

Red Squirrel Conservation Plan for Wales

Review of progress and update 2018



Prepared by the Wales Squirrel Forum

Contents

1. Background	3
2. Drivers for action.....	4
3. Red squirrel conservation management	5
4. Red squirrel Focal Sites for conservation action	6
5. Progress with meeting the 2009 objectives and targets	8
6. Review of implementation of the conservation plan.....	10
7. Updated red squirrel conservation objectives	12
8. Refreshed red squirrel conservation actions	12
9. Governance.....	14
Annex 1 Drivers for action to safeguard red squirrel populations in Wales	15
Annex 2 Red Squirrel Conservation Plan for Wales - progress against	17
2009 actions	

The Wales Squirrel Forum is made up of statutory, non-statutory organisations and local squirrel groups, and aims to enable effective red squirrel conservation, and grey squirrel management in Wales.

For further details see: <http://naturalresourceswales.gov.uk/guidance-and-advice/environmental-topics/wildlife-and-biodiversity/uk-protected-species/red-and-grey-squirrels/?lang=en>

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1. Background

Red squirrels were once widespread across Wales but, like much of the rest of the UK, populations have suffered significant declines following the release and spread of the North American grey squirrel. In recognition of the need for focussed and strategic action, the Red Squirrel Conservation Plan for Wales (RSCPW) was published in 2009¹.

The plan set out conservation objectives for protecting red squirrel populations in Wales and the actions required to meet those objectives. The plan also identified Anglesey, Clocaenog forest and the Tywi forest complex in mid-Wales as focal sites for red squirrel conservation action (see Figure 1).

Since its publication, much progress has been made in achieving the plan's objectives. However, there remains an ongoing requirement to safeguard red squirrels in Wales and the Wales Squirrel Forum (WSF) agreed that a review of progress and a refresh of actions was required to ensure that conservation effort continues to be properly focussed.

There have also been changes in the policy framework for action and developments in the types of Welsh Government (WG) support to landowners through agri-environment schemes.

The aim of this review is to:

- assess progress with meeting the red squirrel conservation objectives in the 2009 plan,
- review implementation of the actions,
- identify updated objectives and a set of refreshed actions, and
- update the drivers for action.

It is not the intention of this review to reproduce the background information presented in the 2009 conservation plan and so this document should be read in conjunction with the original plan¹.

The Welsh Government's Grey Squirrel Management Action Plan (GSMAP) aims to develop an integrated approach to the management of grey squirrels in Wales and meet obligations under the Invasive Alien Species (IAS) Regulations (see below and Annex 1). Objectives for the GSMAP seek to reduce the impact of grey squirrels on both red squirrel populations and woodlands. The RSCPW supports the objectives of the GSMAP, and whilst it is focussed on the conservation of red squirrels, actions will also have wider benefits for woodlands.

¹ Wales Squirrel Forum (2009) *Conservation plan for red squirrels in Wales*. Forestry Commission, Welsh Assembly Government, Countryside Council for Wales, Bangor, UK. <http://naturalresourceswales.gov.uk/media/679445/wales-red-squirrel-conservation-plan.pdf>

2. Drivers for action

The need to safeguard resilient populations of the native red squirrel in Wales remains due to the ongoing threat populations face. However, since the publication of the plan in 2009 there have been new legislative and policy drivers which reinforce the importance of continued action:

- **Environment (Wales) Act 2016 and Natural Resources Policy**
The Environment Act sets out Wales' approach to natural resource management to deliver real outcomes for the environment, people, the economy and communities. Section 7 of the Act requires Welsh Ministers to publish a list of living organisms of key significance to biodiversity in Wales. The red squirrel is included on the interim section 7 list.
- **Nature Recovery Action Plan for Wales 2015**
The Nature Recovery Action Plan aims to 'To reverse the decline in biodiversity, for its intrinsic value, and to ensure lasting benefits to society'.
- **Wellbeing of Future Generations (Wales) Act 2015**
This Act aims to improve the social, economic, environmental and cultural well-being of Wales.
- **EU Regulation (EU) No 1143/2014 on the Prevention and Management of the Introduction and Spread of Invasive Alien Species (the IAS Regulation)**
The IAS Regulation requires both a list of invasive alien species of Union concern be drawn up, and Member States must put in place management measures for the eradication, control or containment of listed species.
- **Grey Squirrel Management Action Plan**
The GSMAP seeks to develop a more integrated and effective approach to grey squirrel management in Wales to reduce the impact of grey squirrels on red squirrel populations, and tree and woodland ecosystems and the services they provide.

See Annex 1 for further details on the relevance of these Acts and plans to the RSCPW.

3. Red squirrel conservation management

The principles of red squirrel conservation management remain broadly the same as given in the 2009 RSCPW. The focus continues to be on grey squirrel control to remove competition and the risk of disease spread together with habitat management to ensure an appropriate mix of tree species and habitat connectivity.

Habitat management

Habitat management recommendations in the 2009 plan remain relevant, but the presence of *Phytophthora ramorum* disease has and will continue to be a factor leading to the felling of larch across Wales. Larch provides an important food source and arboreal connectivity for red squirrels and the loss of this key habitat could particularly affect Clocaenog and mid-Wales focal sites.

Deforestation for restoration of other habitats, such as deep peat, can also have an impact on red squirrel habitat and mitigation for such loss should be implemented.

Grey squirrel management

Live cage trapping followed by despatch remains the primary means of grey squirrel control. The use of warfarin has not been permitted since July 2016. Research into fertility control of grey squirrels continues, but availability of a suitable vaccine is still many years away².

There is evidence from Ireland and Scotland that the recovery of pine marten populations may lead to a decline in grey squirrel numbers and a subsequent increase in red squirrel populations. However, the mechanism by which this effect operates or the circumstances in which it is likely to occur are not yet known³ and research is ongoing.

Disease risk

Squirrelpox virus (SQPV) remains a threat to red squirrel populations with the disease being spread from grey squirrels. The first cases of SQPV in wild red squirrels in Wales were recorded in Gwynedd in 2017. There is increasing awareness of the emergence of other disease risks. In particular, adenovirus has been recorded in dead red squirrels at locations across the UK. Research is continuing to improve understanding of the impact on red squirrel populations.

Two recent publications provide a detailed account of advances in our understanding of red and grey squirrel ecology and management: 'Red squirrels, Ecology, Conservation & Management in Europe' (Shuttleworth, Lurz & Hayward 2014) and 'The Grey squirrel; Ecology & Management of an Invasive Species in Europe' (Shuttleworth, Lurz & Gurnell 2016).

² <http://squirrelaccord.uk/assets/sporopolleninsoralcontraception9nov2016.pdf>

³ Sheehy E et al. 2018 *The enemy of my enemy is my friend: native pine marten recovery reverses the decline of the red squirrel by suppressing grey squirrel populations*. Proc. R. Soc. B 285: 20172603. <http://dx.doi.org/10.1098/rspb.2017.2603>

4. Red squirrel Focal Sites for conservation action

The RSCPW identified the need to prioritise action at focal sites to ensure effective use of resources. With the support of the then WG Ministers for the Environment and for Rural Affairs, the Conservation Plan identified the island of Anglesey, Clocaenog forest in north Wales and the network of forests in mid-Wales centred on the Tywi forest as the agreed Focal Sites where urgent strategic action was needed.

