



The International Mire Conservation Group (IMCG) is an international network of specialists having a particular interest in mire and peatland conservation. The network encompasses a wide spectrum of expertise and interests, from research scientists to consultants, government agency specialists to peatland site managers. It operates largely through e-mail and newsletters, and holds regular workshops and symposia. For more information: consult the IMCG Website: <http://www.imcg.net>

IMCG has a Main Board of currently 13 people from various parts of the world that has to take decisions between congresses. Of these 13 an elected 5 constitute the IMCG Executive Committee that handles day-to-day affairs. The Executive Committee consists of a Chairman (Jennie Whinam), a Secretary General (Hans Joosten), a Treasurer (Philippe Julve), and 2 additional members (Tatiana Minaeva, Piet-Louis Grundling).

Seppo Euroala, Richard Lindsay, Viktor Masing (†), Rauno Ruuhijärvi, Hugo Sjörs, Michael Steiner and Tatiana Yurkovskaya have been awarded honorary membership of IMCG.

Editorial

Indeed. It is only some weeks after the former, but the end of the year challenged us to produce a new Newsletter, particularly to get our desk cleaned from notes and piles. Accordingly news and book reviews form the major part of this issue. It shows that the mire conservation and research community is alive and kicking. And that is good to know with a new year ahead, in which we have to elaborate and implement the IMCG Action Plan.

Next to news and books this issue contains the first information on the IMCG events in Georgia and Armenia in 2008 and the first convocation of an IMCG supported symposium on West-Siberian peatlands and the carbon cycle in Khanty-Mansiysk in August 2007.

We plan to publish a next Newsletter at the end of March 2007. Please continue sending all your discussion contributions, news, publications, etc. to us. Deadline for the next Newsletter is March 23, 2007.

For information, address changes or other things, contact us at the IMCG Secretariat. In the meantime, keep an eye on the continuously refreshed and refreshing IMCG web-site: <http://www.imcg.net>

And last but not least: we wish you a happy and fruitful 2007!

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REGISTER

Please fill out the IMCG membership registration form.

Surf to <http://www.imcg.net> or contact the secretariat.

A note from the Chair

This month has not started well for mires, with unusual weather patterns taking their toll. In the northern hemisphere, there are news reports (reaching even Tasmania) from areas as varied as the Arctic, Russia and Austria about the absence of snow so far this winter – potentially bad for the mires, many of which suffered very dry conditions over the summer. In Australia, the bushfire season has started very early. For example, in Tasmania the major bushfires over the past 100 years have all occurred in either February or March. This year we have experienced fires around Hobart in October and fires are currently burning out of control along the east coast of Tasmania. On mainland Australia there have been countless fires started by lightning strikes and several others started by arsonists. Some of the peatland

restoration work undertaken on the Bogong High Plains in Victoria after the 2003 bushfires has been burnt again. Such big fires so close together, on top of a hotter and drier than average year, are not good for mire conservation. These issues highlight the importance of protecting mires that are pristine and/or of conservation significance.

I would like to take this opportunity to thank the IMCG Secretariat (Hans Joosten, Secretary-General, John Couwenberg, secretary and Michael Trepel, webmaster) who ensure that IMCG members are kept informed throughout the year on issues relating to mire research and conservation.

With best wishes for the festive season,
Jennie

IMCG 2008 Georgia/Armenia Congress Tour Schedule

Izolda Matchutadze and Irakli Goradze have prepared a first plan for the 2008 IMCG events in Georgia (and Armenia). They envisage the following schedule:

27 August 2008: Day 1: arrival in the Kolkheti Lowland South Kolkheti province, Ajara, Georgia; Welcome and registration. Accommodation: Batumi. It is strongly recommended to come via Turkey (Trabzon) or Batumi International Airport.

28 August 2008: Day 2: Visit Chorokhi Delta Ramsar site and Managed Reserve, Ajara. Wetland of International Importance, 5 km from Batumi
Main habitats: Typhetum, Phragmitetum, open water dominated by *Trapa colchica*. Rare Red List species: *Trapa colchica*, *Trapa maleevi*, *Marsilea quadrifolia*, *Butomus umbellatus*.

12.00 h: lunch followed by free time

19.00 h: welcome dinner

Accommodation: Batumi

29 August 2008: Day 3: Drive from Batumi (one hour by bus) to the Kolkheti Lowlands, Visit Kolkheti National Park: Grigoleti and Maltakva drained peatlands; open water dominated by *Trapa colchica*.

12.00 h: lunch

Afternoon: Imnati percolation mire, Guria Region (core zone), Georgia)

20.00 h: dinner (special very tasty Mengrelian meal - with spices or without)

Accommodation: Kobuleti.

30 August 2008: Day 4: Visit Kolkheti National Park Administration; 12.00 h: lunch

Afternoon: visit lake Paliastomi and Pichori river (Samegrelo Region): Kolkheti relict forest dominated



Yellow Azalea (Rhododendron luteum), a typical aspect of Georgian mires

by *Pterocarya pterocarpa*, *Quercus imeretina*, *Quercus hartwissiana*, *Hibiscus ponticus*, *Kostaletskia pentacarpa*

20.00 h: dinner

Accommodation: Kobuleti

31 August 2008: Day 5: Kolkheti Lowland (two hour from Kobuleti by bus), visit Anaklia Churia mire
12.00 h: lunch
Afternoon: Nabada mire, Samegrelo Region, Georgia
20.00 h: dinner
Accommodation: Poti

1 September 2008: Day 6 (four hour drive): Visit Borjomi-Kharagauli National Park.
12.00 h: lunch
Afternoon: Drive (two hours) by Land cruiser to the Bakuriani high mountain *Sphagnum* mire (Imereti Region). Enjoy the beautiful *Picea orientalis* and *Abies nordmanniana* area, subalpine and alpine vegetation and the *Sphagnum* mire.
20.00 h: dinner
Accommodation: Bakuriani

2 September 2008: Day 7: Drive (four hour by bus) to the Javakheti lake system in the Javakheti Plateau proposed National Park and Ramsar Site. Region, Georgia
Accommodation: Javakheti

3 September 2008: Day 8: Drive to Armenia, Lake Arfi

4 September 2008: Day 9: Lake Sevan, Armenia

5 September 2008: Day 10: six hour by 4WD through the Ajara-Shavsheti and Arsiani high mountains (Lesser Caucasus)
13.00 h: lunch
Afternoon: Khulo Goderzi hill. Enjoy the beautiful high mountain landscape and especially the local Ajarian meal. Continue to the destination by 4WD.
Accommodation: Oladauri

6 September 2008: Day 11: visit Chirukhi mire (2700 m asl) in the Arsiani-Shavsheti mountains, Shuakhevi District, Ajara, Georgia
Accommodation in local communities "Iailebi" lodges, Chirukhi

7 September 2008: Day 12: Drive back to Batumi
12.00 h.: lunch (Keda District)
Afternoon: drive to Kobuleti
20.00 h: dinner
Accommodation: Kobuleti

8 September 2008: Day 13: Visit Ispani mire complex
Accommodation: Kobuleti

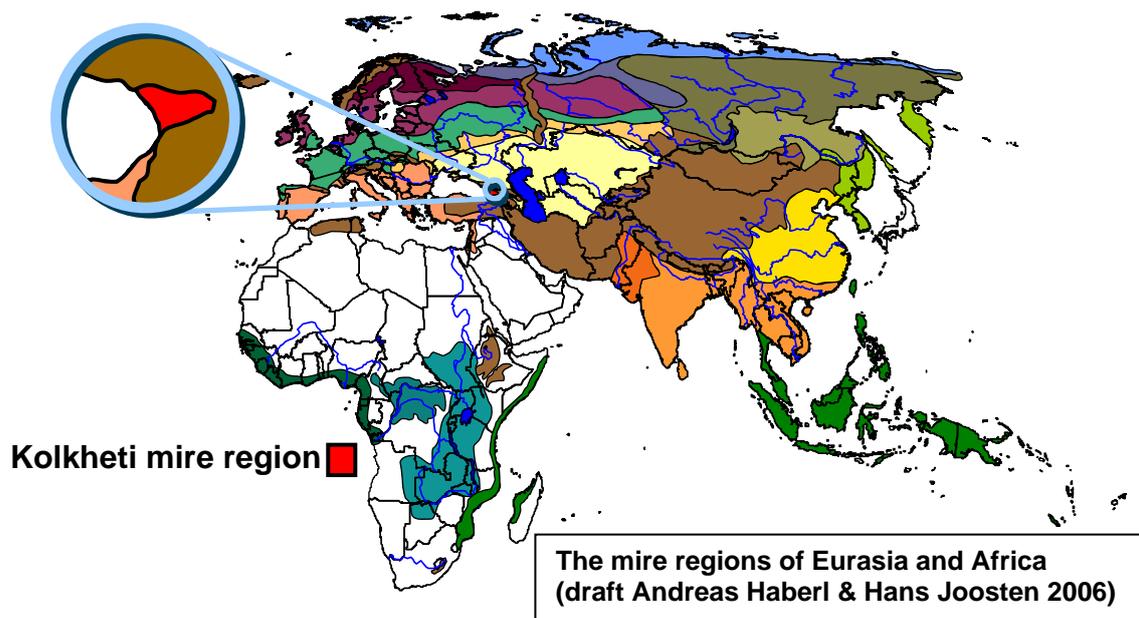
9 and 10 September 2008: Scientific Symposium Kobuleti
Closing evening

11 September 2008: IMCG General Assembly
Afternoon: Departure from Georgia

The estimated costs are about 700 EUR for the whole package and 200 EUR if you only attend the Scientific Symposium.

