



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 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 (Jan Sliva), a Secretary General (Hans Joosten), a Treasurer (Philippe Julve), and 2 additional members (Tatiana Minaeva, Stuart Brooks).

Viktor Masing (†), Hugo Sjörs, and Richard Lindsay have been awarded honorary membership of IMCG.

Editorial

Apologies to you all: for the first time in "our" Newsletter history we have not managed to produce the Newsletter at the time we had intended. We had planned to be with you again around the 16th of June, and now it is more than a month later. An advantage is that we could include in this newsletter the latest discussions and decisions of the IMCG Exec. Comm. that met on 22 and 23 June.

We have received many interesting articles and news items from around the world and we would like to thank all authors sincerely for their input. We think it is particularly nice to also have some bird-oriented articles and news items this time. We hope we didn't edit too much, because of course our editing of the Newsletter has been as rigorous as always and – as always – we take full responsibility for any mistakes we may have made.

Together with this Newsletter you will receive a form asking you whether you would like your contact details and information on your field of expertise made available to the rest of the IMCG membership. This would allow members to contact each other and share their expertise in a direct way.

We will do our best to publish the next Newsletter around the middle of October 2003. Please send all your contributions, news, publications, etc. to us before October 12th, and with your help we hope to prepare another interesting newsletter.

For information or other things, contact us at the IMCG Secretariat. Address updates should be send to Jan Sliva (sliva@wzw.tum.de). In the meantime, keep an eye on the IMCG web-site: <http://www.imcg.net>

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IMCG Executive Board Meeting

Greifswald 22-23rd June, 2003

Present: Stuart Brooks (SB, minutes), Herbert Diemont (HD), Hans Joosten (HJ), Philippe Julve (PJ), Tatiana Minaeva (TM), Jan Sliva (JS).

agenda

In order to improve Main Board input to EC matters it was agreed to circulate the draft EC agenda to all Main Board members prior to the EC meeting.

membership

After checking the Action Points arising from the previous meeting of the EC on 19th November, 2002 in Valencia, the EC discussed the possibility to make membership details available to IMCG members. It was agreed that as long as all members were asked whether their details could be shared, this would satisfy the legal position. Sharing expertise contact details is a key function of IMCG and helps to deliver elements of the Action Plan. It is apparent that there is a significant membership gap in North and South America. It was agreed that this area should be targeted by contacting institutions and individuals.

newsletter

HJ reported that they were slightly behind schedule for production of the next newsletter but it was agreed that this should wait for inclusion of the minutes of the Greifswald EC meeting. HJ reported that there was no problem with the quantity and variety of material sent in for inclusion. The EC agreed that the newsletter was one of the most important vehicles for IMCG communication and thanked HJ and John Couwenberg for their continued efforts. In order to improve communication between members and help to foster greater corporate awareness it was agreed that a brief progress report on the IMCG Action Plan should be included in each newsletter.

finances

PJ presented a financial statement showing all income and expenditure from 2002 to present. As of July 2003, IMCG has a positive balance on unrestricted funds of €2,806 with a turnover in 2003 of €1,836.

It was noted that as the vast majority of IMCG management infrastructure was supported on a voluntary basis it may be useful to cost this element. These figures could then be used as the basis of fundraising activity for core costs.

Arrangements for administration and receipt of credit card sales for IMCG books have still not been finalised. PJ has reported difficulties with the French banks as IMCG does not have enough continued guaranteed business. This could potentially be handled in Germany within a separate bank account. Sales of the Wise Use Guidelines are being handled by NHBS. IMCG and IPS have an in principle

agreement to split revenues generated by the NHBS sales on a 50/50 basis. A draft agreement had been received from IPS but it was not considered acceptable. SB is currently trying to establish expenditure and income picture for IMCG and IPS before June 2003. Once this has been established a formal agreement will be signed by IMCG and IPS.

2004 General Assembly and Symposium

The EC considered a final draft agenda for the South Africa 2004 General Assembly and Symposium. JS was asked to liaise with Piet Louis on a number of points of detail. There was a discussion regarding the level and source of support for delegates with financial problems.

An additional symposium to be held in South America in 2005 was considered to be a good option for supporting growing problems in the region. No decision on a 2008 meeting was reached.

flyer

HJ has produced a general IMCG flyer that can be used to encourage potential members to join IMCG. It can also be used in any situation where institutions or individuals want to know who the IMCG is and what they do. It was agreed that 2,000 copies (or more with economies of scale as appropriate) should be printed in Russia.

Ramsar

SB and Andreas Grunig are currently IMCG Ramsar STRP representatives with observer status. TM is also an STRP member but as an official Russian representative. At the last meeting of the STRP in Gland on the 8-11th April the following points should be noted:

- TM expressed concern that peatlands were given a lower priority in the STRP work programme and has forced a change in STRP agenda setting procedures.
- There are no Ramsar funds available for lower priority work areas.
- IMCG will contribute expertise, where capacity allows, to assist with delivery of the Ramsar Support Service currently hosted by Wetlands International.
- The STRP work programme has been formulated. Please see web link at:
www.ramsar.org/key_strp_workplan_2003.htm
- 6 working groups have been established to deliver the work programme – IMCG is represented on all the working groups.
- Main IMCG contribution is via the Coordinating Committee (CoCo) for the Implementation of the Global Action Plan for Peatlands (GAPP). IMCG and IPS are already progressing development and it is hoped that GPI will fund the first meeting of the CoCo to be scheduled to coincide with the joint

IMCG/IPS EC meeting in Amsterdam in November, 2003. Tobias Salate (Ramsar) should be invited, along with a representative from the GPI (as a potential funder of the GAPP). IPS and IMCG could be joint chairs.

IUCN ecosystem management

JS had contact with Dr. Hillary Masundire, Chair of the Commission on Ecosystem management IUCN in February and IMCG was asked if it would like to be a member organisation. The EC agreed that it would not but would maintain links between IMCG and CEM IUCN where appropriate.

GPI

TM stated that project vetting had improved within GPI and procedures were now in place and being used. TM provides endorsement for IMCG projects and will consult with the EC and Main Board where required.

IMCG will now host the GPI website. Michael Trepel will be commissioned to undertake the work, coordinated by TM.

The IMCG/GPI projects in South Africa are running well, coordinated by JS.

Progress on the World Mires Book and the European Mires Book has stalled but should pick up again in the Autumn. HJ is liaising with TM as the GPI link.

International Peat Journal

A full discussion took place as a result of the e-mail correspondence between Jack Rieley and the IMCG Main Board re the future of the International Peat Journal. Consensus opinion from the Main Board was there is still a demand for Journal but IMCG could not take on Editorial responsibilities without further investigation of the distribution and production figures. It would be up to a suitably qualified person to volunteer for the job of editor.

The EC considered the request from the IPS for development of a memorandum of understanding. It upheld its view as first developed in Valencia that IMCG should not develop such a relationship.

The next joint meeting of the IMCG and IPS Executive Committees is scheduled for November 2nd, Amsterdam.

action plan

The EC went through the Action Plan to update progress. There are still some gaps in the 'champions' column and volunteers would be called for.

A full report on progress with the Action Plan will be generated by TM with consultation from the champions identified.

next meeting

The next meeting of the EMCG EC will take place on Saturday 1st November, Amsterdam

REGISTER

Please fill out the IMCG registration form.

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

IMCG congress: Southern African mires and peatlands

IMCG Field Trip, IMCG Symposium and IMCG General Assembly, 11 – 26 September 2004.

Dear Mire and Peatland Friends,
you are herewith once again invited to attend the IMCG Field Trip, IMCG Symposium, and IMCG General Assembly in Southern Africa in September 2004. In contrast to earlier announcements, we have extended the meetings for one day to be able to offer you the optimal field programme.

We will be distributing short contributions via the IMCG Newsletter of the places, mires and peatlands we will be visiting during the IMCG Field Trip. Our first contribution is about the Alpine Mires of northern Lesotho.

Please do not hesitate to contact us regarding any inquiries. Look out for the 3rd announcement in the next issue of the IMCG Newsletter!

Please refer to the previous IMCG Newsletter for a more detailed programme. People are urged to start making preparations and apply for funding very soon. Limited funding for African attendants has been arranged by the organising committee.

For registration and questions please contact

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The alpine mires of Northern Lesotho

by Piet-Louis Grundling and Gary Marneweck

Introduction

The Kingdom of Lesotho is a landlocked country located in southern Africa, within the borders of the Republic of South Africa. The country has a population of about 2 million, covers an area of about 30 375 km². The capital of Lesotho is Maseru and only about 14 % of the population lives in urban areas. Lesotho is also known as the mountain kingdom with rugged Alpine and sub-Alpine terrain above 2 000 m above mean sea level covering 75 % of the country. The people of Lesotho depend on subsistence agriculture and its economy is inextricably linked to that of South Africa with about 150 000 Basotho (citizens of Lesotho) working in South Africa. Most of these are men working in South African mines (about 100 000).

The mires that we will be visiting during the September 2004 IMCG Congress are located in the upper catchment areas of the Maliba-Matšo, Motete, Motsoku and Rivers in the Mokhotlong and Butha-Butha Districts of Lesotho. The mires and wetlands of the above mentioned rivers occur at the source of the major feeder rivers to Katse Dam and are important for regulating the quality and quantity of water which flows into the feeder rivers of Katse Dam. The Katse Dam is the major reservoir of the Lesotho Highlands Water Project. The Lesotho Highlands Water Project is a water transfer scheme to South Africa's industrial heartland and most densely populated region, the Gauteng Province.

These wetlands are mostly peat-dominated systems and perform a critical hydrological role in the upper catchments. The wetlands are key components in terms of the biodiversity of the Maloti Mountain landscape. This region forms the heart of the Maloti-Drakensberg Transfrontier Park between Lesotho and South Africa and is immediate adjacent to South Africa's uKhalamba-Drakensberg World Heritage and Ramsar sites. The highest mountain peak in southern Africa occurs in this same region: Thabana Ntlenyana – 3482 m.

Fens and bogs

The majority of the wetlands sampled are classified as fens meaning that they have an accumulation of peat due to perennial waterlogged conditions and that they are open-ended wetland systems that receive some drainage from surrounding areas or streams. They are dominated by short sedge and grass species within a wet meadow habitat. The wet meadows are dominated by short mat-like peat forming plants. Peat depths vary but are commonly about 1 to 2 m in most of the wetlands. Peat depth greater than 4.5 m does occur and typical peat domes are evident in most of the systems. Hummocks are common in the wet meadows and gravel beds are common within the peat.

It has been widely acknowledged by various authors that the wetlands of the mountains of Lesotho are unique (Van Zinderen Bakker 1965; Bakéus 1988, Marneweck 1996, and Marneweck and Grundling

1999). Marnebeck and Grundling (1999) identified a number of habitat types in the high altitude (2750 m - 3250 m) wetlands in the catchment areas of the Bokong, Motete, Motsoku and Maliba-Matšo Rivers. An interesting observation from both this and the Mohale study (Marnebeck 1996) was that none of the investigated mires (39 field sampled wetlands from the two areas in Lesotho) could really be classified as bogs. This is in contrast to the many literature reports of the occurrence of bogs in Lesotho (Van Zinderen Bakker 1955; Jacot Guillarmod 1962 & 1963; Schwabe 1995). There also does not seem to be any indication of a relationship between aspect and mire type as reported by Schwabe (1995).

Flora

In the fens the most abundant habitat type is that of short sedge meadows that often had extensive areas covered in hummocks. Open water pools are often associated with the short sedge meadows and these are dominated by floating leaved and submergent aquatic vegetation.

Mixed sedge/grass meadows are the next most abundant habitat types and these comprised a mixture of grass and taller sedge species. Tall sedge meadows also occur in some of the fens. These are most often associated with open water pools, where they occur on the edges in permanently saturated zones with some surface water. The least common habitat type is constituted by moss beds, which are restricted to isolated zones within a few of the fens. They are associated with the short sedge meadows and often dominated by hummocks.

The hummock plant communities range from being dominated by marginal species such as *Crassula setulosa* var. *setulosa* to being covered by short sedge meadow species such as *Limosella longiflora*, *Eriocaulon dregei* var. *sanderanum*, *Athrixia fontana* and *Cotula paludosa*. In some areas, grass species such as *Poa binata* also occur on hummocks while in others, the hummock communities cannot be distinguished from the surrounding short sedge meadow.

A total of seventy-three species of plants and two species of algae have been collected from the fifteen wetlands sampled during the first field visit. Of these, one grass *Agrostis* sp., three forbs *Helichrysum* sp., *Myosotis* sp., and *Senecio* sp., and one algae *Nitella* sp. could not be identified beyond genus level, while two species were unknown, possibly due to the lack of adequate material for identification. No new species have been found.

A seventy sixth species of plant, the submergent *Potamogeton pusillus*, has been collected from the Motete River where it was found growing in the shallow slow flowing areas of the channel near the confluence of the Motete and Majoe-Liqhobo Rivers. An additional 46 unidentified species were collected during a second field visit at 12 sites and are at present at the National Botanical Institute in Pretoria, South Africa, awaiting identification.

