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IAB Presidential Address

Dear friends of the IAB,

The year 2025 has been a busy one for our IAB association. Elections were held to renew some members of the Council, including the Vice President, who also sits on the Executive Committee responsible for the day-to-day management of the IAB (see “Election Results” in this issue).

A major event marked the last quarter: the IAB International Conference, which brought together nearly 60 participants at the Biodiversity Research Institute in Jiiji, Taiwan. We were given a remarkably warm welcome, combining kindness and efficiency, and the conference was a real success (see the “Conference Report” in this issue).



During this conference, we had the opportunity to exchange ideas with many of you, particularly during a very productive panel discussion. We would like to build on these exchanges to further improve the functioning of our organization in 2026. You will soon receive a questionnaire to share your expectations, particularly regarding the update of our website. We hope you will take a few minutes to complete it.

During the IAB Council meeting held in Taiwan, the location of the next congress in July 2027 was unanimously decided: it will take place in Colombia, following a proposal from colleagues at the University Nacional of Colombia, Bogotá. Dr. Laura Victoria Campos is the lead organiser for the 2027 congress. We now have two years to prepare for it, and in the meantime, we plan to organise a virtual meeting in 2026 to continue our discussions.

I hope you enjoy reading this issue of our newsletter, which is once again full of news from around the world. Please feel free to share any events or updates for our next issue in June.

Best bryological regards,

Catherine Reeb



IAB Election Results

This past summer the International Association of Bryologists held elections to select new council members, to replace those whose term had come to an end. I would like to thank Juan Carlos Villarreal (1st vice-president), Matt von Konrat (secretary treasurer), Jessica Budke, Andrew Franks, Itambo Malombe, and Mereia Tabua (all council members), for their service and dedication to our association.

I would also like to thank all colleagues who accepted the nomination to be on the ballot, namely Michelle Price, Barbara Thiers and Li Zhang (candidates for the vice-presidency), Itambo Malombe, Nonkululo Phephu, and Nicholas Wilding (for council seat representing Africa), Jessica Budke, Marc-Frédéric Indorf, and Dale Vitt (for council seat representing North America), and Andrew Franks (for council seat representing Australasia).

The election seeks to maintain geographic representation on the council, and members were asked to vote for a candidate based on the geographic region they represented (Africa, Australasia or North America) and then for a candidate regardless of geographic representation.

The vote ended on 30 July, 2025, and 126 members participated. All members were given a unique four-digit voting identifier. Those were used to identify duplicate votes, and the following rules were applied:

- If a member voted twice and both votes are identical, one entire entry is discarded.
- If a member voted twice and the votes were incongruent, the incongruent entries are deleted and one entry for congruent entries is deleted.
- If a member voted for more than one candidate for a particular seat all entries for that position are discarded.
- The region-free vote, the nominees were ranked based on the votes they received, and the first nominee not already selected in the region-based vote, was selected for council.

Consequently, the following members were elected:

- Michelle Price for vice-president
- Matt von Konrat for secretary-treasurer
- Jessica Budke for council representing North America
- Andrew Franks for council representing Australasia
- Nicholas Wilding for council representing Africa
- Nonkululo Phephu for council, filling a region free seat.

Congratulations to all members elected and I look forward to working with you to further IAB's mission.

Sincerely,

Catherine Reeb (President of IAB) and Bernard Goffinet (Chair of the Election Committee)



The International Association of Bryologists Conference 2025 in Jiji, Taiwan

Boon-Chuan Ho¹ & D. Christine Cargill²

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The International Association of Bryologists (IAB) conference 2025 was recently held in Taiwan between 13 and 17 October 2025 and organised jointly by IAB, Taiwan Biodiversity Research Institute (TBRI) and the Bryological Society of Taiwan. The last such meeting was held in Madrid, Spain in 2019 (see BT 149) before the COVID-19 pandemic and thereafter a virtual version in Quebec, Canada in 2021 (see BT 152). This is the second face-to-face version of this biennial IAB meeting after the COVID-19 pandemic, following on from the concurrent meeting in Madrid at the IBC in 2024. The conference venue is within the Research Building of TBRI itself, located in Jiji Township, Nantou County in the central part of the main island of Taiwan. The international event saw 58 registered participants from 21 countries, and—as in most other such meetings—the local participant of the venue country is also the best represented with 10 from Taiwan (Fig. 1). The theme of the meeting was “Bryological Advances in Asia and Beyond” and true enough, 35 of the registered participants were from Asian institutions. The rest of the participants included 15 from Europe, four from North America and four from Australasia; none were from South America or Africa. However, a study based on an African student's work was presented orally by Catherine Reeb. The oral and poster presenters were also dominated by members from Asian institutions.



Fig. 1. Participants of the IAB 2025 conference (© IAB Conference 2025 / TBRI)

With very good weather, participants approaching the registration desk were warmly welcomed by the staff of TBRI, with everything already laid out. Upon registration, each participant was issued a lanyard name badge and a very generous "goodie bag". The bag contains twelve items of nicely designed gifts and souvenirs, including the abstract book, beverage coaster, calendar (2026), cutlery set, disposable mask set of four pieces, folding paper fan, kerchief, moss poems (a notebook with a written and illustrated introduction on bryophytes), set of nine postcards, T-shirt, tote bag and towel (Fig. 2). Furthermore, seven of these items have a bryophyte design, including the beautiful painting of a moss on the cover of the abstract book and tote bag; all were from the hands of Taiwanese artist Tasha Chen, who is also a staff of TBRI. A classical Chinese poem "Deer Fence" (鹿柴; Lù Chái) composed by Wáng Wéi (王維; 701–761) also appeared along the moss painting. The renowned poem is the 224th in the "Three Hundred Tang Poems" collection and moss is mentioned in its last verse. Several English translations exist for this poem and here is one of the simplest and most direct by Burton Watson (1971): "Empty hills, no one in sight, only the sound of someone talking; late sunlight enters the deep wood, shining again on the green moss".



Fig. 2. The generous "goodie bag" with 12 items of gifts and souvenirs received by every participant. Photo by Boon-Chuan Ho.

The opening speech of the conference was given by the director of TBRI, Dr Jia-Dong Yang, who himself is the foremost bryologist in Taiwan (Fig. 3). Welcoming speeches were subsequently given by the president of IAB, Dr Catherine Reeb and the president of Bryological Society of Taiwan, Ms Yu-Feng Yang. Keynote speeches of 45-minute each started the first two days of oral presentations.



Fig. 3. Dr Jia-Dong Yang, director of Taiwan Biodiversity Research Institute, giving his opening speech. Photo by Boon-Chuan Ho.

The scientific committee (Jim Shevock [chair], Jia-Dong Yang, Masaki Shimamura, Boon-Chuan Ho) supported by the very able and hardworking secretary Kuei-Yu Yao, composed an exciting five-day conference, comprising two keynote speeches. On day one after the opening and welcoming speeches, Sylvia Pressel gave an eye-opening keynote presentation on her research on land plant evolution with, of course, an emphasis on bryophytes. She has been utilising multiple research techniques, including micro-morphology and other comparative studies, to understand the evolution of bryophyte characters. On day two, the keynote speech was given by Christine Cargill on the topic of the systematics of the diverse and notoriously difficult liverwort genus *Riccia* (Fig. 4). With worldwide collaboration, she has accumulated nearly 350 samples of DNA target enrichment data from around the world. With this data, she is now able to test infra-generic classifications put forth by earlier workers as well as to interpret hypotheses on character evolution within *Riccia*.

Apart from the two keynote speeches, 30 oral presentations organised into eight sessions were given during the first three days of the event. It is perhaps coincidental that there are as many as six talks on complex thalloid liverworts in this conference, given its overall lower diversity in relation to other bryophyte groups. Although the majority of the talks were about bryophyte taxonomy/systematics and floristics/biodiversity, topics ranged widely from conservation, cryopreservation, dispersal, ecology, ethnopharmacology, genetics, herbarium management, physiology and symbiosis in bryophytes.



Fig. 4. Christine Cargill giving her keynote speech on “*Riccia*: A new phylogeny testing past hypotheses, taxonomies and relationships across this megadiverse genus using a target enrichment approach” (© IAB Conference 2025 / The Bryological Society of Taiwan & TBRI).

A 90-minute session was allocated for the poster presenters on the second day after lunch. The 21 posters were lined up along the office corridors and presenters, mostly students, and viewers alike were eager to interact, exchange ideas and learn from one another (Fig. 5).

The IAB council members also had a closed-door meeting on the evening of the second day of the conference.

The conference concluded with a special panel discussion session led by the IAB president, Catherine Reeb (Fig. 6). Several good suggestions and fruitful discussion surfaced during this session. IAB will be considering all suggestions seriously and critically. The main intention is to implement the good suggestions thereby improving the association to bring everyone even closer.

Director Yang and President Yang both gave a heartfelt closing speech and thanked all the participants which marked the end of the conference proper. Everyone was then brought by a shuttle bus to a restaurant for the banquet dinner. When everyone was seated and before food was served, the IAB President announced the IAB award winners for this year.



Fig. 5. Posters set up and ready for the 90-minute poster session. Photo by Boon-Chuan Ho.



Fig. 6. A dedicated panel discussion session. From left to right, Gaik Ee Lee, Karn Imwattana, Catherine Reeb (IAB president), Jim Shevock (chair of scientific committee) and Christine Cargill (IAB vice-president). Photo by Boon-Chuan Ho.

After the three-day intensive presentations, most participants signed up for one of the three optional field visits to nearby sites still within Nantou County, which non-local participants were most excited about (Fig. 7). Yu-Feng Yang has put in a lot of effort to visit the sites multiple times before the actual event, and even painstakingly prepared a preliminary inventory list of bryophytes for the bryophyte-curious visitors. The field visits lasted one or two days depending on the sites and the organiser gave the option to take participants to Taichung HRS (High-Speed Rail) station, where they could easily continue their journey.



Fig. 7. Participants who chose the two-day field trip to Sun-Link-Sea Forest Recreation Area © IAB Conference 2025 / The Bryological Society of Taiwan & TBRI.

The organisers in Taiwan are applauded for organising an almost seamless conference given many challenges and a short-time frame of just 14 months. This is indeed an impressive undertaking. The especially kind and hospitable Taiwanese people will bring good memories for all the participants whenever we think about the IAB 2025 conference. The venue of the next IAB meeting has already been announced to be held in Bogotá, Colombia in 2027. We look forward to meeting many of you during the next IAB conference in South America!



IAB Membership

IAB membership follows the calendar year, that is, from 1 January to 31 December. Individual membership is either for one year (US\$16) or five years (US\$70). Students are eligible for free membership for one year. Discounted membership fees apply to citizens from eligible countries.

Relevant payment links, student forms, and list of eligible countries for discounted rates can be found on the [IAB website](#). For further information or queries please do not hesitate to contact IAB secretary/treasurer, Dr. Matt von Konrat.

We encourage you to renew your membership and/or to invite others to consider joining and contribute to the IAB's mission of promoting the study of bryophytes and the cooperation and communication among bryologists.



Naming of new IAB award after a prominent female bryologist decided!

D. Christine Cargill & Josephine Milne

A proposal to name a new IAB award after a prominent female bryologist was published in the Bryological Times in June 2025 (BT Vol. 160). In early October, IAB members were asked to vote on a new award honouring one of our prominent female bryologists by having the award named after that bryologist.

The IAB membership enthusiastically embraced the idea and voted for their favourite female bryologist. There was an excellent suite of candidates to select from and certainly hard to choose just a single person from the list. But only one person could be selected and overwhelmingly the community chose Dr. Janice Glime!

The outcome of the vote was announced at this year's IAB conference dinner in Taiwan following an email to Janice to inform her that the new award would be named in her honour and asking her if she was happy to accept.

Janice responded to the email as follows:

Dear Chris,

This is a great honor and a humbling experience for me. I only wish I was strong enough to be at the meeting to greet all my bryological friends. Running Bryonet and writing Bryophyte Ecology are the joys in my life, and bryologists increase that joy by their kindness to each other and expressions of appreciation. I truly believe that bryologists are the greatest people in the world! I accept this honor on behalf of all the bryologists who have shaped my life - for all the conferences and field trips that helped my love and knowledge of bryophytes to grow.

My very best wishes to everyone,

Janice

Congratulations Janice.

The next step is for the IAB Council to determine the details of the Janice Glime Award:

- what will the award be for
- the frequency of the award
- how to adjudicate the award, and
- what will be awarded to the successful applicant.

Thanks to everyone who contacted us with feedback and to IAB members who voted.



The Nomenclature Committee for Bryophytes for July 2024 - July 2029

Michelle Price

Conservatory and Botanical Garden of Geneva, Chemin de l'Impératrice 1, CP 71, 1292 Chambésy-GE, Switzerland.

