LOCH STACK AND RIVER LAXFORD
Site of Special Scientific Interest

SITE MANAGEMENT STATEMENT

Site code: 1055

Scottish Natural Heritage
Dualchas Nàdair na h-Alba
All of nature for all of Scotland
Nàdair air fad airson Alba air fad

The Links, Golspie Business Park, Golspie, Sutherland, KW10 6UB.
Tel. 01408 634063 **north_highland@snh.gov.uk**

Purpose

This is a public statement prepared by SNH for owners and occupiers of the SSSI. It outlines the reasons it is designated as an SSSI and provides guidance on how its special natural features should be conserved or enhanced. This Statement does not affect or form part of the statutory notification and does not remove the need to apply for consent for operations requiring consent.

We welcome your views on this statement.

This statement is available in Gaelic on request.

Natural features of Loch Stack and River Laxford SSSI	**Condition of feature** (and date monitored)
Oligotrophic loch	Favourable, maintained (July 2004)
Oligotrophic river/stream	Favourable, maintained (August 2003)
Upland birch woodland	Favourable, maintained (September 2003)
Breeding bird assemblage	Favourable, maintained (June 2004)
Black-throated diver	Favourable, maintained (July 2003)
Freshwater pearl mussel	Unfavourable, no change (May 2004)

Description of the site

Loch Stack and River Laxford Site of Special Site of Scientific Interest (SSSI) is located in north-west Sutherland between Achfary and Laxford Bridge and is designated for six nationally important features listed in the table above.

Oligotrophic loch

The SSSI is a complex of nutrient-poor (oligotrophic) hill lochs which constitute the headwaters of the River Laxford. The lochs, and the rivers that feed, them have no artificial impoundments, e.g. dams or weirs, and the water levels are therefore naturally regulated. The largest of the lochs, Loch Stack, is a good example of an oligotrophic loch which supports aquatic plant species typical of upland areas in north-west Scotland, including broad-leaved pondweed and white water-lily. It also supports uncommon species, notably awlwort and two species of stonewort *Nitella opaca* and *Nitella translucens.* At the southern end of the loch there is a well developed fen with typical emergent species such as common reed and water horsetail.

Monitoring of Loch Stack was last undertaken in 2004. Typical species which grow within nutrient-poor conditions such as broad-leaved pondweed, spiked rush and water

lobelia were recorded. Incidental observations of dragonflies including the four spotted chaser, black and common darters, common hawker, golden-ringed dragonfly, and the common blue and large red damselflies were also noted. The loch was assessed as being in favourable condition.

Oligotrophic river

The River Laxford is a good example of a nutrient-poor river without artificial impoundment. The river runs through rich geology and, despite a generally low gradient, it supports a diverse set of geomorphological features including pools, rapids and waterfalls. There is a diverse assemblage of vascular aquatic plants. Species of particular interest include pondweeds and western brook moss. The river was assessed as being in favourable condition during monitoring in August 2003.

Upland birch woodland

The small woodland at Creag nan Suidheag Mor is a fragment of native woodland which is considered to be of ancient origin. Ancient woodland cover in Scotland is fragmented and scarce. This birch-rowan woodland grows on a boulder field and is notably rich in ferns, mosses and liverworts. Species such as Wilson's filmy fern grow at the bases of trees and on rocks where they thrive in the shady, damp conditions .

The woodland was assessed as being in favourable condition during monitoring in September 2003. No non-native species were noted, and the ground flora included a characteristic range of grasses, ferns, mosses and lichens. Dead wood, both standing and fallen, is important within a woodland as part of the natural cycle of tree growth, followed by decay and nutrient recycling to the next generation of trees. Appropriate amounts of dead wood were recorded on this site. Regeneration of young trees is crucial to the future of woodlands. Although tree regeneration is occurring (particularly in the more inaccessible locations), grazing by deer is a potential threat around the woodland edges, with noticeable declines in natural regeneration within these areas.

