

Grey Squirrel Strategy for the National Forest



Background

The grey squirrel, *Sciurus carolinensis*, is not native to the United Kingdom, having been introduced from North America in the late 19th Century. Since its introduction, the population of grey squirrels has rapidly grown and they have expanded their territory to cover most of mainland England and Wales, displacing the native red squirrel *Sciurus vulgaris*.

Grey squirrels can have up to two litters a year with 3-7 kits in each. This reproductive rate has no doubt contributed to their widespread expansion and success in lowland Britain. The grey squirrel is a carrier of the squirrel pox virus which can be deadly to the red squirrel. They also compete with red squirrels for food and habitat.

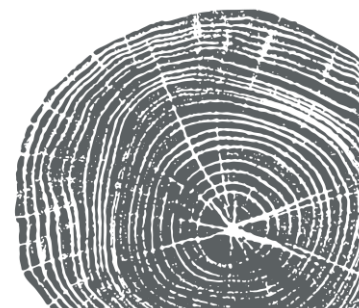
Grey squirrels are particularly damaging to broadleaf woodland aged between 10-40 years old. Damage can occur on trees as young as six years old and conifers can also be damaged. This age range means that the National Forest is highly vulnerable to damage by grey squirrels, over the next ten years there will be approximately 3,000 Ha of woodland aged between 15-25 years old. Damage is widespread within a number of young sites across the National Forest. Damage will often increase following thinning interventions, so as much of the Forest reaches first thinning age, damage levels could increase.

Grey squirrels cause damage to broadleaf trees by stripping the bark, most commonly between February and July, continuing into August and September in some years. Such bark stripping is damaging to trees as they can no longer move the nutrients they need up and down the tree. In some cases severe damage can cause mortality, whilst in most cases, bad scarring and substantial epicormic growth will occur, significantly de-valuing the tree. These issues are of major concern to timber growers. A DEFRA-commissioned study in 2010 estimated that grey squirrels cost the British economy £14m per annum¹.

It is not fully understood why grey squirrels damage broadleaf trees or why they favour specific species; research is on-going in these subject areas.

Grey squirrels seem to target, amongst others: Beech, Field Maple, Oak, Sycamore, Hornbeam, Willow and Silver Birch as their preferred species. This is of great concern to the National Forest as many of these species make up large proportions of its young woodlands. In light of the tree disease problems facing Ash, it will become increasingly important to protect our remaining tree stock which is not currently being affected by other pests and diseases. The scars left by bark stripping can also be an entry point for other tree pests and diseases and can therefore make trees more vulnerable to these threats.

1. The Economic Cost of Invasive Non-Native Species on Great Britain, 2010



The creation of the National Forest is providing ideal habitat for the grey squirrel to expand its territory and population. Proportionate but effective actions will need to be taken to control the amount of damage to young broadleaved trees. Research has shown that areas which are well connected, such as the National Forest, can be re-colonised within one month of control taking place.

National Exemplar Role

The National Forest seeks to be at the forefront of tackling the threats grey squirrels pose to our young woodlands. Part of this approach has been to sign the UK Squirrel Accord² along with other key partners from across the UK.

The National Forest is also supporting the collaborative management of squirrels across multiple land ownerships. This approach will enable a landscape scale approach to managing grey squirrels in order to reduce damage to developing young woodland.

The National Forest supports the UK Forestry Standard (UKFS) as guidance for sustainable woodland management across the UK. The following extract is taken from the UKFS:

- “Where non-native species are invasive and pose problems, control or remove them where this is feasible; take action early while populations are still small.
- Participate in collaborative actions to control invasive species.
- Plan for the control of invasive species where feasible by developing barriers to their dispersal; ensure newly created elements in habitat networks do not facilitate dispersal.
- Consider how forest operations, such as felling and thinning, might promote the spread of invasive species and take action to control them beforehand.”

Key messages can be taken from the guidelines which include: Supporting collaborative action, monitoring and targeting approaches where control is feasible and appropriate. The guidelines go on to say: “invasive species can quickly colonise and dominate areas, cause economic and environmental damage, and be costly to eradicate”.

In the case of grey squirrels in the National Forest, damage to young woodland will bear a cost not only to the final value of the trees, but also to the wider woodland environment; this includes visual landscape damage as well as potential health & safety implications of damaged branches in sites with public access. The Strategy is not looking to eradicate grey squirrels but to manage populations at a proportionate level to reduce the damage they can cause, in order to maintain the multi-purpose environmental, economic and social benefits the National Forest aims to achieve.

