was found in the high pH areas, coinciding with a reduction in rich fen species. Experimental addition of nitrogen during 3–4 years reduced *Sphagnum* growth in bogs and poor fens representing a wide range of ambient nitrogen deposition. A changed interspecific competition relation was found between *S. lindbergii* and *S. balticum* when increasing nitrogen influx, but the competitive relations between the two hummock-growing species pairs did not change in a 3-year nitrogen fertilization study. Sulphur addition did not affect the production or length increment in *S. balticum*. An increased temperature reduced *Sphagnum* growth, but there were no indications of altered competitive relationships between hummock- and hollow-inhabiting *Sphagnum* species in a 4-year experiment.

Hattaway, Robert A. 1984. A monograph of the Ptychomniaceae (Bryopsida). Ph.D. thesis, Pennsylvania State University, University Park, PA, U.S.A. xi + 311 pp. In English. Current address of author: Department of Biology, Georgia Southern University, Statesboro, GA 30460-8042, U.S.A. E-mail: rhattawa@georgiasouthern.edu.

This doctoral thesis presents a monographic revision of the Ptychomniaceae. The family is defined sporophytically by the strongly 8-ribbed capsules. The family is divided into two subfamilies, the Ptychomniodeae with *Ptychomnion* and *Cladomniopsis*, and the Cladomniodeae with *Cladomnion*, *Glyphothecium*, *Hampeella*, *Tetraphidopsis* and *Dichelodontium*. *Dichelodontium* is only provisionally retained in the family. A total of 16 species are recognized, including a new species of *Hampeella* from Queensland, Australia.

Holz, Ingo. 2003. Diversity and ecology of bryophytes and macrolichens in primary and secondary montane *Quercus* forests, Cordillera de Talamanca, Costa Rica. Ph.D. dissertation, Georg-August-Universität zu Göttingen, Germany. [vi] 172 pp. In English with summary and curriculum vitae in German. Current address of author: Ernst-Moritz-Arndt-Universität Greifswald, Botanisches Institut und Botanischer Garten, AG Allgemeine und Spezielle Botanik, Gummer Straße 88, D-17487 Greifswald, Germany. E-mail: ingo.holz@uni-greifswald.de.

This doctoral dissertation contains the results of a study done in the upper Rio Savegre watershed area on the Pacific-

facing slope of the Cordillera de Tamanca in south-central Costa Rica, on the diversity and biogeography of bryophytes, the distribution of life-forms and species in microhabitats and along ecological gradients, the host preference and community composition of epiphytic bryophytes and macrolichens, and the secondary succession of epiphytic vegetation and the selection of indicator species. 251 bryophyte species were found, of which 93% are tropical in distribution (74% neotropical, 19% pantropical). Most of the neotropical element showed a tropical Andean-centered distribution. The bryophytic affinities of the páramos, at a higher elevation than the *Quercus copeyensis* and *Q. costaricensis* forests, are primarily to temperate regions. However, the oak forests have a high percentage of Central American endemics, lacking in the páramo. The epiphytic cryptogam communities on the two dominant oaks are described. Although the species diversity between primary and secondary forests was very similar, the species composition was quite different. 40% of all species found in secondary forests were not in the primary forests and about 33% of those in the primary forest were not found in the secondary forests. It is recommended that a range of successional stages be maintained to keep the highest levels of biodiversity of non-vascular epiphytes.

