



RESTORING A LOWLAND RAISED PEATBOG

a Boginar on the future of Portmoak Moss

Date: Friday 16 November

BOGINAR: REPORT OF THE SEMINAR ON THE FUTURE OF PORTMOAK MOSS

Friday 16th November 2012 Portmoak Village Hall

A moss, a wood, a moss – what next?

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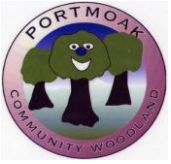
The boginar: presentations and discussions

(These notes were based on an audio recording of the entire event by Dave Batchelor, steering group.)

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Executive Summary

The Portmoak Community Woodland Steering Group held a seminar or 'boginar' on the future of Portmoak Moss. The expert evidence was that there has never been a better time to receive support for bog restoration. The Scottish Parliament, International Union for the Conservation of Nature, Scottish Natural Heritage and Scottish Wildlife Trust are all in support and funding initiatives are in place. Climate change is a key driver, as restored peat bogs are carbon sinks. Peat bogs are also a rare habitat supporting unusual flora and fauna. Some communities prefer to leave old peat bog sites under woodland but in the parish of Portmoak there is strong support for the bog restoration and that is worth a great deal. Since the restoration began at Portmoak in 2000, dams have raised the water table from -400mm to -150mm. We need to get to -100mm, to stop the birch regeneration and improve the growth of moss and other bog plants. The sphagnum mosses are recovering well and 11 species are thought to be there. We must put in more dams and do more birch control, as well as levelling as many tree stumps as possible and flattening some of the ridges, to remove the drier areas and promote further sphagnum growth. The 'boginar' prompted considerable activity, from funding for dams and birch control from Scottish Natural Heritage, to help from volunteers and plans for a butterfly and moth survey.





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1. The story so far

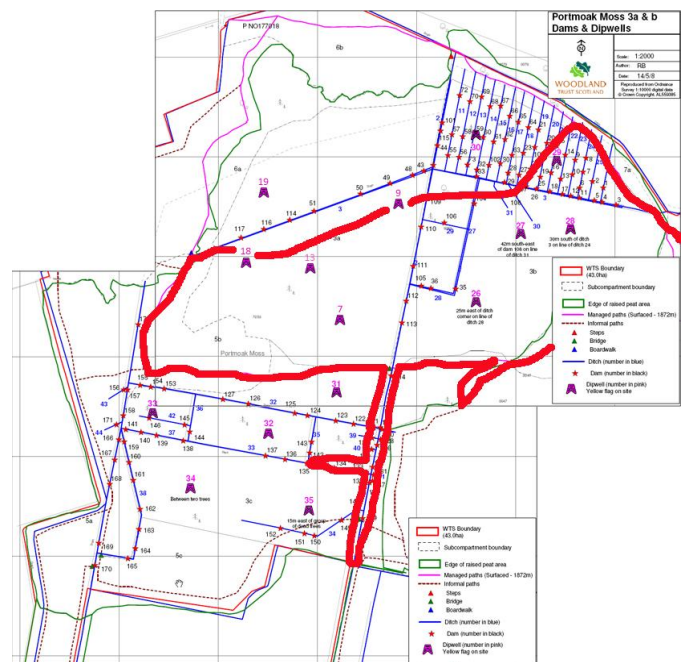
Portmoak Moss is on the outskirts of the village of Scotlandwell, Kinross-shire. It is owned by the Woodland Trust and managed in partnership with the Portmoak Community Woodland Steering Group. In the 1960s it was owned by the Forestry Commission who planted a conifer plantation on this lowland raised peat bog. A handful of sphagnum mosses managed to survive and 12 years ago restoration work began on the central dome of the bog. The trees were removed by sky-lining and dams were installed in the drainage ditches. No-one knew how long restoration would take and probably didn't think twice about the Woodland Trust's management plan which stated:-

"If, despite our remedial works, the regeneration of birch and conifers remains vigorous by the 2015 review, then the sustainability of the project will be reviewed. An alternative to be considered at that point may be reversion of the whole restoration area to wet woodland (also a UK priority habitat)."

