



IMCG Bulletin: May-June 2016



www.imcg.net

Word from the Chair

Dear mire friends

The IMCG Bulletin has recently experienced some delay, therefore this issue is covering both May and June 2016. Remember: We depend on our members to keep the Bulletin relevant and call on all of you to contribute by providing news on mires and peatlands in your region or country. A short paragraph and a photo or two are more than adequate.

There is some great news from our journal's Editor-in-Chief: see the section below on *Mires and Peat*.

As you are aware our field symposium will be taking place in Malaysia in August 2016. This issue is full of news on peatlands and management challenges in Southeast Asia and provides excellent background to the upcoming symposium.

Please send your July contribution by 31 July 2016 to Piet-Louis Grundling at peatland@mweb.co.za.

Mires and Peat

News from *Mires and Peat*

The big news from *Mires and Peat* is that Thomson Reuters recently published the 2015 Impact Factors (IF), and **our IF has increased by about one-third, from 0.806 to 1.095**. We have also moved up in the ranking of environmental sciences journals, from the 14th to just above the 25th percentile. OK, that means three-quarters of indexed journals in the category have a higher IF, but also that we came out with higher IF than one-quarter of our 'competitors'. Many, many thanks to all of our authors, editors and reviewers who have stuck with the journal and helped – and continue helping – to make it all happen.

Of course, we continue to publish across the whole spectrum of topics that peatland researchers all around the world want to write about. New articles published up to the end of June are:

- **Controls on plot-scale growing season CO₂ and CH₄ fluxes in restored peatlands: Do they differ from unrestored and natural sites?** (M. Strack, J. Cagampan, G. Hassanpour Fard, A.M. Keith, K. Nugent, T. Rankin, C. Robinson, I.B. Strachan, J.M. Waddington and B. Xu) [Volume 17 Article 05]
- **Greenhouse gas dynamics in degraded and restored tropical peatlands** (J. Jauhainen, S.E. Page and H. Vasander) [Volume 17 Article 06]
- **Characterisation of Holocene plant macrofossils from North Spanish ombrotrophic mires: vascular plants** (M. Souto, D. Castro, X. Pontevedra-Pombal, E. Garcia-Rodeja and M.I. Fraga) [Volume 18 Article 11]

- **Do testate amoebae communities recover in concordance with vegetation after restoration of drained peatlands?** (E. Daza Secco, T. Haapalehto, J. Haimi, K. Meissner and T. Tahvanainen) [Volume 18 Article 12]
- **Palaeoecological studies as a source of peat depth data: A discussion and data compilation for Scotland** (J. Ratcliffe and R.J. Payne) [Volume 18 Article 13]
- **Concentrations, loads and yields of organic carbon from two tropical peat swamp forest streams in Riau Province, Sumatra, Indonesia** (H.M. Yupi, T. Inoue, J. Bathgate and R. Putra) [Volume 18 Article 14]
- **Area estimations of cultivated organic soils in Ireland: reducing GHG reporting uncertainties** (J. Donlan, J. O'Dwyer and K.A. Byrne) [Volume 18 Article 15]

Mires and Peat is the free and open-access peer reviewed journal of IMCG and the International Peatland Society (IPS). Find it online at <http://mires-and-peat.net/>. And, of course, send your new manuscripts on **any** topic relating to mires, peatlands and peat to the Editor-in-Chief o.m.bragg@dundee.ac.uk, for:

- friendly editorial management by eminent peatland specialists (O.M. Bragg, R.S. Clymo, S.N.P. Glatzel, A.P. Grootjans, P.M. Jones and J.O. Rieley);
- minimal publication delays (the average turnaround time from submission to publication is currently less than 230 days); and
- free global exposure of your work in an ISI journal.

News from our regions

New Zealand news

Bev Clarkson Clarksonb@landcareresearch.co.nz

Good news for mire research

New funding for freshwater research has recently been announced in the 2016 NZ Government Budget in recognition of a national need to maintain freshwater science skills, knowledge, and new research. The funding will be allocated as 'core funding' to research organisations to provide certainty of future funding, which is not provided under the current open contestable funding model. The national wetlands programme, comprising researchers from Landcare Research, National Institute of Water and Atmospheric Research, Waikato University, Maori groups, and the Department of Conservation, together with numerous stakeholders and partners will receive \$533k p.a. for 6 years. Projects cover research on mire function and restoration, which includes development of indicators and tools to manage and restore mires and their values. Priority restoration projects are: (1) Otakairangi Bog, the largest remaining raised bog in Northland, but modified by surrounding agricultural development; (2) Whangamarino Wetland, a fen under threat from invasion by grey willow; and (3) Moanatuatua Bog, a small hydrologically modified remnant that may have tipped from being a carbon sink to a source.

Southeast Asia

Noor Azura Ahmad azura@gec.org.my and Hans Joosten joosten@uni-greifswald.de

Workshop on Implementing the ASEAN Guidelines on Peatland Fire Management

A Train-the-Trainer Workshop for implementing the ASEAN Guidelines on Peatland Fire Management was held on 30 May – 1 June 2016 in Pontianak, West Kalimantan, Indonesia. The workshop aimed to (i) develop and conduct a preliminary training course (with field demonstrations) for ASEAN Member States (AMS) on peatland fire management based on the ASEAN Guidelines on Peatland Fire Management; (ii) at the conclusion of the

training, revise the training materials in line with participants' feedback; and (iii) circulate and encourage the use of the endorsed peatland fire management training materials within AMS. The workshop was conducted with two days of indoor presentations and experience sharing among the participants and one-day field visit and simulation. The organisation of this training workshop was undertaken with generous funding from the ASEAN Haze Fund and the National Environment Agency of Singapore with administrative support from the ASEAN Secretariat. The Global Environment Centre (GEC) Malaysia led the preparation of the training materials and the technical facilitation of the workshop with inputs from a number of technical specialists. The workshop was attended by nominated representatives from relevant government agencies from Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Singapore and Thailand who have been working on peatlands and fire management.