Hylander, Kristoffer. 2004. Living on the edge: Effectiveness of buffer strips in protecting biodiversity in boreal riparian forests. Ph.D. dissertation, Umeå University, Umeå, Sweden. 35 + 21 (+ viii) + 14 + [10] + 19 pp. In English with Swedish abstract. Address of author: Landscape Ecology Group, Department of Ecology and Environmental Science, Umeå University, SE – 901 87 Umeå, Sweden. E-mail: kristoffer.hylander@eq.umu.se. This doctoral dissertation studied the ecological consequences of buffer strips along riparian habitats otherwise being clear-cut in terms of their effectiveness in retaining biodiversity. The organisms examined were land snails and bryophytes. Buffer strip management was assumed to be important for protecting such species. Experiments were done along 15 small streams in northern Sweden, with buffer strips of 10 m on each side of the stream. Such buffers did moderate the effects of clear-cutting. The number of land snail species remained approximately the same before and after clear-cutting within the buffer zone. However, the bryophyte species, especially those red-listed, declined significantly, especially those that were not on soil (i.e., on logs, tree trunks, etc.). Thus, for the species in most need of protection, the buffer strips were too narrow. Microclimatic edge effects were stronger on S-facing edges of forests than on N-facing ones. In conclusion, narrow buffer strips consisted entirely of edge habitat. Therefore, buffer strips wider than 10 m are needed to insure long-term survival of bryophytes. Appended to the dissertation are four manuscripts: Hylander, K., M. Dynesius, B. G. Jonsson & C. Nilsson. Lie low: Substrate form determines the fate of bryophytes in riparian buffer strips. 21 + viii pp.; Hylander, K., C. Nilsson & T. Göthner. Effects of buffer strip retention and clearcutting on land snails in boreal riparian forests. 14 pp. [submitted to Conservation Biology]; Hylander, K., B. G. Jonsson & C. Nilsson. 2002. Evaluating buffer strips along boreal streams using bryophytes as indicators. Ecological Applications 12: 797-806; Hylander, K. North- vs. south-facing edge effects: Different magnitudes but equal spatial extent. 19 pp.

Jiménez Fernández, Juan Antonio. 2003. Revisión taxonómica del género *Didymodon* Hedw. (Pottiaceae,

Musci) en la cuenca mediterránea, Macaronesia, sudoeste y centro asiático. Ph.D. thesis, Universidad de Murcia, Murcia, Spain. [viii] 410 pp. In Spanish. Address of author: Departamento de Biología Vegetal (Botánica), Universidad de Murcia, Campus de Espinardo, 30100 Murcia, Spain. E-mail: jajimene@um.es.

This doctoral thesis provides a taxonomic revision of the ca. 80 names in *Didymodon* from the Mediterranean Basin, Macaronesia, and southwestern and central Asia. Thirty species are accepted. It was confirmed that the primary separation from *Barbula* is the coloration of the basal cells of the axillary hairs, with those of *Didymodon* being brown and those of *Barbula* hyaline. Synonymized with *Didymodon* are *Geheebia*, *Husnotiella*, *Oxystegus* and *Trichostomopsis*. The principle taxonomic characters used to recognize species of *Didymodon* are the shape of the leaves, the papillosity and stratification of the laminae, the color of the lamina with the addition of KOH, the shape of the cells on the surface of the costa, and leaf cross-sectional characters. No infrageneric classification is recognized. One new species, *D. erosus*, is described from northwestern Iberian Peninsula. All the species are described, illustrated, and mapped. A key is provided to the species.

Klazenga, Niels. 2000. A revision of the Malesian species of *Dicranoloma* (Dicranaceae, Musci). Ph.D. thesis, Universiteit Leiden, Netherlands. vii + 130 pp. Introductory material in Dutch, text in English. Address of author: National Herbarium of Victoria, Royal Botanic Gardens Melbourne, Birdwood Avenue, South Yarra, Vic. 3141, Australia. E-mail: Niels.Klazenga@rbg.vic.gov.au.

This doctoral thesis, after a brief introduction in Dutch (including the author's Curriculum Vitae), is a reprint from Journal of the Hattori Botanical Laboratory 87: 1–130 (1999). *Dicranoloma* is accepted in the traditional (Renauldian) sense, and 15 species are accepted for the Malesian region. Some names are transferred to other genera (*Cryptodicranum* and *Dicranum*), two new combinations are made into *Dicranoloma*, and one nomen novum is proposed. Extensive new synonymy is given. All species are keyed, described and illustrated; selected specimens are cited.

Lin, Shan-hsiung. 1982. A taxonomic revision of Phyllogoniaceae (Bryopsida). Ph.D. thesis, Pennsylvania State University, University Park, PA, U.S. A. xv + 268 pp. In English. Address of author: Department of Biology, Tunghai University, 181 Taichung Harbor Road, Section 3, Taichung 40704, Taiwan, Republic of China. E-mail: slin@mail.thu.edu.tw.

