

Action for red squirrels



What we are doing

The red squirrel *Sciurus vulgaris* is one of the key woodland species identified for action under the Scottish Forestry Strategy 2006. This note summarises the action being undertaken by Forestry Commission Scotland, either ourselves or in partnership with others, to help conserve red squirrels in Scotland. There are links to more detailed information.

The red squirrel is a well-loved animal, and is one of very few mammals in Scotland that is completely reliant on woodlands. It can thrive in coniferous and mixed woods and is able to live in broadleaved woodlands in the absence of competition from grey squirrels. The spread of the introduced north American grey squirrel *Sciurus carolinensis* has pushed red squirrels out of broadleaved and mixed woods in most of England, Wales and parts of southern and eastern Scotland. Red squirrels are now increasingly confined to large conifer forest areas, including both native pinewoods and planted forests of spruce, pine, fir and larch.

Scotland holds at least three quarters of the remaining British population but the likely continued spread of grey squirrels poses a major long term threat to the species.

The **Red Squirrel Species Action Framework plan 2007-2012**, published by Scottish Natural Heritage (SNH), summarises actions for red squirrel across Scotland. This note explains in more depth how Forestry Commission Scotland will contribute to this overall effort.

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Current status

Red squirrels are very hard to count accurately and there are no reliable census data. The most recent estimates of red squirrel population from 2005, suggested that Scotland held 121,000 (75%) of a total estimated British population of 161,000 red squirrels, with approximately 30,000 in England, and 10,000 in Wales. They are also present in Ireland. It is likely that our share of total population is increasing at the moment because of faster declines occurring in England and Wales than in Scotland.

We do not know what is happening to the overall population of red squirrels in Scotland although there is a national squirrel survey underway which will give a clearer picture of distribution. The range is declining in southern and eastern regions where there are established grey squirrel populations but elsewhere it is possible that both range and population could be increasing in some areas in response to the increased habitat area being provided by maturing conifer forests.

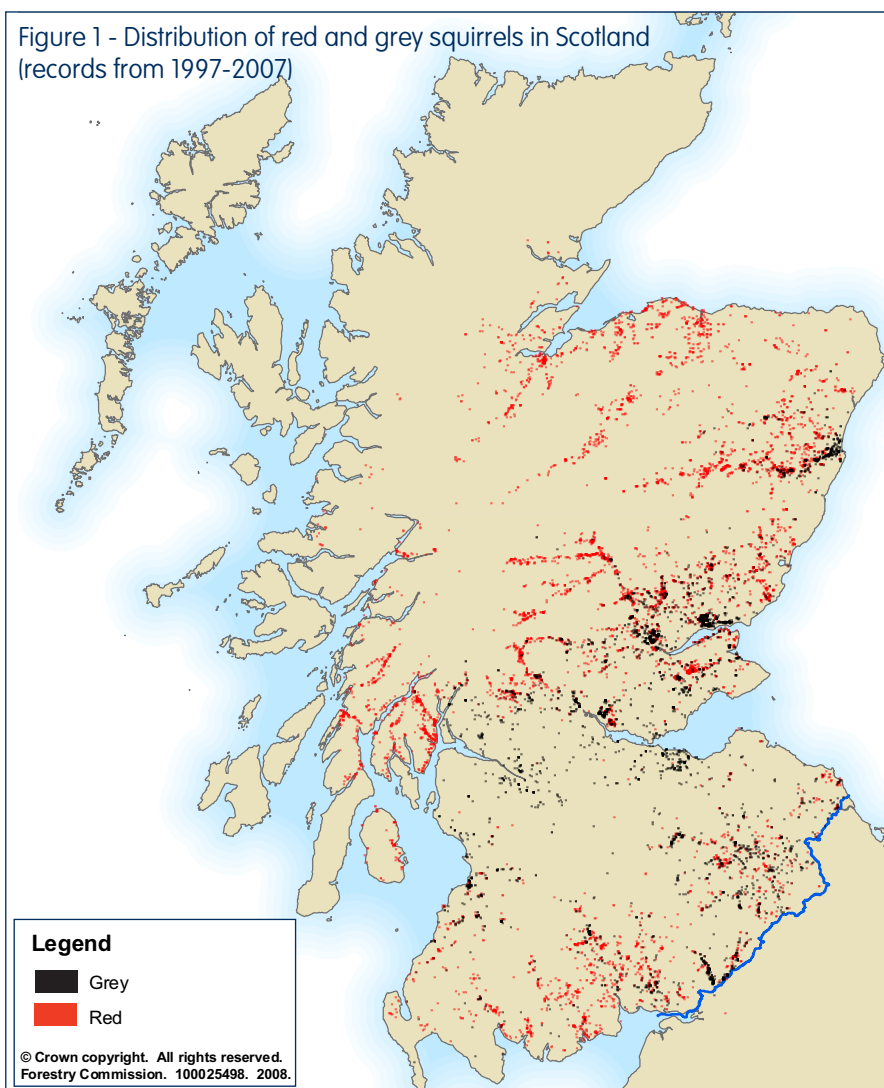
The red squirrel is a UK priority species, as a result of its threatened status.

