

DEVELOPING THE SCOTS PINE RESOURCE



Scots Pine Forest Management Case Study 1: Rothiemurchus Estate, Scotland

Introduction

Rothiemurchus Estate is located in Inverness-shire, Scotland, within the **Cairngorms National Park** (Figure 1). The property extends to some 10,000 hectares, of which the forest occupies an area exceeding 3,400 ha.



Figure 1: View across Rothiemurchus Forest

Forest management at Rothiemurchus is influenced by a number of factors, not least the extensive areas covered by **statutory designations** for conservation interest and the high level of public access for formal and informal recreation. The overall objective of forest management at Rothiemurchus is to fully integrate woodland and habitat management through delivery of the Local Biodiversity Action Plan.

Within the context of the “**Developing the Scots Pine Resource**” project, Rothiemurchus represents an example of forest management where timber production is secondary to biodiversity and recreation objectives. That is, forest management at Rothiemurchus must meet a wider range of objectives, including the provision of significant public benefits and safeguarding the public interest, than have been expected of most other privately-owned forests. This dictates that the estate does not function in a purely market-driven economy. In this case study we aim to highlight aspects of management that seek to integrate the production of quality timber with other key objectives.

History of Forest Management at Rothiemurchus

Rothiemurchus Estate has been owned by the Grant family since the 16th Century and during the intervening period the woodlands have had a varied history of management. The area has long been heavily wooded and the oldest continuous records, dating back to the mid 17th Century, suggest that felling for timber production between 1650 and 1800 took place to supply both local needs and markets further south. A second identifiable period of felling commenced early in 19th Century, when felled timber was floated down to the River Spey and onwards to markets in the north east. This felling was characterised by pulses of heavy production by the estate, nearly reaching clearfell proportions at least once. From 1840 the first attempts to practise woodland management were initiated. The woodlands were divided into systematic blocks, and felling concentrated therein. In the late 1800s commercial planting commenced in the low-lying areas. This period also saw control of livestock in the woods, and the forest regenerated from the large coarse seed trees which were left (Figure 2). In the 20th Century, following felling and food shortages during the two world wars, the emphasis was on sheep grazing before shifting towards natural regeneration of open ground and conservation.



Figure 2: Examples of the heavily branched types of trees from which much of the forest regenerated

Current Forest Management Objectives

The forest management objectives for Rothiemurchus, which are detailed in the estate's Forest Plan, include:

- **Access/recreation/social:**
 - *Promote sustainable access;*
 - *Promote knowledge, understanding and enjoyment of visitors;*
 - *Protect and restore paths;*
 - *Maintain and enhance the character and quality of the landscape; and*
 - *Enhance public benefits and woodlands' contribution to local rural development.*

- **Biodiversity/environment:**
 - *Practise sustainable forest management according to **Natura 2000** principles and enhance the Forest Habitat Network;*
 - *Restore woodland floodplain and riparian ecology, implement flood control and river bank stabilization measures;*
 - *Increase woodland structural and species diversity, including development of sub-montane scrub at natural upper treeline;*
 - *Maintain deer populations and species balance at level commensurate with achieving natural regeneration; and*
 - *Increase carbon sequestration through sustainable forest management.*

- **Timber production/economic value:**
 - *Enhance the value of timber products and develop the non-timber benefits of woodlands;*
 - *Promote woodland expansion and regeneration;*
 - *Identify and maintain important woodlands for stock and crop shelter; and*
 - *Enhance wildlife and stalking value.*

Silviculture and timber production

The area of woodland at Rothiemurchus exceeds 3400 Ha, with the majority classified as Ancient Semi-Natural Woodland, predominantly pinewoods. The Caledonian pinewoods of the Cairngorms are greater in total area and individual size than anywhere else in Scotland, representing part of the most extensive area of boreal forest in the UK. There are about 600 Ha of plantation, composed of Scots pine, lodgepole pine, Sitka spruce & Norway spruce, hybrid larch, Douglas fir, noble fir & grand fir.

