

CONSERVING THE RED SQUIRREL

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Abstract

The wildlife value of the red squirrel is high. It is our native squirrel and fills an important ecological niche. Red squirrels are attractive and engaging to the public. However, they are now rare or absent in many parts of England and Wales. Encouragement of the red squirrel by means of habitat improvement will help to increase the wildlife and nature conservation value of

British forests. The long-term future of the red squirrel on the British mainland depends mainly upon maintaining large tracts of contiguous coniferous forest. This Note discusses some of the relevant factors affecting the ecology of squirrels, and summarises forest management prescriptions that will help conserve the red squirrel.

Introduction

The decline of the red squirrel in the British Isles and its replacement by the grey squirrel continues. Within the next 10 to 20 years the red squirrel may well become extinct in central and southern England and Wales, apart from on offshore islands (e.g. Isle of Wight, Brownsea), and its range may continue to be eroded in the north of England and Scotland. Red squirrels are fully protected by the Wildlife and Countryside Act, 1981.

Numbers of red squirrels have fluctuated widely in the past. These fluctuations have been influenced by loss of habitat, tree seed food availability, and disease epidemics (e.g. coccidiosis, parapoxvirus), especially at times when animals are already undernourished and in poor condition. Red squirrels disappeared from many areas before the arrival of grey squirrels and red squirrels were unable to recover from very low numbers in many places where the grey squirrel superseded them. The replacement of the red by the grey was not due to disease brought into the country by the grey squirrel or to the larger grey squirrel 'chasing out' the smaller red squirrel. Nevertheless, the disappearance of red squirrels is associated with the appearance of grey squirrels. The critical factors which favour either red or grey squirrels are believed to be connected with how efficiently the two species utilise food supplies in coniferous and broadleaved habitats.



Figure 1. Map of Great Britain showing the distribution in 1989 of the red squirrel in Forestry Commission forests (red areas). The dark green areas are FC forests where the red squirrel is not present.

Red and grey squirrels in broadleaved and coniferous forests

Red squirrels are smaller (230–350 g) and have a slighter build than the grey squirrel (500–600 g). Grey squirrels have a more marked seasonal weight change (20% increase in body weight from spring/summer to winter) than red squirrels (10%). Over the year red squirrels spend more of their active time (c.70%) in the canopy compared with grey squirrels (14%).

Red squirrel densities fluctuate between levels of approximately 0.4 and 1.2 squirrels per hectare in both coniferous and broadleaved forests. Grey squirrels also live at these densities in coniferous habitats but can reach much higher densities of 2 to 8 squirrels per hectare in broadleaved forests. Thus, it appears that red squirrels are unable to utilise broadleaved habitats as efficiently as grey squirrels. They can, however, survive in large areas of pure conifer where grey squirrels may not. It is believed that patches or belts of large-seeded seed-producing broadleaved trees are required to enable the initial



Figure 2 (and front cover). Red squirrel. (Alastair Baxter)

invasion of grey squirrels into coniferous forest and to maintain their presence. These broadleaves act as survival habitats, from which grey squirrel populations can expand and contract into and out of the conifer stands according to prevailing food

supplies. The long-term future of the red squirrel on the British mainland, therefore, depends on maintaining large areas of mixed species coniferous forest, devoid of the types of broadleaves which can give the grey squirrel a competitive advantage.

Conservation management

Strategy

The long-term objective is to produce red squirrel populations that can be sustained under normal forest management practices. In the short term the aims are to manage forests in such a way as to increase both red squirrel range and numbers and, at the same time, discourage the presence of grey squirrels.

Target forests

All forests within the existing range of the red squirrel should be examined to see whether management procedures can be modified to benefit red squirrels and deter the incursion of grey squirrels either now or in the future. Forests which are especially important are those that still have red squirrel populations but are becoming increasingly isolated (e.g. Cannock, Thetford, and in Wales), and those at the edge of the declining range of the red squirrel (e.g. in the Lake District).

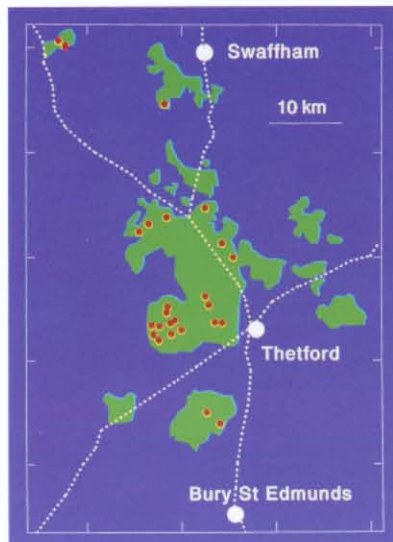


Figure 3. Red squirrel sightings in Thetford Forest, 1985–89. (FC)

Conservation priorities

There are many conservation demands made on the forest manager and red squirrels may not have the highest priority. There may be some areas of the forest which have been set aside for other conservation projects and their management prescriptions may not be compatible with red squirrel requirements.

