

Peatlands

International

issue 2.2021



Thank you for
our Congress!

The Estonian Peat Database
Welcome to "Ghent" ISHS-IPS Symposium
Successful IPS-INAR Peatland Restoration Webinar
Extracts from the 16th International Peatland Congress
Amazonian open peatlands: a palynological investigation
Sphagnumfarm Barver: Planning, Building and One Year of Experience
17th Century Dutch 'Peat Advisors' had to deal with similar problems to those today
The peatlands of the East Anglian Fens: Measuring the impacts of long term drainage and intensive agriculture
Results of the IPS member survey 2020: Part II - What do you like about the IPS?

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Editorial

Recovery is on its way

Spring is a beautiful time in the latitudes of Estonia. Nature is starting to show signs of life again. Elks can be seen in our area all year round, but spring brings the frogs, who attempt to cross the roads. They are in search of a suitable water body for reproduction. Frogs' swing - is one of the fiercest sights in nature, the passion takes place right in front of your eyes.

People who work on peatlands also start up peat harvesting at this time of year. Gardeners expect effective growing media. The number of countries where the pressure to reduce or stop the use of peat is increasing, for example England, as has recently been reported. The only thing that does not decrease is demand for peat. More people want a nice garden, to eat vegetables, as well as give and receive flowers for anniversaries.

This spring, the number of scientists involved with peatlands and representatives of the peat



Lahermaa, Estonia. Photo: Maksim Shutov

industry has also increased. The 16th International Peatland Congress (IPC) has become an event of the past. One hundred and eighty-five presentations were made at the so-called Tallinn Congress at the beginning of May.

This resembled a global spider web: technicians in Estonia, a presenter in Indonesia, for example, and a panel moderator in Canada. The only place where there was silence, were the lobby bars of the Tallinn hotels, because everyone was in their own homes. We warmly thank all who have

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.

Impressum

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Cover: Martimoaapa at Simo, Keminmaa in
Finland. Photo by Mikko Pekkala

www.peatlands.org/publications

contributed to the success of this important event.
See you latest in China in 2024!

Great things happen in sequence. We have just been informed that the European Commission approved in the Horizon 2020 - Research and Innovation Framework Program with maximum points, the MERLIN project - "Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: innovation, upscaling and transformation", totalling more than 20 million euros, with 44 partners and, among them, the IPS, with a small share.

In addition, we recently held a webinar especially for peatland restoration - world leading experts from 11 countries introduced their activities on 14th of June during a free live session.

We hope that the relaxation of COVID-19 restrictions will also give us the opportunity to meet face to face. The President of the IPS has received the first vaccination and the second has been scheduled.

Keep up the good work and enjoy the summer - at work, in the field or during holidays.

Marko Pomerants

IPS President
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ISHS-IPS 2nd International Symposium on Growing Media, Soilless Cultivation, and Compost Utilisation in Horticulture

22 to 27 August 2021
Virtual & Ghent, Belgium

#GrowingMedia2021 www.growingmedia2021.com

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Extracts from the International Peatland Congress

The IPS has its 16th International Peatland Congress behind, and we can say that all who have been involved have dealt very well with the challenges of our first large-scale virtual event!

Huge thanks to all participants, all speakers, all poster presenters, the sponsors, the organising and scientific committee, the congress bureau, the session chairs and all others who have worked for months to make the Congress a success.

Altogether 384 persons attended the event; we heard 185 oral presentations and had about 75 posters on display. In addition to the scientific sessions, also the virtual exhibition and the Industry Summit were very popular.

During the two panel discussions, experts from the growing media sector and those from international conventions and nature conservation truly exchanged views and ideas. Further events like this are very much needed to bring the goals of all



peatland stakeholders closer to each other, supported by fresh data and peer-reviewed research results.

You can view the Congress presentations until the end of this year. If you have not registered as participant yet for the live congress in spring, you can buy post-congress tickets via <https://holvi.com/shop/peatlands>. Contents are the same, just without interaction, and on Vimeo, without the pleasant user interface of the Brella system.

For the full programme, and further details, visit www.peatlandcongress2021.com.

Opening Speech

Welcome to Estonia to the 16th International Peatland Society's Congress.

Maybe I should talk quieter. The western hemisphere is still asleep, Canada, the States and South America. It might be the 16th Congress for the IPS Vice President Jack Rieley, but it is the first for me and hopefully not the last one.

I am currently in the bog of Viru. If someone from Tallinn can name one bog, then it is Viru bog. As a matter of fact, the bog islands have been places to hide from wars, diseases and repressions over many years.

This is kind of truth even today. In March last year, when COVID came into our lives and the first wave of closures took place, and people were advised to go into the outdoors, it happened that half of Tallinn collected here during the weekend. Over time, their horizons widened and other bog landscapes came into people's lives.

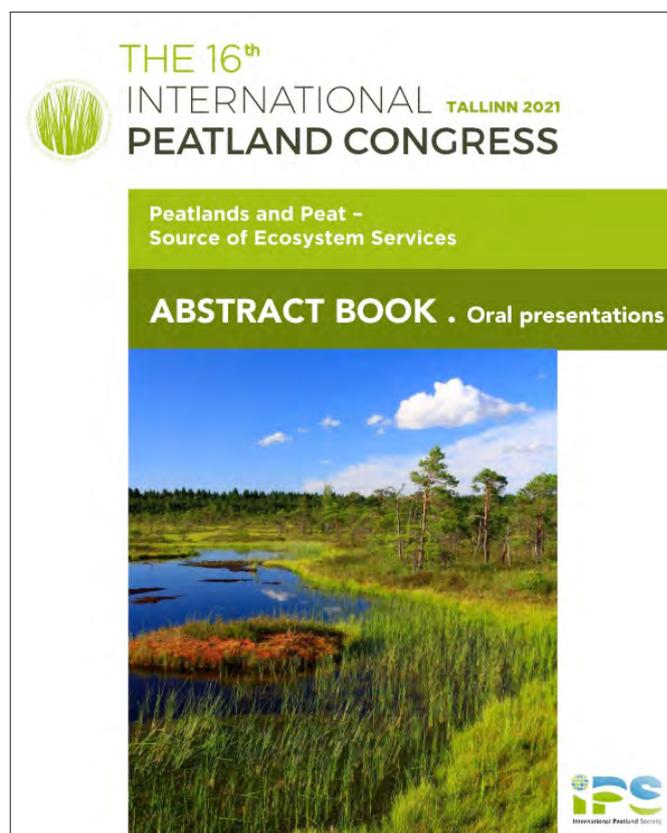
Just as we started to treat the COVID situation without knowing where it takes us, sometimes this seems to be truth about the future of our peatlands, because people dealing with peat and peatland might see issues differently. The future is in our hands. However, this doesn't mean that



we have many options. We can play only with the cards that have been given to us.

The four suits in playing cards are: clubs, diamonds, hearts, and spades, collectively represent the four elements (wind, fire, water, and earth.) All relevant keywords and it looks like the card suits come from the edge of the bog.

The cards dealt to us today are representing different ecosystem services. They all have their role and they must fit nicely in our hands, and we



The books of abstracts for oral and poster presentations were available for download via the Congress portal.



Marko Pomerants getting ready for the Congress. Photo by Tiit Mõtus

whether there can still be two such “large” harbors in one bay. Tarmo Soomere, President of our Academy of Sciences, was asked for his opinion. He said, "You know, if you were bitten by one mosquito before, now it's like two. What did I mean by that story?"

We sometimes think that our own organizations like IPS, GPI or GME, have a very powerful voice. In fact, on a global level, a swarm of mosquitoes would be needed to make the peat people heard. It seems to me that there is potential. It seems

must not play off the bogs. We can't afford a poker face either.

to me that there is potential if we are not foolish enough to compete against each other.

In the context of peatlands, our cards are more than appropriate. Mires are some of the most intriguing ecosystem service providers globally.

Understanding these ecosystem services and their relation to our everyday life helps us to appreciate and justify the need to protect natural resources and ensure responsible ecosystem management.

IPS has a significant role in endorsing the implementation of the Wise Use and Responsible Peatland Management concepts. We have to admit that questions and concerns have dominated past Peat Congresses, where the focus has been on ecological questions, conservation, restoration, etc. based on the submitted abstracts.

We have to admit that there is a lack of agreement between the peatland managers and environmentalists despite decades of side by side co-existence. Quite often, we do not understand each other and each other's needs. That presents a key challenge for the IPS in the future. We need to provide knowledge-based solutions. To consider and engage in the discussion of peatland ecosystem services at their broadest relevance and potential enables a unique opportunity for multilateral discussions.

Not far from here is the Käsnu Bay, which already has a small yacht and boat harbor in one village, and a passionate debate in another village, as to

-
- Congress Topics 1954 - 2024**
- 2028, Bidding starts in 2021
 - 2024, Changchun, China
 - 2021, Tallinn, Estonia “Peat and Peatlands - Source of Ecosystem Services (from now on Peatland Congress)”
 - 2016, Kuching, Malaysia "Peatlands in Harmony - Agriculture, Industry & Nature" (until here Peat Congress)
 - 2012, Stockholm, Sweden “Peatlands in Balance”
 - 2008, Tullamore, Ireland “After Wise Use - The Future of Peatlands”
 - 2004, Tampere, Finland “Wise Use of Peatlands”
 - 2000, Québec, Canada “Sustaining our Peatlands”
 - 1996, Bremen, Germany “Peatlands Use - Present, Past and Future”
 - 1992, Uppsala, Sweden “Peat in Nature and Industry - A Matter of Balance”
 - 1988, Leningrad, Soviet Union
 - 1984, Dublin, Ireland “Dublin Revisited: 30 Years of International Collaboration in Peat Development and the Challenge of the Future”
 - 1980, Duluth, Minnesota, USA “The Role of Peatlands in a World of Limited Resources - Energy, Food, Fiber and Natural Areas”
 - 1976, Poznan, Poland
 - 1972, Otaniemi, Finland
 - 1968, Québec, Canada
 - 1963, Leningrad, Soviet Union (Second Peat Congress)
 - 1954, Dublin, Ireland (First Peat Symposium)
-

Where the magic took place. The virtual congress backstage in Tallinn. Photo: Erki Niitlaan



I invite everybody to leave their prejudices aside and to listen to all partners! We may seek solutions that genuinely meet the needs of a maximum of interest groups, as opposed to merely their own. We should also not only follow known paths but go off the beaten track, walk on new duckboards. We must invite different interest groups to communicate with each other to generate synergy and fresh, innovative ideas.

I would like to warmly thank all sponsors who were ready to support our Congress under challenging circumstances. I thank the organizing committee of the Congress, and I am sure that everything will go well. I truly hope that a purely virtual Congress is a historical exception to the IPC, not a rule. Meeting face to face is a blessing, not a burden. Congress presentations can cover all kinds of services that bargains have to offer. The program promises to be diverse and interesting, which means that we will offer all participants world-class knowledge and experience.

As President of the IPS, I call on the rapporteurs to contribute on a daily basis to the work of the IPS expert groups and commissions. Remember - a swarm of mosquitoes is still much more effective than a bite of one of two mosquitoes.

There is one area that clearly remains to be missing, and that is the social interaction of the peat people on the evenings of Congress days. We hope you will still be able to talk with each other via the Brella tool.

To finalize my speech; Estonia is a country where the bread is black and the beer is dark as bog water, but it will remain like this until we can meet again, in real life. Enjoy the Congress!

Marko Pomerants

IPS President
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A view to the past

Dear fellow members of the IPS,

Greetings from Jyväskylä, the home city of the IPS office. Let me briefly comment on the IPS' history. I think I have the right to do so, as I have been involved in IPS activities since 1972. It all began in Espoo, when I attended my first IPS Congress as a liaison officer within a group of interpreters. In 1992, despite the heavy snowfall, I moved the IPS office from the University of Helsinki to Jyväskylä, where I held the position of Secretary General of the IPS until my retirement in 2004.

Significant changes in relation to the functions of the IPS have taken place since its foundation in 1968. This is clearly visible from the contents of IPS Congress programmes. Whereas in the 1980s, peat harvesting technology and the use of peat as an energy source played a central role in our congress and symposia programmes, today, the main focus is on climate change, peatlands as a carbon resource, the restoration of cut-over peatlands and the growing of peat moss, etc.