Important conclusions of the workshop:

- The drafted training materials will require each Member State to translate and localize some examples of the training to make it relevant to their specific needs.
- Each Member State is at a different stage of fire management development and does not uniformly need to have the same level of fire management capacity. It will be important for each Member State to recognize its needs and set up its system to an appropriate scale and capacity.

The workshop trained the participants to be national trainers to promote the endorsed ASEAN Guidelines on Peatland Fire Management in respective AMS. It also provided a platform for the participants to share their existing practices on peat forest and land fire management measures implementing in the respective country through country case studies. It is hoped that these national trainers will be the resource person to conduct localized training programmes for relevant line agencies on managing peatland fire

Indonesia to restore Kalimantan peatlands this year

The Indonesian Peatland Restoration Agency (BRG) plans to restore 679,573 hectares of peatlands in Central Kalimantan. The restoration will be carried out within five years, especially in the heavily degraded areas, such as Pulang Pisau District, said Nazir Foad, the BRG boss, during a dissemination of the BRG work program at Central Kalimantan Governor office on the 19 of May. Central Kalimantan is one of the top seven priority provinces in the program of peatland restoration.

Based on the BRG data of total 2,681,441 hectares of peatlands to be restored, the biggest area is Sumatra with 1,972,749 hectares and Riau with 938,485 hectares. Other peatlands in South Kalimantan, West Kalimantan, Jambi and Papua will also be restored.

<http://en.tempo.co/read/news/2016/05/20/055772636/Govt-to-Restore-Kalimantan-Peatlands-This-Year>

Five donor countries pledge 130 million dollar for peatland restoration in Indonesia



Fire warning on burned peatland in South Sumatra
(Photo: H. Joosten May 2016)

The Chairman of the Indonesian Peatland Restoration Agency (BRG) Nazir Foad has announced that there are currently five donor countries that help the process of peatland restoration in Indonesia. “As for aid from donor countries, so far [we have] Norwegia, the United States, England, Japan and Germany as donors. Some [other donors] are still being discussed further,” Nazir said in South Jakarta on May 31. At present, the total funds given by the donor countries to support peatland restoration reaches 130 million US dollars. The amount of funds given by each donor countries differs, so does the program period. More than two million hectares of peatlands that were burned in 2015 will be restored.

Nazir believes that more donors will help the restoration of burned peatlands in Indonesia. “If they [new donors] are to earmark the funds this year, they will certainly need parliament’s approval etc, similar [process] with APBN [Indonesia’s state budget], so possibly in 2017 we will see how many [will become new donors],” he added.

<http://en.tempo.co/read/news/2016/06/01/206775776/5-Donor-Countries-Give-Indonesia-Funds-for-Peatland-Restoration>

Indonesia opens global peatland research centre in Riau

The Indonesian Peatland Restoration Agency (BRG) is turning the Meranti Islands and Bengkalis regencies in Riau (Sumatra) into centres of global tropical peatland restoration research. A number of agencies and local and foreign universities have been invited to do research as part of an effort to protect peatland in Riau, which covers a total area of 5.7 million hectares. BRG head Nazir Foad said implementation of the research centre commenced through cooperation with a number of universities and institutions in Japan, such as Kyoto University, Hokkaido University, the Research Institute for Humanity and Nature (RIHN), the Japan International Cooperation Agency (JICA) and the National Institute of the Humanities (NIHU). At the local level, BRG is cooperating with 11 universities, eight of which are located in provinces on Sumatra and in Kalimantan that have peatland and are prone to forest and land fires.

“The sharing of knowledge is expected to provide the best solution and formulation for peatland restoration,” Nazir said recently on the sidelines of the Peatland Restoration and Fire Prevention joint symposium.

Riau has been picked as a research centre because almost half of the areas targeted by the government for restoration are found in this province. “Of the target of 2 million hectares of peatland to be restored, 900,000 hectares are in Riau, which has the largest peatland area compared to other provinces.

Riau Governor Arsyadjuliandi Rachman asked the BRG to focus on developing native peatland commodity crops in accordance with the culture of the surrounding community. “Sago plants are very suitable and their hydrological area reaches 83,0000 hectares. In addition to restoring peatland, sago also has economic value for the local community,” he said. Although newly started, he expressed confidence that peatland restoration in Riau, the biggest sago producer in Indonesia, could be achieved in the next five to six years. “The Riau provincial administration has been making efforts to promote and popularize sago as an alternative staple food and encourage sago-based products, such as noodles, cookies and sago rice.”

<http://www.thejakartapost.com/news/2016/06/08/govt-opens-global-peatland-research-center-riau.html>

Firms responsible for peatland conservation

Much of the burden for the restoration of damaged peatland areas, which often cause forest fires and haze, lies heavily on the private sector in control of concession areas as 531 companies operate in restoration areas. A map by the Indonesian Peatland Restoration Agency (BRG) reveals that 2.7 million hectares of peatland have to be restored over the next five years to prevent recurring land and forest fires. Out of 2.7 million ha, 2.3 million, or 87 percent, are in concession areas.