After helping to raise the money to buy the woodland, it had been a challenge for the steering group, persuading local people that a bog was better than trees. They were reluctant to allow the project to fail without exploring all the options, and so, on November 16th 2012, a 'boginar' was held, a seminar attended by leading experts on bog restoration.

This report summarises the speeches and debate and sets out the key issues for future management.

35 people attended the morning site tour to see at first hand the progress which has been made so far as well as the remaining challenges. 34 were at the afternoon session in Portmoak Village Hall. There were technical experts, local councillors, community councillors and members of the community. It was a highly interactive meeting with a great deal of discussion and exchange of ideas, knowledge and experience. It was chaired by former BBC Scotland Environment Correspondent and member of the steering group, Louise Batchelor, and facilitated by Dr Jeff Gunnell (steering group) who recorded the main points on wall charts (see his summary at the end.)



Route of the site tour



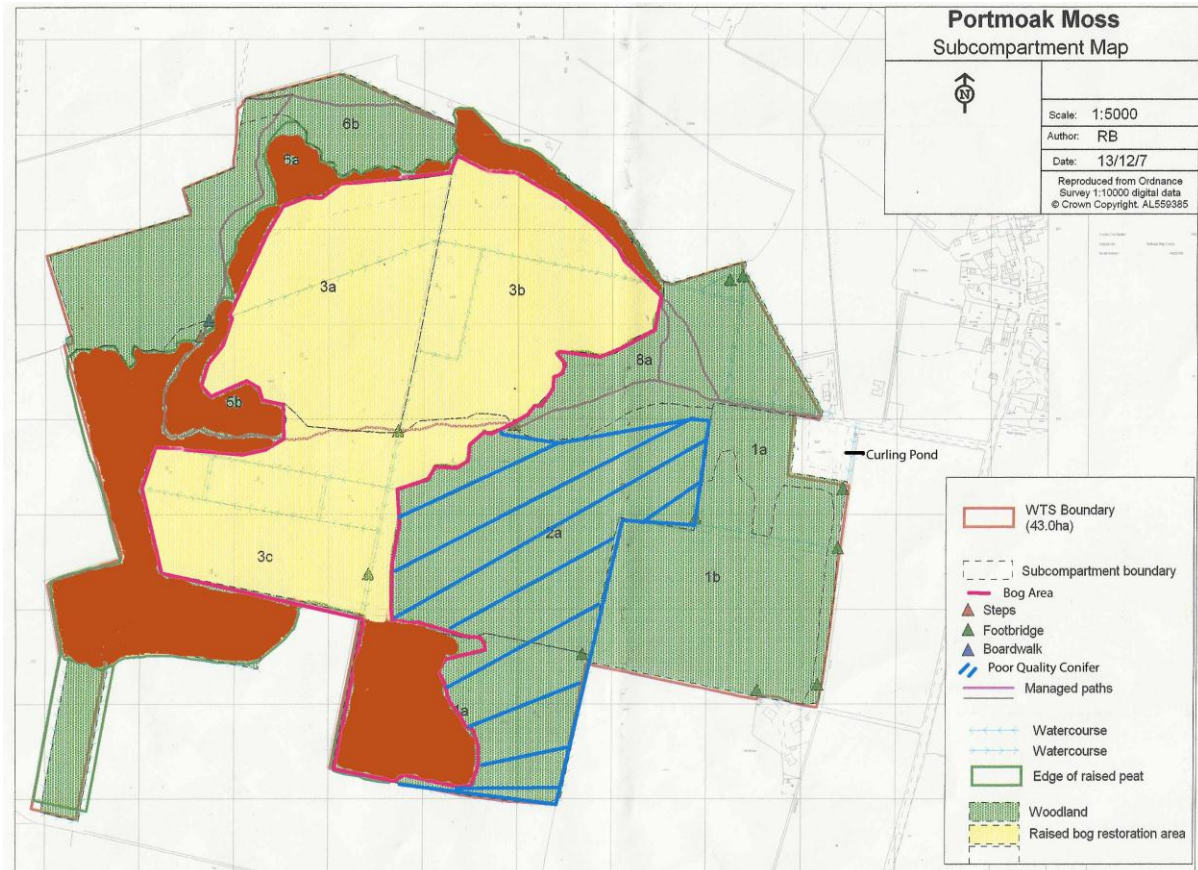
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2. Introduction: Michael McGinnes, Portmoak Community Woodland

