

# **GLEN CRERAN WOODS SPECIAL AREA OF CONSERVATION (SAC)**

## **CONSERVATION ADVICE PACKAGE**



Glen Creran Woods © Lorne Gill/NatureScot

## Site Details

Site name:	Glen Creran Woods
Map:	<a href="https://sitelink.nature.scot/site/8265">https://sitelink.nature.scot/site/8265</a>
Location:	Highlands and Islands
Site code:	UK0030155
Area (ha):	705.91
Date designated:	17 March 2005

## Qualifying features

Qualifying feature	SCM assessed condition	SCM visit date	UK overall Conservation Status
Mixed woodland on base-rich soils associated with rocky slopes [H9180]*	Favourable Maintained	17 October 2000	Unfavourable-bad
Western acidic oak woodland [H91A0]	Favourable Declining	23 June 2008	Unfavourable-bad
Otter ( <i>Lutra lutra</i> ) [S1355]	Favourable Maintained	31 July 2012	Favourable

### 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

[Glen Creran Woods Site of Special Scientific Interest \(SSSI\)](#) and [Glen Etive and Glen Fyne Special Protection Area \(SPA\)](#). [Glasdrum Wood National Nature Reserve](#) also lies within the site.

## Key factors affecting the qualifying features

### 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.

Glen Creran Woods comprises large areas of remnant native broad-leaved woodland on the northern and southern slopes of Glen Creran. The site has some of the most extensive areas of native woodland in the Lorn and North Argyll area. The SAC encompasses an area of hanging ash woodland overlying calcareous rocks grading into sessile oak with birch, on more acidic soils, as height is gained. Alder occurs on some of the many flushed areas. The woodland extends from just above sea level to a height of over 330 metres; the site itself has an altitudinal range from just above sea level to over 500 metres.

Key management issues include grazing levels, problematic native and non-native species, air pollution and urban development.

#### 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.

At Glen Creran the qualifying woodland feature of upland oak woodland forms a significant component of this native woodland habitat mosaic, and is characterised by a predominance of oak and birch in the canopy, with varying amounts of holly, rowan and hazel as the main understorey species. During the last site condition monitoring assessment targets for local distinctiveness failed, with woodland glades found to have abundant regeneration within them. This can cause increased shading which can limit the floral diversity of the site and impact typical species of the habitat such as notable butterfly and lichen species. Due to this the site was assessed as favourable but declining.

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. Localised overgrazing has been noted at Glen Creran SAC. 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.

#### Otter

Otter require continued proximity to unpolluted open water either freshwater or coastal. There should be a plentiful food supply and features for providing shelter for both resting and breeding. They are wide ranging and normally occur at low densities.

Previous population declines in otters across Scotland were primarily due to pollution and persecution.

Further information about this sites [habitats](#) and [species](#) can be found on the JNCC website.

## 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. Conservation management for woodland should also have no impacts on the other feature of the site. The impact of any proposed management measure on all the qualifying features should first be considered as part of a Habitats Regulations Appraisal.

The site is exceptional for its rich butterfly assemblage, which includes at least three nationally-scarce species, and notable lichen interest. These species are considered typical species of the SAC woodland habitat and are also notified features of the SSSI. Management requirements for these species and the woodland interest however may not always align. Abundant regeneration within woodland glades can impact the butterfly and lichen interests and management would require careful consideration.

In the past, the requirements of the woodland, butterfly and lichen interests have been met at Glasdrum NNR by managing areas prioritised for each interest. Recent observations have shown that this spatially fixed approach may be preventing the underpinning woodland habitats from evolving. This is because the management for butterflies and lichens involves cutting young trees and scrub, which obviously inhibits natural regeneration in these areas of the reserve. Our monitoring shows that deer browsing is also limiting tree regeneration, especially of the more palatable species, so the regeneration that is occurring at Glasdrum is not diverse enough to sustain the reserve's full range of natural heritage interests in the long term. Ash, an important tree for several lichen species, seems to be particularly under-represented. Deer management at Glasdrum was introduced in 2018, to support deer management done in the other ownership units of Glen Creran SAC. A key conclusion we have reached therefore, is that we need to allow a more dynamic habitat system, with diverse tree regeneration, to establish itself at Glasdrum. Further discussions in this regard are therefore required.

## Conservation Objectives

### Overarching Conservation Objectives for all habitat features

<b>1. To ensure that the qualifying features of Glen Creran Woods SAC are in favourable condition and make an appropriate contribution to achieving favourable conservation status</b>
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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 Glen Creran Woods SAC is maintained by meeting objectives 2a, 2b and 2c for each qualifying feature**

The aim at this SAC is to maintain the features in a favourable condition as a contribution to their 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 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 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 habitats are 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 habitats’ 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.