Freshwater pearl mussel	Black-throated diver
	

Breeding bird assemblage

The loch and bank side habitats support breeding divers and waders including black-throated diver, red-throated diver, greenshank, ringed plover and dunlin. A wide range of upland breeding birds were recorded when this feature was monitored in June 2004.

In addition to the species above, heron, teal, red-breasted merganser, snipe, goosander, common sandpiper, grey wagtail, and dipper were noted. The breeding bird assemblage was assessed as being in favourable condition.

Black-throated diver

Black-throated divers are particularly sensitive to disturbance and are specially protected by legislation in the UK. Their nests should not be disturbed during the breeding season since eggs may fail to hatch if they become chilled due to the parent birds being disturbed from the nest. The provision of islets and islands (including artificial raft sites) for black- and red-throated divers on the loch provides protection from land-based predators.

Monitoring of the black-throated diver indicates that two pairs breed on Loch Stack in most years. They do not always use the artificial raft sites. The habitat used by the divers has been maintained and therefore their condition was assessed as being 'favourable maintained'.

Freshwater pearl mussel

The River Laxford has populations of freshwater pearl mussel along its length. Oligotrophic rivers are preferred by freshwater pearl mussels as the water quality, particularly the water chemistry, is critical to their survival. They also require low sediment loads, low turbidity, and suitable, undisturbed river substrate in which to grow.

Freshwater pearl mussels can grow up to 15cm long and live for over 100 years. The adults live attached to or buried in the substrate of rivers and filter small particles of food from the flowing water. They become mature at about 10 to 12 years of age and each female can produce between one and four million larvae that are released in synchrony over one or two days in late summer.

The survival of freshwater pearl mussels is inextricably linked to the availability of juvenile salmon and trout. Mussel larvae released into the flow of the river must attach themselves to the gills of young salmon and trout if they are to develop. Only a small proportion of larvae will succeed in this and survive to drop off their host fish and take up the sedentary life of the adults on the riverbed. The riverside habitats, with areas of birch, common alder and willow, provide shaded stretches of water, a supply of leaf litter and insects that are beneficial to salmon and trout and therefore also to the mussel populations. The freshwater pearl mussel is listed as an endangered species (by the International Union for Conservation of Nature) as a result of its dramatic decline throughout its range in northern continents.

The freshwater pearl mussel population was monitored in 2004 and was assessed as being in unfavourable condition as a result of heavy and prolonged pearl fishing during the last century. Now that pearl fishing is illegal the population will hopefully recover however the population is currently small and thus vulnerable to further losses of mussels. It is important that the gravel beds where mussels live are not disturbed and that the combination of high water quality and the presence of salmon and trout in the river are maintained.

Past and present management

Both Loch Stack and the River Laxford are primarily used for angling. Artificial diver rafts have been introduced to Loch Stack to provide nesting habitat for both black- and red-throated diver. The rafts are maintained and monitored by the RSPB through a SNH funding agreement.

Freshwater pearl mussels have been exploited in the past on the River Laxford. The species is now fully protected so that any disturbance to the species or its habitat is illegal. Exotic conifer plantations within the catchment have been removed from the riverbank and native broadleaves planted in more sensitive areas. This management should reduce acidification of the river which will benefit both fish and freshwater pearl mussel populations.

Although deer impacts on this site have not been observed care should be taken to avoid detrimental effects when devising management measures to relieve pressure on nearby sites.

There are some very attractive footpaths along the River Laxford and most of the people who visit this site walk along these.

Objectives for Management (and key factors influencing the condition of natural features)

We wish to work with land managers to protect the site and to maintain and where necessary enhance its features of special interest. SNH aims to carry out site survey, monitoring and research as appropriate to increase our knowledge and understanding of the site and its natural features.

The list of Operations Requiring Consent and the discussions on land management involved in the issuing of formal consents are intended to minimise the threat of any damage to the natural features.