“So the restoration work in these concession areas will be done by private companies. What we do is just supervise and facilitate,” BRG planning and cooperation deputy Budi S. Wardhana said. The BRG has been able to map out which companies are responsible for the restoration of areas that have been damaged by years of peatland fires. Most of them are agroforestry companies, with 217 palm oil companies operating across 589,000 ha of restoration area. Furthermore 109 pulp and paper companies operate across 609,000 ha as well as 109 companies that produce natural forest products across 59,000 ha.

The pulp and paper company with the biggest restoration responsibility is PT Bumi Mekar Hijau (BMH), a supplier to the Sinar Mas Group, one of Indonesia’s largest conglomerates. The company was at the centre of a controversial court verdict last year, when the Palembang District Court in South Sumatra rejected a Rp 7.8 trillion lawsuit against BMH. BMH was sued by the government for its alleged criminality in the burning of 20,000 ha of its concession area in Ogan Komering Ilir, South Sumatra, in 2014.

However, presiding judge Parlas Nababan said that BMH was not guilty as it was still able to plant acacia trees in the concession after it was burned up, which, according to him, meant that there could not have been any environmental damage. While BMH won in court, it is still being held responsible for restoring 95,000 ha of damaged peatland that fall within its concession area, Budi said. Another company, PT Bumi Andalas Permai, a major supplier to giant pulp and paper company Asia Pulp & Paper (APP), has to restore 91,500 ha of peatland, out of the 193,000 ha that it owns. “Only 33,000 ha are managed well,” Budi said. Another major pulp and paper producer, PT Riau Andalan Pulp and Paper (RAPP), has to restore 27,000 ha out of the 213,000 ha that it owns in peatland areas. “They manage 90,000 ha well,” said Budi.

The BRG also found that more than 800,000 ha of damaged peatland areas are located in peat domes, which should have been protected. “Peat domes shouldn’t have been opened up for concessions but almost all of them have been converted to industrial forest concessions. So that’s a mistake,” BRG head Nazir Foad said.

Therefore, the BRG will instruct concession owners to return the function of peat domes, which are used to preserve large amounts of water. If the companies are not willing to restore their damaged peatland areas, then the government could revoke their permits as stipulated by Environmental and Forestry Ministerial Regulation No. 77/2015, Nazir said. In June/July the BRG will summon all responsible companies and instruct them to restore their concessions. They will also give companies the opportunity to refine the restoration map.

“We are opening ourselves up. If our data needs to be verified or corrected, we will support that process,” said Nazir.

<http://www.thejakartapost.com/news/2016/06/10/firms-responsible-peatland-conservation.html>



Budi S. Wardhana at the Paludiculture Workshop in Jakarta, May 2016 (Photo: Hans Joosten)

Indonesia plans peat monitoring system to curb choking haze

Indonesia is planning a hi-tech monitoring network to protect peatland at the centre of last year's raging fires that cloaked Southeast Asia in toxic haze. The fires in 2015 were the worst for years as an El Nino weather phenomenon created tinder-dry conditions. The hardest-hit areas were peatland on Sumatra and the Indonesian part of Borneo, which become highly flammable after being cleared of vegetation and drained to make way for palm oil and pulpwood plantations.

Jakarta in January set up an agency to oversee the restoration of 2.6 million hectares of peatland in the next five years to try to prevent future fires. It is part of a broader push to stop a repeat of the devastating blazes. President Joko Widodo has introduced other measures to protect peatland and banned the use of new land for palm oil operations.

Restoration of peat involves damming enormous canals built to drain the peat, replanting vegetation and replacing lost water. Monitoring devices will be installed in the peat to ensure restoration is being properly carried out, said Peatland Restoration Agency head Nazir Foad. "We are going to install monitoring tools, sensors, that will send us the data real time through the Internet so companies are fully aware that their restoration action is being monitored," he told AFP in an interview on June 28. Roughly half the peat earmarked for restoration is on companies' concession land and they are responsible for carrying out the improvement work, with guidance from the agency. The agency will restore peatland on government- and community-owned land.

The monitoring stations will include an underground sensor and rain gauge to check if peat is retaining water after rainfall, allowing authorities to work out whether drainage canals have been properly closed off. The sensors will send regular updates to a control centre near Jakarta which is linked to government departments, Foad said. A test monitoring device was installed on Sumatra last month and the agency hopes eventually to have hundreds across the country.

Foead conceded that only "very small steps" had been taken so far in restoring peat, but was optimistic the body would be able to fulfil its task. He said he did not believe 2016 would see a repeat of last year's fires as authorities were better prepared.

<http://www.aseanpeat.net/newsmaster.cfm?&menuid=11&action=view&retrieveid=3318>

Five palm oil firms in Indonesia to face lawsuit over forest fires

Date: 28-Jun-2016

The Environment and Forestry Ministry of Indonesia is finalising its civil lawsuits against five palm oil companies allegedly responsible for last year's forest fires that killed 19 people, mostly children, and caused US\$16 billion economic losses.

The Indonesian government is gearing up to take some of the alleged perpetrators of last year's massive fires to court for the first time. Amid public pressure, the government decided to hand down administrative sanctions to 23 companies suspected of being behind the land and forest fires last year. These companies had their land-clearing licenses either revoked or frozen for their failure to act to prevent the fires, which led to the worst pollution in the region for almost two decades. While the government has started legal action in response to the fires, it has not taken any cases to court yet.

According to the ministry's environmental dispute settlement director Jasmin Ragil Utomo, the process of taking last year's forest fires to court takes a long time because there are numerous steps that the government has to take. "There is field work, laboratory investigations, calculations and processing the cases through evidence. This takes a long time because the evidence is scattered not only in companies but also in other institutions," he told The Jakarta Post. Jasmin refused to name the five companies.