The Nomenclature Section (NS) of the XX International Botanical Congress (IBC) took place from the 15 – 19 July 2024 in Madrid, Spain, the week before the main congress. The NS effectively functions as a governing body for the *International Code of Nomenclature for algae, fungi, and plants* (the Code) that meets to review, discuss and vote on formal proposals for modifying the Code. The decisions and appointments of the NS are proposed as a resolution for formal ratification during the final plenary session of the IBC. The decisions of the NS come into immediate effect upon the adoption of the resolution. The accepted proposals and amendments are integrated into the new Code by the Editorial Committee. The 'Madrid Code' was recently published (Turland *et al.* 2025) with an [interactive digital version](#) on the International Association for Plant Taxonomy (IAPT) website.

The permanent nomenclature committees of the IAPT gather expertise on specific taxonomic groups (algae, bryophytes, fossils, fungi and vascular plants). They are mandated to examine the proposals to conserve or reject names, to suppress or sanction works as well as requests for binding decisions that are referred to them by the General Committee. Their recommendations are published in the journal TAXON. The new Nomenclature Committee for Bryophytes (NCB) for July 2024-July 2029 was approved on the 27 July 2024 and contains 18 members: Prof. Paulo E.A.S. Câmara, Dr. Sanna Huttunen, Dr Catherine La Farge as well as the following:

Dr John **Brinda** (secretary), Assistant Scientist (Science and Conservation), Missouri Botanical Garden, St. Louis, U.S.A. ORCID: <https://orcid.org/0000-0001-9083-1235>. *Bryological expertise*: Bryophyte taxonomy, biogeography, and ecology especially of the southwestern United States. *Motivation*: As a maintainer of bryophyte nomenclatural data for both tropicos.org and bryonames.org, I frequently encounter problems that require action by this committee.

Prof. Dr. Ricardo **Garilleti**, Professor of Botany, University of Valencia, Burjassot, Spain. ORCID: <https://orcid.org/0000-0002-5977-2908>. *Bryological expertise*: Bryophyte taxonomy, systematics and biogeography of the Orthotrichaceae. *Motivation*: I am very interested not only in taxonomy (with a direct link to naming, nomenclature and typification), but also in History of Botany and the development of systems of classification and naming.

Prof. Dr. Bernard **Goffinet**, Professor of Ecology and Evolutionary Biology, University of Connecticut, Storrs, U.S.A. ORCID: <https://orcid.org/0000-0002-2754-3895>. *Bryological expertise*: moss systematics and phylogenetics. *Motivation*: Interested in nomenclature and I have led seminars on botanical nomenclature at UCONN.

Dr. Boon-Chuan **Ho**, Researcher in Plant Taxonomy, Singapore Botanic Gardens, Singapore. ORCID: <https://orcid.org/0000-0003-0530-775X>. *Bryological expertise*: Bryophyte taxonomy and nomenclature with a focus on tropical Asian bryophytes. Taxonomic expertise in the Hookeriales. *Motivation*: I am interested in natural history collections. My work often deals with herbarium specimens and associated nomenclature issues either in my own research or while reviewing manuscripts of others. I also feel obligated to represent Southeast Asia because there are so few of us.

Dr. Tomoyuki **Katagiri**, Lecturer of the Plant Taxonomy Laboratory and Director of Herbarium of Kochi University (KOCH), Kochi, Japan. ORCID: <https://orcid.org/0009-0002-8196-0400>.

Bryological expertise: Bryophyte taxonomy and nomenclature. Taxonomic interest in liverworts, specifically the Trichocoleaceae and fossil bryophytes. *Motivation*: My interest in bryophyte taxonomy led me to nomenclature that is a vital system requiring continuous modifications. I hope some of my knowledge about bryology can help it get better.

Dr. Niels **Klazenga**, Biodiversity Informatics Developer, Royal Botanic Gardens Victoria, Melbourne, Australia. ORCID: <https://orcid.org/0000-0003-2224-6821>. *Bryological expertise*: Taxonomy of Dicranaceae; Australasian and Malesian mosses. *Motivation*: I belong to the furniture; past Secretary of the Committee.

Dr. Matt **von Konrat**, Head of Botanical Collections, The Field Museum, ORCID: <https://orcid.org/0000-0001-9579-5325>. *Bryological expertise*: Liverworts, nomenclature, southern South America, Oceania, Frullaniaceae. *Motivation*: As a bryologist, I serve on the bryophyte nomenclature committee to support the global bryological community by contributing taxonomic expertise, mentoring early-career researchers, and ensuring stable, accurate names for future research and conservation.

Dr. Juan B. **Larraín**, Curator of cryptogams and consultant on bryophyte diversity, Herbario del Universidad de Concepción, Concepción, Chile. ORCID: <https://orcid.org/0000-0002-9423-6561>. *Bryological expertise*: Taxonomy, systematics and floristics of southern South American bryophytes. *Motivation*: There is still much work to be done regarding the nomenclature and typification of southern South American bryophytes, and I have dedicated over 20 years to studying the flora of this region.

Dr. Itambo **Malombe**, Senior Research Scientist, East African Herbarium, National Museums of Kenya, Nairobi, Kenya. ORCID id number: <https://orcid.org/0000-0002-8168-7013>. *Bryological expertise*: Lejeuneaceae, specifically *Cheilolejeunea*. *Motivation*: interest in taxonomy and conservation, including nomenclature aspects of bryophytes.

Dr. Michelle **Price** (convenor), Head of the Cryptogamic Herbarium, Conservatory and Botanical Garden of Geneva, Geneva, Switzerland. ORCID: <https://orcid.org/0000-0002-2706-1124>. *Bryological expertise*: Bryophyte taxonomy and nomenclature, typification and herbarium management. Taxonomic interest in mosses, and specifically the Dicranales. *Motivation*: I am passionate about natural history collections and particularly herbaria so my work with bryophyte collections and specimens has a direct link with nomenclature, naming processes and typification.

Dr. Jacques **van Rooy**, Fellow of the South African National Biodiversity Institute, Pretoria, South Africa. ORCID: <https://orcid.org/0000-0002-7822-5547>. *Bryological expertise*: More than 40 years of experience in herbarium curation and research on the taxonomy, nomenclature, biogeography and conservation of African bryophytes, southern African mosses in particular. *Motivation*: Nomenclature forms an integral part of my research on the taxonomy and conservation of African bryophytes.

Prof. Dr. Lars **Söderström**, Professor emeritus, Department of Biology of the Norwegian University of Science and Technology, Trondheim, Norway. ORCID: <https://orcid.org/0000-0002-9315-4978>. *Bryological expertise*: Bryophyte diversity and distribution, especially liverworts. Typification, nomenclature and taxonomy of liverworts. *Motivation*: I am interested in stabilizing the nomenclature of bryophytes as it is important for all diversity, distribution and taxonomic studies.

Assoc. Prof. Dr. Phiangphak **Sukkharak**, Lecturer in the Department of Biology, Burapha University, Chonburi, Thailand. ORCID: <https://orcid.org/0000-0001-5330-1411>. *Bryological expertise*: Taxonomy and systematics of liverworts, especially *Thysananthus* and *Frullania*. *Motivation*: My work focuses on the taxonomic treatments of liverworts so it is directly related to nomenclature, and the history of the taxa.

Dr. Nicholas **Wilding**, Researcher, Université de La Réunion, Saint Denis, La Réunion, France. ORCID: <https://orcid.org/0000-0003-4029-5387>. *Bryological expertise*: Taxonomy and systematics of the Funariaceae, bryophytes of the Mascarenes. *Motivation*: Interest in the application of rules and recommendations that govern scientific naming.

Prof. Dr. Rui-Liang **Zhu**, Head of the Department of Biology and Curator of Biological History Museum of East China Normal University, Shanghai, China. ORCID: <https://orcid.org/0000-0002-0163-8255>. *Bryological expertise*: Bryophyte taxonomy and nomenclature, herbarium management. Taxonomic interest in liverworts, hornworts and peat mosses. *Motivation*: My main work with collections and specimens of bryophytes has a direct link with nomenclature.

What can you do?

If you have encountered a nomenclatural issue during your research, you can consult with colleagues or NCB members on the potential nomenclatural implications of your findings. Turland (2019), in his 'The Code Decoded,' provides practical guidance to using the Code, with explanations, definitions, information and uses cases to help with the interpretation and implementation of the provisions and articles. If your issue should be formalised so it can be resolved, it can be formulated as a specific proposal. Proposals that deal with nomenclatural issues or requests for binding decisions follow a workflow from conception to decision. This workflow starts with the pre-submission phase to develop the proposal, its content and its argumentations. The proposal should be formatted according to the appropriate TAXON guidelines. If it concerns the conservation or rejection of names, it should include a detailed statement of arguments both for and against the proposal itself. Examples of different types of bryophyte proposals can be sourced from one of the recent NCB reports (Klazenga 2017, 2023, 2024). The proposal is then submitted to TAXON via the online submission system where it will be assigned for review. If accepted, the proposal will appear in a subsequent volume of TAXON with its assigned proposal number that is used to track it and the decisions made about it. Outcomes of the discussions on proposals and the recommendations are communicated in the NCB committee reports.

When and where will the next IBC and Nomenclature Section be?

The XXI IBC will take place on the 21 – 28 July 2029 in Cape Town, South Africa, with the NS planned for the week before the main event.

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ECCB: A glimpse backward – and a leap forward

Bisang I., Albertos B., Bergamini A., Hodgson A., Konstantinova N., Papp B., Pihlaja K., & Kiebach T.

The European Committee for Conservation of Bryophytes (ECCB) was founded in 1990 on the occasion of the first European Conference on Bryophyte Conservation in Uppsala (Fig. 1). The aim was to establish a network of bryologists involved in conservation in Europe and thus to increase the efficiency of bryophyte conservation. One of the early major achievements, initiated at the conference in Uppsala, was the submission of a list of bryophytes of conservation concern to the council of Europe. This list eventually made its way into European conservation legislation (in 1992; [EU Habitat Directive Annex II](#)) The directive implies that the included species and their designated habitats need to be monitored and maintained in a “favorable status” in all European Union countries. Since then, a quite informally organised group of the ECCB has continuously worked for bryophyte conservation across Europe, under the dedicated contribution of the leading European bryologists. Among the highlights that the ECCB accomplished during more than three decades of its existence are nine much-appreciated [conservation conferences](#) held in different European regions (Zurich 1994, Trondheim 1998, Prague 2001, Valencia 2004, Bispgården 2005, Cluj-Napoca 2007, Budapest 2012, Montenegro 2016, Zagreb 2022). These conferences assembled a wide array of bryologists involved in bryophyte conservation at the local, national, continental and even global scale for presentation of their work and for excursions to explore the regional bryophyte floras. Look up ECCB’s website [for the next conference in Sardinia in May 2026 which is already in planning.](#)

ECCB has directed, initiated or was involved in several [transnational conservation projects of European relevance](#). A significant milestone was the publication of the IUCN [Red List of European bryophytes](#) in 2019 to which more than 90 bryologists from Europe contributed. ECCB was responsible for the scientific lead and ECCB’s members provided the bryological expertise, while the European Commission funded the project (EC LIFE14 PRE BE 001), and the IUCN regional office in Brussels managed it with the support of the [IUCN SSC Bryophyte Specialist Group](#).

After a long period of serving as committed chair and secretary, [Nick Hodgetts](#) and Neil Lockhart announced during the ECCB-conference in Zagreb, Croatia in May 2022, that they wished to step down. At the ECCB General Assembly during this meeting, ECCB decided to join the [IUCN SSC Bryophyte Specialist Group](#) (BSG) as a regional (European) chapter. [Thomas Kiebach](#) agreed in 2023 to act as ECCB-chair. He appointed a new board, who during the past 1.5 years established by-laws for the ECCB, launched a website and opened up ECCB-membership to everybody with an interest in the conservation of European bryophytes.



Fig. 1. Sixty-eight bryologists from three continents attended the founding conference of ECCB in Uppsala, Sweden, in October 1990. Photographer unknown. Due to reasons of Data Protection Legislation in different countries, we refrain from publishing the names of the attendees.

The aims of ECCB are as follows:

- Provide expertise in bryophyte conservation by maintaining a network of people involved or interested in bryophyte conservation in Europe
- Initiate regular conferences on bryophyte conservation every four years
- Support the IUCN SSC Bryophyte Specialist Group's efforts to achieve its targets for bryophyte conservation in Europe
- Promote projects and activities related to bryophyte conservation in Europe (Red List, Checklist, Priority species, research)

Did we pique your interest? Please visit the [ECCB web site](#), subscribe to ECCB's newsletter – and, most importantly: join the group. ECCB welcomes bryologists and bryophyte enthusiasts of all levels as members!

We thank all members, leaders and experts who supported ECCB to date! We look forward to continuing a fruitful and rewarding collaboration for the sake of conservation of these small, rather inconspicuous but amazingly beautiful plants with their unique life-history.

