



Peatland

ACTION PLAN



Peatland Landscape

INTRODUCTION

A Landscape Perspective...

Peatlands are a special living landscape and are rich in carbon peat soil. The UK is of international importance for peatland habitat with most of this found in Scotland. More than 20% of Scotland's land area is covered in peatland habitat. Most peatland in Scotland is in the form of blanket bog and raised bog which contain the most extensive and deepest peat spoils. These bogs are formed over many thousands of years. Our peatlands are significant stores of carbon and play an important role in tackling climate change. The carbon stored in Scotland's peatland is equivalent to over 180 years of greenhouse gas emission from Scotland. Both blanket bogs and lowland raised bogs are found within North Lanarkshire, with the latter being more common.

"As well as supporting a unique array of wildlife, peatlands play an important role in tackling climate change. By restoring our degraded bogs to healthy, functioning ecosystems, we can increase the amount of carbon being sequestered"

**Pardeep Chand, North Lanarkshire Council
Biodiversity Projects Officer**

Why are they important?

Peat bogs are home to a unique array of wildlife, some of which are only associated with this habitat type. As rainwater fed ecosystems, they are acidic and poor in nutrients and therefore support a restricted range of specialist species. Carnivorous plants such as Sundew and Butterwort are found on various bogs in Scotland. They also support a rich abundance of invertebrates and are important for a number of breeding wader birds such as Curlew and Golden Plover. Sphagnum moss is a key driver in the formation of peat bogs. It can thrive in low nutrient conditions and soak up water like a sponge. Carpets of bog moss continue to grow on the surface of the bog, with decaying plant matter forming peat.

Blanket bogs and raised bogs are recognised as internationally important habitats and included under the EU Habitats Directive.

Peatlands are not only important for biodiversity, but also provide many benefits to people. The multi-use benefits in terms of ecosystem services include the provision of clean drinking water as much of our drinking water comes from peatland areas. Intact peat bogs play a vital role in flood management by helping to maintain steady flow rates as well as reducing the risk of flooding events downstream.

Peatlands Under Threat....

In Scotland, much of the blanket and raised bog has been damaged by activities such as afforestation, drainage, and agriculture. This has resulted in the extent and benefits of this important habitat being much reduced. Degraded bogs do not sequester carbon, and fail to act as a carbon sink. In Scotland, it is estimated that up to 70% of blanket bog and 90% of active raised bog has been damaged. The 2020 Challenge for Scotland's Biodiversity includes a key imperative to restore Scotland's peatlands. Extensive areas of peatland will be managed to conserve their wildlife, and to improve their capacity for storing carbon.

The Scottish Government has recently funded a programme of peatland restoration (Peatland Action) to mitigate against climate change. Delivered by SNH, Peatland Action aims to;

- restore and manage peatlands to maintain carbon stores and encourage carbon sequestration (with 6500 ha peatland restoration by March 2015);
- restore peatland ecosystem functions;
- enhance ecosystem resilience to climate change; and
- build peatland restoration capacity and understanding amongst land managers, contractors, advisors and the public.

Peatland Action contributes to the objectives of Scotland's National Peatland Plan which sets out Scotland's long term objectives for sustainable use, management and restoration of peatlands.

Peatlands in North Lanarkshire

A notable coverage of lowland raised bogs is present within North Lanarkshire given the size of the region. Unfortunately, the extent and quality of this habitat mirrors national trends and is much reduced and degraded. However, there are 6 sites in North Lanarkshire which are designated as SSSI and some have the additional cSACs designation (candidate Special Areas of Conservation – a European designation). For example, North Shotts Moss Special Area of Conservation (SAC) is designated for its active raised bog habitat, and is one of the best examples of this feature in the country.



The Lowland Raised Bog Action Plan aims to protect and safeguard existing peatland sites as well as guide restoration works on degraded sites. The plan also includes objectives and targets for the Small Pearl bordered Fritillary, found on various bogs in North Lanarkshire, and aims to improve habitat quality for this priority Action Plan species.

The restoration and enhancement of bog sites in North Lanarkshire will help to contribute to Scotland's targets to reduce carbon emissions and help tackle climate change, as well as improving conditions for a large number of bog associated species.



