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Scotland's Nature Agency
Buidheann Nàdair na h-Alba

ONICH TO NORTH BALLACHULISH WOODS SPECIAL AREA OF CONSERVATION (SAC)

CONSERVATION ADVICE PACKAGE

Site Details

Site name:	Onich to North Ballachulish Woods
Map:	https://sitelink.nature.scot/site/8637
Location:	Highlands and Islands
Site code:	UK0030344
Area (ha):	618.49
Date designated:	17 March 2005

Qualifying features

Qualifying feature	SCM assessed condition	SCM visit date	UK overall Conservation Status
Base-rich fens [H7230]	Favourable Maintained	22 June 2007	Unfavourable-bad
Mixed woodland on base-rich soils associated with rocky slopes [H9180]*	Unfavourable Declining	17 January 2008	Unfavourable-bad
Western acidic oak woodland [H91A0]	Unfavourable Declining	17 January 2008	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.
***** Habitats Directive priority habitat

Overlapping Protected Areas

Onich to North Ballachulish Woods and Shore Site of Special Scientific Interest (SSSI)

Key factors affecting the qualifying features

Onich to North Ballachulish Woods SAC is one of the largest expanses of native woodland within the south of Lochaber. It extends over south, west and north facing slopes from sea level to a height of approximately 400 metres. The woods are of ecological interest both for their extent and for the variation in structure and flora, which they exhibit as a reflection of the site's varied topography, aspect and underlying geology. The upland habitats support particularly diverse alkaline fens.

Base-rich fens

Base-rich fen consists of a complex assemblage of vegetation types characteristic of sites where there is tufa and/or peat formation with a high water table and a calcareous base-rich water supply.

There is considerable variation between sites in the associated communities and the transitions that may occur. Such variation can be broadly classified by the geomorphological situation in which the fen occurs, namely: flood plain mire, valley mire, basin mire, hydroseral fen (i.e. as zones around open waterbodies) and spring fen. Another important source of ecological variation is altitude, with significant differences between lowland fens, which are rich in southern and continental species, and upland fens, which are rich in northern species.

At Onich to Ballachulish woods SAC the underlying base-rich rocks have given rise to significant areas of Calcium-rich springwater-fed fens, a habitat which is uncommon in Lochaber. No other site in the south of Lochaber has the same extent or shows the wide range of influences of ground conditions on species composition so clearly.

Key factors potentially affecting this habitat type are land use changes, development, drainage, scrub encroachment, vehicle tracking, pollution to ground or surface water, and inappropriate grazing pressure (grazing that is either too high or too low).

Mixed woodland on base-rich soils associated with rocky slopes

This habitat typically occurs in association with base-rich rocks in steep-sided immature river valleys, and is found on nutrient-rich soils that often accumulate in the shady micro-climates towards the bases of slopes and ravines. Such forests are not extensive but fragmentary stands that then grade into other woodland types on level valley floors or slopes above.

Key management issues for this habitat include grazing levels, problematic native and non-native species, air pollution and urban development. The woodland is considered to be in an unfavourable condition at this site due to the presence of non-native species.

Western acidic oak woods

This habitat type comprises a range of woodland types dominated by mixtures of oak and birch. It is characteristic of base-poor soils in areas of at least moderately high rainfall. A key feature of importance within this habitat type is the well-developed Atlantic bryophyte communities it can support.

The woodland is considered to be in an unfavourable condition at this site due to the presence of non-native species and low levels of deadwood present.

Further information about these habitats can be found on the JNCC website.

Both western acidic oak woodland and mixed woodland on base-rich soils associated with rocky slopes require low but not zero grazing. High levels of grazing can distort the structure and composition of the woodlands, especially leading to a species poor ground flora, and restricting regeneration of the more palatable tree species such as oak, rowan, hazel, holly and ash. This eventually results in a woodland dominated by older trees, and by the less palatable species such as birch, and lacking normal representation of intermediate life classes. Too little grazing can result in a lack of structural diversity in the canopy and over shading which can impact negatively on important lichen and bryophyte communities. The presence of non-native species such as Rhododendron, and exotic conifers, can also impact the habitat, shading out ground flora and epiphytes, and preventing natural regeneration of native tree and shrub species. In the future new stresses to the feature, particularly from climate change, chalara ash-dieback and possibly other novel pests and pathogens, are anticipated.