Read more

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First International Bryological School in St. Petersburg (Russia)

Nadezhda Konstantinova¹, Eugenia Smirnova², Mark Goldstein² & Helena Kushnevskaia²

¹Polar-Alpine Botanical Garden Institute, Apatity, Russia

²St. Petersburg State University, St. Petersburg, Russia

The first Bryological School in Russia took place in St. Petersburg from 5 to 11 September 2025. The aim of the event was to improve methodological approaches for the identification of mosses and liverworts in laboratory and field situations. The School consisted of lectures, laboratory workshops and one-day nature excursions (Fig. 1). All classes and work at the demonstration microscopes were also broadcast online to a wider audience.



Fig. 1. Participants in the first Bryological School in St. Petersburg

The idea of holding such a school-seminar originated from the bryological meeting and field school held in Khibiny in 2024. The large number of young participants revealed a great interest in the field school and the importance of educational bryological activities. The meeting in Khibiny encouraged the most engaged students, led by Dr. Helena Kushnevskaia and Dr. Alexey Potemkin, to develop the educational programme into a special event.

Invitation letters were sent to both potential lecturers and interested employees and students. The selection of in-person participants was based on their application letters, which took into account motivation and personal interest in bryophytes, their level of bryological training, and participation in scientific and natural history projects. Masters and postgraduate students, as well as interested employees from across the country — from Magadan in the east to Murmansk Province and Karelia in the west, and from Arkhangelsk in the north to Rostov-on-Don in the south — came to St. Petersburg. Attendees also came from Belarus and Uzbekistan. In total 35 participants attended the school in person and 20 joined online.

At the School's opening session, four introductory lectures were presented at the Komarov's Botanical Institute. Dr. Alexey Potemkin gave a brief overview of the methods used to classify the main groups of liverworts in Russia. Dr. Michael Ignatov spoke about the peculiarities of moss peristome structure and development. Dr. Vladimir Fedosov introduced the modern taxonomy of the family Orthotrichaceae with the intriguing title "Orthotrichaceae — the Orchids of the Moss World". The opening lectures were concluded by Dr. Anna Vilnet's presentation on hybridization in liverworts (Marchantiophyta) from a molecular genetic perspective.

The focus of the School was on laboratory workshops (Fig. 2). The laboratory workshops took place at St. Petersburg State University, and combined theoretical and practical classes. Leading taxonomists conducted workshops on specific taxonomic groups and provided interesting specimens for identification. Participating early career scientists had the great opportunity to communicate with the authors of the identification keys, discuss specific features and theses, and work with rare herbarium specimens. Dr. Michael Ignatov conducted a workshop on the identification of the Brachytheciaceae family (Fig. 3).



Fig. 2. Participants undertaking laboratory workshop during the School

Dr. Vladimir Fedosov introduced the school participants to the diversity of small Dicranidae. Dr. Elena Ignatova explained the new identification keys for the genera *Schistidium* and *Didymodon*. Anna Shkurko helped to understand microscopic and macroscopic features of the genus *Sphagnum*. Dr. Irina Chernyadjeva spoke about the genus *Pohlia* and suggested to participants to compare different species using temporary or permanent prepared samples. Three workshops were dedicated to the identification of liverworts. Dr. Eugene Borovichev shared the remarkable features of liverworts with a complex thallus structure. Dr. Alexey Potemkin held a workshop on identifying *Lophozia* and *Scapania*. Dr. Nadezhda Konstantinova explained the key characteristics to consider when identifying small liverworts such as species from the genera *Cephalozia* and

Cephaloziella. The participants identified the specimens provided by lecturers, as well as specimens collected during the field trips or personal work.



Fig. 3. Dr. Michael Ignatov conducting a workshop on Brachytheciaceae

Two days of the School were devoted to field excursions. On 7 September, an excursion was made to the Suma River (Fig. 4) and the Syurevskoe Bog (Fig. 5), both of which are located in the south of the region. The excursion took a full day and contained two parts. The participants collected bryophytes in the rocky limestone canyon of the Suma River and in the adjacent areas of coniferous and broad-leaved forests, and after lunch, in a swampy area called “Syurevskoe boloto” located about 50 km away. During the excursions, the experienced bryologists introduced the young participants to the habitats where bryophytes can be found, as well as to the species that are easy to identify in the field - both those that are widespread and those that are rare in the region. The most interesting species discovered were calcicolous *Taxiphyllum wissgrillii*, *Rhynchostegium riparioides*, *Fissidens gracilifolius*, and *Seligeria pusilla*. A sizeable area of *Sphagnum medium*, species with amphi-Atlantic distribution, was found in the Syurevskoe peat bog. Some notable hepatics were also found amongst *Sphagnum* shoots including *Mylia anomala*, *Odontoschisma fluitans*, *Cephalozia* spp.



Fig. 4. School Participants surveying Suma River



Fig. 5. School participants surveying Syurevskoa Bog

On 9 of September, participants took a tour of the famous Monrepo Park. This is an ancient manor house and a protected area of rocky forest on the coast of the Gulf of Finland, around 100 km from

St. Petersburg. There, on the rock outcrops covered in bryophytes the participants were able to collect many interesting species (Fig. 6). Of particular interest were the frequent occurrences of *Scapania lingulata* (Fig. 6), a suboceanic species described by H.Buch in a nearby location. Other rare species collected included *Amphidium lapponicum*, *Grimmia hartmanii*, and *Ulota curvifolia*.



Fig. 6. Rock outcrop at Monrepa Park being surveyed for bryophytes (left) and *Scapania lingulata* (right)

During the laboratory sessions after the excursions, participants had the opportunity to receive individual tuition from experts to determine the identification of the samples they brought with them. Throughout the entire days of the school-seminar, participants actively communicated with each other during coffee breaks, workshops and trips. Many participants met each other for the first time with many new connections established. Both young participants and lecturers received a powerful boost of energy, felt support and interest, and were eager to continue exploring and learning about the fascinating world of bryophytes.

The School was organised with the support of Komarov Botanical Institute of the Russian Academy of Sciences, St. Petersburg State University, the Russian Botanical Society and the Monrepa Park Museum-Reserve. The organising committee would like to thank these organisations for the opportunity to hold this useful event and would like to express the sincere gratitude to all the lecturers and participants of the School.



Première réunion de l'Association française de bryologie

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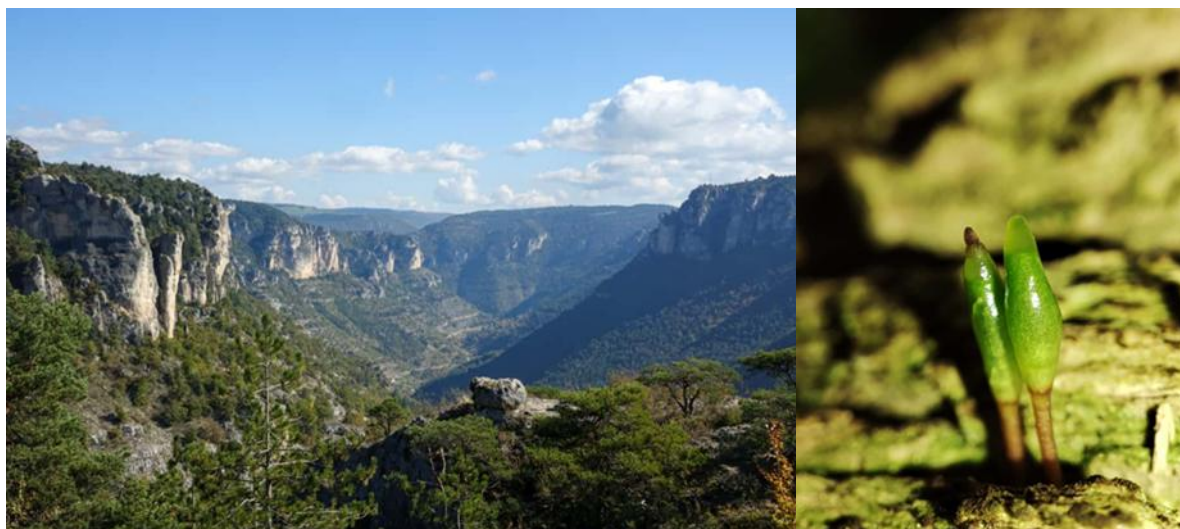


Association Française de Bryologie

L'Association française de bryologie a tenu son assemblée générale le 18 octobre 2025 à Bédouès-Cocurès dans les Cévennes.

Les membres de l'association, venus des quatre coins de la France, se sont réunis pendant 3 jours pour se familiariser avec la bryoflore locale et pour tenir l'assemblée générale de l'association. Lors du premier jour, les participants ont pu découvrir les magnifiques paysages des balcons de la Jonte et un cortège bryologique calcicole composé notamment de *Cololejeunea calcarea*, *Myurella julacea*, *Gymnostomum*

calcareum ou *Plagiopus oederianus*. La journée a été marquée par la découverte de *Codonoblepharon forsteri*, au sein d'un dendrotelme d'un hêtre. Le deuxième jour a permis de prospecter les cortèges acidiphiles se développant sur des roches granitiques sur le site de la Cascade de Rûnes, comme *Andreaea rupestris*, *Frullania fragilifolia* ou encore *Trilophozia quinquedentata*. Le dernier jour a été l'occasion d'inventorier la tourbière du col de Finiels, sur le mont Lozère, avec l'observation de diverses sphaignes, près d'une dizaine d'espèces, et d'hépatiques sphagnicoles ou encore *Warnstorfia stramineum*. Il s'est achevé avec l'observation de *Buxbaumia viridis* avec sa forme propagulifère et sa forme sporophytique dans les boisements voisins de la tourbière.



Paysages des balcons de la Jonte © Léo Giardi - Sporophyte de *Buxbaumia viridis* © Léo Giardi

L'assemblée générale a rassemblé une vingtaine de personnes et a été l'occasion de revenir sur les premières actions menées en 2025, la reprise de l'association inactive depuis plusieurs années, la reprise du site internet Bryophytes de France (à paraître), la refonte des statuts ou encore l'organisation de ce week-end de terrain. Un nouveau conseil d'administration, composé de 11 membres, a été élu, ainsi qu'une nouvelle co-présidence pour l'association, représentée par

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quatre jeunes bryologues. De nouveaux projets ont également été évoqués et verront le jour prochainement!



Assemblée générale © Eva Chardin



Le groupe au Mont Lozère © Paol Kerinec



The French Association of Bryology held its general meeting on 18 October, 2025 in Bédouès-Cocurès in the Cévennes.

Members of the association, coming from all over France, gathered for three days to discover the local bryoflora and to hold the general assembly of the association. During the first day, the participants discovered the magnificent landscapes of the Jonte balconies and a calcic bryological community composed of *Cololejeunea calcarea*, *Myurella julacea*, *Gymnostomum calcareum* and *Plagiopus oederianus*. The day was marked by the observation of *Codonoblepharon forsteri*. The second day, we explored the acidiphilic community developing on granite rocks on the site of the Cascade de Rûnes, characterised by *Andreaea rupestris*, *Frullania fragilifolia* and *Trilophozia quinquedentata*. The last day was an opportunity to wander the Col de Finiels peat bog with the observation of around twenty species of *Sphagnum* moss, sphagnicolous liverworts and *Warnstorfia stramineum*. It ended with a nice population of *Buxbaumia viridis* with its propagulous form and its sporophytic form within neighbouring woods.

The general meeting brought together around twenty people and was an opportunity to review the first actions carried out in 2025 such as the revival of the association which has been inactive for several years, the reworking of the Bryophytes de France website (to be published), the rewriting of the association's bylaws and even the organization of this field weekend. Eleven new board members have been elected, as well as new members for the co-presidency of the association composed of four young bryologists. New projects have also been mentioned and will come soon!



Bryophyte diversity in ice age refugia: New disjunct records and the first endemic species from Vancouver Island

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The northwest coast of North America hosts a unique diversity and puzzling biogeography of bryophytes (Schofield 1984). Intriguing components of this bryoflora are the disjunct arctic and Sino-Himalayan elements, consisting of species such as *Acrobolbus ciliatus*, *Bazzania griffithiana*, and *Mastigophora woodsii*, which are found in specific areas within and adjacent to places that possibly remained unglaciated during the last glaciation. These areas are known as ice age refugia and have functioned as places of long-term ecological stability, continuing to support a high diversity of endemic and relictual taxa (Pruett *et al.* 2010; Carter *et al.* 2014; Erlandson *et al.* 2021). The concept of ice age refugia has, since the mid-20th century, been among the main hypotheses used to account for the emplacement of these disjunct taxa.

Yet, support for the ice age refugium hypothesis has been tempered by advances in phylogeography and geomorphology. Long-range spore dispersal during the Holocene has been shown to account for a growing number of broadly disjunct bryophyte taxa (Lewis *et al.* 2014; Shaw *et al.* 2014), which traditionally were hypothesised as the result of glacial vicariance. The exact location, extent, and duration of putative ice age refugia are currently contested among geomorphological studies (Mathewes *et al.* 2015).

