Scottish Wildcat

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Summary

- The Scottish wildcat was listed on the Species Action Framework (SAF) as a Species of Conservation Concern because of a decline in its distribution and abundance.
- Work under SAF initially sought to clarify the identity of the species and provide a practical description for field identification. This work drew together information on morphology and genetics into a single suite of characteristics accepted to be indicative of the Scottish wildcat.
- Work also focused on designing a method for survey and monitoring. Owing to the wildcat's rarity and cryptic nature, remote camera-trapping was investigated rather than relying on direct observations. Further field trials resulted in a survey protocol which could be applied across geographic areas.
- Practical methods for wildcat conservation were developed and trialled in the field under the Cairngorms Wildcat Project. This comprised four main elements: raising awareness of wildcats and their conservation, responsible cat ownership, working with estates, and research and monitoring.
- SAF project funding contributed to important outcomes including: providing clarity on the species' identity, practical survey methods, protocols for wildcat-friendly predator control, increased public awareness and a demonstration of how the benefits of responsible cat ownership could be promoted in wildcat areas.
- The Cairngorms Wildcat Project provided useful feedback on the resources required to manage widespread conservation measures for a rare and elusive species and directly contributed to the development and resourcing of ongoing action under Scottish Wildcat Action, a partnership project supported by the Scottish Government and Heritage Lottery Fund.
- Follow up to SAF is now being taken forward as a wide-ranging package of action through the *Scottish Wildcat Conservation Action Plan* (SWCAP) (2013).

Introduction

The Scottish wildcat (*Felis silvestris*) is the only native member of the Felidae, the cat family, still to be found in the wild in Britain. It is one of our rarest, and most elusive, mammals (Fig.1).

Fig 1. Scottish wildcat.

It belongs to the European wildcat sub-species, which is one of six wildcat sub-species that were once widely distributed across Europe, Asia and Africa. Heavily persecuted, the Scottish wildcat population declined markedly in both number and range. European wildcats have also experienced declines in other parts of their range. Wildcats became extinct in Austria and the Netherlands in the first half of the 20th century (though with recent reports of their return to Austria from Italy in 2008), and declined in the Czech and Slovak Republics. They are now confined to three major areas of the former Soviet Union: the Carpathian Mountains of the Ukraine, the Kodry region of Moldova and the Caucasus mountain region between the Black and Caspian seas. Elsewhere in Europe, isolated populations are limited to the Iberian Peninsula, Italy, north-east France-Luxembourg-Belgium, north-west Germany, eastern central Germany and the Balkans (Yamaguchi *et al.*, 2015).

The wildcat population had already declined in Britain by the early 1800s and was lost from England and Wales by 1862. The decline in

Scotland continued into the 20th century and the range was ultimately confined to the north-west by the 1920s. There was an expansion in range over the following 20 years, possibly a reflection of increased numbers, but the range has been considered to be stable since the 1940s.

The current status of the Scottish wildcat is unclear. A questionnaire survey in 1983-87 suggested that the species was restricted to an area north of the Central Belt, with the main populations found to occur in north-east Scotland, Easter Ross, north-east Inverness-shire, Strathspey, east Perthshire and parts of Argyll (Easterbee *et al.*, 1991). A subsequent survey in 2006-08 sought to repeat the method and concluded that the wildcat appeared to be stable in its historic locations in the north and east of Scotland, with localised populations persisting around Ardnamurchan and Morvern (Davis and Gray, 2010). Its fate elsewhere was less clear, however, with information obtained often being insufficient to distinguish wildcats from feral domestic cats.

Scottish wildcats are generally found on the edge of woodland, or in scrub at the margins of rough grazing and moorland. Animals living in the east and west of Scotland, however, appear to show some differences in preference: those in the east prefer marginal agricultural areas with moorland, grassland and woodlands; whilst those in the west favour rough grazing and moorland with limited pastures. Animals in both areas seem to avoid high mountains, exposed coasts, and fertile lowlands with intensive agriculture.

Geographic differences also figure in their diet. Rabbits constitute up to 70% of the diet of animals in the east, compared to a preponderance of voles and mice in the diet of animals from the west (where rabbits account for only 34% of the diet). Wildcats hunt by both day and night, although they can be inactive for up to 24 hours in the winter if the weather is inclement.

More details on the ecology and behaviour of this important species are available on the SNH website and in the SNH Naturally Scottish – wildcats booklet.

