

The Bryological Times

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Dear Bryologists,

We hope this issue of *The Bryological Times* finds you well and enjoying the holiday season. We would like to apologize for this issue's tardiness – several unforeseen circumstances delayed the publication. Starting in the near future, DorothyBelle Poli will become the Editor of *The Bryological Times* and contact can begin to be made with her at poli@roanoke.edu. Geert's input and guidance will still be necessary and helpful for future publications. Please let us know how we can make *The Bryological Times* more relevant to you.

This issue is full of information from the IAB meeting in South Africa. Check online at the IAB blog for complete reports and more pictures! Many thanks to everyone who helped make this issue possible!

Geert Raeymaekers and DB Poli

IAB



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The **International Association of Bryologists (IAB)** is an organisation open for all interested in bryophytes. For membership, contact Geert Raeymaekers or Blanka Shaw. Visit the IAB web site: <http://bryology.org> for further information. The *Bryological Times* is issued 3 to 4 times per year.

IAB NEWS

As none of the editors were able to attend the 2009 IAB-Conference in South Africa, various members provided their reports. Jim Shevock provides an overall report of the conference and a report from the conservation biology session. Together Jim Shevock and Krustoffer Hylander provide reports of the field trips. Paddy Dalton gives us an Australian perspective. Lars Hedenas summarizes the phylogeny and systematics session. There was also a workshop on bryophyte conservation, of which Ron Porley reports. For even more pictures, check out www.bryology.org!

Report by Jim Shevock



IAB World Conference of Bryology 2009

The 2009 meeting this year was held in South Africa at the Goudini spa and resort complex at the base of the Boland Mountains about 90 minutes drive from Cape Town. The surrounding landscape of fynbos scrub was dominated by *Protea* and *Leucodendron* spp. among sandstone rock outcrops. The area was very scenic. This venue provided opportunities to explore and collect bryophytes between the conference center and the residential units scattered across the facility. Compared to the 2007 meeting at Kuala Lumpur, Malaysia, the attendance for this IAB dropped from 129 to around 55 participants, nonetheless, this meeting was wonderful. I want to state up front that the planning for this IAB was superbly arranged by Terry Hedderson, University of Cape Town with assistance from Claudine Ah-Peng and Nicholas Wilding. The hospitality of the events was superb and we drank many a bottle of wonderful South African wines. As a Californian, I have access to many wonderful wines but I must honestly say that I was very impressed with the quality of South African wines. I also learned first hand that South Africans like to BBQ and their term for it is the 'braai' which is pronounced like 'bry' in 'bryophyte'. The South African braai is done by the creation of a bed of coals from the burning of hardwoods not by using charcoal briquettes. Terry was in charge of two such events; one on the last night of the conference then another during the foray.

Conservation Biology session overview

Lars Söderstöm provided the plenary talk and served as the facilitator for this symposium. In his opening address, Lars gave a detailed overview that covered topics including the crisis of species extinction, the study of conservation biology and the efforts by bryologists to address the conservation of these remarkable plants. One of the take home messages for me is that the data sets (detailed inventories) are far from ideal to make hard choices in conservation priority sites, and this is especially more revealing in countries without a long history of bryological exploration. The knowledge about bryophytes is also widely disseminated in countless journals around the world and in various languages that make it particularly difficult to have access to all of the information that currently exists. In many cases, it is conservation of other landscapes and for other purposes (like large mega-vertebrates) that have provided habitat protection in many counties but not all bryophytes can be adequately protected through these types of conservation strategies. One of the concepts being used for bryophytes is to identify 'hot spots', but in practice, much of these sites are only recognized as the result of detailed explorations and inventory efforts. In a continent like Africa there is just not enough data (especially for liverworts) available to systematically identify the best 'hot spots' worthy of bryophyte conservation by country and by habitat parameters. Hot spots generally fall into two basic types: 1) areas documented by their species richness or 2) areas with high concentrations of endemics or species with restricted ranges. The parameters influencing conservation within a county include factors such as population density, population growth, habitat conversion and extraction of resources, country size, elevation range, eco-regions, climate, and a conservation ethic and political will (laws and land management policies) to make long-term conservation of biodiversity possible. Based on the field work conducted in Africa to date, it appears that the most important criterion is elevation relief as a proxy for species diversity and discovery of species hot spots.

Tomas Hällingback followed with a presentation on using short cuts to identify hot spots and endangered

species of bryophytes. There are many difficulties that create a barrier for advancing conservation of bryophytes. These include a lack of knowledge or awareness of the importance of bryophytes to ecosystem function by the general public, species surveys at a world-wide scale are nearly impossible to achieve, the identification of species is difficult in the field therefore microscopic examination is needed, and the lack of skilled workers to conduct inventories, and funds to pay for it. Based on the data sets at hand, about 20 percent of the land surface is mountainous, but this area contains over 50 percent of the bryophytes. Islands are also rich in bryophyte diversity. So the question was asked, can bryophyte hot spots be predicted? Satellite imagery can be a powerful tool when used to determine forest cover in conjunction with topographic and geologic maps. These tools can aid in locating areas likely to have diverse bryophyte floras based on elevation relief and climate. Strategies can include the assessment of keystone species and taxa surrogates. However, field work remains critical to assess the quality of the habitat and its likelihood to be conserved. Methods need to be cost-effective to assess hot spots yet be scientifically sound.

Matt von Konrat presented a system that addresses the goal to unify the existing data on liverworts through the Early Land Plants Today Project (ELPT). This project is designed to integrate vastly scattered data on liverwort taxonomy and distribution. Its core function will be to contribute towards a working list of liverwort species, assist with identifying areas with geographic gaps in knowledge, and aid in conservation research.

Post Conference Field Trips

Report by Jim Shevock

Twenty-four participants along with the bus driver traveled along the Western Cape Province in a 22-passenger bus. Another car was utilized to deal with various logistical issues as the foray unfolded with the driving of the car by Nicholas and Claudine. Terry Hedderson served as the 'tour guide' as we drove along the way. Participants came from Canada, Estonia, Ethiopia, Finland, France, Germany, Norway, Portugal, Spain, South Africa, Sweden, and the United States. With participants with so many varied interests, this foray offered something for everyone. There was unbelievable scenery, wildflowers, wildlife, bryophytes, and of course dining and wine to consume.

We left Goudini on Saturday August 22 on our way to Bontebok National Park and De Hoop Nature Reserve. However, along the way we would be driving through

The last three speakers of this session gave specific field examples. Ana Seneca compared the effect of an altitude gradient on regional bryophyte hot spots in mountains in Portugal. In this study the total species richness and richness of threatened species varied considerably between sites and elevation, and the parent rock type available appears to be a key factor in species distributions in this area. Helena Korpelainen gave a presentation on a fine-scale spatial genetic structure of the liverwort (*Barbilophozia attenuata*) within a network of ant trails. Here micro-satellite markers were employed and significant genetic differentiation was detected among colonies along and outside ant trails concluding that ants do not have much of a role as dispersal vectors. The concluding presentation of this session by Kristoffer Hylander addressed Ethiopian coffee production systems and bryophyte diversity. Coffee is planted in both a modified forest environment and under the shade trees within a home garden condition in this country. Plots were placed in both forests and home gardens and species were recorded to determine how bryophyte abundance and species change by edge effect and type of modified habitat. The results concluded that as an agricultural crop, coffee can be a fairly good substrate for bryophytes under specific growing conditions. Around 40 per cent of all species recorded in the forest were located in at least one home garden site, and for several bryophytes, they were more common on coffee plants than in the forest plots. However, there remain a large number of bryophytes that require quality interior forests without large edge effects so both management strategies are needed to maintain bryophyte diversity on the landscape.

one of the best wine growing regions of the Cape, so naturally we had to re-stock our supplies for dinner since we basically drank everything we had on hand during the last evening braai at Goudini! We made two winery stops, sampled the merchandise, and loaded dozens of bottles back into the bus. Our first stop was at the Vrolijkheid Nature Reserve, an area of karoo vegetation dominated by members of Aizoaceae and Asteraceae and covered with soil crusts, primarily Pottiaceae. By lunch we were at Bontebok, a small national park basically established for the conservation of the rare antelope, the bontebok. Here we had lunch along the Breede River and hiked the Aloe Hill Trail where we got to explore in another type of karoo vegetation with Aloe and scattered trees, mainly *Acacia*. *Triquetrella tristicha* dominated the site along with *Pseudocrossidium crinitum*. Later that afternoon, we traveled at a fairly good pace over dirt roads in an agricultural area dominated by winter wheat where

blue cranes, the national bird of South Africa, were observed. I found out later that we had to reach the entrance gate of the De Hoop Nature Reserve before the gate was closed and locked for the day. We made it with 15 minutes to spare. A local winery heard of our pending arrival and decided to give us a 'wine tasting' so here we were at this nature reserve many kilometers from any town and we are presented with a really nice overview of the wines they produce at the southernmost winery on the Cape. Well of course to be appreciative, we consumed all that they brought. That evening at De Hoop we had a remarkable gourmet meal in their cottage restaurant. More wine also flowed.

Sunday August 23 we spent the entire day at De Hoop. It functions much like a game reserve with eland, bontebok, Cape zebra, and ostrich grazing basically outside our lodging windows. After a leisurely breakfast, we gathered our lunches (they were designed for two and placed in a large wicker picnic basket) then we headed out for the sand dunes and coastal fynbos dominated by Ericaceae and Restoniaceae. It was a delightful sunny day and from the bluffs with a scenic panorama of the Indian Ocean we could see many whales beyond the waves. Many of the participants ventured among the tide-pools and walked along the beautiful sandy beaches. After lunch at an estuary we then stopped at a *Protea*-dominated fynbos over limestone bedrock. This type of limestone fynbos is restricted to a small area of the Cape with its own suite of endemics. The *Protea* flowers here were in fabulous bloom. Again, a plethora of Pottiaceae was encountered. The last stop of the day occurred higher up the slopes along an intermittent streamlet and here we saw our first set of pleurocarpous mosses which was indeed a welcome relief from being on our hands and knees examining soil crusts. When we returned to the cottages a local herpetologist with an interest in the conservation of the Cape Region retrieved from the back of his land rover a couple of large plastic boxes. In the first one he retrieved a puff adder (a relatively slow moving snake) and gave us much information about this species. After returning the puff adder, out came the Cape cobra! Evidently they are both quite common at De Hoop and I must say in retrospect I thought about all the cross-country scrambling we did in the fynbos and along that intermittent stream channel earlier in the day and wondered how many snakes were actually out there. That evening was to be another braai, this time arranged by the restaurant staff. We had various meats prepared including ocean fish and everything again was simply delightful.

On Monday August 24 after breakfast we left De Hoop and had several hours before reaching our next destination. The driver stated that instead of us backtracking to the highway he would take us a different route. After nearly 2 hours over dirt roads we came to the small town of Malgas and here we needed

to cross the Breede River, but there was no bridge. What we saw when we arrived was a 'raft' operated by three men who literally pull this floating barge attached to a cable from one side of the river to the other. It looked very small and not that sturdy! So I said to Terry, "what is plan B?" However, the barge was in fact wide enough, and more importantly, long enough to carry our bus and our luggage trailer. However, the decent to the riverbank and then to get onto the barge was at such an angle that the trailer with our luggage dug into the road bed during the decent to the river. We removed the trailer but the back of the bus was now wedged on the ground too. It took a bit of effort and some large wood planks to eventually get the bus freed and then onto the barge. Once on, the three men used a chain with a harness to wrap around a cable and literally pull the barge across the river. But getting off the barge at the other bank of the river was just as steep, and again we did a bit of damage to both the bus and the barge while departing. Terry offered a few extra Rand (money) to the operators and we were off. By noon or so we arrived at Grootvadersbosch Nature Reserve, a wonderful mixed hardwood forest area with *Podocarpus*. Lunch was prepared picnic style and then we had about 2 hours to explore. Most of us got less than 0.5 km from the bus before the departure time arrived. The collecting here was wonderful and most taxa observed were not seen elsewhere during the foray. I could have spent a whole day here with ease. That evening we arrived around 7pm in the resort city of Sedgefield near Knysna. Our lodging location was, for loss of a better term, a 'bed and breakfast' (The Eagle's Nest) right on the Indian Ocean that could actually accommodate all of us. Although the rooms were really small, the hospitality was wonderful. In fact, it felt like we were all family using other rooms in their house. That evening we had dinner at a local restaurant specializing in seafood.

Tuesday August 25 we departed for the day to Diepwalla-Gouna National Park to the site of Big Trees of Henry VI. This area contained a nice trail in mixed hardwood forests with many bryophytes and tree ferns. It was a scenic walk in the woods. We left a 1:30 pm to have lunch at another reserve but we discovered later that it was not accessible due to flooding from a recent storm. We then had lunch on the beach then played tourist for less than 2 hours before returning to our lodging site. Most checked out the boardwalk area while a few of us went to the local brewpub. That night Terry was in charge of the braai and again, much fine food and wine was consumed.

On Wednesday August 26 we began the return journey back to Cape Town. Our first stop was a karoo area near the town of Ladismith where we had lunch. The flowers were now beginning to bloom in the karoo after the rains that occurred while the IAB was at Goudini. That evening we arrived at the Pat Busch Private Nature Reserve at the base of the Langeberg

Mountains. We shared three houses and used one as the 'dinner area' where we actually prepared our own meal. Again, since this was the last night of the foray the remaining bottles obtained from the wineries earlier in the week were now emptied.

Thursday August 27 would be the last day of the foray. We had access to several trails at this reserve so everyone was free to do whatever they desired. Go birding, look at flowers, read, relax, or collect and study bryophytes. Blanka Shaw and I got up early and headed off to explore up the trail that went along a stream. She was hoping to find several Bartramiaceae and I was seeking to find rheophytes, especially the monospecific genus *Wardia*. Everyone was due back at the bus by 1 pm since several participants had flights departing later that day from Cape Town. The foray was a wonderful success and we had really good weather considering it was still technically the winter rainy season for the Cape Region. We did have some rain during the foray but while collecting and exploring the weather cooperated, and most times we had sunny skies. Again, Terry and his team did a fabulous job organizing the foray. The accommodations were nice, the food and wine wonderful, and the bryophyte collecting great.

Field Trip to the Coast (19 August)

Wednesday was devoted to a journey down to the coast. We headed for the penguins at Simonstown and were lucky enough to get a glimpse of a Southern right wale out in False Bay as we drew along the coast. The penguins were of course very interesting to see both in their breeding sites among the shrubs and as they played in the waves among the boulders. After that we

enjoyed marvelous views from the bus as we drew around the Cape peninsula. The fynbos (the shrubby vegetation so rich in number of vascular plant species that you don't believe it) surrounded us most of the time. At the South African National Biodiversity Institute, that is located just beside the Kirstenbosch botanical garden, we got a bagged lunch before being introduced to the various research and other activities conducted there. We learned for example that there are 20600 vascular plant species in South Africa of which 65% are endemic and 688 only known from one locality. They have recently evaluated the whole flora for their new red-list, impressive!

After that session we were let free in the garden, beautifully settled at the slopes of Table Mountain. Many of us strolled around the *Protea* and *Leucospermum* species that flowered in various colors and attracted attention not only from people but also Cape sugarbirds and various other sunbirds. The group seemed to have disappeared in the garden but was refound in the bookstore trying to choose among the many beautiful and informative books about the nature in this special corner of Africa. Most people didn't see many bryophytes this day, but I heard of people that found the large pleurocarp *Wardia hygrometrica* in a stream in Kirstenbosch. I saw some *Ptycomitrium* sp., *Leptodon smithii*, and *Leucoloma sprengeliaunum* at a boulder close to the Skeleton stream, which I had previously seen in dry summer state but now went to have a look at when it was filled with water. More bryophytes to come, however, at the coming excursions....

By

K.Hylander.

IAB South Africa 2009 – An Australian Perspective

By Paddy Dalton

I have been asked, as the sole Australian participant, to reflect on the IAB conference in South Africa. What I present here is 'just a little' from the report that I have written for the Australasian Bryological Newsletter.

This conference, in contrast to Kuala Lumpur in 2007, was smaller in both participation and presentations, but lacked none of the bryological spirit and camaraderie that is characteristic at IAB. To this end the organisers, Terry Hedderson and Claudine Ah-Peng with assistance from Nicholas Wilding and Phelex Manyanga are to be commended. Their organisational skills were surely tested at the outset with delayed arrivals and misplaced baggage, however all was in readiness for the opening session on Monday morning.

The location for the conference was approximately 100 kilometres out of Cape Town at the resort, Goudini Spa, nestled amidst the Boland Mountains, surrounded by superb vineyards where attractive hostesses tempted our sapidity – what an ideal location.

