



The Bryological Times



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China - Australia International Workshop for Karst Bryology in Guizhou, China, 3rd - 7th August

Alison Downing | Macquarie University | Sydney, Australia | alison.downing@mq.edu.au

Pina (Josephine) Milne | Royal Botanic Garden | Melbourne, Australia | pina.milne@rbg.vic.gov.au

The World Heritage listed South China Karst encompasses about 550,000 km² of subtropical to tropical karst in Guizhou, Guangxi, Yunnan and Chongqing provinces. The karst terrain includes tower, cone and pinnacle karst, together with massive caves, natural bridges, deep gorges, enormous sinkholes, karst waterfalls and disappearing streams. Mountain slopes and peaks are clothed in dark green tropical to sub-tropical rainforest in stark contrast to the bright, light green rice paddy fields on pocket handkerchief parcels of land in valleys or on hilly terraces, flanked by traditional rural villages.

Following the International Botanical Congress in Shenzhen, we were privileged to be invited by Professor Zhang Zhao Hui from Guizhou Normal University in Guiyang, to participate in the China-Australia International Workshop for Karst Bryology in Guizhou, organized by the Key Laboratory for Information Systems of

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Mountainous Areas and Protection of Ecological Environments of Guizhou Province. This proved to be an ideal opportunity to learn more about this famous area of karst and to engage in field trips to areas of spectacular natural landscapes. Participants in the workshop, about 45 in all, included staff and students from Guizhou Normal University and other local universities and colleges.



Rice paddy fields in karst landscape, south-eastern Guizhou.



Karst landforms in western Guizhou Province, China.

Student presentations were all the more impressive when it was realized by the visitors that most students had never previously had the opportunity to speak in English to an English-speaking person!



Karst towers clothed in sub-tropical, broad leaf rainforest, Maolan National Nature Reserve, Guizhou. Photo: Dr. Bruce Kirchoff.

On the first day of the workshop, there were 11 oral presentations, and 17 abstracts published in the official handbook prepared for the workshop. The presentations were of particular interest to the Australian visitors, as one of us (Alison) had previously worked on bryophytes on karst in Australia, and the other (Pina) has published on the taxonomy of bryophytes on calcareous and saline substrates in arid and semi-arid environments of Australia. Many of the presentations focused on the biodiversity and ecology of bryophytes in natural karst systems, such as karst waterfalls, active travertine deposits, peak clusters and caves; some related to urban issues, such as moss walls in cities; others confronted pollution problems, including heavy metal contamination and using roadside epiphytic bryophytes as heavy metal bio-monitors; and lastly, moss-dwelling protozoan communities in aquatic karst environments. One study in particular, by Dr. Wu Qimei, is a reminder of the very long history of China. Her research involved the use of the aquatic moss *Drepanocladus aduncus* to monitor pollution in a river near a mercury mine. So why would that be so special? Just that the mine had been in operation since about 221 years BC, the time of Emperor Qin Shi Huang (秦始皇), famous for the Terracotta Warriors (兵马俑) of Xian. Planned for his underground tomb were rivers of mercury, doubtless the mercury may have originated from this mine where, fortunately, operation ceased in 2001.

The following days were spent visiting some most amazing regions of karst, including the famous Huangguoshu waterfall, the highest waterfall in China and the Zhijindong Cave, China's largest cave, providing opportunities to understand much of the research outlined in the papers presented on the first day of the workshop.



The famous Huangguoshu Waterfall in western Guizhou Province, China.

Huang Guo Shu Waterfall National Park (黄果树瀑布国家公园) near Anshun City (安顺城) in south-western Guizhou, is famous for its waterfalls; of these, the Huangguoshu Waterfall on the Bai Shui River (白水河) is the most celebrated, almost 80 meters high and just over 100 meters wide. However, in late autumn, when water levels drop considerably, rheophytic bryophytes (growing in fast moving water) and bryophytes growing on substrates adjacent to this waterfall and others, such as Dopotang Waterfall (陡坡塘瀑布) have been surveyed by Professor Zhang Zhaohui, his staff and students.



Dopotang Waterfall, upstream from Huangguoshu Waterfall.



Zhijindong Cave.

The second field trip site, Zhijindong Cave (织金洞) in the Guizhou Zhijin Cave Scenic Area (贵州织金洞风景区) near Bijie in western Guizhou, was equally amazing. The cave which was discovered in 1980, has an area of over 30,000 square meters. In the highest section, it is 185 meters tall. Visitors can take a 2.5 km long walk through the cave which is rich with stalactites, stalagmites, waterfalls and underground lakes. Our colleagues have plans for a survey of both the entrance to the cave and the surroundings which are rich in bryophytes. However, the cave, or more correctly, series of massive caverns, is challenging and it is necessary to be very fit, as most of the walking is actually stair climbing, with 400 steep, punishing steps to the exit! The Zhijin Cave limestones are also famous for their fossils, including not only the appropriately named *Kweichosaurus* (Guizhou-saurus, 贵州龙), but also for crinoids and ichthyosaurs (鱼龙). There is a poem written by a famous contemporary writer Feng Mu, who said “When you come back from a visit to the Huangshan Mountains, you have no interest in other mountains. The same is true of Zhijindong Caves!” It is impossible to speak of the

karst terrain of Guizhou without superlatives as it is truly unique and magnificent.



