

Peatlands

International

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Bringing Lowland Raised Bogs to Life - Cumbrian BogsLIFE+ project 2014-2019
Strategy for Responsible Peatland Management - Sixth, edited edition out
Creating A New Approach to Peatland Ecosystems - Project CANAPE

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16th International **Peatland** Congress

*Peatlands and Peat - Source of
Ecosystem Services*

Tallinn, Estonia

14 - 20 June 2020

www.ipc2020.com

Editorial

What we should expect in 2020 and what your role will be:

We have reached October and, as you will have easily calculated, there are only two months left before we enter 2020, a new decade.

What can we expect from the next 10-20 years? Climate is at the forefront of the global discussion, and we peat and peatland people are at the centre of it, either in conservation or in our daily business. What is the impact of our activities and is there a way to guarantee both, our professional future and way of living, and the future of our planet? I think all are involved in this discussion on a daily basis, and it is time for true dialogue and compromises, instead of continuous black-and-white accusations.

One possibility for dialogue is next year's International Peatland Congress. This will be held



from 14 to 20 June in Tallinn, Estonia, a small but incredibly beautiful, active and modern country on the shores of the Baltic Sea. Estonia even offers digital citizenship and is full of opportunities for entrepreneurs. There, we will be shown truly beautiful pristine peatlands, such as the Viru bog, Lahemaa and Soomaa, and the stunning old town of Tallinn City.

The call for abstracts will be out very soon. We also still welcome additional editors to the Scientific Committee (great career boost!). Visit www.ipc2020.com and www.visitestonia.com in the meantime to get familiar with all options for travelling - and (if you own a company) sponsoring our important event.

Have you already downloaded the new Strategy for Responsible Peatland Management? This important document was firstly launched in 2010 following an extensive stakeholder consultation process. Since then, time has flown, and thus an

Peatlands International is the global magazine of the International Peatland Society (IPS). It provides the more than 1,400 individual, institute and corporate members of the Society with up-to-date information on peat and peatland matters, reports and photos of conferences and workshops, background reports and publication reviews.

To serve all of our members, we provide always a good balance between economic, social and environmental points of view. To receive Peatlands International in your email every three months, visit www.peatlands.org/join-us and sign up as a member or subscribe for € 60/year.

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Nisulankatu 78 B, 40720 Jyväskylä
phone: +358 40 418 4075
email: info@peatlands.org

Editor-in-Chief
Gilbert Ludwig, IPS Secretary General
Assistant to the Editor-in-Chief & Layout
Susann Warnecke, IPS Communications
Manager

Editorial Board
Rachel Carmenta, UK; Lydia Cole, UK;
Catherine Farrell, Ireland; Marie Kofod-
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Are you interested? Contact
susann.warnecke@peatlands.org.

Cover: Peatland profile by Gilbert Ludwig

www.peatlands.org/publications

update has been badly needed. Discussions at two Congresses and email consultation were guided by Donal Clarke and Jack Rieley, and now we can present a sixth, edited edition. Have a look, or download or order your copy at: <https://peatlands.org/peatlands/responsible-management>.

What else to expect in 2020? The IPS will further intensify its stakeholder dialogue and involvement in international conventions. For this, we need experienced and not-yet overly busy specialists - and their networks. In June, there will be elections to the IPS Executive Board. This is the body that not only oversees activities of the IPS but takes on a great share of the actual work of the Society. Are you interested in becoming a member and thus an important part of the IPS' inner circle?

Alternatively, we are continuously looking for members of our commissions and their expert groups. Visit the "About us" menu at www.peatlands.org and contact us if you are ready to join in. Generation change and more diversity in background, gender and age are needed and welcome - so do not hesitate to apply!

Susann Warnecke

IPS Communications Manager
susann.warnecke@peatlands.org

Mires and Peat

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of IPS and IMCG. Submit your paper!
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IPS Secretariat
Nisulankatu 78 B
40720 Jyväskylä
Finland
peatlands.org



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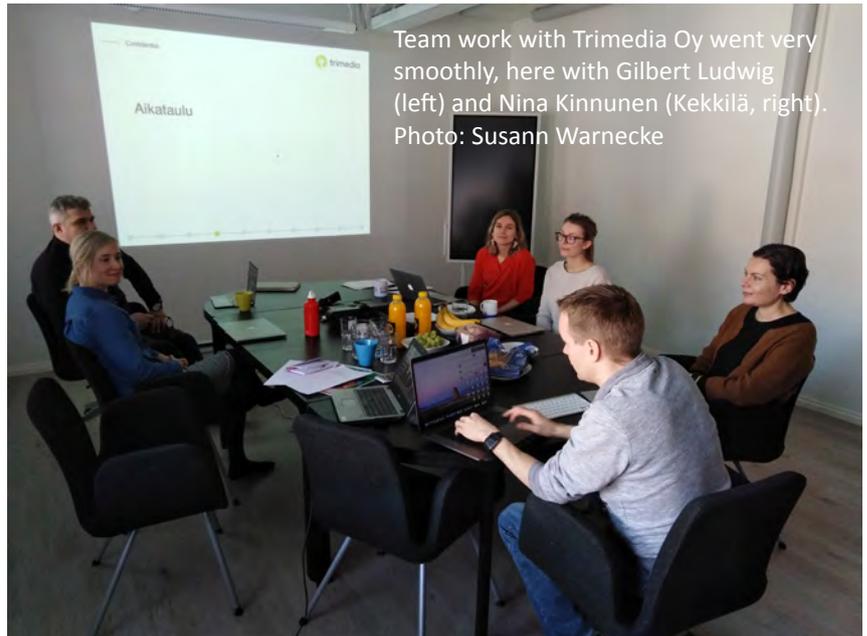
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Have you visited the new IPS website?

The IPS launched its new website in June. Have you had time to visit our new online platform? The long-awaited launch of www.peatlands.org with a new design and layout was preceded by a two-month consultation period with the media company Trimedia Oy, also located in Jyväskylä, just a few minutes from the IPS Secretariat.

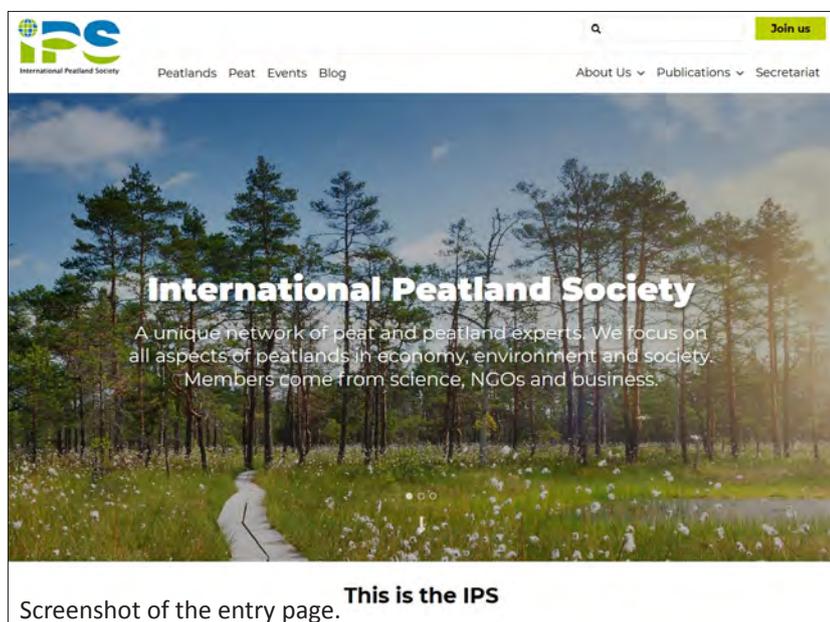
During this time, dozens of selected IPS members from all around the globe were interviewed by phone, meetings took place between the Secretariat and the Finnish communications and technical specialists, and ideas were born and buried - but, in the end, a convincing concept for visuals and content was developed.

Then it was time for our expert groups to provide knowledge and data, which mostly took place



Team work with Trimedia Oy went very smoothly, here with Gilbert Ludwig (left) and Nina Kinnunen (Kekkilä, right). Photo: Susann Warnecke

via shared online documents. With the arrival of summer, we also consulted the literature and the Internet to gain a balanced overview of the most important peat(land) topics. More will come in over the following weeks and months.



Screenshot of the entry page. **This is the IPS**

Now we can proudly present a fresh design that focuses, on the one hand, on basic information about peat and peatlands for a broad range of audiences and, on the other hand, on specialist scientific and practical data, which are of great importance to our members and external decision makers.