In accord with IAB custom, the meeting opened with the keynote address by Jeffrey Duckett who received the Richard Spruce award in 2007. He presented a stimulating view of the function of stomata in bryophytes where Jeff argued that their role may not always be in the regulation of gaseous exchange. The paper and poster presentations that followed exhibited the diversity of disciplines that bryology encompasses. From Phylogeny and Systematics, Conservation,

Community ecology, Phylogeography and Biogeography and papers that emphasised the distinctive features of bryophytes. Several presentations did challenge our traditional thoughts, especially Cymon Cox who asked that we “need to be sceptical” with some of the current interpretation of bryophyte phylogeny, while Terry Hedderson questioned the populist view of species definition. Student presentations provided evidence that the future of bryological research will be maintained at a high level. The best student paper was awarded to Rafael Medina ‘Epiphytic bryophytes of inland juniper forests throughout the Mediterranean basin’, while Amélie Pichonnet was highly commended for her paper “New insights into the genus *Dicranum* Hedw.” The best student poster went to Greg Buda for his informative “Understanding of the evolution of plant cuticles using the moss *Physcomitrella patens* as a model experimental species”.

was unanimously elected an honorary member in recognition of his contribution to international bryology. A week may be a long time in politics, but all too short in bryology. Far too quickly the conference week came to a close, but not before we experienced the traditional South African braai (barbeque). On a pleasant evening, entertained by our hosts overlooking the surrounding landscape, we reflected on the week’s events and discussed among other things the attributes of Test Cricket for the benefit of our Spanish guests.

This was my first visit to South Africa and hopefully not the last. The country has come a long way during the past decade but it is obvious there is more to be done. The flora of the Cape was captivating. As an Australian I am very familiar with families like Proteaceae, Ericaceae and Restionaceae, but nothing could prepare me for the extraordinary diversity encountered. The afternoon spent at Worcester Botanical Garden was enthralling and to walk amongst some of the most

Fig. 1. The Goudini Spa, site of the 2009 IAB-Conference



It was not all hard work. The day trip to the Cape, Kirstenbosch Gardens and South African Biodiversity Institute provided the opportunity to capture the remarkable scenery and floristic diversity. At the Institute, I was most impressed to hear that over a 5-year period a comprehensive conservation plan has been produced for the South African flora at a modest budget of only \$650,000. By comparison we are well behind such a target for the Australian flora. The Kirstenbosch Botanic Gardens lived up to their reputation and I was engrossed with the groves of Cycads. The day concluded with an excellent dinner at the Kelvin Grove Club in the heart of Cape Town. Suitably attired with dresses and jackets (let me qualify that statement, ladies in dresses and men in jackets) we enjoyed good food, fine wine and some uninhibited dancing all of which prepared us for the long drive back to Goudini Spa. During the evening the new president of IAB, Jeff Duckett, announced that the remaining founding father of the IAB, Zen Iwatsuki,

Fig. 2. Terry Hedderson, delivering his final comments



extraordinary plants like *Welwitschia mirabilis* was very special. I regret not being able to participate in the post conference field trip, there would have been much more to learn particularly the distinctive bryophyte flora.

The conference left a lasting impression of a floristic hotspot where there is still enormous amount of research to be done. It is evident that this is being achieved through collaboration and the bryological community is embracing this approach. Once again I’m indebted to our IAB conveners, Terry, Claudine and many others, for the opportunity to broaden my bryological horizon. On behalf of the Australian bryophyte community, I take this opportunity to invite you to join us in two years time in Melbourne, Victoria, from 23rd to 30th July 2011. There we can guarantee a warm welcome, reciprocate the generous hospitality and continue the grand tradition that IAB conferences have established.

Phylogeny and Systematics Session Overview

By Lars Hedenäs

The Phylogeny and Systematics session on Thursday included a wide variety of topics, from species level problems to the plenary lecture that questioned recent ideas on large-scale bryophyte relationships. Although some results confirmed what we thought we knew, other ones made us uncertain regarding our knowledge or even turned some of our ideas upside down. Well, this is how science should be – moving gradually forward.

Fig. 3. From left to right: Cymon Cox, Lisa Pokorny Montero, Sanna Olsson, Nonkululo Phephu, Amélie Pichonet, Noris Salazar Allen. During several years many, perhaps most of us bryologists, have believed that liverworts, mosses, and hornworts form a basal grade among the green land plants, and that the Charales are the sister of the latter. In his plenary lecture, Cymon Cox first pointed out that large chloroplast genome data sets mostly place the Zygnematales as sister to the green land plants. He discussed his own results, including information from two mosses and two liverworts, in the context of other anomalies in earlier results. His research shows that, for example, non-monophyletic tracheophytes could *possibly* be explained by composition bias (incorrect analysis model specification). This is important, because earlier researchers used these anomalies as a reason to reject analyses from these large chloroplast data sets and argued that the hypothesis of liverworts as basal among the green land plants is most reasonable. However, a monophyletic bryophytes and monophyletic tracheophytes tree is also a viable hypothesis. Therefore, at least mosses and liverworts, and perhaps all bryophytes, could *possibly* form a monophyletic group. Ever heard this before? Although some of Cymon's analyses are still preliminary, we are

about bryophytes as a natural, monophyletic entity. Not bad for the dinosaurs!

Lisa Pokorny Montero reviewed ideas on Hookeriales relationships and showed some preliminary results suggesting that the Hookeriaceae and the Daltoniaceae should possibly be split into two families each. She found no clear relation between phylogeny and habitat preferences. On the other hand, such a relationship was shown for the Neckeraceae by Sanna Olsson in the following talk. In the latter family, similar morphologies evolved independently in each of the three main lineages within the family, correlated with parallel adaptations to epilithic and epiphytic habitats. Molecular data helped reveal that earlier classifications of taxa within the family were partly based on similar character states that had evolved in parallel. Earlier bryologists probably turn in their graves when they realize how easily nature cheated them. In the last talk on pleurocarpous mosses, Nonkululo Phephu provided an overview of the African members of the Thuidiaceae.

Turning to acrocarps, Amélie Pichonet described her work on a world-wide revision of *Dicranum*, a genus with somewhere between 60-100 species that has so far resisted all attempts to complete a comprehensive revision. Her research includes both phylogenetic studies of the members of genus and an assessment of the relationship between *Dicranum*, *Orthodicranum*, *Dicranoloma*, and *Pseudochorisodontium*. We are probably many persons who look forward to see the outcome of this effort. In the single talk on liverwort systematics, Noris Salazar Allen discussed species level problems within *Dumortiera*. Two taxa exist,



Fig. 3. From left to right: Cymon Cox, Lisa Pokorny Montero, Sanna Olsson, Nonkululo Phephu, Amélie Pichonet, Noris Salazar

possibly back to the old times when we can again talk

presently recognized as subspecies, but ongoing molecular and morphological studies of samples from

all-over the distribution area of the genus may change this view.

The talks were all interesting and engaging, and show that bryophyte systematics is full of life. After a period when molecular data were thought to solve all problems, it is especially pleasing to see that morphology and a wider understanding of the biology of the taxa are again more appreciated, both as

sources of information and in providing a context for the molecular results. Since bryologists working with other aspects than systematics need to know more about the relationships and circumscriptions of their organisms, I find it very positive that systematics continues to attract a healthy interest and understanding.

The IAB Workshop on the Conservation of Bryophytes

By Ron Porley, IUCN Bryophyte Specialist Group

The meeting took place in Cape Town on the 18th of August and was chaired by Tomas Hallingbäck.

Red Lists – open forum

The first Global Red List of bryophytes (approx. 90 spp.) was compiled in 2000. IUCN has indicated that an updated list is now needed. A global list has an important role, but National Red lists have most impact at the country level.

Africa has advantage of authoritative checklists (eg: O'Shea; Wigginton) which could provide the basis for country red lists by selective sifting. However, even in South Africa which has a history of recording and a bryophyte flora, knowledge of the country's bryoflora is considered patchy at best. In compiling a red list it should be possible to identify range restricted species and biome threat. Different habitats are protected to different degrees: fynbos is afforded much greater protection than Renosterveld for example. A provisional list would have the function of raising awareness of threats to bryophytes which few African countries/governments /NGO's currently appreciate. The term Red List, in an African context, based on very imperfect knowledge, may be somewhat misleading, implying the rigorous listing of bryophytes that is possible in many European and North American countries which have greater knowledge. Terms such as 'provisional' red list, 'conservation concern' or some other appropriate term may go some way in avoiding direct comparison with lists from such countries. It should also be noted that any kind of Red List is not a legal instrument; it is the discretion of a country whether it uses a red list as the basis for protection under domestic (or other) legislation. Many countries in Africa are signatories to various international conventions (eg Bern) that include some bryophytes although Africa is very poorly represented in such lists.

Protection of bryophytes in an African country: Kenya - Min S. Chuah-Petiot

Two-thirds of Kenya is arid, albeit very varied geologically and topographically, with such well-known areas as the Rift valley, Mt. Kenya, Mt. Elgon and the Aberdare's. The threat to the biomes and bryophyte flora is great, largely due to land exploitation which is compounded by high-level politics. Forest clearance (land 'grabbing'), habitat destruction is exacerbated by climate change (drought is a particular issue in Kenya). The population is largely rural and poor and hence there is enormous pressure on the land and resources. There are many game parks/national parks, ranging from coastal to montane, and bryophytes are indirectly protected to a degree. However, administrative structures are not in place to provide protection for bryophytes and institutions that are knowledgeable and can provide advice are weak in the face of vested interests and political indifference or indeed corruption. Politicians are regularly invited to conferences on conservation issues but seldom if ever attend. In summary, bryophyte protection in Kenya is either non-existent or minimal, having to compete with more lucrative interests, such as elephant conservation. This bleak picture is probably repeated across the continent.

Bryophyte hotspots and monitoring: examples from Germany – U Drehwald

Hotspots. The working definition of a hotspot is an area (small or large) with high species richness, of endemics and/or high number of threatened taxa. However, this often ignores inherently species poor habitats such as disused mine sites. One approach to counter this is to base the hotspot selection at the habitat level. Hotspot identification is successfully being employed in Europe, and could be applied to Africa based on current knowledge, particularly if ideas for hotspots were to be posted on the IAB website. Réunion has preparing a hotspot map from an 'index' dataset (checklist) based on species richness, although this is also coincident with endemic localities such as within the mountain cirques. In C. America and the Caribbean bryophyte herbarium specimens have

been digitised and are available on the internet and will be geo-referenced.

Monitoring. *Notothylas orbicularis*, is a hornwort on the EU Habitat & Species Directive. There are about 35 locations around Frankfurt, Germany, and is a specialist of cereal (grain) fields and thus does not lie within protected areas. It is a plant that grows between harvest and the first frosts, but population fluctuate year to year depending on weather conditions. With a move to winter sown crops, where land is cultivated immediately following harvest, *Notothylas* is at risk. However, farmers can be offered money where they enter an agreement to sow spring crops, remove (suppressing) litter and must not add liquid manure (slurry). The populations will be monitored every three years to ensure the money is usefully spent. Such a scheme also benefits the rare arable liverwort *Anthoceros neesii*. Another bryophyte monitored in Germany is *Dicranum viride*, an indicator of undisturbed (or minimally disturbed) forest. Its core distribution is around the Vogelsberg, Rhone and near Frankfurt, particularly where basaltic rocks occur. It is not known to produce spores in Germany, dispersing by leaf fragments (may take 100 years or more to return to an area where lost). It is known from about 50 localities, typically on 3-5 trees at any locality, although one site it occurs on more than 500 trees. Local foresters are informed of its presence and trees are marked. It is monitored every six years, in 100m² plots, and the results logged with the EU. It mostly occurs in state owned forests so no problem to protect the areas.

Education and Communication – the C American picture – SA Norris

Much progress has been made in raising awareness of bryophytes and their conservation needs to the public and government representatives in Panama, a herbarium has been built up and courses held in

botany covering a survey of the plant kingdom including bryophytes and there is now a graduate course in bryology. Much has also been done to disseminate awareness of bryophytes and their ecological importance to a range of institutions. There are many education opportunities through student participation, but there is a critical shortage of placements for gifted students to do research with bryophytes. An aspect that is being addressed through education and outreach is the collecting of bryophytes for nativity scenes. Similar awareness-raising has also begun in Guatemala. Digitising of herbarium material held by Panama University is in progress enabled by a grant, including providing digital images of bryophytes.

Role of IAB – J Glime

The Conservation Committee of the IAB is very active in the context of N America. Guidelines for the sustainable harvest of bryophytes has been well received by forestry services in the States but have not yet permeated around the globe where there is great potential. This would engender feedback and improvement. Collection (scientific) guidelines are needed for all countries, particularly developing nations, and it is important that at least one duplicate collection is returned to that country. Because of the scale of the problem it was emphasised that the IAB needs to know what they can do to further bryophyte conservation outside the States. Possibilities include sponsorship of a student, or to target an area to visit and invite a group of participants (similar to recent Réunion expedition). IAB may be particularly effective at promoting bryophyte collecting trips/workshops in certain tropical countries by linking up State universities with local universities, and may be able to train participants to collect 'intelligently'. Further ideas for capacity building were solicited and would be welcomed by e mail/correspondence.

Reports Presented at the IAB-Council Meeting

IAB council AGENDA 2009 for 4:30 pm Sunday 16 August

Officers

President:

Janice Glime (2005-2009) USA

Jeff Duckett (2009-2013) UK

1st VP: Masa Higuchi (2007-2011) Japan

2nd VP: Ben Tan (2005-2009) Singapore

Jiri Váňa (2009-2013) Czech Republic

Treasurer: Blanka Shaw (2005-2011) USA

Secretary: Geert Raeymaekers (2005-2011) Belgium

Council

Christine Cargill (2005-2009) Australia; Uwe Drehwald (2005-2009) Germany; Terry Hedderson (2005-2009)

South Africa; Misha Ignatov (2005-2009) Russia; David Long (2005-2009) United Kingdom; Rob Gradstein (2005-2009) – Germany as past president; Min Chuah-Petiot (2007-2011) Malaysia; Efrain De Luna (2007-2011) Mexico; Zhang Li (2007-2011) China; Emma Pharo (2007-2011) Australia; Rosa Ros (2007-2011) Spain; Dietmar Quandt (2009-2013) Germany; Nadya Konstantinova (2009-2013) Russia; Matt Von Konratt (2009-2013) USA & New Zealand; Claudine Ah-Peng (2009-2013) South Africa; Nancy Slack (2009-2013) USA; Janice Glime (2009-2013) USA, as past president

Editors for Bryological Times: DorothyBelle Poli & Geert Raeymaekers

Results of Election

President: Jeff Duckett
VP2: Jiri Váňa (replacing Ben Tan)
Council: Dietmar Quandt (2009-2013) Germany;
Nadya Konstantinova (2009-2013) Russia; Matt Von Konratt (2009-2013) USA & New Zealand; Claudine Ah-Peng (2009-2013) South Africa; Nancy Slack (2009-2013) USA

Thank you to VP2 Ben Tan and Councillors: Christine Cargill (2005-2009) Australia; Uwe Drehwald (2005-2009) Germany; Terry Hedderson (2005-2009) South Africa; Misha Ignatov (2005-2009) Russia; David Long (2005-2009) United Kingdom; Rob Gradstein (2005-2009) Germany

Awards: Spruce (chair Higuchi); Hattori Prize (chair Tan) \$400 prize; Greene Award (chair Goffinet); Grolle (chair Salazar); Student Travel Awards (chair B. Shaw)

Reports: Budget/expenditures (Blanka Shaw), Conservation Committee (Tomas Hallingbäck), Genetic Engineering Standards (Brent Mischler), Membership Committee (Rosa Ros), Bryological Times (Geert Raeymaekers).

IAB Blog and image site

New BT co-editor: DorothyBelle Poli

Old Business: Janice Glime Presiding
Tropical Bryology (Dietmar Quandt)
Back Issues of BT (Niklas Lönnell) – need tables of contents
Directory of Members (Efrain DeLuna & Uwe Drehwald)

Minutes of the IAB Council Meeting held on Tuesday August 18, 2009 at the Goudini Spa Hotel, South Africa from 19:50 to 22:13.

Present:

Executive Committee: Presidents: Janice Glime (2005-2009) & Jeff Duckett (2009-2013), 1st VP Masa Higuchi, Treasurer: Blanka Shaw,
Council: Claudine Ah-Peng, Uwe Drehwald, Terry Hedderson, Min Chuah-Petiot, Matt Von Konrat,

Other IAB members present: Patrick Dalton, Noris Salazar Allen, Irene Bisang, Tomas Hallingback, Wynne Miles (acting as Secretary for Geert Raeymaekers)

IAB Blog Site (Efrain DeLuna)
2011 meeting in Australia (Paddy Dalton)
Proposed Constitutional Amendments (Janice Glime)

Stanley Greene Award: Replace "chaired by Secretary-Treasurer" to "chaired by Secretary"
Add: "Treasurer is ex officio voting member."
Do we want to redefine secretary/treasurer since it is currently two positions?
Online Keys

New Business: Jeff Duckett Presiding

2013 meeting location: Invitation from Vancouver, BC; Wynne Miles & Judith Harpel
Incorporation of IAB as non-profit organization
Student Travel Awards
BT Survey
Advertising booths at meetings
Membership lists and emails
Recruitment
Intracontinental meetings linking with national societies to alternate with Congress years (How feasible might this be for eg in the USA and in Europe)

Links with *Physcomitrella* meetings
Web page suggestions
recent links to scientific publications
pictures from IAB meetings
more detailed information on what a bryophyte is
definition of a bryologist
link to blog site
recent events
upcoming events
link to the Melbourne 2011 Bot. Congress
ABLS meetings, etc

Janice Glime called the meeting to order at 19:50 and provided an agenda.

