

Black Wood of Rannoch Management Plan 2009 - 2019



Tay Forest District

Black Wood of Rannoch Management Plan 2009 – 2019

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1. Introduction

The Black Wood of Rannoch is one of only 35 surviving remnants of the native pinewoods of Scotland, as identified by Steven and Carlisle (1959). It falls into the South Central Group of native Scots pine woodlands and is the largest such wood in the Southern Highlands (Forestry Authority, 1994). It is isolated from other native pinewoods, the nearest being the Old Wood at Meggernie in Glen Lyon, which is some 10 miles to the south over the watershed.

2. Description

Location

The Black Wood (OS Grid Ref. NN 570 560) is situated on the southern shores of Loch Rannoch (see Appendix 1a Location plan) six miles to the west of Kinloch Rannoch. It lies within the larger forest area of South Rannoch Forest, which is part of the national forest estate managed by the Forestry Commission Scotland (FCS) and can be accessed from the C class public road, which runs along the loch shore. Appendix 1b (Strategic influences - an excerpt from South Rannoch Forest Plan) shows some of the surrounding designations, such as the Tay Special Areas of Conservation (SAC) and the Loch Rannoch and Glen Lyon National Scenic Area (NSA). Appendix 1c (Strategic Management Objectives - also from the South Rannoch Forest Plan) shows the relative management objectives for the Black Wood and surrounding South Rannoch forest.

Environmental Information: Physical

The forest has a northerly aspect and lies in a broad band along the loch shore rising gently from 205 m at the loch shore to just over 400 m at the top of Cnoc Eoghainn. The ground is undulating and comprises deposits of glacial drift. This drift contains mainly schistose and gneissose material with numerous granite erratics and overlies rocks of the Moine series. The predominant soils are podsol on the morainic knolls and slopes with poorly flushed peaty gleys in between. There are smaller and more fertile areas of brown earth on the slopes and flushes of surface water gleys. On the higher ground and in hollows there are areas of deep peat, some of which is unflushed and contains pool systems.

The rainfall is approximately 1,300 mm (53 inches) and the mean annual temperature is 7°C (44°F), with a January mean of 3°C (37°F) and a July mean of 13°C (55°F). In the British context the area would be described as cool and moist.

Environmental Information: Biological

Scots pine is the major tree species, although there is a considerable quantity of birch particularly at the eastern end of the wood. Towards the eastern end the birch is largely *Betula pendula* with *Betula pubescens* predominant at the western end. Alder, rowan, willow (*Salix aurita* and *Salix atrocinerea*) and a little aspen and juniper also occur. For Scots pine there is a varied range of both age class and stocking. Birch occurs mainly as even-aged stands, the age varying from 20 - 60+ years, with occasional trees scattered through the pine areas.

The ground vegetation of much of the Black Wood is western type *Calluna - Vaccinium*

community with abundant *Sphagnum nemoreum* - *Sphagnum quinquefarium* together with pleurocarpus mosses. The denser areas of Scots pine woodland have *Vaccinium vitis-idaea* - *Vaccinium myrtillus* co-dominant with *Deschampsia flexuosa* and hypnaceous mosses, whereas the birchwood is on richer soil with herbs such as *Primula vulgaris*, *Oxalis acetosella*, *Anemone nemorosa* and *Lysimachia nemorum* present in the field layer. The area adjacent to the public road also carries a richer vegetation. Open wet hollows have *Molinea caerulea* or wet heath species dominant. Rarer plants within the wood include *Listera cordata*, *Rubus saxatilis*, *Orthilia secunda*, *Corallorhiza trifida* and *Pyrola minor*.

Lichenologically the Black Wood is considered to be of major regional importance with a total of 153 epiphytic species identified so far, including a large number rarities and species confined to native pinewoods. The major habitats of lichenological importance are older trees (living and dead) of all species, especially close to burns. Mycologically the wood is of great importance, containing many rare and very interesting fungi characteristic of northern pine and birch woodlands.

Red and roe deer occur, (and the occasional Sika), together with otter, fox, pine marten, red squirrel, bats, wild cat, voles and moles. The bird fauna is typical of Highland Scots pine woodlands and includes species such as capercaillie, Scottish crossbill, siskin, goldcrest, redstart and four species of tit.