Research and any case studies from within the National Forest will be made available to national partners to share experiences with any successes or failures.

The future of grey squirrels in the National Forest – our vision

The National Forest is a highly attractive habitat for grey squirrels and is also entering the most vulnerable stage for damage. Unless they are managed, increasing populations and geographical spread of grey squirrels into new plantations will have a widespread adverse impact on the trees that have been so successfully established in the Forest.

The National Forest wants to see a sustainable population of grey squirrels where damage is at an acceptable level to all landowners. Anecdotal evidence from the forestry sector suggests that

² UK Squirrel Accord, 2014



where canopy damage is seen, grey squirrel control should be implemented immediately to reduce further damage and safeguard the remaining crop. It may be the case that it is too late by that point as serious damage could have already occurred. The European Squirrel Initiative³ state that damage to branches in the canopy may cause dieback, with timber yield being affected if 30% of the canopy is lost.

Realistically, it is very unlikely that grey squirrels could be eradicated within the Forest due to the permeable boundaries. However, the substantial damage that can be caused by the grey squirrel is a threat to the resilience of our woodlands, requiring action to be taken.

The National Forest does not hold enough suitable habitat to support a sustainable population of red squirrels. As a result there are no known records of red squirrels within the Forest. The conservation of red squirrels is therefore not an objective of grey squirrel management in the National Forest.

We will look to encourage and support research into behaviours of grey squirrels to see if their destructive habits can be reduced, as well as research and new innovations in effective and humane control of expanding populations.

The need for action

Grey squirrel and their impacts in The National Forest

Research commissioned in 2008 by the National Forest Company surveyed 21 woodland sites across the National Forest. Grey squirrel damage surveys were completed on each of the sites. Results showed that 19 of the sites displayed signs of damage; however this was at a low level for most.

The research is available at:

http://www.nationalforest.org/document/research/RN7_Squirrel_damage_surveys_2014.pdf

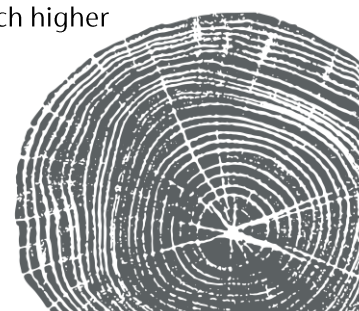
In 2016 the National Forest Company's Woodland Management Officer undertook a survey of 500ha of woodlands ranging in age from 15-25 years old. Severe damage was seen in almost all of the sites with some stands displaying damage on over 50% of the trees. Oak and Field Maple were seen to be hardest hit, with Sweet Chestnut, Silver Birch and Willow also receiving significant damage. Unfortunately the most dominant trees seem to be hit more often than those that are suppressed. This, in some cases, left a stand with little viable tree stock which could produce good quality timber.

The principle impact of grey squirrels is the stripping of bark from trees, but they also eat seed from various tree species. If a high density of squirrels is found in woodland, they can have an impact on the amount of natural regeneration. However, squirrels can have a positive impact on regeneration by harvesting and burying seed, which then regenerates prior to being found. Other impacts, which are more anecdotal are their impact on woodland birds where they have been found to disturb nests and eat eggs and young chicks⁴.

Grey squirrels are also found in urban and peri-urban environments. They are attracted to gardens through bird feeders and other food sources. Damage can also occur to property, where they can for example; nest in loft spaces. Here their perceived value as a wildlife species is much higher

³ European Squirrel Initiative: The Grey Squirrel Review, 2003

⁴ Impacts of Grey Squirrels on Woodland Birds: An Important Predator of Eggs and Young, BTO. 2003



than in more rural areas. Education with the general public is needed to raise awareness of the potential damage they can cause to young trees.

Grey squirrels are often more abundant in woodlands used for shooting due to the amount of available food. Game keepers will feed their pheasants and this food source can be invaluable to other wildlife through the long winter months. In these cases, squirrels will need to be controlled not only to reduce the amount of food being taken, but also to reduce the impact on trees and shrubs in the surrounding woodland.

Guiding principles – our approach to grey squirrel management

At a local level, landowners in the National Forest should ensure that grey squirrels are managed responsibly and humanely, minimising impacts on woodlands and protected habitats. Grey squirrel management is a collective responsibility, with the leading role lying with landowners and site managers within the National Forest, working with partners to provide support and coordination. Landowners wish to protect their woodlands against all pests and diseases. Outside of red squirrel zones, culling of grey squirrels is carried out for the protection of trees from bark stripping.