For more information and preliminary registration: Izolda Matchutadze: tchaobi@yahoo.com

For more information on the Kolkheti mires, see IMCG Newsletters 2003/3: 19–23, and 2006/1: 6–9 and Haberl, A., Kahrmann, M., Krebs, M., Matchutadze, I. & Joosten, H. 2006 The Imnati mire in the Kolkheti lowland in Georgia. *Peatlands International* 2006/1: 35–38.





Scheduled route



Ispani II, the World's first described percolation bog: species poor, no surface patterning, but unique

West Siberian peatlands and carbon cycle: past and present: The 2th International Field Symposium

August 26-30, 2007, Yugra State University, Khanty-Mansiysk, Russia

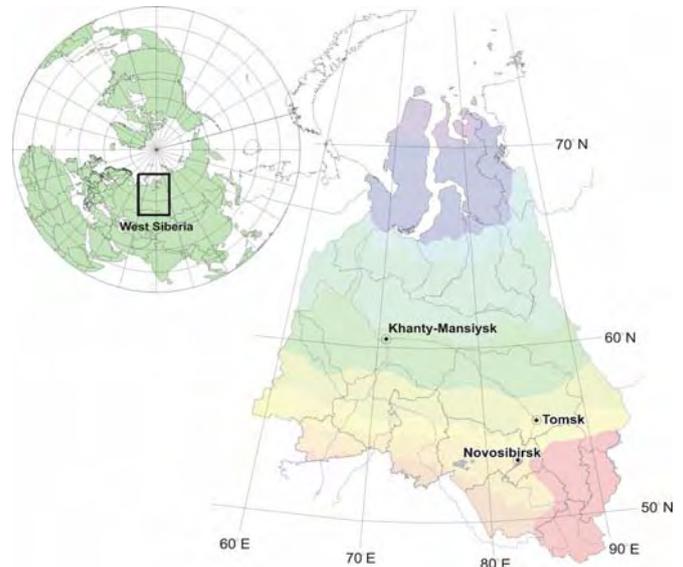
This symposium is organized by the Yugra State University (YSU), the Institute of Soil Science and Agrochemistry, Siberian Branch of Russian Academy of Sciences (ISSA SB RAS), Tomsk State University (TSU) and the Administration of environmental protection of the Yugra Region, with support of the Russian Fund of Fundamental Investigation, the Ministry of Natural Resources of the Russian Federation, the Administration of the Yugra Region, the International Mire Conservation Group (IMCG), the Peatland Conservation Project of Wetlands International, Russian Program, the NSF Peatland Ecosystem Analysis and Training Network (PEATNET), and the INTAS-Project «The effect of climate change on the pristine peatland ecosystem and (sub)actual carbon balance of the permafrost boundary zone in “Subarctic Western Siberia, CASUS”.

The goal of the 2nd International Field Symposium is to present research results and to promote the exchange of expertise in the field of paludification, conservation of natural functions of mires and paludified forests, ecological monitoring of mires, the role of mires in the global carbon cycle as well as the assessment of the effects of anthropogenic peatland exploitation and reclamation. The symposium will focus on peatlands and paludified forests of the Northern Hemisphere with respect to 1) Paleoecology, 2) Actuo-ecology and biodiversity, 3) Primary production and peat accumulation, 4) Carbon cycling and sequestration, 5) Climate change and permafrost, 6) Monitoring and modeling, 7) Effects of anthropogenic activities.

The official languages of the Symposium will be Russian and English

Scientific excursions offered will include:

- a 3-days pre-symposium excursion to Surgut Polesye (ridge-pool mires of the Middle Taiga);
- a 1-day mid-symposium excursion to Khanty-Mansiysk neighbourhood: “Moroshkovyi ostrov” near the Irtysh-river visiting a mesotrophic forested mire, oligotrophic bog complexes, raised bog (“ryam”) and an eutrophic mire;
- a 1-day mid-symposium excursion to “Kukushkiny ozera” visiting patterned ombrotrophic bog complexes (ridge-hollow complexes) and raised bogs (“ryams”) of the Middle Taiga;
- a 4-days post-symposium excursion to Tobolsk Biological Station RAS visiting bog and fen mires of the Southern Taiga;
- the Ramsar site “Verkhnee Dvuoobje” with a visit to the zakaznik “Yelizarovskiy” in the wide floodplain of the Ob River.



Khanty-Mansiysk, in the centre of Western Siberia, is one of the fast developing towns of Russia. It developed from a settlement that was founded in 1637 on the right bank of the Irtysh River not far from its confluence with the Ob River. Today the town of Khanty-Mansiysk has the features of the capital-center of active business life. Nice modern houses, hotels and sport accommodations are mixed with historical wooden houses. New motorways are under construction.

Deadlines: March 30, 2007: Registration and abstract submission

May 30, 2007: Decision of acceptance for oral presentation or poster and mailing of the second (final) circular

July 30, 2007: Submission of extended abstracts of accepted oral papers

Abstracts of posters and extended abstracts of papers will be included in the Symposium Proceedings available for participants before the symposium starts.

Registration fee: Participants from Europe, USA, Canada, Australia, and Japan 300 Euro, post-graduate students from these countries 150 Euro. Participants of Russia and NIS 1500 Rubles. The registration fee includes refreshments, mid symposium field trips, and proceedings. Costs for pre- and post symposium field trips will be given in the second circular.

For more information:

<http://www.edu.ugrasu.ru/conferences/?cid=2>

Peatland restoration manual

After having received a lot of contributions and constructive criticism on the first draft Peatland Restoration Manual (see IMCG Newsletter 2006/1), Martin Schumann has prepared a final draft. This will in the beginning of January 2007 be placed on the IMCG website (www.imcg.net) for a last round of consultation, before it will be delivered to the UNEP-GEF project "Integrated management of peatlands for biodiversity and climate change".

We hope that you will find time to glance over it and send us your critical comments, additions, and ideas.

After presentation to the UNEP-GEF project we want to extend the manual to a peatland *restopedia*, a web-based instrument that can actively be accessed to share knowledge and experience worldwide.

For more information, contact Martin Schumann: Martin.Schumann@uni-greifswald.de

Free access to environmental journals

A new initiative provides scientists in developing countries with free access to online environment journals with the aim of reducing the information gap between developed and developing countries. The Online Access to Research in the Environment (OARE) scheme has been launched by the UN Environment Programme (UNEP) and US-based Yale University.

Online Access to Research in the Environment (OARE), an international public-private consortium coordinated by the United Nations Environment Programme (UNEP), Yale University, and leading science and technology publishers, enables developing countries to gain free access to one of the world's largest collections of environmental science literature.

Over one thousand scientific journal titles owned and published by over 200 publishing houses, scholarly societies, and scientific associations are now available in 70 low income countries. Another 36 countries will be added by 2008.

Research is provided in a wide range of disciplines, including biotechnology, botany, climate change, ecology, energy, environmental chemistry, environmental economics, environmental engineering and planning, environmental law and policy, environmental toxicology and pollution, geography, geology, hydrology, meteorology, oceanography, urban planning, zoology, and many others.

<http://www.oaresciences.org/>

UPCOMING EVENTS

See for additional and up-to-date information: <http://www.imcg.net/imcgdia.htm>

Interdisciplinary Symposium on Carbon in Peatlands

15-18 April 2007, Wageningen, the Netherlands

for more information visit:

<http://www.peatnet.siu.edu/CC07MainPage.html>

SWS-Europe, 2nd Annual Meeting

31. May - 03. June 2007, Trebon, Czech Republic

for more information visit <http://www.enki.cz>

IALE World Congress: 25 years Landscape Ecology: Scientific Principles in Practice

08-12 July 2007, Wageningen, The Netherlands

for more information visit <http://www.iale2007.com>

Biannual Conference of the German Peat Society

20-23 July 2007, Bad Muskau, Germany

for more information visit www.dgmtv.de

2nd International Field Symposium West Siberian peatlands and carbon cycle: past and present

26-30 August 2007, Khanty-Mansiysk, Russia

for more information surf to:

<http://www.edu.ugrasu.ru/conferences/?cid=2>

Monitoring the Effectiveness of Nature Conservation Programmes

03-06 September 2007, Birmensdorf, Switzerland

for more information visit:

http://www.wsl.ch/event_07/monitoring/

WETPOL 2007 – 2nd International Symposium on Wetland Pollutant Dynamics and Control

16-20 September 2007, Tartu, Estonia

for more information visit:

<http://www.geo.ut.ee/wetpol2007>

Regional News

News from the EU Citizens' Guide to European Complaint Mechanisms

The new Citizens' Guide to European Complaint Mechanisms developed by CEE Bankwatch Network in cooperation with a number of European NGOs, now available on the Bankwatch website at:

www.bankwatch.org/guide/complaint_mechanisms

The aim of the Guide is to assist and stimulate individuals and NGOs, especially in the CEE region, to more often and more effectively use institutional mechanisms at the European and international level. The Guide is built on the existing experience of civil society in involving international bodies in ensuring the protection of the environment and the effective use of public funds on the national level. Pressure from outside can be fundamental for cases where local citizens are fighting for their right to a sustainable and healthy future against multinational companies and financial institutions.

