

The BRYOLOGICAL TIMES

Newsletter of the International Association of Bryologists

ISSN 0253-4738

August, 1993

No. 74

The problem of stability in bryophyte nomenclature.

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Ecology Column. Send contributions to the column editor: Janice M. Glime, Department of Biological Sciences, Michigan Technological University, Houghton, Michigan 49931, U.S.A.

In The Bryological Times no. 68/69 (1992) a discussion was started by Janice Glime concerning the problems with changing names of bryophytes (the same problem exists with other organisms as well). That is, in the first place the problems perceived, I presume, by non-taxonomists.

In a comment by George Scott in the same issue of The Bryological Times, the problems are divided into two groups, those depending on the nomenclature rules and those related to taxonomic research. I will address the second part of the problem, giving a strongly biased taxonomists view.

To my mind, the main aim of taxonomic research is to add to the understanding of the biological world, and then especially the phylogeny of the different organisms that are known. There are not, and should not be, considerations of any other kind than the scientific ones when trying to reconstruct the relationships between the taxa you work with. The groups of taxa you find, must then be named in a way which reflects their phylogenetic relationships. Neither the grouping nor the naming (which is a way of stating your theory of the relationships between the taxa) can be made with the main purpose of conserving nomenclature. Anyone arguing against this view should consider what

would happen if this should not be the general way of reasoning in science. How many ecologists or physiologists would like to work with the aim (restriction) of trying to formulate their theories in a way which does not violate earlier perceptions of the world. This would be a sure way to conserve old ideas and would certainly not benefit the development of these sciences. The same is of course also valid for the science of taxonomy. It is just as impossible for taxonomy as for any other science to progress without developing theories (partly reflected in a changing nomenclature). A quite different matter is the question of bad and good taxonomic science, which I think George Scott hints at in the last two paragraphs in his comment, but that is a general problem in all sciences. The "problem" with taxonomy is that other disciplines in biology are, at least to some degree, dependent on the nomenclature of the organisms they work with. If nothing else, the problems stated by Janice Glime in trying to find old references regarding a species, do exist. On the other hand taxonomists are also dependent on the other sciences in their work, while all kinds of characters should ideally be considered in good taxonomy, not only morphological ones. I would be more than happy if these sciences did

not change too fast, but I would not dream of suggesting that they should adapt to my needs. Taxonomy has finally, during the last decades or so, due to theoretical developments, begun to work in a more scientific way than earlier, so that testable hypotheses are nowadays produced to a large degree, rather than revealed truth. This has lead to new ideas about the relationships between different bryophyte taxa and will probably lead to even more radically new theories about the relationships between diffe-

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rent bryophyte taxa in the future. Unfortunately a lot of changes in the nomenclature follows from these new insights, but since the predictability of the systems probably increases as taxonomic research continues, this drawback may be well compensated for.

So, let's turn to the problems faced by the users of the results of the taxonomists' research. If we disregard the problems which are due to bad science, which need not be discussed in this context, the only viable way to solve this seems to be some kind of *Index Muscorum* and *Index Hepaticorum* with all names having cross-references to all their (possible) synonyms. I would suggest that in such an index, no nomenclature should be selected as "the correct one", leaving this choice to the users judgement. Since checklists will hardly become redundant even if an index of the kind suggested should be produced, the user can follow either his/her own opinion or a checklist in which name to put on a species. In these days of computers, it should be possible to have an annually (or bi-annually, or three-annually) updated index available for everyone interested in bryophytes. It would be preferable to have this index computer-based, since this allows faster and more efficient search than if it is printed.

Column Editor's Reply:

Thank you Dr. Hedenäs for accepting my challenge of "Stability or Pedagogy" in The Bryological Times Ecology Column. I agree with your point of view as stated. I would not want to see a species remain in an incorrect genus when it clearly belongs in another already existing genus. However, I am uncomfortable with making new genera still in the same family and closely related when they might just as well serve their purpose as subgenera. In other words, I dislike splitting of long established taxa into

new closely related ones.

I fully support your idea to provide a computer list of all synonyms, including very old ones, and I would further hope that this cross-referenced index would be available through a computer network so that persons doing research where there is no bryologist, and therefore most likely no printed copy of *Index Muscorum*, would have ready access to it as well. I would also hope that someone would be willing to take on the challenge of keeping it updated with new publications. This is an activity I strongly urge the IAB to support. It would be a useful project for which to pursue shared international funding and I believe it might be an activity for which we could be on-line before the vascular folks. That could go along way to improving our image!

I received some comfort about my position on re-naming in discovering that some of my American colleagues who are bryophyte systematists were resisting some of the same generic splits as I, and I hope some of them will be moved to respond to this column as well.

