



Peat extraction in southern Akanyaru River valley at the border of Rwanda and Burundi. Photo: Hans Joosten.

## IMCG Bulletin: April 2019



**INTERNATIONAL MIRE  
CONSERVATION GROUP**

[www.imcg.net](http://www.imcg.net)

### Contents of this Bulletin

#### IMCG issues

Word from the Secretary-General .....	02
Mires and Peat .....	02

#### Papers

Peatland prose from the past: The indulgent and exorbitant mires of St. Ambrose (340-397 CE) .....	02
The word (paludiculture) .....	03
Thirsty trees – the catch 22 situation on the Maputaland Coastal Plain, South Africa .....	05

#### Peatland news

Global: WMO, Ramsar, GPI, IPS, RPP, IPCC, IPBES etc. ....	09
Africa - South-Africa .....	15
Asia .....	15
Brunei .....	15
Georgia .....	16
Indonesia .....	18
Malaysia .....	28
Singapore - ASEAN .....	30
Europe - European Union .....	31
Finland/ France/ Germany .....	32/33/33
Ireland/ Lithuania/ Netherlands/ Russian Federation .....	34/35/36/37
United Kingdom .....	38
North- and Central America - Honduras .....	44
South-America .....	42
Bolivia/ Falklands-Malvinas .....	46/47
Peru .....	48

<b>New peatland conservation relevant papers .....</b>	<b>50</b>
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## IMCG issues

### Word from the Secretary-General

A new IMCG Bulletin covering April going into May 2019. Pim de Klerk continues his series of old - and I mean really old - texts and figures about peatlands, this time “only” 1600 years old. Future contributions – Pim already submitted texts for the next 12 Bulletins, will address sources that are even two millennia older.

Very fresh news also on peatland fires, haze, court cases and fines related to oil palm and pulpwood in SE Asia. The IMCG Bulletin compiles material from various sources and diverse opinions from all over the world. When – like in this Bulletin - substantiated criticism is ventilated on what is happening in Southeast-Asia, we should never forget that the efforts and achievements of our Indonesian colleagues are the largest and most important the World has ever seen with respect to the aimful conservation and restoration of peatlands.

Our peat extraction counterparts in and around IPS could use Indonesia as an inspiration and stop irresponsibly propagating the use of peat. Okay, the challenges of replacing fossil peat with renewable and ‘clean’ alternatives might seem enormous, but they have to be resolved, and they have to be resolved quickly by the specialists in this field!

We must go on. So keep sending news, photographs, papers and other contributions for the next Bulletin **by June 8, 2019** to Hans Joosten at [joosten@uni-greifswald.de](mailto:joosten@uni-greifswald.de). The peatland world needs **you**, more than ever!

### Mires and Peat

In April 2019 the following papers were published in Mires and Peat:

- Spatial potential for paludicultures to reduce agricultural greenhouse gas emissions: an analytic tool. [A. Schlattmann & M. Rode] Volume 25: Article 03 <http://mires-and-peat.net/pages/volumes/map25/map2503.php>
- Testing the three-phase technology for harvesting biomass from wetlands. [K. Zembrowski & A.P. Dubowski] Volume 25: Article 02 <http://mires-and-peat.net/pages/volumes/map25/map2502.php>
- Annual CO<sub>2</sub> fluxes from a cultivated fen with perennial grasses during two initial years of rewetting. [S. Karki, T.P. Kandel, L. Elsgaard, R. Labouriau & P.E. Lærke] Volume 25: Article 01 <http://mires-and-peat.net/pages/volumes/map25/map2501.php>
- Aapa mire on the southern limit: A case study in Vologda Region (north-western Russia). [S.A. Kutenkov & D.A. Philippov] Volume 24: Article 10 <http://mires-and-peat.net/pages/volumes/map24/map2410.php>
- Are point measurements in a bog representative of their surrounding area? [S.A. Howie & H.J. van Meerveld] Volume 24: Article 09 <http://mires-and-peat.net/pages/volumes/map24/map2409.php>

Find the journal online at <http://mires-and-peat.net/> Electronic submission is required using our dedicated electronic submission system. If you experience any problems please contact the Editor-in-Chief Olivia Bragg ([o.m.bragg@dundee.ac.uk](mailto:o.m.bragg@dundee.ac.uk)) who can offer alternative routes for electronic submission.

### Papers

#### Peatland prose from the past:

#### The indulgent and exorbitant mires of St. Ambrose (340-397 CE)

*Pim de Klerk ([pimdeklerk@email.de](mailto:pimdeklerk@email.de), [www.pimdeklerk-palynology.eu](http://www.pimdeklerk-palynology.eu))*

The Christian religion was initiated in the first century CE, but it took several centuries until an ‘official’ theological theory was established. The so-called church fathers - the early theologians who shaped the new religion – were very prolific in debating their respective views in their writings. One of them was St. Ambrose (340-397 CE), who became bishop of Milan after a career in Roman public services and who was one of the most influential Christian theorists. In his ‘Six days of creation’ he wrote about the opening of the Book of Genesis. In his comment on the third day he compared the separation of water and land and the regulation of water in different habitats with the development of the Christian religion. He used mires as metaphor:

*„A swamp is indulgence, a swamp is exorbitance, a swamp is incontinence, in which there are places to wallow in lust, where there are howls of wild beasts, and lairs of passion. All who fall into the mire go down and do not get out, here the feet slip-away, and all who go there stagger. The waterfowl wash themselves dirty, the laments of doves wail from above, and the slow turtle sticks in the mud of the sludge. Hence the expressions ‘the swine in the swamp and the deer at the spring’. But from every swamp, where ancient laments were sung as by frogs, faith came together, and those of pure mind and candour souls came together.”*

*(„palus est luxuria, palus est intemperantia, palus est incontinentia, in qua uolutabra libidinum sunt, bestiarum murmura, latibula passionum, ubi mersantur quicumque inciderint et non emergunt, ubi labuntur pedum uestigia, fluitant singulorum incessus, ubi fulicae se dum lauant polluunt, ubi flebiles desuper gemitus columbarum, ubi pigra testudo caenoso haeret in gurgite; denique aper in palude, ceruus ad fontes. ex omni igitur palude, ubi quasi ranae ueterem canebant querellam, congregata est fides, congregata est puritas animi mentisque simplicitas“). (‘Six days of creation’ 3<sup>rd</sup> day, chapter 1, paragraph 4).*

Romans in general had a rather negative attitude towards mires and wetlands, which was inherited by the early Christians in the Roman Empire. Many authors used these landscape types as metaphors for despicable things, ranging from the chaos before the biblical creation to the burning hell of the afterlife. Often mires were seen as dwelling places of heathens, who frequently were compared with loud incoherently croaking frogs. The text of Ambrose fits in this latter category: to him, obviously, mires were the uttermost pinnacle of disgust and he deliberately composed a text that pictures them as the most desolate landscape type. The metaphors are rather clear: even typical wetland animals like water birds or turtles did not prosper in mires, and the only creatures that felt well were negatively viewed “wild beasts” and “swine”. He also connected lust and passion with mires conform the general disgust of Christianity towards sex and sexuality. However, Ambrose stated that from mires faith, pure souls, and frank minds could arise: although “mentis simplicitas” is translated as a “simple mind” in the consulted translations, “simplicitas” may also mean “frankness” or “candour” (Glare 2016) which would fit the religious context better. The “deer at the spring” is a reference to Psalm 42 (or 41 in the Septuagint and Vulgata) in which the longing of the deer for water is compared with the longing of the soul to the Hebrew/Christian god, which does not really fit the otherwise negative character of the quote. Ambrose probably referred to a proverb which pictures a pure deer and pure water as contrast to the swine in the dirty swamp. Although Ambrose quoted the complete proverb, he will have intended it for the swine-part only. Despite his absolute disgust for mires, Ambrose provided hope that in the end something good could come from them when the pure soul was separated from the heretic swamp, i.e. when the good was separated from the bad and the ugly.

I am grateful to Immanuel Musäus for his help with the translation.

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## The word<sup>1</sup>

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It took a while before I could pronounce the word correctly. And sometimes it still doesn't work properly. The term we needed - we are talking about 1998 - did not yet exist; the word had to be created. Because only things with a name really exist.

Swamp cultivation? Swamp farming? ...Hardly convincing...From the beginning it was clear that the word had to be used and understood internationally. The farmers had their agri-culture, the gardeners their horti-culture,

<sup>1</sup> This is a translation of a short paper on the origin of the word “paludiculture” in the November 2010 Newsletter of the Vorpommern Initiative Paludiculture (VIP) project.

the foresters their silvi-. There is even pisci-culture for the fish breeders. But how would you call cultivation on wet peatland?

I come originally from the Netherlands, from a region called "de Peel". In fact, it was a peatland that - as we learned as children - was on its eastern border plugged with old newspapers. After all, the Earth was flat and ending there and without the newspaper wall one would fall off.

The few intellectuals in our village (the pastor, the family doctor, and perhaps the schoolmaster) claimed that the name "Peel" came from the Latin "palus", which means "swamp". They understood what was being said in the holy mass in church and most residents of the Peel also believed the story with the "palus". I didn't... Because I couldn't imagine that normal people in our region used to speak Latin.

My mother suggested that - as preparation for secondary school - I would become an altar boy, "because that's how you get the Latin almost in a playful way". I had hardly put on the chasuble, or the church of the 1960s changed to the national language. Latin remained the monopoly of the regional grammar school, and of the monastic order of the Societas Verbi Divini, the Society of the Divine Word, which ran it. And of course of our classical languages teacher, Father Poyer, who preferred to pronounce his name in French ("Pwajee") because the Dutch pronunciation ("pooier") means "pimp". We did not yet know the latter term either...

So it was obvious what the root words should be: "culture" and "palus", only the connection was not immediately clear. "Pali culture" simply sounded wrong. "Palus" was not a plain word like "hortus" (garden: hortus, horti, horto, hortum, horto) with which we had started to learn Latin. Palus belongs to a different, consonantal declination: "palus, paludis, paludi, paludem, palude". Not for nothing the old maps called the Peelmire "Locus paludosus". And so I knew, even earlier than Franziska<sup>2</sup> ;-), that mire dwellers are indicated with "paludi-cola" (not with pali-cola...).

Thus a new word was born, which has gradually spread, has achieved something of fame, has been implemented as a pilot concept. Now a new phase has dawned in which we will try to implement the concept across the board and build the necessary scientific, technological, economic and social infrastructure.

The word has become flesh: VIP: Paludiculture: worldwide, without borders!



*Harvested reed (Phragmites australis) in the Netherlands. Photo: Hans Joosten.*

<sup>2</sup> IMCG Main Board member and Greifswald friend and colleague Franziska Tanneberger who had in 2008 finished her PhD thesis on the fen bird species Aquatic Warbler (*Acrocephalus paludicola*)

## Thirsty trees – the catch 22 situation on the Maputaland Coastal Plain, northern KwaZulu-Natal, South Africa<sup>3</sup>

Lulu Pretorius ([Pretorius.lulu@gmail.com](mailto:Pretorius.lulu@gmail.com))

In 2017 parts of South Africa faced some of the worst drought conditions in a long time, as a result of below-average rainfall since 2014. Uncertain water security and climatic changes do not bode well for South Africa's already scarce peat resources – an added threat to the multitude others such as mining, agriculture, ignorant development, and poor management. Maputaland in northern KwaZulu-Natal, South Africa, is a case in point. This coastal plain (MCP for short) is a sandy coastal aquifer - home to one of SA's most vulnerable communities, the Zulu and Tonga communities. Approximately 60% of all South Africa's peatlands occur on the MCP - as does extensive subsistence agriculture in sensitive and rare peatlands. This form of agriculture is, however, not the worst threat to peat resources on the MCP – a lack of water is.

The MCP (Fig. 1) is classified as a groundwater-driven system: firstly, it is a sandy coastal aquifer, and also the largest primary aquifer in South Africa; and secondly, there is minimal surface water flowing in the northern parts of the MCP. As a result, the MCP is also regarded as an 'aquifer dependent ecosystem', and most of the ecological systems in the area are dependent on the regional groundwater table for healthy functioning. A loss of groundwater will result in a rapid decline of both freshwater and terrestrial ecological systems. Over the past few years this is exactly what researchers and communities in the area have been observing. In places there has been a decline in the groundwater table of more than 20 meters! And although drought is a huge contributor, there is another contributor to this unprecedented hydrological crisis.

Over the past 20 years, *Eucalyptus* plantations have changed from a minor to a major land use in the area (Fig. 2). Legally, all plantations require a license from the Department of Water and Sanitation (DWS). On the MCP few have been granted thus far due to the lack of knowledge of the unique groundwater reserve and -dynamics. While the plantations towards the south are mostly old, established, legal commercial or state forestry, the woodlots springing up like mushrooms in the northern parts of the MCP are predominantly unlicensed, illegal woodlots as an alternative source of revenue in a below-average income area. The interaction between the need for forestry expansion by commercial growers who are restricted by the water use licensing process of DWS, and a desperation among community members for economic activity in the area, originally initiated (knowingly or unknowingly) the informal timber production. This originally took place through formalized or semi-formalized outgrower schemes, where community members grew trees on behalf of commercial forestry companies. Although this practice has since decreased, the idea of *Eucalyptus* woodlots as an alternative source of income, in the form of a decadal financial injection, has now spread like wildfire. Currently most woodlots are illegal; yet environmental legislation enforcement has been slow to catch on to the trend in this seemingly forgotten area. Exploitation of the seemingly lax enforcement by both the community and commercial foresters has led to an increase in planted area from 200 ha in 1990 to nearly 7000 ha in 2011.

The effect of *Eucalyptus* trees on water resources is globally well established. Evidence is increasingly indicating that the effect of these trees on a sandy aquifer, especially under conditions of drought, is significantly more severe than in other catchments. It has been shown that *Eucalyptus* species planted on the MCP can lower the groundwater table between 10 and 16 m over a period of 13 years, equating to an average decline of 1 m per year. Despite this, timber remains an easily implementable economic solution for marginalised- and economically neglected communities (Fig. 3). Community members are not incentivized to remove the trees, regardless of clear evidence of the degrading effect on the natural resources these same communities are dependent on (to quote a local farmer: "Since we planted those trees over there 20 years ago our water started disappearing"). It appears as though people are prepared to walk significant distances to the next nearest well for water, rather than get rid of the 'money-trees' that have sucked their own well dry. But what happens when everybody's wells run dry because of large scale woodlot expansion across the MCP? As long as commercial foresters are profiting from timber, the communities on the northern MCP will not willingly get rid of their *Eucalyptus* woodlots; unless "government creates alternative income-generating industries in the area". Rigorously applying the law to get rid of the illegal timber (the so-called 'hard approach') could instigate large-scale community outcry and protest action in the current unstable political environment. It also has an ethical side to it – how do you take away income from a community which has nothing else?

<sup>3</sup> A version of this article and associated figures appeared in the March edition of the Botanical Society of South Africa's Veld & Flora Magazine as: Pretorius, L., 2019. The survival riddle of Maputaland's money trees. Veld & Flora, 105(1): 26-33.

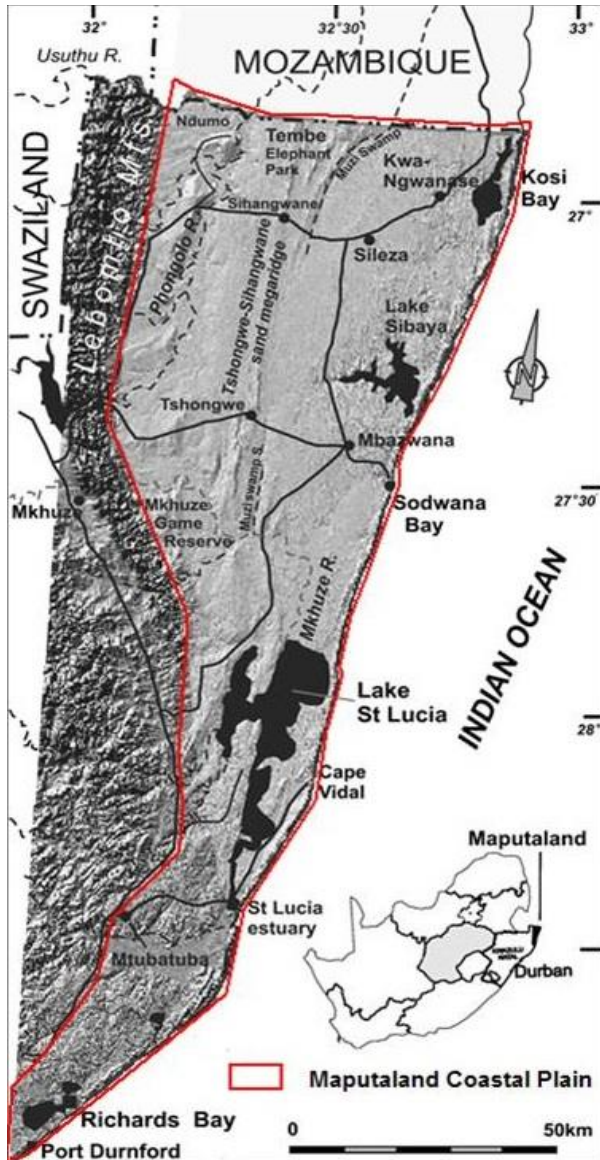
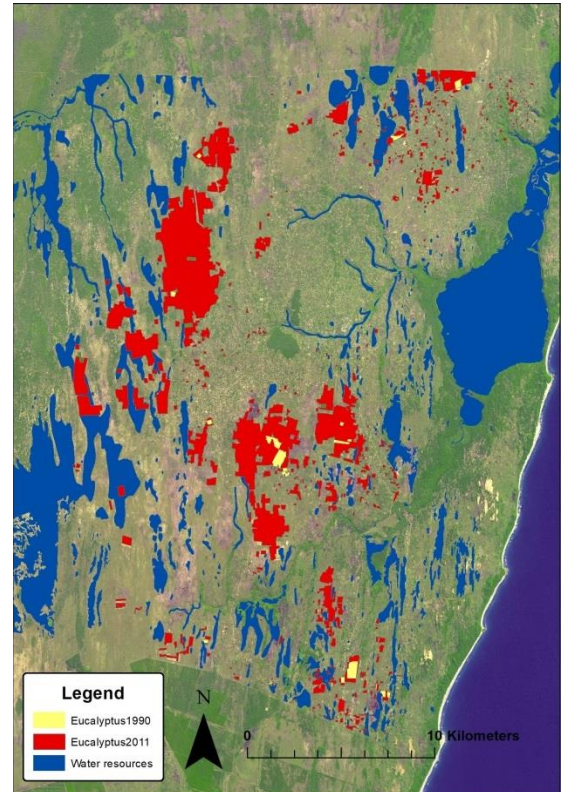


Fig. 1: The Maputaland Coastal Plain (adapted from Botha & Porat 2007).

