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Another good day in London



Andy Wiseman

I cannot write this editorial without mentioning the untimely loss of our great friend Peter Goodwin. Peter helped to found ESI and was key in obtaining financial support in the early years and later on – but most importantly was a fount of sage advice and steadfast in his determination that ESI should stay strong in our core message. Eradication of the grey squirrel in the UK is both necessary and desirable if we want to save our broadleaved woodlands so they can produce trees that our children and grandchildren can enjoy looking at and produce timber as a sustainable and renewable resource.

Our recent conversations and emails with Peter were full of vigour and plans for the future as ESI approaches its 15th anniversary AGM that Peter had hoped to chair for old time's sake. We will miss one of the finest friends of trees, timber, red squirrels and our woodland heritage.

Our work continues and we will keep going with our mission to control grey squirrels. There are some exciting prospects notably around the Red Squirrel Survival Trust promoting a new development in fertility control (formerly known as Immunocontraception or IMC).

ESI has never stopped looking into IMC and over the year's progress has been made with discussions with companies and scientists, but there are still a number

of issues to resolve. The new approach taken by the Animal and Plant Health Agency (APHA) last year on the use of GonaCon™, a product identified by ESI, is an exciting development in overcoming one of the technical challenges of getting the active ingredient into the grey squirrels. Independent evaluation suggests that there are still significant development costs and several years of research and testing required but the science is encouraging.

However, ESI is mindful that fertility control is a long game and ultimately the use of GonaCon™ may not be applicable or affordable in every situation. In the meantime, we must keep up our fight against the grey

squirrel using traditional methods of trapping and shooting wherever possible and we must be relentless in our determination and influence over other less determined organisations.

In the meantime, we are all looking forward to the approval of the Good Nature trap under the Spring Trap Order. ESI is proud to have brought Good Nature to the UK and to have played a small part in its development. We understand that the approval has been delayed but are reassured that any issues will be overcome as soon as possible.

Andy Wiseman
ESI Chairman

In Brief...

ESI's scientific advisor Dr Craig Shuttleworth has been awarded a 2017 Winston Churchill Travelling Fellowship. Craig



has been involved with ESI since its inception and is perhaps best known for leading the clearance of greys from Anglesey and the re-establishment of red squirrels on the island. His work for ESI continues, most recently with the publishing of the book *Grey Squirrels, Ecology and Management of Invasive species in Europe*.

Craig's scholarship will involve travelling to the west of Canada to look at the control of the eastern grey squirrel and also the fox squirrel.

Jigger Writes...

Out of the norm trapping

"While checking the traps, putting big squirrels in the bag for the game dealer, throwing the smaller ones for the buzzards, I came face to face with a magnificent hawk eating one of the small squirrels.

The next day I set three Larson traps along the line. The first day I caught a common buzzard, which I sat on the back rest of my quad and after regaining composure, he flew off.

The second day was a blank. I had arrived home and received a call from the two young keepers saying 'Jigger, you've caught that hawk'. I told them to put it in the big compartment of the trap and not to hurt it or let it go. Tom put his hand in the trap; the hawk stepped on it and sunk his talons into each side of his thumb. Jason helped but the hawk was

scratching and pulling at his jumper with his other foot!

When I arrived the huge bird's eyes were big and its hackles were going up and down, so I picked the whole trap up and put it in my truck. Thanks to the keepers for doing the brave bit though.

I contacted the Owl Sanctuary and they had it back with its owners within two days by the registration number on the leg ring.

It was such a magnificent bird; 2 feet tall and a 5 foot wing span and feet as big as my hands.

In the woodlands there is something new every day..."

Jigger Mallett
Vermin controller at a Suffolk estate



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ESI Update - by Andrew Kendall, ESI

ESI's heritage stems from the protection of trees from grey squirrels. This is the foundation upon which ESI was created in 2002. While protecting and restoring the red squirrel is a terrific by-product, ESI does not waiver from its core raison d'être of controlling grey squirrels to safeguard the future of our trees whether they be for commercial purposes, amenity or pleasure.

In the 15 years since ESI was founded, public attitudes towards the work of ESI and controlling grey squirrels, in particular, have shifted.

This change in attitude was apparent at a recent "knowledge fair" organised by Red Squirrels United and held in Belfast at the beginning of March. At the meeting, which was addressed by ESI, a range of organisations spoke passionately about controlling grey squirrels, recognising, furthermore, the link between tree damage, red decline and grey squirrels.