(A) Fossil *Kweichosaurus* (Guizhou-saurus).
(B) *Marchantia*.

The workshop and associated field trips were especially productive. We would like to convey our heartfelt thanks to Professor Zhang Zhao Hui, Professor Wang Zhi Hui, Dr. Wu Qimei, Dr. Wang Dengfu and all the staff and students from Guizhou Normal University for their very kind invitation to attend this very successful workshop and for the opportunity to participate in field trips to some extraordinarily beautiful and interesting areas of karst landforms. Professor Zhang Zhaohui can be contacted at: zhaozhang9@hotmail.com



Professor Zhang Zhaohui in the field.



First row from left: Professor Wang Zhihui, Dr. Yang Zaichao, Wang Chengchen, Professor Zhang Zhaohui, Dr. Alison Downing, Dr. Josephine Milne, Dr. Wu Qimei, Dr. Pan Sha, Dr. Jiang Hong, Dr. Wang Dengfu. Second row (1st & second from left): Liu Run, Wang Wei. Third row: Li Fang, Li Xiaofang, Huang Huan, Li Zeke, Lan Yunchun, Wu Jing, Li Chengyi. Fourth Row: (3rd & 4th from left) Pang Jiapeng, Shen Jiachen.



Another field-observation of a possible springtail-mediated moss sperm transfer

Arne Fjellberg | Mågeröveien 168 |
NO-3145 Tjøme, Norway |
arnecoll@gmail.com

Lars Hedenäs | Swedish Museum of Natural
History | Stockholm, Sweden |
lars.hedenas@nrm.se

Irene Bisang | Swedish Museum of Natural
History | Stockholm, Sweden |
irene.bisang@nrm.se

Insects visiting fertile moss shoots have been noticed as early as in the beginning of the 20th Century (*Polytrichum commune*; Harvey-Gibson & Miller-Brown 1927). More recently, springtails have been demonstrated to fertilize mosses in experimental setups (Cronberg et al. 2006; Rosenstiel et al. 2012). Lately, we observed abundant springtails in highly fertile tufts of *Tortula cernua* (Huebener) Lindb., indicating possible animal-mediated fertilization in this species in a natural setting (Bisang & Hedenäs 2016).

In 2016, Arne Fjellberg observed two specimens of *Xenylla maritima* (Tullberg 1869) (family Hypogastruridae) in a splash cup of male *Polytrichum piliferum* Hedw. in southwestern Norway (Oppland, Skjåk; 30 March 2016). This observation of a natural situation again suggests that the springtails search for food among the sex organs of the moss (**Figure**), and / or are attracted by volatile compounds emitted by the moss (Rosenstiel et al. 2012). *Polytrichum piliferum* is common in open, dry, and acidic sites, and *X. maritima* usually occurs in dry habitats. The antheridia in the splash cup on the image may admittedly have dehisced, judging from the juvenile ramet growing from the center of the structure. However, during the appropriate season, they also here contribute to sperm dispersal in a situation where liquid water is limited, and thus facilitate cross-fertilization in the moss.



Xenylla maritima in male splash cup of *Polytrichum piliferum* (Norway, Oppland, Skjåk; 30 March 2016). Photo: A. Fjellberg.

This adds another species of *Xenylla* to those springtails observed interacting with moss sexual reproductive structures either in experiments or in nature, increasing the number of different species to five, belonging to four genera. It also confirms an additional order and class of mosses to be involved in this association (the Polytrichales of the Polytrichopsida; Goffinet et al. 2008), besides the Bryales, Dicranales, and Pottiales (Bryopsida) that are potentially fertilized by springtails. It is obvious that the phenomenon is not restricted to certain microarthropods or moss groups, and microarthropod fertilization of mosses may thus be significantly more widespread than so far known. We therefore strongly encourage bryologists to look for and study springtails and other microarthropods in association with fertile mosses!

We dedicate this exciting observation to Janice Glime, who keeps inspiring bryologists through her online book on bryophyte ecology, not least the profound account of bryophyte-animal interactions (Glime 2007). Due to unfortunate circumstances, this note escaped from being published in the latest volume of *Bryophyte Diversity and Evolution* 39, 2017, *A Tribute to Janice Glime—A Stalwart Contributor to Bryology*.

Acknowledgment: We thank Nils Cronberg for directing us to a literature reference.