Fig. 2: The expansion of informal Eucalyptus woodlots in the northern part of the Maputaland Coastal Plain (based on data from Roeder 2014). The yellow patches are Eucalyptus woodlots in 1990; the red in 2011. During the past 7 years the rate of the expansion has increased even further.



Not surprisingly the most apparent evidence of the dropping water table has been in the peatlands, leading to an unprecedented number of peat fires raging on the MCP over the past few years. A peat body which has taken 3000 years to accumulate (the average growth rate of peat is approximately 1 mm per year on the MCP), can be destroyed by fire within a few days. Regardless of the very serious environmental consequences, the loss of the highly fertile agricultural substrate also has direct negative social implications. Peatlands are not only burning in communally owned land (Fig. 4), but also in world renowned protected areas on the MCP, which host some of the rarest peatlands in South Africa (Fig. 5). Other aquatic resources also suffer: the water levels of the Lake Sibayi (the biggest saltwater lake in South Africa) have been dropping at an alarming rate since the year 2000, creating much concern and anxiety among the scientific community, conservation and tourism bodies, local government, and surrounding communities. This has initiated a host of cutting edge research and monitoring in the area, funded by, among others, the Water Research Commission, the South African Earth Observatory Network, DWS, and local universities. Results are still in the pipeline – however, it seems that there is little doubt that climatic changes, in combination with rapidly expanding woodlots, are steering the coastal plain into a looming environmental crisis.



*Fig. 3: Informal woodlots around an unchannelled valley bottom wetland system. Photo: Lulu Pretorius.*



*Fig. 4: Subsistence garden in a peatland destroyed after a peat fire. The peat is still smouldering underground as evident from the smoke from the ground in the right bottom of the picture. Photo: Lulu Pretorius.*



Fig. 5: A rare calcareous mire burning in a reserve on the MCP. Photo: Lulu Pretorius.

There are alternative, yet untested, income-generating land uses. Although none alone are as profitable as woodlots in the short-term, they are more adapted to the local ecosystems and sustainable in the long run. Examples include: increasing efficiency farming by addressing soil quality; commercial cultivation of traditionally used trees for non-timber products, such as Mango (*Mangifera indica*), Cashew Nuts (*Anacardium occidentale*), Monkey Orange (*Strychnos cocculoides*), Marula (*Sclerocarya birrea*), Waterberry (*Syzygium cordatum*), African Medlar (*Vangueria infausta*) and Lala Palms (*Hyphaene coriacea*); and agroforestry, where trees are grown alongside crops. The creation of markets and value added chains for processed products such as dried fruits, jams, liquors, juices, sauces, chutneys, and beverages can, alongside training, support extended tourism activities in the area.

So the catch-22 is this: Allow the woodlots to expand as an economic activity in the area, and accept that most of the very special and unique terrestrial and aquatic natural resources on the MCP are bound to degrade and decline and possibly disappear over time, and eventually the community will also sit with large-scale water problems.

Alternatively get rid of all *Eucalyptus* trees, and find a suite of other economic activities which can be established in the area. Or maybe some form of a combination or trade-off of both the above can be negotiated?

The question I personally am grappling with is: whose problem is this to solve? As researchers we identify and highlight the problem, but how far do scientists get involved in such issues, and how is this addressed? Clearly governmental departments must become more involved (more than they already are) in the regulation of activities in the area. The forestry industry (who probably will only withdraw from an area if the risk of water stress, fires, or rallying community members outweighs the profits) must be appealed to. Furthermore, the onus is also on the tribal authority and local community champions to stimulate the transformation in mindsets towards resources. Although the community has the freedom to make decisions about their own livelihoods and futures, these decisions should be well-informed: timber cannot be preferred above ecological infrastructure if there is no understanding of future consequences of decisions made today.

This seemingly straightforward matter currently unfolding on the MCP is in fact a complex and volatile issue, which clearly cannot be resolved by one or two stakeholders alone. The answer to the looming socio-ecological tragedy is a combination of all of the above approaches, and involves politicians, government, scientists, conservationists, and most of all the local communities. It is a situation that requires a bottom-up transformative paradigm shift from all spheres of stakeholders, and can only be resolved in a collective matter.

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## Peatland news

### Global

#### **WMO Statement on the State of the Global Climate in 2018**

“Peatlands are important to human societies around the world. They contribute significantly to climate change mitigation and adaptation through carbon sequestration and storage, biodiversity conservation, water regime and quality regulation, and the provision of other ecosystem services that support livelihoods. Climate change has emerged as a significant threat to peatland ecosystems, because it exacerbates the effects of drainage and increases fire risk. It exposes peatlands currently protected by permafrost to thawing and possible increased CH<sub>4</sub> emissions and loss of carbon. Sea-level rise increases the risks of coastal erosion and salination of freshwater peatlands.”

[https://gallery.mailchimp.com/daf3c1527c528609c379f3c08/files/82234023-0318-408a-9905-5f84bbb04eee/Climate\\_Statement\\_2018.pdf](https://gallery.mailchimp.com/daf3c1527c528609c379f3c08/files/82234023-0318-408a-9905-5f84bbb04eee/Climate_Statement_2018.pdf)

#### **Ramsar Convention**

The Scientific and Technical Review Panel of the Ramsar Convention convened 18-22.03.2019 in Gland, Switzerland to develop a draft work plan for the 2019-2021 triennium. This draft will be considered and approved by the Standing Committee at its 57th meeting (24-28.06.2019). As highest priorities were identified:

- The regular production of the Global Wetland Outlook (following the Sustainable Development Goals and linked to the GPI Global Peatland Assessment)
- The production of a Ramsar Technical Report on sustainable agricultural practices in wetlands
- The production of Ramsar guidelines on peatland restoration (as an update of the 2008 IMCG Global peatland Restoration Manual)
- Gender issues in Convention
- The production of a Ramsar Technical Report on coastal blue carbon

As relevant, but lower priorities were identified:

- Assessing the implementation status of Res. VIII.17: Guidelines for Global Action on Peatlands (to be done by an expert working group)
- Developing guidance for cost-benefit analysis, cost-effectiveness analysis, and multiple criteria analysis of peatland restoration projects
- Developing templates to assist parties to report on peatland restoration (link to the multi-convention initiative).

### Global deforestation is on the rise!

Updated data from the University of Maryland, released on Global Forest Watch, reveal that despite a growing number of zero-deforestation commitments from governments and companies, primary rainforest loss hit record-highs in 2016 and 2017 due to fires, and remained above historical levels in 2018. The Global Forest Watch, run by the World Resources Institute, looked at deforestation across different regions. In 2002, Brazil and Indonesia accounted for 71 per cent of tropical primary forest loss. In 2018, they accounted for 46 per cent, with countries such as Colombia and the Democratic Republic of Congo following closely behind. The study found that the tropics lost 12 million hectares of tree cover in 2018, the fourth-highest annual loss since records began in 2001. 3.6 million hectares of primary rainforest, an area the size of Belgium, has disappeared. Read the report in full [here](#). See for spatially explicit worldwide annual forest loss <https://earthenginepartners.appspot.com/science-2013-global-forest>

- <http://www.climateaction.org/news/global-deforestation-wipes-out-an-area-size-of-belgium>



*Tropical deforestation for oil palm in Gabon. Photo: Hans Joosten.*

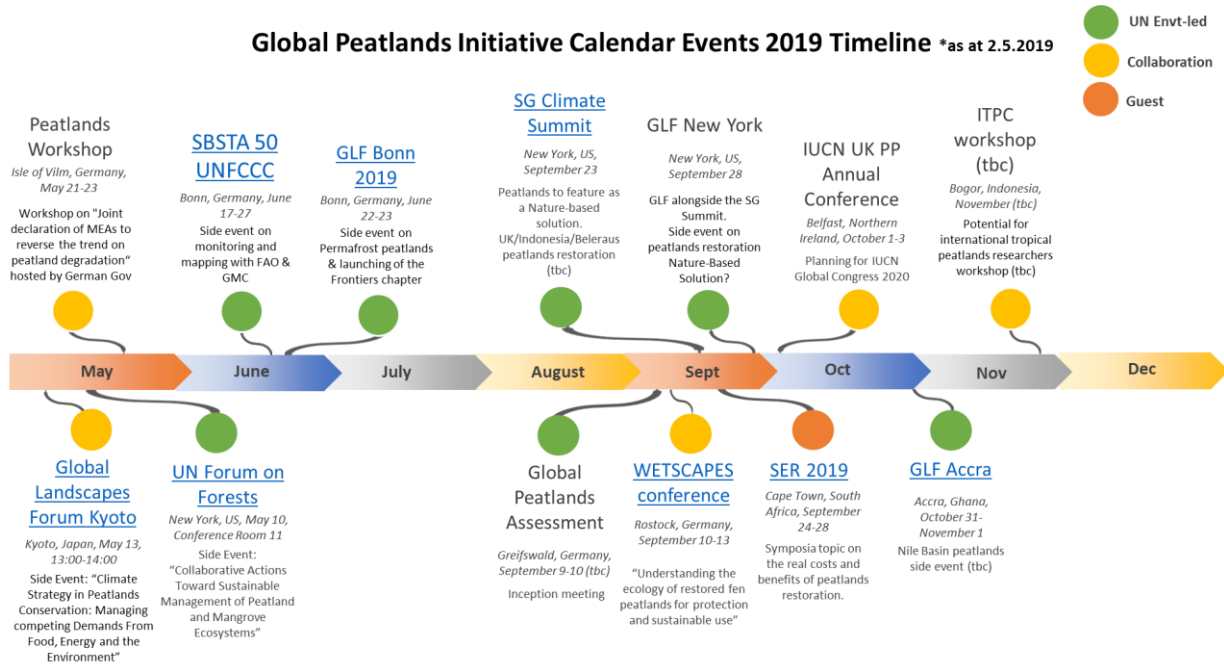
### GPI News

The Global Peatlands Initiative team in Nairobi is working on the GPI website, updating logos of all partners and making improvements that will allow to share more content of GPI partners' work. Please share your suggestions directly to Julie Van Offelen ([julie.vanoffelen@un.org](mailto:julie.vanoffelen@un.org)) who has joined the GPI team to help out.

Peatlands featured at the Global Landscape Forum on Monday 13 May in Kyoto in the panel session, "Climate Strategy in Peatlands Conservation: Managing Competing Demands from Food, Energy and the Environment". This panel session explored engagement with a wider range of partners and countries for more effective South-South co-operative efforts to tackle challenges around peatland conservation and restoration.

- <https://events.globallandscapesforum.org/agenda/kyoto-2019/day-1-monday-13-may-2019/climate-strategy-in-peatlands-conservation-managing-competing-demands-from-food-energy-and-the-environment/>

From May 21-23 we are co-hosting a workshop at the Isle of Vilm, Germany, on "Joint declaration of MEAs to reverse the trend on peatland degradation" with the German Government (BMU/BfN). This will be a good opportunity to build on the UNEA 4 Resolution on peatlands contributing to guiding future concrete programmatic synergies of MEAs for peatlands! In June, we would be thrilled to have you join us at the Global Landscape Forum in Bonn (22-23rd) where a collection of partners will have a dialogue on "Permafrost and Peatlands – An Emerging Frontier in the defence against Climate Change" (Sa 22 June, 09.00 – 10.30 h). Please keep a look at the website as the agenda unfolds: <https://events.globallandscapesforum.org/bonn-2019/>



**Is IPS going to miss the train?**

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On May 13 – 15, the International Peatland Society (IPS, formerly called the International Peat Society) organized its Annual Convention in Bremen, Germany under the motto “Economy meets Environment & Society”. The increasing societal demands of climate change mitigation and guaranteeing food security were indeed recognised. But instead of discussing integrative solutions for these challenges, most invited speakers repeated in a mantra-like fashion their outdated arguments in favour of the use of peat. Meanwhile observers groaned in the corridors about the peat industry being “the eternal yesterdays that are about to miss the passing train.”

Fallacies of the peat industry	Rebuttal
Unavailability of peat alternatives in sufficient quality and quantity	Strengthen research and development. Reduce demands by avoiding use of high-quality peat for low quality applications
Ample availability of peat reserves	Lack of stones was not the reason that the Stone Age ended. We have to stop using fossil peat because it harms the climate
Peat extraction and use contributes to a negligible extent to GHG emissions	As do my car, my holiday flight, my light bulb, my heating, my food,... Reaching zero CO <sub>2</sub> emissions globally (cf. Paris Agreement) implies that every sector and every person has to reach zero emissions
Unclear to whom peat emissions are attributable (the producer or consumer)	With the same argument “bunker fuels” from international transport have been kept outside climate accounting. Such issues have to be resolved instead of neglected
Current machines are equipped for processing peat, conversion is difficult and expensive	We are talking innovation, i.e. the stuff that entrepreneurs claim to provide...
Automation in horticulture requires constant quality of raw materials	Develop renewable materials of sufficiently constant quality
If peat use is banned in Germany, knowledge will go where peat may still be mined or used	Knowledge is needed where alternative substrates are being developed and applied
Peat and substrate management is sustainable, if not only ecological, but also social and economic aims are considered	Climate change mitigation (zero CO <sub>2</sub> emissions) is not only “ecological” but primarily needed because of social and economic needs

Peat extraction can be responsible	Peat extraction is <i>always</i> irresponsible from a climate perspective because it reduces a long term carbon stock. Don't mix up "less irresponsible" with "responsible".
In Canada successful restoration is achieved within 50 years	This restoration concerns – if at all - only vegetation cover, not the peat body. If peat would be practically renewable, peat extractors could perpetually use the same site, which they don't
Peat is necessary for meeting growing food needs	Food security is threatened by climate change. Don't replace one evil with another
Alternatives are sometimes much worse than peat	Then look for alternative alternatives
Horticulture requires less space than agriculture	Space is only <i>one</i> variable for optimizing production
The burning of peat can produce 35 times more energy per unit area than the burning of forest wood	"...To burn a peat moss does twenty times as much damage, as a forest can twenty times grow up before a new and equally good peat moss matures... It may seem to be a good invention to use the fens for fuel and thus spare the wood; but a forest can grow several times in a seculum, whereas a fen is not filled with peat in several secula". Carl von Linné: "Skånska resa" 1749

As a central contribution Chris Blok from Wageningen University and Research compared the envisaged demand for horticultural substrates in 2050 with the "available resources".

Raw material	Available volume (million m <sup>3</sup> )	Remarks
Peat	80	Current use 40 million m <sup>3</sup>
Coir (coconut fibre)	60	
wood fiber	1,138	
bark	140	
compost	~371	"dirty", partly not useable
perlite	16	
rock wool	120	
tuff	100	
Total availability	2,025	
Need in 2050	244	In 2017: 59 million m <sup>3</sup>

Particularly worrying was the envisaged sharply increased demand for peat/substrate for 2050, especially in Asia and the joyful reaction of short-sighted peat extractors on this announcement.

Professor Meng Xianmin, Northeast Normal University, Changchun, China and Chair of the IPS National Committee of China, explained that the paddy fields on 3,018 million ha require young plants grown on peat substrates, resulting in a demand of an additional 40 million m<sup>3</sup> of peat. In total China would need 50 million m<sup>3</sup> peat, of which currently 2 million m<sup>3</sup> is covered by imports.

The plans of China are to

- increase the imports of peatmoss peat from NW-Europe
- increase the imports of coir and wood-containing peat from SE Asia
- explore the peat reserves in Russia
- promote Sphagnum farming in SW-China
- develop domestic alternatives
- expand know-how, e.g. by importing peat processing plants and recruiting skilled personnel, and by establishing a "community of peat interests".

In contrast, the German government finances a research programme to reduce the use of peat ("Torfminderungsstrategie"), which was presented by Dr. Thomas Schmidt, German Federal Ministry for Food and Agriculture. Instead of leaning back and waiting for state-financed results, the peat industry should take much more effort to develop and provide alternatives.

The problems of simultaneously securing global environmental, social and economic justice are indeed enormous. But these problems *have to be* reconciled and *can be* addressed if we use the expertise available in a positive way. However, instead of looking for integrated solutions, IPS seems to develop increasingly towards a narrow-minded, one-dimensional lobby organisation of peat exploiters without global responsibility. IPS has to change this direction to avoid manoeuvring itself into the abyss of history.



*The quest for alternatives to fossil peat: the experiments of Gramoflor, Germany. Photo: Hans Joosten.*

### IPS Annual Report 2018

The 2018 Annual Report of the International Peatland Society can now be downloaded from the IPS website: <https://bit.ly/2H7lh6n>

### Responsibly Produced Peat: a response

Hans Joosten ([joosten@uni-greifswald.de](mailto:joosten@uni-greifswald.de))

In a recent interview with FloraCulture International, RPP Secretary Hein Boon and executive officer manager Maureen Kuenen explain the philosophy behind the Responsibly Produced Peat (RPP) label (<https://www.responsiblyproducedpeat.org/>). Some highlights from this interview and my comments (HJ):

*“RPP ensures that areas with High Conservation Value (HCV) are identified and conserved. ... However, where an area has been drained, used for agriculture and as such is highly degraded with peat producing harmful carbon CO<sub>2</sub>, RPP recommends extraction.”*

HJ: Why not rewet the site and stop CO<sub>2</sub> emissions immediately (while producing renewable biomass alternatives for fossil peat on the rewetted sites)?

*“Responsibly Produced Peat certification secures the best possible development following peat production (meant is “mining”, HJ), with preference for restoration.”*

HJ: Why not restore before extraction? Then the climate harmful carbon remains in the peat and is *not* emitted.

*“RPP is also a charm offensive in a bid to win ‘a social licence’ to operate from a retail business audience that is increasingly demanding transparency from the whole supply chain.”*

HJ: RPP’s name and presentation pretend that peat extraction and use can be inherently “responsible”. RPP may indeed be “better” than other forms of peat extraction, but it is only “less irresponsible” compared to the

others. It is irresponsible in a time where all have to stop emitting fossil carbon to present carbon emitting activities and products as being “responsible”

*“Overall, the industry must take the lead and not wait for consumer demand. It is important to be a few steps ahead to ensure that future customers don’t lose trust in the environmental claims of your product.”*

HJ: Indeed and that means: reducing (and eventually fading out) the use of peat and looking vigorously for carbon-neutral alternatives (which are strikingly no criteria for RPP labelling...). Responsibility does not mean: pursuing a largely “business-as-usual” scenario and frustrating the development of real alternatives by using concealing narratives and terms.

*“...in some segments of the industry, plant propagation for example, there is no real substitute for peat”*

HJ: Then limit the use of “Responsibly Produced Peat” to segments without alternatives, instead of trying to maximize sales undifferentiatedly. And stimulate research into real alternatives!

*“The share of peat is relatively decreasing, but due to the strong growth of the total market, peat volumes are expected to double. Of course, we hope this will apply to RPP peat.”*

HJ: Responsible people would hope and work for a trend reversal...

