

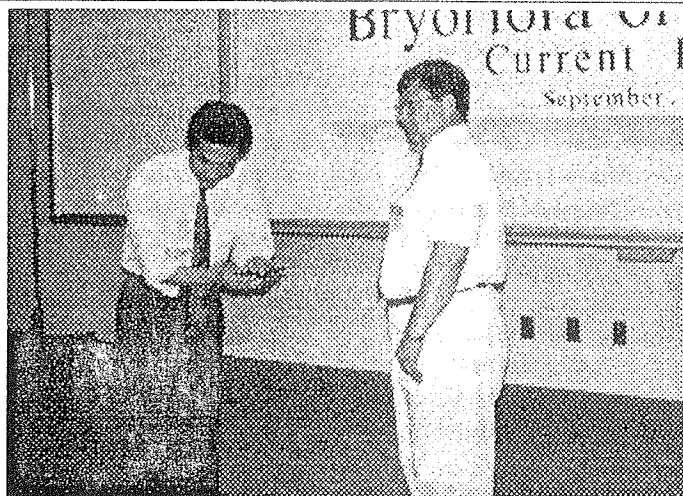
the Bryological Times

*Newsletter of
the International
Association of Bryologists*

Volume 77
February 1994
ISSN 0253-4738

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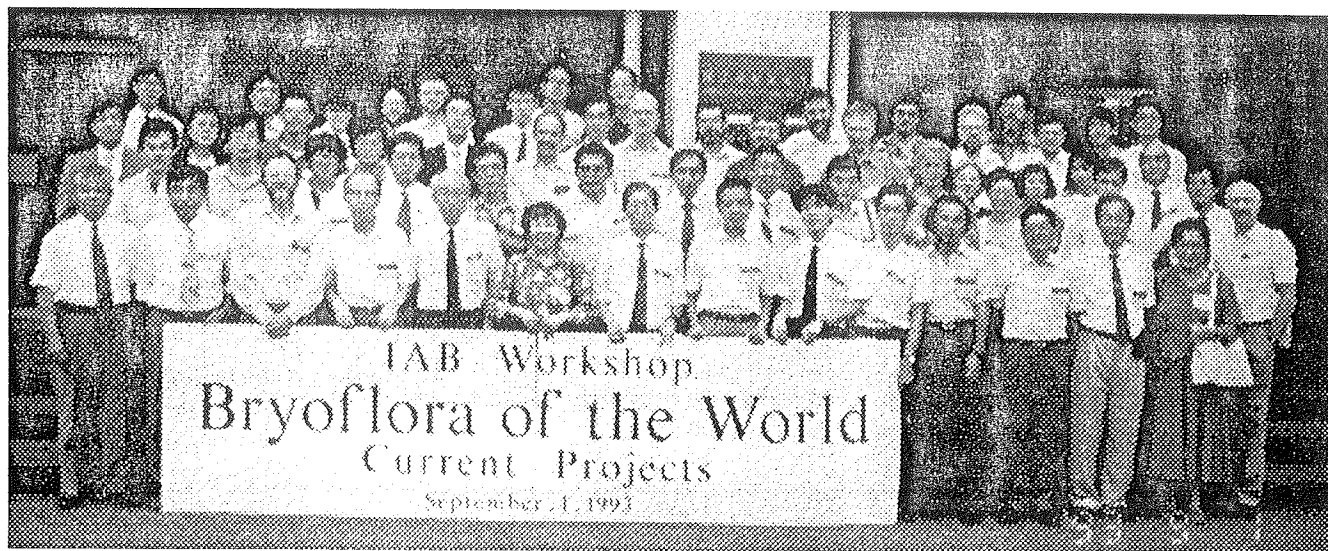
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1993 Hedwig Medal to Dr. Sinske Hattori

The 1993 Hedwig Medal was presented posthumously to Dr. Sinske Hattori's at the Tokyo biennial meeting of the International Association of Bryologists. The award commemorated Dr. Hattori's outstanding lifelong contribution to Bryology. His son, Shinpei Hattori accepted the award on behalf of the family.

IAB Workshop on
Bryoflora of the World - Current Projects
Tokyo, September 1, 1993



The situation at the Canadian Museum of Nature

by Dale H. Vitt

The situation at the Canadian Museum of Nature is troublesome. With the recent cutbacks no bryologists is employed there. This will influence the bryology in Canada and internationally negatively. Therefore, all bryologists are asked to write to Prime Minister Chrétien (address below) to express there concerns about the future of bryology if the positions as bryological curators and researchers at the Canadian Museum of Nature are withdrawn.

Below is a letter sent by Dale Vitt to the Prime Minister.

December 7, 1993

The Right Honourable Prime Minister
Jean Chrétien
House of Commons
Ottawa
Ontario K1A 0A6

Dear Prime Minister Chrétien:

The recent decision to cancel Bryology, with two research positions, at the Canadian Museum of Nature is of great concern to me. I realize funding of programs at the Museum is currently restricted; however, this area of expertise is of national interest to Canada and this decision should be carefully reconsidered.

Bryophytes (mosses and hepatics) represent an important part of Canada's ecosystems. They are of real ecological and environmental importance. Some significant facts are as follows:

1. There are about 1500 species of these plants in Canada.
2. Peat moss, with over 60 species, is of national economic and environmental importance.
3. Peatland trace gas flux, nutrient dynamics, hydrology and vegetation

patterning are all intimately connected to the bryophytes present. In most systems (perhaps as much as 7-8% of Canada's land surface) bryophytes cover 100% of the surface. In these situations, their presence is a controlling factor in the ecosystem function.