Results of Election:

President: Jeff Duckett
VP2: Jiri Vana (replacing Ben Tan)
Council: (2009-2013)
Claudine Ah-Peng - South Africa
Dietmar Quandt - Germany
Nancy Slack - USA
Nadezhda (Nadya) Alekseevna Konstantinova - Russia
Matt Von Konrat - Chicago

Thank you to President Janice Glime, VP2 Ben Tan and Councillors:

Christine Cargill (2005-2009) Australia
Uwe Drehwald (2005-2009) Germany
Terry Hedderson (2005-2009) South Africa
Misha Ignatov (2005-2009) Russia
David Long (2005-2009) United Kingdom
Rob Gradstein (2005-2009) – as past president Germany * Janice Glime assumes this position.

Awards

Richard Spruce Award (chair Masa Higuchi): M. Higuchi reported that the recipient of this award was Jon Shaw.

Hattori Prize (Chair Tan): The Hattori Prize (including a cash award of \$400) was split amongst the four authors of the following article: Bell, N. E., D. Quandt, T.J. O'Brien & A.E. Newton (2007). Taxonomy and phylogeny in the earliest diverging pleurocarps: square holes and bifurcating pegs. *Bryologist* 110(3): 533-560.

The Stanley Greene Award (chair Goffinet) was given to Jessica M. Budke.

Ricief Grolle Award for Excellence in Bryodiversity Research (Chair Salazar): The committee chair noted that there had been many applicants for this award covering many categories and criteria. It was decided to give the award to Dr. Claudio Delgadillo for his long service in the area of biodiversity. Dr. Delgadillo initially refused the award due to a perceived conflict since he had chaired the committee that developed the award. However after some discussion, including the comment by Jeff Duckett that the applicants should be judged purely by criteria, the council decided to confirm the original choice of Claudio Delgadillo.

Student Travel Awards (chair Blanka Shaw):
Lisa Pokorny Montero, Duke University, USA
Ariyo OlusesanAyodele, University of Lagos, Nigeria
Gregory Buda, Cornell University, USA
Shivom Singh, Bareilly College, India
Kajal Srivasatava, Barielly College, India

Written guidelines were presented. A discussion ensued about the history of this award, and how to fund it. B. Shaw noted that the \$1000 is split amongst 5 students, and that they apply for additional money elsewhere. J. Glime explained some history regarding the funding of student travel grants. At the 2007 meeting in Malaysia the Japanese IAB members donated \$1000, as the dues collected in Japan remain there and can be used for scholarships. Discussion is needed therefore for future years. JG noted that fees collected in other countries are not always transferred to the IAB. UD mentioned that he had personally paid for the IAB website for this year. B. Shaw suggested using the IAB money as seed money. MH suggested

providing four \$300 awards. JG noted that the IAB has an endowment of \$28,000 (a gift from E. Lawton with restrictions) that the Council had decided not to use for now except for the interest. Therefore the interest could be used for student travel.

A discussion ensued regarding fund raising. TH enquired whether fund raising had been fully investigated by the IAB in order to get funds for investing. JD noted that publishers give funds. JG suggested advertising at meetings. JD noted that Cambridge University Press could have sold more books here at Goudini if more had been brought. TH suggested the new council investigate fund-raising as only one or two substantial donations are needed. JD suggested that the Physcomitrella work could provide openings. CA suggested that IAB members try fund-raising in each of their home countries.

Reports

Budget / Expenditures (Blanka Shaw): B Shaw presented a seven page written financial statement as of July 17 2009 with one correction (total committed Funds = \$30, 705.00). The report included accounting summaries for Arctoa and Lindbergia. B. Shaw noted challenges with communications with some countries. Dues are collected locally in some countries and not forwarded to IAB. As well currency exchange can lead to bookkeeping challenges. B. Shaw noted that she had used Paypal for personal payments, but it is too expensive for general use. JD will check regarding using Paypal.

Conservation Committee (Tomas Hallingback)
A report was sent to all Council members
1) A spring workshop in Singapore over a long weekend was successful for raising money. Twenty people attended and ~ 500 species identified.
2) Fund-raising will continue this year for a workshop in Central America / Panama. The workshop has been postponed from this coming October. JD supported the idea of regional meetings.

Genetic Engineering Standards (Brent Mischler) BM has not reported back yet. The existing standards need to be made more stringent, especially regarding possible escape into the environment through asexual reproduction. TH and others have been contacted.

Membership Committee (Rosa Ros): no report.

IAB Blog and Image Site, managed by Efrain DeLuna

The blog site is shunted from Bryonet such that large photo files are held on the Blog and a notice is sent to Bryonet.

New BT co-editor:

Dorothy Belle Poli will assist Geert Raeymaekers to

edit the Bryological Times. Thank you!

Old Business: Janice Glime presiding.

1) Directory of Members (Efrain DeLuna & Uwe Drehwald) The online directory uses the same BT password. It is linked through the IAB website to the Efrain site.

2) 2011 meeting in Australia (Paddy Dalton) A one-page printed report was presented to council. The organizing committee believes that IAB activities should be integrated with the IBC program. Therefore the IAB sessions (4-5) will mirror the IBC themes but be separate with IAB keynote speakers (JD will contact PD regarding this):

- i) Systematics, evolution, biogeography & biodiversity informatics
- ii) Ecology, environmental change & conservation
- iii) Structure, development & cellular biology
- iv) Genetics, genomics & bioinformatics
- v) Physiology & biochemistry
- vi) Economic botany including biotechnology, agriculture & plant breeding (possibly eliminate this one)

Expressions of interest from IAB are requested for symposia conveners (keynote speakers). Jon Shaw as the winner of the Spruce Award will present the opening address. Deadline for symposia proposals is the end of November 2009. PD suggests advertising in BT. The committee will endeavor to avoid concurrent sessions within our program, and proposes to organize a separate student session so that it will be easier to judge student awards.

The student registration rate has not been determined. JD mentioned that funds will be available through the Royal Society of London; people can apply to offset registration fees.

JD suggested that Physcomitrella talks should be included in IAB sessions. PD will target 3 field trips and provide bryological experts. The website is up. JG suggested that bryologists be provided with distinctive name tags or ribbons. PD will organize a Meet & Greet for bryologists on the first night. It was suggested that there should be a webpage for IAB 2011 linked through the IAB webpage. All registration will be through IBC. It was noted that the Melbourne Convention and Exhibition Centre is brand new, a hotel facility will be provided for all IAB participants, and that Melbourne as the sporting capital of Australia and a multicultural center is a great place to visit!

Proposed Constitutional Amendment (JG): According to the constitution the position of Secretary / Treasurer is held by one person. This was split in 2005, and this split should be continued. B.Shaw has found a replacement for her position as Treasurer (Jim

Shevock). As the executive council can appoint a replacement for a council member (except for president) it was moved (TH) that Jim Shevock be appointed as Treasurer or Treasurer/Secretary (Geert has 2 more years remaining as secretary) . The motion was seconded by MCP and passed unanimously.

Online Keys:

MVK reported. A database is needed, with protocol for data formatting online. Some options;
i) Discover Life, Chicago Field Museum; build own keys and upload images;
ii) Conservation and Environment at the Chicago Field Museum; online keys - to be explored;
iii) John Pickering, University of Georgia, Athens
MVK will write an article for BT regarding Discover Life.

Tropical Bryology:

A two-page letter from Dietmar Quandt was presented to the Council outlining proposed changes needed to the journal Tropical Bryology such as placing the journal under the official roof of the IAB with a ISI citation and broadening the scope of the journal. As the TB is currently both an online journal and printed, a paper copy as needed would need to be distributed i.e. to describe new species. Libraries would need a paper copy, either for free or for a \$100 fee per year. It was noted that we have lost one bryological journal (the Hattori).

MVK noted that the Chicago Field Museum has dropped 60% of its serials due to the financial downturn. A paper copy will be needed unless the IBC changes that criterion. JG suggested contacting other journals regarding amalgamation, such that the Tropical Biology could continue giving priority to Tropical Studies. It would be a boon to IAB membership if the IAB had a journal. JD suggested that a committee was required to rethink the role of journals in Biology. It would be beneficial if all new species (e.g. fungi, bacteria, lichens and bryophytes) were published in one place. A main paper copy could describe spp. and other articles could be published online. Tropical Biology could be one section. It was noted that Lindbergia is in a crisis state. TH noted some concerns with only one journal; i.e. if we would be putting all the 'eggs in one pot', and articles could be squeezed out. JD did not think this would be a concern if the majority of the articles were published online. It was noted that the IBC needs a printed copy, and the Lindbergia does not have ISI listing.

It was suggested a committee be set up including DQ, perhaps TH, and others.

The gavel (imaginary at this point in time!) was now turned over to Jeff Duckett as the incoming president. JD will bring a gavel, fashioned from some appropriate material, to the 2011 meeting.

New Business: Jeff Duckett presiding.

2013 Meeting:

A presentation was made by Wynne Miles proposing that the IAB 2013 meeting be held at the University of British Columbia in Vancouver. Co-chairs for the organizing meeting would be Wynne Miles and Judith Harpel. The proposal was accepted. It was suggested that an invitation be extended to the ABLs for a joint meeting. JD will contact ABLs.

Incorporation of IAB as a non-profit organization.

JG has obtained the necessary papers for incorporation. Those present signed as members of the organization. The cost is US \$20.

Student Travel Awards

As noted above B. Shaw presented a one-page proposal to support student attendance at biennial meetings. JG moved to continue with the student awards as outlined in B. Shaw's proposal. Seconded by JD. Passed.

BT Survey

The BT survey results were provided as a two-page report by DorothyBelle Poli. The survey was successful with responses provided by 33 people including many positive ideas. One suggestion was a personal column in which current bryologists could submit topics of interest; e.g. JD suggested JG write an article on what made her become a bryologist. Other suggestions included having links to current IT services such as libraries and online keys, and links to council reports and news.

Advertising Booths at Meetings

This could be a good idea for fund-raising. Many books were sold here at Goudini. There will be many booths at the 2011 meeting in Melbourne, including an IAB booth.

Membership Lists and Emails: covered previously: on website.

Recruitment:

It was agreed that this very much depends on the future activities of IAB.

Intracontinental meetings linking with national societies to alternate with Congress years (Regional Meetings); (how feasible this might be for example the USA or Europe?)

SE Asia would be a good location. Perhaps Central America on alternate years.

Links with Physcomitrella meetings; JD will report

Web Page Suggestions:

Recent links to scientific publications; pictures from IAB meetings; more detailed information on what a bryophyte is; definition of a bryologist; link to blog site; recent events; upcoming events such as the Melbourne 2011 Botanical Congress and ABLs meetings, etc.

Additional business

Regarding 2013 meeting: PD queried who would pay the deposit to UBC? Jim Shevock as treasurer (JD). A financial report is not necessary unless an advance is given.

Flyer: It has been discussed in the past that an IAB Flyer be produced to promote the organization. Rob Gradstein had offered to provide some funds (\$500?); this should be put on hold until the journal is settled.

BT: Password for nonmembers; table of contents should be open as this would encourage new members; all back issues are now posted.

The council meeting was adjourned at 22:13.

Respectfully submitted
Wynne Miles
Acting Secretary

Bryonet report

Bryonet has had 1786 subscribers. Current membership is 962. We are in the process of moving to new list software that will retain the original formatting and handle foreign characters and html

code effectively. Bryonet posts are now being preserved on the IAB Blog site.

Janice Glime, 30 July 2009

The IUCN/IAB Bryophyte Conservation Group

First of all, I would like to thank all of you for your contributions and your work devoted to the endangered species during this year. I hope that 2008

has been a good year for all of you.
For me it went like this: At the end of February a

number of us were invited by Ben Tan to participate in a workshop in Singapore. The meeting was due to the fact that we have to support the Target 2 of the Global Strategy for Plant Conservation of the CBD, IUCN has developed a new methodology, based on IUCN Red List Criteria, to allow rapid preliminary evaluations of the conservation status of plant species. The species were divided into three categories: "Probably not threatened", "Probably threatened" and "Probably Data Deficient". We evaluated the rare species of East, SE and South Asia (hereby named SE Asia), which include Russian Siberia, China, Japan, Korea, Indochina, Malaysia, India, Pakistan and Sri Lanka. Japan and China are the only two countries in this region that already have made their national Bryophyte Red lists. Sixteen experts participated. The first morning was dedicated to the presentation of Red List Categories, Criteria and Definitions. Our working procedure at the Singapore workshop started by dividing the 16 invited experts on Asian bryophyte biodiversity and distribution into two groups, one for liverworts/hornworts and one for mosses. Each group was assigned a meeting room with facilities of computers, coffee/tea and one secretary!

Assigning bryophytes to a threat category is associated with a number of difficulties and not the least, by the absence of proper distribution data. The last is very true about Asia!

In total, we discussed c. 500 species, including many subsp. and varieties. Some of these taxa were subsequently not considered because either they are too common in distribution, or they were taxonomically uncertain, and we had not enough of the needed information on hand. We ended up with a list of c. 400 species of those (200 liverworts and 200 mosses) evaluated.

If you want to check the species list for yourself, please tell me and I will send it to you.

Provisional plans for a workshop on endangered species in Panama 2009

Dr Noris Salazar has discussed a very preliminary plan to arrange a red listing workshop in Panama in September or October 2009. This will cover most of the Central American countries.

As you remember we have the very challenging task till year 2010 to present a preliminary world-wide list of very rare and/or threatened bryophytes. The Singapore workshop was one step, more steps are to follow. If you are interested to contribute with species from your region, please contact me.

Members in committee: In 2009 (June) the joint IAB/IUCN committee consisted of 24 members: René Belland (Canada), Ariel Bergamini (Switzerland), Jaime Aguirre Ceballos (Colombia), Denise Pinheiro da Costa (Brazil), Uwe Drehwald (Germany), Allan Fife (New Zealand), Tomas Hallingback (Sweden), Judy Harpel (USA), Zen Iwatsuki (Japan), Matt von Konrat (USA/New Zealand), Nadeyda Konstantinova (Russia), David Meagher (Australia), Ron Porley (United Kingdom), Geert Raeymaekers (Belgium), Margaret Ramsay (United Kingdom), Noris Salazar Allen (Panama), Cecília Sérgio (Portugal), D. K. Singh, Kimmo Syrjänen (Finland), Lars Söderström (Norway), Benito C Tan (Singapore), Cao Tong, Jiri Váňa (Czech Republic), Yelitza León Vargas (Venezuela). **My suggestions for the next term, is to keep all of the present committee members, - they are all very active people!**

Tomas Hallingback

Chairman of IUCN SSC Bryophyte Specialist Group & the IAB standing Committee for Endangered Bryophytes

See further down under "Conservation news" for the report from the Asian Bryophyte conservation Workshop held in Singapore, Feb 28 -- 2 March 2008

Report from the IAB-Council Election Ballot

Total Ballots cast: 92. Results of Elections:
President: Duckett (88 votes cast); Vice President: Vana
Councillors elected: Quandt, Konstantinova, Von Konrat, Ah-Peng, Slack

General comments:

IAB Membership list: I do not envy the Keeper of the membership list. It seems to be a bit of a nightmare to maintain and some regional members who are responsible for receiving membership dues are clearly

not keeping the list up to date. Blanca does a good job under difficult circumstances but for her sake, and anyone else who takes on this job should Blanca no longer wish to do so, the list needs to be kept current and needs to be completely overhauled.

I think it would also help if the list was subdivided alphabetically by country (or region and then country within the region) and members also alphabetised.

The email list needs to be kept up to date but this really should be the responsibility of the individual, not the list keeper.

Responses: There was a steady flow initially. This tapered off to virtually nothing until a reminder of the voting and deadline was sent to Bryonet by the President. This reminder added approximately a quarter of the votes received. In general, I believe that total of 92 voting ballots received is a poor result. The dates of ballots received represent a rather nice bimodal curve!!

I received one email ballot without indication of a vote for any candidate. I have not included this ballot (but have advised the voter). However, any votes cast will not materially affect the outcome of this ballot.

Candidates voting: I would have thought that any of the candidates nominating would/should wish to cast a ballot, even if they only voted just for themselves. Half the candidates nominating for office did not cast a ballot.

Electronic ballots: This seems to be working well. I only received 5 postal ballots. Most of these appear to have email addresses but maybe find it difficult to understand how to activate the electronic ballot.

Number of nominations: There was a very good field of candidates nominating for selection. This made for some difficult choices. As I have separately remarked to Janice, I felt it unfortunate that there was only one nomination for President. Two other nominations were received on ballot forms. One nomination was for me but, as Returning Officer, I would (and did) automatically disqualify myself.

