



Andy Hay/RSPB

Hen Harrier

Blanket Bogs - getting active

Grip blocking at Lake Vyrnwy

Around the world, blanket bogs and other peatlands are under severe threat from human actions. A partnership is working to reverse this trend in two important blanket bog areas in north Wales, the Migneint and Berwyn. MIKE MORRIS reports on conservation at a landscape scale.

A trip to the Welsh mountains can provide a day of stunning views and fantastic scenery. The chance to visit some of the UK's most beautiful countryside or to see hen harriers or peregrine falcons in their native environment is a real draw. But when you find yourself walking in the uplands, take the time to look down. If your feet are getting wet, chances are you have left the dry heathland and stumbled into the wetter blanket bog.

And I should know! The decision to wear walking boots or wellies is a tough call, especially when you spend all day out on the mountain. However, it can be the difference between being just uncomfortable, or wet and uncomfortable. I have stopped counting the number of times I have been walking along suddenly to find my leg disappearing down a metre deep drain, only to pull it out and find I'm wet up to my knee.

Sundew *Drosera* spp.*Sphagnum magellanicum*

Not too bad on a sunny summer's day, but in mid winter it can be 'refreshing' to say the least. This may sound like a daft thing to do, but when the drains (or grips) are covered by heather and other vegetation it is also a very easy thing to do. I think my record must be around five grips in a day and by the second one, you start to get a little annoyed. Mind you, it still beats being in the office!

Having spent the past few years working in England's uplands helping farmers and ramblers work together with Open Access, the opportunity to help restore the Welsh uplands was an extremely enticing one. To work

on a large-scale habitat restoration project in the part of Wales where my great-grandparents lived was the perfect way of getting back into conservation work.

The job gets even better when spending all day on the moor using a quad-bike to check the progress of the ditch blocking. These machines make my job a great deal easier and quicker and they leave little or no mark on the ground, though I have been known to get a bit stuck on occasion. The quad is certainly necessary when I remind myself that over the next four years I will be monitoring around 100km of grip!

So what is a blanket bog?

A blanket bog is an area of wet peatland that is fed exclusively by rainwater. The bog is normally found on areas with peat greater than 50cm deep. Peat is a waterlogged soil that is composed of compacted, partially decomposed, vegetable matter. Active blanket bog is defined as a bog that is 'still supporting a significant area of vegetation that is normally peat forming'. In the UK, blanket bog vegetation typically includes sphagnum mosses, heather *Calluna vulgaris*, cross-leaved heath *Erica tetralix*, deer grass *Trichophorum cespitosum*, and cotton grasses *Eriophorum* spp.



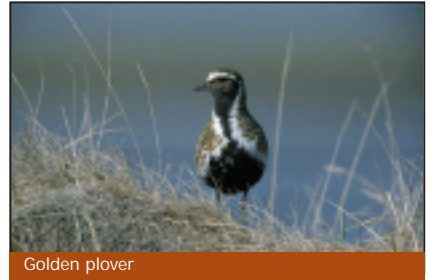
Snipe

Why should we care about blanket bog?

This incredible yet rare habitat houses a unique assemblage of plant, insect and bird species. These include rare plant species such as the beautiful, insect-catching sundew *Drosera spp.* These plants, like many others, require the wet conditions the bog provides and if it dries out these plants may disappear altogether. I would be the first to admit that, whilst hurtling past in a car, blanket bog can look bleak and at times boring, but stop. Take a close look and even get down on your hands and knees. It is only then that you begin to appreciate just how much is going on down there. The variety of colours and textures is incredible, and can be as spectacular as any other habitat in the UK and beyond. This vegetation in turn supports a very wide range of terrestrial and aquatic vertebrates and invertebrates, including rare birds such as the Eurasian golden plover *Pluvialis apricaria* and snipe *Gallinago gallinago*.

Blanket bog is found in naturally high rainfall areas and so is an important aspect of the water cycle. The bog acts as a natural sponge, which holds a lot of water in the uplands. When in good condition, this water is released at a slow and steady rate, but when the bog is damaged the water is released quickly. This may cause severe lowland flooding and erosion, and even lead to drought during dry periods.

The water held within our blanket bogs is the source



Golden plover

of much of our drinking water. When this enters our reservoirs it often contains large amounts of dissolved and particulate matter that the water companies spend millions of pounds removing before it comes out of our taps. If the bog were in

good condition, it would do some of this job for us, thus saving us all money on our water bills.

Blanket bog also holds an enormous amount of carbon within its peat. It has been estimated that the carbon stored in the peatlands of the UK is greater than that stored in the forests of the UK and France combined. However, due to serious pressure from years of human activity, the plants can be so damaged that they stop gathering carbon from the atmosphere to be stored in the peat, and the peat itself dries out. This can result in the release of huge quantities of carbon that otherwise would be stored away indefinitely.

In Wales and England alone, it is believed that peatlands could capture and store around 41,000 tonnes of carbon annually if they were in pristine condition. The current damage to the peat results in 381,000 tonnes being lost to the atmosphere on an annual basis. If we could reverse this trend, it would have the effect of removing the equivalent of 230,000 cars from our roads every year! It's now got to the stage that I find it difficult to pass by damaged peat and not imagine great plumes of carbon-rich gases pouring up from its damaged surface.

Blanket bog in the UK – globally important

Due to the climatic conditions required for their formation, blanket bogs have a limited global distribution. In Europe they are found primarily in the



Cross-leaved heath

UK and Ireland, in their cooler and damper parts. There are no agreed figures for the total area of blanket bog vegetation in Britain, but it has been estimated that 10-15% of the world's blanket bog occurs here.