4. In boreal forest coniferous uplands, feather mosses may act to control nutrient fluxes and hence productivity of the system. This is probably true of old-growth west coast forests as well.

5. Bryophytes may be significant in providing nesting sites for such species as the 'spotted owl' and they dominate in habitats occupied by woodland caribou.

6. Economically they provide the basis for the horticultural peat industry and for Johnson & Johnson's absorbent board products. Both of these products are multi-million dollar industries in Canada's economy.

7. It has been estimated that *Sphagnum* (peat moss) is the most abundant plant on earth. There is more organic matter tied up in peat moss than is produced by all living plants on earth in a single year. The potential for this carbon sink to change with global climate change is significant. Canada has more peatland and peat moss dominated area than any other country.

8. Despite these important considerations for Canada's economy and environment, we know relatively little about these organisms and the processes in which they are involved.

9. Our knowledge of the diversity of bryophytes is among the poorest of all plants. We have no nation-wide Canadian floristic treatment flora and our collections are mainly in four localities (The Universities of Alberta and British Columbia, The Canadian Museum of Nature and in Montreal). The largest and most significant collection is in the Canadian Museum of Nature.

The bryophyte collections at the Canadian Museum of Nature has a long history, it is the national collection and it is of international importance, especially in light of the Convention on Biological Diversity that Canada recently ratified. Without bryology at the Museum we will not be able to carry out a national inventory of Canada's biodiversity - an essential part of the ratification of this convention.

Because of the importance of these plants to Canada and the international significance of the collection at the Canadian Museum of Nature, it is imperative that we have personnel at the Museum that have the necessary knowledge to identify, curate and continue research on these organisms.

The decision to discontinue bryology at the Canadian Museum of Nature is a mistake; I ask you to weight this decision and to make available funding and positions that will enable these research positions to continue to function.

Sincerely

Dale H. Vitt.

Director, Devonian Botanic Garden
and Professor of Botany

cc: Michell Dupuy, Minister of Canadian Heritage
Alan Emery, Director, Canadian Museum of Nature
Judy Berthel, Member of Parliament from Edmonton, AB
Barbara Crandall-Stotler, President, American Bryological and Lichenological Society
Timo Koponen, President, International Association of Bryologists
John Herity, Director, Biodiversity Convention Office
Peter Ravens, Missouri Botanical Garden.

Dale Vitt, Department of Botany,
University of Alberta, Edmonton, Alberta T6G 2E9, Canada

Towards a World Red List of Bryophytes¹

Benito Tan*, Patricia Geissler** & Tomas Hallingbäck***

Conservation column. Send contributions to the column editors: T. Hallingbäck, Swedish Univ. of Agric. Sci., P.O.Box 7072, S-75007 Uppsala Sweden, or E. Urmi, Inst. für Syst. Bot., der Univ., Zollikerstr. 107, CH-8008 Zürich, Switzerland

*Farlow Herbarium, Harvard University, Cambridge, HUH, 22 Divinity Avenue, Cambridge, MA, 02138, USA;
Conservatoire et jardin botaniques of Geneva, 1292 Chambesey, Switzerland; *Swedish University of Agricultural Sciences, P. O. Box 7072, S-750 07 Uppsala, Sweden.

The compilation of the first world Red List of immediately endangered bryophyte taxa has not been easy. Because of incomplete knowledge of the moss and hepatic flora in many parts of the world, many colleagues have found it difficult to participate in such an exercise. Yet, it is evident that bryophyte-rich habitats around the world are being destroyed continuously. Under such circumstances, we believe that having a red list sanctioned by international organisations like IAB (International Association of Bryologists) and IUCN (World Conservation Union), albeit a short and preliminary one to start with, is an invaluable tool for promoting bryophyte conservation on a world-wide basis.

Methods. A questionnaire and an appeal for candidates was distributed to more than 500 bryologists all over the world. The suggestions were carefully evaluated by us and other specialists. A candidate to the world list had to fulfil the following criteria: 1) the species must be threatened on a world-wide scale; 2) the species must be confined to a threatened habitat; 3) the species should be narrowly distributed and 4) not overlooked due to under-collection.

Results. With many suggested names in hand, we decided to give priority to those taxa that exhibit a unique morphology/biology or occupy a special position in the evolution of bryophytes. We gave also priority to

candidates representing different taxonomic groups, geographical regions and habitat types to show examples of threatened species. For practical reasons, we could not list all candidates which fulfil these criteria. Since there are hundreds of species which are known only from a type specimen or from a single locality the list could be very long and this could defeat the purpose of getting public attention.

Thus, we produced the list presented below. The present list includes an assemblage of 50 species (24 mosses and 26 hepatics) representing several monotypic families and genera. Others are endemic members of various biomes and floristic provinces of the world. The threats to the species on this first list are very difficult to specify without thorough ecological studies. However from habitat descriptions and general information about localities it is possible to estimate the main threats to these globally endangered bryophytes. The most frequent main threats seem to be: deforestation (25 species or 50 % of the endangered species), farmland expansion and urban development (10 species), changes in the water regime and water quality in streams (6 species) and drainage of wetlands (2 species). For the remaining 7 species there are other threats than those mentioned.

Discussion. We are fully aware of the scientific limitation of the resulting list. There are probably species which are equally or more seriously endangered and which we have overlooked. There might also be species in the list which ultimately need to be removed because of new information. We there-

fore seek corrections. More importantly, we ask for suggestions of worthy additions to our "full" list of endangered bryophytes. Such additional candidates must be made in writing to be considered in the preparation of the next edition of the more comprehensive Red List.

