



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 15 people from various parts of the world that has to take decisions between congresses. Of these 15 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 (Francis Müller), and 2 additional members (Tatiana Minaeva, Piet-Louis Grundling).

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

Editorial

This double issue of the IMCG Newsletter is again a testimony of the powerful and growing network that IMCG is: connecting peatlands and people all over the world. It describes this summer's adventures in Georgia and Armenia and the inspiration that the trip brought to guests and hosts. But IMCG is also transpiration... The newsletter discusses the next steps of bringing peatland rewetting – a very effective mechanism for climate change mitigation – under the Climate Convention. It is published while in Copenhagen the negotiations are reaching their thrilling moments, and decisions are taken that may determine the future of many of the world's mires.

Deliberante senatu perit Saguntum?... Finnish peat extractors threaten high quality peatlands, Russia plans to expand its peat extraction considerably, South Africa and Canada destroy their peatlands to reach the valuable resources underneath.... And the new Climate Convention's Clean (?) Development Mechanism allows biofuels from drained peatlands...

On the other hand, the exposure that peatlands receive is growing with major newspapers, journals and magazines paying attention to the global importance of peatlands in the last weeks. It has become almost 'not-done' to forget 'peatlands'. And a simple call of us was sufficient to flood the secretariat with reports from how members of our network are busy with rewetting and restoring: peatlands for climate, for biodiversity, for water, for food security. We could only publish shortened selections of these contributions: sorry and thanks!

We will try to come back to you early in the next year, with the latest information on the Climate Convention and its effect on peatlands, with in depth articles on "our" new Ramsar site in Tierra del Fuego, on the peatland destruction by exploitation of Alberta's tar sands, and with a report on what Russia is up to with its new energy politics. And we report – of course – on everything you send us. So please send your contributions (news, reports, books, congress announcements etc.) before January 23, 2010.

All the best for the New Year. And if you have too much money left after the X-mas days: the new bank account of IMCG (see at the bottom of this page) is happy to receive your financial contributions!

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A note from the Chair

The field symposium in Georgia and Armenia was a great success, with members able to spend time with their colleagues and friends in an interesting landscape. Izolda and Karen made sure that participants were well looked after in their respective countries – see the report in this issue. The trip made me appreciate some of the many issues that make it much harder for people in countries suffering the devastating consequences of war (physically, socially and economically) to promote the conservation of natural values. People working in these countries deserve our support where it is appropriate.

The IMCG excursion was an unforgettable event thanks to Izolda Matchutadze who organized the event, the administration, singers and dancers of the Shuachevi district for presenting amazing Georgian art and culture, as well as the Department of Tourism of Adjara for supporting the symposium in Kobuleti.

Several members of our Main Board are currently engaged in exhaustive (and exhausting) climate change negotiations in the lead up to the December meeting in Copenhagen – see the articles by Hans and keep informed by accessing the IMCG website. The outcome of these meetings will have long-term implications for mires globally, as it will influence how these ecosystems are counted in terms of greenhouse gases and how they are valued in terms of carbon storage and ecosystem services.

IMCG has recently written to IPS to indicate that it cannot support the Responsible Peatland Management Strategy that they have drafted. IMCG

feels that the strategy does not reflect the views of the major organisations engaged in researching and promoting the wise use of peatlands. While the title of the document suggests that the strategy addresses all the issues relating to peatland management, this is not the case. The current draft strategy has been drafted over a very short time period which has precluded detailed analyses, discussion and input. The document largely focuses on peatland management for economic purposes, without balancing the associated environmental and social issues. IMCG has suggested that the appropriate mechanism for an international strategy on peatlands is the Coordinating Committee on Global Actions of Peatlands, which is recognised by the Ramsar Convention and therefore has the necessary mandate. As you read this newsletter, I will be on Macquarie Island investigating the causes of a massive and rapid dieback in the endemic keystone fieldmark cushion plant species, *Azorella macquariensis*, which is the major peat former in the upland areas of this sub-Antarctic island. It is not yet clear whether the cause of death of up to 90% of this species is due to a single factor or a combination of pathogens, climate change and/or increased rabbit numbers.

I urge you to read the information on the next field symposium in Poland next year and to consider including this event in next summer's field program.

Jennie Whinam

REGISTER

Please fill out the IMCG membership registration form.

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

Meeting of the IMCG Main Board

07-09-2009 (Tbilisi) and 12-09-2009 (Chirukhi).

Present: Jennie Whinam (chair), Hans Joosten, Francis Müller, Piet-Louis Grundling, Tatyana Minaeva (only Chirukhi), Tapio Lindholm, Rodolpho Iturrapse, Line Rochefort

Agenda

- 1) Opening and welcome
- 2) Executive Committee election
- 3) Main Board cooptation
- 4) Treasurer and financial situation
- 5) Secretariat and other organisational issues
- 6) Journal: progress report
- 7) IMCG Action Plan 2006 – 2010: topical issues
- 8) International Conventions
- 9) IPS/IMCG: strategy, peat and energy
- 10) Georgia/Armenia field symposium and conference
- 11) Information on next venue 2010 in Poland; discussion on future venues

1) Opening and Welcome

The chair opened the MB meeting in Tbilisi and announced a continuation in Kobuleti (became Chirukhi)

2) Main Board cooptation

The MB has coopted Eric Munzhedzi (South Africa, 8 votes), Shengzhong Wang (China, 11 votes) and Eduardo García-Rodeja Gayoso (Spain, 11 votes) as Main Board members.

3) Executive Committee

The elections of the IMCG Executive Committee lead to the following results:

Jennie Whinam – chair, Hans Joosten – secretary, Francis Müller – treasurer, Tanya Minayeva – member, Piet-Louis Grundling – member.

Jennie Whinam announced that she will step down as chairman in 2010.

4) Treasurer and financial situation

The MB welcomes Francis as new treasurer. The *financial administration* has, however, not yet been transferred by Philippe. The MB proposes Francis to go to Lille and to arrange it.

At the moment we do not have a good overview on the *financial situation* of the IMCG, but it can not be good.... Francis will work out a strategy to improve the financial situation of the IMCG. The MB agrees that we will continue the policy of no-membership-fee, but donations from members have to be stimulated.

The change of treasurer implies that it would be good to change the seat of the association (presently at the University of Lille) also. Francis proposes furthermore to change the bank to the Credit Cooperative, because the latter is closer to the seat of the current treasurer and has a better identity with respect to NGOs and nature conservation than the

current bank. The MB agrees to that. Francis will arrange it with Jennie and Hans. Possible internet banking to enable also other EC members to make financial transactions will only be arranged when this brings advantages.

We will ask the organisers to report back to the IMCG about the financial aspects of the Field Symposia to get for future symposia a better overview of costs.

5) Secretariat and other organisational issues

The role of the *Newsletter* is crucial in the functioning of IMCG. Therefore it is unfortunate that the *Newsletter* did only appear 2 times in 2008. The MB acknowledged the valid reasons for this, but stressed the secretariat to try and maintain a regular appearance. Various proposals for improvement were discussed including

- Publish the *Newsletter* more often but with less pages. This proposal was rejected because it would not decrease the efforts of the secretariat.
- Encourage people to write: invite all members (via the mailing list) a month before appearance of the *Newsletter* to submit contributions. Whereas we normally do not have a lack of copy, this is a good way to involve members → task for Michael T.
- Skip the extensive analyses of topical mire conservation issues. As members in their discussions appear to benefit from having such in-depth analyses (regularly positive feedback), the MB favours them to be continued. It would, however, be useful also to produce factsheets with short and clear information (*cf.* the web-item that Michael T. made on the climate discussions). Members are requested to contact Michael T. on topical issues for which they would like to see such factsheets.
- To improve readership, members must be invited to share the *Newsletter* with others.

The contact with the growing *membership* needs more attention. The information of John to the MB on the background of people applying for membership is highly appreciated. At the moment, however, the follow-up after membership application is limited. Members should be better informed when their membership is accepted (which might be 3 months after their application...). Furthermore the membership expertise database should be worked out and made available to the membership. A good idea is also to welcome new members with a short presentation in the *Newsletter* (if they consent). As John has too little time to do all these things, Hans will try to find another IMCG member in Greifswald to support these activities.

The *website* is functioning well, but is not sufficiently consulted by members for them to stay up-to-date.

Members will be proposed to consider opening their web-browser with the IMCG website.

In accordance to the decision of the MB of 2006 (see IMCG Newsletter 2006/3) IMCG has given *financial support to the secretariat* to facilitate its work. The MB recognizes the achievements of John C in this respect. As the secretariat can now be supported by Greifswald project income, the IMCG financial support is no longer necessary.

The MB discussed the position of *local/regional IMCG groups/branches* in the organisation and concluded that it is not (yet) necessary to organize the structures more formally. When regional groups want to use the name of IMCG for regional meetings they need permission of the secretariat, which will deal with such requests in a simple, practical and strategic way. When substantial central IMCG resources are involved, the consent of the MB is required.

6) *Journal: progress report*

The MB congratulates Olivia for getting the journal up and running in an excellent way.

7) *IMCG Action Plan 2006 – 2010: topical issues*

Hans gave an update on the latest developments on the *climate* front with the UNFCCC, the Kyoto Protocol, and the Voluntary Carbon Standard and was requested to present overviews at the Kobuleti conference. For detailed information on UNFCCC and KP, see the IMCG Newsletters 2009/1, 2009/2 and 2009/3.

The question was asked how the “life cycle analysis” of energy peat is dealt with under the Kyoto Protocol. → Hans will sort that out.

Line reported on the large-scale destruction of mires for the exploitation of *oil sands in Athabasca* (Alberta). → Line, Tanya (who is involved via Wetlands International’s contacts with Shell) and Jonathan Price will prepare an review article for the Newsletter with information and an analysis of bottlenecks and perspectives, and the coordination with the “First Nations”.

Tanya reported on the *Energy Strategy of Russia* that includes plans to use more peat domestically, to enable more oil and gas to be exported and to provide remote areas that are difficult to reach with oil/gas transport infrastructure with energy. The strategy was already adopted in 2007, but a recent press release indicates that now money is available for implementation.

We have to develop a strategy with respect to energy peat, also in relation to IPS. In Russia IPS is fully dominated by energy peat people. → Tanya will consult the Russian peat people about the content and the consequences of the strategy. This will be coupled to a feasibility study into peat extraction and peatland rewetting that Hans and Tanya are currently planning for the German Environmental Ministry.

8) *International Conventions*

Tanya sketches the history of the *Ramsar CCGAP* and stresses that the CCGAP should be more country addressed and country driven as has been in the past. The secretariat of the CCGAP is with Wetlands International and Tanya has now within WI the task to bring CCGAP forward.

The MB observed the need to provide more guidance to the members how to act in and with the various international conventions technically. An article for the newsletter on that subject will be prepared (→ Tanya).

IMCG does not sufficiently monitor the resolutions and other developments in the *CBD*. → Line and Tapio will take that up and will regularly inform the MB.

9) *IPS/IMCG: strategy, peat and energy*

The IPS has asked IMCG to endorse the IPS Draft Strategy for Responsible Peatland Management. This Strategy was discussed in two workshops and by e-mail consultation in 2009 and distributed for final approval on 1 July 2009.

Several MB members expressed their doubt of having such document, as we already have the Wise Use of Mires and Peatlands. It makes no sense discussing nice wording in general strategies when simultaneously mutual trust is decreasing. The MB noticed that experiences with peat renewability and the climate effects of peatland use have shown that IPS is not capable or not willing to have a real communication and discussion.

The MB decided not to support the Strategy in its current form as the strategy insufficiently reflects our views. While the title suggests that it addresses all the issues relating to peatland management, the document largely focuses on peatland management for economic purposes, without balancing the associated environmental and social issues. The current document has been drafted over a very short time period which has precluded detailed analyses, discussion and input. IMCG suggests that the appropriate mechanism for an international strategy on peatlands is the Coordinating Committee on Global Actions of Peatlands, which is recognised by the Ramsar Convention and therefore has the necessary mandate.

10) *Georgia/Armenia field symposium and conference*

A *memorandum* will be prepared summarizing our most important conclusions on the status of Georgian mires and presented for adoption during the Kolkheti block at the conference.

Draft *conference resolutions* have been submitted for Finland and South Africa. As the Congress in Kobuleti does not include a General Assembly, these drafts will be sent out as Letters of Concern under responsibility of the MB.

Tapio will present the resolution for Finland as part of his presentation. After adoption by the conference it will be sent out as a Letter of Concern.

The draft Letter of Concern will be circulated during the meetings.

Honorary members have to be nominated by the Main Board and have to be granted the status of honorary member by the General Assembly. As the 2008 General Assembly was not held, next honorary memberships can only be granted in 2012. Possible candidates were discussed.

Several *press meetings* have been arranged during the Field symposium and Congress.

The proceedings of the *2006 IMCG Finland Congress* are almost ready. The volume has now 34 articles; its publication is planned for 2010.

11) Information on next venue 2010 in Poland and Slovakia; discussion on future venues

At the Congress, Hans will present a powerpoint presentation with detailed information on the dates and schedule of the 2010 Field Symposium, Congress and General Assembly in *Poland and Slovakia*. A question was why after the successful 2006 SWS/IPS/IMCG excursion again NE Poland was included in the programme. The MB thought this was acceptable because only a small number of IMCG members had participated in that excursion, but asked attention of the organisers to limit excessive overlap.

From 1-5 February 2010, IMCG will organize two Peatland sessions (total 12 papers) in the

International Conference on Flood Pulsed Wetlands in *Okavango, Botswana* (1-5 February 2010) to bring the regional peatland people together. Next to the normal pre- and post conference excursions, IMCG will organize a special peatland orientated post-conference excursion of a few days in the area. → Piet-Louis will coordinate with Fred Ellery and prepare a paper for the Newsletter. For further information: contact Piet-Louis Grundling: peatland@rogers.com

In spring 2010 PeatNet will have its final meeting in Canada. There are plans to bring the PeatNet network under in a special peatland chapter of SWS.

In 13-16 June 2011, IMCG (Line et al.) will co-organize a meeting in Quebec Canada with much attention for peat as a fuel (cf. recent discussions in Ontario). The first 2 days of IMCG meetings will be followed by an IPS meeting on “responsible management of peatlands”. The junction of the meetings is done to make it worthwhile for people from the whole of Canada to participate.

Other proposals for 2011 include a permafrost associated peatland meeting in Siberia (Yakutia, East Siberia or Yamalo-Nenets, West Siberia)

For 2012 the following venues were proposed: Tasmania, Andes (Colombia, Peru/Bolivia), China, and East-Africa (Kenya, Uganda, Ruanda). After short discussion the MB decided to explore the perspectives of an Andes meeting in 2012. Rodolpho will take the lead.

IMCG Main Board and Executive Committee

Election of the IMCG Executive Committee

After the election of the Main Board (see previous IMCG Newsletter), the IMCG Executive Committee had to be elected. This happened during summer 2009. Information about the candidates for the different positions was given in mails of 13 June 2009 from the secretariat. Asbjørn Moen received the votes and coordinated the elections.

From the 12 IMCG-MB members, 11 members had voted per 15 August, 2009 (deadline). The results are as follows:

Jennie Whinam – chair: 10 yes, 0 no, 1 abstention
 Hans Joosten – secretary: 11 yes, 0 no, 0 abstention
 Francis Müller – treasurer: 11 yes, 0 no, 0 abstention
 Tanya Minayeva – member: 11 yes, 0 no, 0 abstention
 Piet-Louis Grundling – member: 11 yes, 0 no, 0 abst.

Result: the Executive Committee is elected as proposed.

Cooptation of extra IMCG Main Board members.

After the election of the IMCG Executive Committee, the IMCG Main Board has co-opted three more members. As there were more than 3 candidates a voting was made that led to the election (again coordinated by Asbjørn Moen) of the following new IMCG Board members:

- | | |
|---|----------|
| 1. Eric Munzhedzi (South-Africa) | 8 votes |
| 2. Shengzhong Wang (China) | 11 votes |
| 3. Isabel Fraga or Eduardo Rodeja (Spain) | 11 votes |

Isabel Fraga and Eduardo Rodeja were proposed jointly. After their election they decided that Eduardo would take the task.

Eric and Eduardo present themselves in this Newsletter.

Pleased to meet you: new Main Board members

Eduardo García-Rodeja Gayoso (Spain)



This is a short note to introduce myself as a new member of the IMCG Main Board. I am a professor of Soil Science at the University of Santiago de Compostela and, currently, director of the Department of Soil Science and Agricultural Chemistry of the university.

My first contact with the IMCG, apart from the knowledge of its activities through its website, took place during the IMCG Field Symposium at Tierra del Fuego in November 2005, which I attended in company with M. Isabel Fraga, professor of Botany of the USC. The main aim of our attendance to the symposium was to present the studies of our research groups on the mires developed in NW Spain, the peculiarities associated with their formation and evolution, and to make known to the members of the IMCG our concern for their conservation, mainly due to the huge expansion of wind farms at its main distribution area in the north mountains of Galicia. After the good experience during the meeting with the active and pleasant people of the IMCG, we decided to join the IMCG and collaborate with its activities.

As a pedologist, the first approach to the study of mires was from the standpoint of soil science, but later our attention was focused on mire biogeochemistry and the use of peat bog archives as records of environmental change and on mire ecology.

In the year 2008 we organized, in cooperation with the IMCG, the Wind Farms on Peatland Symposium in Santiago de Compostela, the first activity within the theme, which focused on the intersection of European policy for wind farm development with peatland interests. Recently I have participated in the redaction of the document 'Preliminary ecological basis for conservation of habitat types of Community interest in Spain' for the Spanish Ministry of Environment. In particular, M.I Fraga and I developed the chapters on several habitats of the group 72 (Calcareous fens). Currently, I am involved in a research project on the mires of Tierra del Fuego and continue with the study of the mires of Galicia as well as different activities devoted to their protection. As a new member of the IMCG Main Board I offer my knowledge and expertise in soil science and my experience in management, of more than 10 years, in positions of responsibility at the University of Santiago de Compostela. I would like to help to extend the influence of IMCG in Spain and other countries, assist in raising interest in the study and protection of peatlands in the Iberian Peninsula and the disclosure of their environmental interest, promote cooperation with other scientific societies as the Spanish Society of Soil Science, and cooperate in other group activities as and when appropriate. Finally, I appreciate the trust placed in me by those who have elected me as a member of IMCG Main

Board, a fact which reinforces my interest in the study and conservation of peatland ecosystems.