A list of the plant species collected from the wetlands that were investigated is given below (excluding the additional 46 unidentified species collected during the second field visit):

Agrostis bergianna Trin. var. *laeviuscula* Stapf
Agrostis lachnantha Nees var. *lachnantha*
Agrostis subulifolia Stapf
Agrostis sp.
Alepidea ciliaris F. Delaroché
Anthoxanthum ecklonii (Nees ex Trin.) Stapf
Athrixia fontana MacOwan
Bromus catharticus Vahl
Bryum alpinum Huds. ex With.
Carex cognata Kunth var. *drakensbergensis* (C.B. Clarke) Kük.
Carex glomerabilis Krecz.
Carex subinflata Nelmes
Cineraria erodioides DC.
Colpodium drakensbergense Hedberg & I.Hedberg
Cotula paludosa Hilliard
Crassula setulosa Harv. var. *setulosa* forma *setulosa*
Deschampsia cespitosa (L.) P. Beauv
Eragrostis caesia Stapf
Eriocaulon dregei Hochst. var. *sonderianum* (Körm.) Oberm.
Felicia drakensbergensis J.M. Wood & M.S. Evans
Festuca caprina Nees
Geranium multisectum N.E.Br.
Geum capense Thunb.
Haplocarpha nervosa (Thunb.) P. Beauv.
Helichrysum cymosum (L.) D.Don subsp. *calvum* Hilliard
Helichrysum lineatum Bolus
Helichrysum trilineatum DC.
Helichrysum sp.
Helichrysum flanaganii Bolus
Helichrysum subglomeratum Less.
Hesperantha candida Baker
Isolepis angelica B.L.Burt
Isolepis fluitans (L.) R.Br.
Isolepis setacea (L.) R.Br.
Juncus dregeanus Kunth
Juncus exsertus Buchenau subsp. *lesuticus* B.L. Burt
Juncus mollifolius Hilliard & B.L.Burt
Kniphofia caulescens Bak.
Koeleria capensis (Steud.) Nees
Lagarosiphon muscoides Harv.
Limosella africana Glück
Limosella inflata Hilliard & B.L.Burt
Limosella longiflora Kuntze
Limosella vesiculosa Hilliard & B.L.Burt
Lobelia galpinii Schltr
Merxmuellera drakensbergensis (Schweick.) Conert
Merxmuellera stricta (Schard.) Conert
Myosotis sp.
Nitella sp.
Oxalis obliquifolia Steud. ex Rich
Pennisetum sphacelatum (Nees) T. Durand & Schinz
Pentastichis galpinii (Stapf) McClean
Poa annua L.
Poa binata Nees
Polytrichastrum formosum (Hedw.) G.L. Sm.
Potamogeton pusillus L.
Potamogeton thunbergii Cham. & Schldl.
Pseudognaphalium undulatum (L.) Hilliard & B.L. Burt
Ranunculus meyeri Harv.
Ranunculus multifidus Forssk
Rhodohypoxis deflexa Hilliard & B.L. Burt
Rumex crispus L.
Schoenoxiphium filiforme Kük.
Scirpus ficinioides Kunth

Sebaea marlothii Gilg
Senecio cristimontanus Hilliard
Senecio hypochoerideus DC.
Senecio polyodon DC. var. *subglaber* (Kuntze) Hilliard & B.L. Burt
Senecio sp.
Senecio seminiveus J.M. Wood & M.S. Evans
Tolypella nidifica (O Müll) A. Braun
Trifolium burchellianum Ser.
 Unknown sp.
 Unknown sp.
Utricularia arenaria A.DC.
Utricularia livida E.Mey.

Alluvial fans and associated mires

Interbedded gravel layers in the peat as described by Marneweck and Grundling (1999) are closely related to the alluvial fans which result from erosion of the Maluti mountain landscape. To some extent, these also dominated the investigated peatlands, particularly on the steeper slopes. These fans deposited the eroded gravels onto the wetland surface and with time these gravels became incorporated into the peat layer as part of the peat accumulation process.

In geological time, young mountain areas such as the Maluti are dominated by weathering and erosion processes and are dynamic landscapes in a state of constant change. In contrast, the peatlands that occur in these areas are sensitive features in the landscape that prefer stable and low energy environments. Evidence of this comes from mires that were dated as more than 8 000 years old (Van Zinderen Bakker and Werger 1974 and Zawada, *pers.comm* 1998). Considering the conditions required for mires to develop, these ages tend to indicate that there must have been a stable energy regime over a long period of time.

The small alluvial fans of gravel therefore tend to represent localised higher energy pulses that may play an important role in the hydrological processes of the fens. This can be explained as follows: All of the fens sampled contained layers of fine to medium fine-grained peat. These layers of peat are excellent in storing water but act much like clay in terms of not releasing the water. In contrast, the gravel layers and more fibrous peat layers tend to act more like conduits allowing the water to be released more easily. In combination then, the gravels and fibrous peat allow water to be transported down stream, while the finer grained peat and clay layers retain the water for longer periods. These two factors would appear to be key in the retention, storage and slow release of water from the catchments and would be essential for the maintenance of baseflows in the streams.

The loss of the peat and degradation of the fen structure due to various impacts may therefore have serious consequences for flow in the streams. It is also important to consider that peat accumulation rates are slow at 0.25 mm / year (Van Zinderen Bakker and Werger 1974) in the Maluti mountains. However, it would appear that the Lesotho mires are

the only peatlands that thus far, have been shown to be associated with alluvial fans.

Water storage capacity and water storage loss of the mires

The peat and gravel layers in the hydrological regime of these wetlands are important for regulating the quality and quantity of water entering the feeder rivers of Katse Dam. The peat, water storage capacity and water storage loss characteristics of each wetland studied in this project (first visit) are summarised as follows:

- The studied wetlands have an average surface area of 6.12 ha (minimum 0.08 ha; maximum 33 ha);
- The average maximum peat thickness is 1.5 m (minimum 0.3 m; maximum 4.3 m); The total inferred current water storage capability of these wetlands is 522 470 m³;
- The average water loss as a result of degradation was 36 %. The total inferred potential water storage may have been 36 % more at 817 845 m³; Individual fens stored on average 34 831 m³ (minimum 45 m³; maximum 228 000 m³) of water;
- The potential water storage for individual fens before degradation amounts to 54 523 m³ on average (minimum 300 m³; maximum 285 000 m³);
- Water storage losses were in certain cases as high as 85 %, with only a few of the fens still in relatively good condition;
- Moisture content varying between 75 – 90 % was used in the storage calculations.

Impacts

Many of the wetlands have been degraded by anthropogenic impacts, ranging from agricultural practices (mainly livestock) to infrastructure development. The loss in wetland function still needs to be determined in full but key benefits such as storage, filtering, erosion control, carbon storage, base flow maintenance etc. have been limited severely at most study sites. The prospects for the successful halting of further degradation of many of these systems will depend on the development and implementation of a long-term rehabilitation strategy. A key component will be on-site management and restoration. It is strongly recommended that urgent attention is given to direct on-site measures for curbing further deterioration of the wetlands, especially by stormwater drainage from roads and overgrazing by livestock.

Conclusion

The mires of Lesotho are unique and quite unlike any other southern African mires in terms of the association of peat and gravel beds in alluvial fans. Further studies on these relatively small but interesting mires are urgently required and it is quite clear that the desiccation and erosion of these wetlands, and particularly the fens, in the study area, has impacted dramatically on the storage capability

of these wetlands. It is likely that many of the other high altitude mires are also showing a trend of degradation. Since all these wetlands occur at the head of the major feeder rivers into Katse Dam, there is cause for concern relating to the long-term supply of good quality water to the reservoir.

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The importance of South African mires as habitat for the endangered Whitewinged Flufftail (*Sarothrura ayresi*)

by P. Barry Taylor and Piet-Louis Grundling

Introduction

Flufftails (genus *Sarothrura*) are members of the avian family Rallidae (for a review of all species, see Taylor & van Perlo, 1998). Flufftails are small (length 13.5-17 cm) rails inhabiting dense ground vegetation of wetlands, grasslands, forest, and dense bush. They are extremely shy and difficult to observe, usually being located only by their very distinctive calls. Seven of the nine species are confined to Africa and two to Madagascar. Most species are predominantly sedentary, but two are intra-African migrants. Two species are globally Endangered (Stattersfield & Capper, 2000), the Slenderbilled Flufftail (*S. watersi*) of Madagascar and the Whitewinged Flufftail (*S. ayresi*) of Ethiopia and Southern Africa (Fig. 1), which is regarded as Critically Endangered in South Africa (Taylor, 2000). South Africa is predominantly an arid country and the average annual rainfall of 497 mm is well below the average of 860 mm for the world (Cowan, 1995). Water is a scarce commodity and peatlands are thus recognised as rare and unique features in the South African landscape. Peatlands occur mostly in the relatively well watered eastern and southern parts of the country, ranging from coastal, subtropical inter-dune mires of the KwaZulu-Natal and Mozambique Coastal Plain to temperate highveld sponges on the central plateau (Grundling and Mazus, 1998). These regions are also the most densely populated rural areas in South Africa and Gauteng Province in the highveld is the most urbanised and industrialised region. The highveld areas in Mpumalanga Province are severely impacted by mining, commercial afforestation, and agriculture, while wetlands and grasslands in KwaZulu-Natal are being increasingly impacted by commercial afforestation, agriculture and wetland destruction / modification.

The Whitewinged Flufftail: distribution, habitat and ecology

The only known populations of this enigmatic rail occur in highland marshes near Addis Ababa, Ethiopia, and (4,000 km to the south) in mainly highland marshes of eastern South Africa (Taylor, 2000). In Ethiopia the species breeds in July-August, in high-altitude seasonal marshes dominated by grasses, forbs and short sedges; it is assumed to be a long-distance migrant because it is recorded from the breeding areas only in June-September, outside which period there is only one Ethiopian record, from a lower-altitude permanent reed/sedge marsh in May (Taylor, 1994; Taylor 1999; Taylor & van Perlo 1998).

South African records of the Whitewinged Flufftail fall mainly within the period October-March inclusive, with one record in early May, three in August and two in September (Taylor, 1994; Taylor & van Perlo, 1998; P.B. Taylor unpubl. obs.). There are also records from Zimbabwe in January-March 1977 and 1979, and one from Zambia in November 1962 (Taylor, 1994). The Whitewinged Flufftail is assumed to migrate from Ethiopia to southern Africa (principally South Africa) during the nonbreeding season, as there is little overlap in occurrence dates between its two centres of distribution and also because there is no evidence that the species breeds anywhere in southern Africa, where it occurs mainly in tall, permanent reed and sedge marshes which are very different to its breeding habitat in Ethiopia. In South Africa it is found throughout its period of occurrence in permanent marshes on moist to shallowly flooded ground with dense sedgebeds 1-2 m tall, dominated principally by *Carex* species (especially *C. acutiformis*) but also *Cyperus*

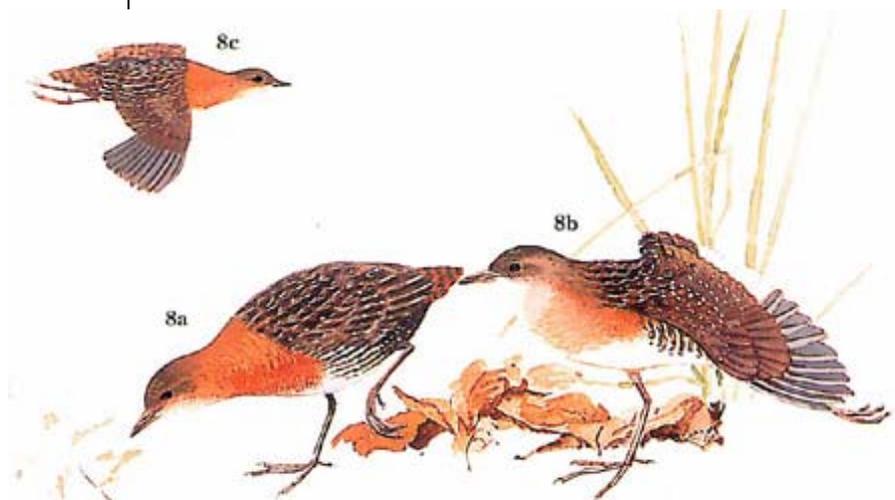


Fig. 1: Whitewinged Flufftail male (top left, bottom left) and female (right). Reproduced from Taylor & van Perlo (1998).

fastigiatus; such sedgebeds are often mixed with *Phragmites australis* and *Typha capensis* (Taylor, 2000; Taylor & van Perlo, 1998). It also occurs for short periods, usually early in the rainy season (November-December) in seasonally to permanently wet sedge meadow and hygrophilous grassland dominated by *Cyperus*, *Fuirena*, *Eleocharis*, *Pycurus*, *Schoenoplectus* and *Mariscus* spp., rushes (*Juncus* spp.) and grasses, especially *Leersia hexandra* (Taylor & van Perlo, 1998).

The Ethiopian breeding population is estimated at 210-215 pairs, confined to two marshes (Taylor & van Perlo, 1998). In South Africa, the Whitewinged Flufftail was recorded only sporadically after its discovery in 1876, but from the early 1980s small to moderate numbers have occurred at four high-altitude

wetlands, Franklin vlei, Lakenvlei, Penny Park and Wakkerstroom (Taylor 1994; Taylor 1997a) - see Table 1. In the late 1990s, surveys identified five more sites where the birds occur regularly in small to moderate numbers, Hebron, Murphy's Rust, Vanger, Watervalvlei and Seekoeivlei (Taylor, 1997a; Taylor, 1997b) – see Table 1. The South African population is estimated at about 200-250 birds (Table 1; Taylor, 1997a).

The recently-documented high-altitude distribution of the Whitewinged Flufftail in South Africa is not unexpected in view of its correspondingly high-altitude distribution in Ethiopia. However, there are also a few historical records from eastern coastal South Africa. In the Eastern Cape the species was recorded from KingWilliamsTown in August 1876, Cambridge in September 1956 and East London in September 1955 and October 1956, while there is also a mention of its occurrence, presumably in the late 19th Century, in "vleis around Durban", KwaZulu-Natal (Stark & Sclater, 1906; Taylor, 1994). The lack of recent records from coastal localities has been taken to suggest that the species no longer occurs at the coast, possibly as a result of habitat destruction (Taylor, 2000). However, as a result of wetland surveys made in 1995/96 (Taylor, 1997b),

several potentially suitable sites for Whitewinged Flufftails were located in northern coastal KwaZulu-Natal. Visits to this region in November-December 2002 confirmed the presence of Whitewinged Flufftails at the Mfabeni wetland (see Table 1), potentially the most suitable of these sites (P.B. & R. Taylor, unpubl. obs.).