Future. Our plan is that the IAB Standing Committee for Endangered Bryophytes (ICEB) and the IUCN Bryophyte Specialist Group will in co-operation prepare an action plan for the conservation of endangered bryophytes. This action plan will include a more comprehensive list of threatened species and proposals for protection of threatened sites for endangered bryophytes. All comments pertaining to the endangered species listed here or those omitted which ought to have been included should be addressed to the authors (addresses above): Tomas Hallingbäck, Benito C. Tan (mosses) and Patricia Geissler (hepatics).

Acknowledgements. We thank all those who kindly send us information on threatened species and have helped us with the preparation of this Red List; special thanks go to the other members of the IAB committee on endangered species: S. Rob Gradstein (The Netherlands), Nick Hodgetts (UK), Tamas Pócs (Hungary), Celina Matteri (Argentina) and Heinar Streimann (Australia).

Mosses

1. *Acritodon nephrophilus* Robins. (Sematophyllaceae)

Mexico. On trees in forested ravine in cloud forest belt. Known only from the type locality where large areas of forest have been felled recently. Source:

¹ Version 2. (1st version was presented in Yokohama 1993). One species has been deleted (*Plagiochila allorgei*) and one has been added (*Anthoceros neesii*).

C. Delgadillo pers. comm.

2. *Archidium elatum* Dix. & Sainsb. (Archidiaceae)

New Zealand. On coastal rock. Known from two localities in North Auckland. Its habitat is threatened at present. Source: A. Fife pers. comm.

3. *Brymela tutezona* Crosby & Allen (Hookeriaceae)

Panama. Epiphytic in the crown of trees in elfin cloud forest. Not known outside of the type locality. Habitat is currently undergoing rapid deforestation. Source: Gradstein 1992a,b.

4. *Distichophyllum carinatum* Dix. & Nichols (Hookeriaceae)

Europe, Japan. On wet limestone cliffs in wooded ravine. Known from six sites in Europe. At five of these it has not been recovered despite of repeated search for it. In Japan, it is known only from one locality. Sources: Urmi 1984, Noguchi 1991, R. Lübenau pers. comm., H. Deguchi pers. comm.

5. *Donrichardia macroneuron* (Grout) Crum & Anders. (Donrichardiaceae)

USA. Growing over boulders in water of calcareous springs. Known only from a small area in Texas. The calcareous spring habitat is unusual and succumb easily to degradation through settlement development. Source: Wyatt & Stoneburner 1980.

6. *Echinodium setigerum* (Mitt.) Jur. (Echinodiaceae)

Madeira (Macaronesia). Growing on stones in deep and narrow valleys. Confined to a few localities where the natural forest habitat is today threatened by changing land uses. Source: Hedenäs 1992.

7. *Fissidens hydropogon* Spruce ex Mitt. (Fissidentaceae)

Southeastern Ecuador. Submerged in flowing river in rain forest. Known only from the type collected in 1857 by Richard Spruce at the foot of the Andes along the Rio Bombonasa in Amazonian Ecuador. The forest in the area has been disturbed. Source: Pursell et al. 1988, R. Pursell pers. comm.

8. *Jaffuelobryum arsenei* (Thér.) Thér. (Grimmiaceae)

Mexico. On soil-covered rocks in dry lands. Habitats are threatened by farmland expansion brought by the population growth. Source: Churchill 1987.

9. *Lepidopilum grevilleanum* Mitt. (Callicostaceae)

Western Ecuador. On trees in humid premontane forests. Known only from two localities in western Ecuador in the foothills of the Andes. According to Churchill (1992) "this very conspicuous species... [is] likely to be collected even by non-bryologists... the massive deforestation in western Ecuador may account in part for the rarity or even possible extinction of this species." Source: Churchill 1992.

10. *Leucoperichaetium eremophilum* Magill (Grimmiaceae)

Namibia. On quartzite outcrop in dwarf succulent shrub lands. Known only from the single type collection. The locality is close to a seaport and is now threatened by urban and industrial developments. Source: Magill 1981.

11. *Limbella fryei* (Williams) Ochyra (Amblystegiaceae)

USA. Near a road by a lake in Oregon. Known only from a single locality and "any major change in water level of the nearby lake will extinguish the population..." Source: W. B. Schofield pers. comm.

12. *Merrilllobryum fabronioides* Broth. (Fabroniaceae)

The Philippines. Epiphytic on trees in montane mossy forests. Known from a few old collections from mountains in northern Luzon. Habitat has been disturbed for decades by agricultural expansion, logging and mining operations. Source: Gradstein 1992a, B. C. Tan pers. comm.

13. *Mitrobryum koelzii* Robins. (Dicranaceae)

India. On earth in forest at 3300 meter elevation. First reported in 1968 from the type and one other collection in the area. Habitats threatened by human activities. Source: Vohra 1987.

14. *Neomacounia nitida* (Lindb.) Irel. (Neckeraceae)

Canada. Growing on elms in a swamp. Known only from the type and two other collections made in the same general locality between 1862-1864. According to Ireland (1974) "an attempt was made to rediscover *Neomacounia nitida* ... The species was not found ... There is always a possibility that the species is now extinct". Source: Ireland 1974.

15. *Ochyraea tatrensis* Vána (Hypnobartlettiaceae)

Slovakian Republic. On stones in stream at subalpine elevation. Known only from a single locality. Habitat threatened by human activities. Source: Vána 1986.