The change started during the presidency of Mr. Reidar Pettersson from Sweden between 1992 and 1996, and intensified from 1996 to 2000, when Professor Jens-Dieter Becker-Platen from Germany was IPS President. Since then, climate change has played an ever-increasing role in IPS scientific activities, with the role of industry gradually diminishing. Although not totally, the emphasis



Raimo Sopo and Susann Warnecke at the IPS Secretariat almost 20 years ago. Photo: Suvi Salo

has essentially moved from a fuel to a horticultural peat industry, as can be seen in the programme of the Tallinn Congress.

Today, as an outside observer, I am worried about the financial situation of the IPS. The abandonment of the industry's support may seem an ideologically sound development but, at the same time, this has resulted in the weakening of the financial preconditions required for the running of a basic, scientific society, such as the IPS. I hope that this fact will also be taken into account when planning future IPS activities.

Finally, I would like to congratulate the Estonian Peat Association for the organization of the IPS Congress. It has been my long-standing dream since the beginning of 1990s to see this take place in Estonia.

Raimo Sopo

IPS Secretary General 1992-2004
Honorary member of the IPS

Closing Speech

Dear Ladies and gentlemen, dear Congress participants! You haven't seen my face this week yet, but I can promise you that I have been following dozens of presentations on all four Congress days for 8-9 hours, as many of you have done.

My name is Susann Warnecke and I am currently Acting Secretary General of the IPS. That is one

of the few paid positions within our organisation, while all the other work is done by volunteers. So let me - at this point - thank all of you who have voluntarily contributed papers and posters to this Congress, all who have worked as moderators and reviewers, and the amazing technical magician team.

Huge thanks also to all sponsors and exhibitors, who have made this event possible: peat companies, suppliers and their friends. And of course the Estonian Peat Association, the Estonian Environmental Centre, Publicon, and the Estonian scientists who have put lots of work in each session. Well done, Mereli, Erki, Marko, Martin, Elve, Kirke and all others!

However, when talking about voluntary input and finances, we have a saying in German called "nichts kommt von nichts", nothing comes out of nothing. We have to keep in mind that IPS fully depends on membership fees. Large congresses like this can only be organised if we have funding available - also after this year. This is not self-evident. I thus warmly welcome each of you to join as member. Please also attend the General and Annual Assemblies of the IPS today at 3 pm as observers. This is where important decisions are being made for our future.

Dear folks, we have seen contributions on many different topics this week. From drones to potting plants, from Peru to Kalimantan, from Finland to Australia - people from all over the world are getting wet feet and dirty hands because they want to learn more about peat and peatlands.

We really need to come together and truly discuss compromises and alternatives to today's practices and policies if we want to save the planet, the economy and our health at the same time.

Last but not least, I warmly welcome you to next year's Annual Meetings in Latvia, and to the 17th International Peatland Congress in China in 2024. Stay as active as you were this week, fight corona, and let's keep in touch! Thank you very much!

Susann Warnecke

Acting Secretary General
susann.warnecke@peatlands.org

A photograph of two women standing in a field of tall grass and purple flowers, seen from behind. They are holding large bouquets of pink and white flowers. The woman on the left is wearing a light blue dress, and the woman on the right is wearing a white dress with vertical black stripes. The background is a soft-focus landscape under a cloudy sky.

See you in **Latvia!**
Next IPS Annual
Convention
8 - 10 **June 2022**

Mark the date!

Successful IPS-INAR Restoration Webinar

The International Peatland Society (IPS) together with the Institute for Earth System Research of the University of Helsinki (INAR), arranged an international webinar on "Peatland Restoration Worldwide - Where do we stand in 2021?" on 14th of June.

We combined the themes of the second World Peatlands Day (IPS), World Environment Day (United Nations) and the Decade on Ecosystem Restoration (UN) to set the date of this important

event. The latter is also promoted by the Society of Ecological Restoration which has its meeting later this summer.

Fifteen experts on peatland restoration from all over the world gathered in the MS Teams meeting which lasted for over three hours. The experts gave short presentations on the status of peatland restoration in their respective countries. Most were IPS members and were eager to talk about their work. Presentations included:



Late view via the IPS member folder or <http://bit.ly/presto21>

Teaser for the event. Photo: Edgar Karofeld

JOIN THE IPS WEBINAR

Peatland Restoration 2021

In cooperation with the
Institute for Atmospheric and Earth System Research of the University of Helsinki
14 June 2021 3-6 pm EEST | www.peatlands.org/events

- Opening by Marko Pomerants, IPS President
- World Environment Day - Peatland Ecosystem Restoration: Olli-Pekka Siira
- Peatland Restoration in Finland: Anne Tolvanen
- Peatland Restoration in Estonia: Ain Kull, Edgar Karofeld, Jüri-Ott Salm
- Peatland Restoration in Germany: Gerald Jurasinski
- Peatland Restoration in Sweden: Sabine Jordan
- Peatland Restoration in Indonesia, the need of Criteria and Indicators for Peatland Restoration: Daniel Murdiyarso
- Peatland Restoration in Lithuania: Nerijus Zableckis, Jūratė Sendžikaitė, Leonas Jarašius
- Peatland Restoration in Latvia: Andis Lazdiņš
- Peatland Restoration in Canada: Pete Whittington, Line Rochefort
- Peatland Restoration in Ireland: Mark McCorry
- Peatland Restoration in Scotland: Roxane Anderson
- Peatland Restoration in Czechia: Karel Prach
- Closing words: Susann Warnecke



We warmly welcome all participants to join Pete Whittington's Expert Group on Peatland Restoration (see peatlands.org/about-us/commissions-expert-groups-and-sab) and hope to meet you all in person for follow-up projects as soon as we have bogged down Covid-19.

In total, 90 people attended the event. Technically it was challenging to realize the event within a relatively short period of time immediately after the Peatland Congress. However, all speakers were present, and, with a few exceptions, the equipment worked well.

We received excellent feedback from those who were able to follow the live session. If you want to watch the recorded webinar, visit your IPS member folder or go directly to <http://bit.ly/presto21>.

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Susann Warnecke

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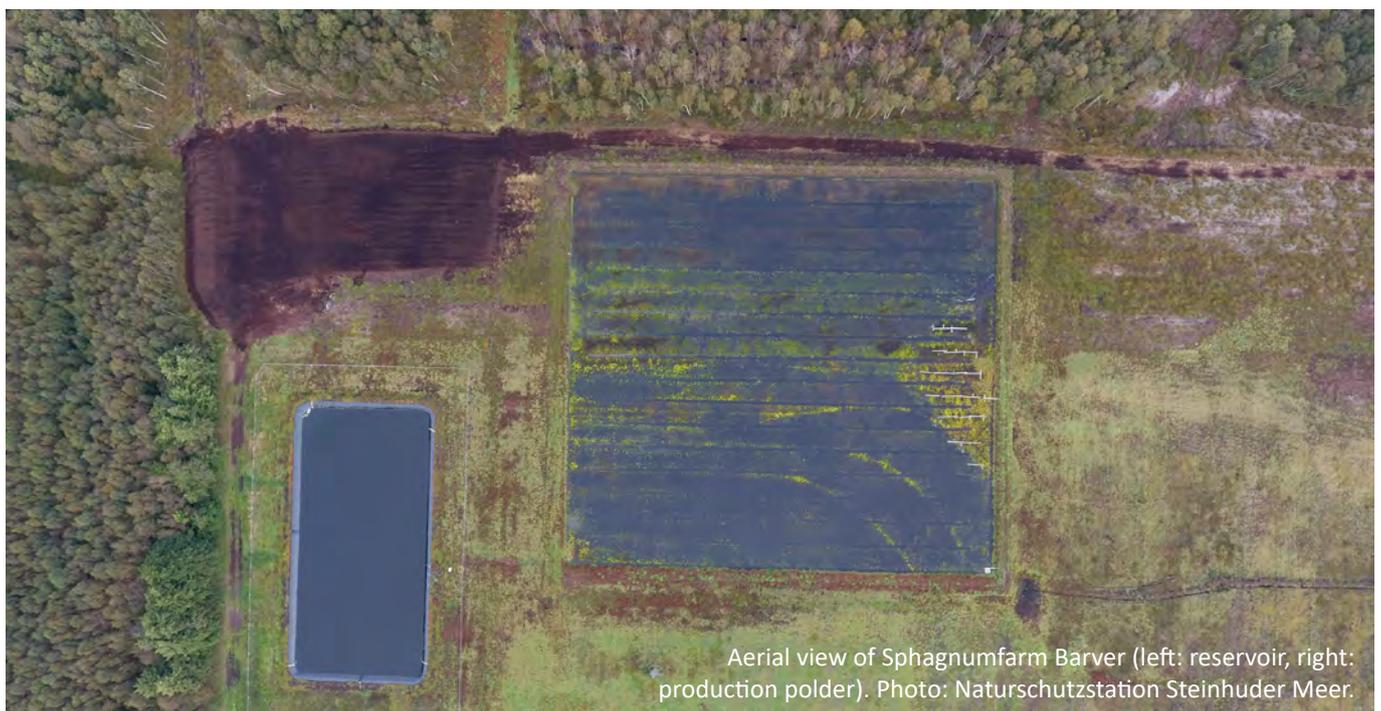
Sphagnumfarm Barver: Planning, Building and One Year of Experience

In 2020, the Interregproject CANAPE created a paludiculture pilot (size: one ha; geometry: quadratic) to trial the agricultural production of peatmosses on degraded, heavily drained and eutrophicated bog grassland, with the regional conditions of the Diepholz district (Lower Saxony, Germany: 52°37'54.6"N, 8°37'16.4"E) ("Sphagnumfarm Barver").

The site design was based on an in-depth, basic evaluation of the topographic, stratigraphic and

hydrogeological situation of the peat body. In addition, the depth of major nutrient enrichment was explored. Furthermore, meetings with residents and stakeholders provided helpful suggestions, due to their local knowledge of the area.

The resulting design was a complex compromise, providing adequate, technical, state-of-the-art solutions to the challenges of peat stratigraphy, a nutrient-rich topsoil, hydraulic issues and the



Aerial view of Sphagnumfarm Barver (left: reservoir, right: production polder). Photo: Naturschutzstation Steinhuder Meer.



Removal of earthified topsoil and digging of irrigation grid. Photo: Jens-Uwe Holthuis

chosen harvesting system. Parallel to this, the process of approval (construction permits, water consents, nature protection) and organization of power supply, etc. was initiated. The water permits, in particular, proved to be laborious and time consuming, since the water authority demanded comprehensive expertise for water extraction from a small main outfall.

Construction works started in November 2019 with the preparation of an almost perfectly flat surface. For usable growing conditions, this necessitates the removal of a large volume of eutrophic, earthified topsoil (approx. 4000 m³). The plain is surrounded by a peripheral trench, feeding 16 smaller irrigation trenches, dug through the polder surface. This should ensure an even

Harvesting of donor material at the famous Sphagnumfarm Hankhausen. Photo: Jens-Uwe Holthuis



Manual inoculation of the polder bed with fragmented peat mosses. Photo: Jens-Uwe Holthuis



spread of water and divides the polder into 16 production strips with a 6 m width between each ditch.

The surrounding causeway improves the microclimate and allows for the management of the water table to ensure a constant water level. Water overflow (storm water, snow melt) is removed by an adjustable outflow construction. Further earthworks included the traverse of pipes and cables and the destruction of at least three unknown drainage systems. Due to the difficult hydrology of the site, the supply of water is a key consideration for paludiculture at this site. Additional irrigation is necessary. This permanent water supply to the polder is ensured by a HDPE foil-sealed water reservoir, storing 2500 m³ of water. It guarantees that the Sphagnum carpet can be kept supplied with a steady flow of water, even during dry summers, without over extracting from local water bodies.

By the end of January 2020, the production polder, with a bed of bare, strongly-humified peat, the water reservoir and the hauling of pipes

for irrigation had been completed. In March, the installation of an automatic, sensor-controlled irrigation system, with necessary measuring and control equipment for the irrigation of polders followed. From then onwards, an automatically controlled inlet of polder allowed for active management of the water table, to obtain high and stable water levels, required for high Sphagnum growth.