The known habitat preferences and distribution of the Whitewinged Flufftail indicate that, in South Africa, the species occurs most regularly and commonly in wetland types that favour the accumulation of peat (Table 1). Some of the sites mentioned above are peatlands with 5 to 10 m of peat, while others are mires with thin layers of recently accumulated peat.

Nine of the ten important sites for the Whitewinged Flufftail fall within the Eastern Uplands, Great Escarpment Mountains and Highveld peatland eco-regions (see Table 1, sites 1-3 and 5-10). The distribution of peatlands within these eco-regions could thus serve as a template to determine a broader distribution range for the Whitewinged Flufftail. The discovery of the Mfabeni site (Table 1, site 4), as recorded in this contribution, clearly establishes the Natal Coastal Plain as another important distribution centre for the species.

Table 1: South African sites at which the Whitewinged Flufftail occurs regularly and/or in significant numbers.

Site/ map no.	Name of Site	Peatland Ecoregion	Wetland/ Peatland	Main Vegetation type	Peatland type	Peat Thickness	Estimated Whitewinged Flufftail population (1)
1	Franklin Vlei	Eastern Uplands	Peatland	Tall Emergent: Carex, Phragmites, Typha	Mire – fen	0.8 m	40-50
2	Hebron	Eastern Uplands	Wetland?	Tall Emergent: Carex, Phragmites, Typha	?	?	10
3	*Lakenvlei	Central Highlands	Peatland	Tall Emergent / Mixed grass/sedge meadow: Carex, Phragmites, Typha	Mire – fen	4.2 m	10-15
4	*Mfabeni	Natal Coastal Plain	Peatland	Tall Emergent / Mixed grass/sedge meadow: Phragmites, Carex (swamp forest in some parts)	Mire – fen	10 m	20+
5	Murphy's Rust	Great Escarpment Mountain	Peatland	Tall Emergent / Mixed grass/sedge meadow: Phragmites, Typha, Cyperus	Mire – fen	1.4 m	10
6	Penny Park	Eastern Uplands	Wetland?	Tall Emergent / Mixed grass/sedge meadow: Phragmites, Typha, Cyperus	?	?	5
7	Vanger	Great Escarpment Mountain	Peatland	Tall Emergent / Mixed grass/sedge meadow: Typha, Phragmites, Carex, Cyperus	Mire – fen	1 m ?	20-30
8	Wakkerstroom	Great Escarpment Mountain	Peatland	Tall Emergent / Mixed grass/sedge meadow: Phragmites, Carex, Typha	Mire – fen	2.8 m	15-20
9	*Watervalvlei (Braamhoek/Chatsworth)	Great Escarpment Mountain	Peatland	Tall Emergent / Mixed grass/sedge meadow: Phragmites, Carex, Typha	Mire – fen	4.7 m	50
10	Seekoeivlei	Great Escarpment Mountain	Floodplain	Tall Emergent / Mixed grass/sedge meadow Phragmites, Typha, Cyperus	Floodplain with sections of mire	Organic layer on surface	10

* Sites to be visited during the IMCG Congress in South Africa in September 2004.

(1) Population data from Taylor (1997a) and unpublished observations by P.B. Taylor.

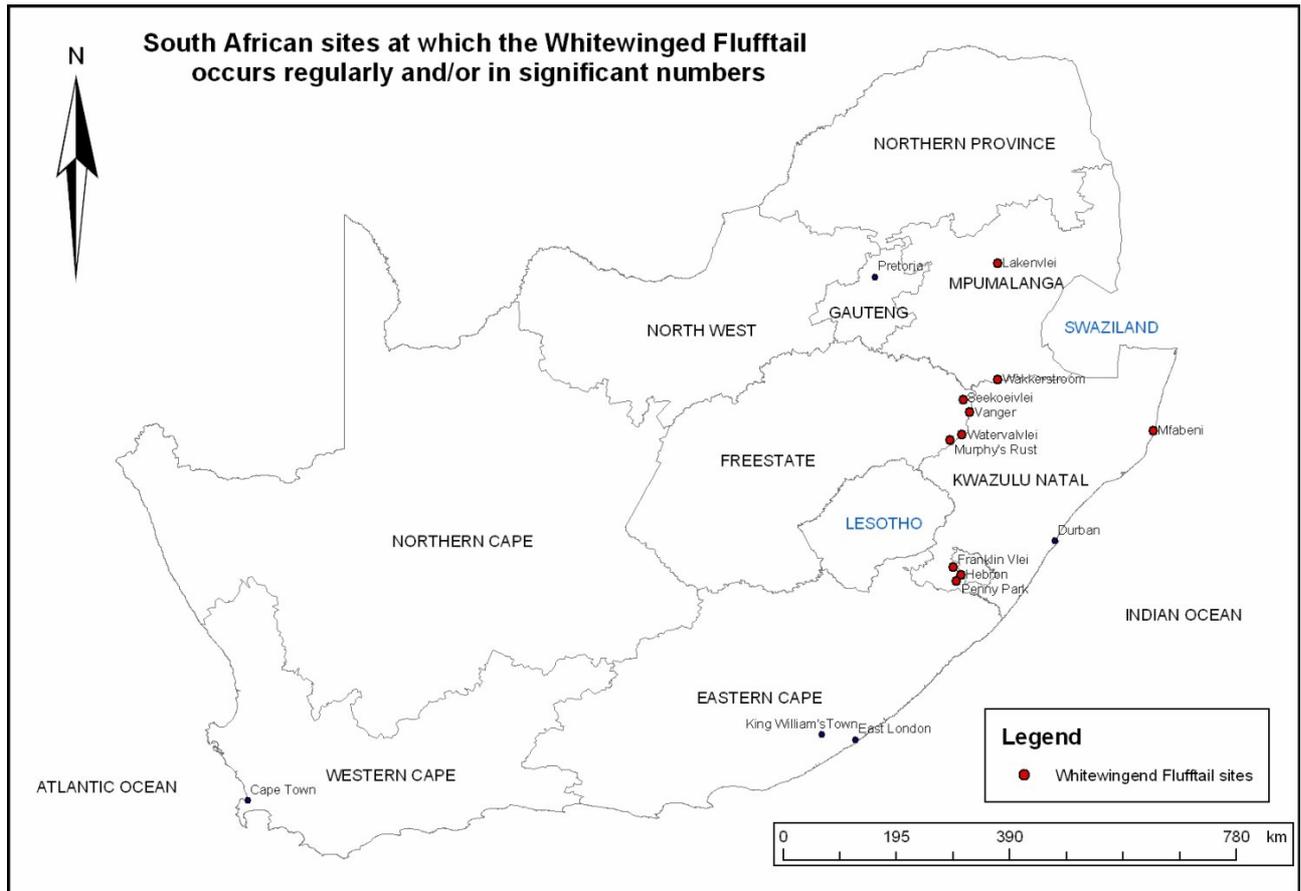


Fig 2: map showing sites mentioned in the text

South African mires: Habitat and distribution

Eleven peatland eco-regions have been identified (Marneweck, Grundling and Miller, 2001), occurring largely in the eastern part of the country, along the coastline and in mountainous and highveld areas. The largest of these eco-regions are the Natal Coastal Plain, Eastern Uplands, Great Escarpment Mountains and Highveld. Peatland eco-regions also occur along the coast of the Eastern Cape and the fold mountains of the Western Cape.

The eco-regions vary with respect to a number of factors including:

- the type of peatland present;
- the extent and number of known peatlands present;
- the peatland characteristics; and
- the type, depth, age and paleo-environmental development of the peat.

The four main peatland eco-regions linked to the distribution of the Whitewinged Flufftail are described as follows.

Central Highlands Peatland Eco-region

The Central Highland Peatland Eco-region covers c.7 % of the total peatland eco-region area and 63 known peatlands (c.14% of the total recorded peatlands) occur in this region. This eco-region, while only the sixth largest, contains the second largest number of known peatlands. The major land-use in the eco-

region is cultivation, and c.25% of the area has been altered from a natural state. The major land-use encroachment on the peatlands is also cultivation.

Most of the known peatlands in this eco-region are concentrated on the Steenkampsberg Plateau. The peatlands in this region vary in extent from 0.5 ha to 293 ha, with a total area of 2179 ha. Peat thickness varies from 0.6 m to 4.5 m with an average of 1.31 m. The largest peatland is the *Phragmites australis* and *Carex acutiformis*-dominated Lakenvlei Wetland Complex.

The majority of the known peatlands in the eco-region are valleybottom fens with the dominant vegetation cover being reeds (*Phragmites australis*) and *Carex* species as well as grasses and other sedges to a lesser extent. The reed and sedge peat tends to be fibrous to medium fine, the grass and sedge peats are mostly medium to fine-grained.

Peatland utilisation and impacts include water abstraction, agriculture, grazing, afforestation, peat fires, draining, headcut and donga erosion, roads, fences and dams (particularly trout dams).

The Lakenvlei peatland was dated at 5080 ± 50 years Before Present (BP) at a peat depth of 1.95 m. During this period (the Holocene), peat accumulated at 0.36 mm/year. This peatland has subsequently been sampled up to a depth of 4.2 m and this thickness relates to a possible peat age of approximately 11,600 years.

Great Escarpment Mountains Peatland Eco-region

The Great Escarpment Mountain Peatland Eco-region covers 17.6 % of the total peatland eco-region area and 14 known peatlands (3 % of the total recorded peatlands) occur in the region. It is the second largest eco-region and contains the fifth largest number of known peatlands. The major land use in the eco-region is forestry and c.21% of the area has been altered from a natural state. The major land-use encroachment on the peatlands is also afforestation. The peatlands in this region vary in extent from 1.6 ha to 298 ha, with a total area of 696 ha. Peat thickness varies from 0.75 m to 4,7 m with an average of 1.52 m.

The majority of the known peatlands are valleybottom fens with the dominant vegetation cover being grasses and sedges and to a lesser extent *Phragmites australis* and *Carex* species. The largest peatlands are reed- and sedge-dominated and these have developed the thickest peats. The reed and sedge peat tends to be fibrous to medium fine peat. The grass and sedge peats are mostly medium to fine grained peat.

Peatland utilisation and impacts include water abstraction, agriculture, grazing, afforestation, draining, headcut and donga erosion, roads, fences and dams. In a few areas, siltation is also a problem.

The peatlands are better developed in the south than in the north, but this is not a clearly-defined boundary. The Wakkerstroom peatland (a reed and sedge dominated peatland in the middle of the eco-region) was dated at 780 ± 40 BP at a peat depth of 2.2 m, with a peat accumulation rate of 2.8 mm/year. In contrast, the Watervalvlei peatland (a reed and sedge dominated peatland in the southern area) was dated at $10\,745 \pm 30$ BP at a peat depth of 4.6 m. This peatland has a peat accumulation rate of 0.43 mm/year.

Eastern Uplands Peatland Eco-region

This eco-region covers 29.4 % of the total peatland eco-region area and 4 known peatlands (0.9 % of the total recorded peatlands) occur in this region. It is the largest peatland eco-region, but it contains the third least number of known peatlands. The major land use is cultivation and c.44% of the area has been altered from a natural state. The major land-use encroachment on the peatlands is also cultivation.

The peatlands in this region vary in extent from 1.2 ha to 114 ha, with a total area of 246 ha of peatland. Peat thickness varies from 0.6 m to 1.9 m with an average of 1.25 m.

The majority of the known peatlands are valleybottom fens with the dominant vegetation cover being bulrushes (*Typha capensis*) and sedges, as well as grasses to a lesser extent. *Phragmites australis* and *Carex* species also occur. The reed/sedge peat tends to be a fibrous to medium fine peat. The bulrush /grass and sedge peats are mostly medium- to fine-grained.

Peatland utilisation and impacts include water abstraction, agriculture, grazing, afforestation,

draining, headcut and donga erosion, roads, fences and dams.

The peatlands in this region are, in general, poorly developed with respect to peat thickness and most seem to have developed more recently. The Mvoti peatland was dated at 400 ± 50 years BP at a peat depth of 1.65 m. Over this period, peat accumulated at a rate of 4.1 mm/year.

Natal Coastal Plain Peatland Eco-region

The Natal Coastal Plain Eco-region covers 7.1 % of the total peatland eco-region area and 306 known peatlands (c.66 % of the total recorded peatlands) occur in this region. It is the fifth largest eco-region and contains the largest and highest density of peatlands of all the eco-regions. The major land use is forestry and c.38% of the area has been altered from a natural state. The major land-use encroachment on the peatlands is cultivation.

The peatlands vary in extent from 0.5 ha to 3 925 ha, with a total area of 20,230 ha. Peat thickness varies from 0.2 m to 10 m with an average of 2.03 m. These volumes were not reflected in the original database used for this eco-region and as such have not been included in the linked peatland attribute tables for this eco-region. The largest mire is the Mkuze Delta dominated by *Phragmites australis*, a *Carex* species and *Cyperus papyrus*. Swamp forest are also associated with this system.

