



Scottish Natural Heritage
Dualchas Nàdair na h-Alba

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KNAPDALE WOODS
Site of Special Scientific Interest

SITE MANAGEMENT STATEMENT

Site code: 8158

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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 Knapdale Woods SSSI	Condition of feature (date monitored)	Other relevant designations
Upland oak woodland	Unfavourable, recovering (June 2008)	SAC
Loch trophic range	Unfavourable, no change (June 2004)	SAC
Bryophyte assemblage	Favourable, maintained (October 2003)	
Lichen assemblage	Unfavourable, no change (May 2004)	
Dragonfly assemblage	Favourable, maintained (August 2008)	
Breeding bird assemblage	Favourable, maintained (July 2003)	

Features of overlapping Natura sites that are not notified as SSSI natural features	Condition of feature (date monitored)	Designation (SAC or SPA)
Marsh fritillary butterfly (<i>Euphydryas aurinia</i>)	Favourable, maintained (September 2006)	SAC
Otter (<i>Lutra lutra</i>)	Favourable, maintained (September 2003)	SAC

Description of the site

Knapdale Woods Special Site of Scientific Information (SSSI) comprises a contiguous group of 5 woodland areas and 7 lochs in the Knapdale Forrest area 6 km west of Lochgilphead. The site is notified for its oak woodland habitats, lichens, bryophytes, freshwater habitats, dragonflies and breeding woodland bird assemblages.

The landform of west Knapdale is unique, being deeply indented with sea lochs lying more or less parallel to each other in a north-eastern to south-western alignment. Consequently the physiography of this area is marked by a series of parallel ridges or 'knaps' separated by narrow glens or 'dales'. The ridges are steep sided. The effect of this formation provides sudden and striking changes to micro-climate, drainage and soil condition over short east-west distances.

Woodland

The site supports a nationally-important network of woodland compartments that are composed predominantly of sessile oak and downy birch that support rich communities of lower plants. Over half of the woodland is of ancient semi-natural origin with a history of coppicing. The lochs are fringed with pockets of alder and tussock sedge woodland. There are smaller areas of damp downy birch and purple moor-grass woodland in the hollows, damp alder and ash with yellow pimpernel woodland around the loch and stream edges, and also some areas of ash and rowan with dog's mercury woodland on some of the drier slopes. On steep rocky slopes at the Faery Isle there is a population of aspen. The nationally-scarce narrow-leaved hellborine has also been recorded on the site. The woodland is in unfavourable but recovering condition because of the high proportion of non-native trees and because of the lack of deadwood. Since the FC has felled many of the non-native conifers and beech will no longer be replanted, the woodland feature is likely to gain favourable condition in the future.

Loch Trophic Range

The seven lochs and lochans are oligotrophic or mesotrophic and are generally steep sided with a coarse substrate. Each of the lochs has a rich assemblage of pondweed species including the near threatened long-stalked pondweed and the nationally-scarce long-leaved pondweed.

Loch Coille-Bharr and Loch Barnluasgan are mesotrophic and lowland in type and more alkaline than most lochs in this region. The vegetation is sparse in this loch but there is a rich diversity of species including 33 aquatic plants and 7 species of pondweed including long-stalked pondweed and long-leaved pondweed. The non-native Canadian pondweed has established itself in Loch Coille-Bharr and is already known to be in Loch Barnluasgan, and so the condition of the loch trophic range is unfavourable with no change due to the proportion of non-natives.

Loch Linne and Loch Fidhle are oligotrophic. These two lochs support extensive colonies of white water-lily with yellow water-lily, the nationally-scarce least water-lily and both long-stalked pondweed and long-leaved pondweed. Loch nà Creige Mòire also has a large population of shoreweed, water lobelia and quillwort in addition to those species listed above.

Mosses and Liverworts

The larger woodland compartments support an extensive community of oceanic woodland mosses and liverworts (bryophytes) with an assemblage of Atlantic species with two nationally-scarce liverworts, deceptive featherwort *Adelanthus decipiens* and western featherwort *Plagiochila heterophylla*. The bryophyte and lichen assemblages are sheltered by the block scree, broken crags, woodland cover, and low ridges and are promoted by the high rainfall throughout the year. In the block scree is a widespread community of the slender mouse-tail moss *Isoetecium myosuroides* and white earwort *Diplophyllum albicans* community but more important is the extent of the western earwort *Scapania gracilis*, prickly featherwort *Plagiochila spinulosa* and Wilson's filmy-fern *Hymenophyllum wilsonii* community. Within this community are stands of western and deceptive featherwort and spotty featherwort *Plagiochila punctata* and, on the most humid and acidic rocks, greater whipwort *Bazzania trilobata*, rock fingerwort *Lepidozia cupressina* and Scott's fork-moss *Dicranum scottianum*. On the more basic rocks short-beaked wood-moss *Hylocomium brevirostre* is often overwhelmingly abundant,

sometimes with fox-tail feather-moss *Thamnobryum alopecurum* on steeper, more sheltered faces. Base loving (calcicole) bryophytes occurring here include bitter scalewort *Porella arboris-vitae*, rambling tail-moss *Anomodon viticulosus*, bird's-foot wing-moss *Pterogonium gracile*, beech feather-moss *Eurhynchium crassinervium* and there are relatively frequent stands of the Atlantic liverwort *Plagiochila bifaria* and MacKay's pouncewort *Marchesinia mackaii*.