The Indonesian Forum for the Environment (Walhi) legal and executive policy manager Muhnur Satyahaprabu said the lawsuits were not comparable to the scale of last year's fires. "Five companies is too few. If the names of the companies behind last year's forest fires were published, the number could be dozens," he told the Post.

Strict liability is recognised by Article 88 of Law No. 32/2009 on the environment, which stipulates that any person whose actions, business and/or activities use hazardous or toxic waste (B3), produce and/or manage toxic waste and/or cause serious threats to the environment is fully responsible for the damage done, without their liability having to be proven. Law experts said the article could be used to immediately put responsibility for the fires on the shoulders of the culprits, even though there was no proof that the fires on their concessions had been caused by them or their negligence.

Each of the five companies allegedly burned between 500 and 2,000 hectares of land in Palembang, South Sumatra, Jambi and South Kalimantan.

<http://www.aseanpeat.net/newsmaster.cfm?&menuid=11&action=view&retrieveid=3312>

Singapore companies form alliance to tackle haze pollution and deforestation

Singapore's top firms are coming together to drive an increase in the amount of sustainable palm oil used in Singapore with the goal of delivering products that have not contributed to haze pollution or deforestation to consumers. The Singapore Alliance for Sustainable Palm Oil is supported by five founding members, who together produce some of the most popular everyday brands used by Singaporeans. It was WWF-Singapore who first engaged the founding members with the idea of the alliance and the conservation organisation will remain on the steering committee to support and guide members as the alliance grows. The five founding members are Unilever, Danone, Ayam Brand, IKEA and Wildlife Reserves Singapore.

The formation of the Singapore Alliance on Sustainable Palm Oil was prompted by the public outcry over 2015's prolonged haze pollution. Through the We Breathe What We Buy campaign, which reached over 20 million people globally, WWF-Singapore was able to raise awareness of the link between the slash and burn practices used in the production of palm oil and haze pollution, and enlist public support for a switch to sustainable palm oil. "The alliance sends a clear signal to consumers about which companies are committed to sustainability", says Elaine Tan, CEO, WWF-Singapore. "This is a timely opportunity for NGOs and businesses to work together towards transforming the palm oil industry".

The mission of the alliance is to work towards 100% sustainable palm oil in Singapore. If this happens it would mean consumers could then be certain the products they buy were not contributing to deforestation or haze pollution. Palm oil is in around 50% of the goods on supermarket shelves and currently it is not possible for consumers to identify which products contain sustainable palm oil, if any.

<http://www.aseanpeat.net/newsmaster.cfm?&menuid=11&action=view&retrieveid=3306>

Sovereignty, jurisdiction and international law

In 2014, Singapore enacted the Transboundary Haze Pollution Act, which came into force on Sept 25, 2014. Essentially, the Act makes it an offence for any entity to engage in conduct, or to condone conduct, causing or contributing to haze pollution in Singapore. Apart from criminal liability, the Act also creates statutory duties and civil liabilities. The Act is unusual in targeting conduct that occurs outside Singapore, and which causes or contributes to haze pollution in Singapore. Foreign Minister Vivian Balakrishnan, speaking in Parliament in August 2014, said the Act "is not intended to replace the laws and enforcement actions of other countries, but it is to complement the efforts of other countries to hold companies to account". He added that "we, in Singapore, cannot simply wait and wishfully hope that the problem will be resolved on its own. The Singapore Government would want to send a strong signal that we will not tolerate the actions of errant companies that harm our environment and put at risk the health of our citizens".

There were mixed reactions to this law in Indonesia. Some parties expressed support for Singapore's law. Others, including some Indonesian ministers, criticised the law on the grounds that it was a violation of Indonesia's sovereignty. A typical comment was: "As it happened in Indonesia, it is part of Indonesia's jurisdiction. If Singapore could easily try Indonesian citizens, it could be a violation of Indonesia's sovereignty." The Singapore Government responded that the law was consistent with international law. It was drafted with the advice of international law experts and did not violate the sovereignty of any country.

The issue is whether it is permissible for a country to enact legislation that would have extraterritorial reach. The answer to this question turns on a proper understanding of the established principles of international law. The general principle in international law is that states exercise jurisdiction on a territorial basis, namely, over persons, property and acts within its territory. However, there are exceptions to this principle. One exception is a group of crimes that attract universal jurisdiction. Examples are piracy, genocide, torture, slavery, crimes against humanity and serious war crimes. For instance, under this exception, it is permissible for an Indonesian or Singapore court to try persons accused of committing piracy, such as Somali pirates, even if the acts of piracy occurred outside their respective maritime jurisdictions.

Another exception involves crimes committed outside a state's territory but which have harmful effects on the state concerned. There are many examples, including bribery and corruption, terrorism, cybercrimes and cyber attacks and pollution. Such an exercise of extraterritorial jurisdiction can be justified under several principles of international law, notably the "objective territoriality principle".

To argue that states cannot exercise such jurisdiction would mean that states are powerless to deal with a variety of situations where individuals, groups and corporations can, with impunity, carry out acts outside their territories which have harmful effects and consequences on them. Indeed, the United Nations International

Law Commission (ILC) 2006 Report stated that "today, the exercise of extraterritorial jurisdiction by a state with respect to persons, property or acts outside its territory has become an increasingly common phenomenon". This phenomenon is due largely to increased movements of persons beyond national borders, the growing number of multinational corporations, globalising of the world economy, increased transnational criminal activities, increased illegal migration and increased use of the Internet for legal or illegal purposes. To that, we will add the growing interdependence between nations, and the undeniable fact that we live in a fragile environmental ecosystem, where harmful polluting activities in one country can cause serious harm, not only to its own people but to the people of other countries. The nature of transboundary offences necessarily means that multiple states do have a legitimate interest in bringing the offenders to justice.