Anglesey

The 710 km² island of Anglesey is separated from mainland Wales by the Menai Strait but is connected by two bridges. The island contains approximately 2500 ha of mature woodland, including two commercial conifer plantations (Newborough Forest 689 ha and Mynydd Llwydiarth 244 ha).

Grey squirrels were once widespread but a trapping programme initiated in 1998 led to their eradication. In 1997 only 40 red squirrels remained, but following natural expansion and a series of reintroductions, the adult red squirrel population is now around 700 individuals. Current work by the Red Squirrels Trust Wales <http://www.redsquirrels.info/>, as part of the EU Life and HLF funded Red Squirrels United project RSU <http://www.redsquirrelsunited.org.uk/> is focussed on preventing grey squirrel re-colonisation of the island through control within an adjacent 150 km² area in Gwynedd, understanding pathogenic disease threats that mixed red/grey populations present, and monitoring red squirrel distribution and abundance including the animals which have spread from Anglesey and established in Gwynedd. In autumn 2017 there was an outbreak of SQPV in the Menai Strait area of Gwynedd with three dead red squirrels testing positive. There is no evidence of it spreading to the Anglesey population.

Clocaenog

Clocaenog Forest is a large (5500 ha) upland commercial conifer plantation in north Wales bordering Denbighshire and Conwy and managed by Natural Resources Wales (NRW). The forest is dominated by Sitka spruce but also has widely dispersed stands of tree species more suitable to red squirrels such as Norway spruce, larch and pine.

In the 1990s, red squirrels were widespread in the forest and were considered to represent the largest single population in Wales and 2000 ha of forest was classified as a 'Red squirrel reserve' in 1992. Subsequently, red squirrels were identified as a priority feature within the whole afforested area with conservation action encompassing grey squirrel control, an increase in Norway spruce and Scots pine area, and the introduction of Continuous Cover Forestry (CCF) which maintains productive high forest and canopy connectivity.

Survey information suggests that the red squirrel population has declined in recent years, but recent trail camera records have shown that reds are still present in both the main section of the forest and the western Alwens block. The difficulties of monitoring low density red squirrel populations mean that data is not available to determine whether the red squirrel decline has been the result of gradual competitive exclusion by grey squirrels, or whether there has been a sudden decline resulting from a SQPV outbreak (the isolation of the forest means it is unlikely that any diseased red squirrels would be detected). A red squirrel reinforcement project is now underway to support the recovery of the population.

Grey squirrel control is ongoing across the forest and for the first time volunteer trapping and monitoring is underway under the Red Squirrels United (RSU) project and the BASC Green Shoots project. The RSU Red Squirrel Ranger has been successful at recruiting an enthusiastic group of volunteers who are trapping within the forest and in the buffer zone. An extensive network of camera traps is being used to both monitor the red squirrel population and identify the presence of greys to initiate trapping. The BASC Green Shoots project has also been working with their members to encourage trapping in and around the forest.

Mid Wales

The red squirrel population in mid Wales is widely dispersed over 15,000 ha of upland forestry plantations in the upper Tywi catchment. Survey effort has been localised and infrequent, with estimates of population size ranging from 100 to 500 individuals.

Grey squirrels are present in the broadleaved woodlands surrounding the Mid Wales Red Squirrel Focal Site (MWRFS) and at times venture into the core of the Focal Site. Inappropriate habitat management also threatens the viability of the red squirrel population in mid Wales. Large clear-fells reduce both habitat availability and arboreal connectivity and can lead to local extinctions of red squirrel populations. Recent changes in species composition caused by loss of larch due to *Phytophthora ramorum* disease, and reluctance to plant lodgepole pine could threaten food sources for red squirrels. However, it is predicted that the requirement to diversify plantings under UKWAS will help to provide a variety of food sources for red squirrels over the long term.

The Mid Wales Red Squirrel Partnership (MWRSP) is working to reduce the grey squirrel population in and around the MWRFS, and to encourage sympathetic forest management. Since 2014, a project headed by the Wildlife Trust of South and West Wales (WTSWW) has employed a Red Squirrel Officer on a part-time basis. The project has set up a Trap Loan Scheme (TLS) to engage landowners and residents in and around the MWRFS in grey squirrel control. Since September 2016, through the UK-wide RSU Project, the WTSWW project has also employed a part-time Grey Squirrel Control Officer to help to support and expand the TLS. The WTSWW TLS is reinforced by a BASC Green Shoots project which runs a TLS in a zone surrounding the MWRFS buffer. Trapping of grey squirrels has also been funded under the Glastir agri-environment scheme (Glastir Woodland Management and Glastir Advanced) and is carried out in several forests in the core area of the Focal Site, and in smaller woodlands with the buffer area. It should be noted that the continuation of these grant schemes is not guaranteed.

The Project works to raise awareness of the red squirrel and its conservation needs through a presence at events, public talks, press engagement, a project website and social media. Local volunteers are monitoring red squirrels at several locations in the MWRFS with camera traps as well as conducting wider surveys for red squirrel to ascertain range and abundance. The MWRSP has been working with forest managers to develop a management plan for the core of the MWRFS; the first 5-year plan was launched in 2017.

Since 2015, there has been a marked increase in the number of sightings of red squirrels reported to MWRSP and in the geographical spread of the sightings. This appears to indicate an increase in the size and range of the population of red squirrels in mid Wales. However, the increase in reported sightings could also be an indication of increased public awareness.

5. Progress with meeting the 2009 objectives and targets

The 2009 RSCPW had a primary objective to maintain breeding populations of red squirrels at all Focal Sites, but also aimed to meet Biodiversity Action Plan (BAP) target agreed by the WSF in 2005.

Biodiversity Action Plan target

The BAP target set in 2005 was to ‘Maintain red squirrels at the current range by 2010 and 2015’. At that time, red squirrels were assessed to be present in a total of 20 x 10km squares in Wales. In 2017 it was estimated that the red squirrel range extends to around 32 10 km squares (see Table 1 and Figure 1).

Table 1 Summary of red squirrel distribution in Wales

Count of red squirrel presence in 10km squares in 2005 and 2017

Sites where red squirrels have been recorded	No. 10 km squares	
	2005	2008-2017
Anglesey Focal Site	4	12
Gwynedd		4 ^a
Clocaenog Focal Site	2	2
Mid-Wales Focal Site	10	13
Cynwyd and Nantyr	2	0 ^b
Aberhirnant	2	0
Cwm Mynach	0	1 ^c
Brechfa	0	0
Rheola	0	0
Total number of squares	20	32

a excludes squares that overlap with Anglesey

b unconfirmed reports of sightings

c single confirmed record in 2011

RSCPW 2009 objectives

The RSCPW objective to ‘maintain breeding populations of red squirrels at all Focal Sites within Wales’ has been successfully achieved with breeding red squirrels still present at Clocaenog forest, the mid-Wales population being more secure and potentially expanding and a significant expansion of the population across Anglesey.