Initially the Citizens' Guide will give an overview of seven complaint mechanisms: the European Parliament's Petition Committee, the European Commission - on Infringement of EU law, the European Court of Justice, the Aarhus Convention, the Bern Convention, the EU Ombudsman and OLAF, the European Anti-Fraud Office. However, in the near future it is planned to include the possibilities for appealing under the ESPOO Convention, the EU Court of Auditors and via the recourse mechanisms of the international financial institutions.

The guide is planned as a living document and will be regularly updated, based on comments and new cases submitted by citizens and NGOs.

The guide is also available to download in pdf.

Infringement procedures

The European Commission announced the opening and/or pursuit of numerous infringement proceedings for non-compliance with EU environment legislation. The Commission has sent a first written warning to Warsaw (Poland) for non-compliance with the Habitats Directive (92/43/EEC) and the Wild Birds Directive (79/409/EEC) in the context of eight road projects linking north-east Poland to the Via Baltica (Helsinki-Warsaw corridor). The Rospuda mire is directly threatened by the Via Baltica (see elsewhere in this Newsletter and on the IMCG Website www.imcg.net).

The Commission has also sent Poland a reasoned opinion (the second phase of infringement proceedings) in view of the inadequate number of protected sites under the Natura 2000 network.

News from Poland Expressway crossing Rospuda valley

The European Commission is taking legal action against Poland in two cases of infringement of EU nature protection law. Both cases concern the EU-wide network of important protected wildlife sites and natural areas, Natura 2000. Poland will receive a first written warning for going ahead with eight road projects which encroach upon designated or potential Natura 2000 areas. These projects are linked to the Via Baltica Helsinki-Warsaw road corridor in the North-East part of the country, and include the Augustow bypass. In addition, Poland will be given a final written warning for failing to propose a sufficient number of sites and areas for Natura 2000. While all the possible means of protest against building the Augustow bypass through the Rospuda valley at the national level seemed to be exhausted, the above information has lit a light of hope in the Rospuda mire defenders.

The question is now if the EU warning is a strong enough reason for the Polish Government to resign from the investment. The building procedure is at the moment at the stage of issuing a building licence by the Voivode of Podlasie. The Voivode is waiting for the opinion of the Polish Minister of the Environment concerning latest NGO letters of complaint and now also for the decision of the Polish Government concerning the EU warning.

Hopefully the response of the Polish Government will follow up the latest opinion of the Polish President, to whom a letter of concern with a protest against building a road through the Rospuda mire signed by ca. 155 thousand Polish citizens was addressed. The President said: "Making a decision on building the Augustow bypass and a route of this road is a task of Government and Local Autonomy and I respect it as a President. However if there has been made any mistake that evokes so much emotions, if important issues have been left unaddressed, it will be worth thinking it all through again. Our present decisions, made even with the best of intentions, must not harm either people or the environment. Let the road, which is going to be build there, connect and not divide. The road is to lead not only to Augustow, but also to Helsinki. It is an important part of a united Europe, where I would like to see such a pearl of nature like the Rospuda river valley." Let us hope now that the Government will turn the President's opinion into action.

News from Germany

Decision Support System for nitrogen retention in peatlands online

Peatlands fulfil several functions; one of them is their high potential to reduce nitrogen concentrations in downstream water bodies. This function only operates when groundwater or river water from upstream basins is allowed to flow through or on top of the peat layer. However, due to drainage and river deepening and straightening the water and matter exchange between peatlands and their surrounding is severely disturbed and processes supporting water quality improvement operate only at a reduced intensity.

At the moment water authorities in Europe are preparing river basin management plans to achieve a good ecological status in their water bodies, which is required by the European Water Framework Directive until 2015. To achieve a good ecological status in many surface and coastal water bodies a reduction of the nitrogen concentration is required. One option to reduce nitrogen concentrations is to restore wetland systems. The decision support system (DSS) WETTRANS was developed to quantify the effect of land use and water management changes on nitrogen retention of minerotrophic peatlands. The DSS calculates (i) the amount of additional retained nitrogen for different scenarios in comparison to the present situation and (ii) the cost effectiveness of the proposed measures. Thus the results can be used by water authorities to justify the inclusion of peatland restoration projects in river basin management plans. The decision support system WETTRANS is available for free on the Internet at: <http://umwelt.landsh.server.de/servlet/is/79021/> To get an account to use the system and for further information, contact Michael Trepel at: mtrepel@lanu.landsh.de

News from the UK

RSPBs 200th Reserve

Sutton Fen in the Norfolk Broads has been secured as the RSPB's 200th nature reserve. The new nature reserve, by the River Ant near Stalham, has been bought following a successful appeal to raise £1.5 million. Sutton Fen is one of the finest examples of unpolluted valley fen in Western Europe and one of the most important nature conservation sites in the UK.

Sutton Fen is a haven for plants once found all across the Broads but now restricted to this one site. Bitterns, marsh harriers, garganey and Cetti's warbler are among the birds which flourish here, alongside a nationally important population of insects, including Norfolk Hawker dragonflies and swallowtail butterflies. Cranes are known to have bred nearby and the RSPB hopes they can be encouraged to use the site in the future.

Other projects by RSPB continue and thousands of wintering birds are set to benefit from the creation of a huge new wetland along the Ribble estuary in Lancashire. The RSPB will begin work in March to re-flood 170 hectares of farmland at Hesketh Out Marsh, which was reclaimed from the sea 25 years ago. The result will be a mix of saltmarsh, saline lagoons and muddy creeks, providing a wetland haven for thousands of wintering birds such as black-tailed godwits, dunlins, avocets, redshanks and wigeons.

The 380-hectare Saltholme site is situated near the mouth of the River Tees in north east England and within easy reach for millions of people. The RSPB is working with the Teesside Environmental Trust to transform the former industrial site into a new kind of nature reserve. With around 100,000 visitors expected every year, the site will be one of the largest tourist attractions in the region, offering people the chance to get close to nature.

Lewis wind farm

The European commission believes that proposals to build more than 180 turbines on Lewis Island are flawed, because developers have failed to assess other less sensitive sites across Scotland. The Lewis turbines, each more than 150 metres high, would stretch for more than 40 kilometres through peatland protected under European Union conservation laws. The area is home to eight species of Europe's most endangered birds, including golden eagles, red-throated divers and merlin.

On 12 December, Lewis Wind Power (LWP), a joint venture between Amec and British Energy, submitted revised plans to the Scottish executive for the £500m project, reducing the number of turbines from 234 to 181 to lessen the impact on wildlife. The company said it had restricted the search for sites to the Outer Hebrides because one of the primary aims of the project was to provide social and economic benefits to the islands. The plans are now being scrutinised by the European commission.

Officials in Brussels believe that the company must assess other possible locations across Scotland to comply with the habitats directive, which demands that other sites are considered when species and protected tracts of land are threatened by development. The decision could have implications for other developments in Scotland, such as the wind farm at Waterhead Moor in north Ayrshire, which threatens a special protection area for hen harriers.

It means LWP could be forced to spend tens of thousands of pounds and many months assessing other sites. But if commission officials conclude that Lewis is not the best location, they could demand that the plans are scrapped. The Scottish executive would risk being taken to the European Court of Justice and could face heavy fines if it ignores the EC's warning. Last October the Portuguese government was fined undisclosed costs for building a motorway across a

special protection area for birds and failing to consider alternatives.

More than 4,000 people have opposed the Lewis proposal because they believe that the huge turbines will ruin protected peatland and could kill hundreds of rare birds. Local residents have formed a campaign group amid fears that the wind farm will damage the local economy by costing the island up to £10m in lost tourism revenue and blight its picturesque countryside.

Source: The Sunday Times - Scotland

See also: <http://www.proact-campaigns.net/>
http://windfarmsandbirds/lewis_objection.html
 and www.rspb.org.uk/scotland/action/lewis/index.asp

News from South Africa **Preliminary Launch of Wetlands Inventory**

Several groundbreaking wetlands statistics have emerged from the first phase of the National Wetlands Inventory, which offers the most solid South African wetlands information base to date and can aid in management, planning and law enforcement.

Removing a fair amount of uncertainty about the identification and occurrence of wetlands, the inventory will ultimately present a clear picture of the extent, distribution and diversity of wetlands systems in the form of digital coverage and printed maps, and this spatial data will be linked to a national database containing the attributes, functions and values of individual wetlands. Its uses range from aiding in water resource management to freshwater conservation planning and environmental impact assessments. Over time it will be possible to use the inventory for monitoring

Due to limitations of scale and availability of data, certain isolated or smaller wetlands could not be mapped. However, every attempt has been made to capture major wetland areas as accurately as possible. For now the National Wetland Map is a presentation of the spatial distribution of wetland systems around the country. More details and attribute data will be added as the project continues.

While the Wetlands Inventory will by no means on its own prevent illegal or destructive development or encroachment of wetlands, it will allow for a quick reference of wetland sites by developers, municipal managers, officials and environmental consultants to help determine whether further investigation of particular sites should be conducted. Used in conjunction with other tools such as the Water Affairs and Forestry Wetlands Delineation Manual, the WET-Health and WET-EcoServices assessment tools, and systematic conservation planning tools, the Wetlands Inventory will facilitate the inclusion of wetlands in planning and decision-making processes to an extent that was not previously possible.