I extend my congratulations to the candidates who will be elected and presented at the IAB Conference in South Africa (which I am unable to attend). May they serve the Association well during their term of office.

Rod Seppelt, Returning Officer

News from “Tropical Bryology”

Since almost 20 years the journal *Tropical Bryology* serves the bryological community to exchange ideas and to report scientific results mainly dealing with bryophytes from tropical areas. Besides encouraging tropical bryology the journal originally aimed at promoting researchers from the tropics.

With the *Journal of the Hattori Laboratory* deceasing, we feel the need to broaden the scope of the journal. Indeed, during the last years more and more publications appeared dealing with mosses from non-tropical areas. In addition, the editorial team noticed that unlike other societies no official IAB journal exists. Therefore and in order to gain a wider acceptance of *Tropical Bryology* the editorial team suggests placing the journal under the official roof of the International Association of Bryologists (IAB) and at the same time to broaden the scope of the journal. Although we believe that tropical aspects and the promotion of young scientists should still be in the focus of the journal.

Our vision is to promote *Tropical Bryology* into the ISI citation index. This would be beneficial for all of us. Therefore, we are working hard to fulfil certain requirements such as timely appearance; a fast and unquestionable review process etc. which is only possible with our joint forces and easier to achieve if the journal is placed under the roof of the IAB.

However, we are aware that certain changes of the journal would need to go along with this proposal:

- the journal title needs to change into something more general, e.g. *International Journal of Bryology*;
- previous restrictions concerning the need for tropical aspects of manuscripts would be abandoned; a restriction that has been adopted in the past very loosely anyway;
- a new web page hosting an online system with downloadable pdfs of the papers for IAB members and other subscribers;
- an online first section in order to avoid long time gaps between the acceptance of the papers and printing, i.e. accepted papers appear online directly after proof reading;

Currently the journal appears once a year and everything from starting the review process until paper layout etc. is done by the editors. We believe the journal could appear twice a year, given that we receive an appropriate amount of suitable publications. With broadening the scope of the journal and placing it under the roof of the IAB this should be feasible. Printing and shipping costs for each volume are calculated at 15 € per volume. Thus, if the journal would appear twice a year we end up with 30 € that need to be added to the IAB membership fee. Most subscribers are members of the IAB anyway, thus payment of the journal could be largely done together with the IAB fees.

With kind regards on behalf of the editors.

Dietmar Quandt

IAB Membership Report

By Blanka Shaw

	2005	2006	2007	2008	2009
Number of IAB members	547	500	473	624	592
Number of student members	8	20	24	4	8

Country	2005	2006	2007	2008	2009
Albania			1	1	
Argentina	1	1		1	
Australia	25	21	14	26	2
Austria	7	6	4	7	1
Barbados	1	1	1	1	1
Belgium	7	6	4	7	7
Bolivia	1	1	1	1	1
Brazil	2	2	2	3	3
Bulgaria	1	2	1	2	2
Canada	15	19	13	28	28
Chile	1	4	3	4	4
China	47	48	49	50	50
Czech Republic	10	7	7	10	10
Estonia	4	5	5	5	5
Finland	12	6	7	13	13
France	5	5	4	5	5
Germany	37	30	24	40	40
Greece	1	1	1	1	1
Hungary	20	14	14	20	20
India	21	24	15	26	26
Indonesia	1	1	1	1	1
Italy	5	6	5	6	6
Japan	44	44	52	52	52
Kenya	1	2	1	2	2
Korea	1	1	1	1	1
Latvia	3	3	3	3	3
Malaysia	2	3	2	3	3
Mexico	3	3	3	3	3
Nepal	1			1	1
New Zealand	4	3	3	4	4
Nigeria	3	3	2	3	3
Norway	8	4	4	8	8
Poland	2	2	4	4	4
Portugal	6	1	1	6	6
Puerto Rico	1	1	1	1	1
Panama	1	1	1	1	1
Reunion			2	2	2
Romania	1	1	1	1	1
Russia	55	55	57	57	57
Slovenia	1			1	1
South Africa	1			1	1
Spain	19	20	15	23	23
Sri Lanka	1	1	1	1	1
Sweden	12	7	5	14	14
Switzerland	11	9	7	11	11
Taiwan	1	1	1	1	1
Thailand	3			3	3
The Netherlands	16	9	9	17	17
Turkey	1	1	3	3	3
Ukraine	1	1	1	1	1
United Kingdom	38	38	37	45	45
USA	80	75	79	91	91
Venezuela	2	1	1	2	2
Grand Total	547	500	473	624	592

Report from the Bryological Times Editor

Since the last IAB-council meeting (July 2007), 6 issues of the Bryological Times have been published (BT-123 to BT-128): BT 123 (October 2007), BT 124 (Dec. 2007), BT 125 (May 2008), BT 126 (November 2008, BT 127 (April 2009), and BT-128 is planned for September/October 2009;

Organisation

- Co-editor: the main and very important news is that Dr. Dorothybelle Poli has accepted to become co-editor of the Bryological Times. I hope that she soon will be able to take over the editorship, so that I will then become co-editor. "DB's" address is: DorothyBelle Poli, Assistant Professor Biology, Roanoke College, 221 College Lane, Salem VA 24153 USA. Phone 540 375 2461, email: poli@roanoke.edu
- A network of "country contacts" and column editors
- Proofreading: Dr. Brian 'O Shea and Janice Glime (president IAB) have been a very helpful proofreader and I would like to thank them for their generous contribution and support.
- Publication of the Bryological Times on www.bryology.org with kind assistance from Uwe Drehwald. Thank you Uwe!
- With the support of Niklas Lonell and Uwe Drehwald, we were able to get all the BT's scanned and available on the IAB-website.

News gathering

- Requests through Bryonet. Bryonet remains an important source of information. Items presented on Bryonet allow a quick scan of potentially interesting contributions and allows me to request for contributions when a newsletter is published. Overall successful reactions from the Bryonet!
- Country contacts replaced since 2005 the previous regional contacts (see table below for list of country contacts). This improved to a certain extent the information flow as country contacts have a smaller area to cover than the regional contacts and are more in touch with the bryologist "on-site". However, despite the several contributions from a number of effective country contacts, others rarely report and id requests from the editor a significant amount of effort to receive contributions to the Bryological Times. This key problem, the lack of a constant flow of relevant information from all parts of the globe, remains. I have discussed this with DB, who sent out a questionnaire to the IAB membership to enquire on their willingness/interest to contribute to the BT. Out of 34 respondents, 19 indicated to be willing to contribute. I sincerely hope that with this interest and the fact that DB and me

are now jointly working to prepare the BT, we will have issues at a more regular basis and with a wide range of contributions. May I also urge that the various IAB-Council members support the newsletter. DB and I will keep the Council informed and I will discuss with DB how we can keep the Council members further motivated to contribute to the Bryological Times.

- Column editorial: Collaboration with column editors remains useful to receive specific information as e.g. "Literature" and "Theses in Bryology" contributions. However, seems to be less effective to receive contributions for on "Tropical Bryology". I would like to thank the column editors for their contribution to the newsletter.

Content of newsletter

- Evidently, the content of the newsletter depends upon the contributions received and overall, there has been a good mix of articles and a good geographical spread of contributions. Interestingly, proportionally less contributions of large countries as US, Australia, China, and a less than expected number of contributions from countries with well-organised bryological societies.
- I have the impression that several bryologists are not fully aware of the uniqueness of the kind of information that they may be able to share (There is too much of a feeling that what one may have to present to the BT is not really useful information; on the contrary it mostly is very valuable news).

Dissemination of newsletter

- Dissemination: has been easier and far less costly now that the Bryological Times is accessible from the IAB website. I send only 10 issues per regular post to subscribers in Europe who have paid the extra fee to receive a paper copy of the newsletter. I however do now know how many other people (outside Europe) receive a paper copy. One problem is that passwords and keywords are being kept forgotten and I am regularly contacted to provide these to our members. It would be better if we could develop a system to send the BT by email. Or do we really have to restrict the BT to paid members (see below)?
- Make BT freely accessible: This all was an additional burden and personally, I do not see the advantage of restricting access to the newsletter to paying members; Will membership drop if we make the Bryological Times freely accessible? I think that by putting energy in increasing the membership (with increased n° of dues paid) and reducing the cost of paper copies, we could make the BT freely

accessible on the IAB website, apart from sending the BT by the internet.

Expenses

- A substantial saving: there has been a substantial saving since the BT has become available on line. However, the extra fee of 10 USD to members wishing to receive a paper copy of the newsletter is not sufficient to cover the printing and mailing costs if more than two issues per year are distributed. .
- Cost per newsletter copied and mailed increases since last year. The following table summarizes the copy and mailing costs for BT 123 to BT 127. (Only expenses for paper copy distribution in Europe).

Continuation

I informed the IAB meeting in Venezuela that I plan to keep editing the Bryological Times until the IAB-conference in Kuala Lumpur in 2007. I then started to

search for someone to replace me as an editor for the BT and as mentioned above am very pleased the role DorothyBelle Poli will take is now a very active co-editor; I am pleased to become co-editor as soon as she takes over the editorship. The working relationship with DB has been more than exemplary and pleasant and I am very much looking forward to keep working with her over the next years.

Issues for the attention of the IAB-Council:

- to appoint Dr. DorothyBelle Poli as the next Editor of the Bryological Times.
- to provide suggestions and lead on how to improve the flow of contributions to the Bryological Time;
- to discuss the financial issues as related to the distribution of the BT.

Geert Raeymaekers

OBITUARIES

Wilfred Borden Schofield (1927 – 2008)

After a brief struggle with cancer, Dr. Wilfred (Wilf) Borden Schofield, 81, passed away peacefully on the morning of November 5, 2008 in Vancouver, British Columbia. Wilf was born in Nova Scotia on 19 July 1927 and attended Acadia University. During his undergraduate years he collected both vascular plants and bryophytes after John

While this was primarily an ecological study, his dissertation, "The Ecotone between Spruce-fir and Deciduous Forest in the Great Smoky Mountains," included a strong bryophyte component. During his stay at Duke he developed strong friendships with Lewis Anderson, Sinske Hattori, Hisa Ando, Zen Iwatsuki, Alan Mark and Helen Ramasy. These long term friendships continued until the day he passed away. After completing his dissertation in 1960, Wilf, accepted a teaching position at the University of British Columbia (UBC) in Vancouver. During his teaching years Wilf supervised 10 Ph.D. students, and 9 M.Sc. students. His office door was always open and even after retirement he continued to serve on numerous graduate committees. Wilf served as a Member of Council and First Vice-President of the International Association of Bryologists between 1970-1972. During his career he published numerous papers and wrote several books. Probably the best known book is his Introduction to Bryology which was published in 1985. His passion for fieldwork and interest in phytogeography is reflected in the huge collection of bryophytes amassed at the UBC Herbarium. In 2005 Peggy passed away leaving Wilf in a quandary. With the support of family and friends Wilf continued to do fieldwork and he was collecting in the Aleutian Islands up until several weeks before he became sick. For additional information on Wilf please see the following previously published articles listed below.

Wilf is survived by his daughters, Linda, Muriel and Pamela, grandchildren Aisha, Elise, Shayden and Kai. Wilf's contributions to bryology will be deeply missed by all of his friends and colleagues. Donations are

Fig. 4. Wilf at Burns Bog, British Columbia, 2002. Photo by W. Miles



Erskine introduced him to botany and bryology. It was during this time that he developed his love of bryophytes and in 1954 he moved to Stanford University in California to start graduate work under the guidance of William C. Steere. He chose to work on the taxonomically difficult genus Hypnum with a focus on the species of Canada, Alaska, and the northern latitudes. He completed his thesis, "The Relationships and Geographic Distribution of Canadian and Alaskan Species of Hypnum" in 1956. The summer of 1957 was spent working as Howard Crum's field assistant in the Canadian Rocky Mountain parks. It was also during his time at Stanford that he met and married Margaret (Peggy) Irene Bledsoe. Wilf and Peggy were very interested in music and their home was always filled with classical music. In 1957 Wilf and Peggy moved to Durham, North Carolina where Wilf started his Ph.D. under Henry J. Oosting at Duke University.

being accepted at the UBC Herbarium to help finish his Aleutian Islands Moss flora book co-authored with Stephen Talbot.

Additional articles

Belland, R. & H. Crum. A tribute to W.B. Schofield on his 70th birthday. *The Hattori Journal* Vol. 82:1-14.
Cheska, A. 2009. *Botanical Electronic News (B.E.N.)* 404. <http://www.ou.edu/cas/botany-micro/ben/>

Harpel, J. 2009. Wilfred Borden Schofield (1927-2008). *The Bryologist* 112(2) 257-267.

Harpel, J. 2003. Dedication to Wilfred B. Schofield. *Madroño* 50(4): 326-327.

Judith A. Harpel, Univ. of British Columbia Herbarium, jharpel@interchange.ubc.ca

Zoltan Tuba

There is little, which one can say at a time like this. But I'd like you to know all about the loss of an eminent Professor Zoltan Tuba on 17th of July, 2009. I know that nothing can dull the sorrow or irreparable loss to the scientific community. Prof. Zoltán Tuba



(PhD: 1985, DSc: 1998) started to work as ecophysiological in 1978 for the Ecological And Botanical Research Institute of Hungarian Academy of Science. Since 1985 he was working for the Department of Botany and Plant Physiology, Szent István (former Agricultural) University of Gödöllő (1989: Head of Plant

Physiology Sect., 1992: full professor, 1997: head of department and Academic Research Group). From 1992-95 he was a visiting professor at Universität Karlsruhe, University of Edinburgh, University of Exeter. He worked with Prof Proctor, M. C. F., Lichtenthaler, H. K and I had an opportunity to visit his lab twice and found that he had great regard for Professor Tamas Poc.

Professor Tuba and his group have 6 ongoing research projects financed by various Hungarian Scientific Research Foundations and grant giving bodies (OTKA, OMFB, FKFP, MTA). These projects concern ecophysiology of plants at present and elevated CO₂. He was the Hungarian project manager of the 3 (ECOCRAFT, ESPACE/Grass, EWVAR, MEGARICH) EU programmes. He introduced a new (cryptogamic:lichen/moss, ecophysiological transplantation) bioindication method for the measurement of environmental quality. In Hungary, he initiated research on the likely effects of high CO₂ on

plants (the pilot project was launched in 1991). He founded the "Gödöllő Global Climate Change and Plants" EU Long-term Experimental Ecological Research Station funded by the ECOCRAFT EU programme. Currently, the station is working as part of the MEGARICH EU R&D programme and is a 'core research' project of the GCTE (Canberra). Z. Tuba was a member of the Management Committee of the EU COST ACTION (619) entitled "Effect of atmospheric CO₂ increase on carbon fluxes in grassland-ecosystems" and at present is the member of Management Committee of the EU COST ACTION (627) "Carbon storage in European Grasslands".

He was one of the main organisers of the first International Conference on Bryoecology in 1985 (Vácrátót-Budapest). Recently he organised an international workshop on: 'Grassland Ecology and Ecophysiology Under Elevated Atmospheric CO₂ and Temperature' (7th European Ecological Congress', EURECO'95), 20-25 August 1995, Budapest-Gödöllő. He acted as chairperson on many occasions e.g. at 'International Conference on Vegetation Stress' (June 19-21 1995, München/Neuherberg; in 2 sessions), at the International Workshop on "Global Climate Change as Stress for Plants", (Stress of Life Int. Congr., Budapest, 1997) and International Conference on the Developmental Biology, Physiology and Molecular Biology of Bryophytes (8-12 January 1998, Bombay; in 2 sessions). Member of scientific advisory board and organising committee of XIth Int. Congress on Photosynthesis (Budapest, August 17-22), Z. Tuba was the co-organiser and co-chair of the "Desiccation Tolerance in Plants" symposium at the XVIth International Botanical Congress (1-7 August 1999, St. Louis, USA) and plenary lecturer at the "Water and Life" EUROCONFERENCE (Orleans, France, 1999). He published over 240 scientific papers. He is on the boards of international journals *Community Ecology*, *J. Crop production*, *Acta Bot. Hung.* He is the secretary of the Hung. Nat. Com. of IGBP.

CONSERVATION NEWS

Report from the Asian Bryophyte Conservation Workshop Held in Singapore, Feb 28 -- 2 March 2008

The IAB Bryophyte Conservation Committee has the great commitment aimed at evaluating the conservation status of as many mosses, liverworts and hornworts of the world as possible. A workshop was arranged therefore in Singapore in 2008 in co-operation with IUCN in order to obtain a broad baseline agreement on the subject matter. Our intention was to evaluate the rare species of East, SE and South Asia (hereby named SE Asia), which include Russian Siberia, China, Japan, Korea, Indochina, Malesia, India, Pakistan and Sri Lanka. Japan and China are the only two countries in this region that already have made their national Bryophyte Red lists. The main goal of this project was to evaluate the threat status of as many species as possible within the time frame of the workshop.