This doctoral thesis examined the Phyllogoniaceae in the broad sense. In this work the family is considered monogeneric with *Phyllogonium* having three species. *Orthorrhynchium* is placed in its own family, and *Catagonium* is recognized as belonging to the Plagiotheciaceae. *Horikawaea* and *Orthorrhynchidium* are recognized in the Pterobryaceae. A new genus, *Pursellia* (Pterobryaceae), is based on *Orthorrhynchium phyllogonioides*. *Orthorrhynchium* contains two species, *Catagonium* four, *Horikawaea* two, *Pursellia* one and *Orthorrhynchidium* one. *Catagonium gracile* and *C. serrulatum* are moved to *Taxiphyllum* and *Stereophyllum novarae* to *Entodon*.

Lücking, Andrea. 1995. Diversität und Mikrohabitatpräferenzen epiphyller Moose in einem tropischen Regenwald in Costa Rica unter besonderer Berücksichtigung der Familie Lejeuneaceae. Ph.D. Dissertation, Universität Ulm, Ulm, Germany. [vi] 211 pp.

In German with English summary. Current address of author: Andrea Bernecker-Lücking, Escuela de Biología, Universidad de Costa Rica, Ciudad Universitaria "Rodrigo Facio", San José, Costa Rica. E-mail: aberneck@biologia.ucr.ac.cr.

This doctoral dissertation studied the epiphyllous bryophytes (all hepatics except for one moss) in Parque Nacional Braulio Carrillo at ca. 480 m in central Costa Rica, from both a taxonomic and ecological perspective. A record 83 species were found at the site but nevertheless, the number is decidedly lower than the number of foliicolous lichen species at the same site. It was calculated that there are probably no more than ca. 500 species of regularly epiphyllous bryophytes worldwide. Because of the large number of collections, it was possible to evaluate the variability of characters what are usually of taxonomic importance. Diversity was highest in rather open and dry areas but maximum area cover was reached in open but humid situations. The most common species found (*Cyclolejeunea convexistipa*, *C. peruviana*, *Odontolejeunea lunulata* and *O. decemdentata*) were found to be the strongest competitors on a given leaf. Cluster analyses revealed that characters of the phorophyte were principally responsible for differences in colonization, whereas microclimatic parameters were of secondary importance. Weak competitors tended to grow under more extreme microclimatic conditions. Examples of these were often hepatics of small stature, such as *Aphanolejeunea* spp., *Cololejeunea tenuicornis* and *Lejeunea autoica*. Early colonizers were most often those that were good competitors.

Manuel, Monte G. 1976. A monograph of the genera *Meteoridium*, stat. nov., *Meteoriopsis*, emend, and *Zelometeorium*, gen. nov. (Bryopsida: Meteoriaceae). Ph.D. thesis, Pennsylvania State University, University Park, PA, U.S.A. vi + 134 pp. In English. Author deceased.

This doctoral thesis examined material of *Meteoriopsis* s.l. (as circumscribed in Die natürlichen Pflanzenfamilien) and determined it to be a heterogeneous assemblage. *Meteoridium*, formerly a section in *Meteoriopsis*, is raised to generic rank and only a single species is recognized. *Zelometeorium* is newly recognized to accommodate the five species previously placed in *Meteoriopsis* sect. *Squaridium*. *Meteoriopsis* is left as an Old World genus with three species.

Odu, Ebenezer Abiodun Abayomi. 1976. Rhizoids of mosses as attachment organs. Ph.D. thesis, University of Wales. In English. ix + 133 pp. + 62 figs. + 88 photographs. Current address of author: unknown.

