

# INTERNATIONAL LICHENOLOGICAL NEWSLETTER

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**International Association for Lichenology**

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The opinions expressed in the *Newsletter* are not necessarily those held by  
the International Association for Lichenology

## INTERNATIONAL ASSOCIATION FOR LICHENOLOGY

The **International Association for Lichenology (IAL)** promotes the study and conservation of lichens. It organizes symposia, field trips, and distributes a biannual newsletter. There is a listserver that enables on-line discussion of topics of interest. Webpages devoted to lichenology are also maintained by members of the Association. People wishing to renew their membership or become members of IAL are requested to pay their membership fee (one payment of 40 USD for 2016-2020) using PayPal or by bank transfer. All details available at <http://www.lichenology.org/>.

The **International Lichenological Newsletter** is the official publication of IAL. It is issued twice a year (July and December) in English. The *Newsletter* is also available on the Internet. The *Newsletter* is divided into four main sections: 1) **Association news**: official information concerning the Association, such as minutes of Council meetings, proposals of Constitutional changes, new members, changes of addresses, etc. 2) **News**: information about lichenologists, institutional projects, herbaria, requests of collaboration, announcements of meetings, book reviews, etc. 3) **Reports**: reports of past activities, short lectures, obituaries, short historical novelties, etc. 4) **Reviews**: presentation of recent progress and other topics of interest in lichenology with optional discussion. When the material exceeds the available space, the Editor will prepare a summary, on prior agreement with the contributors.

**Any information intended for publication should reach the Editor on or before June 10 and November 10 for inclusion in the July and December issues, respectively.**

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IAL affairs are directed by an Executive Council elected during the last General Meeting. Council members elected at the IAL8 Symposium (Helsinki, Finland, 2016) are listed below, and will serve until 2020.

### IAL COUNCIL 2016-2020

**President:** Mats Wedin, Swedish Museum of Natural History, Department of Botany, P. O. Box 50007, SE-104 05 Stockholm, Sweden. Email: [mats.wedin@nrm.se](mailto:mats.wedin@nrm.se)

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## ASSOCIATION NEWS

### LETTER FROM THE PRESIDENT

Dear IAL members!

2017 is almost over and I hope that it has been a happy and successful year for all of you! Next year, the IMC11 Conference will take place in San Juan, Puerto Rico, 16-21 July. As far as I can see in the programme (<http://imc11.com/symposia/>), there are only two lichen-specific symposia, but many other symposia are indeed lichen-relevant! I urge you all to consider attending and to remember that the early bird registration period will close in March. The IAL plan is to organize an IAL dinner during IMC11 where lichenologist attendees can meet, and where the IAL Council will present the new Acharius and Hale Awards. I hope to see many of you there, and that many of you will present talks and posters! There will be a number of other events of lichenological interest, which you can read more about in this Newsletter. Finally, I hope that you all please check that you have paid your IAL dues for this period. Ca 350 lichenologists are sent the IAL Newsletter, but currently only about half of you have paid. You can check your payment status on the IAL website; if you are listed under "List of members", then you have paid!

All best wishes for 2018!

*Mats Wedin, IAL President*

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### INVITATION FOR NOMINATIONS FOR IAL AWARDS IN IMC11, PUERTO RICO

The IAL Council will make awards of the Acharius Medal and the Mason Hale Award at the planned IAL dinner at the IMC11 in Puerto Rico in July 2018. For information regarding previous recipients, please consult the IAL website: <http://www.lichenology.org/>.

#### **Erik Acharius Award**

The Acharius medal is awarded for outstanding contributions to lichenology over the career of an individual. One or two medals will be awarded at the IMC in Puerto Rico. Nominations should be sent no later than 31 January 2018 to Mats Wedin ([mats.wedin@nrm.se](mailto:mats.wedin@nrm.se)).

#### **Mason Hale Award**

This award is granted to recognize excellence in research by young lichenologists for outstanding work resulting from doctoral dissertations or similar studies. The submission of work(s) for consideration must be made by a person other than that being proposed.

Nominations should be sent directly by e-mail to the Chair of the Mason Hale Award Committee, Ana Crespo ([a.crespo@farm.ucm.es](mailto:a.crespo@farm.ucm.es)), to arrive not later than 31 January 2018, and should include (a) a pdf(s) of the nominated thesis/work(s) AND (b) a justifying statement from the person making the nomination.

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## NEWS

### 11TH INTERNATIONAL MYCOLOGICAL CONGRESS

**SAN JUAN, PUERTO RICO, JULY 16-21, 2018**

The 11th International Mycological Congress will be held in San Juan, Puerto Rico from July 16-21, 2018. The theme of the congress is “Mycological Discoveries for a Better World” to discuss about the importance of fungi to ecosystems and society. We have invited a select group of speakers from around the world to participate in 45 symposia. Also, we will have 8 plenary speakers, with Dr. Paola Bonfante as the first female keynote speaker in an IMC. The congress will have workshops, special interest group sessions and poster presentations together with various social activities for people to network. We invite all lichenologists to come and join us in San Juan. Visit [www.imc11.com](http://www.imc11.com) for more information.

#### About Lichens in the Caribbean

We still know very little about the diversity of lichenized fungi that occur in the islands of the Caribbean. Most of what is known, however, comes from work done in particular islands, including Bermuda, Cuba, St. Eustatius in the Netherland Antilles, and Puerto Rico. Recent efforts in Puerto Rico have revealed intriguing aspects about the diversity of this group in this region. By far, the most notable has been the discovery of two new genera in the family Graphidaceae, and 19 new species in different families besides Graphidaceae, including Trypetheliaceae, Hygrophoraceae and Coenogoniaceae. Interestingly, all these species have been found in different types of habitats, from karst and high elevation elfin forests to coastal freshwater wetlands, suggesting that more discoveries might be awaiting. These observations are also part of the growing body of evidence suggesting that lichen endemism might be more pervasive than we previously thought. Research in Puerto Rico, along with several ecological studies being done in Cuba, are changing our notion about general diversity and biogeographic patterns of lichens in tropical islands. Informing the mycological community about these discoveries and the opportunities that not only Puerto Rico, but the Caribbean region, offer for the advance of lichenological research is therefore fundamental for the advancement of our field.



*Thalloloma rubromarginatum*, a new species of the family Graphidaceae from Puerto Rico (Photo: Joel A. Mercado-Díaz).

Sharon A. Cantrell,  
IMA Vice-President and MSA President Elect  
and Joel A. Mercado-Díaz,  
The Field Museum, Chicago, Illinois.



**9<sup>TH</sup> INTERNATIONAL SYMBIOSIS SOCIETY CONGRESS****July 15-20, 2018****Oregon State University, Corvallis, Oregon, USA**

On behalf of the International Symbiosis Society, I would like to invite you to the 9<sup>th</sup> ISS Congress. The meeting will be held at Oregon State University, Corvallis, Oregon, USA. The ISS Congress is the sanctioned meeting of the International Symbiosis Society and is held every three years. It is the primary international meeting focusing on symbioses, including complex interactions between hosts and their microbiomes. The Congress is anticipated to bring together 400 symbiosis scientists from up to 20 nations to present the latest research in symbioses, their ubiquity in nature and their impact on all environments on the planet.

Please visit the [ISS Congress 2018 website](#) for more information on the meeting.

Follow ISS Congress 2018 on [Twitter](#), [Facebook](#) and [Instagram](#)

**Abstract submission:** January 1 – March 1, 2018 **Registration begins:** February 15, 2018

The Congress will be organized around a series of cross-cutting themes:

- Susceptibility and resilience of symbioses in the Anthropocene
- Ecology of symbioses
- Mechanisms of host-microbiome interactions
- The host-microbe interface: signaling, recognition and regulation
- Tinkering with symbiosis: experimental insights into host-symbiont systems
- Rise and fall of symbiosis: evolutionary transitions
- New tools and approaches for studying symbiosis

**Keynote speaker:** Ed Yong, science writer and author of the book on symbiosis: *I Contain Multitudes*

**Plenary speakers**

Betsy Arnold, U. of Arizona, USA

Ruth Gates, University of Hawaii, USA

Margaret McFall-Ngai, University of Hawaii, USA

Joel Sachs, University of California at Riverside, USA

Toby Spribille, University of Alberta, Canada

Liping Zhao, Rutgers University, USA,

Shanghai Jiao Tong University, China

Some travel awards will be available to students

Consider submitting your work to [Symbiosis](#), the journal of the ISS.

Watch the website and follow social media for updates. I hope you can join us!



Virginia Weis  
9<sup>th</sup> ISS Congress Organizer  
Professor, Oregon State University

## NATIONAL CONFERENCE ON CURRENT DEVELOPMENTS AND NEXT GENERATION LICHENOLOGY

Organized by  
Indian Lichenological Society (ILS), Lucknow  
27 – 28 January, 2018



### About the conference

India has made significant contributions to lichenological research in the last six decades, and at present more than 100 researchers are engaged in lichenological studies throughout the country. Much of the research is focused on taxonomy, floristic or revisionary studies of lichens; more recently, projects on biodeterioration, biomonitoring, climate change and bioprospection of lichens have also been initiated. Lichenological research in India has a strong basis in classical taxonomy and still follows traditional techniques. At the same time, it is on the verge of transformation into modern lichenology, incorporating several advanced aspects. This conference will review current developments in Indian lichenology and shed light on new frontiers.