Of course, we also inform visitors about the IPS as an organization, and its bodies and tasks, and how people can get involved. We truly believe that, although face-to-face communication remains extremely important, online activities and



Peat formation
The habitat requirements for peat initiation and accumulation are similar in every geographical location (waterlogging, low pH, low nutrient availability, low oxygen supply, reduced decomposition rate) but the physical and chemical characteristics differ according to specific site characteristics of landscape area and topography, climate, water depth and flow, nutrient availability and biogeographical availability of plant species.
[Read More →](#)

Peat for horticulture
Peat is used in horticulture, as a soil improver and ingredient of growing media.
The volume used annually is about half that of fuel peat. Germany and Canada account for over half of horticultural peat extraction.
Other important peat production countries are the Baltic states, Finland, Ireland and Sweden but also Chile and Argentina.
[Read More →](#)

Peat for heat and power
Peat has been an important local or regional energy source in Finland, Ireland and Sweden. (Doosten & Clarke, 2002. Wise Use of Mires and Peatlands).
Due to environmental pressures, increasing carbon trade prices and the climate targets the amount of peat for energy has declined drastically during the last few years.
[Read More →](#)

Peat info section.

under one page: www.peatlands.org/publications. Have you considered being an author or even sitting on an editorial board?

We are also continuing with the successful Holvi bookstore for printed publications at: www.holvi.com/shop/peatlands. Sales have indeed increased to over €1,000 since last year - thanks to our book enthusiasts.

Let's look at events, the core of IPS activities: maps, photos and single pages are provided for each event, which can be easily shared, as well as being

much more visually attractive than before. You can also decide whether you would like to see member-only events or the full range on offer, both from the past and in the future, and filter by countries and organisations at: www.peatlands.org/events.

You will also find sections on IPS grants, awards and honorary members, as well as contact information and annual reports from our National Committees and Commissions, details of the IPS Secretariat, and important expert group information



interactivity will continue to increase at all levels.

The document database for proceedings, articles and presentations is now available to anyone without the need for a password - this makes it easy for you to find the information you need at any time. Have a look at www.peatlands.org/publications/document-database and try out the comprehensive search tool.

Information on our publications, such as Peatlands International, the Mires and Peat Journal and Peatland Snippets, is bundled

Document Database Scientific papers.

Search from Publications

Title of the paper: Authors: Year:

Book (published in): Venue: Keywords: **SEARCH**

Responses of peat carbon at different depths to simulated warming and oxidization
Authors: Liangfeng Liu and Hual Chen
Book: Proceedings of the 15th International Peat Congress
Year: 2016
Venue: Kuching

Mineral variation across an estuarine raised bog in Wales
Authors: Fred M. Slater
Book: Proceedings of the 15th International Peat Congress
Year: 2016
Venue: Kuching

Long-term disturbance dynamics and resilience of tropical peat swamp forests
Authors: Lydia E.S. Cole, Shonil A. Bhagwat and Katherine J. Willis
Book: Proceedings of the 15th International Peat Congress
Year: 2016
Venue: Kuching

Gauging differences between blanket and raised bogs using legacy data
Authors: Stephen James Chapman
Book: Proceedings of the 15th International Peat Congress
Year: 2016
Venue: Kuching

Diversity in the physicochemical properties of tropical peat in Sarawak, Malaysia
Authors: Norika Kato, Nagamitsu Mae, Lulie Mellong, Sonoko D. Bellingrath-Kimura, Haruo Tanaka, Masahiro Maeda, Zuhilmy Abdullah Mohd and Akira Watanabe
Book: Proceedings of the 15th International Peat Congress
Year: 2016
Venue: Kuching

Characterization of organic carbon compounds of tropical peat from various land management types
Authors: Kõnnonen Mari, Jauhainen Jyrki, Laiho Riisa, Spetz Peter, Kusin Kitso, Limin Suwido and Vasander Harri
Book: Proceedings of the 15th International Peat Congress
Year: 2016
Venue: Kuching

via the “About us” menu on the top right of the following webpage: www.peatlands.org/about-us/ organisation. We hope you will find these useful in your daily work.

Last but not least, individuals and organisations can easily join as members via an online membership form - we simply forward all incoming applications to the National Committee in your country, or accept new members from other countries directly via the Executive Board.

What are we planning for the future? This month, the IPS blog and a section for open positions were added to further increase interactivity. You are welcome to participate and send interesting submissions to the Secretariat via susann.

warnecke@peatlands.org or gilbert.ludwig@peatlands.org at any time. Photographs of bogs, on the one hand, and peat in use, on the other, are always welcome for both the website and our PDF publications.

We also especially want to develop the sections on peat and peatlands and would appreciate any valuable input. Read, write and share - our network is only as strong as its parts.

Susann Warnecke

IPS Communications Manager
susann.warnecke@peatlands.org

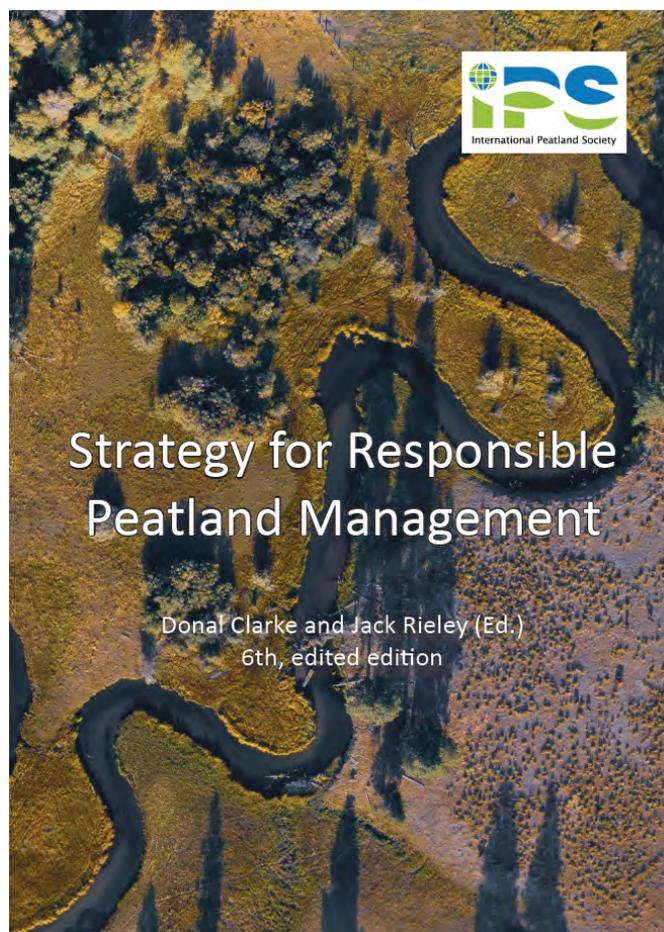
Strategy for Responsible Peatland Management - sixth, edited edition out

On 15 October, the IPS launched the sixth, edited edition of its Strategy for Responsible Peatland Management (SRPM). The original document was published in 2010 as part of the IPS certification project which started at the 2008 International Peatland Congress in Tullamore.

Since 2012, Donal Clarke and Jack Rieley have reviewed the document, with input from two Congresses and an extensive stakeholder consultation involving email and face-to-face communication. The result is a 35-page booklet which is of great importance to all who deal with peat or peatlands in one way or another.

The Strategy covers, in addition to an executive summary and an introductory section, strategic objectives and actions for biodiversity, hydrology and water regulation, climate and climate change processes, economic activities, after-use, rehabilitation and restoration, human and institutional capacity, information dissemination, engagement of people and good governance.

The booklet can be downloaded at: www.peatlands.org/peatlands/responsible-management. It can also be ordered in print for €5



including worldwide shipping from the IPS online store: <https://holvi.com/shop/peatlands>.

Wanted: new members for the IPS Executive Board!

As you may know, the IPS will hold elections to its Executive Board next June. There will be seven vacant positions: for the President, First and Second Vice President as well as four Ordinary Members. According to the Statutes of the IPS, nominations for these positions must come from the National Committees by **14 February 2020** at the latest.

This is your chance to get involved in, obtain real insider knowledge, network and influence the future of the IPS! In practice, all National Committees can submit proposals (Sweden, Malaysia, the UK and Germany only for the

President/Vice President roles). Detailed rules can be found below. Contact your National Committee and convince them that you are the best candidate.