Lowland Raised Bog

ACTION PLAN

SCOTTISH BIODIVERSITY LIST HABITAT:

YES

UK BIODIVERSITY LIST OF PRIORITY HABITATS:

YES

Summary

This Habitat Action Plan outlines the conservation status of all lowland raised/intermediate bogs in North Lanarkshire, known locally as Mosses. Lowland raised bog is a UK Biodiversity Group priority habitat, and is considered the most nationally and internationally important habitat in North Lanarkshire.

Lowland raised bogs are peatland ecosystems that usually develop in lowland areas such as the head of estuaries, along river flood plains, and in depressions in the landscape left by the last glaciation.

Habitat Profile

Lowland raised/intermediate bogs are recognisable within the landscape as gently sloping raised mounds of peat. They consist of a deep accumulation (up to 10m) of water-logged peat and, when intact, their surface is covered by a living layer of plants and mosses. As the surface of the moss is raised above the local water table the only source of water and nutrients feeding the bog comes from direct rainfall (ombrotrophic systems). Lowland raised/intermediate bogs can be classified as primary or secondary depending on the degree of damage the bog has been subjected to.

Primary raised bogs are those in which the dome is intact and are usually dominated by actively growing, undisturbed Sphagnum moss-rich vegetation. A secondary moss is one, which has been damaged due to peat extraction, afforestation, agricultural intensification, built or other development, but where the water table has stabilised because the drainage pattern has become blocked. Under these conditions, the surface vegetation may be dominated by a secondary growth of Sphagnum moss species and Cottongrass. Secondary bogs may be either active or degraded (ie: laying down peat, or capable of restoration). Both types are considered to be of European conservation importance.



The characteristic plants of raised/intermediate bogs, such as Heather species, Cotton Grasses, bog (Sphagnum) mosses, Cranberry and Sundews are all specially adapted to live in water-logged, nutrient poor conditions. The abundance of some Sphagnum species is of critical importance to the development of the bog (typically *Sphagnum papillosum* together with species such as *Sphagnum magellanicum*). The growth of Sphagnum species helps to create the strongly acidic conditions of ombrotrophic peat and associated bog pools.

Lowland raised/intermediate bogs support a distinctive range of animals including many wetland birds such as Curlew, and invertebrates such as dragonflies and beetles. Rare and localised invertebrates such as the Large Heath butterfly may also be found on lowland raised/intermediate mosses. In North Lanarkshire, Longriggend Moss is noted for its rare spider fauna.

Peat accumulation preserves a unique and irreplaceable record of plant and animal remains and some atmospheric deposits from which it is possible to assess historical patterns of vegetation, climate change, and human landuse. Many bogs in North Lanarkshire, such as Greenhead Moss, can provide information on such aspects over a period of up to 6000 years.

Current Status

The UK Biodiversity Action Plan lists 23,000 km² of bog and fen peatland habitat in the UK covering about 9.5% of the UK, with the majority in Scotland

Intact lowland raised/intermediate bogs are one of Europe's rarest and most threatened habitats. They occur throughout the UK and account for less than 5% of the UK's total peatland area, with 87% blanket bog (commonly found in the uplands). In North Lanarkshire, lowland raised/intermediate bogs are most commonly found around Shotts, Western Monklands and in the Kelvin Valley.

Since the start of the 19th century, the area of undisturbed lowland raised bog in the UK has declined from around 95,000 hectares (ha) to around 6,000 ha, a loss of 94%. In Scotland this represents a decline from 28,000 ha to 2,500 ha, a loss of 91% of the original resource with the remaining resource scattered across numerous small sites. In North Lanarkshire, the approximate area of the resource is 187 ha, which represents 7% lowland raised bog cover in Scotland.

In terms of the extent of all lowland raised/intermediate bog habitat (primary and otherwise), North Lanarkshire has approximately 3,724 ha, which represents 10% of all lowland raised/intermediate bog cover in Scotland and 4.6% of all such cover in Great Britain. For a district that represents 0.2% of the total land area of Great Britain, North Lanarkshire therefore supports a significant area of the remaining and best bog resource in Scotland and UK.