However, it is for its invertebrate fauna that the Black Wood is best known and is of outstanding importance for moths, beetles, flies, bugs, dragonflies and spiders. Further research may well reveal other species of importance. Each of these groups of invertebrates includes many different species with a large number of rarities.

The habitats of entomological importance include both trees (living and dead) and ground flora. The main tree species of interest are Scots pine, downy birch, willows, juniper and aspen although there is very little of the last two species. There are also areas of ground vegetation (open sheltered sunny clearings of mixed *Vaccinium* under scattered Scots pine) of importance for some insects (eg moths, dragonflies and damselflies).

Environmental Information: Cultural

The Black Wood belonged to the Robertsons for many centuries, the first chief being a follower of Robert the Bruce. From the 14th century, and certainly from the 16th century, there has been exploitation of the resources of the Forest. Early fellings provided timber for local needs, which included charcoal for use in iron smelting, stocks to make into splinters for illumination of dwellings and building materials. Early in the 19th Century an ambitious project to send the timber to more distant markets involved the construction of canals through the wood for its extraction. It was subsequently rafted down the Tummel and Tay to Perth. The venture was not a success but the canals are still visible.

There were intervening periods of inaction and occasional bouts of active forest management e.g. the period of management as one of the Forfeited Estates after 1745. In historical times the forest would always have been subject to grazing which intensified in the Victorian era when the area was managed as part of a sporting estate, primarily for red deer.

In more recent times the wood was spared during the 1914-18 War, being scheduled for felling in 1919. It yielded about 350 trees per annum to the estate sawmill at Dall in the inter-war years. During the Second World War it was subjected to selective felling by the Canadian Forestry Corps when some 8000 trees, with an estimated volume of 8460 cubic metres, were removed.

The core area of the Black Wood of Rannoch was included in an acquisition by the Forestry Commission from the Wentworth family in 1947. Its importance as a historic and scientific site was appreciated and no work other than some hand drainage and deer control was carried out in the first eight years. A series of eight vegetation plots (each 2 acres) was established and surveyed by J M B Brown, the Forestry Commission ecologist, in 1948.

It had been hoped that the policy of 'laissez faire', other than deer control, would allow the Black Wood to regenerate naturally. However, by 1955 there was little evidence of seedling native trees. In 1956 the core area of 271 ha was recognised as being 'relict Black Wood', with the Forestry Commission Research Division having responsibilities for investigation into Scots pine regeneration in the areas with the most complete tree cover. A limited amount of drain maintenance, group felling and restocking with Scots pine of Rannoch origin was undertaken between 1956 and 1974.

Between 1947 and 1975, but mainly during 1956 and 1957, the Forestry Commission felled about 5050 cubic metres (from 5000 trees) to promote regeneration and clear up dead, dying and windblown trees. However, no felling of pine of Rannoch origin has taken place since 1975.

The further acquisition in 1958 by the Forestry Commission of the remainder of the Dall Estate included the more scattered remnants of the Black Wood lying to the west of the original area.

Between 1961 and 1972 plantings using standard forest techniques took place through the stands outwith the "Relict Black Wood", between the scattered older pine groups and on the open ground on the edge of the wood. The drier knolls were planted with Rannoch Scots pine, although at higher elevations lodgepole pine of coastal origin was used with spruces in the flushes and small areas of western hemlock. Phosphate was probably applied by hand at planting, and the larger areas have had two subsequent aerial application of nitrogen or phosphate and potassium fertiliser at standard rates. Spruce areas subject to *Calluna* invasion have been given hand applications of 2,4-D. As far as is known no fertiliser or herbicide applications were carried out within the principal pine area.

The 1986 -1995 Black Wood of Rannoch Management Plan divided the wood into 3 management zones:

Conservation Zone (386 ha): to allow the relatively undisturbed development of the native pinewood ecosystem.

Restoration Zone (245 ha): to secure the restoration of all elements of the native pinewood ecosystem including promotion of natural regeneration, if required.

Extension Zone (281 ha): to extend pinewoods of native origin onto contiguous areas.