16. *Orthodontopsis bardunovii* Ignatov & Tan (Bryaceae)

Russia. On rotten old log in *Pinus-Larix* forest. Known only from a few localities in Siberian taiga. The species seems unable to survive outside the fast disappearing old growth forest. Source: Ignatov, pers. comm.

17. *Orthotrichum truncato-dentatum* C. Muell. (Orthotrichaceae)

Uruguay, Argentina. On trees near human settlements. Known only from

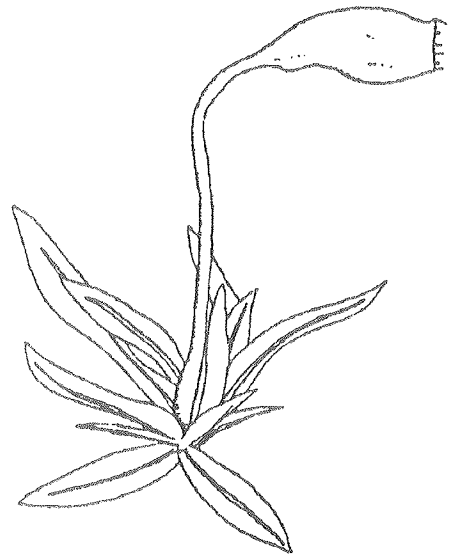


Fig. 1. *Orthodontopsis bardunovii* Ignatov & Tan. - Drawing made by B. Tan, and published in J. Hattori Bot. Lab. 71.

the type and two other collections made more than a 100 years ago. The two known localities are heavily urbanised today. Source: Lewinsky 1992.

18. *Renauldia lycopodioides* Bizot ex Pócs (Pterobryaceae)

Tanzania. Epiphyte on branches in mossy montane forest. Known only from two localities. The forest habitat is much threatened by illegal deforestation at present. Source: T. Pócs pers. comm.

19. *Sciaromiopsis sinensis* (Broth.) Broth. (Donrichardiaceae)

China. Submerged in river. Known from three small localities in SW China. The natural vegetation of these is seriously disturbed today by a growing population, deforestation and industrialisation, causing heavy siltation in the rivers. In Huili County, a large iron and steel mill has polluted the river for years. Source: Ochyra 1986 and Cao Tong, pers. comm.

20. *Skottsbergia paradoxa* Card. (Ditrichaceae)

Argentina. Associated with *Sphagnum* wetlands. Known only from a few localities in a boggy area that is highly threatened by increasing human activities. Sources: Matteri, pers. comm.

21. *Sphagnum leucobryoides* Yamaguchi, Seppelt & Iwats. (Sphagnaceae)

Australia. Buried in wet sandy soil in alluvial wash site. Known only from one locality in SW Tasmania. Sources: Yamaguchi et al. 1990.

22. *Sphagnum novo-caledoniae* Par. & Warnst. (Sphagnaceae)

New Caledonia. Growing on rocks in small stream in shaded forest between 730 and 1200 meter elevation. Confined to a few localities in New Caledonia. Source: T. Engelmark & T. Hallingbäck, pers. comm.

23. *Takakia ceratophylla* (Mitt.) Grolle (Takakiaceae)

Sikkim, Nepal, Tibet, Aleutian Islands. On shaded, dampish cliff and very wet ground with late snow cover. Population range highly fragmented and unstable. Habitats threatened by

human activities. The genus has a unique combination of characters of mosses and hepatics. Source: Hattori et al. 1968, Smith & Davidson 1993.

24. *Taxitheliella richardsii* Dix. (Hypnaceae)

Sarawak, North Borneo. Epiphytic on rotten logs and lianas inside primary lowland rain forests. Known only from the type collection made in 1932. The primary lowland forest in Borneo is seriously threatened today by commercial logging. Source: Gradstein 1992a, B. C. Tan pers. comm.

Hepatics

1. *Anthoceros neesii* Prosk. (Anthocerotaceae)

Central Europe: Czech Republic, Germany and Poland. There is only one locality (out of very few), where *A. neesii* was collected since the middle of this century. Its habitat (crop fields) has undergone drastical changes due to very intense agricultural practice in most of the area. Source: E. Urmi pers. comm.

2. *Aitchinsoniella himalayensis* Kashyap (Aitchinsoniellaceae)

Western Himalaya. On muddy slopes. Very rare, habitat disturbed. Source: Pant et al. 1992.

3. *Bryopteris gaudichaudii* Gott. (Lejeuneaceae)

Northern Madagascar, Reunion (?). Epiphyte in virgin rain forest. The only old world species of a neotropical genus; one record from northern Madagascar since 1900 (leg. T. Pócs). Source: Gradstein 1992a, Pócs pers. comm.

4. *Calypogeia rhynchophylla* (Herz.) Bischl. (Calypogeciaceae)

Costa Rica. Epiphytic in rain forest. A monotypic subgenus, only three localities known. Source: Bischler 1962, Morales 1991, Gradstein 1992b.

5. *Caudalejeunea grolleana* Gradst. (Lejeuneaceae)

Northern Madagascar, Nossi Bé Is. In virgin lowland rain forest. A monotypic subgenus. Source: Gradstein 1992a.

6. *Cladolejeunea aberrans* (Steph.) Zwickel (Lejeuneaceae)

Tanzania, East Usambara Mountains. Epiphyllous. In endangered habitat, only known from type locality. Source: Jones 1974, Pócs pers. comm.

7. *Dactylolejeunea acanthifolia* Schust. (Lejeuneaceae)

Dominica. Epiphyllous in old growth rain forest. A monotypic genus, habitat probably destroyed due to hurricane. Extinct? Source: Schuster 1970.