Soon after the removal of the topsoil and by the end of March, the polder was kept saturated with rainwater to soak the peat intensively, so as to prepare for Sphagnum inoculation. Prior to planting, the water table was lowered to surface level, by opening the special outflow construction of the polder.

Finally, at the start of the vegetation season (April 2020) the dewatered polder was inoculated with the target species, *Sphagnum palustre*, *S. papillosum* and *S. magellanicum*, mixed with *S. cuspidatum* and *S. fallax*. The mosses were introduced as viable fragments of 5 - 6 cm in length. The total volume of the planted

Sphagnum material was 37.5 m³ per hectare. The spreading of the mosses was assisted by a small tractor with a cable winch, towing an improvised transport sledge, made of bigpaks, filled with the Sphagnum fragments. Subsequently, a team of 10 volunteers and contract workers spread the mosses uniformly by hand. This planting campaign lasted for three days. For a better capillary contact to the substrate, the mosses were rolled at the end. No straw cover was applied, because immediately after planting, the water table could be adjusted close to the ground surface or as shallow flood irrigation. The irrigation system worked as intended.

Following the end of seeding, the phase of Sphagnum cultivation began. After two months of intensive hydro-management, a growing Sphagnum carpet began to emerge. Sphagnum growth was favoured next to ditches, in wet depressions or in zones where water tends to accumulate briefly. To prevent the sensitive fragments from damage, due to the dry and hot weather in the summertime, the entire bed of the polder was shallow flood irrigated. Botanical monitoring showed that the planted fragments

were able to survive and grow when subjected to such long-term, shallow flooding (five months). At the end of 2020, different types of growth could be observed, in relation to the dependence of the origin of diaspores, the position of the water table (drier elevated zones exhibit retarded growth) and the kind of substrate (best growth in disturbed/ mixed aquiferous layers, such as former drainage ditches or soil replacement zones). In optimal situations, certain sectors exhibit densities close to 100% Sphagnum cover and a carpet thickness of 4 - 5 cm achieved within nine months. The remaining gaps in cover can be expected to be filled by the end of 2021.

The laborious and time-consuming operating activities include careful observation of the dynamic water regime (frequent controls of function, day-to-day vernier adjustments, troubleshooting with regard to pump defects, damage of sensors), monitoring and management of vegetation on the polder (weed cutting of *Juncus*, *Phragmites*) as well as causeways and ditches (mowing of emerging *Molinia*, *Juncus*, *Polygonum persicaria* L., *Betula*) and the desludging of ditches.



To date, the successful course of the project indicates that with a sufficient peat mat, the cultivation of Sphagnum on degenerated, drained bogs with inhomogenous proportions of white and black peat, is possible.

Over a period of one year, the degenerated bog grassland converted to a new type of farm, a vision of how the future could appear. This "Paludi" farm will grow moss. The EU Council of Regions has already cited Sphagnumfarm Barver as a "best practice" project for the implementation of the EU green deal.

The proof that Sphagnum cultivation on black peat is possible, is interesting for several thousand hectares of peat-depleted production sites, which could be made available for farming peat moss in a short period of time, instead of simply being "recultivated". This deviation of progress by large-scale cultivating on "unsuitable" black peat, might speed up technological developments and provide an economic breakthrough in terms of Sphagnum farming, thus empowering general agricultural acceptance.

However, there is still a need for more know-how to ease site management and harvesting. An intensive, scientific escort of the sociocultural transformation process from dry to wet peatland agriculture also seems of importance, to raise the acceptance of paludiculture. Only with this assurance will farmers have faith in paludiculture as being the right way forward.

A video of the described works can be found on the projects' website under <https://northsearegion.eu/canape/news/canape-so-how-do-you-build-a-moss-farm>.

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Update of RHP product certification scheme on 1 July

Every year RHP updates the standards of the RHP quality mark for substrates, partly based on developments in the sector. Therefore, changes to the content of the RHP product certification scheme are introduced on a yearly basis.

Normally, the update of the RHP product certification scheme is published on February 1st. Certified companies then have three months to prepare for the adjustments. This year, for various reasons, the release of the update is scheduled for July 1st. Three months after this publication date, on October 1st, certified companies must comply with the new standards.

Most of the adjustments were already discussed in the relevant Product Groups in 2020 and in the spring of 2021. These will therefore come as no surprise for certified companies. The list of resolutions of the Central Board of Experts (CCvD) of 2020 can be found at My RHP under 'Documents for RHP certification'. In mid-June there will also be a list available there of the decisions that will be taken in the coming meeting of the CCvD and which will also be part of the update.

An important change in the RHP product certification scheme concerns the replacement of a number of analysis methods. Read more about this here: www.rhp.nl/en/rhp-introduces-new-methods. Please contact me if you have any questions.

Liesette van Schie

RHP Foundation
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CSPMA Welcomes New President - Ms. Asha Hingorani

The Canadian Sphagnum Peat Moss Association (CSPMA) is pleased to announce the hiring of a new President, Ms. Asha Hingorani. Asha is taking over from Mr. Paul Short, who will be progressively retiring after leading the association for almost 14 years.

In her former career, Asha held the position of Director of Government and Public Affairs with Wine Growers Canada. As a former journalist, she also teaches Scientific Communication in Regulatory Affairs at Algonquin College in Ottawa. She brings a background in communications, policy development and governmental relations at the political and bureaucratic level. Her international experience and association management skills are additional strengths that will help advance and guide the needs of the Canadian horticultural peat industry.

For a transitional period extending until March 2022, Mr. Short will act as an Advisor Former President for the CSPMA. He will also be sharing his knowledge of the industry, specifically relating to international issues and the government relations linked to the horticultural peat industry with the new president.

As a truly pan-Canadian association, the CSPMA team will now be present in four locations: Ms. Asha Hingorani (President) in Ottawa (ON), Ms. Doris Reeve (Executive Assistant) in Edmonton (AB), Ms. Stéphanie Boudreau (Science Coordinator) in Rivière-du-Loup (QC) and Ms. Marie-Claire LeBlanc (Project and Communication



Manager) in Québec (QC). The Canadian Sphagnum Peat Moss Association (CSPMA) is an association of horticultural peat moss producers and related enterprises devoted to promoting the sustainable management of the industry and the responsible management of Canadian peatlands. It provides support and advocacy for its members through leadership in environmental stewardship, as well as societal and economic wellbeing related to the use of Canadian peatland resources.

Marie-Claire LeBlanc

Project and Communication Manager
Canadian Sphagnum Peat Moss Association
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Welcome to "Ghent"

GrowingMedia2021, the 2nd International Symposium on Growing Media, Soilless Cultivation, and Compost Utilization in Horticulture will be held in the historic university city of Ghent, Belgium, from 22nd to 27th August 2021. The conference will be hybrid, a combination of an online and in-person meeting, should the COVID-19 situation allow this. Oral and poster presentations will be given both online and in person.

The conference will focus on sharing expertise relating to growing media, soilless cultivation and compost utilization in horticulture, with sessions on:

- growing media and the sustainable use of resources.
- the microbiome of growing media and integrated disease and pest control.
- soilless cultivation: added value of innovations for water and nutrient use efficiency.
- biochar and compost in horticulture, and carbon storage potential.

Furthermore, we are organizing specialized workshops during the conference

- nomenclature workshop, by Jean Caron and Youbin Zheng (ISHS): 'Glossary of terms and basic growing media characteristics and minimal characteristics, norms and methods in scientific experiments'.
- policy workshop by the European Compost Network (Stefanie Siebert, ECN): 'EU Fertiliser Regulation - Opportunities and Challenges to Place Growing Media and Soil Improvers on the European Market'.
- NGS workshop by ILVO/Ghent University: 'Next-Generation Sequencing Technology and



Strawberry Farm. Photo by Hao Pan

Corresponding Bio-informatics for Microbiome Analysis of Soil and Growing Media’.

- peat presentations by IPS experts.

Vlaco awards

For research stimulating compost use in sustainable growing media, Vlaco (the Flemish compost and biogas organisation) will give two awards during the GrowingMedia2021 symposium:

- one award for the best oral presentation: € 500
- one award for the best poster: € 250

A special committee consisting of Vlaco, a composting facility producing growing media, a growing media producer and the OVAM (Public Waste Agency of Flanders), will be responsible for selecting the awardees.

Based on the capacity of the venue at ILVO, we can host a meeting with 100 persons participating on site. Therefore we have sent a request for

this symposium (including a crowd management plan, a ventilation plan and a safety plan) to the local authorities to get their approval for this symposium. We hope this event will be accepted soon and then we can proceed with upgrading the registrations for those who want to participate on site (in total 125 registrations so far).

All relevant information concerning the preliminary programme, keynote speakers, workshops, submission, registration, venue, social events and sponsorship opportunities, can be found at www.growingmedia2021.com and by following us on Twitter.

We are looking forward to welcoming you to Ghent later this summer!

Bart Vandecasteele

Convener and Chair of the Organizing Committee @GrowingMedia2021
bart.vandecasteele@ilvo.vlaanderen.be
www.growingmedia2021.com



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The Estonian Peat Database

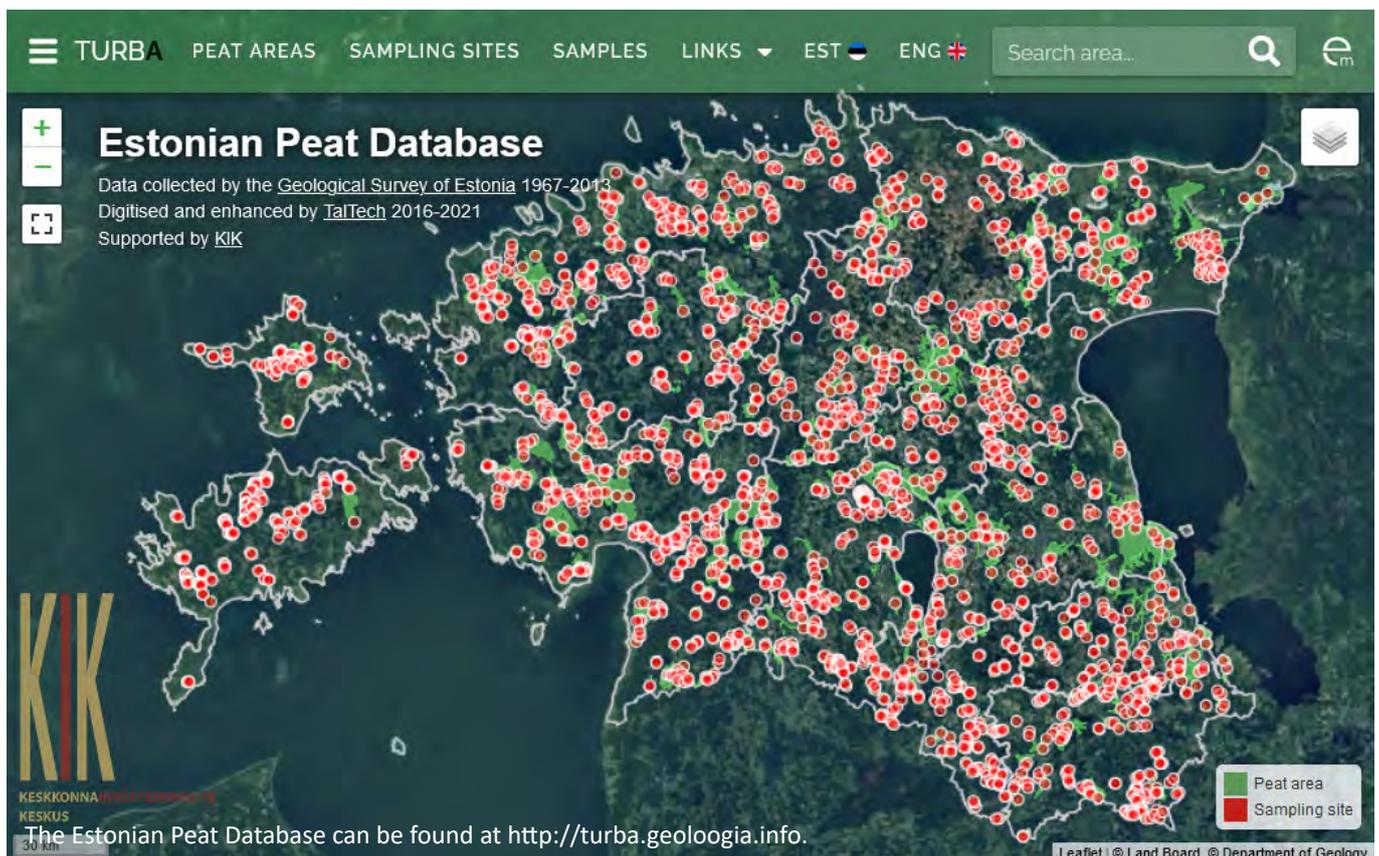
Estonia is rich in peatlands, covering 22% of its territory (Orru, 1992). Peat is an important mineral reserve, amounting to 2.4 billion tons, of which 1.0-1.2 million tons per year are extracted. It is important to analyse the sustainability of peat extraction, and to develop innovative peat uses, such as for horticulture, balneology, activated carbon, peat wax, humic substances, fertilizers, etc.