Janice M. Glime

Collections of living bryophytes

I have kept a collection of live mosses and hepatics here since the 1960s. The collection, as it existed in 1991, was described in my "Moss Grower's Handbook", but there have been substantial changes since then. There are now many more "mounted" cultures (growing on a very thin layer of substrate), and hepatics, especially oceanic ones, are better represented, and in better condition. The priority remains, as always, to grow the plants. I do not wish to be distracted from this by any other project, though such a collection can obviously provide live material (usually in small amounts) or opportunities for a lot of research. Anyone wanting material of almost any British species is welcome to contact me.

The strangest thing is that this collection remains apparently unique in its size and in the variety of bryophytes being grown. It is disappointing that after so many years so few other bryologists yet share this interest.

For comparison I also have a collection of similar size, of cacti, succulents and house plants. In Reading alone, I know seven live collections of cacti at least as large and successful as my own, (there may be others) and in Britain as a whole there are probably 5,000-10,000 substantial collections of cacti and succulents, most of them grown for pleasure and interest, with no scientific pretensions. It would be thought bizarre and outrageous for the discoverer of a new species of cactus to keep only a herbarium specimen, and not a live plant. Anyone ignorant of bryology would deduce that live bryophytes are over 1,000 times more difficult to keep than cacti, or 1,000 times less interesting.

It seems likely that some who have kept mosses or hepatics alive do not publicise them. In 1971-73 I collected details of other living collections which were published in Bulletin no. 24 of the British Bryological Society, in 1974. That list is probably now completely out of date. I would like again to hear from anyone maintaining live bryophytes, and to compile another guide to living collections, to be available to IAB members, and to be regularly updated.

It would not be very practical to offer a complete list of my own cultures. I can offer lists for particular genera, comments on any plant I have grown, or annotated cultural checklists (British or Southern Hemisphere) to anyone sending stamps or return postage vouchers. I would also be pleased to consider acquiring live material of non-British spp. of especial interest, on a selective basis.

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Present Research on Population Biology of Bryophytes in the Nordic Countries

by Lars Söderström & Sanna Laaka

Ecology Column. Send contributions to the column editor: Janice M. Glime, Department of Biological Sciences, Michigan Technological University, Houghton, Michigan 49931, U.S.A.

Bryophytes have always played an important role in vegetation research in the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden), especially in mire systems and in forest systems. Traditionally, bryophytes have been used as indicator species and considered to be an important part in vegetation analysis. This is also important today but in recent years, also population and community ecology studies on bryophytes have resulted.

We would like to present bryoecological projects in the Nordic countries dealing with population biology and conservation biology. We are only dealing with projects that we think are of direct interest for bryology and if any project is missing, it is either because we consider it to be of only minor interest for bryology (although of major interest as an ecological project) or that we do not know about it. There are also several persons studying *Sphagnum* ecology, e.g. production and nutrient ecology. This research is in many cases intergrading

towards peatland ecology. We are not presenting those projects since we think that people involved in them will do that much better. Also some ecophysiological projects are disregarded for this reason.

Theoretical and basic research on population biology is done by several groups in the Nordic Countries, mostly concentrating on dynamic communities. This is often also combined with more applied conservation aspects, especially on boreal forest bryophytes.

Bryophyte communities in boreal forests

A lot of the bryoecological research in the Nordic countries is done within forest systems and especially with species on decaying wood. In Norway, Tommy Prestø (Trondheim) is studying bryophyte communities on decaying logs in cooperation with Arne A. Frisvoll and Kjell I. Flatberg. They are focusing on threatened species in different types of forest vegetation and are trying to identify the critical parameters for them. Lars Söderström (Trondheim, Norway) has investigated the bryophyte and lichen flora on decaying logs in northern Sweden and related the occurrences to decay stage and other parameters of rotting wood. Sanna Laaka (Helsinki, Finland) is studying the structure and diversity of epixylic bryophyte communities. She is also, in cooperation with some mycologists, studying the effects of the decay process on epixylic hepatics. Bengt Gunnar Jonsson (Umeå, Sweden) also works in forest systems and studies the role of disturbance on the forest floor communities. He has shown that patches disturbed by uprooted trees

have a much higher number of species than the surrounding forest floor (Jonsson & Esseen 1990). Those uprooted patches are rapidly recolonized and Jonsson has started to study the recolonization process by experimentally disturbing the forest floor.

