15 December 2021

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IPS at Glasgow COP26

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Photo: Jerry Wang

Editorial

No wishful thinking: smart solutions are required

Screenshot: Susann Warnecke

As a representative of the IPS, I had the opportunity to be an observer during the climate conference in Glasgow. It was impressive to see so many people from all over the world united in the fight against climate change and choosing to participate in such a high-profile event.

For the first time, Global Peatlands Initiative partners organised and financed “The Peatland Pavilion” in the so-called Blue Zone of this COP. In the pavilion, many peatland experts met each other, shared their knowledge and presented peatland and peat-related topics in oral sessions. A second and ultimate goal of this Peatland Pavilion was to raise awareness of the huge quantity of greenhouse gas, which drained and disturbed peatlands emit. As we already know, these greenhouse gas emissions account for ca. 3,000M tons annually, mainly caused by peat fires and land use changes in Southeast Asia and by agriculture and forestry in Europe. It would be beneficial if the world leaders of the next COP would give this issue the attention which it urgently needs.

The IPS organised a 90-minute session in “The Peatland Pavilion”, which was structured according to the three pillars of sustainable development: environmental, social and economic aspects. I was honoured to give a presentation relating to the

Peatlands International is the global magazine of the International Peatland Society (IPS). It provides the more than 1,700 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. Opinions are those of the authors. To receive Peatlands International in your email every three months, visit www.peatlands.org/join-us and sign up as a member - or easily subscribe for € 59/year via our online shop.

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Cover: Jack Rieley, Guus van Berckel and Alue Dohong in Glasgow. Photo: JR/GvB

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economic aspects. I focused on the use of peat for the production of ornamental and edible plants. Chris Blok of Wageningen University made a forecast of the worldwide demand for peat for this purpose a few years ago (https://peatlands.org/document/growing-media-blok-2018).

He expects that the share of peat in growing media will drop from 70%, where it stands currently, to 30% in 2050. However, in terms of volume, it will double! This is a surprising fact for many environmental NGOs and politicians, and it is certainly an unwelcome truth during a climate conference.

I concluded that smart solutions are required of which the certification of peat extraction forms a part. All stakeholders should work together to develop these much-needed smart solutions, based on facts and not on wishful thinking.

NB. At the moment the worldwide use of peat for horticulture is estimated to be 40M m^3. The extraction and worldwide use of peat for horticulture emits the equivalent of around 10M tons of CO_2 annually. For more details please see my presentation in this issue of PI or via the recording of the Peatland Pavilion.

Guus van Berckel

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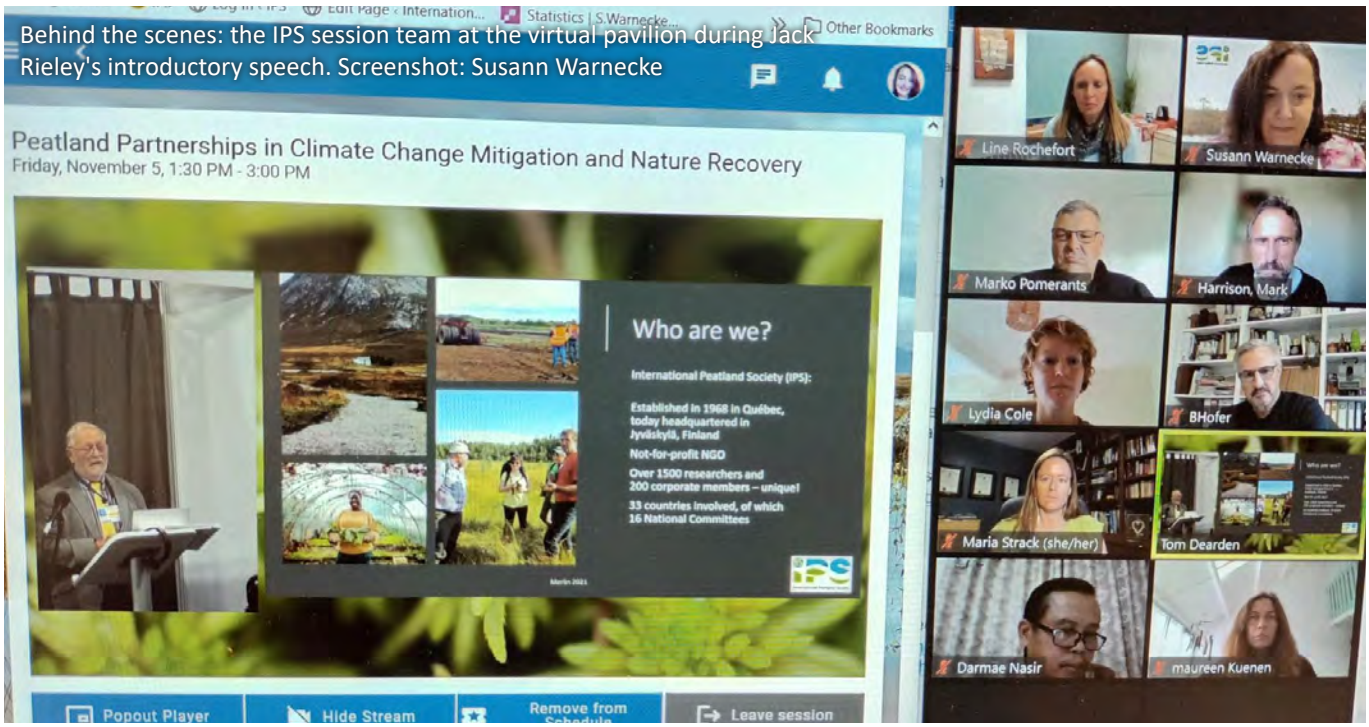
IPS at COP26 in Glasgow

What have we done and what has been achieved?

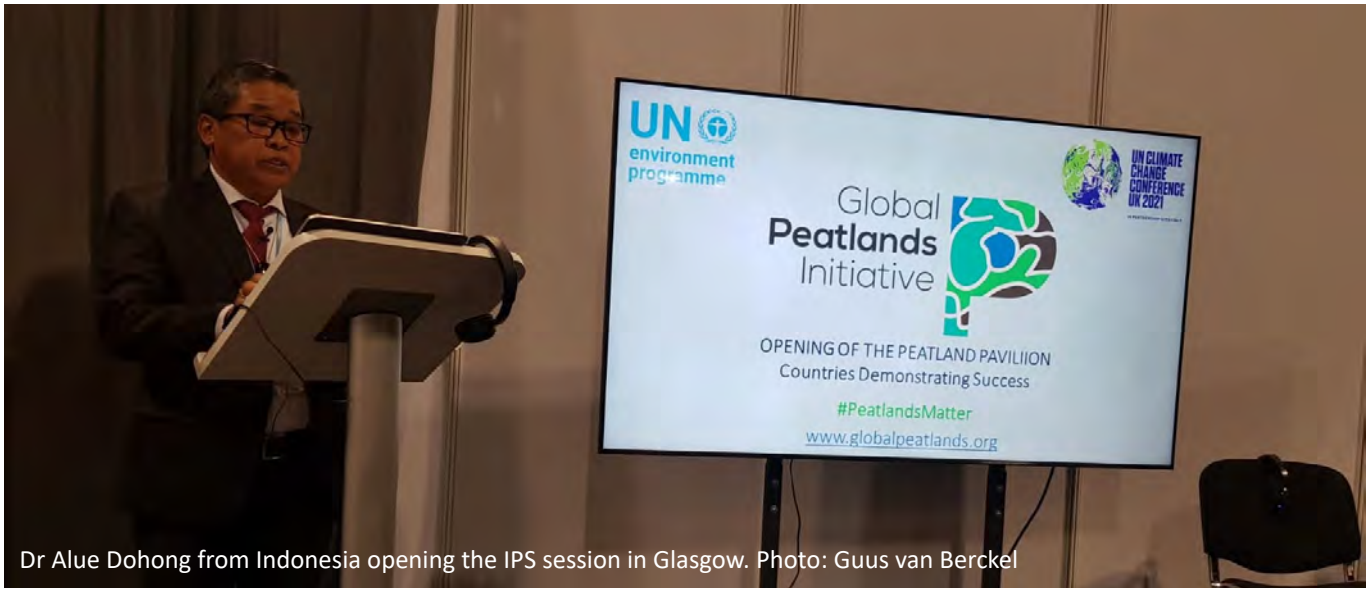
For nearly three decades the United Nations has been bringing together almost every country on earth for global climate summits called 'Conferences of the Parties' (COP) of the Framework Convention on Climate Change (UNFCCC). The IPS has observer status on UNFCCC, and monitors activities that affect management of peatland and wise use of peat.

