

The Bryological Times

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Newsletter of the International Association of Bryologists

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Editorial

New date for the IAB-World Congress: Due to the political situation in Venezuela, the organisers had to cancel the for July 2003 planned conference, but were able to propose a new date and venue. The Congress will take place between 12 and 17 January 2004; between 9 and 10 January there will be a workshop on Bryophyte Conservation. Please register!

I also would like to thank all people who contributed to this newsletter. I regularly contact bryologists if I spot something noteworthy to include in the Bryological Times and am happily surprised that most people readily accept to write a contribution. However, there must be so much more happening out there in the bryological world; activities I am not aware of and which are very noteworthy to be published. Please do not hesitate to make this your newsletter, and to contact me or one of the co-editors. All of us will benefit if information gets better disseminated.

Geert Raeymaekers

email: Geert.Raeymaekers@ecosystems.be

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

OBITUARY

Elsa C. Nyholm (1911-2002)

In the autumn of 2002, Elsa Nyholm quietly passed away after a long period of illness. Elsa was well known to bryologists world-wide because of her *Illustrated Moss Flora of Fennoscandia* and the yet unfinished *Illustrated Flora of Nordic Mosses*. These two floras have become the standard moss floras for northern Europe, but thanks to the thoroughness with which they were prepared their significance reaches far beyond this geographical area.

Elsa Nyholm came from a farmer's family in Skåne, southern Sweden. She was already interested in nature as a child, but due to the prevailing ideas of the time she had to fight for her wish to pursue a career as a biologist. Her parents did not allow her to get a higher education, since many people at that time thought that women should not aim at academic positions. Luckily, when Elsa had become 21 years old she managed to get a position as technical assistant and later as museum assistant at the Botanical Museum in Lund. From this position she gradually got wider responsibilities and also had the chance to study plants. Thanks to contacts with a bryologically-inclined chemist and a vicar earlier in her life, she was from the beginning interested in bryophytes. Elsa realised that there was a great need for a modern moss flora covering northern Europe, and managed to get support for working with such a flora from the Swedish Natural Science Research Council (now The Swedish Research Council). Thus, between 1954-1964 she could spend her working time on *Illustrated Moss Flora of Fennoscandia*.

In 1964 Elsa became curator of the bryophyte herbarium at the Swedish Museum of Natural History (Naturhistoriska riksmuseet) in Stockholm and moved away from Lund. She held the position until she retired, and continued to work at this museum long after that. While in Stockholm, she tried to get support for writing a Turkish moss flora, and also went on collecting trips to Turkey. However, in the end it was clear that such a flora would not get funded. Around the beginning of the 1980's it became evident that especially the first fascicles of Elsa's earlier flora were becoming outdated. She therefore started to work on a new flora that should include all the Nordic countries, including Iceland, Svalbard, and the Faroe Islands besides the areas that were covered in *Illustrated Moss Flora of Fennoscandia*. She unfortunately did not survive to see the final volumes of this new flora, *Illustrated Flora of Nordic Mosses*, completed.

Elsa Nyholm never received formal academic schooling, and in addition had to fight against the antipathy against women in academia that was relatively widespread earlier. However, her significant contributions to science were formally acknowledged in 1969, when she became honorary doctor at the University of Lund.

Lars Hedenäs, Swedish Museum of Natural History, Dept. of Cryptogamic Botany, Box 50007, SE-104 05 Stockholm, Sweden; e-mail: lars.hedenas@nrm.se

Jerzy Szweykowski and Alicja Szweykowska

Mrs Zofia Szweykowska-Kulinska, the daughter of Jerzy Szweykowski and Alicja Szweykowska brought us the sad news that her parents died in an automobile accident on Friday, 8 November 2002. On Friday, 15 November 2002, an official memorial ceremony was held at the Adam Mickiewicz University, where both Jerzy and Alicja were Professors of Botany. Zofia requests that any bryologists who wish to send written memorials in honor of her parents please address them to one of the following fax numbers: (+48)-61-829-27-30, (+48)-61-829-45-03, or (+48)-61-829-44-44.

Many of us knew Jerzy Szweykowski as a leader in early studies of genetic variation in liverworts, in bryophyte biogeography, and in studies of chromosomes. He was a postdoctoral associate in the laboratory of Harlan Lewis in the 1960s and always retained an interest in the genetics of speciation. Alicja Szweykowska was a plant physiologist. Their work is continued by their many successful students and also by their daughter, Zofia, who is currently Professor of Genetics and an expert in the subject of organellar inheritance in plants, including mosses and liverworts.

**Nebel, M. & Philippi, G. (eds.) 2000: Die Moose Baden-Württembergs.
Band 1: Allgemeiner Teil. Spezieller Teil (Bryophytina I, Andreaeales bis Funariales).
Verlag Eugen Ulmer, Stuttgart. 512 pp. ISBN 3-8001-3527-2**

This is the first in a series of three volumes covering all bryophytes in Baden-Württemberg, SW Germany. The book is really nice and produced to a very high standard. It starts with a 50 page introduction (*Allgemeiner Teil*) to bryology in Baden-Württemberg, including distribution of bryophytes and description of habitats and their distribution in the region. One hepatic and eight moss species are reported as new for Germany, and an additional 44 moss and seven hepatic species as new for Baden-Württemberg. It also presents a few nomenclatural novelties, e.g. *Tortula papillosissima* var. *submamilliosa* comb. nova. I could not find any list of these novelties, which makes it more difficult to locate them. Some combinations can thus easily be overlooked since it is not primarily a taxonomic work. The remaining pages are descriptions of the bryophyte taxa occurring in Baden-Württemberg (*Spezieller Teil*). The description treats morphology, habitat ecology in detail, general distribution and distribution in Baden-Württemberg, and finally threats, conservation and population sizes. There

are maps for all taxa, which, in addition to localities, also indicate how recently they were found in each area. The whole book is rich in colour illustrations of very good quality. It is rare to find photos of such high quality that you can identify the species, but this is possible for most of the illustrated species in this book. I have looked for possible misidentifications, but so far not found any. I congratulate the authors for a nice and interesting book. Although it covers only a relatively small area of Europe, it is a rich area in bryophyte species. The information for each species includes much information, which is usually not included in many other floras. In addition the habitat requirements are described in much more detail than in most other books. All this together makes it a valuable book for bryologists all over Europe and useful also for bryologists in other parts of the world.