Modern silvicultural methods have a great impact on boreal forest communities, including bryophyte communities. Therefore, several projects investigate the effects of forestry on bryophytes to survive in the managed landscape today. In Finland, Sanna Laaka has made a survey of threatened forest bryophytes (Laaka 1992) and she is studying the requirements of some of the species. She is also comparing the bryophyte diversity and composition in natural and managed forests in southern Finland. Tommy Prestø is trying to identify the critical parameters that are essential for the survival of threatened bryophytes in central Norway. Important here is analysis of the effects of fragmentation, i.e. the decrease and isolation of populations, and the changes in habitat quality as a result of modern forestry. Lars Söderström and Bengt Gunnar Jonsson are also studying the possibility for species to survive in a region with localities heavily fragmented. They are trying to explore the possibility to survive in managed forests and to identify species demanding old-growth forests. Substrate availability and moisture regimes seem to be critical (Söderström 1989, Söderström & Jonsson 1992). Most of the work is, however, on a more theoretical level of metapopulation studies.

Another environmental threat to bryophytes is acid precipitation. Kjell I. Flatberg and Arne A. Frisvoll

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(Trondheim, Norway) are leading a project studying the effects on populations of forests bryophytes. They have noted considerable damages on the bryophytes in heavily affected areas, and the damages seems to appear in irregular periods. A master student, **Anne E. Langaas** (Trondheim, Norway) is studying the differences in annual growth rate and reproduction success of *Polytrichastrum formosum* in two areas with different acidification levels. It is also noted that in the area heavily affected by acid rain, *Dicranum majus* no longer produce capsules. Tufts with capsules, transplanted from less heavily affected areas, continue to produce capsules while the tufts from the affected areas do not produce capsules even when moved to less affected areas. A master student, **Ida M. Sagmo-Solli** (Trondheim, Norway), has started to study this problem. It is assumed that a single (or a few) very acid events has wiped out all dwarf males of the population. Therefore, the development and phenology of gametangia, and especially dwarf males, is studied.

Processes in bryophyte communities and populations

The recent metapopulation hypothesis in population ecology has attracted bryologists in Fennoscandia. **Krister Karttunen** (Helsinki, Finland) studies diversity, species richness, extinction, and colonization of bryophyte-dominated communities, especially in aquatic habitats and on cultivated fields. **Risto Virtanen** (Oulu, Finland) is studying community ecology of stream bryophytes in Koillismaa (Kuusamo), northern Finland, together with **Timo Muotka**, a zoologist from Oulu. One aim is to study the bryophyte strategies in relation to the disturbance regimes (flow rate and water level fluctuation) along the rivers. Virtanen is also working in a group (with **Minna Mäntylä** and **Tauno Ulvinen**) on patterns of species distribution, using bryophytes on lime boulders in Kiiminki, northern Finland, as model communities.

Lars Söderström is studying the possibility for species to survive in habitats which have decreased in area and been fragmented into several small pieces. The possibility for a regional survival in areas with many small habitat fragments is thus dependent on the recolonization of localities, i.e. on the dispersal ability. The more often a species faces local extinction, the more dependent is it on dispersal. Dispersal contains several steps: diaspore production, transport to new sites, and establishment, and all steps are studied. An analysis by Herben et al. (1990) shows that transport and establishment is most crucial. Studies on spore transport meets a lot of practical problems. How can one record the movement of a small spore from a capsule to a new locality several km away? It is known that spores are present in the atmosphere and that they are transported over long distances. But, how many are transported as long as or longer than the average distance between suitable localities? One attempt to approach it is to develop a chain of circumstantial evidence. First, the production of diaspores can be studied. Secondly, the number of spores deposited close to the mother patch can be calculated (Söderström & Jonsson 1990). The number of spores produced minus the number deposited in the immediate vicinity, gives a figure on the number of spores involved in the distance dispersal at the beginning. Experiments on this are going on. Another way to study transport may be to study the deposition rate at the locality. To calculate the input rate, one must be able to identify the species that the spores belong to, and one must know the sources of them (at least the nearest possible sources). Experimentation on establishment ability (i.e. the proportion of the spores that have established after reaching a suitable habitat) is easier. Sowing experiments in different concentrations in the field will give figures on that. Herben et al. (1990) noted that the survival of a

Dissertations

Dissertation in Umeå

Bent Gunnar Jonsson, University of Umeå, has successfully defended his thesis entitled "Treefall disturbance, succession, and diversity in boreal forest floor vegetation". The thesis deals with the role of uprooting trees for species richness in boreal spruce forest and the succession in the disturbed patches where bryophytes are important [L.S.]

Dissertations in Kiev

During 1992-1993 the bryologists of Ukraine have risen their qualification and several theses were defended at the Kiev - N. G. Kholodny institute of Botany, Academy of Sciences of Ukraine.

