

**Bringing back red squirrels to West Cornwall will succeed only when all the grey squirrels are cleared from the area. Project Co-ordinator Natasha Collings reports on progress.**

The project to reintroduce the native red squirrel, founded in 2009, is using the naturally isolated geography of Cornwall to maximise the chances of this most enchanting mammal becoming successfully re-established in the county.

But all this remains a future hope whilst grey squirrels remain established in the county. The first American grey squirrel was introduced to the UK in 1876 at Henbury Park in Cheshire, setting a trend amongst Victorian land owners which ensured that numerous releases of grey squirrels took place over the next sixty years.

Sadly legislation was slow to catch up, and only in 1937 was the importation and release of grey squirrels banned. By then the grey squirrel was well established in the UK, and in a frighteningly short space of time populations of native red squirrel dwindled. To start with the reason for the rapid loss of red squirrels was not understood, and many people thought it was just down to competition between the two species for food and nesting resources.

This is of course an issue, but in the mid 1980's the main reason for the loss was discovered – the existence of the squirrel pox virus. Carried by the grey squirrels which appear to suffer no ill effects from the disease the pox is fatal to reds, resulting in sores around the mouth and eyes, and death within five to seven days. By 2000 just 170,000 red squirrels remained in the UK, compared to estimates of five million grey squirrels. This shocking loss is estimated to be 50 times faster than if there had just been a competitive issue between the two species.

Of course, the introduction of grey squirrels was not just bad news for red squirrels, as songbirds have also suffered from the more voracious appetite and higher population densities of the greys. New research by the Game and Wildlife Conservation Trust shows a significant positive correlation between numbers of grey squirrels in woodland and fledging success in birds. “The results from the research work indicate that grey squirrels at particular densities have a noticeable effect on some birds, particularly those which have open nests, rather than nesting in holes or hollow trees,” says George Farr Chairman of the European Squirrel Initiative who commissioned the research. Professor Nick Sotherton of the Game and Wildlife Conservation Trust, who also acts as Scientific Advisor to the Cornwall Red Squirrel Group, added: “The study indicated when grey squirrels were at a relatively high density and were then removed there was a measurable positive effect on the post nesting fledging of the woodland bird community.” This adds to the body of evidence already known, including research from the British Trust for Ornithology in 2003 (Hewson, C.M. and Fuller, R.J.), which showed predation of some bird nests by grey squirrel, including those of the blackbird, Eurasian collared dove, green woodpecker, long-tailed tit and Eurasian jay. The same report concluded that bird species potentially most at risk from Grey Squirrel predation are those that nest in the canopy but that no species, even those nesting on the ground or in holes and nest boxes, are completely immune.

The impact on bird species from grey squirrels is not only down to direct predation of eggs and fledglings, but also through stripping of trees. Grey squirrels are well known for attacking our

broadleaved tree species, often resulting in the death of the tree either directly or through fungal attack. The cost to the UK forestry industry is over £50 million a year in commercial forestry alone, with many arboriculturists believing the true figure is six to ten times this amount. Geraint Richards, Head Forester for the Duchy of Cornwall believes the true cost of grey squirrel damage to woodland is yet to be seen. "The fact is that we will have far fewer native broadleaved trees maturing from the post grey squirrel era, meaning that the type of ancient woodlands we enjoy today may well be the last," he said.

This point is now even more serious, as historically the only native tree species the grey squirrel hasn't favoured has been the ash. With this species likely to suffer extensive losses through ash dieback (*Chalara fraxinea*) the picture for mature native woodland looks even more bleak. All of this means that success for the Cornwall red squirrel project would be good news for bird species in Cornwall, as well as for the red squirrel itself.

The project now has a full time "squirrel ranger", David Fineren, spends all of his time in the field, educating land owners from those with a small garden to estates of several hundred acres and enrolling them in the scheme. Since his appointment earlier this year more than 85% of the Lizard and 50% West Penwith in terms of land area have been signed up to either remove their own grey squirrels or have assistance from project in doing so, with this percentage rise set to continue over the next few months.