In December 2019, IPS participated in side events highlighting peatlands as Nature Based Solutions (NBS) at COP25 in Madrid, represented by the Secretary General. This time the IPS approach to COP 26 was different, and it joined with other peatland organisations to showcase conservation, restoration, and sustainable management of peatlands in a specially designed Peatlands Pavilion hosted by Global Peatlands Initiative, and IUCN UK Peatlands programme. This consisted of an 'actual' pavilion, and a 'virtual' pavilion on the Internet consisting of remotely presented talks, case studies, environmental information and discussion, as well as a 3D tour.

COP26 with the UK as President, took place in the Scottish Events Campus (SEC) in Glasgow, Scotland on 1 - 13 November 2021. It brought together heads of state, climate experts and campaigners to agree steps that need to be taken to tackle climate change and implement the Paris Agreement made at COP21 in 2015. Over 100 World Leaders came to this event, together with up to 30,000



Behind the scenes: the IPS session team at the virtual pavilion during Jack Rieley's introductory speech. Screenshot: Susann Warnecke



Dr Alue Dohong from Indonesia opening the IPS session in Glasgow. Photo: Guus van Berckel

negotiators, government representatives, businesses, and NGOs for thirteen days of lobbying and talks. It also attracted up to 100,000 activists who demonstrated outside the conference venue and on the streets of Glasgow.

Some famous environmental activists, cultural leaders, and spokespersons also attended the climate change conference, including Sir David Attenborough, Prince Charles and Greta Thunberg.

What is the Paris Agreement?

At COP21 in 2015, in Paris, UNFCCC Parties committed to bring forward national plans, known as Nationally Determined Contributions (NDC), setting out how much they would reduce their emissions by to meet their contribution commitment of keeping mean annual global temperature increase below 1.5 degrees Celsius by 2050.

For the first time, every country agreed to work together to reach this target, adapt to the impacts of a changing climate, and provide money to deliver these aims. The Parties also agreed they would come back with an updated plan every five years that would reflect their highest possible greenhouse gas reduction ambition at that time.

These updated NDCs were due to be presented at COP26 in 2020, but because of Covid-19 this was postponed until November 2021.

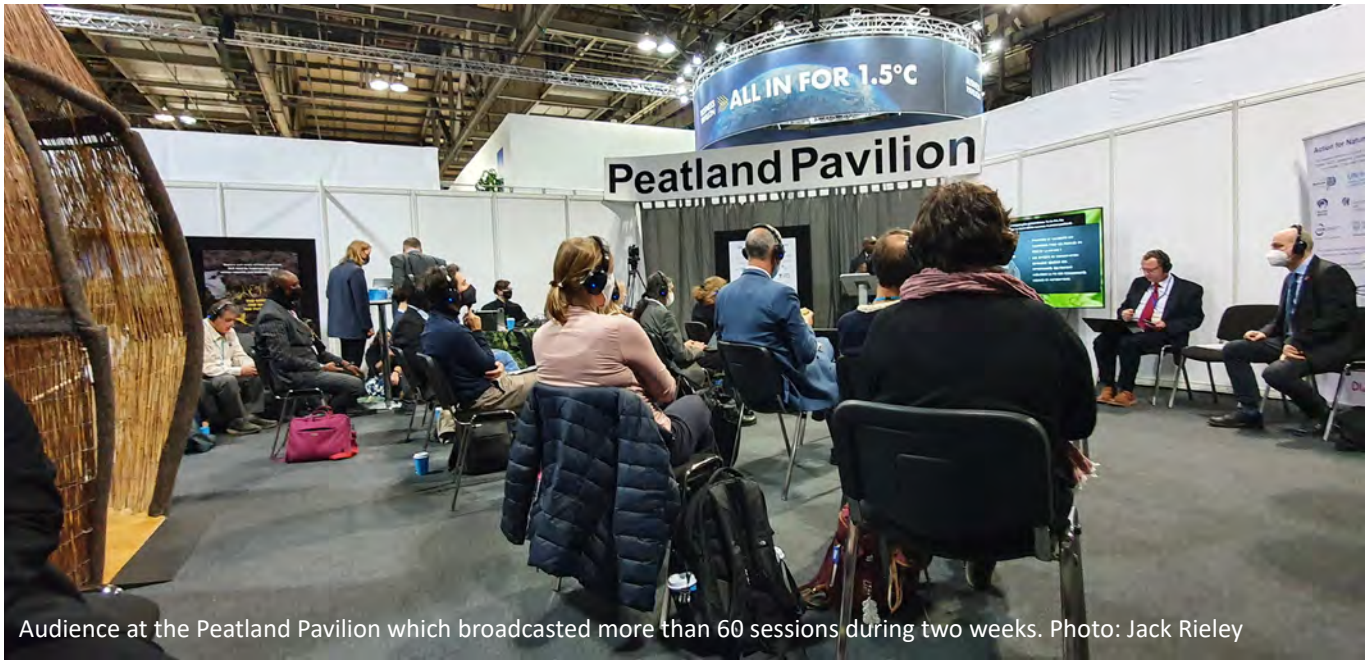
COP 26 Brief Overview

Guus van Berckel and I were privileged to represent the International Peatland Society as observers at COP26 in Glasgow during its first week (the maximum time allowed for individual observers). During that time, we stayed in an Airbnb house in the town of Gourock that is located on the Firth of Clyde some 50km from Glasgow, from which we had to travel to the COP venue each day.

Although this was rather tedious it was the nearest accommodation we could find but were compensated by the view we had every day of the River Clyde estuary, the islands of Bute and Cumbrae, and some mountains of the Highlands.

Our days started with breakfast followed by a Covid-19 Lateral Flow


Some participated in their nation's traditional clothes such as this Scotsman. Photo: Jack Rieley



Audience at the Peatland Pavilion which broadcasted more than 60 sessions during two weeks. Photo: Jack Rieley

Test. The latter was necessary to gain admission to the Scottish Events Centre.

COP26 opened on Monday 1st November 2021 with important statements from numerous important world leaders who set the scene for the later detailed, lengthy and fractious deliberations and negotiations by the representatives of all of the country Parties present. While these discussions were taking place in the main plenary hall and many side rooms most participants spent time networking, visiting the many pavilions, renewing acquaintances, making new friends, joining some of the many presentations, and enjoying the refreshments and snacks on offer. A UNFCCC COP is similar to a trade fare with many different countries, NGOs and companies showcasing how good and effective they are in reducing or mitigating greenhouse gas emissions or lobbying others to do better.

While the official delegates and observers were enjoying themselves indoors, even more were making a noise, and their presence known, outside the gates and on the streets of Glasgow. This was the legion of demonstrators through which participants had to 'run the gauntlet' every day before entering the exhibition centre. There was a major police presence in and around the venue to which there were strict security and coronavirus measures, precautions and enforcement. Attending this event was a challenge, especially

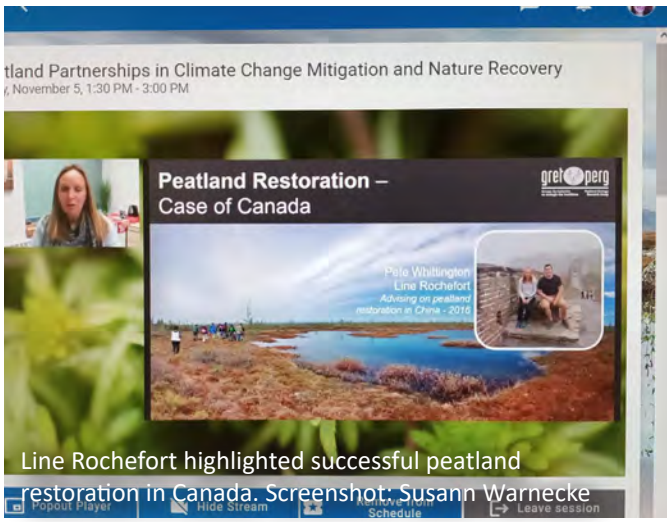

Demonstrators in the streets of Glasgow. Photo: Jack Rieley

taking a Lateral Flow Test every morning before reaching the entrance.

There were special events such as the opening and closing plenary sessions in the main hall, and smaller gatherings at the many meetings and presentations that were hosted every day on the vast range of subjects related to climate change and nature recovery. In addition, there were numerous evening receptions hosted by sponsors, companies, NGOs and others.

Guus and I attended an evening reception on 3rd November, hosted by the National Trust for Scotland in Pollock house stately home on the south side of the River Clyde, but inside the City of Glasgow. This was attended by officials of the National Trust and dignitaries from the Scottish Government. On 10th November another IPS member, Lydia Cole, lecturer at The University of St Andrews, UK attended the reception in Glasgow Cathedral hosted by Global Peatland Initiative.