*“It is important that peat producers (meant is “extractors”, HJ) help nature restore itself for example by planting Sphagnum. This way, we make sure peat is harvested (meant is “mined”, HJ) responsibly with respect for the environment.”*

HJ: An activity that is bad for the climate (including peat extraction with subsequent vegetation restoration) cannot rightfully claim to have respect for the environment.

*“RRP’s ultimate goal is to become mainstream by having 150-200 sites certified and at least half of total production area dedicated to the extraction of ‘horticultural’ peat. In Europe the total area of peat production (meant is “extraction”, HJ) sites covers 120,000 ha with half of it in use for growing media and the remainder for energy purposes.”*

HJ: If RRP would be really responsible, its ultimate goal would be to stop the use of fossil peat and make itself superfluous.

My conclusion: RPP is better than many other peat extraction procedures, but not good enough in the light of what is needed. Its inappropriate exploitation of the term and concept “responsible” may frustrate and retard the necessary rapid development and implementation of carbon-neutral alternatives for fossil peat.

- <https://www.floraculture.eu/minds/responsibly-produced-peat-promise/>

### **IPCC updates methodology for greenhouse gas inventories**

The Intergovernmental Panel on Climate Change (IPCC) released on Monday May 13 an update to its methodology used by governments to estimate their greenhouse gas emissions and removals. Governments are required to report their national greenhouse gas inventories -- comprising estimates of greenhouse gas emissions and removals -- to the United Nations Framework Convention on Climate Change (UNFCCC) including under processes such as the Kyoto Protocol and Paris Agreement. The updated IPCC methodology improves this transparency and reporting process by ensuring that the methodology used to determine these inventories is based on the latest science. The new report, the *2019 Refinement to the 2006 IPCC Guidelines on National Greenhouse Gas Inventories (2019 Refinement)*, was prepared by the IPCC’s Task Force on National Greenhouse Gas Inventories (TFI). “The *2019 Refinement* provides an updated and sound scientific basis for supporting the preparation and continuous improvement of national greenhouse gas inventories,” said Kiyoto Tanabe, Co-Chair of the TFI. Over 280 scientists and experts worked on the *2019 Refinement* to produce many changes to the general guidance as well as methodologies for four sectors: energy; industrial processes and product use; agriculture, forestry and other land use; and waste.

- <https://www.ipcc.ch/site/assets/uploads/2019/05/2019R-refinement-PR.pdf>

### **New IPBES global assessment**

An advance unedited version of the Summary for policy makers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services is available under: [https://www.ipbes.net/system/tdf/spm\\_global\\_unedited\\_advance.pdf?file=1&type=node&id=35245](https://www.ipbes.net/system/tdf/spm_global_unedited_advance.pdf?file=1&type=node&id=35245)

## Africa

### South-Africa



National Wetlands  
Indaba  
7 to 11 October 2019  
Karibu Leisure Resort & Conference  
Centre, Tzaneen, Limpopo, South  
Africa  
<https://nwi19.sawetlands.org>



## Asia

### Brunei

#### Firefighters battle to keep Belait peatland fires under control

The current (23/04/2019) hot and dry weather in the country is causing peatland forest fires to break out in the Belait District. It is believed that the fires are caused as a result of a natural occurrence – underground fires – as well as human negligence in the form of indiscriminate open burning. The Fire and Rescue Department's (FRD) Operation 'B' Branch is currently battling a huge peatland fire which has destroyed an estimated 50 hectares of peatland forest, according to a statement from the Fire and Rescue Department. Nearly all fire stations under Operation 'B' Branch are currently trying to put out the fires in the affected areas, assisted by other government agencies and private sector bodies such as the Royal Brunei Police Force, Public Works Department of the Belait District – who provided water tanks – and the Royal Brunei Air Force, which provided water bombing assistance. Additional help in the firefighting effort was provided by Brunei Shell Petroleum

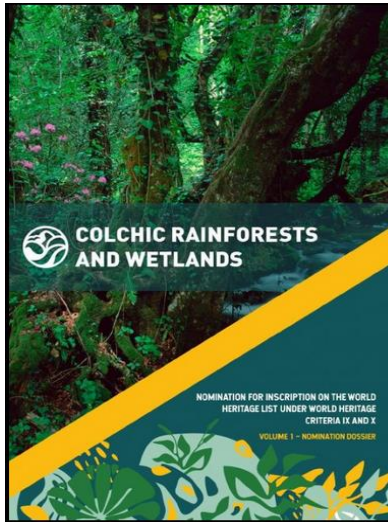


Peat swamp forest in Belait, Brunei. Photo: Hans Joosten.

Company Sdn Bhd, with the company deploying personnel and fire engines to the affected areas. Due to the current situation, the Fire and Rescue Department is urging members of the public to not carry out open burning and to do their part to put out small fires by the roadside with sand or water to stop them from spreading. Motorists are also urged to drive carefully and slow down their vehicles when driving through the affected areas due to limited visibility caused by thick smoke.

<https://bruneinews.worldtimes.news/firefighters-battle-to-keep-belait-peatland-fires-under-control/>

## Georgia



### Colchic forests and peatlands nominated as World Heritage!

The mires and humid forests of the Colchic plain in the west of Georgia were only slightly influenced by the ice ages. The Georgian authorities have recognised the special species diversity and composition as well as the unique mire types and are striving to have the relevant protected areas recognised as UNESCO World Natural Heritage Sites. The Michael Succow Foundation (Germany) supported the Georgian Agency for Protected Areas with nomination, which was submitted in January to the UNESCO World Heritage Centre in Paris. Now it's time to wait and see and cross fingers for a positive evaluation of the nomination by IUCN and its subsequent confirmation by the World Heritage Commission. Recognition of the Colchic forests and peatlands as World Heritage Sites will strengthen the protection of these ecosystems and raise international awareness.



*Anaklia-Churia part of Kolheti National Park, Georgia, with in the background the Greater Caucasus mountain range. Photo: Hans Joosten.*

### World treasure Imnati mire no longer under threat!

იზოლდა მაცუტაძე ([izoldamatchutadze@bsu.edu.ge](mailto:izoldamatchutadze@bsu.edu.ge))

Since the establishment of Kolkheti National Park (KNP) in the year 2000, Imnati mire, the second and largest percolation bog in the world and as such the most valuable part of the park from a biodiversity point of view, has factually been beyond the control of the KNP administration, because of a conflict between the administration and the local population. The conflict arose from the very poor local social economy and the absence of any source of income, even almost 20 year after the establishment of the National Park, and was aggravated by the very bad communication and lack of information about the uniqueness of Imnati mire. This resulted in several attempts to resume peat extraction in Imnati mire (as had happened south of Imnati mire during Soviet times) and to keep the area outside the area to be nominated as World Heritage Site.

While working on a new updated management plan for the National Park, in 2016 a first meeting was held in Lanchkhuti with local decision makers of the municipalities concerned and involving the international experts Hans Joosten, Ab Grootjans and Matthias Krebs. During the public hearing on the new management plan, Ab and Hans explained the unique geologic, climatic, hydrologic and ecological value of the Kolkheti lowland and stressed that any melioration activities and peat extraction would have negative impact – also internationally. In the second public hearing in Lanchkhuti on a revised management plan, the head of administration of BSU and representatives of the Governor of Guria Region participated. During this hearing information was given on the uniqueness of Imnati mire and that it is the most valuable ecosystem of the entire KNP, which made the local population very proud. Also information was given on the initiative to nominate the forests and mires of Kolkheti as World Heritage Site. Especially former KNP director Alexander Khabeishvili played an excellent role in the communication between KNP administration and Guria region and its Governor. After these meetings and in consultation with APA, it was decided to include the addition of 12 extra rangers in the management plan to control biodiversity of Imnati mire from the Guria site. APA added these 12 rangers with equipment in its budget. Furthermore it was decided that the KNP will have a new ecotourism trail in Guria to Imnati mire.

Now all sites of Kolkheti National Park are under control of the Agency for Protected Areas. And never the idea will be proposed again to extract peat from Imnati mire! To increase nature conservation and wise use and to stimulate the cooperation between KNP and the local communities, we are now developing proposals to improve the local social economy by developing paludiculture and forest restoration projects with the local people.



Matthias Krebs (l.) and Ab Grootjans checking water quality in Kolkheti NP, Georgia. Photo: Hans Joosten.

## Indonesia

### Indonesia sees drop in hotspots due to peatland restoration efforts, says agency

The number of hotspots in restored peatlands in Indonesia has dropped by nearly 93 per cent since 2015, on the back of restoration efforts. The figure was revealed on Thursday May 2 by the head of Indonesia's peatland restoration agency Nazir Foad, on the sidelines of the 6th Singapore Dialogue on Sustainable World Resources. Indonesia in 2016 launched an initiative to restore peatlands as part of efforts to tackle forest fires that sparked one of the region's worst haze crisis the year before. While forest fires occur annually due to the clearing of land for commercial agriculture, the 2015 forest fires were exacerbated by the draining of peat forests, which made the soil dry and highly combustible. Speaking to CNA, Mr Nazir said that about 679,000 hectares - or 65 per cent - of damaged peatlands on government land earmarked for restoration has been re-wetted. His agency had announced a target of restoring about 2.5 million hectares of damaged peatlands – 40 per cent of which lies in government land and the rest, in the hands of concession holders such as plantation companies - by 2020.

Mr Nazir did not provide any figures on the restoration of damaged peatlands on concession areas, but said there has been "some progress". "There is some progress but I think we need to wait," he said. "The Indonesian government is evaluating how the companies are doing the restoration. The Ministry of Agriculture and Ministry of Environment and Forestry is working with us in assisting and supervising the companies to do the restorations."

Speaking at the same event, Singapore's Environment and Water Resources Minister Masagos Zulkifli said that recent incidents of fires in northern ASEAN indicate warmer and drier weather ahead. "ASEAN has enjoyed clear skies in recent years thanks to strong leadership and determined efforts of President Jokowi and Minister Siti Nurbaya," said Mr Masagos. "We must remain vigilant," he said, adding that Singapore stands ready to assist Indonesia with technical resources for firefighting assistance if the need should arise. Mr Masagos called for international cooperation to address such environmental issues. "We need to integrate global cooperation as part of our national agenda," he said. "No one country can address the new and pressing challenges alone. An effective global response is needed."

- <https://www.channelnewsasia.com/news/asia/indonesia-peatland-haze-environment-fire-masagos-climate-change-11496892>

### Fight for land

In an effort to gain land for farming, local villagers of Perigi Talang Nangka (Sumatra) have petitioned officials for a 10,000 hectare swath of land that is currently part of the Padang Sugihan Sebokor Wildlife Reserve and production forest, home to the few wild elephants left in the area. The Malay villagers have coexisted with the elephants for centuries. Though they don't want to take their land away, a moratorium on peatland burning by the Indonesian government following the 2015 fires has left them at a loss on how they themselves can sustain their livelihoods. "Elephants need space and protection, while humans also need space and economic security from forest products," said Perigi Talang Nangka farmer, Edi Rusman. "The elephants have lived here for hundreds of years. This is their original habitat, and we're not willing to let the elephants go extinct."

The answer? Paludiculture. Though it doesn't quite roll off the tongue, the wet agriculture and forestry technique for peatlands provides a sustainable solution, says CIFOR scientist Yusuf Samsudin Samsudin, whom the villagers had asked for alternatives they could plant that didn't involve burning the peatlands". The benefits of this type of agriculture are big: first, it keeps peatlands wet, preserving both the incredible stores of carbon locked inside, and its ability to prevent the spread of wildfires; second, it can take place on degraded lands.

"Of course we want to see this succeed," he says, hoping that paludiculture will prove enough of a success to end peatland burning in the area to make way for oil palm, pulp and rice. "What's more, we wanted to test native species on degraded land. But we didn't just want to use the degraded land, but also restore it back to its full potential- serving our planet, nature and people too."

The researchers planted a variety of local species: nyamplung (*Calophyllum inophyllum*), belangeran (*Shorea belangeran*), jelutung (*Dyera lowii*), bintaro (*Cerbera manghas*), meranti swamp (*Shorea pauciflora*), pulai (*Alstonia pneumatophora* L.), and medang maras (*Blumeodendron kurzii*).

"We chose these species for [their] various purpose, including food and biofuel," said Samsudin. "The government has a biodiesel program but it is very oil palm heavy, hopefully they will consider other sources of bioenergy." Amazingly, some of the plants also naturally repel elephants. "The elephants simply avoid to eat *Cerbera manghas*, or Bintaro tree," Samsudin says grinning at the prospect of a natural solution to the human-

elephant conflict. “This should be designed carefully though,” he ponders, before explaining how the bintaro tree will act as a fence around the village. “Then we’ll restore the elephants home range with their favorite plants for shelter and food.”

Samsudin and his team’s work has finished in funding terms, though he says his team are enthusiastic to check in with the community. Will the villagers continue on the path of paludiculture without him? “Absolutely,” he says, “the villagers are excited, they will continue to monitor and care for the plants.”

Perigi Talang Nangka village will have to be patient to reap the rewards. Though the rice paddies can be cultivated quickly, it will take four years before bioenergy and timber can be harvested. Despite this, Samsudin does not doubt their commitment, “The community is very involved, especially the farmers.”

- <https://forestsnews.cifor.org/60463/earth-day-can-sumatran-elephants-and-people-coexist?fnl=en>



*Jelutung plantation in Sumatra. Photo: Hans Joosten.*

### **A Saga of palm oil, international conflict and forest destruction**

In September last year, Indonesian President Jokowi imposed a [moratorium](#) on new oil-palm plantations. Though only partially effective, Jokowi’s initiative was applauded by conservationists and scientists worldwide. But now, barely six months later, Jokowi is [threatening to renege](#) on his much-praised moratorium. Why?

Jokowi wants to punish the European Union for daring to introduce a [measure](#) to [phase out](#) biofuels produced from palm oil by 2030. The E.U.’s rather [bungled experimentation](#) with biofuels started in 2003, in an attempt to reduce their use of fossil fuels and greenhouse-gas emissions. They quickly became the [biggest consumer](#) of biofuels in the world. But the E.U. failed to realize just how much deforestation was caused by oil palm, both directly and indirectly (by displacing other land uses, such as rice or corn, that in turn felled yet more forest).

The E.U.’s biofuel spree was initially a bonanza for Indonesia and Malaysia, which together produce [over 85 percent](#) of the world’s palm oil. Industrial plantations and smallholders alike expanded already-massive estates into forests and carbon-rich peatlands to take advantage of the situation. In response, alarmed environmental organizations and scientists warned that the E.U. was actually [driving deforestation](#) — producing far more greenhouse gases from forest destruction than they’d save by marginally reducing fossil-fuel use. Hence, the E.U. now plans to phase out palm oil. And that has made Indonesia and Malaysia very, very mad.

As this saga unfolds, there’s plenty of blame to go around. The E.U.’s new policies are flawed because their palm oil “phase-out” does not in any way stop E.U. importers from buying palm oil from Indonesia — it only stops them from counting it toward their renewable-energy targets. And if palm oil is certified as deforestation-free — which certain producers are able to do — then it can be freely bought by the E.U. too.

For their part, Indonesia and Malaysia have been playing hardball with the E.U. for many months, engaging in an increasingly shrill and heavy-handed lobbying effort. It seems they are intent on deforesting, despite rhetoric to the contrary. Their tactics have shifted to promoting smaller and medium-sized producers collectively called “smallholders” — traditionally thought not to cause massive forest loss. But smallholders now comprise over 50 percent of Indonesia’s palm oil estate, and they are one of the [largest deforesters of all](#). In fact, helping “smallholders” has become the catch-cry of the Nigeria-based [Initiative for Public Policy Analysis](#), a lobbying group partly supported by climate-skeptics combating efforts to slow global warming. Malaysia is now spending big money to get the Nigeria group to lobby the E.U. on its behalf.

President Jokowi faced a national election on April 17 — a fight for his political life. To survive he’s tried to appease the powerful palm-oil industry. Almost overnight, he’s transformed from an environmental good-guy — someone who’s battled destructive wild fires and haze, tried to slow palm oil expansion, and promoted several other eco-smart measures — into a nationalistic mouthpiece for the oil palm industry. He’s even threatening to give the E.U. the middle finger, instead selling Indonesia’s palm oil to China and India — massive consumers that are happy to buy palm oil regardless of its source or impact on forest destruction — so long as it’s as cheap as possible. In a true pique of recklessness, Indonesia is even [threatening to pull out of the Paris climate accords](#). Let’s hope this ‘Dr Jekyll and Mr Hyde’ transformation is temporary, a kind of ephemeral election madness that overtakes many politicians in the heat of battle. If not, then the world will have a lot to worry about.

President Jokowi’s oil-palm moratorium is far from perfect, with breaches of the current moratorium being reported [almost daily](#). But the moratorium has indeed slowed the rate of forest loss. It includes not just a freeze on new licences, but also a planned review of oil-palm licencing which, if actually implemented, would catch big and small illegal deforesters alike. And for all its weaknesses, the E.U. ‘phase-out’ is a step in the right direction so long as it doesn’t open the door to other biofuel crops such as [soy](#) — much of which also comes from destroying forests. So, let’s hope - now that President Jokowi seems to be re-elected - he leaves his moratorium in place. And let’s watch Indonesia, Malaysia, and Europe closely — to see whether they pursue sustainable-development policies generally. Or effectively become forest-destroying puppets of their powerful agriculture lobbies.

- <http://alert-conservation.org/>



*Peat swamp forest freshly burned for oil palm cultivation in Sumatra. Photo: Hans Joosten.*

### **Indonesia should not quit climate pact over palm-oil spat - UN official**

Indonesia should stay in the Paris climate deal and lead efforts to curb global warming under the accord, Dechen Tsering, Asia-Pacific director for the United Nations' environment agency in Bangkok said on Friday, April 5. The week before, Indonesia had said it might consider exiting the 2015 Paris Agreement on climate change if the EU went ahead with a decision to phase out palm oil in renewable transportation fuel. "We need countries like Indonesia in the Paris Agreement, taking forward their commitments quite seriously," said. "It is our hope that there will be better dialogue and communication, so both sides recognise the constraints and the issues," she told the Thomson Reuters Foundation in an interview. "It would undermine the Paris Agreement," Tsering said. "Even though the United States (is) working towards withdrawing from the Paris Agreement, you've had states and the private sector taking on very strong commitments." In Indonesia, by contrast, "it is the central government that is taking on the ambition and leadership, so (it is) quite a different scenario", she added. Under the Paris accord, Indonesia has committed to reducing its greenhouse gas emissions by 29 percent by 2030, a target that could rise to 41 percent with international support. Tsering said Indonesia had sought external expertise on tackling forest fires in the last few years, and set up a global institute to protect peatlands.