Proposals should include a one-page presentation of the nominated person and a clear statement for which position(s) he/she is being proposed. Current Executive Board members are (term in brackets):

Presidents (2016-2020)

Gerald Schmilewski, Germany - will become vacant
Guus van Berckel, Netherlands (1st Vice) - post



Frank Tamminga, Gilbert Ludwig, Jack Rieley, Donal Clarke, Guus van Berckel, Lulie Melling, Sabine Jordan, Erki Niitlaan, Samu Valpola and Gerald Schmilewski (left to right). Photo: Susann Warnecke

will become vacant
Samu Valpola, Finland (2nd Vice) - post will become vacant

Ordinary Members (2016/2018-2020)

Donal Clarke, Ireland - post will become vacant
Paul Short, Canada - post will become vacant
Erki Niitlaan, Estonia - post will become vacant
Zhengping Wang, China - post will become vacant

Ordinary Members (2018-2022)

Sabine Jordan, Sweden - continuing
Lulie Melling, Malaysia - continuing
Jack Rieley, United Kingdom - continuing
Frank Tamminga, Germany - continuing

Rules for the Executive Board

Statutes of the IPS

So as to ensure an equitable distribution of national representation, there can be only one Ordinary Member from any one National Committee on the Executive Board at any given time. The President and the two Vice Presidents should come from different countries, but can be from the same National Committee as one of the Ordinary Members.

Nominations for any position on the Executive Board must come from a National Committees at least four months prior to the Annual Assembly and the nominees must be IPS members residing in the country in which the National Committee is located.

Separate nominations must be made for each position (President, First Vice President, Second Vice President, Ordinary Member). The same person can be nominated for more than one position, but each nomination must be clearly stated in the nomination papers. When proposing candidates for the Executive Board, National Committees shall ensure that nominees' travel expenses are covered.

Internal Regulations

All candidates are asked to prepare a one-page written presentation of him/herself including qualification for the candidacy, and to speak for no more than three minutes at the Assembly.

Allan Robertson Grants 2020

The Allan Robertson Grants 2020 will be dedicated to **participants in the 2020 International Peatland Congress** in Tallinn.

As in the past, students and young professionals (typically under the age of 30) can apply.

We will cover travelling costs and/or registration fees to the Congress - note that there will also be a special pre-Congress excursion for students. The grants traditionally amount to €500 each.

More details will be revealed at www.peatlands.org and in Peatland Snippets later this autumn.

The application period will last until **31 January 2019** and winners will be informed in March.



Photo: Artem Beliaikin

In memoriam: Claes Rülcker 1956-2019



It is with great sadness that we must inform you that Claes Rülcker, Managing Director (MD) of Svensk Torv (Swedish Peat) and the Swedish Peat Research Foundation, passed away on 19 July at the age of 63. Internationally, Claes Rülcker held a position on the

Executive Board of the IPS and was the Swedish representative for Growing Media Europe.

Since the early days, he had a great interest in outdoor activities, forest management and hunting. He pursued this interest while obtaining a master's degree in forestry and even considered starting a career as researcher, but instead he chose to work in the forestry industry.

His excellent ability to communicate with people partly explains his involvement in disseminating research results in the organisation SkogForsk, while, later on his career, he was responsible for PR at a forest company. When Claes Rülcker started to work as MD for the Peat Producers' Association and the Peat Research Foundation in 2011, one of his first tasks was to improve communication through a modernised webpage and a newsletter. He also initiated the name change to Svensk Torv to widen the scope of the organisation.

It soon became clear to him that the main question to address was the climate issue. Together with his former teacher, Prof. Mats Olsson of the SLU, he started a research

programme which led to a comprehensive report on the climate effects of peatland management and peat use and especially the emissions from drained peatlands. The report has become an important tool in the discussion about the future use of peat.

In his contacts with politicians and representatives from NGOs, he gave a very knowledgeable and serious impression, with the ability to explain difficult questions in a clear and understandable way without compromising the factual basis. He wrote a wide array of information materials for organisations, everything from leaflets for the lay public and newspaper opinion pieces to public consultation responses.

Within the organisation, he quickly became a well-liked focus point. His personality was warm and open, while he was known to be a good listener and someone who recognised others. He was without prestige and could admit to his own shortcomings, while being unafraid to state his case when he felt he was right. In the course of his leadership, Svensk Torv adopted a new structure and developed into a modern organisation.

About one and a half years ago, Claes was diagnosed with cancer. Between treatments, he spent much of his time in the forest he owned and took great pride in its proper management. He was an artisan and had a small carpentry workshop at his home in Insjön, where he had new projects going on all the time. Even if his prospects for the future were bad, he was determined not to let the disease interfere any more than necessary with the limited time he had available. We will miss a truly outstanding friend and colleague and remember his positive nature.

Torbjörn Claesson & Ingrid Kyllerstedt

Meeting of IPS Member CEOs in Palanga - Insights

A meeting with the Chief Executives and Managing Directors of principal stakeholders of the IPS was organized in Palanga, Lithuania, on **4 September**, on the verge of the Baltic Peat Producers Forum.

The reason for this meeting was twofold. Firstly, the IPS wished to provide an update about current developments in the Society and on the peatland scene and intensify the dialogue with its stakeholders and members. Secondly, the IPS introduced the idea of “Concept 2050”, which addresses the current challenges regarding opposing trends in demand and the availability of peat for growing media.

Therefore, in order to establish priorities, a stakeholder analysis was performed to:

- identify the needs of key stakeholders/ members
- identify the key themes/actions/projects to satisfy those needs
- identify ways of implementation.

A total of 17 participants from 14 different stakeholder companies or associations was present. Additional participants included four specialists from the IPS and Growing Media Europe (GME), as well as the IPS Secretariat.

IPS Secretary General Gilbert Ludwig gave an introduction about the IPS, and its activities and current key challenges. In his speech, he also called for increased cooperation within stakeholders and commitment to provide data



and information. However, Gilbert Ludwig also stressed the neutral standpoint of the IPS as an NGO: that the Society stands for the “wise use and responsible management of peat and peatlands” and cannot be a lobby organisation.

In a second presentation, Bernd Hofer gave a thorough introduction to Concept 2050. In summary, the principal issues are as follows:

Increasing demand for peat for growing media:

The growing media industry is expected to satisfy a continuously growing demand for growing media, which for the time being contains peat.

Decreasing availability of peat:

The argument from governments, administrative bodies and NGOs, in the context of the 2015 Paris agreement on climate, that the industrial use of

peat should be reduced to zero in the foreseeable future and that, as a consequence, future growing media will be exclusively peat-free.

General consensus was reached that the IPS, as an internationally renowned multi-stakeholder organization, must play a key role in improving the quality of this discussion by convening relevant stakeholders and knowledge providers, by creating a platform for exchanging fact-based arguments on these issues, and by recognizing legitimate differences in participants' interests.

For the stakeholder analysis, the participants were divided into four groups and shown seven key topics, as identified in an IPS specialist workshop held in Finland the week before. Of these, three were selected by the participants as priorities:

- Importance of peat for growing media
- LCA (life cycle analysis) and CO₂ compensation
- Improving stakeholder dialogue

In addition, each group took part in an open discussion, giving them the opportunity to add other significant topics or actions. These included the, among others, collection and exchange of data, the future importance of peat alternatives



In total, 190 persons attended the Baltic Peat Producers Forum this year. Photo: Susann Warnecke

and recycling growing media. The subjects were discussed in the context of a) problem description, b) reasoning and c) the main actions.

The results of the discussions were sent to all participants. Combined with the outcome of the previous IPS workshop, they will enable the IPS to identify, plan and implement the key tasks and actions needed to achieve the goals of each topic.

In order to achieve further operational goals, more funding will be needed, e.g., by applying for project funding. Planning and implementing fundraising by themselves take up considerable resources, and hence prioritising is key.

As a next step, the IPS will discuss and agree on follow-up actions, about which we will report regularly. In the Society, we are very thankful for the support given by our stakeholders and members, and we would like to see this kind of stakeholder event to become an ongoing tradition - we at least hope to see you in Tallinn in June.

Gilbert Ludwig

IPS Secretary General
gilbert.ludwig@peatlands.org



Group discussions were an essential part of the meeting in Palanga. Photo: Susann Warnecke

Continued research on peat alternatives but no breakthrough

Strong increase in growing media use predicted for Asia

For decades, the International Society for Horticultural Science (ISHS) has been organising biannual symposia on growing media. For the seventh time in a row, the IPS joined the ISHS as co-organiser.

The University of Milan, Italy, was the venue for this year's International Symposium on Growing Media, Composting and Substrate Analysis from **24 to 28 June**. The event topics and the beautiful

city of Milan brought together 180 growing media experts from around the world, representing science, research and industry R&D.

The only inconvenience was the unusually hot and very humid weather, with temperatures ranging between 35 and 40°C - the only factor that the outstanding symposium convenors, Dr. Patrizia Zaccheo, Dr. Constantino Cattivello and Prof. Dr. Francesco Gioffrida had no control over.



ISHS-IPS Milano Participants. Photo: Paula van Ommen

The International Society for Horticultural Science

The ISHS is the world's leading independent organisation for horticultural scientists and covers all branches of horticultural science.