In April 1992 Mikhail F. Boiko (the chair of botany, Kherson pedagogical Institute) successfully defended his doctor thesis and got a scientific rank of professor of botany. The title of the thesis was: "Bryoflora of the steppe zone of the East-European plain and Precaucases.

In September 1992 Valentin A. Boljukh (Department of Cryptogams, N. G. Kholodny institute of Botany, Academy of Sciences of Ukraine) defended his thesis. The title was "The bryoflora of the central part of Podolia and its analysis".

In February 1993 Svitlana V. Hapon (the chair of botany, Poltava pedagogical Institute) defended her thesis "Bryophytes of Leftbank Forest-steppe of Ukraine".

Professor M. F. Boiko (chair of botany), Kherson pedagogical Institute, 325 000 Kherson, Ukraine

species is improved if the establishment ability varies between years. Experiments on this have been started but there are yet no results.

Sanna Laaka is also studying bryophytes on decaying logs, especially hepatics. Her aim is to study distribution patterns, population dynamics,

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and reproduction ecology of bryophytes on temporary substrates. In cooperation with some Finnish mycologists she has started studies on the effects of the decay process of wood on the epixylic hepatic species and on the structure of epixylic communities. She has also started transplantation experiments moving logs with epixylic communities into different kinds of managed forests.

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Portable mini - dissecting microscope

Studying collections under a dissecting microscope during a field trip can provide great advantages. Especially for hepaticologists it is useful to look for details such as antheridia to determine the sex of the plant in the field, while the plants are still fresh.

Normal dissecting microscopes are quite heavy to be carried in the field, and even small models (course models) which are not as heavy still take up quite a lot of space. For more than ten years, ZEISS in Germany has offered the ideal solution. It consists of a light weight small binocular (10x20 or 8x20) combined with a small stand, to which the binocular is fixed. The binocular can be used as normal binocular during a fieldtrip, e.g. for bird-watching. Because of its small size (10 cm) and light weight (200 g), it fits even into a shirt-pocket. It is unnecessary to add that it is of excellent quality. The stand is light weight also, consisting of plastic and aluminium, and allows the binocular to be focussed.

The only disadvantage is the price: The binocular is priced in Germany at DM 750 (ca. US\$460) and the stand at DM 590 (ca. US \$ 360), which makes it very expensive for private users but can perhaps be purchased for an institute or for a project. There are cheaper alternatives, which are, however, not as ideal. The company Novodirect in Germany offers a 7x binocular of 500 g weight, to which a close up lens can be mounted so that it can be used on a stand as a dissecting microscope (12x) with a total weight of 2.3 kg. The price for both is DM 940 (\$587).

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Gophering for botanical data

by Jan-Peter Frahm

Computer techniques column. Send contributions to the column editors: Jan-Peter Frahm, Universität Duisburg, Fachbereich 6, Botanik, D-47048 Duisburg, Germany, or Brian O'Shea, 141 Fawnbrake Avenue, London SE24 0BG, UK

For most readers, gophers are rodents. However, computer gophers are interactive client-server systems to evaluate data on mainframe computers. If data are stored on a mainframe, a computer user from any other part of the world has usually only been able to access the data by using the 'ftp' command, i.e. by transferring the entire file onto your own machine. If the foreign host permits, you log in with 'anonymous' as usercode and 'ftp' as password and directories and sub-directories can be displayed and texts or programs can be downloaded. However, text files cannot be displayed before downloading. There is, however, a need to read textfiles and to search for data before downloading, e.g. in bibliographies, type catalogues, herbarium catalogues etc.

To fulfill this requirement, some hosts have developed their own software solutions, e.g. SYSTAX for botanical purposes at the university of Ulm, Germany. SYSTAX can be reached through the telnet command (IP number is 134.60.65.1). It is menu driven and has database capabilities allowing e.g. queries on an SQL level. Anyone who is interested in testing SYSTAX may apply for a login and password from :
systax@spezbot.biologie.uni-ulm.de.

When used in this way, client-server programs must be programmed specifically for each use, and thus require some expertise. It would be much easier to have common programs for this purpose with a common standard.

Recently, various public domain programs have been developed for this purpose, called gophers. A gopher consist of a client and a server. The word gopher is derived from "go for" (data and information in a foreign

host) but implies digging in the data like a gopher. The client is started by the user, it accesses the server which provides the data to be evaluated. The usage is quite simple: the command "gopher huh.harvard.edu 70" starts the gopher client and accesses the Harvard university computer through a special port which is usually port 70. Harvard will then display a list of facilities, e.g. to read the last issues of "Flora Online", the "Bean bag", or to search for type specimens in the catalogue of the Gray Herbarium. In addition, files can also be downloaded. This is no more than bulletin board systems on PCs were already offering years ago, e.g. Taxacom by Richard Zander. But gophers allow this concept to be realized on a mainframe computer with enormous masses of data. Therefore the use of gopher programs has jumped from place 168 in the mainframe computer applications to place 16 in spring 1993.