Eduardo García-Rodeja Gayoso



Eduardo in the Valle de Andorra mire (Tierra del Fuego, Argentina)

Eric Munzhedzi Tshifhiwa (South Africa)

Eric Munzhedzi is currently holding the newly formed position of Implementation and Aftercare Manager which is a national portfolio in the Working for Wetlands Programme of the South African National Biodiversity Institute. Among other things his responsibilities are project implementation, planning and contract management, operations management, supervision of provincial coordinators and application of norms and standards for projects. Eric holds a Bachelor of Arts Degree in Education through the University of Venda where his major courses are Geography and Biological Sciences. He worked at the University of Venda as a research assistant in the Natural Science department during his studies. After completing his degree he worked at the University for about three years as a laboratory assistant and conducted practical works in biology and zoology. During this period he was exposed to peatlands by Piet-Louis Grundling who gave presentations at the University. Peatlands were visited for assessment. From thereon Eric's passion on wetlands was stirred. Eric joined the Working for Water programme where he was dealing with wetlands as student project Manager. He progressively moved to Project Manager, Senior Project Manager, Area Manager, Regional Coordinator, Provincial Coordinator finally to become one of the top managers of the Working for Wetlands programme. Eric is one of the pioneers of the Working for Wetlands Programme. When the programme formed under Working for Water (under the Department of Water Affairs and Forestry) he was there facilitating and contributing to the process. Eric was also exposed to the International Course on African Wetland Management where he successfully

obtained a Certificate at the Kenya Wild Life Training Institute in Naivasha, Kenya on the 23rd November 2004.

Eric Munzhedzi has much involved in peatlands during his daily activities in the Working for Wetlands Programme. He has been involved in the rehabilitation of a number of peatlands, including Bodibe peatland in Lichtenburg in the Northwest province and at QwaQwa area in Maluti a Phofung in the Freestate province of South Africa.

Eric has been a member of IMCG for a number of years now and is a key member of the IMCG South Africa committee.



Eric Munzhedzi assessing peat thickness

World Wetlands Day 2010

The second of February each year is World Wetlands Day (WWD). It marks the date of the signing of the Ramsar Convention on Wetlands on 2 February 1971. Each year, government agencies, non-governmental organizations, and groups of citizens at all levels of the community have taken advantage of the opportunity to undertake actions aimed at raising public awareness of wetland values and benefits in general and the Ramsar Convention in particular. From 1997 to 2009, www.ramsar.org has posted reports of WWD activities of all sizes and shapes, from lectures and seminars, nature walks, children's art contests, sampan races, and community clean-up days, to radio and television interviews and letters to newspapers, to the launch of new wetland policies, new Ramsar sites, and new programmes at the national level. The 2010 WWD slogan: "Caring for wetlands – an answer to climate change".

At the end of 2009 a critical climate change meeting of the world's leaders will take place in Copenhagen, and in January 2010 the International Year of Biodiversity will begin. This makes biodiversity and

climate change timely themes, and there is much to say at global and national levels about wetland species and ecosystems under continuing threat from unsustainable human practices, about the likely impact of climate change on wetland ecosystems, and about the role of wetlands in climate change mitigation and adaptation.

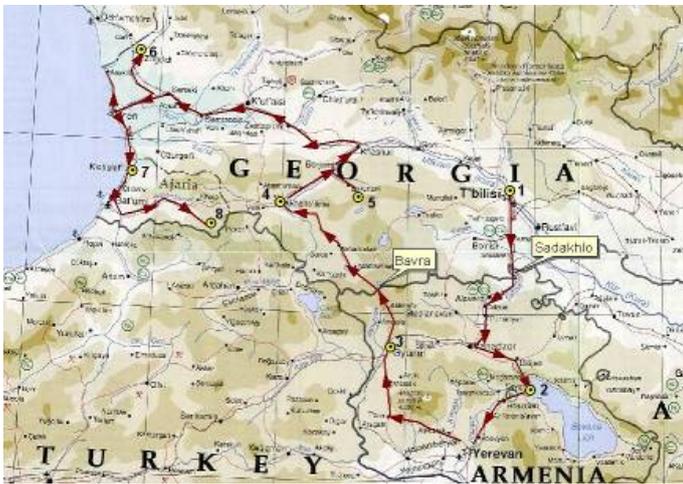
The Ramsar Secretariat is distributing material (in English, French, and Spanish) that will be helpful to you in your WWD activities. It covers where we are in terms of wetland biodiversity loss, why such losses matter to ecosystem health and ecosystem services from wetlands, what's causing the unprecedented losses, specifics on climate change impacts on wetlands, as well as a look at adaptation and mitigation strategies.

The WWD material is available for download from the Ramsar website. You can contact the Ramsar Secretariat (wwd@ramsar.org) for hardcopies of poster, leaflet and CD-ROM. For more information surf to: <http://tinyurl.com/yftczuj>.

From calamity to success: IMCG Meetings in Georgia and Armenia

1-16 September 2009 – by Piet-Louis Grundling

There comes a time in the life of any person or organisation when you need to reflect on your objectives, actions and interests. To me the recent symposium to Georgia and Armenia provided me this opportunity. Is it possible that a voluntary network such as the IMCG can make a difference in a world where exploitation and self interest are resulting in the wholesale destruction of our environment? A while ago mires and peatlands were marketed by some as the last natural frontiers – the world listened and these frontiers are now being tested – it is always a challenge to explore the unknown. How then is it possible that we in the IMCG have this believe that we can make a difference, that we can challenge the governments and multi-national corporations of this world?



The route of the IMCG field symposium through Georgia and Armenia.

Well, I once again saw the answer, the result of this passion for a cause during the IMCG 2009 Field Symposium in Georgia and Armenia and the Scientific Congress in Kolkheti, Georgia; and how it can transform opinion, people and I believe governments and landscapes. The symposium was postponed in 2008 due to regional conflict but the Georgian and Armenian organisers persevered and for good reason! We were able to experience for ourselves the dramatic landscapes of the Caucasus, enjoy the company of its hospitable people and the uniqueness of its mires. We started the field symposium with a meeting in Tbilisi (Georgia) on the evening of 1 September, travelled through Armenia from 2 – 5 September and ended the field symposium at Kobuleti (near Batumi, Georgia) on 14 September 2009. The scientific meeting took place on 15 and 16 September along the shores of the Black Sea where Jennie Whinam, our Chair, concluded matters and rightfully declared this symposium a success!

The symposium was not without controversy – how can it not be? This is after all the Caucasus with an ancient history of advanced civilizations, steadfast

religion but also of upheaval and turmoil. We did not experience all of those but a few delays with transport, Khachapuri (ხაჭაპური / “cheese bread”) overdose followed by its shortage, and a lack of information at times made for a few sad faces. However, nature compensated for this with a 6.3 Richter scale earth quake, torrential downpours, flooding, lightning storms and tornadoes (apparently the 1st in recent history). As this was not enough to dull our senses we were totally unprepared for the wonderful attitude of our hosts towards us. In Armenia, Karen gave up his participation in the field visits to make sure that justice was done to Asbjorn and Berit Moen when they suffered at the hands of thieves. In Georgia people share their wonderful culture with us – oh! ...those beautiful voices and dances. People went out of their way to supply in the needs of us foreigners: imagine people wanted tea instead of coffee, or even worse, some peatlander needed milk in his coffee!! On a serious note – I saw a few evenings that Georgians did not partake in meals because they feared we would not have enough. Although that was not the case when it came to the drinks....!! We are very grateful to the people of the Caucasus for looking after us, for sharing their beautiful mires and landscapes.



A group photo at Lake Sevan, Armenia. We nearly represent all the continents of the world – and if we group Jennie’s (sitting next to Hans in the middle back) sub-Antarctic islands with Antarctica we score 100%!

Which brings me back to my original point – how do we in the IMCG make a difference in the world out there? Did IMCG 2009 made a difference to mire conservation in Georgia and Armenia? – I believe, even though some people got a bit discouraged, that we did. Yes, a lot of work was done by Hans Joosten and students in the past decade. So much so that even the Minister of the Environment met with us for an hour or two. However, I measure the success of this

trip in the enthusiasm I have seen amongst IMCG members as they engaged with local people: Transferring their knowledge and passion to eager students and professionals alike. That makes the difference, this networking taking place across political boundaries and divides building relationships and partnerships which I hope will not only benefit the people and mires within the Caucasus but will also strengthen the ties within the IMCG.



Just look how colourful – we were treated!! Khachapuri in the foreground left and Adriana Itturaspe with a young dancer from Ispani on the right.

I believe that from a near disaster in 2008 due to circumstance outside our control the IMCG had a very successful (although not always easy or smooth) symposium in Georgia and Armenia. Thanks again Izo, Karen and your teams. Also thanks to those members who came to support these precious people and their passions for mires.

I need to highlight the contributions of a few people:

- Izo – thanks for organising this lovely trip and for not giving up. We hope you have rested well! Keep up the good work.
- Karen – for showing us Lake Sevan and a mire or two!
- The young Georgians for being so friendly and helpful (Khatuna, Manuchar, Sofa and Tamara).
- The young Germans (Mathias and Franzi) for being so involved in the arrangements and always ready to deal with the next challenge,
- Asbjorn Moen, for sharing 25 years of IMCG nostalgia with us on the last night together (sounds if some symposia was just as exciting as this one!), and lastly
- Our own Francis Muller whom discovered our bus's engine was stolen at the sacred Cave City. Francis your humour landed me in trouble – many times.....

I want to measure this successful symposium at the hand of the experience of 4 young Georgian folk who joined us, some of them are young students and some young conservation professionals (and all very beautiful – except for Manuchar, but he is strong!!).

Judge for yourself – here is what they had to say about the IMCG, the symposium and what they saw and experienced:

Welcome to Georgia – Khatuna Tsiklauri

I liked the IMCG symposium and the mires of Georgia and Armenia, because it forms a particular area of interest to me. I work in the Ministry of Environmental Protection and Natural Resources of Georgia (Agency for Protected Areas) and we have various problems with our mire ecosystems. One of the most pressing problems, for me and our office, is the lack of awareness in our country on the importance of our mire ecosystems and the need for peatland conservation and protection.

People do not realise the richness of our mire's biodiversity and the global interest in our mires. Persons in important positions don't know which road to take: should peat be mined from these mires or should they be conserved in protected areas for our future? Besides, for them it is not important that the Ispani mires are part of a very extensive water reserve; this area to them is more suited for large development projects.



Khatuna (second from the left) at the spectacular cave city with (from left to right) Izo, Sofa and Peat-Louis

This symposium gave me a very good opportunity to meet with many people and scientists, who gave me excellent information about mire ecosystems and conservation. In future, I want to see more mires in other countries, I want to learn more on mire management, balancing conservation and development.

I want to help my country and its protected mire areas. Administrators need expert advice and clear direction as conservation work can be difficult. I want to support my country in this respect as there is hardly anyone at present except Izo, Rezo and Sofo, and a few others. Who of our people can really say they know mires?

The more I read about mires in literature and on the internet, the more I realize that you have a very interesting sphere in science!

The best way to express my thoughts and ideas is by saying (again): “Welcome in Georgia”

Khatuna Tsiklauri
Agency of Protected Areas, Georgia
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From the High mountains of Georgia – Manuchar Mamulaze

We, Manuchar and Merabi (both MSc students of Izo), have worked together with German students Matthias and Phillip in Kolkheti and we joined you in Kolkheti (Manuchar) and in Chirukhi during the symposium (both of us). Thanks for the unforgettable days, we learnt a lot.



Natia Tetemadze and Manuchar in the Ispani I mire in Kobuleti looking at potential Sphagnum farming plots.

We are from the high mountains of Khulo village in the Shuakheti district (of which Chirukhi is also part). Izo, during our lectures about anthropogenic impacts on wetlands and mires, compares the erosion processes in the high mountains of Georgia (especially in the area which you visited in Chirukhi) with the erosion in the mountain kingdom of Lesotho. In preparation of the IMCG tour, we visited a *Sphagnum* mire in high mountain setting, Sari-cairi, situated southwest of Chirukhi Hill. Hill slopes are collapsing due to large scale erosion in this area. Can this catastrophe be halted?

During our IMCG visit in Chirukhi we had a strong focus on nature conservation. Hans Joosten has promised that one of his students will visit Chirukhi to study the area with us. After learning so much I (Manuchar) decided to work in nature conservation and nature protection. We would like to establish protected areas in Chirukhi, and to do some habitat rehabilitation projects on degraded wetlands.

Next to forest cutting and wetland degradation (mainly due to overgrazing by cattle), a changing climate has its impact on the high mountain areas. Our grandparents, for example, still remember long, cold winters, but now winter is shorter and warmer with less snow. The village where I come from is

experiencing severe erosion that makes it impossible for people to live there anymore; people have lost their beautiful houses and landscapes, and 15 years ago had to move to new places near Lake Paliastomi. Of course we have very nice houses there but we miss our mountains.

We need your help and your opinion. Let's hope we meet again in the context of a habitat restoration project.

Manuchar and Merabi
email: txilvana@yahoo.com



A fen in a good condition at Chiruki. However, erosion just downstream of the fen (insert) threatens its existence.

Reflections on Kolkheti and the IMCG visit – Sofa Tkhilaishvili

“This country is full of feeling, warmth and wood. There are often heavy rainy days in every season of the year. The people there have settled down on bogs. They have wooden and reed thatched houses. They rarely walk, but rather move by boat, which is carved from a solid tree. It's better to move by boat because of the many channels.”



Sofa (far right) investigating a peat core together with (from left to right) Rudolfo, Russell, Piet-Louis and Sake in a high mountain mire complex of Javakheti.

We have this description by Hippocrates (B.C 460-356) in his learned work on the Kolkheti Lowland. He described conditions before large scale human transformation. Nature took its course over time and today we have the unique Ispani II mire. It was fitting

that when the IMCG members visited Ispani II, the type location of the percolation bog, it was raining cats and dogs; this is a usual natural phenomenon that has shaped the Kolkheti Lowlands.

I have thought a lot about the future of the *Sphagnum* mosses that make up the Ispani mire, living only on rain. What will happen if future changes in climate affect precipitation patterns in the Kolchis?

It is a pity though, that it was raining so much while IMCG was visiting and lost a chance to see and fully value the whole ecosystem that is of such importance in our region. I hope you'll return to Georgia one day, and that IMCG will further promote the beautiful biodiversity of our country and will also remain involved with the conservation of Georgia's high mountain mires.

I want to say thanks to Jennie, the IMCG chair, for joining us; to Hans for teaching us the history of the Kolkheti mires; to Matthias for his huge love of Georgia and for the important research work he is doing in the areas of Kolkheti; to Piet-Louis for the good and merry time which he brought into our group; to Izo who brought you to Georgia – she gave me the chance to meet IMCG; to my Georgian friends, Tamar and Khatuna, and finally thanks to all of you who took part in this interesting tour. Thanks a lot everyone!

Sofa Tkhilaishvili
Kobuleti Protected Areas, Georgia
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Izo and Matthias braving the weather on the renowned Ispani II mire, a percolation bog

In love with mires – Tamara Qurkhuli

“In the beginning was the word.....” Yes, first it was a word, more exactly not a word but a phrase; my first definition of mires... “A mire is a wet and muddy place you may be drowned in.”

This early childhood definition I had to put aside on this IMCG symposium after experience and training by countless mire specialists: “A mire is a wetland where peat is currently being formed ...” The change seems but small when put in words, but at least the fear of drowning is lost. However, during this

symposium not only my concept of the word “mire” changed, but also my interest in mires and wetlands as I discovered their beauty and harmony as ecosystems. With that came a transformation in my opinions and my vision about mires and wetlands.



Tamara enjoying a lunch break at Lake Arpi, a Ramsar site, in Armenia.

This, for me, is the main result of this exciting expedition with the IMCG, travelling from south-east Caucasus to the west Caucasus, from Armenia (Sevan) to Georgia (Kolkheti). This journey was everywhere accompanied by the hospitality of Caucasian people and by beautiful landscapes varying from semi-deserts to Kolkheti forests (an interesting and wide spectrum of biomes for a relatively small region). During this journey there was born within me the conviction that these people and these landscapes (this nature) need more support scientifically and politically as well as legally and financially to protect intact ecosystems from unsustainable activities as well as to support rehabilitation of degraded landscapes. There are plenty of problems to manage in the Caucasus and intervention is needed because not only is the region's biodiversity and beauty of local importance but it is recognized as a world heritage site.

Yes, the Caucasus is really very controversial and diverse... and the same could be said about the field symposium. Every day was unique and very often full of planned or non-planned surprises; some of them so sudden that made it hard to be adaptable. But we could manage almost every problem and survived to tell the story. Some days were more productive than others, but each one loaded enough to give us something to think about, to discuss and to impress upon us something special.

I am very thankful to Izo: the organizer who (with the IMCG) gave me such an opportunity to take part in the program for which I only had to render some support to the organizers. I was very impressed by the first coring. To tell the truth it was my first. I was motivated to expand my knowledge and experience

about wetland biology, ecology, flora/fauna, hydrology, principles in development dynamics, management etc. I am worried about how successful and the rewetting of the mire at Lake Gili will be and whether the local people will support it. Similarly, the issue of *Sphagnum* farming in Georgia; this is so complex and complicated with many specific economical, social and political factors from Georgian reality which must be taken into account.

I was brave enough, like other participants, to move toward the target site and goal every day, despite many kinds of barriers. We used a variety of transport from primitive wooden-boats to vehicles and a whole spectrum of relationships with local relatives and officials to make ends meet. We were braving the hot weather and biting sun of Armenia and the torrential downpours of Kolkhich.

I was proud because of the value and diversity, not only of nature, but of culture and traditions in the Caucasus, the richness of museums, bearing testimony of the great role Caucasians played in the past at a crossroad of cultures along the Silk Route, of Georgia's past fame and historical value, and of people united in polyphonic songs: diverse voices joining in one song; as the diverse people and regions in one country, one voice!

But there were also the tearful eyes of a woman dressed in black, whom I saw on the way through Gori that had been hit in air strikes during the 2008 conflict. I was shocked as many others because of seeing the terrible view of a village full of refugees. I was sorry looking at the forest in the Borjomi region,

burnt in the 2008 conflict, although outside the zone of conflict.

I was very glad that IMCG members from Russia took part in this symposium. I began to believe that we in both countries have enough ability, responsibility and knowledge to solve our problems. We need and we will have a fruitful and peaceful future!!! (And then we will have plenty time and money for nature science and for nature conservation.)

I am very hopeful that the IMCG Kobuleti Memorandum will not remain words on paper, but that it will work effectively and that the support from the IMCG will be useful for both Georgia and Armenia. I am now in love with mires... any kind and type of mire or wetland... and I have a great desire to form part of a group, a network of people, loving and working for nature: for wetlands.

My journey has just begun...

Tamara Qurkhuli
email: tamriko.7@gmail.com

What more can I add? The strength of the IMCG is and will be in the passion of its members; to promote the cause of mire conservation and to inspire others such as we have inspired these young people from Georgia: Peat and Peace Forever!

Till we meet on a mire again, my friend!

Piet-Louis Grundling
IMCG, South Africa
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The IMCG Kobuleti Memorandum, Georgia 2009

During the period September 1 – September 16, 2009, in the 25th year of its existence, the International Mire Conservation Group (IMCG)¹ held its 15th International Field Symposium in Armenia and Georgia, as part of IMCG's regular field assessments and symposia.

An IMCG delegation from 12 countries and 5 continents, accompanied and supported by representatives of the Ministry of Environment Protection and Natural Resources of Georgia and Georgian scientists, travelled across the Javakheti region, the Kolkheti Lowlands (Kolkheti National Park, Kobuleti Nature Reserve) and the Shuakhevi region (Chirukhi), studying the diversity and functionality of peatlands and the issues facing them. As a result, the IMCG experts, recognizing the achievements of the Government of Georgia in improving land use planning and in developing the network of protected areas, including those of international importance, look forward to the continuation of this policy. We wish to inform the Government, central and regional authorities, and the local self-governance of Georgia of the following:

¹ The International Mire Conservation Group is the global network of over 500 specialists from 56 countries having particular responsibility for and interest in the conservation and wise use of mires and peatlands worldwide.