It is protected under Schedule 5 of the Wildlife and Countryside Act, 1981, as amended by the Nature Conservation (Scotland) Act 2004, from intentional or reckless damage or disturbance. Forestry Commission Scotland has published **Forestry Commission Scotland Guidance Note 33** giving guidance on planning forest operations to reduce the risk of affecting red squirrels.

Distribution

The red squirrel's natural range extends across the British Isles, continental Europe and northern Asia as far as Japan. They may have become extinct in some parts of Scotland following historic large-scale deforestation. But widespread tree planting and introductions of red squirrels from England, and possibly Scandinavia, from

Figure 1 - Distribution of red and grey squirrels in Scotland (records from 1997-2007)



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the late 18th and early 19th centuries resulted in population increases which continued into the 20th century. The introduction and spread of grey squirrels have since reversed this recovery. Red squirrels have already disappeared from parts of the central lowlands since grey squirrels arrived.

Current distribution of both red and grey squirrels in Scotland is shown in Figure 1. This map is based on records reported from the public, land managers and volunteers and professional staff in local squirrel groups and through the work of the Scottish Squirrel Survey.

Grey squirrels are expanding their range in most areas where they are found but there are some natural obstacles such as mountain ranges and sea lochs that should slow their progress and provide opportunities to target control efforts.

Threats

In the past, habitat loss and fragmentation contributed to red squirrel population declines. The area of potential habitat has increased threefold through afforestation in the last 80 years, and habitat quality should continue to increase as the conifer plantations are transformed into more mature forests with a range of ages and species. The main current threats to the red squirrel are the continued expansion of populations of the introduced grey squirrel and with them the potential for squirrelpox virus transmission. Although the precise mode of transmission is not known, the virus appears to be passed from grey squirrel 'carriers' which are unaffected by it, to reds which are highly vulnerable and normally die when infected.

More information on the squirrelpox virus can be found on the **UK Red Squirrel Group** website.

Evidence from England suggests that once grey squirrels arrive in a woodland populated by red squirrels, the red squirrel often disappears within 20 years. So far there have been examples of co-existence for much longer periods in Scotland, notably at Craigvinean Forest in Perthshire. This may be partly due to a more infrequent seed production from beech and oak trees in much of Scotland so that greys are not so productive. However, it is thought that squirrelpox virus will add significantly to the future threat from greys in Scotland if it spreads out from its current area in the western Borders.

Because large-seeded broadleaved trees like oak, beech, chestnut and hazel tend to support resident grey squirrels, the broader aims of expanding native woodlands and planting broadleaved trees for scenic or biodiversity benefits, or for hardwood timber, can conflict with red squirrel conservation. This means some hard choices may be needed, with some areas promoted primarily for red squirrels.

The effects of climate change on the growth and seed production of trees could affect the competitive balance between the species in future, and research will be needed to understand and predict these interactions.



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Natural history and habitat requirements

For information on red squirrel natural history, habitat requirements and other useful information please go to the following links:

- **The Mammal Society Red Squirrel Fact Sheet**
- **Red Squirrel Conservation (Forestry Commission Practice Note 5)**
- **Habitat Use by Red and Grey Squirrels: Reports of Two Recent Studies and Implications for Management (Forestry Commission Information Note)**

Red squirrel conservation action to date

Recent efforts in Scotland have centred on building up national and regional efforts and capacity to co-ordinate conservation of the species, including survey and recording of squirrels and awareness raising. A national survey is underway funded by SNH. A series of 'priority woodland' areas which are thought to have significant potential long term viability for red squirrels have been identified and these, together with the results of the national survey, will help target conservation efforts. A smaller list of 'stronghold sites' is now being selected, (see below) as key sites for long-term conservation of red squirrels in case grey squirrels continue to spread.

Red squirrel needs are included in the design planning of forests on the national forest estate and for many private woodlands that are supported by the Scottish Forestry Grant Scheme (SFGS).