In Estonia more than 9,836 peatlands, covering an area of more than one hectare, have been systematically investigated. Of these, 558 peatlands have been studied in more detail, which have a larger area and are important for peat extraction, peatland formation studies and nature protection purposes. They have been sampled

to determine the botanical content, degree of decomposition, ash content, pH, trace elements and natural moisture content of the peat, and detailed maps have been drawn up.

These largely handwritten data have now been entered into the digital "Peat Database", which has been compiled in the Institute of Geology at Tallinn University of Technology (2016-2021). It is the first digital peat database in Estonia. The Estonian Digital Database is written in both the Estonian and the English language.

Estonian peat is exported to more than 110 countries all over the world, therefore, the Digital Peat Database provides valuable information about peat quality, genesis and reserves.



TURBA PEAT AREAS SAMPLING SITES SAMPLES LINKS EST ENG Search area...

Ikepera peat area

ID	285
County	Valga County
Area (ha)	955
Deposit area (ha)	773.45

Peatland is located on the border of Viljandi and Valga counties. Its eastern edge is crossed by the Pärnu-Tartu road, the southeastern edge is 2 km from Taagepera. The peat formed on moraine plain by terrestrialisation. The thickness of the lake mud layer under peat is 0.2 ... 0.3 m. The area of Lake Ikepera is 10 ha. It feeds on precipitation, the water recipient is the Viira stream. The peat lies on sand. In some places, the formation of the bog began with the formation of bog peat. The bog is dominated by a wooded bog, a transitional forest grows in the periphery. The area of the peatland is 955 ha, of which the peat deposit is 773.45 ha; registry card no. 281. Of the peat reserves in Viljandi county are 0.263 million tons of slightly

Peat area view, showing the description and location of sampling sites. <https://turba.geoloogia.info/en/turbaala/285>

Systematic studies of Estonian peatlands have been carried out chiefly by the Geological Survey of Estonia. All peat samples were analysed using a uniform methodology. They represent the whole peat sequence and different types of fens and bogs across Estonia. These data were included in unpublished reports of the Geological Survey, and are now available in the digital archive (<https://fond.egt.ee>).

Peat Research Underlying the Database

In 1967, a peat working group was established in the Geological Survey to conduct systematic geological surveys of peat deposits. The peat research working group includes high-level specialists. Work begun by writing the project and submitting it to the Geological Survey. As there are many peatlands in Estonia, the work was divided over several years. Every year, surveys are conducted in one to two of Estonia's 15 counties.

Peat surveys have already started in the winter, behind an office desk, where existing information

on peatlands, such as previous surveys, soil maps, mire drainage data, etc., was examined. Based on this, areas where peat could be found, were selected and in the spring, acting on this information, we visited the peatlands to glean information on these areas. Peat research began with planning, based on topographic maps and orthophotos.

Peat research was carried out by a hand auger, whereby specialist drill equipment is pushed into the peat by young men, and the thickness of the peat is determined. The first assessment of the peat was made in the field of an experienced peat geologist. Laboratory analyses of peat were performed by specialists in the Geological Survey laboratory.

Information relating to peat, collected over almost 40 years (Estonian Peatland inventory and other peat deposit surveys) has been available through the Geological Foundation, however, much of this information was still on "paper", and was only scanned in 2020.

However, even if the reports are scanned, a digital database improves data handling and viewing. To

TURBA PEAT AREAS SAMPLING SITES SAMPLES LINKS EST ENG Search area...

Sampling site: Ikepera_25

ID	8514
Sampling site	Ikepera_25
Peat area	Ikepera
Peat area plan	Ikepera_1.tif Ikepera_2.tif Ikepera_3.tif
X (L-EST, m)	6431800
Y (L-EST, m)	595268
Z (m)	107.9
Depth / peat thickness (m)	10
Opening area	r.

Samples

Study site view, showing samples, analytical data and old maps. <https://turba.geoloogia.info/en/proovipunkt/8514>

ensure the free availability of peat data, all data were digitized at the Institute of Geology at Tallinn University of Technology.

The first step of the work was to systematize and enter laboratory data into a digital database. Each peat sample and analysis was assigned a unique ID code, through which various data objects could be identified, referenced and linked. There were a total of 2,753 sampling points, whereby 32,942 samples were taken to determine the general, technical characteristics of the peat (botanical composition, degree of decomposition, ash content, pH, natural moisture content).

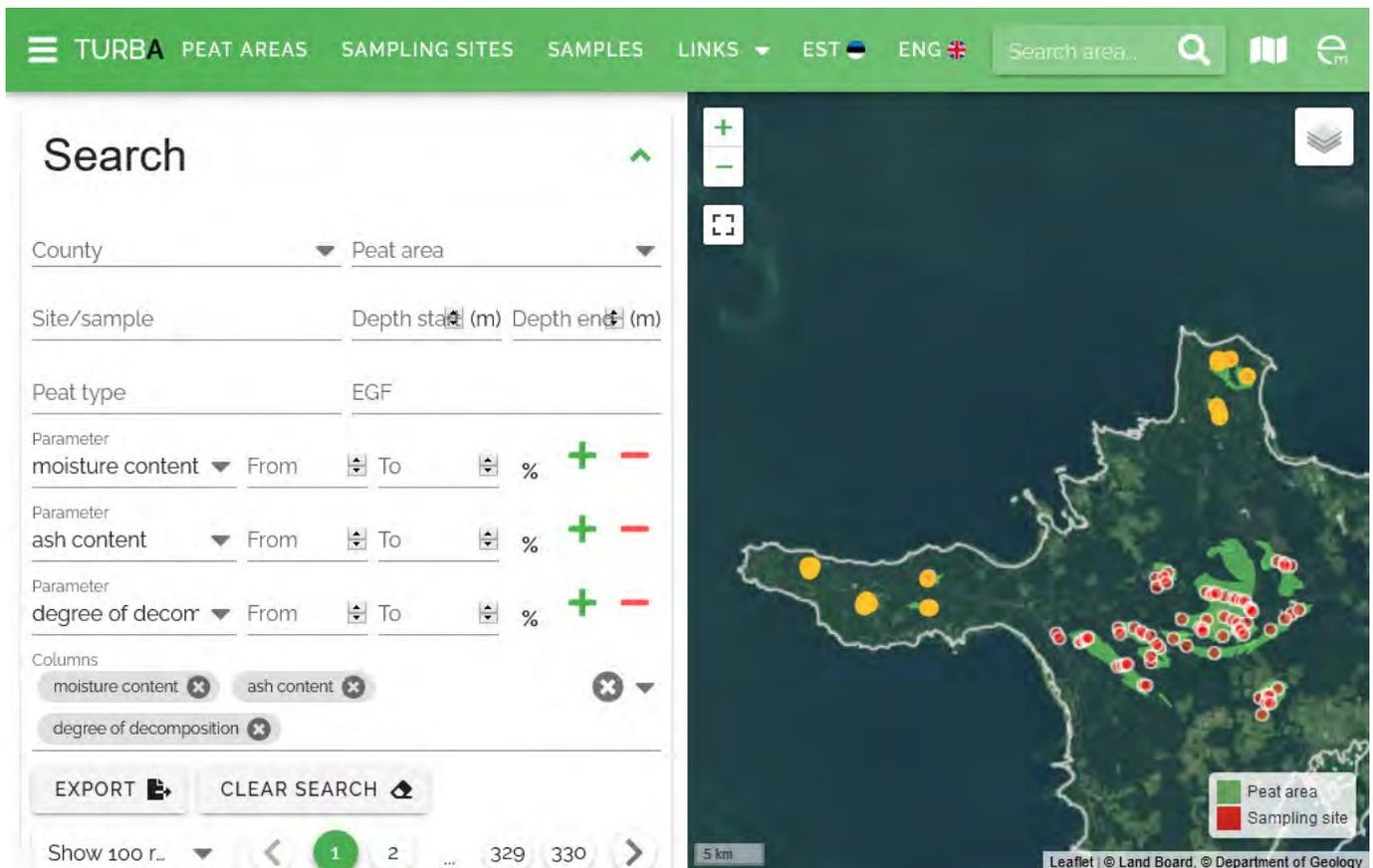
These samples contained a total of 165,807 plant determinations, in which the share of plant species (e.g., peat moss, reed, sedge, cotton-grass) in the peat-forming vegetation was determined. All sampling points passed through the entire peat deposit (as a rule, the sampling interval was 0.25 m) and in most cases, the sediment under the peat was also determined.

The second step was to add peat deposit plans for peat research and reserve calculation, in which the plans for the research areas were scanned and

georeferenced. The map layer of the Land Board deposits, orthophotos and other maps, were used for georeferencing. The X, Y and Z coordinates of the sample points were found in the EH2000 system; the information of their absolute heights comes from the 5 m (DTM5) resolution model, based on the LIDARI data of the Land Board, which is in the EH2000 system. Thus, the coordinates of all 2,753 sample points were found.

Database Information

The projects, “Digitising the results of peatland research and compilation of a database, phase I and II” were financed by the Estonian Environmental Investment Centre (projects no. 12632 and 14460) and were carried out at the Department of Geology, Tallinn University of Technology between 2016 and 2020. The database was translated into English in 2021. An open-access database was compiled for public use, which was compatible with geological mapping data and the catalogue of deposits in the environmental register. Data from various peatland studies were collected, systematized and digitalized.



Search peat samples based on analytical data. <https://turba.geoloogia.info/en/proov>

The database comprises also characteristic calorific values, contents of trace elements, drainage conditions, chemical composition of mire water, restrictions due to nature protection, locations of Natura 2000 areas and fields of use for peat.

A summarizing characterization was compiled for 558 peat deposits and peatlands (genesis, age, properties, characterization of reserves and potential fields of use, connected to data in the database).

The data forming the basis of the project have been collected principally by the Geological Survey of Estonia and are deposited in the Geological Report Archive of the Survey.

The database of peat studies uses the structure and technical solution of SARV, the data management platform of Estonian geological information, which forms part of the services of NATARC, the natural history archives and information network of Estonia.

The peat database has huge practical and scientific value. Peat extraction companies can find information on the thickness of the peat

sequence, its extent and fields of use. Peat geologists gain information on peat genesis and temporal and spatial stratigraphical conditions. Ecologists have the opportunity to analyse various environmental changes. We can receive information on climatic changes over the latest 10,000 years, reflected by the botanical content of peat. The database enables pupils and students to carry out science projects on peat, which have already been realized. All the systematized information collected, can be used for scientific studies in international cooperation.

Using the Database and Downloading Data

The TURBA database of security research is available at: <https://turba.geoloogia.info>.

The database uses the relational data model of the geosciences information system SARV (see <https://geocollections.info>) and the technical infrastructure, developed at the Institute of Geology at Tallinn University of Technology, within the framework of the Estonian Research



Vacuum peat extraction. Photo: Estonian Peat Society

technical solution and web service. Students of the Institute of Geology at Tallinn University of Technology took part in the digitization of the data.

The peat database can be accessed via a custom user interface or an open API endpoint.