Mike set the scene and explained that the yellow area showed cleared bog, the orange was the rest of the bog not cleared, the blue hatched area was conifer plantation of poor quality, 1b: was an area that was felled in 1990s and was birch re-growth, the other areas were mostly Scots pine, birch and various other conifers.



Portmoak Moss covers 43 hectares, or just over 100 acres. The Moss is part of an extensive bog system which started growing about 7,000 bc. It is now at least 5 metres deep at the centre of the peat dome (the bottom of the profile has not been reached). It has been extracted for various reasons such as house building and use as a fuel for hundreds of years. Until the late 1960s people were still taking peat from the bog. The result is vertical banking and damage to the edge of the bog, as well as the damage from draining the Moss when the Forestry Commission planted on it in the 1960s. Restoration: after the Woodland Trust bought this site in 1990s they decided that the bog was so important they would try to restore it. They started removing the trees from 3 different patches at different times up to 4 or 5 years ago. The bog has restored itself quite well in some areas, not so well in others, depending on whether the areas are wet or dry.



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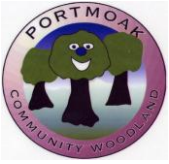
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“The steering group want to get the bog as wet as possible. It’s not a short term goal as it will take a long time. It was under trees for 40 years. It’s going to take at least the same to get it back,” says Michael.

The main problems were the birch re-growth and the uneven bog surface which has mounds and heaps, and tree stumps creating high points which stick up above the water level and remain dry - and allow more birch to grow.. “We have to remove the stumps or level the ground in some way”. Michael and Stuart Garvie of the steering group have been monitoring water levels. The levels are very good in some places, in others the water’s getting out. Summer and spring of 2012 were very wet, which helped. Every summer has been getting wetter - which is better for the bog. Water levels have risen every year. It used to be a few inches a year, now it’s millimeters but it’s still going in the right direction. Drainage ditches were cut round the bog, by a neighbouring farmer, about 5 years ago, right on the boundary and without consultation. Hard to tell how much that has affected the bog. If it is a problem, how do we solve it?

Solutions? The Canadians strip the top off their bogs and spray the sphagnum back on again. It’s very expensive. “We’ve got to find a solution that is sound, sensible and ideally doesn’t cost a penny! It may cost lots of money but you’ve got to start with the principle first and then look at the cost. If we find the right solution, we’ll have to find the money. There’s no point in doing half the job, it won’t work.”





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3. Keynote address: Jonathan Hughes, Director of Conservation for the Scottish Wildlife Trust and formerly community liaison officer for the Woodland Trust in Portmoak

Jonny was the person who first suggested that we could restore Portmoak Moss and he has recently been elected to the council of the International Union for the Conservation of Nature. His message: peatlands are a nature-based solution to climate change. He set out what what's happening in Portmoak in a global context. Conservation as a solution to other problems is the mantra of the IUCN. If you get peatlands right you can deliver so many other benefits.

Peatlands are found in almost every country in the world, with a few exceptions, like Saudi Arabia. But they are rare, covering about 4 million square kilometers, about 3% of the land area of the world. Scotland is very much a 'hot spot', as is Scandinavia - and Siberia. Bogs hold significant amounts of carbon locked up in peat.

"Drained and degraded peatlands, on just 0.3% of the planet, emit 6% of all global anthropogenic climate change CO2 emissions, which is about equivalent to the aviation industry. Unlike the aviation industry we can actually fix the bogs so we can work on that 6% and bring it down, not just to zero, but to a positive, because restored bogs sequester carbon and don't emit carbon," says Jonny.