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At the bicentennial of Richard Spruce's birth

S. Robbert Gradstein | Muséum National d'Histoire Naturelle | Paris, France | gradstein@mnhn.fr

Richard Spruce was one of the greatest bryologists of all times. He was a pioneer of the bryology of the Pyrenees and his treatment of the liverworts of the Amazon and the Andes is one of the most important bryological works ever published. But Spruce's accomplishments go beyond bryology. He is also the author of a major monograph of the palms of Amazonia and the first botanical study of the Hevea rubber tree, he published numerous notes on the economic potential of South American plants, prepared maps of the Amazon region, wrote accounts of the life and customs of

South American Indian tribes and documented the vocabularies of twenty one Indian languages. In addition, he laid the basis for the development of the Southeast Asian Cinchona plantations, the source of the antimalarial medicine quinine, by sending Cinchona seeds and seedlings from South America (see Honigsbaum 2001).

Spruce's achievements were presented in detail at the Richard Spruce Centennial Conference of the Linnean Society and the Royal Botanical Gardens, Kew (Seaward & Fitzgerald 1996), from which many of the data presented here have been derived. I have also profited from Barbara Thiers' excellent account on Richard Spruce (Thiers 1984). Richard Spruce, born 10 September 1817, was a native of Yorkshire, England, where he became a school teacher of mathematics in 1839. Already during his youth he had developed a strong interest in botany and by the age of sixteen he had prepared a list of all the plant species found around his home town. Encouraged by some of the leading bryologists of the time, especially Thomas Taylor, he also developed an interest in bryophytes. Almost all his free time was spent on undertaking collecting trips and numerous new records of flowering plants and bryophytes resulted from these explorations (e.g., Spruce 1845, 1846).

In 1845, when the school where he was employed was closed, Spruce decided to give up teaching and make a living as a professional plant collector. The botanists at Kew Garden helped him with the sale of his specimens. Spruce's first venture was a collecting trip to the Pyrenees; a French travel guide of the time had stated that bryophytes did not exist there! (Schultes 1997). Spruce spent a whole year in the Pyrenees and out of this came the first major overview of the bryophytes of the region, *The Musci and Hepaticae of the Pyrenees* (Spruce 1850), enumerating 478 species including 17 new to science. During many of his trips he was accompanied by Dr. Southby, a wealthy British landowner who had settled in southern France. He is remembered with the genus *Southbya* Spruce.



Richard Spruce, photograph taken upon his return from South America (copy of portrait in BM).

Upon his return to England, Spruce soon began planning a larger trip and in 1849, at the age of 31, sailed to South America to explore the flora of the Amazon basin and the Andes of Ecuador and northern Peru. His journey lasted fifteen years and took him up many of the tributaries of the Amazon River, including the rich upper Rio Negro area at the Brazil-Venezuela border where he spent almost three years and detected numerous plant species and genera new to science. But the most rewarding area for bryophytes was the eastern slopes of Andes, where the wealth of undescribed species of mosses and liverworts exceeded all expectations. His journey took him through large tracts of unexplored jungle, often travelling miles and miles by foot or in canoe. The most hazardous part of his trip was the journey to Baños, in the foothills of the Ecuadorian Andes, during which much of his baggage had to be abandoned while crossing the torrential waters of the Topo River. During this struggle Spruce was able to collect the extraordinary liverwort *Myriocolea* Spruce, about which he noted: "[*Myriocolea* is] perhaps the most interesting bryophyte that I have ever found ... and the only agreeable souvenir I have preserved

of this river" (*Notes of a botanist on the Amazon and the Andes* vol. 2, p. 167).

Spruce brought back about 7,000 species of flowering plants from his South American travels, as well as innumerable specimens of ferns, mosses, liverworts and lichens. The specimens were put in the hands of the leading specialists of the time for study with exception of the palms and the liverworts, which Spruce studied himself. Out of this came the monographs *Palmae amazonicae* (Spruce 1869) and *Hepaticae Amazonicae et Andinae* (Spruce 1884–1885), which are his best known achievements. Spruce's moss collections were studied by William Mitten and published in *Musci Austro-americi* (Mitten 1869). The type specimens of the mosses are kept in NY, those of the hepatics in MANCH. A detailed account of Spruce's South American travels appeared posthumously in *Notes of a botanist in the Amazon and the Andes* (Spruce 1908).

The South American journey also took its toll. During the last five years of his sojourn, Spruce was no longer able to work due to illness and by the time he returned to England in 1864 he was deaf in one ear, had suffered from attacks of malaria, could scarcely walk or sit upright due to paralysis of his legs and back, and had suspected tuberculosis. Moreover, he was penniless due to bankruptcy of the Ecuadorian mercantile firm in which he had deposited all his savings. With a modest pension provided by the British government in recognition of his Cinchona work, he could overcome this problem and settled down again in Yorkshire, now a chronic invalid, where he worked on his South American liverworts for the rest of his life. He died at Coneysthorpe on 28 December 1893, aged 76.