### About Indian Lichenological Society (ILS)

ILS is an association of lichen researchers and enthusiasts established in the year 2014 for the promotion of lichen research in India. The society is registered under the Society Registration Act 1860 at Lucknow, and has grown profusely to accommodate the interests of other cryptogam groups in India by publishing a journal entitled 'Cryptogam Biodiversity and Assessment' ([www.cbaj.in](http://www.cbaj.in)).

*Membership of ILS:* The society offers membership to any interested cryptogam researcher with 'Life Membership' of Rs. 2500 and 'Ordinary (Annual) Membership' for Rs. 500. For more information please visit the society's website - [www.indianlichenology.com](http://www.indianlichenology.com)

### About the venue

Lucknow, the capital of Uttar Pradesh state, is popularly known as the "city of Nawabs"; it is well-known for its unique *tahzeeb* (culture), and distinguished by its *nazakat* (politeness) and *nafasat* (refinedness), coupled with its *pahle app* (you first) hospitality. The city is also popular for its 18<sup>th</sup> century monuments, kababs and chikan cloth. Lucknow was just a small town during the medieval period, but rapidly developed into a large modern city with a number of research organizations and educational institutes such as CSIR, ICAR, DRDO, SGPGI, Lucknow University and BB Ambedkar (Central) University. Located at the centre of the city, CSIR-National Botanical Research Institute is a premier plant-based research institute in India which conducts cutting-edge research in both basic as well as applied plant science. It is a unique institute where cryptogam research is given prime importance. The Lichenology Laboratory of the Institute is one of the pioneer organizations in India for lichen research. The laboratory has state-of-the-art infrastructure for lichen research. So far the laboratory



CSIR-National Botanical Research Institute in Lucknow

has produced several skilled lichen researchers, and published more than 400 articles. The herbarium of the institute (LWG) holds more than 1.5 lakh (150,000) specimens of lichens and is one of the biggest lichen herbaria in south Asia. There conference venue not only offers a great opportunity to meet renowned lichenologists, but also provides access to our huge collection of lichen specimens, housed together with rich literature in the institute library.

### **Themes**

The conference organizers will accept all abstracts related to lichenological research. However, some themes are recognized here to help the authors prepare their abstract.

- History of lichenology in India
- Revisions, monographs, description of new species, and new records
- Molecular taxonomy and phylogenetics
- Floristic aspects and diversity assessment
- Lichenicolous and endolichenic fungi
- Symbiont culture and diversity
- Ecology, phytogeography and conservation
- Physiology and biochemistry
- Biomonitoring for air pollution and climate change
- Biodeterioration and conservation of monuments
- Ethnolichenology, bioprospection and economic importance
- Recent tools, web applications, and digitization of lichens
- Recent techniques in lichenology

### **Abstracts submission**

The abstracts should be within 3000 characters (including alphabets, numbers, special characters, and spaces) and be typed using 'Times New Roman' font. The abstract can be directly typed or copied in the space given in the pdf registration form. Full names of the authors (without using titles such as Mr., Mrs., Ms., Dr. etc.) along with the address of the affiliated institute should be mentioned. In case of two or more authors, the presenting author should marked with an asterisk (\*) and his/her email should be mentioned for communication. A maximum of five key words (different from those in the title) should be provided. The filled-in PDF form with all the details should be mailed to the organizing secretary on or before 15<sup>th</sup> December 2017.

### **Mode of Presentation**

The authors can select their preferred mode of presentation (Oral or Poster) in the registration form. However, the final decision regarding mode of presentation will be taken by the organizing committee depending upon the nature of the work and number of presenters. The oral presentation should be short and concise with a maximum time of 15 minutes (including 12 minutes of presentation and 3 minutes of discussion); this may be modified by the organizers depending upon the number of presenters. Posters can be made of flex or paper, and the size should not exceed 36 (width) × 48 (length) inches.

### **Pre-Conference Workshop on 'Molecular Systematics'**

A one-day workshop on 'Molecular Systematics of Lichens' will be conducted on 26<sup>th</sup> January 2018. This workshop is suitable for participants who are already engaged in lichen molecular research, or intend to take up molecular studies in the near future. The number of seats for the workshop is limited and reserved only for ILS Life Members. The participants of the workshop will be selected on the basis of the usefulness of the course to them as expressed in the separate application form. The last date for participants expressing their interest in the workshop is 15<sup>th</sup> November 2017, and only selected candidates will pay the workshop fee. The selected candidates

will learn molecular techniques such as DNA extraction, PCR amplification, DNA sequencing, sequence editing & alignment and various phylogenetic approaches such as maximum likelihood, maximum parsimony and Bayesian analysis.

### **Highlights of the conference**

- The conference also includes a felicitation of Dr. D.K. Upreti, a renowned Indian lichenologist, on his 60<sup>th</sup> birthday. A special volume of the ILS official journal 'Cryptogam Biodiversity and Assessment' will be released on the occasion to commemorate the event.
- The conference will also include a keynote lecture by Dr. Thorsten Lumbsch (The Field Museum, Chicago, U.S.A) as well as a special lecture by Dr. P. K. Divakar (Complutense University of Madrid, Spain). Drs. Lumbsch and Divakar will also lend their expertise to the pre-conference workshop.

### **Awards/Prizes in the conference**

In order to felicitate and boost researchers in the field of lichenology, the following three awards have been constituted:

#### **1. Dr. D. D. Awasthi Memorial Lifetime Achievement Award**

This award will be bestowed to a senior Lichenologist for his/her outstanding contribution to lichenology of India. The candidate for the award will be selected by the Executive Council of the ILS. The award includes a memento and citation.

#### **2. Dr. P. G. Patwardhan Award**

This award will be given for the best oral presentations among students and delegate categories. One person from each category will be selected based on his/her presentation in the conference by the chairing committee.

#### **3. Dr. Ajay Singh Award**

This award will be given to the best poster presentations in both students and delegate categories. One person from each category will be selected based on his/her presentation in the conference by the judging committee.

### **How to register?**

There are separate registration forms for both the conference and pre-conference workshop that can be downloaded from ILS website. The registration forms are the 'pdf filling' type; please read the instructions and provide all necessary information.

### **How to reach the venue?**

The participants have to reach the venue or place of their stay on their own. Transportation may be provided (at cost) on request to participants (especially ladies) arriving during night hours. Lucknow city is well-connected by rail, air and road networks. Several trains connect to major cities like Delhi, Mumbai, Chennai, Bengaluru, Bhopal, Kolkata, etc. The railway station is about 6-7 km from NBRI and can be reached by pre-paid taxi, autos, shared autos or cab services of Ola/Uber. The Chaudhary Charan Singh International Airport (Amausi), Lucknow has flight connectivity throughout the day to Delhi, and some flights to other important cities such as Mumbai, Bengaluru, Hyderabad, Kolkata, Ahmedabad. It is located about 20-24 km from the venue and can be reached by cab. Several buses also connect Lucknow to Delhi and other parts of the state. The guest house of CSIR-NBRI is about a 10 minute walk from the institute. The important locations near the venue include – Hazratganj, Saharaganj, Gomtinagar, Aminabad and Aliganj.

### **Registration Fees**

Following are the structure of registration fees for the workshop and conference:



Category of participants	Workshop	Conference Before 15 <sup>th</sup> Dec 2017	Conference After 15 <sup>th</sup> Dec 2017
Delegates* (ILS Life Members)	2000/-	2500/-	3000/-
Delegates* (non-ILS members)	2000/-	3000/-	3500/-
Students <sup>#</sup> (ILS Life Members)	2000/-	2000/-	2500/-
Students <sup>#</sup> (non-ILS members)	2000/-	2500/-	3000/-
Accompanying person <sup>^</sup>	N.A.	2000/-	2000/-

Registration fee includes conference kit; guest house or hostel accommodation; and food, including breakfast, lunch and dinner.

\*Delegates include – Scientists, Professors, Post Docs, Industry people

<sup>#</sup>Students include – Masters Students, Ph.D. Research Scholars. Candidates should provide their proof of studentship by uploading their valid ID card or letter from their supervisor.

<sup>^</sup>Accompanying persons will not be given provided conference kit; only accommodation and refreshments will be provided during the conference period.

### Fee remittance details

All financial transactions should be made via online transfers using RTGS/NEFT/IMPS modes into the following account:

**Account No.:** 34349534762

**Name:** Indian Lichenological Society

**Bank:** State Bank of India

**Branch:** NBRI Lucknow

**Address:** National Botanical Research Institute, Rana Pratap Marg, Lucknow – 226001

**IFSC Code:** SBIN0010173

**MICR Code:** 226002051

Cash will only be accepted from local candidates (residing in Lucknow). Other than this, cash will only be accepted for on-site registration on the inaugural day of the conference.

### Accommodation and food

Delegates will be housed in the NBRI Guest House and Youth hostel. As we have limited accommodation, it is available on a first-come, first-served basis for delegates/students who have paid their registration fees. The organizing committee reserves the right to allot or modify the accommodation for participants. The organizers cannot guarantee accommodation for participants who register late. Accommodation will be provided from 25<sup>th</sup> evening to 27<sup>th</sup> January night for participants also attending the pre-conference workshop, and from 26<sup>th</sup> to 27<sup>th</sup> night for conference participants only. Similarly, food will be provided from 25<sup>th</sup> dinner to 28<sup>th</sup> evening tea for participants attending both the conference and the workshop, and from 26<sup>th</sup> dinner to 28<sup>th</sup> evening tea for conference participants only.