Seven bogs are designated as Sites of Special Scientific Interest and some have the additional cSACs designation (candidate Special Areas of Conservation – a European designation). All have been surveyed for their habitat quality. The sites, site condition and survey dates are shown below:

West Fannyside Moss (SAC) – 34ha.
Favourable maintained condition (2002).

Black Loch Moss (SAC) – 95ha.
Favourable recovered condition (2012).

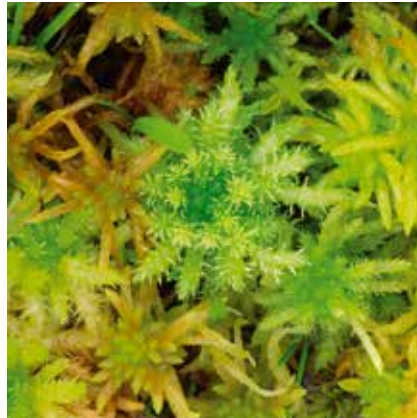
Hassockriggs (SAC and SSSI) – 45ha.
Unfavourable condition (2008).

North Shotts Mosses (SAC) – 35ha.
Favourable maintained condition (2014).

Lady Bell's Moss – 54ha.
Unfavourable recovering condition (2008).

Longriggend Moss (SSSI) – (around 37ha).
Favourable maintained condition (2005).





Legal Status

A number of UK and Scottish lowland raised/intermediate bogs have been notified as Sites of Special Scientific Interest (SSSI's). A number of sites have also been declared as National Nature Reserves (NNRs), although none as of yet in North Lanarkshire.

In Scotland there is a continuing programme of notification to ensure that all key areas which meet the SSSI selection guidelines are notified. Raised bogs, both active and degraded, are listed on Annex 1 of the EC Habitats Directive and the UK Government is presently determining areas that qualify as Special Areas of Conservation (SAC's) under this Directive.

In North Lanarkshire, 6 bogs have been notified as SSSI's by Scottish Natural Heritage (SNH), of which 3 are also SAC's. In addition to this there are also 70 bogs, which are, at least in part, designated as Sites of Importance for Nature Conservation (SINC's) by North Lanarkshire Council, including all of the SSSIs. Kingshill, Greenhead Moss and Brownsburn have been designated as Local Nature Reserves. However, despite these designations, many sites are vulnerable to destruction, damage or neglect.



Current Factors Affecting This Habitat

- **Peat extraction** – the extraction of peat and/or underlying mineral deposits for horticultural and fuel uses.
- **Forestry** – in addition to the direct impacts of existing plantations on deep peat, successive rotations dry out neighbouring areas and act as an invasive seed source. Current procedures ensure that new woodland schemes avoid peatland of value in North Lanarkshire.
- **Built development** – Opencast and built development can result in the total destruction of bogs or in serious damage to their hydrology.
- **Agricultural Intensification** – Livestock management/ rough grazing on bogs is common in North Lanarkshire. This is frequently accompanied by drainage, trampling, burning and surface contamination with feed and droppings.
- **Dereliction/Neglect** – Many North Lanarkshire sites suffer from neglect and are being currently drained (either directly or indirectly) and will degenerate without conservation management. Many bogs are burnt as a result of vandalism or accidents.
- **Pollution** – contamination from adjacent landfill, opencast or agricultural drainage. Deposition of atmospheric pollutants, fertiliser drift during its application, or the legacy of past deposition, may be significant at certain sites.
- **Windfarms** – Development on sensitive bog areas.