It cannot therefore be said that any of these states would be acting in contravention of the offending state's sovereignty by enforcing its own laws. Such a violation of sovereignty would arise in some cases, such as, for example, if a state were to send its firefighters into the territory of another state, without its consent, to put out a fire. Clearly, Singapore's legislation does not seek to do this. The law is enforced only when the party accused of causing the harmful act enters Singapore and comes within Singapore's jurisdiction. Indonesia should welcome Singapore's law, which complements Indonesia's efforts to hold accountable those errant companies and individuals that have acted in blatant disregard of the serious harm they have caused to the people of Indonesia as well as those of its neighbours.

<http://www.aseanpeat.net/newsmaster.cfm?&menuid=11&action=view&retrieveid=3303>

See further: Indonesia will not allow its citizens to be prosecuted under Singapore laws:

<http://www.channelnewsasia.com/news/singapore/indonesia-will-not-allow/2866306.html>



Endless oil palm plantations on drained peatland in South-Sumatra (Photo Hans Joosten, June 2016)

No more fires in Indonesia?

Commentary by Erik Meijaard, a Jakarta-based conservation scientist (20-Jun-2016).

Between June and November 2015, Indonesia experienced one of its worst fire and haze episodes ever. The most recent estimates indicate that some 116,000 individual fires burned up to 6.5 million acres of scrub and forest land in 2015. Air quality during high burning periods in villages near the fires regularly exceeded the maximum level of 1000 on the international Pollutant Standard Index (PSI)—this is more than three times the amount considered “hazardous.” In the wider region, some 110 million people were affected by the haze. The World Bank estimated that the total economic costs of the fires in 2015 in Indonesia exceeded US \$16 billion. This estimate is more than double the damage and losses from the 2004 tsunami, and equal to about 1.8% of Indonesia’s Gross Domestic Product.

The societal and economic impact figures from the fires clearly drew the attention of the Indonesian government. Indonesian fires are nothing new though, and several Indonesian presidents have spoken out about fighting them. So far, none has successfully stopped this annual curse. Indonesian fires are nearly all man-made. People burn land to open it up for agriculture, or to claim it for speculation on future land deals. Such burning has been illegal for years. Obviously, law enforcement was not working.

I was talking a few months ago to Dr. Hadi Daryanto, the Director General of Social Forestry in the Indonesian Ministry of Environment and Forestry. He explained why Indonesia has so far been unsuccessful in preventing major fire events. “First”, he said, “there is insufficient government funding to prevent fires. Second, fire prevention is not a priority for local-level government at the province or district level. And third, local elites benefit from using fires in land speculation.” He suggested that this time, however, there was going to be real change in Indonesia’s management of fires. I thought that sounded pretty promising.

On a recent trip to Central Kalimantan, I decided to check out what was going on. Impressively, during 12 days in Kalimantan with plenty of hot clear days, I saw exactly one small fire. On clear dry days when normally skies would turn hazy and several smoke plumes would be visible, now all was a fresh blue. Something seemed to be different.

Local government officials explained what was now different compared to previous years. Mr Muriansyah, the head of a local forestry police unit, told me that “every responsible person in government now has real-time information on their phones about the location of fire hotspots, which are detected by satellite”. He further explained that through direct instruction from the President and the Minister of Environment and Forestry, every detected fire now requires an immediate response from a team of army, police, forestry guards, and fire fighters. Apparently several people, who had been caught by such teams near a fire, had already been prosecuted and sentenced to jail terms or fined. Probably most importantly, however, as explained by the Head of the Forestry and Agriculture office in the East Kotawaringin District, there is a threat that every senior army, police, or local government official who has fires in their area will be demoted. If that indeed happens, this would be a powerful means to reduce fires, because careers are at stake.

One thing I was worried about is what local people might think. Many people use fire for small-scale agriculture. How are they supposed to clear land without access to land clearing equipment? Interestingly, a few discussions I had with traditional farmers suggested that they were not too concerned. Mr. Arifin, a local farmer in the inland town of Pahirangan, explained that they were ok with and well-informed about the new government regulations. “Instead of burning the land in May, at the start of the dry season”, he said, “I will now have to clear land a few months earlier, allowing the vegetation to decompose and turn into good soil”. “It is not a problem”.

It is too early to say whether Indonesia’s present efforts to prevent future fire disasters will succeed. Looking at fire risk maps of the region, the land is now becoming quite fire prone, but there are only a handful of fires in Kalimantan. Whatever the outcome, this is a promising and important initiative from Indonesia. I hope that the

Indonesian government gets the local support and help from the international community to further support the country in resolving its burning issue.