The ISHS was constituted in 1959 and has over 7,000 members from 150 countries and 14 divisions, one of which looks at "protected cultivation and soilless culture" with seven workgroups, two of which address "substrate analysis" and "growing substrates".

As with the IPS, the ISHS organises symposia and congresses. As stated earlier (Schmilewski 2005), the IPS Expert Group on Growing Media (formerly the Horticultural Peat WG, HOPE) and the ISHS Workgroups on Substrate Analysis and Growing Substrates share a common interest in growing media. Knowledge transfer between ISHS and IPS professionals on a global scale is essential to better understand the possibilities and limits of using peat and non-peat materials in growing media based on economic, environmental and social aspects.

In principle, all aspects of growing media were subjects of discussion: from additives to analytical methods, from bacterial colonization to biochar, from composts to cultivation techniques. However, there were a few lectures that were especially future-oriented and particularly interesting for readers of Peatlands International.

Here are four lectures of note.

Chris Blok, from Greenhouse Horticulture, Wageningen University & Research, Bleiswijk, the Netherlands, gave an eye-opening talk on growing media for food and quality of life in the period 2020-2050, in which he focused on the increasing need for peat and other constituents in the manufacture of growing media. Initial funding for this study was granted by the IPS.



Construction of the Duomo di Milano, probably the main attraction in Milan, began in 1386 and it took almost six centuries to complete. It is the largest church in Italy, the third largest in Europe and the fourth largest in the world. The organisers gave participants the possibility to tour the city center. Photo: Gerald Schmilewski.

Growing media in soilless cultivation enable growers to apply water, fertilizers and disease control measures more accurately, resulting in significantly higher crop yields per area unit. His prediction for the increase in future demand is "based on the expected growth of the world population, the expected increase in living standards for most people and the influence of several trends".

Trends for vegetables include the need to address obesity, chronic micro-nutrient deficiencies and product safety. Trends for ornamentals include the appreciation of natural aesthetics and the amelioration of indoor and city climates. General trends include dealing with water scarcity and urbanization. The global growing media market is highly dynamic with the potential to increase fourfold between 2017 and 2050. (Table 1)

For peat alone, Blok predicts a global demand increase from 40 million m³ today to 80 million m³ by 2050. Coconut coir, wood fibre, bark, exfoliated perlite, tuff/soils, composted materials and mineral wool could increase between 413% (soils/tuffs) and 1200 % (wood fibre).

Regarding peat, the question arises as to how future demand will be satisfied if, as we expect, fewer extracting licences will be granted to peat-extracting companies in Europe and elsewhere. However, the question of availability is also valid for most other materials.

Table 1. Per continent market expectation for growing media for the period 2017 to 2050 (Chris Blok).

| | 2017 | 2050 |
|--------------------|-----------------|-----------------|
| | Mm ³ | Mm ³ |
| Europe | 26 | 60 |
| North America | 17 | 60 |
| Asia (China alone) | 7 (4) | 80 (35) |
| South America | 4 | 17 |
| Australia | 2 | 7 |
| Africa | 3 | 20 |
| Total | 59 | 244 |



Chris Blok talking on the future increase of growing media needed globally. Photo: Paula van Ommen

“one country, one system” model results in the modernisation of China’s entire agriculture/ horticulture cultivation system - and that is the aim. This includes building modern greenhouses, the use of peat-based growing media and the use of indigenous or imported constituents, i.e., coconut coir, wood fibre, composted materials, exfoliated perlite and others.

Meng predicts the following figures for the demand for growing media in the future without specifying a year:

China - the awakening growing media giant

The information and data given in Prof. Xianmin Meng’s enthusiastic lecture on the analysis of the market for growing media in China and future developments were astonishing.

- Growing media for vegetable and ornamental seedling production: 65 million m³
- Growing media for soilless cultivation in pots, containers etc.: 20 million m³
- Growing media for vertical gardening: 5 million m³

Considering the total Chinese population, its vegetable-eating habits and the already-existing hundreds of thousands of hectares of protected as well as field plant cultivation, the predictions presented by Meng might be more realistic than we think. This is especially true if the



Prof. Xianmin Meng inspecting an innovative cultivation system during the excursion. Photo: Paula van Ommen

In addition, the Chinese fertiliser industry is expected to manufacture about 12 million tons of so-called peat-mineral fertiliser per year. Regarding such predictions, only the future will tell how accurate these figures are.

Life in growing media

That was the title of a session including a keynote on microbial life in sustainable and disease-suppressive growing media by Dr. Jane Debode from the Flanders Research Institute for Agriculture, Fisheries and Food/Plant Science Unit, Merelbeke, Belgium.

Debode shed some light on a research area described by Schmilewski (1999) as the black box of growing media. Debode explained that current knowledge of the microbial communities inhabiting growing media is limited, but techniques, i.e., phospholipid fatty acid analysis, amplicon sequencing and shotgun metagenomics, are used more and more in the microbial analysis of growing media and starting to fill knowledge gaps.

Most Peatland International readers will know nothing of these analytical methods. However, the chemical, physical and biological interactions that influence the microbial composition of growing



Vertical greening of living complexes in the vicinity of Milano. Photo: Paula van Ommen

media composed of organic constituents must be better understood to ensure safe and risk-free growing media. Further, as stated above, the use of organic materials will increase.

Indoor vertical farming: innovative and efficient plant cultivation

Dr. Genhua Niu from the Texas A&M University, El Paso, emphasized that crop production is increasingly threatened by water and land shortage as well as severe weather. The FAO suggests that, by 2025, 1.8 billion people are expected to be living in regions with absolute water scarcity, resulting in an unstable and unreliable plant-derived food supply.

R&D on indoor vertical plant cultivation is evolving. Genhua emphasized that “vertical farms can be built near the consumer, achieve year-round production, eliminate the use of herbicides/pesticides, significantly reduce water use, increase produce quality, and create job opportunities in a comfortable environment.” R&D on such plant factories is developing quickly. High investments and operational costs (especially electricity for



Dr. Jane Debode reported on fungi and bacteria in growing media. On the left a roll-up with the symposium sponsors. Photo: Paula van Ommen



Growth



Substrates



Potting Soils



Raw Materials



Energy



Renewable Energy

Keeping an eye on our responsibility as we continue to grow

Our substrates ensure the growth of fruit, vegetables, ornamental plants, trees and shrubs worldwide. We turn our renewable resources into climate-friendly energy sources. The key criterion for our activities is sustainability. And we are pursuing ambitious plans for the future.

Klasmann-Deilmann is one of the global market leaders to have emerged from Germany's medium-sized businesses, and we are at home all over the world.



we make it grow

Dr. Genhua Niu gave an invited lecture on why indoor vertical farming is emerging as an alternative and supplementary crop growing system to conventional field-based and greenhouse production systems.
Photo: Paula van Ommen



lighting) currently limit production mainly to high value culinary and medicinal crops.

Symposium excursions

Two tours were offered on the excursion day with temperatures of around 40°C.

Tour A took participants to Fertil, a growing media manufacturer; Gremizzi, a grower specialising in the production of young plants for the conventional and hydroponic production of leafy



Indoor vertical farming. Photo: Oasis Biotech

vegetables and seedlings grown in peat-based blocking media; and the company Sempre Fresco, which showed transplanting machines in action.

Tour B took participants to the agro-food company La Linea Verde, which specialises in the production of fresh-cut salads and chilled fresh soups. This tour group also visited Fertil, the first Italian organisation dedicated to the recovery of organic wastes by composting. Today, the company recovers 100,000 tons of organic waste for composting. Compost forms an important constituent of their growing media.

As an aside: Italy and the Netherlands are about the same in size in terms of growing media production with a capacity of about 4 million m³ per year. Neither country has its own peat resources, although peat is the main growing media constituent in both countries.

Save the date

The title of the next co-organized ISHS/IPS symposium is “II International Symposium on Growing Media, Soilless Cultivation, and Compost Utilisation in Horticulture”.

The event will be held in Ghent, Belgium, from **22 to 27 August 2021** (social media hashtag: #GrowingMedia2021). Visit the website at www.ishs.org/symposium/712.

Proceedings

The proceedings of the Milano symposium will be published in Acta Horticulturae in 2020.

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*Gerald Schmilewski
& Olli Reinikainen*

gerald.schmilewski@peatlands.org
oreinikainen@gmail.com

Qingdao 2019 - Successful 1st China International Peat Symposium & Expo

The Chinese National Committee of the IPS, in particular, Prof. Meng Xianmin, had warmly invited us to attend the International Peat Symposium, “Peat or Food Production and Quality of Life”, and the First China International Peat Product and Technology Expo, which was combined with the large-scale Agri-Food trade fair in the coastal city of Qingdao, and took place from **17 to 21 September**.