The workshop was held from February 28th to March 2nd, 2008, at the Singapore Botanic Gardens in Singapore. Also students and personnel from the Singapore Botanical Gardens joined us to learn more about the IUCN methods.

The donors of the meeting were beside IUCN also, The Botanic Gardens Conservation International (BGCI), The Tan Chin Kee Foundation, Lady Yuen Peng McNeice, Mr. Uwe Swatz, and Singapore Botanic Gardens.

Participants. Sixteen experts participated: Benito C. Tan(Singapore), Jifí Váňa(Czech rep), Ho Boon-Chuan(Germany), Cao Tong(China), Hiroyuki Akiyama(Japan), Lars Söderström(Norway), Masanobu Higuchi (Japan), Michael Ignatov (Russia), Monica Suleiman(Malaysia), Tatsuwo Furuki(Japan), Tomas Hallingbäck(Sweden), Yong Kien-Thai(Malaysia), Zhang Li (China), Zennosuke Iwatsuki (Japan) and Zhu Rui-Liang (China).

Results

Why are bryophytes in SE Asia threatened?

To date, among bryophytes a large number of species are declining in distribution, abundance, or both, while a small number are expanding. The loss has occurred in several regions and ecosystems. Of the recorded historical extinctions, most have been on islands, especially in lowland forest. The landscape of Asia is being modified in a negative way for many bryophyte species and the landscape modification appears to continue, at least in densely populated regions. The risk of increased extinction rates of bryophytes is therefore real

Habitat loss is the fastest-growing threat to the survival of bryophyte species and will probably continue to be the dominant threatening factor in the next few decades to come.

One of many features which makes bryophytes vulnerable is their desiccation-intolerance. For instance, shade epiphytes, which are characteristic of the understorey of dense primary forests, are highly sensitive to deforestation. They require full shade for their survival. More or less all of them are likely threatened because of forestry operations and deforestation in Asia.

Current rates of land cover changes are highest for virgin moist forests and a significant deforestation in SE Asia forest areas has been documented not least on the Island of Borneo.

Which species did we consider globally threatened or endangered at the Singapore workshop?

Proposed moss species considered to be threatened or endangered at a GLOBAL level:

Acroporium aciphyllum Dixon. Found only in: Malaysia; Philippines; Thailand

Acroporium macroturgidum Dixon. Found only in: Malaysia

Acroporium ridleyi Dixon. Found only in: Malaysia

Aloina cornifolia Delgadillo. Found only in: China; Mongolia

Andreaea morrisonensis Nog. Found only in: Taiwan (Province of China)

Anomodon dentatus C. Gao. Found only in: China

Barbula pachyloma Broth. Found only in: Indonesia; Papua New Guinea; The Philippines

Benitotania elimbata H. Akiyama; T. Yamag. & M. Suleiman. Found only in: Malaysia

Blindia campylopodioides Dixon & Bodhw. Found only in: India; Pakistan

Brachydontium noguchii Z.Iwats.; Tad.Suzuki & Kiguchi. Found only in: Japan

Brachythecium kamounense (Harv.) A. Jäeger. Found only in: India; Pakistan

Brachythecium waziriense Dixon. Found only in: Pakistan

Bucklandiella albipilifera (C. Gao & T. Cao) Ochyra & Bednarek. Found only in: Bhutan; China; India; Nepal

Buxbaumia javanica Müll.Hal. Found only in: Indonesia; Papua New Guinea; Philippines

Buxbaumia punctata P.C. Chen & X.J. Li. Found only in: China

Calomnion ceramense Vitt. Found only in: Indonesia

Calyptrochaeta parviretis (M.Fleisch.) Z.Iwats.; B.C.Tan & Touw. Found only in: Indonesia

Campylopodiella himalayana (Broth.) J.-P. Frahm. Found only in: Bhutan; China; India; Nepal

Chaetomitrium perarmatum Broth. Found only in: Philippines; Indonesia

Chaetomitrium robbinsii Bartram. Found only in: Papua New Guinea

Chaetomitrium roemeri Fleisch. Found only in: Papua New Guinea

Chaetomitrium schofieldii B.C.Tan & H.Rob. Found only in: Malaysia; Philippines

Clastobryum glabrescens (Z. Iwats.) B.C. Tan; Norris & Iwats. Found only in: Japan; Malaysia; Philippines

Cryphaea amurensis M. Ignatov. Found only in: Russian Federation

Cryphaea obovatocarpa S. Okam. Found only in: China; Japan

Cryptolepton rigidulus (Mitt.) Broth. Found only in: India; Pakistan

Cyathothecium distichaceum Dixon. Found only in: India

Cyclodictyon kinabaluense Z. Iwats. Found only in: Malaysia

Cyrtodontopsis leveillei (Thér.) P. Rao & Enroth. Found only in: China; Indonesia; Laos; Japan; Viet Nam

Dendrocyclophorum decolyi (Broth.) Kruijer. Found only in: Taiwan (Province of China); India; Japan; Philippines

Dichelyma japonicum Cardot. Found only in: Japan; Russian Federation

Dimorphocladon borneense Dixon. Found only in: Indonesia; Malaysia; Papua New Guinea; Thailand

Diphyscium kashmirensis (H.Rob.) Magombo. Found only in: Japan; Pakistan

Diphyscium lorifolium (Cardot) Magombo. Found only in: China; Japan; North and South Korea; Pakistan

Diphyscium suzukii Z. Iwats. Found only in: Japan

Distichophyllum angustifolium Dixon. Found only in: Malaysia

Distichophyllum carinatum Dixon & W.E. Nicholson. Found only in: Austria; China; Germany; Japan; Switzerland

Distichophyllum meizhiae B.C.Tan & P.J.Lin. Found only in: China

Distichophyllum noguchianum B.C.Tan. Found only in: Philippines

Distichophyllum subnigricaulis Broth. Found only in: China; Indonesia; Malaysia; Philippines

Ditrichopsis clausa Broth. Found only in: China; India

Ditrichopsis gymnostoma Broth. Found only in: China

Dixonia thamnoides (Broth. & Dixon) Horik. & Ando. Found only in: India; Malaysia; Myanmar; Sri Lanka; Thailand

Felipponea esquirolii (Thér.) H. Akiyama. Found only in: China; Japan

Fissidens beccarii (Hampe) Broth. Found only in: Malaysia

Fissidens firmus Mitt. Found only in: Malaysia; Sri Lanka

Fissidens jungermannioides Griff. Found only in: China; Taiwan (Province of China); India

Fissidens longevaginatus Dixon. Found only in: Malaysia

Fissidens pachyphyllus Dixon. Found only in: Malaysia

Forsstroemia noguchii L.R.Stark. Found only in: China; Japan; Russian Federation

Gollania elbertii Broth. Found only in: Indonesia

Gollania splendens (Broth. ex Iisiba) Nog. Found only in: Japan

Handeliobryum sikkimense (Par.) Ochyra. Found only in: China; India

Haplohymenium flagelliforme L.I. Saviz. Found only in: Japan; Russian Federation

Homaliadelphus laevidentatus (S.Okamura) Z.Iwats. Found only in: China; Russian Federation; Japan; Thailand

Homomallium andoi Higuchi & Nishimura. Found only in: Nepal; Pakistan

Horikawaea dubia Tixier. Found only in: China; Viet Nam

Hydrocryphaea wardii Dixon. Found only in: China; India; Laos; Viet Nam

Hypnodontopsis apiculatus Z.Iwats. & Nog. Found only in: Japan

Hypopterygium elatum Tixier. Found only in: China; Viet Nam

Leptohymenium hokinense Besch. Found only in: China

Leskeodon philippinensis Broth. Found only in: Philippines

Leucodon corensis Cardot. Found only in: China; Japan; South Korea

Leucodon exaltatus Müll. Hal. Found only in: China

- Leucodon jaegerinaceus* (Müll. Hal.) Akiyama. Found only in: China
- Leucodon sphaerocarpus* Akiyama. Found only in: Taiwan (Province of China)
- Leucodon subulatus* Broth. Found only in: China; Taiwan (Province of China)
- Leucoloma celebesiae* Broth. Found only in: Indonesia; Malaysia; Philippines
- Macgregorella indica* (Broth.) W.R. Buck. Found only in: Papua New Guinea; Philippines
- Macromitrium incrustatifolium* Robinson. Found only in: China; India
- Macromitrium papillisetum* Dixon. Found only in: Malaysia
- Macromitrium taiwanense* Nog. Found only in: Taiwan (Province of China)
- Mamillariella geniculata* Lazarenko. Found only in: Russian Federation
- Mastopoma deningeri* (Herzog) H.Akiyama. Found only in: Indonesia
- Mastopoma pulchellum* (Herzog) H.Akiyama. Found only in: Malaysia; Papua New Guinea; Solomon Islands
- Merrillibryum fabronioides* Broth. Found only in: Philippines
- Metadistichophyllum rhizophorum* (M.Fleisch.) Nog. & Z.Iwats. Found only in: Indonesia; Malaysia
- Microdendron sinense* Broth. Found only in: Bhutan; China
- Mielichhoferia macrocarpa* (Hook. ex Drumm.) Bruch et Schimp. ex A. Jaeger. Found only in: Canada; Kazakhstan; Russian Federation; United States
- Mielichhoferia macrophylla* Ochi. Found only in: India; Nepal
- Mitrobryum koelzii* H.Rob. Found only in: India
- Mittenia plumula* var. *gigantea* B.C.Tan. Found only in: Malaysia
- Mitthyridium iwatsukianum* B.C.Tan. Found only in: Philippines
- Mitthyridium retusum* (Besch.) W.D. Reese. Found only in: Indonesia; Malaysia
- Miyabea rotundifolia* Cardot. Found only in: China; Japan; South Korea
- Neckeropsis moutieri* (Broth. & Paris in Paris) M.Fleisch. Found only in: China; Philippines; Viet Nam
- Neckeropsis submarginata* Card. ex Touw. Found only in: Malaysia; Andaman Islands
- Neodolichomitria yunnanensis* (Besch.) T.J.Kop. Found only in: Bhutan; China; Taiwan (Province of China); Japan
- Neolindbergia cladomnioides* H.Akiyama. Found only in: Indonesia; Malaysia
- Neolindbergia veloirae* H.Akiyama. Found only in: Indonesia; Malaysia; Philippines
- Oediacidium serricuspe* (Broth.) Nog. & Z.Iwats. Found only in: China; Taiwan (Province of China); Japan
- Orthodontopsis bardunovii* Ignatov & B.C. Tan. Found only in: Mongolia; Russian Federation
- Orthorrhynchium elegans* (Hook.f. & Wilson) Reichardt. Found only in: China; India; Indonesia; Papua New Guinea; Philippines; Lord Howe Island; Sri Lanka
- Osterwaldiella monostricta* Fleisch. Ex Broth. Found only in: China; India
- Papillidiopsis bruchii* (Dozy & Molk.) Buck & B.C.Tan. Found only in: Indonesia; Malaysia; Singapore
- Pinnatella limbata* Dixon. Found only in: India
- Plagiomnium tezukae* (Sakurai) T.J. Kop. Found only in: Japan; Thailand; Viet Nam.
- Polytrichadelphus archboldii* E.B.Bartram. Found only in: Indonesia; Malaysia; Papua New Guinea
- Pseudopterobryum tenuicuspis* Broth. Found only in: China
- Pterobryella papuensis* Dixon. Found only in: Indonesia; Papua New Guinea
- Pylaisia extenta* (Mitt.) A.Jaeger. Found only in: China; Nepal
- Pylaisia speciosa* (Mitt.) Wilson ex Paris. Found only in: China
- Reimersia inconspicua* (Griff.) P.C.Chen. Found only in: Taiwan (Province of China); India; Philippines
- Rhachithecium nipponicum* (Toyama) Wijk & Margad. Found only in: Japan
- Rhachithecium papillosum* (R.S.Williams) Wijk & Margad. Found only in: India; Myanmar; Philippines
- Rhizohypnella sundaensis* M.Fleisch. Found only in: Indonesia; Malaysia; Papua New Guinea
- Rhodobryum laxelimbatum* (Hampe ex Ochi) Z. Iwats. & T.J. Kop. Found only in: China; India; Japan; Nepal
- Rhynchostegiella opacifolia* Dixon. Found only in: Indonesia
- Schlotheimia rubiginosa* C.H.Wright. Found only in: Malaysia
- Sciaromiopsis sinensis* (Broth.) Broth. Found only in: China
- Sclerohypnum littorale* (Hampe) B.C.Tan. Found only in: Brunei; Indonesia; Malaysia
- Solmsiella biseriata* Steere. Found only in: Indonesia; Malaysia; Philippine; Sri Lanka
- Sphagnum antareense* Wijk & Zanten. Found only in: Indonesia; New Guinea
- Sphagnum ceylonicum* Warnstorf. Found only in: Sri Lanka
- Sphagnum luzonense* Warnst. Found only in: China; Philippines; Thailand; Viet Nam
- Sphagnum nepalense* H.Suzuki. Found only in: Nepal
- Sphagnum novo-guineense* Fleischer & Warnstorf. Found only in: Indonesia; Papua New Guinea
- Sphagnum ovatum* Hampe ex Müll. Hal. Found only in: India; Thailand
- Stereodontopsis pseudorevoluta* (Reimers) Ando. Found only in: China; Japan
- Symphyodon scaber* (Tixier); S. He & Snider. Found only in: Myanmar; Thailand
- Symphysodontella obtusa* Tixier. Found only in: Indonesia; Malaysia; Philippines; Viet Nam
- Symphysodontella siamensis* Dixon. Found only in: China; Thailand
- Syrrhopodon armatispinosus* P.J. Lin. Found only in: China
- Syrrhopodon meijeri* Reese. Found only in: Malaysia
- Syrrhopodon pulcher* Reese. Found only in: Indonesia
- Taiwanobryum speciosum* Nog. Found only in: China; Taiwan (Province of China); Japan; Philippines
- Taxiphyllopsis iwatsukii* Higuchi & Deguchi. Found only in: Japan; Thailand
- Taxitheliella richardsii* Dixon. Found only in: Malaysia

Tayloria alpicola Broth. Found only in: China; Taiwan (Province of China)
Tayloria grandis (D. Long) Goffinet & Shaw. Found only in: China
Tayloria jacquemontii (Bruch & Schimp.) Mitt. Found only in: India; Nepal
Thamnobryum negrosense (E.B. Bartram) Z. Iwats. & B.C. Tan. Found only in: Indonesia; Philippines
Thuidium thermophilum Czernyadjeva (Thuidiaceae). Found only in: Russian Federation
Trismegestia maliauensis H. Akiyama & M. Suleiman. Found only in: Malaysia
Ulota eurystoma Nog. Found only in: China; Japan
Ulota novo-guineensis Bartram. Found only in: Papua New Guinea
Ulota splendida Bartram. Found only in: Malaysia; Papua New Guinea

Proposed liverworts and hornworts considered to be threatened or endangered at a GLOBAL level:

Adelanthus borneensis Grolle. Found only in: Malaysia
Aitchinsoniella himalayensis Kashyap. Found only in: India
Anastrophyllum auritum (Lehm.) Steph. Found only in: Malaysia; Indonesia
Anastrophyllum divergens Herzog. Found only in: Malaysia
Anastrophyllum ellipticum Inoue. Found only in: Bhutan; China; Japan
Anastrophyllum karstenii Schiffn. Found only in: Indonesia
Anastrophyllum obtusum Herzog. Found only in: Malaysia
Anastrophyllum prionophyllum S.Hatt. Found only in: Malaysia; Indonesia
Andrewsianthus cavifolius Grolle et Vána. Found only in: Indonesia; Papua New Guinea
Andrewsianthus ferrugineus Grolle. Found only in: India; Nepal; Bhutan
Andrewsianthus kinabaluensis N.Kitag. Found only in: Malaysia
Andrewsianthus koponenii Vána et Piippo. Found only in: Papua New Guinea
Andrewsianthus mizutanii N.Kitag. Found only in: Malaysia
Andrewsianthus papillosus N.Kitag. Found only in: Malaysia
Andrewsianthus sundaicus (Schiffn.) R.M.Schust. Found only in: Indonesia; Nepal
Andrewsianthus zantenii Vána. Found only in: Papua New Guinea
Aneura cerebrata Hewson. Found only in: Papua New Guinea
Aneura hirsuta Furuki. Found only in: Japan
Anthoceros telaganus Steph. 1916 [1916]. Found only in: Indonesia
Aphanotropis saxicola Herzog. Found only in: Malaysia
Archilejeunea falcifolia Steph. 1910 [1910]. Found only in: Solomon Islands
Bazzania bhutanica N.Kitag. et Grolle. Found only in: Bhutan
Calatholejeunea lamii Mizut. Found only in: Indonesia