Conservation Priorities

Mixed woodland on base-rich soils associated with rocky slopes is a Habitats Directive priority habitat and therefore management of this feature should have priority over the other features of the site. In practice measures that are beneficial to this habitat are also likely to benefit the western acidic oak wood habitat and there is unlikely to be any conflict in management between the two features. If conservation management of the woodland could potentially impact the base-rich fens feature of the site this would first need to be considered as part of a Habitats Regulations Appraisal.

Conservation Objectives

Overarching Conservation Objectives for all habitat features

1. To ensure that the qualifying features of Onich to Ballachuilish woods SAC are in favourable condition and make 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 restoring 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 appraisal 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 appraisals 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 appraisal. 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 Onich to North Ballachulish Woods SAC is restored by meeting objectives 2a, 2b and 2c for each qualifying feature

The aim at this SAC is to maintain, or where appropriate restore, the habitat in a favourable condition as a contribution to its wider conservation status. Therefore any impacts to 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 restoring site integrity, specifically by meeting the objectives outlined in 2a, 2b and 2c. If these are met then site integrity will be restored. 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 restoration of site integrity. Temporary impacts on these objectives resulting from plans or projects can only be permitted where they do not prevent the ability of a feature to recover and 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 exception to this is when the favourable condition of a habitat is dependent on halting or managing natural succession. 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.

Conservation Objectives for alkaline fens (base-rich fens)

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

Maintain the extent and distribution of existing base-rich fen to at least 1.24ha. However, due to the small and fragmentary nature of this habitat current baseline estimates of its area may not be very precise and any changes in extent estimated as a result of new survey may not represent real change but greater precision.

Alkaline fens can be found in small, scattered patches throughout the site, where springwater seeps to the surface and supports vegetation comprising sedges and other short plants such as butterwort, in narrow flushes on gentle to moderate slopes.

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

This habitat is found where there are springs or seepages, fed by base-enriched waters on both peat and mineral soils. Flows of ground water should therefore be maintained.

Light grazing can be beneficial in helping to maintain species-richness and in preventing succession. Grazing levels should be considered at an individual habitat patch level to ensure the maintenance of the base-rich fen structure and function across the whole of the site.

Over-grazing and excessive poaching is detrimental which can result in damage to the fragile plants that grow on the wet ground and lead to large areas of disturbed bare ground. 'Disturbed bare ground' 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 'disturbed' rather than 'bare'.

Excessive grazing/browsing/trampling by livestock can also contribute to a deterioration in the habitat structure, leading to a reduction or loss in the typical/indicator species. Equally, a complete lack of grazing can lead to habitat loss as rank species can come to dominate the habitat at the expense of the typical species listed in section 2c. Stocking levels should therefore be controlled in an appropriate manner that helps to maintain the habitat by ensuring grazing is neither too high nor too low.

Heavy trampling and/or tracking by livestock/ATVs should be avoided as this can result in active drainage of the habitat. Drainage should be considered active if it has altered or removed the original vegetation (or is likely to do so) or facilitates the removal of water from the site.

Colonisation of this habitat by vigorous native species (common reed *Phragmites australis* and/or soft rush *Juncus effuses*), tree or scrub growth or invasive non-native species could lead to irreversible habitat loss in the longer term, through conversion to other open-ground habitats or woodland, and should therefore be avoided.

This habitat is very sensitive to muirburn and this should be avoided in these areas.

2c. Maintain the distribution and viability of typical species of the habitat

The core vegetation of this habitat is short sedge mire (mire with low-growing sedge vegetation) of the following NVC types:

M9 *Carex rostrata – Calliergon cuspidatum/giganteum* mire, of which at least 2 indicator species should be present; M10 *Carex dioica – Pinguicula vulgaris* mire, of which at least 6 indicator species should be present; and M13 *Schoenus nigricans – Juncus subnodulosus* mire community, of which at least 4 indicator species should be present.

For the base-rich fen on this site the relevant NVC type and indicator species are:

M10
Brown mosses; quaking grass *Briza media;* dioecious sedge *Carex dioica;* glaucous sedge *Carex flacca;* tawny sedge *Carex hostiana;* yellow sedge *Carex viridula;* carnation sedge *Carex panacea;* flea sedge *Carex pulicaris;* jointed rush *Juncus articulates;* fairy flax *Linum catharticum;* common butterwort *Pinguicula vulgaris;* birdseye primrose *Primula farinose;* lesser clubmoss *Selaginella selaginoides;* marsh arrow-grass *Triglochin palustris*

At this site there are very subtle transitions between M10 and M11 (Carex viridula ssp. oedocarpa-Saxifraga aizoides mire), with some well defined single mire complexes straddling the floristic boundary between M10 and M11. In these places the M11 is essentially the same type of vegetation and habitat as the M10, so it makes sense to regard both communities as belonging to the same base rich fen habitat type.