The event started with an Executive Board meeting on **16 October**, where further progress was made on IPS projects and many administrative issues. Lunch was held with our Chinese hosts, during which most of us learned a few words in Chinese and how to eat with chopsticks, both of which we got to practise in the week ahead.

On the next day, two buses headed out for excursions. The first group visited the Shandong Zhucheng National Agriculture and Forestry

Seedling Incubator, and the second visited the Qingdao Green Silicon Valley Agricultural Technology Co., Ltd., as well as the Qingdao Jliawo Rongmao Blueberry Seedling Base. Both visits were very interesting, and it transpired that the numerous discussions that took place enabled participants to learn a lot from each other.





Opening of the symposium with more than 170 participants. Photo: Susann Warnecke

This was followed by a warm reception in the impressive hall of the Westin West Coast Hotel. Already at this point it became obvious how interested our Chinese partners were in the products that our European companies had to offer. Many business cards were exchanged and plans were made for future conversations.

On Wednesday, the Symposium was opened with around 170 participants. In the morning,

invited keynote presentations were given by Shang Qingmao, Liu Tianjin and Xu Hui (Opening), Gerald Schmilewski (The evolution of growing media in Europe and China), Guus van Berckel (Peat for food and quality of life, observations of the Chinese growing media market), Ingrida Krigerė (Peat resources in Latvia and Europe, their role in national economy) and Bernd Hofer (Use of peat for growing media and its effect on the environment).



Workers at the blueberry farm. Photo: Hannu Salo



Sarah Shui and Meng Xianmin opening the ice breaker. Photo: Susann Warnecke

The afternoon continued with Marie Kofod-Hansen (Responsible management of peatlands and livelihood opportunities), Chris Blok (Growing media cultivation for the future), Hannu Salo (Visions and prospects in Sino-Finnish cooperation of peat industry - a strategic approach) and Erki Niitlaan (Peat harvest, after-use and introduction to the 16th International Peatland Congress).

After these, Dong Shunwen discussed the present situation in China's blueberry industry and future prospects for growing media culture, while Shang Qingmao spoke about vegetable seedling production and peat demand in China, Guo Shirong explained the dependence on and demand for growing media in the development of the growing media culture industry in China, and Zhu Defeng closed the day with a presentation on the development of and prospects for seedling substrate in rice machine transplanting in China. All speeches were simultaneously translated into English and Chinese, and most were followed with great interest.

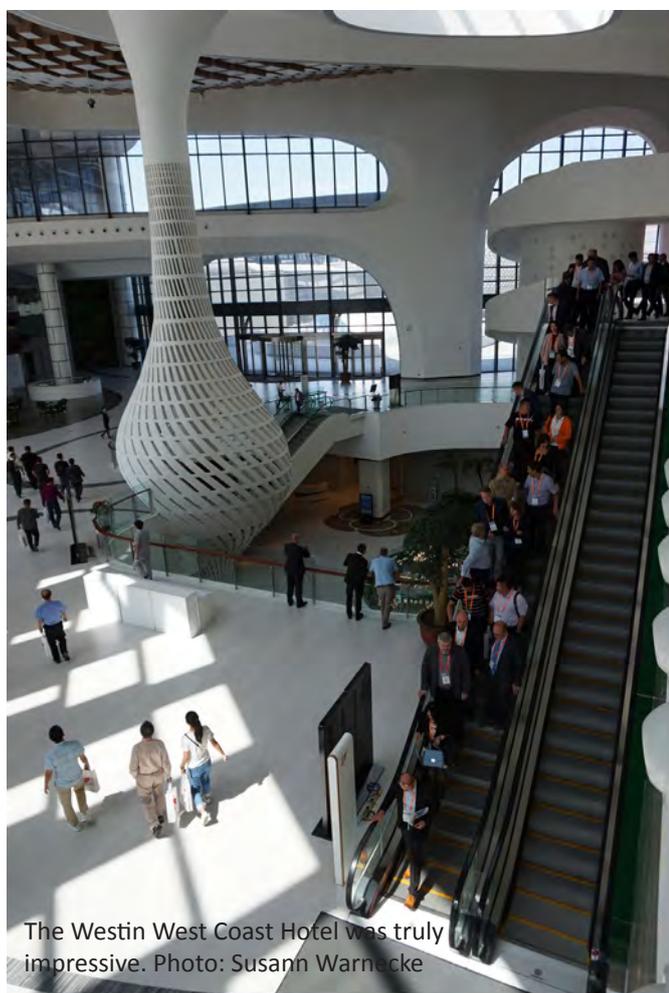
The Gala Dinner of the event was held together with other participants from the Agri-Food trade

fair at the Mangrove Tree Resort World - this was a great chance to truly get in touch with each other and enjoy Chinese music, food and hospitality for a few hours.

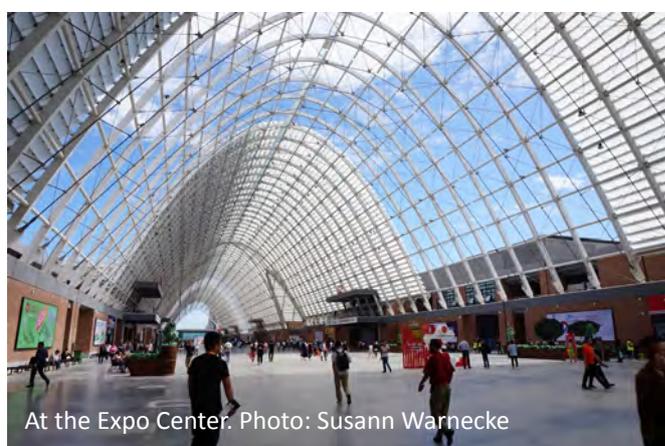
On Thursday, the presentation sessions continued at the Expo Centre in two rooms. Sessions with 12 speakers were held in Room 1: on the development of growing media and market, on sphagnum farming, ecological harvesting and application, on alternative materials to peat, and on the application of growing media.

The second room hosted 13 lectures: on policy and management of peatland, machinery for growing media, soil improvers and organic fertilisers with peat, and standards for growing media and determination methods. Most were simultaneously translated and prompted great interest, not only among "our" symposium participants but also among the general audience from the trade fair.

Throughout the following days, attendees seized the chance to visit the Agri-Food exhibition, especially its Peat Expo section, where many



The Westin West Coast Hotel was truly impressive. Photo: Susann Warnecke



At the Expo Center. Photo: Susann Warnecke



Booth at the Peat Expo. Photo: Susann Warnecke



Audience in Room 1. Photo: Hannu Salo



Tomatoes grown in coir. Photo: Hannu Salo



Careful listeners in Room 2. Photo: Susann Warnecke



Business talk during the break. Photo: Susann Warnecke

suppliers and peat producers had set up their booths. There was a great deal of hustling and bustling going on, and rumours abounded that some companies had even sold their entire 2019 harvest within a short time. It was also interesting to see which type of high technology was commonly used in greenhouse production and animal husbandry.

Peat demand in China is indeed skyrocketing, alongside an ever-increasing need for safe and clean food. The greenhouse industry is growing at a speed that is difficult to imagine in Europe. Many of our European members are very interested in this exciting market, but there are also logistic, language and cultural challenges to overcome, and learning from each other takes time.



Tree seedlings on peat. Photo: Susann Warnecke

In addition, how do we ensure that responsible management of peatlands is put into practice and peat is “wisely used” in Europe and Asia? There is work ahead for the IPS.

We warmly thank all organizers, exhibitors and our Chinese hosts, especially Meng Xianmin, Sarah Shui, Rose Zhang, Nancy Yang and LianYun Li, for this important event. The programme and collection of abstracts (English and Chinese) can still be ordered from the IPS online shop at <https://holvi.com/shop/peatlands>. Please note that only a few copies remain.