The inventory is funded by the Ministry of Environmental Affairs and Tourism, the Water Research Commission, the Norwegian government, and WWF Green Trust. A beta version was launched at the National Wetlands Indaba in October and is available for review (<http://bgis.sanbi.org>). A more comprehensive version is expected to be launched in early 2007.

Source: The Gumboot

News from Uganda **Peatlands, climate and awareness**

According to Uganda's Senior Wetlands Assessment Officer at the Wetlands Inspection Division Norah Namakambo, 45 per cent of wetlands in Uganda are peatlands and should be protected from drainage for climatic reasons. Ms Nnamakambo said the peat lands are scattered all over the country.

Peat scientists at the United Nations Climate Change Summit that took place from November 6 to 17 in Nairobi said they had been studying Uganda's wetlands and found them to contain a lot of peat. They warned that draining wetlands containing peat leads to unlocking of the carbon, leading to climate change.

The Peat Inventory Report at the Wetlands Inspection Division says peat deposits are found in various parts of the country. Peat was discovered in Musamya, about 8 kilometres southeast of Kayunga and in Sezzibwa valley, south of Kayunga district. In Matumbwe valley, about 3 kilometres southeast from Nakifuma in Kayunga district, peat deposits were 0.7metres thick while in Namulanda valley, they were found at 0.8 metres. In Odwali valley, about 16 kilometres south of Soroti, the deposits stood at 0.3 metres while in Mpologoma valley, about 11 kilometres south west of Palisa, it stood at a thickness of 1.2 metres. Other surveyed places including southwestern parts of Uganda had thicker deposits. Nema's 2002 report on environment shows a lot of wetlands have been encroached on for industrialisation and settlement, exposing lots of peat deposits.

Source: allafrica.com/stories/200612060272.html

News from Canada **Largest Private Protected Area**

AbitibiConsolidated and Nature Conservancy of Canada's (NCC) Québec Region signed an agreement today confirming a gift of 1,400 hectares of land, forming a major part of the Lac à la Tortue peatland. With its 6,633 hectares of land, the Lac à la Tortue bog is the largest peatland in the St. Lawrence Valley and Lake Champlain ecoregion.

Inventories conducted in the peat bog have identified the presence of species likely to be designated as threatened or vulnerable, such as the Four-toed

Salamander, the White Fringed Orchid and the Twin-scaped Bladderwort.

AbitibiConsolidated produces newsprint and commercial printing papers as well as wood products and is among the largest recyclers of newspapers and magazines in North America.

Source: www.natureconservancy.ca

News from Indonesia Containing forest fires

Indonesia is intensifying efforts to prevent forest fires and hopes to control the annual haze problem in the next few years. Indonesia's neighbours have grown increasingly frustrated by the fires, most of which are deliberately lit by farmers or by timber and palm oil plantation companies – some owned by Singaporeans and Malaysians – to clear land for cultivation.

The government strategy to contain the fires includes raising water levels on peatland and confiscation of plantation land responsible for forest fires. The overall strategy is to prevent fires from happening. Jakarta says around 90 percent of this year's fires have been extinguished, but they could flare again should dry El Nino conditions intensify.

The government has signalled it is not against new plantations, but would not allow them at the expense of the country's forests. There are 18.2 million hectares of land readily available for plantation without cutting down trees.

Police will confiscate any burnt land to prevent plantation owners from illegally expanding their holdings. The government has created an initiative where plantation owners will be held responsible when there is fire, whether they started it or not. Land may be confiscated, depriving anyone the motive to burn land.

Source:

www.alertnet.org/thenews/newsdesk/JAK268362.htm

Action against Malaysian firms

Malaysian Deputy Prime Minister Datuk Seri Najib Razak, who met Indonesian President Susilo Bambang Yudhoyono yesterday, said no one was

above the law, especially when it involves polluting the air and causing millions of people in the SE Asia region to suffer.

Reminding Malaysian plantation companies operating in Indonesia to follow their host country's laws, he said if Malaysian companies were found to flout the laws, action should be taken against them. If there are rogue companies involved in open burning, then let them pay the price for it.

Source: New Straits Times

News from Australia Haze linked to rain

Pollution haze from Asia may be the reason for increased rainfall in central and northwestern Australia. The elevated particle emissions are thus cooling the Asian continent and nearby oceans. But once the aerosol pollution eases later this century, the rain in Australia could decrease and the trend of increased rainfall in the northwest and centre of Australia could be reversed. The northwest and centre are the only parts of Australia where rainfall has been increasing in recent decades.

Source: The Australian - Science & Nature

News from India Declining rice yields blamed on haze

Haze from burning peatlands in SE Asia is blamed for the reduction in India's rice yields from the mid-1980s to 1998, according to a recent paper in the Proceedings of the National Academy of Sciences. India rice yields have been on a decline after the 1970s. An analysis revealed the declining yield was caused by two environmental factors – Haze and global warming. Without haze, the annual rice harvest yield was estimated to have been 11 percent higher than it was.

Haze blocked much sunlight from the rice producing regions. This in turn caused cooler and dimmer conditions unsuitable for rice cultivation.

Source: www.pnas.org/cgi/content/full/103/52/19668.

New and recent Journals/Newsletters/Books/Reports

Migratory species and climate change. Impacts of a Changing Environment on Wild Animals. UNEP. 64p. PDF

Biodiversity is already suffering from a range of impacts including overexploitation, loss and damage to habitats and pollution. Climate change will pile on more pressure making it increasingly difficult for the world to meet the 2010 target – to reduce the rate of loss of biodiversity by 2010”.

Migratory species are in many ways more vulnerable as they use multiple habitats and sites and a wide suite of resources throughout their migratory cycle. This calls for protection of habitats, reduction of pollution to the land, freshwater and the marine environment, more sustainably managed water supplies for people and wildlife and other measures to assist animals and plants to cope and to adapt in a climatically changed world.

UNEP and CMS argue that conserving and more sustainably managing biodiversity in a climatically-changed world, is of the highest economic importance and important in the fight against poverty. Published by United Nations Environment Programme (UNEP) and the Secretariat of the Convention on the Conservation of Migratory Species of Wild Animals (CMS), this report is available at: www.cms.int/publications/pdf/CMS_CimateChange.pdf

Guidance for Promoting Synergy Among Activities Addressing Biological Diversity, Desertification, Land Degradation and Climate Change. CBD Technical Series No. 25. 48p. PDF

Besides mitigation measures to halt or reverse human induced climate change, adaptation measures to a changing climate are seen as essential in surviving. Adaptation to climate change is divided into natural adaptation by ecosystems and planned adaptation by human intervention. Already many adaptation measures are being undertaken, but often the impact on biodiversity is neglected.

This new scientific publication of the Convention on Biological Diversity (CBD) on the linkages between climate change and biodiversity lays out a (largely theoretical) framework for designing, implementing, and monitoring adaptation projects that include biodiversity considerations.

The report stresses the need for synergy in implementing the commitments adopted under different multilateral environmental agreements. Maintaining biodiversity allows ecosystems to provide goods and services while societies adapt to climate change. Enhancing the resilience of an ecosystem – its ability to maintain its functions after natural or human disturbance – is an essential component of this adaptation. Careful planning and implementation of these activities is needed to slow

down the rate of biodiversity loss in the face of climate change.

The report fails to address ecosystems as biological diversity themselves, but treats them as “mere” carriers of species and genotypes and of ecosystem services to humankind. This means that adaptation measures often read as if nature were malleable and ecosystems can and should be created or changed by humankind in order to ensure habitats for species and goods and services to society.

The trade-off between naturalness of ecosystems and species/genetic diversity is never addressed.

<http://www.biodiv.org/doc/publications/cbd-ts-25.pdf>

Paappanen, T., Leinonen, A. & Hillebrand, K. (2006). Fuel peat industry in EU, summary report. VTT, 20p.

This report was ordered and funded by the European Peat and Growing Media Association (EPAGMA). The objective of this study is to give a clear image of the overall energy and socio-economic impacts of peat used for energy purposes in the European Union. The study covers the following countries: Finland, Ireland, Sweden, Estonia, Latvia and Lithuania.

The summary report is made on the basis of more detailed country reports and contains information on peat producers, peat users, energy and socio-economic impacts of peat use in EU. The importance of fuel peat is described at the European Union, national, regional and local level. The role of peat in security of energy supply is also discussed.

The total annual use of peat for energy purposes is about 3 370 ktoe (kilo-tonne oil equivalents; 39 TWh) in the European Union. The share of peat in primary energy consumption is highest in Finland and Ireland (5 to 7%) and amounts to 1.9% in Estonia and 0.7% in Sweden. Fuel peat use in Latvia and Lithuania is almost nonexistent at the moment. Finland is the largest peat user in the EU and the use of peat has important national, regional and local impacts in Finland. In Ireland, Estonia and Sweden effects are seen foremost at regional and local levels. 630 companies and entrepreneurs are involved in fuel peat.

The value of fuel peat sales in the EU is about 390 million Euros, and the value of international trade is 18 million Euros. The total employment effect of fuel peat production and use is 13100 – 16100 man years. The approximate number of people getting heating energy from peat is 1,94 million people. The long-term role of peat in securing energy supply is most important in Finland and in Ireland. The reserve supplies can cover short-term interruptions of energy supply. For example in Finland and Estonia these reserves corresponds to 7 – 17 months of energy consumption.