Since squirrelpox virus was discovered in the Lockerbie/Langholm area in 2006, SNH has funded a project which has monitored the occurrence of the virus in grey and red squirrels and started to control grey squirrels in the area to restrict the spread of the virus. A larger multi-partner control programme is currently being developed.

Some grey squirrel control to help conserve red squirrels has also been funded locally under SFGS.

Local squirrel groups have carried out a lot of outreach work to increase interest in the animal and encourage recording of sightings and volunteer involvement in conservation projects. Some projects have also been developed to encourage visitors to see and enjoy red squirrels, for example at Craik Forest, in the Borders and Farigaig Forest by Loch Ness, both on the national forest estate.

Scottish squirrel survey

SNH funds a national survey to assess the distribution of both species of squirrels across Scotland. See **www.scottishsquirrelsurvey.co.uk** for information.

The UK red squirrel species action plan

The **UK Red Squirrel Group** (UKRSG) acts as UK steering group for the UK red squirrel species action plan. It focuses mainly on communication, awareness and research. Conservation action is steered by country Squirrel Groups in the 4 countries of the UK. They are represented on the UK Red Squirrel Group to promote exchange of best practice and co-ordination of research.

The Scottish squirrel group

The **Scottish Squirrel Group** (SSG) is the country group for Scotland. It is a forum to co-ordinate activities to

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help conserve the red squirrel in Scotland. It is currently chaired by SNH with support from Forestry Commission Scotland, and includes statutory and non-statutory bodies, local squirrel groups and local project staff.

The Scottish Squirrel Group developed the Scottish Squirrel Strategy 2004, which provides a framework for red squirrel conservation action across Scotland, identifying objectives and types of action at local and national levels. Copies of the document can be downloaded in pdf format from the [SNH website](#).

Following a Ministerial conference in February 2006 SNH published the **Scottish Red Squirrel Action Plan 2006-2011** with costed options to deliver the 2004 strategy. Key points are summarised below.

- The grey squirrel is the primary threat to red squirrels, but total eradication of grey squirrels from Scotland as a whole is unlikely to be achievable. The Plan proposed targeted sustainable control of grey squirrels in limited key areas plus the establishment of stronghold areas where the greatest efforts would be made to secure red squirrels for the long term, in case grey squirrels continued to spread.
- Monitoring resources need to be increased to achieve complete national coverage, including fieldwork and data collection and management.
- Diversification of conifer forests is important to improve red squirrel habitat, including a greater variety of conifers and light-seeded broadleaf species, as well as varied ages of trees.
- Large-seeded broadleaved trees like oak, beech or chestnut will encourage the spread of grey squirrels. The Plan recognised the need to balance the requirements of red squirrels with other management objectives such as the expansion and management of native woodlands.



Forestry Commission Scotland action for red squirrels

Forestry Commission Scotland will contribute strongly to achieving the programme in the **Red Squirrel Species Action Framework 2007- 2012** which sets out the actions to be taken by Forestry Commission Scotland, SNH and others over this period. It is based on the recommendations in the Scottish Red Squirrel Action Plan 2006- 2011.

The actions proposed are described in more detail in the tables in the Species Action Framework website.

The main actions are:

- implement strategic grey squirrel control measures to reduce the spread of grey squirrels and associated squirrelpox virus,
- improve woodlands for red squirrels through appropriate forest planning and red squirrel-friendly management,

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- identify priority areas for red squirrel conservation, including selecting a final set of red squirrel strongholds in 2008/09,
- support red squirrel conservation research,
- improve public awareness.

The following sections describe our action for red squirrels in more detail.

Red squirrel management on the national forest estate

Good forest design and operational practice will often benefit red squirrels, for example by increasing the range of ages and species of conifer trees. Over the period 2007-2012 the minimum estimated average spending expected for operations specifically to improve habitat or protect red squirrels on the national forest estate will be £70,000 annually. This work will include:

- planning forest operations to minimise damage to red squirrel dreys and populations, including survey work to locate dreys
- planning forest structure and composition specifically to suit red squirrels and/or to discourage grey squirrels, including spatial modelling of future forest structure for stronghold sites
- contributing to survey of stronghold sites to establish presence/absence in each part of the forest
- some local habitat improvements such thinning to promote coning, or the removal of large seeded broadleaves where they provide colonisation routes into red squirrel strongholds.

Our efforts to improve habitat for red squirrels will be targeted firstly at stronghold sites, once these are selected. Elsewhere red squirrel conservation will normally not be a primary management objective, and red squirrel conservation will be balanced with other objectives and priorities of the Scottish Forestry Strategy. We will take account of advice and information on the potential of woods for red squirrels.