A growing number of studies have found evidence supporting that mostly sterile bryophyte taxa with broadly disjunct distributions may be the exception, and vicariance with ice age refugia hypotheses may best explain their distribution (Gabrielsen *et al.* 1997; Schneeweiss & Schönswetter 2011). In putative unglaciated areas of Northwest North America, many disjunct bryophytes have never or only rarely been observed with sporophytes, and for the most part, lack phylogeographic study. Consequently, this mostly sterile and dispersal-restricted element of the disjunct bryoflora of northwest North America may serve as proxies for locating ice age refugia (Frey & Kurshner 2011; Patino *et al.* 2016; Alonzo-Garcia *et al.* 2020).

Understanding the distribution of these mostly disjunct and sterile bryophyte species in relationship to putative ice age refugia was the focus of my master's research. In the summer of 2023, I was awarded the IAB Endangered Species and Conservation grant to fund field surveys and genetic work on bryophytes from ice age refugia in the North Cascades Mountains of Washington State and the northwest coast of Vancouver Island, British Columbia. Funding went towards two main objectives: 1) To fund the remaining field work expenses of my master's thesis, and 2) to undertake genetic work on an undescribed species of *Calypogeia* I had collected from Doom Mountain (Fig. 1B & 2), which is located within Brooks Peninsula Provincial Park- a well-supported ice age refugium on the northwest coast of Vancouver Island (Hebda & Haggarty 1997; Hebda *et al.* 2022). After two years, I have completed my master's work and have received the genetic evidence sufficient to support the designation of this new species of *Calypogeia*.

Masters Research:

In response to recent advances in bryophyte biogeography, my master's thesis contributed to the field of ice age refugium testing by both validating earlier methods (Strong 1999) and introducing a new approach to evaluate how the bryophyte flora of a putative refugium relates — ecologically and empirically — to patterns of disjunct, dispersal-limited species across North American refugia. I applied this approach to a potential refugium at Barlow Pass, Washington (Fig. 1A), through three complementary components: (1) a regional floristic comparison of Barlow Pass with four nearby sites known to have been glaciated during the last glacial maximum, requiring baseline bryophyte surveys at all sites (Fig. 1); (2) geomorphological surveys to reconstruct paleo-glacial maxima within the Barlow Pass area to assess whether *in situ* persistence of relictual bryophytes was feasible; and (3) development of a statistical model to predict ice age refugia by comparing the proportion of disjunct, dispersal-limited bryophytes in refugial versus adjacent non-refugial areas.

The results of my master's research indicate that disjunct, dispersal-limited bryophytes occur more frequently in ice age refugia than in non-refugial areas. At Barlow Pass, this pattern is reflected in the presence of several such species, including *Cyrtomnium hymenophylloides* (Miller 1996; Miller & Morgenson 2004), and *Douinia imbricata*, along with other disjunct taxa such as *Gymnomitrium corallioides*, *Oedipodium griffithianum*, and *Psilopilum cavifolium*. Paleo-glacial reconstructions further suggest that small ice-free areas persisted near Barlow Pass throughout the last glaciation, providing geomorphological evidence for refugial conditions. Taken together, the geomorphological surveys, the concentration of disjunct and dispersal-limited species, and the statistical model all support the interpretation of Barlow Pass as a micro-refugium. More broadly, this integrative approach demonstrates how life-history traits and biogeographic patterns of bryophyte diversity can be used to identify and test for other ice age refugia.

***Calypogeia* sp. ‘doomensis’ from the Brooks Peninsula Provincial Park, B.C.**

In late July of 2022, my advisor, Dr. Eric DeChaine, and I were flown to the summit of Doom Mountain (Fig. 1B & 2) in the heart of the Brooks Peninsula. Our objectives were to collect plant leaf material for phylogenetic analyses and to document the flora from the alpine areas of Doom Mountain as part of the University of Washington’s 50 Peaks Project, which seeks to generate baseline alpine plant diversity data in areas of Washington and B.C. that are at risk of climate change. Doom Mountain is characterised by a series of steep summits flanked by near-vertical cliffs, making passage through the terrain dependent on technical climbing equipment. After three exhausting days, we had collected a comprehensive list of vascular and non-vascular species with notably uncommon species such as *Diphyscium foliosum*, *Gymnomitrium corallioides*, and *Oedipodium griffithianum*, as well as an undescribed *Calypogeia* species with distinctly red underleaves (Fig. 2). The *Calypogeia* was found in a sterile condition and without specialised asexual propagules but was immediately distinct in its pigmented underleaves. It was collected from a moist rock crevice within a steep west-facing gully on the northwest aspect of Doom Mountain – an area that remained unglaciated during the last glaciation.

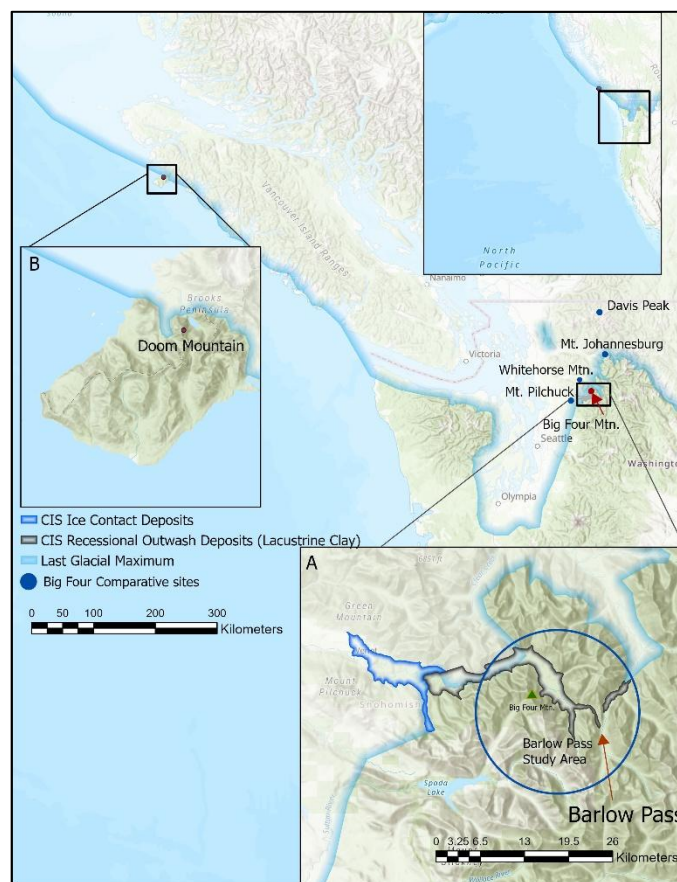


Fig. 1. Background map showing the extent of the Cordilleran Ice Sheet (CIS) at its maximum (16.4 kya), the location of Barlow Pass relative to its four comparative sites. Inset map ‘A’ showing the area of study around Barlow Pass, where bryophyte and geomorphological surveys with geological deposits provide evidence for an ice age refugium. Inset map ‘B’ showing the location of the Brooks Peninsula refugium and the location of Doom Mtn. relative to the extent of the CIS (Thorson 1980; Riedel 2017; Batchelor *et al.* 2019; Haugerud 2021).

To work on the morphological and genetic distinction of this *Calypogeia* species, I am collaborating with Connor Waldrop at the University of British Columbia. Our initial DNA sequencing efforts with the undescribed *Calypogeia* specimen support its distinction at the genetic as well as morphological level. Thus far we have only sequenced the plastid gene *rbcl*, but we hope to continue our genetic analysis by examining *trnL-F* and *trnG* sequence data, as well as nuclear ITS2. For *rbcl*, *Calypogeia* sp. ‘doomensis’ has a haplotype rather distinct from all other species present in North America. It is similarly distinct from the worldwide accessions of *Calypogeia* available on GenBank. Relationships between *Calypogeia* species are not well recovered with *rbcl*, and currently, we can’t make any inference on sister-relationships between the new *Calypogeia* sp. ‘doomensis’ and other species of *Calypogeia*. We hope to provide a formal description of this species that will be published within the next year.



Fig. 2. Background photo of Doom Mountain, B.C. showing approximate locations of noteworthy species collected during surveys. Inset photo of the ventral side of a shoot of *Calypogeia* sp. 'doomensis'.

This new species of *Calypogeia* represents the first putatively endemic bryophyte species recorded from Vancouver Island and is the first putative endemic taxon to the Brooks Peninsula refugium, further emphasizing its regional biogeographic significance. More broadly, the occurrence of disjunct and endemic taxa reported here for Barlow Pass and the Brooks Peninsula Refugium is a testament to places that have escaped the continental ice sheets of the last Pleistocene glaciation, and their vital role in retaining evolutionary histories, maintaining regional biodiversity, and sustaining species through climate change. Funding from the IAB was fundamental for the completion of these studies, and I sincerely thank the members and the IAB council for funding this and other endeavors to better understand and conserve places of bryophyte diversity.

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Les soirées bryologiques en mode virtuel au Québec: un effet positif du confinement

Stéphane Leclerc, Carole Beauchesne, Marc-Frédéric Indorf et Marc Favreau

Le 25 mars 2025, un groupe de bryologues de la Société québécoise de bryologie (SQB) a célébré le cinquième anniversaire de leurs Soirées bryologiques virtuelles. Voici comment ont vu le jour ces rencontres hebdomadaires, riches en apprentissages pour les participants et profitables pour la mise à jour de la répartition des bryophytes au Québec.

Des soirées bryologiques avaient déjà été instaurées en 2018. Il s'agissait alors de rencontres en personne dans les laboratoires d'institutions d'enseignement, situées à Québec et à Montréal. Elles avaient pour objectif de répondre au besoin des membres de s'entraider dans l'identification de leurs récoltes de bryophytes. Neuf rencontres ont eu lieu au cours des deux années suivantes.

Mais voilà qu'arrive la pandémie, en mars 2020, avec son lot de contraintes sanitaires qui limitent sérieusement les possibilités de rencontres en personne. Dans le même temps, la plateforme Zoom se fait connaître au grand public. Une membre de la SQB suggère alors d'utiliser cet outil pour poursuivre les échanges. Six bryologues se laissent tenter par une première expérience le mardi 24 mars 2020. Les avantages de cette approche deviennent rapidement évidents: confort du chez-soi, ouvrages de référence à portée de main, possibilité de montrer à tous, et au même moment, des photographies des spécimens à identifier. Et surtout, la distance étant abolie, le groupe peut désormais s'agrandir sans limite.



Fig. 1. Capture d'écran des participants rassemblés pour une soirée bryologique

Depuis cette première rencontre, pas moins de 61 participants se sont joints à au moins une des Soirées bryologiques virtuelles, qui cumulent maintenant 270 rencontres en cinq ans. Il n'est pas rare d'observer la présence d'une vingtaine de participants. Le bon déroulement des soirées est assuré par un animateur qui établit une liste des présentations pour chaque rencontre et dirige les

discussions. Une autre personne compile une liste des espèces présentées. Ainsi, en 2024, 197 taxons ont été étudiés lors de 280 présentations des participants. Quelques soirées thématiques ont mis en valeur les Mniacées, les Orthotrichacées ou encore les Sphagnacées. Un conférencier, Juan Carlos Villarreal A., a également été invité pour nous entretenir de sa passion, les anthocérotes.



Fig. 2. Présentation d'un péristome de *Plagiomnium cuspidatum* lors de la soirée bryologique du 13 juin 2023

Au cours de ces soirées, les échanges ont lieu en français uniquement. Les principaux ouvrages utilisés sont la Flore des bryophytes du Québec-Labrador (Faubert 2012, 2013, 2014), Les sphaignes de l'Est du Canada (Ayotte et Rochefort, 2019) et Bryophytes de France (Hugonnot et Chavoutier, 2021, 2024), à cela s'ajoutent d'autres ouvrages en français ou dans d'autres langues que certains participants ont dans leur bibliothèque.

L'engagement des participants avant, pendant et après chaque séance est à souligner. La prise de photos et de notes demande une organisation efficace, et il arrive souvent qu'un participant se voie confier des devoirs (nouvelles photos d'un détail en particulier, mesures de cellules, etc.) et revienne présenter ses résultats dans une rencontre subséquente afin de compléter l'identification avec l'aide du groupe.

En conclusion, la pandémie aura eu au moins un effet collatéral positif, car les Soirées bryologiques virtuelles sont finalement une excellente façon de réunir les bryologues du Québec, de partager l'expertise, de découvrir des espèces communes ou rares, de créer un sentiment d'appartenance à la SQB et d'enrichir les connaissances sur la répartition des bryophytes présentes sur le territoire québécois. Merci aux participants qui contribuent à faire de ces soirées des rencontres stimulantes, où le sérieux de l'activité n'empêche pas la rigolade entre copains.



On-line bryophyte nights across Québec (Canada): A positive effect of the Covid pandemic

On 25 March, 2025, a group of bryologists of the Société québécoise de bryologie (Québec Bryological Society) celebrated the fifth anniversary of the *Soirées bryologiques*, their weekly on-line Bryophyte Night. Here is how these evenings came to be, how they helped participants improve their skills and knowledge in bryology, and how they further developed our understanding of species distribution ranges across Québec.