Current and Past Action

- The Forestry Commission (FC) has produced a guidance note on “Forests and Peatland Habitats”. This signals a presumption against new planting on active raised bog and degraded raised bog capable of restoration. It also describes the criteria, which the FC will use to consider supporting the restoration of lowland raised bog from existing woodlands.
- Development of Scotland’s first National Peatland Plan being led by SNH. Scotland’s National Peatland Plan aims to recognise vital benefits of peatlands and set out a strategic framework to protect, manage and, where required, restore our peatlands
- North Lanarkshire Council are encouraging composting initiatives as part of a waste minimisation strategy. This is a valuable component for education in reducing horticultural peat use.
- A Peatland Survey of Mid-Strathclyde (1989) was commissioned by SNH and is held in the SNH Hamilton Office. This contains information on all North Lanarkshire’s raised/intermediate bog resource.
- Scottish Wildlife Trust (SWT) management advice produced in 1995 for several local bogs as part an EU-LIFE funded project.
- Joint SNH/FC/Central Scotland Forest Trust (CSFT) Guidance: The Assessment of Peatland for Woodland Establishment in the Central Scotland Forest Area has been produced in order to assist in the planning of afforestation schemes.
- SNH Peatland Action funding and Butterfly Conservation Bog Squad
- Through SNH’s Peatland Action fund, restoration projects are planned for Broadwood, Cathburn Moss, Greenhead Moss and North Shotts Moss,. Peatland restoration projects at Fannyside and Kingshill on-going by NLC, FCS and CSGNT.
- Awareness raising through interpretation at accessible bog sites in NL



Proposed Objectives, Targets and Actions.

1. Maintain existing area of active peatlands.
2. Improve the condition of degraded peatlands.
3. Increase awareness of peatlands and their importance.

Action	Meets objective number	Action by	Target
Policy and legislation			
1.1 Seek to reduce consumptive use of peat by all NLBAP Steering Group organisations, including contracted work.	1, 2	All	A written statement for each organisation by end of 2016.
Site safe guard and management			
2.1 SSSI sites to be in a local bogs management scheme	1	SNH, NLC	All eligible sites to be in scheme by 2018.
2.2 Refuse new applications for extraction consents on all European, national and locally designated peatlands.	1	NLC	Record all relevant applications and consents/refusals and report in to BARS annually.
2.3 Undertake favourable management works to improve council owned bog sites	1, 2	NLC, SNH	All council owned sites to have benefited from restoration work by 2017
2.4 Create and maintain favourable conditions for the conservation and enhancement of key Forestry Commission sites	1, 2	FC, SNH	Two sites to be in positive management by 2018
2.5 Key bog sites and their owners to be identified.	1	NLC, SNH	Identify gaps in ownership knowledge by 2020 and maintain list of sites
2.6 Collate information on council owned bogs regarding their condition and management	3	NLC	Report to be produced by 2017
Communications and publicity			
3.1 Promote awareness of the biological and cultural importance of Mosses to local communities adjacent to lowland raised/ intermediate bogs.	1, 3	NLC, SNH, SWT	A talk, walk, leaflet, interpretation or practical involvement in restoration, or accessibility to mosses, to be provided annually from 2015.
3.2 Information on key bog sites and their ecological significance to be produced and promoted	3	NLC	Information available on webpages in 2015
3.3 Facilitate practical volunteer opportunities on bog sites	1, 2, 3	NLC, CSGNT, BC	One practical conservation activity to be undertaken from 2015
3.4 Encourage survey of plants and invertebrates on key sites.	1, 3	NLC, SNH, SWT	Invite and support specialists to carry out surveys on key sites. Survey events at 3 bogs by 2020.





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IUCN (2011): IUCN UK Commission of Inquiry on Peatlands

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Authors:

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Small pearl-bordered fritillary

ACTION PLAN *Boloria selene*

SCOTTISH BIODIVERSITY LIST:

YES

UK BIODIVERSITY LIST OF PRIORITY SPECIES:

YES

WATCHING BRIEF ONLY

Summary

The Small Pearl-bordered Fritillary is widespread locally but restricted to sites where its favoured larval food plant, Marsh violet, grows. The number of known colonies identified in North Lanarkshire has increased from 25 in 1996 to about 50 in 2014. Other than at a few sites, the size of colonies is not known, and obtaining this data will be a key action of this plan.

The butterfly is identified as a high priority for Butterfly Conservation at the UK level, and medium priority for conservation action in Butterfly Conservation's Regional Action Plan for South West Scotland (Kinneir and Kirkland, 2000). The Small Pearl-bordered Fritillary is a UK Biodiversity Action Plan species of Conservation Concern, however there is no UK Biodiversity Action Plan for this species.