8. *Diplocolea sikkimensis* Amak. (Jungermanniaceae)

Sikkim, Nepal. Epiphyte on bark, 3650-4000 m. A monotypic genus, known from two localities in Sikkim (Amakawa 1963) and one in Nepal (Hattori 1968). Source: Vána 1973 and pers. comm.

9. *Drepanolejeunea aculeata* Bischler (Lejeuneaceae)

Southeastern Brazil. Epiphyllous in old growth rain forest. Rare, not found since 1922, habitat endangered. Source: Bischler 1964, Gradstein 1992b, A. Schaefer-Verwimp pers. comm.

10. *Exormotheca bullosa* (Lindenb.) K. Muell. (Exormothecaceae)

Western Mediterranean. On sandy soils. Rare, not found on any of the mediterranean expeditions of Drs Jovet-

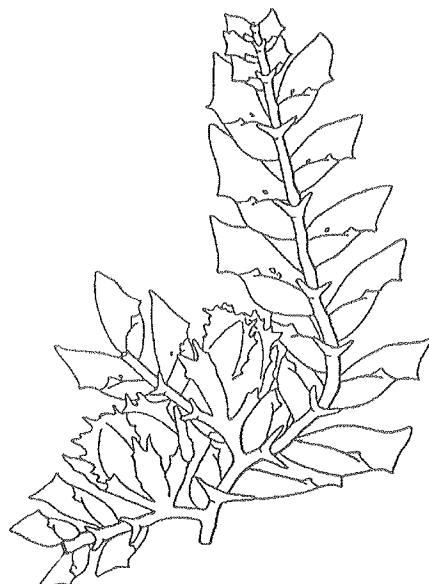


Fig. 2. *Drepanolejeunea aculeata* Bisch. - From Rev. Bryol. Lichenol. 33.

Ast and Bischler. Source: Mueller 1954, C. Sergio pers. comm.

11. *Fuifordianthus evansii* (Fulf.) Gradst. (Lejeuneaceae)

Belize, Costa Rica, Panama. Shade epiphyte in wet atlantic Central American rain forest. Very rare. A third locality has just been discovered in Panama. Source: Gradstein 1992 and pers. comm.

12. *Hattoria yakushimensis* (Horik.) Schust. (Jungermanniaceae)

Japan. Epiphyte. Known from three localities in southern Japan. Source: Inoue 1974.

13. *Jamesoniella undulifolia* (Nees) K. Muell. (Jungermanniaceae)

Northern and Central Europe including two sites in Greenland. In fens. Several old localities known but has declined dramatically and very few sites are unspoilt today. Source: T. Halling-

bäck pers. comm.

14. *Leptolejeunea tridentata* Bischler (Lejeuneaceae)

Colombia: Chocó Department. Epiphyllous in old growth lowland rain forest. Rare, known only from type collection. Source: Bischler 1969, Gradstein 1992b.

15. *Marsupella profunda* Lindb. (Gymnomitriaceae)

Portugal, Cornwall, Madeira, Canary Is. On acid, clayey soils. Rare and threatened. Source: C. Sergio pers. comm.

16. *Myriocolea irrorata* Spruce (Lejeuneaceae)

Amazonian Ecuador. A highly unusual, monotypic genus collected in 1857 by R. Spruce along the Rio Topo in Amazonian Ecuador in undisturbed rain forest area. On twigs of shrubs sprinkled by the stream. Recent efforts to relocate the species have been unsuccessful. Extinct? Source: Spruce 1884-85, Gradstein 1992b and pers. comm.

17. *Nardia huerlimannii* Grolle & Vana (Jungermanniaceae)

New Caledonia. On rotten log and on bark. Known only from original collection, habitat endangered. Source: Vána 1970 and pers. comm.

18. *Nowellia wrightii* Grolle (Cephaloziaceae)

Cuba: Oriente. On bark and rotten log in undisturbed lower montane rain forest. Endemic, rare, habitat endangered. Source: Grolle 1968, Gradstein 1992b.

19. *Phycolepidozia exigua* Schust. (Phycolepidoziaceae)

Dominica. On bark of tree in old growth rain forest, 450 m. A very remarkable, monotypic family, known only from type collection, habitat destroyed by hurricane. Efforts by Dr. Schuster and others to relocate the species have been unsuccessful. Extinct? Source: Schuster 1966, Gradstein 1992b.

20. *Sauteria spongiosa* (Kash.) Hatt. (Cleveaceae)

Western Himalaya. High altitude rocks. Endangered. Source: Pant et al. 1992.

21. *Schistochila undulatifolia* Piippo (Schistochilaceae)

Papua New Guinea. On fallen trunk in undisturbed tropical rain forest, 800 m. A monotypic section, only known from original collections. Source: Piippo 1986, Gradstein 1992a.

22. *Sewardiella tuberifera* Kash. (Fossombroniaceae)

Western Himalaya. Moist rocks at high altitudes. Endangered. Source: Kashyap 1929, Pant & al. 1992.

23. *Sphaerolejeunea umbilicata* Herz. (Lejeuneaceae)

Colombia: Department Cauca. Epiphyllous in montane forest. A rare, monotypic genus known only from type collection. Source: Herzog 1938, Gradstein 1992a, b.

24. *Spruceanthus theobromae* (Spruce) Gradst. (Lejeuneaceae)

Western Ecuador: Department El Ríos. The only neotropical species of an Asiatic genus. Discovered by R. Spruce in ca. 1861-62 along the Rio Ventanas in coastal Ecuador, on twigs in lowland rain forest; collected by Prof. G. Harling in the same region in 1946. The forest in the area has now mostly been destroyed. Extinct? Source: Gradstein 1992a, b.