Since 2018, bryologists living near the cities of Québec and Montréal have been gathering regularly in laboratories of higher education institutions. The goal of these meetings was to encourage knowledge-sharing between members and to facilitate help in bryophyte identification. Altogether, nine meetings were held over a period of two years.

But then, in March of 2020, the pandemic was declared in Québec, and social restrictions were put in place to reduce community transmission. The situation made it impossible to continue meeting in person. At the same time, the virtual platform Zoom suddenly became known to the general public. A member of the Society thus suggested trying out a virtual meeting to continue sharing about bryophytes. Six bryologists experimented with this option on Tuesday, 24 March, 2020. Almost immediately, the advantages of this option became obvious: the comfort of one's home, resources and references within reach, and the possibility to show images of specimens to everyone simultaneously, which greatly facilitates discussion. Furthermore, geographic distance was no longer a problem, and the group could grow without restrictions (Québec is approximately the same size as Alaska, 2.7 times the size of Ukraine and 3 times the size of France).



Fig. 1. Screen capture of participants during a Bryophyte Night.

After this first evening, at least 61 participants have connected virtually at least once. Altogether, 270 virtual meetings have been held over the last five years, and it isn't rare to have about twenty participants at any one time. A moderator prepares a list of presentations for each meeting and

helps direct discussions. Another person notes each species presented. In 2024 alone, 280 presentations were made, including a total of 197 species. Occasionally, themes are decided in advance to explore certain families such as Mniaceae, Orthotrichaceae and Sphagnaceae. Juan Carlos Villarreal A. joined in by invitation to give a detailed talk on hornworts, his personal passion.

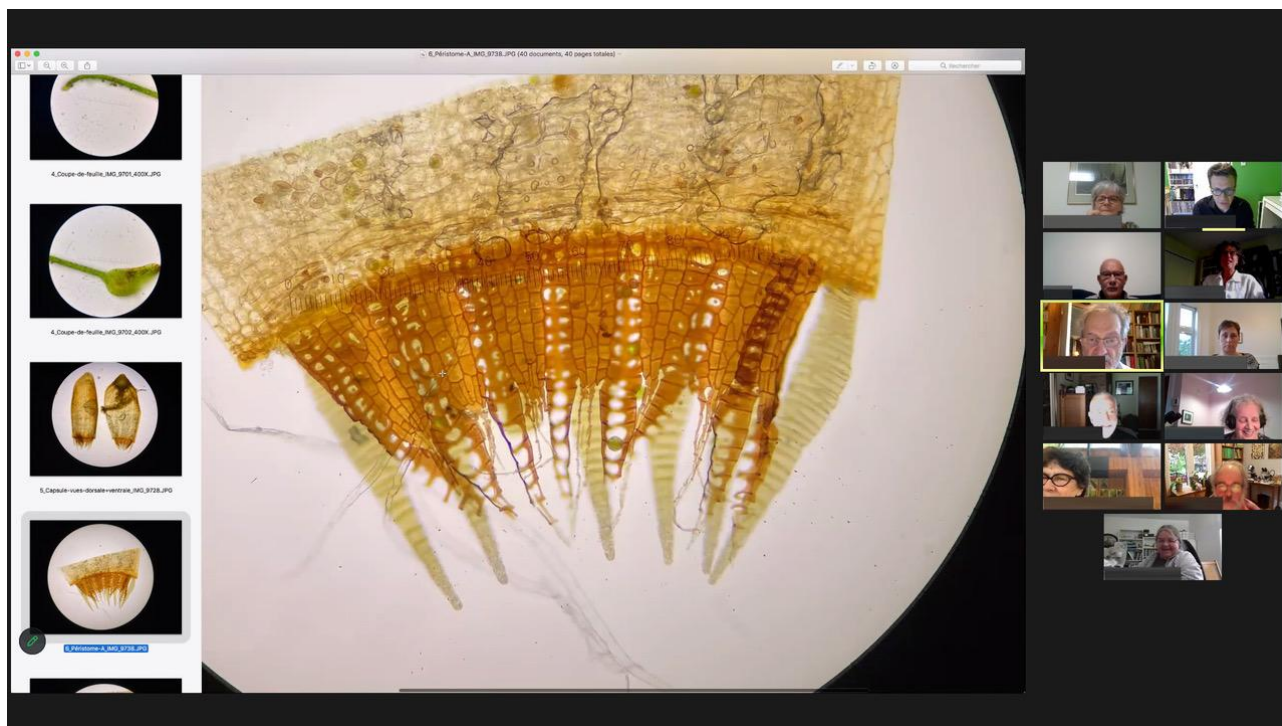


Fig. 2. Presentation of a peristome of *Plagiomnium cuspidatum* during the Bryophyte Night of June 13, 2023

Due to the linguistic particularity of Québec in North America, meetings are held in French. The main references used are Québec's own bryophyte flora, *Flore des bryophytes du Québec-Labrador* (Faubert 2012, 2013, 2014), as well as *Les Sphaignes de l'Est du Canada* (Ayotte & Rochefort, 2019) and *Bryophytes de France* (Hugonnot & Chavoutier, 2021, 2024). Other works in French or other languages are also used, depending on personal libraries available in the participants' homes.

It is important to highlight the implication of each participant before, during and after each session. Quality photos and good notes must be prepared in advance of each presentation. During the session, participants are often given homework, such as preparing photos of a specific detail or making additional measurements of cells or other details. These new photos and measurements are then presented at a later meeting.

In conclusion, the pandemic had at least one positive collateral effect, because the weekly Soirées bryologiques has proven to be an excellent way to bring bryologists together from across the province, to share knowledge, to discover common and rare species, to develop a stronger sense of community within the Society and to improve knowledge on the distribution of bryophyte species across the Québec territory. A big thank you to all who have contributed to making these weekly meetings both stimulating and scientifically sound, and at the same time a moment of good spirit and laughter between friends.



Discovering the Miocene diversity of bryophytes in Mexican amber

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Amber is fossilised resin produced by different types of trees. It can preserve inclusions of plants, animals, fungi or parts of them. Amber is a natural reservoir of the planet's past life, evidence of its diversity, and the climatic conditions that prevailed on Earth thousands or millions of years ago. There are several regions around the world with amber deposits, such as the Baltic Sea, Mexico, the Dominican Republic, Alaska, and Myanmar. In Mexico, the Simojovel Formation in Chiapas represents one of the most important amber-bearing areas in the world (Fig. 1). The amber from this region originates from the exudation of resin from trees of the genus *Hymenaea* (Fabaceae). For this geological formation, international and national researchers have described seven new species of extinct liverworts (*Ceratolejeunea palaeomexicana*, *Ceratolejeunea antiqua*, *Ceratolejeunea sublaetefusca*, *Mastigolejeunea extincta*, *Frullania delgadilloi*, *Frullania chiapasensis*, and *Thysananthus patrickmuelleri*), as well as three inclusions at the genus level (*Frullania*, *Lejeunea*, and *Hypnodontiopsis*) (Fig. 2).



Fig. 1. Miner from Simojovel region Allende, Chiapas, Mexico, showing several pieces of amber. Photo by Emilio Estrada-Ruiz.

As part of a postdoctoral project, we seek to understand, examine, and compare the richness and composition of species, genera, and families of the fossil and extant bryoflora from the Early Miocene of the Simojovel municipality of Chiapas, and understand the changes in its floristic composition that have occurred over time. This research will hopefully contribute to the understanding of the biodiversity, ecology, biogeography, and morphological evolution of regional bryophytes.

Current results have already been published in the journals *Ameghiniana*, *Paleontología Mexicana*, and the *Journal of South American Earth Sciences*.



Fig. 2. Catalina taking a photo of a *Frullania* inclusion at the Laboratorio Nacional de Biodiversidad (LANABIO). Photo by Emilio Estrada-Ruiz.



Brazilian Cangas as open-air laboratories: Functional traits and adaptations of bryophytes in harsh environments

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Brazilian *Cangas* (Fig. 1A-C) are ferruginous rocky outcrops that host a distinctive flora adapted to withstand intense ultraviolet radiation, extreme daily temperature fluctuations, rapid desiccation, and strong winds (Jacobi *et al.* 2007). One of the most important regions where *Cangas* occur in Brazil is the Iron Quadrangle (*Quadrilátero Ferrífero*, QF), a geologically rich area of approximately 7,200 km² located in the state of *Minas Gerais*, south-eastern Brazil. In these harsh ecosystems, the vegetation forms a mosaic of montane, grassy–shrubby, and fire-prone patches that are renowned for their high levels of endemism among flowering plants, many of which produce strikingly colourful and ornate blossoms (Jacobi & Carmo 2008). In contrast, bryophytes were long

overlooked in biodiversity assessments of *Cangas*, receiving little attention until our research group began investigating their diversity and ecological roles.

Our initial studies aimed to understand the general patterns of bryophyte diversity in this harsh environment, revealing that *Cangas* supports a surprisingly high richness of mosses and liverworts (Fantecelle *et al.* 2017; Peñaloza-Bojacá *et al.* 2018a, 2018b; Oliveira BA *et al.* 2021, 2024). Similar to their role for flowering plants, where *Cangas* have long been acknowledged as heterogeneous landscapes (Jacobi *et al.* 2007), our findings demonstrate that bryophytes also mirror this spatial complexity. Their distribution can be categorised into three main mesohabitats: exposed areas, shrub associations, and tree associations (Fig. 1D-F; Oliveira BA *et al.* 2024). Within these mesohabitats, bryophytes occupy a variety of microhabitats (Fig. 1G-I), including tree trunks, soil patches, and termite mounds (Peñaloza-Bojacá *et al.* 2018a). These species also exhibit distinct functional traits that enhance their growth, survival, and reproduction under the challenging conditions of the *Canga* environment (Oliveira BA *et al.* 2024).

In the field, the adaptations displayed by these tiny plants are readily observable (Fig. 1J-L). Some tolerate desiccation, others use pigmentation to cope with solar radiation, and many possess specialised leaf structures that assist with capture and retention of water, such as hyaline apices, papillae, costae, and lobes (Peñaloza-Bojacá *et al.* 2018a; Oliveira BA *et al.* 2021; Teixeira *et al.* 2024). Their reproductive strategies are also diverse, spanning sexual and asexual modes which contribute to their persistence and colonisation under stressful environmental conditions (Fig. 1M-O; Peñaloza-Bojacá *et al.* 2018b). These strategies vary across mesohabitats. For example, in exposed areas, acrocarpous mosses dominate, exhibiting desiccation tolerant traits and high levels of asexual reproduction (Oliveira BA *et al.* 2024). In contrast, pleurocarpous mosses and liverworts, which are less tolerant of open environments and more commonly reproduce sexually, are typically found in tree associated vegetation (Oliveira BA *et al.* 2024). Observing these traits in action during fieldwork often transformed each expedition into a source of new questions that we brought back to the laboratory for further investigation.

One intriguing question emerged when we observed that liverworts frequently produced sporophytes, even under the harsh conditions of the *Cangas*. Given that members of the liverwort family Lejeuneaceae often exhibit endosporic and intracapsular germination (Schuster 1988), a trait linked to desiccation tolerance, we hypothesised that species commonly found in *Cangas* might share this adaptation. We also questioned whether these species stored lipid reserves that could enhance survival during dry periods. This curiosity led us to investigate species of *Cheilolejeunea* (Spruce) Steph., where we confirmed both intracapsular germination and lipid storage (Santos *et al.* 2023).