This doctoral thesis studied the rhizoids in a wide variety of British mosses and in *Lophocolea cuspidata* to investigate the mechanical function of attachment to the substrate. Pleurocarpous mosses growing on different substrates were shown to have different rhizoid characteristics. Usually these mosses have numerous rhizoids on hard substrates but fewer when growing among vascular plants. The paucity of rhizoids in *Pleurozium schreberi* and *Racomitrium lanuginosum* seems to be due to their competition with vascular plants. Transplant experiments were carried out to see how it affected rhizoids. In pleurocarps and the single hepatic studies it was found that the branching of the rhizoid tips was in response to contact with any solid object but such was not the case for acrocarps. Electron microscope studies showed that at least in some species that rhizoidal attachment is affected by the production of extra-wall materials (mucopolysaccharide adhesive substances) after

the contact stimulus. Their production and diffusion outside through the cell wall involved rhizoid cytoplasmic degeneration and wall ultrastructural changes, which ultimately result in rhizoid senescence.

Randall, Eric A. 1973. A taxonomic and distributional study on the mosses of western New York State. Ph.D. thesis, Pennsylvania State University, University Park, PA, U.S.A. 3 + vi + 274 pp. In English. Current address of author: Arts & Science Center, Edinboro University of Pennsylvania, Edinboro, PA 16444, U.S.A. E-mail: erandall@edinboro.edu.

This doctoral thesis is based on a floristic and distributional study of the mosses of New York State west of the Genesee River. Keys and an annotated list of species are provided for the 342 mosses found in the region. Microenvironment was found to be the primarily determining factor affecting the distribution of the majority of species. Emphasis was placed on bedrock geology and the effects of past glaciation within the region. It should be noted that the student's advisor, Dr. R. A. Pursell, reports that no vouchers for this study were ever deposited in a herbarium.

Russell, Shaun. 1994. Production ecology of bryophyte vegetation at Marion Island (Sub-Antarctic). Ph.D. thesis, Rhodes University, Grahamstown, South Africa. xii + 303 pp. In English. Current address of author: Centre for Arid Zone Studies, Thoday Building, University of Wales, Bangor, Gwynedd, LL57 2UW, Wales, U.K. E-mail: s.russell@bangor.ac.uk.

This doctoral thesis examines the oceanic "tundra" type bryophyte vegetation on the subantarctic Marion Island. On the island, bryophytes contribute as much as 60% of the biomass and 90% of the plant cover in the mires that dominate the well vegetated coastal plain. The first part of the thesis details the physical and biotic environment of Marion Island. Data are then presented on the cover, biomass, seasonal and annual production vales, and turnover rates (decomposition) of 15 bryophyte species representative of the full range of habitat types on Marion Island. An analysis is also made of growth-associated variables, i.e., soils, climate, plant energy, chlorophyll, water and mineral nutrient contents. Production was found to be controlled by moisture-related variables, overlain by nutrient factors in some instances. The results suggest that decomposition is controlled mainly by tissue degradability factors and that it is more significant than production in controlling biomass accumulation. Several growth measurement techniques were tested and recommendations are given concerning methodology for future bryophyte production studies.

Scheirer, Daniel C. 1974. The anatomy, histochemistry and ultrastructure of the gametophore of *Dendroligotrichum dendroides* (Hedw.) Broth. (Bryopsida: Polytrichaceae). Ph.D. thesis, Pennsylvania State University, University Park, PA, U.S.A. 4 + x + 165 pp. In English. Current address of author: Department of Biology, Northeastern University, 360 Huntingdon Avenue, Boston MA 02115. E-mail: daniels@neu.edu.

This doctoral thesis used light and electron microscopy, as well as histochemical techniques, to investigate the gametophore of *Dendroligotrichum dendroides*. Special emphasis was placed on the putative food- and water-conducting tissues. Internally, the aerial gametophore is differentiated into a central cylinder of hydroids, surrounded by a thick-walled hydrom sheath. External to this sheath is a multilayered leptom sheath, surrounded by an outer and

inner cortex. The hydroids are very similar to tracheary elements of vascular plants in terms of their elongated nature, the general phenomenon of the autolysis of the protoplast, the presence of hydrolyzed walls, and the presence of encrusting compounds. Similarly, the leptoids resemble sieve elements of lower vascular plants. The presence of xylem- and phloem-like tissue is discussed in terms of the phylogenetic relationships between the bryophytes and tracheophytes.