25. *Symbiezidium madagascariensis* Steph. (Lejeuneaceae)

Northern Madagascar; Seychelles. On bark in rain forest. A monotypic subgenus. Source: Gradstein & van Beek 1985, Gradstein 1992a.

26. *Vandiemenia ratkowskiana* Hewson (Vandiemeniaceae)

Tasmania. On rotten log. Monotypic family. Only known from the type locality. Source: Hewson 1982, Streimann pers. comm.

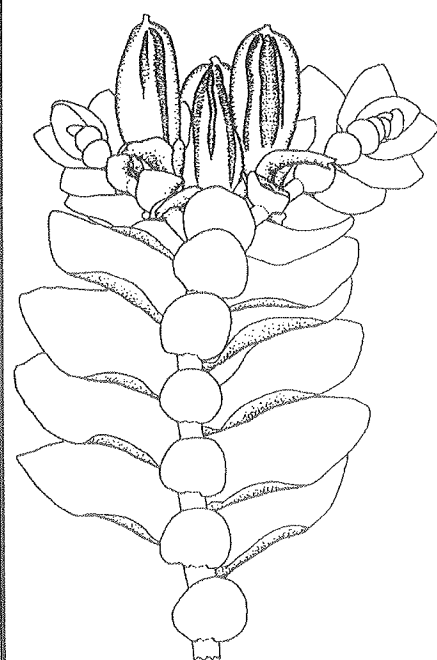


Fig. 3. *Spruceanthus theobromae* (Spr.) Gradst. an epiphytic hepatic on twigs of *Theobroma* trees in Ecuador. Extinct? - Drawing made by Mrs. Mariette Aptroot-(Teeuwen)

To be continued in next issue

Male Plants of *Cyrtomnium* *hymenophylloides*?

Recently we studied many herbarium specimens of the dioicous, arctic-alpine moss *Cyrtomnium hymenophylloides* (Hüb.) Nyh. ex Kop. collected in North America, Greenland, and Europe. While female plants are frequent (we have found them in specimens from Alaska, NWT, Manitoba, Greenland, Finland, Norway, Sweden, and Poland), we have been unable to find male plants in any correctly named material we have examined so far. Hübener's protologue and discussion of the species (Bryol. Germ. 416, 417. 1833) ambiguously include both a description of the capsule and operculum and a disclaimer that he had observed sporophytes. However, a plant with a sporophyte has been found in Jämtland, Sweden (H. Persson, Ark. Bot. 14(3): 41-43. 1915). Male plants were not noted or described by either of these authors.

We ask our bryological colleagues to join us in a search for male plants of this species either by careful new field work or by study of collections in bryological herbaria that we have not examined already. We assume that the male plants of *Cyrtomnium hymenophylloides* will be similar morphologically to those of *C. hymenophyllum*, in which males have terminal splash-cups on upright stems that bear reduced leaves. With practice a female plant of *C. hymenophylloides* can be recognized easily under a dissecting microscope by its apical cluster of archegonia surrounded by narrow, short inner perichaetial leaves and by one (sometimes two) outer perichaetial leaf, which is abruptly tapered toward the insertion.

Please write to either or both of us if you can help develop a better understanding of the occurrence and distribution of the male plants of this moss.

N. G. Miller, Biol. Survey, NY State Mus., Albany, NY 12230, U.S.A.

G. S. Mogensen, Bot. Mus., Univ. of Copenhagen, Gothersgade 130, 1123 Copenhagen K, Denmark.

Announcement: Memoirs of The Torrey Botanical Club

The latest issue of the Memoirs of The Torrey Botanical Club, "Modern botanical research using plants of ancient lineage," vol. 25, no. 1, September 1993, is now available.

The price is: \$23.95 U.S.A., \$26.95 Foreign.

Early bird special - \$17.95 U.S.A., \$20.95 Foreign, to individuals, for pre-paid orders received before March 30, 1994.

Send orders to: Dr. Margaret R. Basile, Treasurer, Torrey Botanical Club, Dept. of Biological Sciences, Lehman College, CUNY, Bronx, NY 10468, U.S.A.

This issue contains six contributions to modern botanical literature by well-known scientists who conduct their research with bryophytes:

Modern research with bryophytes:

an overview, by N. G. Miller.

Genetic analysis of phytohormone action and morphogenesis in *Physcomitrella patens*, by N. W. Ashton, T. A. Zacharias & D. F. Fracchia.

Isozyme evidence proves that the moss *Rhizomnium pseudopunctatum* is an allopolyploid of *R. gracile* x *R. magnifolium*, by R. Wyatt, I. J. Odrzykoski & A. Stoneburner.

Gravitropism in protonemata of the moss *Ceratodon*, by F. Sack.

Diversity of cell division in simple land plants holds clues to evolution of the mitotic and cytokinetic apparatus in higher plants, by R. C. Brown & B. E. Lemmon.

The role and control of the place-dependent suppression of cell division in plant morphogenesis and phylogeny, by D. V. Basile & M. R. Basile.

BRYOTROP Results

The first part of the taxonomic results of the Bryotrop expedition to Zaire and Rwanda were published in Tropical Bryology vol. 8. This volume includes 26 contributions on the bryology of Central Africa on 314 pages, including checklists of the hepatics and mosses of Central Africa, the history of bryological exploration of Central Africa, the description of the collecting sites and treatments of genera or families written by specialists. Although Central Africa is one of the best explored part of Africa and all localities studied by members of the Bryotrop expedition were visited earlier by other bryologists, twelve species were found as new to science, nine species were recorded for the first time for Africa, ninety four species were recorded as new to Rwanda and seventy species could be added to the bryoflora of Zaire.