### **Conservation Objectives 2a, 2b, and 2c for mixed woodland on base-rich soils associated with rocky slopes (also known as *Tilio-Acerion* forests of slopes, screes and ravines)**

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

The extent of the feature, taken from the Standard Data Form, has been estimated at 173.51ha. 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.

The 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.

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, such as from further agricultural reclamation, 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.

There does not appear to have been any loss of extent of the mixed woodland at Glen Creran SAC since designation.

## **2b. Maintain 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.

Some rhododendron seedlings and shrubs were noted in 2008 and further monitoring will look for spread of invasive species, which can compromise the critical characteristics of the habitat. An abundance of key tree species, particularly ash, hazel and wych elm, should be maintained and grazing levels should allow all species of trees, shrubs and ground flora to develop naturally and flower, fruit etc. Deer management is ongoing with monitoring informing changes in cull levels as appropriate.

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

The main NVC types conforming to Tilio-Acerion forests are the 'western' forms of W8 *Fraxinus excelsior* – *Acer campestre*-*Mercurialis perennis* woodland, and the equivalent north-western community W9 *Fraxinus excelsior* – *Sorbus aucuparia* – *Mercurialis perennis* woodland.

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

The flora associated with the habitat is linked to variations in moisture and shade, or 'disturbance communities' associated with scree and cliff-bases. A wide range of other basiphilous herbs and grasses may occur within these stands. Glen Creran woodland is considered as one of the richest areas of its kind in Britain.

The ground flora can be very varied, but the following elements are usually present: fern banks containing buckler-ferns *Dryopteris* species; 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*, and cleavers *Galium* species. A wide range of other basiphilous (preferring base-rich soil) herbs and grasses may occur within these stands.

The combination of oceanic climate and humid woodland environment provide ideal conditions for mosses and liverworts. Averis (2006) found a total of 219 species in Glen Creran Woods, including 10 nationally scarce species and 35 western oceanic species. It is believed to support around 300 species of lichens and over 200 species of bryophytes. Several notable bryophytes, in particular calcicoles associated with base-rich rock outcrops and Atlantic species are found at Glen Creran. The site is also of international importance for

its lichen flora.

The site is exceptional for its rich butterfly assemblage which includes at least three nationally-scarce species. The populations of two of these, chequered skipper and pearl-bordered fritillary, are amongst the most important in the Lorn and North Argyll area. The butterfly interests require areas of open ground sheltered by woodland. This provides the butterflies with warm areas for basking and access to food plants for larvae and nectaring sources for adults.

The wood has a typical mixed woodland breeding bird community, with summer visitors joining the resident species. The song thrush and spotted flycatcher are both UK BAP priority species. Mammals found at Glen Creran include pine marten, red squirrel and pipistrelle bat.

#### Tree Health implications

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 2a, 2b, and 2c for western acidic oakwoods (also known as old sessile oak woods with *Ilex* and *Blechnum* in the British Isles)**

#### **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 194.55ha. 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.

There does not appear to be any loss of extent of the oak woodland at Glen Creran Woods SAC since designation.

#### **2b. Maintain 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.
- 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*.
- Prevention of pathogen arrival, establishment and spread.

All of the targets relating to the above were met at Glen Creran Woods SAC during SCM in 2008. Deer management and *Rhododendron* removal is ongoing as issues arise: SNH (NatureScot) own Glasdrum NNR in the centre of the site, with Forestry and Land Scotland owning the second section, and a proactive land owner managing the third.

## **2c. Maintain 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, at Glen Creran particularly NVC types:

- W9 *Fraxinus excelsior* - *Sorbus aucuparia* - *Mercurialis perennis* woodland
- W11 *Quercus petraea* – *Betula pubescens* – *Oxalis acetosella* woodland
- W16b *Quercus* spp. – *Betula* species – *Deschampsia flexuosa* woodland, *Vaccinium myrtillus* – *Dryopteris dilatata* sub-community
- W17 *Quercus petraea* – *Betula pubescens* – *Dicranum majus* woodland

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 and hazel are also important components of the habitat.

The woodland flora has a rich variety of herbs, particularly on the lime-rich soils. Over a hundred species of woodland vascular (higher) plants have been recorded.

Western acidic oak woodland supports an important component of Britain's oceanic bryophyte flora and lichen mycota. The distribution and viability of these assemblages should be maintained with particular focus on nationally rare, scarce and/or threatened species and on assemblages that indicate a long period of ecological continuity.