The secondary objective to ‘maintain the current distribution of red squirrels within Wales if resources permitted’ has probably not been achieved. Whilst there has been an expansion of the total range of red squirrels in Wales (see Table 1), it has not been possible to target management at most of the non-focal site woodlands. Populations are now considered to be extinct at Aberhirnant, Nantyr, Brechfa and Rheola, although they may have already been so when the 2009 plan was written. The status of red squirrel populations at Cynwyd and Cwm Mynach is unclear.

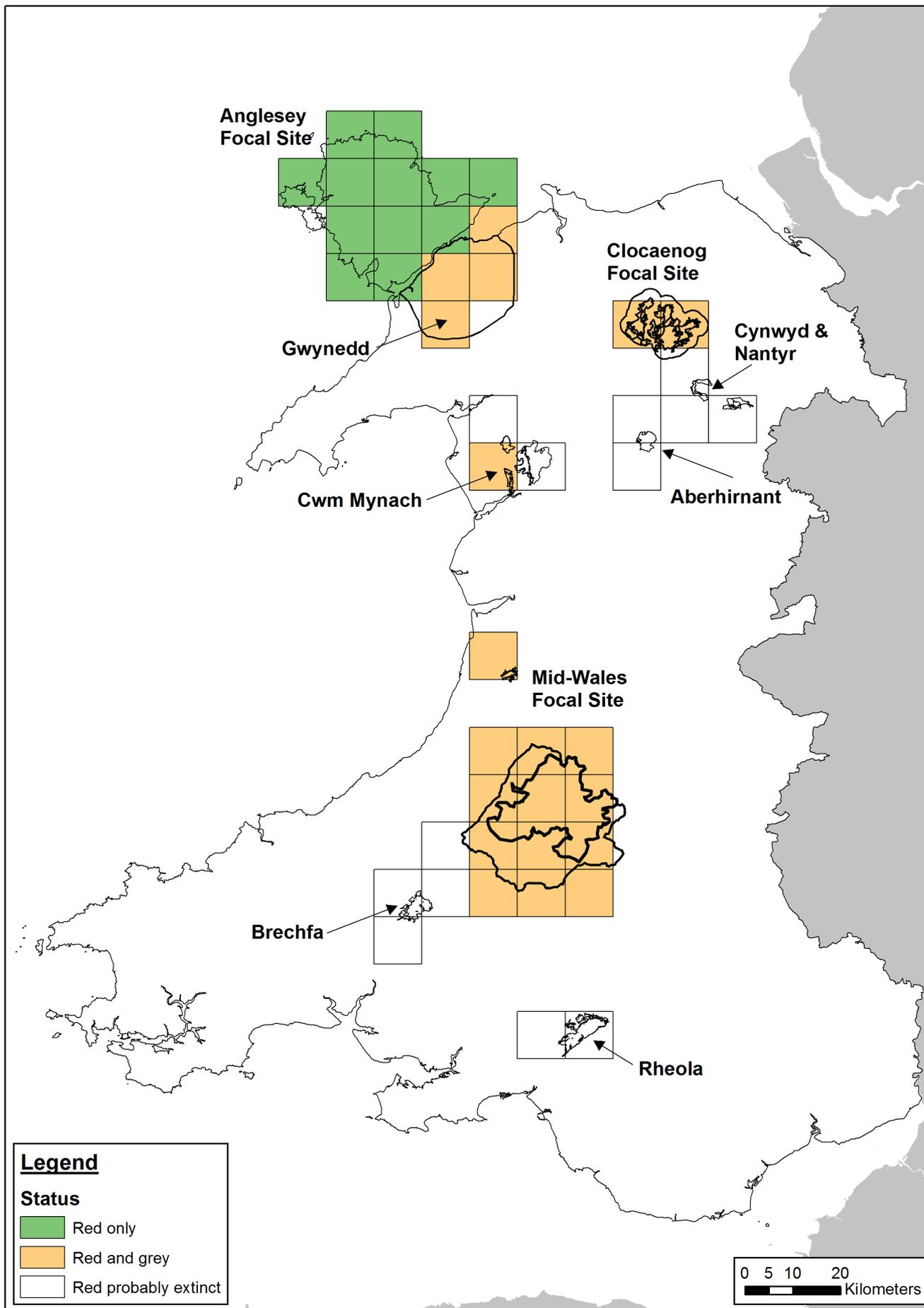


Figure 1 Distribution of red squirrels in Wales in 2017

Map shows records at 10km square level at the three Focal Sites, their buffer zones and other sites where red squirrels were considered to have been present in the last 20 years.

6. Review of implementation of the conservation plan

Members of the Wales Squirrel Forum were asked to provide information on progress and constraints encountered during the implementation of the conservation plan. See Annex 2 for further details on each action

Survey and monitoring

Survey work has been completed at the majority of sites with prior evidence of red squirrels. Red squirrels were detected at Cwm Mynach and sightings reported at Cynwyd. It is likely that red squirrels are now extinct in Brechfa, Rheola, Aberhirlant and Nantyr (see Figure 1).

The implementation of effective monitoring of population sizes at the focal sites has not been possible due to populations having a low density of squirrels over a wide area, particularly in the mainland focal sites. A cost-effective monitoring methodology that would be powerful enough to detect change in population size has yet to be identified. The availability of more affordable trail cameras has improved survey opportunities, although there is some concern around the disease risk of using baited methods. Available evidence suggests that the Anglesey population has increased and is now substantial, mid-Wales has a widespread low density population with numbers probably stable although there are indications that the red squirrel population may have declined to the east of the MWRSFS. Clocaenog Forest has a low population which has most likely declined. Recent records have been in the west and east of the forest, but with few in central section.

Focal sites - woodland management for red squirrel populations

There has been ongoing engagement with the forest planning process, although the availability of dedicated project staff has at times limited the ability of projects to input. Management plans have been prepared for all three focal sites with extensive work to engage with private forest companies and NRW, particularly in mid-Wales. Mandatory felling of larch due to *Phytophthora ramorum* infection has affected red squirrel management plans. There will continue to be a need to influence forest management in the focal sites, but clarity is needed on the best approach for doing so, particularly as NRW develops Forest Resource Plans. The continued development and implementation of agreed management plans remains an important priority.

Grey squirrel management within focal sites and buffer zones

Management of grey squirrels has been successfully implemented at each focal site to protect red squirrel populations. Trapping has been undertaken using paid contractors and/or by volunteers following the establishment and co-ordination of trap loan schemes. Funding for contractors and project officers has come from a variety of sources such as Heritage Lottery Fund, European funding, WG and NRW. Some control has also been undertaken through Glastir agri-environment agreements.