- The IMCG is particularly impressed by the variation in well-developed mires in Georgia. As a result of the special biogeographic and climatic conditions, Georgia harbours mire species, species assemblages and even a mire type – the percolation bog - that are not known from other places in the world. The mires and peatlands of Georgia and the landscapes in which they are embedded form a unique and irreplaceable part of the Earth's natural heritage.
- Mires and peatlands have very important functions for regulating local, regional and global climate and hydrology and for sustaining biodiversity. These functions are recognized by international conventions to which Georgia is a Contracting Party, including the Convention on Wetlands (Ramsar), the Convention on Biodiversity and the UN Framework Convention on Climate Change.
- The mires of Georgia, and the impressive wild and cultural landscapes of which they are an integral part, represent an important economic resource. They provide clean water, flood control and enable a (hitherto largely untapped) sustainable source of income through ecotourism and associated activities. Furthermore the conservation of these mires and peatlands will facilitate Georgia meeting the goals of the UN Framework Convention on Climate Change with respect to both mitigation and adaptation.
- IMCG greatly appreciates the work that has already gone into characterising and understanding the mires and peatlands of Georgia. The extensive complex of pristine mires and forest landscapes of the Kolkheti National Park clearly deserves international recognition and integral protection under the World Heritage Convention.
- IMCG further acknowledges and greatly appreciates the efforts in protecting the peatlands of Georgia, especially in the Kolkheti Lowlands, including the designation of two Ramsar sites, the establishment of the Kolkheti National Park and the Kobuleti Nature Reserves and their management infrastructure, the development of impressive interpretation and education materials to convey the values of mires to the national population and foreign visitors (also by the Tchaobi NGO), and the effective management, especially in the Ispani 2 mire.
- It is clear, however, that extensive areas of mires and peatlands are not yet sufficiently protected. The national park and nature reserves lack adequate buffer zones to protect the sensitive mire ecosystems against damage brought on from the outside. Most mires in the protected areas and Ramsar sites are being badly affected by fires for hunting purposes, that – next to illegal grazing, wood cutting and fish farming - , is insufficiently controlled by current management. An adequate system to monitor changes is still missing. The establishment and operation of the Black Sea Terminal at the river mouth of the river Khobi bordering the core zone of the Kolkheti National Park must be considered as a disgrace of global dimensions.
- Future conservation and wise use of mires and peatlands in Georgia requires:
 1. Further inventory of their biodiversity values and other functions, also in the high mountain areas;
 2. Protection of the natural values of the most important mires;
 3. Recognition of the international significance of these peatlands;
 4. Prevention of damage to all pristine sites, including a total ban on peat extraction and drainage and an effective control of fire, grazing, wood cutting and hunting activities under a management regime;
 5. The assessment and elimination of negative impacts from adjacent areas by the establishment and adequate management of buffer zones around the protected areas;
 6. Obligatory and comprehensive Environmental Impact Analysis for all development proposals on and adjacent to peatlands;
 7. Systems for integrated planning and management to effectively control developments along the Black Sea coast;
 8. Strategic restoration and rehabilitation of mires and Kolkheti forests;
 9. Elaboration and adoption of legislation to effectively protect high value mire habitats;
 10. Development of expertise and organisational infrastructure for planning the conservation and wise use of peatlands, including the establishment of a system for monitoring changes in their status;
 11. Development, in a sustainable way, of the benefits, which peatlands bring to the region (tourism, water quality, carbon storage, biodiversity, research, international collaboration, etc);
 12. Development of further programmes for public awareness, education and ecotourism.

The International Mire Conservation Group congratulates the Government of Georgia and its Ministry of Environment Protection and Natural Resources with the steps already taken and offers the experience and expertise available through its network to enable the Government to meet the objectives mentioned above. We offer this support in recognition of the international importance of the mires of Georgia.

The 2009 IMCG symposium in Georgia will stimulate further international interest in research, education and conservation management of this globally important resource. The IMCG feels privileged to have had the opportunity to see such a renowned part of the world's natural heritage, thanks the Government of Georgia, the Autonomous Republic of Adjara, and all other concerned central and local authorities for their important support, and would like to join the Government in its efforts to ensure that this unique resource is conserved for future generations.

Kobuleti, September 16, 2009.

IMCG Letter of Concern for Finland

All remaining mires must be saved Peat mining threatens nearly pristine mires

The International Mire Conservation Group (IMCG) is a worldwide organisation of mire (peatland) specialists who have a particular interest in the conservation of peatland habitats. The IMCG held its 2009 Field Symposium and Congress in Georgia (Transcaucasia). The Congress in Kobuleti adopted the following resolution that is brought to your attention as a Letter of Concern.

The Finnish peat industry aims at expanding peat extraction to an additional 100,000 hectares of mires, which would double the current peat mining area in Finland. To reach this goal, an extensive environment impact assessment and environmental permit process is under way. Because of weak legislation, however, the permit process takes biodiversity and recreation values and climate impacts insufficiently into account.

A large part of the expansion is aimed at mires that are valuable from a nature conservation point of view, in spite of the fact that almost all mire site types and mire massif types in Finland are threatened, as a recent survey of threatened habitats has revealed. At present the area of unditched peatland sites (including protected mires) is some 40% of the original mire area, but more than half of that area is situated in Lapland. In southern and central Finland all mires are surrounded by ditches and partly drained. The still wet central parts of these mires are now threatened because of their technical and economical suitability for peat mining.

No serious hindrances have been set for acquiring and extracting these sites, even when the mining threatens to destroy valuable mires. Already in its Resolution on Finland of 2006, IMCG has urged Finland to modernize and update its environmental legislation so that the full range of peatland ecosystem services are duly considered in decision making. We repeat this appeal.

Climate control cannot succeed without major reductions in GHG emissions. Consequently, the fossil peat must be replaced by renewable energy. We urge Finland again to develop and implement an energy strategy - based on truly sustainable resources – and to

- phase-out fuel peat mining by the year 2025
- prevent peat mining in areas of high conservation value
- immediately stop peat mining in areas that can easily be restored, are important for protecting high conservation value areas, or provide key ecological services
- restrict remaining peat mining to deposits that have lost their ecological values, such as forestry drainage sites and agricultural fields on peat soil.

Mire habitats and species are not sufficiently preserved by the existing mire conservation network: the prevention of biodiversity loss requires additional mire conservation and improvement of the ecological state of already protected mires. A wide restoration programme is needed to increase biodiversity and carbon storage, and to improve the state of waters, especially in mires drained for forestry.

Kobuleti, Georgia, September 2009

IMCG Letter of Concern for South Africa

The International Mire Conservation Group (IMCG) is a worldwide organisation of mire (peatland) specialists who have a particular interest in the conservation of peatland habitats. The IMCG willingly places its advice and expertise at the disposal of any government seeking to establish or maintain mire conservation programmes.

The IMCG held its 2009 Field Symposium and Congress in Georgia (Transcaucasia). The Congress in Kobuleti adopted the following resolution that is brought to your attention as a Letter of Concern.

The IMCG notes with approval the positive developments in wetland conservation in South Africa since the IMCG meeting in Quebec, August 2000, where the first resolution on South African peatlands (as acknowledged by DEAT communiqué dated 01 August 2001) was adopted. Subsequent General Assemblies in Besançon, France (July 2002) followed by the 14th bi-annual meeting in Paarl, South Africa, 2004 confirmed this encouraging progress.

However, IMCG notes with concern problems related to the issuing of mining and prospecting permits and a lack of protection of wetlands (including mires and peatlands) affected by current and proposed mining actions. Of recent interest are the mining applications and approvals related to the following areas which will impact on mires and wetlands:

- Sand: Seringveld (Dinokeng Conservation area, Gauteng Province),
- Diamonds and coal: Lakenvlei, Steenkampsberg Plateau (Dullstroom/Belfast, Mpumalanga Province),
- Coal: Chrisiesmeer Lake District and Wakkerstroom/Luneburg (Mpumalanga Province),
- Coal: Adjacent to and within the boundaries of the Mapungubwe National Park/World Heritage site and transfrontier park (Limpopo Province), and
- Heavy minerals: catchment of Verlorenvlei Ramsar Site (Western Cape Province).

The way the Departments of Mining and Energy issue permits without due consideration of the environment or the long term needs of society in terms of water is of special concern.

We call on the South African government to act according to the Constitution, which recognises the right of every South African to a safe environment and access to clean water and to:

- Place a moratorium on new permits for exploration and mining of coal, diamonds and all other mineral commodities affecting the mires and wetlands mentioned above, and revise all environmental mitigation measures in existing permits affecting them.
- Enforce environmental and water regulations nationally on developments potentially impacting on mires and wetlands.
- Enforce stipulations of Records of Decision, Environmental Management Plans and Environmental Management Programme Reports pertaining to all existing mining operations where mires and wetlands are affected.
- Ensure adequate and thorough consultation with all interested and affected parties and adequate consideration of concerns raised when mires and wetlands are concerned.

Mires and peatlands, like most wetlands, are under severe pressure internationally and urgently require additional protection (cf. Ramsar Resolution 8.17). The IMCG is – as always - willing to make its expertise available to the South African government to assist in these matters.

Kobuleti, Georgia, September 2009

Getting peatlands under Kyoto: The long and winding road to Copenhagen, stage Bangkok/Barcelona

by Hans Joosten

In the last Newsletter we have tried to explain what the major difficulties are to get peatlands into the Climate Convention and into the second commitment period of the Kyoto Protocol. From 28 September to 9 October and from 2 to 6 November the next round of – largely informal – negotiations took place in Bangkok and Barcelona, respectively. In these meetings a large step forward was made in defining what we actually want and with respect to formulations that could satisfy a large number of parties.

To explain the difficulties involved, we first have to pay attention to the differences between ‘land use categories’ under the UNFCCC and ‘land use activities’ under the Kyoto Protocol.

Land use categories

The United Nations Framework Convention on Climate Change (UNFCCC, 1992) has as its goal to achieve “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”. Progress with respect to this goal is monitored by means of greenhouse gas inventories that all countries have to submit. The industrialized ‘Annex 1’ countries have to report their emissions annually, the developing ‘Non-annex 1’ countries at least as an initial national communication.

IPCC

The Intergovernmental Panel on Climate Change (IPCC) is an independent scientific body established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide clear scientific information on climate change and its potential consequences. It reviews the most recent scientific, technical and socio-economic information. Thousands of scientists from all over the world contribute to the work of the IPCC on a voluntary basis.

The IPCC is an intergovernmental body, open to all member countries of UN and WMO. Governments are involved in the IPCC work as they can participate in the review process and in the IPCC plenary sessions, where main decisions about the IPCC work programme are taken and reports are accepted, adopted and approved.

Because of its scientific and intergovernmental nature, the IPCC can provide rigorous and balanced scientific information to decision makers. By endorsing the IPCC reports, governments acknowledge the authority of their scientific content. The work of IPCC is therefore policy-relevant and yet policy-neutral, never policy-prescriptive.

The reports follow guidelines that have been developed by the Intergovernmental Panel on Climate

Change (IPCCC, see box IPCC, www.ipcc.ch/). For emissions from Land Use and Land Use Change, the so-called LUCF Sector Good Practice Guidance 2003 is used. This Guidance distinguishes six land use categories (Table 1) that – while tolerating national approaches – are defined as follows (... = omission of less relevant text):

“*Forest land* ... includes all land with woody vegetation It also includes ...vegetation that currently falls below, but is expected to exceed, the threshold of ... forest land ...”

“*Cropland* ... includes arable and tillage land, and agro-forestry systems where vegetation falls below the threshold used for forest land ...”

“*Grassland* ... includes rangelands and pasture land that is not considered as cropland. It also includes ... vegetation that falls below the threshold used in ... forest land ... and is not expected to exceed, without human intervention, the thresholds used in ... forest land... This category ... includes all grassland ..., subdivided into managed and unmanaged...”

“*Wetlands* ... includes land that is covered or saturated by water for all or part of the year (e.g., peatland) and that does not fall into the forest land, cropland, grassland or settlements categories. This category can be subdivided into managed and unmanaged....”

“*Settlements* ... includes all developed land, including transportation infrastructure and human settlements of any size, unless they are already included under other categories. ...”

“*Other land* ... includes bare soil, rock, ice, and all unmanaged land areas that do not fall into any of the other five categories. It allows the total of identified land areas to match the national area...”

The definitions reflect the conceived hierarchy in categories and the strong forest bias of the UNFCCC: you first look whether something is *forest land*. If it is not, it can be something different. *Wetlands* at the lowermost end of the pecking order are really the Cinderella of the land use categories. A land can only belong to the *wetlands* category if it does not fall under all other managed land use categories...

Kyoto Protocol

The Kyoto Protocol (KP, 1998) is the legally binding commitment for the industrialized nations and formulates general tasks for all member countries. Whereas the UNFCCC reporting with respect to land use is ‘land based’, i.e. takes the land (use) categories as point of departure, the accounting under the Kyoto Protocol is ‘activity based’, i.e. it relates to human activities. It only considers activities with an effect on greenhouse gas (GHG) fluxes; natural fluxes are excluded. The fact that pristine mires sequester carbon dioxide and emit methane has no relevance, because the Kyoto Protocol and the UNFCCC only address human-induced climate change.

Under the Kyoto Protocol the industrialised countries must have reduced their emissions in the first commitment period (2008-2012) with a certain percentage compared to the reference year 1990. In Article 3.3 of the Kyoto Protocol it is decided that “The net changes in greenhouse gas emissions by sources and removals by sinks² resulting from direct human-induced land-use change and forestry activities, limited to afforestation, reforestation and deforestation since 1990 ...shall be used to meet the commitments...”

Article 3.3 thus created the possibility to compensate industrial emissions (GHG sources) by way of afforestation and reforestation (GHG sinks). Reforestation would be senseless without also accounting for ‘de-forestation’. Otherwise, a country could first cut its forest and then claim subsequent reforestation as a climate mitigation activity. Therefore, all three activities have to be accounted and Article 3 became ‘symmetrical’: it includes both the positive and the negative side of the land use activity.

Under Article 3.4, the Kyoto Protocol continues: “The ...Parties ...shall ...decide ...how and which ... additional human-induced activities ... in the agricultural soils and the land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for Parties... Such a decision shall apply in the second and subsequent commitment periods. A Party may choose to apply such a decision on these additional human-induced activities for its first commitment period....”

Land use activities

In their first meeting in Montreal (December 2005) the Parties to the Kyoto Protocol specified (in Decision 16/CMP1) these additional land use activities as ‘revegetation’, ‘forest management’, ‘cropland management’ and ‘grazing land management’ (table 1). In the same decision the main terms were defined.

These definitions have wide consequences and every word counts. If some of the following text seems pedantic, discussions on the meaning of single words and phrasing take up much of the time in the negotiations.

Forest was defined as “land ... with tree crown cover ...of more than 10–30 per cent with trees with the potential to reach a minimum height of 2–5 metres at maturity in situ.” (The “10-30% “and “2-5m” allows for national interpretations).

“*Afforestation* is the direct human-induced conversion of land that has not been forested for a period of at least 50 years to forested land...”

“*Reforestation* is the direct human-induced conversion of non-forested land to forested land...”

“*Deforestation* is the direct human-induced conversion of forested land to non-forested land...” Interestingly, a definition of *forested* and *non-forested* is missing. It would have been more consistent to use the term *forest* and to define *afforestation* as “the direct human-induced conversion of land that has not been *forest* for a period of at least 50 years to *forest*”...

Forest management is “a system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological (including biological diversity), economic and social functions of the forest in a sustainable manner”. When drafting this definition the legislators were apparently in an over-idealistic mood: only ‘good’ things (“stewardship”, “relevant functions”, “sustainable manner”) are considered, a thing as bad forest management seems not to exist, at least it has – according to this definition – not to be accounted for... Strangely the activity ‘deforestation’ deals with *forested* land, whereas the activity ‘forest management’ refers to *forest* land.

However, in this definition a link seems to be made between the activity *forest management* and the land use category *forest land* (see IPCC Guidance 2003 above).

Cropland management is defined as “the system of practices on land on which agricultural crops are grown and on land that is set aside or temporarily not being used for crop production”. Also here the activity *cropland management* seems to be directly coupled and limited to the category *cropland*.

The practice to link the activity with a category is broken in the next definition: “*Grazing land management* is the system of practices on land used for livestock production aimed at manipulating the amount and type of vegetation and livestock produced.” There are some strange consequences of this definition. First, the arable cultivation of fodder beets or maize for feeding cattle would be *grazing land management*. Furthermore, the activity under the Kyoto Protocol refers to *grazing land*, whereas the category under UNFCCC is called *grassland*. Some countries maintain that *grazing land management* not only applies to *grassland*, but can also be implemented on other land categories e.g. on *forest land*.

“*Revegetation* is a direct human-induced activity to increase carbon stocks on sites through the establishment of vegetation ... and does not meet the definitions of afforestation and reforestation contained here.” With respect to *revegetation* any reference to a land use category is absent. Furthermore, the definition of *revegetation* is clearly asymmetrical: a country choosing this activity can simply de-vegetate an area without being accountable for that, and the next day re-vegetate that area and claim the credits associated with *revegetation*.

16CMP1 also determines that parties have to account for changes in all carbon pools (above-ground biomass, below-ground biomass, litter, dead wood,

² Instead of the simple “GHG fluxes”, the KP uses the abundant phrase “emissions by sources and removals by sinks”.

and soil organic carbon). Peat losses by oxidation are covered under soil organic carbon.

In principle the activities under the KP have no relation to the categories under the UNFCCC (Table 1). Only with respect to *forest management* and *cropland management* a compelling link is made. Categories like *grassland* and *wetlands* illustrate that there is no full mutual coverage of categories and activities, because these categories also explicitly include “unmanaged land”, i.e. lands that are not subject to any activity.

Table 1: Overview of land use categories and activities used in the UNFCCC and the Kyoto Protocol, respectively. In grey the activities that are per definitionem coupled to a specific category.

Land use categories under the UNFCCC	Activities under the Kyoto Protocol
	Afforestation Deforestation Reforestation Revegetation
Forest land	Forest management
Cropland	Cropland management
Grassland	Grazing land management
Wetlands	
Settlements	
Other land	

The relation between activities and categories and the issue of ‘symmetry’ are not merely academic questions. To prevent ‘cherry picking’, i.e. only choosing positive practises and forgetting about the negative ones, symmetry is required: you have to account for all practises related to the land, subject to a chosen activity. 16/CMP1 states. “Once land is accounted for under Article 3, paragraphs 3 and 4, all anthropogenic greenhouse gas emissions by sources from, and removals by sinks on this land must be accounted for throughout subsequent and contiguous commitment periods.” This means that if a country wants to account for ‘cropland management’, it may not restrict itself to – for example – cropland soil carbon sequestration, but must also account for the N₂O emissions from fertilizer use on cropland. Because of these implications, very few countries have for the first commitment period chosen to account activities mentioned under Article 3.4.