Recognising the social and amenity value of grey squirrels

Management of grey squirrels should be sensitive to the values society as a whole place on them. They are valued by many people as part of our wildlife and are sometimes the only species seen on a woodland walk. Although non-native, grey squirrels have become naturalised since the 19th Century and have become a part of our countryside. At the same time, these positive values need to be balanced against the considerable negative impacts the grey squirrel can have on forestry and the wider environment.

Partnership between stakeholders across the National Forest

Management of grey squirrels should be an integral part of a woodland management plan. It should be carried out over a prolonged period of time and not just in response to specific problems. The lead responsibility for grey squirrel management lies with landowners and land managers, whether owners or tenants. As grey squirrels regularly cross man-made boundaries, cooperation at a landscape-scale is crucial.

It is for landowners themselves to decide whether or not they wish to carry out management, it is not the decision of the National Forest Company (NFC), except on its own land. The NFC will encourage and support landowners to co-operate with each other as populations can move across boundaries and quickly re-colonise a previously managed area.

We will support landowners, land managers and others through an agreed Action Plan for sustainable grey squirrel management. This includes:

- Advice and technical support
- Supporting grey squirrel damage surveys
- Supporting awareness, education and training
- Promoting grant support to owners to help enable effective management to happen
- Undertaking risk management mapping and encouraging collaborative management amongst owners in high risk areas



- Setting an example and supporting local management operations through the management of grey squirrels on the NFC's own land, as required
- Working with partner organisations to pioneer and test research into new, novel and effective control methods including immune-contraception trials.

We remain committed to a partnership approach for the coordination, delivery and review of an Action Plan for grey squirrel management (attached). We believe this is best achieved through a broad range of public, private and voluntary sector stakeholders working together.

Sustainable management

We will look to target management in specific areas where woodlands are most at risk and there is a higher chance of economic loss as well as destruction of valued habitat. Some areas may be of less concern; where timber species are less susceptible or where damage is less important to the land manager. This may be where woodland is more isolated from known populations or due to the landowner's particular objectives.

Care must be taken that these areas do not become reservoirs to squirrel populations which can recolonise neighbouring woodland. Collaborative approaches must be implemented to have an effective landscape-scale approach to sustainable grey squirrel management. Use of local contractors and land managers to control grey squirrels will help to build community understanding of the issues posed by this species.

Protecting grey squirrel welfare

We recognise the need to ensure highest standards of animal welfare in all aspects of grey squirrel control. This will be achieved through the use of competent persons with effective and humane control methods. It is for landowners to decide which method will best suit their situation. The NFC only promotes the use of approved and humane control methods which are legal, well-maintained and fit for purpose.

Evidence-based decision making

Where sustained management of grey squirrels is to be carried out, baseline damage surveys will be encouraged. These surveys must be repeatable, annually, to keep track of the effectiveness of grey squirrel management. It is sometimes useful to have survey sites where no control is taking place to compare against active control sites. Once an initial assessment has been made of damage on trees subsequent assessments need only look at fresh damage.

Sustainable management of grey squirrels relies on sound scientific evidence. It is important to continually develop this through research looking for new control methods as well as at the behavioural aspects of grey squirrels.

Squirrel risk mapping

The NFC has undertaken risk mapping for all woodlands in the National Forest. This takes into account several factors, including species, age and proximity to other land uses, applying a risk score to each woodland and colouring into risk categories. This risk mapping enables effective and collaborative action to be focussed in target 'high risk' areas. This spatial approach has been developed further by the NFC for Forestry Commission England.



An agenda for action

This agenda identifies **six** key activities that are needed in relation to grey squirrel management and the actions required to deliver them. The action plan sets out specific short-term actions and identify the lead organisations and timescales involved.