<https://news.mongabay.com/2016/06/no-more-fires-in-indonesia/>

Short notes

* Nearly half of the 8.4 million hectares of peatland protected under the 2011 forestry moratorium has been damaged or converted to other uses. In the first week of June, the Indonesian forestry ministry announced a regulation to provide legal status for these areas. Areas turned into small-scale plantations and agricultural lands by local people will be rezoned as social forestry, while areas converted by large companies could be investigated and sanctioned: <https://news.mongabay.com/2016/06/indonesia-to-rezone-3-8m-of-protected-peat-that-was-damaged-or-converted/>

* Firms responsible for 2015 fires go largely unpunished:

<http://www.thejakartapost.com/news/2016/06/14/firms-responsible-2015-fires-go-largely-unpunished.html>

* 8.7 gigatons of carbon: the damage that Southeast Asia's damaged peatlands could do:

<http://www.labroots.com/trending/plants-and-animals/3366/8-7-gigatons-carbon-damage-southeast-asia-s-damaged-peatlands>

* Peat expert Suwido Limin dies from cancer after fighting Indonesian fires:

<https://news.mongabay.com/2016/06/peat-expert-dies-from-cancer-after-fighting-indonesian-fires/>

* Five ways to restore Indonesia's tropical peatlands: <https://www.weforum.org/agenda/2016/05/5-steps-to-restore-indonesia-tropical-peatlands/>

EUROPE

Integrate peatlands into EU policies -Workshop on better solutions to manage peatlands in the EU framework

A few months after conclusion of the Paris agreement on Climate Change, a workshop in Brussels on 19th April 2016 addressed the importance of peatlands and organic soils in the European Union and its Member States for biodiversity and climate change. "Peatland ecosystems are still suffering from the Cinderella syndrome", Professor Hans Joosten, Greifswald University stated. "They contain disproportionately more organic carbon than all other terrestrial ecosystems and emit enormous amounts of CO₂ when drained." Furthermore, they provide habitats for specially adapted and rare species strictly protected by the EU's bird and habitat directives. And yet, when it comes to policymaking – climate policymaking, in particular – peatlands remain largely out of sight. This leads to poor protection and conservation. Within the project 'Peatlands in the EU Regulatory Environment' (<http://www.succow-stiftung.de/peatlands-in-the-eu-regulatory.html>)] the Michael Succow Foundation, Partner in the Greifswald Mire Centre (<http://www.greifswaldmoor.de/home.html>), and Silvestrum have assessed the impact of EU law — on the environment, agriculture, and energy — on peatlands and organic soils in Member States, with special emphasis on case studies for Poland and Estonia. They brought together senior officers from the EU Commission, Member States' governments, NGOs, research institutes and cooperates to call for joint action to better integrate peatland management and conservation into EU policies as instruments to improve their status across Member States.

Weber's Augstumal monography published in Lithuanian

In 2002 John Couwenberg translated C.A. Weber's „Über die Vegetation und Entstehung des Hochmoores in Augstumal [On the vegetation and development of the raised bog of Augstumal]" (in today's Lithuania) into

English and thus made it accessible to a wider audience. This year Lithuanian mire scientists issued a Lithuanian language edition. The monograph was published by the cooperation of Lithuanian fund for nature and scientists of Nature research centre in the framework of the EU LIFE project “Restoration of Aukštumala raised bog in Nemunas delta regional park” (<http://www.aukstumala.lt/en/>). Via contacts to the Greifswald Mire Centre, Germany (<http://www.greifswaldmoor.de/home.html>) the Lithuanian LIFE project team is now also in contact with the family of C.A. Weber (1856-1931). The family welcomed the new edition warmly and plans to visit Aukstumala bog in the near future.



Axel (grandson of C.A.) and his wife Heidi Weber (both left) looking in the Augstumal monograph in the peatland library of the Greifswald Mire Centre, June 2016 (Photo: Tobias Dahms)

Global

Agriculture in INDCs: the Cinderella syndrome is still alive...

FAO's latest publication on 'The Agriculture Sectors in the Intended Nationally Determined Contributions: Analysis' is now available at <http://www.fao.org/3/a-i5687e.pdf>. This working paper is open for public comment. Please send your comments to INDC-Analysis@fao.org by 15 July 2016. The analysis provides:

- An overview of how agriculture sectors (crops, livestock, fisheries and aquaculture, as well as forestry) have been included in the Intended Nationally Determined Contributions (INDCs) to the UNFCCC
- The role of these sectors in meeting national mitigation and adaptation goals as well as delivering synergies and co-benefits
- A basis on which to identify priorities for international support for climate action in the agriculture sectors.

Out of the 145 countries that mention LULUCF as mitigation option, 21 countries point to forests and land use in the broad sense without naming specific inventory subcategories. Among those that include information on the type of land, almost 95% refer to forests, while significantly less refer to grasslands and rangelands (<40%), croplands (<40%) and wetlands and/or peatlands (<15%).

Among the countries that refer to LULUCF in their mitigation efforts, 85% mention activities related to “forestry”, “forest land” or “land use change”. Less prominent are grasslands or rangelands (11%), wetlands (9%), croplands (9%) and peatlands (e.g. Azerbaijan).

It is very clear that most countries still do not realize the mitigation options of peatlands and surprising that peatland is chosen as a mitigation effort by Azerbaijan, a country that only has a peatland area of a few hundred hectares...

UNEP takes action for peatlands

The UK Met Office says carbon dioxide levels have seen a surge in recent months as a result of the El Niño climate phenomenon, which has warmed and dried the tropics. These conditions not only limit the ability of forests to draw CO₂ from the atmosphere but also trigger huge fires that inject extra carbon into the air.

The 2015 peatland fires in Indonesia are estimated to have generated more CO₂ on some days than average daily emissions for the whole of the USA. They also caused an estimated \$16.1 billion in overall economic damage (twice the value of the Aceh Tsunami Reconstruction), affected 43 million people, hospitalized 550,000 and killed 24 people.

Peatlands cover 3-5 per cent of the Earth's surface but store over 30 per cent of all soil carbon. The area of peatland currently classified as drained and degrading covers less than 0.4 per cent of the global land surface but is responsible for 5 per cent of global anthropogenic emissions. Peatlands are therefore disproportionately important to the climate system.