- <https://uk.reuters.com/article/asia-climatechange-indonesia-palmoil/interview-indonesia-should-not-quit-climate-pact-over-palm-oil-spat-un-official-idUKL3N21N19C>

### **Palm oil, logging firms the usual suspects as Indonesia fires flare anew**

Oil palm and logging companies in Indonesia have come into public glare once again as another season of forest fires flares up in Sumatra. Hotspots have been detected in [12 concessions](#) in Sumatra's Riau provinces. Nine of those concessions belong to palm oil companies, two to oil and gas operators, and one to a logging company, according to the Ministry of Environment and Forestry. A separate survey by the NGO Forest Watch Indonesia (FWI) has found 58 hotspots in palm concessions and 88 in logging concessions. Many of these concessions contain areas of peat swamp. The Peatland Restoration Agency (BRG) says hotspots on peat areas within designated concessions account for up to 40 percent of hotspots across all peatlands. The government has recorded fires spanning an area the size of [5,000 football fields](#) in Riau since the start of the year, with hotspots in [11 of the 12 districts](#) that make up the province.

Rasio Ridho Sani, the enforcement chief at the environment ministry, said his office had sent warning letters to the companies with fires on their concessions, demanding that they take swift action to end the burning. "Of course if we see an indication that [the fires] are continuing and that there's a crime, we will enforce the law," he told reporters in Jakarta.

Slash-and-burn clearing is widely employed by concession holders as a cost-effective method of preparing the land for planting, and some of the companies with hotspots in their concessions have a history of fires, according to the Riau Forest Rescue Network (Jikalahari), an NGO. Some were among a group of 17 — 12 logging and five oil palm — subjected to a [government-sanctioned audit](#) in 2014 to determine who was responsible for the fires that year in Riau. The audit measured the companies' level of compliance with environmental regulations, such as whether they cultivate on deep peatlands that should've been protected or not, and whether they have proper infrastructure and equipment in place to prevent and extinguish fires. [None passed](#) the compliance test. The worst-performing company was found to have complied with just 7 percent of its 122 obligations, while the compliance rate for the others ranged between 26 and 52 percent.

Some of those companies audited five years ago are on the list of companies with fires on their concessions this year, Jikalahari says, citing as repeat offenders PT Bumi Reksa Nusa Sejati, with five hotspots on its land, PT Sumatera Riang Lestari (60 hotspots) and PT Rimba Rokan Lestari (67). These three companies were among 49 that [Jikalahari reported](#) to the Riau police and environment ministry in 2016 over the fires that kept occurring in their concessions.

Weak law enforcement allows the same companies to keep popping up on the list of firms with fires on their concessions, according to Jikalahari deputy coordinator Okto Yugo Setyo. "Looking at the forest fires that are happening again now, the ministry should have followed up on our report [in 2016]," Okto said. "But for the last three years, there hasn't been any progress from the ministry's law enforcement unit."

There's also been little movement on the issue on the part of the police. In 2016, the Riau police dropped investigations into 15 of 18 companies allegedly involved in forest fires the previous year, despite [indications](#) that some of them had benefited from the fires by planting the land afterward. Among the 15 whose investigations were dropped was PT Sumatera Riang Lestari. "Companies whose concessions are burning again

have shown they're not afraid of the environment ministry, even though the ministry's law enforcement has shown some progress compared to the previous administration," Okto said. He added that proper deterrence would require more than just a warning letter. "It's no longer appropriate for the companies to just be warned," Okto said. "The ministry should immediately review these companies' environmental permits and environmental impact assessments." Should such a review result in the companies losing their concessions, the land can be given over to be managed by local communities under the government's social forestry program, Okto said.

Even Sembiring, head of policy analysis at the Indonesian Forum for the Environment (Walhi), the country's biggest green NGO, said there needed to be a sweeping review of all permits for concessions located on peatland. Under a 1990 regulation, areas with a peat layer deeper than 3 meters are strictly off-limits and must be protected. A 2016 government peat protection regulation reiterates this point. The 2014 audit in Riau found some companies had submitted bogus environmental impact analyses in order to exploit areas with peat layers more than 3 meters deep. But there's been no follow-up to the audit and no review of the permits in question, which in effect means the companies have been allowed to continue operating on the basis of the falsified environmental impact analyses. "The only way to save our peatland and to keep the carbon below the ground is to evaluate all permits in peat ecosystems," Walhi's Even told reporters in Jakarta. "The government should have made this a priority."

The government has tried to go after companies that deliberately set fires on their concessions, by taking them to court, says Walhi spokeswoman Khalisah Khalid. Since 2015, it has won lawsuits filed against 10 companies for setting forest fires, who have been ordered to pay a total of 2.7 trillion rupiah (\$190 million) in fines. The government also won a record 16.2 trillion (\$1.1 billion) fine from a company accused of illegally clearing forests (though not by setting fires). President Joko Widodo cited these 11 cases during a televised election debate in February as evidence that his administration had intensified its crackdown on offending companies. What he didn't mention, though, was that none of the companies have paid anything to date.

"The law enforcement isn't working because the guilty verdicts can't even be executed," Khalisah said. "As a result, these verdicts won't deter companies. That's why forest fires keep happening." Greenpeace Indonesia forest campaigner Arie Rompas questioned why the government had failed to collect on any of the fines. "A citizen who doesn't pay his taxes can be punished under the law," he [said](#) in a statement. "So why aren't the owners of these big companies forced to pay their fines or have their assets seized?" The environment ministry, in its defense, says some of the companies have challenged the court rulings, delaying the collection of fines.

The most high-profile case is that of palm oil firm PT Kallista Alam, which was found guilty in 2015 by a district court in Sumatra's Aceh province of using fire to clear 10 km<sup>2</sup> of land in the Tripa peat swamp. The company pursued a series of appeals all the way up to the Supreme Court, which [upheld](#) the initial ruling and ordered the company to pay a then-unprecedented 366 billion rupiah, about \$26.5 million at the time, in fines and reparations. Its final ruling came in April 2017, at which point the company should have exhausted all avenues of appeal. And yet PT Kallista Alam managed to evade this obligation by filing for legal protection from the same district court that had ruled against it in the first place. The company then [filed suit](#) against the government on the basis of a typo in the coordinates of the concession as submitted in the environment ministry's original complaint. In 2018, the district court in Aceh ruled in favor of PT Kallista Alam, effectively shielding it from the Supreme Court-ordered fines on that basis. Since then, the environment ministry has appealed the decision to the provincial high court, which ruled in its favor. That should have closed off all options for legal redress for PT Kallista Alam. Yet the company still hasn't ponied up the fine.

Rasio, the ministry's enforcement chief, said PT Kallista Alam didn't respond to two letters from the ministry demanding payment. That has prompted the district court to order an auction of the firm's assets, including its land bank and any buildings or crops on it, as of Jan. 22. "This marks significant progress," Rasio said, adding the auction was expected to raise sufficient funds to cover the fine.

Another company facing imminent auction of its assets is PT Merbau Pelalawan Lestari, a logging company that has also ignored payment demands from the ministry, Rasio said. "Our courts don't have experience in executing environmental cases that are big in scope," he said of the protracted process to collect the fines.

Bureaucratic barriers have also made the environment ministry's job harder, he said. Before it can collect a penalty, the ministry must wait for the official court record of the verdict to become available — something that can take more than a year, as in the case of PT Surya Panen Subur, a palm oil firm. And without a centralized depository of court rulings, the ministry can sometimes lose track of the official court verdict. That's

the case for PT Bumi Mekar Hijau, a pulpwood firm that was ordered to pay 78.5 billion rupiah (\$5.5 million) for illegally setting fires on its concession in 2014. The verdict was handed down in 2016, but the environment ministry says it doesn't know where the official record has been posted. It says the record was delivered to the wrong subdistrict office and subsequently picked up by an unknown party. The ministry has since asked the court that handed down the ruling to issue a copy of the official verdict.

- <https://news.mongabay.com/2019/04/palm-oil-logging-firms-the-usual-suspects-as-indonesia-fires-flare-again/>



*Oil palm plantation on peat in Central Kalimantan. Photo: Hans Joosten.*

### **Indonesian companies fined for 2015 climate disaster have not paid, group says**

More than \$1 billion in fines have not been paid by 11 Indonesian palm oil and paper pulp companies found guilty for their failure to prevent burning on their land during the historic 2015 Indonesian forest fires, according to Greenpeace Indonesia. The activist group is calling attention to the unpaid fines to pressure the government and the companies, which were found guilty of improper land management in lawsuits filed by the Indonesian government. The verdict found that the companies' practices contributed to the massive fires, which charred [2.5 million hectares](#). The companies, which include Kallista Alam, PT Surya Panen Subur, Jatim Jaya Perkasa and Bumi Mekar Hijau, released the equivalent of an estimated [1.2 billion tons of carbon dioxide](#), believed to be the largest human-caused climate event in decades. "The government must be sure to enforce the law, and ensure that the legal institutions, like the courts, push the companies to pay the fine," said Asep Komarudin, a campaigner with Greenpeace Indonesia.

Climate and environmental advocates say the government's failure to hold companies responsible for the fires could lead to increased burning, as the benefits of using fire to clear land outweigh the costs of fines or regulations. Even if collected, the fine is little deterrent for the industries. The court-imposed fine — which totals \$1.3 billion (19 trillion Indonesian Rupiah)— is only a small percentage of exports for both the palm oil and paper industry, which total more than [\\$22 billion](#) per year.

The lack of follow-through on collecting the fines contradicts promises President Joko Widodo made after the fires to pursue strict action. Luhut Binsar Pandjaitan, then-coordinating minister for Political, Legal, and Security Affairs, said the government would blacklist companies and owners responsible for the fires. Government officials have not commented on the specifics of the uncollected fines, only saying that the lawsuits are being fully enforced. Greenpeace said it would like to see more forceful action by the government. If the companies refuse to pay the fines, there are other possible legal avenues. "The government has the power to confiscate

property, or revoke the permit,” said Asep. “But we see there is nothing happening. It seems like the government is not following up the verdict to get the fines.”

Besides the unpaid fines, another area of concern is the lack of transparency on what companies face when they are issued administrative sanctions. So far, 171 companies have been sanctioned according to the government, but there is little information on what the sanctions entail, and why only 11 companies were eventually sued. “What is the standard when choosing which company goes to court, and which ones get sanctions?” said Arie Rompas, team leader with Greenpeace’s Indonesia forests campaign. Greenpeace has found evidence of burning in both fined and sanctioned company lands, and still does not have a clear understanding of sanctions are monitored or enforced.

There could soon be a chance to see if the government’s actions have had any impact. [Scientists have said](#) this year will likely also bring an El Nino, meaning that dry conditions are possible across much of Indonesia later this year. “This year is very important in looking at how the effort of government, and how the company that were already identified in our investigation, if they are still doing fires or not,” said Arie. If the government’s actions have been sufficient, fires and emissions should be less. But if not, the world could be in line for another massive climate catastrophe.

- <https://www.climateliabilitynews.org/2019/04/23/indonesia-fires-2015-palm-oil-timber-climate/>

### **Towards tier 2 reporting on peat fires in Indonesia**

Emissions from peat fires have, to this point, not been included in official Indonesian reporting to the UNFCCC. This is because a methodology to measure such emissions and empirical data are lacking, which prevents Indonesia from moving from default Tier 1 to Tier 2 reporting, which uses country-specific data. Tier 2 reporting is aspired, as it is one of the requirements to receive results-based compensation, such as from REDD+. Aiming to help Indonesia provide that empirical data and calculation methodology, the Asia-Pacific Network for Sustainable Forest Management and Rehabilitation (APFNet) teamed up with Indonesia’s FOERDIA, the Forest Research and Development Center under the Ministry of Environment and Forestry of Indonesia, and the University of Melbourne, Australia under the new project “Improving Capacities towards Reducing Greenhouse Gas Emissions from Peat Swamp Forest Fires in Indonesia”. The project officially started in January and the kick-off workshop was held on February 27. Representatives from the project partners, the Australian government, which contributed funds to the project, as well as international organizations, such as CIFOR, FAO and UNEP attended the 1-day meeting. Participants were welcomed by Dr. Kirsfianti Linda Ginoga, the Director of the Forest Research and Development Center, whereas the DG of FOERDIA, Dr. Agus Justianto, officially launched the project.

In the afternoon Dr. Haruni Krisnawati, the leading researcher in FOERDIA for the project, explained the approach and key objectives to the participants. She remarked that while specific peat emissions are currently not reported, the overall emissions reporting to the UNFCCC just assumes that 100% of the peat is burned during each burn, an assumption grossly misrepresenting the reality. In fact, if that was the case the site likely would not be able to burn multiple times, as it currently does. She emphasized that for future reporting, factors such as burn patchiness, fire severity, fuel type burned, fire return interval and combustion factors will have to be considered, factors this project is precisely attempting to assess through analyzing peat areas with different fuel properties that have been burned multiple times.

Finally, all participants discussed ways this project could achieve synergies with similar projects of other organizations, such as UNEP and how it can be ensured that the greatest use for the Indonesian government can be drawn out of this research.

- <http://www.apfnet.cn/en/show-list-1343.html>

### **Peat protection rule may be a double-edged sword for Indonesia’s forests**

A logging prohibition in Indonesia aimed at protecting peatlands threatens a supply crunch for two of the world’s biggest paper producers that could drive them to source wood from as-yet-untouched forests elsewhere in the country, a recent study indicates. Suppliers of pulpwood, typically acacia, to Asia Pulp & Paper (APP) and Asia Pacific Resources International Limited (APRIL) are subject to an Indonesian government regulation that prohibits them from clearing peat forests with protected status, such as those with peat layers deeper than 3 meters and those that contain high biodiversity. The regulation, issued in 2016, also [stipulates](#) the conservation of at least 30 percent of all peat domes. Newly conducted spatial analysis shows that peat domes account for a combined 12,000 km<sup>2</sup> of these suppliers’ concessions, mostly in Sumatra.

[The study](#) was carried out by a group of NGOs trying to verify whether the companies were complying with the regulation to conserve these deep-peat areas of their concessions. “We don’t know whether the peat concessions that should be protected have actually been rehabilitated or not,” Syahrul Fitra, a researcher with one of the NGOs, Auriga, told Mongabay. “We can’t access the work plans for conservation submitted by the companies to the government, and thus we don’t know what the companies are doing.”

So the NGOs overlaid a government map of peat areas onto maps of the pulpwood concessions reportedly supplying wood to APP and APRIL. Their analysis showed the suppliers’ total concessions spanned 41,000 km<sup>2</sup>, over a quarter of which constituted peat forests that should be protected. These affected zones represent 30 percent of the plantation area in APP’s supply chain, and 25 percent of APRIL’s, according to the analysis. Protecting them from being cleared for planting pulpwood would therefore be “likely to have significant negative impacts on each group’s overall wood fiber supply,” the study says. But in trying to protect areas of deep peat, the government regulation may inadvertently push the suppliers to clear forests elsewhere for their plantations, the study says. This includes the vast and mostly intact natural forests of Papua, in Indonesia’s far east, where oil palm growers are already clearing the land after having depleted much of the forests in Sumatra and Borneo.



*The endless Acacia plantations of Asian Pulp and Paperon peat in Jambi, Sumatra. Photo: Hans Joosten.*

The potential supply crunch thrown up by the peat protection regulation comes as both APP and APRIL look to ramp up their pulp output. APP opened a massive new pulp mill in southern Sumatra’s Ogan Komering Ilir (OKI) district at the end of 2016, rated at maximum capacity to process 2 million tons of pulp a year. The company said it could feed the mill entirely through its own pulpwood plantations without having to rely on outside suppliers. But a [2016 analysis](#) by various NGOs show APP’s overall demand for wood fiber in Sumatra could rise by more than 50 percent. APP’s current planted area, then, even under a high-growth scenario, won’t be sufficient to supply the company’s new mill and two older ones, with the company projected to face an annual shortfall of 3 million cubic meters of plantation wood. And that was before it was revealed that the new mill had actually been approved for a much higher maximum capacity: 3.25 million tons a year. This has stoked fears among environmental activists that APP will have to source its supplies from natural and peat forests to feed the mill, as the company’s demand could increase by 85 percent if production at the OKI mill ramps up to the full 3.25 million tons.

For its part, APP says it will not resort to clearing rainforests even after the OKI mill is operating at full capacity. It says it's committed to its forest conservation policy (FCP) that espouses zero deforestation. Under the pledge, APP says it won't accept timber sourced from the clearing of peatlands and rainforests.

Auriga's Syahrul questioned APP's commitment, saying the company faced a supply shortfall even before taking into account its suppliers' concessions affected by the peat protection regulation. The coalition's analysis identified more than three-quarters of concessions in South Sumatra supplying wood to the OKI mill are on peatlands. Their spatial analysis shows that the largest areas overlapping with the peat protection zone are those surrounding the OKI mill, comprising nearly half of the land expected to be planted with pulpwood to serve as the mill's fiber supply base. "If it's true that APP's existing suppliers must restore their concessions located within protected areas, then the suppliers won't be able to meet the demand from APP because almost half of their concessions are affected," Syahrul said. "So according to our analysis, the OKI mill will be heavily affected" by the regulation, he added.

APP has downplayed the concerns, saying it has sufficient supply to meet projected demand at its mills through at least 2020. It says it has improved yields by cutting waste and cloning the most productive tree species for its plantations. Importing wood chips is also an option, the company said in a response to questions from Mongabay. "This allows us to purchase responsibly managed plantation wood chips from South East Asia and Australia to maintain adequate supplies of wood chips," it said. APP has added 35 new suppliers since March 2018, according to its FCP monitoring website, including chip mills in Malaysia, Australia and Thailand. Fifteen of them were added in 2019 alone. The company says it's taking on new suppliers to mitigate fluctuations in demand and local supply and to ensure future supply. Syahrul, though, said this onboarding of dozens of new suppliers only "affirmed our suspicion that APP doesn't have enough supply."

Elim Sritaba, APP's director of sustainability and stakeholder engagement, said the company could guarantee a sufficient fiber supply because it sources more than 96 percent of its fiber from existing suppliers. Only 2.5 percent of its fiber comes from one-time suppliers — the sole component of its supply chain for which supplies can't be guaranteed in the long term — while the rest is sourced from community plantations under long-term partnerships, Elim said. "Even if we can't secure the 2.5 percent fiber supply, we can just adjust our production," she told Mongabay. "The question of whether there's enough supply or not is merely about business. Recently we shut down our OKI mill because our pulp stock was too high and also for maintenance." Syahrul said this in itself raised more questions. Seventy percent of the \$2.6 billion tab for the initial phase of the OKI project was financed through loans from Chinese state-owned banks. The [initial loan](#) from China Development Bank has been described as "one of the largest financings ever signed between Indonesian and Chinese interests."

Activists like Syahrul say APP's ability to pay off those loans depends on the profitability of the OKI mill, and thus APP may have no choice but to operate the mill at full capacity to service that debt within the 12-year tenure. APP, though, says paying off the loan "is not the responsibility of any single mill, but a shared responsibility borne by APP as a group," and that to date the OKI mill is operating profitably below a threshold of 2.8 million tons a year.