Hepaticae Amazonicae et Andinae, a 600-page monograph describing about 560 species (including almost 400 new to science), is Spruce's magnum opus. It was the first major study describing tropical liverworts based on direct observation of the plants in the field, their growth forms, branching patterns, color, habitat, etc. It laid the foundation for the modern classifications of the Frullaniaceae and Lejeuneaceae. As Barbara Thiers wrote "*Hepaticae Amazonicae et Andinae* displays a level of sophistication far beyond that of



Bust of Richard Spruce at Río Verde near Baños, Ecuador.

Spruce's predecessors or contemporaries in the field of exotic hepaticology." The fact that Spruce knew his species in the field, together with his outstanding skills as a taxonomist, his eye for detail and his passion for hepatics, must be reasons why the book is so good.

On 4 March 2006, a bust of Richard Spruce was unveiled at Río Verde near Baños, Ecuador, with the support of the IAB and several other organizations as well as private donors (Gradstein et al. 2006; **Figure**). The text of the monument reads:

Richard Spruce (1817–1893), gran científico, explorador de la Amazonia y los Andes, padre de la etnobotánica y briología, paso por Río Verde en 1857 y vivió en el canton Baños durante seis meses, sus descubrimientos pusieron la extraordinaria biodiversidad del canton en los ojos del mundo.

[Richard Spruce (1817–1893), great scientist, father of ethnobotany and bryology, came to Río Verde in 1857 and lived in the canton of Baños during six months, his discoveries opened the eyes of the world for the extraordinary biodiversity of the canton].

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2017 IAB honors

In the spring of 2017, calls for nomination for the Hedwig Medal for outstanding contributions, the Hattori Prize for best publication in the previous two years and the Grolle Award for outstanding contributions in bryodiversity in developing countries, were made. The three adjudication committees were chaired respectively by Drs. Goffinet, Zhu and Higuchi (thank you and all committee members for your service). They received seven, six and five recommendations. The outcome of the adjudications was endorsed by the LAB council at the meeting in Shenzhen. We are hereby delighted to share these with you.

Hedwig Medal (for outstanding contributions to bryology): Dr. Rod Seppelt (Australia).



Rod Seppelt, Hedwig Medal recipient.

Prof. Rod Seppelt has spent 40 years contributing significantly to our knowledge of the bryophyte flora of Australia, Antarctica, subantarctic islands and most recently New Zealand, and to Arctic cryptogamic research. His taxonomic work focused on liverworts (Ricciaceae) and particularly on mosses (Ditrichaceae, Sphagnaceae, Bryaceae and most recently Fissidentaceae, Bruchiaceae and Pottiaceae). His scholarly contributions, however, span also the areas of ecophysiology, biogeography, biochemistry, palaeo-biodiversity, climate change and whole ecosystem studies and

integrate also lichens, algae and fungi. During his remarkable career, Prof. Seppelt authored 215 publications including four books, 2 theses, 14 book chapters, 4 book reviews and 132 papers in refereed journals. His research rests in part on the 35,000 collections of bryophytes, lichens, fungi and algae that are now housed in the Tasmanian Herbarium in Hobart (HO). Prof. Seppelt has continuously provided support to bryologists in the region, and beyond, through mentoring students, editing papers, provision of scientific illustrations, and his numerous contributions to discussions on bryonet. He is an exemplary advocate of bryology, through activities aimed at precollege students, exhibits of his award winning bryological illustrations and his writing in more popular journals.

Hattori Prize (for best publications): Dr. Juan Carlos Villarreal (Canada).



Juan Carlos Villarreal, Hattori Prize recipient.

In his recent publications, Dr. Juan Carlos Villarreal has highlighted hornworts and liverworts as key plants in advancing our understanding of fundamental biological concepts. They are the foundation for major future research on bryophytes and will also promote bryology globally at all levels.

- Villarreal J. C., Crandall-Stotler B. J., Hart M. L., Long D. G. & Forrest L. 2016. Divergence times and the evolution of morphological complexity in an early land plant lineage (Marchantiopsida) with a slow molecular rate. *New Phytologist* 209: 1734–1746.
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Grolle Award (for outstanding contributions in bryodiversity in developing countries): Dr. Wagieh El-Saadawi (Egypt).



Wagieh El-Saadawi, Grolle Award recipient.

Dr. Wagieh El-Saadawi, Professor at the Ain Shams University, Cairo, Egypt, and a member of OPTIMA Commission on bryophytes. El-Saadawi participates in meetings, lectures, publications of lists of hepatics, hornworts, and mosses of the Mediterranean area. He supervised more than 20 MSc and PhD students in the field of Bryology (mainly bryoflora), and he published more than 170 new records from different Arabian countries (Egypt, Kuwait, UAE, Sudan, Libya) together with his students. El-Saadawi is the first to collect, study and publish on the moss flora of Kuwait (Arabian Peninsula). His work highlighted the vastly incomplete knowledge we had regarding the

bryoflora of Saudi Arabia, which triggered bryologists from other parts of the world to explore Saudi Arabia's bryophyte diversity. El-Saadawi and his colleagues founded a bryological herbarium at Ain Shams University (CAIA) holding moss specimens mainly from Egypt, but some from Kuwait, UAE, Libya, Iraq, Jordan, Italy, and England. El-Saadawi published more than 100 papers and articles, 50 of them on bryophytes (mainly bryoflora) and the others on different botanical subjects but mainly fossil plants.