The summary and country reports can be downloaded from: <http://www.torvproducenterna.se/rapporter/>

What the reports fail to report on is the climatic impact of the use of peat as energy source. A Swedish report from 2001 (www.ivl.se/rapporter/pdf/B1423.pdf), for instance, concluded that – depending on the after-use – the use of peat for energy has at least the same climate impact as the use of natural gas and on shorter timescales (100yrs) would approximate the impact of the use of coal. Compared to already drained peatlands, the use of pristine peatlands results in larger climate impact. These findings were largely supported by a later report, which included a variety of before- and after-uses of the cutover peatlands (www.ivl.se/rapporter/pdf/B1606.pdf). A comparison with Finnish studies revealed only minor discrepancies (www.ivl.se/rapporter/pdf/B1681.pdf).

This was also why a request of the Swedish peat cutters and combustors to lower the climate impact factor of peat combustion in the Swedish national reporting to the UNFCCC was not honoured (see: www.ivl.se/rapporter/pdf/B1595.pdf).

Interestingly, the peatland forestry lobby likes to keep their timeframe of observation short – as it increases the effect of forest biomass offsetting carbon losses from peatland drainage – whereas the peat for energy lobby likes to stretch its timeframe of observation in order to offset the concentrated release of carbon from combustion against possible contrary effects from before and after-use.

Schmilewski, G. (ed.) 2006. Peat in Horticulture – Peat in the stranglehold of interest groups. Proceedings of the International Peat Symposium Amsterdam 30 Oct. 2006. IPS. 90p.

These proceedings cover various topics in relation to the use of peat. There are several articles covering the legal background of peat extraction in Germany, the UK, the Baltic States and Canada and of the use of peat for horticultural purposes in Finland and Sweden. Jaakko Silpola addresses the climate impact of the use of peat for energy, summarising some of the findings from recent Swedish and Finnish reports (see Paappanen et al. above).

Donal Clarke makes a well reasoned argument for the use of peat in horticulture being wise use if certain conditions are met. In his view the Wise Use process provides a framework for reasoned exchange on a factual basis, keeping peat out of “the stranglehold of interest groups”. He concludes that society’s decisions will almost always be wise if we are consistent and respectful of each other.

Gerald Schmilewski continues polemics on the EU Ecolabel for Growing Media. He argues that the ecolabel should primarily be awarded based on good product performance and not on overall environmental impacts. Since there is no true alternative for peat in horticulture, peat based growing media are therefore the only growing media worth considering and thus should be allowed the EU ecolabel, thus Schmilewski.

As he himself quotes, the EU states that the main objective of the ecolabel scheme is to contribute to sustainable development (both economically and environmentally). Sustainable use is, however, not equal to wise use. So if – as Donal Clarke argued in his article – the use of peat for horticulture may under circumstances be wise, this does not mean it is sustainable.

To repeat: peat extraction, for whatever purpose, is not sustainable on any economically viable timescale. Whether or not it may under circumstances be wise is another question altogether. Continued peat extraction is detrimental to our environment, to our climate, and to biological diversity. Peat of sufficient quality is a limited resource and peat extractors are on a dead end – as some companies seem to have understood by now, taking care to rid the company name of “peat”, exchanging it for more general terms.

Hooijer, A., Silvius, M., Wösten, H. and Page, S. (2006). PEAT-CO₂, Assessment of CO₂ emissions from drained peatlands in SE Asia. Delft Hydraulics report Q3943.

This report presents figures on CO₂ emissions from drained peatland areas in SE Asia. Forested tropical peatlands in SE Asia store at least 42,000 Megatonnes of soil carbon (twice the total global annual emissions). This carbon is increasingly released to the atmosphere due to drainage and fires associated with plantation development and logging. Emissions from South-east Asian peatlands count now already for 8% of the global emissions.

One important crop in drained peatlands is palm oil, which is increasingly used as a biofuel in Europe. Especially the drainage for this crop is intense and leads to emissions between 70 a 100 tonne carbon dioxide a year for each hectare.

In the PEAT-CO₂ project, present and future emissions from drained peatlands were quantified using the latest data on peat extent and depth, present and projected land use and water management practice, decomposition rates and fire emissions.

Out of 27 million hectares of South-east Asian peatland, 12 million hectares (45%) are currently deforested and mostly drained. Peatlands are drained to enable wood extraction. After deforestation, drainage is in many areas intensified to establish large scale plantations (oil palm, acacia wood, etc.). Especially the emissions from these plantations are very high, up to a hundred tonne CO₂ per hectare a year, compared to only a few tonnes from recently logged areas. Natural peatlands do not release any carbon dioxide.

It was found that current likely CO₂ emissions of drained peatlands caused by decomposition only, amounts to 632 Mt/y (between 355 and 874 Mt/y). This emission will increase in coming decades unless land management practices and peatland development plans are changed, and will continue well beyond the 21st century.

In addition, during 1997-2006 an estimated average of 1400 Mt/y in CO₂ emissions was caused by

peatland fires that are also associated with drainage and degradation. The current total peatland CO₂ emission of 2000 Mt/y equals almost 8% of global emissions from fossil fuel burning. These emissions have been rapidly increasing since 1985 and will further increase unless action is taken. Over 90% of this emission originates from Indonesia, which puts the country in 3rd place (after the USA and China) in the global CO₂ emission ranking.

It is concluded that deforested and drained peatlands in SE Asia are a globally significant source of CO₂ emissions and a major obstacle to meeting the aim of stabilizing greenhouse gas emissions, as expressed by the international community. It is therefore recommended that international action is taken to help SE Asian countries, especially Indonesia, to better conserve their peat resources through forest conservation and through water management improvements aiming to restore high water tables.

Download from: <http://tinyurl.com/ymlq3r>

Maslov B.S., Konstantinov, B.V. Babikov, B.V., and Ahti, E. (eds.) 2006. Permanent experiments on drained peatlands in Russia.

Published by Finnish Forest Research Institute, this book is in Russian with English summaries. It covers field experiments in peatland forests in Russia.

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Hydrology and Management of Forested Wetlands, Proceedings of the International Conference, April 8-12, 2006, New Bern, North Carolina

On 6-12 April a Conference on Hydrology and Management of forested wetlands was held in New Bern, North Carolina. This meeting was organised by the American Society of Agricultural and Biological Engineers. In the meeting there were numerous presentations of wetland hydrological processes, restoration & best management practices, biogeochemical cycling, monitoring and modelling techniques, effects of drainage on hydrology, hydrology and water quality, sustainable management, and effects of land use and climate change on wetland hydrology and water quality.

Abstracts of the proceedings book are available: <http://asae.frymulti.com/conference.asp?confid=hmfw2006>

Horner, A. 2004. Wicklow & Dublin Mountains in 1812: Richard Griffith's Map for the Bogs Commissioners. Glen Maps, Dublin, 30pp. + 1 map in facsimile.

Reproduction of carefully-executed map prepared for the government-appointed commissioners charged with the task of assessing the extent and development potential of the bogs of Ireland. The commissioners produced four major reports between 1809 and 1814. The map is reproduced at a scale of 1:100,000 and approximately shows the Wicklow and Dublin mountains a few years after the convulsions of 1798, and just after the Military Road through the "at

present uninhabited wilds" had been completed to provide the army with an easy access "to preserve the peace and quiet of adjacent districts". The pack further contains a reproduction of the report made by Richard Griffith which includes early observations on the geology and physical geography of Ireland's largest continuous upland area and comments on contemporary conditions and prospects of development of the mountain bogs.

The circumstances of the scarcity of fuel has induced Mr. Greene of Kilranalagh to stop the water in the drains, in part of the bog near his house from which turf has been cut nearly to the bottom. ... Mr. Greene expects that the bog will grow again, and afford fuel to a future generation. The drains have now been stopped four years. I saw the bog last summer, and I found that in many places the whole of the drains and many of the old turf holes were filled nearly to the top with a pulpy mass. Upon examination I found [this] to be composed of matted grass and the bog moss (sphagnum palustre) which when soaked in water has a gelatinous appearance but when taken out and dried diminishes to less than a twentieth part of its apparent bulk in the water and becomes hard and tough. Probably in eight or ten years the grass and moss will have grown so thick and firm as to bear a man to walk on its surface, and I doubt not that in less than forty years turf may be again cut from the old turbary.
Richard Griffith 1812

Similar commented reproductions are available:

Horner, A. 2003. Kenmare River in 1812: Alexander Nimmo's Map for the Bogs Commissioners. Glen Maps, Dublin. 30pp. + 1 map in facsimile.

Horner, A. 2003. Iveragh Co. Kerry in 1811: Alexander Nimmo's Map for the Bogs Commissioners of 1809-1814. Glen Maps, Dublin.

Lang, G. 2005. Seen und Moore des Schwarzwaldes. Andrias 16, Staatliches Museum für Naturkunde, Karlsruhe, 160 p. (in German)

Review of the palynological, stratigraphical, and macrofossil work done by the author since the 1970s on deposits of 15 mires and lakes of the German Black Forest. With a description of the regional vegetation development and of the development of lakes and mires. Usually the transition from lake to mire ("terrestrialization" was started by a floating Sphagnum-Scheuchzeria mat.