Calypogeia apiculata (Steph.) Steph. Found only in: Sri Lanka; Malaysia; Indonesia
Cephalolejeunea parvilobula Mizut. Found only in: Indonesia; Malaysia
Cephaloziella longii Vána. Found only in: Bhutan
Cephaloziella polystratosa (R.M.Schust. et Damsh.) Konstantinova. Found only in: Russian Federation
Cephaloziella stephanii Schiffn. ex Douin. Found only in: China; Indonesia; Thailand
Cheilolejeunea chenii R.L.Zhu et M.L.So. Found only in: China; Taiwan
Cheilolejeunea gaoi R.L.Zhu et al. Found only in: China
Cheilolejeunea ghatensis A.K.Asthana et al. Found only in: India
Cheilolejeunea larsenii Mizut. Found only in: Thailand
Cheilolejeunea obcordata Herzog. Found only in: Indonesia; Malaysia
Chiloscyphus koponenii Piippo 1998 [1998]. Found only in: Papua New Guinea
Chondriolejeunea chinii (Tixier) Kis & Pócs. Found only in: China; Viet Nam; Malaysia
Cololejeunea acuminata Mizut. Found only in: Malaysia
Cololejeunea albodentata P.C.Chen et P.C.Wu. Found only in: China
Cololejeunea angustibracteata Schiffn. Found only in: Indonesia
Cololejeunea bolovenensis Tixier. Found only in: Laos
Cololejeunea ciliata Pócs. Found only in: Indonesia; Papua New Guinea
Cololejeunea dilatata (Steph.) Mizut. Found only in: Malaysia; Indonesia
Cololejeunea dinghuiana R.L.Zhu et Y.F.Wang. Found only in: China
Cololejeunea filicis (Herzog) Piippo. Found only in: China; Viet Nam
Cololejeunea flavicans (Steph.) Mizut. Found only in: Philippines
Cololejeunea hattoriana Mizut. et Pócs. Found only in: Malaysia
Cololejeunea johannis-winkleri (Herzog) R.L.Zhu. Found only in: Indonesia
Cololejeunea khani Tixier. Found only in: Bangladesh
Cololejeunea lancinulata Benedix. Found only in: Malaysia
Cololejeunea magnilobula (Horik.) S.Hatt. Found only in: China; Taiwan
Cololejeunea pluridentata P.C.Wu & J.S.Luo. Found only in: China
Cololejeunea rosellata Mizut. Found only in: Malaysia
Cololejeunea sharpii Mizut. Found only in: Philippines
Cololejeunea stoniana Tixier. Found only in: Malaysia; Singapore
Cololejeunea vietnamensis Tixier. Found only in: Viet Nam
Cololejeunea yipii R.L.Zhu. Found only in: China
Colura corniantha Grolle. Found only in: Viet Nam
Colura cristata Ast. Found only in: Indonesia
Colura cymbalifera Herzog et Ast. Found only in: Malaysia
Colura fastigiata Ast. Found only in: Cambodia
Colura galeata Ast. Found only in: Malaysia
Colura hemisphaerica Ast. Found only in: Indonesia

- Colura karstenii* K.I.Goebel. Found only in: China; Indonesia; Malaysia; Papua New Guinea; Laos; Viet Nam
- Colura maxima* Ast. Found only in: Indonesia
- Colura palawanensis* Ast. Found only in: Philippines
- Colura schusteri* Grolle. Found only in: Papua New Guinea
- Cryptocoleopsis imbricata* Amak. Found only in: China; Japan; Russian Federation
- Dendroceros japonicus* Steph. Found only in: China; Taiwan; Japan
- Dendroceros pedunculatus* Steph. Found only in: Indonesia; Papua New Guinea
- Dendroceros subdifficilis* S.Hatt. Found only in: Indonesia
- Diplocolea sikkimensis* Amak. Found only in: India; Nepal
- Drepanolejeunea bakeri* Herzog. Found only in: Philippines
- Drepanolejeunea bischlerae* (Grolle) Grolle et R.L.Zhu. Found only in: Indonesia; Papua New Guinea; Malaysia
- Drepanolejeunea brunnea* Mizut. Found only in: Malaysia
- Drepanolejeunea tibetana* (P.C.Wu & J.S.Luo) Grolle & R.L.Zhu. Found only in: China
- Eopleurozia simplicissima* (Herzog) R.M. Schust. Found only in: Malaysia; Indonesia
- Frullania iriomotensis* S.Hatt. 1980 [1980]. Found only in: Japan
- Frullania okinawensis* Kamim. 1982 [1982]. Found only in: Japan
- Frullania sinosphaerantha* S.Hatt. et P.J.Lin. Found only in: China
- Gottschelia maxima* (Steph.) Grolle. Found only in: Indonesia; Papua New Guinea
- Gymnomitrium crenatilobum* Grolle. Found only in: Nepal
- Gymnomitrium incompletum* (Gottsche) R.M.Schust. ex Vána 1976. Found only in: Malaysia; Australia; Papua New Guinea
- Gymnomitrium laceratum* (Steph.) Horik. Found only in: Bhutan; India; Japan; Nepal; Russian Federation
- Gymnomitrium obtusilobum* N. Kitag. Found only in: Nepal
- Gymnomitrium obtusum* (Lindb.) Pears. Found only in: Nepal; Bhutan
- Harpalejeunea pinaundensis* Grolle. Found only in: Papua New Guinea
- Hattoria yakushimensis* (Horik.) R.M.Schust. Found only in: China; Japan
- Heteroscyphus timppae* Piippo 1992 [1992]. Found only in: Papua New Guinea
- Heteroscyphus turgidus* (Schiffn.) Schiffn. Found only in: China; Indonesia; Malaysia
- Jamesoniella orbicularis* Grolle. Found only in: Papua New Guinea
- Jamesoniella undulifolia* (Nees) K.Muell. Found only in: China; Austria; Canada; Czech republic; Denmark; Finland; France; Germany; United Kingdom; Greenland; Norway; Poland; Russian Federation; Sweden; Switzerland
- Jubula blepharophylla* Grolle. Found only in: Papua New Guinea
- Jungermannia baueri* (Schiffn.) Amakawa. Found only in: Indonesia
- Jungermannia borneensis* Amak. Found only in: Sri Lanka; Indonesia; Malaysia
- Jungermannia caelastis* Inoue et Vána. Found only in: Papua New Guinea
- Jungermannia cheniana* Gao et al. Found only in: China
- Jungermannia conchata* Grolle et Vána. Found only in: Nepal
- Jungermannia diversiclavellata* Amakawa et Grolle 1968 [1968]. Found only in: Papua New Guinea
- Jungermannia grollei* Amak. Found only in: Nepal; Malaysia
- Jungermannia hattorii* Amakawa 1960 [1950]. Found only in: Japan
- Jungermannia hewsoniae* Amakawa et Grolle. Found only in: Papua New Guinea
- Jungermannia hokkaidensis* Vána. Found only in: Japan
- Jungermannia nivea* Grolle. Found only in: Papua New Guinea
- Jungermannia poeltii* Amakawa. Found only in: Nepal
- Jungermannia raujeana* Grolle. Found only in: Nepal
- Jungermannia shimizuana* S.Hatt. ex Vána. Found only in: Japan
- Jungermannia tuberculifera* (Herzog) Vána. Found only in: Indonesia; Malaysia
- Kurzia sinensis* K.C.Chang. Found only in: China
- Lejeunea contracta* Mizut. Found only in: Malaysia
- Lejeunea hui* R.L.Zhu 2001 [2001]. Found only in: China
- Lejeunea khasiana* Mitt. Found only in: India
- Lejeunea latilobula* (Herzog) R.L.Zhu et M.L.So. Found only in: China
- Lejeunea otiana* S.Hatt. Found only in: China; Japan
- Lejeunea reineriae* Ilkiu-Borges. Found only in: China; Indonesia; Malaysia; Papua New Guinea; Laos; Cambodia; Viet Nam; India; Sulawesi; Thailand; Philippines
- Lepicolea norristii* Pippo. Found only in: Papua New Guinea
- Lepicolea yakusimensis* (S.Hatt.) S.Hatt. Found only in: Republic of China; Japan; Indonesia; Malaysia; Sri Lanka; Thailand
- Lepidozia integrifolia* Doei. Found only in: Indonesia; Malaysia
- Leptolejeunea spinistipula* (Mizut.) Xiao-lan He. Found only in: Malaysia; Indonesia
- Leptolejeunea truncatifolia* Steph. Found only in: Taiwan; Philippines
- Leptoscyphus cuneifolius* (Hook.) Mitt. Found only in: Russian Federation
- Lethocolea javanica* (Schiffn.) Grolle. Found only in: Indonesia
- Lethocolea naruto-toganensis* Furuki. Found only in: Japan
- Leucolejeunea gradsteinii* Grolle et Piippo. Found only in: Papua New Guinea
- Leucolejeunea loriana* (Steph.) Mizut. Found only in: Indonesia; Papua New Guinea
- Leucolejeunea suprema* Grolle et Piippo. Found only in: Papua New Guinea
- Lophocolea teptepensis* Piippo. Found only in: Papua New Guinea
- Lophocolea wambana* Piippo. Found only in: Papua New Guinea
- Lopholejeunea borneensis* (Steph.) Verd. Found only in: Malaysia

Lopholejeunea evansiana Verd. Found only in: Indonesia; Papua New Guinea
Lopholejeunea latilobula Verd. Found only in: Indonesia
Lopholejeunea magna Mizut. Found only in: Malaysia
Macrodiplophyllum imbricatum (M.A.Howe) Perss. Found only in: Russian Federation
Marchantia philippinensis Bischl. Found only in: Philippines
Marsupella condensata (Ångström.) Kaal. Found only in: Russian Federation; China
Marsupella disticha Steph. 1901 [1901]. Found only in: Japan
Marsupella nigra Grolle et Vána. Found only in: Papua New Guinea
Marsupella stoloniformis N. Kitag. Found only in: Nepal; Bhutan; Malaysia; Japan
Marsupella subintegra S.W.Arnell. Found only in: Nepal; Indonesia; Malaysia; Papua New Guinea
Mastigolejeunea recurvifolia Mizut. Found only in: Malaysia
Metahygrobiella acuminata (Herzog) R.M.Schust. Found only in: Indonesia; Malaysia; Philippines
Metahygrobiella mollusca (De Not.) R.M.Schust. Found only in: Indonesia; Malaysia; Papua New Guinea
Metahygrobiella stolonacea (Herz.) R.M.Schust. Found only in: Indonesia; Papua New Guinea
Metalejeunea winkleri R.L.Zhu et Grolle. Found only in: Malaysia
Nardia flagelliformis Inoue. Found only in: Nepal; India
Nardia poeltii Vána. Found only in: Nepal
Neohattoria herzogii (S.Hatt.) Kamim. Found only in: Japan
Odontoschisma purpuratum Herz. Found only in: Malaysia
Otolejeunea hoana (Tixier) Grolle et Tixier. Found only in: Viet Nam
Otolejeunea philippinensis R.L.Zhu et M.L.So. Found only in: Philippines
Otolejeunea zantenii Grolle. Found only in: Papua New Guinea; Malaysia
Papillolejeunea balazsii Pócs. Found only in: Papua New Guinea
Papillolejeunea candida Pócs. Found only in: Papua New Guinea
Papillolejeunea falcata Pócs et J.Eggers. Found only in: Papua New Guinea
Papillolejeunea koponenii Pócs et J.Eggers. Found only in: Papua New Guinea
Papillolejeunea papuana Pócs. Found only in: Papua New Guinea
Papillolejeunea touwii Pócs. Found only in: Papua New Guinea
Phaeolejeunea inermis (Steph.) Mizut. Found only in: Papua New Guinea
Pleurozia johannis-winkleri Herzog. Found only in: Malaysia; Indonesia
Poeltia campylata Grolle. Found only in: Nepal; China
Porella grollei S.Hatt. Found only in: Papua New Guinea; China
Pseudolepicolea andoi (R.M.Schust.) Inoue. Found only in: China; Taiwan; Japan; Malaysia
Pycnolejeunea borneensis Steph. Found only in: Indonesia

Riccardia barbiflora (Steph.) Piippo. Found only in: China
Riccardia fruticosa (Steph.) Furuki. Found only in: Malaysia; Papua New Guinea
Riccardia hattorii Furuki. Found only in: Malaysia
Riccardia pumila Furuki. Found only in: Japan
Riccardia robbinsii Hewson et Grolle. Found only in: Papua New Guinea
Sandeothallus japonicus Inoue 1984 [1984]. Found only in: Japan
Sauteria japonica (Shimizu et S.Hatt.) S.Hatt. Found only in: Japan
Sauteria yatsuensis S.Hatt. Found only in: Japan
Scapania obscura (Arnell et C.E.O.Jensen) Schiffn. Found only in: Russian Federation
Scapania rigida Nees. Found only in: Indonesia
Scapania sphaerifera Buch & Tuomik. Found only in: Russian Federation
Scaphophyllum speciosum (Horik.) Inoue. Found only in: China; Taiwan; Bhutan; Nepal
Schistochila macrodonta W.E.Nichols. Found only in: China; Bhutan
Schistochila undulatifolia Piippo. Found only in: Papua New Guinea
Sewardiella tuberifera Kashyap. Found only in: India
Stenolejeunea morobensis Grolle. Found only in: Papua New Guinea
Stephensiella brevipedunculata Kashyap. Found only in: India
Stictolejeunea iwatsukii Mizut. Found only in: Japan
Telaranea fragilis Mizut. Found only in: Philippines
Telaranea longicaulis (Piippo) J.J.Engel et G.L.Merrill. Found only in: Indonesia; Papua New Guinea
Telaranea longitudinalis (Herzog) R.M.Schust. Found only in: Malaysia
Telaranea octoloba Del Ros. Found only in: Philippines
Telaranea panchoi Del Ros. Found only in: Philippines
Telaranea trichocoleoides (Herzog) R.M.Schust. Found only in: Malaysia; Papua New Guinea
Trichocoleopsis tsinlingensis P.C.Chen ex M.X.Zhang. Found only in: China

Other activities among members:

Brazil: In September 2008, bryophytes were for the first time officially redlisted in Brazil and recognized by the Brazilian Ministry of the Environment (MMA) with 17 species.

Dr. Denise Pinheiro da Costa and three other Brazilian bryologists are now preparing a conservation workshop for the Latinamerican Bryology Society (SLB) to be held during the X Latin American Congress of Botany (4-10 October 2010, in Chile) During this meeting different important tasks concerning the status of bryophyte species and habitats of Latin American countries will be discussed.

Canada: René Belland is a member of the COSEWIC, the Canadian committee charged with assessing status of species at the national level, listing mosses

for legal protection. 18 species are listed at COSEWIC see

http://www.cosewic.gc.ca/eng/sct1/searchform_e.cfm.

Also visit: Species at Risk site

http://www.speciesatrisk.gc.ca/default_e.cfm

The province of Newfoundland and Labrador also has an endangered species program (<http://www.releases.gov.nl.ca/releases/2006/env/1218n03.htm>) and listed *Bryum porsildii* in late 2006. *B. porsildii* now receives legal protection in that province.

The province of Alberta also had a status report produced for *Bryum porsildii*, but assessment has been delayed because of changes in the government committee.

Japan: In Japan the following publications on Red List of Japanese bryophytes have been published:

Iwatsuki, et al. 2008. New Red List of bryophytes of Japan, 2007. *Bryol. Res.* 9(8): 259-267, (in Japanese)

Iwatsuki, Z. 2009. Mosses in Threatend wildlife of Aichi Prefecture, 2009 (Red Data book Aichi 2009), (in Japanese)

Yamada, K. 2009. Liverworts in Threatend wildlife of Aichi Prefecture, 2009 (Red Data book Aichi 2009), (in Japanese).

Revised red list of Japanese bryophytes has been much progressed by five bryologists, Z. Iwatsuki, H. Kanda, and M. Higuchi for mosses, and T. Furuki and J. Hasegawa for liverworts. We made a data base of the specimens of endangered species located in major herbaria in Japan, such as The Hattori Botanical Laboratory, Hiroshima University, National Science Museum, Tsukuba, etc. Total number of specimens in this data base are some 8000. Considerable revision will be made in our new red list which will be open by the summer of 2007.

New Zealand: There is quite a lot occurring in New Zealand in the area of protecting threatened bryophyte species. A "specialist group" of six bryologists (Jessica Beaver, John Braggins, Patrick Brownsey, David Glenny, Matt Renner, and myself) advises the New Zealand Dept. of Conservation concerning "threatened" bryophyte taxa.

Of the moss taxa recognized as both endemic and "nationally critical" in New Zealand, the two that I would consider to qualify for inclusion on a world RED LIST are *Epipterygium opararensense* Fife and *Lindbergia maritima* Lewinsky.

We review the listings and classifications every four years. We very recently met in Wellington for two days for this purpose and we made considerable changes (both deletions and additions, and many changes to a taxon's threat classification. These changes were

made both because of increased knowledge about taxa and because of our better understanding of a set of criteria written by (and progressively refined) by the Department of Conservation.