Management initially focussed on the removal of grey squirrels from the core area of the focal sites. Grey squirrels have been eradicated from Anglesey and are now infrequent in Clocaenog Forest and mid-Wales. Trapping is now focussed on managing grey squirrels within the buffer zones of each site, whilst maintaining the core areas free of grey squirrels. The future remains uncertain due to schemes provides an important role in fostering sustainable grey squirrel management, but volunteers will need ongoing support.

Advice and public awareness

The WSF and project partners have responded to WG consultations on Glastir, provided advice on implementation of measures to protect red squirrels and inputted to the development of the GSMAP. There will be a need to continue to provide advice as new agri-environment schemes are developed.

The WSF provides an opportunity to share ideas and discuss issues. The current Red Squirrels United project includes all three focal sites in Wales as well as England and Northern Ireland with co-operation and sharing best practice being an important part of the project.

Community engagement is a key activity at all three focal sites. On Anglesey, the Red Squirrels Trust Wales is a community led group and co-ordinates all conservation and engagement work. The Mid Wales Red Squirrel Partnership has established ten volunteer hubs with local people actively involved in grey squirrel control, red squirrel monitoring and project promotion at events. At Clocaenog Forest work is now actively underway to establish a 'friends' group with good local interest.

Involvement of local communities will continue to be fundamental to safeguarding red squirrel populations in the future. Work is ongoing in all three focal sites but it is likely that groups will continue to need support. Participation in the Red Squirrels United project and the UK Squirrel Accord (<http://squirrelaccord.uk/>) provide opportunities to raise public awareness and engage with work at a UK level.

Disease control

Tissues samples from all focal sites show the presence of antibodies for squirrelpox virus in grey squirrels and the first outbreak in red squirrels was recorded in autumn 2017 in Gwynedd. Adenovirus has also been identified as a potential threat to red squirrels with infected red squirrels found in Anglesey/Gwynedd in 2016. Availability of funding has limited the ability to analyse samples and there is an ongoing need to undertake disease surveillance.

Trap hygiene best practice is being followed by all projects with standard operating procedures produced for grey squirrel control and red squirrel monitoring. Additional guidance is needed in relation to emerging disease threats.

Research

Wales level input to research arenas has been limited recently due to fewer red squirrel meetings at a UK level. However, there remains a need to ensure any identified research needs are highlighted to the appropriate organisations.

In summary, there has been progress with delivery of actions in all areas of the conservation plan. However, there have been limitations, particularly in relation to the availability of resources to deliver effective grey squirrel management, challenges around forest management and the need for an effective and practical red squirrel monitoring technique.

7. Updated red squirrel conservation objectives

This review of progress has identified that the agreed Focal Sites (Anglesey, Clocaenog and mid-Wales) should continue to be the priority areas for action. The Wales Squirrel Forum has agreed that the objectives of the Red Squirrel Conservation Plan for Wales from 2018 onwards are to:

- Maintain and enhance the range of the red squirrel within the Wales Focal Sites
- Maintain and enhance the size of the red squirrel population within the Focal Sites to ensure robust and resilient populations.

And,

- If resources allow, maintain and extend the range of the red squirrel populations beyond the Focal Sites.

8. Refreshed red squirrel conservation actions

Following the review of progress with the implementation of the conservation plan actions, the WSF have agreed the following updated actions.

The lead body is responsible for co-ordinating and/or encouraging action, but a range of other parties will be involved in delivery.

Action	Lead body
Identify and monitor red squirrel populations	
1. Survey non-focal sites where reliable records of red squirrels received	WSF
2. Review agreed red squirrel focal sites every five years	WSF
3. Monitor red squirrel populations in focal sites to establish range and if possible relative population size	Local red squirrel projects
Protect red squirrel populations	
4. Review and comment on forest management planning including Forest Resource Plans	NRW and WSF members
5. Review and continue to implement red squirrel management plans for Focal Sites ⁵	Local red squirrel projects
6. Manage grey squirrels within Red Squirrel Focal Sites (see also GSMAP Actions 5 & 7)	NRW ⁶ and/or local red squirrel projects
7. Manage grey squirrels within Red Squirrel Focal Site buffer zones	NRW ⁶ and/or local red squirrel projects
8. Provide development advice where red squirrel habitat maybe affected	NRW and/or local red squirrel projects
Policy advocacy	
9. Respond to consultations to ensure red squirrel conservation is addressed in relevant policy documents	WSF and individual member organisations
Disease control	
10. Monitor incidence of squirrelpox virus in grey squirrels	WSF and local red squirrel projects
11. Ensure that activities minimise the risk of disease transmission	WSF and local red squirrel projects

⁵ Focal Site management plans will be subject to Habitat Regulations Assessment as appropriate.

⁶ NRW grey squirrel management is with respect to the Welsh Government Woodland Estate

	Lead body
Advisory and public awareness	
12. Facilitate and enhance communication and sharing of good practice between red and grey squirrel practitioners within Wales and the UK (see also GSMAP Actions 9 & 10).	WSF
13. Provide advice on red squirrel conservation (including grey squirrel management) for developers, foresters and local authorities (see also GSMAP Action 6)	WSF and local red squirrel projects
14. Establish and support red squirrel community groups for Focal Sites	Local red squirrel projects
15. Promote public understanding of the red squirrel in Wales and its conservation	WG, NRW and local red squirrel projects
Research	
16. Maintain an overview of red and grey squirrel research within the UK and ensure Wales' specific issues are addressed (see also GSMAP 11)	WG, NRW and Forest Research
17. Review and assess the potential impact of climate change on red squirrel conservation in Wales	Forest Research

9. Governance

The implementation of the RSCPW will be overseen by the Wales Squirrel Forum. Members of the WSF will be responsible for selected actions.

The RSCPW will be reviewed every 5 years to assess progress with implementation and determine if any updates are needed.

The Wales Squirrel Forum, will also act as a steering group to co-ordinate, support and provide advice on the Grey Squirrel Management Action Plan (GSMAP). It is likely there will be scope to identify actions common to both plans to streamline implementation.

Annex 1 Drivers for action to safeguard red squirrel populations in Wales

The need for action to maintain and enhance red squirrel populations in Wales is supported by the following legislative and policy drivers:

Environment (Wales) Act 2016 and Natural Resources Policy

The Environment Act sets out Wales' approach to natural resource management to deliver real outcomes for the environment, people, the economy and our communities. The Act includes an enhanced biodiversity duty on public authorities to seek to maintain and enhance biodiversity, and promote the resilience of ecosystems, where it is within the proper exercise of their functions. Section 7 of the Act requires Welsh Ministers to publish a list of living organisms of key significance to biodiversity in Wales. The red squirrel is included on the section 7 interim list.

The objectives and actions in the Conservation Plan for Red Squirrels in Wales are relevant to the Environment Act and the three key features introduced by the Act: the State of Natural Resources Report; the Natural Resources Policy and Area Statements. As a key and iconic part of Wales' biodiversity, action to continue to safeguard red squirrel populations will contribute directly to delivery of the biodiversity duty of the Act.