My purpose of attending the side events at COP26 was to chair and facilitate the IPS Session in the Peatland Pavilion on Friday 5th November. This is a very auspicious date in the UK because it marks the Anniversary of the capture of the infamous Guy Fawkes as he was attempting to blow up the Houses of Parliament in London on that day in 1605. Fireworks were set off all over Glasgow that evening to mark the occasion. I visited several other pavilions, but these mostly had their own followers.



Line Rochefort highlighted successful peatland restoration in Canada. Screenshot: Susann Warnecke

IPS Networking Session in the Peatlands Pavilion

The IPS as a member of the Global Peatland Initiative was able to host a session in the Peatland Pavilion at COP26 in Glasgow. IPS submitted a proposal to GPI in June 2021 for face-to-face and virtual presentations of international peatland research, examples of responsible peatland management, and interactive discussions. IPS was allocated a 90-minute session consisting of 60 minutes of presentations and 30 minutes of interactive discussion, initially on Friday 11th November, later moved to Friday 5th November.

Jack Rieley and Guus van Berckel answering questions on peat use for horticulture during the Q&A part of our session. Screenshot: Susann Warnecke

IPS Executive Board put together an IPS COP26 Planning Team to organise the programme for this event. Numerous members, partners, and stakeholders were contacted to find suitable and willing participants. The general approach agreed by EB was to focus on the three Pillars of the IPS - Economy, Environment and Society - to showcase to this international gathering what peatlands are, which (ecosystem) services they provide, what can be

IPS Session Programme

Peatland Partnerships in Climate Change Mitigation and Nature Recovery, 5 November 2021

Chair and facilitator: Professor Jack Rieley, IPS Second Vice President

- Introduction to International Peatland Society Partnerships (Jack Rieley, IPS); Outline of the structure of the IPS and its membership expertise.
- Welcome by Dr Alue Dohong, Vice Minister of Environment and Forestry, Republic of Indonesia; opening of the Session.
- 'Peatlands and Climate Change' - Introduction to the revised IPS book - Maria Strack, University of Waterloo, Canada.

Environment Pillar
- Peatland Restoration - Case of Canada - Line Rochefort (Université Laval, Canada) and Pete Whittington (Brandon University, Canada).
- Peru's lowland peatlands - Dr Lydia Cole (University of St Andrews, Scotland).
- Conservation of tropical peatland from the air and on the ground - Darmae Nasir (University of Palangka Raya, Indonesia) and Mark Harrison (Borneo Nature Foundation).

Society Pillar
- From facts to policies - Peatland fire management in Indonesia - Rachel Carmenta (University of East Anglia, UK).

Economy Pillar
- Peat - an important natural resource for food security and climate change mitigation - Guus van Berckel (CEO Griendsveen AG, Germany and Netherlands; IPS First Vice President), see next pages for his speech.
- Responsible Peat Production - Maureen Kuenen (Foundation Responsibly Produced Peat, The Netherlands).
- German Peat Strategy: an assessment - Dr Bernd Hofer (Hofer & Pautz GmbH, Germany)

Monitoring
- Natural capital in Eco-management of tropical peatland - Mitsuru Osaki (Hokkaido University, Japan).
- Monitoring peatlands and restoration by remote sensing - Dr Florian Siegert (Remote Sensing Solutions GmbH, Germany).

New Partnership
- MERLIN - Mainstreaming Ecological Restoration of freshwater-related ecosystems in a LaNdscape context: innovation, upscaling, and transformation - Sebastian Birk (University of Duisburg, Germany).

Q&A and Network Panel Discussion - Jack Rieley, Chair

The presentations above and all other sessions can still be viewed by those who had registered for the Peatland Pavilion (go back in the agenda) and will be made available to the general public later on by GPI. Links, slides, recorded presentations and more info: https://peatlands.org/ips-networking-event-5-november. IPS also held a one-hour COP26 briefing for its corporate members on 25 November informing industry on what has been discussed with regard to their business.

done to mitigate GHG emissions and promote nature recovery, and how important partnerships of experts are to the understanding of the function, importance and value of peatlands and peat.

Cover of the IPS COP26 Portal at the Virtual Pavilion, highlighting all three pillars.

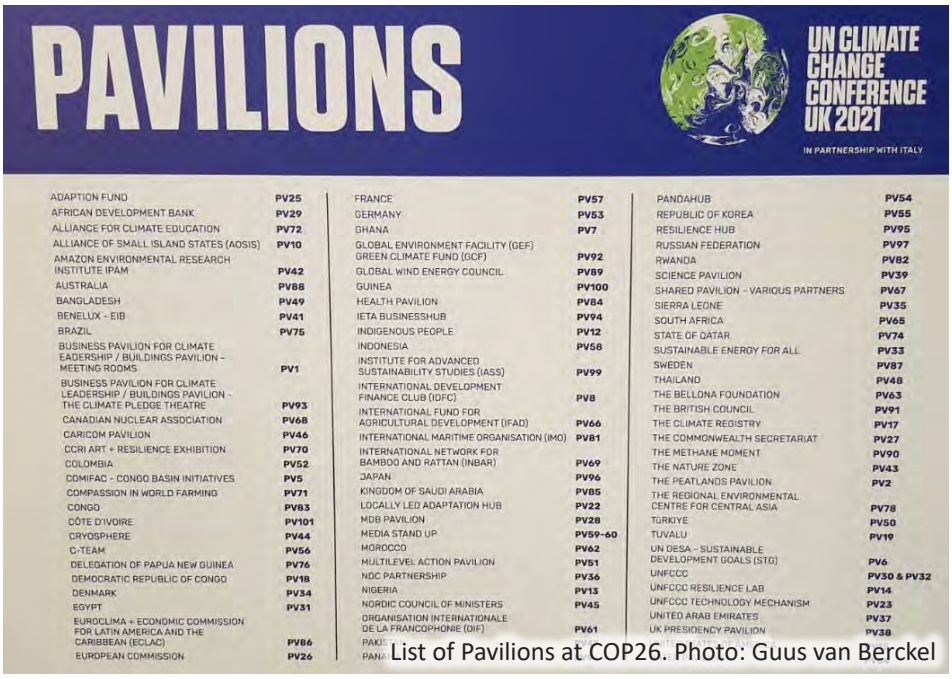
The IPS COP26 session was a major challenge by hosting 13 presentations, publicising the revised IPS book, and giving introduction and welcome statements, involving 15 internationally renowned peatland and peat experts from eight different countries from around the world.

In addition, the IPS had set up its own COP26 Portal with important information, resources and data on peat and peatlands at www.peatlands.org/cop26, which is also still on display at our website and via the GPI's 3D tour of the Peatland Pavilion.

What were the Key Outcomes of the COP26 Climate Summit?

During the two weeks of intensive discussion, lobbying and position taking several important decisions were agreed to facilitate movement towards the goal of net zero emissions by 2050. However, there were also some disappointments falling short of reaching targets set at COP21 in Paris in 2015. Because of this, Ministers from countries around the world agreed to reconvene at COP27 in November 2022 in Egypt to submit stronger 2030 emissions reduction targets that will limit global warming back to 1.5°C. It was also decided that developed countries would deliver the resources promised to developing countries at COP21 to enable them to adapt to the consequences of climate change they are already experiencing.

Countries also committed to make significant reduction in methane emissions, stop and reverse forest loss, phase out use of coal and internal combustion vehicles, align the financial sector with net zero by 2050 and end international financing of fossil fuels and other decisions. However, there were let-out clauses insisted upon by certain countries over dates by when they must achieve these measures. Examples are forest loss and fossil fuel phasing down.



List of Pavilions at COP26. Photo: Guus van Berckel

Rachel Carmenta speaking on society and fire management questions. Screenshot: Susann Warnecke

Many of these measures fall short of requirements needed to achieve the Paris Agreement targets.

By the end of COP26 151 countries had submitted new NDCs to reduce their emissions in line with the 2030 targets that will limit global temperature rise to 1.5°C. However almost 50 countries have not provided their revised NDCs so far, and the current United Nations projection is that global warming in 2050 will reach 2.5°C. Progress is being made but not enough.

The challenge for all countries is how to bridge this gap and reduce it to zero, but some major GHG emitting countries, especially Australia, China, Saudi Arabia, Brazil and Russia, have not provided realistic plans to achieve their net zero targets. They must take stronger steps to strengthen their targets for which they will be called to account at COP27. These aspirations, decisions and targets are enshrined in the Glasgow COP26 declaration. It also recognised the importance and role of nature and nature recovery in reducing emissions and mitigating the effects of climate change. Eventually the negotiators managed to keep the aspiration of keeping the 1.5°C target alive, but there is still much remaining to be done.

Glasgow's Parallel COP26

UNFCCC COPs always attracts many 'camp-followers'. At COP26 some were delegates and observers inside the official pavilions and stalls where countries publicise their problems caused by climate change and what needs to be done to deal with it.