1. To maintain the water quality and extent of Loch Stack and the River Laxford. This objective can readily be achieved by maintaining the present management of Loch Stack and the River Laxford that allows natural processes to continue with minimal intervention or disturbance. Management in the vicinity of Loch Stack and the River Laxford should avoid activities that would alter water levels, release sediment and excessive nutrients or chemicals into the water. Where possible, any increase in drainage, abstraction or other activities affecting the hydrology of the river catchment should be avoided. Any agriculture or forestry operations within the catchment should be carefully managed to prevent the input of sediment, chemicals or nutrients into watercourses. The Forestry Commission's Forests and Water Guidelines should be carefully adhered to when carrying out any forestry operations within the River Laxford catchment.

2. To maintain the distribution, condition and extent of the woodland habitat. Management of deer populations may be required in the future if increased browsing were to limit natural regeneration of trees and/or excessive numbers of deer were to use the woodland for shelter causing tracking and poaching of the ground. Currently the absence of fencing is considered to be a positive aspect of this site and future management to secure woodland regeneration should aim to avoid the need for fencing.

3. To maintain breeding bird populations and to avoid significant disturbance of birds during the breeding season. If the habitats on this site are maintained, breeding bird populations are also expected to be maintained. Disturbance can reduce the breeding success of nesting birds. It is important that any potential activities on the site are carefully planned to safeguard the nesting birds.

Black- and red-throated divers are particularly sensitive to human presence and, along with other uncommon species, are protected by special legislation. Their nests should not be disturbed during the breeding season since eggs may fail to hatch if they become chilled due to the parent birds being disturbed from the nest. Both eggs and young chicks are more likely to be eaten by predators if the parent birds are not there to protect them. It is important that anglers do not unintentionally disturb these birds during the period April to June, when they are nesting. Anglers should be made aware and look out for divers and keep as far away from their nests as possible if fishing on Loch Stack. On the associated lochans, anglers should move to a different loch if breeding divers are present. A leaflet on 'Black throated divers and anglers' is available from SNH on request explaining how anglers can help divers by avoiding their nests.

Bird eggs and chicks are vulnerable to predation. Foxes, crows and mink are potential predators of eggs or young. Legal control of these species as part of general estate management is likely to be beneficial to breeding birds.

4. To avoid disturbance to the freshwater pearl mussels

The management needed to protect freshwater pearl mussels is the same as that needed to protect the rest of the loch and river environment – principally, to minimise human intervention. Freshwater pearl mussels are sedentary animals that attach themselves to the substrate of the river. Disturbance to the substrate can result in the death of mussels. Therefore, any in-river engineering works should be minimised and carefully planned to avoid areas containing mussel populations. Operations such as gravel extraction and channel dredging have the potential to destroy mussel populations if they occur in sensitive areas of the river. Sediment from in-river engineering works can also be carried downstream, potentially smothering mussel beds. These operations should only be carried out with the prior agreement of SNH and SEPA following an assessment of the likely impacts of any specific proposal.

Freshwater pearl mussel larvae need to attach themselves to young Atlantic salmon or trout for part of their development. Therefore healthy salmon and trout populations are essential for maintenance of the freshwater mussel populations. Populations of Atlantic salmon and trout can be enhanced by good river management which includes maintaining clean water and minimising sediment load that might smother the gravel beds where fish spawn. Encouraging the formation of shaded pools with overhanging branches, alder and willow can also benefit fish by providing a source of leaf litter and insects that can enhance their food supply.

/see overleaf

Other factors affecting the natural features of the site

Egg collecting: Some of the rare birds that breed on Loch Stack and River Laxford SSSI are potential targets for illegal egg collecting. Any suspicious activity including a description of cars and number plates should be reported to the Police.

Illegal pearl fishing: Freshwater pearl mussels have been damaged by fishing in the past. Pearl fishing for freshwater pearl mussels is now illegal. Any suspicious activity should be reported to the Police as soon as possible.

Forestry: Forestry could influence water flow rates and water quality in the river downstream of the non-native conifer plantations.

Date last reviewed: 21 October 2009