All you need is a gopher client program. Gopher clients can be obtained free from the author, but since there are several software solutions of gopher programs it is rather complicated to install such a program and to adapt it to your mainframe, so it is best to ask the computer department of your university or the system operator of your host, who will give detailed instructions for use.

Many universities and other institutions have now installed gopher servers and therefore there is a enormous mass of data available. It ranges from the weather forecast for Texas, the weather map of Tasmania, directories of universities, etc. So far, the use for botanists is not overwhelming, but will surely increase within the near future. The best gopher for botanical information seems to be huh.harvard.

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New publications

Casas, C., Brugues, M., Cros, R. M. & Sérgio, C. 1992. *Cartografia de Briòfits. Península Ibèrica i les Illes Balears, Canàries, Açores i Madeira, Fascicle III: 101-150. [Bryophyte Cartography. Iberian Peninsula, Balearic and Canary Islands, Azores and Madeira, Fascicle III: 101-150]. Institut d'Estudis Catalans, Barcelona. Available from: Publicacions de l'Institut d'Estudis Catalans, Carrer del Carme, 47, E-08001 Barcelona, Spain. ISBN 84-7283-079-9. Price: Ptes. 7,500:-, incl. postage and package (The price of the earlier fascicles is also Ptes. 7,500:- each).*

This is the third fascicle in a series mapping the distribution of the bryophytes of the Iberian Peninsula, the Balearic Islands and Macaronesia (excluding the Cape Verde Islands). The style of this part is the same as in the previous one, and the quality of the printing is high. Among the fifty taxa mapped, the following could be mentioned: ten species of *Racomitrium* (*R. macounii* with two varieties), five species of *Thuidium* (*Abietinella abietina*, with two varieties is included in this genus), three *Pogonatum* species, two species of *Riccia*, two of *Scapania* and four of *Sphagnum* sect. *Sphagnum*. It is nice to see that new parts of this fundamental work appear at reasonable intervals. Anyone with a serious interest in the bryophytes of the geographical area treated will need a set of this work. [L.H.]

Correction: IAB member list

The list of IAB members on file is available from Jan-Peter Frahm, Universität Duisburg, Fachbereich 6, Botanik, D-47048 Duisburg, Germany, by sending him a blank 3.5" disk. The earlier information that it is available for the cost of a disk is not correct. The list of IAB members has also been distributed through BRYONET.

New column: News from the Herbaria

News about what happens at the herbaria is important to many researchers. From this issue onwards, Dr. A. R. Perry at the National Museums of Wales will take care of a new Bryological Times Column, "News from the Herbaria", with information about all kinds of changes occurring at bryophyte herbaria all over the world. Anyone having relevant information about developments, staffing, contents, etc. are welcome to send their contributions to the Column Editor, Dr. A. R. Perry, National Museum of Wales, Cardiff, CF1 3NP, Wales, United Kingdom.

E. W. Jones' Bryophyte Herbarium

News from the Herbaria. Send contributions to the column editor: A. R. Perry, Department of Botany, National Museum of Wales, Cardiff, CF1 3NP, Wales, United Kingdom

The African bryophyte herbarium of the late Eustace W. Jones, Kirlington, Oxford, England, was bequeathed in 1992 to the Royal Botanic Garden, Edinburgh (E). The collections comprised 57 Anthocerotae, 5948 Hepaticae and 277 Musci (a total of 7282 specimens) all named to species. In addition there are several hundred unsorted and unidentified packets (many named to genus). For African Hepaticae this is perhaps one of the most important collections ever assembled, including types of most taxa described in his series "African Hepatics" published between 1952 and 1992 in the *Transactions of the British Bryological Society* and *Journal of Bryology*. The collection is especially rich in Lejeuneaceae, one of his specialist areas of research. Many of the specimens, especially types, are duplicated in the herbarium of the Natural History Museum, London (BM). The collection

includes duplicates supplied by many other collectors of African Hepaticae, especially P. W. Richards and T. Pócs, and includes material from the Mascarene Islands.

His manuscript notes and annotated reprints relating to African Hepaticae have also come to Edinburgh. The herbarium has now been fully incorporated by Ms Jenny Wright and is available for study.