The group intends to collate and publish a summary of the results. The Dept. of Conservation is also taking steps towards actively managing the most highly threatened (and "manageable") taxa of bryophytes. Unfortunately New Zealand has recently elected a rather right-wing and fiscally conservative government, so what becomes of these plans (and many other conservation initiatives) is very much in limbo.

Sweden: In Sweden a preliminary version of the 2010-national redlist is since June displayed on the Internet (only in Swedish language): <http://www.artdata.slu.se/rodlista/prel2010/lists.asp?OrgGrupp=%27%20Mossor%27>

Only very minor changes of the new redlist compared to the old (2005) has been made.

United Kingdom: Margaret Ramsay reports that she is currently making changes to her job which will allow more time for laboratory research and education and training. As part of this she has applied for a small amount of funding to restart the ex situ bryophyte project in a small way. As she will be doing the work herself rather than recruiting a member of staff, this will not be on the same scale as previous but she hopes to be able to start putting priority species into culture and cryopreservation on a regular basis once she is more familiar with applying the techniques.

Venezuela: The bryology group lead by Dr **Yelitza León Vargas** in Mérida Botanical Garden.

They are compiling a checklist of Venezuelan mosses but need still more work. The Bryological group is very proud since the group was awarded with the regional prize for science outreach (do not know very well how to translate it, "Premio regional de Difusion de la ciencia para publicos amplios" for the work with the educational campaign to protect bryophytes. This has indeed been a success in Venezuela and has spread to other Andean countries like Colombia and Ecuador.

Tomas Hallingbäck
Chairman of the joint IAB / IUCN SSC Bryophyte Conservation Group
Swedish University of Agricultural Sciences, Species Information Centre, PO Box 7007 SE 75007 Uppsala, Sweden

RESEARCH NEWS

BRYOLOGICAL EXPLORATION IN SCARCELY EXPLORED AREAS IN CENTRAL CHILE

Figure 7. Map of the bryological exploration made in the central regions of Chile (Roman numerals, RM meaning Metropolitan Region), showing protected areas: 1. La Campana NP; 2. Lago Peñuelas NR; 3. El Yali NR; 4. El Morado NM; 5. Río Clarillo NR; 6. Roblería del Cobre de Loncha NR; 7. Río Los Cipreses NR; 8. Laguna Torca NR; 9. Radal 7 Tazas NR; 10. Altos del Lircay NR; 11. Los Bellotos NR; 12. Los Ruiles NR, sector El Fin; 13. Federico Alberts NR; 14. Los Ruiles NR, sector Curacautín; 15. Los Queules NR; 16. Los Huemules de Niblinto NR; 17. El Arrayán NS; 18. Yerba Loca NS; 19. Cocalán NP*; 20. Tanumé experimental forestal center (CONAF); 21. Alto Huemul. Inset: map of Chile showing the central regions in black (NP= National Park; NR= National Reserve; NM= Natural monument; NS= Nature Sanctuary; asterisk (*) indicates a private National Park, with restricted access)



On June 2007 I received a Stanley Greene Award from the International Association of Bryologists (IAB) for the “bryological exploration of scarcely explored areas in central and south Chile.” Central Chile is very interesting because it is one of the less known zones of the country in terms of its bryophyte flora, in addition to being the less protected and the most populated area of Chile. The objectives of this study were: (1) to explore some of the several areas in Chilean mainland territory that have received little or no bryological attention at all, for improving the mapping of moss species distributions in the country; (2) to explore protected areas in central Chile for providing floristic accounts that may lead to a better knowledge of Chilean moss flora; and (3) to assess the conservation status of some emblematic Chilean species that are known from a few localities, or just from the type collection.

From August 2007 to January 2009 bryophyte material was collected from 87 localities ranging from Concepción (37°S) to Zapallar (33°S), trying to cover as much as possible the environmental variation among the coastal plains, the coastal mountain range, the central valley, and the Andes of central Chile. A total of 55 days were spent in the field. All state protected areas in this geographic range were visited, and several private or municipal protected areas as well, with the exception of some protected areas in Maule Region, i.e. National Reserves Radal 7 Tazas, Altos del Lircay, and Los Bellotos. Collections were also made in some unprotected private lands where we were able to have access (Figure 1), and in natural areas adjacent to roads. The total bryophyte material gathered during these field trips amounts to over 2,910 specimens, with more than 90% being mosses and the rest liverworts and hornworts. All voucher specimens are deposited in CONC. A big proportion of this material was collected in enough quantity to allow making several duplicates, which will be sent to some major herbaria as soon as possible.

Although a big proportion of the moss material is still undetermined, several new moss records for the Metropolitan (RM), Valparaíso (V), O'Higgins (VI) and Maule (VII) regions have already been noticed. The first article so far published with part of the gathered data is Larrain *et al.* (2009)¹. The material collected in these explorations means a huge contribution to improve the knowledge on the richness, composition, distribution, conservation status and taxonomy of central Chilean bryophyte flora.

I am very much acknowledged to IAB for the funds given, to CONAF for the collecting permits and logistic support, to the Botany Department at Universidad de Concepción, to the land owners that agreed for us to work in their properties, and to Gabriela Zegers, Nicolás García, Pajaristikov, Reinaldo Vargas and Inelia Escobar for assistance in the field.

Juan Larrain, Departamento de Botánica, Universidad de Concepción, Casilla 160-C, Concepción, Chile.
e-mail: juanlarrain@udec.cl

¹ Larrain, J., F. Herrera, J.M. Budke & B. Goffinet. 2009. Phylogenetic affinities and conservation status of the Chilean endemic *Costesia spongiosa* (Gigaspermaceae). *The Bryologist* 112: 278–286.

COUNTRY REPORTS

New Council of the Bryological Society of China (BSC)

The Botanical Society of China has appointed Prof. Dr. Rui-Liang Zhu the president of the Bryological Society of China (BSC). The new council of BSC is as follows:

President: Rui-Liang Zhu (East China Normal University, Shanghai).



The new president, Rui-Liang Zhu, is a professor of Plant Sciences in Shanghai, East China Normal University, where he teaches botany and bryology. He got his Masters degree in bryology from East China Normal University in 1989, and got his Ph D degree in Bryology from the Hong Kong Baptist University in 1999. He received the Humboldt Research Fellow in 2002, and worked on the taxonomic revision of *Lopholejeunea* (Lejeuneaceae) with Prof. S.R.

Gradstein in Göttingen University. His interests are taxonomy and phylogeny of liverworts. He has been the associate editor of "Journal of Systematics and Evolution" since 2008. In 2009 he just obtained a NSFC research grant (2,000,000 RMB, approximately 300,000 USD) and other grants from the Chinese government to work on bryophyte study.

Vice president: Jian-Cheng Zhao (Hebei Normal University, Shijiazhuang), Li Zhang (Fairylake Botanical Garden, Shenzhen), Tong Cao (Shanghai Normal University, Shanghai), Yu-Huan Wu (Hangzhou Normal University, Hangzhou), Yu Jia (Institute of Botany, Beijing), Zhao-Hui Zhang (Guizhou Normal University, Guiyang).

Secretary: Yue Sun (East China Normal University, Shanghai, Shanghai).

Council members Xue-Liang Bai (Huhehaote), Wei-Kai Bao (Chengdu), Shui-Liang Guo (Shanghai), Wei Sha (Qiqihaer), Xiao-Ming Shao (Beijing), Yue Sun (Shanghai), You-Fang Wang (Shanghai), Yuan-Xin Xiong (Guiyang), K.-L. Yip (Hong Kong), Zun-Tian Zhao (Jinan), Yuan-Ming Zhang (Wulumuqi).

The annual meeting of the Bryological Society of China was held on 23-28 August 2009 in Qiqihaer, Heilongjiang Province (Northeastern China) with about 80 participants.

The Bryological Society of China:
<http://life.ecnu.edu.cn/sites/zrl>

Yue Sun, e-mail: ysun@bio.ecnu.edu.cn

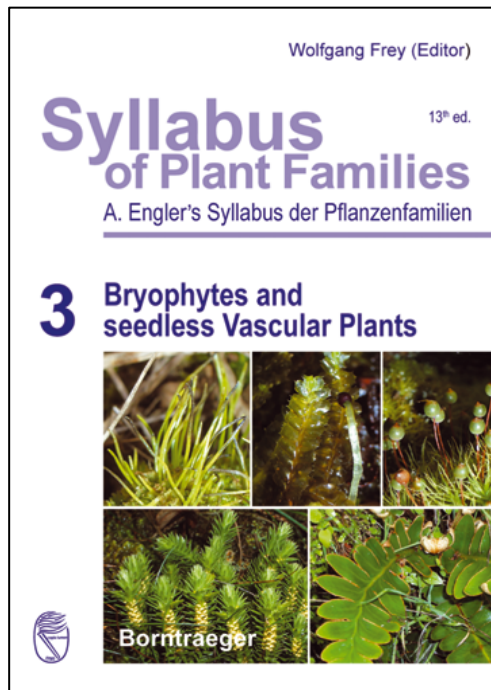
LITERATURE COLUMN

Part 3. Bryophytes and seedless Vascular Plants. (Syllabus of Plant Families). Wolfgang Frey (Editor). 13th ed. 2009. ISBN 978-3-443-01063-8. Price: 89€

Engler's Syllabus of Plant Families, since its first publication in 1887, aimed to provide both the researcher, and particularly the student with a concise survey of the plant kingdom as a whole, presenting all higher systematic units right down to families and genera of plants and fungi. In 1964, more than 60 years ago, the 12th edition of the well-known Syllabus der Pflanzenfamilien ("Syllabus of Plant Families"), set a standard.

Now, the completely restructured and revised 13th edition of Engler's Syllabus published in five parts in English, for the first time also considers molecular data, which have only recently become available in order to provide an up-to-date evolutionary and systematic overview of the plant groups treated. In our "molecular times" there is a growing need to preserve the knowledge of the entire range of diversity and biology of organisms for coming generations, as there is a decline in "classical" morphological and taxonomical expertise, especially for less popular (showy) groups of organisms. Accordingly, the 13th edition of Syllabus of Plant Families synthesizes both modern data and classical expertise, serving to educate future experts who will maintain our knowledge of the full range of Earth's biodiversity.

Part 1 concerns the blue-green algae, Myxomycetes and Fungi; part 2 concerns the Eukaryotic Algae and in part 4 and 5 the seed are treated.



Part 3 focuses amongst others the mosses and liverworts and provides a thorough treatment of the worldwide morphological and molecular diversity of the Marchantiophyta, Bryophyta, Anthocerotophyta, Polysporangiomorpha, Protracheophytes, Rhyniophytina, Lycophytina, "Trimerophytina", Moniliformopses (Cladoxylopsida, Psilotopsida, Equisetopsida, Marattiopsida, Polypodiopsida) and of the Radiatopses (Progymnosperms).

The advent of DNA sequencing and advances in phylogenetic analysis has raised new interest in the relationships of liverworts, mosses, hornworts, ferns, and fern allies as extant representatives of early land plant evolution. Following the tradition of Engler with the

morphological-anatomical data and incorporating latest results from molecular phylogenetics and phylogenomics, an up to date overview of families and genera has been created that will serve as reference for a long time.

Members of IAB are entitled to receive 15% discount on the list price and should mention order reference 'IAB -member'

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Website: www.borntraeger-cramer.de

The Illustrated Moss Flora of Antarctica

Ochyra, R., Lewis-Smith, R. I. & Bednarek-Ochyra, H. 2008: *The Illustrated Moss Flora of Antarctica*. xvii + 685 pp., incl. 275 figures and 42 colour photograph plates. Cambridge University Press. Hardback, ISBN 978-0-521-81402-7. Advertised price £ 125 + postage (weight 2.2 kg)

Even a most detailed vascular plant flora of the Antarctica, with two species, would perhaps not be very hefty, but this moss flora is truly something else.

Stanley Greene is a major figure in the survey of the Antarctic moss flora. As is discussed in the *Foreword*

as well as *Preface* in the present volume, he planned to publish a definitive taxonomic account of the flora, but mainly due to waning of the necessary financial support for taxonomic work, his plans never materialized. In the *Preface* the authors indicate that this flora was, indeed, inspired by the initiative of the late Greene, so his spirit is still strongly present.

The book begins with a list of *Contents*, followed by a four-page list of *Taxonomic and Nomenclatural Novelties*, including new synonyms and typifications. After the *Foreword* and *Preface* follows an *Introduction*, which describes the agenda and aims as follows: "The objective of this work is to provide a comprehensive account of the mosses of Antarctica based on critical assessment of specimens in most of the world's major herbaria with Antarctic holdings, and on ecological data for habitats and communities. Individual taxa have been compared with type specimens wherever possible, and with relevant material from other parts of the world. We have sought the expertise of many bryologists with specialist knowledge in particular genera". The total number of examined specimens was c. 10 000 - an admirable effort by the authors.

The concept of Antarctic employed here comprises all land and adjoining ice shelves south of latitude 60°. The landmass is c. 14 square km (1.5 times the area of Europe!), but only c. 0.3 % of it is seasonally ice-free and thus potentially "moss-prone". The biogeographic zones - continental and maritime - are defined and described in some detail, and the geobotanical zones are presented in a table. The *Introduction* ends with relatively brief but quite adequate chapters on the climate and geology.

The illustrated *History of Muscological Investigations in Antarctica* (pp. 9-26) is enjoyable reading and contains tables of the published moss collections from between 1829 and 1941, and of the moss taxa published from the Antarctic between 1833 and 2007. Then follows *Terrestrial Environment and Moss Ecology of Antarctica* (pp. 27-34) - a detailed account that adds considerable value to this work, as compared with several "regular" floras.

Diversity and Phytogeography of the Moss Flora (pp. 35-52) examines numerous taxonomic treatments as well as modern revisions and monographs of the mosses are listed here. Under the subheading "Diversity and species richness" I found the information I had looked for in more obvious places (such as back cover or *Introduction*): in the Flora area there is a total of 111 species within 55 genera and 17 families. This part also has valuable information in tables, such as the altitudinal range, frequency and fertility of the species. The flora is divided into phytogeographical elements that are discussed. The beautiful colour plates placed here display the landscape, habitats,

moss vegetation and individual species. A two-page, interesting account of the origin of the Antarctic moss flora ends this part.

Background to the Flora (pp. 53-58) provides the aims and objectives in a more detailed manner. The subheading "Arrangement of text" explains the rationale and organization of the taxonomic accounts. All descriptions are detailed and supported by full-page line drawing plates and distribution maps, the latter also displaying the global ranges of the species.

The core of the book is of course the flora itself, titled *Systematic Accounts of the Taxa* (pp. 59-590). The classification "is derived from the latest systems" but has some modifications based on the authors' own ideas. That is good. In terms of species numbers the largest families are the acrocarpous Grimmiaceae (23 spp., especially *Schistidium* with 13 spp.), Pottiaceae (16 spp.), and Bryaceae (14 spp.), together about half of the flora. There is a long (more than 7 pp.) key to the genera, in which some genera of course key out several times. On p. 72 there is also a key to the three classes of the Antarctic Bryophyta - I am not sure how necessary or practical that is.

The taxon descriptions themselves leave nothing to be desired, especially when the line drawings are admirably precise, informative - and aesthetic too! Synonymies and type citations are given under the accepted species' names. The specific descriptions are followed by chromosome numbers, and separate paragraphs entitled Discussion, Reproduction in Antarctica, Habitat, World range, Distribution in Antarctica, and last a list of the selected specimens examined.

The *Glossary* (pp. 591-606) is a necessary part, and also provides the synonyms as well as antonyms (terms with opposite meaning). As in several other glossaries, the origin of *vaginula* is here wrong (my regular objection) - it is *not* derived from the venter of the archegonium but mainly from the subtending receptacular tissue. The list of *References* is apparently exhaustive and runs from p. 607 to 664. The last part is *Index to Latin Plant Names*.

It is truly difficult to find areas in this book to be critical of, no matter how hard one tries. It is a treat that I believe every bryologist can appreciate and enjoy. Briefly, probably the best moss flora I have ever seen or been privileged enough to own. Warm thanks must go to the authors for the great effort and accomplishment - and also to Cambridge University Press for publishing such a bryological and cultural milestone.

Information available at
www.cambridge.org/9780521814027

Suomen uhanalaiset sammalet. (Threatened bryophytes of Finland).

Sanna Laaka-Lindberg, Susanna Anttila and Kimmo Syrjänen (eds.) March 2009. Finnish Environment Institute (SYKE). ISBN (pbk.) 978-952-11-3247-6. Price 40,00 €

The handbook "Threatened Bryophytes of Finland" came about in collaboration with several Finnish bryologists and bryophyte specialists. It presents detailed information on 136 threatened and 24 regionally extinct species. Identification and separation of each species from their close relatives are explained, and the habitats and distribution of them and their reproductive biology are described. Also data

on stand development, causes of threat, and current trends of development are assessed, as well as the need for conservation measures. For each species a picture and a distribution map is given, and its status in other European countries is counted for. This is the most comprehensive presentation of threatened Finnish bryophytes so far. There are altogether 884 bryophyte species in Finland. A check list of the Finnish bryophytes with distribution data in the biogeographical provinces appear in the appendix.