It is also a place where some commercial interests, for example oil, gas and coal companies, showcase their wares, publicise how they intend to reduce their emissions and when they will start this phase down. These projections are always for the future. NGOs are also present that lobby for everyone to do better, sooner and more effectively.

Outside of the official halls and negotiation rooms a parallel COP took place throughout the two weeks. This was the tens of thousands of ordinary people who are the ones directly affected by climate change, and so will their children, and children's children, and groups of environmental activists. They came to demonstrate and make their views on climate change known, and demand

Future generations are especially worried. Photo: JR


One of the rooms of the 3D tour of the Virtual Pavilion. Screenshot: Susann Warnecke

People from the global South and island nations are already now severely affected by climate change. Photo: Jack Rieley

stronger, more immediate action. Many of the latter came from distant parts of the world; some from islands and coastal areas experiencing climate change-induced sea level rise; others came from around the UK, including the City of Glasgow and its region. They kept up a constant barrage of noise, poster waving and street acting throughout the COP.

They did this largely at their own expense and without available inexpensive accommodation because virtually all within a 50-mile radius of Glasgow was either taken up by the COP organisers or priced well above its normal market value. It is to the credit of the many Glasgow citizens who opened their doors to many of these visitors to provide them with Scottish hospitality and beds for the night.

For more information please visit also the COP26 website at www.ukcop26.org and the UNFCCC documentation at www.unfccc.int, or contact those who participated on site or virtually on behalf of the IPS (see page 10).

Jack Rieley

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Chair IPS Scientific Advisory Board
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View from the "IPS House" in Gourock, Scotland. Photo: Jack Rieley

Peat - an important natural resource for food security and climate change mitigation

COP26 speech by Guus van Berckel

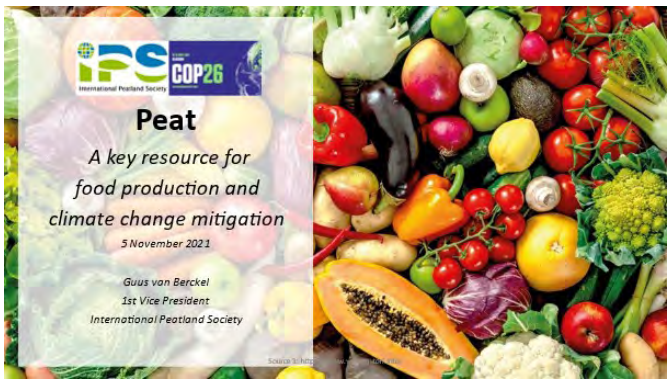
My name is Guus van Berckel. I am Vice President of the IPS and in my daily life, I am the CEO of a family-owned mid-sized company, active in the supply chain of the horticulture sector, including growing media production and peat extraction.

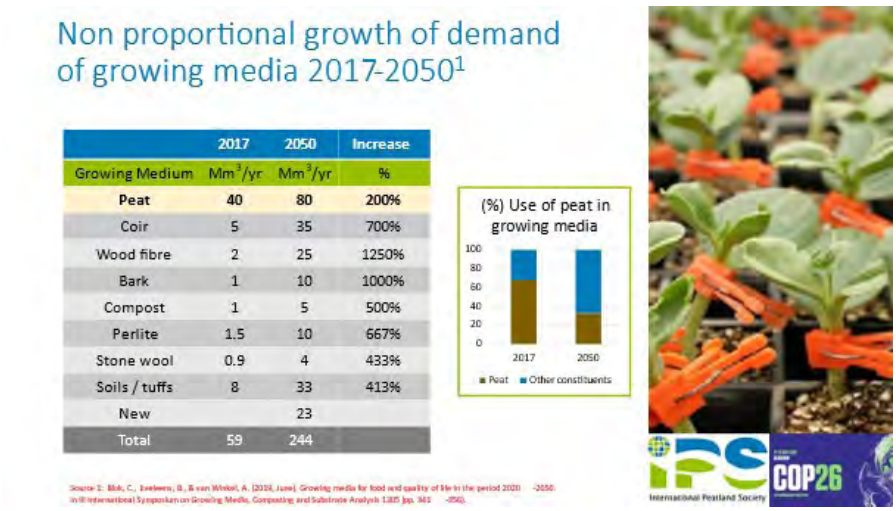
I am very honoured to have this opportunity to give a presentation here in "The Peatland Pavilion" during COP26. It is important that besides the environmental and social aspects of peatland and peat, economic aspects are also taken into account. This is the vision of the IPS with regard to responsible peatland management.

I am not representing the industry, I speak here as Vice President of the IPS, a multi-stakeholder NGO.

In 2017 the IPS asked Chris Blok of Wageningen University, a rooting medium specialist, to give a projection of the worldwide demand for peat over the next 25 years. He consulted many sources and concluded that demand would double by 2050. This was completely unexpected and you may also be surprised to learn this.

The main driver behind Chris Blok's prognosis is the growing world population, which will consume





	2017	2050	Increase
Growing Medium	Mm³/yr	Mm³/yr	%
Peat	40	80	200%
Coir	5	35	700%
Wood fibre	2	25	1250%
Bark	1	10	1000%
Compost	1	5	500%
Perlite	1.5	10	667%
Stone wool	0.9	4	433%
Soils / tuffs	8	33	413%
New		23	
Total	59	244	

more vegetables, together with the fact that 80% of these people will live in cities. Therefore, the use of peat is connected to other UN development goals such as zero hunger.

Another driver is the expectation that more and more edible and ornamental plants will be produced in closed systems, in a protected environment. Soilless growth is also mentioned.

This practice of growing has huge advantages compared to traditional growing practices. It also requires less water, fewer fertilizers, fewer pesticides and less land use for the same yield, but needs growing media or potting compost.

Nowadays, peat is the most important constituent of growing media. The current worldwide use of peat for this purpose is estimated to be 40M m^3, which results in equivalent annual emissions of 7 to 11M tons of CO_2.

These trends will boost the demand for growing media in the coming decades by 400% as this forecast shows, which will grow from its current figure of around 59M m^3 to 244M m^3 in 2050 (slide on the left).

Peat volume will grow from 40 to 80M m^3. The percentage of peat in growing media mixtures will decrease from its current volume of 70% to 30% by 2025, however, in terms of volume, peat will double.

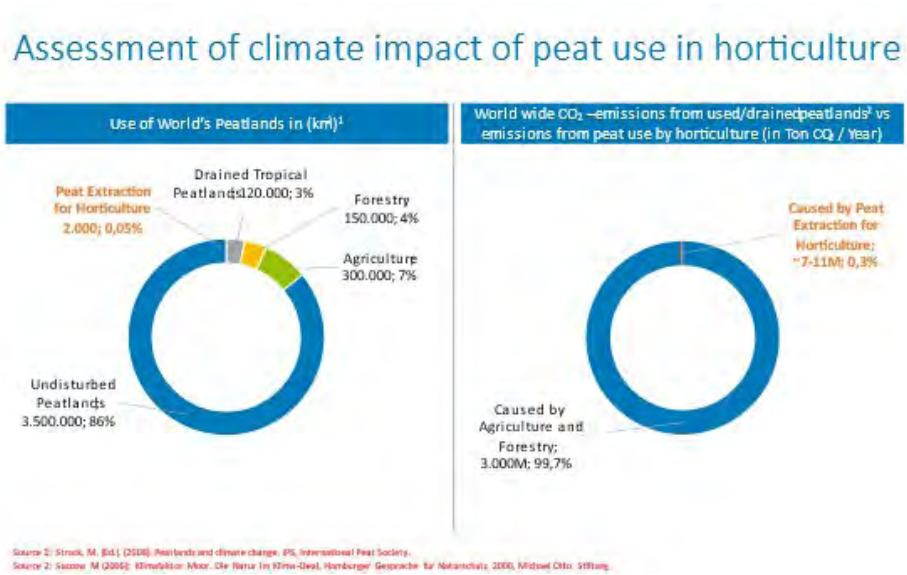
To replace peat with circular materials is a huge challenge for the horticulture industry and its suppliers, although research has been ongoing for 40 years. This is difficult while the concept of 'fit for purpose' is key, and because of the simple fact that circular materials are not available in the correct quantities and qualities.

I would like to conclude by showing the impact of the use of peat for horticulture. I do this to help governments, politicians and NGOs focus and direct their energy and money towards tackling the real problems. As a percentage of land use, peat extraction for horticulture accounts for

0.05% of the worldwide peatlands. As a percentage of CO_2 emissions from drained peatlands, peat extraction and its use account for 0.3%, which is 0.03% of global CO_2 emissions.

My conclusion is that we require smart solutions to meet multiple UN development goals. One of these smart solutions is the certification of peat extraction, based on the IPS wise use strategy and guidelines.