Syahrul has raised similar concerns about APRIL, whose parent company, Royal Golden Eagle (RGE), needs a growing supply for plant fiber as it expands into the textile industry in Indonesia. At its Kerinci complex in Sumatra's Riau province, where APRIL's flagship mill is located, RGE recently built a large mill to produce viscose staple fiber (VSF) from plant cellulose. VSF is increasingly popular in the textile industry as a less water-intensive, and thus eco-friendly, alternative to cotton. During the annual World Economic Forum in January, RGE director Anderson Tanoto [said](#) VSF could help the fast-fashion industry become more sustainable, touting it as biodegradable and "sourced from sustainably managed tree plantations." But the spatial analysis of APRIL's suppliers shows the two concessions that have historically been the prime sources of pulpwood for the mill in Riau will be particularly affected by the peat conservation program. The analysis found that a combined 2,383 km<sup>2</sup> of these two concessions, controlled by APRIL subsidiaries PT Riau Andalan Pulp & Paper (RAPP) and PT Sumatera Riang Lestari, fall within peat protection zones. Together, they represent 40 percent of the concessions of APRIL's suppliers that should be protected, the NGO coalition says.

Like APP, APRIL has made corporate commitments to manage its plantation operations on drained peatland areas responsibly. But the coalition says both companies' commitments need to be monitored through strict government supervision "to ensure that the peat protection zones within their licensed areas remain protected."

Responding to the supply concerns about its new foray into the textile industry, APRIL said there wouldn't be an increase in production capacity, and thus no increase in the group's overall pulpwood requirements. "Dissolving pulp production will be done within the current pulp production capacity of 2.8 million tons [annually]," APRIL said. "Volume will be periodically determined based on market demand." However, the coalition said the company had not released enough details about its expansion for independent analysts and civil society organizations to verify the claim. APRIL said that while it couldn't disclose its long-term wood supply plans because they were commercially sensitive, production capacity will remain at 2.8 million tons a year until at least 2025. Like APP, the company says it is also looking to increase efficiency and cut waste in order to boost productivity.

Syahrul said APRIL was still [exporting](#) dissolving pulp, from which VSF is made, to its sister company in China, Sateri, which also produces the fiber, putting further pressure on its supply. In 2016, APRIL exported 90,000 tons of dissolving pulp to Sateri mills in China; export volumes increased to 240,000 tons in 2017 and an estimated 500,000 tons in 2018. APRIL said it would reduce its exports to accommodate the demand from the Kerinci mill, targeted to produce 240,000 tons of VSF a year. "Reducing exports aren't that easy if there are long-term contracts," Syahrul said. "And if they do reduce their exports, will it be by the same amount as the increase in demand due to their expansion in Indonesia? Or will they still need to increase their production? If it's the latter case, then there's a possibility they will open up new plantations or continue cultivating on peatlands."

The tree from which APRIL derives its dissolving pulp is an acacia species, *Acacia crassicarpa*, which grows best on peatland. Syahrul said this indicated the company would continue "cultivating in protected peat areas by planting *Acacia crassicarpa* based on the justification that the species is peat friendly." "But planting a species suitable on peatland isn't the same as restoring peat," he added. The company said that "regardless of source, all wood supply that comes into APRIL's mill must comply with our Sustainable Forest Management Policy. The safeguards for sustainable fiber production are well in place and independent audit shows we are upholding these commitments."



*Acacia plantation on peat in Sumatra. Photo: Hans Joosten.*

The Ministry of Environment and Forestry says 67 pulpwood firms and 127 plantation firms that are required to protect and rehabilitate their peat concessions have already done so. In all, they have restored 31,000 km<sup>2</sup> of peat areas nationwide, according Karliansyah, the ministry's head of environmental degradation mitigation. He said the government's Peatland Restoration Agency (BRG) had restored another 9,000 km<sup>2</sup>, for a combined

total that far exceeds a national target of restoring 24,000 km<sup>2</sup> of degraded peatlands by 2020. But the NGO coalition disputes that claim, saying the 31,000-km<sup>2</sup> figure for the private companies cannot be independently confirmed. Syahrul said the government had failed to disclose detailed information on the implementation of the companies' restoration plans or any follow up to the plans, which are required to be carried out immediately upon approval. "We were surprised when we heard the number," he said. "We can't get the names of the companies, and so there's no way for us to check the number. And that figure is only an aggregate, it only distinguishes between pulpwood plantations and palm oil plantations."

Karliansyah said the ministry couldn't publicly disclose the data for each company because of privacy concerns. Both APP and APRIL also declined to disclose their peat restoration plans, saying only the Ministry of Environment and Forestry had the authority to decide whether the documents should be made public. APRIL said an ecosystem restoration program it launched in 2013 aimed to restore 1,500 km<sup>2</sup> of peat ecosystem on Riau's Kampar Peninsula. APP said it had retired 70 km<sup>2</sup> of plantation land, an initiative announced in 2015. That area represents less than 1 percent of the peat concessions managed by the company and its suppliers as indicated by the NGO coalition.

APP's Elim said the company had since 2015 retired more than the initially declared 70 km<sup>2</sup>, but wouldn't give a new figure, deferring again to the government. She said the focus of the peat protection initiative shouldn't be on the total area restored, but on the quality of the restoration, especially the effectiveness of efforts to rewet drained peatlands. "So we don't want to focus on the number. That's why APP always reports on forest fires" in its concessions, she said.

Syahrul said the government and companies should still disclose their peat restoration plans and progress to the public to allow for independent verification of their claims. "Because if we're talking about natural resources, we're not only talking about the rights of the companies, but also the implication [of their businesses] on the greater public," he said. "When these companies fail to restore their concessions and they start burning again, those affected will be the public."

The secrecy surrounding companies' peat restoration efforts also threatens to derail the wider move to restore peatlands nationwide, given that the largest area of such ecosystems falls within existing concessions. Syahrul said it was also crucial to restore peat ecosystems as a whole, not partially, because fires could still spread from unrestored peat concessions to restored areas. Government-restored areas, he said, "are connected to peat areas inside concessions. And if you truly want to restore a peat ecosystem, you can't do it partially." For a government agency like the BRG to ensure the restoration initiative is effective, it needs access to companies' full restoration plans documents, he added. "It's just wrong to see an institution established solely to restore peatland not be given access to that information," Syahrul said. "The BRG can't even monitor [peat restoration progress] if it's located inside a company's concession."

- <https://news.mongabay.com/2019/04/peat-protection-rule-may-be-a-double-edged-sword-for-indonesias-forests/>

## Malaysia

### **"Malaysia's palm oil industry will never result in deforestation"**

The palm oil industry in Malaysia has and will never result in deforestation because of the existing replanting incentives scheme introduced by the Rubber Industry Smallholders Development Authority (Risda) since 1952. Responding to the European Union (EU)'s claims that palm oil was not a "green fuel" and should not be promoted since it causes deforestation, Risda chairman Rosely Kusip recently said: "Smallholders are required to cut down their oil rubber trees of 15 to 20 years and replace it with palm trees. "As such, this plantation activity has not affected the biodiversity and ecosystem of the forest," he said in a statement. He said almost 45 per cent of land area in Malaysia consists of peat soils for palm tree cultivation and unused or idle peat lands were also used for palm oil trees, thus rubbishing the claims that the usage of palm oil causes deforestation. "The palm industry is the major source of income for smallholders and they are entitled to plant palm trees and other crops that are compatible to the subsidies given by Risda. Risda, an agency upholding the well-being of smallholders, has helped 154,090 smallholders working in the palm oil plantations with total land area of 482,024 hectares nationwide.

- <https://www.nst.com.my/business/2019/04/476184/malaysias-palm-oil-industry-will-never-result-deforestation>



*Oil palm bunches from peatland plantation ready for collection in Sarawak, Malaysia. Photo: Hans Joosten.*

### **Need to tackle the trust deficit**

The European Commission's decision to phase out palm oil biofuels is based on the high carbon footprint of palm oil production and as a mechanism for protection against indirect land use change (iLUC) (and indirectly also against food price hikes in developing countries). Therefore, nothing can be done at this stage against the phasing out. What is coming next is the same issue of high carbon emissions and food safety of palm oil in food products. Remember 3-MCPD? (It is an organic chemical compound which is the most common member of chemical food contaminants and is suspected to be carcinogenic to humans).

This is not the first "fight" on the carbon emissions front. The first was with the United States (US) government (2009-2014) when Malaysia and Indonesia lost the argument. The difference this time is that Europe engages with its partner countries, but still does not deviate from the principles of science. From the argument with the US, it is demonstrated that developed countries want trade-partner countries to recognise the urgency of climate change and initiate some action against it. The European directive is to bring about good behavioural change in the palm oil industry.

Sustainability of palm oil production is closely related to its carbon footprint. Apart from conversion of rainforest land and peatland into oil palm plantations, the other major activities are application of fertiliser and treatment of palm oil mill effluents, which release greenhouse gases that leave a large carbon footprint.

The palm oil industry needs to mitigate the present carbon emissions in its production methods to prove that they are environmentally sustainable.

Let's not forget that between the Conference of Parties (COP) at Copenhagen in 2009 and the COP21 Paris Accord on Climate Change in 2015 — a span of six years — the planted area of oil palm has increased by a million hectares as government statistics indicate. Information withheld is that a major extent of expansion has involved peatland drainage in the increased planted area. The Rubber Industry Smallholders Development Authority (Risda)'s statement that almost 45 per cent of land area in Malaysia consists of peat soils for palm tree cultivation and unused or idle peat land was also used for palm oil trees, is the most damaging to date.

The government has tried hard to deny cultivating on peatland but Risda has indicated otherwise.

Cultivating oil palm on peatland compared to planting in mineral soil causes more than 10 times greenhouse gas emission into the atmosphere for many years — i.e. up to 170 tonnes of CO<sub>2</sub> per ha per year.

On the concern for the well-being of smallholders, it's like crying over spilt milk, when attention should have been directed to negotiating the definition of a smallholder to include land size of up to five hectares, which was laid on the table by the EU. Smallholders' well-being is our problem, not the EU's.

To safeguard palm oil as a food source and grow the market share, the primary industries minister must convince the EU that Malaysia is genuinely concerned about climate change, and as proof of action, convey to the EU what Malaysia intends to do next. Both the US government and the European Commission have suggested that the massive amount of biomass residue generated at palm oil mills be used efficiently for renewable energy generation to reduce carbon emissions and prosper the palm oil industry.

- <https://www.nst.com.my/opinion/letters/2019/04/476863/need-tackle-trust-deficit>



*Oil palm in Sarawak, Malaysia. Photo: Hans Joosten.*

## Singapore - ASEAN

### Why severe haze may return in 2019 and how to mitigate the risk

A Haze Outlook developed by the Singapore Institute of International Affairs (SIIA) has assessed that there is a real, although moderate, risk that [severe haze will return in 2019](#). The prognosis is “amber”; on a scale of red-amber-green. How did we come to this evaluation? What follow up do we hope for?

Haze pollution from land and forest fires has troubled the region for decades, though new efforts to tackle the problem have shown progress. Since the worst prolonged spell of health-hazard air in 2015, there have been almost three years of blue skies. Yet some underlying factors have not been solved, and there is no room for complacency. These blue skies mainly result from better policies and stronger implementation under Indonesian President Joko “Jokowi” Widodo. Corporations too have played a role, with the agro-forestry sector taking on greater responsibility, with banks and the biggest customers in the supply chain demanding traceability and transparency. But these conditions are not guaranteed to hold. Climate change increases the intensity and frequency of extreme weather events, including the risk of fire. In 2018, destructive fires swept California and, on the other side of the world, Australia. For 2019, the outlook is for the return of the El Nino Southern Oscillation, which brings hot, dry weather, although this year’s El Nino effect is not expected to be as extreme as some previous years.

South-east Asia is already experiencing incidents of fire. The smoky conditions over the past weeks in Singapore and the southern parts of West Malaysia come from fires in nearby Johor. Further north, Bangkok and Chiang Mai are experiencing severe air pollution. But Johor was not a major contributor to past haze episodes, and the sources of smoke that impact Thailand are different from those in southern Asean.

As such, simply tracking different cases of fire does not determine whether severe haze will recur. In developing the Haze Outlook, SIIA has instead gathered relevant quantitative and qualitative data, looking at three factors: Weather, peat, and people. Peatlands are naturally water-saturated, but lose resistance to fire when drained to make way for plantations. Degraded peatlands were the primary sites of fires in 1997 and 2015, spewing out some of the thickest haze. Since 2015, President Jokowi's peatland restoration agency, Badan Restorasi Gambut (BRG), has restored some 679,000 hectares of peatland. According to BRG chief Mr Nazir Foad, who was in Singapore to attend the 6th Singapore Dialogue on Sustainable World Resources (SDSWR), peat restoration has reduced hotspots by over 93 per cent in targeted areas. But BRG's interventions are only within government-controlled land and not on concessions in the hands of plantation companies. BRG is conducting a nation-wide evaluation of restoration efforts, but this review will only be finished later in 2019. In addition, even if degraded peatland has been rewetted, there is still a danger. Some areas could dry out if there is a long drought in 2019, exacerbated by El Nino.

The human factor is also crucial. Since 2015, Indonesian authorities and agroforestry companies have intensified engagement with village communities and strengthened fire prevention, detection, and suppression capabilities. Despite this, Indonesia is a vast country. If fires break out in difficult-to-reach areas, there is no guarantee that blazes can be extinguished before they spread out of control.

Predictions are always approximations. The main purpose of the Haze Outlook is not only to get the prediction right, but rather to draw the attention of the public, policy makers, and the private sector to this emerging situation so that timely and proactive actions can be taken. Indonesian authorities say they have made progress in convincing large companies to stop slash-and-burn agriculture. But the bigger challenge is reaching out to smallholders living in remote areas. Speaking at the SDSWR, Mr Franky Oesman Widjaja, Chairman and CEO of Golden Agri-Resources, said it is easier for companies to invest in sustainability than for smallholders to do the same. In order for small farmers to change their practices, they must see tangible benefits, rather than simply being told to stop burning. There are government, corporate, and NGO initiatives working to give smallholders better access to financing and improve their agricultural methods, thus improving both their yields and profits. This serves to advance better adoption of environmentally and socially-friendly practices, and helps smallholders achieve sustainability-related certification. Currently, many smallholders as well as mid-sized players often struggle to meet certification criteria on their own.

A case in point is the Roundtable on Sustainable Palm Oil (RSPO), which is now developing an Independent Smallholder Standard for oil palm growers. If more smallholders achieve certification, it could help open doors to international markets that recognise certifications and further spur widespread acceptance of sustainability among small and mid-sized actors in the supply chain.

In 2016, the World Bank estimated that the 2015 haze crisis cost Indonesia some S\$21.8 billion. A forthcoming study by Nanyang Technological University, previewed at the SDSWR, calculated that the economic damage to Singapore was around S\$1.5 billion. A survey conducted as part of the study further suggested that Singaporeans, Singapore Permanent Residents and Malaysians are willing to "pay" for clean air, if this can lead to a haze-free environment.

The 10 member states of Asean have set the ambitious target of a haze-free Asean by 2020. In order for the grouping to achieve this goal, stronger interventions are needed to mitigate the risk of haze, with multi-stakeholder action involving governments, NGOs, the private sector, and local communities. Only then can we replace business-as-usual with a sustainable value chain, and go from amber or moderate risk of haze, to green.

- <https://www.todayonline.com/commentary/innovation/why-severe-haze-may-return-2019-and-how-mitigate-risk>

## Europe

### European Union

#### Wetland futures in contested environments

WETFUTURES is a 3-year, international project funded through the Joint Programming Initiative Cultural Heritage (Heritage in Changing Environments Call, via the European Union's Horizon 2020 research and innovation programme) that will focus on wetland environments in Ireland, the Netherlands and the United

Kingdom. The project lead is Dr Roy van Beek (Wageningen University, Netherlands) whilst Dr Ben Gearey (University College Cork, Ireland) and Dr Ben Jennings (University of Bradford, UK) will lead the Irish and British components respectively. [More](#)

## Finland

### Activated carbon from peat

Finnish energy company Vapo is building its first activated carbon facility in Finland in response to growing international demand. Located in Ilomantsi, Eastern Finland, the EUR 25 million facility is planned to begin commercial production by the end of 2020 and will have an initial capacity of 5000 tonnes. The facility is designed to allow expansion in the future. Vapo may also apply for carbon facility building permits at two other sites in Finland, located in Haapavesi and Seinäjoki. Activated carbon is used in many air and water purification applications as well as in industrial processes and food production to absorb chemicals, metals and odours.

“In the first stage, Vapo Carbons’ main market is Europe, where the need for solutions suitable for the purification of air, water and industrial emissions is growing strongly,” says Jaakko Myllymäki, Business Area Director for Vapo Carbons, in a statement. According to Vapo, its carbon portfolio will be mainly peat-based but the flexible design of its production unit allows the use of a variety of organic raw materials, including wood. According to Jan Lång, Chairman of Vapo Oy’s Board of Directors, the strategic investment is an indication of the company’s commitment to the new responsible growth strategy, in which the commercialisation of new innovations plays a significant role. “Activated carbon improves the purity and comfort of our living environments globally,” says Lång in a statement.

- <https://www.businessfinland.fi/en/whats-new/news/2019/vapo-to-build-first-activated-carbon-facility-in-finland/>
- <https://yle.fi/uutiset/3-10564520>
- <https://www.vapocarbons.com/>



*Peatland in the French Jura. Photo: Hans Joosten.*

## France

### New French peatland inventory

In the current context of global warming, peatlands are important carbon stocks, which need to be better assessed. Indeed, carbon storage per unit area is very important, but the overall quantity on a national French scale is not yet established. The Peatland Relay Centre is hosting Malo Pilloix from the University of Franche-Comté from March to August 2019 to compile the peatland inventories carried out in each region to make the most exhaustive mapping of peatlands in France possible. Then, a complete database will be associated with this mapping, including the area, peat depth and conservation status of the peatlands. This will allow calculating the volume of peat and the amount of carbon stored. For peat thicknesses the project will rely on the 1949 Peatland Atlas of the Direction des Mines, which is to date the most complete data source for peat quantities. These vintage data will then be amended by recent inventory data. The aim is to provide information on the carbon stocks contained in French peatlands within an evolving mapping tool, which can be fed with data from future surveys, particularly with respect to peat thicknesses, in order to provide a basis for the conservation of peatlands.