The majority of the peatlands are interdune valleybottom fens and the dominant vegetation cover is reeds and sedges (*Cyperus papyrus*, *Phragmites australis* and *Carex* species) as well as swamp forests. Grasses and sedges occur to a lesser extent. The reed/sedge and swamp forest peat tends to be coarse fibrous to medium fine. The grass and sedge peats are mostly medium fine fibrous to fine -grained. Peatland utilisation and impacts include intensive *in situ* horticulture, water abstraction, agriculture, grazing, afforestation and draining.

Two distinct peat age trends are present in these peatlands. Most peatlands are younger than 7000 years and are distributed across the eco-region. Two of the peatlands (Mfabeni and Mhlanga) are of Pleistocene age and are located in the southern area of the eco-region. Mfabeni is most probably one of the oldest active peat accumulating wetlands in the world. It was dated at $43,000 + 4900 - 3000$ BP at a peat depth of 9.9 m. During the period 43,000 – 11,000 years BP (the late Pleistocene), peat accumulated at 0.23 mm/year, while during the period 11,000 years BP to present (Holocene), the peat accumulated at 0.43 mm/year (5290 ± 70 BP at a depth of 2.5 m).

Conclusion

The distribution of the Whitewinged Flufftail is not only restricted to the upland wetlands of southern Africa. These birds have now been shown to occur in the coastal wetlands of Maputaland, KwaZulu-Natal. There is a strong correlation between the distribution of the Whitewinged Flufftail and mires dominated by

Carex species mixed with *Phragmites australis*, *Typha capensis* and often also *Cyperus fastigiatus*. The distribution of peatlands within these eco-regions could serve as a template to determine a broader distribution range for the Whitewinged Flufftail. More birds might be occurring in these peatlands in the eco-regions and further research is required to determine the extent of the Whitewinged Flufftail's dependency on mire habitat in South Africa.

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New Book Flyer Wise Use Guidelines

Together with IPS, IMCG has produced a flyer to promote the book "Wise Use of Mires and Peatlands – Background and Principles."

The flyer should ideally be distributed among people who are not yet or insufficiently informed on the book. Copies of the flyer/order form are available

from Stuart Brooks (for contact details see p. 29). Feel free to contact him if you wish to inform people at your venue or in your country on the book. You may also download the flyer as a PDF file from the IMCG webpage (www.imcg.net/docum/wugp1.pdf).

Mires of Galicia (Spain)

by *Xabier Pontevedra-Pombal, Juan Carlos Nóvoa-Muñoz, Eduardo García-Rodeja & Antonio Martínez Cortizas*

With a strong oceanic influence, high annual precipitation, mild temperatures, and a broad geomorphological heterogeneity, Galicia (NW Spain, fig. 1) hosts a large variety of mire ecosystems that cover an area of at least 10.000 ha. In European context, their particular location as well as other characteristics associated with their formation and development makes them unique. For example, the presence of an important cover of blanket bogs in the northern mountains represents the southwestern limit in the European distribution of this mire type; extending their 'classical' distribution. Another added value of these wetlands is the low degree of human disturbance.

The location of Galicia in a Eurosiberian-Mediterranean transition area has worked as an engine that generated a great richness of mire types. Following the Interpretation Manual of European Union Habitats (European Commission, 1996), Galicia's mires fall into the general group of RAISED BOGS, MIRES and FENS: *Sphagnum* acid bogs. In a relatively small region blanket bogs, high altitude mires associated with glacial processes, and mires of Tertiary basins can be found.

Minerotrophic mires (FENS, Cod: 7140- Transition mires and quaking bogs) are widely represented. The oldest formations (more than 11.000 years old) appear in the eastern and southeastern mountains where they occupy small basins that originated during the last Quaternary glaciation. In the northern sector, these types of mires fill depressions that resulted from weathering and erosion of granitic outcrops. These mires were formed in two main periods, one around 5.500-4.000 years BP and another one from 3.000-2.000 years BP. Average peat depth of these mires ranges between 1.5 to 2.5 meters.

Ombrotrophic mires (BLANKET MIRES, Cod: 7130- Blanket bog, active only; RAISED BOGS, Cod: 7110- Active raised bogs, 7120 - Degraded raised bogs) are located exclusively in the northern mountains and their development began 8.000-9.000 years BP. The formation of blanket bogs (Cod: 7130) is linked to the particular biogeographic characteristics of the northern mountains: flat surface summits, strong oceanic influence with high precipitations (1600-1800 mm y⁻¹), low or null pluviometric seasonality, numerous and persistent fogs, moderate to low monthly average temperatures (7.5° to 10.0° C), and acidic geological material low in nutrients. Maximum peat depth of these bogs is above 5 meters, with a representative average value of 3 meters. Studies of peat accumulation during the Holocene indicate a mean of 1 cm every 20-25 years (accumulation rates varying between 0.2-0.7 mm y⁻¹).

The scientific study and public concern on the values of the Galician mires have been among the main aims

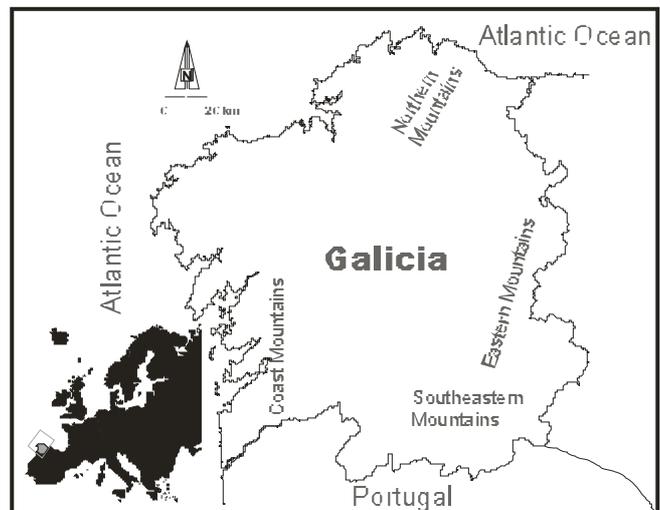


Fig. 1: Galicia (NW Spain) is one of the most western regions of southern Europe (41° 48' - 43° 48' N, 6° 42' - 9° 18' W). In biogeographical terms it can be defined as a transition area between the Eurosiberian and Mediterranean regions.

of the Grupo de Estudios Ambientales of the University of Santiago de Compostela (GEA, Environmental Studies Group) during the last ten years. Our present knowledge is based on different research programmes related to pedo-ecological studies, biogeochemistry of trace elements, atmospheric pollution, paleo-environmental reconstruction using mires as archives, and proposals related to the biodiversity preservation of mire ecosystems that were developed through international collaboration.

The overall purpose of the studies carried out in our mires is to achieve a global knowledge that will enable better conservation policies and to raise awareness on the environmental values associated with these wetlands, as basis for their protection and conservation for future generations. As a result of this work, the regional government of Galicia edited a book (in Spanish) two years ago that contains a comprehensive review of the knowledge of Galicia's mire ecosystems titled "Mountain Mires of Galicia". For interested people, this book can be downloaded (without charge) as a pdf file:

<http://www.xunta.es/conselle/cma/CMA07g/CMA07ga/coltecnica/TurberasMontanaGalicia.pdf>

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Towards an inventory of Patagonian Peatlands

by Daniel Blanco

Wetlands International - South America

The Patagonian Peatlands in southern South America are shared by Argentina and Chile. Baseline information about their distribution, attributes and functions, is still very scarce and patchy. The need of an inventory at regional scale arises as a priority and as a first step for their wise use and biodiversity conservation, particularly due to the increasing pressure for their exploitation and mining.

The "Patagonian Peatlands" project aims to strengthen the capacity of Argentina and Chile – as Contracting Parties of the Ramsar Convention – to fulfil the obligations derived from Recommendation 7.1 "A global plan for the wise use and management of peatlands." Particularly the Ramsar Convention in its Resolution 7.20 (7th Meeting of the Conference of the Contracting Parties; Costa Rica, 10-18 May 1999), encourages the development of systematic and standardised approaches for wetland inventory as well as the development of national wetland inventories as a basis for national planning and wetland management.

This project is also contributing to the implementation at regional, national and local level of the global programmes of Wetlands International, as stated in the "Strategy 2002-2005," and specially in relation to Programme 3: "Working towards Wise Use" and to the Objective: "3.2. Promote wise use of peatlands world-wide."

Main objectives of the project are to complete an evaluation of the Patagonian Peatlands focused on biodiversity, an assessment of direct values, current uses and demands as the basis for integrated planning, and the promotion of the conservation of the most important peat ecosystems in Patagonia, including designation of Ramsar Sites.

The project was started in February 2003 and will be completed by December. A technical publication about the Patagonian Peatlands will be produced in Spanish and will be widely distributed in Argentina and Chile, as well as to the international peatlands community.

The project is coordinated by Wetlands International from its Regional Office in Buenos Aires, and includes the participation of many peatland specialists and other actors involved with peatland conservation and wise use in both Argentina and Chile, representing various research institutes, universities and governments agencies.

In Argentina the project is being developed in close cooperation with the National Secretariat of Environment and Sustainable Development – the National Ramsar Authority – and the Government of Tierra del Fuego province. In Chile it is being developed in close cooperation with the Universidad Austral and the Environment Division of the Ministry of Foreign Affairs – the National Ramsar authority.

World Wetlands Day 2004

World Wetlands Day takes place on 2 February every year, and traditionally the Ramsar Bureau provides materials for the use of everyone who will be organizing WWD activities of their own. Make sure you start in time with your preparations for World Wetlands Day 2004. This year the Bureau has developed a theme – "From the Mountains to the Sea - Wetlands at Work for Us" – that will allow people to focus on their own wetlands and consider how these wetlands work for their benefit both at national and local levels, and to consider too how to manage their wetlands so that they continue to deliver these benefits. For a brief description of the materials now being prepared for distribution in mid-October has surf to: http://ramsar.org/wwd2004_prelim.htm (français and español also).

It's worth mentioning that all of the materials for WWD activities are being offered **free of charge**. Furthermore, they will also be made available in Quark XPress design format, so that those with the will and the means to do so can adapt the materials to their own languages, their own local circumstances, and larger print-runs if they wish. A page of illustrations of WWD2003 materials that have been adapted by our collaborators in several countries to their own specificities is also available at:

http://ramsar.org/outreach_materials_translations2.htm

It should be noted that the Ramsar Bureau, having provided the original designs, is unfortunately not able to provide funding for local adaptations.

International project on arctic goose and climate change

by Thomas Heinicke



In January 2003, a major new project called FRAGILE (Fragility of Arctic Goose Habitat: Impacts of Land Use, Conservation and Elevated Temperatures) started, funded by the European Commission under the Framework 5 research and development programme. Within its three year programme, 13 research groups from six European countries (Belgium, France, The Netherlands, United Kingdom, Norway, Denmark) take part. On 15th and 16th May this year a 'International Stakeholder Workshop' was organized by the WWT at Slimbridge, in which the IMCG participated.

Project contents

FRAGILE is a research programme that will explore the past/future effect of land use, conservation, hunting, and climate change on goose populations as well as how the future combination of increased goose numbers and climate change could impact fragile tundra ecosystems. Therefore, the project is based on three key issues:

1. High latitude habitats will experience considerable temperature elevation during the next 50 years, and there is a potential for Arctic ecosystems to become 'net producers' of carbon.
2. Increased levels of grazing of tundra by geese during the breeding season have the potential to negatively impact fragile arctic habitats.
3. In the wintering areas of north-west Europe, many goose populations have increased in response to changes in agricultural land use and a range of conservation measures.

In the context of these issues, FRAGILE will:

- quantify changes in the number of geese and conservation action associated with geese during the last century, types, changes and distribution of agricultural land use and distribution of arctic tundra habitats; present day climate patterns
- model goose population dynamics, distribution of tundra habitats in relation to climate and distribution of agriculture in relation to climate and socio-economic factors
- determine tundra biota and processes that are most vulnerable to the combined effects of increased goose grazing and climate change, and thresholds for degradation
- explore future changes in goose numbers, in distribution of tundra and associated goose carrying capacity, in types and distribution of agriculture in north-west Europe, in climate for the Arctic and north-west Europe, and in tundra carbon flux and nutrient cycling in tundra ecosystems
- engage local, national, and international stakeholders by efficient and appropriate

dissemination of research results, and engaging stakeholders in the research process

Because of the large amount of arctic breeding geese, wintering in Europe, the wide range of arctic tundra habitats, and the wide scale of different interactions and influences, a model region is to be needed. So, the programme focuses on two goose populations, breeding at Svalbard/Norway:

- the Svalbard Pink-footed Goose *Anser brachyrhynchus*, wintering in Denmark, the Netherlands and Belgium
- the Svalbard Barnacle Goose *Branta leucopsis*, wintering on the Solway Firth in northern Britain

Both goose populations are probably the best researched ones in Europe with a huge amount of data on distribution and numbers as well as ringing data.

Impact of goose on arctic tundra habitats

The project focuses on the effects that increased goose grazing pressure has on tundra (terrestrial and freshwater) ecosystems in a context of climatic change. In order to predict the extent of the effects of geese on these vulnerable ecosystems, prognoses will be developed using predictive models of goose population dynamics resulting from future land use changes, decreased hunting pressure, and the increase of protective measures for the goose species in Western Europe.

Because of the increase in agricultural production in Western Europe, goose species are able to return to their breeding grounds in good physical condition. This improves their breeding success and their survivorship in the summer quarters, which in turn results in increasing population size. This effect is enhanced because a decrease in hunting pressure and an increase in protective measures following the Ramsar convention and the European Bird Directive favour the survivorship of migratory birds. The resulting overgrazing by geese in their summer quarters could disrupt the whole tundra ecosystem and cause desertification of arctic soils (cf. the effect of Snow geese on salt-marsh ecosystems in NE Canada). Eutrophication of freshwaters may be another result, because of the increased numbers of geese populating arctic lakes when disturbed or roosting.