This leads on to our next speaker, Maureen Kuenen. She will present RPP certification. Thank you for your attention.



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Note of the editor: Most of the slides and a few recorded presentations of the 15-speaker IPS event in Glasgow can be found at www.peatlands.org/ips-networking-event-5-november.

Learn more:
Sustainability at
Klasmann-Deilmann

Evolution of Growing Media

“We welcome the increasing use of a wide range of raw materials in growing media. As the global market leader, we are playing a key role in driving this development forward. In addition to climate aspects, we value the benefits of our substrates for the food industry, reforestation projects and the many green oases at home and in gardens and cities.”

Dr. Jan Köbbing, Head of Sustainability Management at Klasmann-Deilmann

www.klasmann-deilmann.com

Encounters in the Swamp

Peatland sports events create a sense of community

The annual swamp sports events and festivals have established their position among the Finnish summer events calendar over the course of the 21st century. Similar events, especially swamp soccer tournaments, have also grown in popularity in several other European countries, such as Sweden, Estonia, Great Britain and Russia (Laurén 2006; Nikkilä & Korhonen 2008).

The following is a brief overview of popular carnivalistic swamp sports events in Finland. The text is based on the ongoing research project that focuses on new and unconventional uses of nature that are changing the cultural heritage of mires (Mire Trend research project).

Swamp Volley World Championship Tournament 2021 in Finland. Photo: Kirsi Laurén

Popular team games

In Finland, the swamp sport events have a history dating back more than 20 years. The starting point for the crazy idea of combining football and swamp is based on the long-standing tradition of top Finnish cross-country skiers who do strength exercises by skiing in swamps. A wet and boggy swamp offers a kind of challenge that cannot be found anywhere else (Suopotkupallo.fi).

The first swamp soccer competition was played in 1998 in the small municipality of Hyrynsalmi. The number of participants grew rapidly, leading to the first swamp soccer world championship tournament being held as early as 2000 in a natural state mire.

The variety of team sports played in mire areas has diversified over the years. The official Finnish championship of swamp bandy has been played in the Leivonmäki municipality since 1999, and a swamp volley event has been organized in the small municipality of Haukivuori since 2003.

The swamp volley (in Finnish suolentis) tournament became a world championship event in 2004 (Swampvolley.fi). The swamp soccer tournament is the biggest mire event bringing together thousands of women and men, while swamp volley and swamp bandy usually attract

Note that in this article the term "swamps" is used for peatlands as this is the commonly used term in connection with sports in the country, maybe because of its similarity to the Finnish "suo".

Playing in peat mud. Photo: Pauliina Latvala-Harvilahti

hundreds of participants. There are also players and teams from abroad. The swamp soccer tournaments are played every year in the same natural mire, whereas the swamp bandy and swamp volley tournaments are held in peatlands where peat extraction has ceased.

High heels in the swamp

Finland also has a completely unique swamp event that combines art and sports, the floral dress high heels swamp skiing event. It takes place during the summer in the Kapustasuo mire, in the small city of Pudasjärvi. The event has been developed by a local artist, Kari Tykkyläinen, who originally planned it specifically for women.

This humorous event was held for the first time in 2007. Over the years, the number of participants has grown, and more and more men are also involved. For example, in 2020, around half of the 80 participants were men, and a few children were also present. Dressing up is an important part of the event. Women wear a floral dress and high heels that are screwed onto a pair of skis. Men, on the other hand, wear men's suits, but many of them dress in the same way as women. The goal is to ski as fast as possible for around 30 metres in the swamp. Skiers can ski alone or in a team. Kari Tykkyläinen hosts the event from start to finish and entertains those present with his singing, music and humorous stories.

Let's have fun and get dirty!

When players are asked what they enjoy most about mire sport events, they typically respond having fun, being together and getting dirty. People like to go to the swamp festivals with friends or co-workers, to play as a team and enjoy themselves. Playing does not necessarily require special skills and it is typical that the players do not train in advance for the tournament. Although the competition is not taken very seriously, the

Ready for skiing with a floral dress and high heels. Photo: Kirsi Laurén

winning teams often do have a sporting background.

The sports events on mires are humorous, boisterous and carnivalistic in nature, which is emphasized by special costumes. The participants say that it is essential to get dirty and feel the peat on their skin. The swamp and the presence of other people, as well as the sense of community, makes it possible to break away from everyday life. They find it liberating to throw themselves into the carnival atmosphere.

The ecological aspects of mires are not specifically considered in swamp sports events. Rather, the mire is the background to the social action (Laurén & Latvala-Harvilahti 2021). Since the events are always held in the same mire areas, they are thought not to harm nature, especially when the tournaments are played in a cutover bog after peat extraction. However, it has emerged in interviews with those participating in swamp sport events, that these events prompt people to think about the natural values of mires, which otherwise would not be considered.

Artist Tykkyläinen hosted the event in the summer of 2020 dressed in an angel's outfit. Photo: Noora Vikman

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Wind erosion on UK agricultural peatlands

The East Anglian Fens are a thriving agricultural landscape. They contain ~50% of England's high-grade agricultural land, produce ~33% of England's vegetables and support a food production industry worth £3 billion GBP[1]. However, having been subject to drainage for hundreds of years, these soils are vulnerable to both mineralisation of soil organic matter (SOM) and wind erosion.

My research aims to understand better the processes driving peat loss and how these might be mitigated. Given the high productive value of these soils, farmers have a vested interest in reducing losses and my research is supported by G's Growers, a major producer of salad vegetables in the Fens. Here I report on a program of research aiming to understand and mitigate wind erosion losses.

Mineralisation of SOM changes the physical properties of agricultural peat soils and over time a fine, granular topsoil forms. This contains many small, light particles, which are highly susceptible to wind erosion. Sediment transport rates of 2.3 - 12.8 t ha^{-1} yr^{-1} have been measured at my study site, with erosion exacerbated by periods of high winds and bare soil[2]. Not all this sediment leaves the site; much is deposited in drainage ditches and at field margins. However, soil contamination

Lettuce crop on peat in the East Anglian Fens.
All photos: Benjamin Freeman

The PI-SWERL next to a lettuce crop.

of crops reduces their value and wind erosion is therefore an economic issue for farmers.

In order to help target mitigation measures, it is important to understand spatial/temporal variation in the vulnerability of soil to erosion and how these are influenced by farm management operations. To investigate this, I undertook a field sampling campaign using a PI-SWERL. This device uses a spinning ring inside a chamber to create an erosive force. It then measures the resulting dust concentrations to provide an index of erodibility comparable to full sized wind tunnels. It is highly portable which allowed us to test a range of surfaces across G's farms under real world conditions.

Crop management had a significant effect on dust emissions, with erodibility increasing through the crop management cycle. This indicates that farm operations may physically abrade aggregates, creating finer particles, which are more susceptible to erosion.

After ploughing, higher SOM soils were more vulnerable to erosion than those with lower SOM content. The higher particle density of lower SOM soils appeared to be protective. However, management activities around crop establishment appeared to produce many small, light particles regardless of SOM content. This creates a period of vulnerability when bare soil is exposed between juvenile crop plants.

One surface, which had been subject to heavy harvesting traffic, was highly erodible. More measurements are needed to confirm this finding. However, it indicates that vehicle traffic routes may create erosion hotspots, especially because vehicles also create turbulence and disturb dust. Vehicle routes may therefore represent important targets for mitigation.

IPS' Allan Robertson Grants (€500) are awarded to:

a) young peatland and peat researchers carrying out research or practical work or
b) young professionals in early stages of their career in managing peatlands or peat industry.

The grant reports of 2021 will be published in the 2022 issues of Peatlands International.

Next deadline is **31 January 2022**. More info and an application form can be found at www.peatlands.org/about-us/honoursgrants. Grants are kindly sponsored by the National Committees of Estonia, Ireland, UK, and IPS.


Bare soil between young plants showing surface after PI-SWERL test.

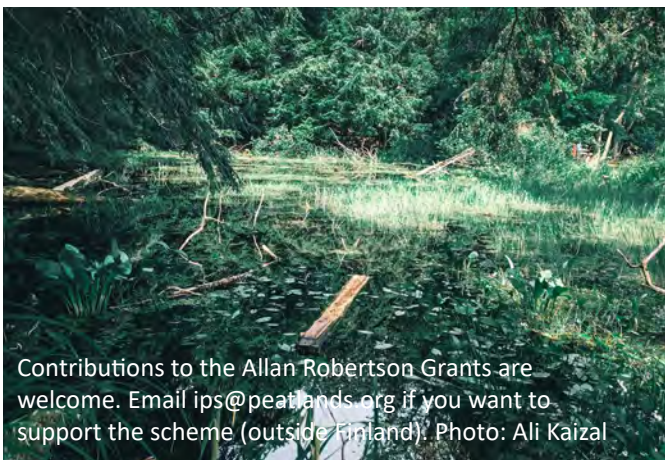

Soil contamination of a lettuce crop.