Bryophyte Inventory for Rainy Pass, North Cascade Mountains, Washington, U.S.A.

Miles E. Berkey | North Cascades National Park Service Complex | Marblemount, Washington | mberkey45@gmail.com

Rainy Pass, which lies on the crest of the North Cascades, within the Okanogan-Wenatchee National Forest, hosts 85 species of bryophytes based on six field visits during 2016. Focus was given towards habitats likely to support *Brachydontium trichodes* (F. Weber) Milde, *Brachydontium olympicum* (E. Britton) T.T. McIntosh & J.R. Spence, and *Bryoxiphium norvegicum* subsp. *norvegicum* (Brid.) Á. Löve and D. Löve., as the presence of these species were the original intent of this survey. Due to the few specimens on record for the North Cascades, all bryophytes were collected at each site. Results from the field work did not yield locations for any of the species of interest. However, among bryophytes collected in the pass, *Anastrophyllum sphenoloboides* R.M. Schust., originally only known from a few localities in Alaska, the Olympic Peninsula of Washington and eastern Canada, represents a rare collection. The collection of *Andreaea rothii* F. Weber & D. Mohr, one of Washington State's critically imperiled mosses, was found several miles outside of the study site and represents the fourth known occurrence for the state. The majority of the species collected were typical to the alpine and montane regions in which they were collected.



Curso-taller sobre hepáticas tropicales

Tamás Pócs | Eszterházy University | Eger, Hungary | colura@upcmail.hu

A postgraduate course and workshop was held in the Herbarium of Missouri Botanical Garden, Oxapampa, Peru (HOXA), during 20–25 July, 2017, in Spanish and English. The course was organized by James Graham (Field Museum, Chicago (F) and Herbario Forestal, Universidad Nacional Agraria La Molina, Lima (MOL)). The lectures were presented mainly by Tamás Pócs and assisted by Margaux Fischer (Field Museum) and by Luis Valenzuela (HOXA). The objective of the course was to give an introduction to the tropical liverworts with emphasis on the Neotropical taxa, their taxonomy, ecology and significance. The course was financially supported by the Field Museum and by the Hungarian Academy of Sciences.

Lectures were given on the organography of hepatics, knowledge of the main taxonomic groups of Neotropical liverworts, morphological adaptations with emphasis on epiphylls, the significance of epiphytic bryomass in water interception and regulation in tropical forests, nomenclature rules, the conservation of bryophytes, the history of the bryological exploration in Peru, as well as an overview of the diversity and ecology of forests found in the central jungle (Selva Central) region of the Peruvian Andes.

The course was supplemented by an excursion to the cloud forests of “La Florida” at an elevation of 2300 m. Daily microscopic sessions were held to study the different Peruvian liverwort genera.

The course was attended by eight people: 6 Peruvians, 1 French and 1 Hungarian participant. At the end of course, the participants received a certificate of participation by Ing. Rodolfo Vásquez Martínez, Director of the Peru Program of Missouri Botanical Garden, as well as by the lecturers.



Excursion in the cloud forest "La Florida". Photo: Ms. Judit Havasi



Excursion in the cloud forest "La Florida". Photo: Ms. Judit Havasi.



Participants of the course. Photo: Ms. Judit Havasi.



Report from the recipient of the 2017 Stanley Greene Award: *Ecophysiological specialization to climate*

**Laura Figenschou | University of Cape
Town | Cape Town, South Africa |
lkfigenschou@gmail.com**

The International Association of Bryologists is excited to announce the recipient of the 2017 Stanley Greene Award. This is an award for early career scientists and students to pursue a research project in bryology. The committee was chaired by the Secretary-Treasurer (Dr. Matt von Konrat), and two members that were appointed by the IAB council, Dr. Claudine Ah-Peng and Dr. Annick Lang. Awards were evaluated based on scientific merit, innovation, feasibility and broader impact. Seven applications were received. The 2017 recipient is Laura Figenschou who is pursuing a Master of Science in the Biological Sciences at the University of Cape Town, South Africa. The title of her project is: Ecophysiological specialization to climate: an explanation for range size and distribution of bryophytes on a tropical island elevation gradient. Laura provides the following description of her research.