Wiatr, A. & Wróblwski, W. (engl. translation W. Kasprzak) 2005. Biebrza National Park. Discovering Nature Guidebook. Multico, Warszawa, 96 p.

Booklet describing the history, nature, conservation and (eco)touristic attractions of one of the major peatland areas of Poland.

Berg, E. 2004. Die Kultivierung der nordwestdeutschen Hochmoore. Isensee Verlag, Oldenburg, 199 p. (in German)

History of the reclamation of the bogs in the Northwestern part of Germany, the area with the largest concentration of bogs, including the legendary Bourtangier Moor. With interesting information on peat extraction, peatland colonisation, buckwheat fire cultivation, early ideas on peatland restoration, and the German bog culture in this region, where "Creation seems to be incomplete."

2006. Bolotnye ekosistemy severa Evropi: raznoobranie, dinamika, uglerodnyj balance, resursy i ochrana: Materialy mezhdunarodnogo simposiuma (Mire ecosystems in Northern Europe: diversity, dynamics, carbon balance, resources and conservation). Institute of Biology RAS Karelian Research Centre, Petrozavodsk, 396 p. (in Russian and English)

Proceedings (partly in Russian, partly in English) of the peatland congress in Petrozavodsk (Republic of Karelia, Russia) of 30 August to 2 September 2005 (the birthday celebration of the "gang of 1935", including our honorary IMCG members Rauno Ruuhijärvi, Tatjana Yurkovskaja and Seppo Euro, see IMCG Newsletter 2006-3). With a wealth of papers on mire research and conservation of mires in Russia and Scandinavia, with special attention to those in Karelia.

Elina, G.A, Lukashov, A.D. & Tokarev, P.N. 2005. Kartografirovanie rastitel'nosti i landschaftov na bremennykh srezach Holocena taeznoj zony Vostotsnoj Fennoskandii (Vegetation and landscape mapping on Holocene temporal cross-sections in East Fennoscandia taiga zone). Nauka, St. Petersburg, 112 p. (in Russian)

Dealing with reconstructing Holocene forest and mire palaeolandscapes in East-Fennoscandia. Using geological and geomorphological maps of Karelia, landscape patterns were reconstructed (in beautiful coloured maps) for four standard areas with different geology and vegetation, for the time slices 6000 BP, 3500 BP and 2000 BP.

Bambalov, N.N. & Rakovich, V.A. 2005. Rol' bolot v biosfere (The role of mires in the biosphere). Bel. Nauka, Minsk, 285 p. (in Russian)

Extensive overview of the natural and economic functions of mires, including environmental, hydrologic, accumulation, biological, gas regulation, geochemical, landscape, climatic, resource, cultural-recreational and informational functions with special attention to the ecology of drained peat soils and of cut-over peatlands and to peatland conservation.

Chytil, J., Hakrová, P. & Vlasáková, L. 2006 (2nd edit.). Wetlands of the Czech Republic – the list of wetlands sites of the Czech Republic. Czech Ramsar Committee, Prague, 36 p.

List of wetland sites with short description of geographical and contact data, basic characteristics, protection and use, and flora and fauna. For more information: libuse_vlasakova@env.cz

Farrell, C.A. 2006. Peatland utilisation and research in Ireland 2006. Proceedings of the 1st Seminar of the Irish National Committee of the International Peat Society. Irish Peat Society, Cahore, 68 p.

Featuring articles on the history of the "wise use process", the history of the peat industry in Ireland, peatland archaeology associated with peat extraction, the use of energy peat in Ireland (in 2005 5% of the total energy and 8.5 % of the electricity of Ireland came from in total 4.2 million tonnes of peat, 3 million of which consumed by three power stations), physical and chemical properties of horticultural peat, Bord na Móna industrial cutaway bogs (what to do with them?), current practise of peatland restoration in Ireland, the IPCC Lodge Bog conservation plan, the Bogland Project (aiming at developing a protocol for future management of peatlands in Ireland), Irish peatlands and climate change, and on the Irish peatland resource. For more information: donalcke@indigo.ie

Boosten, A. (ed.) 2006. Meer Meer; 13 jaar herstelplan Naardermeer. Natuurmonumenten, 's Graveland, 141 p. (in Dutch).

Detailed book on the development of the Naardermeer, the oldest fen reserve and oldest nature reserve in the Netherlands (established in 1906), after restoration activities. Restoration began in 1985 with dephosphating inflowing river water. Since this appeared to be insufficient, additional measures were taken, dealing with water quantity and quality, under water soil quality, acquisition of land, creation of ecological infrastructure. The set of measures is a good example of integral water management, in which also the surrounding areas (where the fen water infiltrates) take responsibility for the conservation of a fen reserve.

Mowing, cutting sods, and digging trenches in the reserve proved to be effective in preserving and restoring fen communities with rare species.

Kirk, G. 2004. The biogeochemistry of submerged soils. Wiley, Chichester, 291 p.

This book describes the physical, chemical and biological processes operating in submerged soils and governing their properties. It describes the transport processes controlling the fluxes of gases and solutes through the soil; the interchange of solutes between solid, liquid and gas phases; reduction and oxidation processes; biological processes in the soil and overlying water; and processes in the roots and

rhizospheres of wetland plants. The dynamics of nutrients, toxins, pollutants and trace gases are discussed in terms of these processes and in relation to wetland productivity and global element cycles.

However, it is not, as the title implies, focused on the biogeochemistry of all submerged soils. Most of the examples are focused on (and biased by) mineral soils in rice research. The author presents in mathematical detail transport processes like mass flow and diffusion in submerged soil (Chapter 2), interchange of solutes between solid, liquid and gas phases (Chapter 3), and reduction and oxidation thermodynamics and kinetics with an emphasis on the transformations of C, N, S and P in reduced soils (Chapter 4). Additional chapters deal with methanogenesis, iron, manganese, nitrate and sulfate reduction, etc in submerged systems (Chapter 5), and root and rhizosphere processes (Chapter 6). The book finishes with chapters on toxins and pollutants (Chapter 7) and trace gases (Chapter 8), the latter focusing on global budgets for methane, nitrogen oxides, ammonia and sulfur.

Van 't Riet, A.J.J. 2005. 'Meeten, boren en besien'. Turfwinning in de buitenrijnse ambachten van het Hoogheemraadschap van Rijnland 1680-1800. Verloren, Hilversum 410 p. (in Dutch).

History of peat extraction in a Rijnland part of Holland since the 14th century, firstly not deeper than the water level, but since the 16th century by dredging. This technologic innovation led to an enormous increase in peat extraction, especially to provide the cities of Amsterdam and Haarlem. A major disadvantage, however, was that the landscape was destroyed by the creation of deep holes, which due to wind erosion, ultimately joined together to form large lakes. The associated loss of land led to new regulations for peat extraction in 1680. These regulations included giving extraction consents only for larger areas and under the condition that the cutover land – a lake – would be reclaimed to new agricultural land. Peat extraction faced an unavoidable dilemma: peat extraction was necessary to meet the demand for fuel and provided taxes for the government and good incomes for merchants and labourers. On the other hand the government had to prevent that peat extraction would eventually lead to flooding of large parts of Holland. The solution was strong regulation.

Clunn, T. 2005. The quest for the lost Roman legions. Discovering the Varus battlefields. Savas Beatie, New York, 371 p.

“The soil was black, peat-like, and still moist considering the time of the year. I moved my metal detector over the small hole I had dug. Again, I heard the sharp, double-toned ringing in my headset indicating a round solid object. There appeared nothing obvious in the hole, so I carefully lifted a small amount of soil in my hand and again moved the

machine over the whole. Nothing. Whatever lay in the earth gathered in the palm of my hand.”

In 9 AD, German clans destroyed three legions of the Romans in the peatlands near Osnabrück and the Teutoburg Forest (Germany). After many centuries of speculations the battleground had finally been discovered by Major Clunn, an amateur archaeologist and military historian who was stationed with the British Rhine Army in the Osnabrück area. The book, based on his diaries and other records, tells the gripping tale of just finding coins, then three pearl shaped stones which turned out to be sling shot pieces, a silver battle mask and other military objects, and finally bones of slain soldiers. Interspersed in the narrative is an imaginative fictional re-telling of the events leading to the battle and the battle itself, based on ancient historians, various archaeological finds, and Major Clunn's knowledge of the topography.

Heikkilä, R. & Lindholm, T. (eds.) 2006. Restoration and conservation of mires. Abstracts of the 12th International Mire Conservation group Biennial Symposium in Tammela, Finland 2006. Finnish Nature Conservation Association, Oulu. 34 p.

The abstracts of IMCG's 2006 event with presentations from all over the world. For more information: tapio.lindholm@ymparisto.fi

Lindholm, T. & Heikkilä, R. (eds.) 2006. Finland – land of mires. The Finnish Environment 23. Finnish Environment Institute, 270 p.