The Global Peatlands Initiative UNEP, in collaboration with partners, is responding to this crisis through the Global Peatlands Initiative (GPI) which aims to:

- Provide an updated overall assessment of the status of peatlands and their importance for the achievement of the Paris Agreement on climate change
- Mobilize countries and partners, including the private sector, to respond to the urgent need to improve awareness of the value of peatlands and the threats they face
- Work in three pilot countries (Indonesia, Peru and the Republic of Congo) to build the knowledge base and develop options for sustainable peatland management.

“A lot of people are working on peat in their own way, but we want to bring together partners in the GPI so that they can agree on the very best ways to maximize peat’s contribution to implementing the 2015 Paris Agreement on climate change,” says UNEP peat expert Jaime Webbe. Active partners in GPI include the European Space Agency, GRID-Arendal, Wetlands International, the Food and Agriculture Organization of the UN (FAO), UNEP-World Conservation Monitoring Centre, the World Resources Institute, and the governments of the three pilot countries. In addition, GPI has a number of advisory and technical partners as well as partners in the three pilot countries.

The project will focus on tropical peat, and work towards developing and piloting key policy recommendations and approaches to more effectively address the drivers of peat loss and degradation. Awareness-raising among key policy- and decision-makers, and South-South cooperation, including within the private sector, will be critical elements in order to ensure that the lessons learned from peatland management in Southeast Asia can be transferred to Central Africa and Latin America where peatlands are facing increasing development pressure. This exchange of information will target sustainable peat strategies in the 25 countries responsible for 95 per cent of peat emissions.

UNEP will be responsible for overall project coordination; input on sustainable peatland management, peatland restoration, engagement of the private sector, and identification of innovative financing mechanisms (through UNEP Finance Initiative).

Later in 2016, UNEP will produce its annual Emissions Gap Report which will explore options and opportunities to address climate change through reducing emissions and increasing carbon stocks. This year’s report will also focus on peat. REDD+ and forested peatlands The United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries ([UN-REDD](#)) was launched in 2008 and builds on the convening role and technical expertise of FAO, the United Nations Development Programme, and UNEP.

The UN-REDD Programme and its 64 partner countries look to forests for climate change solutions. But the peat lying below the forests is not being forgotten. The UN-REDD Programme is already supporting actions targeting peat, including through an assessment of fiscal incentives for Indonesian palm oil production and the mapping of carbon stocks and great ape habitat in key forested peat areas; and key commodity producers operating on or near peatlands are being engaged in REDD+ planning and decision-making through stakeholder engagement.

Peatlands provide a number of ecosystem services including water cycling, and mitigation of droughts and floods. They provide a source of food, and are important for local livelihoods, providing timber and non-timber forest products and other goods and services including energy. In tropical areas, peatlands are being deforested and drained at an unprecedented rate, largely for agriculture, especially oil palm and pulp wood plantations.

Policymakers trying to implement the 2015 Paris Climate Agreement will need to look hard at how peatlands are managed in order to curb emissions. While the launch of the peatland hotspot map the Paris climate talks in 2015 marked the start of work to develop an online Global Peatland Atlas, better mapping is needed before restoration and conservation can begin in some areas, and new partners will need to be mobilized and engaged to make progress towards sustainable peatland management.

GPI hopes to bring partners together and spur action on peat by governments and the United Nations.

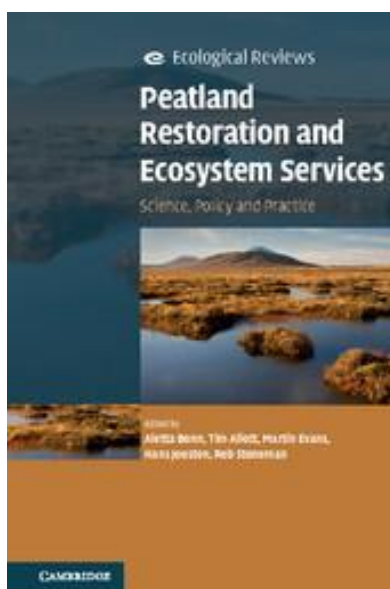
Carbon emissions aren't the only consequence of losing peat forests. In the peatlands of Sumatra and Kalimantan in Indonesia, deforestation and drainage increases local flooding and leads to higher flood peaks and lower baseflow. Furthermore, peatlands tend to have very high biodiversity value hosting endangered species such as orangutans and the Sumatran Tiger.

Drained and drying peatlands are exposed to subsidence, which in the case of coastal peatlands can lead to saltwater intrusion leading to the permanent loss of agricultural production. For example, subsidence may cause almost the entire area of coastal peatland in Southeast Asia (250,000 km²) to be lowered to near sea level and become susceptible to frequent or permanent flooding.

<http://www.unep.org/stories/Climate/Peat-fires-stoke-global-warming.asp#sthash.VHFSqHeF.dpuf>

BOOKS

New book on „Peatland Restoration and Ecosystem Services“



„Peatland Restoration and Ecosystem Services: Science, Policy, and Practice“ (www.cambridge.org/9781107025189) is the title of the first comprehensive book on peatland restoration and ecosystem services. It has been published recently as part of the Ecological Reviews series of Cambridge University Press. The book is 493 pages strong and unites contributions of world class experts to examine the topic from an ecological, social and economic perspective.