When ESI was created, it was formed by a group of foresters, conservationists, scientists and others concerned about our trees and woodlands. At the time these people were setting out on what to many seemed an impossible task. They had a huge mountain to climb but they were determined. Not only did they have to get government and public opinion

behind them but they also had to explore ways of dealing with the invasive American grey squirrels.

Then, as now, ESI based its principals on good science and bringing government and public opinion behind it.

On the scientific side ESI continues to make progress funding research across a range of subjects including fertility control, better traps and most recently a lure to make trapping more effective.

Since the last newsletter ESI has continued to keep its name in the public eye, it has published a new book on grey squirrels with Dr Craig Shuttleworth, launched a new website and had further dialogue with the Forestry Commission on allowing grey squirrels to be shot on its land. It is also taking the lead in setting up squirrel control gun clubs.

What is gratifying is that regular public opinion surveys show that the majority of the British people are behind controlling



Andrew Kendall has been involved with ESI since its founding in 2002, and is responsible for the day to day operation of the charity.

grey squirrels, the great British public have been robust in their support for control and they appreciate the damage that grey squirrels do to our native flora and fauna. Increasingly politicians, government departments and agencies have come around to this way of thinking.

So, 15 years on, ESI continues to be busy championing the cause of foresters, landowners and conservationists in their battle against the grey squirrel.

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Peter Goodwin 1942 - 2017



When the Forestry Commission withdrew funding for the development of fertility control for grey squirrels, it was Peter Goodwin who seized the moment to call a meeting of foresters and conservationists to consider what the private sector might do to develop the technology. From this meeting in 2002, grew the European Squirrel Initiative now 15 years old.

With his brother Jeremy, Peter for many years managed the family firm of Titchmarsh & Goodwin, Ipswich, manufacturers of fine reproduction furniture selling to both domestic and overseas markets.

His organisational skill and boundless enthusiasm were also directed towards the East Anglian Division of the Royal Forestry Society. It was Peter, of course, who made the Divisional woodland meetings so eventful with a mischievous instinct for handing the microphone to members he knew would provoke heated debate for both the entertainment and the education of the congregation.

For his services to forestry, he was awarded the rare honour of the RFS Gold Medal.

With others, Peter founded Woodland Heritage, now under the patronage of Prince Charles, to bring together those who use wood with those who grow it. He devoted

limitless energy to this charity which has done so much to encourage young people to become involved in forestry and its produce.

Peter's enthusiasm and his intimate knowledge of the forestry world earned him considerable clout with its leading figures and with other wealthy donors.

This proved invaluable when an alarming number oak trees across eastern England began dying. Peter raised the funding and persuaded Forest Research to employ Dr Sandra Denman to study this worrying threat to England's iconic tree. His capacity to raise funds enabled Sandra to employ skilled assistants who are now making significant progress towards understanding the cause of this sickness known as Acute Oak Decline. Just in the last few months, Peter directed a film designed to raise additional funding for this task under the title- Operation Oak.

Peter was swift to recognise the significance of work by French scientists experimenting with a silvicultural system designed to shorten the rotation of oak. With others he arranged for Bede Howell to translate Jean Lemaire's book on the subject into English.

The result is Oak: fine timber in 100 years, now a bible for oak growers.

Peter was never without a camera and produced thousands of wondrous images of trees and tree personalities. He was also a very funny man, a merciless mimic and the contriver of elaborate practical jokes. The sound of his gleeful laughter when relating the success of each outrageous subterfuge lingers still.

His untimely death will be felt by the countless people whose lives he touched.

Our thoughts go out to his devoted wife Sally and their daughters.

Miles Barne.



ESI welcomes Select Committee Forestry Report

ESI, as a consultee, welcomed the Environment Food and Rural Affairs Select Committee's Report "Forestry in England: seeing the woods for the trees". Published on 21st March, it highlighted a number of concerns that the Committee had over the creation and management of the UK's woodlands.

The report recognised the damage done to UK's trees by pests and diseases and emphasise the importance of further research in these areas.

"We welcome this report as it once again puts trees and their importance to the UK in the spotlight and highlights some of the neglect shown by government and many of its agencies for a woodland pest which has caused so much damage to trees and the woodland ecology over many years," said Andy Wiseman Chairman of ESI,

who were consultees to the report.