Lars Söderström

**Buck, W. R., Vitt, D. H. & Malcolm, W. M.: Key to the genera of Australian mosses.
Flora of Australia Supplementary Series Number 14.
Softcover, vi + 120 pp., illustrated. ISBN 0642 568 197.
Published by Australian Biological Resources Study, Canberra, 2002.**

To quote the brief Introduction, this booklet is "the first illustrated identification guide to the 291 genera of mosses known from Australia and some of its oceanic islands (Christmas Island, Lord Howe Island, Macquarie Island, Norfolk Island)." The work indicates substrate preferences as well as the current diversity and broad-scale distribution within Australia and its territories. That information is based mainly on an unpublished catalogue of Australian mosses by the late Heinar Streimann, to whose memory the booklet is also dedicated. The booklet ends with a Selected Bibliography - concise yet nearly adequate - and an Index to Genera.

In the key the main diagnostic characters are in italics, but each genus is also more fully described. The descriptions are complemented by beautiful microphotographs. These generally display generic characters, but often also features such as cross-sections of leaves or stems that are not so important in this context. Perhaps due to difficulties in accessing pertinent specimens, many photographs represent extra-Australian species. Examples include *Pinnatella makinoides* and *Neckeropsis calcicola* of the Neckeraceae. This

is not a problem, since generic characters are the focal point, and the species represent their genera adequately.

A few bryologists tested an earlier version of this key but, of course, I had to test it myself. I used previously identified specimens of *Stereophyllum radiculosum* and *Pendulothecium punctatum* and ended up with the right names. This is certainly not obvious, since I know from experience how difficult it can be to construct a generic key that works at least most of the time. The fact that many dioicous species only rarely produce sporophytes does not make it any easier, and with such mosses gametophytic characters should of course be used wherever possible. Couplet 293 makes a distinction between *Himantocladium* and *Thamnobryum*, saying that the former has a short-exserted capsule and the latter a long-exserted one. This is true, but sporophytes are really not very common in *Thamnobryum*. That genus also keys out elsewhere (couplet 281), but even here one must have sporophytes (couplet 269) to get the correct name.

I noticed a few small flaws or inconsistencies in the taxa I know well. On page 60 *Cyptodon* is said to have two species in the region, but in fact there is only one, *C. muelleri*; the other three species in the genus are endemics of New Zealand, New Caledonia, and Fiji-Samoa (cf. Enroth 1995). *Caduciella* (p. 82) is said to be “robust”, yet the fronds are only to 1 cm high, and in my mind the plants are certainly not robust.

But, to summarize, despite the inevitable small discrepancies this small booklet is probably as good as it can be and

without doubt a valuable contribution to the bryological literature in Australia and adjacent regions.

Johannes Enroth

Reference

Enroth, J. 1995: Taxonomy of *Cyptodon*, with notes on *Dendrocryphaea* and selected Australasian species of *Cryphaea* (Musci, Cryphaeaceae). *Fragm. Flor. Geobot.* 40: 133-152.

Herzogia copies for sale

To make room in the shelf, former volumes of HERZOGIA are available at a reduced price of 15 Euro each including postage:

Volume	issues	number of copies
Herzogia 5	3-4	11
Herzogia 7	1-2	1
Herzogia 7	3-4	4
Herzogia 8	3-4	16
Herzogia 9	1-2	4
Herzogia 9	3-4	7

The table of contents of any volume may be found at RECENT LITERATURE http://www.toyen.uio.no/botanisk/bot-mus/lav/sok_rll.htm. To order copies, please contact Dr. Felix Schumm, Schreiberstr. 36, D - 70199 Stuttgart, schumm@compuserve.com, and transfer the requested amount to number 579 300 of the Sparkasse Mittelhardt-Deutsche Weinstrasse BLZ 546 512 40 (SWIFT: MALA DE 51 DKH). Keyword: Herzogia alt

Norbert Stapper.

Website: www.blam-ev.de

W. B. Schofield. 2002. Field Guide to Liverwort Genera of Pacific North America. 232 pp. University of Washington Press. ISBN 0-295-98194-6.

This is the first comprehensive guide to liverworts and hornworts from southernmost California to Alaska. It provides a key to the genera and describes representative species of each genus in the Pacific Coastal region. Line drawings by Patricia Drukker-Brammall and Muriel Pacheco accompany detailed discussions of each genus. This useful

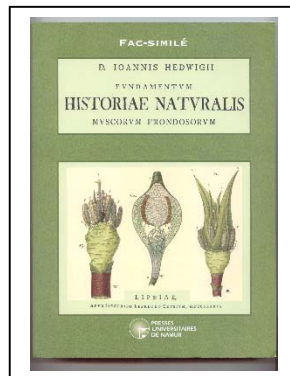
guide to genera found abundantly in the region will be welcomed not only by the professional field botanist, but by the enterprising amateur naturalist who wishes to discover these bryophytes' unusual beauty and fascinating variety.

Source: ABLS web site

J. Hedwig. “Fundamentum historiae naturalis muscorum frondosorum” Facsimilé

Since 1995, Prof. J.L. De Sloover has pleased us with the fac-similé publication of several historical and important bryological works. As such, he has been able to provide us with works from Dillenius (1684 – 1747), R. Dodoens (1517-1595), O. Schwartz (1760-1818), J.G. Voit (1787 – 1813), C. Schkuhr (1741 – 1811). All these fac-similés have been published in the series “Sciences de Vivant” “Collection Botaniques” of the Presses Universitaires de Namur (Belgium) and a complete list of these works can be viewed on the website www.pun.be.