Written for a global audience of environmental scientists, practitioners and policy makers, as well as graduate students from natural and social sciences, this interdisciplinary book provides vital pointers towards wise use of peatlands and includes a variety of inspiring case studies. „Peatland Restoration and Ecosystem Services“ is also available as eBook (<http://www.ebooks.com/2603142/peatland-restoration-and-ecosystem-services/bonn-aletta-allott-tim-evans-martin-joosten-hans-s/>).

Peatland conservation relevant papers May/June 2016

Collected by Hans Joosten: joosten@uni-greifswald.de

1. Global Soil Biodiversity Atlas: <https://globalsoilbiodiversity.org/?q=node/271>
2. Eutrophication triggers contrasting multilevel feedbacks on litter accumulation and decomposition in fens: <http://onlinelibrary.wiley.com/doi/10.1002/ecy.1482/abstract?campaign=wolacceptedarticle>
3. Permafrost warming in a subarctic peatland – Which meteorological controls are most important?: <http://onlinelibrary.wiley.com/doi/10.1002/ppp.1862/abstract?campaign=woletoc>
4. Routledge Handbook of Ecosystem Services: <https://www.routledge.com/Routledge-Handbook-of-Ecosystem-Services/Potschin-Haines-Young-Fish-Turner/p/book/9781138025080>
5. Peat soil bulk density important for estimation of peatland fire emissions: <http://onlinelibrary.wiley.com/doi/10.1111/gcb.13364/abstract?campaign=wolacceptedarticle>
6. The effect of pore structure on ebullition from peat: <http://onlinelibrary.wiley.com/doi/10.1002/2015JG003289/abstract?campaign=wolacceptedarticle>
7. Carbon emission along a eutrophication gradient in temperate riverine wetlands: effect of primary productivity and plant community composition: <http://onlinelibrary.wiley.com/doi/10.1111/fwb.12780/abstract?campaign=wolearlyview>
8. Programm Niedersächsische Moorlandschaften: <http://www.umwelt.niedersachsen.de/download/107028>
9. Assessing the influence of historic net and gross land changes on the carbon fluxes of Europe: <http://onlinelibrary.wiley.com/wol1/doi/10.1111/gcb.13191/full>
10. Impacts of land use, restoration, and climate change on tropical peat carbon stocks in the twenty-first century: implications for climate mitigation: <http://link.springer.com/article/10.1007/s11027-016-9712-1>
11. The role of fire in UK peatland and moorland management: the need for informed, unbiased debate: <http://rstb.royalsocietypublishing.org/content/371/1696/20150342>
12. PESERA-PEAT: a fluvial erosion model for blanket peatlands: <http://onlinelibrary.wiley.com/doi/10.1002/esp.3972/abstract>
13. Should harvest residues be left on site in peatland forests to decrease the risk of potassium depletion?: <http://www.sciencedirect.com/science/article/pii/S0378112716302274>
14. Seagrass meadows are threatened by expected loss of peatlands in Indonesia: <http://onlinelibrary.wiley.com/doi/10.1111/gcb.13392/abstract?campaign=wolacceptedarticle>
15. IPS Annual Report 2015: <http://www.peatlands.org/sites/default/files/ipsannualreport2015small.pdf>
16. A worldwide assessment of greenhouse gas emissions from drained organic soils: <http://www.mdpi.com/2071-1050/8/4/371>
17. Effects of extreme experimental drought and rewetting on CO₂ and CH₄ exchange in mesocosms of 14 European peatlands with different nitrogen and sulfur deposition: <http://onlinelibrary.wiley.com/doi/10.1111/gcb.13228/abstract?campaign=woletoc>
18. Influences and interactions of inundation, peat, and snow on active layer thickness: <http://onlinelibrary.wiley.com/doi/10.1002/2016GL068550/abstract?campaign=woletoc>
19. Peat decomposition – shaping factors, significance in environmental studies and methods of determination; a literature review: <https://www.degruyter.com/view/j/logos.2016.22.issue-1/logos-2016-0005/logos-2016-0005.xml>
20. Biogeography of the cosmopolitan sedges (Cyperaceae) and the area-richness correlation in plants: <http://onlinelibrary.wiley.com/doi/10.1111/jbi.12802/abstract?campaign=wolearlyview>
21. Environmental processes derived from peatland geochemistry since the last deglaciation in Dajiuhu, Shennongjia, central China: <http://onlinelibrary.wiley.com/doi/10.1111/bor.12168/abstract?campaign=woletoc>
22. Rising floodwaters: mapping impacts and perceptions of flooding in Indonesian Borneo: <http://iopscience.iop.org/article/10.1088/1748-9326/11/6/064016/meta;jsessionid=25E19D7C8F4012033C0A7DEB81FE9042.c3.iopscience.cld.iop.org>

23. Transformations of landscape and peat-forming ecosystems in response to late Holocene climate change in the western Antarctic Peninsula:
<http://onlinelibrary.wiley.com/doi/10.1002/2016GL069380/abstract?campaign=wolacceptedarticle>
24. Origin of a boreal birch bog woodland and landscape development on a warm low mountain summit at the Carpathian–Pannonian interface: <http://hol.sagepub.com/content/26/7/1112?etoc>
25. Peatlands. A summary of research outputs supported or facilitated by the Environmental Change Programme of the Scottish Government’s Portfolio of Strategic Research 2011-2016:
[http://www.hutton.ac.uk/sites/default/files/files/publications/Peatlands final web reduced size.pdf](http://www.hutton.ac.uk/sites/default/files/files/publications/Peatlands%20final%20web%20reduced%20size.pdf)
26. Fire carbon emissions over maritime southeast Asia in 2015 largest since 1997:
http://www.cifor.org/publications/pdf_files/articles/AGaveau1603.pdf