### Important dates to remember

Normal registration: 15<sup>th</sup> December 2017

Late registration: 16<sup>th</sup> December 2017 to 27<sup>th</sup> January 2018

Last date for submission of abstracts: 15<sup>th</sup> December 2017

Last date for expressing interest in the pre-conference workshop: 15<sup>th</sup> November 2017

Notification of mode of presentations: 31<sup>st</sup> December 2017  
Date of the pre-conference workshop: 26<sup>th</sup> January 2018  
Dates of the conference: 27-28<sup>th</sup> January 2018

## **ORGANIZING COMMITTEE**

### **Patron & Convener – Dr. D. K. Upreti**

Chief Scientist, CSIR-NBRI, Lucknow

### **Organizing Secretary – Dr. Sanjeeva Nayaka**

Principal Scientist, CSIR-NBRI, Lucknow

### **Treasurer – Mr. Komal K. Ingle**

Technical Assistant, CSIR-NBRI, Lucknow

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Dr. Siljo Joseph

Dr. Sumesh Dudani

Mr. Jyoti Tandon

### **Address for correspondence**

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*Sanjeeva Nayaka (Organizing Secretary)*



## LICHENS AS A TOOL FOR INTERPRETATION OF ENVIRONMENTAL CHANGES AND MANAGEMENT

cE3c 2018 Advanced Course - <http://lichens.fc.ul.pt/>

**9-13 July 2018 | 4 days lectures and lab classes + one day field excursion**

**Objectives:** With this course, we aim at providing the participants with the basics of lichen biology and ecology, biomonitoring and data analysis methods to allow the use of lichens for the interpretation of the environmental conditions, and the development of a responsible scientific-based environmental management.

**Teachers:** Pedro Pinho (Univ. Lisboa), Paula Matos (Univ. Lisboa), Silvana Munzi (Univ. Lisboa), Cristina Máguas (Univ. Lisboa), Cristina Branquinho (Univ. Lisboa), Sofia Augusto (Univ. Porto), Laura Concostrina (Univ. Lisboa).

**Location:** Universidade de Lisboa, Faculdade de Ciências, Departamento de Biologia vegetal

**Schedule:** 9:00-17:30 (36h)

Lichens are amongst the most sensitive organisms to environmental changes at the ecosystem level. Some of the most important drivers of global change, like climate, pollution and eutrophication, are factors to which lichen communities respond in only a few years, and lichen physiology in a few weeks. Therefore, by “reading” lichens we can obtain useful information about the status of the environment and its changes over time and space.

Since the nineteenth century, observations based on changes in lichen community composition and species frequency have been used for biomonitoring purposes. Currently, new approaches based on functional diversity and lichen physiological response are being developed. Functional diversity has a wide geographic applicability and high inter-comparison potential and has proven to better predict impacts at the ecosystem level than total diversity measures. Newly developed physiological methods allow us to assess the response of lichens to rapidly changing environmental conditions. Moreover, the link between physiological mechanisms, functional diversity and ecological impacts provides a reliable base for the development of environmental policies.

Six modules identify the main themes of the course, ranging from basic knowledge of the lichen symbiosis to data collection and interpretation. The course will be organized in lectures, lab experiences, lichen identification and a one-day excursion to apply biomonitoring methods.

A brief description of the module structure is given. The modules are sequential, and therefore attending all is mandatory.

**Module 1 (*Lichen biology and ecology*)** This module will provide basic knowledge on lichen biology and ecology:

- Introduction to the lichen symbiosis, with highlights on the role of each partner.
- The ecological role of lichens and their role in ecosystem functioning.
- From the deserts to the poles: strategies for lichen survival in extreme environmental conditions.
- Lichens in the context of global change: key features that make them excellent ecological indicators of air pollution and climate change.

**Module 2 (*Systematics*)** The module will cover basic lichen structure and techniques needed for lichen determination (lab class) to provide students with basic skills on lichen identification:

- Morphology and anatomy: photobionts, growth forms, sexual and vegetative reproduction strategies.
- Determination methods based on morphological and chemical characteristics.
- Introduction to the most common lichen genera, available floras and online keys.
- Identification of lichen specimens: macro- and microscopic characters (preparation and observation of samples); chemistry; and determination keys.

**Module 3 (*Ecophysiology*)** This module will focus on modern approaches in lichen ecophysiology to assess the impact of environmental stress drivers on lichen functioning:

- Lichen physiological response to environmental changes.
- What should we measure? Selecting parameters to assess cause and/or effect of human-induced environmental disturbances.
- Case studies from both the laboratory and the field.
- Integration of molecular, physiological and ecological techniques.

**Module 4 (*Using lichen functional diversity: from topsoil to trees*)** This module offers an overview on the use of lichen functional diversity as an indicator of global change drivers:

- Functional diversity, what does that mean? A review of definitions and components, including chemical and life-history traits.
- Why is functional diversity so important? The link to ecosystem functioning and the response to environmental changes.
- Case studies using both biological soil crusts and epiphytic lichens.

**Module 5 (*Biomonitoring*)** This module aims to give an overview on the main methodological approaches using lichens as biomonitors:

- What to measure? Standard sampling methods based on biodiversity and bioaccumulation.
- How to measure? When to use transplants or *in situ* lichens in biomonitoring studies. When to use total diversity or functional diversity.
- Different problems ask for different approaches: case studies of different environmental problems (in urban, natural and industrial areas) and their links with human health.

**Module 6 (*Data analysis and interpretation*)** This module gives students basic notions on how to analyze and interpret data collected according to previous modules:

- Both theory and practical examples will be given.
- Emphasis on GIS interpretation of results in space.

**Excursion** One-day field excursion to Mediterranean cork-oak woodlands to: test the acquired knowledge of species; and to apply the following two biomonitoring methods: (1) the standard European method for air pollution and (2) the method for biological soil crusts.

**ECTs:** This course can fulfill 6 ECTs for FCUL PhD students enrolling in it as part of their first doctoral year. For FCUL PhD students only requiring 5 ECTs recognized in their specific PhD programs, the excursion is not mandatory and the certificate will be on 'Topics in Lichens as a tool for interpretation of environmental changes and management'.

**Location:** Departamento de Biologia vegetal (FCUL)

**N° (min, max) students:** 10 – 18

**Minimum formation:** “Licenciatura” (bachelor) in Biology, Natural Science or related areas

**Directed to:** PhD or MSc students in Ecology, Environmental Studies, Geography or related areas, and postdocs and other professionals working in these and related topics

**Fee:** free for 1st year PhD students in the Doctoral program in Biology (FCUL), Biodiversity, Genetics and Evolution (BIODIV UL; UP) and Biology and Ecology of Global Changes (BEAG UL, UA) when the course counts credits for their formation, in which case the delivery of a final report done after the course is mandatory; 25 € for PhD students from institutions of the PEERS network (cE3c, CFE); 125 € for FCUL Master students and unemployed; 180 € for BTI, BI and other PhD students; 250 € for Professional and postdocs.

When the maximum number of students is reached, 9 spots will become available for non-paying 1st year PhD students mentioned above, being, by order of preference: 1) cE3c students; 2) BIODIV students (not from cE3c); 3) FCUL students (not from cE3c); 4) BEAG students (not from FCUL).

**Deadline for applications:** May 31<sup>st</sup> 2018

→ Candidates should send a short CV to [lichenscourse@fc.ul.pt](mailto:lichenscourse@fc.ul.pt)

*Silvana Munzi*

## NEWS FROM THE NORDIC LICHEN SOCIETY

The most recent meeting of the Nordic Lichen Society (NLS) was convened in September, 2017, during the Symposium of Baltic Mycologists and Lichenologists (BML) and NLS in Gdansk, Poland. At the meeting, the society adopted three important changes to stimulate societal activities. First, the official journal of the Society, *Graphis Scripta*—with new editorship headed by Håkon Holien ([hakon.holien@nord.no](mailto:hakon.holien@nord.no)) will be electronic only, and will be sent via email to the Society members. To join the NLS you need to send an E-mail to [ave.suija@ut.ee](mailto:ave.suija@ut.ee). Secondly, starting January 1st, 2018, the membership fee will be zero €—at least for the next two-year period. Finally, (and most importantly), the next NLS meeting will be held in Estonia in Summer 2019.

For more information see: <http://nhm2.uio.no/lichens/nordiclichensociety/>

*Ave Suija, Tartu and Ulrik Søchting, Copenhagen*

## SUPPORT FOR WORK IN GRAZ (AUSTRIA)

On the occasion of his receipt of the distinguished Acharius medal, Josef Hafellner made a donation to the University of Graz to support travel expenses for foreign lichenologists needing to work in Herbarium GZU who have no other funding. By virtue of his generous donation, we were able to support recent visitors Evgeny Davydov and Alice Gerlach. There is still some money left. Please send your applications to the Institute of Plant Sciences (c/o [helmut.mayrhofer@uni-graz.at](mailto:helmut.mayrhofer@uni-graz.at)); they will be considered on a first come-first served basis.