The Scottish wildcat is listed for strict protection under Annex IV of the EC Habitats Directive, making it a European Protected Species under UK law through the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). The species faces several threats including hybridisation with feral cats, incidental harm as a result of predator control, exposure to new diseases (primarily those found in domestic cats), habitat fragmentation and habitat degradation. Urgent action is required to address the decline in distribution and abundance of the Scottish wildcat and it was for this reason that it was included on the SAF list as a species of conservation concern.

One of the main problems facing wildcat conservation has been the lack of a definite taxonomic description. The challenges this presents were exemplified in 1990 when an expert witness could not state in court 'beyond reasonable doubt' that three cats which had been killed were Scottish wildcats. This statement cast doubt on the definition of a wildcat and the ramifications of this have undermined much conservation action in the intervening years. Work under SAF therefore sought to address this uncertainty and establish practical conservation management action.

This work has underpinned the development of the 2013 Scottish Wildcat Conservation Action Plan and its ensuing implementation under the banner of Scottish Wildcat Action, a partnership project supported by the Scottish Government and Heritage Lottery Fund that unites leading experts from over 20 key organisations. This work is also referenced as an update to wildcat conservation action since SAF came to an end.

Aims

Objectives for 2007-2012

Five actions were identified at the outset of the SAF project, to:

- Provide a robust dataset from which to clarify the distribution (and abundance) of the Scottish wildcat.
- Identify potential wildcat stronghold areas for conservation action.
- Improve guidance on methods to improve habitat management in potential wildcat areas to encourage (colonisation by) a sustainable population.
- Initiate a programme of wildcat conservation measures to reduce the threat from hybridisation with feral/domestic cats.
- Raise awareness of the status of the Scottish wildcat and establish the appropriate partnerships to support co-ordinated management action for its conservation.

Management Action

Summary of the main actions carried out

The work funded by SAF developed three objectives:

- **Identification of the Scottish wildcat** – Research drew on existing information and specimens available, to examine the correspondence between the pelage (coat) characteristics and genetics of the wildcat. This work informed development of a practical guide for identifying wildcats.
- **Development of survey field methods** – The wildcat is elusive and difficult to survey. This research used camera-traps to photograph wildcats in the wild and develop a detailed survey protocol.
- **Development of a project to secure the future of the wildcat in the Cairngorms area** – A three-year partnership project was established within the Cairngorms National Park to trial management which reduced the risks to the local wildcat population.

Identification of the Scottish wildcat

Following the ruling of the 1990 court case in Stonehaven, any taxonomic identification of the Scottish wildcat was open to challenge and it became more difficult to enforce the legal protection for the species. This undermined attempts to carry out conservation action for the species. One of the fundamental priorities for the SAF project was, therefore, to establish a suite of criteria by which a Scottish wildcat could be recognised in the field.

Prevailing research on the subject had used either pelage characteristics (Kitchener *et al.*, 2005) or genetic research (Driscoll *et al.*, 2007) to describe the species. In 2008, work was commissioned to draw these together to examine the relationship between the genetics and morphology of the Scottish wildcat (Kilshaw *et al.*, 2010). The study tested 330 cat pelages against the criteria developed by Kitchener *et al.* (2005) as well as assessing 208 individuals for their skull characteristics. Genetic analysis was conducted on 245 of these individuals (microsatellite analysis or mDNA work) and the results cross-referred to determine any correlations.

The research concluded that at least 70% of the specimens gathered from wild-living populations and held in museum collections were hybrids of wildcats crossed with domestic cats, or were domestic cats. It identified three distinct groups of cats based on their pelage markings and found that these groupings could be largely distinguished by their genetic characteristics. Whilst the correlations were not perfect, the research confirmed that pelage characteristics, as set out by Kitchener *et al.* (2005), were sufficiently accurate to identify individuals that are genetically different from domestic cats.

This work was crucial to underpin development of field survey methods and guidance for land managers on how to protect the species during legitimate land management activities.

Further to this SAF work, as part of a 'Knowledge Exchange' initiative, conservation geneticists carried out a review of wildcat genetic studies and implications for management (Neaves and Hollingsworth, 2013). This review supported earlier conclusions that pelage is a useful indicator of wildcat ancestry and highlighted some of the challenges of managing for genetic purity or for morphology and/or ecological function. With the advance of new genetic techniques, the focus has shifted to studies involving Single Nucleotide Polymorphisms (SNPs) - individual marker points in the DNA sequence that are common to reference groups (putative wildcats and domestic cats) and from which inferences can be made about the make-up of individuals. Based on genetic studies from continental European wildcats, a set of SNP markers that are thought to apply to Scottish wildcats have been selected and refined (Senn and Ogden, 2015). A methodology that combines genetic and morphological assessment has been developed to select individuals for conservation breeding as part of Scottish Wildcat Action.