On tree bases the bryophytes are usually similar to those on the rocks, with an abundance of slender mouse-tail moss *I. myosuroides* and frequent patches of western earwort *S. gracilis* and prickly featherwort *P. spinulosa* in the humid areas. In the more humid areas spotty featherwort *P. punctata* can be abundant, particularly on the older birches and alder. There is a more diverse flora on the ash, hazel and wych elm.

This community of more basic rocks is best developed on the Faery Isles but other limited areas occur at Strone and Barr Mor. Of interest are the stands of frizzled crisp-moss *Tortella tortuosa*, rough earwort *Scapania aspera*, long-shanked pincushion *Ptychomitrium polyphyllum*, the moss *Cinclidotus fontinaloides* and an array of moss species of the hair-pointed grimmia *Grimmia trichophylla* group.

The bryophyte assemblage is assessed in favourable and maintained condition.

Lichen Assemblage

Lichen assemblages of international and national importance occur within the wide range of habitats and topographical features which make up Knapdale Woods SSSI. In 2010, over 440 lichen taxa were recorded, with 10 nationally-rare species including *Bactrospora dryina* (Red Data Book (RDB) critically-endangered), and 17 species listed as RDB near-threatened. The presence of 40 lichenicolous fungi further emphasises the biodiversity importance of the site, these fungi being numerous only within old, long-established and species-rich lichen communities. There are 67 lichen taxa of international-responsibility, mostly indicative of the well-developed *Lobarion* community, which includes all four British species of the genus *Lobaria*, as well as four species of *Pseudocyphellaria*, including *P. lacerata* (RDB vulnerable) and *P. norvegica* (BAP species). The *Lobarion* community generally is well represented, and in healthy, viable populations. Around the Faery Isles and Port Lunna, this community is richly developed in characteristic habitat features for this part of Knapdale. These habitats are under dappled tree canopy on sheltered base-rich rocks above the coast in sheltered inlets. The more exposed rocky ridges with oak and birch as are found above Port Lunna, between Loch Barnluasgan and Loch Linne, and around Loch Coille-Bharr, support notable assemblages of the *Parmelietum laevigatae*. The sheltered, humid Atlantic hazelwoods of Barnluasgan are important for luxuriant *Lobarion* lichens, together with a nationally important smooth-bark community of the *Graphidion* on hazel, rowan and holly. Rocks and boulders within the SSSI are an integral part of the overall habitat, and lichens on mossy rocks contribute to the overall species diversity.

The lichen assemblage is assessed to be in unfavourable condition with no change. At Port Luna there is a predominance of dense single age oaks with little other tree species which limits the habitat for the lichen and blocks out the sun. Throughout much of the site there is an increase in trees, particularly sycamore, and other coarse vegetation such as honeysuckle that is shading out the lichen. This may be due to reduced grazing and browsing. It is recommended that there be a review of management. Pretty much all of the conifer clearance within the Knapdale Woods SSSI to date has been carried out either by harvester or mulcher machines. In these instances it is more difficult to address the problem of brash on top of coastal *Lobarion* communities. FC will likely use chainsaw operations to complete the felling of conifers from the coastal areas and in this situation there is an opportunity to keep brash free of *Lobarion* communities and bare rocks.

Dragonflies



The site supports a dragonfly assemblage of ten species: the nationally-scarce hairy dragonfly, highland darter, black darter, golden-ringed dragonfly, four-spotted chaser, large red damselfly, emerald damselfly, blue-tailed damselfly, common blue damselfly, and azure damselfly. The dragonfly assemblage is assessed to be in favourable maintained condition.

Breeding Birds

The site supports a good assemblage of woodland breeding bird species including; siskin, woodcock, tawny owl, common crossbill, redpoll as well as osprey. The breeding bird assemblage is assessed to be in favourable maintained condition.

There are also populations of pine marten, otter, badger, red squirrel, Daubenton's, natterer's and pipistrelle bats.

European beavers have been introduced into a number of lochs within the SSSI as part of a trial reintroduction managed by the Scottish Beaver Trial - a partnership between Scottish Wildlife Trust (SWT), the Royal Zoological Society of Scotland and Forestry Commission Scotland.