The “Fundamentum Historiae Naturalis Muscorum Frondosorum” is the most recent work in this series. Prior



to the publication of his *Species Muscorum Frondosorum* in 1801, he produced this work in two volumes in 1782. In this work, Hedwig clearly identified the mosses in relation to the liverworts and describes the role of antheridia, archegonia, paraphyses, capsules, spores, and so on. It is a stunningly illustrated book, with coloured etchings of J.S. Capieux. According to Bridel, this is the “egregium opus” of Hedwig; Györfly called Hedwig the “Linnaeus of the mosses”, which is for the editor of this fac-similé as well a compliment for Linnaeus.

Source: J.L. De Sloover, rue des Sorbiers 2, 5101 Erpent (Belgium).

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

Faudzi Joshua, Royliza Binti. 2002. Flora lumut sejati (Musci) Hutan Simpan Angsi, Negeri Sembilan, Malaysia [Moss flora (Musci) of Angsi Forest Reserve, Negeri Sembilan, Malaysia]. Thesis for Bachelor of Science with Honours in Botany, Universiti Kebangsaan Malaysia, Bangi, Malaysia. x + 106 pp. In Malay with English abstract. Address of author: No. 25, Jalan Desa Rhu 13, Taman Desa Rhu, Sikamat, 70400 Seremban, Negeri Sembilan Darul Khusus, Malaysia. E-mail address: <zeta_80@hotmail.com>.

This thesis is a moss flora of a forest reserve in the southwestern portion of the Malay Peninsula. The flora treats 76 species (and one variety) of mosses, about 16% of the known moss flora of Peninsular Malaysia, and about 83% of the mosses known from the state of Negeri Sembilan. Forty species are newly reported for the state. The largest family, with 25 species, is the Calymperaceae. All species are keyed and described, and specimens examined are cited.

Ingerpoo, Nele. 2002. Bryophyte diversity and vascular plants. Ph.D. dissertation, University of Tartu, Estonia. Dissertationes Biologicae Universitatis Tartuensis 75: 1-32 + copies of 5 manuscripts (some published, some submitted, see below). In English with summary in Estonian. Address of author: Institute of Botany and Ecology, University of Tartu, Lai Str. 40, 51005 Tartu, Estonia. E-mail: neleing@ut.ee.

This published doctoral dissertation includes a synopsis of the research which was conducted in Estonia, and copies of five manuscripts. It was determined that the relationships between species richness of the bryophyte and herb layers may be different in different plant communities. Species richness of bryophytes was positively correlated with species richness of herbaceous plants in forest communities. Usually, the two groups respond to different environmental factors differently. In general, more area was found to be needed by vascular plants to maintain their community species pools. For conservation purposes, entire communities (not just portions) need to be protected to retain overall species diversity. The included manuscripts are: Ingerpoo, N., K. Vellak, T. Kukku & M. Pärtel. 2001. Bryophyte and vascular plant species richness in boreo-nemoral moist forests and mires. Biodiversity and

Conservation 10: 2153-2166. Ingerpoo, N., K. Vellak, J. Liira & M. Pärtel. Bryophyte and phanerogam responses to environmental conditions in primeval deciduous forests at the North-Estonian limestone escarpment. (Submitted). Ingerpoo, N., K. Kull & K. Vellak. 1998. Bryophyte vegetation in a wooded meadow: relationships with phanerogam diversity and responses to fertilisation. *Plant Ecology* 134: 163-171. Ingerpoo, N. & M. Pärtel. Vascular plants species-specific effects on bryophytes in a grassland experiment. (Submitted). Ingerpoo, N. & M. Pärtel. Bryophyte and vascular plant rarity types in Estonian grasslands. (Submitted).

León Vargas, Yelitza. 2001. Diversity of epiphytic bryophytes in a montane cloud forest in the Venezuelan Andes. Doctoral dissertation, Mathematisch-Naturwissenschaftliche Fakultät der Rheinischen Friedrich-Wilhelms-Universität Bonn, Bonn, Germany. IX + 124 pp. In English with Spanish summary. Address of author: Centro Jardín Botánico, Facultad de Ciencias, Universidad de Los Andes, Apartado 52, La Hechicera, Mérida 5101, Venezuela. E-mail address: <yeltleon@ciens.ula.ve>.

This doctoral dissertation presents the results of the study of bryophyte diversity in the San Eusebio old growth *Decussocarpus* forest at 2300 m in the Venezuelan Andes. Bryophyte diversity at the site was similar to that of other montane forests, but the proportion of mosses was relatively higher, suggesting a drier environment or a better long-term competitive ability of mosses on stable substrates. The largest and richest communities were the understory trunk community and the inner canopy community. Differences in pH, temperature, relative humidity and radiation were influential on community composition. Canopy communities were a source of nutrients for understory communities as well as a source of propagules. High diversity in the canopy was an important contribution to the total bryophyte diversity of the forest. Understory communities were significant in regulating humidity within the environment. It was determined that cell wall ultrastructure in the leaves of pendent mosses was related to their life form and to their capability to withstand repeated cycles of rehydration. The floristic results from the montane forest were compared to those of a lowland Amazonian forest. Diversity, cover, and community complexity were lower in the Amazonian forest.

IAB-NEWS

Change of addresses

Dr. Bengt-Gunnar Jonsson is no longer affiliated with the Dept of Ecological Botany, Umeå Univeristy. His new address is now: Dept. of Natural and Environmental Sciences, Mid Sweden University, SE- 851 70 Sundsvall, Sweden, Tel: +46 - (0)60 - 14 8941, Fax: +46 - (0)60 - 14 8802, Email: Bengt-Gunnar.Jonsson@mh.