The database includes:

Infrastructure Roadmap Archives and Data Network NATARC (<https://ut.ee>).

The security research database additionally uses the web-based map server's WMS services to display spatial objects and the SARV-DOI application (<https://doi.geocollections.info>) to archive a static extract of the database. All data can be downloaded as an MS Excel data table, which allows for the statistical processing of the data.

When using the database, it must be referred to as a registered database as follows: Orru, M., Aarniste, M., Mustonen, E., Hints, O. 2020. Estonian peat research database. Institute of Geology, Tallinn University of Technology, Tallinn. <https://doi.org/10.15152/GEO.487>

- scanned and georeferenced maps of more than 550 peat areas, accompanied by their characteristics and ca. 2,750 sampling sites.
- nearly 33,000 samples with analytical data results.
- over 165,000 identifications of plant species.
- information on related data and links to other resources, notably the Environment Agency, Land Board and the Geological Survey of Estonia.
- the Data User Manual, which includes:
 1. technical description of the Estonian peat database
 2. peat database web application: TURBA
 3. general introduction and manuals
 4. map introduction and manual
 5. search introduction and manual
 6. table introduction and manual

Mall Orru, an Associate Professor at Tallinn University of Technology, was the coordinator and person responsible for compiling the digital database of peat research; she has worked as a peat researcher for over 40 years.

Monika Aarniste, Olle Hints and Enar Mustonen participated in the search for raw data, the development of the database structure and the creation of the



Peatland Kakerdaja. Photo: Tõnis Saadre



Peatland Tuhu. Photo: Tõnis Saadre

7. graph introduction and manual
8. public API
9. map server
10. data download

Roadmap NATARC. The translation of the database was supported by the Estonian Peat Association, Mikskaar AS, ASB Greenworld, Kekkilä BVB and OÜ Kalloveen Eesti.

The user interface allows searches to be carried out in relation to peat areas, samples, as well as analytical and botanical data, and provides basic information on the project and instructions on portal functionality. The Estonian Peat Database can also be downloaded as a single data file.

The creation of the Estonian Peat Database has been supported by the Environmental Investment Centre and the Estonian Research Infrastructure

*Mall Orru, Olle Hints
and Enar Mustonen*

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Do you know the IPS Document Database?
Download IPS publications and conference
proceedings for free and via open access.

www.peatlands.org/publications/document-database

One Year of Peatland Protection

German FÖJ

The “Ahlenmoor” is a raised bog, situated in northern Germany. Parts of this area have been renatured and are the home of many rare species. Our centre “MoorInformationsZentrum Ahlenmoor”, providing information about the bog, is located there with an exhibition and a peatland railway for visitors.

After finishing school, we, Hanne Holzmann and Marie Wehrmeyer, took a gap year to carry out voluntary work in the environmental sector. As volunteers, we have been given many tasks and have been actively involved in peatland protection, among other interesting activities.

Last autumn we prevented further tree growth in certain moorland areas by removing young trees and seedlings. This practice is known as shrub

removal. In order to bring back a special kind of peat moss, we went into the area and distributed different kinds of peat moss, like *Sphagnum magellanicum*, *Sphagnum rubellum* and others, from different areas of the Ahlenmoor.

Other tasks included working in the theme shop, where we were responsible for dealing with requests, answering the phone, informing visitors about the hiking trails and exhibition or booking reservations for the peatland railway. On some occasions we organized guided activities for children, such as building a bee hotel or going on nature trails and exploring the world of plants and animals.

We have also worked on creative projects. We organized different hiking trails near our workplace, and to make the walks more interesting

Relocating heath and sundew.
Photo: Marie Wehrmeyer



Shrub removal with the peatland railway.



for children, we designed a backpack with many fun tasks, containing interesting information and games for little explorers. We are currently in the process of arranging an exhibition regarding the importance of biodiversity and designing a colouring book.

For more information you can look up our website: www.ahlenmoor.de.

Hanne Holzmann & Marie Wehrmeyer

MoorInformationsZentrum MoorIZ Ahlenmoor
Wanna, Germany
mooriz@ahlenmoor.de
www.ahlenmoor.de

The FÖJ is an educational year in Germany that offers young people the possibility of becoming active in environmental protection. It provides them with a good opportunity to find or confirm their career, contemplate their ideas and have new experiences. The offer is available to all young people who left school and are between the age of 16 and 27 years. For info, visit <https://foej.de/en/start-eng>.

Building a bee hotel.
Photo: Hanne Holzmann



Tending the peat moss field.



17th Century Dutch 'Peat Advisors' had to deal with similar problems to those today

In 2017, when googling historical information on peatlands, my screen surprised me with an old map of Europe. On this map, several regions were indicated in different colours, each referring to different periods, roughly between 1200 and 1850.

A closer look revealed that these regions were dominated by peatlands, and for each of these, the map revealed the names of Dutch drainage

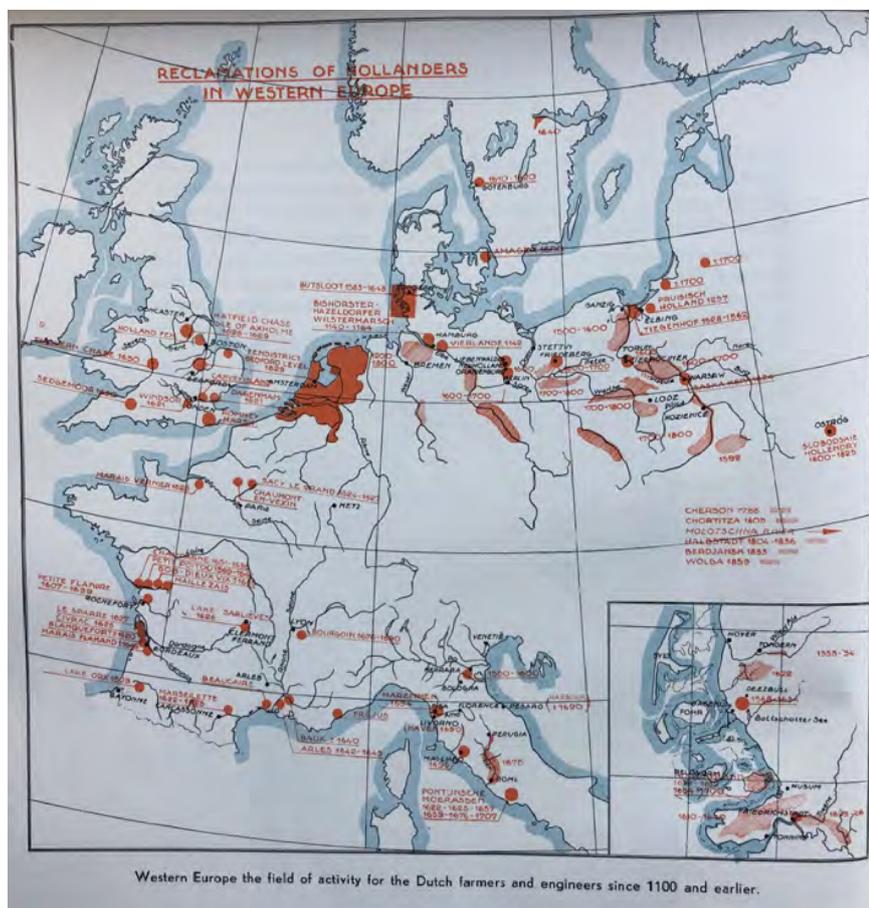
engineers. I have been looking at this amazing map for more than two hours. Apparently, Dutch advisors had been active in almost every corner of Europe, from central Sweden to southern Italy, from England to the Ural in Russia. In the 17th century, in particular, these 'consultancies' were numerous.

Who were these fellow Dutchmen and what were they doing in these remote peatland regions?

Why did they leave their family and their home for many years to assist an English King or a Pope in Rome? Why were they asked to do so? Was it only for their expertise or were there other reasons?

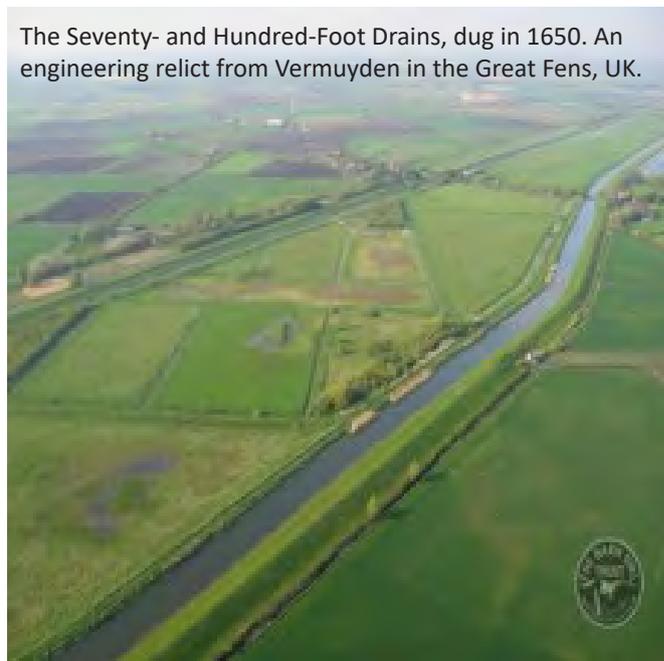
My curiosity resulted in three short novels. One tells the story of Cornelius Vermuyden, who in the 17th century, worked for King Charles and Lord Bedford in the Great Fens, north of Cambridge. A second novel describes the adventures of Nicolas de Wit and Otto Meier as advisors to the Vatican in the Pontine Marshes, south of Rome.

The map presented by Van Veen in 'Dredge, Drain, Reclaim. The Art of a Nation', edited in 1950.





Sir Cornelius Vermuyden, the 17th century 'advisor' for the draining of the Great Fens in England.



The Seventy- and Hundred-Foot Drains, dug in 1650. An engineering relict from Vermuyden in the Great Fens, UK.

The stories show that the motivation for their involvement was not only their knowledge and expertise in drainage and cultivation; their involvement was also for personal reasons. The Dutch 'advisors' were mostly backed by private companies in the Netherlands, looking for opportunities to invest in new agricultural land.

They were also able to guarantee the early settlement of Dutch farmers, with practical

experience on these newly reclaimed soils.



The cover of the book 'Rumours about marshes', written by Jos Schouwenaars.

It is interesting to look at the similarities with current consultancies. Do Dutch

consultants in 2020 always act independently as experts? An answer is given in a third novel. This 'fictional story' traces the adventures of a Dutch water-management expert in the coastal peatlands of Sumatra, Indonesia.

The stories demonstrate that in the 17th century peatland regions of England and Italy, dilemmas and conflicts, similar to those currently observed in the peatland regions of Indonesia, existed. As always, local communities depend on the peatlands for food and products. Not surprisingly, anyone from outside with new ideas and plans will be met with scepticism and resistance.

The regular acts of sabotage and resistance, described in all the stories, illustrate that initiatives for another type of peatland use, both drainage and rewetting, can only be successful when accompanied by interesting economic opportunities for local communities.

The three stories, written in Dutch, are published by Elikser in the Netherlands, www.elikser.nl/rumoer-om-moerassen.htm

Jos Schouwenaars

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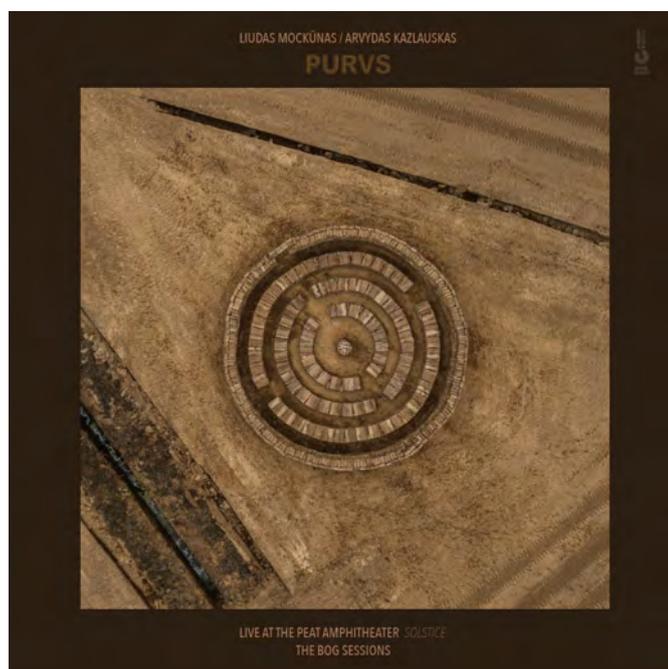
A Unique Free Jazz Album Recorded in a Peat Bog Is Released

Double album PURVS, by saxophonists Liudas Mockūnas and Arvydas Kazlauskas, is released on jazz label, Jersika Records.