Conservation Objectives for *Tilio-Acerion* forests of slopes, screes and ravines (mixed woodland on base-rich soils associated with rocky slopes)

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

The extent of the *Tilio-Acerion* forests of slopes, screes and ravines feature within the site has been estimated at 30.92ha. The area figure is an estimate and has been taken from

the Standard Data Form. Fundamentally however there should be no measurable net reduction in the extent of the habitat and its distribution throughout the site.

The habitat typically occurs on nutrient-rich soils that have formed in association with base-rich rocks, and where there is base-rich flushing. At this site, the woods are on steep slopes, often with numerous small streams and flushes. The wetness of the slopes (and of the climate) means that alder, as well as ash, is widespread in the canopy over much of the area, not just confined to definite streamlines. Other parts of the site, such as the Onich gorge, support more typical *Tilio-Acerion*, dominated by ash and hazel, with some elm, but lacking alder. This feature occurs in a mosaic with western acidic oakwoods, which predominates on more acidic soils.

Impacts that could lead to a permanent reduction in the extent or distribution of the habitat should be avoided. In particular there should be no habitat loss from within or at the edge of the woodland and no habitat fragmentation. A lack of regeneration by native species, such as could occur through high herbivore impacts, will also lead to a long term decline in woodland extent.

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

This habitat depends on nutrient-rich and base-rich soils and shady micro-climates found towards the bases of slopes, coarse scree, cliffs, steep rocky slopes and ravines. It is characterised by tree cover that:

- Has a mixed forest structure including young, mature, dying and dead trees in dense thickets and open glades with a range of shade cast on the woodland floor.
- Is made up of diverse broadleaved tree and shrub species, but most consistently and abundantly by species with the characteristics (shade, leaf decay, structure, bark pH and obligate/associated dependent species) of ash, hazel and wych elm.
- The slopes on which this woodland type develops are often unstable, leading to an element of dynamism in their structure. Whilst this adds to the diversity of the communities present, it also makes the woodland vulnerable to disturbance from human activities. If disturbance is too frequent, or present over too large an area, it may lead to loss of woodland area and typical species, and recovery might be slow.

The ground flora associated with the habitat is linked to variations in moisture and shade, or ‘disturbance communities’ associated with scree and cliff-bases.

These characteristics can be achieved by maintaining an abundance of key tree species, particularly ash, hazel and wych elm, an absence of invasive species which compromise the critical characteristics of the habitat, and grazing levels that allow all species of trees, shrubs and ground flora to develop naturally and flower, fruit etc.

Within the SAC Rhododendron is widespread forming dense and extensive stands in several areas of the site. Cotoneaster and young non-native conifers are also present and their saplings are frequent in some parts of the site. These should be removed in order to restore the structure, function and supporting processes of the habitat.

2c. Restore the distribution and viability of typical species of the habitat

The key tree species for this habitat are ash (*Fraxinus excelsior*), hazel (*Corylus avellana*), and wych elm (*Ulmus glabra*)). The main NVC types at this site are:

- W7c Alnus glutinosa-Fraxinus excelsior-Lysimachia nemorum woodland, Deschampsia cespitosa sub-community
- W9a Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis woodland, Typical sub-community
- W9b Fraxinus excelsior-Sorbus aucuparia-Mercurialis perennis woodland, Crepis palludosa sub-community.

The ground flora can be very varied, but the following elements are especially characteristic: fern banks (lady fern *Athyrium filix-femina*, hard fern *Blechnum spicant*, buckler-ferns *Dryopteris* species wilson's filmy fern *Hymenophyllum wilsonii*, lemon-scented fern *Oreopteris limbosperma* and beech fern *Phegopteris connectilis* are especially frequent here); stands of ramsons *Allium ursinum* in the moister zones; dog's mercury *Mercurialis perennis* and enchanter's-nightshade *Circaea* species on drier but still base-rich soils; wood avens *Geum urbanum*, and natural 'disturbance communities' comprising common nettle *Urtica dioica*, herb-Robert *Geranium robertianum* and cleavers *Galium aparine* associated with scree and cliff-bases. A wide range of other basiphilous (preferring base-rich soil) herbs and grasses are also present.