Since 1986, many of the smaller spruce and lodgepole pine have been felled in the Restoration and Extension zones and left in situ. This was a pragmatic decision based on the cost of removal of the felled trees being estimated at that time as £3000/ha as against felling and leaving them in situ at a cost of £300/ha. The ground flora in the felled area was already largely shaded out and any extraction process of the trees was also likely to damage existing ground flora in the surrounding area. This decision was taken in recognition of the value of the habitat outwith the "Relict Black Wood" and the prescriptions laid down in the 1985 Management Plan. The planted Rannoch pine has been left as they form a new age class of stands on the margins of the core area of woodland.

The more mature and accessible stands of spruce and lodgepole pine were left to be worked conventionally. Much of this has now been completed. Most of the more inaccessible mature spruce and lodgepole pine, where conventional harvesting was not an economic option and extraction of the trees would have caused unacceptable damage to ground flora were killed by herbicide injection with glyphosate. This provides another source of deadwood while allowing more light to penetrate and encourage a recovery of the ground flora compared to conventional felling and piling of the fallen material.

3. Status

Statutory Designation

In 1955 the Nature Conservancy included the Black Wood within a larger area of 2369 ha which it notified as a SSSI. The Black Wood qualifies as a SSSI largely on the basis of size and rarity, the latter criterion referring to the rarity of the Caledonian Scots pine ecosystem as well as the rarity of the lichen and insect populations. The wood is also important as a representative example of the Central Group of pinewoods and, although much exploited in the past, is a relatively natural example of such an ecosystem.

The SSSI was re-notified in 1972 and, in 1977, it was listed as a Grade 1 Site in the Nature Conservation Review. Under the terms of Section 28 of the Wildlife and Countryside Act 1981, the Nature Conservancy Council formally re-notified the Black Wood of Rannoch as a SSSI in December 1985 and this was confirmed in June 1986. The SSSI was reviewed again as a result of the Nature Conservation (Scotland) Act 2004, (NCA) in October 2007.

The site description that accompanied the most recent review noted:

"The Black Wood is the most extensive area of relict Caledonian pine forest in Perthshire and an example of the genetically distinct Central group of native pinewoods. It supports a varied range of highland woodland, upland and open water breeding bird species, including several uncommon species. The margins of open water and the shelter of the extensive woodlands provide a variety of conditions which are of value to dragonflies for feeding and breeding. These include an number of rarer species found only in northern Britain, for example the Northern Emerald Somatochlora arctica and the Azure Hawker Aeschna caerulea. Ancient pine and birch trees with dead wood of varying ages, some standing, some fallen, provide niches for a wide selection of other invertebrates: moths, beetles, spiders and flies. This site has the largest number of very rare insects of any Scottish site outwith Speyside and is the prime example of the outstanding insect fauna of the Tummel-Garry valley system.

The Black Wood supports important communities of lichens and fungi species characteristic of old pinewoods, for example the nationally rare fungus Scarlet Splash Cytidia salicina. The nature of the site with the distinct pine and birch dominated areas has produced a quality of lichen flora in the pinewoods close to that of the best in Scotland."

The identification of important features is listed in Table 1.

The Operations Requiring Consent are listed in Appendix II.

The Black Wood is also an important landscape feature within the Rannoch and Glen Lyon National Scenic Area.

The River Tay Special Area of Conservation (SAC) was designated 20/02/2005, primarily for the Atlantic Salmon. This includes Loch Rannoch shore boundary to the Black Wood (see Appendix 1a).

The Black Wood of Rannoch is now a designated SAC under the EC Habitats Directive (SAC EU code UK0012758). The Black Wood has been selected as a SAC because it comprises Caledonian Forest, a habitat endangered on a European basis. This habitat "supports a ground layer of heath species, mosses and liverworts and often contains a range of distinctive lichens, flowering plants, invertebrates and bird communities".