"In order to achieve a sustainable and productive woodland and forest industry in the UK, there needs to be effective grey squirrel control and if government is to support new woodland creation through any form of grant aid then it must be linked to the control of grey squirrels at a landscape level. We welcome the committee's findings that the current grant system is "not fit for purpose" and that its call for the reintroduction of a one stop shop for forestry grants as the UK is about to exit

from the European Union is laudable", he added.

The report criticised the Countryside Stewardship Scheme saying it was "not fit for purpose and overly complex" it also emphasised the need for a greater level of planting with the correct mix to ensure that there was a 50/50 mix of planting of softwoods and hardwoods.

The report went on to state that it felt that ancient woodlands were not being adequately protected and that more should be done to protect trees within the national planning policy framework.

The Shoulders of Giants - Strategising Red Squirrel Conservation

- Connor McKinney of The Ulster Wildlife Trust

In recent years grey squirrels have made their presence felt right across Northern Ireland. Originally brought into Ireland as a wedding present in 1911, they have since spread throughout most of the island. In woodlands across the country where grey squirrels have established, we have seen reds disappear.

The Irish topography plays an important part in the spread and distribution of grey squirrels across Northern Ireland. The province of Connaught, despite being so close to the original release site in County Longford, still has very few grey squirrels. The River Shannon, substantial in length at 224km, has been integral in creating a protective barrier for red squirrels west of the river.

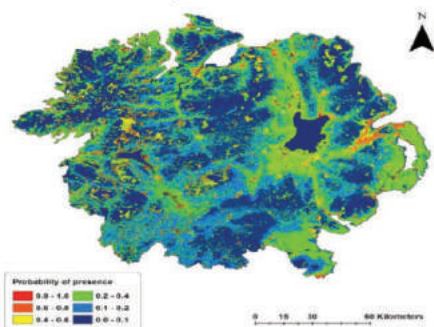


Figure 2 - Mapping work demonstrating areas more favourable (shades of red), moderately favourable (shades of green/yellow) and unfavourable (shades of blue) to grey squirrel dispersal.

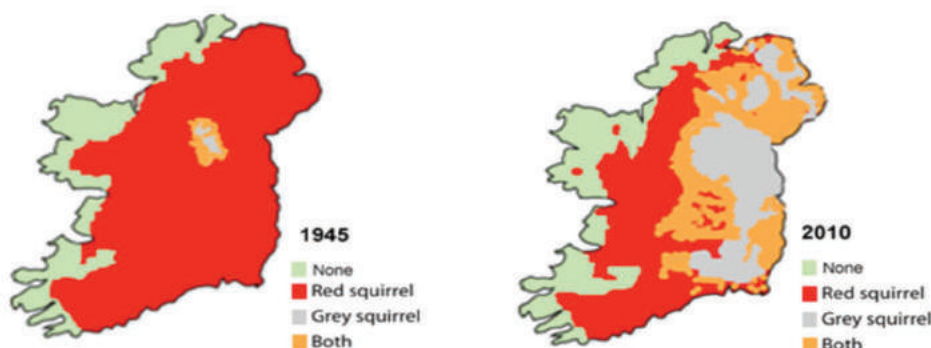


Figure 1 - Mapping work demonstrating spread of grey squirrels in Ireland between 1945 and 2010 © Craig Shuttleworth

This example of the importance of topography has been demonstrated in research by NUI Galway. The research shows that “hard boundaries” such as mountains and peninsulas help limit the spread of grey squirrels. Likewise there are features of the landscape that act as grey squirrel least cost pathways facilitating grey squirrel dispersal, for example urban areas and areas of lowland deciduous woodland. Using this research we can identify landscapes where grey squirrels can only invade through a restricted number of pathways. Controlling these pinch points helps us prevent grey squirrel invasion of entire landscapes and supports grey squirrel eradication on a landscape scale. This concept is used in Ulster Wildlife’s component of the Red Squirrels United project, in particular the Mourne Mountains eradication attempt.

The Mourne Mountains (area 4 in figure 3) is a large granite ridge with the highest mountains in Northern Ireland, including Slieve Donard at 850m. These mountains form a formidable barrier for grey squirrels. Figure 4 illustrates that by controlling 3 main least cost pathways (east of the range, over a central pass in the range and west of the range) we can control grey squirrels entering the plains to the south of the mountain range. This allowed us to attempt eradication of grey