Dr Jones' British and European collections were bequeathed to the National Museum of Wales, Cardiff (NMW). The named collection comprises 21 Anthocerotae, 3962 Hepaticae and 5639 Musci (a total of 9622 specimens). In addition there are several hundred unsorted and unidentified specimens. The collection is rich in British and Irish specimens (especially from Oxfordshire, Berkshire, Cornwall, South Wales, Cumbria, the Carngorms and Kerry) but there is a wide spread of the collections throughout the British Isles. He made frequent excursions to Europe, often with Forestry students, and collected specimens in many different countries. France was visited most often with numerous collections from about 15 visits (1938-74). Switzerland is represented by collections from about six visits (1934-57). In addition there are collections from single visits to the following countries: Algeria (1953), Austria (1964), Belgium (1955), Corsica (1950), Iceland (1934), Italy (1968), Netherlands (1951), Portugal (1960), Spain (1933) and Sweden (1963).

Jones' own British and European collections are supplemented by many packets from correspondents such as A. C. Crundwell, P. W. Richards and E. C. Wallace.

The E. W. Jones herbarium at NMW is available for study.

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Gophering (cont'd from p. 6)

edu (155.187.10.12), offering access to the herbarium and arboretum collection catalogues, to directories of biologists (both with a search function), and even software. Programs, such as the Herbarium Curator Toolkit for the Macintosh, MVSP, Delta or Clinch can be downloaded just by clicking. Gopher. nhm.ic.ac.uk provides taxonomical data on 29,000 species of Scrophulariaceae. The National Science Foundation has a gopher, as has the Australian National Botanic Gardens. As yet there are no specific bryological data available, but it is planned to make the IBIS data at the university of Duisburg accessible by a gopher server.

**Obituary: Prof. Dr.
Vladimir J. Krajina**

Professor Vladimir Krajina died on May 31, 1993, at the age of 88, in Vancouver. Born on January 30, 1905 in Slavice near Trebic (now Czech Republic), he received his doctorate degree from Charles University in Prague in 1927. Dr. Krajina moved to the Department of Botany at the University of British Columbia in Vancouver in 1949 where he started as a Special Lecturer. He became Assistant Professor in 1951, Associate Professor in 1954 and Full Professor in 1958. He retired in 1973 but continued his scientific work.

Besides contributions in many other fields Vladimir J. Krajina published two new species of bryophytes in the Bryologist. The first was *Dicranella hutchinsonii* (Krajina, 1950) which was collected in a "cultivated forest near the university campus". This species has been reduced to a synonym of *Dicranella rufescens* (With.) Schimper, according to Lawton (1971). The second species was *Pellia columbiana* (Krajina 1951), which was collected in the "forest near the University of Columbia". Schuster (1981) gave this taxon the

status of a subspecies of *P. neesiana*, a view which he later (Schuster 1992) maintained.

References

- Krajina V. 1950: New species of the genus *Dicranella* from British Columbia - Bryologist 53: 153-159.
 Krajina V. & T.C. Brayshaw 1951: A new species of *Pellia* - Bryologist 54: 59-68.
 Lawton E. 1971: Moss Flora of the Pacific Northwest - Nichinan, Miyazaki 1971.
 Schuster R. 1981: Evolution and speciation in *Pellia*, with special reference to the *Pellia megaspora-endi-viifolia* complex (Metzgeriales), I. Taxonomy and distribution - J. Bryol. 11: 411-432.
 Schuster R. 1992: The Hepaticae and Anthocerotae of North America, Vol. V - Chicago.
 Gillis Een, Swedish Museum of Natural History, Dept of Cryptogamic Botany, Box 50007, S-104 05 Stockholm, Sweden

**Nordic Bryological
Society's Annual
meeting and Excursion
on Gotland**

The 1993 Annual Meeting and Excursion of the Nordic Bryological Society was arranged on Gotland 17-20 June. The bryophyte flora of the is relatively badly known. Most of the interesting species were found already during the 1800's by S. O. Lindberg and J. E. Zetterstedt and the later additions (until the 1980's) were made mainly by B. Pettersson.

The first day was mainly spent on the NW part of the island. In a swampy forest, the first new species for Gotland, *Plagiochila asplenoides*, was found. At the end of the day, a locality for *Trochobryum carniolicum*, was visited near Visby. The second day was spent on the southern end of the island (Hoburgen area) where we searched for *Pleurochaete squarrosa*, Only found by Zetterstedt in 1850's,

without result. During the third day we visited Thorsburgen where Zetterstedt found, among other things, *Loeskeobryum brevirostre*. This species was refound some years ago on the locality, but last year a large forest fire went over the area, leaving only small parts of the wall intact. We were still able to find many of the interesting species but no trace of *Loeskeobryum*. The last day was spent on the NE part of the island looking at shores, wet calcareous fens and alvar ground.