These actions build on activities undertaken to date. Many actions will need the participation of a wide range of stakeholders to ensure their success, and we will be actively seeking to facilitate opportunities for stakeholders to become increasingly involved. At the same time, we will work with and build on existing partnerships to:

- Ensure that all relevant landowners are aware of the impacts of grey squirrels
- Ensure that our advice on grey squirrel management is in line with this strategy and the latest available national research and guidance

1. Partnerships

- The NFC will work in partnership with the Forestry Commission, Forest Research, UK Squirrel Accord, British Association of Shooting & Conservation and other forestry organisations, as well as local landowners, agents, contractors and the general public
- Through working partnerships, we will seek to raise awareness of grey squirrels and their impacts on the National Forest. We will encourage landowners to carry out annual surveying of damage across the Forest using a standardised simple approach
- We will promote, with others, an understanding of the impacts of grey squirrels to the general public in and around the National Forest
- The NFC will work to support the National Forest becoming a national exemplar of grey squirrel management in young woodlands

2. Manage the impacts of grey squirrels

- We will provide advice through our woodland management programme to a wide range of landowners and managers on the impacts of grey squirrels and the current and most effective control methods
- We will provide funding, when possible, to support landowners to purchase equipment for effective grey squirrel control and attend training in best practice
- We will promote collaborative management of grey squirrels across the Forest through partnerships with landowners and partner organisations

3. Trial innovative methods of control

- We will look to trial innovative control methods when available
- National and international research and trials into control methods will be monitored and appropriate action taken if found to be effective



4. Ensure that grey squirrel management is delivered in a responsible, competent and humane manner

- Through partnerships we will pass on best practice from national research and advice into control methods to local land managers and owners
- We will promote national training initiatives and best practice courses
- We will provide training opportunities through our Woodland Owners Club events, focusing on the impacts of grey squirrels and effective methods of humane control

5. Research and Monitoring

- We will keep abreast of requests for grey squirrel data and advise landowners accordingly
- We will look to support research into grey squirrel behaviours and management
- We will monitor national research and pass on information to local contacts
- Through training landowners and the general public, we will look to implement regular local impact monitoring
- We will look at levels of damage resistance of alternative tree species

6. National Exemplar Role

- We will explore, support and implement collaborative management of grey squirrels
- We will look to support national initiatives and research
- We will look to share experiences and case studies (including successes and any failures) with partners

Delivery

This strategy sets out the outcomes we require for grey squirrel management in the National Forest. Delivering this ambition will reduce the impact on vulnerable young woodlands within the Forest. Delivery will require a sustained, concentrated and collaborative approach between partners and landowners within the National Forest.

To progress implementation of the strategy we have set out for each of our outcomes what we want to see happen and how we plan to get there. These key activities are the basis from which we will develop a National Forest Grey Squirrel Management Action Plan, providing the short-term focus to make progress towards our long-term ambitions. The Action Plan aims to capture the activities required to implement this strategy. It needs to be inclusive, and we recognise that it will need the involvement of many delivery partners to achieve success.

Monitoring & Review

Implementation of the Action Plan will include monitoring of its delivery on an annual basis to review progress toward the outcomes required by this strategy. This strategy will be reviewed on a tri-annual basis to assess its effectiveness in managing grey squirrels in the National Forest.



Resourcing

The National Forest will look to support management of grey squirrels with advice and guidance to landowners through our Forest & Woodland Management Programme. Funding, where possible, will be made available for practical grey squirrel management and training within the Forest. The Forest will also look to support research into grey squirrels where appropriate.

Other stakeholders and lead organisations may also support the work carried out within the National Forest and nationally. Research is a fundamental part of managing this species, and shared resourcing will be integral to ensuring this happens.

Achievements 2014-17

Since 2014 the National Forest Company has delivered against the original strategy and action plan. Notable achievements over this time include:

- Produced a woodland risk map for the National Forest outlining clusters of woodland most highly at risk from grey squirrel damage. This work was taken forward by the NFC for the Forestry Commission with a risk map for England produced in 2015.
- NFC undertook damage survey assessments across 5% of the National Forest woodlands (500 Ha) to ascertain current levels of grey squirrel damage. Results showed that 33% of Oak showed some level of damage, which was a worryingly high percentage. This report is available from the NFC on request.
- In partnership with the Forestry Commission and other bodies (RFS/ICF/Confor) the NFC has successfully delivered four training courses on grey squirrel control for landowners and industry professionals. These courses attracted over 90 attendees.
- Press articles and case studies on woodland management consistently refer to the damage by pest and diseases and the need for active, sustained and collaborative management.
- The NFC has invested £50k in grey squirrel control mechanisms through its Woodland Management Grant, reaching over 80 woodland sites. Advice to woodland owners through its woodland management programme has been a catalyst to greater awareness and levels of control in the National Forest.
- The NFC is a lead partner of the UK Squirrel Accord and is actively contributing to this important research and educational role. It is hoped any future trials for immunocontraception could be hosted in the National Forest.
- NFC has been instrumental in setting up and piloting the BASC squirrel control groups. There are now 5 groups across the National Forest managing grey squirrels using bait stations and air rifles. The NFC is working with other partners and landowners to implement this approach to achieve landscape scale control.
- Continuing to influence national policy agenda and approach to grey squirrels including representation at high profile events such as the launch of UK Squirrel Accord at Clarence House in 2017, hosted by HRH The Prince of Wales and subsequent House of Lords reception.