Mosses and graminoids often dominate Arctic plant communities that are grazed by geese, and any shift in the balance between these groups would alter the carbon balance of the system. The low thermal conductivity of mosses reduces soil temperature, and their lack of roots means that, once the water table is below the soil surface, evapotranspiration is minimised, maintaining wet soil. Both these factors reduce decomposition rates in the soil, as does the high concentration of lignin-like polymers in moss tissues. Thus moss-dominated vegetation is likely to

be a carbon sink. In contrast, graminoids access soil water and their transpiration increases overall rates of evapotranspiration, drying the soil and potentially increasing microbial activity. They also produce litter with lower C/N ratio and lignin content, which decomposes faster than moss tissue. Graminoid dominance is thus more likely to shift the system towards being a carbon source.

Herbivory by geese can have a large effect by selective removal of biomass thus changing the vegetation composition and the amount and quality of the litter produced. Goose grazing has also been shown to accelerate the nitrogen cycle and in this way increase the productivity of their forage when goose droppings function as a source of nitrogen for the vegetation. It is clear that continued increase in the populations of geese grazing the tundra might have significant implications for both the carbon and nitrogen balance of the system.

Geese have also direct and indirect effects on the freshwater ecosystems of the Arctic, dramatically affecting N and P regimes in lakes and ponds. For very nutrient poor localities, faecal droppings will provide a valuable input for the systems, while other ecosystems, notably some coastal ponds, may in fact be severely eutrophied by increased loading of nutrients. N and P are key determinants of productivity, biodiversity, ecosystem processes and food-web dynamics in these freshwater systems.

Svalbard: climate and vegetation

Very little information about mires and related systems on Svalbard is published. Most of the information below is taken from Moen 1999.

The Gulf Stream exerts its influence north and east of Iceland and along the west coast of Svalbard. It gives the island a better climate than other land areas at the same latitude. Svalbard has an annual temperature lower than -4°C . The normal monthly temperature of the warmest month is highest in inner fjord districts of Svalbard, where it can reach just over 6°C in July.

Svalbard (except Bjørnøya) is noted for its omnipresent permafrost and numerous glaciers. Glaciation is particularly extensive in areas with high precipitation. Two-thirds of Svalbard is covered by ice, and even ice-free areas are not always vegetated. High plateaus, steep hillsides, screes and newly-formed moraines frequently lack vegetation, generally because the ground is too unstable owing to frost action, solifluction or steep topography. A continuous vegetation cover is chiefly found on stable ground on the strandflat and up to a height of 200-300 m.

Three broad zones can be distinguished on Svalbard: Glacier, Northern Arctic, and Middle Arctic Zone. The Middle Arctic Zone occupies substantial areas in the fjords of western and northern Spitsbergen, where an 'inner fjord region' is found forming a transitional zone to the southern part of the 'Northern Arctic Zone'. The Northern Arctic Zone, including the polar

desert, occupies the islands in the east, the southern end of Spitsbergen and all the high ground elsewhere. In climatically favourable parts of Svalbard, the shift from the Middle to the Northern Arctic Zones occurs at a height of 200-300 m, and the polar desert, with widespread permanent ice and snow, reigns from 500-600 m upwards. Barely half (approximately 90) of Svalbard's vascular plants are found in the Northern Arctic Zones; about 30 are found in the polar desert. The largest numbers of plants requiring relatively warm conditions are found in the inner, continental fjord region on Spitsbergen. *Betula nana*, *Campanula rotundifolia*, *Rubus chamaemorus*, *Tofieldia pusilla*, *Vaccinium uliginosum* and *Empetrum nigrum* are among these. Elsewhere in the arctic regions, these species are most typically found in the Southern Arctic Zone. Along with some mire vegetation, accompanied by some peat, they show some Southern Arctic traits in the most favourable parts of the fjords. These are weak, however, and only found locally. They are therefore interpreted as relics of more thermophilous, southern arctic vegetation in Svalbard during the postglacial climatic optimum.

According to Ad Huiskes, the co-ordinator of the FRAGILE project, mires with brownmoss-sedge vegetation and peat layers of more than 30 cm can be found. The hydrology of the mires is strongly influenced by glacier waters and permafrost, which is e.g. similar to mires, found in the alpine zone of the Tien-Shan Mountains in Kyrgyzstan.

Contacts

More information about the FRAGILE project can be found at: <http://www.fragile-eu.net/> or please contact the project co-ordinator Ad Huiskes from the Netherlands Institute of Ecology, Centre for Estuarine and Coastal Ecology: a.huiskes@nioo.knaw.nl.

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Training people for wetlands: East African Wetland Management Course

17th September to 28th October 2003

The East African Wetland Management Course (EAWMC) is a Regional Training Initiative for Wetland Managers. It is a Ramsar Convention endorsed programme and is designed based on the Ramsar New Guidelines for Management Planning for Ramsar sites and other wetlands (Resolution VIII.14). Ramsar Convention is an International Convention on Wetlands, which provides the framework for national and international co-operation for the conservation and wise use of Wetlands. Currently it has 133 Contracting States (members), amongst them the three East African countries. The Convention restrains member countries from unsustainable use of their wetland resources. Uganda is the only country in Africa that has put in place a National Wetland Policy and a Legal Instrument to manage its Wetlands. Most of African countries are still in the process of developing this, while some like Kenya, are fairly advanced on Wetland inventories. The EAWMC has been developed and organized primarily by Kenya Wildlife Service Training Institute (KWSTI) in conjunction with Wetland Advisory and Training Centre RIZA-Rijkswaterstaat of the Netherlands, with subsequent contribution from Uganda and Tanzania to suit the African situation. The execution of the programme is jointly done by personnel from Kenya Wildlife Service, Wetlands Inspection Division, Ministry of Water, Lands and Environment Uganda, Wildlife Division of Ministry of Natural Resources and Tourism, Tanzania, renowned Wetland Organizations (such as IUCN, Wetlands International) and tertiary institutions (Nairobi, Kenyatta & Egerton Universities).

The first course was executed in September/October in 2001 and attended by 20 participants from seven African Countries (Uganda, Tanzania, Seychelles, Nigeria, Burundi, Zambia & Kenya). The second course was held in 2002 and had 23 participants from

the following African countries (Tanzania, Uganda, Cote d'Ivoire, Seychelles & Kenya).

Broadly, the course aims at providing knowledge and skills necessary in Management of Wetland Sites – both protected and unprotected. It takes participants through the process of developing Wetland management plans using biodiversity data, stakeholders analysis information, legal/institutional framework and other communication variables. The course consists of a mixture of lectures, workshops and field practicals as well as interactive learning.

Applicant Profile

- Persons with at least two years experience in initiating, developing and (co-ordination of) implementation of Wetland management and policies.
- Persons with a B.Sc. in (Conservation) Biology, Wildlife Management, Environmental Science or Water management or equivalent.
- Persons acquainted with knowledge and training in Biodiversity and/or Natural Resources Management.
- Should be proficient in spoken and written English

Course Duration and Costs

EAWMC is a residential course that lasts 42 days (6 weeks) and is run annually. The fee charged is US\$ 3000 (equivalent to Kshs. 240,000/-); this includes Tuition and Full-board Accommodation. The fee does not cover for International travel expenses, health cover or personal expenses (DSA).

For more information contact:

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Ecohydrological Processes in northern wetlands

by Michael Trepel

From 30. June to 4. July 2003, the Institute of Ecology at Tallinn Pedagogical University in Estonia organised in association with Sheffield Wetlands Research Centre at University of Sheffield, UK an International Conference and Educational Workshop. The conference attracted around 70 researchers from Western (30) and Central Europe (35), Canada (2) and Australia (1). The Conference was structured in three parts: During the first two days lectures and posters were presented, during the third day methods were introduced in an educational workshop for measuring water exchange and carbon fluxes at different scales. Andy Baird showed new developments for measuring hydraulic conductivity of peat soils in the field as well as under laboratory conditions. Sake van der Schaaf introduced the concept of transmissivity theoretically and with examples from research at Clara bog. Gert van Wirdum presented methods for determining hydrochemical water types and for measuring and evaluating thermal gradients in peatlands. During a two day excursion these methods were demonstrated in the field at Männikjarve bog and Viru bog. The field demonstration of old and new methods stimulated discussion among all participants and gave many ideas for future research projects. Both during the conference as well as during the workshop and field excursion an urgent need for a better understanding of (hydro)physical conditions of flow patterns in peatlands under near natural and degenerated conditions was formulated.

During the field excursion and the following post conference tour to peatlands in southwestern Estonia the question how to restore peatlands was heavily discussed. Important aspects of these discussions include the question why revegetation on cutover peatlands in some areas occurred while at other (even neighbouring) sites even after 25 years after peat cutting nearly no new vegetation establishment was visible. On the other hand it was argued that restoration should concentrate not at the most degenerated sites but on the most valuable peatlands. For the future, the development of mire and peatland restoration and conservation strategies will become an important task at the research institutes and the environmental authorities.

Finally, thanks were expressed to the organisers, namely Elve Loode, Mati Ilomets, Kris Heinsoo, Ene Kadastik, Edgar Karofeld, Are Kont, Raimo Pajula, Urve Ratas, Reimo Ravis, Ülle Sillasoo, Laimi Truus, Aljona Lukjanova, Aili Kants, and Heidi Remmelkoor, for not only organising an international conference about ecohydrological processes but also for developing a new meeting strategy which by introducing methods both in lectures and field demonstrations provoked discussions and thoughts.

Selected papers from the conference are available in the reviewed proceedings

Järvet, A. & Lode, E. (eds.) (2003): Ecohydrological processes in northern wetlands. Tartu University Press, 303 pp. ISBN: 9985-56-765-x

For ordering details contact Elve Lode at elve@eco.edu.ee.

Regional News

News from France: four new Ramsar sites

The French government has designated four interesting new Wetlands of International Importance. They are the Bassin du Drugeon (5,988 ha) in the Franche-Comté near Pontarlier near the Swiss frontier; Etangs du Lindre, forêt du Romersberg et zones voisines (5,308 ha) in Lorraine, near Dieuze not far from Nancy; Lac du Bourget - Marais de Chautagne (5,500 ha) in the Rhône-Alpes region, between Geneva and Grenoble; and Marais du Fier d'Ars (4,452 ha) on the Atlantic island of Ré off the coast of La Rochelle. The first three contain peatland areas.

Bassin du Drugeon, Franche-Comté; 5,988 ha; 46°50'N 006°10'E. Proposed Site of Community Importance EC Directive. A peatland landscape complex in the Jura foothills with a rich variety of natural habitats including dry grasslands, alkaline

fens, mires, river floodplains, ponds, and lakes. It holds important populations of threatened plants including *Saxifraga hirculus*, *Liparis loeselii* and *Hamatocaulis vernicosus*. Of conservation interest are the local populations of waterbirds, including corncrake *Crex crex*, spotted crane *Porzana porzana*, and snipe *Gallinago gallinago*, of the toads *Alytes obstreticans* and *Bufo calamita*, the newt *Triturus cristatus*, the rare butterfly *Euphydryas aurinia*, and a number of dragonflies. The Drugeon river course was restored in large parts during the 1990s with the help of European Union LIFE subsidies, including measures to improve its water quality, reduce water pollution, and make agricultural practices more environmentally friendly. The main land uses are agriculture and forestry, some hunting and fishing, cycling and walking, plus the beginnings of nature tourism benefiting from the newly established mire track. Ramsar site no. 1266

Etangs du Lindre, forêt du Romersberg et zones voisines, Lorraine; 5,308 ha; 48°47'N 006°48'E. Regional Nature Park (in part), proposed Special Protection Area and Site of Community Importance EC Directives. A complex of shallow lakes, marshes, reedbeds, mires, small rivers and associated forests, pastures, hedgerows, and cultivated areas that provides a variety of habitats. Small continental salt grasslands are of particular biodiversity value. The forest contains many rare plant species and an important population of wild cat *Felis silvestris*. The lakes serve as important moulting areas for shoveler *Anas clypeata* and as breeding and wintering sites for many other waterbirds. Non-intensive fish farming, hunting and nature tourism are the main human uses besides agriculture and forestry. Each year, a popular event celebrates the annual fish harvest in the lakes. Ramsar site no. 1267.

Lac du Bourget - Marais de Chautagne, Rhône-Alpes; 5,500 ha; 45°44'N 005°51'E. Proposed Special Protection Area and Site of Community Importance EC Directives. One of the largest French Alpine lakes (4,500 ha). Apart from the lakeside town Aix-les-Bains, more than half of the lake shores remain natural, either rocky or covered with reedbeds (stretching along 11 km shoreline). Tourism and leisure activities are important, but restricted to specific lake areas only. Adjoining the lake outlet are the Chautagne marshes and peatlands. The submerged lake vegetation and animal communities are very well developed and in good condition. During winter, and especially during cold spells, the lake harbours more than 20,000 waterbirds that also use the nearby part of the Rhône River, including up to 16,000 pochard *Aythya ferina* (Criterion 6). Bourget lake provides an important spawning area for the fish *Coregonus lavaretus* (one of the two French top sites), *Salvelinus alpinus*, and *Lota lota*. Ramsar site no. 1268.

News from Spain: new Ramsar sites

Spain has designated 10 new Ramsar sites and extended an existing one. The hosts of Ramsar COP8 in Valencia announced during the Conference the designation of 11 new Ramsar sites. Ten of them are now ready for inclusion in the List (the Ramsar Bureau is still awaiting a map for the eleventh: Bahía de Cádiz). They include small wetlands, some of them intermittent, from all over the country, including four in the País Vasco (Basque country) contiguous with France and one in the Canary Islands.