Generally we will make more effort to improve red squirrel habitat in large forest areas containing 2000ha or more of conifer woodland, as red squirrel populations there are likely to be more robust, and more able to withstand any colonisation from grey squirrels, than those in smaller forests.

We will also cull grey squirrels on the national forest estate in areas specifically identified in the forthcoming Scottish grey squirrel control strategy to be published by SNH, including the squirrelpox virus control area in the south-west Border area, national forest estate stronghold sites with greys already present and key pinchpoints where grey squirrel dispersal to new regions could be prevented. Costs for control on the national forest estate cannot be estimated at this time, but they will be added to a later version of this note.

Management of private woodland for red squirrels

The Scottish Rural Development Programme (SRDP) can provide grant support under **Rural Development Contracts - Rural Priorities** for measures that can help red squirrels outside the national forest estate.

Forestry Commission Scotland will work with SNH and Scottish Government Rural Payments and Inspections Directorate (SGRPID) to promote suitable management using relevant grant options under SRDP. These include:

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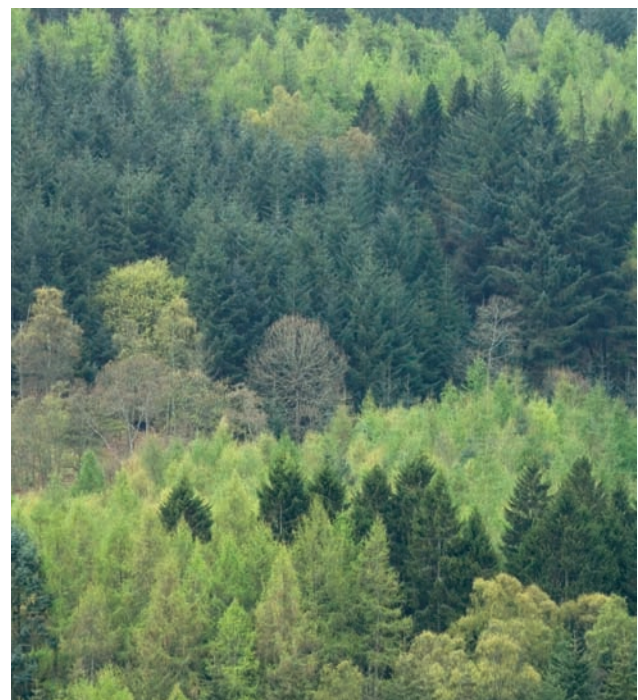
1. Forest Plan preparation grant which can help owners factor red squirrels into long-term integrated forest planning;
2. Sustainable Management of Forests to support the conservation and small scale regeneration of native woods, or of non-native woods managed under low impact silvicultural systems;
3. Woodland Improvement Grants for habitat improvements including:
 - small-scale thinning or pre-commercial thinning or felling to alter tree species composition to favour red squirrels and make woods less attractive to grey squirrels (this could include removing clumps of large seeded broadleaves)
 - restructuring grants to favour change to red squirrel-friendly species and diversify food sources for red squirrels, eg. Scots pine, Norway spruce, lodgepole pine, Douglas fir, larches
 - planting trees and shrubs to feed red squirrels
 - occasionally also, removal of rhododendron and encouraging conifer regeneration.



We will promote use of these measures, especially in stronghold sites once these are finalised. In other areas, we will prioritise support taking account of advice and information on the potential of woods for red squirrels, as for the national forest estate (above). Again the larger woods will generally be a higher priority for support as a more robust habitat in the long term.

The Control of Invasive Non-Native Species option can also be used to support the costs of grey squirrel control carried out to protect red squirrels in target areas defined under the grey squirrel control strategy (as above). Support will be available to check the spread of squirrelpox virus, protect stronghold sites and control in key areas to stop grey squirrel range spread.

Forestry Commission Scotland will work with SNH and SGRIPD to develop more detailed guidance during 2008/09 for using SRDP support for red squirrel conservation.



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Figure 2 shows red squirrel distribution by Regional Proposals Assessment Committee (RPAC) areas. Links to those RPAC areas relevant to red squirrels are also provided. This document will be updated with details of stronghold sites when that information becomes available.

Potential grant applicants can receive advice from a case-worker in their area to help them develop suitable plans for red squirrel management.