More taxonomic papers as well the results of the ecological, ecophysiological, morphological and phytosociological studies will be published in vol. 9

Vol. 8 is available at a subscription

price of DM 27.50 (US\$ 16.50) for subscribers from tropical countries or 55 (US\$33) for subscribers from other countries, inclusive mail, disk version half price. Single volume can be obtained at a price of DM 80 (US\$47).

The material of the first two Bryotrop expedition is deposited at the Botanical Museum Berlin and it was planned to deposit also the African collections there. However, there is no more a bryophyte curator at the Botanical Museum in Berlin and by this way the material and data of the first two expeditions are no more accessible. Therefore the first set of the African Bryotrop material has been sent to Geneva, where it will be available on loan from Patricia Geissler.

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

INTERNATIONAL BRYOLOGICAL CONFERENCE

Tropical Bryophytes: Biology, Diversity and Conservation

Mexico City

August 7-12, 1995

The International Association of Bryologists and Instituto de Biología, National University of Mexico, announce the celebration of an international meeting on tropical bryophytes. The scientific program will include personal contributions, special lectures, field trips and a workshop on endangered bryophytes.

In order to determine the number of potential participants and to make preliminary arrangements, we ask you to complete the following statement and submit it to the address given below.

I plan to attend the Bryological Conference in Mexico City and would like to receive further information

Name: _____

Address: _____

Send the form to: Claudio Delgadillo M., Instituto de Biología, UNAM, Apartado Postal 70-233, Del. Coyoacán, 04510 Mexico, D.F. MEXICO, FAX (525)550-1760, e-mail: moya@redvax1.dgsca.unam.mx

MOSTY an On-line Database of the Types of Mosses by Marshall R. Crosby

The Missouri Botanical Garden has added another database to its collection of information available through Internet. It is MOSTY, a specimen- and protologue-based on-line database of moss types, based on the MOST database of information about mosses at the Missouri Botanical Garden. Currently the database contains about 3300 records for species and infraspecies of mosses. This is primarily protologue information for names published in the last thirty years

that were catalogued in the published Index of Mosses, 1963-1989 and will appear soon in IOM, 1990-92. The data will be updated about once a month with newly recorded nova. Physically, MOSTY is an alphabetical list of basionyms, including author(s) and year of publication. Each basionym record may include other uses (combinations and names), protologue type information, and label data from type specimens seen in herbaria. Not all basionym records contain all of these fields, but each contains at least protologue information or specimen information. Currently nearly all of the records are protologue-based, but information about the types of mosses in MO will soon be added.

The file is indexed on every word and may be searched by using the three Boolean terms: and, not, or. The information is case sensitive, and the asterisk (*) may be used as a wild card.

MOSTY may be accessed on Internet. At your system prompt, e.g. \$ or %, type gopher mobot.org. Do not forget the space after gopher and the period between mobot and org. (Some systems may still require mobot.mobot.org). Then press Enter. You will see the Missouri Botanical Garden menu of gopher files. Select the correct number and press Enter. An explanation of MOSTY will appear.

For further information contact M. R. Crosby, crosby@mobot.org.

The Bryological Society of Japan

The Bryological Society of Japan has elected new officers for January 1994 - December 1995, at the general meeting in Sendai, 30 July - 1 August, 1993.

President: I. Nagano (Saitama Univ.).
Secretary: H. Kanda (National Institute of Polar Research).

Treasurer: S. Imura (National Institute of Polar Research).

Auditor: H. Deguchi (Hiroshima Univ.).

Editor: N. Nishimura (Okayama Univ. of Science).

Associate Editors: M. Higuchi (Nat. Sci. Mus., Tokyo) and H. Kanda (Nat. Inst. of Polar Research)

The secretary of BSJ was moved incidentally from Hiroshima University to National Institute of Polar Research. All communications should be addressed to secretary: Bryological Society of Japan, National Institute of Polar Research, 9-10, Kaga-1-chome, Itabashi-ku, Tokyo 173, Japan.

H. Kanda

New publications

Mueller, F. 1993. *Studien zur Moos- und Flechtenflora der Stadt Halle/S.* Limprichtia 1, 168 pp. Price DM 25 (US\$ 15). Results of a mapping project in the town of Halle/East Germany.

Schrader, H.-J. 1994. *Die Moosflora von Braunschweig.* Limprichtia 2, 100 pp, 144 maps and 4 transparencies. Price DM 40 (US\$25). Results of a mapping project of the bryophytes in the city of Braunschweig, Germany.

Copies can be ordered from J.-P. Frahm, Universitaet Duisburg, Fachbereich 6, Botanik, D-47048, Germany.

New Address

Dr Jan H.D. Wolf
Centro de Investigaciones Ecologicas del Sureste (C.I.E.S.)
Apdo. Postal No. 63
29290 San Cristóbal de Las Casas
Chiapas
Mexico

DIARY

Cont'd.

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 30 May-1 April 1994)

September 23-25. Annual General Meeting and Symposium Meeting, Preston Montford Field Centre, Shrewsbury, Shropshire. Further information from Dr. Martha Newton, Department of Botany, Liverpool Museum, William Brown Street, Liverpool L3 8EN, U.K. Phone 051 2070001.

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) 1 982 4494 or (54) 1 982 5243.