Rare lichen <i>Pseudocyphellaria norvegica</i>	Rare western featherwort <i>Plagiochila heterophylla</i>
	

Past and present management

In the 19th century the iron smelters at Furnace and Bonawe used wood and charcoal from the site in the smelters, and the remains of the charcoal platforms are visible on the site. Much of the wood was coppiced. There is evidence which shows a more intensive removal of woods from the southern end of the SSSI. The northern end had mixed usage with areas of pasture woodland where larger old specimen trees remained, and therefore protected the rare lichen, mosses and liverworts. Since the closure of the smelters in 1870s the woodlands and grassland have been grazed, and this continued until 1996. The Forestry Commission (FC) purchased the land in the 1930s from the Poltalloch Estate of Col. Malcolm. FC began planting conifers and beech in 1933 and continued until 1989. Conifer removal began when the value of the flora and fauna was recognized in the late 1980s.

More than half the land is used at present for commercial forestry with conifer plantations. The Forest Enterprise Design Plan is in the process of restoring much of the area back to native woodland.

All the lochs are used by anglers mostly infrequently, and they fish from the shore and by boat. The lochs are leased to two local angling associations and fish are stocked in some lochs. There are no water sports or other aquatic activities on any of the lochs.

The majority of adjacent land use is for forestry. There are some small farm holdings adjacent to the area where the main land use is sheep grazing.

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

We wish to work with the owners and occupiers 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 EU Habitats and Birds Directives oblige Government to avoid, in SACs and SPAs, the deterioration of natural habitats and the habitats of species, as well as disturbance of the species for which the areas have been designated, where such disturbance could be significant in relation to the objectives of these Directives. The objectives below have been assessed against these requirements. All authorities proposing to carry out or permit to be carried out operations likely to have a significant effect on the European interests of this SSSI must assess those operations against the relevant Natura conservation objectives (which are listed on our website through the SNHi – SiteLink facility).

1. To increase the extent of native oak woodland and create varied habitats.

The main factor influencing management is the continued removal of conifers. Regeneration of conifers will have to be controlled as will the possible invasion of rhododendron. The clearfelled sites will need to be left in a suitable condition for broadleaf regeneration. Regeneration by the adjacent established oak woodlands should be encouraged to give a more diversified stand structure that will ensure the sustainability of the woodlands and its associated flora and fauna. The dominant colonization by birch should be avoided and oak and hazel woodland with open glades should be promoted. This may require more complex conditions than are found in ungrazed conifer clear-fells, where birch is clearly heavily favoured. Deer control is another important factor.

2. To maintain the low to moderate nutrient quality in the lochs.

All the lochs within the SSSI are moderate to very nutrient poor. Unnatural nutrient enrichment of the SSSI lochs would be of concern as this may have an effect on the breeding abilities of dragonflies and on the habitat suitability for the pondweeds.

3. To improve the habitat for bryophytes and increase their numbers.

The programme of removal of conifers and eradication of rhododendron in the area should be continued. Leave brush away from the features.

4. To improve the habitats for lichens and increase their numbers.

In achieving the general aim of restoring clear-felled conifer plantations to broadleaved woodland, there is a danger that deer browsing levels will be reduced to a degree that coastal Lobarion communities will be threatened by woodland expansion and the spread of coarse vegetation. Deer browsing and cattle grazing are also very important to build and maintain a fully functional woodland ecology that will support the lichen rich old growth woodland and coastal rock Lobarion communities.

5. To maintain the wetland habitats that supports the diverse population of dragonflies.

Commercial Forestry surrounds the SSSI and the adjacent lochs. All forestry operations

including the use of chemicals and fertilisers should ensure that there is no run off into the water systems.

Between the burn and the lochan to the north of Loch Buic is a clear felled area. It would be advantageous if this was left unplanted, particularly as the burn once had Beautiful Demoiselle dragonfly and in the light of the beaver trial. Management should identify stretches which are no longer suitable because of excessive tree growth and where management to create areas of sunlight and shade would be beneficial.

The population of hairy dragonfly at Loch Losgunn may become isolated when trees mature; leaving a corridor of unplanted ground between it and Loch Buic, as has been created at Loch Creagmhor would be beneficial.

6. To increase the extent and diversity of habitat that supports the breeding bird assemblage.

The proposal to convert the land currently used for forestry production to native habitats has the potential to cause much disturbance to nesting birds. It is important that any land management practices and any land use changes are carefully planned to avoid disturbance to nesting locations. Due to the bird interest within the site some areas are sensitive to disturbance from forestry operations and so the careful timing of certain operations is required within the large blocks of commercial forestry.

Other factors affecting the natural features of the site

The effect of the trial re-introduction of European Beaver on the habitats and species within the SSSI are being monitored as part of an independent scientific monitoring programme co-ordinated by SNH.

Date last reviewed: 28 February 2011