Bogs are also incredibly important for biodiversity. Do we have common lizards on Portmoak Moss? They're often seen on raised bogs. He thinks there are about 11 species of sphagnum at Portmoak and suggests getting a guide so that we can learn to identify them. May also find round-leaved sundew which supplements its diet by catching insects.

Bogs are also a historic archive - recording the history of vegetation which can be studied by taking cores from the peat. They're also a water regulator, both in terms of quality and quantity. They act like a natural sponge. Also, an important training resource - e.g. how to put in dams.

So how to restore them? SWT has produced a publication, 'Climate Connections: Towards Low Carbon, High Biodiversity Economies'. Damaged peat lands are a significant economic liability to society but if you fix them, restoration can turn that liability into an asset - both economic, social and environmental. The key is water. Get the water table up as high as you can.

SWT have been re-assessing Scotland's raised bogs to see how they've changed since the surveys of the 1990s. They've surveyed some 60 sites, including Portmoak (*see Pete Matthews final report 2012*). Benign neglect is improving some of them but about half are getting worse, mainly because of the scrub issue. Only 11% are sphagnum dominated, and that's a good measure of whether they are sequestering carbon. 90% are probably carbon emitters but the vast majority of landowners want to do something.

Potential funding sources: Scottish Rural Development Programme and possibly some other schemes, like Scottish Government's recent announcement of £1.7 million for peatland restoration - and hopefully some of that can go directly into schemes like Portmoak. Most of the



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sites have similar problems to Portmoak. Maybe a partly wooded bog is something we can live with? A debate, Jonny says, we should have.

Costs: £21 - £23 million is estimate of how much it'll cost to restore the entire lowland raised bog resource in Scotland with annual management in the tens of thousands. Scottish Wildlife Trust is keen to seek funding for the restoration of a minimum of 50 sites at a cost of around £1.4 million with annual management around £50 per hectare, which he says is, "a small price to pay" for the benefits this will bring.

"Let's not lose our nerve on this. Climate change policy is certainly driving forward peatland restoration globally. The policy context is there for restoration. The IUCN has identified, at the World Conservation Congress, peatlands as a global priority for the next 4 years. We've got this £1.7 million injection of Government cash into the SNH coffers and there's lots of new science emerging" says Jonny.

Question and answer main points: Restoration is good for the economy as it employs local people. SWT are aiming to apply for funding from the Esmée Fairbairn Foundation to try to put together a Peatland Advisory Team who would come to your raised peatbog and tell you about funding sources, help you write a restoration plan, liaise with contractors - essentially make it happen, as that's the missing link. Any pressure that Portmoak can apply would be helpful - through press releases, contacting local MSP, saying it's a local asset and really important to us. How heavily does the Portmoak community want to be involved in future? Some members of the steering group are worried about having enough funds, some are not so worried about that, but are concerned about controlling a big contract with the funds to match. There will be case studies on-line, on IUCN website, in the next year or so - a resource offering best-practice.

P&K council advised consultant Adrian Davis on how to set up as an informal group and get funding for different projects - entrepreneurial organizations. They got £25, 000 through LEADER funding. Adrian says Portmoak enjoys a lot of support and it was incredibly important to list that and get qualified statements but we need a structure and a plan of where we're going to go, then, hopefully, we can recruit/employ people to get a handle on the costs.

Tim Hall from the Woodland Trust says he totally understands our anxieties about taking on the Moss lease (funding, aging committee, long-term lease, managing large sums of money and big contracts). Tim says it doesn't have to be a case of all or nothing. We don't necessarily have to have a lease. The Community Woodland Network has the most experience in this. We could have a management agreement - what we're going to do, what they retain - and this would give us an exit strategy.

Jeff Gunnell of the steering group says we need people who understand hydrology, someone who can manage contractors. We're good at ideas but not especially good at making detailed work happen. We have to pay for expertise, and the managers and the workers.



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Jonny: we are facing similar problems right across the peatlands of Scotland.

We need to publicize what we're doing and generate enthusiasm. We get good responses to events like choose a Christmas tree, planting an orchard - but the people who turn up don't get involved regularly.