Susann Warnecke

Communications Manager
susann.warnecke@peatlands.org

Bringing Lowland Raised Bogs to Life

Cumbrian BogsLIFE+ project 2014-2019

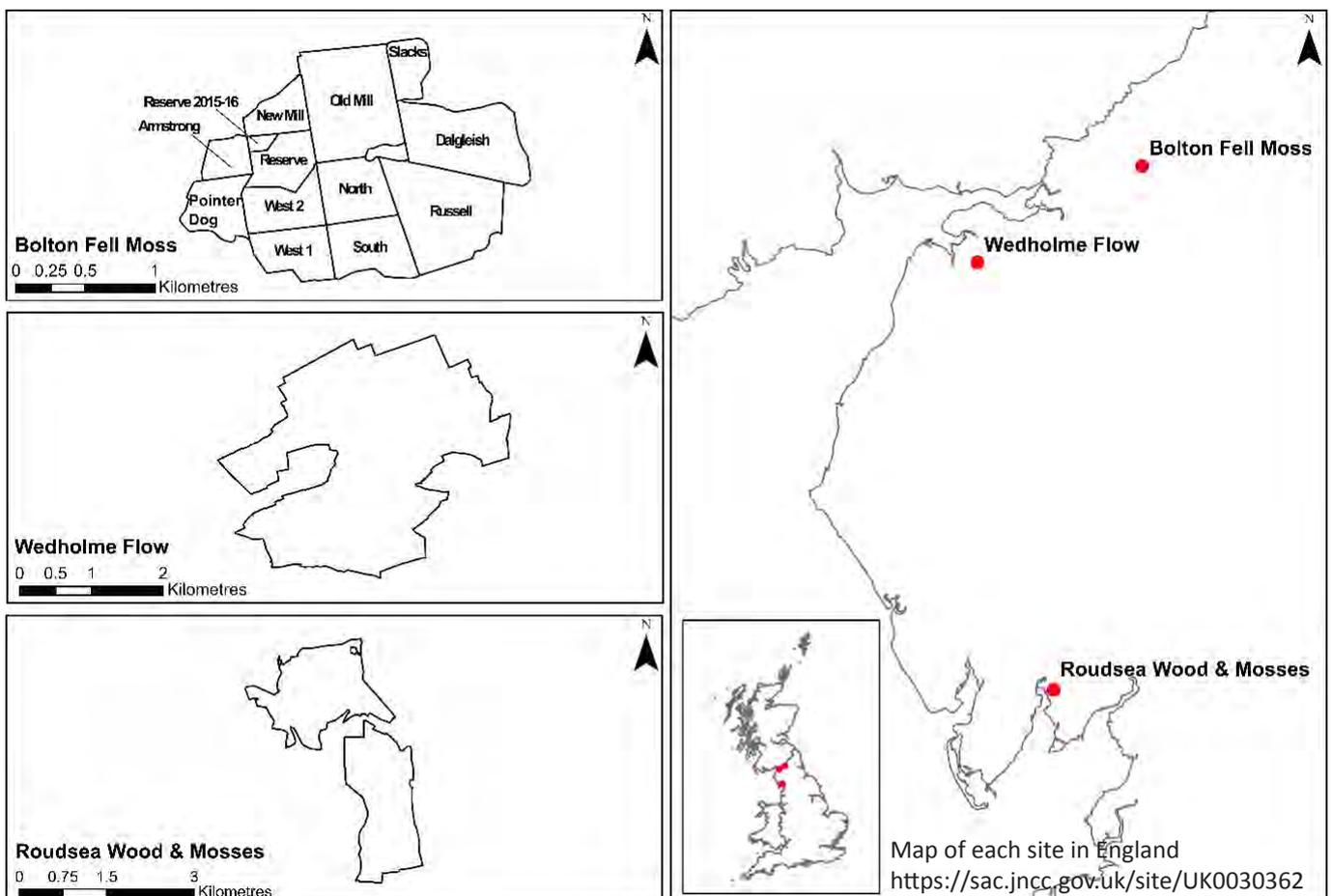
Introduction

The EU's LIFE+ programme awarded Natural England, a UK environmental body part of the Department for Environment, Food and Rural Affairs (DEFRA) a grant to complete peatland restoration work from 2014-2019. The Project has restored 608 hectares (ha) of damaged lowland raised bog within three sites in Cumbria, in the North West of England:

- Bolton Fell Moss
- Roudsea Wood and Mosses
- Wedholme Flow

As these sites are part of wider areas of bog, this has resulted in improvements to 751 ha of habitats – that's equivalent to 1000 Wembley Stadium sized football pitches!

Map of site locations in Cumbria. All images copyrighted to Natural England unless otherwise stated.



Why these bogs need life and love

Lowland raised bog is one of Western Europe's rarest and most threatened habitats (Bain et al, 2013), with 94% of this unique habitat destroyed or damaged in the UK. 45% of what remains within England lies within Cumbria (Natural England, 2016). Despite a lot of this being protected at a European level, much of it needs restoration to bring it back to its natural state, as a consequence of land management changes (Natural England, 2017).

As peatland ecosystems require a long time to become established in England (approximately at least 50 years!) (IUCN UK Peatland Programme, 2011), actions are important in order to restore these lowland raised bogs to full functioning active carbon (C) sequestering systems. This enables Greenhouse Gas (GHG) emissions mitigation goals to be met. Peatland, restoration also supports rare and specialist plants and animals that can be found in lowland raised bogs including the Sundew - a carnivorous plant pictured.

Restoration

Centuries of drainage, peat-cutting, tree planting and agricultural practices have left these sites in

a condition that is unsuitable for the specialist bog plants and animals that depend on them. The Cumbrian BogsLIFE+ project has undertaken large-scale restoration work using innovative techniques from specialist contractors to:

- Rewet the bogs by blocking drainage ditches and creating bunds to hold water.
- Remove large areas of tree, scrub and *Rhododendron sp*
- Revegetate the bogs with a mix of heather, grasses and *Sphagnum* mosses from donor sites, and spreading the resulting "mulch" across the peat, as a "living carpet".

Bolton Fell Moss

Bolton Fell Moss is a National Nature Reserve (NNR) located to the North East of Carlisle, UK. It has been substantially affected by large scale mechanised commercial peat extraction, which left large areas of bare peat and very little of the original vegetation. Extraction ceased in November 2013 with Natural England acquiring the land in 2015 and restoration began.

Bolton Fell Moss is divided into compartments with different landowners, therefore restoration techniques had to be tailored for each compartment. On July 9th 2019, this site was declared as a NNR. Unfortunately, the re-wetted peat body is unstable, and the peat surface will continue to settle for several years. In the short-

term, safe access has been provided to part of the site using a floating, 3-plank boardwalk. It takes visitors 1.5 km from the viewing platform at the edge of the old factory site following some of the old railway tracks to the central woodland.

Roudsea Wood and Mosses

Roudsea Wood and Mosses is a Special Area of Conservation (SAC) located in the South Cumbria. Restoration work for this site



The Sundew. Photo: Rob Petley Jones

Roudsea before.



included especially extensive clearance of trees and non-native invasive shrubs. By tackling the *Rhododendron sp* presence on land adjacent to the bog, the Estate is helping to reduce the chances of this aggressive plant seeds establishing and invading this rare habitat.

Wedholme Flow

Wedholme Flow is one of four raised bogs within the South Solway Mosses NNR SAC to the North West of Carlisle. It is also a Site of Special Scientific Interest (SSSI) under UK legislation and as such, has been around for longer than other European designations for nature conservancy.

Wedholme Flow is similar to that of Bolton Fell Moss as it was used for industrial peat extraction till the late 1990's, until operations ceased in 2003. The milled section of Wedholme Flow has been the focus of the Cumbrian Bogs LIFE+ restoration works.

The Bogs LIFE+ project has restored 125 ha of degraded bog onsite and in just a few years' time, we expect to see a transformation in that a living carpet of vegetation will replace what was a brown bare site.

Monitoring work throughout the restoration

The Cumbrian Bogs LIFE+ Project have monitored along the years six key aspects to measure the success of the restoration: hydrological, invasive species, vegetation, condition assessment, C storage and efficacy of work.

The information provided through monitoring helps us to understand what has worked and where we need to make adjustments to the management of each site. Over the course of this project we can now see some preliminary results, but the monitoring will continue into the future, every five years to investigate the impact of restoration in the After LIFE+ project.

Preliminary results of the monitoring

At Bolton Fell Moss, peatland restoration had increased the *Sphagnum sp* species cover from 0% (before restoration) to 6% in 2018 just after the final restoration work was completed. The graph on page 27 shows the change found at the site.

Efficacy of restoration work monitoring was assessed by taking fixed point photography over the years, and by flying through using drones. The

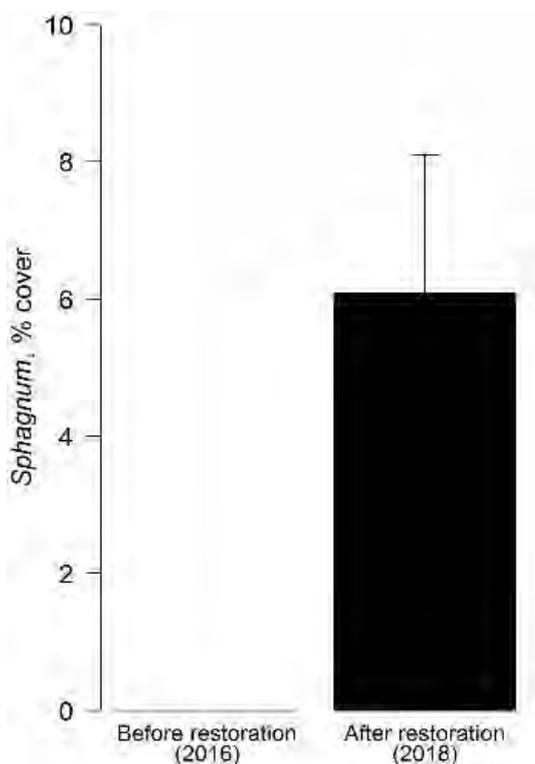
Roudsea after.



fixed point photo locations has provided a record of visual changes across the sites, but can also provide comprehensive baselines for the future of the sites.