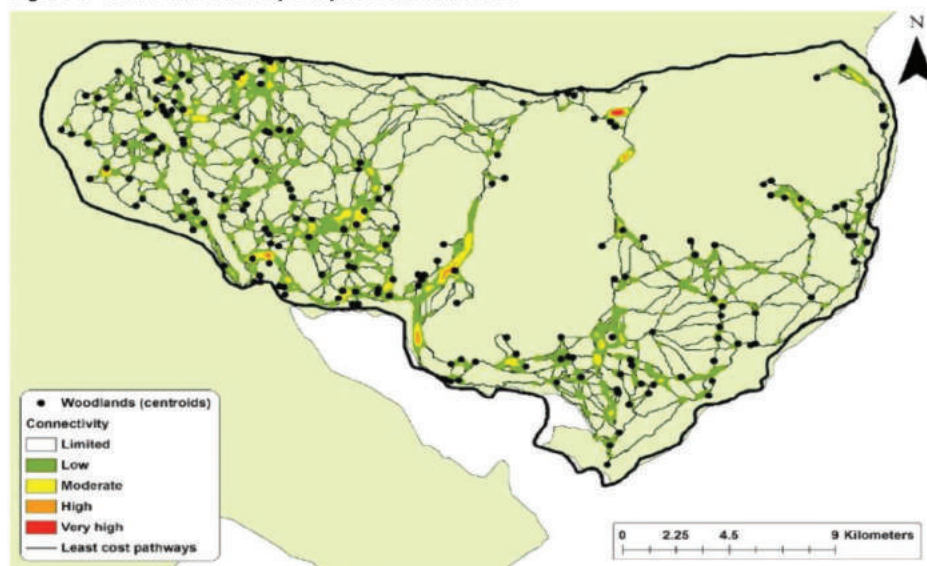
Figure 3 - RSU NI project areas: No. 1 NW area, No.2 Broughshane and Ballygally area, No.3 Fermanagh and No.4 Mournes.

squirrels across the Mourne plains, and we are now well advanced.

Currently RSU NI is working on dispatching the remaining greys on both flanks of the mountain, over the next 3

years we aim to take the fight from beneath the shadows of the Mournes out beyond the eradication zone, in part thanks to the fact we have been able to stand on the shoulders of giants.

Figure 4 - Least Cost Pathway analysis of Mournes area





The life u-savereds project: turning challenges into opportunities

- Valentina La Morgia Istituto Superiore per la Protezione e la Ricerca Ambientale

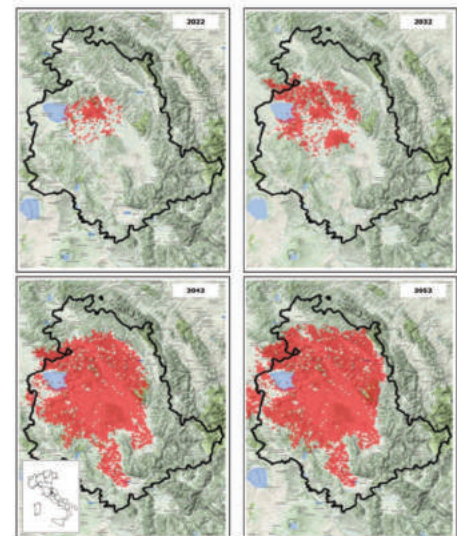
Since the first introductions of the grey squirrel into Italy in 1948, several attempts have been made to eradicate the newly established groups or to control already established populations. Recently, the LIFE EC-SQUARE Project (2010-2015) coordinated these activities in the north of Italy (Piedmont, Lombardy and Liguria Regions). But a new challenge was on its way: in 2000, new grey squirrel records were reported for Umbria, central Italy. A few individuals were released near Perugia, and then the population experienced a typical exponential growth: more than 240 grey squirrel sightings were recorded till 2014, over a range of about 50 km².

This set the scene for a new LIFE+ Project - LIFE U-SAVEREDS (2014-2018) aimed at the conservation of the native red squirrel and of forest biodiversity. There are about 1500 grey squirrels (2015 distance sampling estimates), concentrated in urban parks and in several small private properties embedded in a highly natural landscape, deciduous woods directly connected with Apennine forests: these are some of the key elements of the challenge posed by the presence of the grey squirrel in Umbria. Moreover, the situation seemed complicated by the citizens' lack of awareness of the 'grey squirrel issue', as revealed by a survey conducted in 2015, and by the strong opposition of local animal welfare associations towards the removal of animals.