*Helmut Mayrhofer*



## REPORTS

### LICHEN GENOMICS WORKSHOP II

The Second Lichen Genomics Workshop took place at the Institute of Plant Science at the University of Graz, Austria, from 2nd to 5th November. It was intended as a follow-up of a smaller gathering organized by Ólafur Andr sson in Reykjav k following the IMC9 in Edinburgh in 2010. The second workshop in Graz was organized by Silke Werth, Philipp Resl, Fernando Fernandez-Mendoza, and Martin Grube. This time almost 40 lichenologists took part in the event to discuss the significant, mostly technical, advances made in the field. Morning sessions covered (a) genome assembly and annotation, (b) genomes and functions, transcriptome studies, (c) population genetics, (d) microbiome and mycobiome, and (e) techniques and prospects. Four keynote speakers delivered lectures on different aspects of lichen genomics: Christoph Hahn, Philipp Resl, Tomislav Cernava, and Fernando Fernandez-Mendoza. More hands-on, practical seminars took place in the afternoons, introducing the participants to bioinformatic analyses, e.g. an introduction to linux command line; quality analysis of high throughput data; genome assembly; and phylogenomic pipelines. There was also time for scientific discussion and social activities, e.g. at the official welcome reception in the Green House of the Botanical Garden, where a representative of the city of Graz welcomed the participants; during the visit of the spectacular castle Riegersburg in Southeastern Styria, and a subsequent traditional Styrian meal in a local Buschenschank (a special type of wine restaurant); or during optional excursions exploring Graz's night life. It became apparent that understanding the biology and diversity of lichen symbioses from a genomics perspective remains a great challenge, to be further addressed in future workshops. Many thanks to the IAL that kindly endorsed this workshop!



Group photo of participants of the workshop in the botanical garden.

*Martin Grube (Graz)*

## **THE 30<sup>TH</sup> BIRTHDAY OF THE ITALIAN LICHEN SOCIETY (SLI)**

During the second week of September, 13th-15th 2017, the Italian Lichen Society (SLI) celebrated the 30th anniversary of its founding.

The society was born on the 23rd of February, 1987, in Portogruaro, a small village close to Venice. It was founded by Pierluigi Nimis, professor of botany at the university of Trieste; the notary Paolo Pasqualis, cousin of Professor Nimis; Giulio Scarpa, an amateur lichenologist living in Venice and selling electrical tools; and Mauro Tretiach, who was (at that time) a student at the University of Trieste. The whole story of the society's birth is told by Professor Nimis with much humor and excitement in an interview reported in the 30th issue of the *Notiziario della Società Lichenologica Italiana*.

The main purpose of the SLI was to group and unify those Italian lichenologists as an independent lineage from the Italian Botanical Society of that time. In addition, SLI aimed to resurrect and carry on the first lichenological studies and achievements in lichenology done by the Italians Massalongo, De Notaris and Jatta during the second half of the 1800's. That was, in fact, a period of time in which Italy was one of the most important, worldwide centres for lichenological research.

The first president of the society was Pierluigi Nimis (1987-1993), followed by Paolo Modenesi (1993-1999), Mauro Tretiach (1999-2008), Rosanna Piervittori (2008-2011), Stefano Loppi (2011-2014) and Sonia Ravera (2014-to date).

Currently, SLI counts 134 members, including students, university professors and researchers, school teachers and amateurs. The society has developed into five working groups active at both the national as well as the international level; topics of research include Lichen Biology, Biomonitoring, Teaching and Scientific Dissemination, Floristic and Ecology.

SLI celebrated this important event at its yearly congress, this time held in Turin, in the region of Piedmont, Northwestern Italy. Here, multiple congress venues were an innovative aspect of the meeting: they were changed every day, and were all important, historical buildings of the city. They included the former Holy Cross Convent, now hosting the Department of Life Sciences and Systems Biology of the University of Turin; the Villa della Regina (UNESCO World Heritage Site), a residence of the Royal House of Savoy located on the hill of Torino and offering a wonderful view on the city and the surrounding Alps; and the ancient Turin Botanical Garden building, immersed in the "green lung" of the city, where ancient trees from the Savoia kingdom are still preserved.

The scientific sessions of the meeting dealt with lichen ecology and biodiversity, lichens and cultural heritage, lichen biology, and ecophysiology. The invited lectures gave modern overview on subjects such as "Climatic and environmental change across space and time: a cryptogams' perspective" (N. Cannone, University of Insubria); "Rock biofilms in nature and in the lab" (A. Gorbushina, Free University of Berlin & BAM); and "Mycorrhizas and lichens: how symbioses move from two to multiple partners" (P. Bonfante, University of Torino).

The society this year also elected a new directive committee, which will govern the society for the coming three years. It includes the president, Sonia Ravera; the secretary, Sergio Favero Longo; and three additional members: Renato Benesperi, Paolo Giordani and Lucia Muggia.

*The SLI committee*

## TWO INTERNATIONAL LICHENOLOGICAL MEETINGS IN POLAND, GDAŃSK

The triennial XX Symposium of Baltic Mycologists and Lichenologists took place in Gdansk (Poland) from 25 to 29 September 2017 in the symposium venue at Novotel Gdańsk Marina Hotel. The symposium venue was located near the border with seaside resort town Sopot and ca. 100 meters from the south shore of the Baltic Sea. This was the very first time that the Symposium of Baltic Mycologists and Lichenologists was organized in Poland (it usually takes place in Estonia, Latvia or Lithuania). A meeting of the Nordic Lichen Society was also held during the Symposium. The meetings were organized by the University of Gdańsk together with various co-organisers, including the Foundation for the Development of the University of Gdańsk and the Lichenological Section of the Polish Botanical Society. In total, there were 38 participants from Belarus, Czech Republic, Denmark, Estonia, Finland, Hungary, Latvia, Lithuania, Poland, Russia, Sweden, and the United Kingdom.



Group photo of participants (*Photo: Anna Fedosova*).

The first evening of the symposium began with the registration of participants, followed by a welcome dinner in the symposium venue. The second day started with scientific presentations, and continued with a poster session that inspired fruitful discussions into the evening. In addition, a small exhibition of beautiful lichen paintings by Ekaterina Kuznetsova and Aleksandra Demina (St. Petersburg State University) was on view during the poster session. The second day concluded with the meeting of Nordic Lichen Society. On the the third and fourth days, we enjoyed full-day field trips in different habitats in Western Pomerania, including valleys with beech forests, black alders along a river, and old oaks in a meadow in Trójmiejski Landscape Park. We also stopped to check roadside trees, notably in the area influenced by a cement plant in the Reda River valley, and along an old railway in the Radunia River valley. The latter has become an especially interesting place to explore, attracting a lot of attention from lichenologists. Each day, the excursions ended with laboratory work. On Wednesday evening, participants were given time to explore the city center of Gdańsk, where they visited the old town and local restaurants. On the last evening of the symposium, we had a closing dinner, accompanied by rousing music as well as a special cake commemorating the twentieth Symposium of Baltic Mycologists and Lichenologists.



We sincerely thank Martin Kukwa and the other members of the organizing committee for such a warm and hospitable reception. The time and location of the next (XXI) Symposium of Baltic Mycologists and Lichenologists has not yet been decided; however, on behalf of the organizing committee, we would like to invite you to the next meeting of Nordic Lichen Society, which will take place in August 2019 in Estonia.

*Polina Degtjarenko, University of Tartu*

### **LICHEN FIELD TRIP TO CENTRAL HONSHU, JAPAN, 27 SEPTEMBER TO 10 OCTOBER 2017**

Seven lichenologists from outside Japan experienced Japanese lichens during a field trip to the mountains of Central Honshu, organized by Göran Thor (Sweden). Our Japanese colleagues T. Ohkubo (Utsunomiya University) and Y. Ohmura (National Museum of Nature and Science, Tsukuba) helped in arranging collecting permits, joined the group for selected days, and improved our knowledge about Japanese nature and culture.



Participants at the Japan lichen field trip, from left to right: Björn Owe-Larsson, Martin Grube, Tina Randlane, Göran Thor, Yoshihito Ohmura, Einar Timdal, Reidar Haugen, Inga Jüriado.

We mostly stayed in traditional guesthouses (ryokan), slept on tatami mats and enjoyed the local food. The area was lichenologically exciting. The humidity supports a lush epiphytic flora (with many and large thalli of *Lobaria*, *Sticta*, *Nephromopsis*, etc.) and increasing diversity of interesting epilithic lichens with altitude. We hiked to the Mt. Nikko-Shirane (Oku-Shirane) summit (2.578 m), which offered a fantastic vista of the surrounding forests dressed in fiery autumn colour. We also experienced a rapid change of sun, and driving sleet, while screening for lichens on the ridge of Mt. Tanigawa, where weather patterns from the Asian continent and the Pacific Ocean meet. The trip was concluded by a visit of the National Museum of Nature and Science in Tsukuba, where we explored their excellent collection of lichens.

*Martin Grube, Graz*

## BOOK REVIEWS

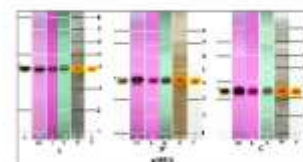
**Schumm, Felix (2017): Atlas of Images of Thin Layer Chromatograms of Lichen Substances. Supplement (Bilderatlas von Dünnschichtchromatogrammen von Flechten-Inhaltsstoffen. Ergänzungsband).** Herstellung und Verlag: Books on Demand GmbH, Norderstedt. Pp. 196. ISBN: 978-3-7431-4586-3, price EUR 60.00, Kindle Edition EUR 29.99.

The book is a supplement to the previously published „Atlas of Images of Thin Layer Chromatograms of Lichen Substances“ (F. Schumm & J.A. Elix 2015, ISBN: 978-3-7392-6103-4) and contains a set of chromatograms obtained by high-performance thin-layer chromatography (HPTLC). The images presented in the book show the position of several secondary lichen metabolites on plates run in solvents A, B/B' and C, which are most commonly used in lichenology. Many substances presented in the book are rarely produced by lichens and were not represented in the first part of the “Atlas”. This was, as the author stated, due to the obtainment of purified lichen substance samples, which were provided in most cases by S. Huneck. This substance collection, owned now by K. Kalb, also contained substances presented in the first part of the Atlas, and are now presented again in the “Supplement”, but based solely on purified material. In some cases, however, the plates present substance position based on unpurified extracts obtained directly from lichen thalli.