Schljakov's private library at the Polar-Alpine Botanical Garden and Institute. Dr. Vadim Bakalin reports that after the death of the famous Russian bryologist, Dr. Roman Nikolaevich Schljakov, his private library was moved to the Polar-Alpine Botanical Garden and Institute (Murmansk Prov., Russia). There are many reprints of Schljakov's papers including some rare and poorly known ones (earliest is 1950). Several copies/reprints are available of most papers. Most publications deal with hepatics, but several also deal with mosses and a few concern vascular plants. The papers are in Russian, but some have an English summary. Ca. 15 sets of reprints are available now for exchange. For a complete list of reprints for exchange as well as additional information, please contact Dr. Vadim Bakalin, Email: v_bak@aprec.ru

JOB OPPORTUNITIES

PhD-position: rain forest research in Ecuador

Applications are invited for a PhD position (max. 3 years) at the Dept. of Systematic Botany, University of Göttingen, financed by the German Research Foundation

Research subject: analysis of bryophyte and macro-lichen diversity in relation to vegetation, soil and climate in upper montane rain forests of southern Ecuador. The project is carried out within an interdisciplinary team of biologists, climatologists and soil scientists, and includes about 6 month of field work based at the Estación Biológica San Francisco, Loja, Ecuador.

Those interested may send their application to the head of the Department, Professor S. Robbert Gradstein, Institute of Plant Sciences, Untere Karspüle 2, 37073 Göttingen, Germany, Email: sgradst@gwdg.de

FIELD EXCURSION NEWS

SO BE FREE

Founded in 1996, SO BE FREE is a series of West Coast forays started by the Bryolab at UC Berkeley, but open to all botanists. The main focus is on bryophytes, but we also encourage experts on macroalgae, mushrooms, lichens, ferns, and flowering plants to come along. We welcome specialists as well as generalists, or amateurs who are interested in an overview. It is held each spring, associated with Spring Break at universities. This distinguishes it from the eastern bryological forays (the Andrews and the Blomquist Forays) which are held in the fall. This allows the occasional easterner, desperate as they often are to see plants and blue sky in the spring, a chance to attend.

The usual tradition is to have a four-day, three-night schedule with communal cooking and eating, in inexpensive and remote biological field stations. Evening slide shows and informal talks are presented as well as keying sessions with

microscopes. In addition to seeing interesting wild areas and learning new plants, important goals for SO BE FREE include keeping West Coast bryologists (and friends) in touch with each other and teaching beginners.

For a glimpse of the past seven outings, consult the SO BE FREE web site:
<http://ucjeps.herb.berkeley.edu/bryolab/trips/sobefree.html>

Location this year is the Whiskeytown National Recreation Area and will take place from Friday 3/21 until Monday 3/24. For information on excursion site, lodging, food and reservations, please contact Brent Mishler by March 1st, 2003.

Brent D. Mishler:

E-mail: bmishler@socrates.berkeley.edu

The *Ex situ* Conservation of Bryophytes

Jane Burch and Margaret Ramsay
 Micropropagation Unit, Royal Botanic Gardens, Kew,
 Richmond, Surrey, TW9 3AB, U.K.

The development of *ex situ* conservation techniques for threatened bryophytes is a pilot project financed by the statutory UK conservation agencies (English Nature, Scottish Natural Heritage and the Countryside Council for Wales), based at the Micropropagation Unit at the Royal Botanic Gardens, Kew. The main aim of the project is to develop techniques and protocols for the collection, propagation and basal storage (storage in a non-metabolic state such as in liquid nitrogen) of rare and threatened British bryophytes. The UK will be the first country to endeavour to conserve its threatened bryophytes by using *ex situ* techniques to assist delivery of the UK Biodiversity Action Plan (BAP) targets, setting new standards for bryophyte conservation.

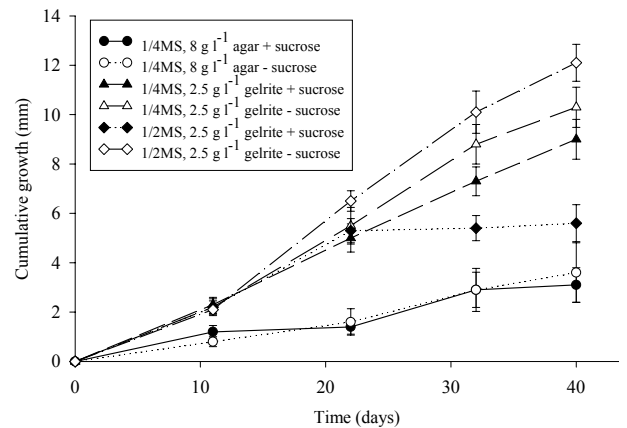
A database has been constructed for the specific needs of the project, recording species name, collection site, substrate, name of donor and detailed records of each stage of propagation. This shows just how dependent the project is on field bryologists. Collection protocols have been developed and can be obtained from steering group members if required. After the initial success with culturing *Ditrichum cornubicum* (a Red-Data Book species) a further seven BAP species are now in culture.

The biggest challenge so far has been cultivating the bryophytes free from contamination. Usually either sporophytes or gametophytic tissue are surface sterilised prior to being placed in culture. With so few stems available, however, material has to be 'bulked up' before sterilisation, so that sterilisation trials can be undertaken without risking killing the entire sample. This means that the sterilisation process is being undertaken using protonemata. Bacterial contamination has been low, with algae and fungi being the main contaminants. Algae can be eliminated by exploiting the phototropism exhibited by mosses. Inverting the Petri dish, protonemata grow through the medium towards the light, and emerge algae-free. Although fungal contaminants are more resilient than the protonemata, some success has been achieved using either heat or low concentrations of sodium dichloroisocyanurate on aerial protonemata. Neither of these techniques has yet been reliably reproducible. Although this line of investigation is continuing, the possibility of having to induce gametophytes in culture for sterilisation and subsequent protonemal production is also being investigated. A sterilization protocol will be produced once a technique has been established that is reliable across a variety of species.