- <https://mailchi.mp/d5c8200fa24c/fcenti91-2940657?e=508d5b9a52>

### Annual reports

The Annual Reports of the Peatland Relay Centre Pôle-relais tourbières over 2017 and 2018 are downloadable from: <http://www.pole-tourbieres.org/pole-relais/article/les-rapports-d-activite-du-pole>



## Germany

### PaludiMed sets up area for certified cultivation of sundew

From 7 to 12 May 2019, the largest sundew cultivation area in Europe was established in the Breesener Moor, a former peat extraction area in the Schaalsee Biosphere Reserve. 60 tons (115 m<sup>3</sup>) of peatmoss from a Sphagnum farm in the Hankhauser Moor (Lower Saxony) were spread by hand over 2.8 ha and the area was then wetted to prepare a "bed" for the sundew plants. Balazs Baranyai and Dr. Jenny Schulz, founders of PaludiMed GmbH, the first spin-off from the Greifswald Moor Centrum, want to cultivate sundew for medical use in a bio-certified way. Dr. Till Backhaus, Minister of Agriculture and Environment of the federal state of Mecklenburg-Vorpommern, turned the first sod last October for the establishment of the area.



*The spreading of Sphagnum to install a bed for sundew cultivation. Photo: Balazs Baranyai.*

### **New guide to grow hummock-forming *Sphagnum* species**

The Stiftung Lebensraum Moor (Foundation Mire Habitat), growing media producer Gramoflor and the Institute for Landscape Ecology of the University of Münster, Germany have developed methods to artificially grow and spread hummock-building *Sphagnum* species. This is because donor areas for cut-over peatland restoration are difficult to find in North-Western Germany. The new guide (in German) can be downloaded at [www.dbu.de/doiLanding1540.html](http://www.dbu.de/doiLanding1540.html).

## **Ireland**

### **New peat extraction regulations challenged in High Court**

Friends of the Irish Environment (FIE) has brought a High Court challenge against the State over new regulations that allow for the industrial extraction of peat from bogs. The environmental group claims the new regulations mean that large scale peat extraction does not require planning permission, and instead must be licenced by the Environmental Protection Agency (EPA). According to FIE the effect of the new regulations will create a retention mechanism for unauthorised industrial peat extraction and allow this activity to continue for many years in an unassessed and unregulated fashion. The group argues the regulations fail to comply with several EU directives on the protection of the Environment.

FIE's action is against the Minister for Communication, Climate Action and Environment, the Minister for Housing, Planning, and Local Government, as well as Ireland and the Attorney General. The group seeks orders including quashing the making of the regulations by both the Ministers in January of this year. The regulations are known as the 2019 European Union (Environmental Impact Assessment (Peat Extraction) Regulations, and the Planning and Development Act 2000 (Exempted Development) regulations 2019.

FIE claims the majority of Irish industrial peatlands are operated by Bord Na Mona, which has been licensed by the EPA since 1999. It claims the remainder of the industrial peat operations, which supplies approximately 500,000 m<sup>3</sup> of horticultural peat into the UK market, have been operating without planning permission or licences from the EPA. The group says none of the large scale industrial activity on Irish bogs has undergone proper environmental assessments.

The group said that it has received a letter from the European Commission stating it shared the concerns held by the Friends of the Irish Environment about a lack of applications of the law to peat extraction activities. The Commission welcomed the creation of a new regime which it hopes will bring Ireland's peat extraction activities into line with EU law. The Commission added it will be raising its issues of concerns about peat extraction with the Irish authorities.

- <https://www.independent.ie/business/farming/news/courts/new-peat-extraction-regulations-challenged-in-high-court-38060769.html>
- <https://www.irishtimes.com/news/crime-and-law/courts/high-court/environmental-group-challenges-peat-bog-extraction-regulations-1.3875535>

### **English country gardens are blooming at Ireland's expense**

*Caroline Lewis* ([admin@friendsoftheirishenvironment.org](mailto:admin@friendsoftheirishenvironment.org))

Every year an area of peat bog the size of the Curragh is shaved off, loaded on to lorries and quietly shipped to the United Kingdom and Europe. Thousands of acres of Irish soil are added to British territory on an annual basis with a minimum of fuss. For decades, up to 27 million British gardeners have been gratefully buying our peat for virtually nothing when compared to its true value. As well as firing our power stations, the bogs of the Irish midlands are the source of more than half of the peat used in gardening in the United Kingdom.

Irish moss peat can be purchased from the shelves of the big UK home retailers for a lower price than in many Irish garden centres. The great British gardening tradition is blooming. But at the expense of Ireland's nature and our finances and at risk to our public health.

Most of the industrial peat extraction in Ireland is either poorly regulated or not regulated at all. While the lack of regulation keeps peat moss prices down and benefits British consumers, it comes at a high price for Ireland. The drainage of bogs for peat extraction causes many problems. Peat solids in drainage water discharged to rivers make their way into water treatment plants where they can react with the chlorination process to create cancer-causing trihalomethanes in our drinking water. Only recently the European Commission initiated

infringement proceedings against Ireland for failing to meet its obligations under the drinking water directive in relation to concentrations of trihalomethanes in the drinking water of more than 500,000 people. The drainage of bogs for peat extraction causes many problems. Peat solids in drainage water discharged to rivers make their way into water treatment plants

Ireland is facing other EU proceedings and fines of reportedly up to €600 million per year for failure to meet targets for climate changing emissions, a significant percentage of which come from the drainage of peatlands. Peat in its natural state can be a great store of carbon but, when drained, it acts in the opposite way and releases carbon. Even though the bulk of Irish horticultural peat is used in foreign flower beds, it is Ireland's citizens who will pay the hefty fines for the emissions caused by its extraction.

The absence of proper regulation of peat extraction means that the effect on the environment and nature is not being assessed. Ireland's biodiversity is under pressure from climate change and unsustainable land management practices. England's roses may be blooming but in Ireland the wild bog orchids are becoming scarcer. Almost half of the endangered birds in Ireland have peatland habitats.

The benefits to Ireland of this industry are difficult to pinpoint. There is seasonal employment for workers in the milling of peat. But much of the employment created in the sale of Ireland's horticultural peat to the UK and Europe is in marketing, administration and retail roles outside of Ireland. The manufacturing and bagging of products destined for the British market is also increasingly being done in the United Kingdom. Bord na Móna recently acquired two compost-manufacturing factories in Liverpool. Other companies extracting peat from the Irish midlands have chosen to locate their processing and sales operations in Northern Ireland.

In January of this year, the extraction of peat on bogs of 30 hectares or more in area was made exempt from planning permission by the Government. This does not affect the small bog plots of domestic turf-cutters, but bogs totalling tens of thousands of hectares reserved for the large-scale industrial extraction of peat. The removal of the planning permission obligation is to be accompanied by a new licensing regime under the Environmental Protection Agency, but with a delayed starting time that could in practice be years away. One consequence of this new regulatory move may be to keep cheap Irish peat moss in prime position on the shelves of UK garden retailers at a time when the UK government is introducing progressive environmental policies to promote peat-free compost alternatives. But it comes at a greater cost to Irish public health and our environment.

- <https://www.irishtimes.com/opinion/english-country-gardens-are-blooming-at-ireland-s-expense-1.3874266>

### **IWT object to Derryadd wind farm**

The Irish Wildlife Trust (IWT) have joined the campaign against the proposed 24-turbine windfarm in Derryadd, Co Longford. IWT have submitted an official objection to An Bord Pleanála against the development. Although they are not opposed to wind energy generation, IWT have expressed their concern at the proposed location of the farm, which is predominantly peatland. They spoke of their disappointment for community members that the preferred Shannon Wilderness Park, proposed by locals, will not be developed and said many ecologists chose this as the perfect site for the reintroduction of long-extinct Irish birds such as crane and bittern. "We're very disappointed that the hard work and hopes of local communities for the Shannon Wilderness Park are being swept aside by Bord na Móna in their pursuit of this wind energy project," IWT Campaigns Officer, Pádraic Fogarty said. "There's a huge opportunity in creating a distinct and unique identity for this part of Longford, something people would travel from far and wide to experience." It was also hoped that white-tailed sea eagles would colonise the shores of Lough Ree. "Bord na Móna should be working with local people and ecologists in trying to deliver this, rather than working against them to impose an unwanted wind farm. "We hope An Bord Pleanála can refuse permission," Pádraic Fogarty concluded.

- <https://www.longfordleader.ie/news/local-news/373691/iwt-object-to-derryadd-wind-farm.html>

## **Lithuania**

### **Translocation of Aquatic Warbler successful!**

Early May, six Aquatic Warblers that were last year translocated from Belarus to Lithuania have returned safely from their winterquarters in Africa to the newly restored potential breeding area in Lithuania, illustrating that the translocation method also functions with this highly threatened fen species: <https://meldine.lt/en/the-first-ever-translocation-of-aquatic-warbler-is-successful/>



*One of the translocated Aquatic Warblers. Photo: Zymantas Morkvenas.*

## Netherlands

### Shell introduces 'carbon neutral' motoring in Europe

Starting April 15, motorists who fill up at Shell service stations in the Netherlands will be able to drive "carbon neutral" through the use of nature-based carbon credits, the company announced on Monday. Shell buys these credits from a global portfolio of nature-based projects, including Cordillera Azul National Park Project in Peru, Katingan Peatland Restoration and Conservation Project in Indonesia and GreenTrees Reforestation Project in the USA. The carbon credits will apply to CO<sub>2</sub> emissions generated by participating motorists, as well from the extraction, refining and distribution of the fuel. This will be done at no extra cost for customers who choose Shell VPower petrol or diesel, while those who fill up with regular Shell petrol or diesel can participate for an additional 1 cent a litre, the company said. Shell said it will roll out similar choices to customers in other countries, starting with the UK later this year.

- <https://www.jwnenergy.com/article/2019/4/shell-introduces-carbon-neutral-motoring-europe/>
- <https://www.edie.net/news/9/Shell-commits-300m-to-conservation-and-carbon-offset-projects/>

### Rabbinge: high-production dairy farming no longer in the peat pasture area

It is impossible to maintain high-productivity dairy farming in peatland areas if you want to use it to capture CO<sub>2</sub>. That's what leading agricultural Professor Rudy Rabbinge of the Wageningen UR said during a hearing on climate measures in agriculture in the Lower House. According to Rabbinge, if you want to convert the peat's CO<sub>2</sub> emissions into CO<sub>2</sub> sequestration, this requires a different approach from the current practice. He does see room for low-intensity livestock farming in the peat meadow area, but some of the areas will also have to be soaked up.

Rabbinge sees a revenue model in the areas that have to be flooded as negative water board charges, because water boards would then no longer have to pump water away from the areas, in combination with a premium for capturing CO<sub>2</sub> in the soil. "If you arrange this wisely, you can count on compensation of at least € 350 to € 500 per hectare," says Rabbinge.

Rabbinge does not see the capture of CO<sub>2</sub> by rewetting as a solution for all peat meadows. However, he does recommend that the policy should already be applied in places where it is a solution. "If we don't, the oxidation

of the peat will continue and we don't want that to happen. Rabbinge says that large-scale construction of underwater drainage means postponement of execution in many areas.

Harm Wiegiersma (Dutch Dairy Farmers Union NMV) sees a solution in drawing up a master plan. "The average age of dairy farmers is 55 plus and not everyone has a successor. If we want to do something, we all have to do it together and we need a master plan for that. Dairy farming can make a transition, but we do need help with that, because we can't do it alone", says Wiegiersma.

- <https://www.boerderij.nl/Rundveehouderij/Nieuws/2019/4/Rabbinge-hoogproductieve-melkveehouderij-niet-meer-in-veenweidegebied-418452E/>

## Russian Federation

### Russia and Germany strengthen cooperation, also on peatland rewetting

On April 23, the Ministry of Natural Resources and Environment of the Russian Federation held a meeting with the Minister of Economic Cooperation and Development of the Federal Republic of Germany Gerd Müller. Mr. Müller was greeted by Deputy Minister Murad Kerimov, who said that the Russian side highly appreciates the level of mutual understanding and cooperation with its German counterparts in the field of environmental protection. Nuritdin Inamov, Director of the Department of International Cooperation of the Ministry of Natural Resources of the Russian Federation, made a report on the main areas of cooperation between the two countries. "A landmark example of our joint work is the Russian-German project "Restoration of peatlands in Russia to prevent fires and mitigate climate change". The aim of the project is to rewet drained peatlands, thereby contributing to the optimization of ecosystem services and fire safety, climate change mitigation and biodiversity conservation," Inamov said. Moscow, Pskov, Vladimir, Nizhny Novgorod, Tver, Ryazan, Kaluga, Kaliningrad regions and the Republic of Bashkiria take part in the project. The project organizes training courses and seminars, international exchange of experience in the field of rewetting and joint Russian-German studies.



*Orsha peatland, Tver, Russia, rewetted within the Russian-German project "Restoration of peatlands in Russia to prevent fires and mitigate climate change". Photo: Hans Joosten.*

Inamov also informed his colleagues about the work carried out by Russia under the Paris Agreement. "Russia is one of the leaders of the international climate process both in terms of its contribution to the reduction of emissions and in terms of measures to ensure the universality of the climate regime discussed by the UN. With

regard to the ratification of the Paris Agreement, I can report that after the analysis of the socio-economic impact on our country and the implementation of relevant measures at the national level, the Government of the Russian Federation is considering the issue of ratification. We hope that by the beginning of the 25th session of the Conference of the Parties to the UNFCCC in Chile the issue will be resolved," Inamov said.

Russian representatives also spoke about the observance of the Convention on Biological Diversity, about the achievement of the goals of rational use of water resources, the adoption of urgent measures to combat climate change and its consequences, and the preservation of oceans, seas and marine resources.

The German Minister, in turn, highly appreciated the joint work within the framework of international environmental programs, stressing that he hopes for the implementation of the agreements reached earlier.

- [http://mnr.gov.ru/press/news/rossiya\\_i\\_germaniya\\_ukreplyayut\\_sotrudnichestvo\\_po\\_voprosam\\_sokhraneniya\\_klimata\\_morey\\_unik\\_alnykh\\_ze/](http://mnr.gov.ru/press/news/rossiya_i_germaniya_ukreplyayut_sotrudnichestvo_po_voprosam_sokhraneniya_klimata_morey_unik_alnykh_ze/)



*Peatlands in the Pennines, UK. Photo: Hans Joosten.*

## United Kingdom

### **New data on UK peatland distribution and emissions**

UK's peatlands are estimated to occupy around 3.0 million hectares (12.2 % of the total UK land area). Another ~280,000 ha of peat are believed to be present in the Falkland Islands (around one quarter of the land area).

Of the UK's total peat area, approximately 640,000 ha (22%) is estimated to remain in a near-natural condition. This area of near natural bog and fen is believed to be continuing to act as a significant net sink for CO<sub>2</sub>, of approximately 1,800 kt CO<sub>2</sub> yr<sup>-1</sup>. This CO<sub>2</sub> sink is however counterbalanced by similar emissions of methane (CH<sub>4</sub>) when its greater 100-year Global Warming Potential is taken into account making near-natural peatlands close to carbon neutral. Over longer time-horizons, natural peatlands have a strong net cooling impact on climate, due to the longer atmospheric lifetime of CO<sub>2</sub> compared to CH<sub>4</sub>. While near-natural bogs are very small net GHG sources, for near-natural fens, CO<sub>2</sub> uptake exceeds CH<sub>4</sub> emission on a CO<sub>2</sub>-equivalent basis making them a very small net GHG sink. However the areas that could be definitely mapped as near-natural fen from available data were small.

A further 1,213,000 ha (41%) of the UK peat area remains under some form of semi-natural peatland vegetation, but has been affected to varying degrees by human activities including drainage, burn-management, and livestock grazing. This has led to drying of the peat, loss of peat-forming species and erosion,

converting these areas into net GHG sources. Although the emissions per unit area of modified peatland are relatively low, their great extent makes them significant contributors to overall UK peatland GHG emissions ( $\sim 3,400$  kt CO<sub>2</sub>e yr<sup>-1</sup>, 15% of total emissions).



*Peatland erosion in the Pennines, UK. Photo: Hans Joosten.*

Arable cropland occupies just 7% of the UK's peat area, but has the highest GHG emissions per unit area of any land-use, with high rates of both CO<sub>2</sub> and N<sub>2</sub>O emissions as a result of drainage and fertilisation. As a result, cropland is estimated to emit  $\sim 7,600$  kt CO<sub>2</sub>e yr<sup>-1</sup>, 32% of total UK peat GHG emissions. Around two thirds of the cropland area is on 'wasted' peat (shallow residual organic soils where much of the original peat has already been lost), predominantly in the Fenlands of East Anglia. The true extent and rate of GHG emission from wasted peatlands is not well quantified, making this component of the total cropland emission particularly uncertain.

Peatlands converted to Grassland occupy a further 8% of the UK's peat area, and emit  $\sim 6,300$  kt CO<sub>2</sub>e yr<sup>-1</sup>, 27% of total UK peat emissions. Drained intensive grasslands in lowland areas are the primary source of these emissions.

Around 16% of the UK peat area is covered by woodland, the majority of which is drained conifer plantation. The UK inventory currently applies a model-based ('Tier 3') approach to inventory reporting for forests, but empirically-based 'Tier 2' emissions estimates suggest that peat under forestry in the UK could be emitting around  $4,600$  kt CO<sub>2</sub>e yr<sup>-1</sup> (20% of the UK total). This figure does not take into account CO<sub>2</sub> uptake into tree biomass, or the after-use of harvested timber.

Industrial peat extraction for horticultural use occupies a comparatively small proportion of the UK's peat area ( $\sim 4,600$  ha). A much larger area (mainly in Northern Ireland and Scotland) has been affected by current or historic domestic peat cutting for fuel ( $\sim 145,000$  ha), and the resulting modification of vegetation and hydrology is thought (in the absence of subsequent restoration) to have converted these areas into sustained GHG sources. The combined total GHG emission from extracted areas of  $\sim 1,200$  kt CO<sub>2</sub>e yr<sup>-1</sup> derives mainly from these domestic extraction areas, despite the higher emissions per unit area of industrial extraction sites.

In total, the UK's peatlands are estimated to be emitting approximately  $23,100$  kt CO<sub>2</sub>e yr<sup>-1</sup> of GHG emissions. This emission is sufficient to convert the UK LULUCF inventory as a whole from a net GHG sink into a net GHG source.

There are large inter-regional variations in the main sources of peatland GHG emissions. In Scotland, with the largest total peat area, the largest sources are modified blanket bog and forests. In England, the smaller (and

partly wasted) peat area makes a larger overall contribution to total UK emissions, as a result of intensive arable and grassland cultivation, predominantly in lowland areas. In Northern Ireland, intensive grassland in the lowlands and domestic peat extraction in the uplands are major sources, and in Wales sources include intensive and extensive grasslands and modified bogs. It was not yet possible to develop an inventory for the large area of peat in the Falkland Islands, but a significant proportion of this area is thought to be modified by grazing, erosion and fire.