There was a suggestion that we get other conservation groups to help run events. There's plenty of expertise out there but we're not tapping into it. Even finding the time to find the experts can be challenging when time is short. Could we employ an administrator to do a bit of part-time work?

Jonny: "It's not rocket science. We need to dam up a few more ditches, think about long term solution for controlling the scrub...and that's it!"



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4. Management plan: Gary Bolton, site manager from WT.

How to square the circle of Portmoak Moss? The Woodland Trust was committed to a 10 year project to restore the Moss. At the end of this period it was always planned to review every aspect. Portmoak Moss has several different habitats - raised bog, native broad-leaved wet woodland, sections of afforested coniferous woodland. The diversity supports a wide range of wildlife. The Moss attracts 11,000 visitors a year. Combating tree regeneration was more challenging than we anticipated, resourcing was a recurring theme, the increase in water level hadn't significantly reduced tree re-seeding to an acceptable level.

In the past there'd been a combination of tactics - pulling, weed-wiping, contractors, volunteers, corporate volunteers, SWT have brought in volunteers in arrangement with the WT. Contractors have often proved to be expensive, and often lacked commitment and consistency - the results have been patchy and inconclusive. The volunteer sector has undergone changes with the loss of employment training groups; volunteers tend to opt for cutting, rather than pulling up the regenerating trees, which is not beneficial in the long term as you just produce a lot more coppice. Options: complete regeneration with native trees, controlled regeneration with non-native species, allowing a wet woodland; increasing levels of control of regeneration, installing further dams, plus bunding or revetment works around the outside. Finally, identifying the key areas where existing bog vegetation is richest and where there's potential and scope for improvement, committing to continue reducing tree regeneration on these areas, with contractors, volunteers, and with the rest becoming wet woodland; installing numerous additional dams as required.

Question and answer main points: Jonathan Walker, consultant, is working on a bog near Methven which will cost £6, 000 per hectare (including chipping the timber); In the Moss, Woodland Trust spend £2, 000 on generic woodland work like path maintenance. £1, 000 - £2, 000 for contractors. £200 per man day, 8 man days per year.

Long term solutions to funding and scrub control: a community biomass boiler, fed by the woodchips from the bog (not enough wood – maybe a woodchip boiler, 100 cu meters per annum, for the hall).

In the old days people would have cut down the trees as soon as they appeared, for fuel said Dr David Munro, historian, who also said grazing by both sheep and cattle was important on the Moss in the winter and this reduced the woodland regeneration.

Adrian Davis said biomass was ideal for this site - get rid of more trees. Carol Evans, director, WoodlandTrust Scotland, said we should consider the *non-native trees* for fuel.

Jonny Hughes thinks a mosaic of different habitats it the most pragmatic and sensible option. Bunding, even grazing, could create liabilities for the future. Bunding would cost a fortune. It would have to be patched up and fixed. A combination of open bog and woodland is the best option. 3, 4, 5 days a year with a gang of people would sort the regeneration.

22 man days of volunteers in 2012 made a big difference (Eric Coull SWT). £2, 000 pa for weed wiping and lopping per year for the past 3 yrs. Jonny reckons we could get away with a quarter of that.



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Mike McGinnes says we should be looking at a bog which is self sustaining in 30 - 40 yrs time, even it costs a lot upfront. If not, we'll always be spending £4, 000 and we'll always need a committee. He says remove all the birch trees.

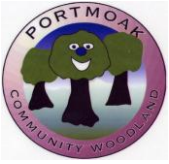
Susan Forde, resident, says better to make furniture from the wood than burn it, and take peat from a local building development and put it on the bog.

Duncan Davidson, Butterfly Conservation, says keep the wet woodland as there's already a colony of priority butterfly species there:- Small Pearl Bordered Fritillary. Restoration and cotton grass and cross-leaved heath may bring Large Heath.

John Handley - take away the heaps and put them in the ditches.

Jonny - thinks that's overcomplicated.