After this illustration of the complexities and inconsistencies, we can look at the possibilities of including peatlands under the Kyoto Protocol. In essence four major options exist:

1. Adopting a land-based approach under the Kyoto Protocol;
2. Increasing the number of mandatory activities in a still-activity based KP;

3. Stimulating the voluntary accounting of current art. 3.4 activities;
4. Creating a new voluntary activity in the KP.

Land-based approach

Under the current Kyoto Protocol, countries *have* to account for afforestation, reforestation and deforestation (art. 3.3.). They *may* account – on a voluntary basis (art. 3.4) – for forest management, cropland management, grazing land management and revegetation. The latter will lead to ‘cherry-picking’, i.e. only choosing activities with a positive balance.

Therefore, Papua New Guinea has proposed to account for all greenhouse gas fluxes from all activities on all lands. This ‘land-based approach’ is currently formulated as follows:

“For the purpose of accounting greenhouse gas emissions and removals from land use, land-use change and forestry, a Party shall account for anthropogenic greenhouse gas emissions by sources and removals by sinks on forest land, cropland, grassland, wetlands and settlements as well as greenhouse gas emissions by sources and removals by sinks resulting from land-use changes from the land-use categories forest land, cropland, grassland, wetlands or settlements to any other land-use category.”

Except for *other land*, which is assumed to consist of unmanaged land, this option thus covers all managed land. It would allow accounting for peatland rewetting under whatever land use category it would or will occur.

The political support for such a comprehensive approach is, however, still limited. Many countries sympathise with the option, but argue that they are not yet able to manage the necessary inventory and monitoring. This is somewhat odd, because the developed countries already report all these emissions annually to the UNFCCC. By claiming that they cannot follow a land-based approach, they implicitly admit that their reporting to the UNFCCC is not yet what it should be...

During the Barcelona meeting (October 2009) India has proposed to go for a full land-based approach in the third commitment period (after 2018/2020?).

More mandatory activities

As long as a land-based approach is not within reach, it is possible to account for peatland rewetting under relevant land use activities. Some 80% of the drained peatlands in the developed countries have been drained for agriculture or for forestry. If forest, cropland and grazing land management would be mandatory (currently they are optional), the rewetting of large areas of peatlands would simply be accountable under the Kyoto Protocol. An extra activity ‘management of wetlands’, focussing on the land use category ‘wetlands’ (that covers peat extraction sites and flooded land) would bring little extra, because only 10% of the drained peatlands have been drained for peat extraction.

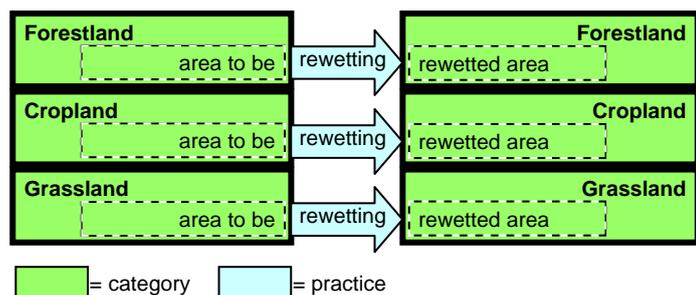


Fig. 1: The procedure of accounting for rewetting peatland in case the activities ‘forest management’, ‘cropland management’ and/or ‘grazing land management’ are mandatorily or voluntarily elected.

With respect to the mandatory accounting the situation is confused. The G77+China, the large block in which the developing countries are cooperating, wants all these activities indeed to become mandatory in the second commitment phase (2012 - ???).

This has, in fact, already been decided with the adoption of the Kyoto Protocol!

Article 3.4 of the Kyoto Protocol says: “The Conference of the Parties serving as the meeting of the Parties to this Protocol shall, at its first session or as soon as practicable thereafter, decide upon modalities, rules and guidelines as to how, and which, additional human-induced activities related to changes in greenhouse gas emissions by sources and removals by sinks in the agricultural soils and the land-use change and forestry categories shall be added to, or subtracted from, the assigned amounts for Parties included in Annex I, ... *Such a decision shall apply in the second and subsequent commitment periods* [italics HJ]. A Party may choose to apply such a decision on these additional human-induced activities for its first commitment period, provided that these activities have taken place since 1990.”

The Kyoto Protocol thus announces that in the first COP/MOP the “modalities, rules and guidelines” will be decided. Then, a few years later, the “Conference of the Parties serving as the meeting of the Parties to the Kyoto Protocol on its first session, held at Montreal from 28 November to 10 December 2005” comes with Decision 16CMP1 including the “ANNEX Definitions, modalities, rules and guidelines relating to land use, land-use change and forestry activities under the Kyoto Protocol”. One cannot seriously maintain that these “modalities, rules en guidelines” adopted on the first COP/MOP are not the “modalities, rules en guidelines” that according to art. 3.4 should be decided on “at its first session or as soon as practicable thereafter”.

This is confirmed by article 1 of the Annex that states “1. For land use, land-use change and forestry activities under Article 3 paragraphs 3 and 4, the following definitions shall apply:...” These are thus the definitions concerning the activities meant under

articles 3.3 and 3.4 of the Kyoto Protocol. The first definitions concern ‘forest’ and the activities ‘afforestation’, ‘reforestation’ and ‘deforestation’, i.e. what already explicitly had been defined in Art. 3.3 KP. Art. 1 of the Annex continues with definitions of ‘revegetation’, ‘forest management’, ‘cropland management’ and ‘grazing land management’. As these do not pertain to Art. 3.3, they must delineate the activities of Art. 3.4. The conclusion is then that ‘revegetation’, ‘forest management’, ‘cropland management’ and ‘grazing land management’ are mandatory in the second and subsequent commitment periods.

Some countries would point to 16CMP1 ANNEX art. 6 to deny this obligation. This article states: “6. A Party included in Annex I may choose to account for anthropogenic greenhouse gas emissions by sources and removals by sinks resulting from any or all of the following human-induced activities, other than afforestation, reforestation and deforestation, under Article 3, paragraph 4, in the first commitment period: revegetation, forest management, cropland management and grazing land management.”

This article, however, merely repeats the Art 3.4 KP that Parties who wish to do so may account for these land use categories already in the first commitment period. It does not state, however, that these activities are *restricted* to the first commitment period. The article says nothing about the second and subsequent commitment periods.

We have to conclude that the stipulation in Art. 3.4 remains completely valid. It is anyhow inconceivable that the first meeting of the KP would change the fundamental meaning of the Protocol, after it took 5 years for sufficient countries to ratify. Such a step would put the entire protocol at risk, if a few disagreeing countries would turn back their ratification of a Protocol they could no longer support.

No objective court could interpret the Kyoto Protocol and 16CMP1 differently: revegetation, forest land management, cropland management and grazing land management are – starting with the second commitment period - mandatory.

Some developed countries oppose this mandatory accounting. This would, however, need an amendment of Article 3.4 (which has not yet been proposed concretely) or a total repeal of the Kyoto Protocol. It is difficult to imagine that many countries (G77 + China?) would accept either of these options, as both would weaken the climate change mitigation potential substantially...

More voluntary accounting

If mandatory accounting of Art 3.4. KP activities is not within reach, things become more difficult. Like at present, it would then be possible to account for rewetting of peatlands currently under forest-, crop-, and/or grassland on a voluntary basis by electing the relevant activity (forest-, cropland, and/or grazing land management). But the chance that countries will

elect these activities for the benefit of rewetting peatland is small. To account for 'rewetting' on part of the land under a category implies that *all* emission relevant activities on *all* land of that category have to be accounted. A country like Germany would not only have to account for the 600 km² of rewetted grassland on peat soil, but also for the remaining 6,000 km² grassland on drained peatland and for the 60,000 km² grassland on mineral soil. The associated workload and uncertain outcome discourages countries from voluntarily electing these activities. Whereas the greenhouse gas fluxes from all these lands are already reported to the UNFCCC 'ex gratia' to account them under the Kyoto Protocol would affect many more stakeholders and entail much more administration.

A new voluntary activity?

If not mandatory, there is little option to stimulate peatland rewetting under the current activities and a new activity has to be formulated. In recent KP meetings, many ideas in that direction have passed the floor. The most important variants were:

- A new activity 'rewetting' under the current category 'wetlands';
- A new activity 'rewetting' applicable to all categories with the rewetted land remaining in the same category;
- A new activity 'rewetting' applicable to all categories, but transferring the land to the category 'wetlands'.

Rewetting of current 'wetlands'

Rewetting of current 'wetlands' involves drained (peat)land under the category 'wetlands' that is rewetted to become 'rewetted land' (fig. 2). To make the activity 'symmetric', i.e. to cope with the possibility that undrained wetlands are drained outside of the accounting and subsequently accounted under rewetting, an activity 'wetland management' (or whatever you would call it) also has to include drainage in its definition. This is reflected in the two blue arrows in fig. 2.

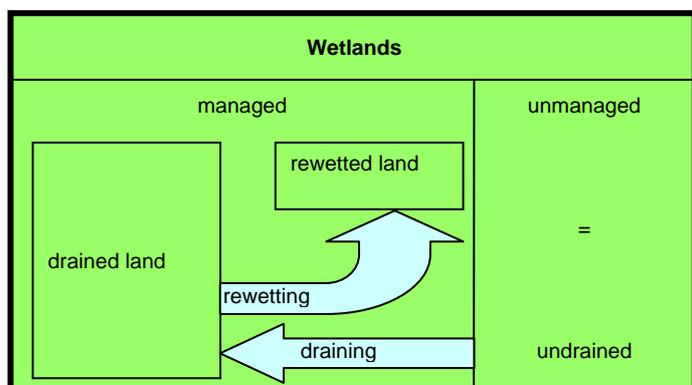


Fig. 2: The procedure of accounting for rewetting peatland in case of a new activity 'wetland management' (with the practises 'rewetting' and 'draining' applicable to the category 'wetlands').

Enabling 'rewetting' of drained land would indeed fill a gap in the current Kyoto Protocol because there is no activity clearly associated with the land use category 'wetlands'.

It would, however, only be applicable to a very limited area because most drained land is under other categories.

Rewetting independent of category

Allowing an activity applicable to all land use categories comes closest to the 'activity-based' philosophy of the Kyoto Protocol. Such 'wetland management' (or whatever you would call it) does not treat 'rewetting' as a practice under the existing activities forest-, crop-, or grazing land management (see fig. 1). In contrast, this option would make 'rewetting' a practice under a new activity 'wetland management' applicable to the categories forestland, cropland or grazing land when the associated activities (forest management, cropland management or grazing land management) are NOT elected. Figure 3 illustrates – with grassland as an example – that only the area to be rewetted and the rewetted area in the category 'grassland' are accounted under 'wetland management', whereas the remaining grassland may remain unaccounted.

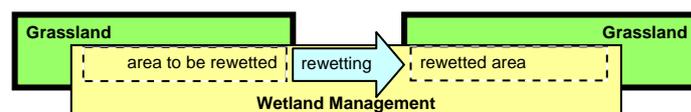


Fig. 3: The procedure of accounting for rewetting peatland in case of a new activity 'wetland management' applicable to all land use categories, but only to their rewetted parts.

This option, however, raises concerns because the selection of only part of the land belonging to a category and leaving the rest unaccounted conflicts with the general approach of the Kyoto Protocol and is generally considered to be 'cherry picking'. That impression could be avoided by accounting *all* drained and undrained wetland (irrespective of category/activity) under the activity 'wetland management' and not only the areas (to be) rewetted (fig. 4).

For major relevant countries such an approach would not be attractive, because under this activity they would have to account for areas of land that are many times larger than the area to be rewetted. Countries like Finland (25%), Estonia (15%), Belarus (10%), Iceland (10%), Netherlands, Ireland, Lithuania, Germany, Poland, Denmark and Latvia would have to bring more than 5% of their land area under 'wetland management' to be able to account for even the smallest area of rewetting. This disproportional demand would again discourage Parties to choose 'wetland management'.

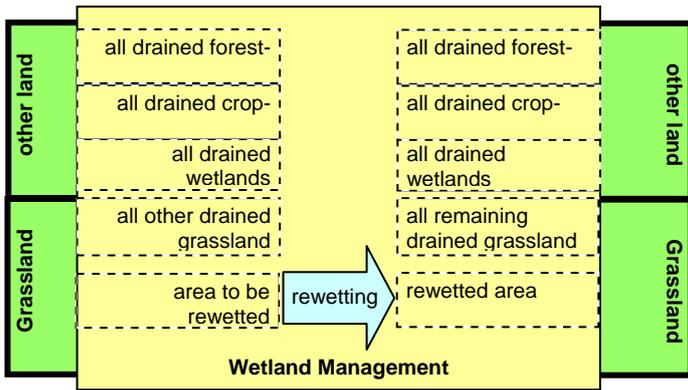


Fig. 4: The procedure of accounting for rewetting peatland in case of a new activity ‘wetland management’ applicable to all drained and rewetted lands under all land use categories.

Transferring the rewetted land to category ‘wetlands’

This final option implies that the practise ‘rewetting’ is only accountable for the category ‘wetlands’. Lands from all other categories can be rewetted, but only after their transfer (on paper) to the category ‘wetlands’ (fig. 5).

To prevent generating unaccounted drained land that subsequently can be rewetted and accounted, electing ‘wetland management’ (or whatever you may call it) must imply that all areas that have been drained since the base year are transferred to the category ‘wetlands’ and accounted under ‘wetland management’. This means that if ‘wetland management’ is elected, *all* land that has been drained and *all* land that has been rewetted since the base year will fall under the activity ‘wetland management’, unless that land is accounted under another elected Article 3.4 activity.

Wetland management

The status of the negotiations since Barcelona is that there are two proposals to include ‘wetland management’ in the Kyoto Protocol.

Option 1 is an older one. It is for the time being maintained to give the opportunity to reconsider all

kind of issues. It reads (with alternative proposals between square brackets):

“[Wetland] [Peatland] management is a system of practices for stewardship and use of [wetlands] [peatlands] that have an effect on [greenhouse gas emissions and removals] [carbon stock changes], including drainage of [wetlands] [peatlands] and restoration of drained [wetlands] [peatlands].”

The open issues and weak points in this option are:

- how the activity will be called (wetland management versus peatland management). This discussion is of less relevance, because the content of the activity is not defined by its name (“What’s in a name? That which we call a rose, by any other name would smell as sweet” Shakespeare, Romeo and Juliet). The name ‘wetland management’ would not necessarily refer to the category ‘wetlands’.
- the reference to stewardship. This overly positive annotation, inspired by the forest management definition, has in the latter caused problems and necessitated corrective additions.
- the question emissions/removals versus stock changes. In peatlands a stock-based approach is not feasible, because of the enormous stocks involved. A drained peatland in the temperate zone easily loses 25 tons of CO₂ per hectare and year from peat oxidation. Even such huge amounts can hardly be assessed in a stock-based approach, because the change is smaller than the error in determining the total soil carbon stock (that may amount to several thousands of tons of Carbon per ha). Therefore emissions from organic soils must be assessed via emissions.
- whether the activity has to refer to ‘restoration’. ‘Restoration’ is a general and unspecified term that does not refer to what aspect(s) have to be restored. The climate effects of activities on peatlands are primarily determined by water level. Therefore it makes sense to refer to the driving forces (rewetting and drainage) to prevent the impression that only revegetation or other practices would substantially decrease the GHG fluxes from drained peatlands.

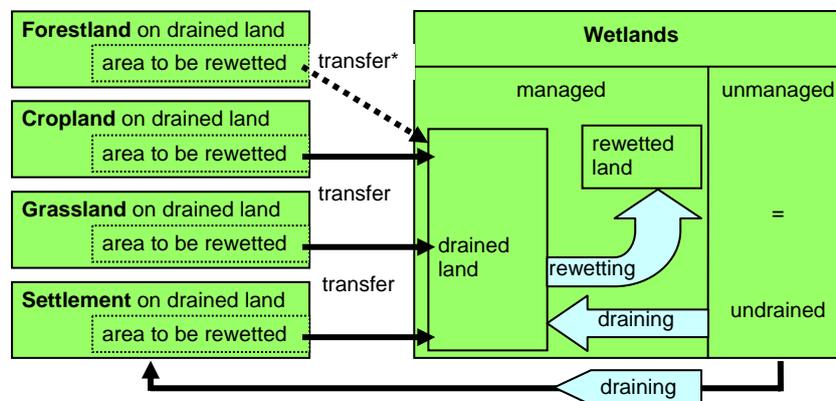


Fig. 5: The procedure of accounting for rewetting peatland in case of a new activity ‘wetland management’ applicable to all drained and rewetted lands under all land use categories, but with transfer of the relevant drained land to the category ‘wetlands’. *The transfer of forestland may include deforestation and consequently interference with Art. 3.3 KP.

The second option is the result of much deliberation between parties in Bangkok:

“Wetland management is a system of practices for rewetting and draining on land [that covers a minimum area of [0.5 ha] [X ha]] [resulting in accountable greenhouse gas emissions by sources and removals by sinks]. It includes all lands drained and all lands rewetted since the base year, provided that these lands are not included under other mandatory or voluntary activities elected.”

The open issues in this option are:

- the inclusion of a minimum area. On this issue no major differences of opinion exist. For practical monitoring several countries prefer to define a minimum area.
- whether or not to refer to GHG fluxes. Most definitions of activities do not refer to that, because it is implicit in the Kyoto Protocol. The phrase is actually redundant, but it is not harmful to have it in.

So this definition does not create major conflicts. All Annex-1 countries (for whom it would be directly applicable) support this definition, as does the group of African countries. Brazil, who initially questioned the feasibility of assessing methane emissions, does not see such methodological issues as a major obstacle any more. Brazil considers, however, whether this activity should get an extra cap, comparable to the cap that already exists for the total LULUCF sector.

The major benefits of this definition are:

- it includes all land that is rewetted or drained since the base year and is therefore equally applicable to forest land, cropland, grassland, wetlands, and settlements, and equally to peat soils and mineral soils.
- it is concrete in mentioning the relevant practices, rewetting and draining, without referring to the more obscure ‘restoration’.
- the accounting only concerns lands where changes in drainage condition have taken place since 1990. In the vast majority of the developed countries these changes have only been positive, because hardly any country has increased its drained area since 1990.

Relevant is still, how the central practises ‘rewetting’ and ‘draining’ are defined. Some countries are afraid of ‘wetland management’ as it might include ‘flooded land’, i.e. the areas flooded for hydro-electricity that are known as notorious sources of methane.

To respect this concern ‘rewetting’ has to be defined in relation to ‘drainage’, i.e. as the reversal of drainage:

Draining is a system of practices, both on- and off-site, leading to a lower water level.

Rewetting is the total or partial reversal of draining.

Consequences

The assessment and monitoring of ‘wetland’ in the proposed form is rather simple. The approach

concerns net-net accounting covering all three greenhouse gases: CO₂, CH₄ and N₂O.

How draining and rewetting has proceeded before the base year 1990 is not relevant: it is the drained and managed wet area (with the associated emissions) in the base year that counts.

Similarly it is irrelevant how draining and rewetting has proceeded between the base year and the commitment period: it is the drained and managed wet area (with the associated emissions) in the commitment period that counts.