Tactics

Area

To have the best chance of success, large areas of predominantly coniferous forest (of more than

2000 ha) should be considered as red squirrel protection areas. Grey squirrels can make foraging movements of 1 kilometre or longer and can disperse over distances of several kilometres. Therefore, at the edge of forests that are in danger of being invaded by squirrels, a border of at least 3 km wide must be established as a buffer against the infiltration of grey squirrels. The border should consist of habitats that are unsuitable for grey squirrels. However, these need not consist only of coniferous forest, but could include open, agricultural or common land, although urban habitats are unsuitable. This may require the co-operation of adjacent landowners.

Broadleaves

All large-seeded broadleaves (e.g. beech, oak, sweet chestnut) should be removed before they begin to produce seed and they should not be included in new planting programmes. The broadleaved content should be confined to small-seeded species such as birch, rowan, willow and aspen.

Conifers

Sitka spruce and Corsican pine are now generally planted for wood production in preference to Norway spruce and native Scots pine. The first two species cone less heavily and less frequently than the latter two species and so are less favourable for the red squirrel. Sitka spruce sheds seed in late autumn resulting in a shortage of seed from December onwards. Mixtures including Scots pine, Norway spruce and larch will extend the period that seed is available as well as increase the quantity. These can be planted in groups along ride edges and in small patches within the forest. It is also desirable to plant other conifer species, such as Douglas fir, to provide a continuity of conifer seed sources for red squirrels.



Figure 4. A red squirrel feeding site: Norway spruce seed. (FC)

Forest structure

Squirrels disappear from an area after clear felling and may not reappear until the trees are again of cone-bearing age (15+ years). It is believed that red squirrels prefer young (16 to 30-year-old) plantations which provide food and dense cover. However, extended rotations of Norway spruce and Scots pine should also be considered as these areas will provide a continuity of habitat while surrounding areas are felled and restocked. Such areas will also have other possible wildlife benefits. The seed-producing areas should be linked to facilitate movement between them (small islands surrounded by clear felled areas are of little benefit to the squirrels).

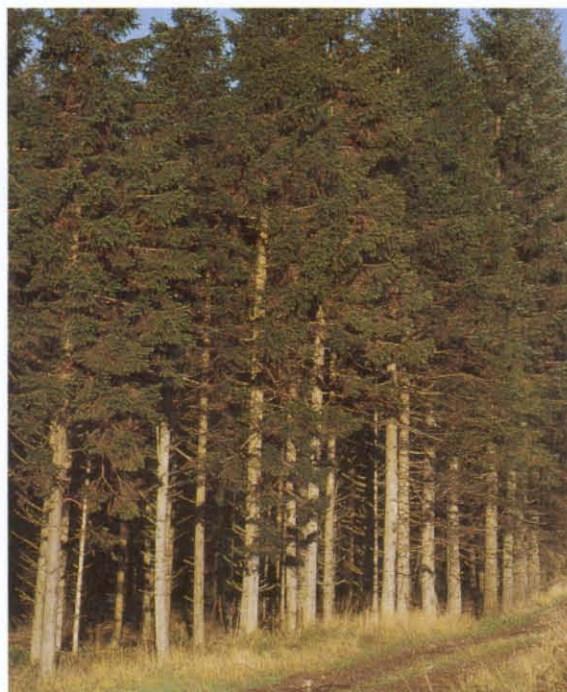
Ideally about two-thirds of the red squirrel management area should be of seed-producing age, which means that the age-class structure of the area should be designed such that one-third of the trees are 0 to 15 years old, one-third are 16 to 30 years old and one-third are over 30 years old, including long-term and permanent retention areas.

Thinning

The maintenance of some areas of dense thicket will provide protective shelter for the red squirrels. In these areas thinnings should be deferred as long as possible (e.g. to about age 30).

Short-term management tactics

In forests where red squirrel numbers have declined drastically in the presence of grey squirrels, red squirrel recovery may be assisted by (i) removing grey squirrels by trapping or shooting, and (ii) providing a supplementary food source. The usefulness and design of selective food hoppers, which would allow access to the food by red but not grey squirrels, is being assessed.



Habitats favoured by the red squirrel.
Figure 5. Norway spruce. (38708)



Figure 6. Scots pine. (19687)

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