Wellbeing of Future Generations (Wales) Act 2015

This Act aims to improve the social, economic, environmental and cultural well-being of Wales. To make sure we are all working towards the same vision, the Act puts in place seven well-being goals:

- A prosperous Wales
- A resilient Wales
- A healthier Wales
- A more equal Wales
- A Wales of cohesive communities
- A Wales of vibrant culture and thriving Welsh language
- A globally responsible Wales

The Act places a Well-being Duty on public bodies to carry out sustainable development in achieving these goals. The Conservation Plan for Red Squirrels in Wales meets the sustainable development principle through a number of the well-being goals. Red squirrels are part of Wales' natural environment (a resilient Wales) and the success of conservation programmes are reliant on local communities (a Wales of cohesive communities), with people deriving considerable enjoyment from seeing red squirrels in their local environment (a healthier Wales).

Nature Recovery Action Plan for Wales 2015

The Nature Recovery Action Plan for Wales is comprised of a Strategy for Nature, its associated action plan and a Nature Recovery Framework which sets out the governance structure to deliver action in Wales. The ambition to be addressed through the Nature Recovery Action Plan is:

'To reverse the decline in biodiversity, for its intrinsic value, and to ensure lasting benefits to society'

The Nature Recovery Action Plan defines the objectives and key actions needed in Wales to achieve our ambition and meet both the Resilient Wales goal and the global and European commitments to halting the loss of biodiversity. This Conservation Plan for Red Squirrels contributes to Objectives 2 and 4 of the Nature Recovery Action Plan:

- *Objective 2: Safeguard species and habitats of principal importance and improve their management.* Red squirrel is currently listed as a species of principle importance.
- *Objective 4: Tackle key pressures on species and habitats.* Competition from grey squirrels and spread of disease are the most significant pressures on red squirrel populations. Appropriate habitat management is also important.

EU Regulation (EU) No 1143/2014 on the Prevention and Management of the Introduction and Spread of Invasive Alien Species (the IAS Regulation)

The IAS Regulation requires both a list of invasive alien species of Union concern be drawn up, and Member States must put in place management measures for the eradication, control or containment of listed species. Grey squirrels are on the first Species of Union Concern list, which came into force on 3 August 2016. Member States, such as the UK, have 18 months to put in place effective and proportionate management measures for listed species, including grey squirrels. The Welsh Government's GSMAP addresses the requirements of this Regulation in Wales.

Grey Squirrel Management Action Plan

The Grey Squirrel Management Action Plan (GSMAP) seeks to address commitments under the Welsh Government's Woodlands for Wales Strategy, as well as requirements under the EU Regulation on the Prevention and Management of the Introduction and Spread of Invasive Alien Species (the IAS Regulation), in relation to grey squirrels. Its aim is to develop a more integrated and effective approach to grey squirrel management in Wales, making best use of resources.

The plan's objectives recognise the importance of seeking to improve the health and resilience of the Welsh woodland resource and the benefits it provides to present and future generations. The objective of the GSMAP is to manage grey squirrel populations in order to:

- Reduce the impact on red squirrel populations
- Reduce the impact on tree and woodland ecosystems and the services they provide, including timber production.

The grey squirrel management action plan supports this updated Red Squirrel Conservation Plan for Wales and some of the actions it contains will contribute to red squirrel conservation.

Annex 2 Red Squirrel Conservation Plan for Wales – progress against 2009 actions

Summarised version of responses submitted by Wales Squirrel Forum partners.

1. Identify and monitor populations of red squirrels

<p>Action 1.1</p>	<p>Survey all sites with records of red squirrels in the last 10 years. Survey all sites with recent reliable records of red squirrels using appropriate techniques to provide reliable information on the status of the populations at those sites. Encourage the submission of sightings from members of the public, providing guidance on red squirrel identification.</p>
<p>Progress</p>	<p>See below for surveys of Focal Sites. Other sites with previous evidence of red squirrels:</p> <p>Cwm Mynach – hair tube and camera trap surveys 2011-2016. Hair sample collected in 2011 only record.</p> <p>Aberhirnant – last survey carried out in 2001 with no evidence of red squirrels found.</p> <p>Cynwyd – camera trap surveys initiated, but access problems halted survey. Some reports of sightings. Survey being reinitiated but red squirrels not recorded.</p> <p>Brechfa – wind farm surveys using hair tubes and walkover transects revealed no evidence of red squirrels.</p> <p>Rheola or Nantyr – no opportunity to survey but no reported sightings.</p> <p>Gwynedd – red squirrel records received from Bangor area and beyond as red squirrels spread from Anglesey. Animals occasionally trapped during grey squirrel control. Casual records are reported and these can be used as the basis for further survey, but red and grey squirrels can be easily confused.</p>
<p>Constraints</p>	<ul style="list-style-type: none"> • Funding to implement formal surveys has been very limited • The large size of sites and low density of squirrels has placed a constraint on the relevance of most standard methodologies and a cost effective, appropriate survey methodology has yet to be established. • Concern regarding risks cross contamination of squirrel pox virus between squirrel species where bait used.
<p>Future requirements</p>	<ul style="list-style-type: none"> • To access funding and foster relationships with universities to enable survey of all appropriate sites. • Ongoing awareness of need to report red squirrel sightings and mechanism to assess validity. • Identify opportunities to undertake future surveys at sites with earlier red squirrel records, esp Cynwyd.
<p>Summary</p>	<p>Some sites have been surveyed with mixed results. Availability of more affordable trail cameras has improved survey opportunities, but there is concern around disease risk.</p> <p>Need to continue to be aware of possible presence of red squirrels outside Focal Site, particularly Cynwyd and Cwm Mynach. It is likely that red squirrels are now absent from Brechfa, Rheola and Nantyr.</p>

<p>Action 1.2</p>	<p>Establish monitoring of Focal red squirrel populations in Wales</p> <p>Using an agreed protocol, establish regular monitoring of Focal Sites within Wales to determine the status of red squirrel populations. Monitoring should also provide information on the distribution and abundance of grey squirrels within focal sites and buffer zones and be used to target control effort.</p>
<p>Progress</p>	<p>Draft monitoring protocol discussed by WSF, but no suitable methodology that will provide reliable population estimates for sites has been identified. Focal sites have each undertaken own survey work.</p> <p>Mid-Wales - systematic trapping surveys carried out a number of sites which have given an estimate of local population size. Radio-tracking project completed and hair samples collected. Individual camera traps have been set up and are monitored by volunteers and larger scale camera trap surveys are being headed by volunteers at selected sites in the MWRFSFS.</p> <p>Clocaenog - trapping survey in 2011/12 failed to catch any red squirrels, but camera traps monitored by volunteers are now detecting red squirrels.</p> <p>Anglesey - no systematic monitoring but reds regularly reported by the public across the island.</p>
<p>Constraints</p>	<ul style="list-style-type: none"> • The very large scale and low density of squirrels at the mainland focal sites has placed a constraint on the relevance of most standard methodologies. A cost effective, appropriate monitoring methodology has yet to be established that would be powerful enough to detect change in population size. • Monitoring is not consistent and is dependent on volunteers to effectively monitor each camera trap. • A decision has been made not to use hair tube surveys in mid Wales due to the possible risk of cross contamination of squirrel pox virus between squirrel species. • Monitoring considered to be low priority for resources when compared to implementing grey squirrel control
<p>Future requirements</p>	<ul style="list-style-type: none"> • Academic / statistical guidance on appropriate methods for detecting changes in low density populations. • More willing, able volunteers living close to where sightings of red squirrels have recently been reported.
<p>Summary</p>	<p>Some progress but it has not been possible to systematically monitor populations due to technical constraints. Evidence available suggests that Anglesey population has increased and is substantial, mid-Wales is stable with a widespread low density population and Clocaenog has a low population, with records in the west and east of the forest.</p> <p>Important to continue to work towards identifying a suitable low cost monitoring methodology.</p>