But in this general framework, the new European Regulation (no. 1143/2014) on invasive alien species and, in July 2016, the adoption of the list of invasive species of European concern came to the aid, pointing out that we can no longer put off the

eradication attempt. Nevertheless, the need to act immediately to protect red squirrels still needed to be communicated to the general public. While a low communication profile was adopted at the beginning of the Project, in 2016 the dissemination of preliminary results and the establishment of a direct communication line between citizens and the Project became urgent to access the private properties where most grey squirrels live.

in this complex socio-ecological context, a decision support system is guiding the project staff in the implementation of the management activities, including the direct removal of the animals (through capture and subsequent euthanasia) and the indirect removal (capture followed by surgical sterilization and release in urban parks, for a limited number of individuals). 578 grey squirrels were removed from January 2016 to March 2017. As a result, sightings of red squirrels started to increase. The local red squirrel population estimated in 2015 in an area of about 15 km² amounted to 112



individuals, but the staff of the LIFE U-SAVEREDS Project is ready to grasp the opportunity to reinforce this remnant population through restocking in key areas, after the local removal of the alien squirrels.

Moving beyond the local issue, taking into account the high potential of expansion of the grey squirrel towards the Apennine forests, an Early Warning System and Rapid Response and an Alien Squirrel Emergency Team are briefed to allow timely management reactions if new groups of alien squirrels are detected in Italy. Converting all challenges faced by the Project in opportunities is not easy, but it is the path we have to go through to make a real difference for the conservation of the red squirrel in Italy and in continental Europe.



A Review of ESI Activity

Research

ESI recognises the absolute necessity of conservation decisions being based on sound scientific evidence. For this reason, it has dedicated funds to a wide variety of research projects and disseminated findings to allow discussion and debate at the highest level. ESI funded (or part funded) research in the past few months includes:

Pine Martens

ESI part funded work by Dr Emma Sheehy on the effects of pine martens on grey squirrel populations in Ireland. The results revealed that there was a "population crash" of grey squirrels, coupled with a parallel revival in the native red squirrel population, when an abundance of the native predators were present. The findings created intense debate as there is uncertainty on the relationship between pine marten density and the grey squirrel. ESI took the lead in ensuring that decisions to reintroduce a native predator in the UK were taken with the benefit of continued understanding and hosted a scientifically based discussion in June 2016.

Public Opinion

ESI has maintained a programme of public opinion surveys since 2004. The latest survey in 2016 revealed a strengthening public awareness of the grey squirrel threat with over 71% of those surveyed being aware that the grey squirrel is responsible for the decline to almost extinction of the native red squirrel. The greatest degree of understanding of the need to control the grey was in parts of the country where the red squirrel is present, such as the Scottish borders, where 80% were in favour of grey squirrel control. However, the survey also showed that 76% of those surveyed in the south of England shared the same sentiment.

Attracting grey squirrels to traps

There is a need to develop a lure which will attract animals to traps. ESI commissioned research at Rothamsted Research that was able to identify pheromone compounds in female grey squirrel urine that could be replicated synthetically. In late 2016, we commenced field trials with the pheromone compounds and this work is ongoing.

Italy

There are three ongoing projects coordinated by the University of Insubria, Varese (under supervision of Luc Wauters and Adriano Martinoli, Department of Theoretical and Applied Sciences) sustained with ESI funds.

Funding

- ESI continues to maintain its ethos of using top level voluntary expertise of land managers, forest managers, conservationists, researchers, and academics. Our administrative and operational costs are thereby kept as low as possible but our expertise is high.
- In 2016 we were able to boost our fighting fund as a result of introduced fundraising activity. This was necessary to enable us to achieve that which is included in this report and also to establish methods of meeting the costs associated with several new projects in 2017 and beyond. We have embarked on several new initiatives which are enabling us to engage more closely with supporters - both existing and newly recruited - and these include the launch of a legacy campaign that we trust will help us address the need for stability of ongoing funds that will be required for some years yet.

The Future

Although we can be proud of our contribution towards the fight to protect our broadleaved woodlands and other native species, we are not complacent and we understand the need to increase the volume of our voice and to maintain pressure on those who can make a difference to how our countryside will look in years to come. Our priorities in the coming months and years will include:

- To continue to work with land managers, woodland owners, researchers and industry to develop new and effective ways to control grey squirrels. In particular, we will address immuno-contraception (IMC) and appropriate fertility control. We have commissioned a review into DEFRA's latest research and are working with an American research company on a novel approach to IMC.
- To remind government and the agencies of their responsibilities, particularly as generational change occurs and new officers emerge, who might view the presence of the grey squirrel as part of an accepted biodiversity. ESI will continue to lobby, influence and educate woodland policy makers and management programmes.
- To follow up on the new legislation affecting non-native species, by hosting events that will explain and advise on actions required of land and woodland managers.
- To provide financial support to The British Association of Shooting and Conservation (BASC) to establish pilot schemes of grey squirrel control shooting clubs across England and Wales and develop systematic and strategic landscape control of greys by utilising the national leisure activity of shooting.
- To continue to be a point of reference for those managing grey squirrels and to provide advice and comment on topical issues such as the controlled release of pine marten.
- To continue to fund relevant research and fundraise for specific projects.