Salad residue left to shield the soil surface.


Shelterbelt to protect recently ploughed fields.

For electrical safety reasons, measurements could not be made on soil that was still wet from irrigation. However, dust emissions were lower from moister soils in our sample. Irrigation also forms a thin surface crust, and so may offer some temporary protection against erosion at lower wind speeds; as long as the soil remains damp.

G's are implementing a range of erosion mitigation measures on their farms. Winter cover cropping is widespread and salad residues are left on field surfaces. They are also integrating shelterbelts and hedgerows into the landscape and are using companion cereal crops to shield the bare soil between rows of young vegetable crops. We are investigating more options to mitigate wind erosion at times of limited vegetation cover. We hope our findings can help farmers to protect the peat from wind erosion.


Contributions to the Allan Robertson Grants are welcome. Email ips@peatlands.org if you want to support the scheme (outside Finland). Photo: Ali Kaizal

I am grateful to the IPS for the award of the Allan Robertson Grant to support my work. My research is supported by a NERC studentship through the STARS CDT and part-funded by G's Growers Ltd. Thanks are due to Martin Hammond, Peter Shropshire, Rob Parker, Emma Garfield and all the staff at G's farms for their support with this research. Thank you also to Giles Wiggs and to my supervisors Chris Evans, Dave Chadwick and Davey Jones.

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Benjamin Freeman

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Holocene scale development history of a subarctic fen

With the financial support of the Allan Robertson Grant 2020, I was pleased to participate in the International Peatland Congress 2021 and present our research paper, published in the Quaternary Science Reviews.

In my oral presentation, I had the opportunity to present the background, methods and main findings of our results that are briefly summarized below and provide answers to questions from the audience. I would also like thank the IPC2021 organisers for the well-formulated congress. Even though the event was held online, it was intriguing and educational to follow the presentations and posters dealing with various peatland-related topics.

My presentation concentrated on the Holocene scale development history of a subarctic fen in northern Finland. Palaeo methods were applied to reveal the initiation processes of the fen. We sampled the basal peat layers with a peat corer and dated the peat layers.

The dating methods revealed that the peatland was formed ca. 9500 years ago and that the greatest lateral peatland expansion took place between ca. 9000 and 7000 years ago. We also aimed to reveal the aggregate effect of the peatland on the atmosphere and for this, we reconstructed the radiative forcing of the peatland from its initiation to the present day. In the fen studied, carbon fluxes have been measured by the chamber and eddy covariance technique

Figure 1. A photograph from the fen studied, picturing the patterned microtopography of the peatland, with high strings and wet flarks. Photo: Sanna Piilo

over the years by other researchers, and we were able to apply these results to our reconstructions of the past lateral growth of the peatland and to reconstruct vegetation assemblages for each inspected time period.

Based on plant macrofossil analysis, we deduced that the current highly patterned microtopography of the fen, with high and dry strings and wet flarks, (Figure 1) was formed only ca. 1000 years ago. Carbon accumulation showed high variability during the peatland succession, including the recent past. The radiative forcing modelling suggested that the fen had an overall cooling effect during its history, despite periods of a warming effect caused by higher methane emissions.

We were interested to establish whether the known historical warm and cool climate phases had an effect on peatland development and carbon or vegetation dynamics, but we were unable to detect any consistent peatland-scale patterns caused by the past climatic phases. Our data suggested that the changes in vegetation were more related to autogenic succession and reflected the changes in the carbon dynamics. Our study also highlighted the need for multiple study points per site to reconstruct peatland development and carbon dynamics comprehensively.

The paper presented can be found at https://doi.org/10.1016/j.quascirev.2020.106596.

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New Articles in Mires and Peat

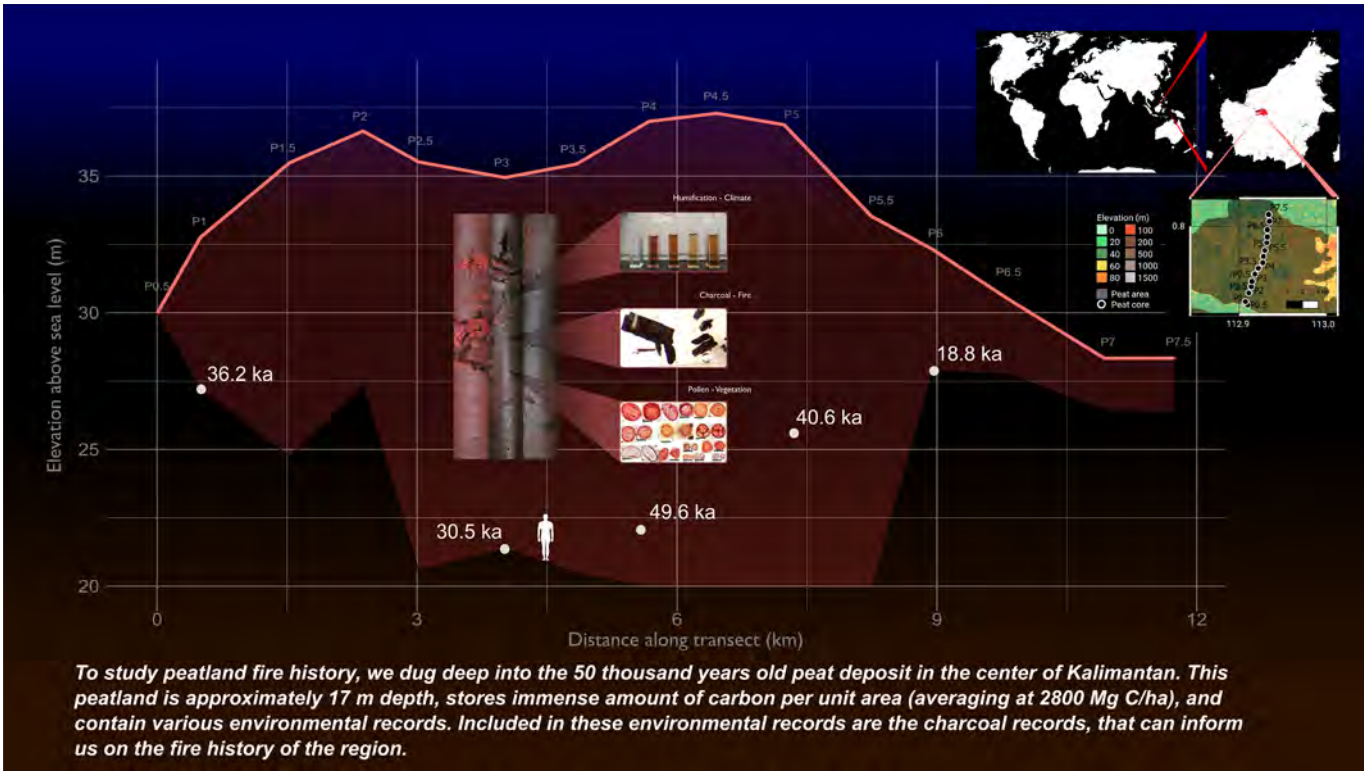
- The potential role of coconut in improving the sustainability of agriculture on tropical peatland: A case study of 32 years' practice in Pulau Burung District. by N.I. Fawzi, A.N. Rahmasary, I.Z. Qurani
- Description of a peatland complex in an agricultural landscape on Terceira Island (Azores): Criação do Filipe Case Study. by C. Mendes, E. Dias, D. Pereira
- Status of plant-available potassium after 17 years of wet grassland restoration on a degraded minerotrophic peat soil. by S. Heller, J. Müller, M. Kayser, S. Jensen
- Recommendations for successful establishment of Sphagnum farming on shallow highly decomposed peat. by A. Grobe, B. Tiemeyer, M. Graf
- Current state, pressures and protection of South African peatlands. by P.-L. Grundling, A.T. Grundling, H. Van Deventer, J.P. Le Roux
- Static and dynamic characterisation of Agartala peat. by R. Debnath, R. Saha, S. Haldar
- Changes in plant cover of a mire in southern Karelia, Russia over 50 years following drainage. by S.I. Grabovik, L.V. Kantserova, V.A. Ananyev
- Assessment of the effect of drainage on the accumulation of Zn, Cu, Pb, and Cd in bog plants: a case study of two raised bogs in Western Siberia. by L.P. Gashkova, Y.A. Kharanzhevskaya, A.A. Sinyutkina
- The effect of wood ash application on growth, leaf morphological and physiological traits of trees planted in a cutaway peatland. by S. Neimane, S. Celma, A. Zuševica, D. Lazdina, G. Ievinsh
- Sphagnum farming substrate is a competitive alternative to traditional horticultural substrates for achieving desired hydro-physical properties. by R. Müller, S. Glatzel
- Thirty years later: How successful was the restoration of a raised bog in the Swiss Plateau? by S. Frei, R. Holderegger, A. Bergamini
- Peat and other organic soils under agricultural use in Germany: Properties and challenges for classification. by M. Wittnebel, B. Tiemeyer, U. Dettmann

Mires and Peat - the scientific journal of IPS and IMCG. Submit your paper. **www.mires-and-peat.net**

The oldest extant tropical peatland in the world: a major carbon reservoir for at least 47,000 years

When we collected samples from a peatland in the middle of Borneo Island in Southeast Asia, we found a deep peat deposit (17-18m) and a radiocarbon date, indicating that it was almost 50 thousand years old. Therefore, this peat sample originated from one of the oldest extant peatlands in the world.