Other ground flora that are common at Onich to North Ballachulish Woods SAC include *Deschampsia cespitosa, Lysimachia nemorum, Oxalis acetosella, Primula vulgaris, Viola riviniana, Blechnum spicant, Agrostis stolonifera , Athyrium filix-femina,* and *Rubus fruticosus*; *Filipendula ulmaria* and *Parnassia palustris* are found in more flushed areas, and *Crepis paludosa*, *Phegopteris connectilis* and *Sanicula europaea* occur in the Onich Gorge.

The lichen communities are rich; 109 species were recorded in a 2006 survey of three areas of the site. Species include the Near Threatened *Fuscopannaria sampaiana* and *Parmeliella testacea* and a number of other notable species. The woodlands also support a rich assemblage of mosses and liverworts, with a total of 228 species recorded here. Unusually, this includes good assemblages of both Atlantic and calcicolous species, and the latter include the Nationally Scarce *Orthothecium rufescens* and *Sphagnum subsecundum*.

Non-native species can impact the typical species of the site. Management is needed to remove rhododendron, cotoneaster and young non-native conifers present within the SAC.

<u>Tree Health implications</u>

Many of the characteristics of mature Wych elm are reduced or absent in many locations due to Dutch elm disease (DED). However, it usually continues to persist as an 'auto-coppicing' shrub after the loss of the mature trees, so long as grazing impacts are low enough for it to continue to grow. Ash is beginning to show extensive infection from Ash Dieback (ADB). While the end point of the disease is not known, some level of resistance has been found in most populations, and the main threat to this is the prevention of regeneration by high herbivore impacts. Meanwhile, it is likely that a high proportion of the mature ash will be damaged, with a short-term increase in deadwood. Other trees, such as hazel, rowan, willow and aspen, support many of the species associated with ash, although their nutrient cycling properties differ somewhat. Probably the most important management requirement for this habitat is to ensure low enough herbivore impacts to allow all tree and shrub species present to regenerate. This will maximise the opportunity for ash to develop resistance to ash dieback, and allow other species to regenerate as well, to ensure a species-rich tree and shrub layer.

Conservation Objectives for old sessile oak woods with *Ilex* and *Blechnum* in the British Isles (western acidic oak woods)

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

The extent of the western acidic oak woodland feature, taken from the Standard Data Form, has been estimated at 123.7ha. This should be maintained or allowed to increase through natural regeneration. There should be no measurable net reduction in the extent of the habitat and its distribution throughout the site.

To avoid any permanent reduction in the extent or distribution of the habitat, no habitat loss should take place from within or at the edge of the woodland, for example through non-native forestry planting or dumping of waste. A lack of regeneration by native species, such as could occur through high herbivore impacts, will also lead to a long term decline in woodland extent.

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

This habitat type comprises a range of woodland types dominated by mixtures of oak. It is found in areas of base-poor soils with at least moderately high rainfall, and the key elements that should be in place include:

- Mixed age classes of trees, canopy cover, deadwood/fallen trees, understorey, ground flora & epiphytic plants. At this site there are low levels of deadwood present.
- Large, long lived trees with the characteristics of existing species, especially the defining species of oak (bark chemistry and structure, shade, leaf litter, fruiting, senescence and deadwood development)
- Low levels of herbivore impacts, to allow all species of trees and shrubs to regenerate, and healthy growth of ground flora, including flowering and fruiting.
- Levels of humidity capable of supporting characteristic bryophyte and lichen assemblages.
- Absence of invasive non-native species, especially Rhododendron. Within the SAC Rhododendron is widespread forming dense and extensive stands in several areas of the site. Cotoneaster and young non-native conifers are also present and their saplings are frequent in some parts of the site. These should be removed in order to restore the structure, function and supporting processes of the habitat.
- Prevention of pathogen arrival, establishment and spread.