November 24-29. 10th John Child Bryophyte Workshop, Waipoua Forest, North Auckland, New Zealand. Further information from Lisa Forester, Department of conservation, P.O.Box 842, Whangarei, New Zealand.

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April 5-12. Spring field meeting at Ambleside, Cumbria. Further information from Peter Bullard. Work address: Cumbria Wildlife Trust, Cumbria, LA22 0BU Phone 05394 32476. Home address: 36 Castle Garth, Kendal, Cumbria LA9 7AT Phone 0539 732699.

1996

August 4-8. To celebrate the 100th anniversary of the British Bryological Society, a symposium entitled 'Innovations in bryophyte research' will be taking place at the University of Glasgow. Contributions will be invited shortly. The BBS summer field meeting in west will take place immediately afterwards in the west and central Highlands.

Our secretary honoured

Dale Vitt has been honored with a medal of the University of Helsinki in connection with the course on Tropical Bryology in October 1993. This medal can be awarded to "a foreign guest or expert. who have significantly promoted the research and teaching of the university". Congratulations [LS].

Corrigenda

In the last issue of The Bryological Times (No. 76) on page 12, the address to where information about important conservation projects should be addressed had been left out. The address is: Tomas Hallingbäck, Threatened Species Unit, EMC, SLU, P O Box 7072, S-750 07 Uppsala, Sweden [LS].

A promising moss bud at Leiden

Ir. Niels Klazenga has accepted a temporary position at the Rijksherbarium, Leiden (The Netherlands), for a period of four years. He is undertaking a revision of *Dicranoloma* s.l. for Malesia (As 4) and adjacent parts of tropical Asia, Australia and Oceania. His research will include an analysis of internal and external relationships, and of the relationships with *Dicranum* and *Leucoloma* in particular.

A. Touw, Rijksherbarium,
Postbus 9514, NL-2300 Leiden, The Netherlands

The Bryological Times is a newsletter published bimonthly for the *International Association of Bryologists*. Items for publication are to be sent to the Editors (preferably LH), **except** for those for the regular columns, which may go **direct** to the column editors.

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.

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Henrik Weibull, Stockholm.

Column Editors

J.-P. Frahm & B. O'Shea (computer techniques); J. M. Glime (ecology); T. Hallingbäck & E. Urmi (conservation); A. R. Perry (news from the herbaria); T. Pócs (tropical bryology); M. L. Sargent (techniques); J. Vána & W. R. Buck (floristics and phytogeography); D. H. Vitt (diary, best book buys, taxonomy).

The Bryological Times, founded in 1980 by Stanley Wilson Greene (1928-1989), is distributed from Beijing (China), Canberra (Australia), Edmonton (Canada), Eger (Hungary), Geneva (Switzerland), Hiroshima (Japan), Moscow (Russia), Praha (Czech republic), St. Louis (USA) and Trondheim (Norway).

Production

Lars Söderström, Trondheim

For details regarding membership of to *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.

DIARY

Send contributions to:

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

1994

March 23-29. BBS Spring meeting at Weymouth, Dorset. Further information from Dr. Mark Hill, Institute of Terrestrial Ecology, Monks Wood, Abbots Ripton, Huntingdon, Cambridgeshire, PE17 2LS, U.K. Phone 04873 381

April (date not yet fixed). Sociedad Española de Briología: "XIV Reunión de Briología", incl. SEB General Meeting. The objective is to study the rich bryophyte flora of Liébana valley (Cantabria, north Spain). Further information from Jesús Muñoz, IATEV, Apdo 8, E-33120 Pravia, Spain. Phone +34-8-5822977.

April 30-May 1. Excursion to Gori (the Netherlands) with the Dutch Bryological and Lichenological Society to look at inland forests and heathland. 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.

June 1-6. Annual assembly of the Swiss Bryological and Lichenological Association, with paper reading sessions and excursions to Bondo, Val Bregaglia (Southeastern Swiss Alps). Further information from Patricia Geissler, Cons. & Jardin Botaniques, Case postale 60, CH-1292-Chambésy, Switzerland.

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.

July 10-15 (tentative). Workshop on Chinese Bryophytes and Lichens. Place: Shengyang, China. Contact Officers: Cao Tong, Department of Plant Resources, Institute of Applied Ecology, Academia Sinica, Shenyang 110015, China and Lai Ming-Jou, Institute of Landscape Architecture, Tunghai University, P. O. Box 1-4, Sanchung, Taiwan 241.

July 13-27. BBS Summer meeting in Ireland. Based at Ballyvaughan, County Clare, for the first week and Clifden, County Galway, for the second week. Further information from Donal Synnott, Botany Section, National Botanic Gardens, Glasnevin, Dublin 9, Ireland. Phone 353 1374 388.

July 18-28. The 1994 field meeting of the Dutch Bryologische en Lichenologische Werkgroep van de KNNV will be held in SW Carinthia, Austria. The meeting will be based at Weissbriach, c. 15 km W of Villach in the Gailtaler Alpen. Excursions will be extended to the Karnische Alpen, near the Italian border, and to the Kreuzeckgruppe of Hohe Tauern in the north. Further information from Leo Spier, Kon. Arthurpad 8, 3813 HD Amersfoort, The Netherlands, or Othmar Breuß, Naturhistorisches Museum Wien, Botan. Abt., Burg-ring 7, Wien, Austria.

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.

September 9-12. Excursion to Wägital (Schwyz, northern prealps) with the Swiss Bryological and Lichenological Association's annual field trip. Further information from Patricia Geissler, Cons. & Jardin Botaniques, Case postale 60, CH-1292-Chambésy, Switzerland.