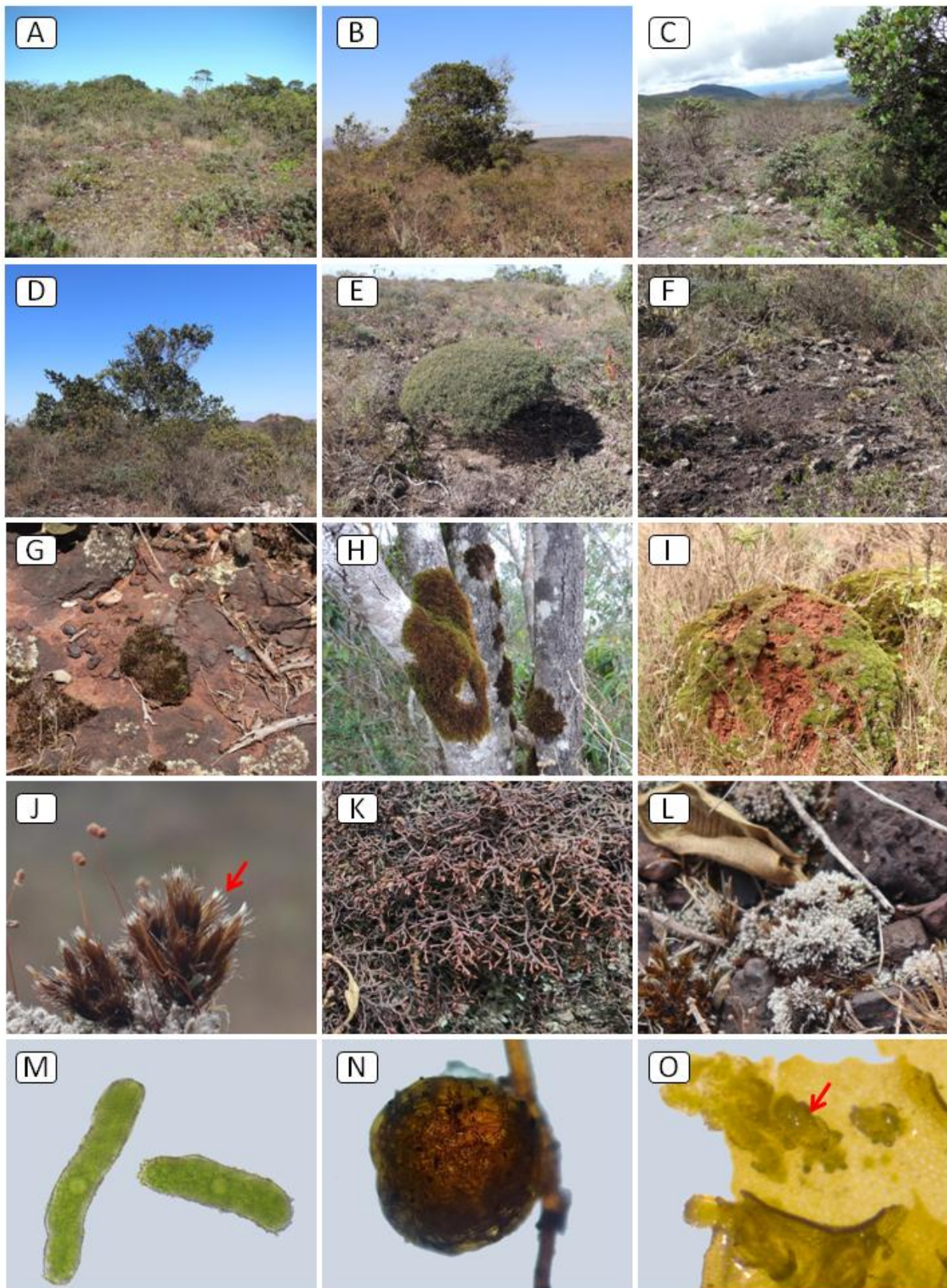


Fig. 1. Brazilian Cangas: mesohabitats, microhabitats, and functional traits of bryophytes. (A) General view of a Cangas formation in Serra da Moeda. (B) Site in Serra da Calçada. (C) Site in Chapada de Cangas. (D) Tree-associated vegetation. (E) Shrub-associated vegetation. (F) Exposed area. (G) *Campylopus* spp. (Leucobryaceae) growing on soil island. (H) Tree trunks densely colonised by *Schlotheimia* spp. (Orthotrichaceae). (I) Termite mound covered by *Rosulabryum atense* (Bryaceae). (J) Hyaline hair point of *Campylopus lamellatus* (red arrow). (K) Dark pigmentation in the liverwort *Frullania brasiliensis*. (L) Whitish coloration in *Bryum argenteum*. (M) Sporelings of the liverwort *Cheilolejeunea xanthocarpa*. (N) Underground tuber of *B. atense*. (O) Plantlets of *Plagiochila corrugata* (red arrow).

Another moment of surprise came with the moss *Brachymenium consimile* (Mitt.) A.Jaeger (Bryaceae). Although traditionally described as dioicous, colonies in the *Cangas* consistently bore sporophytes. Detailed observations revealed a previously undocumented polyoicous sexual system, with archegonia and antheridia occurring either on the same or on different individuals (Oliveira MF *et al.* 2023). Fieldwork also brought us into contact with *Rosulabryum atenense* (R.S.Williams) J.R.Spence (Bryaceae), a species that reproduces through underground tubers formed by rhizoids (Ochi 1980). Finding it thriving in recently burned sites, we hypothesised that its tubers might be fire-resistant, functioning similarly to the underground organs of angiosperms (Ratter *et al.* 1997). Experimental tests confirmed this hypothesis: tubers exhibited remarkable regenerative capacity, with 60.4% recovery after exposure to 120°C for 30 minutes and 58.3% after 160°C for 5 minutes (Oliveira GF *et al.* 2025).

One curious case involved two Leucobryaceae mosses, *Campylopus julaceus* A.Jaeger and *C. lamellatus* Mont. In the field, they appeared strikingly different, yet under the microscope, their leaf anatomy suggested they might be the same plant, which prompted us to examine them more closely. As we hypothesised, morphometric analyses revealed that they do not form mutually exclusive groups, although genetic studies are needed to confirm whether they truly represent distinct species (Araújo *et al.* 2020). Another case involved the liverwort *Frullania brasiliensis* Raddi (Frullaniaceae), which we observed displaying a reddish colouration under high solar radiation and green in shaded areas. This pigmentation, along with adjustments in water content during the dry season, suggested poikilohydric behaviour and potential photoprotective mechanisms. Indeed, antioxidant compounds were detected in this species, with activities influenced by light, temperature, and humidity, highlighting its physiological adaptations to environmental stress (Santos 2024).

Yet another question emerged from the unique chemistry of *Canga* soils. These substrates are notoriously rich in aluminium, and many vascular plants are known to accumulate heavy metals in such environments (Jacobi *et al.* 2007). But could mosses do the same? Given their highly effective ion-exchange tissues (Tyler 1990), the possibility seemed plausible. To test this, we examined *Campylopus lamellatus* Mont. (Leucobryaceae) and *Polytrichum juniperinum* Hedw. (Polytrichaceae) and found that both accumulate aluminium, though in strikingly different ways. While *C. lamellatus* stores aluminium apoplastically, within the cell walls, *P. juniperinum* sequesters it symplastically, likely within vacuoles and chloroplasts (Oliveira MF *et al.* 2025).

We also focused on broader community-level questions: how are life-history traits organised within liverwort assemblages across contrasting *Canga* mesohabitats? By clustering species based on functional traits, we identified distinct ecological groupings that reflect different strategies for survival (Teixeira *et al.* 2024). Some lineages rely on intracapsular germination and fragmentation for establishment, while others produce caducous leaves or leafy propagules. In addition, certain groups occupy broad niches, functioning as both epiphytes and saxicolous species, whereas others are more specialised, forming mats on soil and rock or relying on desiccation tolerance combined with asexual gemmae production. Together, these findings underscore the remarkable diversity of adaptive pathways available to liverworts in the heterogeneous and environmentally stressful landscapes of the *Cangas*.

In many ways, Brazilian *Cangas* have become our open-air laboratories. Each visit reveals new questions, each observation opens new paths of inquiry, and each experiment uncovers unexpected strategies for survival. From desiccation tolerance to reproductive novelties and aluminium accumulation, bryophytes in *Cangas* show how life can persist in environments that

appear inhospitable. Yet, this natural laboratory faces growing threats from mining, habitat loss, and fragmentation (Jacobi *et al.* 2007; Skirycz *et al.* 2014). Protecting these landscapes is not only vital for biodiversity conservation, but also for preserving the scientific opportunities they provide: unique windows into how plants adapt, endure, and thrive under extreme conditions.

Acknowledgements

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Establishment of the Southeast Asian Bryologists and Lichenologists (SEABAL) Group

Monica Suleiman, Boon Chuan Ho, Khwanyuruan Naksuwanku, Gaik Ee Lee, Andi Maryani A. Mustapeng, Thien Tam Luong, Phiangphak Sukkharak, Lesley C. Lubos, Ekaphan Kraichak

The first informal group for Southeast Asian bryologists and lichenologists was seeded when Prof. Dr. S Robbert Gradstein and Dr. Benito C Tan reported the first SEAMEO BIOTROP (Southeast Asian Regional Centre for Tropical Biology) training course on bryophytes and lichens in Southeast Asia in 2001, Bogor, Indonesia (see *Bryological Times* 105: 4–5, 2002). Upon returning from Bogor, the late Dr. Tan created the “Malesian bryophytes discussion group” on Yahoo Groups for the course participants at the suggestion of Prof. Gradstein to facilitate communication among people with a shared interest in bryophytes and lichens in the region. This SEAMEO BIOTROP

course was very successful and was subsequently conducted six times in alternate years from 2001 to 2011, with all the participants invited to join the discussion group upon completing the course. After the fourth training course in 2007, Boon Chuan Ho (BCH) was asked to take over the role of the moderator of the discussion group.

To keep up with the trend on the internet interface, the group transitioned onto a Facebook Page called SEABAL (Southeast Asian Bryophytes and Lichens) on 20 July 2011 to supplement the discussion group on Yahoo Groups. Incidentally, Yahoo Groups discontinued its service during 2014 and the SEABAL Facebook Page remains the only platform holding the group together. Subsequently, a three-part ASEAN Centre for Biodiversity (ACB) training course on bryophytes and pteridophytes was conducted from 2014 to 2015 in Bogor, Bali, and Chiang Mai (see *Bryological Times* 142: 14–16, 2016). As Dr. Tan and BCH were among the main trainers, participants were also encouraged to join or visit the SEABAL Facebook Page.

More recently, during the IUCN Red List Assessor training workshop on bryophytes in Southeast Asia, held in Vietnam (see *Bryological Times* 159: 69–71, 2024), several participants including Thien Tam Luong (TTL), Gaik Ee Lee (GEL), Andi Maryani A. Mustapeng, Lesley C. Lubos, Phiangphak Sukkharak and lichenologists (Khwanruan Naksuwanku and Phi Giao Vo) came together with an idea to form a more organised and structured group for bryologists and lichenologists in Southeast Asia for better collaborative work. Bryologists and lichenologists in the Southeast Asian region were called to attend the 1st virtual meeting in February 2025 to discuss this idea, led by GEL and TTL. After three such meetings, it was decided to form an informal organisation with eight key positions, which would be elected via voting by the members.

As an outcome, the Southeast Asian Bryologists and Lichenologists (SEABAL) group was officially formed following the 4th virtual meeting held on 26 June 2025 (Fig. 1). The group was established to strengthen collaboration among researchers and students working on bryophytes and lichens across Southeast Asia.



Fig. 1. One of the Webex online meetings of the Southeast Asian Bryologists and Lichenologists (SEABAL).

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The SEABAL group provides a platform for sharing knowledge, building regional networks, and promoting research and conservation of bryophytes and lichens. The group will also coordinate future activities, such as conferences, meetings, training courses, and joint projects.

The founding Committee (Fig. 2) is as follows:

- President: Monica Suleiman (Malaysia)
- 1st Vice President: Boon Chuan Ho (Singapore)
- 2nd Vice President: Khwanyuruan Naksuwanku (Thailand)
- Secretary: Gaik Ee Lee (Malaysia)
- Treasurer: Andi Maryani A. Mustapeng (Malaysia)
- Subcommittee for Networking: Thien Tam Luong (Vietnam)
- Subcommittee for General Affairs: Phiangphak Sukkharak (Thailand)
- Subcommittee for Events and Activities: Lesley C. Lubos (The Philippines)
- Subcommittee for Media: Ekaphan Kraichak (Thailand)



Fig. 2. Founding Committee of the Southeast Asian Bryologists and Lichenologists (SEABAL).

The SEABAL group held its first in-person gathering during the International Association of Bryologists (IAB) conference in Taiwan in October 2025, where further discussion on activities and future direction will take place.

You are welcome to visit the SEABAL Facebook page (<https://www.facebook.com/SEABAL2011>) and to join our Facebook discussion group (<https://www.facebook.com/groups/seabal/>).

For more information, please contact the SEABAL Secretary, Gaik Ee Lee at gaik.ee@umt.edu.my.

**Taxonomic notes and review of the moss *Pterobryella speciosissima* (Sull.)
Müll.Hal. in two Natural Parks, Mindanao Island, Philippines**

Andrea G. Azuelo

Taxonomic notes and review of the moss species *Pterobryella speciosissima* collected from two natural parks in Mindanao are presented here. Mindanao, the second largest island in the Philippine Archipelago, supports a rich diversity of flora and fauna. A high diversity of bryophytes species occurs in the montane regions of the island. My first research survey was conducted on Mt. Malindang in 2003 during my PhD program, followed by a subsequent survey on Mt. Kalatungan in mid-2024. Twenty-one years after my initial survey, renewed interest in this moss species reflects both its persistence in nature and the resilience of field work over time.

Although both natural parks are widely separated, each supports important montane ecosystems. Mt. Malindang, covering 24,511.75 hectares with an elevation of 2,199 masl, is the only remaining natural forest in the Zamboanga Peninsula Biogeographic zone. In comparison, Mt. Kalatungan encompasses 21,248 hectares and rises to 2,824 masl in the central portion of Bukidnon province, forming part of the Mindanao Central Cordillera.