Volume prepared for the 2006 IMCG Field Symposium with a wealth of background information on all aspects of Finnish mire and peatland ecology, distribution, use and conservation. The items dealt with in the book are the following: 1. Unsettled weather and climate of Finland. 2. Climate of Finland and its effect on mires. 3. Bedrock in Finland and its influence on vegetation. 4. The landforms of Finland. 5. Glacial and postglacial history of the Baltic Sea and Finland. 6. Postglacial history of Finnish inland waters. 7. Lake and river systems in Finland. 8. Interglacial and interstadial organic deposits in Finland. 9. Mire development history in Finland. 10. Regional distribution of peat increment in Finland. 11. Geobotany of Finnish forests and mires: the Finnish approach. 12. Ecohydrology of Finnish mires. 13. Ecological gradients as the basis of Finnish mire site types. 14. Mire plant species and their ecology in Finland. 15. Land uplift phenomenon and its effects on mire vegetation. 16. Palsa mires in Finland. 17. Cultural land use history in Finland. 18. The use of mires for agriculture and forestry. 19. Destruction of mires in Finland. 20. Environmental impacts of mire utilization. 21. Peatlands and global change - the Finnish case. 22. Ecosystem services provided by Finnish mires. 23. Mire conservation and its short history in Finland. 24. Ramsar areas in Finland. 25. Land birds in Finnish mires and their conservation status. 26. A short introduction to the

Finnish language. 27. Etymology of some Finnish words for mire.

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Available under

www.ymparisto.fi/default.asp?contentid=194173&lan=en

Heikkilä, R., Lindholm, T. & Tahvanainen T. (eds.) 2006. Finnish mires - daughters of the Baltic Sea The Finnish Environment 28. Finnish Environment Institute, 166 p.

Excursion guide prepared in connection to the 2006 IMCG Field Symposium through Finland from Forest Lapland in the north to the hemiboreal mires on the southern coast of Finland. With extensive information, maps, aerial photographs, and pictures on 17 locations. For more information: Tapio.Lindholm@ymparisto.fi or Raimo.Heikkila@ymparisto.fi

Tahvanainen, T. 2005. Diversity of water chemistry and vegetation of mires in the Kainuu region, middle boreal Finland. Dissertation, Department of Biology, Faculty of Science. PhD dissertations in biology, no 33, University of Joensuu.

This study is a search for consistent hydrochemical correlations of the main ecohydrological vegetation gradient within mires. Special features in mire water chemistry in relation to the particular geochemical context of the study area are explored. Special attention is paid on the water pH gradient, its chemical regulation, sampling methodology, fine-scale variation, and importance to richness of mire plant communities.

The thesis concludes that the poor-rich gradient is a gradient of major plant community turnover and species richness that is correlated with pH. Correlations along this gradient are frequently found for many other water chemical variables as well. The concentrations of the main cations, particularly calcium, are typically correlated with the pH gradient but the concentration levels differ between regions due to the geochemical differences. The pH of surface waters of mires was found to be regulated by the balance of mineral alkalinity and organic acidity in the study area. In addition, the variation of carbon dioxide was a very significant factor regulating pH of fen waters and causing fine-scale variation in time and place. The recognition of the correlation of pH and the poor-rich gradient as a 'pH-related continuum of vegetation' gives an opportunity for a robust assessment of several mire ecological questions, independent of the different practices of mire classification and terminology. Undoubtedly, there are other directions also of variation in mire vegetation related to the chemical variation and the pH continuum is a firm ground for the study of such patterns. The ecophysiological mechanisms affecting the distribution of plant species along the pH gradient are yet unclear.

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Available under:

www.joensuu.fi/biologia/phd/tahvanainen.pdf

Valk, U. 2005. Eesti rabad. Ökoloogilis-metsanduslik uurimus. Summary: Estonian bogs. Summary of ecological and sylvicultural studies. Eesti Pollumajandusülikool, Metsanduslik Uurimisinstituut. Tartu, 314 p. (in Estonian, with extensive English summary).

After his review monograph on Estonian mires in general (Eesti Sood, Valk 1988), Uno Valk now focuses on raised bogs and their usage for forestry, his speciality for almost fifty years.

After general information on the mires and bogs of Estonia, the ecology and growth forms of Scots pine (*Pinus sylvestris*), the main tree species on Estonian bogs, are described.

Tree growth on drained peatlands (both originally forested and treeless sites) is illustrated with long-term experiments that show that it is possible to drain, afforest and grow trees even on ombrotrophic bogs. "Today, at the beginning of the third millennium AD, however, there are many fallowed lands in Estonia that will be easier, cheaper and more reasonable to forest than bogs. The end result of the paludification process is attractive hollow and pool bogs. Natural rarities in Europe, they are of scientific importance and deserve protection. Even more important, however, is the protection of our forests and soils from paludification."

The book is an excellent review on the ombrotrophic raised bog ecosystems and on the forest amelioration activity in Estonia.

For more information, see the review of Juhani Päiväinen in *Peatlands International 2005/2*: www.peatsociety.org/user_files/files/pi22005final.pdf

Rienks, W.A. Gerritsen, A.L., Meulenkamp, W.J.H., Ottburg, F.G.W.A., Schouwenberg, E.P.A.G., van den Akker, J.J.H. & Hendriks, R.F.A. 2004. Veenweidegebied in Fryslân - de effecten van vier peilstrategieën. Alterrapport 989, 56 p. + 130 p. appendices. (in Dutch).

Scenario study into the future of the Dutch peatland meadow area where peat oxidation leads to continuous subsidence. The lower the water level, the larger the annual rate of subsidence. Normal agricultural levels lead to an annual subsidence of 1 a 2 cm with large consequences for water management and infrastructure. As the agricultural area starts to become lower than the adjacent nature reserves, the latter suffer from desiccation. Subsidence can only be counteracted by raising the water levels, but that will make agriculture less profitable and eventually impossible. Four strategies were studied:

1. "0-20" (water level 0 cm in winter, -20 cm below surface in summer) will remove agriculture as land user to be replaced by nature conservation. Fens will develop with on the drier parts hay meadows.

2. "25-55" (- 25 cm in winter, -55 cm in summer) with agriculture as main land use concentrating on the higher grounds.

3. "90-60" (-90 cm in winter, -60 cm in summer). Because of the low water levels in winter and spring the land can be easily cultivated in spring. In summer water levels are raised by irrigation so that subsidence and drought stress are reduced.

4. "90-90" (-90 cm in winter, -90 cm in summer). This is the normal condition in the majority of the area at present.

The scenarios were evaluated against various criteria. The summary results are presented in the table below:

0-20	25-55	90-60	90-90	criteria
4	8	10	18	subsidence mm/yr

0	0	0	0	water quantity
++	+/0	-	--	water quality
+/-	-	-	--	GHG emissions
--	0	0	0	cultural history
--	0	0	0	openness
--	++	-	--	birds (waders)
++	+	-	--	vegetation
++	++	-	--	fish population
--	-	+/0	0	agriculture
++	0	0	0	recreation
855	261	103	161	Net costs (€/ha/yr)

As the unnatural scenario 90-60 is in almost all criteria more positive than the current 90-90 one, it is advised to adopt this strategy in all areas where agriculture remains main land user. Strategy 0-20 is advised to be implemented around urban and recreational centres, preferably around existing nature reserves (as buffer). Strategy 25-55 is proposed for areas with valuable cultural landscape patterns with much openness and potential for the conservation of meadow birds (waders). Available under: http://library.wur.nl/wasp/bestanden/LUWPUBRD_00335145_A502_001.pdf

Inisheva, L.I. (ed.) 2003. Vasyuganskoe boloto. Prirodnye islovaya, struktura i funktsionirovanie (Vasyugan Bog. Nature conditions, structure and functioning). Siberian Institute of Peat, Tomsk, 190 p. (in Russian with English summary)

Describes the history of research in Vasyugan, the world's largest peatland, since 1876 up to the present day, the present environmental conditions and ecosystem types, the peat resources and their carbon content, the chemical properties of the peat deposits and the hydrogeochemistry of the landscape.

Moore in der Regionalentwicklung. 25 Jahre Niedersächsisches Moorschutzprogramm. Bund Fiepholzer Moorniederung, 108 p. (in German).

Proceedings of a conference on the occasion of the 25th anniversary of the Peatland Conservation Programme of Lower Saxony. Focussing on the role

of protected and restored peatlands in regional development. With contributions from Germany, Netherlands, Sweden, and Estonia. For more information: Friedhelm Niemeyer: info@bund-dhm.de

Grünwald, K. & Mannsfeld, K. (eds.) 2005. Problematische Huminstoffeinträge in Oberflächengewässer im Erzgebirge. Ursachen – Trinkwasserrelevanz – Prognosen – Maßnahmen. Rhombos, Berlin, 244 p. (in German).

Review of recent research into increased immission of humic substances in surface water in the German Ore Mountains, their causes, their importance for provision of drinking water, prognoses and possible measures.

Doerpinghaus, A. 2003. Quellen, Sümpfe und Moore in der deutsch-belgischen Hocheifel. Vegetation, Ökologie, Naturschutz. Angewandte Landschaftsökologie 58, Bundesamt für Naturschutz, Bonn-Bad Godesberg, 223 p. (in German)

Overview of the springs and mires in the German-Belgian Eifel- mountain area, covering flora/vegetation and macrofauna, site conditions (water temperatures, hydrology, EC, hydro-chemistry), nature conservation values, and management options

Dyrcz, A. & Werpachowski, C. (eds.) 2005. Przyroda Biebrzańskiego Parku Narodowego. Monografia. Biebrzański Park Narodowy, Osowiec-Twierdza, 440 p. (in Polish with English summaries).