The Conservation Objectives for Black Wood of Rannoch Special Area of Conservation are:

*"To avoid deterioration of the qualifying habitat (listed below) thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying features; and
To ensure for the qualifying habitat that the following are maintained in the long term:*

1. *Extent of the habitat on site*
2. *Distribution of the habitat within site*
3. *Structure and function of the habitat*
4. *Processes supporting the habitat*
5. *Distribution of typical species of the habitat*
6. *Viability of typical species as components of the habitat*
7. *No significant disturbance of typical species of the habitat"*

Table 1 - Identification

| FEATURE | STATUS | | |
|-----------------------------|---|---------|-------|
| | NATIONAL | RARE | LOCAL |
| Geology | | | |
| Geo-morphology | | | |
| Habitats | Caledonian Scots pine ecosystem W18b, W17b, W18d | | |
| Communities and Populations | | | |
| Lower Plants | +(1420)* | | |
| Higher Plants | | +(100)* | |
| Invertebrates | +(3250)* | | |
| Herptiles | | | + |
| Birds | | + | |
| Mammals | | + | |
| | | | |

| | | | |
|--------------|--|--|--|
| Species | | | |
| Fungi | | | + |
| Lower Plant | 8 species of Lichens** (4 European threatened) (4 nationally rare) | 19 species of Lichens** (19 nationally scarce) | 7 species of moss** (all woodland indicators) 3 species of liverworts** (all woodland indicators) |
| Higher Plant | | <i>Corallorhiza trifida</i> (Nationally scarce) | <i>Orthilia secunda</i> |
| Invertebrate | 7 species** (all Red Data Book) | 27 species** (all Red Data Book) | 65 species** |
| Herptiles | | | |
| Birds | | Scottish crossbill | Buzzard Siskin Capercaillie |
| Mammals | | Pine marten Red squirrel Pipistrelle bat Daubenton's bat Wildcat | Otter |
| Landscape | National Scenic Area | | |
| Archaeology | | | 19th century extraction canals |

* For calculations of score, see Appendix VIII.

** For detailed lists of species, see Appendix VIII.

Other Designations

The re-notification of the SSSI in 1972 heralded considerable discussion between the Forestry Commission and the Nature Conservancy Council. This resulted in the Black Wood being designated as a Forest Nature Reserve in 1975 with a total area of 851 ha and the preparation of a 10 year Management Plan. This was a **three-fold increase on the area regarded as "Relict Black Wood" at the time of acquisition.**

Following confirmation of SSSI notification in 1986, it was agreed to increase the size of the Forest Nature Reserve to 910 ha by including the compartments of the Lower Dall Burn eastwards to the forest road, and the lochside strip between the public road and Loch Rannoch. A further 10 year Management Plan was agreed subsequently to cover the period 1986 to 1995.

In 1993, the Forest Nature Reserve was re-designated as a Caledonian Forest Reserve as part of a Forest Enterprise (the management arm of the Forestry Commission) initiative to highlight and promote the remnants of Caledonian Forest under its management (Forest Enterprise, 1992, 1993). This gave added impetus to the ongoing programme of removal of introduced species and to the preparation of another 10 year Management Plan.

The latest extract from the Forest District database (Table 2) highlights the current rough breakdown of the Caledonian Forest Reserve:

538ha total Scots pine

| Table 2 | Ha | % (2009) | % (1995) |
|------------------------|------------|-------------|-------------|
| Scots pine (pre 1947) | 281 | 31% | 42% |
| Scots pine (post 1947) | 257 | 28% | 37% |
| Birch | 85 | 9% | 9% |
| Sitka spruce | 32 | 3% | 8% |
| Lodgepole pine | 16 | 2% | 2% |
| Other conifer | 2 | 0% | 1% |
| Bare* | 244 | 27% | 1% |
| Total | 918 | 100% | 100% |

*Areas such as power line and old croft. Areas cleared of Sitka spruce have been incorporated as integral open space within Scots pine stands.

The figures from the 1995 database look very different from the 2009 figures, with a large increase in open space and decrease in Scots pine. This is due to the availability of good quality aerial photography, facilitating better plotting of the actual open space, which is defined as having less than 20% tree canopy cover. The decrease in Sitka spruce reflects the clearance of non natives.

The area has increased by 6 ha to 918ha since 1995, because the SAC/SSSI now includes an area of birch, lodgepole pine and spruce adjacent to the new native pinewood scheme on the south west boundary of South Rannoch forest.

4. Management

Management Objectives

The primary objective will be to maintain and enhance the historic, landscape and Scientific interest of the Black Wood as a semi-natural Caledonian pinewood with its associated fauna and flora, while perpetuating the genetic purity of the local Rannoch pine.