This peatland is a long-term carbon sink, but unfortunately, during previous decades, due to land cover change and fire events, the peatlands



To study peatland fire history, we dug deep into the 50 thousand years old peat deposit in the center of Kalimantan. This peatland is approximately 17 m depth, stores immense amount of carbon per unit area (averaging at 2800 Mg C/ha), and contain various environmental records. Included in these environmental records are the charcoal records, that can inform us on the fire history of the region.

in Borneo have degraded and have become a carbon source instead. Despite their importance in the global carbon cycle, tropical peatland is much less studied compared to temperate peatland. Moreover, as a Borneo native, who has a wealth of experience of the impact of peat forest fires, including the loss of a family member, I decided to study this ecosystem.

Beside functioning as a carbon sink, this peatland also holds significant value as an environmental record of climate, paleoecology and fire history of this region.

Currently, we are in the process of examining the fire history and carbon accumulation reconstruction using the charcoal count method.

Funding from the Allan Robertson Grant is mainly used for vertical radiocarbon analysis on the three oldest peat cores from our site.

One paper was already published from this study: https://iopscience.iop.org/article/10.1088/1748-9326/abb853.

Thank you very much for your support.

Monika Ruwaimana

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New Members of the IPS

New members (or new contact persons for corporate and institute members, and industry partners) are mainly approved by our National Committees. For all 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 7 December 2021). In some countries, IPS has both a National Committee and an industry association as a member.

Student members:
Finland (Suoseura): Olivia Kuuri-Riutta

Individual members:
Canada (CSPP): Talal Asif, Kathy Pouliot
Finland (Suoseura): Riku Rinnekangas
Ireland: Jenny Neff
United Kingdom: Alma Adventa

Welcome to the peatland family :)

Corporate & institutional members:
Canada (CSPMA): Philippe Malboeuf (Yves Malboeuf Custom Work inc.), Pierre Sabouring (Balcan Plastics)
Germany: Philip Testroet (Industrieverband Garten e.V., IVG)

Finland (Suoseura): Hannu Tolonen (Metsähallitus Metsätalous Oy)
(Bioenergia ry): Pasi Rantonen (Neova Group)

You can ask for, change or delete your membership information any time by contacting susann.warnecke@peatlands.org.

More info, membership benefits and membership form: www.peatlands.org/join-us

We all have peat on the plate...

In only 1 m³ peat substrate it is possible to produce up to 350,000 vegetable seedlings. Without peat efficient commercial horticulture is not conceivable. And our plates were nearly empty.

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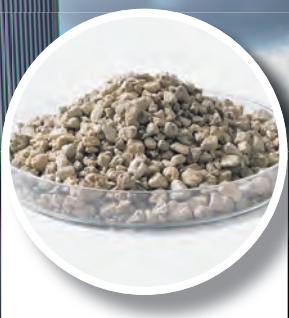

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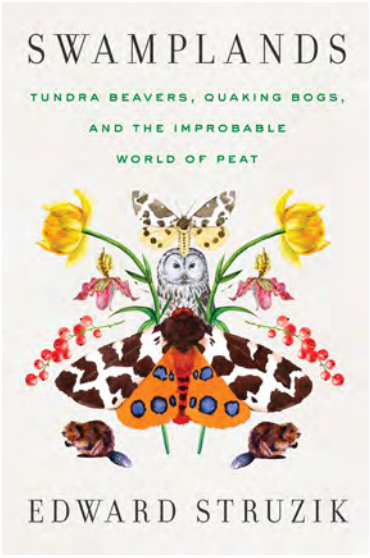
NEW BOOK

Swamplands: Tundra Beavers, Quaking Bogs, and the Improbable World of Peat



For more than a thousand years, peatlands - including bogs and fens, and to a lesser extent swamps and marshes - were considered to be dismal, unhealthy "wastelands" that were a source of disease and the haunt of evil spirits such as corpse candles and will-o-wisps.

Peat is partially decomposed plant material that builds up over centuries in swampy, waterlogged conditions. Representing just three percent of the earth's landscape, peatlands can store four times more carbon than the Amazon rainforest and twice as much as all of the world's forests.

They play an outsized role in regulating climate, filtering water, mitigating floods, drought, and wildfire, and providing refuge for new and critically endangered species such as the Bornean orangutan, the re-introduced red wolf, and the Red-cockaded Woodpecker. In Swamplands: Tundra Beavers, Quaking Bogs, and the Improbable World of Peat, writer Edward

Cotton-grass meadow in a peatland at Strathcona Fiord on Ellesmere Island in the High Arctic. The fossils in a 4.5-million-year-old beaver pond nearby offer an intriguing look at what kind of plants and animals lived there back then, when the Arctic was much warmer. Photo: Edward Struzik

Struzik highlights the struggle waged by scientists, conservationists, and landowners to protect these vital ecosystems against the many threats they face, including urbanization, mining, and resource developments, as well as climate change and runaway wildfires. Struzik visits with scientists and indigenous people, exploring the haunting past of the Great Dismal Swamp in Virginia and North Carolina, and the windswept, tropical bogs in Kauai, Hawaii, where biologists engage in "extreme botany" to help save some of the world's rarest plants from extinction. In the Mojave Desert, one of the hottest, driest places in the world, he explores the last remnants of an ancient peatland where critically endangered fish live and fossil water takes up to 15,000 years to seep into the ecosystem. And in the Canadian wilderness, he searches for rattlesnakes and polar bears that den in peat, and butterflies and moths that were once thought to be extinct.

These critically important peatlands are still being systematically drained and degraded by oilsands, mines, farms, and hydroelectric projects as well as for the electric power that peat can produce. As a warming climate thaws frozen peatlands, the carbon held in the permafrost will contribute to climate change rather than mitigate it. While conserving existing peatlands is the most effective method to protect them, scientists have proven that in many cases successful, inexpensive solutions to restoring peatlands exist, from growing peat to reintroducing beavers to help restore swamplands. An ode to peaty landscapes in all their offbeat glory, Swamplands delivers an urgent call to understand the importance and beauty of these so-called "wastelands." Our planet's survival might depend on it.

Edward Struzik has been writing about scientific and environmental issues for more than 30 years. A fellow at the Institute for Energy and Environmental Policy at Queen's University in Kingston, Canada, his numerous accolades include the prestigious Atkinson Fellowship in Public Policy and the Sir Sandford Fleming Medal, awarded for outstanding contributions to the understanding of science. His books include Future Arctic, Arctic Icons, The Big Thaw, Northwest Passage, and Firestorm. He is an active speaker and lecturer, and his work as a regular contributor to Yale Environment 360 covers topics such as the effects of climate change and fossil fuel extraction on northern ecosystems and their inhabitants.

A review will be published in one of the next issues of Peatlands International.

Island Press
700 12TH ST NW STE 700 PMB 95497
WASHINGTON DC 20005-4052 USA
https://islandpress.org/books/swamplands

One of many permafrost slumps in the Arctic that are resulting in lakes draining and water chemistry changing. Photo: Edward Struzik

Call for papers for special issue journal Sustainability of Tropical Peatland Conservation and Restoration

Sustainable and Climate-Smart Technology, Finance and Management Models. Submissions are open until April 2022. The scope for papers includes:

- An increased technical understanding of tropical peatland dynamics, rewetting regimes and revegetation practices;
- Emerging stakeholder-led management models, including local and community-driven approaches and private sector value chain transparency and conservation schemes;
- Leveraging the power of innovative technologies;
- Mobilizing promising sources of finance; and
- Embedment into national and local government policy and enforcement programs and linkages to relevant international agreements, such as the Sustainable Development Goals (SDGs) and Paris Agreement Nationally Determined Contributions (NDCs).

The call seeks contributions from practitioners, academics and postgraduate students - particularly encouraging submissions from those in developing and emerging countries working on tropical peatland management challenges on a day-to-day basis.