The site supports at least 219 species of bryophyte, including 10 nationally-scarce species (*Bartramia hallerana*, *Cynodontium jenneri*, *Ulota calvescens*, *Sematophyllum micans*, *Anastrophyllum hellerianum*, *Jamesoniella autumnalis*, *Leptoscyphus cuneifolius*, *Lophozia longidens*, *Plagiochila heterophylla*, *Tritomaria exsecta*) and 35 western oceanic species.

The site is outstanding, on a national and international scale, for its exceptionally rich oceanic lichen assemblage which includes numerous species from the notable communities

*Lobarion pulmonariae*, *Graphidion scriptae* and *Parmelietum laevigatae*, including 4 globally vulnerable species, 19 globally near-threatened species, 10 nationally rare species and 66 nationally scarce species.

When monitored in 2008 the woodland features failed targets for local distinctiveness: maintenance of the diversity and extent of open semi-natural habitats and maintenance of suitable habitat for lichens, resulting in a favourable but declining assessment. Glades are an important component of woodland habitats that are vital for maintaining the diversity of these habitats. Abundant regeneration in parts of Glen Creran woodland is thought to have increased shading which can limit the floral diversity of the site and impact notable lichen species.

The site is exceptional for its rich butterfly assemblage which includes at least three nationally-scarce species. The populations of two of these, chequered skipper and pearl-bordered fritillary, are amongst the most important in the Lorn and North Argyll area. Open ground sheltered by woodland provides the butterflies with warm areas for basking and access to food plants for larvae and nectaring sources for adults.

The wood has a typical mixed woodland breeding bird community, with summer visitors joining the resident species. The song thrush and spotted flycatcher are both UK BAP priority species. Mammals found at Glen Creran include pine marten, red squirrel and pipistrelle bat.

Constant species are:-

<i>Q. petraea</i>	sessile oak
<i>B. pubescens</i>	downy birch
<i>Lonicera periclymenum</i>	common honeysuckle
<i>Pteridium aquilinum</i>	Bracken
<i>Rubus fruticosus</i> aggr.	Blackberry spp.
<i>Galium saxatile</i>	heath bedstraw
<i>Oxalis acetosella</i>	wood-sorrel
<i>Potentilla erecta</i>	common tormentil
<i>Viola riviniana</i>	dog-violet
<i>Holcus mollis</i>	creeping soft-grass
<i>Agrostis capillaris</i>	common bent
<i>Anthoxanthum odoratum</i>	sweet vernal grass
<i>Deschampsia flexuosa</i>	wavy hair-grass
<i>Rhytidiadelphus squarrosus</i>	springy turf-moss
<i>R. loreus</i>	little shaggy-moss
<i>Dicranum majus</i>	greater fork-moss
<i>Plagiothecium undulatum</i>	waved silk-moss
<i>Pleurozium schreberi</i>	red-stemmed feather-moss

## Conservation Objectives for Otter

**1. To ensure that the qualifying features of Glen Creran 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 Glen Creran Woods SAC is maintained by meeting objectives 2a, 2b and 2c for the qualifying feature**

The aim at this SAC is to maintain the species 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 species are exposed to a wide range of drivers of change. Some of these are natural (e.g. population fluctuations/ shifts or habitat changes resulting from natural processes) and are not a direct result of human influences. Such changes in the qualifying species’ distribution and use of 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 population of the species as a viable component of the site**

An estimate of the number of otters occupying the site is not available and therefore there is no numerical baseline that can be given for the site. This conservation objective is considered to be met if the conditions for the species’ long-term existence are in place.

This includes:

- avoiding effects that could lead to a permanent reduction in the otter population through mortality, injury, or impacts caused by disturbance or displacement. This includes for example the effects caused by development, river engineering, water pollution, roads without adequate crossing provision for otters or suitable culverts, or entanglement in fishing gear.
- maintaining the species’ ability to use all areas of importance within the site (to be considered under conservation objective 2b)
- maintaining access to, and availability of, undisturbed resting places
- maintaining access to, and availability of, supporting habitats and prey (to be considered under conservation objective 2c).

Otters are wide-ranging and highly mobile. The population at Glen Creran is reliant on

suitable habitat in the surrounding wider countryside and marine environment and is unlikely be viable (capable of functioning) in isolation. The home range of an otter will vary depending on their sex, habitat quality and food availability. It will also vary between freshwater and coastal environments. In coastal areas otter densities may be as high as 0.5 - 0.7 animals/km. At this SAC otter will predominantly feed in coastal waters that lie outwith the boundary of the site. When assessing the effects of any plan or project consideration should be given to whether impacts outwith the SAC could affect achievement of this conservation objective.