Action 1.3	Establish and maintain a squirrel database and bibliography and ensure that data are made available to the National Biodiversity Network A squirrel database will be established and used as a central repository for all squirrel records (survey information and casual records). This will ensure that records and distribution maps are kept up to date and are available to a range of organisations and groups.
Progress	Sightings managed by individual projects and shared with local record centres as appropriate. MWRSP and BASC have websites for reporting records.
Constraints	Difficulties in verifying reported sightings.
Future requirements	Maintain the sightings webpages and continue to encourage reports of sightings from the public.
Summary	Ongoing action. NBN Gateway has been replaced by new Atlas of Living Wales.

2. Focal sites for conservation action

To ensure effective use of resources, conservation action for the protection of red squirrels within Wales will initially be concentrated at the sites considered to be the most robust in the long term. However, red squirrels are legally protected under the Wildlife and Countryside Act (1981) and forest managers should take account of the needs of red squirrels at all sites where they are present.

Action 2.1	Agree focal sites for Wales Criteria for identifying priority sites for red squirrels which were prepared by the UKRSG have been adapted for use in Wales. An initial assessment has been completed and three Red Squirrel Focal Sites have been identified (Anglesey, Clocaenog and mid-Wales).
Progress	The three Focal Sites have been formally adopted.
Constraints	Mid-Wales – formal recognition as a Focal Site has had a fairly limited impact on the ability of partners to release resources to assist in conservation delivery.
Future requirements	Boundaries of sites should be kept under review as populations spread.
Summary	The Focal Sites are well established, although boundaries could be refined in the future with further evidence
Action 2.2	Review focal sites list The assessment of focal sites will be periodically reviewed to take account of any changes in the status of red squirrel populations or the availability of new information.
Progress	No new evidence has emerged to suggest that there should be any change to the three agreed focal sites.
Constraints	
Future requirements	
Summary	Option for review of focal sites should be retained

3. Protect red squirrel populations

Conservation action to protect red squirrels on mainland sites needs to focus on ensuring suitable habitat is present to support viable red squirrel populations and yet deter grey squirrels. Each Focal Site will need to have a management plan that has been agreed with all landowners, detailing the action required to maintain a viable population.

<p>Action 3.1</p>	<p>Review and comment on forest management planning</p> <p>The adoption of forest planning that ensures an appropriate mix of tree species, tree age and stand structure in the long-term is critical to safeguarding red squirrel populations. Where grey squirrels continue to be a threat, the priority is to provide good quality red squirrel habitat that at the same time minimises the suitability of the habitat for grey squirrels. Forest Design Plan reviews for the Assembly Woodland Estate and Better Woodlands for Wales (BWW) management planning for private woodlands provide an opportunity to ensure effective woodland management is in place. Advice will be provided to Forest District planners and BWW management planners on good practice management techniques.</p>
<p>Progress</p>	<p>The project leads for each of the Focal Sites has had some input into the forest management planning for their site. At Clocaenog and Mid-Wales separate projects were undertaken to review the forest management needs for red squirrels at those sites. Implementation of the reports' recommendations is ongoing, although there have been some constraints in mid-Wales. The MWRSP launched a 5-year focal site management plan in 2017, following a consultation process with all of the major forest managers in the focal site. At Anglesey discussions are ongoing with regards to the management of WGWE on the island.</p> <p>Liaison with BWW has been ongoing, but the scheme was incorporated into Glastir in 2011. Glastir Woodland Management is not currently open to new applications. An alert system for red squirrels is in place for Glastir Woodland Creation to ensure no inappropriate planning occurs in focal sites.</p>
<p>Constraints</p>	<ul style="list-style-type: none"> • Project staff time is limited to input to ongoing advice. Forest companies have other priorities • Changes to the forest planning system in NRW. • The BWW scheme has expired and the current Glastir Woodland Management successor scheme contracts that exist will end within 12 to 24 months, ending funding for grey squirrel control for managed forests.
<p>Future requirements</p>	<ul style="list-style-type: none"> • To pursue the consultation process and to produce focal site management plans with as many forest managers involved as possible. • The Partnership's ability to influence NRW natural resource management plans will be a key factor.
<p>Summary</p>	<p>There has been ongoing engagement with the forest planning process. However, the establishment of Natural Resources Wales has led to changes in the forest planning procedures and the introduction of Forest Resource Plans. There will continue to be a need to influence forest management in the focal sites, but clarity is needed on the best approach for doing so.</p>

Action 3.2	<p>Agree and implement red squirrel management plans for Focal Sites</p> <p>Effective management of focal sites and their associated buffer zones will depend on a co-ordinated partnership approach, particularly where there are multiple landowners. This will be achieved most effectively through the agreement of a red squirrel management plan. Private woodland owners will be given advice on entry to relevant grant schemes, eg BWW or Tir Gofal.</p>
Progress	<p>Management plans are in preparation for all three focal sites:</p> <p>Anglesey: focal plan drafted by RSTW and NRW</p> <p>Mid-Wales: review of red squirrel habitat requirements (Cartmel & Denman 2012) used as basis for the 2017 - 2022 Focal Site Management Plan in consultation with all relevant forest managers.</p> <p>Clocaenog: forest management 'consultation' report (Cartmel 2009) used as basis for management planning with further recommendations in review of red squirrel conservation (Shuttleworth & Hayward 2015).</p>
Constraints	<p>Preparation of management plans has taken longer than planned due to lack of dedicated staff time and ability to engage with private forest companies. Mandatory felling of larch due to <i>Phytophthora ramorum</i> infection has also affected management plans. In Mid-Wales important tree species are not being replanted creating a potential threat to future red squirrel food supplies and habitat (future proofing). Open peat restoration, involving the removal of tree cover, could threaten habitat availability for red squirrels in mid Wales and the impact of permanent loss of food resource and connectivity will need to be addressed.</p>
Future requirements	<p>Completion of focal site management plans with ongoing review process.</p>
Summary	<p>Lack of staff time has hindered ability to develop management plans, although contract reports have helped inform process. Agreed management plans remain an important priority.</p>