On La Réunion Island, bryophytes show a unimodal pattern of species distribution with elevation with a peak in richness at mid-elevation (Ah-Peng et al. 2012). It is unclear as to why this pattern occurs, but unimodal patterns of richness have often been linked to climate (Gradstein and Pócs 1989). The substantial change in climate with increasing altitude leads me to hypothesize that bryophytes are specialized to the climatic conditions of the altitudinal range in which they occur. The results of my honors research showed that ecophysiological specialization to relative humidity did not fully explain this pattern of diversity and that there must be other factors at play. Therefore, my current research towards my M.Sc. aims to determine whether climate is a driver of bryophyte distribution and range on La



Laura Figenschou.

Réunion Island. Thus, I endeavor to test the climatic favorability hypothesis using reciprocal transplants and measures of photosynthesis in response to manipulated climatic variables (chlorophyll fluorescence). The Stanley Greene Award will make it possible for me to travel between South Africa and La Réunion in order to conduct my research in the field.

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News from Australasia

**Rod Seppelt | Tasmanian Herbarium |
Sandy Bay, Tasmania, Australia |
rgdsep@bigpond.com**

**Alison Downing | Macquarie
University | Sydney, Australia |
alison.downing@mq.edu.au**

The on-line version of the *Mosses of New Zealand*, being masterminded by Allan Fife (from Landcare in Lincoln) and Jessica Beever (Landcare in Auckland) is progressing slowly but steadily with work on various family groups (by Allan) and Pottiaceae (being worked on by Jessica). David Glenny (Landcare Christchurch) and John Engel (Field Museum, Chicago) continue to work on the revision of the hepatic flora of New Zealand. The exciting news is that the Missouri Botanic Gardens editor has nearly finished proofreading volume 2, and the hope is that the volume will go to press in 2–3 months. It is also hoped that volume 3 will be edited while volume 2 is at the press and hopefully will be published in about 6 months.

Meanwhile, Matt Renner is continuing his work of various hepatic genera and families and has now been appointed to the National Herbarium of New South Wales. At least part of Matt's time is allocated to bryophytes.

Sadly, a major project using classical and molecular methodologies to unravel the *Riccia* flora of Australia, with Chris Cargill (Canberra) as the lead, again was not considered for support in Australia. As elsewhere, despite the undoubted merits of the work proposed, it seems that support for lower plant research is very much on the outer. In recent years, a number of additional undescribed species, new species records and much clarification of the systematics of Australian species has been done by Chris and her team and it would be really nice to be able to complete the study. The Australian *Riccia* flora, as Sarie Perold found in southern Africa, is quite diverse.

Helen Ramsay and Alison Downing (Macquarie University) and Rod Seppelt have been updating

Mesochaete and completing a revision of *Trematodon* in Australia. The former has been submitted to the journal *Telopea* and the latter is about to be submitted.

Alison Downing (Macquarie University, Sydney) and Pina Milne (National Herbarium, Melbourne) attended the recent IAB Conference in China, held in conjunction with the International Botanical Congress in Shenzhen. Their presentation, Bryophytes in Australian Ecosystems – opportunities to educate the wider community, co-authored by Chris Cargill [National Herbarium of Australia & Canberra Botanic Gardens], Graham Bell [State Herbarium of South Australia] and Cassia Read [Friends of the Box-Ironbark Forests, Castlemaine), was well received.

Much to the delight of Rod Seppelt's colleagues in Australia and New Zealand, Rod was awarded the Hedwig Medal by the International Association of Bryologists for his outstanding contributions to world bryology, including significant contributions to the knowledge of the bryophyte flora of Australia, Antarctica, subantarctic islands and New Zealand and for his work on Arctic cryptogams. Congratulations, too, to Alison Haynes, University of Wollongong, one of three successful recipients of IAB Student awards to attend the Congress.

Both Alison Downing and Rod Seppelt had been involved in editing the English language text of a beautiful publication by Zhang Li, Shenzhen Fairy Lake Botanical Garden, with paintings by two artists, Ms Li Shihua and Ms Xu Lili. The book, *The Magic and Enchantment of Bryophytes* (苔藓之美) was launched during the Congress, an excellent opportunity to see the final production and to meet the artists. During the Congress, Alison and Pina were able to spend time with Professor Zhang Yuan Ming, staff and students of the Xinjiang Institute of Ecology and Geography (中科院新疆生态与地理研究所), Chinese Academy of Sciences, with whom they have been involved in soil crust studies in the Gurbantunggut Desert of north-western China.

Following the Congress, Alison and Pina travelled to Guizhou with Zhang Li, part of a post-Congress tour to visit some extraordinary and

unusual regions of limestone karst and rare Danxia sandstone landscapes. On return to Guiyang, they spent a number of days as guests of Professor Zhang Zhaohui and Professor Wang Zhihui from Guizhou Normal University, to participate in the China-Australia International Workshop for Karst Bryology in Guizhou, organized by the Key Laboratory for Information Systems of Mountainous Areas and Protection of Ecological Environments of Guizhou Province. This proved to be an ideal opportunity to learn more about bryophytes of this famous area of karst and to engage in field trips to areas of spectacular natural landscapes.