Media trials have identified Gelrite® as a more suitable gelling agent than agar. In addition, the addition of sucrose to the media has been shown unnecessary, as, so far, all the species in culture have been autotrophic (Figure

1). A variety of nutrient media is being used, depending on the requirements of the species being grown.

Figure 1: Cumulative growth of *Ditrichum cornubicum* on six different media combinations. *D. cornubicum* is 1) autotrophic in culture, with sucrose inhibiting the growth and 2) susceptible to toxins in agar. The use of media containing XXX strength Murashige & Skoog (1962, MS) with sucrose results in phytotoxicity, possibly due to the inhibition of photosynthesis by sucrose in combination with an excessive supply of nutrients. The dilution of MS media



to quarter-strength was not beneficial. Symbols represent mean values (\pm one S.E.), n=5 (Burch In Press).

Cryopreservation is commonly used for the long-term storage of vascular plants as it stops cellular processes and reduces the selection pressure from repeated subculturing of plants kept in culture. Early indications are that cryopreservation offers an effective method of long-term storage for threatened bryophytes. Trials using *D. cornubicum*, *Bryum rubens* and *Cyclodictyon laetevirens* have shown that some desiccation tolerant species will survive cryopreservation after a prolonged period of dehydration (Figure 2), whereas desiccation intolerant species benefit from growth on medium supplemented with abscisic acid and sucrose (Figure 3). Cryopreservation protocols will be produced once the effectiveness of the techniques has been tested on several species.

Figure 2: Percentage survival of unencapsulated and encapsulated protonemata of desiccation tolerant *Bryum rubens*, *Ditrichum cornubicum* and desiccation intolerant *Cyclodictyon laetevirens*, after 18 days air drying and 20 hours immersion in liquid nitrogen. The survival of the three species after cryopreservation reflected the water availability in their natural habitat. Bars with the same letter are not significantly different (Chi-squared test), n=15 (Burch In Press b).

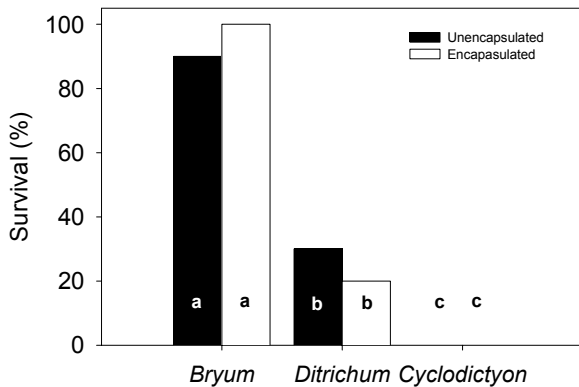
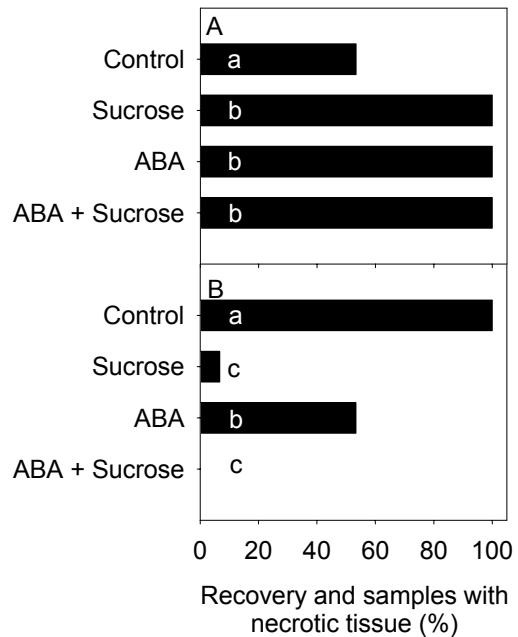


Figure 3: Effect of pretreatment medium on percentage A) recovery of protonemata and B) samples with evident necrotic tissue of *Ditrichum cornubicum*, after rapid dehydration to 0.2 g H₂O g⁻¹ dw and 20 h storage in liquid nitrogen. Pretreatment with sucrose and/or ABA afforded protonemata high levels of protection during cryopreservation. Sucrose combined with ABA was the most effective pretreatment with reduced presence of necrotic tissues and the rapid recovery of growth of protonemata once thawed. Bars with the same letter are not significantly different (Chi-squared test), n=15 (Burch & Wilkinson 2002).

The project is of wider interest to the scientific communities. Material of *D. cornubicum* has been sent to Western Australia as part of cryo-exchange research. Posters have been presented at the 3rd Planta Europa Conference and 4th ECCB Conference, both held in Prague, 2001 (Ramsay & Burch 2001); the Science for Plant Conservation Conference, Dublin, 2002; the ABLs AGM, 2002 and the BBS AGM, Edinburgh, 2002.

Once protocols have been established for the sterilisation, culture and cryopreservation of bryophytes, reintroduction trials can begin. The first candidate for reintroduction is *Orthodontium gracile*. Material is being bulked up from various sites around the UK. Molecular studies are being undertaken at Kew to identify any inter-population genetic variation. Using cultured *O. gracile* material we also hope to learn more about its interaction with the introduced *O. lineare* in a partnership with Kew and Queen Mary University, London. We hope to broaden

the scope of the project and assist other countries to meet their conservation goals. The techniques developed have



the potential to be applied to endangered species in Europe and elsewhere.

References.

- Burch, J. & Wilkinson, T. (2002) Cryopreservation of protonemata of *Ditrichum cornubicum* (Paton) comparing the effectiveness of four cryoprotectant pretreatments. *CryoLetters* 23, 197-208.
- Burch, J. (In Press) Desiccation tolerant mosses may not require encapsulation and pretreatment to survive cryopreservation. *The Bryologist*.
- Burch, J. (In Press). How do gelling agent and sucrose affect the growth of bryophytes? *Botanic Gardens Micropropagation News*.
- Murashige, T. & F. Skoog (1962) A revised medium for rapid growth and bioassays with tobacco tissue cultures. *Physiologia Plantarum* 15: 473-497
- Ramsay, M. & Burch, J. (2001) *Ex situ* techniques in support of UK bryophyte conservation. *Novit. Bot. Univ. Carol. Praha* 15, 27-33.