Action 3.3	<p>Grey squirrel control within Red Squirrel Focal Sites</p> <p>A trapping programme will be established within focal red squirrel sites to eradicate greys squirrels from the core of each forest. Monitoring using hair tubes and sightings records may be used to target control. Research at Clocaenog Forest has shown that grey squirrels may periodically move into the forest to exploit the seed crop at certain times of year. Consideration may be given to monitoring cone crops to forecast when increased control within the forest is needed.</p>
Progress	<p>Mid Wales:</p> <ul style="list-style-type: none"> • MRWSP has co-ordinated control throughout the focal site funded through a range of different sources. • A Trap Loan Scheme (TLS) has been set up in the mid Wales Focal Site to enable and support local landowners and residents to control grey squirrels. • The MWRSP is working with forest managers and NRW to encourage comprehensive and more effective grey squirrel control in the sites that they manage. <p>Clocaenog:</p> <ul style="list-style-type: none"> • Control has been ongoing on an annual basis, funded by FCW/NRW. More recently some work has been supported by volunteers through BASC. • A TLS is being established through the Red Squirrels United project <p>Anglesey:</p> <ul style="list-style-type: none"> • Widespread and extensive control through a series of funded projects (including European funds and HLF) has led to the eradication of grey squirrels from the island in 2013. • Control work is now focussed on Gwynedd to prevent recolonization of the island. <p>BASC has initiated a co-ordinated trapping scheme targeting local members around and within the Focal sites, including a Trap Loan Scheme and bespoke grey squirrel control training course.</p>
Constraints	<ul style="list-style-type: none"> • Permeability of Buffer to grey squirrels so trapped areas are quickly recolonised from outside Buffer. Difficult to plan trapping strategically and to deploy traps as efficiently as would be wished, due to lack of information on grey squirrel population dynamics, and other factors. • Forest managers have other priorities, and therefore there is patchy uptake of grant assistance and grey squirrel trapping. Lack of continuity and/or availability of forest management grant schemes such as Glastir. • Engaging every landowner at the landscape scale can be difficult and results in gaps in the control network. • Lack of systematic trapping in all areas of forests • The termination of grey squirrel control funded as part of Glastir Woodland Management is a major threat.
Future requirements	<ul style="list-style-type: none"> • Need to identify alternative mechanisms to support grey squirrel control as ongoing core funding unlikely. • TLSs should be expanded, although volunteers will need ongoing support. • Continue encouraging forest managers to undertake grey squirrel control.
Summary	<p>Grey squirrel control to date has been successful in protecting focal red squirrel populations. The future remains uncertain due to resource constraints, but the establishment of trap loan schemes will support ongoing control.</p>

Action 3.4	<p>Establishment and protection of Red Squirrel Focal Site buffer zones</p> <p>To inhibit grey squirrel incursion into red squirrel sites it will be necessary to establish a buffer zone around each site. The size of the buffer zone will depend on habitat type and the permeability to grey squirrels. Control effort will be focussed on habitats which greys are more likely to use as dispersal routes. Management of buffer zones will require engagement of a wider partnership of landowners and links with grey squirrel control for other objectives, eg tree protection.</p>
Progress	<p>Control in buffer zones is ongoing either through Trap Loan Schemes (Mid-Wales & Clocaenog) or funded control (Anglesey/Gwynedd).</p> <p>BASC are also operating a TLS, as a 'buffer to the buffer' to complement the MWRSP TLS.</p>
Constraints	<p>Engaging every landowner at the landscape scale can be difficult, resulting in gaps in the control network and there is a limited number of residents prepared to participate in the control of grey squirrels.</p>
Future	<p>To continue to support and expand the TLSs via project staff and BASC.</p>
Summary	<p>Projects have been successful at instigating grey squirrel control in buffer zones. Supporting and expanding this work remains critical to safeguarding focal sites.</p>
Action 3.5	<p>Development advice</p> <p>Where red squirrel sites may be affected by developments, red squirrel conservation issues will need to be addressed. Effective and timely advice, expertise and representation should be provided in the planning process, land use planning, planning applications, development proposals and use planning, planning applications, development proposals and environmental impact assessments. Generic advice will be given by WSF</p>
Progress	<p>The rural nature of the Clocaenog and mid-Wales means that development has not been a significant threat to red squirrels. On Anglesey development is more likely to be in areas occupied by red squirrels. RSTW provides advice to local planning officers.</p>
Constraints	<p>None</p>
Future	<p>Ensure that projects are recognised as stakeholder and consulted on significant developments.</p>
Summary	<p>Development pressures not currently a significant issue for red squirrel conservation, but need to maintain a watching brief.</p>

4. Policy advocacy

Action 4.1	Respond to relevant consultations Seek to ensure that the needs of red squirrels are addressed in relevant policy documents to secure long-term favourable management through land use consultations (eg BWW grant schemes, Tir Gofal).
Progress	The WSF and project partners have responded to consultation on Glastir and provided advice on implementation of measures to protect red squirrels. Red squirrel conservation measures are included, but concerns have been raised through WSF that scheme does not follow best practice.
Constraints	<ul style="list-style-type: none">• Glastir Woodland Management is currently not open to applications so woodland managers risk losing funding to support grey squirrel control.• Contact with the relevant Glastir officers has been problematic, but has improved recently.
Future requirements	Further engagement with WG over support for red squirrel conservation in Glastir or any future agri-environment scheme.
Summary	Support for grey squirrel control has been accessed through BWW and subsequently Glastir. However, implementation has been problematic and the future of the scheme now appears uncertain. Ongoing dialogue with WG is needed.

5. Disease control

Squirrelpox virus (SQPV) is a fatal infectious disease in red squirrels and the presence of the disease has been found to significantly increase the rate of replacement of the red by the grey squirrel in parts of England. The incidence of disease in red squirrels appears to be related to the level of presence of grey squirrels in an area, suggesting they are involved in transmission of the disease, although the mechanisms of transmission have not yet been determined. Grey squirrels with antibodies to SQPV have been found in all the red squirrel sites in Wales where testing has been undertaken.

Action 5.1	Monitor incidence of squirrelpox virus in grey squirrels Blood from grey squirrel carcasses will be submitted for SQPV antibody analysis. VLA to advise on required sampling level
Progress	Samples from Clocaenog have been analysed and show presence of antibodies for SQPV in grey squirrels. In mid-Wales previous work identified the presence of SQPV and so no further sampling has been undertaken. Adenovirus has also been identified as a potential threat to red squirrels with dead animals found in Anglesey/Gwynedd in 2016 identified as being infected.
Constraints	Availability of funding has limited the ability to analyse samples.
Future requirements	Guidance is needed on priorities for future disease surveillance, together with funding.
Summary	Ongoing need to undertake disease surveillance, but more guidance needed particularly in relation to emerging disease threats.
Action 5.2	Ensure that activities minimise the risk of disease transmission between red and grey squirrels Produce and disseminate best practice guidance on trapping techniques, supplementary feeding and other activities that may bring red and grey squirrels into contact with each other
Progress	Guidance/Standard Operating Procedures for grey squirrel control have been produced by projects. In mid-Wales a decision has been made not to use hair tube surveys in mid Wales due to the possible risk of cross contamination of squirrel pox virus between squirrel species.
Constraints	There is a potential conflict between the need to use bait with camera traps/hair tubes to identify presence of red squirrels and the risk of drawing grey squirrels into the same location. Red squirrel monitoring guidance includes disease precautions. Current advice is to ensure trapping initiated as soon as grey squirrels detected.
Future requirements	Prepare written guidance for camera trap monitoring.
Summary	Trap hygiene best practice being following by all projects, but additional guidance needed on risks associated with monitoring techniques.