The two target areas of the Lizard and West Penwith were chosen with the help of Dr Craig Shuttleworth at the outset of the project in 2009. Dr Shuttleworth is the renowned red squirrel expert who successfully re-established a healthy population of red squirrels on the island of Anglesey, the "pathfinder" project which Cornwall hopes to follow in the footsteps of. Both target areas are peninsulas with narrow bands of land joining them to the rest of Cornwall. West Penwith uses the Hayle River to Marazion line as a boundary, and the Lizard uses a line between the Helford river and Loe Bar near Porthleven. Both of these lines make use of natural watercourses, but although these help delineate the areas, they have little effect on the grey squirrel populations except at the wider end of the Helford, as greys are good swimmers and will cross even substantial water bodies if they can see woodland on the other side.

In tandem with the removal of grey squirrels the Cornwall Project has also joined the captive breeding efforts, led by the National Stud Book for Red Squirrels which is run by Peter Litherland at the Welsh Mountain Zoo. The stud book helps match unrelated red squirrels between breeding centres across the county, making sure that newly bred stock are as genetically diverse as possible. This is especially important when introducing new individuals to small existing populations, where the effect of any inbreeding needs to be diluted. With this in mind a new captive population of red squirrels was established at Trewithen, near Truro in spring 2012. Three squirrels were sourced for the Trewithen breeding operation, on the advice of David Woolcock, curator at Paradise Park in Hayle. Paradise Park has been breeding red squirrels for 17 years, and in that time has produced over 80 young, known as kits, which have either gone on to other breeding populations, or in many cases have been released back to the wild to help bolster wild red squirrel populations. David Woolcock says "We've found that trios of red squirrels seem to breed best in captivity, that is, two females and one unrelated male". Paradise Park therefore loaned Trewithen two of its 2011-born female red squirrels on loan, and then helped source an unrelated male squirrel from the Welsh

Mountain Zoo. The male red squirrel had a special release by none other than HRH The Prince of Wales who is a keen supporter of the Cornwall Red Squirrel Project, as well as being Patron of the national red squirrel body, the Red Squirrel Survival Trust.

It is hoped that the trio will breed this year and their young can go on to be released into the wild, and eventually back into Cornwall. For now though, the prospect of release remains a few years off as efforts are concentrated on removing the grey squirrels from the two target areas, and an associated buffer zone. The buffer zone covers 10km to the north of the two target areas, joining together the areas in a line below Camborne and Falmouth. This gives a total area of more than 39,000 hectares to be cleared, in which it is estimated there are around 3,500 grey squirrels. This was worked out using GIS habitat mapping and average population estimates, required to give a robust strategy for the Cornish project, which prides itself on its scientific basis in understanding the challenges of removing the grey squirrels and releasing the reds. Thanks in part to the rigour of the project CRSP has been successful in pulling together a "Stakeholder Committee" made up of all the main statutory and non-statutory conservation bodies in Cornwall including Natural England, the Forestry Commission, Cornwall Council, the National Trust and Cornwall Wildlife Trust.

The aim for the next three to five years is twofold, firstly to ensure the on-going removal of grey squirrels from the target areas and buffer zone, and secondly to continue to enthuse and educate the public about the plight of the red squirrel. Schools and adult talks and workshops are held by CRSP several times a month, together with awareness raising workshops and stalls. It's hoped in the near future to develop "Red Squirrel Walk Packs" for both locals and visitors to encourage them to visit the two captive populations of red squirrels in Cornwall, learn about the threats the species faces, and then walk into the surrounding habitat and imagine our native red squirrels back there again. At the end of this period it is hoped that looking for red squirrels in these very woodlands will require not an active imagination, but just a keen pair of eyes, as red squirrels once again gambol in the woods of Cornwall.