Otters are a European protected species (EPS) and it is an offence to deliberately or recklessly capture, injure, kill, harass or disturb them in certain circumstances, or to damage or destroy their breeding or resting places anywhere in Scotland unless a licence has been issued to do so. A licence can only be issued for particular purposes which the law allows. Further, there must be no satisfactory alternative and no detrimental impact on the contribution to the maintenance of otter at a favourable conservation status for a licence to be issued. This assessment considers impacts on the otter population at a local and regional level. The licensing requirement is in addition to considering whether a plan or project will result in any impacts (including incidental impacts) to the otter population within the SAC.

#### **2b. Maintain the distribution of the species throughout the site**

The distribution of otter within the SAC should be maintained. Distribution of otters within the site can be affected by disturbance originating both within and outwith the site. Plans and projects that cause displacement and barrier effects to the species can also affect species distribution. Examples include use of night-time floodlighting of watercourses, road and bridge construction works and general disturbance from human activity (and dogs) by watercourses especially at dusk/night-time.

SCM performed at Glen Creran SAC in 2012 monitored 2 resting sites, both of which were found to be used by otters. One of the resting sites was a large holt under a rocky outcrop with massive spraint piles. Spraints containing crab shells were found at 3 locations including a holt which may indicate young otters present. Cub prints were also seen at one site. Habitat for otters was found to be extensive and the only potential threat to otters on the site was through disturbance during forestry operations.

#### **2c. Maintain the habitats supporting the species within the site and availability of food**

Otters require suitable habitat for foraging, breeding and resting. In coastal areas their preferred habitat is rocky shore with abundant boulders, crevices and/or peat, or other cavity-forming features such as tree root systems to provide secure holt sites above high water. Dense scrub is also valuable for providing lie-ups and couches. These features should ideally be close to gently-shelving shallow inshore waters with good habitat for inshore fish species and crustaceans. Otters will primarily forage in adjacent coastal waters however will also feed on freshwater fish and amphibians within the SAC. Ample sources of freshwater nearby are essential to enable animals to remove salt from their fur.

Changes to water flow and water quality can adversely affect otter habitat and prey on which they depend. Otters' food supply is normally associated with good water quality and therefore the water quality standards set out under the Water Framework Directive (2000/60/EC) should be met. Several streams run through Glen Creran SAC, however these are below the size threshold for SEPA's freshwater classification system. However there are currently no concerns about water quality at this site.

## Conservation Measures

Glen Creran 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 mixed woodland on base-rich soils associated with rocky slopes and western acidic oak woods

Issue	Measure	Responsible party
Herbivore impacts	<p>Ensure that herbivore impacts are appropriate based on the FCS/SNH (NatureScot) Herbivore Impact Assessment Process.</p> <p>Cattle grazing has been introduced on the western part of the site to help tackle dense regeneration.</p> <p>Deer also influence the site with palatable species under represented. Management is ongoing with regular monitoring to set cull targets.</p> <p>Deer management of Glasdrum NNR was introduced in 2018, and is ongoing across the remainder of the SAC.</p>	Land managers, NatureScot, Forestry and Land Scotland Deer Management Groups
Habitat management	Part of the SAC overlaps the Glasdrum Woods National Nature Reserve (NNR). This area is managed in accordance with an approved NNR management plan. The plan sets out conservation measures to be carried out on the NNR.	NatureScot
Invasion by non-native species	Some scattered <i>Rhododendron ponticum</i> plants noted in 2008 – further monitoring can inform management as appropriate.	Land managers, NatureScot Forestry and Land Scotland
Avoidance of introduction of known pathogens	Discussions on options available to avoid any introduction of known disease organisms. Ash Die Back known to be in the locality.	Land manager, NatureScot Forestry and Land Scotland
Hydrology	Ensure natural hydrological processes are maintained where they support significant populations of typical wooded ravine bryophytes and lichens.	Landowner SEPA NatureScot
Trampling (visitors, stock & deer) and other mammalian plant damage	<p>Cattle at Creggan can cause light poaching; monitoring can adjust management to avoid negative impacts.</p> <p>Visitor management at the Glasdrum NNR section of the site reduces the risk of human impacts.</p>	Land manager Local authority NatureScot
Future threats	A coordinated resilience planning process should be developed to respond to anticipated	NatureScot Land managers

	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.	
Climate change	Discussions on options available and participation in available local, national and international initiatives	Land manager, Local authority, Scottish/UK government, NatureScot
Research and monitoring	To identify emerging impacts on the habitat and their causes, in order to understand the long term issues, identify refugia, review site-level resilience plans in the light of updated future threat projections and to inform future management of the habitat across Scotland.	NatureScot, Universities, land managers

### Current and recommended management for otters

Issue	Measure	Responsible party
Ongoing species protection	Otter are a European protected species and therefore the species protection provisions of the Habitats Regulations apply.	All

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Approved on 02 October 2020 by:

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