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Scotland's Nature Agency
Buidheann Nàdair na h-Alba

BROUBSTER LEANS
SPECIAL AREA OF CONSERVATION (SAC)

CONSERVATION ADVICE PACKAGE

Image: © NatureScot

Site Details

Site name: Broubster Leans

Map: https://sitelink.nature.scot/site/8213

Location: Highlands and Islands

Site code: UK0030099

Area (ha): 172.19

Date designated: 17 March 2005

Qualifying Features

Qualifying Features	Assessed Condition for this site	SCM visit date	UK overall conservation status
Transition mires and quaking bogs	Favourable Maintained	23 August 2007	Unfavourable - Bad

Notes:
Assessed Condition refers to the condition of the SAC feature assessed at a site level as part of NatureScot's Site Condition Monitoring (SCM) programme.
Conservation status is the overall condition of the feature throughout its range within the UK as reported to the European Commission under Article 17 of the Habitats Directive in 2019.

Overlapping Protected Areas:

Broubster Leans SAC overlaps Broubster Leans Site of Special Scientific Interest (SSSI) https://sitelink.nature.scot/site/265 and is part of Caithness Lochs Special Protection Area (SPA) https://sitelink.nature.scot/site/8477.

Key factors affecting the qualifying feature

Very wet mires often identified by an unstable 'quaking' surface
This feature is also known as transition mires and quaking bogs. The term 'transition mire' relates to vegetation that in floristic composition and general ecological characteristics is transitional between acid bog and alkaline fens, in which the surface conditions range from markedly acidic to slightly base-rich.

Transition mires and quaking bogs can occur in a variety of situations, related to different geomorphological processes. On this site the habitat has formed in the flood plain of the Forss Water. The main part of the river was diverted many years ago, leaving a variety of ox-bows and drains which are now revegetating and where floating vegetation from the 'quaking' part of the feature is now found.

The water table is often close to or above the surface of the substrate giving rise to the characteristic floating mats of vegetation. This means that key factors affecting this habitat type are alterations to the hydrology. It is particularly sensitive to any over and undergrazing or disturbance to the surface i.e., trampling or use of ATVs or other vehicles.

A fuller account of the habitat can be found here.

Conservation Priorities

This SAC overlaps with the Caithness Lochs SPA. Any pro-active management for the SAC or assessment of plans or projects will also need to take account of the SPA interests.

Conservation Objectives for Transition mires and quaking bogs [H7140] (Very wet mires often identified by an unstable 'quaking' surface)

1. To ensure that the qualifying feature of Broubster Leans SAC is in favourable condition and makes an appropriate contribution to achieving favourable conservation status
Favourable Conservation Status (FCS) is considered at a European biogeographic level. When determining whether management measures may be required to ensure that the conservation objectives for this site are achieved, the focus should be on maintaining or improving the contribution that this site makes to FCS. When carrying out appraisals of plans and projects against these conservation objectives, it is not necessary to understand the status of the feature in other SACs in this biogeographic region. The purpose of the assessment should be to understand whether the integrity of the site (see objective 2) would be maintained. If this is the case then its contribution to FCS across the Atlantic Biogeographic Region will continue to be met. Further details on how these assessments should be carried out in relation to maintaining site integrity is provided by objective 2 (including parts a, b and c). If broader information on the feature is available then it should be used to provide context to the site-based assessment. Note that "appropriate" within this part of the conservation objectives is included to indicate that the contribution to FCS varies from site to site and feature to feature.

2. To ensure that the integrity of Broubster Leans SAC is maintained by meeting objectives 2a, 2b and 2c for each qualifying feature.
The aim at this SAC is to maintain the transition mires and quaking bogs habitat in a favourable condition as a contribution to its wider conservation status. Therefore any impacts on the objectives shown in 2a, 2b, or 2c below must not persist so that they prevent the achievement of this overall aim. When carrying out appraisals of plans or projects the focus should be on maintaining site integrity, specifically by meeting the objectives outlined in 2a, 2b and 2c. If these are met then site integrity will continue to be maintained. Note that not all of these will be relevant for every activity being considered. Any impacts on the objectives shown in 2a, 2b or 2c below must not persist so that they prevent the maintenance of site integrity. Temporary impacts on these objectives resulting from plans or projects can only be permitted where there is certainty that the features will be able to quickly recover. This objective recognises that the qualifying habitat is exposed to a wide range of drivers of change. Some of these are natural and are not a direct result of human influences. Such changes in the habitat's extent, distribution or condition within the site which are brought

about by natural processes, directly or indirectly, are normally considered compatible with the site's conservation objectives. An assessment of whether a change is natural or anthropogenic, or a combination of both, will need to be looked at on a case by case basis.

2a. Maintain the extent and distribution of the habitat within the site

On Broubster Leans this habitat is found in a lowland situation in the flood plain of the River Forss. Accurate measurement of the extent of the transition mires and quaking bogs habitat is hard to achieve due to gradual transitions in vegetation to adjacent habitats. The figure within the SAC standard data form is therefore used as a guide (19.23 ha), and the objective is that there should be no loss of the habitat within the SAC.

This habitat is transitional with other adjacent wetland habitats so current baseline estimates may not be precise and any changes in extent estimates as a result of new survey may not represent real change but greater precision. Habitat survey may be needed prior to assessing whether any plans or projects would alter the distribution and extent of the habitat.

2b. Maintain the structure, function and supporting processes of the habitat

This habitat is present as a mosaic with other wetland habitats. The term "transition mire" relates to vegetation that, in floristic composition and general ecological characteristic, is transitional between acid bog and alkaline fens, in which the surface conditions range from markedly acidic to slightly base-rich.