CORRECTION

The publication of the letter of J. Futschig to R. Grolle, which appeared in *The Bryological Times* 12 (1983), was not a "planned indiscretion" (Frahm 2002) but was authorized in written form by J. Futschig (fide R. Grolle in litt.).

Ref.: J.-P. Frahm, The only actual records of *Notothylas orbicularis* in Europe. *The Bryological Times* 107: 17. 2002.

Rare liverwort turns up as aquarium plant: request for information

The rare thalloid Asiatic liverwort *Monosolenium tenerum* (*Marchantiales*: family *Monosoleniaceae*) has recently been introduced as a tropical aquarium plant in Germany (Gradstein et al. in press). The species is being sold under the name "*Pellia endiviifolia*" but is readily distinguished from the latter, when sterile, by its papillose rhizoids, ventral scales and the presence of numerous ocelli in the epidermis (easily visible with the hand lens as grayish-white dots). *Monosolenium* lacks air chambers and pores characteristic of *Marchantiales* and this is probably the reason for it being confused with *Pellia*.

Monosolenium tenerum produces attractive glossy olive-green mats on solid surfaces in the aquarium; in addition, the species can be cultivated emerged on moist earth or rock. In the tropical greenhouses of the Botanical Garden of Göttingen, thalli of *Monosolenium* grow very well on flower pots and on rock at a waterfall. Reproductive organs (gametangiophores) are only produced in emerged plants, which shows that *Monosolenium* is not an aquatic species.

Monosolenium tenerum has been reported from greenhouses in Europe and North America in the early 20th century (Bot. Garden München, Goebel 1910; California, Campbell 1923) but I am not aware of any more recent reports of the species as a greenhouse plant. Neither do I know of any records from aquaria. Kodama (1970) reported the occurrence of *Monosolenium tenerum* on eutrophic, man-made substrates in Central Japan but recently the species seems to be declining there (see Schuster, Hep. Anth. N. Am. Vol. 6, 1992).

Does anyone have further information on the occurrence of *Monosolenium* in greenhouses, aquaria or other artificial habitats? Please write to The Bryological Times or to the author.

Reference: S.R. Gradstein, E. Reiner-Drehwald & H Mut in press: Über die Identität der neuen Aquariumpflanze "*Pellia endiviifolia*". - Aqua Planta.

Rob Gradstein: email: sgradst@gwdg.de

IN FOCUS

News from Australasia

The very successful 18th John Child Bryophyte Workshop has recently been held in the South Island of New Zealand. A full report will appear in the next issue of the Bryological Times and also in the next issue of the Australasian Bryological Newsletter. No sooner has one completed and we have news of another.

The 19th John Child Bryophyte Workshop.

This workshop will be held in the Hunua Ranges, 50 km SE of Auckland City. Transport from Auckland will be arranged. The Hunua Ranges rise to 688 m and are a water catchment area for Auckland City. Major vegetation types are podocarp/broadleaf forest, with some kauri (*Agathis australis*), and small areas dominated by hard beech (*Nothofagus truncata*). There are also areas of second-growth forest dominated by kanuka (*Kunzea ericoides*). In addition it is planned to make an excursion to swamp-land to the south, in the Waikato district. All levels of expertise welcome, including beginners.

To be placed on the list to receive the first circular, which will contain details of the dates, or for further enquiries, please contact: Mei Nee Lee, Botany Department, Auckland Museum, Private Bag 92018, Auckland. NEW ZEALAND (phone: 09 309 0443 ext 86).

E.email: mnlee@akmuseum.org.nz
mnlee@akmuseum.org.nz

Also coming up in 2003 is an Exhibition of Bryophyte Illustration to be held in conjunction with the 150th anniversary of the founding of the National Herbarium of Victoria (MEL). The exhibition will run from 20 September until 12 October 2003. This exhibition aims to stimulate the production of new works and an interest in this frequently overlooked group of plants, which play such an important role in the ecology of both forests and arid zones in Australia.

150th Anniversary of the founding of the National Herbarium of Victoria (MEL)

A special conference to celebrate the 150th Anniversary of the founding of the National Herbarium of Victoria (MEL) a joint conference of the Australian Systematic Botany Society and the Australasian Mycological Society with the 7th Australasian Bryophyte Workshop and the Orchid Conservation Forum II. The conference will be held at the University of Melbourne from 29 September until 03 October 2003. For further information, please contact: Conference Management, The University of Melbourne.

Internet:
<http://www.conferences.unimelb.edu.au/150years>.
Email: bhewitt@unimelb.edu.au.

Immediately following the 150 Years Conference; the 7th Australasian Bryophyte Workshop will be held at Mt. Baw Baw, in an alpine area east of Melbourne, from 4 to 9 October 2003, please contact Dr. Pina Milne (pina.milne@rbg.vic.gov.au).

Recently, a prelude to the long-awaited Bryophyte Flora of Australia appeared, with the publication of the "Key to the genera of Australian mosses" produced by Bill Buck, Dale Vitt and Bill Malcolm. Hot off the press is the update to the "Catalogue of Australian Mosses" by the late Heinar Streimann and Niels Klazenga. For details of ordering, please contact Patrick McCarthy (patrick.mccarthy@ea.gov.au).