Large format and detailed monograph on the nature of Biebrza National Park, one of the most important mire reserves of Poland, including a biography of the "founding father" of the park Adam Pałczyński, the geomorphology of the Bierbza ice marginal valley, its peatlands and peats, Lateglacial and Holocene vegetation history (incl. a large series of pollen diagrams), an overview of the flora and (a reprint of a 1975 work of Pałczyński) vegetation, a study of shrub encroachment in the second half of the 20th century (the major management problem), an overview of the plant communities, lichens, and algae of the National Park, a description of the history, ecology, and behaviour of moose (*Alces alces*), studies on mammal predators, bats, birds (with special attention to aquatic warbler (*Acrocephalus paludicola*), amphibians and reptiles, fishes and lampreys, butterflies, spiders, and beetles, the history of the establishment of the national park, the protection of its forests, the history of scientific research in the area, its importance for tourism and ecological education, and an extensive (40 p.) bibliography. For more information on the park: www.biebrza.org.pl. Orders via www.biebrza.org.pl/pol/wydaw/index.html

Zingstra, H., Roosalu, A., Leivuits, A., Urtans, A., & Kitnaes, K. 2006. Master Plan for North Livonia. Wetland protection and rural development in the transboundary area of Latvia and Estonia. Wageningen International, Wageningen, 44 p. (with cd with appendices.

Report of the outcomes of the PIN/Matra project "Integrated Wetland and Forest Management in the Transborder Area of North Livonia (Estonia-Latvia)". The project objective was to support the protection and management of the biodiversity and to integrate biodiversity protection into socio-economic development in a transboundary context. The project resulted in the Transboundary Master Plan presenting an analysis of main issues related to transboundary biodiversity management and providing directions for tuned development and management of the transboundary area. The Master Plan contains recommendations for 1) Protected areas management, 2) Water management and hydrology, 3) Forestry, 4) Eco-tourism, 5) Cultural Heritage, 6) Game management and hunting, 7) Agriculture, 8) The Estonian Native Cattle, 9) Nature management plans for N-2000 sites, 10) Designation of a transboundary Ramsar site.

The recommendations are based on technical reports produced during the project by 80 experts, working in 7 work groups. The Master Plan aims to provide direction to the development of future projects for harmonised nature management, physical planning and rural development. The target group includes local municipalities, national and regional authorities, water managers, state forest managers and local interest organisations.

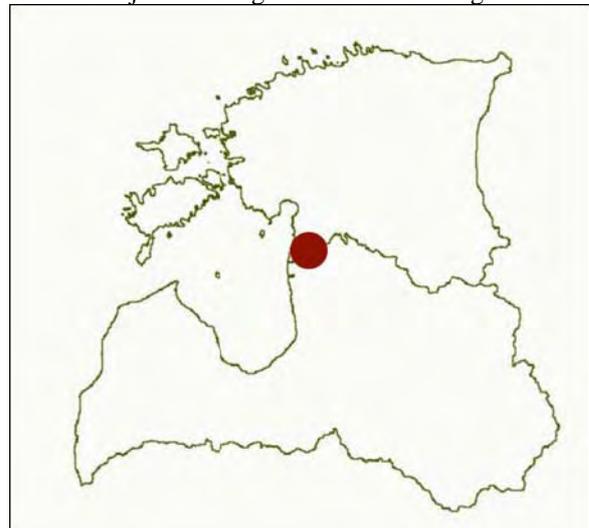
One of the most tangible outputs of the project is the creation of a transboundary GIS database with digital maps holding all relevant information about the topics mentioned above. This GIS is an indispensable tool for future cross border co-operation. The project provided insight in the hydrological system of the transboundary area and lead to the conclusion that in many cases borders of protected areas do not follow the borders of hydrological catchments. It is therefore recommended to adjust the borders of protected areas so they will coincide with the borders of hydrological units or catchments. It is strongly recommended to prohibit the maintenance or restoration of drainage systems in the direct vicinity of protected areas. More detailed investigations on the possibilities for restoring the natural water regime for the protected areas are needed. An important prerequisite for the long-term biodiversity conservation is the continuation of traditional agriculture of the semi-natural habitats. Long-term agreements with farmers are important to sustain the management of these habitats.

The Master Plan promotes the co-ordination of issuing hunting permits, exchange of information about differences on hunting seasons and game species and exchange of monitoring and field research data. The project strengthened

transboundary co-operation in the field of tourism and a good base for further development of tourism harmonized with the protection of nature, cultural and historical values was laid.

Stronger co-operation between municipalities in the field of tourism across the border is another important spin-off of the project. The Project Steering Committee agreed to support the designation of the three Ramsar sites Nigula NR (EE), Sookuninga NR (EE) and Ziemelu Purvi (LV) as one Transboundary Ramsar site and the procedure to achieve this was set in move. This Master plan holds management objectives and presents an overview of measures to ensure the long-term protection of the Transboundary Ramsar Site and other areas valuable for nature conservation.

Draft nature management plans were developed simultaneously for two Natura 2000 sites (pSCIs) on both sides of the border (Ziemelu Purvis (LV) and Sookuninga NR (EE)) in order to secure favourable conservation status for the Natura 2000 habitat types and species. The tuned setting of objectives and design of management activities for two sites separated by a country border is unique in the implementation of Natura 2000. To sustain the transboundary co-operation on management and development of North Livonia the Joint Transboundary Commission on Nature Conservation between Estonia and Latvia was established during the last Project Steering Committee meeting.



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Downloadable under:

<http://portals.wi.wur.nl/E-news/CDIC2/Livonia2.pdf>

Jenderedjan, K. 2006. Wetlands in Armenia. About and around wetlands. Ministry of Nature Protection of the Republic of Armenia. 64 p.

Information on Armenia and its wetlands and Ramsar sites. For more information: Karen Jenderedjian: jender@nature.am

Pätzolt, J. 2005. Hydrologie und Phosphorhaushalt eines druckwassergespeisten Quellmoores. Shaker, Aachen, 105 p. (in German)

PhD thesis on the phosphorus budget and retention of a spring mire in NE Germany with detailed quantitative and qualitative hydrologic research. For more information: jens.paezolt@lua.brandenburg.de

Stegmann, H. 2005. Die Quellmoore im Sernitztal (NO-Brandenburg) – Genese und anthropogene Bodenveränderungen. PhD thesis Greifswald University, 94 p. + app. (in German)

PhD thesis on the origin, development and soil development of calcareous spring mire in NE Germany with special attention to anthropogenic soil degradation in relation to drainage

Blankenburg, J. 2004. Praktische Hinweise zur optimalen Wiedervernässung von Torfabbaulflächen. 12 p. (in German)

Practical guidance for the rewetting of cut-over peatlands. Downloadable under www.nlfb.de/boden/downloads/geofakten_14.pdf

Ojanen, P., Vasander, H. & Kuuluvainen, T. 2006. Marhatan marjamailla. Matka pohjoisen Karjalan luontoon ja kulttuuriin. Publications from the Department of Forest Ecology, University of Helsinki 35, 159p. (in Finnish with English summary.)

Report of an excursion to Viena Karelia and the Solovetsky Islands in north-western Russia by forestry students of Helsinki. With information on nature and culture of that peatland-rich region. Intended for people who plan a trip to there.

Borren, W. 2006. Carbon exchange in Western Siberian watershed mires and implication for the greenhouse effect. A spatial temporal modeling approach. Netherlands Geographical Studies 355, Utrecht, 125 p.

PhD thesis using a 3-D dynamic model based on groundwater modelling to assess carbon fluxes between mires and the atmosphere as a function of changing climate and anthropogenic drainage. Under unchanged climate the modelled Bakchar mire will reach its maximum peat thickness around 11,400 AD, under wetter conditions mire growth could continue

much longer, under drier conditions shorter. IPCC's Global Warming Potential (GWP), which is developed for calculating the effect of pulse emissions, is replaced by a sustained flux response approach that deals with gradually changing fluxes, which are indeed more relevant for peatlands. Model results show that at present West-Siberian mires form a net sink of greenhouse gases, but will change to a net source during the 21st century. On the long term increased CO₂ uptake will again overrule CH₄ emissions leading again to a net sink of GHGs. For more information: wiebe.borren@tno.nl

Applied Vegetation Science Vol. 9.2 (November 2006).

Special issue on peatland status, threats, conservation and restoration in the temperate zone with articles on nutrient cycling in floodplain wetlands, the hydrological background of natural fens and fen meadows, vegetation succession, competition, eutrophication and acidification and on restoration and rewetting.

Bragazza, L. et al (2006). Atmospheric nitrogen deposition promotes carbon loss from peat bogs. Proc. Natl. Acad. Sc. 103: 19386-19389

High levels of nitrogenous compounds can make bogs give off more CO₂, thereby adding to the greenhouse effect. There are indications that nitrogenous compounds in the air make bogs give off more CO₂ than they bind, and that bogs may consequently tip over from being a carbon trap to being a carbon source, thereby aggravating the greenhouse effect.

In this study, a network of scientists show, that peat mosses growing in areas with higher levels of nitrogen form smaller amounts of polyphenols and are therefore more susceptible to degradation by microorganisms than those growing in areas with low levels of nitrogen. This increased degradation entails that bogs give off more CO₂ to the atmosphere.

It was also found that precipitation with high levels of nitrogen promotes the growth of grasses and sedges in raised bogs. These plants do not add to peat formation in the same way as peat mosses. All in all, this means that bogs can aggravate the greenhouse effect in areas with high levels of nitrogen in precipitation, by both giving off more and binding less CO₂.



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