Since 1990, an estimated 95,000 ha of UK peatland have been subject to some form of active restoration intervention, of which around 70,000 ha has involved some form of re-wetting. These activities have occurred in all of the UK administrations, with the majority having taken place in areas of modified blanket bog. Some re-wetting and restoration to peatland vegetation has also occurred in areas of plantation forest, cropland, grassland and peat extraction. In total, these activities are estimated to have generated an emissions reduction since 1990 of 423 kt CO<sub>2</sub>e yr<sup>-1</sup>. It is likely that other unrecorded restoration activities, land-use changes and management activities (for example as part of agri-environment schemes) have had an additional influence on peatland emissions, but available data were insufficient to allow these changes to be reported.

The emissions estimates obtained represent a major (more than tenfold) increase in the total peat-derived emissions captured in the current UK inventory. This reflects a significant development in the IPCC methodology following publication of the 2013 Wetland Supplement, which allows for more complete reporting of peatland emissions than was previously possible. This new approach by IPCC has led to much more detailed reporting of peatland emissions in the LULUCF inventory, incorporating improved data on peat condition including the extent of peat mapped; peat condition classification and mapping; estimated emission factors; treatment of wasted peats; and methodology applied to forest on peat.

Future emissions projections to 2050 based on a set of illustrative scenarios suggest that currently legislated peat restoration measures (mainly the phasing out of peat extraction in England) will have limited impact on emissions, but that current levels of ambition on peat restoration in all four countries could deliver over 4 Mt CO<sub>2</sub>e yr<sup>-1</sup> of emissions reductions by 2050. A more ambitious restoration scenario, including removal of 50% of forest planted on peat since 1980, could deliver over 8 Mt CO<sub>2</sub>e yr<sup>-1</sup> of emissions abatement. However none of the scenarios incorporated large-scale cessation of drainage-based agriculture on lowland peat, which (as it accounts for 60% of all current emissions) placed effective limits on the degree of emissions abatement that could be achieved.



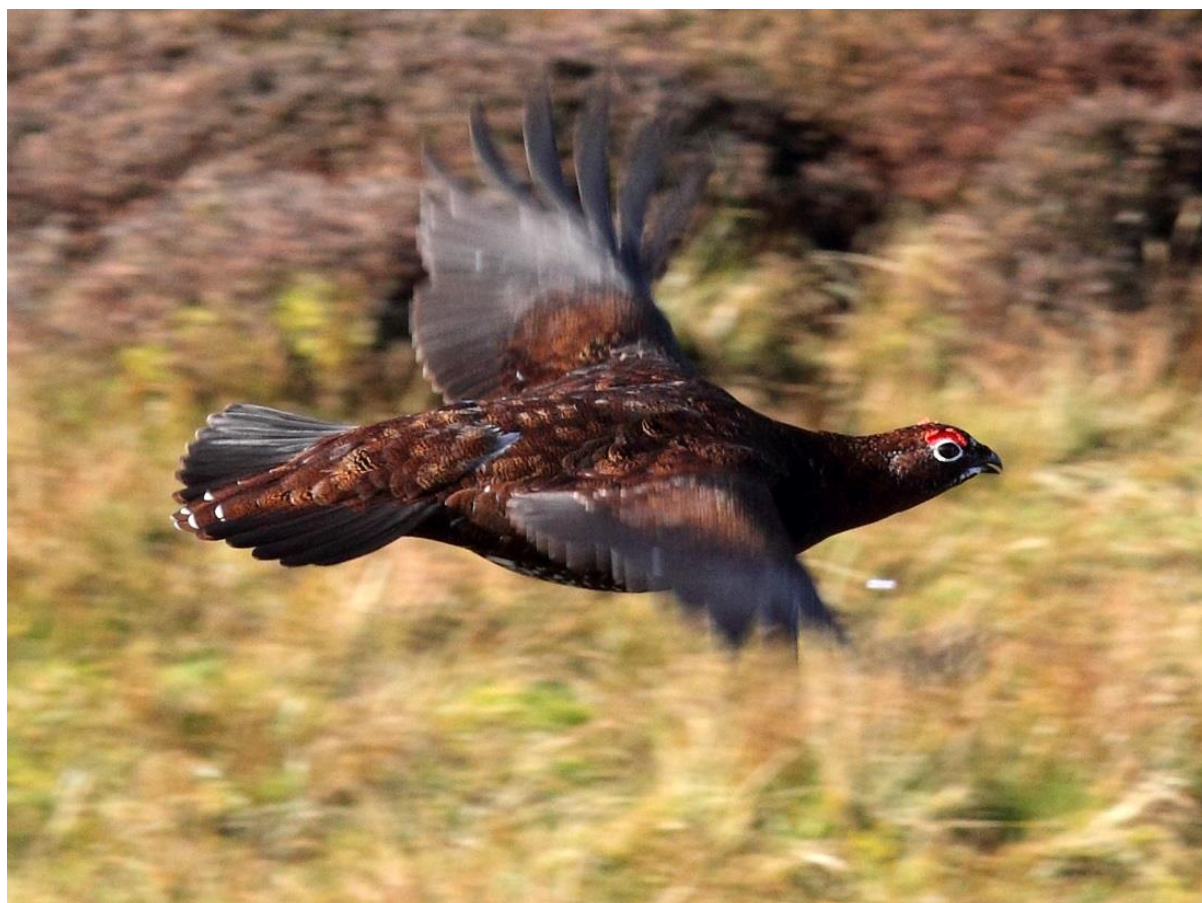
*Forest removal from blanket peatland in Scotland. Photo: Hans Joosten.*

In summary, although around 70% of UK peatlands retain some form of semi-natural vegetation cover, over three quarters are in a modified state, ranging from relatively minor changes to vegetation cover and hydrology, through to the complete replacement of wetland vegetation by arable and horticultural crops, agricultural grasses and non-native conifers, with accompanying deep drainage. As a result, UK peatlands have transitioned from modest historical net GHG sinks (an estimated pre-anthropogenic sink, based on 100 year Global Warming Potentials, in the region of 0.25 Mt CO<sub>2</sub>e yr<sup>-1</sup>) into large emission sources (exceeding 23 Mt CO<sub>2</sub>e yr<sup>-1</sup>). The contrast between these two values highlights that the priority for peatland management should be to reduce current high emissions; it is unlikely that so-called 'negative emissions' from peat formation will be able to offset emissions from other sectors.

Widespread and ongoing peat restoration across the UK has contributed to a reduction in total emissions, but to date the majority of restoration has taken place within modified upland bogs, which produce modest emissions sources per unit area, rather than categories with higher Tier 2 emission factors per unit area such as cropland, lowland grassland and plantation forest. Addressing continued emissions from these areas could provide a high degree of emissions abatement, but would face significant logistical and socio-economic barriers. Mitigation measures that reduce emissions from cultivated peatlands without leading to large-scale loss of income to farmers and landowners, or to a decrease in UK food security, thus represent a key scientific and policy challenge. In the meantime, the continued restoration of modified upland bogs, notably higher-emitting categories such as actively eroding areas and heavily degraded former domestic peat cutting sites, may represent more tractable options for emissions reduction.

Whilst many individual components of the peatland emissions inventory remain uncertain, due to limitations in the number of primary measurement studies and difficulties in translating available soils and land-cover data into reliable peat area and condition estimates, the data and methods set out in this new report provide the basis for initial inclusion of peatlands in the UK emissions inventory. To support the future development of this inventory, there is a need for new field-scale measurements of GHG fluxes from under-studied peatland types, and for the development of consistent, UK-scale condition mapping and monitoring approaches, potentially based on new earth observation data.

Read the full report under [http://uk-air.defra.gov.uk/reports/cat07/1904111135\\_UK\\_peatland\\_GHG\\_emissions.pdf](http://uk-air.defra.gov.uk/reports/cat07/1904111135_UK_peatland_GHG_emissions.pdf)



*Gamekeepers and hunters kill harriers and other non-human predators of Red grouse (*Lagopus lagopus scotica*) to grouse bolster numbers for recreational hunting. Photo: Dunpharlain via Wikimedia Commons.*

### **Solving the mystery of the UK's vanishing hen harriers**

Scientists have found evidence that the disappearance of a large number of hen harriers (*Circus cyaneus*) in the UK may be linked to their being killed illegally over areas managed for grouse hunting. "It has long been suspected that hen harriers were subject to illegal killing on the grouse moors of England," said Arjun Amar, an avian conservation biologist at the University of Cape Town in South Africa and one of the authors of a recent [study](#) that investigated the reasons for hen harrier disappearances. The numbers of breeding hen harriers, raptors that are one of England's rarest birds and a protected species, dropped sharply in the late 1990s and early 2000s. In response, Natural England launched a study to understand the reasons for this decline. Amar and colleagues worked on a part of this study to understand why so few hen harriers were coming back to their nesting areas, and what was happening to the birds that did not return.

The moors are also popular among red grouse (*Lagopus lagopus scotica*) hunters, who shoot grouse during the hunting season that runs from August to December. To make sure grouse thrive on their lands, some gamekeepers kill its non-human predators, including hen harriers. A [2010 survey](#) of hen harriers in the UK found that their populations declined by nearly 20 percent from 2004, with an estimated 662 breeding pairs remaining. Although there is no direct evidence for the illegal killing of hen harriers to support grouse shooting, the argument has been put forth many times. To seek clues, Amar and team fitted satellite-based tracking tags on 60 harriers and geographically referenced the birds' locations using remotely sensed land management data.

Trained volunteers scouted hen harrier breeding grounds, which include grouse moors, grasslands, bogs, and other open areas, and fitted month-old hen harriers with satellite transmitters and individual identity tags. Sixty fledglings across England and Scotland were fitted with transmitters between 2007 and 2017. Tracking the birds with transmitters allowed the scientists to follow each individual's movements on a regular basis. The transmitters sent the birds' location data to the [Argos satellite system](#), which received location data roughly every three days. Argos processes the information using a [Doppler shift](#) method and returns coordinates of the birds' locations.

If the transmitters stopped sending data and the (presumably dead) birds were not recovered, the team used clues from the last location and any other diagnostic information to figure out what happened to the birds. Statistical analysis of all the transmitter data, together with land use information gleaned from satellite imagery, allowed the researchers to tease out further clues about the last days of the dead birds. Of the 60 tagged birds, only 7 were alive, with transmitting tags, at the end of October 2017, and 72 percent were confirmed or suspected of being illegally killed. The rest either died of natural causes or their transmitters malfunctioned.

Through these analyses, one piece of information stood out. Birds that were killed or stopped transmitting spent their last week of life predominantly on grouse moors. Put another way, hen harriers were 10 times more likely to disappear or die when grouse moors dominated their ranges.

This result is probably not surprising to field workers who work with raptors on the ground in Northern England, said Amar. "They have long suspected that illegal killing of raptors is very widespread on these grouse estates. However, we were surprised just how clear cut the results were; no matter how you analyze the data, the pattern emerges that these birds have a far higher rate of death and disappearances on these grouse moors compared with other areas, and it has nothing to do with how much these areas are being used by the birds." "We can think of no alternative, plausible explanation as to why mortality and unexpected tag failure was occurring at a higher rate on grouse moors," write the authors. There is no other explanation that fits all these observations, they add.

The study adds tremendously to the long-standing suspicion of hen harriers being killed illegally over grouse moors. It does not, however, specifically address potential solutions, and the question remains as to what can be done about it. "However, one thing it [the study] does do is suggest that that status quo is not working," said Amar. "The current situation is resulting in widespread wildlife crime occurring across large areas of the English uplands. So, something clearly has to change."

Murgatroyd, M., Redpath, S. M., Murphy, S. G., Douglas, D. J., Saunders, R., & Amar, A. (2019). Patterns of satellite tagged hen harrier disappearances suggest widespread illegal killing on British grouse moors. *Nature Communications*, 10(1), 1094. <https://doi.org/10.1038/s41467-019-09044-w>.

## Bog Day

This year's Bog Day falls on Sunday 28<sup>th</sup> July and will see events across the country helping others to understand the importance of these fantastic places and working together to make sure they are saved for future generations. Bog Day celebrates bogs, fens and mires and all the great things they do for us: helping to fight climate change by storing carbon; providing us with clean drinking water; helping prevent flooding; providing great homes for our rare and endangered wildlife... the list goes on. For more information or to download copies of activities or Bog Day branding please visit: [www.bogday.uk](http://www.bogday.uk). To list your resources or event please contact [info@iucn.org.uk](mailto:info@iucn.org.uk).

## Digibog\_hydro - a decision making tool for restoration planning

Alongside the [User Guide](#) on methods to value the benefits of Peatland Restoration produced by [iCASP](#) partners as part of the [Optimal Peatland Restoration](#) project, a user-friendly model to help guide decision-making in planning restoration will be ready soon. Digibog\_Hydro will help peatland practitioners better understand the effect of restoration measures on peatland hydrological dynamics, and therefore help inform the choice of peatland restoration activities, such as sphagnum planting (see Newsletter header image © Moors for the Future Partnership) in view of optimising ecosystem service delivery. [University of Leeds](#), [Yorkshire Peat Partnership](#), and [Moors for the Future Partnership](#) have worked together to develop this new modelling interface. Several workshops will be organised with partners this Spring to ensure the tool is embedded in their planning and delivery practices and help staff confidently use it.

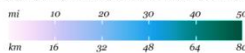
## Distance to the nearest pub

In my (HJ) lectures on peatland classification, I explain that all properties of peatlands may be used for classifying them, depending on the purpose of the classification. As an extreme example I always take the distance to the nearest pub. Not only may the distance to the nearest pub prove to be useful for planning student excursions, but I even hypothesise that that distance might give a fair idea of the greenhouse gas emissions from the respective peatlands (more degraded and thus more emissions closer to a pub, versus less further away). Now indeed these data have become available: see below and compare the distance to the nearest pub (left) with the distribution of peatlands as published in the UK chapter of the IMCG European Mires Book!

- <https://erdaviscom.files.wordpress.com/2019/05/distance-2.png?w=803>

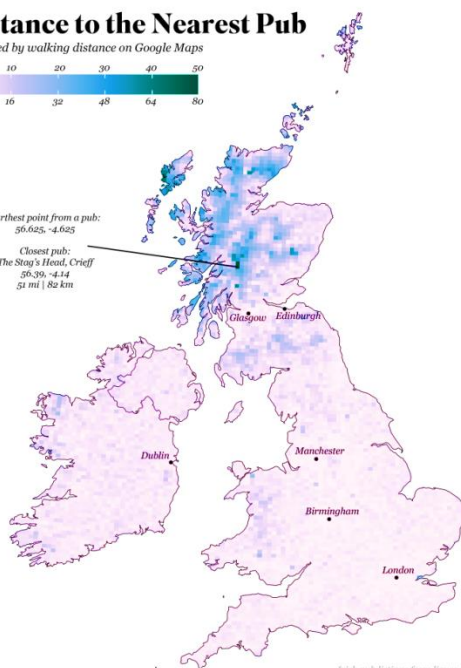
### Distance to the Nearest Pub

As judged by walking distance on Google Maps

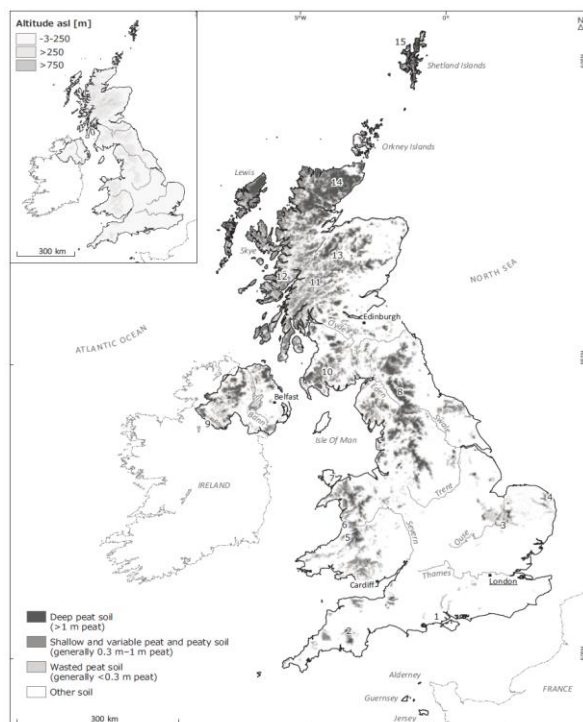


Farthest point from a pub:  
56.625, -4.625

Closest pub:  
The Stop's Head, Crieff  
56.39, -4.14  
51 mi | 82 km



Irish pub listings from liquor licenses  
UK pub listings from food hygiene ratings  
Distances from Google Maps  
For methodology and code see [erdavis.com](http://erdavis.com)



### Peatland restoration each year from 2015

Under the Environmental Information Regulations 2004 (Scotland), the [Environment and Forestry Directorate](#) has been requested to provide information and response on the following questions:

- How many acres of peatland in Scotland have been restored each year, from 2015 to present day?
- What percentage of blanket bog, raised bog and fenland is currently in a conservation status of 'favourable' condition?
- How many statutorily protected areas of peatland out of the total are in, or moving towards a conservation status of 'favourable' condition'

The Scottish Government holds data for the first question and this is laid out in the table below:

	2014-15	2015-16	2016-17	2017-18	2018-19
Restoration (ha)	5570	2810	450	3660	6500
Restoration (Acres)	13764	6944	1112	9044	16062

The other information requested is not held by the Scottish Government: "However, you may wish to submit a new request to Scottish Natural Heritage (SNH) requesting information on these questions."

## North- and Central-America



*Small-scale farmers are traveling deeper and deeper into parks in order to grow oil palm without being discovered. Photo: PROLANSATE (Foundation for the Protection of Lancetilla, Punta Sal, Punta Izopo and Texiguat national parks).*

## Honduras

### National parks in Honduras hit hard by palm oil

New oil palm plantations are popping up inside Jeanette Kawas National Park, Honduras, almost every week. Small-scale farmers, some living legally within park borders, are clearing deeper and deeper sections of forest, making it difficult to know exactly how bad the problem has become, let alone how to stop it.

By 2010, Jeanette Kawas National Park had lost approximately 40 km<sup>2</sup> to oil palm plantations, according to a 2018 report by the country's Zamorano Pan-American Agricultural School. It loses around 6 km<sup>2</sup>. Around 1,900 deforestation alerts were recorded in the park by mid-March this year, according to the University of Maryland's (UMD) Global Land Analysis and Discovery lab, which uses satellites to detect tree cover loss.

Averaged per month, this represents a jump over 2018 numbers. Further east, Punta Izopo National Park lost more than 8 percent of its tree cover between 2001 and 2017, according to UMD data. Meanwhile, the data show a more than 4 percent loss in nearby Cuero y Salado National Park.

Currently Honduras is the eighth-largest producer oil palm worldwide and number three in the Americas, according to the U.S. Department of Agriculture. Small-scale farmers in northern Honduras make about \$73 per ton of oil palm fruit, while putting in significantly less work than is required for bananas or livestock. However, oil palm requires massive amounts of water and must be grown as a monoculture, the agricultural practice of devoting land to a single crop. An independent farmer needs to plant at least 10 hectares of oil palm to make a profit, leading them to clear huge swaths of forest in the parks.

