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*. Red squirrels are most at home in coniferous woodland and are not ideally suited to the habitat covering much of Britain. The grey squirrel, which is more adaptable, has out-competed reds in much of Britain.

Grey squirrels can have up to two litters a year with 3-7kits 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 as we will have approximately 2,800 Ha of woodland aged between 15-25 years old. Damage can already been seen on a number of young sites within The National Forest. Damage will often increase following thinning interventions, so as much of the Forest reaches first thinnings damage levels could increase. Damage on young trees can often result in tree mortality as there is less bark to remove before the tree is ring-barked.

Grey squirrels cause damage to broadleaf trees by stripping the bark 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 around the tree. In some cases severe damage can completely kill a tree, whilst in more mild cases, bad scarring and substantial epicormic growth may result. These issues are of major concern to timber growers. A DEFRA-commissioned study estimated that grey squirrels cost the British economy £14m per annum[1].

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

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

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 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.

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 Accord[2] 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.
Forests & Biodiversity[3] is one of seven guideline documents produced through the UKFS; the following extract is taken from this guidance:

- "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

[2] UK Squirrel Accord, 2014
[3] Forests & Biodiversity – UK Forestry Standard Guidelines

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.

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 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 Initiative[4] 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 our 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

[4] European Squirrel Initiative: The Grey Squirrel Review, 2003

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 2014 the National Forest Company's Woodland Management Officer undertook an unstructured survey of several sites 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 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 burying seed and not finding it to eat. 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 chicks[5].

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 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.

[5] Impacts of Grey Squirrels on Woodland Birds: An Important Predator of Eggs and Young?, 2003

Recognising the social and amenity value of grey squirrels

Management of grey squirrels should be sensitive to the values society as a whole places on them. They are valued by many people as part of our wildlife and are often 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 National Forest Company's own land, as required

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 recolonize 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 (e.g. squirrel trapping).

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.

Landowners and managers will be encouraged to supply carcasses for research purposes. Current research is on-going in a variety of subject areas relating to grey squirrels and researchers are in need of data. Information such as sex, length, weight, age, condition and location could provide valuable data to researchers, whilst others may need the carcasses to perform more detailed analysis

One such project is a joint funded PhD with Forest Research and the Royal Veterinary College. This is looking into why grey squirrels strip bark with a possible hypothesis that they are seeking calcium. Carcasses are needed to test for calcium deficiency in the

bones and spleen, whilst bark samples are being taken to test for calcium and other minerals.

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 will set 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 national research and guidance available

1. Partnerships

- The NFC will work in partnership with the Forestry Commission, Forest Research, the European Squirrel Initiative 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 their control
- 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
- Where live or instant kill traps are used and carcasses collected, we will encourage landowners to send data or carcasses for research purposes when required

6. National Exemplar Role

- We will explore, support and implement collaborative management of grey squirrels where it is deemed appropriate
- We will look to support national initiatives and research where appropriate
- We will provide funding, where available, to manage grey squirrels
- We will look to share experiences and case studies (including successes and any failures), where appropriate, 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 also be reviewed on an 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.

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. Strategic Risk Map					
High risk (Red) **Medium risk** (Black) **Low risk** (Green) (Yellow)	Woodlands between 10 – 23 years old Mature woodlands >25 years old Young woodlands <10 years old Mature Parkland	▪ NFC to produce a risk-based map, with woodland classified by age. ▪ Identify working circles where collaborative effort could be implemented ▪ Identify 'holding areas' for squirrels (eg: mature broadleaved/mixed woodland; parkland; urban areas). ▪ Assess most vulnerable woods in relation to holding areas (eg: woods with commercial objectives; critical age; critical species; height of trees). ▪ Use the map to help focus squirrel management targeting: - monitoring of populations/damage/effects of control activity - specialist advice - grant support	NFC; FC; woodland owners/ managers	2014	Complete

2. <u>Awareness raising of damage</u> Landowner and woodland agents seminars		▪ Organise site-based seminars to identify damage (and distinguish from other types of damage eg: rabbits); discuss control methods; identify sources of advice/specialist help. Use estates where control is underway. Two seminars - west and east sides of the Forest.	NFC; FC; Forest Research; partner organisations	2015/16	Scheduled May 2015
NFC Woodland Owners Group		▪ Squirrel management issues (amongst other maintaining quality issues) to be a focus of future meetings.	NFC; woodland owners	2014 →	Scheduled May 2015
Public awareness raising		▪ Consider wider public awareness raising through the media. Set this within the context of an overall communications plan. ▪ Site signage to be implemented where damage is taking place to better educate the public of the need.	NFC; FC; Forest Research	2015 →	
3. <u>Monitoring, research and dissemination</u> Population monitoring in high risk areas		▪ Surveys of selected 'holding areas' adjacent to high risk woodlands before and after control. Target pilot/priority areas only.	NFC; site owners	2015 →	First survey scheduled for Feb 2015
Woodland damage surveys		▪ Surveys of selected 'at risk' sites, focussing on particular species, severity of damage, age, size and	NFC; site owners	2015 →	

	height of trees affected and occurrence of damage over time. Link surveys to evaluating control activities. ▪ Develop landowner self-assessment monitoring forms for the above; as well as considering contracted out help as needed.	NFC; FC; Forest Research	2015 →	
Long-term research site/s	▪ Explore the potential for developing a joint research site/s with Forest Research to monitor damage over time and establish links with national research programmes.	NFC; Forest Research; FC; WT	2015 →	
Case study sites	▪ Initiate an inventory of locations where successful squirrel management is underway and reducing damage, which can be readily updated/added to.	NFC	2015	
	▪ Identify case study sites which can be used for on-site seminars, to promote good management practice to other woodland owners.	FC; private estates; woodland owners	2015 →	
4. <u>Practical advice and support</u>		NFC and FC woodland officers, forestry stakeholders, FR		On-going advice & funding through Woodland Management Programme
Control methods	▪ Promote a variety of best practice control methods to woodland and other landowners through providing practical advice and examples of successes and failures.		2014 →	
Grant support for management	▪ NFC to provide grant funding for squirrel management at woodland sites through its Woodland Management Grant.	NFC; private landowners/ agents	2014	

Advice to landowners and agents	▪ Squirrel control will be undertaken on NFC land if required.	NFC	2014 →	No damage recorded at present (young sites)
	▪ Identify & focus effort on mature woodlands with squirrel populations that provide a critical threat to national Biodiversity Action Plan species.	NFC; FC; private landowners	2015 →	
	▪ 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.	NFC; FC; other partners undertaking management	2014 →	Practical advice on-going through advisory visits
	▪ Compile advisory information on - practical management options; contractors undertaking management; financial incentives available.	NFC; FC; Forest Research	2015/16	
	▪ Apply best management practice arising from national research and other successful control programmes.	NFC; FC; Forest Research; woodland owners/agents	2014 →	Ongoing

Woodland Owners Group	▪ Promote and share squirrel management best practice and provide landowner support through the National Forest Woodland Owners Club. ▪ Review the need to establish a National Forest Squirrel Management Group.	NFC; FC; woodland owners; forestry agents NFC; FC; woodland owners; forestry agents	2014 → 2014	WOC Meeting scheduled for May 2015 Initial meeting with joint deer and squirrel group. Likely to progress spring 2015