Grey squirrels are bad for the British countryside – full stop

by Dr Craig Shuttleworth, ESI's scientific advisor, examines the evidence

According to an article recently published in *The Conversation*, some animal rights groups the grey squirrel is a victim of circumstance. They say it has been made a scapegoat for regional red squirrel population extinctions and claim that loss of the reds is caused entirely coincidentally by habitat change. They suggest the true facts are being hidden and scientific research being intentionally misinterpreted.

If so, then this conspiracy must extend to British legal provisions and EU directives both listing the grey squirrel as an invader to be controlled, right?

Well, no – put this argument to the test and you'll see that the facts actually do stack up against the grey squirrel. The reality is that, while the grey squirrel is an important part of North American forest ecosystems, since being brought to Europe by the Victorians in 1876, the animal has had severe ecological and economic impacts on British woodlands.

Acrobatic and entertaining they may be, but the charge sheet against the grey squirrel is based on hundreds of peer-reviewed research papers. There really is no defence for it.

Greys vs red in Europe

Today there are approximately 2.5m grey squirrels in Britain, but less than



Red and grey meet on the battleground.
© David Bailey

140,000 reds. Grey squirrels out-compete native reds for food and space. They also dig up and consume seed that red squirrels have buried as a winter store. This behaviour reduces red squirrel skeletal growth rates and adult size, and greatly depresses juvenile survival rates too.

In addition, greys harbour infections – including squirrel pox, which can devastate red squirrel populations. They elevate local viral and nematode infection rates, and bring in new parasites, such as *Strongyloides robustus*, which are picked up by red squirrels.

Occasionally a healthy red squirrel is found with squirrel pox antibodies – some researchers have suggested that this is evidence of them evolving resistance to the pox. Unfortunately, 63% of red squirrels dying from pox have also been found to have this antibody response present and there is no evidence that these antibodies confer immunity. Even if they did, research has also shown that antibodies are gone within 18 months and, irrespective of any resistance, red populations would be replaced by grey via competition anyway.

Woodland damage

Grey squirrels also damage and kill forest trees making it impossible for



Squirrel pox. © Sarah McNeil.

foresters to grow high-grade hardwood. This means such material is imported instead, bringing with it the risk of new tree pests and pathogens.

Tree damage is most frequently seen on the branches and trunks of oak, beech and maple; bark is stripped by squirrels eager to consume the sap underneath. Tree stems break or die following stripping, which in turn leads to changes in the structure and species composition of high canopy in amenity woodlands.

Even songbirds are affected by grey squirrels. A recent study gave evidence of negative association between woodland songbird fledging rates and presence of grey squirrels – though it must be noted that this was not observed annually and only seen on some of the sites studied. Earlier studies didn't find evidence to indicate greys affect bird population, but also didn't exclude the possibility – even for bird

species whose population is increasing overall.

Other animals may be affected by greys too: there has been some suggestion that squirrels compete with dormice for hazel nuts, though more research is needed to confirm the true impact.

Controlling greys

The Wildlife Trust has recently started to recruit 5,000 volunteers to monitor



Stripped tree bark. © Craig Shuttleworth.

and control grey squirrel populations. However, a look beyond the headlines will reveal thousands of people are already legally trapping and shooting greys across the country to control their numbers. Volunteer groups cull 6,000 grey squirrels per year in the north of England, for example. Even in areas where reds are absent, locals control grey squirrels to protect woodlands or prevent damage to property. This is not some dramatic new approach by the Wildlife Trust, but is simply reinforcing an established national movement.

The eradication of greys from the Welsh isle of Anglesey saw red squirrel numbers increase from 40 to 700 and there are other examples of grey control halting or reversing red squirrel decline. Research has also demonstrated that red squirrels do not prefer conifer to

broadleaved habitat and are just as happy in either.