Organizations like the ICF and PROLANSATE have begun what they hope to be ongoing discussions with prosecutors and judges about how to speed up the legal process — or find some way around it — before the situation becomes even more unsustainable.

In the meantime, there isn't much that officials can do except carry out preventative strategies, such as investing in educational programs that stress the importance of environmental preservation, and hope that they can raise some awareness about the destruction taking place across the parks.

"We've made a lot of progress," Bustamante said. "A lot of effort has been made to finish the work that Jeanette Kawas started. Her legacy will always live on. She's an inspiration for us to keep up the fight.

"No matter how frustrating it gets, we're not going to throw in the towel."

- <https://news.mongabay.com/2019/04/its-getting-worse-national-parks-in-honduras-hit-hard-by-palm-oil/>



Coastal peatlands in Honduras. Photos: Hans Joosten.

## South America

### Bolivia

#### Drying peatlands in the Bolivian Andes threaten indigenous pastoral communities

The [Andes](#) are the longest mountain range in the world, stretching 7,000 km long and spanning seven South American countries: Venezuela, Columbia, Ecuador, Peru, Bolivia, Chile, and Argentina. Andean ecosystems include peatlands, grasslands, shrublands, salt flats, forests, and alpine regions. Mountain peatlands, or [bofedales](#), play a particularly central role in the rearing of llamas and alpacas, which provide wool and meat to Andean, pastoral communities. In order to remain productive and green, bofedales require continuous water supply from precipitation, groundwater, and glacial outflow. Without adequate water flow, bofedales are likely to dry up. Climate change and poor irrigation exacerbate the drying of bofedales.

A recently published [research article](#) in *Springer Nature* analyzes bofedal changes due to decreased water availability in Sajama National Park (PNS) in Bolivia. Using satellite image analysis, vegetation studies, and traditional ecological knowledge, [Karina Yager](#) and fifteen of her colleagues, from institutions in the U.S. and South America, study land cover changes over a 30-year timeframe and identify communal perspectives on drying bofedales. Yager shared to GlacierHub: “traditional ecological knowledge gives voice to the human dimensions of land cover and land use change which are often overlooked; in this case with the bofedales, locals help us to understand both the climatic and social drivers of bofedal change, from shifting weather patterns, to water access, to herd management.” A Manasaya herder shared to the researchers: “the pastures of the bofedal are dying because not enough water is entering any longer. In some places that are dry, you can hear how the water runs below and you can see that there are places where the bofedal is sinking. There are holes; we cover them so the livestock do not fall in.”

Through field work and data collection, the researchers find that three communities within PNS—Sajama, Lagunas, and Manasaya—show significant loss of healthy bofedales. These land changes will likely result in decreases to animal health and communal livelihoods. In addition, completely dried bofedales are difficult to restore and likely take generations to recover.



Llamas on eroding bofedales peatland in the Peruvian Andes. Photo: Hans Joosten.

Yager states to GlacierHub: “These are peatland systems that are relatively slow growing and have developed in many cases over several millennia. Some of the systems in Sajama are over four thousand years old, and unfortunately some have become completely desiccated within the last five to ten years. Some bofedal systems would take generations to recuperate, and others may just be completely lost.” On the other hand, increases in healthy bofedal land cover is observed in the two other, irrigated PNS regions of Caripe and Papelpampa. This finding signals that proper irrigation management and communal-based pasture management are critical to the conservation of bofedales.

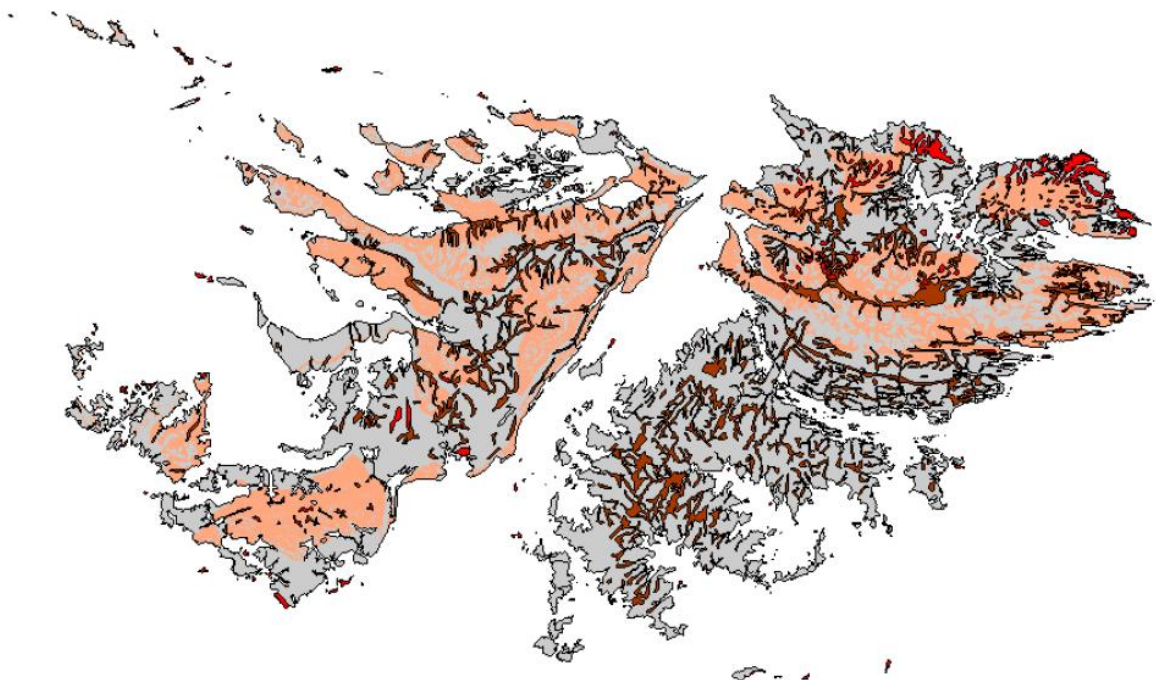
- <http://glacierhub.org/2019/04/18/drying-peatlands-bolivian-andes/>

## Falklands/Malvinas

### New peatland map for Falklands/Malvinas

From: [http://uk-air.defra.gov.uk/reports/cat07/1904111135\\_UK\\_peatland\\_GHG\\_emissions.pdf](http://uk-air.defra.gov.uk/reports/cat07/1904111135_UK_peatland_GHG_emissions.pdf)

The Falklands peat base map was derived from a British Geological Survey(BGS) superficial geology map produced as part of a geological survey of the islands by Aldiss and Edwards (1999). Although the original map only records relatively small areas of upland and coastal deep peat, extensive areas of deep (> 40 cm) peat occur in both upland and lowland settings. An exploratory field peat depth assessment carried out (comprising depth probing at 286 locations in different parts of East Falkland) suggested that peat rarely occurs on steeper slopes in upland areas, but is widespread (and difficult to predict from topographic data alone) on gentler slopes. For these areas a 15% slope cut off was applied, using 30 m horizontal resolution DTM data from the Shuttle Radar Topography Mission, and (based on the depth probe data) the remaining area was estimated to contain 33% deep peat. In lowland areas, ‘valley bottom deposits’ in lowland areas were found to overwhelmingly contain deep peat, and were therefore all mapped as peat, whereas peat was found to be largely absent elsewhere. Based on these assumptions, a preliminary estimated peat area of 282,100 ha was obtained for the Falklands (see Figure above). It is worth noting that a soils map of the Falklands was also recently developed (also from the BGS superficial geology map) by Burton (2015). This map differs from our assessment in that i) valley bottom deposits were classified as peaty gleys, and ii) upland peat extent was not specifically estimated. A new initiative to develop a soils map of the Falklands based on new ground survey data is currently ongoing, and may produce improved peat area estimates in future.



*Falkland Islands peat map. Red represents upland deep peat, brown valley peat, orange mixed upland organo-mineral and deep peat soils, and grey areas with little or no peat cover (thin organo-mineral soils, mineral soils and bare rock).* [http://uk-air.defra.gov.uk/reports/cat07/1904111135\\_UK\\_peatland\\_GHG\\_emissions.pdf](http://uk-air.defra.gov.uk/reports/cat07/1904111135_UK_peatland_GHG_emissions.pdf)

A qualitative assessment of peat condition, based on field observations and previous studies, was reported in a project interim report (Smyth et al. 2016). Briefly, the Falkland peats are distributed across upland and lowland areas, with the majority of this area affected by sheep grazing. In some areas managed burning, drainage (by dredging stream channels) and ploughing of topsoil are practiced in order to increase cover of palatable grasses, in place of shrubs and other bog species. An assessment for the Falkland Islands Government (Otley et al., 2008) estimated that 80% of the original 22,000 ha of tussock grass, which is the natural vegetation of coastal peat areas, have been lost to grazing. The figure for the two main islands is even higher, with an estimated 98% loss in 1988, although some restoration has taken place since that time. The very low rainfall and high wind speeds make the islands susceptible to wind erosion, particularly in upland areas, where eroding 'peat banks' are widespread, and also to wildfire. Domestic peat cutting occurs close to settlements, but is limited in extent given the low population. Other land-use impacts appear minor. Overall, it appears that much of the Falkland peat area could be classed as either grass-dominated modified bog, shrub-dominated modified bog (analogous to heather-dominated areas in the UK) or eroded modified bog.

Aldiss, D.T., Edwards, E.J. 1999. The geology of the Falkland Islands. British Geological Survey Technical Report WC/99/10. British Geological Survey, Keyworth.

Burton, R.G.O. 2015. Soils of the Falkland Islands. Interpretation by R.G.O. Burton based on the solid and drift geological maps of the British Geological Survey.

Otley, H., Munro, G., Clausen, A., Ingham, B. 2008. Falkland Islands State of the Environment Report 2008. Falkland Islands Government and Falklands Conservation, Stanley. <http://www.fig.gov.fk/epd/index.php/environment/19-environment/60-state-of-the-environment-report-2008>

Smyth, M.A., Taylor, E., Artz, R., Birnie, R., Evans, C., Gray, A., Moxey, A., Prior, S., Dickie, I., Bonaventura, M. 2015. Developing Peatland Carbon Metrics and Financial Modelling to Inform the Pilot Phase UK Peatland Code Project NR0165. Report to Defra.

## Peru

### National symposium on the sustainable management of Peruvian peatlands

Debbie Graus and Mónica Maldonado ([mmaldonado@corbidi.org](mailto:mmaldonado@corbidi.org))

The Center for International Forestry Research (CIFOR) organized on 9 April in Lima the "National symposium on the sustainable management of Peruvian peatlands: scientific context and institutional framework". In this event the participants discussed about the sustainable management, politics, threats and some experiences related with peatlands.

The symposium started with two presentations: "Peatlands: from global perspective to Peruvian reality" by Kristell Hergoualc'h from CIFOR and "Advances and challenges for the sustainable management of aguajales (*Mauritia flexuosa*) peatlands in the Amazon" by Jhon del Águila from the Research Institute of Peruvian Amazon (IIAP); the first one was about the importance of peatlands as carbon pool and for the ecosystem services they provide. The next three speakers talked about the regulatory and institutional framework of the peatlands: Jose Alvarez (Environmental Ministry of Peru MINAM) affirmed that 90% of the "aguaje" *Mauritia flexuosa* products brought to the market come from illegally cut trees and only about 20 communities have authorization for their harvest. Jeronimo Chiarella from the MERESE-FIDA Project spoke about the mechanism of retribution for environmental services, which seeks the conservation of high Andean ecosystems through payment for environmental services through agreements between contributors and payers. The following presentations were about the biophysical characterization and threats of peruvian peatlands: "Advances in the mapping of the Peruvian peatlands from the Andes and the Amazon, challenges to reach a national map." by Erick Lilleskov from United States Forest Service (USFS), "Storage and carbon cycle in peatlands in the Andean ecosystem" by Rodney Chimner from Michigan Technological University, "Biophysical characterization and conflicts in the use of Andean and coastal peatlands" by Monica Maldonado from CORBIDI-IMCG, and "The ecology, threats and degradation of peatlands in the Peruvian Amazon" by Tim Baker from University of Leeds. Rodney Chimner made a comparison between peatlands in Colorado and the Andes, the latter have a greater maximum peat depth, a higher peat accumulation rate and the amount of methane produced is approximately nine times lower than in Colorado peatlands. Also, according to his estimations (unpublished research) the high



*Rodney Chimner beginning his presentation about “Methods for the restoration of peatlands and their potential for the reduction of greenhouse gas emissions” (Lima, Peru). Photo: Debbie Graus.*

Andean Peruvian peatlands are as important as our Amazonian Peatlands in carbon, stored in less area. Monica Maldonado stated that the biggest threats to the degradation of these ecosystems are the foreign livestock, overgrazing, peat extraction for growing media, drainage, mining and infrastructure construction (where the hydrology is altered).

The last group of presentations were about the sustainable management and recovery of peatlands: “Methods for the restoration of peatlands and their potential for the reduction of greenhouse gas emissions” by Rodney Chimner, “Initiatives of restoration and conservation of peatlands in the country” by Oscar Angulo from National Superintendence of Sanitation Services (SUNASS), and “Ecological conditions and restoration of high Andean peatlands” by Beatriz Fuentealba from The National Institute of Glacier and Mountain Ecosystem Research. Rodney Chimner talked about restoration techniques with ditches and revegetation by natural regeneration, plant transplant (including the use of those grown in greenhouses), and others. Some examples of restoration were showed. Oscar Angulo talked about the relationship between the wetlands and watersheds and the importance of peatlands conservation to water security.

After the presentations a panel discussed the opportunities for the conservation and sustainable management of peatlands. Panellists were José Alvarez (General Director of Biological Diversity of the Ministry of the Environment), Beatriz Fuentealba (Director of research of INAIGEM, the National Institute of Research in Glaciers and Mountain Ecosystems), Tony Mori (Manager of the Regional Environmental Authority of Loreto), Dennis del Castillo (Director of the Pro Forest Program from the Research Institute of the Peruvian Amazon) and Erick Garcia (National Water Authority). They talked about providing advice to communities to strengthen local management skills, establish a definition of peatland for our country and from there introduce peatlands into environmental policies, the election of an arbitrator at the institutional level for the management of peatlands. They concluded that the management of these ecosystems must be given a broader scope than the local because they depend on water and this is not managed locally. Furthermore more peatlands must be conserved as protected natural areas.



Discussion panel with from left to right: Yolanda Guzmán Guzmán (moderator, from PROFONANPE), Erick García, Dennis del Castillo, Tony Mori, Beatriz Fuentealba and José Alvarez). Photo: Debbie Graus.

Finally, Juan Fernando from United Nations Environment made the last presentation about the Global Peatlands Initiative, a new initiative to save peatlands as the world's largest organic carbon reserve. In several presentations, the necessity and importance to have a national definition of peat and peatlands was stated. Nevertheless, it seemed that the government institution or office responsible for such a task is not clear (or wasn't present). We are looking forward to a fast official solution, something that is needed to enhance conservation /protection /management initiatives and also to take the proper measurements against illegal peat extraction and damage of peatlands in the High Andes and the Amazonian.

## Peatland conservation relevant papers April 2019

Collected by Hans Joosten: [joosten@uni-greifswald.de](mailto:joosten@uni-greifswald.de)

1. Torfowiska alkaliczne w Polsce – zróżnicowanie, zasoby, ochrona: <https://www.depot.ceon.pl/handle/123456789/16725>
2. Les sphaignes de l'Est du Canada: <https://www.editionsjfd.com/fr/products/view/les-sphaignes-de-l-est-du-canada-cle-d-identification-visuelle-et-cartes-de-repartition/>
3. The limits to northern peatland carbon stocks: <https://www.biogeosciences-discuss.net/bg-2019-76/>
4. CO<sub>2</sub> and CH<sub>4</sub> budgets and global warming potential modifications in *Sphagnum*-dominated peat mesocosms invaded by *Molinia caerulea*: <https://www.biogeosciences-discuss.net/bg-2019-82/>
5. Variations of dissolved greenhouse gases (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O) in the Congo River network overwhelmingly driven by fluvial-wetland connectivity: <https://www.biogeosciences-discuss.net/bg-2019-68/>
6. Half Earth or Whole Earth: What can Natura 2000 teach us?: <https://academic.oup.com/bioscience/article/69/2/117/5266282>
7. Draft Ramsar Technical Report on peatland restoration and rewetting methodologies in Northern bogs: <https://www.ramsar.org/es/document/strp22-doc72-draft-ramsar-technical-report-on-peatland-restoration-and-rewetting>
8. A novel mesocosm set-up reveals strong methane emission reduction in submerged peat moss *Sphagnum cuspidatum* by tightly associated methanotrophs: <https://www.biorxiv.org/content/10.1101/536268v1>
9. Natural isotopes identify changes in groundwater flows affecting wetland vegetation in the Drentsche Aa brook valley, the Netherlands: <http://www.jeeng.net/NATURAL-ISOTOPES-IDENTIFY-CHANGES-IN-GROUNDWATER-FLOWS-AFFECTING-WETLAND-VEGETATION,99743,0,2.html>
10. Implementation of an emission inventory for UK peatlands: [http://uk-air.defra.gov.uk/reports/cat07/190411135\\_UK\\_peatland\\_GHG\\_emissions.pdf](http://uk-air.defra.gov.uk/reports/cat07/190411135_UK_peatland_GHG_emissions.pdf)
11. Holocene vegetation, climate, and carbon history on Western Kodiak Island, Alaska: <https://www.frontiersin.org/articles/10.3389/feart.2019.00061/full>
12. Wetland carbon storage controlled by millennial-scale variation in relative sea-level rise: <https://www.nature.com/articles/s41586-019-0951-7>
13. A User Guide for Valuing the Benefits of Peatland Restoration: <https://icasp.org.uk/resources/peat-resources/>
14. Toward a mechanistic understanding of “peat collapse” and its potential contribution to coastal wetland loss: <https://esajournals.onlinelibrary.wiley.com/doi/10.1002/ecy.2720>

15. Carbon dioxide and methane emissions from peat soil in an undrained tropical peat swamp forest: <https://link.springer.com/article/10.1007/s10021-019-00376-8>
16. Материалы конференции «X Галкинские Чтения» Санкт-Петербург 4 – 6 февраля 2019 г./ Proceedings of the «X meeting in memoriam of Ekaterina Alexeevna Galkina» Saint-Petersburg 4 – 6 February 2019: [https://www.binran.ru/files/publications/Proceedings/Proceedings\\_Mire/X\\_Galkinskii\\_Chteniya\\_Proceedings.pdf](https://www.binran.ru/files/publications/Proceedings/Proceedings_Mire/X_Galkinskii_Chteniya_Proceedings.pdf)
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