The annual meeting was held on the evening of the 19th. It accepted for the second time the new statutes and the new organisation around Lindbergia. This means that the reconstruction of the society continues. There have been some problems during the reconstruction period but both NBS and Lindbergia are now working. Vol. 17 of Lindbergia is distributed and vol. 18 is under production. From 1994 the dues for NBS and Lindbergia (vol. 19) will be collected together and in time for individual subscribers. The bill will be sent out around the end of this year/beginning of next. In the meantime, members who have not yet paid vol. 18 will get a bill for this within short. [LS]

**New computer
programs**

by Jan-Peter Frahm

Computer techniques column. Send contributions to the column editors: Jan-Peter Frahm, Universität Duisburg, Fachbereich 6, Botanik, D-47048 Duisburg, Germany, or Brian O'Shea, 141 Fawnbrake Avenue, London SE24 0BG, UK

VMAP V. 1.2 (shareware)

Displays world maps or part of them in various different projections (Mercator, Equiangular, Equidistant, Lambert etc.) in different designs (with political boundaries, islands, lakes, rivers). It is possible to add text and signatures, prints to laser or need-

le printer, and saves maps in different graphics formats.

CARTE.FON (J.-P. Frahm)

An ordinary ATM Courier font, in which the keys for 0-9 are replaced by special signatures for grid mapping (see example). The signatures can be used to express the different abundance of a species (different sizes) or different collecting periods (dots vs. circles). The data input within a database is simply made by pressing the numeric keys, the graphical output will show the signatures. The font includes additionally symbols for female, male and bisexual for indication of the sex of specimens on herbarium labels. Adobe Type Manager required.

FLORKART (Subal/May)

A Clipper compiled program for a German mapping project. For data input from field lists and herbarium specimens and outprint of postscript maps. In German and specifically designed for a German mapping project, it may not be of much use outside Germany but gives an idea of a possible software solution.

CLINCH (K.L. Fiala)

A compiled FORTRAN Program for cladistic interference. Reads a datamatrix prepared with a texteditor and writes cladogram to disk.

The programs can be downloaded from IBIS (134.91.4.5, Usercode and password can be obtained from hh216fr@unidui-uni-duisburg.de.) or ordered on disk.

The use of "cf." - a useless tradition ?

The use of the small abbreviation "cf." is widely accepted in taxonomy. This is usually applied when the identifier wishes to express that he feels unsure of the result of his identification. "*Bryum cf. elegans*" will mean that the specimen is similar to *B. elegans* but does not match this species totally. It may be an extreme expression or could even be a different tax-

on. Such a tentative determination makes sense, because the specimen can then be filed in the herbarium, and even if it is not this species, it is probably filed under a related species. If material is asked for loan for a monograph or revision, it will get into the hands of a specialist. The use of "cf." for this purpose has such a long tradition that hardly anybody will doubt it. But what does it really mean? For a long time I translated it myself as "cum falso", which means with doubt. This would be in accordance with the common usage of this abbreviation. This seems, however, not to be in accordance with dictionaries. According to German dictionaries, cf. is the abbreviation for Latin confer, which means compare! If cf. is used for a doubtful identifications, it doesn't make much sense to express this with "cf.". *Bryum cf. elegans* would say: *Bryum* compare with *elegans*. If I had named the specimen as *Bryum cf. elegans*, I would have al-

ready compared it with *B. elegans* and just for this reason I would be expressing the view that it does not fit exactly the circumscription of that species but might be something else. "Cf." in this original sense could be written on a collecting bag as a suggestion for the determination: compare with *elegans*. On a final herbarium label, this abbreviation is wrong. What else? The most straightforward solution would be to use a question mark: *Bryum ?elegans* to express the tentative character of the identification. If one is sure that it is *Bryum elegans* but an unusual expression, the addition of something like "fo." to the species name would suggest this. It would make more sense to use "cf." for bibliographic references, e.g. (cf. Smith 1990) would mean compare my statement with Smith, who will support this view.

Jan-Peter Frahm, Universität Duisburg, Fachbereich 6, Botanik, D-47048 Duisburg, Germany

DIARY (contd.)

September 4-9. International Symposium: Endangered Bryophytes II, together with the meeting of the European Committee of Conservation of Bryophytes. Zürich. For information contact: E. Urmi, Inst. für Systematische Botanik, Zollikerstr. 107, CH-8008 Zürich. Phone: (41)1/385.44.41. Fax: (41) 1 385 42 04.