*F. Schumm*

Atlas of Images of Thin Layer  
Chromatograms of Lichen  
Substances. Supplement

Bilderatlas von Dünnschicht-  
chromatogrammen von  
Flechten-Inhaltsstoffen.  
Ergänzungsband



The book mostly contains images of HPTLC plates of lichen substances; however, the methods of preparing samples for chemical analyses, as well as how to run and develop HPTLC plates, are also presented. Substances are presented in alphabetical order, and two tables assist in finding the R<sub>f</sub> position of the metabolites in different solvents. An index of all substances covered by the book is also presented.

This book is certainly of great value for all lichenologists dealing with secondary lichen chemistry, and may help in the identification of different lichen substances. One must remember, however, that the identification of a lichen metabolite, especially one rarely reported from lichens or those with a very similar position on chromatograms, should be confirmed by running a control side-by-side with the analyzed substance.

*Martin Kukwa (Gdańsk)*

**HAFELLNER, J. & R. TÜRK (2016): Die lichenisierten Pilze Österreichs – eine neue Checkliste der bisher nachgewiesenen Taxa mit Angaben zur Verbreitung und Substratökologie.** – Stapfia **104**(1), Linz: Oberösterreichisches Landesmuseum, 184 + 32 Pages, Paperback. ISSN 0252-192X. Price: € 24. Also available as free PDF download from [https://www.zobodat.at/publikation\\_volumes.php?id=50637](https://www.zobodat.at/publikation_volumes.php?id=50637)

Checklists are important tools for systematics and floristics. Even with the danger of becoming quickly outdated with ongoing research, it is necessary to publish such tools from time to time. The last checklist of Austrian lichens was published 15 years ago by the present authors as volume 76 of the same journal (HAFELLNER & TÜRK 2001). Over these 15 years, the number of species has grown from 2101 to 2349 or (in other words) with nearly 17 new species per year on average.



Like its forerunner, the list offers information about important synonyms used in Central Europe, as well as on horizontal and vertical distribution in Austria, followed by substrate preferences.

The new list includes a number of new combinations in the genera *Gyalolechia*, *Lepra*, *Myriolecis* and *Pyrenodesmia*, which are listed and discussed on pages 169-174. Of special importance is the resurrection of the genus *Lepra* SCOP. (1777) for the *Pertusaria albescens*-group, and the arguments against other genus names in this group of taxa (*Leproncus*, *Isidium*, *Variolaria*, *Marfloraea*), which are regarded as illegitimate.

The new checklist is rounded out by 192 high-quality, colour photographs, arranged in 32 plates at the end of the volume. Both the authors and publishers of this volume are to be thanked for their efforts.

A continuation of the bibliography of Austrian lichens by TÜRK & HAFELLNER has also been published as *Stapfia* **104**(3): 1-137, (2017): *Zweiter Nachtrag zur Bibliographie der Flechten in Österreich* and can be downloaded from

[https://www.zobodat.at/publikation\\_volumes.php?id=53176](https://www.zobodat.at/publikation_volumes.php?id=53176).

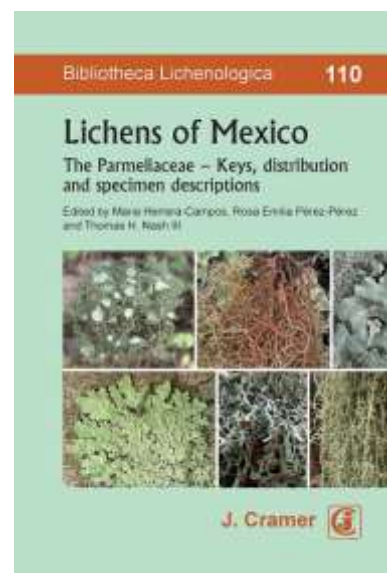


Peter Scholz, Schkeuditz

**HERRERA-CAMPOS, M., R. E. PÉREZ-PÉREZ & T. H. NASH (eds.) (2016): Lichens of Mexico. The Parmeliaceae – Keys, distribution and specimen description.** – Bibliotheca Lichenologica 110, Stuttgart: J. Cramer in Borntraeger Science Publishers, vi +723 pages, Hardback. ISBN 978-3-443-58089-6. Price: € 199.

This new volume of the well-established *Bibliotheca Lichenologica* series is the result of the collaborative efforts of 17 international specialists of Parmeliaceae and is the first flora of a large lichen family for the whole of Mexico. It might be seen as a continuation of the collective work for the Lichen Flora of the Greater Sonoran Desert Region (3 volumes, NASH et al. 2002-2007).

The book starts with the usual introduction to the studied area and an overview on *Phylogenetic metacommunities of parmelioid lichens in Mexico* (LÜCKING et al.) followed by *A synopsis of generic classification of Parmeliaceae in Mexico in the light of molecular data* (CRESPO et al.). This chapter includes also a key to the accepted genera. The main body of the book is called *Systematic treatments by genera covering 450 species* (pp. 69-691). The generic treatments are prepared by various contributors with numbers of accepted species: *Alectoria* (4), *Anzia* (2), *Bryoria* (6), *Bulbothrix* (9), *Canoparmelia* (13), *Cetraria* (1), *Cetrelia* (3), *Flavoparmelia* (6), *Flavopunctelia* (5), *Hypogymnia* (11), *Hypotrachyna* (80), *Imshaugia* (2), *Kaernefeltia* (1), *Letharia* (2), *Melanelixia* (2), *Melanohalea* (3), *Menegazzia* (4), *Montanelia* (3), *Myelochroa* (3), *Nodobryoria* (1), *Oropogon* (14), *Parmelia* (4), *Parmelina* (2), *Parmelinella* (1), *Parmeliopsis* (2), *Parmotrema* (85), *Parmotremopsis* (2), *Phacopsis* (1), *Protoparmelia* (2), *Pseudephebe* (1), *Pseudevernia* (5), *Pseudoparmelia* (3), *Punctelia* (16), *Relicina* (1), *Remototrachyna* (5), *Tuckermanella* (7), *Tuckermanopsis* (1), *Usnea* (66) and *Xanthoparmelia* (74).



The generic chapters start with an introduction to the genus (but no formal description) followed by keys to Mexican species (sometimes with additional species in square brackets) and descriptions of the accepted species in alphabetical order with full information on their Mexican distribution. These species descriptions are omitted in few cases where recently published monographic treatments are cited (e.g. *Canoparmelia*, *Melanohalea*). In general there are no illustrations, except for newly described species which are illustrated by a colour photograph of type material. New species are described in *Alectoria* (2), *Hypotrachyna* (1), *Parmotrema* (2), *Pseudevernia* (2) and *Tuckermanella* (1). Furthermore the new combination *Parmotrema nyasense* (C.W. DODGE) R.S. EGAN is made and *Punctelia nashii* is reduced to a synonym of *P. jeckeri* but there is no list of taxonomic novelties provided. The volume ends with a united list of references for all chapters (pp. 693-723) but has no species index.

The only minor shortcoming I see is the omission of more uniform and complete generic descriptions and very frequently the missing citations of the genera with authors.

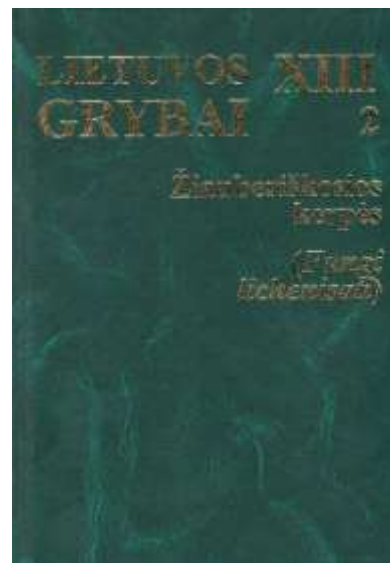
Unfortunately the price for the hardbound volume is rather high but it is of course a must for all main lichen libraries and for everybody who wishes to determine parmelioid lichens from Mexico and Central America. Editors and authors can be congratulated for their achievement.

Peter Scholz, Schkeuditz

## NEW BOOKS RECENTLY PUBLISHED

**Jurga Motiejūnaitė 2016: *Žiauberiškosios kerpės*. In: Lietuvos grybai [Mycota Lithuaniae], Vol. 13, Book 2. Vilnius: Gamtos tyrimų centras. ISBN: 978-9986-443-88-9** [in Lithuanian]. Available from Nature Research Centre, Akademijos Str. 2, LT-08412 Vilnius, Lithuania.

This is the second book of a two-book series on the species diversity, distribution, and ecology of lichens occurring in Lithuania. It includes descriptions of species with crustose, placodioid and squamulose thalli (lichenized ascomycetes and basidiomycetes); several non-lichenized taxa traditionally studied by lichenologists (e. g. non-lichenized calicioid genera); and some lichenicolous, non-lichenized fungi belonging to genera of mostly lichenized species.



**Ulrik Søchting, 2017. *LAV I KLIT OG HEDE*. De danske rensdyr- og bægerlaver og deres følgearter. Biologisk Forening for Nordvestjylland. ISBN: 978-87-92100-33-7** [in Danish].