Including possible mires/peatlands is Salburua. 24/10/02; País Vasco; 174 ha; 42°51'N 002°39'W. A complex of two shallow lakes at the edge of Vitoria-Gasteiz, the capital of the Basque autonomous region (220,000 inhabitants). The marshes were drained during the 20th century and subsequently restored in

the 1990s. Arkaute lake fulfils a key hydrological function in preventing flooding of the nearby part of town. The site contains the most extensive *Carex riparia* reedbed of the Iberian peninsula and other priority habitats of the EC Habitats Directive. The population of the globally endangered European mink *Mustela lutreola* is noteworthy. The area is used for research and environmental education. Specific trails and picnic areas are designated for nature tourists. Controlled grazing with a herd of deer is managing the emergent aquatic vegetation. Ramsar site no. 1263.

News from The Netherlands: new Ramsar sites

The Netherlands has added 14 sites and extended one existing site impressively. The Ramsar Bureau is further cooperating with the Dutch authorities concerning 11 more sites that are in the process of designation.

The Netherlands has thus more than doubled the area of wetlands that it has placed under the Ramsar umbrella, from about 327,000 hectares (including the overseas territories) to 38 Ramsar sites covering 691,228 hectares.

Here are brief Annotated Ramsar List descriptions as far as peatlands are concerned drafted by Ramsar's Sergei Dereliev --

Broekvelden / Vettenbroek. 23/09/02. Zuid-Holland. 700 ha. 52°03'N 004°47'E. SPA. A complex of shallow slightly brackish lakes, criss-crossed by land strips, peatlands, reed fringes, wet meadows and improved grasslands located near the famous city of Gouda, where the Dutch Gouda cheese comes from. The current landscape has been formed by land reclamation and peat extraction activities. The wetland has been declared a Ramsar site mainly for its importance for waterbirds - first it is a place for significant congregations (average peak 22,500 for 1991/92-1996/97) and, second, it hosts nearly 2% of the biogeographic populations of the Bewick's Swan *Cygnus columbianus bewickii* and the Wigeon *Anas penelope*. The main human uses include boating, commercial fisheries, farming, and tourism. The site is threatened by non-industrial pollution and expansion of agricultural lands. Ramsar site no. 1240. De Wieden. 23/09/02. Overijssel. 9,400 ha. 52°42'N 006°03'E. SPA. A habitat-diverse site comprising shallow small and bigger freshwater lakes and numerous canals established by peat extraction activities mainly in 18th and 19th centuries, reedbeds, fens, wooded peatlands and non-wooded ones, and wet meadows. It is adjacent to the Ramsar site Weerribben. The site has been chosen for Ramsar status for being a particularly representative example of a partially forested lowland peatland with lakes and canals resulted from peat extraction - the most extensive lowland peatland in northwestern Europe. It is also a habitat for several rare and endangered

species and communities - 15 plant communities, 7 plant species, 14 mosses species, 6 species of mushrooms, 8 species of freshwater snails and the same number of insects, as well as 7 species of breeding birds. The site is also a refuge for more than 1% of the biogeographic populations of five waterbird species. It acts as a water storage reservoir from drains of the surrounding polders and provides water for irrigation. Among the main human uses are tourism (with a visitor centre), angling, boating, commercial fisheries, farming, and reed harvest. The site is seriously threatened by drainage due to groundwater abstraction and intensive farming in the surrounding polders, as well as by non-industrial pollution. Proposed for SAC under the Habitat Directive 92/43/EEC. Ramsar site no. 1241.

Fluessen / Vogelhoek / Morra. 23/09/02. Friesland. 2,100 ha. 52°56'N 005°32'E. SPA. The site comprises an extensive rather deep (maximum depth 18 m) freshwater lake, adjoining marshes and surrounding wet meadows. There is sparse water fringe emergent aquatic vegetation, but none submerged. It has been declared a Ramsar site for its importance for the Barnacle Goose *Branta leucopsis* - up to 3.4% of the biogeographic population gathers there in winter time. The lake acts as a temporary reservoir for drained water from the surrounding polders before discharge into the Wadden Sea. Among the main human uses are boating, commercial fisheries, and tourism. Ramsar site no. 1243

Leekstermeergebied. 23/09/02. Groningen, Drenthe. 1,450 ha. 53°11'N 006°26'E. SPA. A freshwater lake, south of the city of Groningen, surrounded by reedbeds, peatlands and pastures, with some small marshes and wet grasslands around the average-one-meter-deep lake. The site qualified for Ramsar status due to its importance for waterbirds - it is a place for large congregations of birds (average peak 33,500 birds for 1993/94-1997/98) and it provides refuge to about 4% of the biogeographic population of the White-fronted Goose *Anser albifrons* - roosting in the lake and feeding in the surrounding grasslands. The lake serves as a drain for the surrounding polders and it provides water for irrigation. However, water level is maintained and stable. The main human uses include commercial fisheries, boating, and tourism. The site is threatened by non-industrial pollution, drainage and unnatural water level management. Ramsar site no. 1248.

Sneekmeer / Goengarijsterpoelen / Terkaplesterpoelen and Akmarijp. 23/09/02. Friesland. 2,300 ha. 53°01'N 005°46'E. SPA. A complex of freshwater lakes, originated from peat extraction activities, and adjoining marshlands and wet meadows. It has been designated as a Ramsar site for its importance for waterbirds - it hosts more than 1% of the respective biogeographic populations of the Barnacle Goose *Branta leucopsis*, the White-fronted Goose *Anser albifrons*, and the Wigeon *Anas penelope*. It serves as a drain for the surrounding polders and surplus water is discharged into the Wadden Sea. Part of the water is used for irrigation. Main human uses comprise

boating (ca. 1,800 boat docking places), commercial fisheries, tourism, and farming. The most significant threat posed on the site is drainage. Ramsar site no. 1250.

News from Ireland: Fenor Bog Open Day

To celebrate International Bog Day on Sunday the 27th July the Irish Peatland Conservation Council is holding an open day at their bog reserve at Fenor Bog in Co Waterford.

Organised in conjunction with IPCC's partners in the project - the Móin Fhionnúrach Development Association, the day will include guided walks of the bog to see its wildlife and the work undertaken to ensure its management for conservation. Visitors will also be made familiar with the Fenor Bog Water Project which began in April of this year and aims to ensure that there is a plentiful and clean supply of water feeding the mire. There will also be a special programme for children and competitions to enter. Guided walks and children's programmes start at 1pm and 2pm.

Visitors on the day will be able to see the bog in safety on the newly opened 500m long boardwalk constructed from plastic lumber, made from recycled plastic drinks bottles. The boardwalk took two years to construct. Design and work on the construction has been undertaken entirely by volunteers from the local community under the guidance of the Móin Fhionnúrach Development Association.

There will also be an opportunity to learn more about IPCC's Save the Bogs conservation work at an information stand.

International bog day was first launched in 1990 to highlight the importance of bogs around the world and to link projects and groups in different countries. This year international bog day is also being celebrated at Peatlands Park in Armagh, Burns Bog in Canada and Caithness Bog in Scotland.

Fenor bog was jointly purchased by the Irish Peatland Conservation Council and Móin Fhionnúrach Development Association in 1999.

Peatland World Saved

The Irish Peatland Conservation Council has saved the future of the Peatland World at Lullymore in County Kildare in a pre-auction purchase.

Teagasc the farm advisory board who originally established Peatland World in 1992 were to put the property up for auction as part of a rationalisation plan. More than likely the property would have been sold for re-development. This would have been a great loss for peatland conservation and education in Ireland.

In the next year IPCC intends to move its headquarters to this property located in the centre of the Bog of Allen and develop its full potential as a cultural interpretive centre for bogs, their past, present and future. In this respect Kildare County Council is sponsoring a trip to the London Wetlands Centre for IPCC staff to see the potential to develop the cultural aspects of peatlands at Peatland World. In particular IPCC hopes to develop new and creative projects at Peatland World involving international peatland groups, which will focus on the conservation of bogs, their wise use and restoration.

For more Irish news surf to [http:// www.ipcc.ie](http://www.ipcc.ie)

**News from Sweden:
Parliament Proposes Green Certificate for
Fuel Peat**

On 3 April 2003, the Swedish Parliament passed a bill according to which electricity produced through wind power, solar power, geothermal energy, biofuels and certain kind of hydropower shall be eligible for green certificates as from 1 May 2003. The Parliamentary Committee for Industry and Energy proposed to the Parliament that peat should also be included in the list of fuels eligible for the green certificate. The proposal was adopted by the Parliament. The Swedish Government's task is now to notify the European Commission about this decision. If the EU Commission confirms this decision, the Government must report back to the Parliament for inclusion of peat in the 2004 budget bill. There were environmental reasons for the proposal of the Parliamentary Committee for Industry and Energy. It was stated that if peat was not made eligible for green certificates it would not be possible for it to compete with coal in combined heat and power plants. According to the Government Commission, there is no risk that peat would reduce the use of wood and other biofuels, because peat is not an alternative to biofuels.

Source: IPS Peat News

**News from the EU:
Biodiversity monitoring networks in Europe**

The final draft of the report 'An inventory of European site-based biodiversity monitoring networks' is now available.

This report was produced by ECNC as a contribution to the ETC/NPB work programme 2002. Many people have contributed details and review comments to this report. The inventory will provide a useful basis for the EEA activities in identifying a way forward to biodiversity monitoring in Europe.

The report can be downloaded from the ETC/NPB web site at:

<http://nature.eionet.eu.int/activities/products/reports/?ftopic=Monitoring&ftype=Draft+report&submit=Go>

If you find information that has become out of date, not correct or have other comments, please contact Ben Delbaere, Senior Programme Coordinator on Biodiversity, ECNC, PO Box 90154, 5000 LG Tilburg, the Netherlands
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**News from Belarus:
Urgent action for globally threatened bird**

An international meeting was held in Minsk, Belarus, from 29 to 30 April 2003, to negotiate and adopt a "Memorandum of Understanding and Action Plan Concerning Conservation Measures for the Aquatic Warbler" under the auspices of the Convention on Migratory Species. Conservationists see this as a huge milestone in the protection of this globally threatened bird and its habitat.

What connects Dakar, Senegal in West Africa with Minsk, Belarus? Why have representatives of governments and non-governmental organisations in 13 European and African countries been meeting in Minsk? The answer - a little brown bird, migrating up to twelve thousand kilometres from Eastern Europe to sub-Saharan Africa.

This bird is a "star" species of Belarus: the globally threatened Aquatic Warbler. Over half of the world population of this species is breeding and spending part of the year in the marshes and fen mires of Belarus. The Aquatic Warbler is also an important component of global biological diversity which is, and will remain, the living basis for humans. It is an alarming indicator for the state of the environment of a vast area covering two continents, since the number of birds and their habitats have been shrinking in recent decades.

The two-day meeting was hosted and chaired by the Belarussian Minister of Natural Resources and Environmental Protection, Leonty I. Khoruzhik, in cooperation with the CMS Secretariat, BirdLife International, Achova Ptushak Belarusi (the BirdLife International Partner in Belarus), the Royal Society for the Protection of Birds (UK) and the United Nations Development Programme. The meeting finalised a formal Memorandum of Understanding (MoU), which was signed by delegates on Wednesday.

The MoU expresses countries' intentions to identify, protect and manage sites where Aquatic Warblers breed (central Europe and Western Siberia), rest on migration (western Europe) or spend the winter (central west Africa). Annexed to the Memorandum is a detailed Action Plan which summarises the distribution, biology and threat status of the Aquatic

Warbler, and describes precise actions to be taken by relevant countries.

“Belarus, for instance”, Minister Khoruzhik stressed, “is going to restore 720,000 hectares of drained peatlands, and thus to regain a lost homeland of the Aquatic Warbler and the wonderful natural environment represented by this small bird”.

Others expressed great satisfaction with the conclusion of the MoU. Norbert Schaffer of BirdLife International said “The level of agreement was exactly what we hoped to achieve, for the benefit of this species and its habitat”. Arnulf Muller-Helmbrecht, CMS Executive Secretary, agreed: “This very successful event represents a positive example of the voluntary commitment of many countries to act together for coordinated conservation, and an example of cooperation between governmental and non-governmental organisations. I congratulate the Republic of Belarus on the strong leadership it has given to these joint efforts.”

Source: Secretariat of the Convention on Migratory Species BirdLife International & Ministry of Natural Resources and Environmental Protection of the Republic of Belarus

News from Malaysia: Burning peatlands and haze

In May the Department of Environment Malaysia gave warning saying that “Malaysians will have to remain on the alert as the current hot and dry weather is expected to continue right through August.” Kuala Lumpur has been clouded by haze lately due to the open burning in Sumatera, said the Director General of DOE, Madam Rosnani Ibrahim. There are at least 49 hot spots detected and believed to be signs of forest fires. Peat swamps have been noted to be among the most critical areas that need to be monitored closely because fire in these areas could last for a long time.

For information on hotspots, please visit the website of Singapore’s National Environment Agency. NOAA <<http://app.nea.gov.sg/>>

<<http://app10.internet.gov.sg/scripts/nea/cms/htdocs/article.asp?pid=1456>>

hotspots satellite image and latest <<http://app10.internet.gov.sg/scripts/nea/cms/htdocs/article.asp?pid=1195>>

Haze maps can also be found on the website.

Meanwhile, a Malaysian-owned plantation firm whose director was ordered jailed for causing smoke haze on Indonesia’s Sumatra island has agreed to pay more than one million dollars in compensation.

Following an agreement on April 23 with the company, PT Adei Plantation agreed to pay 1.1 million dollars in settlement money to the government. The money will be used to finance reforestation programs.