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September 10-11. Excursion to Schonne (the Netherlands) with the Dutch Bryological and Lichenological Society to look at coastal dunes. Contact Dr. A. Aptroot (address see 11-12 Sept. 1993)

October 2-8. VI Congreso Latinoamericano de Botanica to be held at Mar del Plata, Argentina. Further information from Celina M. Matteri, Museo Arg. Cs. Nat. B. Rivadavia, Av Angel Gallardo 470, C.C. 220, 1405 Buenos Aires, Argentina. Fax: (54) 1 9824494.

1995

A symposium organized by the International Association of Lichenologists, dealing with foliicolous cryptogams is planned to take place in Hungary during spring or summer 1995. Anyone interested in further details should contact Edit Farkas, Institute of Ecology and Botany, Hungarian Academy of Sciences, Vácrátót, H-2163, Hungary (Fax: 36 27 60 110).
E-mail H7483FAR@ELLA.HU

COLOPHON

The Bryological Times, founded in 1980 by Stanley Wilson Greene (1928-1989), is a newsletter of the *International Association of Bryologists*. It is published in Edmonton (Canada) and distributed from Albany (USA), Canberra (Australia), Edmonton (Canada), Eger (Hungary), Geneva (Switzerland), Hiroshima (Japan), Moscow (Russia), Praha (Czech republic), St. Louis (USA) and Trondheim (Norway).

Items for publication in *The Bryological Times* are to be sent to the Editors (preferably LH), except for those for the regular columns, which may go direct to the column editors.

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DIARY

Send contributions to D. H. Vitt, University of Alberta, Department of Botany, Edmonton, Alberta, Canada T6G 2E9

1993

September 11-12. Excursion with the Dutch Bryological and Lichenological Society to Drente/Appelscha (the Netherlands). Inland dunes and heathlands. Contact the secretary of DBLS, Dr. A. Aptroot, G. v. d. Veenstr. 107, NL-3762 XK Soest, the Netherlands. All DBLS excursions are open for non-members.

September 17-19. Annual General Meeting and Symposium of BBS at Ripon. Special theme is 100th anniversary of the death of Richard Spruce, a 19th century bryologist who is known for his collections and studies in South America. Cost approximately £38 per day (full board). Further information from Mike Longman, 8 St. Quentin Rise, Bradway, Sheffield S17 4PR, U.K. Telephone 0742 368010.

September 21-24. X National Symposium of Cryptogamic Botany to be held in La Laguna, Canary Islands, Spain. Further information from Secretaria, Dpto. de Biología, Facultad de Farmacia, Universidad de La Laguna, 38271 La Laguna (Tenerife), Espana. Fax 922/630095

September 21-24. Sixth Meeting of the Czech and Slovak Bryologists and Lichenologists in the Tatra National Park in Tatranská Lomnica, Slovakia. The meeting will consist of both lectures and excursions. Further information from Dr. Rudolf Šoltés or Dr. Zuzana Kyselová, both at the Research Station of the Tatra National Park, 059 60 Tatranská Lomnica, Slovakia (Fax: 0969-967958; Phone: 0969-967951).

September 24-26. Eighth annual Blomquist Bryological Foray at Roan Mountain, Tennessee/North Carolina. Habitats on the mountain range from mixed hardwood to high elevation spruce/fir forests. The entire area supports a rich bryoflora, with several disjunct populations in the higher elevations. Further information from Karen S. Renzaglia, Biological Sciences, Box 70703, East Tennessee State University, Johnson City, TN 37614. Telephone (615) 929-6931; Fax (615) 929-5958.

1994

April 30-May 1. Excursion to Gori (the Netherlands) with the Dutch Bryological and Lichenological Society to look at inland forests and heathland. Contact Dr. A. Aptroot (address see 11-12 Sept. 1993)

July 4-11. Australian Bryological Society Conference on "Australian Tropics". Lake Tinaroo (Atherton Tableland west of Cairns). Further information from Elisabeth Brown or Helen Ramsay, Nat. Herb. of New South Wales, Royal Botanical Gardens, Sydney N. S. W., Australia 2000. Fax (61) (02) 251 4403.

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Deadlines for material to the Bryol. Times will be January 15, March 15, May 15, July 15, September 15 and November 15 with the publication shortly afterwards. Shorter notes may be accepted later if there is still space for it.

For details regarding membership of the *International Association of Bryologists* (currently US \$ 10.- per year) write to Dale H. Vitt, Department of Botany, University of Alberta, Edmonton, Alberta, Canada T6G 2E9. All correspondence concerning mailing to Mrs. Sandi Vitt at the same address.