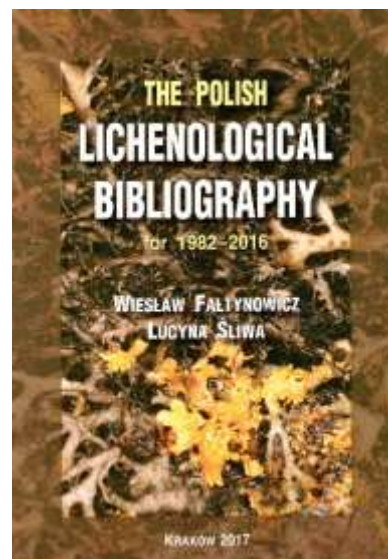
A new book on Danish *Cladonia* spp., with two keys. One key is based mainly on morphological characters and includes 33 of the most common *Cladonia* species, while the second key encompasses all of the country's *Cladonia* species and is expanded with the use of spot tests with chemicals and UV light. The species are listed in alphabetical order by Latin name followed by the Danish name.





**Wiesław Faltynowicz & Lucyna Śliwa 2016. *The Polish lichenological bibliography for the years 1982–2016* [Polska bibliografia lichenologiczna za lata 1982–2016] Botanical bibliographies vol. 8, W. Szafer Institute of Botany, Polish Academy of Sciences, Kraków ISBN: 978-83-62975-28-0 [in English and Polish]**

The previous Polish lichenological bibliography (Faltynowicz 1983) contains publications that appeared in print up to the end of 1981. This, the second part, is a continuation and supplement; it includes papers from 1982 through 2016, as well as some earlier publications omitted in the first part. In addition to works by Polish authors, this bibliography includes publications by foreign authors that deal with areas lying within the present-day borders of Poland. Foreign monographs and floristic papers are also included if their authors took lichen localities from Poland into account.



**Wiesław Faltynowicz & Maria Kossowska, 2016. *The lichens of Poland. A fourth checklist*. Acta Botanica Silesiaca, Monographiae 8: 3-122. ISBN: 978-83-61764-57-1 [in English].**

This catalogue consists of 1642 lichen species and 19 subspecies belonging to 333 genera. All the taxa recorded to date from Poland are listed. For taxa recorded after 2003 and not included in the previous edition of the checklist, the appropriate reference is given. If present, contemporary taxonomic revisions of individual genera and other groups occurring in Poland are also cited. For 286 taxa, whose names have been changed compared to the previous edition of the checklist, the old names published there are added as synonyms. An index of Polish names of all species is also included.



**Piotr Grochowski 2015. *Lichenobiota województwa lubuskiego na terenach obszarów Natura 2000: porosty wokół nas*. Gorzów Wielkopolski: Regionalna Dyrekcja Ochrony Środowiska. ISBN 978-83-63564-01-8 [in Polish].**

This book contains basic information about lichens, their morphology, anatomy, ecology, occurrence and significance. The main part of the book consists of an atlas, showing 100 species of lichens, both common and rare, that were encountered in the areas of Lubuskie Natura 2000 and which can be used for bioindication.



**ORBITUARY**  
**OTTO L. LANGE**  
**21 AUGUST 1927 – 14 AUGUST 2017**



Otto Lange at the IAL Symposium in Tartu in 2004  
(Photo: David Hawksworth)

Since the 1950s, there has been a massive increase in our knowledge and understanding of the ecophysiology of lichens. At the centre of these developments was Otto Lange, an acknowledged leader in the field because of his excellence in research, technique development, scholarship and collegiality.

Otto was a plant ecophysiologicalist, but I will start by concentrating on his lichen work, which was very much his favourite research topic. As Otto viewed it, the objective of physiological plant ecology is to explain processes in plant ecology, such as plant performance, survival, and distribution, in physiological, biophysical, and biochemical terms. Therefore, the first aim of his research was to quantitatively analyse the responses of plants in nature with respect to environmental conditions. A major characteristic of his research was the manner in which he combined analysis under controlled conditions in the laboratory with measurement and experimentation in the field, under as near-natural conditions as experimentally possible.

Otto's research career started soon after the end of the Second World War with detailed investigations into the heat and cold tolerance of lichens and plants generally. Such work did not require complex equipment, but it did require excellence in experimentation together with a clear vision of the aims—and it was the precision and quality of Otto's research that made him so successful. His first major paper (1953) showed that dry lichens could withstand temperatures

above 70°C—in fact, up to 101°C. In a later study (1966), he demonstrated that hydrated lichens rarely survive above 35°C (a lower temperature than most higher plants) and from this contrast, between hydrated and dry, he drew attention to the protective effects of the poikilohydric lifestyle (a so-called “avoidance strategy”). Conversely, a survey of the low temperature limits of 30 species revealed a lower limit of -24°C, somewhat surprisingly for a lichen from sand dunes on the North Sea coast.

Otto adopted CO<sub>2</sub>-exchange as the key parameter to track lichen responses and soon, Otto was using Infra-Red Gas Analysers (IRGAs). His goal was to constantly improve these techniques to a point where they could be used in the field. He achieved this through a career-long collaboration with Heinz Walz, who began his career at Siemens and then (in 1972) moved and set up Heinz Walz GmbH, a company that has remained a world leader in equipment used to study photosynthesis. This relationship resulted in the development of fully conditioned cuvettes (temperature, CO<sub>2</sub> concentration, humidity, and light could be controlled) for monitoring photosynthesis and transpiration, which could be used both in the laboratory as well as in the field. Small H<sub>2</sub>O/CO<sub>2</sub> porometers were also developed that allowed rapid measurements of leaves and lichens. In 1990, Otto and Heinz Walz GmbH were awarded the Adalbert-Seifriz Prize for technology transfer in the area of ecophysiological instrumentation. These techniques were adopted by many other researchers throughout the world.

The following are a selection of the major advances in lichen ecophysiology achieved by Otto:

*Field studies:* His studies on the photosynthetic activity of *Ramalina maciformis* (his favourite lichen by far) in the Negev Desert are classics, and his figure depicting the early morning “gulp” of photosynthesis, is probably one of the best-known results in lichen ecophysiology. Ernst-Detlef Schulze, who was one of Otto’s doctoral students at that time, collaborated on this research; he went on to be head of the Max-Planck Instituts für Biogeochemie. Over time, Otto extended this work to other biomes including Alaskan tundra, New Zealand rain forest, Portugal, Namibia and the Panamanian tropical forest.

*Humidity:* One of Otto’s early results in the Negev indicated that *R. maciformis* could regain positive net photosynthesis (NP) by hydration from humid air alone. This topic became a life-long interest for him, and he demonstrated that this was a property possessed by green algal lichens but not cyanobacterial species. It is now clear that this hydration by humid air is not a laboratory artifact, but rather has many ecological implications.

*Thallus water content:* Another life-long interest of Otto’s was analysis of the influence of thallus water content on NP in lichens, and the demonstration that many showed a depression in NP at high thallus water contents, the so-called “suprasaturation effect”. Otto found, by applying high CO<sub>2</sub> concentrations, that this depression was most likely due to increased diffusion resistances caused by water blockage at high water contents. However, because the diffusion of water vapour and CO<sub>2</sub> do not follow the same pathways in lichens, it is not possible to determine CO<sub>2</sub> diffusion resistances using the techniques from higher plants. Otto solved this problem elegantly by measuring NP first in normal air (80% nitrogen) and then in helox (the nitrogen is replaced by helium). CO<sub>2</sub> diffuses at different rates in nitrogen and helium, and this allows the actual resistances to be measured. It took months of preparation, but the measurements were successful, and this work remains the only exact determination of diffusion resistances in lichens.

*Annual productivity:* After his retirement in the early 1990s, Otto developed the so-called Klapp-cuvette, a system that automatically measured lichen CO<sub>2</sub>-exchange every 30 minutes. Some of his data sets were over a year in length! This work remains the best long-term measurements of lichen NP, and through these investigations he was able to produce the first solid estimates of annual carbon gain for lichens in their natural environment. In addition, two other major conclusions stand out. First, that suprasaturation could have a major impact on carbon gain: lichens without it (eg: *Cladonia convoluta*) had high net photosynthetic rates under very wet conditions (heavy rain)



whilst other species (eg *Lecanora muralis*), which have a very severe depression under wet conditions, made very little carbon gain under these conditions. Second, further analysis of the data sets also revealed that some species could fully acclimate their respiration to temperature, so that carbon loss was reduced in warmer months.



Otto in 2009 during a visit to France with Jayne Belnap (Photo: Jayne Belnap)

*Antarctica:* Otto's interest and skills in temperature effects and CO<sub>2</sub> exchange prompted Vernon Ahmadjian to invite him to assist with the first gas exchange measurements of Antarctic lichens in the field by the USA research team in 1966. Although Otto never returned to Antarctica, one of his research assistants at Würzburg, Ludger Kappen, became the world leader in photosynthetic studies of Antarctic lichens, and was later head of the Instituts für Polarökologie an der Universität Kiel.

*Biological soil crusts:* following a sabbatical leave with Jayne Belnap in Utah in 1985, Otto became very interested in soil crusts. Together with Jayne, he published "Biological soil crusts: structure, function and management" (Ecological Studies, Volume 150, 2001), which effectively became the bible for soil crust studies, and underpinned a massive resurgence internationally in the ecology and performance of soil crusts. As a result, soil crusts went from being almost unknown to a major research field.