The company was earlier taken to court on criminal charges of allowing fires to burn at its plantation in Riau province in 1999-2000, worsening the haze that blanketed the region during the dry season.

PT Adei's president, a Malaysian identified only as Goby, was originally ordered jailed for two years. The Supreme Court cut the sentence to eight months plus a 100 million rupiah (11,300 dollar) fine.

Although the government has outlawed the use of fire to clear land for cultivation in an attempt to combat smoke haze, prosecutions are rare. [source: AFP]

News from Indonesia: WWF Indonesia and PFFSEA launch 'Fire Bulletin'

The World Wide Fund for Nature (WWF) and Project Fire Fight Southeast Asia (PFFSEA) have launched the Fire Bulletin, a weekly analyses and information on fire, haze, and related issues in Indonesia. Furthermore, the Bulletin will serve as an early warning system so that fires and haze such as those experienced in 1997 and 1998 can no longer happen.

WWF will actively monitor the fire and haze throughout the upcoming dry season in Indonesia, as well as other activities related by the government and industrial sectors.

In 1997-1998, approximately 80% of the haze, causing damage worth of US\$ 800 million was caused by fires on peatlands. In their statement, WWF and PFFSEA therefore, called for all peatlands to be carefully managed and protected. Furthermore, the private sector should exert self-restraint and adopt best practices including none fire land clearing and protection of the most biodiversity areas within their concession.

A single agency should oversee and co-ordinate fire management, laws, and regulations must be harmonized and clarified to and most importantly enforced, thus WWF and PFFSEA in their joint statement. Also Local communities should be empowered by the government and the private sector to sustainably manage fire and land.

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News from Thailand: Statement from Narathiwat Workshop

From 9-11 April 2003, a Seminar on Wise Use and Sustainable Management of Peatlands was held in Narathiwat, Thailand. The workshop was jointly organized by Wetlands International, Global Environment Centre, Royal Forest Department, the National Park, Wildlife and Plant Conservation Department, and the Royal Phikulthong Development and Study Centre, with support from the ASEAN Regional Centre for Biodiversity Conservation, the Climate Change, Forestry and Peatland in Indonesia Project, the Global Peatland Initiative, and the Canada Fund. It was well attended by technical experts and representatives from government, non-government research and international organisations in South East Asia. The workshop was officially opened by the Governor of Narathiwat Province - Thira Rojannapornphun.

The Seminar examined two main topics - peatland management and rehabilitation; and sustainable use and community participation. Detailed presentations were made on 9 April on a broad range of issues ranging from fire prevention and control, water management, rehabilitation, biodiversity, community involvement and livelihood development. A field assessment of peatland research, management and utilisation in Narathiwat Province was made on 10 April. Two working groups on 11 April reviewed in detail issues related to management and rehabilitation; sustainable use and community participation as well as the ASEAN Peatland Management Initiative, and prepared a broad range of recommendations which were reviewed by the overall Seminar.

The Seminar welcomed the establishment of the ASEAN Peatland Management Initiative in March 2003 as well as the Ramsar Convention Guidelines on Global Action on Peatland.

The Workshop noted with concern the rapid loss and degradation of peat swamp forest in SE Asia and recognised that peatlands are fragile ecosystems vulnerable to fire, and impacted heavily by uncontrolled drainage. The Seminar noted that Southeast Asia has more than 60% of the world's tropical peatlands which play a significant role in flood control, water storage and supply; climate regulation; biodiversity conservation; socio-economic development and livelihood.

The meeting congratulated the Royal Thai government and local agencies for the work undertaken for the sustainable management of the peatlands in the Province of Narathiwat and encouraged recognition of this work in the region through the documentation, promotion and development of international linkages.

Goal

The Seminar urged all stakeholders to work together in achieving the following goal:

- Urgently stop the loss and degradation of peatlands in SE Asia and
- promote their sustainable management

Proposed actions

The Workshop further called for the following actions to be undertaken:

Regional

- Encourage the active implementation of the ASEAN Peatland Management Initiative
- Strengthen cooperation between all stakeholders in Southeast Asia on wise use and sustainable management of peatland resources Collate, translate and disseminate information, case studies and lessons learned on peatland management and develop handbooks on best management practices
- Develop and implement a communication strategy for peatland management including use of video, TV, media, schools, extension services, workshops etc. information exchange programmes, and networks such as SEA Peat Network
- Establish multi-country technical working groups to work on issues of common concern such as peatland water management or rehabilitation options
- Enhance regional information sharing on peatland extent, status and management.
- Develop and promote national or regional "centers of excellence" for peatland management and enhance linkage and cooperation between them.

National

- Establish national inter-agency working groups to develop strategies for peatland protection and sustainable use
- Formulate or update national policies and strategies or action plans for conservation and wise use of peatlands
- Undertake or revise national inventories of peatlands and zone them for protection, rehabilitation and other uses
- Identify and protect key peatlands important for biodiversity, carbon storage, hydrological functions and socio-economic value to local communities.
- Establish or enhance existing funding mechanisms and explore use of user- pay schemes or tax incentives to support peatland research and sustainable management.

Management and Rehabilitation

- Develop overall management plans for each peatland area to include forest, water and fire management as well as community participation and utilization of resources.
- Develop and promote appropriate models for rehabilitation and sustainable management of peatlands
- Control the drainage of peatlands and restore and maintain water tables both within and in buffer zones around peatlands

- Promote the integrated management of peatlands using a basin-wide approach.
- Establish pilot projects and demonstration sites to test and promote approaches to sustainable management

Sustainable Use and Community Participation

- Introduce and strengthen alternative livelihoods to minimize impacts on peatlands
- Local communities and other stakeholders should be involved in decision making on the use of peatlands.
- Develop guidance and Promote use of cost/benefit analysis, EIA as well as Social impact assessment to minimise negative impacts of development activities on peatlands.

The organizers of the meeting were requested to widely disseminate the statement and to coordinate follow-up activities.

News from Australia: Impacts of december wildfires on peatlands in the Australian alps

Jennie Whinam

The consequences of the large wildfires that burnt much of montane, sub-alpine and alpine in the Australian Alps (Kosciuszko National Park, the Australian Capital Territory (ACT) and the Victorian Alps) are becoming apparent. In collaboration with Prof Geoff Hope (Australian National University) and members of the ACT Parks & Wildlife Service and the ACT Electricity and Water Corporation, we inspected sites within the ACT in April to make an initial assessment of the impacts. Also, with Roger Good and Keith McDougall from New South Wales National Parks and Wildlife Service, I inspected some *Sphagnum* peatlands in Kosciuszko National Park that we had surveyed prior to the fire.

It is clear that *Sphagnum* peatlands have been particularly affected in the montane and sub-alpine areas. In fact in many areas the hottest parts of the fire seem to have been in *Sphagnum* peatlands. The vast majority of *Sphagnum* within the peatlands we surveyed have been killed by fire, burnt into the peat or significantly impacted by patch fires. This has large implications for water flow, water quality, and the long-term recovery of these areas, particularly as many of the *Sphagnum* mossbeds in the upper catchment seem to be the worse affected. A significant amount of peat has been lost from many of the peatlands we surveyed, with tunnelling and other forms of active erosion evident. The upcoming seasons will influence the amount of post-fire erosion, depending on the number and severity of frosts, the length of the snow season and the speed of the spring thaw. However, some areas are

regenerating with myrtaceous shrubs, grasses, sedges, and twig rushes thrusting through the dead moss.

Without some intervention and restoration it would seem that the amount of *Sphagnum* peatlands in the montane and sub-alpine regions of the Australian Alps will be substantially reduced. The dead *Sphagnum* hummocks will humify and be invaded by grasses and twig rushes. The remains of similar hummocks killed by a fire in the ACT in 1983 can still be located. This will have consequences for species, such as the Corroboree frog, which depends on a balance between *Sphagnum* moss and peat pools for its habitat.

Several ecological programs have commenced or are proposed post-fire in the Australian Alps. Geoff Hope and I have proposed a program to document the extent and impacts on peatlands, gather evidence of the long-term fire history of these peatlands, and to trial several methods to help stabilise and restore peatlands. These methods could include construction of temporary water barriers to reduce water flow intensity, as well as 'replanting' *Sphagnum* moss into hummocks destroyed by fire.

News from South America: HumedAndes

HumedAndes: An Initiative for Institutional Coordination and Cooperation on Andean Wetland Inventories.

An institutional cooperation initiative to promote and carry out inventories on Andean wetlands is being launched in Colombia. The Fundación Humedales, Alexander von Humboldt Institute for Biological Resources Research, the World Wildlife Fund (WWF)-Colombia, Asociación Calidris, Fundación Fuerachoga, and the Environmental Studies School from Javeriana University, have agreed to join efforts in order to build a common conceptual framework for the cooperative development of wetland inventories in the highlands of Cundinamarca and Boyacá, and the upper Cauca river valley, covering critical endangered wetland habitats of the country. Recently Fundación Ecopar based in Ecuador has joined the group, and the initiative will soon expand to highland paramos, enriched with monitoring tools and case studies already being developed in countries with highland peatland and páramo ecosystems. The process will contribute to the implementation of the National Wetland Policy, led by the Colombian Ministry of the Environment. The interesting thing is that each of the institutions is currently working on a particular scale and with different wetland types, such as:

- Ecopar from Ecuador is developing a simple inventory (list and location) for highland mires from Costa Rica to Chile and Argentina (scale 1:1.000.000);

- Javeriana University is mapping wetlands in the Cundinamarca and Boyacá highlands at scale 1:100.000
- Asociación Calidris in the Cauca Province is developing a simple inventory (1:100.000) with two case studies (1:10.000).
- Fundación Humedales is working at Fúquene, Cucunubá and Palacio wetland complex, developing inventory tools at detailed scales (1:10.000)
- Fundación Fuerachoga is defining a detailed inventory for the wetlands of Páramo de Guerrero.

These ecosystems share the common feature of being Andean wetlands, and institutional collaboration will allow assessing the adequacy of wetland inventory protocols proposed by the Ramsar Convention, as well as to adapt and apply it to Andean Mountains. Interested persons and institutions are invited to contact Lorena Franco Vidal, Fundación Humedales, Calle 97 Número 21-42, Bogota, Colombia
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New initiative on peatlands in tropical Andes

Grupo Páramo, IUCN South America and the Netherlands Committee for IUCN have just launched a new project entitled “Peatlands in the Tropical Andes, towards an international socio-environmental monitoring system”, in collaboration with national partners in Costa Rica, Venezuela, Colombia, Ecuador, Peru, Bolivia and Northern Argentina. Aimed at providing decision makers with an easily applicable monitoring tool for high peatlands ecosystems such as páramo, jalca and puna systems, the project will generate important data and provide evidence of changes in ecosystem health in space and time. Understanding the extreme fragility of high Andean peatlands and their role in rural livelihoods will also help identify ecosystem health indicators at a species, landscape, population and community level. Local and national management institutions, such as farmers, municipalities and governments will then be able to use these indicators to improve local and national sustainable development efforts.

The project will last one year and involve five different South American countries and Costa Rica. Each country will study a peatland area and contribute general cartographic information of high wetlands to generate a regional High Andes Peatland Monitoring System useful for political decision-makers.

The project also supports a parallel initiative led by the working group of international NGO's including IUCN, WWF, Wetlands International, Birdlife International and Grupo Páramo that drafted the resolution on High Andean wetlands that was accepted by the Parties to the Ramsar Convention in

November 2002. This parallel project aims to nominate new Ramsar sites in the high Andes wetlands so as to ensure international and inter-institutional collaboration for their protection. Both initiatives involve local stakeholders and explicitly recognize the importance of peatlands in environmental stability and human survival.

News from Ecuador new Ramsar site.

The Ministerio del Ambiente of Ecuador has designated that country's 11th Ramsar site, effective 12 June. As summarized by Iván Darío Valencia and Julio Montes de Oca from the Ramsar Information Sheets, the Reserva Ecológica Cayapas-Mataje (44,847 hectares, 01°16'N, 079°00'W), located in Esmeralda Province on the Pacific coast near the border with Colombia, between the rivers Cayapas and Mataje, is a complex of estuaries and mangrove forests within the Choco-Darien-Western Ecuador hotspot, a region recognized worldwide for its high level of biodiversity, numerous endemic species, and priority for conservation. Sedge marshes, tidal brackish marshes, peatlands or guandales, as well as humid tropical forest add to its richness. The high productivity of phytoplankton and mangrove forests sustains a diverse wildlife, with reportedly 6 species of mangrove, 68 of fish, 22 of reptiles, 145 of birds and 53 of mammals, including several threatened taxa at national or global scale, such as the black mangrove *Avicennia germinans*, the Neotropical Otter *Lutra longicaudis*, the Jaguar *Panthera onca*, the Blue-fronted Parrotlet *Touit dilectissima* and the American Crocodile *Crocodylus acutus*. The Afro-Ecuadorian population at the site is involved in fishing, gathering of mussels and crustaceans, subsistence agriculture and livestock raising, and recently, ecotourism. Archaeological remains of the Tolita culture (ca. 500 BC-AD 400) are abundant. The area has been affected by the construction of numerous shrimp pools and the establishment of crop plantations. Following designation as a Nature Reserve in 1996, a management plan is in preparation with local involvement. WWF International's Living Waters Programme and the Fundación Natura assisted Ecuador in making this designation. Ecuador now has 11 sites covering 158,481 ha.

News from Costa Rica high-altitude peatlands named Ramsar site

Costa Rica has designated the Turberas de Talamanca (“Talamanca peatlands”) for the Ramsar List, bringing its total number of Ramsar sites to eleven, covering 510,050 hectares.