The structure of the habitat is linked to the hydrology of the site, and it is important that this is maintained. This habitat has developed here because an area of flat ground is close to the water table in the Forss Water and Burn of Broubster. An historic embankment means that the Forss Water only overflows onto the site during spates. Most of the water on the site flows from the Burn of Broubster and remains there because the site is flat and contains a complex of deep pools. The site should remain damp or wet all year, with a higher water level when there is more water in the Forss Water and Burn of Broubster in winter, and temporary flooding following heavy rain.

Preventing or reducing detrimental effects of drainage, including in the surrounding area, is key to maintaining the hydrology of the site. Water quality and sediment load in the Burn of Broubster (and the Forss Water when it floods the site during spates) is also important in determining nutrient and sediment levels within the site.

Colonisation of this habitat by vigorous native species such as willow trees or scrub, or invasive non-native species should be avoided. Domination of the site by these species could lead to irreversible habitat loss in the longer term, through shading, drying out of the habitat and possible conversion to other open-ground habitats or woodland.

A low level of grazing should be followed as this is beneficial in helping to maintain species-richness and in preventing succession. Over-grazing, browsing and trampling by sheep, deer or through recreation can damage the structure of this habitat and the wider mosaic of wetland habitats in which it is found, and result in disturbed bare ground. This is where a substrate of bare humus, bare peat, bare mineral soil, bare gravel, or soil covered only by an algal mat, has its surface broken and imprinted by hoof marks, wallows, human foot prints, or vehicle and machinery tracks. The emphasis is on avoiding 'disturbed' ground rather than 'bare' ground as natural processes can sometimes cause bare ground.
Heavy trampling and/or tracking by deer, livestock and ATVs can also result in active drainage of the habitat. Drainage should be considered active if it has altered, or is likely to alter, or remove, the original vegetation, and facilitate the removal of water from the site.

2c. Maintain the distribution and viability of typical species of the habitat
This habitat is found in lowland and upland situations in transition with other habitats and the typical species are dependent on the site and location of the habitat. On this site the following NVC types are found: M9 *Carex rostrata – Calliergon cuspidatum/giganteum* M27 *Filipendula ulmaria – Angelica sylvestris* mire S27 *Carex rostrata – Potentilla palustris* S11 *Carex vesicaria* swamp S10 *Equisetum fluviatile* swamp S9 *Carex rostrata* swamp For this site the typical/indicator species of the habitat are water sedge *Carex aquatilis* (which replaces the *C. vesicaria* that is normally found in S11 swamp habitat), bottle sedge *C. rostrata*, marsh cinqufoil *Potentilla palustris*, bogbean *Menyanthes trifoliate,* marsh bedstraw *Galium palustre,* water horsetail *Equisetum fluviatile* and narrow small-reed *Calamagrostis stricta*. The site also supports a variety of breeding waders, waterfowl and passerine birds. The site is important in winter for geese and swans from Caithness Lochs SPA.

Conservation Measures

Broubster Leans is notified as a Site of Special Scientific Interest and management changes described on the list of Operations Requiring Consent must have prior consent from SNH (NatureScot).

Current and recommended management for Very wet mires often identified by an unstable 'quaking' surface

Issue	Measure	Responsible party
Herbivore impacts (grazing and/or poaching)	Ensure that deer and livestock impacts on the feature are 'low' based on the FCS/NatureScot Herbivore Impact Assessment Process to prevent poaching and/or loss of typical species.	Land managers, NatureScot, Deer Management Groups, SGRPID (GEAC)
Heavy trampling and/or tracking	Trampling by livestock to be minimal to prevent active drainage of this habitat.	Land managers, NatureScot, Deer Management Groups, SGRPID (GEAC)
Exchange of water between the feature and the Forss Water and Burn of Broubster	The high water table on the site should be maintained by water flowing into the site from the Burn of Broubster and ground water from the Forss Water. The Forss Water should continue to flood the site during spates. The large area of low-lying, periodically flooded ground in the flood plain of the river should be maintained as this is where the SAC	Land managers, NatureScot, SEPA

	habitat is found. Drains that were dug historically within the site now form a key part of the habitat. These drains should be allowed to continue to vegetate over and not be cleared.	
Colonisation by vigorous native and/or non-native species	Ensure colonisation of this habitat by vigorous native species, such as willow tree or scrub growth or invasive non-native species is minimal to prevent loss of indicator species and conversion to other open ground habitats or woodland.	Land managers, NatureScot
Habitat Management (water, sediment and nutrient inputs from the catchment)	Appropriate water and sediment flows into this habitat can be promoted by enhancing natural processes of river flow and morphology by drain blocking in open ground upstream of the site. This would help to buffer high/low extremes in river flow rate (that might damage the feature by alternating between extremes of flooding and drying out).	Land managers, NatureScot
	Appropriate water, sediment and nutrient flows into this habitat can be promoted by planning forestry planting/removal in the catchment of the site so that heavy rainfall is buffered by the forest rather than exacerbating high/low extremes in flow. Unnatural changes in sediment load in the river or pollutants in the river water could affect the habitat, so felling licences in the catchment should include appropriate guidelines to minimise sediment run-off into the river and prevent pollutants from entering water courses.	Scottish Forestry, land managers, SEPA
	Appropriate water, sediment and nutrient flows into this habitat can be promoted by any development proposals in the catchment being planned to include appropriate measures to maintain the natural hydrological regime, minimise sediment run-off and prevent pollutants or excess nutrients from entering the river.	Planning authority, developer, NatureScot
Research and monitoring	To identify emerging impacts on the habitat and their causes, in order to understand the long term issues, and to inform future management of the habitat across Scotland.	NatureScot

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