David Meagher (Melbourne University) and Andi Cairns (James Cook University, Townsville) continue their work on bryophytes of the Australian Wet Tropics. Numerous collections in the region have been made and documented by bryologists over the past 150 years. Nevertheless, David and Andi have discovered a number of new records for Australia. They also plan to describe some new species, the first of which – *Macromitrium erythrocomum* – is available via the free-access journal *Telopea* at: (<https://openjournals.library.sydney.edu.au/index.php/TEL/article/view/11730>). The tropics are once again turning out to be fertile ground for new discoveries!

An update on mosses of the Wet Tropics (Ramsay & Cairns 2004) is to be completed by the end of the year. Thanks to the Australian Tropical Herbarium for facilitating access, David Meagher and Matt Renner have also collected extensively from several mountain peaks in the Wet Tropics. Matt, being slightly more youthful, has been gainfully employed scaling the higher peaks to extend the quest for unusual things in unusual habitats.

Planning for the 14th Australian Bryological Workshop is well under way. We expect to hold it in the Border Ranges region of north-eastern New South Wales in September 2018, in an area first explored bryologically by William Watts in 1896. Further information will be available from Andrew Franks: andrew@oberonia.com.au. The area to be investigated is in the Macleay–McPherson Overlap, a floristically well-documented area of

northeastern New South Wales and southeastern Queensland where southerly temperate and more northerly tropical species converge, so the bryophyte flora is exceedingly rich and interesting.

After doing an excellent job of editing the *Australasian Bryological Newsletter* for a number of years, David Meagher has relinquished the role and passed the baton and the new Editor (from issue 70) will be: Sarah Harvey (sarah.harvey@adelaide.edu.au). The newsletter publishes notes and short articles on bryophytes that are particularly relevant to Australasia. We wish Sarah well in her new role as Editor.

Literature cited:

Ramsay, H. P. & A. Cairns. 2004. Habitat, distribution and the phytogeographical affinities of mosses in the Wet Tropics bioregion, north-east Queensland, Australia. *Cunninghamia* 8: 371–408.



News from the Spanish Bryological Society (Sociedad Española de Briología)

Patxi Heras | Museo de Ciencias Naturales de Álav | Vitoria-Gasteiz, Spain | bazzania@arrakis.esoposal

Marta Infante | Museo de Ciencias Naturales de Álav | Vitoria-Gasteiz, Spain |

In our last general assembly, held in Aranjuez last June, our Society proceeded to the partial renewal of its board. Outgoing President Vicente Mazimpaka and Secretary Isabel Draper from the Autonomous University of Madrid (UAM) were replaced by Patxi Heras and Marta Infante from the Museum of Natural Sciences of Álava. The first chair was also renewed and passed from Patxi Heras to Belén Estébanez (UAM). Vicente and Isabel are warmly thanked by their dedication, as new President and Secretary, we hope to keep up with their good work.

We invite BT readers to visit SEB's webpage (<http://www.uam.es/informacion/asociacion/es/SEB/index.html>) where you can find:

- more detailed information on the Spanish Bryological Society (board, members, twitter, links...)
- information on past and future SEB's Bryological meetings (25 meetings already held!)
- archive of the SEB's journal Boletín de la Sociedad Española de Briología (free access except for the current issue reserved to SEB members)

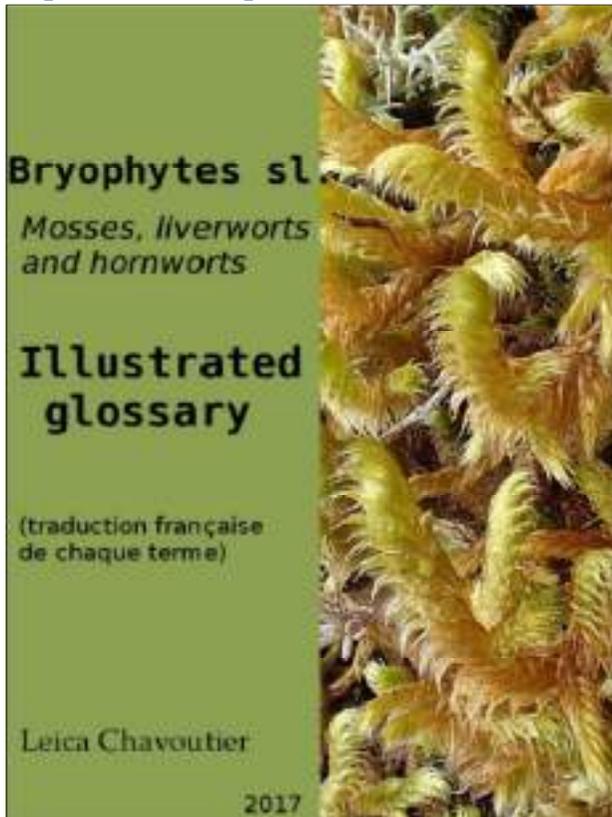
<http://www.uam.es/informacion/asociaciones/SEB/Boletines.html>

Contact to become a member.