News of personnel:

Recently, **Pep Turner** joined the Australian Antarctic Division to work with Rod Seppelt on subantarctic and Antarctic bryophytes. Pep is also about to submit her Doctoral Thesis to the Department of Geography and Environmental Science at the University of Tasmania. The thesis has concentrated on a comparison of the bryofloras of old growth and regrowth forests following harvesting. She has been working under the supervision of Emma Pharo, who formerly held a post-doctoral position at the University of Alberta with Dale Vitt. **Niels Klazenga**, whose revisionary studies of *Dicranoloma* in Australasia

have recently been submitted for publication, is continuing to work on Flora of Australia related projects at MEL. **Jane Wasley** is continuing her studies on the ecophysiology of Antarctic mosses under the guidance of Sharon Robinson and is about to submit her doctoral thesis to the University of Wollongong. In January 2003, **Alison Downing**, a senior technician in Biological Sciences at Macquarie University in Sydney, will take a well-earned retirement from her many duties at the University, but will continue at the University, managing the herbarium and carrying out research on Pottiaceae and karst landscape bryophytes. **Pina Milne** is putting final touches to a number of small, primarily tropical and subtropical moss families for the Flora of Australia, the first moss volume of which should appear in late 2003. In September 2002, **Hironori Deguchi** visited Tasmania to collect samples of *Wijkia extenuata* and other bryophytes for molecular and morphological analyses. In New Zealand, **Allan Fife** is still actively working towards completion of a revision of the New Zealand Moss Flora. **David Glenn** maintains his interest in hepatics while concentrating on completing his doctoral studies on New Zealand Gentianaceae. **John Braggins** retired from the University of Auckland and is now able to devote his full attention to hepatic studies. Further details of personnel movements and activities will appear in subsequent contributions.

Rod Seppelt. E-mail: Rod.Seppelt@aad.gov.au

News from Germany

Computerization of the bryophyte collections of the herbaria of Göttingen (GOET) and Jena (JE) in the framework of GBIF-Germany

The university herbaria of Göttingen (GOET) and Jena (JE) have received a 2-year grant from the German branch of the Global Biodiversity Information Facility (GBIF) for INTERNET-computerization of part of their bryophyte collections. GBIF is an international organization established in 2001 aiming at electronic retrieval of biological collections and names of biological organisms worldwide. Funds are made available by the member states of the organization. Germany is one of the founding members of GBIF and is committed to make a substantial contribution to the goals of the organization (see www.gbif.de/).

The planned activities in Göttingen in the framework of GBIF include INTERNET-computerization of the neotropical collections of bryophytes and of the bryophyte types. The Göttinger neotropical bryophyte holdings (currently ca. 40.000 specimens) are among the largest worldwide and are a key reference to recent taxonomic and ecological studies in the region. To optimize information on

these collections a database with taxonomic and geographical search options is being prepared. The bryophyte types (ca. 1.200) include many historical ones. About half of these are already included in the comprehensive INTERNET-databank of plant type collections of GOET (see www.gwdg.de/~sysbot). With the support of GBIF, electronic retrieval of the bryophyte types of the herbarium Göttingen is being completed.

With about 3 million specimens and 30-40.000 types the Haussknecht Herbarium (JE) is the richest herbarium of Germany. The planned activities in JE include the complete computerization of the Herzog types (ca. 3.600 specimens), which are among the most important type collection of JE and the most frequently requested on loan. By documenting the specimens in the INTERNET, information on the Herzog types and loan correspondence on these specimens will be optimized.

Rob Gradstein: email: sgradst@gwdg.de

Nees Institute for Biodiversity of Plants

It is, perhaps, not so often that an institute is named after a bryologist. At the University of Bonn, the department of systematics and biodiversity within the botanical institute has been raised to the rank of an institute. Following recent trends, it was named after a botanist. The choice was to name the institute after Christian Gottfried Daniel Nees von Esenbeck (1776-1858). Nees was the first professor of Botany at Bonn university (from 1818-1828) and the founder of the botanical garden in Bonn. Nees described

hundreds of bryophyte species (predominantly hepatics), more than six thousand phanerogam species and established 25 genera of hepatics. A biography in English of this (in several respects) extraordinary man was published by me in the *Bryological Times* (Frahm 1996).

Frahm, J.-P. 1996. Biographies of German Bryologists. 1. Nees von Esenbeck, Christian Gottfried Daniel (1776-1858). *Bryol.Times* 86: 2-3.

Some of Geheeb's moss pictures rediscovered

It is known that Adalbert Geheeb (1842-1909) prepared "moss pictures" - landscapes composed of mosses, which were glued together (Frahm & Eggers 2001). Geheeb began these at the age of 23, when he had just finished his pharmacy exam and was working for 9 months in Pirna (near Dresden) prior to taking over the pharmacy of his late father. In Dresden, at the invitation of the botanist Reichenbach, he enthusiastically agreed to a series of lectures on bryology, during which he presented his moss pictures. During his life, he evidently created about 600 of these, mostly in a small format (18 x 24 cm) but with some larger (50 x 70 cm) pieces. Some of these pictures were even displayed at the 1898 world exhibition in Paris. (At the same exhibition, pictures of another bryologist were presented: Fleischer's oil paintings from Java).

Up till now it has not been known if or where his pictures survived. The general opinion was that they were destroyed in 1943 with the rest of the Botanical Museum in Berlin where his herbarium was kept.

In November 2002, local botanists from the Rhön Mountains, where Geheeb was born and lived for many years, arranged a meeting to commemorate his achievements as a famous scientist of the region. During this meeting, many items from Geheeb, such as letters, herbarium specimens and photographs, were shown along with three of the moss pictures that were in the possession of a local

museum in Geisa, Geheeb's birthplace. A few more of these pictures are in Jena in the Haeckel Museum, and but these were not loaned to the Geisa Museum during this workshop. Haeckel, the famous zoologist (e.g. "Haeckels law), was a friend of Geheeb. He was apparently presented with several of these pictures and used one of these in his famous book "Kunstformen der Natur". Geheeb apparently made these pictures predominantly from mosses (he was mainly a muscologist), possibly accounting for the fact that the arrangement of liverworts in this magnificent book is not from Geheeb.

In addition, there were 60 colour photographs of moss pictures in the estate of Paul Geheeb, one of Adalbert's sons, who died in 1960 in Switzerland. It is not known where the originals are, possibly in private collections.