Liudas Mockūnas is one of today's leading Lithuanian free jazz musicians in Europe, a composer and a lecturer at the Jazz Department of the Lithuanian Academy of Music and Theatre. He has played with great masters of this music genre, such as Barry Guy, William Hooker, Vladimir Tarasov and Agustí Fernández.

Arvydas Kazlauskas is a Lithuanian saxophonist living in Latvia, who is considered a significant performer in the Latvian contemporary music scene. Kazlauskas has performed as a soloist with the Latvian National Symphony Orchestra,

The musicians Arvydas Kazlauskas and Liudas Mockūnas with Mareks Ameriks and Mārtiņš Krastiņš. Photo: Anna Ceipe



the Lithuanian State Symphony Orchestra, the State Chamber Orchestra Sinfonietta in Rīga and the Professional Wind Orchestra in Rīga. He is a member of the free improvisation and jazz trio, Endless Roar, and is assistant professor at the Jāzeps Vītols Latvian Academy of Music.

The session took place in two parts. The first record captures the free improvisation of the Lithuanian musicians in the autumnal splendour of the Latvian marsh, while the second record comprises a concert that took place in an amphitheatre made of peat, named Saulgrieži [Solstice], which was created by artist Janis Gutans-Grass. It was constructed as a meditative labyrinth with its entrance to the east and exit to the west. The titles of the compositions are listed

in three languages - Latvian, Lithuanian and Old Prussian - thus attempting to provide a linguistic feel for the unifying way that the Baltic nations perceive the world.

“For a long time I have had a dream to record in natural surroundings with natural acoustics. The proposal from Jersika Records came at just the right time, and the place that we did it was as natural and as surreal as it could be, just perfect for two horn players to plunge into the wild”, states Liudas Mockūnas.

“Even though I have known Liudas for many years, our musical paths crossed for the first time here in this special place. Like every visit to nature, the experience was non-binding, inspiring and pleasantly strange at the same time. I hope the listener will enjoy this musical journey as much as we did in creating it”, adds Arvydas Kazlauskas.

“The duo's euphoric sound world, where they unabashedly demonstrate their insatiable experimental spirit and cast spells with sound, sometimes appears more like a tribal ritual than a musical performance. It is filled with such richness that if you are looking for the thrill of performance techniques or the sympathy of improvisation, you might be bewildered.

However, if you listen to this music with an image of vast grasslands and marshes in mind, you will find that it is a blessing, similar to the bountiful blessings of nature. The cover photo (left page) is an aerial view of a peat amphitheatre, reminiscent of the Coliseum in ancient Rome or Amaterasu's Amanoiwato (Gate of the Celestial Rock Cave in ancient Japanese legend).

It is said that the origin of music performance was in the songs and dances that accompanied the rituals of shamanistic beliefs. This performance by two improvising saxophonists to awaken ancient memories and sleeping spirits, must be an attempt to reclaim the original form of music”, wrote Takeshi Goda in JazzToyko.

The album, PURVS, was recorded on 15th and 16th September, 2020. The recording engineer is Mārtiņš Krastiņš, but photographs taken by photographers, Oskars Upenieks, Anna Ceipe and Vila Muhametšins, have been used in the design of the album cover.

Watch and listen:

Liudas Mockūnas/Arvydas Kazlauskas skaņdarba “Zilās sūnas” video: <https://www.youtube.com/watch?v=ce1hNmZxNf4>

Evening concert in the amphitheatre Solstice.
Photo: Anna Ceipe



2LP/DIGITAL on <https://jersikarecords.bandcamp.com/album/purvs>

Spotify: <https://fanlink.to/e2Wd>
jersikarecords.com

<https://www.facebook.com/jersikarec/>
YouTube: <http://bit.ly/JersikaYT>

Mareks Ameriks

Izdevniecības vadītājs
+371 29147697
jersika.records@gmail.com
<https://www.youtube.com/watch?v=qaEqCEVCQL4>

About Solstice

Work, "Solstice", is designed as a nature space that carries three meanings. From a bird's eye view, we see four regular rings that symbolize the seasons. The entrance to the amphitheatre faces west, through which you can watch the sunset during the summer solstice. Upon entering the object, we are located in a symbolic labyrinth, in the centre of which is a sculpture of the sun, made from tree roots.

The homogeneous material of the work (peat), allows one to feel the breath of primeval nature, making us think about the relativity of time and the size of life in space. Each block of peat is a separate work of land art, a unique fragment of the earth mosaic. The circle is the sun, with rings that symbolize the seasons and a meditative maze.

Jānis Gutāns-Grasis

Land artist

Laflora Contribution

The many years of experience of the "Laflora" company in peatland management, have contributed to the development of the peatland industry, not only as a result of its basic activity, with a highly developed infrastructure and responsible management of peat bogs, but also

in relation to its significant contributions and investments in research, education and culture. Over a period of 25 years, several artistic and educational projects have been implemented, resulting in new and unique traditions. By attracting artists, architects, designers and researchers, the industry is demonstrating signs of growth every year. The experimental use of peat provides opportunities to highlight the importance of supporting the full identification of all resources in Latvia.

Celebrating the 25th anniversary of "Laflora" this year, a project was implemented in cooperation with the land artist, Jānis Gutāns-Grasis, taking another important step in the field of culture and offering domestic and foreign artists unique experiences. The peat amphitheatre "Solstice", established in the Drabiņi peat bog, encourages creativity in various genres of music, poetry readings or meditation, thanks to the non-traditional bog environment and acoustics.

The product that we are exporting - peat and peat products - comes from the depths of Latvian soil. It is the wealth of Latvia, thanks to which our country is recognised all over the world. Without any doubt, we can say that the peat was born in Latvia. We not only process and package this resource, but combine material and spiritual components in the final product - it is a unique substance of continuous birth and growth - the planted seed grows into flowers or healthy vegetables, or an entire forest - this product lives an endless cycle.

Peat is not only born in Latvia, but as a child it has graduated from school and university, receiving added value, which can be further provided to the wide world, where it is so necessary and useful. Peat is cherished both by mother nature and us, showing that it is not just a product, but the Latvian perception of the world - the best we have created." I thank the employees and partners of "Laflora" for this unique opportunity, which has enabled me to work with Latvian peat for so many years and in many different ways!

Uldis Ameriks

Chairman of SIA "Laflora" Board
uldis.ameriks@laflora.lv

We grow with our tasks

As the world's leading supplier of growing media, sustainability is more than just an important issue for us. It is a concrete task. To preserve what needs our protection. And out of respect for the generations that will follow us. This is why we are already acting today by providing renewable raw materials, restoring former extraction areas, developing alternative constituents and reducing emissions.



Find out all the facts in our current sustainability report.



we make it grow

Klasmann-Deilmann

An Illustrated Book of Peat. The life and death of bogs: A new synthesis

This new book takes a holistic view at the life cycle of temperate ombrotrophic peatlands, a cycle which has to be considered in timescales of millennia.

The first part explains why such peat forms in the first place; how it manages to grow above

the surrounding landscape, taking its own water table with it; and its subsequent lateral spread. The second part is devoted to analysing the development of parallel pool systems on peatlands (patterned bogs), and suggests that they are sinusoidal waves of the acrotelm caused by downhill creep. The third part looks in detail at the different types of peat erosion and suggests a new classification system of the different types, as well as a listing of the different causes of erosion, both natural and human-caused.

The first three parts take a detailed look at the different aspects influencing the long-term dynamics of ombrotrophic mires, while the fourth part applies this understanding to the conservation and management of peatlands, and the implications for climate change. There are seven appendices covering other relevant aspects of peatlands, the last of which includes a carbon calculator: a spreadsheet which assists the assessment of the carbon balance of a given peatland; the impact of erosion on this balance; and the comparison between peatland and woodland.

Conclusions from the book include: peatland growth is not particularly sensitive to climate; pools are in effect erosion features; in addition to having human causes, erosion is also a natural feature of peatlands - and decisions have to made

AN ILLUSTRATED BOOK OF PEAT
THE LIFE AND DEATH OF BOGS: A NEW SYNTHESIS

James H C Fenton



Publication supported by



VOLUME ONE

Summary

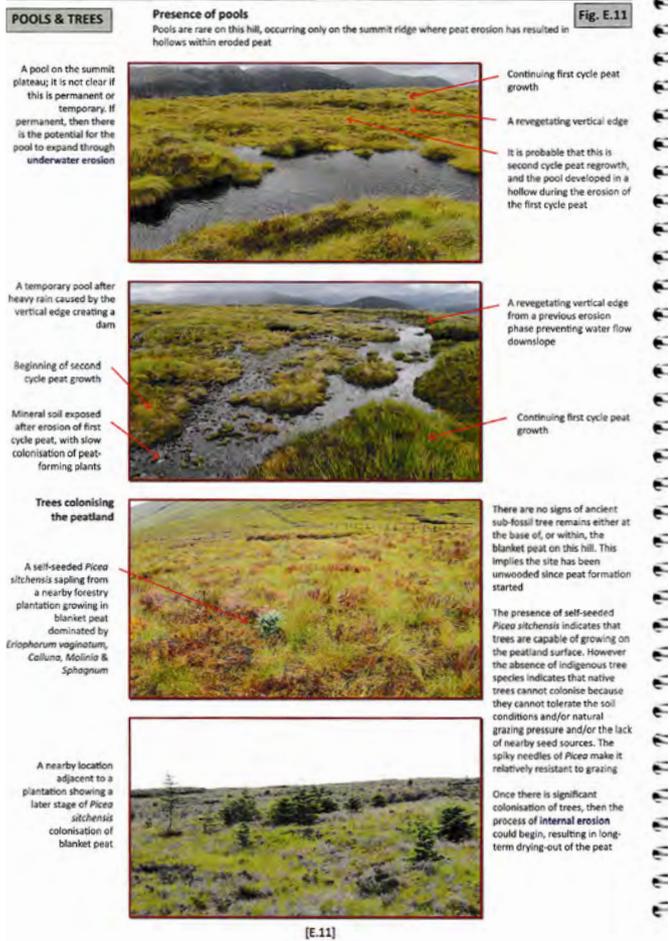
Part 1. Instigation and growth

Part 2. Development of pool systems

Part 3. Peat erosion

Part 4. Implications for climate change and land use

Cover of Volume 1



[E.11]

Detailed illustrations and colour photographs help the reader to understand complex issues.

whether preserving natural processes (including erosion) is more or less important than action for minimising carbon loss; blanket peatland landscapes may have a maximum carbon storage potential, after which the carbon store fluctuates about a mean with growth matching erosion; shallow peats offer the best potential for long-term carbon storage; and increasing tree cover and maintaining peatlands can be contradictory objectives.

The book takes a very visual approach, containing over 200 A4 pages and several hundred photographs and diagrams, and comes in two volumes (text and the appendices). It is spiral bound (enabling the pages to stay open), with high quality printing to bring out the detail in the photographs. It is only available as hard copy because any digital version would be a large file (to ensure the detail of the photographs is maintained); because the reader needs to make numerous cross-references while reading the text; because there is a lot of content; and sometimes analogue is better!

The book is a useful introduction to peatlands generally, although has tried to strike a difficult balance in being accessible to both the interested layman and the peatland specialist.

The Royal Scottish Geographical Society has kindly supported the printing of the book, enabling it to be sold at the very reasonable price of £19.99.

It is available from NHBS.com at www.nhbs.com/an-illustrated-book-of-peat-2-volume-set?bkfno=252901 ISBN 978-1-8384193-0-1

“The study of peatlands is critical for understanding changes in our climate as well as in our landscapes and ecosystems. Fenton’s book presents an accessible introduction that will be of value to all with interests in peatlands.”