Although we see Otto as a lichenologist, he was also a major force in studies on higher plant ecophysiology. Approximately half of his publications are on higher plants, and his work included important studies such as (1) the first demonstration that humidity influenced stomatal opening in leaves; (2) demonstration of the factors influencing leaf temperature in desert plants; and (3) a landmark investigation of forest decline in Germany.

In all, Otto published over 360 papers and, in addition, he was Founding Editor and Chief Editor of the Springer series, Ecological Studies, with 230 volumes completed. He also served as Editor or co-editor for the journals *Oecologia* (1970 to 2007), *Flora* (since 1964), *Trees* (1986 to 1998), *Photosynthetica* (1967 to 1995) and *Botanica Acta* (1987 to 1991). His skill as an editor cannot be underestimated.

It is no surprise that Otto received many honours, as befits such a successful research life. Those particularly relevant to lichenologists are his honorary membership in the British Lichen Society (1991) and his award of the Acharius Medal of the International Association for Lichenology (1992). In addition, three lichen species bear his name (*Peltula langei*, *Hubbsia langei* and *Jackelixia ottolangei*). Further, he received, in 2009, the award of Eminent Ecologist from the Ecological Society of America, the first person from outside the USA to receive this honour. Not to be forgotten is Otto's favourite, and one that pleased him immensely: the naming of Lange Peak, a 2435m high mountain in the Lyttelton Range, Admiralty Mountains, Northern Victoria Land, Antarctica, which commemorated his research at Hallett Station, 1966.

A list of Otto's publications, as well as more information about Otto's honours and awards, in the publication celebrating his 80<sup>th</sup> Birthday by Burkhard Büdel (*Flora* 202:590-607, 2007).

Otto is survived by his wife, Rose, and their two daughters, Annette and Ulrike. Otto passed away on 14<sup>th</sup> August, 2017, peacefully after a sudden and unexpected illness. His passing was a shock to everyone; he will be greatly missed, but remembered as a great lichenologist.

Thomas Allan Green

## PERSONALIA

### PROF. DAVID RICHARDSON REAPPOINTED TO COSEWIC

**Prof. David Richardson** has received a letter from the Minister of Environment and Climate Change of Canada reappointing him to COSEWIC (**Committee on the Status of Endangered Wildlife in Canada**) where he serves as a Co-chair of the Mosses and Lichens Specialist Subcommittee. He is also a member of the Species Assessment Committee which meets twice a year and makes recommendations to the Minister as to whether a species of endangered wildlife (animals or plants) should be designated Endangered, Threatened, Special Concern or Not-At-Risk as part of SARA, the Species at Risk Act.

For more details see

<http://www.cosepac.gc.ca/default.asp?lang=En&n=A9DD45B7-1#>  
<<http://www.cosepac.gc.ca/default.asp?lang=En&n=A9DD45B7-1>>



Prof. David Richardson



## NEW PHD THESIS FROM UNIVERSITY OF BERGEN

On October 6, 2017, **Martina Zahradníková**, University of Bergen, University Museum, Department of Natural History, Bergen, Norway, successfully defended her thesis *Taxonomy and phylogeny of the family Fuscideaceae (Umbilicariales, Ascomycota) with special emphasis on Fuscidea*.



Martina Zahradníková

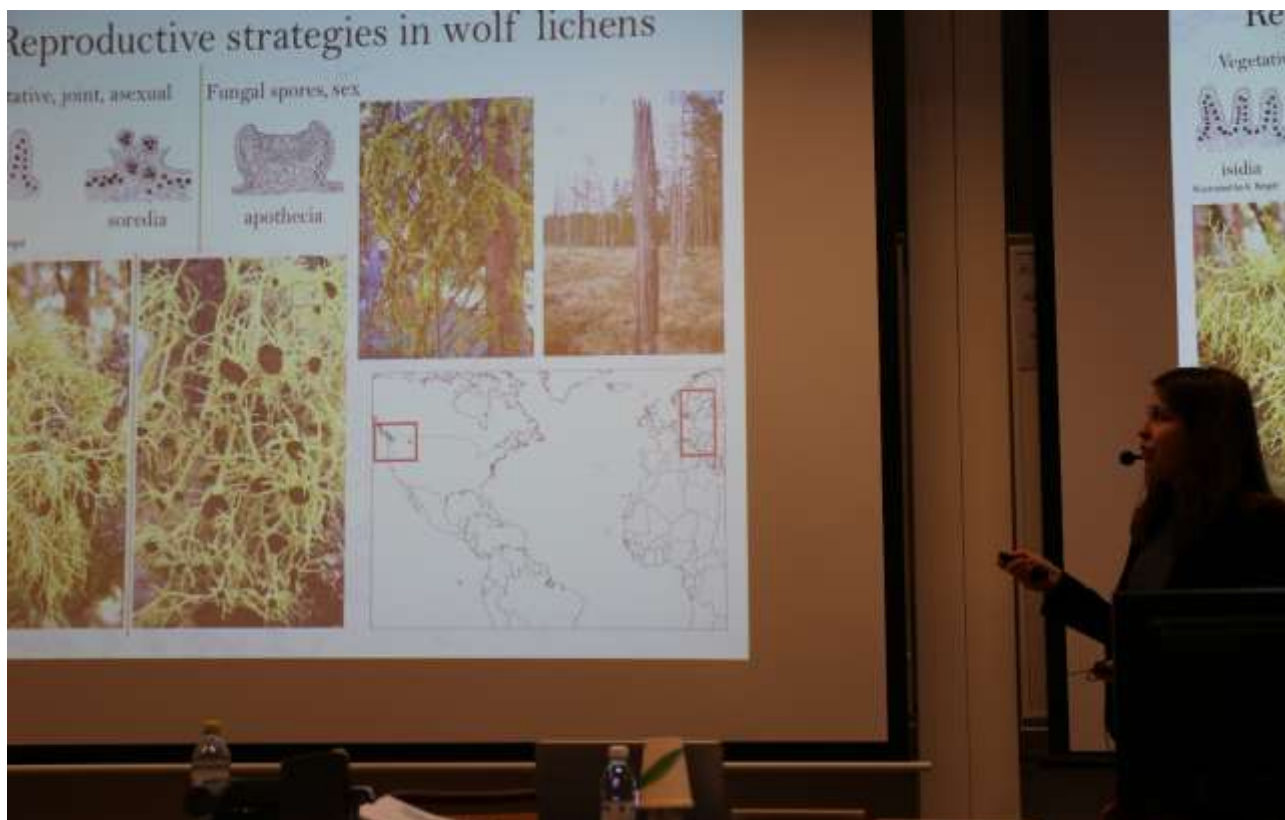
Her supervisors were Prof. Tor Tønsberg and Associate Prof. Heidi Lie Andersen, both faculty at the University of Bergen. The opponents were Associate Prof. Mika Bendiksby, NTNU University Museum, Department of Natural History, Trondheim, Norway; and Prof. Mats Wedin, The Swedish Museum of Natural History, Stockholm Sweden.

*Tor Tønsberg*

## NEW PHD THESIS FROM SWEDISH UNIVERSITY OF AGRICULTURAL SCIENCES

**Veera Tuovinen** successfully defended her PhD thesis, “Hidden complexity of lichen symbiosis”, on 24 March, 2017 in Uppsala, Sweden.

The thesis gives insight into the functionality, composition and reproduction of lichens from the fungal perspective. Four manuscripts are included in the thesis. *Inter alia*, genomic and transcriptomic data were used to identify the fungal partners in lichen thalli, and a fluorescent *in situ* hybridization (FISH) method for the simultaneous visualization of the different fungi was



Veera Tuovinen

developed. Confocal microscopy was used to visualize *Cyphobasidium*, tremelloid fungi and Lecanoromycetes in the cortex of lichens in the family Parmeliaceae. In addition, the mating loci of the genus *Letharia* were characterized in detail. The thesis was supervised by Göran Thor, with Anders Dahlberg, Stefan Ekman and Hanna Johannesson as co-supervisors. The opponent was Elisabeth Arnold.

Göran Thor

## NEW PHD THESIS FROM UPPSALA UNIVERSITY

On the 1st of June 2017, **Ioana Onut Brännström** successfully defended her PhD thesis, “The puzzle of lichen symbiosis: pieces from *Thamnolia*”, in Uppsala, Sweden.

In her thesis, Ioana used the worm lichen *Thamnolia* as a study system. *Thamnolia* species are expected to reproduce only vegetatively through thallus fragments. When the genetic architecture of the mating locus of the symbiotic fungal partner was analyzed with genomic and transcriptomic data, a sexual self-incompatible lifestyle was revealed. However, a screen of the mating-type ratios across natural populations detected only one of the mating types, suggesting that *Thamnolia* has no potential for sexual reproduction because of lack of mating partners. Genetic data based on molecular markers revealed the existence of three morphologically cryptic *Thamnolia* lineages. One lineage was found in the tundra region of Siberia, shorelines of Scandinavia, and Aleutian Islands. The second lineage is allopatric with the latter, and



Ioana Onut Brännström



appears to be highly clonal; only two haplotypes were found across the alpine region of central and southeastern Europe. The third lineage is sympatric with the other two, has a worldwide distribution, and although highly clonal, shows a recombinant population structure. Investigation of *Thamnolia*'s green algal population showed that in different localities, different algal genotypes are associated with the same fungal genotype. Furthermore, data suggest that *Thamnolia* carries several algal genotypes within its thalli, and shares them with other distantly related, but ecologically similar, fungal species.