Snäll, Tord. 2003. Distribution patterns and metapopulation dynamics of epiphytic mosses and lichens. Ph.D. thesis, Uppsala University. 36 pp. + 4 reprints/manuscripts. Available at: <http://publications.uu.se/theses/>. In English. Current address of author: Department of Evolutionary Biology, Plant Ecology, Villavägen 14, Uppsala University, SE-752 36 Uppsala, Sweden. E-mail: tord.snall@ebc.uu.se.

This thesis examined the relative importance of local conditions, dispersal and dynamics of the trees on epiphyte distribution patterns and colonization-extinction dynamics in eastern central Finland. Study species were *Orthotrichum speciosum*, *O. obtusifolium* and *Neckera pennata*, as well as *Lobaria pulmonaria*. The results showed that epiphyte colonization of trees is affected by both local conditions, and by connectivity to occupied trees. The positive effect of connectivity, implying a restricted dispersal range, was established by both demographic and genetic studies. The important local conditions were tree diameter and vitality, and shade. Local extinctions from trees occurred among small trees with low local epiphyte abundance, but more often were the results of tree fall. The four reprints/manuscripts are: Snäll, T., P. Ribeiro & H. Rydin. 2003. Spatial occurrence and dispersal in patch-tracking metapopulations: local colonisation versus dispersal. *Oikos* 103(3); Snäll, T., J. Fogelqvist, P. Ribeiro & M. Lascoux. Submitted. Spatial kinship structure and dispersal in two congeneric epiphytes with different dispersal strategies; Snäll, T., J. Ehrlén & H. Rydin. Manuscript. Colonization and extinction dynamics of an epiphyte metapopulation in a dynamic landscape; Snäll, T., J. Pennanen, L. Kivistö & I. Hanski. Submitted. Modeling epiphyte metapopulation dynamics in a dynamic forest landscape.

Solga, Andreas. 2003. Untersuchungen zur Eignung von Moosen als Bioindikatoren atmosphärischer Stickstoffeinträge. Ph.D. dissertation, Rheinischen Friedrich-Wilhelms-Universität Bonn, Germany. [vi] 179 pp. + 6 appendices on 26 pp. In German. Address of author: Nees-Institut für Biodiversität der Pflanzen, Rheinische Friedrich-Wilhelms-Universität, Meckenheimer Allee 170, D-53115 Bonn, Germany. E-mail: a.solga@uni-bonn.de.

The two general objectives of this doctoral dissertation were 1) testing selected bryophyte species in regard to their suitability as nitrogen accumulation indicators, and 2) investigating the effects of increased nitrogen deposition on bryophyte vegetation. The research was carried out in western Germany. Fertilization experiments were performed under both controlled and field conditions. Changes to bryophyte communities in terrestrial habitats that had been exposed to artificial increase in nitrogen deposition are discussed. Under certain criteria, *Pleurozium schreberi* and *Pseudoscleropodium purum* proved to be suitable for monitoring atmospheric nitrogen deposition. It was shown that increased N deposition on bryophyte vegetation resulted in the spread of common species with broad ecological amplitude, and that ammonium damages several species of bryophytes. The entire text of the dissertation can be

downloaded at: http://hss.ulb.uni-bonn.de:90/ulb_bonn/diss_online/math_nat_fak/2003/solga_andreas.

Suleiman, Monica. 1999. A revision of *Chaetomitrium* (Musci) in Malesia and microscopic and isozymic variation in *Hypnum* (Musci). Ph.D. thesis, University of Manchester. 245 pp. In English. Address of author: Institute for Tropical Biology & Conservation, Universiti Malaysia Sabah, Locked Bag 2073, 88999 Kota Kinabalu, Sabah, East Malaysia. Email: monicas@ums.edu.my.