Interested contributors can access www.mdpi.com/journal/sustainability/special_issues/tropical_peatland_conservation_restoration or contact the Guest Editors for more information.

Oriental hornbill. Photo: Mathew Schwartz

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Open positions

New section!

The IPS is looking for volunteers for the following positions:

Chair and two Vice Chairs for the Commission "Peatlands and Economy"

This is the Commission that coordinates all business-related issues of peatlands and peat - including peatland use for horticulture, forestry, and agriculture. Main responsibilities are the organisation of economy-related events, reporting on and encouraging activities in the sector, and coordinating relevant stakeholder engagement. The Chair of the Commission is member of the Scientific Advisory Board, and participates in convention work and the Merlin project. The Chair position is **vacant as of 1 January 2022**. All three positions are voluntary commitments.

Coordinator for the Expert Group on "Peat for Growing Media"

This includes all kind of activities for horticulture experts and the growing media industry, as well as specialists working in the extracting sector - such as expert statements, webinars, other events, reviews and business intelligence. The Expert Group reports to the Economy Commission.

Coordinator for the Expert Group "Peatlands and people, health and local livelihoods"

This person could especially come from the Tropics, but also other applications are welcome. The Expert Group reports to the "Peatlands and Society" Commission, which is chaired by Marie Kofod-Hansen.

Please send your short application and CV to the IPS Secretariat at ips@peatlands.org. These are unpaid positions, but they will allow you to work with top scientists and professionals, and are an excellent addition to your curriculum - as well as most likely an entry ticket to presenting at some of the most important events in our field.

The Institute of Landscape Ecology at the University of Münster (WWU), Germany, seeks to fill the position of a

Research Associate
(salary level TV-L E13, 65%)

The position is subject to the approval of the third-party funds in the project "ReVersal - Restoring peatlands of the nemoral zone under conditions of varying water supply and quality". The fixed-term position will start **1 March 2022** or later and is limited to three years.

We are looking for a highly motivated candidate to work with us in the European BIODIVERSA project "ReVersal - Restoring peatlands of the nemoral zone under conditions of varying water supply and quality". The main objective of the project funded within the call "Conservation and restoration of degraded ecosystems and their biodiversity, including a focus on aquatic systems" is to develop a spatio-temporally explicit indicator system for peatland restoration success across peatland sites and across spatio-temporal scales.

Photo: Lauren Rader


Photo: Eric McLean

Your tasks:

The prospective candidate will work in an international and interdisciplinary team and will be responsible for the development of an upscaling approach from local field measurements via very-high resolution UAS-data to the satellite-scale. The candidate will derive peatland restoration indicators directly from multi-sensor remote sensing signals and model more complex indicators such as potential gas fluxes by use of machine learning methods. The candidate will publish results in peer-reviewed journals and present them at conferences.

Our expectations:

We are looking for a highly motivated candidate who wants to work at the interface between landscape ecology and geoinformatics. The candidate should possess a higher education degree (diploma, master's degree or equivalent) in landscape ecology, geography, geoinformatics or a comparable programme, with a strong focus on remote sensing and/or spatial modelling. For data analysis and processing, sound knowledge in R is mandatory. Prior experience with applying machine learning methods for spatial modelling of environmental variables is desirable. The candidate should demonstrate a keen interest in ecological research questions, especially in the field of ecosystem restoration and should be willing to perform fieldwork. Prior experience with planning fieldwork and experiences with data acquisition using UAVs are desirable. Fluency in spoken and written English is required, as well as excellent team skills.

The University of Münster is an equal opportunity employer and is committed to increasing the proportion of women academics. Consequently, we actively encourage applications by women. Female candidates with equivalent qualifications and academic achievements will be preferentially considered within the framework of the legal possibilities. The University of Münster is committed to employing more staff with disabilities. Candidates with recognised severe disabilities who have equivalent qualifications are given preference in hiring decisions.

Enquiries can be directed to Prof. Hanna Meyer (hanna.meyer@uni-muenster.de) or Dr. Jan Lehmann (jan.lehmann@uni-muenster.de). Please send your application (in German or English) with a letter of motivation, CV and copies of your degree certificates in a single PDF via e-mail to Dr. Beate Keplin (keplin@uni-muenster.de) by 31 December 2021. Interviews are planned to take place on January 11th/12th, either remote or in presence, depending on the current situation in the pandemic and the possibilities of the candidates to travel.

***

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joint project funded within the call “Conservation and restoration of degraded ecosystems and their biodiversity, including a focus on aquatic systems” is to develop a spatio-temporally explicit indicator system for peatland restoration success across peatland sites and across spatio-temporal scales.

Your tasks:

The prospective candidate will work in an international and interdisciplinary team and will be responsible for the biogeochemical characterization of chosen field sites as model systems for degraded and/or restored peatlands in the involved countries (Germany, Austria, The Netherlands, Poland, Sweden) and estimate their carbon stocks and fluxes. This will involve laboratory analyses of peat and vegetation, incubation techniques, in-situ gas flux measurements (in campaigns), and working with long-term flux data to assess potential and actual carbon losses.

Close collaboration will be with paleoecologists to reconstruct past environmental conditions. Further collaboration with project partners contributing gas flux measurements, addressing site hydrology, ecology and vegetation, microbial diversity, biomarkers, and developing upscaling tools using UAS and satellite data is essential. The candidate will publish results in peer-reviewed journals and present them at conferences.

Our expectations:

We are looking for an excellent candidate who wants to work at the interface between ecology, hydrology, and biogeochemistry. The candidate should possess a higher education degree (diploma, master’s degree or equivalent) in landscape ecology, geoecology, soil science, geography or a comparable programme, with a strong focus on biogeochemistry. Extensive knowledge in soil science and/or carbon turnover in ecosystems is mandatory.

Experience in laboratory analyses of soil and/or organic matter, in ecosystem ecology, or in chamber-based gas flux measurements is desirable. The candidate should demonstrate a keen interest in ecological research questions, especially in the field of ecosystem restoration and should be willing to perform fieldwork. Prior


Münster, Germany. Photo: 30daysreplay

experience with planning fieldwork is desirable, as well as experience in outreach and communication with involved stakeholders. Candidates should be willing to travel to sites, interact with the international team both in presence and via remote communication, and should possess a driver’s licence. Fluency in spoken and written English is required, as well as excellent team skills.

The University of Münster is an equal opportunity employer and is committed to increasing the proportion of women academics. Consequently, we actively encourage applications by women. Female candidates with equivalent qualifications and academic achievements will be preferentially considered within the framework of the legal possibilities. The University of Münster is committed to employing more staff with disabilities. Candidates with recognised severe disabilities who have equivalent qualifications are given preference in hiring decisions.

Enquiries can be directed to Prof. Klaus-Holger Knorr (kh.knorr@uni-muenster.de). Please send your application (in German or English) with a letter of motivation, CV and copies of your degree certificates in a single PDF via e-mail to Dr. Beate Keplin (keplin@uni-muenster.de) by 31 December 2021. Interviews are planned to take place on January 11th/12th, either remote or in presence, depending on the current situation in the pandemic and the possibilities of the candidates to travel.

Contact ips@peatlands.org if you want your open positions be announced on the IPS website and/or in the next issues of Peatlands International. The Editor reserves the right to publish or not, edit or shorten announcements. Links are preferred.

Peat and Peatland Events

Cancellations or changes of dates due to Covid-19 possible. Check the event websites for updates!

Finnish National Committee
Annual Autumn Meeting 2021
Via Zoom
13 December 2021
www.suoseura.fi

Executive Board Meeting
MS Teams
20 December 2021

Finnish Peatland Day
Peatlands in a Changing Society
Helsinki, Finland
2 February 2022
www.suoseura.fi

National Committee Round Table
Via MS Teams
21 February 2022
www.peatlands.org

Merlin Spring Meeting
Germany
March 2022

Convention on Biological Diversity COP 15.2 onsite
Kunming, China
25 April - 8 May 2022
www.cbd.int

World Peatlands Day
2 June 2022 online
#worldpeatlandsday

IPS Annual Convention 2022
6 - 10 June 2022
Venue to be confirmed
www.peatlands.org

31st International Horticultural Congress
Angers, France
14 - 20 August 2022
www.ihc2022.org

AsiaFlux Conference
Kuching, Sarawak, Malaysia
September 2022
www.asiaflux.net

RE3 & IPS Annual Convention
Canada 2023

17th International Peatland Congress
Changchun, China
Summer 2024

More at: www.peatlands.org/events

Peatlands International

valid also for 2022!

Media Kit 2021

Media Description

Peatlands International is the global magazine of the International Peatland Society.

It is read at companies in the horticultural and energy sector, universities, research institutes, scientific organisations and other institutions as well as by private persons interested in peat and peatlands in more than 33 countries of the world.

Distribution

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