At Roudsea Wood and Mosses site, for example, fixed point photography were taken in 2016, 2018 and 2019 and it is possible to see in the photos dramatic changes in the site. (See comparison of Roudsea fixed point photos).

Bolton Fell *Sphagnum* sp. Graph by Arlete S. Barneze



Also, at Roudsea Wood and Mosses, we can see a reduction of *Rhododendron* sp cover and frequency in the South bog (in both monitored areas, Ellerside Moss and Reake Moss).

So what's next?

Monitoring this work is really just the beginning of the restoration journey - we have put in the right conditions to allow restoration to occur, now we have to wait to see how the bogs respond. We will continue to monitor GHG emissions and C storage, hydrology and vegetation to see what, and how quickly, changes take place. Hopefully this will provide us with some preliminary results that can be shared in future newsletters for other peatland restoration projects and AfterLIFE+ project.

Over the next few months we will be writing up technical notes which will allow us to share our learning throughout the project as 'best practice'.

To complement these notes, we are currently working on a series of short films which will demonstrate restoration techniques on lowland raised bogs. These will be shared widely once they are ready, so keep your eyes peeled!

You can access further information on the Cumbrian BogsLIFE+ project on www.gov.uk/government/publications/cumbrian-bogs-life-project. Alternatively a short 10 minute film on YouTube provides an informative overview of the restoration process at Bolton Fell Moss, Wedholme Flow and Roudsea Wood and Mosses: https://youtu.be/YTEjlaUT_sA.

*Fiona Kitchen,
Arlete S. Barneze,
Tony Devos*

Cumbrian Bogs LIFE+ Project
Natural England, Lake District National Park Office
fiona.kitchen@naturalengland.org.uk
+44 7917050835

About the Project

The Cumbrian BogsLIFE+ was a five year Natural England project, restoring three lowland raised bogs within Cumbria. Bolton Fell Moss, Roudsea Wood and Mosses, and Wedholme Flow.

The project was supported by the EU LIFE+ Programme and has put in the conditions for restoration of 608ha of degraded lowland raised bog. These bogs form part of Natura 2000 - a network of protected areas covering Europe's most valuable and threatened species and habitats.

Natural England is here to conserve and enhance the natural environment, for its intrinsic value, the wellbeing and enjoyment of people and the economic prosperity it brings.



3rd Finnish Peatland Day - Call for Abstracts

31 January 2020

Helsinki, House of Science and Letters

Submit your abstracts for orals or posters via www.suoseura.fi/category/koksem in Finnish or English **by 25 October**.

Tervetuloa!

Registration will open in December.



Photo: Alexandre Croussette

Sucked in (to the swamps)

Lydia Cole describes her recent experiences of ‘walking’ through/being sucked into the peat swamps of the western Amazon.

At the end of June, I got back from two months of fieldwork in the Peruvian Amazon. The swamps, the Amazon, Peru, and indeed South America, were all new to me, having spent most of my research career to date searching for remnants of intact peatlands in Southeast Asia.

In the Pastaza-Maranon Foreland Basin (PMFB), a large area of the lowland Amazon within the

Department of Loreto, Peru, you’re pushed to find any land that isn’t swampy to walk on. Mapping projects to date have estimated the peatlands of the PMFB to cover 100,000km². One of the reasons I was there, along with six colleagues (from the Universities of St Andrews, Edinburgh and Manchester) and a bunch of exceptional assistants, was to help improve the accuracy of this estimate. We each had slightly different data gathering agendas, but overall were trying to find



A colleague, being sucked in. She is entering a type of palm swamp dominated by *Mauritia flexuosa*, locally known as an *aguajal* and important for the fruit that can be harvested there.

Some of the great team, fresh-faced and smiling at the start of our fieldwork campaign! (One member of the team may have been carried over the swamps in some parts. Many other members of the team wished someone would carry them over the swamps in all parts.)



out more about the evolution, ecology, condition and value of these peatlands, both from a local and global perspective.

My focus, along with that of Luis Andueza (fellow St Andrian) and Charlotte Wheeler (Edinburgh), was to investigate how people value the wetland ecosystems of the PMFB. Luis formed a key part of the social science team, made up of a great bunch of co-investigators and assistants from the Instituto de Investigaciones de la Amazonía Peruana (IIAP). They spent many hours asking many questions of the members of three communities, Veinte de Enero, Nueva Union and Nueva Pandora, living on the banks of the Yanayacu, Chambira and Tigrillo rivers, respectively. They, incidentally, drank a variety of liquids during the interviews, to facilitate their social integration with the communities!

Concurrently, Charlotte and myself, led by our brilliant botanist, Nállarett, and two courageous Field Assistants, Julio S and Julio I, were out exploring the many ecosystems that surrounded these communities. Our work was, in essence, a big treasure hunt. Our mission (that I questioned



Washing clothes in Veinte de Enero, on the banks of the Yanayacu river, on one of the many fine evenings after coming back from a sweaty day in the swamps.

The ecological crew I was with, busy measuring what we measure in a plot. Spot the agile one up the tree. Never have I seen such heights scaled so quickly, and with such ease! (I might need to adapt the Risk Assessment for the next trip, however.)



why I'd chosen to accept at various points of inundation!) was to find the gold - the code-word for peat.

We ventured into the environment surrounding the three communities in order to “ground-truth” information of two sorts: (i) ecosystem types/resource extraction locations marked on participatory maps generated by the communities in workshops run by the social science team, and (ii) maps generated through remote sensing (using Landsat imagery) that depict changes in land cover, with the different ‘covers’ yet to be confidently identified or understood from an ecological perspective.

We spent approximately 20 days cutting our way through swampy forests of all shapes and sizes. When we came across a new ecosystem type, and felt that we could work at that location for two hours without sinking, we gathered data on various above- and below-ground characteristics.

One of the most challenging plots was half a meter under water, at a location aptly named “31 Devils”. Thankfully, I've had previous experience of snorkelling in bogs. Now that we're all back on

solid ground, we're starting to explore all of the ecological and interview data collected from the swamps, to try to understand how people use, and importantly, how they value the wetlands ecosystems of the PMFB, as well as understanding the physical characteristics of these ecosystems from a western scientific perspective.

Our initial findings suggest that there are a whole range of forested wetlands used by these communities, composed of a huge diversity of flora on both peat and non-peatlands, and on a confusing mix of peaty-lands in between. And, not unsurprisingly, people tend to avoid the deeper, looser, more “sucking”, mosquito-ridden swamps, when and where they can! Sensible folk.

But we still have much to learn about the nuances of how each community values these carbon-rich, biodiverse and beautiful ecosystems.

Dr. Lydia Cole

Postdoctoral Research Fellow
University of St Andrews
lydcole@googlemail.com

Creating A New Approach to Peatland Ecosystems - Project CANAPE

The island of Britain, even if all the industry and agriculture were removed, would remain a carbon emitter due to the level of peat drainage. The forests, fields and pristine wetlands do not absorb enough carbon to offset the emissions caused by drainage and

degradation of peatlands. This was the key finding of the recently published UK Peatlands Inventory.

Last year we saw devastating wildfires around Europe. In Germany nearly 1,000ha of dry peatland burned following a military rocket test,

Broads Authority Officer ready with Peat Corer.



Schoolchildren searching for species on Store Vildmose in Denmark. Photo: Gunnar Hansen



releasing hundreds of thousands of tonnes of CO₂. It's a sobering thought that even if you, the reader of this article, were to live the next 50 years carbon-free, it might offset only 0.1% of the damage done by this single fire. As the climate warms and drought becomes more common, this will only get worse.

The environmental problems are well understood among academics, conservationists, farmers and industry. However the wider public lack awareness, and without public awareness, it will be hard to raise the funds to ensure that there is a just transition from peat drainage to healthy and sustainable peatland use. It will also be hard to change the consumer behaviour that drives peatland degradation.

The same supermarkets that promise plastic-free aisles often still offer only peat-based compost products to consumers. Grocers that promise to remove palm oil from their products then offer no information over whether the vegetables in their aisles are grown on drained fens and bogs, and if

they did the average consumer might not be aware of the issue and change their purchasing behaviour as a result. This is despite the environmental consequences of draining a European peat bog or fen being more or less the same as clearing an Indonesian peatland rainforest, with the same biochemistry process leading to the same CO₂ emissions.