Future control may involve giving the squirrels contraception, but will almost certainly not rely solely on this because of logistical barriers. The pine marten may assist in some landscapes too: one Irish study found a strong negative correlation between pine martens and greys in the woodlands studied. However, the use of trapping and shooting will inevitably continue as part of an integrated national approach.

And so the grey squirrel stands guilty as charged. Their presence has decimated the British countryside since they were introduced from North America, and if we do not continue to control the species, the future for red squirrels and woodland ecosystems will be bleak.

Major boost for Scotland's red squirrels thanks to National Lottery funding

Army of 800 volunteers will help secure the long-term survival of major red squirrel populations

The Scottish Wildlife Trust has been awarded a grant of £2.46 million from the Heritage Lottery Fund (HLF) for the Saving Scotland's Red Squirrels – Developing Community Action project.

Over the next five years the project will enlist volunteers from communities in three key regions to carry out practical work to protect and strengthen red squirrel populations in their local area, and in turn safeguard squirrels across Scotland.

Scotland is home to just 120,000 red squirrels, three quarters of the UK population. The main threat to native squirrels comes from competition with invasive non-native grey squirrels and the spread of the deadly squirrelpox virus.

Dr Mel Tonkin, Saving Scotland's Red Squirrels Project Manager said: "Our work since 2009 shows that through targeted control of grey squirrels it is possible to reverse the decline of our native reds and help them to return to former territories.

Saving Scotland's Red Squirrels aims to secure the long-term future of red squirrels in Scotland by supporting volunteers and land managers in three

key areas to work to save the species.

In Aberdeen City and Aberdeenshire, where grey squirrel populations have been significantly reduced in the last eight years, the project will continue to work towards making the area a grey-squirrel free zone by developing a rapid response system to detect and remove residual individuals.

In the Central Lowlands, coordinated control of grey squirrels will prevent them from becoming established to the north of the 'Highland Line', home to the UK's

largest population of red squirrels that are unaffected by greys.

In Southern Scotland, work will focus on eight Priority Areas for Red Squirrel Conservation (PARCs). Saving Scotland's Red Squirrels will create networks of local people who are able to make an important ecological impact by monitoring squirrel numbers and trapping greys that would otherwise oust local red squirrels, making them more resilient to changes and safeguarding important populations for Scotland.





Nutkin ventured, nutkin gained: Evolving grey squirrel management techniques

Whilst editing the recent ESI publication *'The Grey Squirrel - Ecology & Management of an Invasive Species in Europe'* I first encountered Karl Larson's fascinating chapter on the grey squirrel in British Columbia. Whilst it is a species native to eastern Canada, the grey squirrel is an introduced invasive in the west and it is these expanding populations that where the focus of Karl's detailed account.

Grey squirrels were first released into Stanley Park in Vancouver in 1909 and subsequently to South Okanagan. In 1966, a small number escaped from a game farm on nearby Vancouver Island. They have since progressively colonised the south of the island where they are a threat to the Garry Oak (*Quercus garryana*) ecosystems because they deplete acorn crops. Despite the grey squirrel being listed as a pest, animals are still being deliberately moved by people and there is a risk that new populations will be established elsewhere in the region.

A quick online search using the terms 'grey squirrel & Vancouver' will reveal additional impacts to those observed on trees. Here, as is the case in the United Kingdom, animals damage roof structures, chew wiring and destroy or interfere with loft insulation. Consequently numerous pest control companies now offer grey squirrel removal services in urban and suburban areas of the city and island. The grey

squirrel is not only a wider nuisance in gardens, where they dig up bulbs, but they present a potential commercial threat to fruit, nut and other seed crop production in the region.

What about their impact on native squirrel species? Well, Emily Gonzales (2004) highlighted the fact that both Northern flying squirrels and Douglas squirrels were still present in Stanley park nearly hundred years after greys first arrived. She also made the case that the native red squirrel (*Tamiasciurus hudsonicus*) has often been adversely affected by urban development and changes to forest tree species abundance. However, although it is difficult to tease apart these factors from the direct impact presented by the grey squirrel, there are nevertheless strong suggestions that the larger grey squirrels (550g) exploit the smaller red squirrel (230g) seed stores and compete with them for resources which would contribute to, or exacerbate, local declines.



A north American red squirrel (*Tamiasciurus hudsonicus*)
© Gilles Gonthier - *Tamiasciurus hudsonicus* 1st Nov 2007 Flickr.