There are also a number of **supporting objectives**:

- At this stage it is **not thought appropriate to regard timber production as a priority** within the Caledonian Forest Reserve, other than that produced as a by-product of removal of introduced species. The main efforts will be directed towards maintaining and enhancing the pinewood ecosystem and creating the conditions for the natural regeneration of a new generation of native trees.
- The Black Wood **will also be used for study and research**, especially studies on the development of the pinewood ecosystem. Long-term monitoring will be particularly valuable to provide more objective data for the preparation of future Management Plans.
- As part of an **open access policy, the public will be welcome** to use the tracks within the Reserve on an informal basis, providing this **is compatible with the other objectives**.

Long-term Management Aim

The long-term objective over the next 100 years would be to have a semi-natural pinewood ecosystem flourishing across the whole of the Caledonian Forest Reserve. Within the Reserve there are likely to be **two broad zones**. The **core zone** would be subject to minimal management intervention, apart from selective deer control and long-term monitoring. This would provide an invaluable baseline for comparison with other pinewoods and management regimes. The remaining area still has some

restoration work required such as small-scale felling of exotic trees to create space for future regeneration.

Management Zones **TOTAL 718 HA**

To assist management decisions and priorities and take account of the restoration work to date, the Reserve will now be managed as two zones rather than the three established in the 1986-95 Management Plan (see Appendix III). This is in line with the previously stated long-term management. These zones are more fully described below:

Conservation Zone (649 ha)

To allow the relatively undisturbed development of the native pinewood ecosystem. Other than ongoing deer management, maintenance of the current access tracks and removal of new non-native regeneration, no other management intervention is foreseen.

Restoration Zone (269 ha)

To secure the restoration of all elements of the native pinewood ecosystem including promotion of natural regeneration, if required. This does include more active intervention to remove the remaining stands of Sitka spruce and lodgepole pine and any subsequent non-native regeneration

Although the old Extension zone from the last Management Plan has now been incorporated into the Restoration zone, the South Rannoch forest plan proposes to extend the native pinewood / open heath habitat. This will provide habitat links from the designated Black Wood of Rannoch through to the new native pinewood (planted under the Woodland Grant scheme) on the southern boundary of South Rannoch forest. This is shown as Zone 2 in Appendix Ic (Location: Strategic Management Objectives - Excerpt from South Rannoch FP).

Management Policies

The following policies will apply for the period of this plan. The work programme as agreed between FCS and Scottish Natural Heritage (SNH) is shown in Appendix VI. **Any additional work will be agreed with SNH prior to commencement.**

Tree Regeneration

There will be a **general presumption in favour of natural regeneration in all zones** unless the need for other specified intervention is identified and agreed by FCS/SNH following survey and monitoring. If planting was deemed to be necessary in the Restoration Zone then only trees of local origin would be used.

Wildlife Management

Deer populations will be managed to ensure that they are in balance with the habitat and enabling natural regeneration to take place. At this stage, no new deer fences are planned, but the boundary fences around South Rannoch Forest will be maintained. Access tracks will be maintained for recovery of carcasses.

There have been two population assessments carried out by Strath Caulaidh Ltd. in 2002 and 2008. The intention is to repeat this every five years. The results estimated a roe density of 3.2 per km² in 2002 dropping to 3.0 per km² in 2008 and a red deer density 13.5 per km² in 2002 dropping to 7.5 in 2008.

However these figures apply to the whole of the South Rannoch forest. Although statistically suspect, due to the reduced sample size, the dung count transects within the Reserve indicate similar levels of roe deer to the forest average of 3.0 per km², but a red deer density of about twice the forest average

at around 15 per km².

Other potential pests (rabbits, hares, foxes, crows and mink) will be controlled if there is a perceived threat, or severe damage, to the pinewood ecosystem or neighbouring interests.

Fire Control

Although fire can be a natural process, the isolation of the Black Wood from other areas of native pinewood means that any fire outbreak will be brought under control as quickly as possible. This will require the use of helicopters and foam application in any significant fires. Ground teams with beaters and water pumps will also be used.