There is also no substantial risk for Annex 1 countries to adopt ‘wetland management’ as an activity. Annex 1 countries have hardly drained new areas since 1990. As peatlands decrease in area when drained (because peat oxidates and disappears), the drained area in 2008 can – in absence of other data – be used as a reliable and conservative proxy for the area of drained peatland in 1990.

Methane

IPCC guidance on accounting for CH₄ emissions that occur after rewetting is still lacking. Thus far addressing methane was not opportune. Pristine peatlands, which produce methane, are irrelevant under UNFCCC, whereas drained peatlands do not emit methane.

Only in its 4th Assessment (2007) IPCC recognized that drained peatlands are responsible for >25% of the emissions from land use. This makes peatland rewetting an important mitigation option and the lack of CH₄ guidance a gap that needs to be filled urgently.

This is not difficult:

- Methane has already been addressed in various IPCC guidance (rice, biomass burning, livestock, waste);
- For CH₄ the amount of reliable estimates of annual emissions from wetlands exceeds those of CO₂ and N₂O.
- Recently high quality reviews have been published, covering almost all relevant peatland areas of the world.

Several countries have already expressed their commitment to request IPCC for additional peatland guidance and the IPCC Bureau is open to addressing these issues.

A cap on rewetting?

The request for an extra cap for ‘wetland management’ goes back to the history of the Kyoto Protocol. It reflects the fear that peatland rewetting will reduce the efforts of industrialized states to reduce their industrial emissions. This fear was realistic in the first phase of the Protocol: With the adoption of the Kyoto Protocol the reduction goals of Annex I countries were fixed. Only many years later the instruments, like LULUCF and CDM (Clean Development Mechanism that allows Annex I country to invest in emission reduction in a developing country as an alternative to reducing emissions domestically) were concretized. Indeed,

when the reduction aims are fixed, but the number of mitigation mechanisms is growing, true reductions of fossil-fuel emissions will become smaller.

The current situation is different: here both the goals/commitments and the instruments are still open. The developing and developed countries are keeping each other in paralysis, because the former want the commitments being fixed first, whereas the latter first want to know what instruments will be available. So the former are manoeuvring into a position that additional instruments may weaken the industrial reductions. I think this route is wrong.

If this world is serious with mitigating climate change it should

- clearly formulate the reduction goal;
- develop a realistic reduction pathway to reach this goal;
- use all instruments available;
- distribute the responsibilities in a just way.

It is always smarter to reach the same goal in a cheaper and easier way (with 'cheaper' also including the social and environmental costs). For the climate it is irrelevant whether reduction is caused by decreased industrial emissions or by decreased emissions from deforestation or peatland drainage. If we could reduce emissions sufficiently based merely on LULUCF measures (which we cannot...), the industrial emissions would not be a problem anymore.

Including more instruments allows defining more ambitious targets. Peatland rewetting will not solve the problem of climate change, but it can contribute a disproportionately large share.

The evolution of international treaties

The development of international treaties has much similarity with biotic evolution: you can only build forward on the structures you already have. It is impossible to go back and do it all over in a better way.

Vertebrates have no wheels, because we derive our transport appendages from the fin-limbs that enabled our Sarcoptrygian ancestors to colonize the land. In mammals, the nerves that connect the brain with the larynx run down via the heart. All these organs have developed from the – originally neatly ordered – gills of our fishlike ancestors that have been turned and twisted and reshuffled during evolution. For us it is just a small detour because our heart is close to the mouth. But in case of the giraffe, the vagus nerve first goes a few meters down the neck, branches and return as the laryngeal nerve the same meters up again. Meters of material wasted to bridge a few decimetres.

Major treaties are the product of long and intense labour: they have been finalized in a short moment of hope, inspiration and collective despair. Nobody is truly entirely happy with the outcome, but no one wants to make real changes, because your preferences will not be shared by others. Touching some of the fundamentals would mean risking the entire building. And therefore only small things are changed, added or skipped.

On the one hand it is good that evolutionary change proceeds slowly: I must not think of the chaos emerging when all insights and ideas were implemented immediately. On the other hand, evolution learns that adapting too slowly will be lethal...

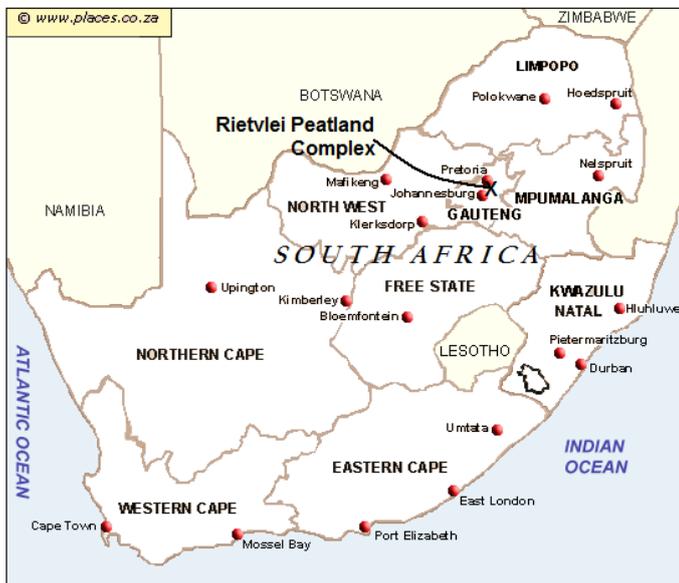
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Rietvlei wetland rehabilitation - rewet a peatland it works!

by Khayi Mabasa

The diverse Rietvlei (“Reed marsh” in Afrikaans) wetland system is situated within a 4000 hectare nature reserve immediately upstream of the Rietvlei Dam just outside Pretoria, South Africa. The dam was built in 1934 for drinking water. The wetland provides about 41 million litres of drinking water per day, or 3% of the Pretoria’s current drinking water requirements. The peatland complex consists of a northern and southern peatland basin, about 200ha in extent, joined by a floodplain. Various other, smaller wetlands, including seepage zones, drain into the peatlands. The system is located within a karst landscape and very susceptible to changes in groundwater. Until recently, the Rietvlei wetlands were heavily degraded and erosion channels drained and dried out the wetlands.



Map of South Africa, indicating the position of the Rietvlei Peatland Complex, just south of Pretoria.

The land on which the Rietvlei Nature Reserve is situated was previously privately farm land where landowners drained the area for cultivation and access, diverting water away from the main wetland. In recent years, the basin has become severely overloaded with nutrients and other pollutants, as its highly urbanized catchment has received increasing volumes of treated domestic sewage and industrial effluent. As a result, blooms of blue-green algae occur in the bad tasting and odorous water that are difficult to remove and require expensive treatment. Partly in response to this situation, Working for Wetlands formed a partnership with the City of Tshwane in 2000 to rehabilitate wetlands upstream of the dam, with the primary objective of improving their ability to purify the water. Interventions included construction of gabion, concrete and earth structures to control erosion, re-wet peatlands, increase retention time of water and ensure an even distribution of flow across the wetland.



Erosion caused by an abandoned drainage canal in the southern Rietvlei peat basin.



Drain blocking with a gabion weir, effectively lifting up the water table and de-activating the erosion potential (insert).



Hay bales are used to slow down flow in a shallow erosion gully in the peat. The bales were later replaced with gabion structures or earth dikes.

The hydrological restoration was done in parallel to extensive clearing of invasive alien vegetation in the reserve by Working for Water. Research on the quality of water in the Rietvlei wetland upstream of the dam was concluded in 2006 by Thabo Masupa of SANBI and Rudzhani Makhado of the CSIR. Their study 'Rietvlei wetland and the role it plays in the reduction of pollutants from sewage wastewater' is now part of a course in Ecological Informatics. The researchers collected water samples upstream, inside and downstream of the wetland and measured the levels of various chemical parameters to determine the effectiveness of the wetland in reducing pollutants. The wetland reduced ammonia levels by 53%, nitrates by 77%, fluoride by 24% and sulphates by 4%. The wetland thus contributes to reduced algal growth, thereby reducing the costs of water treatment for human consumption. Moreover, the wetland provides this service for free.

In the nine years since work began, the wetlands have shown visual signs of recovery, including the return of reeds, birds and frogs, but it is the research conducted by Masupa and Makhado that has provided quantitative evidence of the water purification abilities. This service has direct economic value to the City of Tshwane and its residents, and has validated the investment of at least R8 million to date by Working for Wetlands in the Rietvlei wetlands.

The wetlands of the Tshwane municipality collectively play an important role in sustaining the ecology and economy of the Gauteng and North West provinces. Despite their vital importance to human wellbeing, they have been severely affected. Responding to this crisis, the Working for Wetlands programme in partnership with Rand Water Foundation and Rietvlei Nature Reserve management drew up a rehabilitation plan for the Tshwane wetlands. Wetland restoration will not only enhance biodiversity, but also reduce impacts from flooding and increase water security, protecting agricultural resources, and provide cleaner water, improving livelihoods.

Employment created by the restoration project provides many social benefits. In support of the objectives of the Expanded Public Works Programme, the project has created sixty-two (62) job opportunities for people from the most vulnerable and marginalized groups. The project achieved 720 training days and 9180 working days. Training facilitation by the Dept of Labour was not realized and Trainers had to be mobilized to voluntarily facilitate training in construction, business and life skill courses. The project is tracking the movement of beneficiaries who have exited the project. The majority of them were absorbed into the job market with the training received in the project.

Between April 2006 and March 2009, six (6) contractors temporarily employed were trained on business and entrepreneurship skills, equipping them with skills that will enable them to compete in non-state tenders and in the job market respectively. Two (2) contractors were able to put aside enough money to purchase vehicles which they use to transport workers as well as for other business use outside the project. As part of enterprise development, the contractors are being linked to SEDA and CIDB for further training and development.



Contractors busy with the excavations for the gabion weir shown in the previous photo.

The Working for Wetlands Programme is also involved in the rewetting of other peatlands and mires in South Africa, amongst other:

- Lake Fundudzi Peatlands
- Lakenvlei
- Colbyn Valley
- Bodibe
- Kgaswane
- Molopo
- Dartmoor
- Seekoeivlei
- Ingula (Watervalvlei)
- Ntsikeni
- Kromme
- Duiwenhoks

For more information contact:

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Thomani Managufala, Working for Wetlands, manungufala@sanbi.org

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Peatland Restoration in the United Kingdom

by Sarah Crowe & Duncan Hutt

Peak District National Park, North-west England

From 2002-2006, I was involved in monitoring restoration of eroded peat gully systems in the Peak District National Park, United Kingdom. Historically a number of impacts on the peatland have led to low species richness and a reduction to only 2-3 species of *Sphagnum* being found at present (*S. cuspidatum* being the most prevalent) in a patchy distribution. Restoration here is very much focused on re-vegetating the eroded peat, minimising peat run-off into stream networks and minimising carbon emissions.



Peat gully blocking in the Peak District. Eriophorum angustifolium can be seen beginning to colonise the water filled gully hollows.

The restoration involved the installation of over 7000 plastic piling dams in eroding peat gully systems throughout the Bleaklow and Kinder Scout area. The work which formed part of my PhD thesis on the revegetation of eroded blanket peat (Crowe, 2007) in the Peak District area, monitored vegetation establishment behind 300 of these dams at selected catchments. Within the first 2 years of blocking the vegetation establishment was impressive, tillers of *Eriophorum angustifolium* had established on the re-wetted bare peat gully floors, with 50% of the recorded sites having 30-40% of the gully floor. In addition the effects of re-wetting could be seen on the gully edge vegetation, which prior to re-wetting showed a lack of growth and healthy foliage, however following re-wetting showed an increase in vigorous healthy green foliage. This project formed part of a wider look at revegetation, including natural revegetation in the Peak District area from where gullies had become dammed with large peat blocks (see Crowe et al. 2008). This area is now being regularly monitored for its Carbon budget.

Crowe, S.K. (2007) The natural revegetation of eroded blanket peat: implications for blanket bog restoration.

Crowe, S.K, Evans, M. and Allott, T (2008) Geomorphological controls on the re-vegetation of erosion gullies in blanket peat: implications for bog restoration. *Mires and Peat Journal*, Volume 3.

Forsinard Flows National Nature Reserve, North Scotland

I am currently involved in monitoring of restoration of previously afforested and drained peatland in Forsinard Flows National Nature Reserve in North Scotland. The RSPB (Royal Society for the Protection of Birds), since acquiring the site have initiated since 2002 a programme of forestry acquisition and subsequent tree felling and ditch blocking (plastic piling and peat blocks). Despite previous damage, the peatland is rich in *Sphagnum* and a major breeding ground for Greenshank (*Tringa nebularia*), Golden Plover (*Pluvialis apricaria*) and Dunlin (*Calidris alpina*)



Part of Forsinard Flows NNR. Beyond the pool system the felled trees can be seen

Since restoration began in 2002, blocked ditches have begun to infill with *Sphagnum* (i.e. *S. cuspidatum*) and the edges of the ditches show a renewed growth in hummock forming species such as *Sphagnum capifolium* and *S. papillosum*. The reserve is a major focus for research into recovery of peatland ecosystem functioning including monitoring of carbon fluxes

The Border Mires

The Border Mires comprises of a suite of separated peatland sites throughout the Kielder Forest area in Northumberland, England. Early work on these sites indicated their ecological value but also that sites had been seriously damaged by forestry, including drainage and, where it was possible, planting with conifer crop. Work to try to restore these sites had

been ongoing since the 1980s and received its first boost in the late 1990s with a LIFE funded restoration project. This project saw ditches dammed and conifers removed. One of the most striking areas of restoration was on Grain Heads Moss where a closed canopy conifer crop was felled and chipped on site. The ground under this crop was comparatively dry due to the drainage ditches and the water draw by the trees and had limited vegetation cover. Ditch blocking was done immediately following tree removal and the result was an impressive flush of sphagnum moss growth within 2 years. Subsequently, cotton grasses became dominant followed by more natural bog vegetation with water now at or very close to the bog surface.

The success of this project has meant that the Border Mires Committee has been successful in getting other funds through the landowners, Forestry Commission, to undertake similar work across the whole of the Border Mires including large scale tree removal and the blocking of all remaining active ditches. The Border Mires Committee consists of representatives from: Forestry Commission, Northumberland Wildlife Trust, Natural England, Ministry of Defence, Northumberland National Park Authority and University of Newcastle

Prestwick Carr

Northumberland Wildlife Trust is working with the Ministry of Defence and Newcastle City Council to work on a restoration programme for this lowland raided mire on the outskirts of the city of Newcastle upon Tyne. This wetland area has been drained and all but a small section turned into rough grazing land.

The core of the site has been afforested and is now a mix of pine and birch. The core area is the best relic area of bog and still contains some bog vegetation but is seriously damaged by drainage and tree cover.



Sphagnum mosses expanding over cut-down and chipped trees.

The Ministry of Defence cleared an area in the centre of the core area and blocked drainage ditches. This has wetted up a small area of the site and ensured the survival of bog species. There is a project in place to extend this work though rehabilitation of the larger peatland area will require a significant financial and political process to achieve the necessary re-wetting results.

The first two site descriptions are by Sarah Crowe, the final two by Duncan Hutt.

Aberleri fields (Wales) – paradise re-gained

by Mike Bailey

In 1820, at a time of canal building and ambitious drainage reclamation projects inspired by Dutch engineers, a scheme was begun to transform the southern flank of the Dyfi estuary and drain what was then viewed as wasteland.

Here, the great bog of Cors Fochno had been steadily accumulating peat for 5000 years. It had first overwhelmed and then preserved the forest, which had once spread across the floodplain. By 1820 a dome of peat had risen some 9 metres above the ancient forest floor level. The pristine bog, sheltered behind the Borth shingle spit and merging naturally into saltmarsh to the north, covered some 2400 ha between Borth and Glandyfi. Studded with islands of upstanding bedrock and snaked across by rivers from the surrounding Cambrian hills, the panorama would have been even more breath-taking than it is today.

The drainage scheme involved the raising of a tidal embankment across the estuarine flats (later to become part of the Machynlleth–Aberystwyth

railway line), and the canalisation and embanking of the rivers Clettwr, Leri and Ddu. The original course of the Leri had taken it around the south-west fringe of the bog and out to sea through the dune ridge across the present-day Borth and Ynyslas golf links. The new route sliced straight across the western side of the bog from Borth to the Dyfi, creating a 4km tidal channel and isolating the seaward edge of the bog.

The northern end of this dismembered bog remnant is an area of 100 ha called Aberleri fields. It was acquired by the Countryside Council for Wales as part of the Dyfi National Nature Reserve in 1991, and at that time the area could hardly be described as bog. Since its isolation from the remaining bog, the area had been dissected by drainage ditches, ploughed, under-drained, limed, re-seeded and heavily sheep grazed, so that little of the original vegetation remained.

Locally, where saline flooding (caused by a breach of the Leri bank) had damaged the agricultural sward, wetland species such as black bog-rush, bog pimpernel and saltmarsh rush had returned, hinting at the botanical potential. Significant numbers of breeding lapwing were also present, drawn by the expanse of bare ground close to the recently refurbished river banks.

Wishing to see off a wind-farm proposal in this most inappropriate location, the flushed and fledgling Countryside Council for Wales (the Government's statutory advisor on environment and landscape beauty, CCW) realised it had a rare opportunity to acquire land as much for its restoration potential as for its existing conservation value. This was exciting for me as reserve manager, offering a genuine opportunity to make a wonderful site even better.

Restoration begins

The problem now was how to restore something akin to the original sphagnum bog vegetation which formed the underlying peat, whilst taking account of the recent natural and man-made change which had deposited calcareous beach sand on the seaward side and introduced brackish water throughout the ditches which dissect the site.

Part of the solution was, and remains, manipulating the hydrology – controlling water levels. A topographic survey established that the larger field units were essentially slightly plateau-like, with a gradient towards their margins due to the peat shrinkage along the ditch-lines. Filling in the ditches would raise the water table, but this would lose the open water and tall swamp vegetation of the ditches themselves, and we needed to avoid flooding neighbouring farmland and a caravan park on our boundary. We also had to ask where, and at what cost, could we obtain suitable material to use as fill? We decided that the best option was to re-profile the main ditch to a broad shallow-edged channel and to use the excavated peat to dam the ditch and construct low ridges or bunds to either side, thereby helping to retain rainwater on the fields. Dams were fitted with adjustable overflow pipes to control water levels and allow for vegetation management.

We have continued to work with the same farmer who held a grazing licence when the site was acquired. Sheep provide much of the grazing but summer cattle grazing is now established over much of the area, to the great benefit of the flora. Re-wetting of the more heavily drained areas has inevitably led to a great increase in soft rush, which needs regular cutting to control its dominance.

Many characteristic raised bog species have appeared in the sward, including cross-leaved heath, bog asphodel, common sundew, common cotton-grass and white beak-sedge. But also frequent are wet heath and fen species such as marsh lousewort, marsh bedstraw and marsh pennywort. Marsh orchids and the lesser butterfly orchid have also appeared and so too has the local blunt-flowered rush.