Says tree regeneration will eventually get less.



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5. Hydrology: Andrew McBride, Scottish Natural Heritage, newly appointed Peatland Restoration Manager (19th Nov) with £1.7 million budget.

Most of the water comes off the top layers, not from deep ditch. Most rainwater is intercepted by trees and other vegetation. Some water gets out through peat pipes and cracks - and it can run off very quickly. Dead tree roots form drainage pipes. That's one of the problems on Portmoak. Ditches round bogs is not a major problem. But the shallow ditches on the Moss do take away a lot of water. (See Field Studies Council sphagnum guide). Sphagnum holds 10--20 times its weight in water. Most raised bogs can survive 500 - 550 millimeters per yr. rainwater; in Portmoak there's 750 - 800 mls, so we're not short of it.

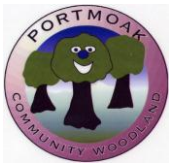
Plastic piling dams - could possibly put wider ones into the Moss, but not where there are existing ones. Can be £10 down to £6 a dam, for peat dams.

Sorting the scrub every few years is not the best solution; it costs everyone money. Longer term approaches including mulching the surface of the bog; cutting vegetation like long heather, baling it and blocking the ditches, re-profiling the edges (which has its problems and could be extremely expensive).

Of Portmoak Moss, he says, *"you have made such a difference already and it's amazing you've got as far as you have. Take a little bit of heart from that."* He praised members of the steering group for doing all the water level and rainfall charts and all the analysis.

Need to be raising the water level across the site. If we don't do that we'll always have birch colonizing. Management has to go on year after year. ***"You've gone so far, don't give up on it because you have got the start of something good."***

Andrew McBride has been heavily involved in the restoration of Flanders Moss, the largest raised peat bog in Europe and it's where the final speaker, Kate Sankey, lives and farms.



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6. Community engagement: Kate Sankey of West Moss-side Organic Farm and Centre

Kate sees the cultural and community benefits of restoring a bog.

Flanders Moss was once largely inaccessible for the public. A policy of public engagement and access by SNH has resulted in a carpark, a walk way/board walk and a tower.. West Moss-side Farm and Centre runs education, field study visits, training and art&craft workshops all related to the bog. Bog management at West Moss-side land focuses on the same key issues – birch regeneration and water retention. Regenerating trees are eaten by her Shetland cattle - who can deal with open, though not hidden ditches. The cattle thrive on poor ground. The organic rare breed Shetland beef is sold from the farm and promoted as beef which is helping to restore the moss. Big problem with rushes on the fields adjacent to the bog edge. Flanders Moss is a demonstration site for bog management and following extensive survey work we are about to create an ambitious lag fen as a buffer between the bog and the hay fields and so improving the farmland as well as enhancing the bog. Other uses of the resource: Birch sap wine has been made 2012; field rush and birch bark are used for basket-making and there is a variety of events and courses at the Centre throughout the year. People want to come to places where you can see the Large Heath butterfly, adders, lizards - and events need to happen regularly. Sometimes there are surprises – we ran a course on bee skep making. The instructor got very excited about purple moor grass on Flanders, which he said was the best thing for making bee skeps!. ***“The whole big skyscape of mosses is fantastic,” says Kate.***

An SNH project called ‘People, Peat and Poetry’ involved poets working with people of all ages, including local schoolchildren.

Overall the message is that the bog is a wonderful asset for education, community involvement and inspiration.

Question and answer main points: Deer should keep tree regen down? But trees mustn’t be too big 70 cms - 1 meter max - need mineral licks to bring the deer in, so it starts to get complicated.

“It takes 30 yrs to turn around degraded bog” - Andrew McBride.

Portmoak is not too complicated a job to sort out - use opportunities as they come along.

Scraping the top off the Moss isn’t a priority for us. Don’t scrape the top off the dome but could flatten some of it. £5, 000 per hectare to re-profile Flanders Moss but doesn’t have to be that expensive. Should be more like £1,000 a hectare.