Species Profile

In Scotland, Small Pearl-bordered Fritillaries are usually found in flushed, rushy grassland, wet rides, glades within or at the edges of woodland and moorland edge. The larvae feed at night on the leaves of violets, particularly Marsh violet, which typically grows on the margins of raised bogs or in wet flushes on acid soils. The adults fly from early June until late July or early August, when they often feed on the flowers of Marsh Thistles.

It is thought that the species may exist as larger metapopulations (many smaller colonies making up a larger population as butterflies move between them) within which adults concentrate around favoured breeding areas. This could explain why there are many small colonies found in our area, and is a good reason why conservation action for this species should occur at a landscape level.



Legal Status

Despite its local rarity, the Small Pearl-bordered Fritillary is not currently listed under Schedule 5 of the Wildlife and Countryside Act (1981), and therefore has no statutory protection.

Current Status

The Small Pearl-bordered Fritillary is found across central and northern Europe and through Asia to Korea. Its population appears stable through much of Europe, though it has declined by more than 75% in the Netherlands and by over 50% in Luxembourg and Belgium, over the last 25 years.

At a UK level, the butterfly's 10 year distribution trend was -12% and the population trend was -19% based on data from 1995 – 2009 (Fox et al, 2011). Whilst it remains widespread and locally abundant in Scotland and Wales, this attractive butterfly has undergone a severe decline in central and eastern England, where a loss of 41% of colonies was estimated in the 1980s. It is thought that it has also declined in parts of eastern Scotland during the last 50 years.

There are small breeding colonies of the Small Pearl-bordered Fritillary scattered throughout North Lanarkshire, from the Kilsyth Hills to the West Lothian border by Harthill. There appear to be concentrations around Croy Hill/Dullatur; to the south of Cumbernauld; and in the Caldercruix-Hillend Reservoir area, where there are more extensive patches of the preferred habitats. Small numbers still occur in, or close to Strathclyde, Drumpellier and Palacerigg Country Parks.

Several new colonies have been confirmed recently, and it is likely that there are more sites to be found.

This does not necessarily indicate the species is spreading, simply that it has been better recorded. The butterfly has been found in 44 one kilometre squares since 1989, but it is not certain how many of these squares still support the species. Overall the population size of these colonies is poorly known, though most sites are thought to have single figure populations. Survey and monitoring has been irregular, mainly because of the insect's relatively short flight period and the localised habitat requirements.

Monitoring has been carried out at Commonhead Moss (east); the population is the largest known in North Lanarkshire, with counts of 130 adults in May 2004. Commonhead Moss (west) holds the record for the highest numbers recorded in west central Scotland of 182 in 1997. Unfortunately these two sites are bisected by the M73.

Only 6 other sites in North Lanarkshire have had records of ten or more adults since 2004 but may be under recorded. There are no recent records from some other sites which previously had large numbers of individuals, such as Auchinbee Quarry, Dullatur (25 in 1992).

With better information on the distribution of this species it will be easier to minimise the impacts of development and degradation of habitats. However, facilitating adequate habitat management for this species will be difficult because of varying land use and ownership.



Current Factors Affecting This Species

The main threats to this species are loss of breeding habitat from drainage or afforestation, persistent burning of grassland and bogs and, on some sites, scrub regeneration (of birch and willow). Built development, mining and quarrying have also eliminated or affected North Lanarkshire sites, one of which is between a busy motorway and an A-class road.