To give an impression of these unique moss pictures, one from the museum in Geisa is reproduced here. Details of Geheeb's life, a man who devoted himself to bryology (at cost of his family and first wife) but ended in a lunatic asylum, are found in Frahm & Eggers (2001).

Frahm, J.-P., Eggers, J. 2001. *Lexikon deutschsprachiger Bryologen*. 675 pp. Hamburg. Source: Jan-Peter Frahm. E-mail: frahm@uni-bonn.de

News from Belgium

Biological field station of Mont Rigi (Université de Liège) closed down.

Following the decision of the Administration Council of Université de Liège, the Field Station at Mont-Rigi (Hautes Fagnes), was definitively closed at the end of 2002. Many of us have visited this excellent research facility. It is a pity, and a dramatic situation for many of us still actively working in this region, for students preparing their MSc or PhD degrees and for so many other researchers. Despite international, national, regional and local protest, the decision was maintained. The rich bryological

herbarium LGHF (ca. 20.000 specimens) will be now integrated in LG, but it will take at least one year before it will be again accessible for loans. For official loan requests or exchanges, send your mail to: The curator of the bryological herbarium, University of Liège, Département Sciences de la Vie/ Life Sciences Department, Bât. B22 Sart-Tilman, B-4000 Liège, Belgium.
Prof. Dr. Schumacker: 620 Becco, B-4910 Theux, Belgium.

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Editors

Geert Raeymaekers, Ecosystems LTD, Generaal Wahislaan 21, B-1030 Brussels, Belgium. FAX + 32 2 646 84 66 or E-mail: Geert.Raeymaekers@ecosystems.be

Terry Hedderson, Botany Department, University of Cape Town, Private Bag, 7701 Rondebosch, South Africa. FAX: + 27 021 650 4041. E-mail: thedders@egs.uct.ac.za

Regional Editors

N-America: René Belland, Devonian Botanical Garden, University of Alberta, Edmonton, AB T6G 2E1, Canada . E-mail: rene.belland@ualberta.ca

Latin-America: Inès Sastre-De Jesus, Dept. Of Biology, University of Puerto Rico, P.O. Box 5000, Mayaguez, Puerto Rico; 00681-5000.

E-mail: l_sastre@rumac.upr.clu.edu

C & E Asia: Cao Tong, College of Life and Environmental Science, Shanghai Teachers University, Shanghai 200234; Email: CT1946@263.net.cn

SE Asia: Benito Tan, Department of Biological Sciences, National University of Singapore, Singapore 119260 Email: dbsbct@nus.edu.sg

Australia and Oceania: Rod Seppelt, Australian Antarctic Division, Kingston, Tasmania 7050 Australia. E-mail: Rod.Seppelt@aad.gov.au

Column Editors

Conservation Column: Tomas Hallingback, Swedish Species Information Centre, Swedish University of Agricultural Sciences, P.O. Box 7007, SE-750 07 Uppsala, Sweden, Fax: +46 18 67 34 80. E-mail: Tomas.Hallingback@ArtData.slu.se

Literature Column: Johannes Enroth, Dept. Ecol. & System., P.O. Box 7, FIN-0014 University of Helsinki, Finland, Fax: + 358 9 191 8656. E-mail: Johannes.enroth@helsinki.fi

Student Profiles: position open

Theses in Bryology: William B. Buck, Institute of Systematic Botany, NY Botanical Garden, Bronx, NY 10458-5126, U.S.A. E-mail: bbuck@nybg.org .

Tropical Bryology Column: Tamás Pócs, Eszterházy Teacher's College, Dept. of Botany, Eger, Pf. 43, H—3301, Hungary. E-mail: colura@ektf.hu

Production

Geert Raeymaekers, Ecosystems LTD, Brussels

UPCOMING MEETINGS

2003

April 10-15: Spring field Meeting of the British Bryological Society: Norfolk/Suffolk (East Anglia). Contact the local secretary, Richard Fisk, 1 Paradise Row, Ringsfield, Beccles, Suffolk, NR34 8LQ. Tel. 01502 714968; email: richardjfisk@onetel.net.uk. For more information: website: <http://www.rbge.org.uk/bbs/bbs.htm>

July 7-14: Summer field Meeting of the British Bryological Society: Kindrogan, Perthshire. This meeting will be based at the Scottish Field Studies Centre at Kindrogan, probably with a workshop on *Schistidium* by Hans Blom. Contact the local secretary, Martin Robinson: e-mail: mcr@dalreoch.fsnet.co.uk. See website: <http://www.rbge.org.uk/bbs/bbs.htm>

July 26-31: Annual meeting of the American Bryological and Lichenological Society together with the annual meeting of the Botanical Society of America in Mobile, Alabama. The ABLs is soliciting proposals for symposia to be held at the meeting. Please consult the Botany 2003 web site (<http://www.botany2003.org>).

August 17-23. Fourth International Symbiosis Society Congress. David Richardson announces that the Fourth International Symbiosis Society Congress will be held between at Saint-Mary's University, Halifax, Nova Scotia, Canada. Contact: D. Richardson Tel.: 902-420-5493, Fax: 902-420-5261, e-mail david.Richardson@stmarys.ca Website: <http://people.bu.edu/dzook/>

2003

January 09-17. IAB World Conference on Bryology and Conservaton Workshop. Merida, Venezuela. The Conference is planned for 12-17 January. The pre-conference workshop "The Bryophyte Conservation – Current Status and Future Work" will take place on 9 and 10 January. For information, contact. Prof. Dra Yelitza Leon. Email: yeltleon@ula.ve

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 places 18-23 July 2005 in Vienna. As usual there will be bryological symposia, a business meeting of the IAB, a congress dinner for the participating bryologists and a bryological fieldtrip. For information,, contact Wolfgang Wanek. 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, email: haji@biology.um.edu.