Professor Peter Convey, Senior Terrestrial Ecologist, British Antarctic Survey

Contents

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 - Part 2. Development of pool systems
 - Part 3. Peat erosion
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 - Appendix E. Complex peatland landscapes: a case study
 - Appendix F. Presence of trees on ombrotrophic peatland in Scotland
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The peatlands of the East Anglian Fens:

Measuring the impacts of long term drainage and intensive agriculture

Once considered uninhabitable, the peatlands of East Anglia, UK, are now considered to be some of the most fertile farmland within England. This transformation is based on a history of continued drainage that has been ever increasing since the 1700s, where by the peatlands are 'reclaimed' for agricultural use. Today, a large portion of the East Anglian Fens are used to grow salad crops such as lettuce and celery which supply many of the UK's supermarkets.



Figure 1. Thomas Newman stood by the Holme post in 2018. All photos: Thomas Newman

This has led to the loss of a significant amount of peat over the last 150 years, with the scale of this loss recorded since 1848 by the Holme Post (Figure 1), an iron pole which was driven into the peat layer in 1848 in Holme Fen.

Today, the Holme post protrudes approximately

4.8 m above the peat surface and provides a tangible record of the legacy of peat loss within the East Anglian Fens.

Whilst some of the peat loss was due to dewatering and initial consolidation of the peat layer, today decomposition of the organic matter within the peat is the primary process by which the remaining peat layer is lost, with continual losses of peat within the region estimated to be around 1.1 cm yr^{-1} (Dawson et al. 2010) within the region. This represents a substantial Carbon (C) emission to the atmosphere.

Over the last 20 years, understanding this carbon loss and coming up with improved C emission estimates from the UK's peatlands has become a real focus, with recent studies funded by NERC and DEFRA highlighting the significant emissions from lowland peatland within the UK. These studies have identified the very significant C emissions from arable agriculture on lowland peatlands, which are now known to represent the largest land-based source of GHG (Greenhouse Gas) emissions in the UK, with an estimate of $7.3 \text{ Mt CO}_2\text{-eq yr}^{-1}$ (Evans et al. 2016).

While these data represent significant strides in gaining an understanding of the climate consequences of arable agriculture on lowland peat within the UK, the emissions estimates were derived from multi-year studies conducted on deep peat soils. Peat classified as 'wasted' (a peatland which has lost a significant depth of peat and with only $\leq 40\text{cm}$ remaining) has come under increasing focus, because these soils cover a large

area of some 1922 km² but have no associated GHG emission factor with which to provide a UK carbon budget. These soils also represent the future of many of the deep peat soils and their use if the current way they are managed continues.

To fill this knowledge gap, my PhD involved setting up an Eddy Covariance flux tower on a wasted agricultural peatland to measure the CO₂ fluxes from the field during multiple years and covering several crops (Figure 2). This research started in March 2018 when the initial flux tower was installed on Engine Farm on field 'Spooners 3', a field that represents a typical wasted peatland under intensive agricultural management in the Fens of eastern England.

Data were subsequently collected as part of my PhD project between May 2018 and May 2020, and whilst instrument malfunction did prevent the collection of 2 years of continuous data, congruent 208 day periods (17th May to 11th December) of data were collected in 2018 and 2019 which provided emissions for 2 years with differing cropping and weather conditions.

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.

Further reports of 2020 will be published in the September-December issues this year. More info: peatlands.org/about-us/honourgrants. Next deadline 31 January.

The results indicate a difference in the cumulative C flux between the two periods in 2018 and 2019 of 177 g C m⁻² (438 g C m⁻² for 17th May 11th to December 2018 and 261 g C m⁻² 17th May to 11th December 2019) (Figure 3). Whilst further analysis of the drivers of these C fluxes is ongoing, the variation in field conditions resulting from differences in crop, field management and



Figure 2. Eddy Covariance flux tower at Engine Farm.

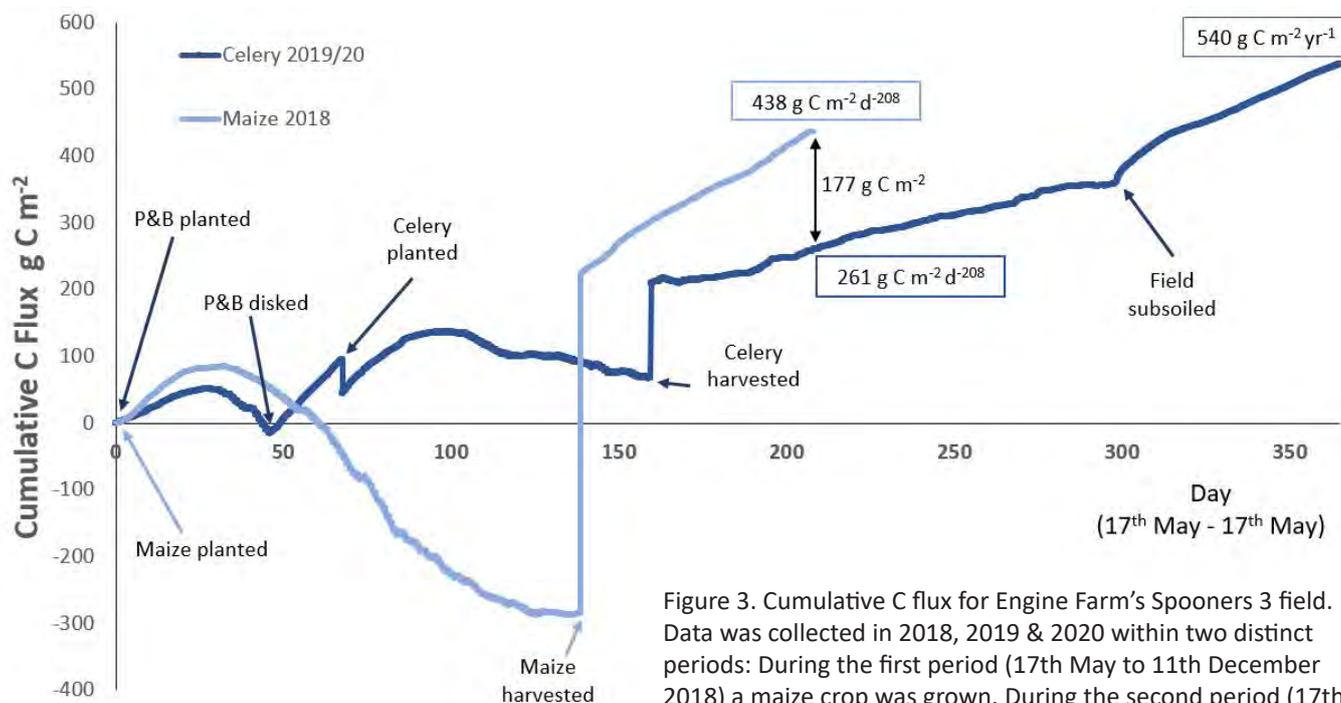


Figure 3. Cumulative C flux for Engine Farm's Spooners 3 field. Data was collected in 2018, 2019 & 2020 within two distinct periods: During the first period (17th May to 11th December 2018) a maize crop was grown. During the second period (17th May 19 to 17th May 2020) a phacelia and buckwheat cover crop was grown prior to a celery crop.

weather conditions all likely played a role in the variation in cumulative C emissions between the years. Additionally, a full year of emissions data (17th May 2019 to 17th May 2020), allowed the calculation of the first yearly emissions estimate from a wasted agricultural peatland within the UK of $540 \text{ g C m}^{-2} \text{ yr}^{-1}$ (Figure 3).

As well as measuring the GHG flux, I have also obtained data on the scale of aeolian (wind blown) erosion from the study site. Within the East Anglian Fens, high winds often coincide with spring months when the fields are largely left bare in preparation for planting, leading to the 'fen blow' phenomenon. Fen blows occur when the top layer of peat is blown from the field, leading to the removal of large amounts of top soil. To measure how much sediment was moved across the field boundaries over a 7 month period (18th July 2019 to 3rd April 2020), six Big Spring Number Eight (BSNE) dust collectors were installed on the field to measure sediment blown both onto (2 collectors) and off (4 collectors) the field (Figure 4).

Over the data collection period, an average Horizontal Mass Flux (HMF) of 626.7 g m^{-2} was measured in the downwind collectors, indicating a small yet substantial loss of top soil blown from the field. In the upwind collectors, an average of 882.7 g m^{-2} was measured, higher than the amount of top soil in the downwind collectors

indicating that more top soil was blown from the neighbouring field into Spooners 3 than was lost. This was likely due to ditch works on the upwind field boundary which left the field edge bare, with piles of loose sediment present for a large period of the measurement period. Overall, the



Figure 4. Upwind BSNE dust collector at Engine Farm taken shortly after installation.

results indicate that vegetated field boundaries and reduced time periods when the field was bare lowered the aeolian erosion of the peat from the field.

Current plans are for the University of Leicester to maintain the Eddy Covariance flux tower for the foreseeable future to gain further insights into how inter-annual variation in weather, cropping and field conditions impact C emissions from wasted peat alongside additional sensors to measure N₂O emissions. In the future, it is planned to be able to provide farmers and policy makers with accurate GHG emissions budgets from wasted peatlands and to be able to advise on best practices for reducing GHG emissions.

The Allan Robertson grant allowed me to disseminate my research at both the EGU (European Geosciences Union) and most importantly the International Peatland Congress (IPC) conferences. Without the grant I wouldn't have been able to attend either. Despite the COVID pandemic delaying the IPC Tallinn congress to 2021 and causing it to be moved to an online event, attending the IPC2021 was a great experience, allowing me to present my PhD research in detail for the first time.

The IPC2021 also exposed me to other research and industry which previously I had not been aware of. I really enjoyed hearing talks from all over Europe; it really helped give perspective to my research on a global level and point me in the direction of academics and members of industry from places outside the UK that previously I had been unaware of.

In particular, I found the talks on paludiculture and Sphagnum farming to be very interesting and something I had not been aware of previously.

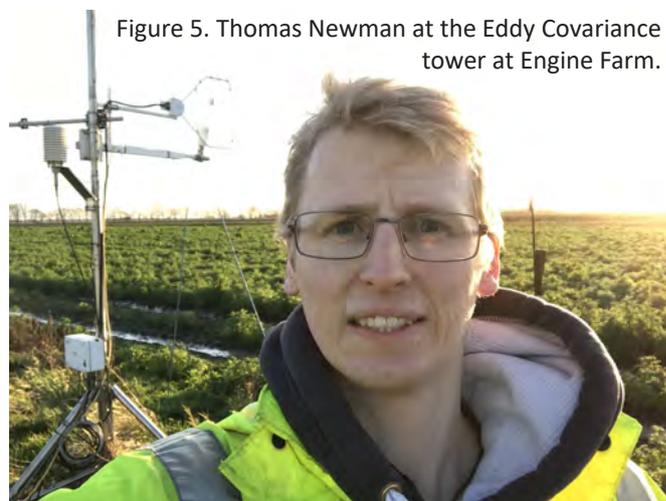


Figure 5. Thomas Newman at the Eddy Covariance tower at Engine Farm.

I'm excited for the future developments in peatland research that attending the IPC2021 has provided me a glimpse of. If you're interested in my research or would like further information, please contact me.

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Mires and Peat - the scientific journal of IPS and IMCG. Submit your paper. Open access and for free. www.mires-and-peat.net

Amazonian open peatlands: a palynological investigation

In May 2019, I embarked on an exciting fieldtrip to the Peruvian Amazon. My destination was the Pastaza-Marañón Foreland Basin (PMFB) - a globally important peatland complex which covers around 35,600 km² and stores about 3 Gt C.

Here, palm swamps cover most of the peatlands in the PMFB, but 11% of the area is occupied by open herbaceous peatlands. Due to their virtual lack of trees, these ecosystems have been often left out of ecological surveys, leading to a relative underrepresentation of open peatlands in scientific literature. While some recent studies

have touched on the subject, there is still much we don't know about these ecosystems. The aim of my PhD - and the reason why I embarked on this trip - is to carry out palaeoecological, ecological and hydrological studies on open peatlands, to improve our understanding of their formation and long-term succession.