Michael McGinnes says we could get rid of all the stumps and end up with 10, 000 puddles (great for sphagnum). ‘Certainly an option and see how it goes’, Andrew McBride.

Baseline data? Data was collected at the beginning, by Dr Hilary Rolton (Louise to try and track down this report – Karen’s looking for it 30th Jan Matriculation no. 00411509 MSc Thesis Wildlife Biology and Conservation Aspects of Restoration for Two Raised Bogs on the Shores of Loch Leven, Scotland) for the vegetation community, in quadrats (a quadrat is a metre square of plastic or metal used in ecology). The key measure of success is the % cover of sphagnum.

Louise Batchelor: Can we be part of the Loch Leven NNR - it would seem to be logical? A McB.

“We certainly would be interested”. The whole basis of NNR is changing says Tim Hall, of WT, who is on the steering group (***need its title***). Adrian Davis says it’s not a bad idea at all.



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Vicky Turnbull warden of RSPB Vane Farm, suggests we could have some of their volunteers, (and within a few days offered us 15!). Dave Morris, Director, Ramblers Scotland, suggests attracting youngsters doing Duke of Edinburgh Award Scheme.

Alex Page, from Living Lomonds Landscape Partnership, wants to support Portmoak Moss. Wants to put forward proposal for management plan that'll identify options for the next 10, 20, 30 yrs – hopefully, if we get the money from the Heritage Lottery Fund, (which he thinks seems likely) that'll go ahead. David Munro is also involved in LLLP - with 'Intangible Heritage', connecting people to the landscape. He's putting together one element of the 'celebrations package' offering money to the 6 parishes, "So if you'd like to be first in the queue?"

The boginar ended on a very positive note.



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35 people attended the morning site tour, 34 were in the afternoon session. Mixture of technical experts, local councillors, community councillors and the community at large. Highly interactive meeting with a great deal of discussion and exchange of ideas, knowledge and experience.

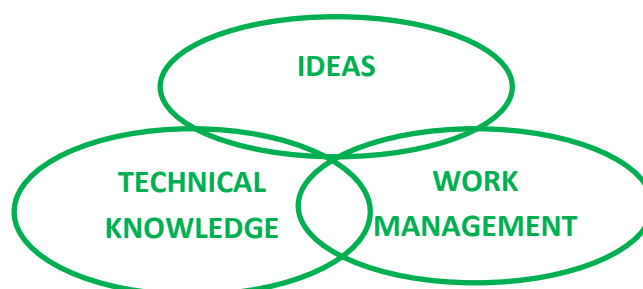
7. Management Plan

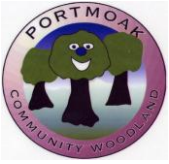
1. Agreement to be developed by Woodland Trust and PMCW group.
 - a. 10 year management plan is up 2015. (NB, Flanders Moss is on a 30 year plan).
 - b. Review successes, identify failures.
2. Status
 - a. Raised moss vegetation is recovering well – surprisingly well in fact.
 - b. Water table has been raised from -400mm to -150mm, but hasn't stopped birch regeneration. Need to get to -100mm (Andrew McBride).
 - c. Gets about 11000 visitors per year.
 - d. Some priority species are found: butterflies and moths; red squirrels.
3. It's not rocket science. The two things to do are:

Dam the ditches

Control the scrub

4. Dams
 - a. Identify locations for the best dams.
 - i. Only the top part of ditches makes a significant contribution to drainage – water doesn't run through the lower layers of the bog unless...
 - ii. ... get water channelling – 'pipes' caused by decayed tree roots give large amount of water loss
 - b. Submit grant application to SWT. Maybe £30K.
5. Scrub
 - a. Attract in community / volunteer effort: 5 days @ 25 people to offset expense costs.
6. Degree of community involvement and ownership
 - a. Worries
 - i. Time commitment
 - ii. Aging steering group – need new blood
 - iii. Big new step if took on larger management role
 - iv. Could we sustain funding?