A bryophyte survey in 2001 recorded 42 species of mosses and liverworts, including three bog mosses *Sphagnum denticulatum*, *S. subnitens* and *S. papillosum*, suggesting that proper bog conditions are beginning to return. However, towards the western margins, where sand overlies the peat, a number of mildly lime-loving mosses have also appeared, including the two nationally notable mosses *Drepanocladus sendtneri* and *D. polygamus*. In this area there is a good population of the local lesser water-plantain, which also occurs at Ynyslas dunes.

The reversion to a wetter soil and more structured vegetation has benefited many species of birds. Around six pairs of common snipe now breed regularly along with two or three pairs of redshank. Strong populations of teal, reed bunting, reed and sedge warbler, linnet and skylark are maintaining themselves well, and water rail are also breeding. Shoveler and garganey are more sporadic breeders. Unfortunately, lapwings have been unable to maintain a viable breeding population here, where proximity to street lighting and other human influences seem to favour the predator.



Sphagnum recolonises the area, overgrowing cattle dung.

In winter Aberleri can be a good place to see raptors, with hen harriers, peregrines, merlins and barn owls are all regular visitors. Short-eared owls are occasionally seen in winter, and ospreys and marsh harriers at migration time. More exotic avian visitors which have delighted birdwatchers have included Montague's harrier and squacco heron.

Patient (or just lucky) visitors have also seen otters right in front of the public hide, and evidence in the form of spraints show that they are regular visitors, feeding on frogs, eels and invertebrates.

We have yet to carry out detailed invertebrate surveys at Aberleri, but casual observations over recent years indicate that a range of invertebrates has benefited from the habitat restoration work. Amongst the taller vegetation the short-winged conehead (a bush-cricket) is now thriving and the nationally rare money spider *Maso gallicus* is also present. Dragonflies have proliferated on the flooded ditches and two species

tolerant of brackish waters are notable arrivals both here and in Ceredigion. They are black tailed skimmer and migrant hawk. A range of common butterflies such as the small skipper and gatekeeper are now to be seen, together with a couple of day flying moths, the Mother Shipton (which sports a wing pattern resembling a witch's face in profile) and the much scarcer silver hook. This summer a moth trap set in the reedswamp attracted a number of interesting species including the silky wainscot, an uncommon species new to the Dyfi area. Further specialised species may await discovery in the extensive saline lagoons, which have developed in the borrow pits which supplied material for the floodbanks.

A challenge for the future

Among the challenges ahead, we need to expand the re-wetting work to those fields which are still relatively dry and species-poor. We need to make a careful assessment of all the options to ensure money is well spent, and this is made considerably more

tricky by the proximity to the tidal Leri channel, with its peat levees, and rising sea levels. Professor Andrew Baird, a leading peatland hydrologist based at the University of London, is currently making a detailed study of the land drainage and flood defence infrastructure. This will help to place the management of the Aberleri unit into the wider context of the Dyfi estuary and Cors Fochno.

So there is still much to be done, but there is also much to be excited about. Fifteen years ago Aberleri fields were a poor shadow of their former life as part of an ancient and vast peat bog. Now they team with life, and the natural processes which built the original bog 5000 years ago are at work again. It is a pleasure for all those involved that we have something very special to show for our work.

Mike Bailey is CCW's Senior Reserve Manager at Dyfi National Nature Reserve, (Ynyslas dunes, Dyfi estuary and Cors Fochno) a post he has held since 1991. Spiders, moths, birds and bogs are among his keenest interests.

PEATBOG Project

by Nancy Dise & Richard Payne

Peatlands are the world's largest soil carbon pool, support a unique biological community, and provide important ecological, economic and protective functions. Maintaining these critical functions depends upon protecting the integrity of the whole ecosystem. Peatlands face obvious threats from peat-cutting and drainage, but can also be affected by less obvious dangers. Ombrotrophic peatlands (true bogs) receive all of their moisture and nutrients from the atmosphere, making them uniquely sensitive to changes in these inputs. The expected change in the climate of many northern peat-forming regions toward warmer air temperatures and more extreme weather will increasingly produce conditions conducive to peatland erosion, decomposition and fire. Such peatland degradation leads to a loss of carbon that has been accumulating for hundreds or thousands of years.

Peatlands are also highly sensitive to air pollution. Reactive nitrogen from fossil fuel combustion or intensive agriculture can contaminate rain and snow, causing soil acidification, nutrient enrichment, and a decline in species that are sensitive to these conditions. Even the 'average' levels of these pollutants in a typical rural countryside have been shown, over the long term, to lead to a significant decline in terrestrial biodiversity. There is good evidence that the combined impact of elevated nitrogen deposition and a warming climate could exceed the sum of the individual stressors and lead to decline in peatland biodiversity and impair the ability of peatlands to capture and store carbon.

To address these issues, we have recently begun the project 'PEATBOG: Pollution, Precipitation and Temperature Impacts on Peatland Biodiversity and Biogeochemistry'; a European Research Area -NET project under the BiodivERsA programme (<http://www.eurobiodiversa.org/>), with five European partners. Our project aims to understand how nitrogen pollution and changing climate, individually and combined, will impact the biodiversity and ecosystem functioning of peatlands. The project also aims to develop meaningful indicators of risk that are of use to conservation managers and policymakers.

To address these aims, we will first, through surveys, determine relationships between peatland species richness and nitrogen deposition across northern Europe and in the Alps. Second, by field manipulation of water table and temperature on two peatlands in areas receiving contrasting levels of nitrogen pollution, we will investigate whether peatlands that have received historically high nitrogen loads are more sensitive to drought and warming than less-polluted peatlands. Impacts on nutrient cycles and carbon accumulation will be examined at various levels of detail across the survey sites, field manipulation sites and in controlled laboratory experiments. Changes in microbial community composition and function will also be determined across the different scales of inquiry, and linked to changes in the vegetation and soil. Finally the survey, field, and laboratory investigations will be integrated to develop models of the response of peatlands to elevated nitrogen deposition and climate change. These will include detailed process-based

models for scientific hypothesis testing, development of bio-indicators for conservation managers and policy applications, and GIS-based maps to highlight the regions most vulnerable to current and future changes in climate and nitrogen pollution. Work on the project began earlier this year and has already produced interesting results. We are currently

compiling a list of 'stakeholders' composed of scientists, peatland managers and people working in conservation policy who may be interested in the results of the project. IMCG members who wish to receive updates on the results of the project are encouraged to email Richard Payne (r.payne@mmu.ac.uk) to be included in this list.

Can peat turn REDD in Copenhagen?

by Unna Chokkalingam

Much of the talk in the three hours of the GTZ-organized REDD donor information sharing meeting in Jakarta early November centered on peat. Peat was said to account for 50% of Indonesia's carbon emissions as a result of drainage, degradation, oxidation and/or burning. Rehabilitating such degraded peatland would help reduce Indonesia's carbon emissions drastically and go a long way to meeting the President of Indonesia's declared target of 26% emission reductions by 2020.

REDD has evolved and expanded a long way since its origins as Reducing Emissions from Deforestation and Degradation to become REDD+ and REDD++. Forested peatland would be a part of REDD because of the standing forests atop the peat soils. However, peat soil conservation or degraded peatland rehabilitation does not feature in the series of pluses generated by negotiators in the consolidated and abbreviated REDD text at the Bangkok Climate Change talks in October 2009. Peat did not appear in any way, shape or form in the text, not even in brackets indicating one or more countries' desire to include it and others disagreeing or uncertain.

So where does all this talk and frenetic activity on peat and REDD originate from and where does it aim to go? Scientific articles, NGO and media reports in Indonesia starting from the COP13 talks in Bali have elaborated on the importance of inclusion of peat soils (included deforested degraded peatlands) under any REDD agreement. This would be critical to preserve the large stores of carbon within that, when emitted through drainage, development and burning gives Indonesia the dubious distinction of being one of the largest GHG emitters in the world. Besides CO₂ emissions, peat fires also lead to copious amounts of smoke and haze that blanket Indonesia and its neighbours for months in the dry season. Intact forested tropical peatlands also tend to be critical for biodiversity conservation, hydrological regulation and fisheries. So all in all restricting peatland development and preserving them for their environmental values was thought to be a good proposition, and perhaps funding for conserving

peatlands and their Carbon stocks could be found under the REDD framework.

If peat is believed to be so important to be included under REDD+ by all and sundry, why does it not specifically feature in the pluses being considered, which cover everything from maintaining existing carbon stocks and enhancing removals, increasing forest cover through afforestation and reforestation, enhancement of carbon stocks through sustainable forest and land management or sustainable management of forests? "And land" seems to be the only concession to possible inclusion of peatland. Does any negotiating country actively push for peatland inclusion in REDD? Why not? Is the importance of peatland degradation and associated emissions a purely Indonesian issue that takes on gigantic proportions when viewed within the Indonesian context and is it of no importance to other negotiating countries?

A Belarus submission to the UNFCCC (Joosten 2009, see elsewhere in this Newsletter) indicates otherwise. Global CO₂ emissions from drained and/or burned peat have strongly increased since 1990 to reach roughly 1.8 Gtons per year. Since 1990, peatland emissions have increased in 50 countries, more than 40 of them developing countries. Indonesia, Russia and the EU 27 are the world's largest emitters from drained peatland. The Indonesian Government agencies were not present at the Jakarta meeting to elucidate their stand – they were at the Barcelona Climate Change talks negotiating for REDD+. The scope of REDD, i.e. the elaboration of the activities to be included under the pluses does not appear to have been discussed further in Barcelona. The new paper released on 5 November 2009 still retains the same text as the earlier one from Bangkok in October with respect to scope. Will someone respond to the voices and inputs from Jakarta and consider peat in the next round of discussions in Copenhagen? We will wait and watch as the talks and text unfold.

Source: <http://eko-eco.com/>

New CDM biodiesel methodology may threaten peatlands

by John Couwenberg & Hans Joosten

The Clean Development Mechanism (CDM) is an instrument of the Kyoto Protocol that allows industrialised countries to invest in projects that achieve emission reductions in developing countries in exchange for carbon credits. The executive board of the CDM recently approved a methodology for the production of biodiesel for use as a fuel.

Whereas the use of biodiesel from *waste* oil and *waste* fats had already been approved in a different methodology, the new methodology will allow biodiesel from crops that have specifically been grown for fuel. Concerns have been raised that stimulation of such biofuel crops may lead to competition with food crop production and other types of land use.

Another fear was that developers would be tempted to cut down forests to plant fuel crops, but the new 'approved consolidated baseline and monitoring methodology – Production of biodiesel for use as fuel' (ACM0017, cdm.unfccc.int/EB/050/eb50_repan03.pdf) only supports carbon credits from dedicated plantations that are established on degraded lands or lands degrading at the start of the project activity. This restriction of the methodology, however, still holds some dangerous elements where peatlands are concerned.

Although the methodology is restricted to oils from plant seeds, the general definition of biodiesel as “a diesel fuel consisting of long-chain alkyl (methyl, propyl or ethyl) esters which is produced by esterification of vegetable oils and/or waste oil/fat with alcohols from biogenic and/or fossil origin” (definition from ACM0017) keeps the option open to produce ‘biodiesel’ solely from fossil peat if you subscribe to the argument that ‘peat is a biomass’ (cf. <http://tinyurl.com/dxeps6>).

Drained peatlands can be considered as “degraded land” (rules for what is degraded can be found under <http://cdm.unfccc.int/methodologies/ARmethodologies/tools/ar-am-tool-13-v1.pdf>) when

- They are classified as degraded in a verifiable classification system
- Degradation indicators are present (e.g. soil compaction/erosion, decline in soil organic matter content, plant cover or productivity, presence of species typical for degradation)

That drained peatlands can be considered degraded land according to the Methodology becomes apparent from Annex 1 of the documentation: ‘Project emissions associated with the cultivation of lands to produce oil seeds’ that explicitly mentions organic soils. Whereas the losses of soil carbon following drainage have to be calculated, the Methodology prescribes the use of IPCC default values. The real carbon losses might be severely underestimated; in case of oilpalm classified under (agro)forestry even with a factor 10 (see Couwenberg 2009).

With respect to oil palm, short-term greenhouse gas balances of the production process, including losses from degrading peat, may suggest no or only small carbon losses (Melling et al., 2007). More comprehensive lifecycle analyses that address the lifetime of a plantation (usually ~25 years) all arrive at clear carbon debits (Germer & Sauerborn, 2007; Pastowski et al., 2007; Fargione et al., 2008; Reijnders & Huijbregts, 2008; Wicke et al., 2008; Danielsen et al., 2009). The CO₂ emissions from peat degradation assumed in these studies range from 18 to 73 tCO₂ ha⁻¹ y⁻¹. The measurements of Melling et al. (2007) indicate emission values from oxidizing peat of 50 tCO₂ ha⁻¹ y⁻¹ or more (Couwenberg et al. 2009). This implies that the emission factor of biofuel derived from oil palm grown on tropical peat soil amounts to at least ~ 400 gCO₂-eqMJ⁻¹ (Wicke et al., 2008; cf. Couwenberg, 2007), which by far exceeds emission factors of common fossil fuels (cf. IPCC, 2006). Other biofuel crops grown on peat soil will not perform much better and carbon losses from the peat will invariably outdo carbon savings from fossil fuel substitution (Couwenberg 2007).

The new methodology thus does not forbid the cultivation of biofuels on drained peatland, but – by giving it a CDM status – even stimulates it.

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Peat and a small, threatened bird

by Malcolm Drummond

Piet-Peat-Louis Grundling invited me to submit an article for the IMCG newsletter; to provide a bit of background on my person: I am 63, live in South Africa, have spent most of my working life in the computer industry, but have always had a profound love of nature and a belief in the need for individuals to contribute to conservation in any way that they are able.

Over the years, my interests focused on birds and I became involved in the formal structures of birding in South Africa. Through this I became friends with the most single-minded person I have ever known – Deon Coetzee. He became aware of a mire, about 230 kilometres east of Johannesburg, which was visited by one of Africa's least understood and most threatened birds (an estimated global population of 750 birds), the White-winged Flufftail (*Sarothrura ayresi*), one of five birds classified as 'Critically Endangered' in South Africa.



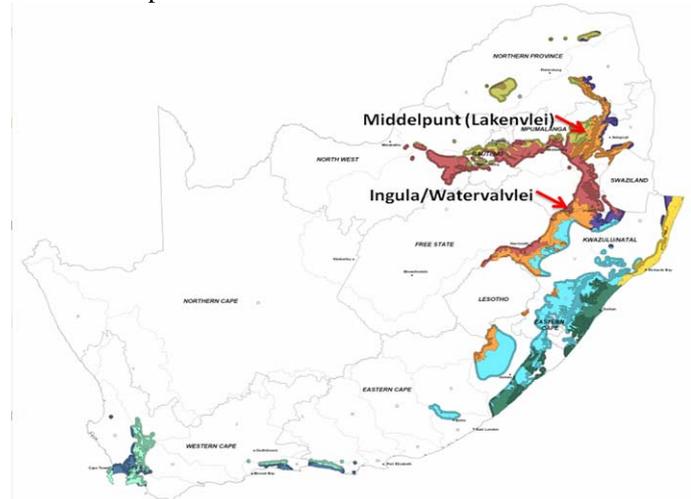
White-winged Flufftail
(*Sarothrura ayresi*)

Apparently restricted to a few high-altitude marshes, with a small population and highly specific habitat requirements, this poorly known species has a highly fragmented distribution and is severely threatened by continued habitat destruction, especially from commercial afforestation, damming, draining and overgrazing.

The species is an endemic resident to Africa and is only known to occur in high altitude wetlands of South Africa and Ethiopia (there are isolated records from Zambia and Zimbabwe). It is speculated that the bird migrates between these two countries, arriving at suitable habitat within South Africa in summer. However, this has not been proven.

In 1993, Deon and I formed Middelpunt Wetland Trust (MWT), with the specific objective of trying to conserve the White-winged Flufftail and its habitat.

So began a chapter in my life that has extended to a book of several volumes! We started by negotiating a lease of the 60-hectare wetland with the farmer so that we could rehabilitate it, manage cattle access and turn it into a protected area.



Map of peatland eco-regions in South Africa and the location of Middelpunt and Ingula.

Our initial focus was on Middelpunt Wetland and included filling-in five kilometres of one-and-a-half-metre deep ditches down each side of the wetland. It was at this stage that we became aware that 'our' wetland is underlain by a five-metre thick peat layer. Little did we realise the extent to which peatlands would become a vital factor in our future interests.



Lakenvlei mire complex - Middelpunt is located in the upper part.

The Trust's activities rapidly expanded to Ethiopia, from where earlier sightings of the flufftail existed. We funded research there, which was successful in making the first-ever scientific recording of the bird's nests, eggs and chicks in the Berga wetland. Following on from this success, we decided to contract a detailed survey to establish more sites for the flufftail in South Africa. There were only three sites (including Middelpunt) known at that stage. The survey was successful in establishing an additional six sites. The Bedford-Chatsworth Wetland (also previously known as Watervalvlei and now part of the Ingula development) at Braamhoek was one of them!



Drainage ditch in the Middelpunt mire before infilling and plugging (top) and afterwards (bottom). Rewet drained peatlands – because it works!!



Livestock grazing the Berga wetland in Ethiopia. The approximate location of the wetland is indicated with the black dot on the inserted map.

The IMCG has been extensively exposed to the Eskom (South Africa's electricity parastatal organisation) pumped storage scheme at Braamhoek, now renamed Ingula. The upper dam site contains a large wetland, one of the six new sites established by MWT as summer habitat for the White-winged Flufftail. It is also home to the Wattled Crane, another 'Critically Endangered' bird in South Africa. The wetland is also underlain by peat.

Numerous objections under the environmental impact assessment (EIA) process eventually led the Minister of the Environment to prohibit the development of the R16 billion project (about \$2 billion). Understandably, Eskom looked at ways through which the objections could be effectively answered and the development allowed to continue. In short, Eskom undertook to purchase 8000 hectares of farmland to create a protected area and to form a partnership between Eskom, BirdLife South Africa and Middelpunt Wetland Trust – the Ingula (Braamhoek) Partnership.

In retrospect, it is interesting to reflect upon this point in time as being divisive for organisations that should have been combining resources, rather than combating each other. Deon and I were satisfied that the offsets and mitigation measures being put in place were sufficient for there to be little or no disturbance to the part of the wetland favoured by the White-winged Flufftail – our prime concern. The upper dam construction and impoundment would affect less than four percent of the total wetland area and the flufftails frequent a part of the wetland more than a kilometre below the proposed dam wall.

Permission was granted for the Ingula scheme to proceed and the Partnership has been actively involved in the project for the past six years. For an amateur conservationist such as myself, it has been a surprisingly open and honest process. Don't believe that ideals are the sole prerogative of NGOs; they are just as passionately subscribed to by many Eskom personnel.

It was soon recognised within the Ingula Partnership that there were insufficient opportunities for interested organisations to be able to keep abreast of developments at Ingula and to contribute their knowledge and experience to the project. With these ideals as guidelines, the Ingula Advisory Committee: Conservation (IACC) was formed – the IMCG amongst the invited members. It was always intended that the IACC should provide a forum for robust debate and the airing of objections and concerns, and this has proved to be the case, with the IMCG having been very vocal in many a debate!