The morphological features of the species and its ecological associations on the trunks of different tree species are described. Recent taxonomic findings for the genus *Pterobryella* are compared with the present specimens and are, for the first time, documented for the Philippine moss flora. These notes aim to provide the essential taxonomic data on the diagnostic characters and ecological adaptations of *Pterobryella speciosissima* from the two montane regions.

Photomicrographs of *Pterobryella speciosissima* collected from the two natural parks are presented Figures 1 and 2.

Descriptions:

Specimen from Mt. Kalatungan - Plants are generally more robust, with densely frondose, complanate branches (Fig. 1A). Frond leaves reach up to 8 mm in length. The costa extends nearly to the apex. (Fig. 1B-C). Leaf margins are denticulate near the apex (Fig. 1D-E), and median laminal cells are long, linear, and arranged in parallel rows (Fig. 1F).

Specimen from Mt. Malindang - Plants are more slender and less compactly branched, producing fronds with a more open, pinnate appearance (Fig. 2A). Leaves exhibit a more sharply tapering apex (Fig. 2B-C) with margins distinctly toothed along much of the upper lamina (Fig. 2D-E). Median laminal cells are likewise long and linear but appear slightly narrower (Fig. 2F) and more densely arranged than those of the Mt. Kalatungan specimens.

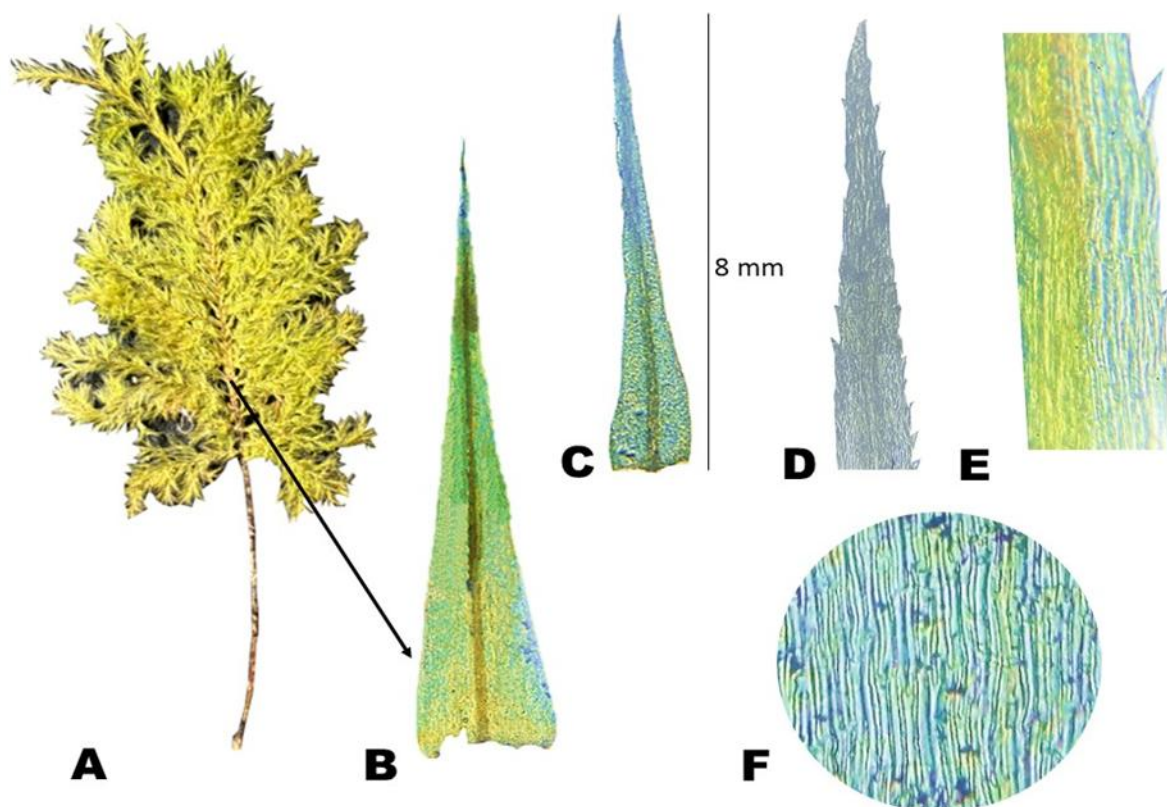


Fig. 1. *Pterobryella speciosissima* (Sull.) Müll.Hal. collected from Mt. Kalatungan. [A]. Plant habit; [B] Stipe leaf shape (40x); [C] Frond leaf shape (40x); [D] Leaf apex (100x); [E] Apical leaf margin and [F] Mid-leaf cell shape (1000x)

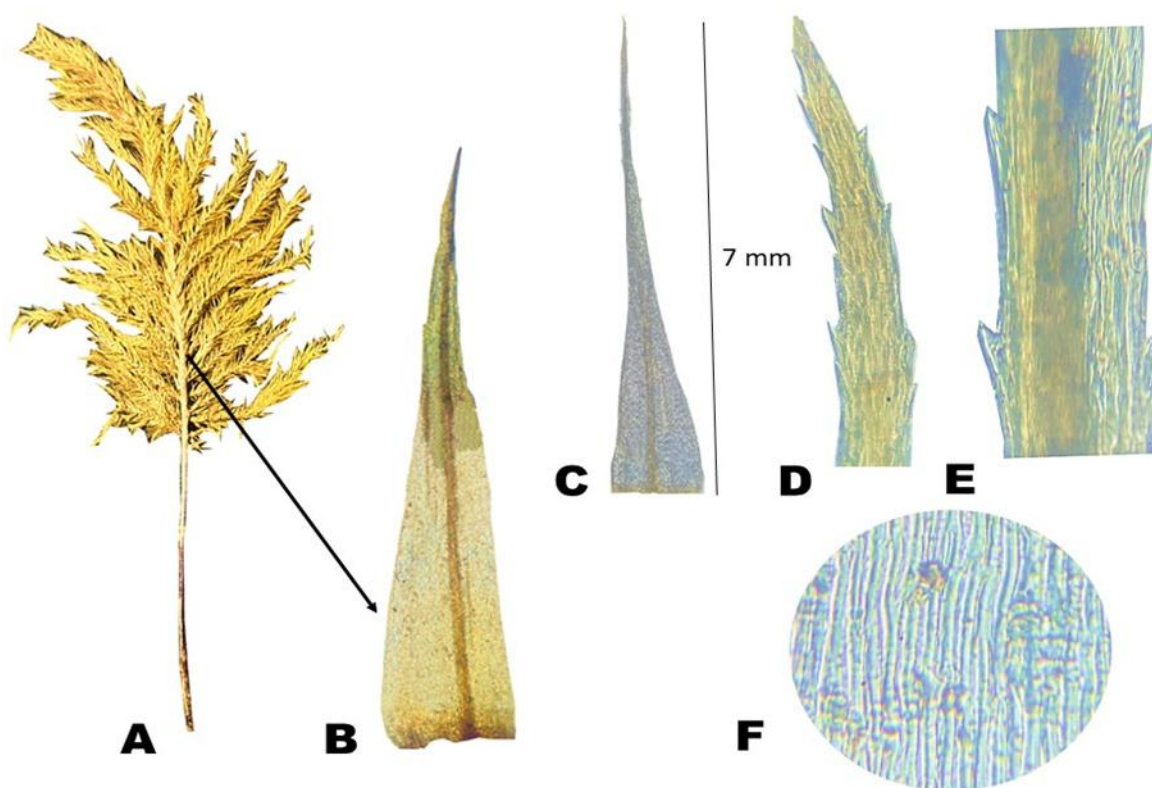


Fig. 2. *Pterobryella speciosissima* (Sull.) Müll.Hal. collected from Mt. Malindang. [A]. Plant habit; [B] Stipe leaf shape (40x); [C] Frond leaf shape (40x); [D] Leaf apex (100x); [E] Apical leaf margin and [F] Mid-leaf cell shape (1000x)

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Red List assessments for bryophytes in Vietnam, with an example of the moss species *Aerobryopsis deflexa* Broth. & Paris

Thien Tam Luong

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A project supported by IAB Conservation and Endangered Species Grants 2023-2025

Grant recipient: Thien Tam Luong (University of Turku, Finland & University of Science, Vietnam National University Ho Chi Minh City, Vietnam)

Why *Aerobryopsis deflexa*?

Our current revisionary work has shown that *Aerobryopsis deflexa* Broth. & Paris (Meteoriaceae) is a good species (unpublished data). The type specimen of *Aerobryopsis deflexa* was collected in Hue, Central Vietnam in 1910. In addition to Hue, the species has been found also at three other localities in Northern Vietnam: Hoa Binh, Ninh Binh Provinces (Pocs et al. 1967) and Ha Giang province (He & Nguyen 2012). The species was considered to be endemic to Vietnam (He & Nguyen 2012) until three specimens collected at two localities from China in 1955 and 1974 were published on GBIF.

Furthermore, it is uncertain whether the species still occurs at the original locality because there are no recent records since the type collection. Since *A. deflexa* is likely to be rare, this is a good example to show the importance of checking if the species is present at the known localities so that its conservation status can be decided. The species is recognisable in the field, and prior to our fieldtrip, very few specimen records of this species exist in Vietnam.

The status of Red List assessments for bryophytes in Vietnam

Currently, ca. 1500 bryophyte species are known to occur in Vietnam, but only four liverwort species have been assessed in the latest Vietnam Red List. Mosses have so far not been included in the National Red List assessments. Herbaria material is scarce, and specimens often remain unidentified because of taxonomic problems and limited knowledge on these groups. The low number of observations obviously causes difficulties for evaluating distributions or ecological preferences as required for species conservation. Moreover, the percentage of Vietnamese endemic bryophytes is relatively high, ca. 7% (41 out of 596 taxa, Tan & Iwatsuki 1993), or ca. 14% (103 out of 719 taxa, He & Nguyen 2012). However, numerous taxa with originally published types from Vietnam have been found only once, partly because of lack of information and reference material for later assessments.

Introduction to the project

Following the “IUCN Red List Assessor Training Workshop with a focus on bryophytes in Southeast Asia” in October 2024, hosted by the University of Science, Vietnam National University Ho Chi Minh City (Bryological Times 159: 69-71), the organizing team, together with some local staff, conducted field surveys to revisit the locations of *Aerobryopsis deflexa* in northern Vietnam. Our goal was to (1) confirm the presence of the species at the known localities, and (2) characterise its habitat to perform Red Listing assessment and to design conservation management practices for the species. For that purpose, we organised two field trips and visited three locations where specimens were collected:

- 07-11 October 2024: Cuc Phuong National Park (Ninh Binh Province) and Ngoc Son - Ngo Luong Nature Reserve (Hoa Binh Province): two of the four sites where *A. deflexa* has been recorded in past years.
- 21-24 July 2025: An Toan Nature Reserve (Binh Dinh province): a new site, the southern-most of all the localities, with similar and potentially suitable habitat for *A. deflexa*.

The fieldwork was supported by the IAB Conservation and Endangered Species Grants (2023–2025), with additional co-funding from the Erasmus+ ICM Program at the University of Turku for the travel costs of Sanna Huttunen and Thien Tam Luong; Swedish Museum of Natural History (Riksmusei Vänner) through a travel grant to Lars Hedenäs and Irene Bisang.



Happy team in the field at Cuc Phuong National Park, 8th October 2024. Photo credit: Thanh Luc Nguyen

On behalf of the whole team, I gratefully acknowledge the support of the IAB committee, whose funding has made this project possible. The IAB Conservation and Endangered Species Grants has provided essential resources that enabled us to organise the first workshop of IUCN Red Listing focusing on bryophytes in Vietnam, and to conduct field surveys. The field surveys provided valuable material and insights into the population and ecological traits of *Aerobryopsis deflexa*, however additional phylogenetic and morphological analysis are still required before the final assessment on its Red Listing status.



Checking population size of *Aerobryopsis deflexa* on gravestones at Ngoc Son-Ngo Luong Nature Reserve, 11th October 2024.



Aerobryopsis deflexa on an exposed tree trunk at Cuc Phuong National Park (left) and on its strange habitat, gravestone & old pottery (right).

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News from China: An English monograph book "Taxonomy and Systematics of Genus *Macromitrium* (Moss, Orthotrichaceae) in the World"¹ was published in France (2024) and in China (2025)

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An English monograph book "Taxonomy and Systematics of Genus *Macromitrium* (Moss, Orthotrichaceae) in the World" was published in France by EDP Sciences and Science Press in 2024 and in China by Science Press in 2025, respectively (Fig. 1). The monograph book, authored by Dr. Guo Shuiliang, Dr. Li Dandan and Dr. Yu Jing from Shanghai Normal University, is the culmination of over 20 years of dedicated research on the family Orthotrichaceae. I highly recommend this monograph book to bryologists as well as botanists at home and abroad.