The thesis was prepared under the supervision of Hanna Johannesson and Leif Tibell. The opponent was Anne Pringle, from the University of Wisconsin-Madison.

Hanna Johannesson

## NEW IAL MEMBERS

**Dr. G. Swarnalatha**, Botanical Survey of India, (Deccan Regional Centre), Ministry of Environment, Forests & Climate Change, 336/1, Attapur, Hyderguda, Hyderabad - 500048, Telangana, INDIA, e-mail: [swarnalathaginnaram@gmail.com](mailto:swarnalathaginnaram@gmail.com)

## LIST OF SOCIETIES

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Journal: *Australasian Lichenology*, web-page: <http://nhm2.uio.no/botanisk/lav/RLL/AL/>

**Brazil:** Grupo Brasileiro de Liqueólogos (GBL). Info: Marcelo P. Marcelli, Instituto de Botânica, Seção de Micologia e Lichenologia, Caixa Postal 4005, São Paulo – SP, Brazil 01061-970. Fax: (+55)-11-6191-2238, phone: (+55)-11-5584-6304 (institute), 218-5209 (home), e-mail: [mpmarcelli@msn.com](mailto:mpmarcelli@msn.com)

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Journals: *Herzogia*, *Herzogiella*, web-page: <http://www.blam-hp.eu/herzogia.html>

**Colombia:** Grupo Colombiano de Liqueología (GCOL). Info: Bibiana Moncada. E-mail: [bibianamoncada@gmail.com](mailto:bibianamoncada@gmail.com); web page: <http://grupocolombianodeliquenologia.blogspot.com/>

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Journal: *Bryonora*, web-page: [http://botanika.prf.jcu.cz/BLS/bryonora\\_en.php](http://botanika.prf.jcu.cz/BLS/bryonora_en.php)

**Ecuador:** Grupo Ecuatoriano de Liqueología (GEL). Info: Alba Yanez, e-mail: [albayanez8@gmail.com](mailto:albayanez8@gmail.com); web page: <http://grupoecuadorianodeliquenologia.blogspot.com/>

**Estonia:** Mycology Society, Estonian Naturalists' Society, Struve 2, Tartu 51003, Estonia, web-page: <http://mukoloogiauhing.ut.ee/avaleht> (in Estonian). Chairman: Külli Kalamees-Pani, e-mail: [kulli.kalamees-pani@ut.ee](mailto:kulli.kalamees-pani@ut.ee)

Journal: *Folia Cryptogamica Estonica*, web page: <http://www.ut.ee/ial5/fce/>

**Finland:** Lichen Section, Societas Mycologica Fennica. C/o: Botanical Museum (Lichenology), P.O. Box 7, FI-00014, Helsinki University, Finland. Info: Teuvo Ahti, e-mail: [teuvo.ahiti@helsinki.fi](mailto:teuvo.ahiti@helsinki.fi)

Journal: *Karstenia*, web-page: <http://www.karstenia.fi/index.php>

**France:** Association française de Lichénologie (AFL). Président: Jean-Pierre Gavériaux, e-mail: [jp.gaveriaux@numericable.fr](mailto:jp.gaveriaux@numericable.fr), web-page: <http://www.afl-lichenologie.fr>.

Bulletin: *Bulletin d'Informations de l'Association française de lichénologie* (deux Bulletins annuels), web-page: [http://www.afl-lichenologie.fr/Afl/Publications\\_afl.htm](http://www.afl-lichenologie.fr/Afl/Publications_afl.htm)

**Great Britain:** The British Lichen Society (BLS). C/o: Department of Botany, The Natural History Museum, Cromwell Road, London SW7 5BD, UK. President: Dr. A. Pentecost. Secretary: P.A. Wolseley. For membership go to <https://my.britishlichensociety.org.uk/>, Society web-page: [www.britishlichensociety.org.uk/](http://www.britishlichensociety.org.uk/)

Journal: *The Lichenologist* (accessible via Cambridge Core <https://www.cambridge.org/core/journals/lichenologist>); *British Lichen Society Bulletin*

**India:** Indian Lichenological Society. Address for correspondence: Lichenology Laboratory; CSIR-National Botanical Research Institute; Rana Pratap Marg, Lucknow-226001, U.P., India. President: Dr. D.K. Upreti. Secretary: Dr. Sanjeeva Nayaka, e-mail: [indianlichenology@gmail.com](mailto:indianlichenology@gmail.com), webpage: <http://www.indianlichenology.com>

**Italy:** Società Lichenologica Italiana (SLI). President: Sonia Ravera, via del Labaro 54, I-00188 Roma, e-mail: [presidente@lichenologia.eu](mailto:presidente@lichenologia.eu), web-page: <http://www.lichenologia.eu/>

Journal: *Notiziario della Società Lichenologica Italiana* (in Italian), web-page: [http://www.lichenologia.eu/index.php?procedure=pubbl\\_not](http://www.lichenologia.eu/index.php?procedure=pubbl_not)

**Japan:** The Japanese Society for Lichenology (JSL). President: Kunio Takahashi, contact email (secretary): [kawahara@kansai-u.ac.jp](mailto:kawahara@kansai-u.ac.jp), web-page: <http://www.lichenology-jp.org/index.php/en/>

Journal: *Lichenology*, web-page: <http://www.lichenology-jp.org/index.php/en/journal/>

Lichenological Society of Japan (LSJ). Secretary: Nobuo Hamada, e-mail:

[MXI00715@nifty.com](mailto:MXI00715@nifty.com), web-page: <http://home.hiroshima-u.ac.jp/lichen/aboutlsj.htm>

**The Netherlands:** Dutch Bryological & Lichenological Society (Bryologische +Lichenologische Werkgroep, BLWG). Contact: L.B. (Laurens) Sparrius, contact e-mail: [sparrius@blwg.nl](mailto:sparrius@blwg.nl), web-page: <http://www.blwg.nl>

Journals: *Buxbaumiella* and *Lindbergia*, web-pages: [www.buxbaumiella.nl](http://www.buxbaumiella.nl) (open access) and [www.lindbergia.org](http://www.lindbergia.org) (open access)

**Nordic Countries:** Nordic Lichen Society (Nordisk Lichenologisk Förening, NLF). President: Ave Suija, e-mail: [ave.suija@ut.ee](mailto:ave.suija@ut.ee), web-page: <http://nhm2.uio.no/lichens/nordiclichensociety/>

Journal: *Graphis Scripta*, web-page: see NLF web page

**North America:** American Bryological and Lichenological Society, Inc. (ABLS). President: Catherine LaFarge, contact e-mail: [clafarge@ualberta.ca](mailto:clafarge@ualberta.ca), web-page: <http://www.abls.org/>

Journals: *Evansia*, web-page: <http://www.bioone.org/loi/evia>; and *The Bryologist*, web-page: <http://www.bioone.org/loi/bryo>

**North America, Northwest:** Northwest Lichenologists (NWL). Info: Bruce McCune, contact e-mail: [bruce@salal.us](mailto:bruce@salal.us), web-page: <http://www.nwlichens.org>  
Newsletter: *Northwest Lichenologists Newsletter*, web-page: <http://www.nwlichens.org>

**North America, California:** The California Lichen Society (CALS). President:, contact e-mail: [president@californialichens.org](mailto:president@californialichens.org), web-page: <http://californialichens.org/>  
Bulletin: *Bulletin of the California Lichen Society*, web-page: [http://californialichens.org/?page\\_id=15](http://californialichens.org/?page_id=15)

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**Poland:** Lichenological Section of the Polish Botanical Society (Polskie Towarzystwo Botaniczne). President: Martin Kukwa, e-mail: [dokmak@ug.edu.pl](mailto:dokmak@ug.edu.pl), web-page: <http://www.porosty.varts.pl/>

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Journal: *Bulletin Slovenskej botanickej spoločnosti*, web-page: <http://sbs.sav.sk/SBS1/content.html>; <http://ibot.sav.sk/lichens/>

**South America:** Grupo Latino Americano de Liqueólogos (GLAL). Info: Susana Calvelo, e-mail: [scalvelo@crub.uncoma.edu.ar](mailto:scalvelo@crub.uncoma.edu.ar)  
Journal: *GLALIA*, web-page: <http://nhm2.uio.no/botanisk/lav/RLL/GLALIA/>

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Journal: *Clementeana*, web-page: <http://www.ucm.es/info/seliquen/cl.htm>

**Sweden:** Svensk Lichenologisk Förening (SLF). President: Martin Westberg, e-mail: [martin.westberg@nrm.se](mailto:martin.westberg@nrm.se), web-page: <http://www.sbf.c.se/slf/>  
Bulletin: *Lavbulletin*, web-page: <http://www.sbf.c.se/slf/Bulletinen.html>; see also *Svensk Botanisk Tidskrift*, web-page: <http://www.sbf.c.se/index.php?id=122>

**Switzerland:** Swiss Association of Bryology and Lichenology (BRYOLICH). President: Ariel Bergamini, e-mail: [praesidium@bryolich.ch](mailto:praesidium@bryolich.ch), web-page: [http://www.bryolich.ch/index\\_en.html](http://www.bryolich.ch/index_en.html)  
Journal: *Meylania*, web-page: [http://www.bryolich.ch/meylania/meylania\\_en.html](http://www.bryolich.ch/meylania/meylania_en.html)

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## **The cover-page illustration**

Representative of *Cora* (*Basidiomycota: Agaricales: Hygrophoraceae*) – a megadiverse lichen  
genus from the tropics. (Photo: Martin Kukwa).