New publication announcements

Chavoutier, L., 2017 – *Bryophytes sl.: Mosses, liverworts and hornworts. Illustrated glossary.* Unpublished. 132 p.



Available for free download at:
<http://www.cbn-alpin.fr/actualites/illustrated-glossary-bryophytes.html>

An English translation of: **The Star Mountains Expedition to Dutch New Guinea in 1959, personal experiences and impressions.**

The book contains about 200 pages and can be ordered from Ben O. van Zanten at the following address: benvanzanten1927@gmail.com.

The book is € 20, shipping costs NOT included.



Administrative Information

IAB Officers & Council

President

Bernard Goffinet
Dept. of Ecology and Evolutionary
Biology, 75 North Eagleville Road,
University of Connecticut,
Storrs, CT, 06269-3043
United States of America

Editor of Bryophyte Diversity and Evolution

Dietmar Quandt
Nees-Institut für Biodiversität der
Pflanzen, Meckenheimer Allee 170
D-53115, Bonn
Germany

Council Member

Juan Larraín
Instituto de Biología
Pontificia Universidad Católica
de Valparaíso
Campus Curauma
Chile

Council Member

Michael Stech
Naturalis Biodiversity Center
PO Box 9517
NL-2300 RA
Leiden
Netherlands

1st Vice-President

Lars Söderström
Dept. of Biology, Norwegian
University of Science and Technology,
N-7491 Trondheim,
Norway

Editor of The Bryological Times

John Atwood
Missouri Botanical Garden, PO
Box 299, St. Louis, MO 63166-0299
United States of America

Council Member

Javier Martínez-Abaigar
Universidad de La Rioja
Madre de Dios 51, 26006
Logroño, La Rioja,
Spain

Council Member

Kien Thai Yong
Institute of Biological Sciences
University of Malaya
50603 Kuala Lumpur
Malaysia

2nd Vice-President

Rui-Liang Zhu
Dept. of Biology, School of Life
Sciences, East China Normal
University, 3663 Zhong Shan North
Road, Shanghai 200062,
China

Council Member

Claudine Ah-Peng
University of La Réunion
UMR PVBMT, BP 7151
15 Avenue René Cassin
97715 Saint-Denis
France

Council Member

Denise Pinheiro da Costa
Instituto de Pesquisas Jardim
Botânico do Rio de Janeiro
Rua Pacheco Leão 915
22460-030, Rio de Janeiro, RJ
Brazil

Council Member

Juan Carlos Villarreal
Departement de Biologie
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Québec
Canada

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Yelitza León
Centro Jardín Botánico
Universidad de Los Andes
Apartado 52 La Hechicera
Mérida 5101
Venezuela

Council Member

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Departamento de Biología (Botánica)
Facultad de Ciencias
Universidad Autónoma de Madrid
Madrid
Spain

Council Member

Catherine Reeb
Institut de Systématique
Évolution Biodiversité
UMR 7205, Muséum National
d'Histoire Naturelle, Paris,
France

Website Coordinator

Efraín De Luna
Departamento de Biodiversidad y
Sistemática, Instituto de Ecología,
AC, Xalapa, Veracruz 91000
México

Secretary-Treasurer

Matt von Konrat
Dept. of Science and Education,
Field Museum, 1400 South Lake Shore
Drive, Chicago, IL 60605-2496,
United States of America

Council Member

Jeff Duckett
The Natural History Museum
London
United Kingdom

Council Member

Juliana Rosa Oliveira
University of Brasília
Dep. Botany, Caixa Postal 04457
Brasília, DF.
Brazil

Newsletter Column Editors

Conservation Column Editor: Tomas Hallingbäck,
Tomas.Hallingback@ARData.slu.se

Literature: Johannes Enroth,

Theses: William R. Buck, wbuck@nybg.org

Tropical Biology: Tamás Pócs, colura@cbello.hu

Association Objectives

The objectives of the International Association of Bryologists (IAB) is to promote international co-operation and communication among persons interested in bryophytes.

Next Meeting

The next IAB meeting will be held jointly with the XIX International Botanical Congress meeting in Shenzhen, China on 23--29 July 2017.

Call for Submissions

The Bryological Times was founded in 1980 by S. W. Greene (1928--1989) as a newsletter published for the IAB.

The Bryological Times welcomes announcements and summaries of bryological conferences, workshops, and fieldtrips; book reviews and notices of publications; and original articles, artwork and photography. Please send submissions to the editor: john.atwood@mobot.org.

All submissions will be acknowledged by email. Contributors will be asked to review their submissions before publication.

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