Access tracks will be swiped periodically to maintain their value as internal fire traces (see Appendix IV) and liaison will be required to ensure rare plants are identified and avoided.

Seed Collection

Seed collection will be carried out when necessary for utilisation of Rannoch origin pine elsewhere in the South Central zone. The maximum quantity to be collected will be 50 hectolitres of cones. Larger quantities will be collected only after agreement between FCS and SNH.

Tree Felling

Remaining non-native trees will continue to be removed concentrating in the Restoration Zone, which should be cleared by the end of the plan period (see Appendix VII). A combination of felling and leaving in situ, felling and removal of timber and herbicide injection will be used.

Any naturally regenerated seedlings of introduced tree species will be removed from all zones.

Any trees presenting a danger to the public, traffic or electricity wayleaves will be felled or limbed to render them safe. This will also apply to necessary maintenance operations on key access routes.

Windblown native trees will normally be left to decay in situ in the Conservation and Restoration Zones. They will only be removed or moved when they block an access route.

Monitoring

Long-term monitoring of the current 'permanent' study sites (see Table 3 and Appendix V) will be carried out to record the changing structure of the Black Wood through time. Eventually this data will provide information against which management objectives and prescriptions can be measured. The existing monitoring schemes will be reviewed at the revision of each Management Plan to ensure their objectives are still valid.

| Table 3 | | | | | | |
|---|-------------|--------------------|---|--|-------------------------|------------------------|
| Summary & History of the Plots, Trials and Surveys in the Black Wood | | | | | | |
| Name | Type | Established | Monitored | Current Position | Monitoring cycle | Next monitoring |
| Brown Plots | 7 plots | 1948 | 1948, 1956, 1984, 1993, 2005 | 3 plots lost in the early stages, 4 still intact | 10 years +/- 2 | 2015 |
| Experiment 49/1 | 2 plots | 1949 | 1961(P), 1978(P), 1892(P), 1996(P), 2008(P) | 1 plot intact (within Brown plot 5) deer fences since 1949, other plot abandoned | 10 years +/- 2 | 2018 |
| ITE enclosures | 3 plots | 1976 | 1976, 1977, 1978, 1979, | All 3 plots still intact, | 20 years +/- 2 | 2013 |

| | | | | | | |
|-------------------------|----------------------|------|--|---|--|---------------|
| | | | 1980, 1981, 1993 | together with deer fences, not roe deer proof | | |
| JCB scarification trial | 19 plots | 1982 | 1982, 1984, 1985, 1986, 1987, 1989, 1996(P), 2008(P) | Fences have been removed and one plot retained roe deer proof | 10 years +/- 2 (photo monitoring) | 2018 |
| Regeneration survey | 10+2 plots | 1983 | 1983 | End posts of main transects still other, other 2 lost | Irregular only if Backmeroff transects do not give the required data | To be decided |
| Swipe trial | 1 plot | 1983 | 1984(P) | Was divided into fenced and unfenced sections, but discontinued after fence removal | N/A | N/A |
| Scarification trial | 9 plots (+ controls) | 1984 | 1984(P) | Was large deer fenced plot 15 ha. Dissected by transects 4,5 & 6 of the Regeneration survey discontinued after fence removal. | N/A | N/A |
| Fire area | 1 Plot | 1984 | 1984(P), 1996(P), 2008(P) | Divided into fenced and unfenced sections, red deer fence intact | 10 years +/- 2 (photo monitoring) | 2018 |
| Backmeroff transects | 3 transects | 1985 | 1985, 1995, 2005 | Utilises transects 3, 7 & 10 of the Regeneration survey. | 10 years +/- 2 | 2015 |
| Watson transects | 2 transects | 1995 | 1995, 2005 | New transects in the west of the Black Wood though felled Sitka spruce | 10 years +/- 2 | 2015 |

In 1995 and in 2005 the three Backmeroff transects were resurveyed giving 20 years analysis of recruitment and mortality. In 1995 two new transects, called the Watson transects (after Gordon Watson the forester at the time) were set up through in the west end of the Black Wood. These new transects ran through some of the areas where the smaller spruce and lodgepole pine had been felled and left. The Watson transects were also resurveyed in 2005.