So, what does Project CANAPE aim to do about this?

Capturing a soil core - changing perception through paleoecology

The fens of the Broads National Park are incredible. They are the largest contiguous wetland in England and are filled with rare birds, insects and mammals. However, what is under the surface, and the 39 million tonnes of CO₂ stored

Public demonstration of peat coring at How Hill.



there is often less appreciated by visitors. So what better way to get the public to understand the importance of these wetlands than by showing them what is 1m, 2m, or even 5m below their feet?

Holding visibly stored carbon from 2,000 years ago in your hand is a powerful message. People can easily understand that the trees that absorbed the carbon 2,000 years ago are still there, preserved in the brushwood peat, metres under their feet and

held in that state by the continuous wetness of the site. A brushwood peat core will still have visible twigs and branches from the trees that once lived there, sufficiently well preserved to identify the species.

For this demonstration, the Broads Authority gave the public the chance to see what they are standing on using peat cores taken from the How Hill National Nature Reserve, extracting the layers of peat and clay from under their feet.

This allowed them to clearly see the difference between the fen peat at the top, the estuarine clay from the Middle Ages, when the sea reached 20 miles further up the estuary than it does today and the brushwood peat, formed beneath forests that coincided with the Roman occupation. Over a mere 4 days over 400 people had the chance to hold prehistoric trees in their hands.

A blitz of bio discovery

In Denmark, a slightly different approach has been taken under the aegis of the project. A 'bioblitz' event was held, giving the local population the chance to head out into the Store Vildmose bog and learn about the wildlife to be found in the area, documenting finds from beetles to eagles and everything in between. 220 students ventured



Finding alder twigs from 2,000 year old peat.

out into the bog, documenting over 800 species in 24 hours.

This underpins the development of a bottom up strategy in the area, where the local people are leading the development of an alternative vision for peatland-based agriculture.

Making money from wetlands - Meet Betty, the Biochar Burner

However we recognise that it is not enough that people appreciate the value of peatlands. We need to find a way for them to generate cold, hard money from them, while protecting their special nature. Without this, the words “just transition” remain an empty phrase.

One way we approach this is to create value from wetland waste, with a range of projects looking for business opportunities. We have started with charcoal, as a relatively simple product. The initial thought process was to find a way of using the wood such as willow and alder that is cut down by the tonne in fen sites to keep them open for breeding birds. Therefore we purchased Betty,

a portable charcoal burner able to access the wetland nature reserves of the Broads.

During the background research for this product we soon discovered that the European tradition of firing up the barbecue is one of Europe’s dirty secrets. Limited control is exercised over sourcing of charcoal, which is imported on a vast scale from countries suffering from severe deforestation, including Nigeria and Indonesia. Deforestation and mismanagement of the tropical forests in Africa now emits more CO₂ than the United States of America. Twelve per cent of EU charcoal imports come from Indonesia - it may be palm oil-free but it is still damaging rainforests.

What we created was an outstanding product. We found it simple to produce a premium product, which can be sold to return a profit for conservationists. The first product from our wetlands went on sale in June and with some producers selling the charcoal for £4 per kilogram, we hope to find a good market for it.

Future work under the CANAPE project will look at products from grass and reed, as well as paludiculture (wetland agriculture) products of *Sphagnum* and *Typha*. In all countries with CANAPE members we are working with farmers to understand their needs in switching to

paludiculture, so that we can address these with policy makers and move forwards in this area.

Our vision is a future where everyone can earn money in a sustainable way.

CANAPE is co-funded by the European Regional Development Fund, through the INTERREG North Sea Region Programme. For more information about the project please contact me.

Harry Mach

CANAPE Project Manager
<http://northsearegion.eu/canape>
harry.mach@broads-authority.gov.uk



Betty, the Biochar Burner!

Canadian harvest of Peat Moss: Season 2019

The Canadian Sphagnum Peat Moss Association (CSPMA), whose members represent 95 percent of the North American Sphagnum peat moss production, has an announcement regarding the level of harvest for the 2019 season. A survey of members was conducted on the status of their 2019 Actual Harvest as a percentage of their 2019 Expected Harvest on August 31.

Overall, the season was not satisfactory with no peatland harvest regions achieving their expected harvest volumes, though most of the members entered the season with a comfortable carry over / buffer from the prior year.

Regional breakdown

In New Brunswick, both North (82%) and South (88%) regions were well below expected harvest volumes. The periods of inclement weather during summer combined with a cool spring affected the harvest. The harvest on Québec's South Shore (94%), while below expectations, was the closest region to achieve its targeted volumes. A moist spring and significant summer storm events account for the shortfall.

In Québec's North Shore (89%), the results are also lower, reflecting similar climatic conditions.

The Prairie Provinces (MB (89%), SK (76%) & AB (53%)), have experienced a mixed and generally poorer harvest season. While the spring started relatively dry in Alberta and Saskatchewan the summer's consistent cool and wet weather

accounted for the decrease. This was particularly relevant for Alberta. Minnesota (80%) experienced a lower than expected harvest and was impacted by similar weather patterns that brought rain and cool temperatures during the peak of the harvest season.

As in the past, the CSPMA members are committed to working cooperatively with their commercial business partners.

Definitions

2019 Actual Harvest: The volume of CFT of harvest that corporately was achieved as of August 31, plus, what can reasonably be expected to be harvested for the last few weeks of the season considering "normal" harvesting conditions.

2019 Expected Harvest: The volume of CFT that equates to a) market needs, plus, b) anticipated buffer as at the end of the 2019 season, minus, c) inventory on hand at the start of the 2019 season (what was left of the 2018 buffer).

Canadian Sphagnum Peat Moss Association
cspma@peatmoss.com, www.peatmoss.com



New Members of the IPS

New members (or new contact persons for corporate and institute members) are mainly approved by our National Committees. In other countries, the approval is made by the Executive Board of the IPS. Each National Committee is asked to compare their membership list to that of the IPS at least once a year. (status below as of 15 October 2019) More info: www.peatlands.org/join-us.

Individual members:

Finland, via Suoseura: Tuula Aarnio, Laura Härkönen, Hanna Kekkonen, Gilbert Ludwig, Jaana Printz, Olli Reinikainen, Tuula Tuhkanen, Tiina Törmänen

Japan: Charles S. Vairappan

Student members:

Finland: Sini-Selina Salko

Japan: Akira Matsumoto, Kameoka Taishin, Nur Wakhid

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Peat and Peatland Events

German Federal Agency for Nature
Conservation (BfN)
Workshop on existing and planned peatland
strategies in European countries
Bonn, Germany
28 - 29 October 2019

Finnish Peat Day
Tampere, Finland
11 November 2019
www.bioenergia.fi

IPS Executive Board Meeting
Phone / Skype
20 November 2019

DGMT & IVG: Peatland Restoration in Germany
Oldenburg, Germany
21 November 2019
www.ivg.org

CBD 23rd meeting of the Subsidiary Body on
Scientific, Technical and Technological Advice
25 - 29 November 2019
Montreal, Canada
www.cbd.int

UNFCCC COP 25, CMP 15, CMA 2
Santiago, Chile
26 November - 13 December 2019
www.cop25.cl/web/en

Southern Hemisphere Regional Conference
on Permafrost of the International Permafrost
Association (IPA)
Queenstown, New Zealand
4 - 14 December 2019
<https://southcop19.com>

3rd Finnish Peatland Day
Helsinki, Finland
31 January 2020
www.suoseura.fi

Ramsar STRP23
Gland, Switzerland
16 - 22 March 2019
www.ramsar.org

IPS Executive Board Meeting
Late March 2020

Tenth International Symposium on Land Subsidence
(TISOLS)
Delft-Gouda, the Netherlands
20 - 24 April 2020
www.tisols2020.org

Québec RE3 Conference 2020
From Reclaiming to Restoring and Rewilding
Quebec City, Canada
7 - 11 June 2020
www.re3-quebec2020.org

IUCN World Conservation Congress
Marseille, France
11 - 19 June 2020
www.iucn.org

16th International Peatland Congress
Tallinn, Estonia
14 - 20 June 2020
www.ipc2020.com
www.facebook.com/events/1162609177193984

Convention on Biological Diversity COP 15
Kunming, Yunnan, China
Q4 2020

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Submission deadline: PI 4.2019: **20 November**



Welcome to the 16th
International Peatland Congress
in Tallinn, Estonia!

WETSCAPES – “Understanding
the ecology of restored fen
peatlands for protection and
sustainable use” in Rostock



Sphagnum farming as a new
tool for peatland restoration
in Lithuania