This Ph.D. thesis primarily revises the genus *Chaetomitrium* for Malesia. Of the previously described 84 species, 60 are found in the region. The genus was revised using morphological characters on herbarium material. Forty-five species are recognized for Malesia, with 13 species reduced to synonymy and three taxa reduced to varietal status. New important taxonomic characters for the genus were length of laminal marginal teeth, height of laminal cell proulae, type of gemination of laminal marginal teeth and length of the basal hairs of the calyptra. Although the genus is placed in the Hookeriaceae, *Hypnum* was used to explore the use of SEM and isozyme electrophoresis to obtain new characters for distinguishing moss taxa. Although no new morphological characters were discovered, it was concluded that isozymes may be useful for species delimitation in *Hypnum*. For *Chaetomitrium*, the species are keyed, described, and illustrated. Nomenclatural novelties include *C. roemeri* var. *laevisetum* (Dixon) n.comb., *C. horridulum* var. *ciliatum* (Bosch & Sande Lac.) n.comb., *C. orthorrhynchum* var. *perakense* (Dixon) n.comb., and *C. fimbriatum* var. *paleatum* (Hampe) n.comb. *Chaetomitrium crispifolium*, *C. longisetulum* and *C. sublaevisetum* are excluded from the genus as *Cirriphyllum* spp. (first two) and *Chaetomitriopsis glaucocarpa*, respectively.

Sundberg, Sebastian. 2000. The ecological significance of sexual reproduction in peat mosses (*Sphagnum*). Ph.D. dissertation, Uppsala University, Sweden. 37 pp. + 5 reprints/manuscripts. Available at: <http://publications.uu.se/theses/>. In English with Swedish summary. Address of author: Department of Plant Ecology, Evolutionary Biology Centre, Uppsala University, Villavägen 14, SE-752 36 Uppsala, Sweden. E-mail: sebastian.sundberg@ebc.uu.se.

This doctoral dissertation was designed to test the ecological role of spores in *Sphagnum* reproduction. It is shown that spores can form a spore bank and have the ability to germinate and contribute to moss establishment whenever suitable conditions occur. The results suggest that spore production is important for explaining the wide distribution and omnipresence of *Sphagnum* in nutrient-poor wetlands. The results further imply that initial recruitment from spores predominates in *Sphagnum* after disturbance or formation of suitable habitats. Spore number per sporophytes ranged among *Sphagnum* species from 18,500 to 240,000, with a trade-off between spore number and spore size. Annual spore production was estimated at 15,000,000 spores/m² on two investigated mires. Sporophytes production showed a large internal variation and was correlated with the amount of precipitation from the previous summer. Spores kept refrigerated for up to 13 years retained high germinability. A field experiment showed that *Sphagnum* can form a persistent spore bank with a potential longevity of several decades.

Tallis, J[ohn] H. 1957. A study of the biology and ecology of *Racomitrium lanuginosum* Brid. Ph.D. Thesis, University of Wales. [iv] 199 pp. + 30 photographs on 13 unnumbered pages. In English. Address of author: unknown.

In the first part of this doctoral thesis, the author studied the ecological distribution of *Racomitrium lanuginosum*. Generally, the moss grows in open habitats with high air humidity. At low elevations it is intolerant of shade, but at elevations above ca. 500 m, then it becomes shade-tolerant. The chief factor restricting *R. lanuginosum* in competition with other plants is its extremely slow growth rate. Even under optimum conditions, growth never exceeded 20 mm/year, and in most habitats it was much less. Thus, *R. lanuginosum* is very susceptible to overcrowding and overgrowth by other plants. It also appeared that *R. lanuginosum* grew primarily in areas where the substrate is susceptible to leaching because the presence of iron, or a related ion, might preclude the growth of the moss. It was determined that reproduction through spores primarily occurs in higher elevations. Observations suggest that branching of the plant is environmentally dependent and that higher humidity and lower air temperature may result in more regular branching. The reason that *R. lanuginosum* can dominate some mountaintop habitats seems to be because of the prostrate growth form, its ability to derive ions from wind-blown dust and rock fragments, and to dissolve certain compounds from the underlying rock particles, thus enabling it to colonize barren substrates where the instability and poverty of nutrients act as a barrier to nearly all other plants.

Weibull, Henrik. 2000. Bryophytes on boulders: diversity, habitat preferences and conservation aspects. Ph.D. thesis, Swedish University of Agricultural Sciences, Uppsala. 24 pp. + 4 manuscripts (see below for details). Acta Universitatis Agriculturae Sueciae Silvestria #159. In English. Address of author: Department of Conservation Biology, SLU, Box 7002, SE-750 07 Uppsala, Sweden.