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8. Woodland Trust options

1. Regeneration of native trees
 - a. Did this mean across the whole site? What work would be done, what cost, what duration.
 - b. What will the end position look like?
2. Revert to wet woodland
 - a. Lowest cost option.
 - b. Means a reduction in water table. So the dams all come out?
 - c. Did this mean across the whole site? What work would be done, what cost, what duration.
 - d. What will the end position look like?
3. Continue to control regeneration
 - a. Most expensive option.
 - b. More dams, higher water table.
 - c. Perimeter revetment.
4. Identify richest bog areas and target those

9. Background comments

1. Bogs make a disproportionate contribution to CO₂ – but can fix.
 - a. Helps climate change
 - i. Economic asset
 - ii. Social asset



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10. Costs

1. Estimates of capital costs:
 1. On average, for restoration across all of Scotland's peatlands, SWT estimate £871/ha.
 2. Has been as high as £6K/ha for chipping – but at a time when there wasn't much completion amongst bidders.
 3. Flattening should cost <£5K /ha – but can't get machines on because of the stumps.
 4. Portmoak Moss is 43 ha so suppose we allowed 3K/ha, that's about £130K for complete restoration. Order of magnitude cost – obviously depends on exactly what work gets done.
2. Estimate of expense costs from Woodland Trust over the last year or so (letter from Tim Hall, 25Jul12)
 1. General maintenance and management: £2K/yr
 2. Birch control: 22 person days for cutting and wiping: £2K.
 - i. Could reduce to 25% using volunteer workers.
 3. Total about £4K /yr to maintain the status quo.
3. Use natural assets to provide sustainable offset of costs.
 1. Biomass for heating the village hall, for example.
 2. Woodcutting for fuel for homes.
 3. Allow grazing on the land – birch control for free (used to happen – David Munro).

11. Funding

1. International Union for Conservation of Nature (IUCN) priority area
 - a. Add PMCW as a case study?
2. Government money – £1.7M to Scottish Natural Heritage (SNT) for peatland restoration
 - a. SWT to match make between funders and projects
 - b. To get a good shot at this money need to gather support
 - i. Write a letter making the case for action – send to MSPs, minister, copies everywhere!
3. Perth and Kinross Council
 - a. Can provide advice on setting up entrepreneurial organisations
 - i. Structure, plan, objectives
4. Living Lomonds Landscape Partnership
 - a. Potential source of funding to develop management plan, then funds to implement plan. Mike and Lesley are working on this.
5. Spending benefits local communities and contractors



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12. Ideas

1. The peat core tells about the history of the land.
 - a. Archaeology.
2. Get more young people involved. And adults – how?
 - a. Get people to know the moss better – guides to sphagnum types, flora and fauna.
 - b. Arts and crafts events – Kate’s Flanders Moss model.
 - c. Community events – Christmas trees, dark skies, ...
 - d. Duke of Edinburgh Award for community projects, like Callum MacIntyre.
 - e. University groups for field studies.
3. Use felled wood to make revetments.
4. When local building digs out peat – get it to use to fill ditches or profile edges.
5. Provide levelling by clearing the lumps and filling them into the ditches.
6. Stock grazing for birch control.
 - a. Deer grazing – low intervention. Deer licks to encourage?
7. RSPB – limited effect in comparison to Vane Farm and Loch Leven, but could attract additional species.
8. Join Loch Leven National Nature Reserve.



RESTORING A LOWLAND RAISED PEATBOG

a Boginar on the future of Portmoak Moss

Date: Friday 16 November

13. Resources

1. SWT: [Climate Connections](#)
2. SWT: [The state of Scotland's raised bogs in 2012](#)
3. IUCN: [Commission of inquiry on peatlands \(full report\)](#)
4. IUCN: [Commission of inquiry on peatlands \(summary\)](#)
5. Field Studies Council: [Sphagnum Guide](#) Costs £2.75
6. SNH: [The fen management handbook](#)
7. SNH: [Boglands](#)
8. SNH: [Peatlands strategy](#)
9. Forestry Commission: [Restoring afforested peat bogs](#)
10. Scottish Parliament: [SPICe Briefing: Peatlands and Climate Change](#)