The publication is also available on the Internet: www.ymparisto.fi/publications

Mail orders: asiakaspalvelu.publishing@edita.fi; www.edita.fi/netmarket

Hepaticae and Anthocerotae of Great Himalayan National Park and its environs (HP), India

S.K. Singh & D.K. Singh. 2009. Hepaticae and Anthocerotae of Great Himalayan National Park and its environs (HP), India. pp. i-x, 465; Hard bound; size Royal 8VO; Publisher: Director, Botanical Survey of India, Kolkata; printed at Shiva Offset Press, Dehradun; ISBN No. 978-81-817-7028-8; Price: INR 1300.00 / US \$104.00].

Apart from the general introductory chapter dealing with area and topography, geology and soil, climate, general vegetation, previous hepatological studies, etc., the book provides the taxonomic account of 104 species of liverworts and hornworts belonging to 45 genera and 27 families, supported by one map, 111

text-figures, and 105 plates of color and black & white photographs. (See attachment)

The book can be procured from the Scientist-in-Charge, Publications, Botanical Survey of India, CGO Complex, 3rd MSO Building, Block F (6th Floor), Salt Lake Sector I, Kolkata - 700 064 (INDIA) by making advance payment.

Dr D.K. Singh, Additional Director
Botanical Survey of India
CGO Complex, 3rd MSO Building
Block F (5th Floor)
Salt Lake Sector I
Kolkata - 700 064 (INDIA)
Ph: +91 33 23214050

The Moss Flora of Mauritius

The mosses reported from Mauritius were compiled from the literature and are listed with localities and references. Included are collections by the first author made in 2007 on the island. *Barbula indica*, *Campylopus flavicoma*, *Racopilum ayresii* and *Ectropothecium chenagonii*, *Groutiella tomentosa*, *Schlotheimia ferruginosa* and *Trichostomum*

crispulum are reported as new to Mauritius. The list includes 238 species. A short survey of the bryological exploration of the island is given.

Download this publication by Jan-Peter Frahm, Brian J. O'Shea & Boon-Chuan Ho free as vol. 51 from www.archive-for-bryology.com

Checklist and distribution of the liverworts and hornworts of sub-Saharan Africa

A 3rd edition of the following document is now available: Wigginton, M.J. 2009. Checklist and distribution of the liverworts and hornworts of sub-Saharan Africa, including the East African Islands (edition 3, 24 January 2009). Tropical Bryology Research Reports 8: 1-116. (ISSN 1468-8158).

The document can be downloaded free of charge from the Tropical Bryology Research website <http://www.tropicalbryologyresearch.co.uk/> as an Acrobat Reader (.pdf) or a Microsoft Word 97 (.doc) document. It can be found via the 'TBR Reports' button. Unfortunately, at present one or other of the files may not open properly in some browsers, and we are trying to resolve this problem.

If there are difficulties with the Wordfile, then the checklist can be selected (within the window), copied and pasted into a new Word document, then saved. The .pdf might not open properly in Firefox.

It is hoped there are not many errors and omissions. The discovery that *Phaeoceros minutus* (Mitt.) S.W.Arnell had been transferred to *Paraphymatoceros minutus* (Mitt.) Hässel [Phytologia 88: 208-211. 2008] came too late for inclusion.

Martin Wigginton

Other new publications

“Introduction to Bryophytes” by Alain Vanderpoorten and Bernard Goffinet is published by Cambridge University Press. The book covers various aspects of bryology and is designed for undergraduates or anyone wanting to learn more about the biology of bryophytes, without getting into the details presented in *Bryophytes Biology* (2nd edition) published earlier this year.

“Die Moose Zyperns” by Jan-Peter Frahm, Michael Luth, & Huub van Melick Abstract: 22 liverworts and 110 mosses were collected during a five-days fieldtrips in the southern part of Cyprus. *Bryum elegans*, *B. gemmiparum*, *B. kunzei*, *Cephaloziella turneri*, *Fissidens dubius*, *Grimmia dissimulata*, *Lejeunea*

cavifolia, *Orthotrichum ibericum*, *O. macrocephalum*, *O. pumilum*, *O. speciosum* var *brevisetum*, *Pottia conica*, *Pterygoneurum ovatum*, *Riccia atomarginata*, *R. ciliifera*, *Schistidium crassipilum*, *S. robustum*, *Tortula canescens*, *T. virescens* and *Zygodon catarinoides* are recorded as new to Cyprus. An updated list of all bryophytes reported from Cyprus is presented. Although written in German, it may be of interest to have a first checklist of the bryophytes of Cyprus, which includes 20 new records for this island. The file can be downloaded without subscription, fees, membership from any place on the world for free from www.archive-for-bryology.com <<http://www.archive-for-bryology.com/>> Everybody is invited to make use of this easy way of electronic publication (with ISSN number) by submitting contributions.

phytogeography and ecology, regional keys, a systematic account of the genus,

Bryological Publications from Poland

The W. Szafer Institute of Botany, Polish Academy of Sciences, has the following bryological publications in stock.

Halina Bednarek-Ochyra. 2006. A taxonomic monograph of the moss genus *Codiophorus* P. Beauv. (Grimmiaceae). 273 pages; W. Szafer Institute of Botany, Polish Academy of Sciences, Price 45,00 EUR (postage included), ISBN: 83-89648-40-7. This includes an historical perspective of the genus, material studied, description of the taxonomic characters, description of the

Ochyra, J. Żarnowiec, H. Bednarek-Ochyra. 2003. Biodiversity of Poland - Z. Mirek (Ed.), Vol. 3. Census Catalogue of Polish Mosses. 372 pages, Price 35,00 EUR (without postage), ISBN: 83-85444-84-X. The present work is an attempt to meet the long felt need for a standard work on the nomenclature and distribution of Polish mosses. The catalogue contains 700 species, eight subspecies and 87 varieties, placed in 207 genera, belonging to 55 families.

R. Schumacker & J. Vana . 2005. Identification Keys to the Liverworts and Hornworts of Europe and Macaronesia (Distribution and Status). 2 nd edition fully revised and updated. ISBN: 83-89949-11-3 format: A4; 209 pages - price 50,00EUR (postage included). This 2nd edition, provides, a.o., new or partly new keys for Conocephalum, Fossombronia, Herbertus, Lepidozia, Plagiochila, Riccia, Scapania, Telaranea, etc., numerous new keys for subspecies or varieties, updated distribution data, many corrections to patronyms, an impressive number (ca. 300!) of new synonyms in the corpus as in the index and many new useful references to literature and illustrations until August 2005.

Stebel, R. Ochya (eds.). 2008. Bryophytes of the Polish Carpathians. 2008. pages 339, ISBN: 978-83-89949-43, price: 40,00 EUR per one copy (postages included)

To order these volume, please, write to: IB Publisher, W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz, 46, PL-31-512 Cracow, Poland. E-mail: ed-office@ib-pan.krakow.pl , fax: 48 12 42 41 731

From The New York Botanical Garden Press

Peat Mosses of the Southeastern United States

Lewis E. Anderson=86, A. Jonathan Shaw, and Blanka Shaw 2009 / 126 pp. / \$42 / Order no. M10200

Sphagnum, commonly known as peat moss, is widely used in agriculture, horticulture, and floriculture. Living plants are colorful and add much to the beauty of wetlands. It takes little training to recognize the genus, and most of the sections are almost as easy to recognize. Yet they are scarcely noticed by field botanists, and even bryologists tend to avoid them; they have a reputation of being taxonomically difficult but this applies only to a subset.

There are few taxonomic treatments of Sphagnum in North America, yet it is a fascinating genus whose species comprise an integral part of nearly all fresh-water wetlands. Almost all significant critical taxonomic characters are microscopic and

require dissections and staining, which can, with a little practice, be easily self-taught. Even with a moderate amount of field experience, however, a novice can learn to recognize sections and some species in the field with certainty (although there are many species that even experts cannot distinguish without a compound microscope). All field identifications need to be confirmed microscopically. This volume will aid those who venture into identifying peat mosses.

Guide to the Plants of Central French Guiana Part 4. Liverworts and Hornworts S. Robbert Gradstein and Anna Luiza Ilkiu-Borges 2009 / 144 pp. / \$52 / Order no. M76P04

This hepatic flora of central French Guiana is based on the study of about 1500 collections made by many different collectors. All species are keyed, described, and illustrated. Brief descriptions of the habitats of the species and of the lowland cloud forest of central French Guiana are also provided.

The flora consists of 175 species of liverworts in 59 genera and 17 families and 2 species of hornworts (2 genera, 2 families). The Lejeuneaceae are the most important family with 117 species in 37 genera. Eight new taxa are introduced.

This much-anticipated volume is the fourth and final part of the Guide to the Plants of Central French Guiana.

In addition, NYBG Press is offering a very special price on the entire four-volume Guide to the Plants of Central French Guiana. Purchase all four books for \$128 -- a savings of \$62 over the list price of \$190. The set comprises 1,674 pages and 200 color plates. Part 1 treats pteridophytes, gymnosperms, and monocotyledons; Part 2 covers the dicotyledons; Part 3 deals with mosses; and the newly published Part 4 covers liverworts and hornworts.

To order, call 718/817.5992

WEB NEWS

IAB Blog Spot Don't forget to bookmark and check out the IAB Blog spot for the archived Bryological Times, Bryonet conversations and the latest from IAB. To find the blog spot, point your browser today to

<http://internationalassociationofbryologists.blogspot.com/>

Gallery of the Bryophytes of Mexico. This is a collaborative effort to coordinate and promote on-line

availability of photographs of bryophytes of Mexico. This is joint initiative by Dr. Efrain de Luna (INECOL) and Dr. Claudio Delgadillo (UNAM). The gallery consists of pictures within albums arranged hierarchically according to the classification. We would like to invite everyone interested to browse the gallery and upload pictures. Please visit the web site at: <http://briofitasdemexico.blogspot.com/2009/08/presentation.html>

A new volume - Bryological Interaction - of Dr. Glime's online book on Bryophyte Ecology is beginning to go online <<http://www.bryology.org/>>.

The newest additions are: Chapter 1: The Fauna; Chapter 2: Protozoa; Chapter 4: Invertebrates Sponges, gastrotrichs, flatworms, nematodes, annelids Note also that Volume 5 is online (Uses) Chapter 1: Household and Personal Chapter 2: Medicine Chapter 3: Arts Chapter 4: Aquaria Chapter 5: Construction Chapter 6: Technological Commercial Chapter 7: Horticulture and the Glossary (only completed for volume 1)

Best "universally current" site for **abbreviations of authors** from Richard Zander on bryonet http://www.ipni.org/ipni/query_author.html

WORKSHOPS

USM Tropical Bryology Training Workshop (Field-based Course) 11th – 21st February 2010

The School of Biological Sciences, Universiti Sains Malaysia, Penang, Malaysia is organizing its first USM Tropical Bryology Training Workshop from 12th to 21st February, 2010 at Gunung Jerai (Mount Jerai or Kedah Peak at 1,200m asl) Hill Station, Kedah, Malaysia

Mount Jerai is a massive granite mountain rising above the surrounding plains to 1,380m asl. at the summit. 11 km of tarmac road lead up to this mountain resort which can be reached by car. The vegetation changes from lowland to highland flora- from dipterocarp forest to lower montane forest of Podocarpus and Agathis and the site is bryologically rich.

Lectures are planned to show the different aspects of tropical bryology-morphology, biology, ecology and classification of tropical bryophytes: mosses, liverworts and hornworts; techniques of field collection and research, identification and management of a cryptogamic herbarium; economic importance and conservation of tropical bryological biodiversity. Diversity and composition of tropical bryofloras; phytogeography, physiology and adaptability of cryptogams in forest enrichment and restoration programs. Field methods to measure biomass, water retention, interceptive capacity of bryophyte cover and their importance to conservation and maintenance of tropical ecosystems.

Field work and laboratory sessions will provide "hands on" experience in the identification and understanding of mosses, liverworts and hornworts.

Guest Lecturers: Prof. Tamas Pocs (Károlyi College, Hungary) and Prof Haji Mohamed (University of Brunei)

Interested participants should contact Min S. Chuah at

mpetiot50@gmail.com

Nectandra Cloud Forest in Costa Rica, with Dan Norris

The Jepson Herbarium of the University of California, Berkeley is now considering a course in tropical bryology to be offered on the Nectandra Cloud Forest near San Ramon in Alajuela Province, Costa Rica (see: <http://www.nectandra.org/index.htm>). If adequate enrollment is achieved, the course will be taught by Dr. Dan Norris of the University Herbarium, UC Berkeley, possibly in cooperation with a Costa Rican bryologist. Dan taught annual university-level courses in bryology at Humboldt State University for 24 years. He also has experience in teaching advanced students: thesis direction at Humboldt and numerous short-duration bryology courses for professional botanists and foresters. His field experience in the Neo- and the Paleotropics included the collection of about 30,000 herbarium numbers from tropical areas. Three weeks of study on the Nectandra Forest have prepared him for the course.

Evelyn and David Lennette developed the Nectandra Institute to host conservation oriented groups. The Forest includes a meeting center and a laboratory in an otherwise pristine forest. It is bounded on three sides by grazing land but it abuts on one side with large tracts of pristine forest. Excellent accommodations both for food and sleeping arrangements are planned.

During this course, we plan to walk on and near the about 5 miles of excellent and easy trails on the

Nectandra forest, and we plan trips, with collecting possibilities, to high elevation lands within only a few hours drive. There is an excellent catalogue of the biota of the forest with special coverage of ferns and vascular plants. Arrayed along the trails of the

Nectandra forest are signposts with identification of nearly 100 species of vascular plants, mostly trees.

Participants in the course will work with completed keys written by Norris for the liverworts, hornworts and mosses that he has documented for the Nectandra Cloud Forests. A reference collection of identified Nectandra bryophytes will be available for comparison. We anticipate that participants will be able to send materials collected during the course to home herbaria. The goal of the course is to prepare participants to do field recognition of the major genera of mosses, liverworts and hornworts of the Costa Rican cloud forest.

We would like to plan for a time in March or April because of a pattern of lower rainfall. Because a trip to distant Costa Rica should be of sufficient duration to allow serious learning, we would schedule 11 days for the course with 2 free days inserted so that each 3 planned days of study are followed by a free day. The price of the class will be about \$1500 (course, lodging and meals) plus air fare. To register interest: inform Cecile Shohet at csshohet@berkeley.edu, indicating 2010 spring or summer preference.

COUNTRY CONTACTS FOR BRYOLOGICAL TIMES

Country	Name	E-mail address
Austria	Harald Zechmeister	harald.zechmeister@univie.ac.at
Australia	Rod Seppelt	Rod.Seppelt@aad.gov.au
Belgium	Herman Stieperaere	herman@br.fgov.be
Canada	René Belland Michael Simpson	Rene.belland@ualberta.ca mjs14@ualberta.ca
China	Cao Tong	CT1946@263.net
Colombia	Jaime M. Uribe	juribem@ciencias.unal.edu.co
Czech Republic	Jiri Vana	vana@natur.cuni.cz
Estonia	Kai Vellak	kvellak@ut.ee
Finland	Viivi Virtanen	viivi.virtanen@helsinki.fi
France	Denis Lamy	lamy@mnhn.fr
Germany	Volker Buchbender	Volker.buchbender@planet-interkom.de
Hungary	Tamas Pócs	colura@gemini.ektf.hu
India	Virendra Nath	drvirendranath2001@rediffmail.com
Japan	Tomio Yamaguchi	yamatom@hiroshima-u.ac.jp
Kenya	Min S. Chuah-Pétiot	petiot@wananchi.com
Lithuania	Ilona Jukonieme	llonet@botanika.lt
Malaysia	Benito Tan	Dbsbct@nus.ed.sg
Netherlands	Laurens Sparrius	sparrius@blwg.nl
Norway	Kristian Hassel	Kristian.Hassel@bio.ntnu.no
Panama	Noris Salazar Allen	SALAZARN@si.edu
Poland	Ryszard Ochyra	Ryszard.Ochyra@ib-pan.krakow.pl
Spain	Javier Martinez-Abaigar	javier.martinez@daa.unirioja.es
Slovakia	Jiri Vana	vana@natur.cuni.cz
Sweden	Tomas Hallingbäck	Tomas.Hallingback@ArtData.slu.se
Switzerland	Michelle Price	Michelle.price@cjb.ville-ge.ch mjprice_cjb@yahoo.co.uk
Turkey	Mesut Kirmaci	mkirmaci@adu.edu.tr
USA	Matt von Konrat	mvonkonrat@fieldmuseum.org
USA – Puerto Rico	Ines Sastre-De Jesus	I_sastre@rumac.upr.clu.edu
Venezuela (**)	Yelitza Leon	yeltleon@ula.ve.

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Editor

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

Co-Editor

DorothyBelle Poli, Roanoke College, 221 College Lane, Salem VA 24153 USA Phone 540-375-2461 or email at poli@roanoke.edu

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

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