In Europe, the grey squirrel not only competes with native red squirrels (*Sciurus vulgaris*) for resources, but they harbour novel infections, including squirrel pox, and elevate local viral and nematode infection rates too. This summer preliminary research will quantify the range of infections carried by grey squirrels in British Columbia and seek to understand how these may affect native squirrel species. This exciting collaborative study is being led by Thompson Rivers University, Bangor University and the Animal Plant Health Agency (Weybridge) and builds upon a generous 2017 Winston Churchill Fellowship and travel grant.

Craig Shuttleworth
Winston Churchill Memorial
Trust Fellow 2017

Keep Options Open on Grey Control, Says ESI

Figures published earlier this year show that in strategically systematic and coordinated programmes carried out in the north of England, grey squirrel control is most effective when a combination of trapping and shooting is used, with shooting proving to be the most effective aspect of control.

The programmes, which were carried out in North Cumbria by three adjoining red squirrel conservation community groups (Brampton, Penrith & Solway) with a combined area of approximately 1430 square miles between July and December 2016 showed that 72.8% of grey squirrels were shot, 25.4% trapped and 1.8% were road casualties

The figures for shooting rose to an average high of 86.6% in the months of October, November and December with 92% being achieved in one area in November 2016.

Shooting was carried out at fixed points with baited feed stations using air rifles and with full appropriate risk assessments, insurance and strict protocols being in place.

"These figures show how important it is to utilise all the methods at our disposal to control grey squirrels," said Andy Wiseman, ESI Chairman.

"Shooting carried out in a controlled and systematic way is clearly very effective in reducing grey squirrel

numbers."

Congratulating Julie Bailey who collated and produced the statistics from standardised squirrel recording data, Mr Wiseman went on to explain that over 1500 grey squirrels were removed during the six month period and the work was part of ongoing red squirrel conservation work carried out by these groups.

"We must congratulate all those involved in these programmes as it shows what can be done when a systematic, consistent and concerted effort is put in place to control grey squirrels. As a result of this work we are significantly reducing the damage to our Broadleaved forests and pushing back the grey invasion allowing our native red squirrels to thrive and prosper in this part of England", he added.

"We are very fortunate that Cumbria still has an abundant healthy population of red squirrels living in their natural environment. The standardised recording data provides very clear

significant evidence that using a combination methodology of both trapping and shooting is the most effective means of clearing areas of the non-native grey squirrels to allow our iconic and genetically unique

Red squirrels to survive for now and for future generations to enjoy" said Julie Bailey. "This invaluable work and the work of many other community based red squirrel conservation groups across the UK is carried out without government funding. This must be addressed as a matter of urgency as it is the dedicated 'boots on the ground front line work' by these community groups that is making the biggest impact in red squirrel conservation. Recording data provided by the community groups year on year in the North of England shows that approximately 70% of the overall grey cull is by these groups and without sustainable government funding to support them, the North of England will lose it" she added".

Publications

The sharing of expertise, information and knowledge remains of paramount importance to ESI. Having already taken the lead on ensuring practitioners were aware of the methods of grey squirrel trapping and the legal issues involved and publishing books on the impact of the American Grey Squirrel, ESI has accelerated its publications programme in recent months. 2016 saw three new ESI publications: all have been well received.

The Grey Squirrel Management Handbook by Charles Dutton is a comprehensive handbook for the control of grey squirrel and the various methods which are available. It brings together relevant information about grey squirrel forest damage and looks at the various methods available to control the species. The handbook also shares how a tried and tested IUCN formula which has been used in many countries throughout the world and been successful in freeing them of alien species could be adapted for use in the UK for a national management programme.



Red Squirrels: Ecology, Conservation and Management in Europe was edited by Dr Craig Shuttleworth, Honorary Visiting Fellow at Bangor University, Dr Peter Lurz, Honorary Fellow, University of Edinburgh and Dr Matthew Hayward who is a Senior Lecturer in Conservation at Bangor University. The book contains peer reviewed studies authored by many of the world's leading squirrel experts and is a collection which will contribute to the evolution of applied conservation across Europe.

The Grey Squirrel: Ecology and Management of an Invasive Species in Europe edited by Dr Craig Shuttleworth, Dr Peter Lurz and Professor John Gurnell of Queen Mary University of London. This volume presents a comprehensive and unique collection of peer-reviewed papers by scientists, experts and managers on critical aspects of grey squirrel biology, their parasites, diseases and management.





The Grey Squirrel Management Handbook

By Charles Dutton



The Grey Squirrel Ecology & Management of an Invasive Species in Europe

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