The monitoring in the Backmeroff transects has shown a slowing down in recruitment of live trees over the 20 years with 51 Scots pine per ha recruited over the 1985 to 1995 period and only 18 over

the 1995 to 2005 period. This is quite logical as more seedlings and saplings grow into trees there is less room for new regeneration. The average recruitment over the 20 year period is 3.45 SP per year, but 5.1 per year over the first decade and 1.8 over the next. Regeneration of birch, rowan and willow in the transects has declined to a negative recruitment.

Also in 2005 the 4 remaining Brown plots were resurveyed. These were originally established between 1948 and 1956 and were resurveyed in 1984 (by Peterken and Stace) and in 1994 and 2005 by Forest Research.

In 1996 fixed point photography monitoring was also established at 4 points:

1. Experiment 49/1 in Brown plot 5;
2. JCB Scarification site;
3. Fire area;
4. Swipe trial.

The Swipe trial deer fence was removed in 2001 to reduce the hazard to capercaillie and because there was no significant difference to the ground vegetation inside or outside the fence. When the photo monitoring was due to be repeated in 2008, it was impossible to distinguish the Swipe trial area from the surrounding forest and so it was not repeated.

SNH also carry out periodic Condition monitoring on a 5-6 year cycle. The results of which are in the table below:

| Interest feature | Date completed | Condition assessment | Comments |
|---|----------------|-----------------------|---|
| Woodland | 13/08/1999 | Maintained Favourable | |
| Non-vascular plants Lichen assemblage | 13/09/2005 | Maintained Favourable | |
| Breeding birds assemblage | 16/09/2002 | Favourable | |
| Non-vascular plants Fungi assemblage | 20/12/2004 | Maintained Favourable | |
| Insect assemblage Dragonflies | 10/02/2005 | Maintained Favourable | Some concern that the forest drains may be detrimental to natural bog pool system |
| Other invertebrates Diptera assemblage | 03/08/2005 | Maintained Favourable | |
| Insect assemblage Spiders | 30/11/2005 | Maintained Favourable | Excellent condition |
| Insect assemblage Beetles | 30/11/2005 | Maintained Favourable | Excellent condition |
| Insect assemblage Moths | 07/02/2006 | Maintained Favourable | |

New trials, experiments or monitoring schemes may be established when all current studies are adequately resourced and maintained. Encouragement will be given to outside parties who are able to contribute to the existing monitoring structure or are able to carry out specialist work, such as tree-age, lichenological or entomological surveys.

Recreation and Interpretation

There will be no formal recreational developments in the Black Wood but the public will have open non-motorised access.

Guided tours led by FCS staff will be provided on demand.

The threshold Reserve sign will be maintained.

Some low-key interpretation has been introduced, telling the story of the canals built in the 1800's to float the timber down the Tay (see adjacent image).



Work Prescriptions and Programme

The detailed prescriptions and programme derived from these objectives and policies are presented in Appendix VI. Over the period of the previous plan (since 1995) within the Restoration zone about 40 ha of Sitka and Norway spruce has been removed. This has primarily been through conventional harvesting and in the more inaccessible areas, herbicide injection to produce standing deadwood. The smaller unmarketable Sitka spruce was cut in the years preceding 1995, but there has also been a clearance of new regrowth or regeneration in 2006 and this will be repeated approximately every 10 years. The latest forestry guidance and best practice with regard to water, conservation and protection of European Protected Species will be adhered to for all operations.

Consents Procedure

On agreement of the Management Plan a universal consent will be issued by SNH referring to work proposed in the Management Plan and the list of Operations Requiring Consent. Any "one-off" operations would be covered by a separate letter of agreement. If certain issues were to become a regular feature then the Management Plan would need to be altered accordingly. Samples or specimens will only be collected after agreement by FCS/SNH.

Records

It is imperative that the records of the Black Wood are maintained, that this plan is supplemented by a DUE 2014 mid plan review and supported by well documented live and archive files. The mid term review will be a summary of management issues, the work programme, visitors and reports or publications. The details will be held in the supporting files, with copies of the key information held at Tay Forest District, NRS and SE region offices (SNH). This duplication will ensure that the records have some chance of surviving the ravages of time.

BLACK WOOD OF RANNOCH BIBLIOGRAPHY

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