Macromitrium Brid. (Orthotrichaceae, Bryopsida) is the third largest moss genus in the world, with the highest diversity around the Pacific Ocean and a typical pan-tropical distribution. It is also one of the most taxonomically difficult moss genera due to a high degree of morphological variation and large number of species. Since its inception by Bridel in 1819, a total of 959 species names have been placed under the genus. By the end of the last century, about 360 species of *Macromitrium* were still recognised in the world.

The present monograph is a systematic summary of a type specimen-based taxonomic revision, together with the previous taxonomic revisions by other bryologists. Major sources of material used in this monograph are type and ordinary specimens. The type specimens were loaned from thirty-one herbaria around the world (B, BM, E, FH, FI, FIELD, G, GACP, GOET, H, H-BR, HIRO, Hattori, HSNU, IBSC, IFP, JE, KRAM-B, KUN, L, MEL, MICH, MO, NICH, NY, PC, PE, S, SHM,

¹ Editor's note: The IAB 2025 Hattori Price was awarded to the authors Guo S. L., Li, D. D. & Yu, J. for their book *Taxonomy and Systematics of the Genus *Macromitrium* (Orthotrichaceae, Moss) in the World*. Congratulations to them.

SHTU, US). The lead authors visited H (2003. 12-2004.11), MO (2006.12- 2007.4. 2013.1-9), IBSC (2009.8), KUN (2014.8) and PE (2015.6) to check the *Macromitrium* specimens in detail.



Fig.1. Front covers published in France (left) and in China (right)

Field collections were conducted in China, including in Fujian, Guangdong, Guangxi, Guizhou, Hainan Island, Henan, Hunan, Jiangxi, Shannxi, Sichuan, Taiwan, Yunnan and Zhejiang. Finally, more than 4000 specimens, including 711 type specimens, were checked during the revisions. As a result of taxonomic revisions, 271 species (including 12 varieties and three subspecies) are confirmed and recognised with about 30 taxonomically doubtful species of the genus *Macromitrium*.

The monograph provides information on literature, description of morphology, geographic distribution, habitats and detailed figures for each species. An identification key to 271 species of the genus *Macromitrium* in the world is also presented. In addition, based on molecular analyses, the molecular phylogeny of *Macromitrium* is also presented. A preliminary result of systematics and classification of *Macromitrium* is provided. In conclusion, this book is a comprehensive monograph on the genus *Macromitrium* across the world. I believe that the book is a valuable and useful reference for the study of mosses. In view of the large number of species, high variations, some type specimens being unavailable to the authors, the taxonomic status of some species, the division, evolution and origin of the genus are still open to study.

Taxonomy is difficult and time-consuming work. Congratulations to the authors, who were my post-doctoral or PhD students, for the publication of this book in English with more than 400 pages. I wish them all success in future bryological research.

The book *Taxonomy and Systematics of the Genus Macromitrium (Orthotrichaceae, Moss) in the World* can be purchased from the following sources: [EDP Sciences](#) or [Amazon](#).

Secluded Moss Garden —The first moss garden in mainland China

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Secluded Moss Garden (幽苔园, hereinafter referred to as Moss Garden) is the first moss garden in mainland China, located in Fairy Lake Botanical Garden (hereinafter referred to as SZBG), Shenzhen, Guangdong Province. Construction of the Moss Garden began in 2018, opening to the public in 2020.

The Moss Garden is situated in the central area of SZBG, covering an area of about 1,000 m². The garden is situated on a gentle slope, surrounded by dense secondary evergreen broadleaf forests (Fig. 1). A nearby small stream flows year-round, creating a shaded and humid environment.

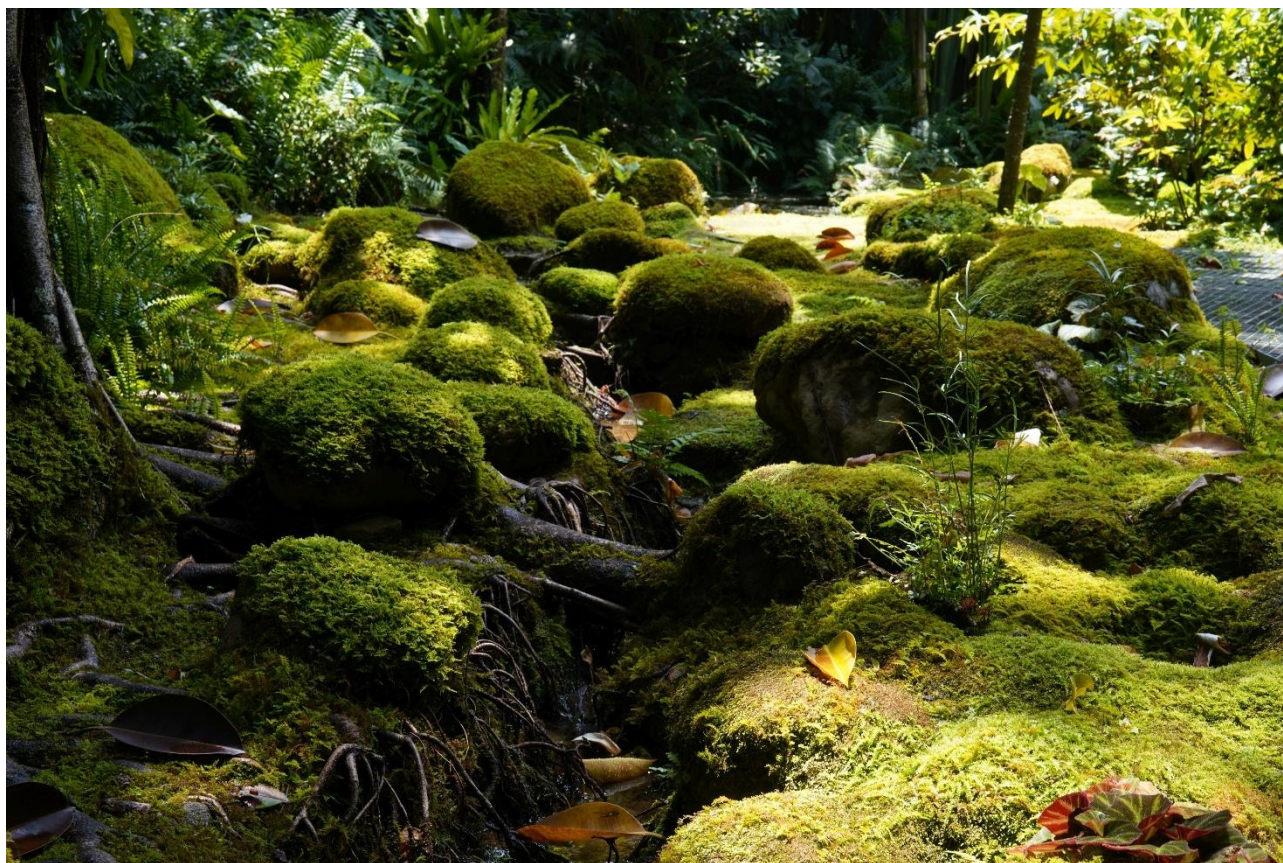


Fig. 1. The Moss Garden at Fairy Lake Botanical Garden

The inspiration for the Moss Garden comes from the verse of Wang Wei (王维, 701-761), a famous poet in Tang Dynasty: “Sunlight filtering through forest, falling on green mosses” (返景入深林、复照青苔上) which depicts a poetic scene. Currently, the Moss Garden supports approximately 50 species of bryophytes, including eight artificially cultivated species, such as *Calohypnum plumaeformae*, *Plagiomnium acutum*, and *Thuidium kanedae*, which were acquired from markets, while the remainder are locally occurring native species.

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In the Moss Garden, gentle sloping soils, stones, and deadwood are used as primary habitats for different bryophytes. Bryophytes cover the ground, rocks, and tree trunks, complemented by ferns, gesneriads, begonias, water lilies, and other plants, creating a scene of tranquillity, and filling the visitor with a deep feeling of Zen (Fig. 2).

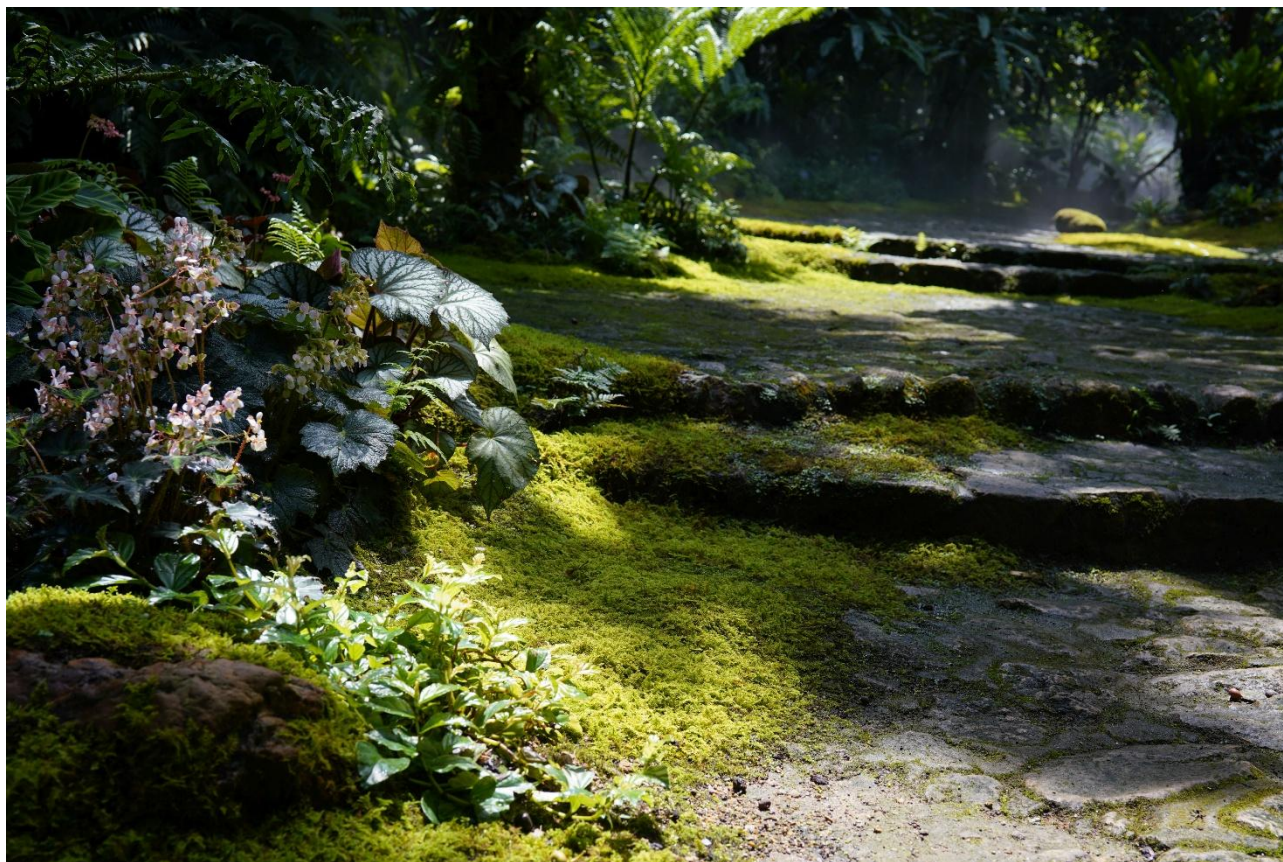


Fig. 2. Bryophytes fringe a path through the Moss Garden.

An artificial misting system is set up to increase humidity for the dry months during autumn and winter. Daily maintenance, through human interference is minimised, and certain dead branches and leaves are retained as habitat and food for fungi, insects, and other organisms. In addition to plants, the Moss Garden is visited occasionally by wild animals, with recorded species including Asian rugose nose frog, red-bellied tree squirrels, green bamboo vipers, and little egrets, among other species.

The Moss Garden integrates functions of conservation, landscape, and science education. Some bryophyte-themed education activities are organised from time to time for school students and the general public. It also offers an ideal venue for university students who major in biodiversity or horticulture.

Although it has been constructed for less than five years, its unique design and landscape, well-equipped education facilities, and meticulous maintenance have made the Moss Garden increasingly well-known. Since 2023, it has received increased media attention nationwide.



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The International Association of Bryologists was established in 1969 to promote international cooperation and communication among all persons interested in the biology of bryophytes. This is achieved through sponsorship and arrangement of meetings and symposia that relate to the various aspects of bryology, and by IAB-sponsored publications including *The Bryological Times* and *Bryophyte Diversity and Evolution*. The Association also supports the publication of reviews, lists, software, and compendia.

Website: bryology.org

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Contributions can be emailed to the bryo.times@gmail.com.

Articles should be less than 1500 words in files no larger than 15 MB.

Images should be at least 2 MB each and may be emailed separately.

The deadline for submissions for the next issue is **31 March 2026**.

Cover photo by Christine Cargill: *Sandia japonica*, one of the complex thalloid liverworts at the Xitou Park, Taiwan, which was visited during the IAB Conference.