The new action plan will aim to build on this successful activity, reaching new areas and ensuring the NFC is at the forefront of grey squirrel control in the UK.



National Forest Grey Squirrel Management Action Plan

Our intention is that while the NFC will facilitate the delivery of this Action Plan the lead organisations and stakeholders identified for each action will work in partnership with the NFC and others to ensure that we achieve the aim.

What needs to be done?		What's involved?	Who's involved?	Timescale	Progress
1. <u>Develop and continue use of strategic risk map</u>					
High risk (Red)	Woodlands between 10 – 25 years old	<ul style="list-style-type: none"> ▪ Use the map to help focus squirrel management targeting in the National Forest: <ul style="list-style-type: none"> - monitoring of populations/damage/effects of control activity - specialist advice - grant support - control group clusters ▪ Encourage Forestry Commission to utilise vulnerability mapping for England to target control trials on Public Forest Estate. 	NFC; FC; woodland owners/managers	2018 →	
Medium risk (Black)	Mature woodlands >25 years old				
Low risk (Green)	Young woodlands <10 years old		FC	2018/19	
(Yellow)	Mature Parkland				
2. <u>Awareness raising of damage</u>					
Landowner and woodland agents seminars		<ul style="list-style-type: none"> ▪ Organise site-based seminars to identify damage, discuss control methods and identify sources of advice/specialist help. Use estates where control is underway. ▪ Squirrel management issues (amongst other silvicultural management) to be a focus of future meetings. 	NFC; FC; Forest Research; partner organisations	2019/20	
NFC Woodland Owners Group			NFC; woodland owners	2018 →	



Public awareness raising	<ul style="list-style-type: none"> Consider wider public awareness raising through the media. Site signage to be implemented where damage is taking place to better educate the public of the need. 	NFC; FC; Forest Research	2018 →	
<p>3. <u>Monitoring, research and dissemination</u></p> <p>Woodland damage surveys</p> <p>Long-term research site/s</p>	<ul style="list-style-type: none"> Develop landowner self-assessment monitoring forms to enable annual damage monitoring. Especially when linked to grant-aided squirrel control. Implement assessment protocol with NFC/BASC squirrel control groups to monitor their success Explore the potential for developing long-term research sites within the National Forest, linked to damage and tree health or new control mechanisms e.g. immuno-contraception through the UK Squirrel Accord. 	<p>NFC; site owners</p> <p>NFC/BASC</p> <p>NFC; FC; Forest Research; UK Squirrel Accord</p>	<p>2018</p> <p>2018/19</p> <p>2018 →</p>	
<p>4. <u>Practical advice and support</u></p> <p>Control methods</p> <p>Grant support for management</p>	<ul style="list-style-type: none"> Promote a variety of current best practice control methods to woodland and other landowners through providing practical advice and examples of successes and failures. NFC to provide grant funding for squirrel management at woodland sites through its Woodland Management Grant. Squirrel control will be undertaken on NFC land if required. 	<p>NFC, forestry stakeholders, FR</p> <p>NFC; private landowners/agents</p> <p>NFC</p>	<p>2018 →</p> <p>2018 →</p> <p>2018/19</p>	



Advice to landowners and agents	<ul style="list-style-type: none"> ▪ NFC and FC woodland officers to provide practical advice to woodland owners, through Tender Scheme, Changing Landscapes Scheme, Woodland Management Grant and EWGS site inspection processes. ▪ Apply best management practice arising from national research and other successful control programmes. 	<p>NFC; FC; other partners undertaking management</p> <p>NFC; FC; Forest Research; woodland owners/agents</p>	<p>2018 →</p> <p>2018 →</p>	
Review of Strategy & Action Plan	<ul style="list-style-type: none"> ▪ 3 yearly review of strategy and action plan 	NFC	2021	