Action 5.3	Prepare squirrelpox virus action plan In the event of an outbreak of squirrelpox virus, rapid action will be needed to ensure the disease is contained and infected squirrels are removed and treated. The preparation of an agreed action plan will ensure that all groups in Wales are aware of the best practice procedures to be followed
Progress	Wales level action plan not produced, although individual projects have their own disease management strategies. No known SQPV outbreak in red squirrels, although adenovirus detected in Anglesey/Gwynedd
Constraints	None
Future requirements	The preparation of an agreed all Wales action plan
Summary	Ongoing need to undertake disease surveillance, but more guidance needed particularly in relation to emerging disease threats.
Action 5.4	Research into squirrelpox virus Promote the need for funding into squirrelpox virus research and vaccine development, and facilitate co-operation between the relevant departments of the different UK administrations.
Progress	Research being taken forward under the UK Squirrel Accord.
Constraints	Funding to support research.
Future requirements	
Summary	Research needs to be taken forward at a UK level.

6. Advisory and public awareness

Action 6.1	<p>Facilitate and enhance communication and sharing of good practice between red squirrel practitioners within Wales and the UK.</p> <p>Effective and regular communication between different groups working to safeguard red squirrel populations will ensure that experience and effective measures will be effectively disseminated</p>
Progress	<p>Wales Squirrel Forum provides an opportunity to share ideas and discuss issues. The UK Red Squirrel Group has not been meeting regularly so communication at a UK level is more limited, although there is some work through the UK Squirrel Accord.</p> <p>The Red Squirrels United project includes all three focal sites in Wales as well as England and Northern Ireland so there is an opportunity to create links and share best practice. BASC have produced guidance on trapping and run trapping training courses as well as joint events with RSTW and MWRSP.</p>
Constraints	Large area and low density of red squirrels in mid Wales means lessons learned in many other red squirrel areas in the UK are not always relevant to mainland sites in Wales.
Future requirements	<ul style="list-style-type: none"> • Continue to work with the WSF and with the UK Squirrel Accord. • Red Squirrels United project will hold annual stakeholders ‘Knowledge Fair’ for red squirrel workers and volunteers, including one to be held in Wales.
Summary	Communication and sharing of best practice remains important, particularly as ideas and knowledge develops.
Action 6.2	<p>Provide red squirrel conservation advice for developers, foresters and local authorities</p> <p>Prepare generic advice to ensure activities are sympathetic to the needs of red squirrels and comply with the requirements of the Wildlife and Countryside Act (1981).</p>
Progress	Advice provided on an as needed basis. MWRSP have produced a pre-operations and during operations advice sheet for forest managers.
Constraints	Resources and management objectives within partner organisations limit ability to embrace best practice.
Future requirements	Continued use of practice guidance and advice sheets.
Summary	Generic advice to key stakeholders remains important and will need to be kept under review.
Action 6.3	<p>Establish red squirrel community groups for Focal Sites</p> <p>Community groups play a vital role in promoting the importance of conserving red squirrels in the local area. Activities include education, raising funds and collation of red and grey squirrel sightings. Some individuals are willing to become involved in grey squirrel control programmes</p>
Progress	<p>Community engagement is ongoing in all three focal sites:</p> <p>Mid-Wales – 10 volunteer hubs established with local people actively involved in grey squirrel control, red squirrel monitoring and project promotion at events.</p>

	<p>Anglesey - RSTW is a community led group and wider engagement work is ongoing through the RSU project.</p> <p>Clocaenog - the MISE project initiated work to engage with local people and a number of volunteers have become involved in monitoring and trapping. Work to establish a friends group is now underway through the RSU project. Also, BASC is developing a network of trappers in and around Focal sites but many BASC members also control squirrels across Wales as part of their own activities.</p>
Constraints	Limited resources and rural locations for mid-Wales and Clocaenog has led to lower public engagement in the past.
Future requirements	RSU project will support community engagement work until 2019 but ongoing support for volunteers will be needed beyond this
Summary	Involvement of local communities will continue to be a key element of safeguarding red squirrel populations into the future. Work is ongoing in all three focal sites but it is likely that groups will continue to need support. need to be kept under review.
Action 6.4	<p>Promote public understanding of the red squirrel in Wales and its conservation</p> <p>Develop bilingual promotional and educational material. In some situations opportunities may be provided for the public to view red squirrels thereby providing an enhanced appreciation of the issues involved, eg Anglesey red squirrel webcam. Encourage public participation and engagement in red squirrel conservation through the use of the media.</p>
Progress	All projects produce publicity material including website, facebook pages, leaflets and educational material. Information is produced bilingually. Assembly Member for Clwyd West, Darren Millar, has been appointed as Species Champion for the red squirrel.
Constraints	Future funding only secured until 2019.
Future requirements	To continue to publicise the existence of red squirrels in mid Wales and their conservation needs.
Summary	Public awareness of red squirrels in Wales should continue to grow through the work of the red squirrel projects.

7. Research

Action 7.1	<p>Maintain an overview of red and grey squirrel research within the UK and ensure Wales' specific issues are addressed.</p> <p>Review current literature and research and identify any gaps in knowledge that need to be addressed. Provide advice to the UKRSG and research organisations on identified research needs for Wales.</p>
Progress	Forest Research rep on WSF provided and overview on current squirrel research, and an opportunity to identify gaps and give feedback on specific needs.
Constraints	Forest Research no longer attends WSF meetings, although some input is provided via the UK Squirrel Accord.
Future requirements	To access funding and foster relationships with universities to enable further research.
Summary	Wales level input to research arena has been limited recently, so need to ensure any identified research needs are still fed into UK level fora.
Action 7.2	<p>Review and assess the potential impact of climate change on red squirrel conservation in Wales.</p> <p>In consultation with relevant experts, assess the likely impact of climate change on squirrel biology and future woodland structure and composition. Review the impact these changes may have on red squirrel conservation</p>
Progress	Some feedback via NRW and forestry sector regarding impact of existing and novel tree diseases and pests, particularly diseases and pests of pine and larch.
Constraints	More dialogue needed.
Future requirements	WSF to work with relevant experts to review and assess the potential impact of climate change on red squirrel conservation..
Summary	Need to ensure potential impacts of climate change on forest industry and consequences for red squirrels are properly understood.