The fieldwork yielded two cores from the peatland of Veinte de Enero, located not far from the city of Iquitos, and one core from the peatland of San Roque (Fig. 1). We also conducted vegetation surveys and hydraulic conductivity tests to improve

our knowledge about the modern vegetation assemblages and rate of water flow through the peatlands.

Downcore palynological and geochemical analyses were the main methods implemented to achieve our aims. Pollen identification and counting was carried out at an 8cm sampling interval, with a total count of 500 pollen grains per sample to ensure robust data on

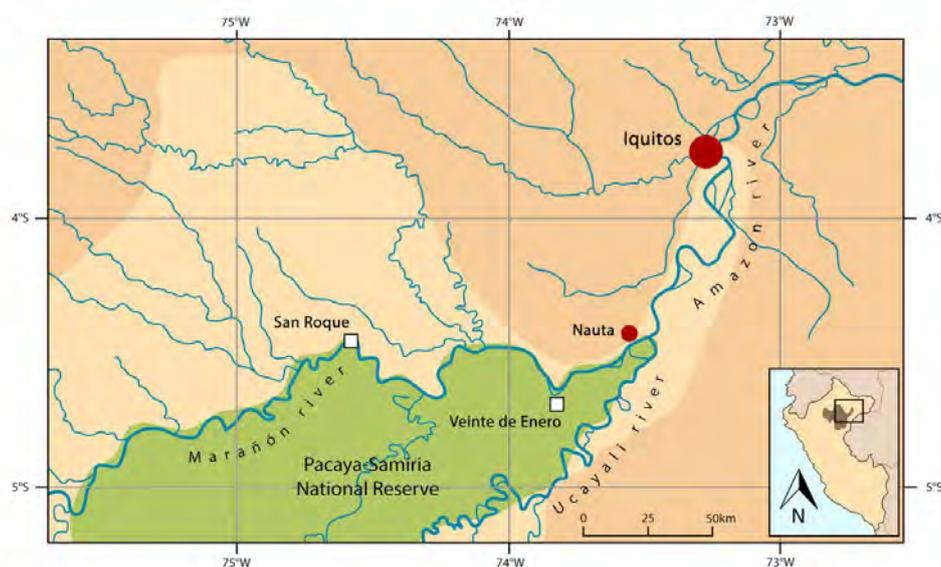


Figure 1: (A) Location of the study sites at Veinte de Enero and San Roque, marked by a white square. All figures by Dael Sassoon

rare pollen types, achieving a taxonomically-diverse, high-resolution pollen record for all cores. Geochemical analyses involved elemental scanning with an ITRAX machine, and measuring the magnetic susceptibility and C/N ratios, in an effort to understand climatic, fluvial and human influence on the environment throughout time.

Initial interpretations of the pollen records from the two sites indicate an overall transition from a more aquatic environment, characterised by species such as *Cecropia* and *Symmeria* (typical trees of flooded forests, indicating aquatic/open canopy environments), to a transitional phase with by *Myrtaceae* and herbaceous swamp plants, and finally to a waterlogged terrestrial assemblage with *Tabebuia*, *Ficus* and dominated by the palm *Mauritia flexuosa*.

In 2020, I had the honour of receiving the IPS Allan Robertson Grant, giving me the chance to travel to Tallinn, Estonia, to present my research at the International Peatland Congress. With the turn of events brought about by the Covid-19 pandemic, this was no longer possible. Instead, thanks to the skilled event organisers who quickly adapted to the situation, I was lucky enough to join two international virtual conferences! Attending the EGU General Assembly and the International Peatland Congress gave me the opportunity to share my research with colleagues from all over the world. Though virtual, both events were exciting, insightful and informative. As an early-career researcher, this was an incredible chance to network and learn new advances in the fields of geosciences and peatland research.

EGU was filled with a series of 2-minute vPICO live talks on a wide range of geoscience disciplines, from the intricacies of cosmic rays and atmospheric dynamics to the implementation of palaeobiological techniques in conservation. One session that particularly interested me was entitled “Tropical ecosystems - biomes of global significance in transition”, where I had the chance



Figure 2: Carefully treading on the waterlogged open peatland at Veinte de Enero, Perú.

to hear updates from Dr. Kristell Hergoulac’h about her research on variability of soil N_2O and CH_4 fluxes in palm swamps in the Peruvian Amazon. Of particular significance to me were the sessions focused on peatland research, namely “Peatland management and restoration” and “Peatlands under pressure”. These sessions were filled with talks on the potentials of rewetting and peatland restoration, and I was struck by how fast peatlands can recover from degradation when the correct measures are implemented.

The International Peatland Congress marked a pivotal point in my career. Here, I was able to conduct my first oral presentation on an international stage, entitled ‘*Amazonian open peatlands: a palynological investigation of Late Holocene vegetation succession at Veinte de Enero, Pastaza-Maranon Foreland Basin, Peru*’. Not only that, but I was also able to attend a variety of presentations on research focused on tropical



Figure 3: A new way to experience conferences.

peatlands. Some talks were delivered by my colleagues from the Tropical Wetlands Consortium (Anna Macphie, Dr. Lydia Cole and Dr. Adam Hastie), making the IPC a valuable opportunity to showcase the efforts of the Consortium on an international platform.

I found myself both troubled by the impacts of draining and plantations on tropical peatlands, but I also felt relieved by the potentials of restoration in the forms of rewetting and paludiculture. I was reminded that researching all aspects of peatlands, especially those under threat, is an extremely valuable endeavour of global importance.

I would like to thank the International Peatland Society for awarding me the Allan Robertson Grant, which made it possible to attend these conferences and enabled me to share my research. This experience has greatly motivated me for the last phase of my PhD, and provided much food for thought for the write-up of my thesis. For further information about my project, please feel free to contact me!

Dael Sassoon

dael.sassoon@gmail.com

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 11 June 2021).

Student members:

Russia: Sergei Khorlamov, Alina Kovaleva, Ekaterina Ogurzova

*Welcome to the
peatland family :)*

Individual members:

Finland (Suoseura): Eerika Tapio

Russia: Vasiliy Burakov, Alexandr Gomonov, Yuri Gordeev, Valentin Hlusov, Andrei Kireev, Nikolai Matveichuk, Oleg Misnikov, Anatoly Prudnikov, Anna Prudnikova, Elena Prudnikova, Evgeny Sorokvashin, Andrei Tochilin

UK: Brian Mc Cuskey

Corporate & institutional members:

Canada: Asha Hingorani (Canadian Sphagnum Peat Moss Association, CSPMA)

Finland (Bioenergia ry): Tanja Hyttinen (Biolan Oy)

Germany (DGMT): Christian Balster (Balster Einheitserdewerk), Christoph Bahrs, Yvonne Friedrich & Sina Garmhausen (Brüning Group Germany GmbH)

Russia: Vladislav Golubtsov (Kozihinskiy Greenhouse Complex), Nikolai Grevcev (Ural State Mining University), Lidia Inisheva (Tomsk State University), Andrei Kolchanov & Vilena Petrisheva (Investment Attraction Agency of Sverdlovsk region), Alexandr Nikiforov, Alexandr Smirnov & Alexey Smirnov (Samaritan State Agriculture Academy), Anatoly Osipov (Agrophysical Research Institute), Victor Ploskina (LLC EKOPROM), Sergey Starovoitov (LLC TORFPROM), Alexey Streltsov (Vice Governor of Smolensk Oblast)

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

Results of the IPS member survey 2020

Part II - What do you like about the IPS?

The IPS Secretariat carried out a member survey between 29 September and 30 October 2020. Altogether, about 1500 members were asked to participate and 75 responded (5%). We were curious to know what you think about the IPS, which things can be improved and what we are already good at. We will publish the questions and answers to the survey in a new series; this is the second part.

On this occasion, we report on the pleasant aspects of our organization, which fit with the uplifting spirit of the recent Congress.

What do you like about the IPS?

Members who answered, appreciate the amount of information they receive and the contacts they are able to make via our organisation. They are enthusiastic with regard to IPS activities, primarily the International Peatland Congresses, and “nice

public relations”; they appreciate “all concerning the future of peat in the substrate industry and for final users”. The fact that “all people interested in peatlands are participating, not just ecologists”, is viewed as positive, as well as the “news in peat business”. Others perceive that “conservation is a focus”.

The IPS “provides a good international perspective on peat and peatland topics”. Members are pleased that the IPS “comprises different nations”. The “discussion culture is good and it is quite an open community”. “Communications from the IPS are very good” and “it is an active, informative organisation”.

Some members have commented that “Peatland Snippets are short enough to read”. Others appreciate the Peatlands International magazine, the articles of the IPS journal and, in general, the “spread of world-wide peatland news”.



IPS Annual Convention in Aberdeen 2017. Photo: Susann Warnecke

They value the exchange of knowledge, opinions and views, as well as the social meetings. It was expressed that “fresh information is always available” and that the IPS is a “good network for professional and personal contacts”. It was also emphasized that the IPS is “the only organization promoting science-based, peatland management with social, environmental and economic issues”. One member wrote, “I believe that IPS conferences, congresses, publications,

journals "Peatlands International", "Mires and Peat" and communication opportunities are a very valuable asset to the global peatland community." The "open mind in discussions shown by leaders" is encouraging.

In general, "international contacts and meetings" are deemed to be very important and are supported by the "positive tone of communication". It is felt that "the IPS is starting to pay more attention to industry issues" and provides "knowledge about production in peat areas". On the other hand, members need more "information regarding research results in peatlands".

Members also state that the "IPS is an interesting society, which has an important role in changing the world. It is the only society related to peatlands and peat, which takes full account of the diversity and perspectives of the use of peatlands." Another member quite rightly summarizes that "the IPS makes an effort to integrate different interests" and "brings together all interested parties regarding peatlands; it gets people out of their bubbles" - which is very important. People benefit from our "multi-stakeholder approach of peat and peatland international issues, the congresses, the magazine".

Others have commented that the IPS is "a forum for the consideration of many different aspects of the world of peatlands, bringing together industry and academia" and state that "it is important that the IPS remains independent, and that business, NGOs and science remain organized within the IPS. The IPS is very approachable [...], which is important". Consequently, many members consider the IPS "as a family".

One member stated that the IPS puts members "in contact with peatland scientists and also the governments and companies that are using peat. Land-use change is critical for peatlands."

Finally, members appreciate the "people, science, journal, and of course the field trips during meetings!" and underline that the society "brings



Tree planing in Kalimantan, Indonesia in 2017. Photo: Susann Warnecke

scientists, the peat industry and conservationists together", or, more detailed, "trying to get scientists, business, practitioners and the whole peatland industry together to find ways of managing peatlands more sustainably". Others appreciate "the camaraderie of the people in it as well as the diversity of people who wish to conserve, restore as well as extract".

Other positive comments express that the IPS "looks like a very active and dedicated platform, adapting to changing circumstances and perceptions in the world". The IPS has a "transparent message; resilient action", covers "a variety of topics", is "well organized" and "working, but the work area is very complicated". I think we can all relate to that.

Thank you very much for sharing your opinions!

Susann Warnecke

Acting Secretary General
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Peat and Peatland Events

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

Executive Board Meeting 117
17 June 2021

9th SER World Conference on
Ecological Restoration
Virtual event
19 - 24 June 2021
www.re3-quebec2021.org

ISHS-IPS II International Symposium on
Growing Media, Soilless Cultivation, and
Compost Utilisation in Horticulture
Ghent, Belgium & online
22 - 27 August 2021
www.growingmedia2021.com/en

IUCN World Conservation Congress
Marseille, France & online
3 - 11 September 2021
www.iucncongress2020.org

SER Europe: 2021 Conference
Alicante, Spain
7 -10 September 2021
<https://sere2020.org>

AsiaFlux Conference 2021
Kuching, Sarawak, Malaysia
21 - 23 September 2021
www.asiaflux.net

Convention on Biological Diversity COP 15
Kunming, China
11 - 24 October 2021
www.cbd.int

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Submission deadline: PI 3.2021: **30 August**

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