2c. Restore the distribution and viability of typical species of the habitat

The habitat corresponds broadly to the western oakwoods described in previous accounts of UK woodlands, the principle NVC types at this site are:

W11b *Quercus petraea-Betula pubescens-Oxalis acetosella* woodland, *Blechnum spicant* sub-community
W17a *Quercus petraea-Betula pubescens-Dicranum majus* woodland, *Isothecium myosuroides-Diplophyllum albicans* sub-community

W17b *Quercus petraea-Betula pubescens-Dicranum majus* woodland, Typical sub-community
W17c Quercus *petraea-Betula pubescens-Dicranum majus* woodland, *Anthoxanthum odoratum-Agrostis capillaris* sub-community

The key tree species found in this habitat are oak (*Quercus robur* and/or *Q. petraea*) and birch (*Betula pendula* and/or *B. pubescens*). There is significant variation between individual stands of the habitat in domination by either oak or birch. Holly, rowan and hazel are also important components of the habitat.

The vascular plant community varies between the richer, grassy W11 woodland (with *Oxalis acetosella, Hyacinthoides non-scripta, Anemone nemorosa, Potentilla erecta, Conopodium majus, Primula vulgaris, Viola riviniana* and *Galium saxatile*) and the heathier W17 (*Calluna vulgaris, Vaccinium myrtillus* and *Deschampsia flexuosa* are the commonest vascular plants). As for the *Tilio-Acerion* woodland on this site, the bryophyte communities are extremely rich. Atlantic species characteristic of the more acidic woodland communities include, on steep rock faces, the mosses *Dicranum scoparium and D. scottianum*, and the western liverworts *Scapania gracilis, Plagiochila spinulosa, P. killarniensis, Mylia taylorii, Bazzania trilobata, B. tricrenata*. Species such as the liverworts *Plagiochila punctata* and the Nationally Scarce *Leptoscyphus cuneifolius* occur on tree-trunks. Other Nationally Scarce species associated with this woodland type include *Sematophyllum micans* and *Ulota calvescens*.

The non-native species rhododendron, cotoneaster and young non-native conifers and their saplings are found within the site. These should be removed as can impact the typical species of the SAC by shading out ground flora and epiphytes, and preventing natural regeneration of native tree and shrub species.

Conservation Measures

Onich to North Ballachulish Woods 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 base-rich fen

Issue	Measure	Responsible party
Herbivore impacts (grazing and/or trampling)	Low levels of grazing can be beneficial in helping to maintain species-richness and in preventing succession. However, over-grazing and excessive poaching should be avoided as it can result in disturbed bare ground, which is detrimental to the habitat.	Land managers, NatureScot, Deer Management Groups
Heavy trampling and/or tracking	Trampling and/or tracking by deer / livestock / ATV's to be minimal to prevent active drainage of, or damage to, this habitat.	Land managers, NatureScot, Deer Management Groups

Colonisation by native and/or non-native species	Ensure colonisation of this habitat by vigorous native species (such as common reed *Phragmites australis* and/or soft rush *Juncus effuses*), 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	The Muirburn plan for the site/area should include measures to ensure burning on base-rich fens is avoided.	NatureScot, landowners, land managers.
Hydrology	Ensure natural hydrological processes are maintained.	Landowners Land managers SEPA 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

Current and recommended management for *Tilio-Acerion* forests of slopes, screes and ravines and Western acidic oak woodland

Issue	**Measure**	**Responsible party**
Herbivore impacts (grazing and/or trampling)	Ensure that herbivore (deer and livestock) impacts on the feature are 'low' based on the FCS/ SNH (NatureScot) Herbivore Impact Assessment Process, and do not prevent the regeneration of native tree species such as ash and oak, or restrict the growth of the ground flora, shrub layer and canopy cover.	Land managers, NatureScot, Deer Management Groups
Colonisation by native and/or non-native species	Rhododendron, cotoneaster and non-native conifers are present in the woodland habitats of the site and should be removed.	Land managers, NatureScot
Low levels of deadwood present	Specific management to deal with this problem does not appear to be required. The situation is likely to improve with time and should be monitored.	Land managers, NatureScot
Hydrology	Ensure natural hydrological processes are maintained.	Landowners Land managers SEPA

	Levels of humidity should be maintained to support characteristic bryophyte and lichen assemblages.	NatureScot
Avoidance of introduction of known pathogens	Discussions on options available to avoid any introduction of known disease organisms.	Land managers, 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
Future threats	A coordinated resilience planning process should be developed to respond to anticipated future threats to the habitat. Management actions arising from the resilience planning process, and site-level plans, should be implemented to anticipate future threats to the habitat on the site. This resilience work may also include further research to understand the vulnerabilities of the habitat.	NatureScot Land managers

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Approved on 28 April 2020 by:

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