This doctoral thesis examined the influence of different overstorey trees on the floristic composition of bryophytes growing on boulders in two deciduous forests. Covering tree species and amount of litter were the factors explaining most of the variation in bryophyte species composition. Boulders below base-rich tree species (*Fraxinus*, *Ulmus* and *Acer*) had a considerably different bryophyte species composition than boulders below *Picea abies*, while the species composition was intermediate below *Quercus* and *Betula*. Transplanted patches of *Tortula ruralis* were grown below the cover of five tree species. The growth was significantly lower below *Picea abies* than below the deciduous trees, which was related to lower amount of throughfall, lower pH in throughfall, and lower relative flight flux. Species richness increased in plots with deciduous litter and decreased in plots with litter from *Picea abies*. Four manuscripts are appended: Influence of tree species on the epilithic bryophyte flora in deciduous forests of Sweden (21 pp., submitted to Journal of Bryology); Bryophyte species richness on boulders: effects of area, habitat diversity and covering tree species (16 pp., co-authored by H. Rydin); Experiments on growth of the mosses *Antitrichia curtipendula* and *Tortula ruralis*: effects of moisture and pH (14 pp., co-authored by N. Bengtsson and M. Larsson); Effects of leaf litter on dynamics of epilithic bryophytes (14 pp.).

Wiklund, Karin. 2004. Establishment, growth and population dynamics in two mosses of old-growth forests. Ph.D. dissertation, Uppsala University, Sweden.

47 pp. + 5 reprints/manuscripts. Available at: <http://publications.uu.se/theses/>. In English with Swedish summary. Address of author: Department of Plant Ecology and Evolution, Plant Ecology, Uppsala University, Villavägan 14, SE-752 36 Uppsala, Sweden. E-mail: karin.wiklund@ebc.uu.se.

The aim of this doctoral dissertation is to increase the ecological knowledge of two threatened moss species, *Buxbaumia viridis*, inhabiting decaying wood, and *Neckera pennata*, inhabiting bark of base-rich deciduous trees. Establishment from spores was investigated for both species and models were created to predict germination of spores as a function of pH and water potential. The quality of the substrate was found to be very important for spore establishment. Germination success increased with increasing pH in both species. *Buxbaumia viridis* was less sensitive to low pH than *Neckera pennata* when water was freely available. Precipitation, moisture-holding capacity and interference competition were the main factors affecting colony growth of *N. pennata*. *Buxbaumia viridis* showed large fluctuations in number of occupied patches among years. Both colonization and extinction were highly related to precipitation. Spore germination and sporophyte occurrences in the field were positively related to phosphorus concentration and pH of the substrate.

Yano, Olga. 1975. Leucobryaceae (Musci) do estado de São Paulo. Master's thesis, Escola Paulista de Medicina. [vii] ii + 177 pp. In Portuguese. Address of author: Seção de Briologia, Instituto de Botânica, Caixa Postal 4005, 01061-970 São Paulo – SP, Brazil.

This master's thesis includes four species of *Octoblepharum*, one species of *Leucophanes*, eight species of *Leucobryum*, and one species of *Ochrobryum*. Each species is described, illustrated and mapped. Specimens examined are listed.

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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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UPCOMING MEETINGS

February 4 – 6: XXth Meeting of the Spanish Bryological Society at San Sebastian de la Gomera (Canary Islands). Contact: javier.martinez@daa.unirioja.es

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

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.

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.

September 18 – 22. British Bryological Society. Annual General Meeting and Symposium. Bangor, Wales. Information: consult website of the BBS

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

Ballot for IAB Election

VOTE NOW!

Terms are expiring for one vice-president and five councillors of the International Association of Bryologists executive. Below is a list of persons who have been nominated and have agreed to stand for office. Please vote as instructed.

Return your vote by February 1, 2005 to:

Dale H. Vitt, Department of Plant Biology, Southern Illinois University, Carbondale, IL 62901-6509, U.S.A. Fax: (618) 453-3441 or e-mail: dvitt@plant.siu.edu

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- _____ Jeff Duckett (U.K.)
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