[Link here for red squirrel information in your local RPAC area:](#)

[Argyll](#)

[Ayrshire](#)

[Borders](#)

[Clyde Valley](#)

[Dumfries and Galloway](#)

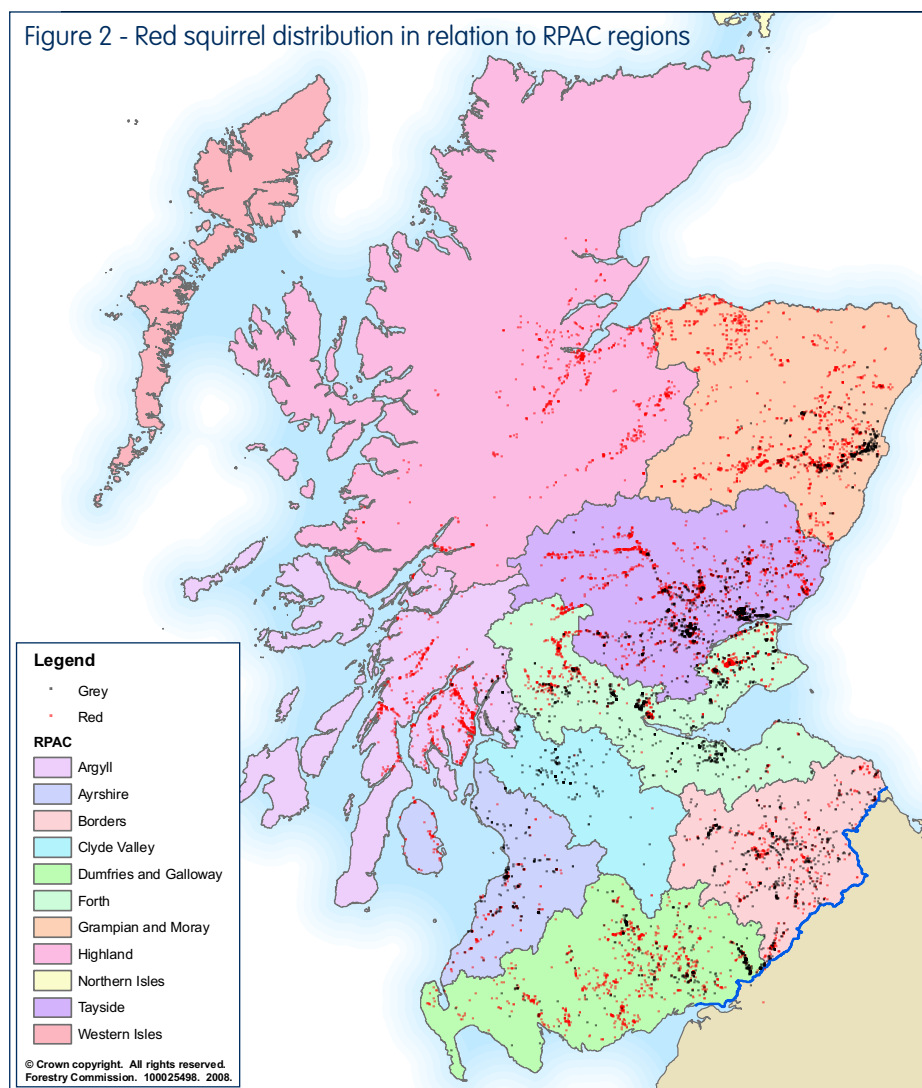
[Forth](#)

[Grampian & Moray](#)

[Highlands](#)

[Tayside](#)

Figure 2 - Red squirrel distribution in relation to RPAC regions



In addition to SRDP funding, red squirrel management is still being carried out under some legacy SFGS schemes.

Research

In 2008 Forest Research will publish a decision support system to help managers manage for priority and protected species and habitats.

Forest Research also run squirrel research projects focused on grey squirrel control methods, as well as contributing to a joint project investigating the potential to develop a vaccine against squirrelpox virus infection in red squirrels. (See Action 3b in the Species Action Framework plan for more details).

Reporting and review arrangements

An annual report of progress in carrying out the actions in this programme will be summarised on this site and in more detail in the Species Action Framework. This programme plan will be revised if required and will be reviewed by 2011/12.

Watching red squirrels

Red squirrels are often hard to see as they blend in well with their tree-top world. However they come readily to feeding stations and garden bird tables and are fascinating creatures to watch there. Some red squirrel watching projects have been set up including those at Craik in the Borders, using a hide and squirrel feeders, and Loch Ness-side where a web-camera has been installed in nest boxes and viewers can observe from the comfort of the local village shop/café.

You can find out more about local opportunities to see red squirrels by contacting your local red squirrel group or **Forest Enterprise Scotland** office or SNH office.



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