It was always inevitable that the building of the upper dam would be a highly contentious issue for the IMCG. This concerned the loss of 11 hectares of peatland that would be inundated and a conviction that there was insufficient understanding of the geohydrology of the upper dam basin. Braamhoek /Ingula was visited by an IMCG group from the 2004 symposium in South Africa and strong feelings were expressed by members. Deon and I gave a

presentation to IMCG members during the 2004 symposium and the feelings of betrayal by Middelpunt Wetland Trust to corporate power and influence were openly expressed.

Construction at the Ingula scheme continues apace. The upper dam wall foundations are in place and the wall itself has been started. An unusual condition of sale for the farm on which the upper dam is situated gave the owner the right to the peat from the dam wall footing and to extract peat from upstream of the wall. To assist the farmer, the peat from the wall footing was stacked adjacent to the construction site, available for him to remove it. Interestingly, most of the peat had such a high clay and sand content that it has no commercial value, and so it has been landscaped to blend into the environment.

As is often the case when involved with 'a cause' (the flufftail, for me), it is easy to promote its importance above that of other issues. I realised that I would like to learn more about wetlands and peat and their interconnectedness with the environment in which they exist. I was fortunate enough to be invited to join Piet-Louis Grundling, Jonathan Price and Ab Grootjans for two days at Mfabeni Mire in iSimangaliso Wetland Park on the east coast of South Africa at Easter this year.



The author (r) with Ab Grootjans in the Mfabeni mire, iSimangaliso Wetland Park

It was a wonderful opportunity to learn and reach a much better understanding of wetlands and their roles. I also learnt that sampling peat down to 11 metres is hard work! We had the opportunity of discussing our particular interests and beliefs, and it certainly expanded my horizons.

It was from this better understanding that I felt able to support a call for a study of the geohydrology of the upper dam site at Ingula, and this will be going out for tender in the near future. Outputs from this study should certainly help inform decisions regarding the management of the 8000 hectare protected area at Ingula and, in particular, for the mire – the flufftail's habitat!

Sadly, the Trust's latest activities include combating diamond prospecting and mining within 500 metres of Middelpunt Wetland – the wetland that prompted the forming of the Trust. Continued prospecting or mining would pose a very real threat to the mire's health and, consequently, the flufftail's continued use of one of only nine known sites in South Africa.

Happily, we have joined forces with the IMCG to combat this threat and a letter from the IMCG was included in documentation recently presented to senior provincial government officials. We are optimistic that we will succeed in having the prospecting stopped and effective rehabilitation of the workings undertaken.

Conservation sometimes results in conflict or strategic alliances that can be criticised. However, every so often one gets an opportunity to extend a hand of friendship and support, which makes one's efforts worthwhile. In Ethiopia the need was identified to help community projects at the main wetland breeding- site. Over the past six years, the Trust has donated over US\$ 8000 towards the building of schoolrooms by the community. When the project started, no schooling was available in the village. In August this year, a new three-schoolroom building has extended schooling to 580 children, with a staff of eight teachers. This has had a significant effect upon the community's protecting the Flufftail breeding habitat. The White-winged Flufftail is an enigmatic creature and one about which we still have so much to learn. We do know that at least eight of its nine sites in South Africa are mire related, and a better understanding of that dependency is one topic that will be researched.

In some ways it seems sad that so much energy has to be expended by busy and committed people and organisations in trying to protect threatened habitats and the creatures that depend upon them. And yet, perhaps it is these ideals that motivate and energise us to do our best. Long may mires and White-winged Flufftails co-exist!

malcolmd@metroweb.co.za

<http://web.uct.ac.za/depts/stats/adu/wwf/index2.htm>



This school near the Berga wetland was sponsored by Middelpunt Wetland Trust and is here visited by community and Trust members. If a community provides the physical facilities, the Province provides the teachers.

Regional News

News from Finland: National mire and peatland strategy

The Finnish National Mire and Peatland Strategy Working Group will be working under the Ministry of Agriculture and Forestry from 10 February to 30 September 2010 to elaborate an updated common vision for the multiple and sustainable use of mires and peatland and their biodiversity. Task encompass To make a plan, how the different need to use mires and peatlands could be solved. To determine, how the different needs to use mires and peatlands should be organised in future decades in Finland.

The objective of the working group is to make a proposal on the strategy of mires and peatlands fitting to the needs of use in shorter and longer run, and in that taking into consideration the existing national, EU and international frameworks. To make a proposal on the means of the realisation of the strategy. To evaluate the functionality of different permission procedures in different uses of mires and peatlands. And if needed, to make proposals also on other questions of the sustainable use of mires and peatlands. In the working group of wide variety of different stakeholders are present, but the working group has to audit outsider stakeholders.

The chair of the working group is Environment Director Veikko Marttila from the Ministry of Agriculture and Forestry and the vice-chair is Nature Conservation Counsellor Pekka Salminen from the Ministry of the Environment. There are altogether 16 ordinary members in the working group representing also ministries of finance and economy and also different research and specialist institutes and organizations of different use. In addition, working group has three permanent specialists. On the environment side there is representatives from Ministry of the Environment, Finnish Environment Institute, Pohjois-Pohjanmaa Regional Environment Centre. Finnish Association for Nature Conservation is the environmental NGO. Representatives of BirdLife Suomi ry is one permanent specialist in the working group. In addition, the working group has four secretaries.

Then there are several important environmental aspects from the point of national and international decision and documents to be considered in strategy work.

The first assessment of threatened habitat types in Finland, which was conducted in the period 2005 to 2007. The objective was to provide a complete description of the current state of the habitat types found in Finland, their development during recent decades, and the threats they are likely to face in the near future. The project was coordinated by the Finnish Environment Institute (2008). This assessment revealed the bad state of intact mire nature in Finland, especially in southern part of Finland, where 50-75 per cent or more mires are destroyed by drainage, in most cases by drainage for forestry. Hydrological and ecological intact mire systems have become rare.

Undrained mires are also fragmented and isolated. Also the protected mires are not natural in a hydrological way, because the boundaries of nature reserves are too tight for the hydrology of the mires.

A total of 35 Finnish habitat types of international responsibility were listed. As concerns mires they are: dwarf shrub spruce mires, frost bogs and mires, flark fens, rich birch flark fens, rich flark fens, concentric raised bogs, flark-surfaced aapa mires, Middle boreal lawn-surfaced aapa mires, palsa mires, mire succession series on the land uplift coast.

The Ramsar Convention is an important international agreement where the wise use of wetlands important now is. Also the Bern Convention is important.

Tapio Lindholm

News from Russia: Alarming plan to mine peat

The Russian government plans to support and allow large scale peat mining for energy. Using peat causes much larger carbon dioxide emissions than fossil fuels, will ruin precious nature and disrupt the hydrology of large areas.

At several occasions, the Russian government has announced the plan to exploit the country's peatlands. Recently, Konstantin Alekseyev, director of the Department of coal mining and peat industry of the Russia's Ministry announced large scale plans in a meeting and on the ministry website (http://minenergo.gov.ru/news/min_news/1410.html) to start large scale mining of peat.

Russia possesses the greatest peat reserves in the world: 1,4 million square kilometres, 47% of the global peat resources, containing 113 Gton of carbon, equivalent to 15 times the annual global anthropogenic carbon dioxide emissions.

Peat mining for fuel is a traditional activity in Russia. For local use in the country side, it can be done with rather limited impacts on the environment. Peat now only accounts for roughly 0.1% of Russia's energy use. The plans of the Russian government would increase this to roughly 10%; for use in mainly remote areas.

The plans of the Russian government are cause for concern as it opens peatlands for large scale and uncontrolled activities. Large scale extraction will destroy the ecology of areas were mining takes place, but also of surrounding peatland areas that are indirectly drained. Besides biodiversity loss, greenhouse gas emissions of uncontrolled peatmining are tremendous. In addition, landscape hydrology is disrupted, leading, amongst others, to extremes in river runoff.

Wetlands International has asked the Russian government to develop only small scale mining for local use in remote areas and to allow only techniques that limit the impact on the landscape and allow natural regrowth, such as 'wet' peat extraction. With

this technique extraction can be limited to small areas where deep layers are mined instead of large surfaces. In addition, mined areas should be rewetted.

Peatlands in the subarctic zone of Russia are very vulnerable to disturbances. Already relatively limited activities such as a road have tremendous impacts on the surrounding areas as waterflows are blocked and drainage causes the peatlands to subside and decompose. The degrading areas are often ten times the size of the area of the activity itself.

Current carbon dioxide emissions from Russia's peatlands are still relatively small (100 mton a year). This may change dramatically if the mining plans are carried out without additional control.

Tatiana Minaeva, Wetlands International

News from Belarus: Monitoring peatland vegetation

Despite large-scale land drainage, Belarus still has a significant amount of peat wetlands. These peatlands currently occupy about 1,680 ha, or 8.1% of the total land area of the country. An important opportunity is the development of sustainable use and conservation of wetland resources as an alternative to the traditional, destructive scenarios of economic development. Extensive rehabilitation of damaged wetlands requires country specific thinking and careful analysis.

Since 2004, in the framework of the "Belarus Wetlands" project, Belarus geobotanists of the Institute of Experimental Botany of the National Academy of Sciences of Belarus and the Earthwatch Institute have studied more than 40 large peatland complexes, characterising vegetation and peat deposits in natural and disturbed state as well as the impact of peat extraction on the surrounding area. In addition, the vegetation of peatlands before and after rewetting has been monitored (e.g. the Yelnya, Dokudovskoe and Morochno sites). Proposals and recommendations on the protection and rational use of peatlands, particularly in protected areas, have been made.

Pressing issues regarding the study and protection of wetlands were discussed during the International Scientific and Practical Seminar "The Vegetation of Mires: Classification, Mapping, Use and Protection", which took place early October 2009 in Minsk. The main organizer of the Seminar was the Institute of Experimental Botany of the National Academy of Sciences of Belarus. We hope this event will give a new impetus to the study of biodiversity of wetlands, their conservation and their restoration.

Vegetation is an important indicator of ecological processes in wetland ecosystems. One of the main tasks identified is the development and implementation of a vegetation monitoring system, focussing on remote sensing and ground truthing. In addition, critical vegetation thresholds will be studied further and guidelines for economic use as well as rehabilitation will be developed.

A book on the flora and vegetation of the largest oligotrophic bog complex in Belarus, Yelnya, is planned for publication in 2010.

Dmitrij Grummo, Natalia Zelenkevich (Institute of Experimental Botany, National Academy of Sciences of Belarus) & Oleg Sozinov (Department of Botany, Yanka Kupala Grodno State University).

New location of Cloudberry

A new Cloudberry population (Rosaceae, *Rubus chamaemorus* L., Belarus Red book species) has been found by Belarus ornithologists in the "Dokudovsky" nature in Lida region (Grodno area, N 53048.115', E 25027.194'). It constitutes the southern and the western most occurrence for Belarus.

Cloudberry occur in the reserve over an area of about 1.5 hectares. With future rewetting of the "Dokudovsky" peatlands the occurrence of the species may provide an opportunity for sustainable use by berry picking. development for the given population with prospect of expansion of occupied area as it will considerably lower threat of fires, and also high fluctuations of soil and atmospheric temperatures.

Oleg Sozinov, Dmitrij Grummo & Natalia Zeliankevich

News from Poland/Czech Republic: Transboundary Ramsar site

The "Krkonoše/Karkonosze subalpine peatbogs" were added on 21 September 2009 to the list of Transboundary Ramsar Sites during the 7th international conference on geocological problems of the Karkonosze mountains, held in the Polish tourist village of Szklarska Poręba. The Giant Mountains (Krkonoše in Czech, Karkonosze in Polish) mark the natural border between Poland and the Czech Republic, form an isolated mountain range with a particular geological history, and function as a biogeographical refuge area and isolated outpost for several Arctic and Alpine species. The mountain habitats were at the base of the development of specific local cultures, traditions, legends and mysterious figures. Unfortunately, during the last period of the 20th century's centrally-planned economies, industrial air pollution created large-scale forest dying in the area. But presently the forests are growing again, and the beautiful landscape attracts millions of hiking and skiing tourists each year.

The Polish Karkonoski National Park is celebrating its 50th anniversary in 2009, and its Czech counterpart is to follow soon. Together with their buffer zones, both form a Transboundary Biosphere Reserve, and the coordination of the work of many scientists through the UNESCO Man and Biosphere programme was instrumental in furthering applied research and monitoring of this unique area. Now, with the declaration as a Transboundary Ramsar Site, also the

peatlands in the subalpine zone of the mountains (i.e., above the timberline), designated earlier unilaterally for the Ramsar list in 1993 in the Czech Republic (site N°637) and in 2002 in Poland (site N°1566), are formally recognized as a shared natural heritage and crucial hydrological infrastructure in the most upstream parts where such major European rivers as the Odra/Oder and Labe/Elbe take their sources.

During the international conference, bringing together about a hundred scientists, public administrators, Ramsar authorities and protected area managers, it was also evoked that not only the subalpine peatbogs in the Karkonosze mountains merit further consideration, but also other types of well-represented wetlands in the area, notably the subalpine lakes, mountain torrents, upstream river parts and their floodplains, and different types of mires. This led to the very concrete proposal about designating the nearby Izer river valley, forming the border between the two countries in its most natural part, with its floodplain, mires and bogs, as another Transboundary Ramsar Site.

Tobias Salathé

Source: www.ramsar.org

News from the UK: Monitoring horticultural use of peat

The UK Biodiversity Action Plan – Lowland Raised Bog Habitat Action Plan contains a target for the reduction of peat used in horticulture, which is expressed as “90% of the total market for soil improver and growing media to be peat free in the UK by 2010”. This builds upon the previous target of 40% peat free by 2005 which was achieved. Research is required to design a scheme to monitor horticultural use of peat to meet both the current target and a future target or measure which may be defined on a different basis than the current target. The project is made up of three tasks each with their own deliverables and deadlines:

- Monitor the use of peat and alternatives based on sales in 2009 (deadline 30/04/2010)
- Monitor the use of peat and alternatives based on sales in 2010 (deadline 30/04/2011)
- Research on how to monitor the use of peat now and in the future (deadline 31/09/2011)

The project is expected to start in December 2009 and take 22 months at a maximum tender cost of £170k. It will include, amongst others, consideration of (a) spent mushroom compost, (b) classification of sources of peat in previous reporting, (c) peat use in imported pot plants, (d) the ability of producers to report data on sources of peat and sales (use) of peat to the country level within the UK and (e) the ability of producers to report data on sales of growing media to different subsectors within the professional grower sector, i.e. to different sectors within horticulture.

Further information can be obtained from: www.defra.gov.uk/evidence/science/funding/competitions.htm.

News from the Southern Atlantic: Two new Ramsar sites

The United Kingdom has designated two new, very large marine areas in its Overseas Territory of St Helena, Tristan da Cunha in the South Atlantic Ocean. The new Wetlands of International Importance, both effective 20 November 2008, are centered on Gough Island and Inaccessible Island, respectively, with surrounding waters, and both are parts of the World Heritage natural site called “Gough and Inaccessible Islands” (1995, enlarged in 2004), as well as Nature Reserves and BirdLife Important Bird Areas (IBAs) and managed in the context of the Agreement on the Conservation of Albatrosses and Petrels (2004), to which the UK is a Party.

Gough Island (229,811 hectares, 40°19’S 009°56’W) is one of the largest relatively unmodified cool temperate island ecosystems in the southern hemisphere. Important wetland types include non-forested peatlands, permanent freshwater pools, permanent streams, marine subtidal aquatic beds and rocky marine shores. The island is a strong contender for the title of the most important seabird colony in the world – a total of 22 bird species and two species of seals breed here, some in very large numbers. Several bird species that breed on Gough are considered globally threatened (e.g., Sooty Albatross, Northern Rockhopper Penguin), and some are endemic to the island group (e.g., Gough Moorhen, Gough Bunting, Atlantic Yellow-nosed Albatross). The South African meteorological station is currently run on the island; other human activities include research, commercial fishery for Tristan Rock Lobster in Gough territorial waters, and limited recreational fishing under license. Inaccessible Island (126,524 hectares, 37°18’S 012°41’W) is a near-pristine cool temperate island of volcanic origin. A total of 24 species of seabirds and land birds as well as the Subantarctic Fur Seal breed there, some in very large numbers. Non-forested peatlands and rocky marine shores are critical to the survival of the breeding populations of Tristan Albatross (relict population of 2-3 pairs) and Spectacled Petrel (island endemic), and Northern Rockhopper Penguin and Sooty Albatross, respectively, all of which are globally threatened. There is no permanent human population – from time to time small numbers of researchers and conservation management teams visit the island. Commercial fishery for Tristan Rock Lobster and limited recreational fishing under license take place in Inaccessible’s territorial waters.

<http://tinyurl.com/yjx6np2>

Source: www.ramsar.org

News from Argentina: Andorra valley mires now Ramsar site

The government of Argentina has designated a new Wetland of International Importance in the province of Tierra del Fuego, one which at the time of listing becomes the Convention's southernmost site. The site, "Glaciar Vinciguerra y turberas asociadas" (2760 ha, 54°45'S 068°20'W) includes glaciers; lakes; *Sphagnum*-, *Cyperacea*-, and tree-dominated peatlands; *Nothofagus* (Southern beech) forests; and permanent and seasonal rivers, at an altitude between 200 and 1300 m.

Among the flora, *Skottsbergia paradoxa*, an endemic and threatened moss species, stands out. The glaciers and peatlands play an important role in regulation of the "Arroyo Grande" watershed, a river that is the primary water source of the city of Ushuaia.

The presence of the Vinciguerra glacier and the Andorra valley's peatlands contribute to the scenic beauty of the site, which attracts local and foreign tourists. The threats to the site are horse rearing (animals feed on *Nothofagus* sprouts), tree cutting for domestic use, and, to a lesser extent, peat extraction. Additionally, climate change affects the stability of the Vinciguerra glacier.

The site acts as a buffer area between the Tierra del Fuego National Park and the suburban expansion of Ushuaia.

The Andorra Valley mires were visited during the 2005 IMCG Field Symposium (IMCG Newsletter 2005/4) and the value of the area was stressed in the IMCG Ushuaia statement. We congratulate our Fuegan friends on this success!

Source: www.ramsar.org

News from the USA: Dam removal in the Everglades

The U.S. Army Corps of Engineers, Jacksonville District has announced the award of a construction contract that will replace one mile of Tamiami Trail with a bridge. This will remove a key portion of the most formidable barrier to fresh water flows to northeastern Everglades National Park and will lead to benefits for the entire Everglades ecosystem.

The Corps awarded the \$81 million contract to Kiewit Southern Company, of Sunrise (Florida) and anticipates construction beginning in November 2009. The contract includes constructing the bridge, and raising and reinforcing an additional 9.7 miles of Tamiami Trail, thus allowing higher water levels in the adjacent canal. Higher water levels in the canal will drive flows into the Park when water is needed most. Projected completion of the bridge and road-raising construction is 2013.

www.saj.usace.army.mil

News from Canada: Oil sands under forest and peatland

The use of Alberta's oil sands leads to more greenhouse gas emissions than previously thought, because the impact of forest and peatland degradation was until now not accounted. Research conducted by Global Forest Watch found that industry and the government are underestimating how much greenhouse gas emissions are coming from oil sand production by nearly 25%. Official estimates don't account for carbon released as forest cover is cut and peatlands disturbed.