The area of woodland is increasing once again at Rothiemurchus, as natural regeneration becomes successfully re-established at the woodland edge. Lower Impact Silvicultural Systems are being used to retain woodland cover & promote regeneration, with an aim of enhancing and maintaining species, structural and age class diversity. Thinning of Scots pine is carried out across the diameter range, with efforts made to retain genetic diversity on the designated sites by selectively thinning from all phenotypes, as opposed to conventional thinning which preferentially selects the best specimens. A final

seedling felling, if planned, takes place at an age exceeding 100 years and often up to 150 years (timed if possible to coincide with good seed years), taking stocking down to 80 – 140 trees/ha. Different ground preparation approaches will be used according to site conditions and evidence of advance regeneration. Controlled grazing of pigs or cattle is expected to be the preferred means of ground preparation, but mechanised scarifying will be used on suitable sites where natural regeneration is less successful, and controlled burning may be employed on open areas at the edge of the forest.

The intervention effort applied to achieve natural regeneration depends on existing stand characteristics and management objectives. In areas of the forest where timber production has a higher priority, a target stocking density of a minimum of 3000 stems per hectare is applied to promote production of high quality timber, and ground preparation is used to achieve this. In areas of extended old growth, where structural, age class and species diversity is a key priority, lower and variable stocking densities are acceptable.

Annual timber production at Rothiemurchus is about 3300 tonnes per annum (Figure 3), of which around 55% is from thinning and 45% from felling. Roundwood is generally processed within 50 miles of Rothiemurchus, with chipwood going to the Norbord OSB plant at Dalcross near Inverness and logs converted in local sawmills mainly for fencing or pallet manufacture. Some of the more specialised local uses for larger diameter pine logs have included:

- *sleepers;*
- *50 tonnes of pine logs sold to Glenfeshie Estate and milled for reconstructing the old bridge across the River Feshie at Carnachuin (some of these were kept as 24' lengths);*
- *two large pines were carved into totem poles for the Outsider Festival in 2007;*
- *two young pines were selected as cabers for use in mini Highland games locally.*



Figure 3:
Harvesting Scots pine
at Rothiemurchus

Biodiversity and recreation

The 56,000 ha of statutory designations that apply to Rothiemurchus recognise the richness and diversity of the Estate’s flora and fauna, much of which is associated with the native pinewoods. Sites of Special Scientific Interest have been notified for the breeding populations of birds (capercaillie, crested tit, Scottish crossbill and osprey), for assemblages of invertebrates, lichen, fungi and flowering plants and for geological landforms. At a European level Rothiemurchus is part of the Cairngorms Special Protection Area and the Cairngorms Special Area of Conservation, designated in recognition of the importance within Europe of the habitats and species in the area. Management of Rothiemurchus Forest is strongly influenced by the need to meet the conditions of these designations, which also present an opportunity for external funding for in support of work to promote biodiversity within the Estate. In addition, the habitats, species and landscape that are recognised by the statutory designations are also key to attracting visitors to the area and thereby adding to the viability of the local economy.

Recreation at Rothiemurchus is an extremely important aspect of land use. Each year there are approximately 300,000 “visits” to the area, making it amongst the most visited natural attractions in Scotland (Figure 4). In addition to informal access for walking and cycling the Estate manages various commercial ventures including a visitor centre, clay pigeon shooting, fishery, guided walks, rafting, canoeing, wildlife watching and off-road driving.



Figure 4:
Forest walk at Rothiemurchus

Conclusions

Rothiemurchus Estate is a prime example of a forest managed to meet a wide range of objectives, the most important of which are not related to timber production. The high profile that Rothiemurchus enjoys as a visitor destination and a key component of the Caledonian pinewoods demonstrates that the value of Scots pine to the rural economy is not restricted to the timber products it can supply. Timber production from the forest is at a lower level than would be the case for a similar area of Scots pine plantation managed to maximise timber yield and revenues. Nevertheless, where timber production is prioritised in the forest, the silviculture practised is aimed at promoting the development of high quality stems by ensuring early stocking density of at least 3000 stems/ha and selectively thinning stands. The older ages to which some trees are retained before felling also present an opportunity for niche marketing of larger, slow grown stems into specialist end uses.

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