Current and Past Action

- North Lanarkshire Council staff have made efforts since the 1996 to record breeding sites and adult numbers within the Country Parks and other locations. Several new colonies have been located since this started in 1996. Efforts have also been made to ensure the protection of suitable habitat within the development planning process and the Woodland Grant Scheme and subsequent woodland management works.
- Small Pearl-bordered Fritillary identification day for members of the public organised by NLC and Butterfly Conservation Scotland, run in June 2004, and again 2008.
- Ongoing collation, by Greenspace Development and Butterfly Conservation, of Small Pearl-bordered Fritillary distribution data.
- Submitting records of this and other species to Butterfly Conservation and accessing their database of butterfly records from North Lanarkshire.
- Site Stewardship programme within Greenspace Development monitoring NLC owned SINCs, some of which include Small Pearl-bordered Fritillary populations.
- The presumption against development of SINCs in the NLC local plan. The majority of Small Pearl-bordered Fritillary sites are designated as SINCs.
- Appropriate mitigation on sites where development or land-use change threatens the species, is ongoing through the Greenspace Development Unit.
- Environmental statements from developments identifying new or prospective sites for this species.
- Advice given on an ad hoc basis by CSGNT, as required or requested, and Peatland management leaflet produced in 2010.
- Regular surveying of key NLC sites.
- Better Homes for Butterflies biodiversity campaign run in 2013 focussed on Large Heath, Small Pearl-bordered Fritillary and Green Hairstreak.
- Marsh violet was introduced at all suitable ponds in Palacerigg Country Park, and at St Maurice's Pond in 2010.
- Continued monitoring at 4 sites: Greenhead Moss, Commonhead Moss (east), Kingshill and Palacerigg.
- An identification guide to the butterflies and some of the day-flying moths of Falkirk, North and South Lanarkshire was published by BC and NLC in 2009.



Proposed Objectives, Targets and Actions

1. To maintain and enhance the population and distribution of Small Pearl-bordered Fritillaries in North Lanarkshire.
2. Survey populations and monitor all known sites.

Action	Meets objective number:	Action by	Target
Site Safe Guard and Management			
1.1 Enter in to simple management agreements with owners of sites from where the butterfly is known.	1	NLC, BC, land owners.	Three targeted management agreement by 2019
1.2 Press for appropriate mitigation on sites where development or land-use change threatens the species	1	NLC	Ongoing through planning consultation responses
1.3 Apply appropriate management prescriptions on areas adjoining sites to be managed within Glasgow City, i.e. Garnkirk Moss and Gartosh Road Mire/Drumpellier Country Park	1	GCC, NLC, private land owners, 7 Lochs	Prescriptions agreed and implemented at key sites by 2020
1.4 Investigate possibilities of a green bridge over M73 to link Commonhead Moss (east) and Commonhead Moss (west).	1	NLC, GCC, Seven Lochs	Renewed connection between the two sites
Species Management and Protection			
2.1 Reintroducing the Marsh violet at sites where it has become extinct, if sufficient suitable habitat exists.	1	NLC, BC, CSGNT	Assess suitable sites for planting from 2015 and plant at appropriate sites
2.2 Monitor known key sites for growth and spread of birch and other invasive trees into key habitat areas, and remove these if necessary	1, 2	NLC, BC, CSGN T	Ensure optimal conditions for SPbF at key sites
Survey, research and monitoring			
3.1 Protect habitat corridors between colonies to maintain metapopulations	1	NLC	Map potential habitat corridors by 2020 for use in planning consultation and future conservation efforts
3.2 Survey all populations at known historic sites	2	NLC, BC, CSGNT	Draw up time table and list of sites to survey by end of 2015. Survey all sites by end of 2020.
3.3 Continue monitoring at least 3 sites. Greenhead, Commonhead Moss (east) and Palacerigg.	2	NLC	Continue to survey annually
3.4 Survey potential sites with suitable habitat for SPbF	2	NLC	Develop a programme of survey in 2015 and implement from 2015
3.5 Establish and maintain a butterfly transect for at least one site as part of the UK Butterfly Monitoring Scheme	2	NLC, BC	Encourage and support volunteers to take forward from 2015
3.6 Track down missing records for SPbF in NL, and maintain and improve distribution maps of this species on GIS	1	NLC, BC	By end of 2015 and update annually.
Communications and publicity			
4.1 Include members of the public in surveys and provide training with the aim that members of the public can survey sites independently and feed back results.	2	NLC, BC, TCV	1 survey annually to include public involvement and training element.



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Fox, R.; Brereton, T.M.; Asher, J.; Botham, M.S.; Middlebrook, I.; Roy, D.B.; Warren, M.S. 2011 The State of the UK's Butterflies 2011. Wareham, Dorset, Butterfly Conservation; & Centre for Ecology & Hydrology, 16pp.

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