In Wales, there are thought to be 70,000ha (over 170,000 acres) of blanket peat, although probably more than 10% of this no longer supports blanket bog vegetation. Unfortunately, a significant proportion of the remaining area is not likely to support active blanket bog. The Berwyn and South Clwyd Mountains Special Area of Conservation (SAC) supports the most extensive tract of near-natural blanket bog in Wales. The Migneint-Arenig-Dduallt SAC supports the second largest area after the Berwyn.

What are the threats to blanket bog?

Blanket bogs in the UK and around the world are currently under threat from many different human activities, including forestry, over-grazing, drainage, burning, pollution, peat extraction, development, erosion and recreation. The changing climate, with predicted drier summers, is itself a threat.

Encroachment by non-native invasive species, such as rhododendron and Sitka spruce, is a further problem.

Blanket bog restoration

The combination of an extremely important habitat for a range of plant and animal species (active blanket bog becoming a priority habitat under the EC Habitats Directive), and the impacts damaged bog may have on water quality, flood risk, and climate change have resulted in the development of the LIFE Active Blanket Bog in Wales Project. The core aim of the project is to restore significant areas of blanket bog to favourable condition. The project is carrying out restoration work within the Berwyn & South Clwyd Mountains and Migneint-Arenig-Dduallt SACs. It began its five year programme of restoration work in August 2006, and to date 19,000m of moorland drain on the Royal Society for the Protection of Birds (RSPB) Reserve at Lake Vyrnwy have been blocked. Over the next four years, a total of 100,000m of drain will be blocked here.

The speed that the project's contractor can install the grip dams is remarkable. Each one takes around 5-10 minutes and involves peat and three bales made from local heather. Once the grip is re-profiled to fit the bales they are inserted and the peat 'spoil' is reinstated to provide extra strength to the dam. Over time, the water builds up behind the dam, and eventually fills with bog plants, in particular Sphagnum spp. The surrounding area will also benefit as the water table is raised to provide a better habitat. Both field workers and the local sheep appreciate the dams, which provide an excellent "bridge" across the unseen grip. I seem to fall over a great deal less when working in these areas!

On top of the grip blocking work the project will:



Bog asphodel

- remove self-seeding rhododendron and Sitka spruce from the Lake Vyrnwy reserve blanket bog;
- restore afforested blanket bog across 300ha of land managed by Forestry Commission Wales in the Migneint-Arenig-Dduallt SAC;
- seed 50ha of Berwyn SAC with heather;
- create fire control areas in both SACs;
- purchase a piece of land on the Migneint SAC with good blanket bog habitat, to conserve its fauna and flora.

We will also:

- carry out demonstration and advocacy work with local farmers and land managers to provide best practice for managing blanket bogs;
- engage in outreach work with local communities and schools;
- share information gained through vegetation and hydrological monitoring with other restoration projects across Europe.

With the increasing interest in the effect of upland management on biodiversity, water quality and carbon sequestration, collaborations such as these are essential. Close working between land managers and research institutions will provide a better understanding of the impacts of the management of the uplands upon these ecosystem services.

Mike Morris works for the RSPB as the LIFE Advisory Officer and Migneint Warden based at Lake Vyrnwy, Powys.



The LIFE Active Blanket Bog in Wales Project is a five year project that aims to restore significant areas of blanket bog in Wales to favourable condition. It is a partnership between the RSPB, FCW,

Countryside Council for Wales, and the Environment Agency (Wales), with 75% of its £2.57m budget coming from the EU LIFE-Nature programme. For more information about the LIFE Active Blanket Bog in Wales project, contact the team via the project website www.blanketbogswales.org

Gofalu am y Gorgorsydd

Os mai moel a llwm yw'r ansoddeiri-
au y byddech chi'n eu defnyddio i
ddisgrifio gorgorsydd, meddylwch
eto! Mae'r cynefin mawnog, rhyfed-
dol hwn yn fôr o liw, yn gartref i
gasgliadau unigryw o fywyd gwyllt
ac yn rhan allweddol o'r cylch dŵr.

Mae gorgorsydd yn hanfodol i ddyn
a byd natur. Maen nhw'n dal llawer
o'n dŵr yfed a phe baent mewn
cyflwr da, byddai hwn yn cael ei
hidlo'n naturiol a'i ollwng yn raddol
i'n hafonydd. Maen nhw hefyd yn
storfa allweddol o garbon. Ond ar
hyn o bryd, oherwydd eu cyflwr
presennol, gollyngir 381,000
tunnell o garbon yn flynyddol o'n
mawndiroedd. Byddai gwyrddro hyn
yn gyfystyr â thymnu 230,000 car o'n
ffyrdd bob blwyddyn!

Mae Prydain yn cynnal 10-15% o
gynefin gorgors y byd. Mae 70,000
ha yng Nghymru yn unig. Amcan
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Migneint yw taclio rhai o'r ffactorau
sy'n achosi dirywiad gorgorsydd.
Bwriedir cau 100,000 m o ffosydd
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yw cronni'r dŵr yn y ffosydd ac
annog planhigion fel migwyn i
ailsefydlu, a hefyd i godi lefel y dŵr
ar diroedd cyfagos er lles adar fel y
cwtiad aur a'r giach. Bydd gwaith
arall yn digwydd hefyd - clirio
planhigion estron fel rhododendron,
ail-hadu tir gyda grug, creu gwell
rheolaeth tân a rhannu gwybodaeth
gyda deiliaid tir a chymunedau lleol.