The total area of natural ecosystems that are planned to be removed by oil sands extraction is 1 613 887 ha. These areas store 579 Mton of carbon, mostly in peatlands. In total 873 megatonnes of CO₂ may be emitted into the atmosphere over the next 100 years under the scenario of full oil sands development. The resulting annual average emissions of 8.7 Mton CO₂ will substantially raise the normally-reported emissions from the oils sands industry activities.

The industry says oil sand facilities release about 36 megatonnes of CO₂eq every year. In more than four decades of oil production starting from 1964, more than 685 square kilometres of boreal forest and peatland has been cleared, containing 77 Mt C. Over the next few decades up to 5000 km² of boreal forest is forecast to be transformed into oil production.

Syncrude Canada Ltd., one of the largest producers in Alberta, began reclamation efforts of forests and peatland five years after starting production in 1978. Syncrude has "reclaimed" 25% of the land the company has "disturbed" for a total of more than 4600 hectares. The industry claims that both direct and indirect emissions are accounted for by producers. According to an industry spokesman, oil sands do clear forests but then they reclaim it again; peat and soil are not destroyed, but are saved and reused for reclamation.

How peat soils are 'reused' in reclamation without the peat actually being degraded and lost remains a mystery.

Source: Bitumen and Biocarbon Report, available from <http://www.globalforestwatch.ca/>

News from Indonesia: High emissions – high targets?

The Indonesian government has come forward with figures that confirm that the country is the third largest emitter of greenhouse gasses; for 80% due to deforestation and peatland loss. The governmental report of the 'National Council on Climate Change' shows emissions of a magnitude of 2,3 Gton CO₂ equivalents per year, 8% of all global emissions. Even more alarming is the prediction of growth towards 3,6 Gton in 2030. Of all these emissions, 45% is coming from drained, degraded peatsoils and 35% from deforestation.

So far national reporting of Indonesia to UNFCCC overlooked these emissions, similar to the reports of many other countries with major peatlands.

Following these figures, the Indonesian government set itself the target of reducing carbon emissions by as much as 26% from their level in 2005. To achieve the target, the government would follow low-carbon development strategies in the implementation of its Medium-Term Development Plan (RPJMN). The government's decision to lower Indonesia's carbon emission level voluntarily was announced by President Susilo Bambang Yudhoyono at the recent G-20 summit in Pittsburgh (USA).

Calculations of potential emission reduction from mixed and renewable energy, including geothermal energy will reduce carbon emissions by 20 percent in 2025 and changes in land use (which contributes 54% of the current total emissions) could reduce emissions by 75 percent. In this light, the 26% target is moderate at best. The impression arises that the high emissions are only recognised by the government to make the target (expressed in percentage) look larger than it really is.

Greenpeace protests

Early November, fifty Greenpeace activists took action to prevent the destruction of Indonesia's rainforests and called on world leaders to end global deforestation. The call came as negotiators met in Barcelona, Spain for the final round of talks before December's UN climate summit in Copenhagen.

Greenpeace activists completed the construction of a dam across one of the many canals built to drain the rainforest and peat soils in order to make way for plantations on the Kampar Peninsula on the Indonesian island of Sumatra.

Greenpeace has set up a 'Climate Defenders' Camp', and intends to continue constructing dams across the Kampar Peninsula.

News from Malaysia RSPO fails to address emissions

The Roundtable on Sustainable Palm Oil (RSPO) meeting in Kuala Lumpur early November has been unable to develop any clear criteria on greenhouse gas (GHG) emissions. This means that there are no credible criteria for sustainable palm oil at this moment. Some hope does exist for the future thanks to the approval of a process to develop better GHG criteria catalysed by the adoption of the resolution from Wetlands International.

Last year, the RSPO established a greenhouse gas working group to develop proposals for GHG criteria, to be decided at this annual meeting. The working group was called to address the alarming emissions from the conversion of forests and peatlands into oil palm plantations. The attempts of the working group to develop appropriate criteria have, however, been frustrated by RSPO members representing Indonesian and Malaysian palm oil growers. The Executive Board of the RSPO has decided on a voluntary mechanism whereby companies may reduce greenhouse gas emissions by 2013.

There is cause for concern about such a voluntary mechanism within the RSPO as it will result in different standards within one brand. Moreover, the timing of 2013 will leave the current and increasingly rapid expansion of palm oil in peat swamp forest areas unabated for another 3 years.

The good news from the meeting is the adoption of a resolution put forward by Wetlands International to establish a committee that will develop options to address the problem of existing plantations on peat. This step at least acknowledges that there is a significant issue with plantations on peat soils. The success of this resolution will of course depend on the willingness of the palm oil sector to develop and adopt solutions. In addition, the current greenhouse gas working group has received an enhanced mandate to continue their effort on development of criteria on emission reductions.

In this regard, the commitment made by the "Rest of the World Producers" (non-Malaysian and Indonesian) to immediately halt expansion of oil palm plantations on peat is encouraging. Last but not least, the majority of members rejected the shocking resolutions of some RSPO members that for instance stated that there should be no sector-wide criteria on greenhouse gas emissions.

Despite these elements of hope, the continued lack of appropriate GHG criteria puts the credibility of current RSPO certified sustainable palm oil in doubt. The expansion of oil palm in carbon rich areas continues at an increasing rate. The inability of the RSPO to reach agreement of GHG criteria represents a major lost opportunity.

The coming year will be crucial for the RSPO. If the RSPO will again fail to establish criteria in relation to peatlands and greenhouse gas emissions, the credibility and hence the future of the RSPO will be at stake.

Source: wetlands.org

New and recent Journals/Newsletters/Books/Reports/Websites

The Gratis Books Scheme

The Gratis Books Scheme provides ecology and conservation books to those outside Western Europe, North America, Japan, Australia and New Zealand who would otherwise be unable to obtain them. The simple purpose of this scheme is to spread ecological knowledge as widely as possible. Books made available through this scheme are free to eligible applicants.

Details on applying and eligibility criteria can be found under <http://www.nhbs.com/Conservation/gratis-books.php>

The books currently in the Gratis Books Scheme are:
 Invasive Species Management
 Amphibian Ecology and Conservation
 Habitat Management for Conservation
 Forest Ecology and Conservation
 Bird Ecology and Conservation
 The Conservation Handbook

Tourbières Infos

The Newsletter of the French Pôle-relais Tourbières continues to relay a wealth of information for the francophone among us. Surf to <http://www.pole-tourbieres.org/documentation.htm>, sign up and keep informed.

Peatlands in the Global Carbon Cycle

Abstracts of the second Symposium on the Role and Importance of Peatlands in the Global Carbon Cycle: Past, Present, and Future, held in Prague, The Czech Republic (September 25-29, 2009) can be found here: <http://www.peatnet.siu.edu/CC09schedule.html>

Joosten H (2009) The global peatland CO₂ picture - Peatland status and drainage related emissions in all countries of the world. Wetlands International, Ede.



peat-containing countries world wide. The publication was presented at the UN climate talks (UN-FCCC) Barcelona on 4 November.

This is the first time that an overview per country is provided of the peat carbon stocks and carbon dioxide emissions caused by loss of the peat-soil carbon of these wetland ecosystems (figures 1990 and 2008). So far, figures were only available for some countries; with a rough estimate for the global situation.

Wetlands International and Greifswald University have published the first ever overview of peat carbon stocks and drainage related carbon dioxide emissions of all 170

This detailed work responds to a call by countries at previous UN climate talks for emission data caused by the Land Use Change and Forestry sector. This is crucial for the current negotiations on climate policies (REDD, LULUCF) to reduce these emissions.

The report presents shocking figures for some countries. For these, peat emission figures are for instance larger than the total emissions so far officially reported. It also illustrates that specific countries contain massive organic carbon stocks in the form of peat. Reclamation of the wetland areas of these countries would strongly influence global GHG emission figures.

A PDF version of the report is available here: <http://tinyurl.com/yaqn5ya>

Minayeva T, Sirin A, Bragg O (eds.) (2009) A Quick Scan of Peatlands in Central and Eastern Europe. Wetlands International, Ede

This report reviews the status, conservation and use of peatlands in the countries participating in the BBI Matra Programme (Belarus, Russian Federation, Ukraine, Moldova, Georgia, Armenia, Romania, Bulgaria, Serbia, Croatia and Turkey). Geographically, it covers central and eastern Europe together with the non-European part of the Russian Federation.

This document provides a review of available data, presenting a series of country sketches describing the peatlands within each country, followed by general conclusions. The data are as up to date as possible, the most recent originating from January 2008 and the oldest referring to the 1990s.

A PDF version of the report is available here: <http://tinyurl.com/QSPCEE>

Maltby E, Barker T (2009) The wetlands handbook. Wiley, Chichester, 800p.

The Wetlands Handbook contains forty-two chapters by international experts from a wide range of discipline. A departure from more traditional treatises, the book examines freshwater wetland ecosystem science from the fundamentals to issues of management and policy.

Introductory chapters address the scope and significance of wetlands globally for communities, culture and biodiversity. Subsequent sections deal with processes underpinning wetland functioning, how wetlands work, their uses and values for humans and nature, their sensitivity to external impacts, and how they may be restored. The text is illustrated by numerous examples, emphasising functional and holistic approaches to wetland management, including case studies on the wise use and rehabilitation of wetlands in farmed, urban, industrial and other damaged environments, highlighting the long-term benefits of multiple use. The Wetlands Handbook provides a reference for researchers,

managers, policy-makers and students of wetland sciences.

UNEP (2009) Assessing biofuels – Towards sustainable production and use of resources. 120pp.

This report provides an overview of the problems and perspectives towards sustainable production and use of biomass for energy purposes. In particular, the report examines options for more efficient and sustainable production and use of biomass. It addresses biomass use for energetic purposes and relates it to the use of biomass for food and material purposes.

This report mainly covers so-called first generation biofuels while considering also further lines of development. Potential benefits and impacts of second and third generation biofuels are partially included, and might be subject to a specific report at a later stage.

With respect to peatlands, the report is stuck with the notion that: “Clearing tropical forests for biodiesel production, and in particular those on peatlands leads to far greater carbon emissions than those saved by substituting biofuel for fossil fuel in vehicles.” The report fails to acknowledge that such a rule applies to all biofuel crops grown on peat soil anywhere in the world.

PDF available for download here:

<http://www.unep.fr/scp/rpanel/Biofuels.htm>

Carlson M, Wells J, Roberts D (2009) The carbon the world forgot: Conserving the capacity of Canada’s boreal forest region to mitigate and adapt to climate change. Boreal Songbird Initiative/Canadian Boreal Initiative, Seattle, WA/Ottawa. 33 pp.

This report identifies the boreal forests of North America as not only the cornerstone habitat for key mammal species, but one of the most significant carbon stores in the world, notably also because of its vast peat stores.

A PDF is available for download here:

<http://borealbirds.org/carbonreport-resources.shtml>

**Lugon A, Matthey Y, Pearson S (2009) Regeneration von Hochmooren - Grundlagen und technische Massnahmen. BAFU, Bern Switzerland, 96 pp. (in German)
Régénération des hauts-marais – Bases et mesures techniques (in French)**

This guide covers basic knowledge required to plan restoration or regeneration of raised bogs. It describes how to execute revegetation of bare peat and how to dam water flow. The technical guide is addressed to authorities responsible for implementing peatland protection policies and to site managers.

Available in German and French free of charge as PDF download here: <http://tinyurl.com/RegBog>

Wheeler BD, Shaw S, Tanner K (2009) A wetland framework for impact assessment at statutory sites in England and Wales. Environment Agency UK, Science Report: SC030232/SR1

The Wetland Framework has been initiated to help establish detailed conservation objectives for designated sites by: (i) identifying environmental features critical for their maintenance or enhancement; (ii) distinguishing these from less critical features; and (iii) providing a basis for assessing whether these objectives can be sustained or enhanced in specific wetland sites.

This report was made to combine and review ecological and hydrogeological data sources for about 200 wetland sites in England and Wales (including over 1,500 stand samples). An ecohydrological framework was developed in which habitats were defined according to a combination of three base-richness (pH) categories, three fertility categories and twenty wetland water supply mechanisms (WETMECs), plus sub-types.

WETMECs were one of the most important outcomes of the study, in essence offering a summary of how wetlands work hydrologically.

A PDF file of this impressive report is available here: <http://tinyurl.com/ye5mxb7>

Baird A, Holden J, Chapman P (2009) A literature review of evidence on emissions of methane in peatlands. University of Leeds/DEFRA, 54p.

This review provides insight in methane (and other carbon emissions) from UK peatlands, particularly in relation to restoration efforts. While dedicated measurements from UK peatlands are largely lacking, the overall conclusion of the report is that rewetting will reduce the global warming effect of peatlands, despite of increased methane emissions.

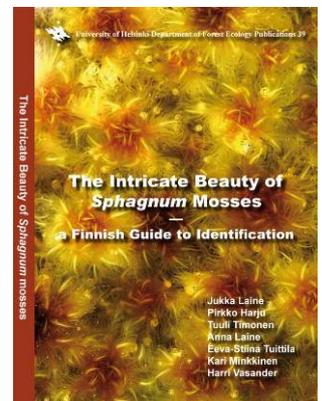
Download here: <http://tinyurl.com/yk5daay>

Laine J, Harju P, Timonen T et al. (2009) The Intricate Beauty of Sphagnum Mosses. University of Helsinki, 190p.

This beautiful new book to identify *Sphagnum* mosses has been published by the University of Helsinki, Department of Forest Ecology Publications. The 190-page guide “The Intricate Beauty of *Sphagnum* Mosses – A Finnish Guide to Identification” contains high-quality colour photographs of the habitus of forty different *Sphagnum* species of the northern hemisphere as well as

microscopic photographs and tables to compare similar mosses to each other.

Beautiful mosses in a beautiful book.



The publication was edited by Jukka Laine, Pirkko Harju, Tuuli Timonen, Anna Laine, Eeva-Stiina Tuittila, Kari Minkkinen and Harri Vasander. It is available for €49.50. More information and orders: www.tiny.cc/83LL5.

van der Werf G, Morton DC, DeFries RS et al. (2009) CO₂ emissions from forest loss. *Nature Geoscience* 2, 737 – 738

The contribution of deforestation to total global anthropogenic CO₂ emissions is lower than hitherto assumed, whereas Southeast Asian peatlands contribute significantly to the global CO₂ budget. This conclusion is drawn in *Nature Geoscience* (2 November 2009) by a group of researchers, led by Dr. Guido van der Werf of the VU University Amsterdam.

The paper shows that CO₂ emissions from deforestation are lower than the 20% commonly assumed. Because also fossil fuel CO₂ emissions have increased, present deforestation accounts for about 12% of the total global CO₂ emissions. Deforestation-related emissions from peatlands in Southeast Asia are responsible for 3 percent of the global CO₂ emissions. Especially Indonesian peatlands are a major source of CO₂, both through man-made drainage to facilitate logging or establishing palm oil plantations and through human-induced fires.

The new data are relevant for the negotiations to reach a climate agreement in Copenhagen. The discussed REDD mechanism (“Reducing Emissions from Deforestation and forest Degradation”) is not only a cost-effective method to reduce CO₂ emissions, but has many other positive effects, such as securing livelihoods of indigenous peoples and conserving biodiversity and ecosystem services such as water regulation. Preventing and reducing peatland emissions is, however, currently not addressed by the global climate treaty and also REDD may overlook emissions from peatsoils.

In their commentary the researchers stress two things:

1. A new climate treaty will be more effective when the emissions from peat soils are included as a reduction option in addition to reducing above-ground deforestation and forest degradation.
2. Reducing deforestation and forest degradation is no substitute for lowering global CO₂ emissions from fossil fuels like coal. It remains, however, an important opportunity for developing countries to reduce their greenhouse gas emissions and protect existing carbon stocks.

The focus on CO₂ reductions provides a powerful opportunity for protecting forests. In this context, the “bad” news of the lower contribution of deforestation

and forest degradation can partly be compensated by taking emissions from peatlands into account.

Source: *Nature Geoscience*
<http://www.nature.com/ngeo/journal/v2/n11/abs/ngeo671.html>

Trumper K, Bertzky M, Dickson B, van der Heijden G, Jenkins M, Manning P (2009) The Natural Fix? The role of ecosystems in climate mitigation. A UNEP rapid response assessment.

This report on the role of ecosystems in climate change mitigation concludes that it is vital to manage carbon in biological systems, to safeguard existing stores of carbon, reduce emissions and to maximise the potential of natural and agricultural areas for removing carbon from the atmosphere.

The priority systems are tropical forests, peatlands and agriculture. Reducing deforestation rates by 50% by 2050 and then maintaining them at this level until 2100 would avoid the direct release of up to 50 Gt C this century, which is equivalent to 12% of the emissions reductions needed to keep atmospheric concentrations of carbon dioxide below 450 ppm.

Peatland degradation is found to contribute up to 0.8 Gt C a year, much of which could be avoided through restoration. The agricultural sector could be broadly carbon neutral by 2030 if best management practices were widely adopted.

Policies are called for that ensure that local and indigenous peoples are not disadvantaged and that consider the potential for achieving co-benefits for biodiversity and ecosystem services.

http://www.unep.org/pdf/BioseqRRA_scr.pdf

Nellemann C, Corcoran E, Duarte CM, Valdés L, DeYoung C, Fonseca L, Grimsditch G (2009) Blue Carbon. A UNEP Rapid Response Assessment.

This report estimates that carbon emissions captured and stored by marine ecosystems such as mangroves, salt marshes and seagrasses equal half the annual emissions of the global transport sector.

A combination of reducing deforestation on land, allied to restoring the coverage and health of these marine ecosystems could deliver up to 25% of the emissions reductions needed to avoid ‘dangerous’ climate change.

But the report warns that far from maintaining and enhancing these natural carbon sinks humanity is damaging and degrading them at an accelerating rate. It estimates that up to seven percent of these ‘blue carbon sinks’ are being lost annually, or seven times the rate of loss of 50 years ago.

Report available at <http://tinyurl.com/ycngqv>

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UPCOMING EVENTS

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

Wetlands in a Flood Pulsing Environment

1-5 February 2010, Maun, Botswana

The symposium is held near the Okavango Delta; one of the worlds largest inland wetlands.

For more information:

<http://www.orc.ub.bw/floodpulse>.

With IMCG peatland sessions and a special IMCG excursion. For more information:

peatland@mweb.co.za

Reclamation and Restoration of Boreal Peatland and Forest Ecosystems: Toward a Sustainable Future

25-27 March 2010, Edmonton, Alberta, Canada

For more information:

www.peatnet.siu.edu/form_edmonton/index.html

IMCG Field Excursion and symposium

5-17 July 2010, Slovakia and Poland

For more information:

http://www.imcg.net/10/imcg_symposium_2010.htm

7th SER European Conference on Ecological Restoration

23 - 27 August 2010, Avignon, France

Ecological Restoration and Sustainable Development
- Establishing Links across Frontiers

For more information: www.seravignon2010.org

Responsible Peatland Management and Growing Media Production

13-17 June 2011, Québec, Canada

For more information:

<http://www.peatlands2011.ulaval.ca>



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