Turberas de Talamanca (designated as of 2 February 2003) in San José, Cartago, and Limón provinces

(192,520 hectares, 09°30'N, 83°42'W; National Parks, Forest Reserve, Biological Reserve) is a unique high mountain wetland (altitude 700-3821m) located in the Talamanca mountain range and considered an extremely heterogeneous area in terms of the ecosystems present: non-forested peatlands, paramos, meadows, cloud forests, and rain forests. The protected areas comprising the Ramsar site make up an immense biological corridor that allows numerous vulnerable animal species to move about in search of food and breeding sites, among them the Central American tapir *Tapirus bairdii*, the ocelot *Felis pardales*, and the red brocket *Mazama americana*. Numerous plant communities are present in the site's different ecosystems present - paramos, oak forests, and non-forested peatlands. Paramos are found between 2900-3100 meters above sea level, and contain a unique mixture of neotropical flora, including holartic, Andean, and endemic species, which show important adaptations to extreme conditions, seasonality, and high solar radiation. Oaks are the dominant feature in what is regarded as the country's largest forest mass, most notably the IUCN Red-Listed black oak *Quercus costaricensis* and the hook *Quercus corrugata*. The peatlands are characterized by Ciperaceae, Juncaceae, Ericaceae, large ferns of the Blechnaceae family, plus *Sphagnum* and other mosses. The hydrological network in Tapantí National Park is of vital importance for Costa Rica in terms of hydroelectric power production and supply of a large portion of the drinking water for the country's largest cities. Chirripó National Park features the country's tallest mountain, Cerro Chirripó (3820m above sea level), as well as rare geomorphologic formations of glacial origin. The largest indigenous group in Costa Rica, the Bribri, are native to the mountains of Talamanca, thus giving the site a great cultural importance. Ramsar site no. 1286.

**News from Ramsar:
CIESIN's Ramsar Data Gateway available**

The Ramsar Bureau is pleased to announce the availability of the Ramsar Wetlands Data Gateway, a Web-based information service developed by the Centre for International Earth Science Information Network (CIESIN) at Columbia University (USA), in collaboration with the Ramsar Bureau and Wetlands International. The Gateway was demonstrated at Ramsar COP8 in Valencia, and Resolution VIII.13

called on "the Bureau and Wetlands International to ... make arrangements for the Ramsar Sites Database to be accessible through the World Wide Web, including the inclusion of a regularly updated version of the Ramsar Sites Database for incorporation into the Ramsar Wetland Data Gateway developed by the Centre for International Earth Science Information Network (CIESIN)." Data about Ramsar sites from the Ramsar Sites Database maintained by Wetlands International are fully searchable using simple and advanced search tools, and an online mapping tool places Ramsar sites in their geographic context by providing map overlays of watershed boundaries, land cover, population density, and major water bodies. To explore the Gateway, please visit <http://sedac.ciesin.columbia.edu/ramsardg/>

**News from IPS:
Documentary Film on the
"Wise Use of Mires and Peatlands"**

At the Commission II Meeting held in Manchester in May 2002, it was decided to start the production of a DVD film based on the contents of the book "Wise Use of Mires and Peatlands". The film is planned to be launched at the opening session of the 12th International Peat Congress. The project will be financed by the national peat producer's associations from Canada, Finland, Germany, Ireland, and Sweden, and carried out under the auspices of the IPS. Other contributors are welcome to join the project. The project is led by the following Steering Group: Donal Clarke, Ireland (chair); Raimo Sopo, Finland (project coordinator); Gerry Hood, Canada; Hartmut Falkenberg, Germany; Magnus Brandel, Sweden and Susann Warnecke, IPS Secretariat. National Committee and Commission Chairpersons as well as representatives of IMCG will be invited to give their comments on the manuscript as soon as it is available. The technical production is carried out by the Finnish company Sound & Picture Oy. Any films, CD-ROM's, or photos from national sources, which could be useful for the production of the film, are welcome. In case you would like to offer material for the project, please contact Ms. Susann Warnecke.
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New and recent Journals/Newsletters/Books/Reports

The Annual Report 2002 of the IPS is currently posted as PDF file. It can be downloaded from: www.peatsociety.fi/publica/annualreport2002.pdf.

The second issue of the French magazine "Tourbières Infos" has been published in May. The first issue (March 2003) can be downloaded as a PDF file from <http://www.pole-tourbieres.org/>. We trust the second issue will very soon also be available from this site.

Rassi, P., Aapala, K. & Suikki, A. (eds.) 2003. Ennallistaminen suojelealueilla. Ennallistamistyöryhmän mietintö. (Restoration in protected areas: report by the working group on restoration). The Finnish Environment 618:1-220.

In 2001 Ministry of the Environment of Finland appointed a working group on restoration to collect information about the extent of restored forests, mires and small water bodies (springs, brooks, ponds) in protected areas, restoration methods used, as well as research and monitoring linked with restoration. The working group also estimated the area of forests and mires in need of restoration in protected areas, the research and monitoring needed and the resources necessary to carry out these activities. The 16 members of the working group were restoration specialists from universities, research institutes and environmental and forestry administration. The members of the mire section of the working group were: Tapio Lindholm (chair) (Finnish Environment Institute), Kaisu Aapala (secretary) (Finnish Environment Institute), Pekka Salminen (Ministry of the Environment), Erkki Ahti (Finnish Forest Research Institute), Samuli Joensuu (Forestry Development Centre Tapio), Tapani Sallantausta (Pirkanmaa Regional Environment Centre) and Anneli Suikki (Metsähallitus).

In protected areas mires that are in need of restoration have mainly been drained for forestry purposes, so the main restoration method has been filling in the ditches. If the mire has originally been open, trees grown after drainage are felled and removed. In originally forested mires some of the trees are killed in situ to increase the amount of dead wood, but most of the trees are left intact.

First mire restoration experiments were done at the end of the 1980s. So far, 7200 ha of mires in 84 protected areas have been restored. Approximately half of the restored mires have been bogs and the other half aapamires. Some 300 ha of rich fens have also been restored. The role of the European Unions LIFE-Nature has been very important, since almost 40 % of the mire restorations have been part of the LIFE-Nature projects.

The working group estimated that approximately 20 000 ha of mires (appr. 3 % of all protected mires) are still in need of restoration in over 600 state-

owned protected areas. Restoring these mires in next ten years will cost appr. 6 milj. €

Even though research and monitoring have been part of the mire restoration work since the beginning, there are still many open questions and the working group emphasizes the need of long-term research and monitoring. A multidisciplinary research programme on ecological restoration is proposed to develop methods and evaluation of the effects of restoration.

The report is available in the Internet (in Finnish)

<http://www.ymparisto.fi/palvelut/julkaisu/elektro/sy618/sy618.htm>

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von Sengbusch, P. 2002. Untersuchungen zur Ökologie von *Pinus rotundata* LINK im Südschwarzwald. Diss. Univ. Freiburg, 151 p. (in German)

Pinus rotundata (bogpine) is an endemic species occurring in some middle European countries. Many habitats were affected by drainage in the past. In the drained bogs a dying of bogpine can be observed since 1990. The aim of this study was to improve the knowledge of the site conditions of drained and natural habitats of bogpine. Results: It could be shown that the feature of bogpine is related to the wetness of the peat: the biometrics of the trees is changed to a slim growth on dry peat and can be regarded as a means for monitoring of hydrological conditions in the peat. An acidification of the upper peat horizon was identified in the drained bogs together with a decreased availability of Ca and Mg. As the availability of NH₄ is still high in the drained sites, a malnutrition of the needles could be detected in the sense of Mg-, Fe- and NH₄-contents being not balanced. The slim trees on dry peat seem to be affected by mechanical stress (snow!) which, together with a dense tree canopy, reduces the wood production of the small pine trees and -shrubs. The result is a lack of recruitment of pine in most drained sites. Spruce is invading the disturbed sites and can obviously establish itself in the tree layer.

The complete text can be downloaded in PDF format from: www.freidok.uni-freiburg.de/volltexte/585/

Thüringer Landesamt für Umwelt und Geologie. 2002. Moore in den Kammlagen des Thüringer Waldes. Naturschutzreport 19: 1 – 287. (in German)

This collection of articles deals with various aspects of the peatlands in the middle-German Thüringer Wald and their conservation / restoration. After an introductory article that paints a rather detailed general overview, there is a section with papers on

flora and fauna, followed by a section on (the history of) peatland use and management.

For more information: surf to www.tlug-jena.de or write S.Bock@tlugjena.thueringen.de; price: 10€

Bos, R.M. van den, 2003. Human influence on carbon fluxes in coastal peatlands process analysis; quantification and prediction. Thesis VU Amsterdam, 129 p.

A conservative estimate of the volume of peat that has disappeared in the western Netherlands since the 10th century AD due to a self-sustaining cycle of drainage, compaction and oxidation of peat, surface lowering, and the subsequent need for further lowering of the water table, arrives at a volume of $3.2 \cdot 10^9$ m³. This amount, which probably underestimates the true volume by a factor of 1.2–1.5, is equivalent to about 680 Mt CO₂-equivalents or an increase in global atmospheric CO₂ of 0.1 ppmv. For comparison, present-day (1990–2000) total annual greenhouse gas (GHG) emission in the Netherlands is about 225 Mt CO₂-equivalents, which corresponds to an increase in global atmospheric CO₂ of 0.03 ppmv. These numbers show that largescale degradation and burning of peat contributes strongly to GHG emission. At present, about 160.000 ha (or 10% of the area) in the western Netherlands consist of peat soils with peat layers up to 8 m thick. Over 90% of these peatlands are used for agricultural purposes.

The aim of this study was to develop a methodology, including a simulation model, for improved

quantification and prediction of carbon fluxes in coastal peatlands subject to land and water management. Specifically, the objectives were to develop a numerical model and quantify (1) present-day CO₂ and CH₄ fluxes from the extensive peatland areas in the western Netherlands, and (2) future GHG fluxes for different climate, water-management and land-use scenarios.

On the basis of an evaluation of several existing models and by using the results from laboratory (incubation of peat columns) and field experiments (closed chamber flux measurements), a process-based model PEATLAND was developed for simulation of peat degradation in coastal peatlands and for quantifying CO₂ and CH₄ fluxes.

The results indicate a strong influence of high water tables on the CO₂ and CH₄ fluxes. *In situ* investigations of the effect of elevating water tables in agricultural peatland areas could, however, not be carried out in the framework of the research.

To predict whether carbon fixation in peat soils effectively reduces GHG emission if agricultural peatlands are (for purposes of nature development) converted back into wetland-nature areas, fluxes of CO₂ and CH₄ in natural (non-drained) peatlands as reported in the literature are discussed and compared with emissions from agricultural peatlands under current conditions.

The study shows that peat degradation in the coastal peatlands of the western Netherlands contributes 1 to 3% to the annual national GHG emission.

For more information contact Remco van den Bos, bosr@geo.vu.nl

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UPCOMING EVENTS

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

VII International Rangeland Conference, Session B3: Rangeland and water resources

29 July 2003, Durban, South Africa

In the arid and semi-arid regions of the world, water catchments are often predominantly used as rangeland. Catchment management influences the quality and quantity of water that flows into rivers and other wetlands and has a major impact on the life of artificial reservoirs. This topic will be dealt with during a special session of the Rangeland Conference. The theme of optimising integrated catchment management will be treated holistically across a range of scales (landscape, land system, catchment, basin), with a focus on law, policy and implementation.

For more information surf to:

www.ru.ac.za/institutes/rgi/irc2003/IRC2003.htm

Ecoflood: Towards Natural Flood Reduction Strategies

6-13 September 2003, Warsaw, Poland

For more information see previous IMCG Newsletter or surf to: <http://levis.sggw.waw.pl/ecoflood/>

BES Winter meeting,: Applying the long-term perspective to contemporary problems

9 - 11 September 2003, Manchester, UK

For more information see IMCG Newsletter 2002/4 or contact Deborah Pearce: dpearce@brooks.ac.uk.

The future of Polish peatlands

13-14 September 2003, Szczecin, Poland

For more information contact:
botanika@agro.ar.szczecin.pl.

International Conference on Eco-Restoration

23-30 September 2003, New Delhi, India

For more information see IMCG Newsletter 2002/4 or surf to: www.nieindia.org/conferences.htm

The Restoration of Scottish Raised Bogs

22-23 October 2003, Dumfries, Scotland

This two day meeting covers various aspects of peatland conservation, varying from global and EU frameworks to practical site management.

For more information contact Mel Tonkin, Tel: +44 (0)131 312 4772 or 312 7765, Fax:0131 312 8705
mtonkin@swt.org.uk

XII International Peat Congress: Wise Use of Peatlands

6-11 June 2004, Tampere, Finland

more information at <http://www.suoseura.com/>

The 7th INTECOL international wetlands conference

25 - 30 July 2004, Utrecht, The Netherlands

for more information visit

<http://www.bio.uu.nl/intecol/>

32nd International Geological Congress

20 - 28 August 2004, Florence, Italy

The congress hosts a symposium entitled "Peatlands: basin evolution and depository of records on global environmental and climatic changes"

for more information have a look at <http://www.32igc.org/> or contact Peter Martini pmartini@uoguelph.ca

IMCG Field Symposium and General assembly in South Africa

12-26 September 2004

For more information see elsewhere in this and previous IMCG Newsletters

POSTPONED

The "International Workshop on Peatland Conservation and Sustainable Use" that was scheduled to take place from 7-9 July, 2003 in Lanzhou, China, has been postponed due to the recent outbreak of SARs. A new date, in the first quarter of next year, will be announced shortly. See previous IMCG Newsletters for more information on this event.

VISIT THE IMCG HOMEPAGE AT

<http://www.imcg.net>