Identification of wildcats in the field under Scottish Wildcat Action will take a pragmatic approach and will be based on appearance and scoring of pelage characteristics.

Field survey methods

Following the work on identification of wildcats from pelage markings, it was important to develop an efficient and effective survey method by which to assess the status of the species in the wild. Scottish wildcats are a cryptic species, and difficult to observe directly, so a study was set up to investigate whether camera-trapping was a feasible

method for monitoring the population. The study sought to confirm camera-traps as a useful resource for wildcat monitoring and, ultimately, to define the criteria for their use.

The results of the study (Kilshaw and Macdonald, 2011) were very encouraging and camera-traps did capture images of wildcats in areas where they were known to occur from previous sightings. Traps that used bait had increased capture rates and obtained multiple images, while those that used 'Valerian lures' did not attract wildcats in this study. No feral cats were photographed and gamekeepers did not report seeing 'wild-living' cats on the estate during the trapping period, highlighting the cryptic nature of wildcats. Photographs of wildcats were of sufficient quality to enable individuals to be recognised by their pelage markings. The ability to identify individual animals from photographs also meant that the method could be used to provide estimates of numbers or population densities and, thus, as a tool for monitoring the species. The work produced a practical protocol for camera-trap surveys with the recommendation that further work to refine this could improve its utility as a tool for monitoring wildcat populations.

Further to this study, and the use of these methods in the survey and scoping of wildcat priority areas (Littlewood *et al*. 2014), a simulation of camera-trap survey design has helped to understand the limitations of these methods in terms of statistical power. Survey designs that should be capable of producing estimates of the number of individual cats observed, and from this population densities, are achievable with the investment of significant resources. However, given the very low capture/detection rates experienced, and wide confidence intervals in the density estimates derived, even the most intensive survey designs are likely to struggle to detect population trends with confidence (Newey *et al*., 2015).

Development of a project to secure the future of the wildcat in the Cairngorms National Park

As the 2006-08 wildcat survey (Davis and Gray, 2010) confirmed that wildcats still occupy their historic range of north and east Scotland, the Cairngorms National Park (CNP) was considered a good place to test practical conservation action for the species. The Cairngorms Wildcat Project (CWP), initiated in 2008, was a partnership between the Cairngorms National Park Authority (CNPA), Scottish Natural Heritage (SNH), The Royal Zoological Society of Scotland (RZSS), the Scottish Gamekeepers Association (SGA) and Forestry Commission Scotland (FCS). It ran until March 2012 and was largely funded by SNH under SAF, with additional funds generated through the Highland Tiger appeal administered by the RZSS. A Project Manager was employed, based at the CNPA.

The CWP aims were to:

- Secure the future of the Scottish wildcat within the CNP, leading to further action across a wider area of Scotland.
- Raise awareness of the plight of the Scottish wildcat.
- Promote public support for wildcat conservation measures.
- Work with land managers in the CNP to ensure that the population of Scottish wildcats benefit from existing feral cat control activities.
- Set in place sustainable feral cat management, with the support and co-operation of landowners, such that this will become self-sustaining beyond the life of the project.
- Carry out research and monitoring to develop a greater understanding of Scottish wildcat conservation status, ecology, genetics and epidemiology within the context of the project.
- Engage the support of the local community for responsible domestic cat ownership, including participation in voluntary neutering and vaccination schemes.
- Provide an efficient and effective programme of activities which could be applied for the benefit of Scottish wildcats across a wider geographic area of Scotland.
- Capitalise on the charismatic nature of the Scottish wildcat in the CNP to nurture an ethos of collaboration and ownership in the CWP across a wide spectrum of interest groups and individuals.

The CWP was initiated at a conference, entitled 'Practical wildcat conservation in the Cairngorms National Park', in April 2008. This event was attended by around 100 delegates from a wide variety of sectors and identified options for conservation management as well as helping to raise awareness of wildcats and their plight. It was clear from the conference that many people wanted to see a practical trial of methods rather than a

research-focused project. This shaped subsequent development of the CWP.

Project management focused on four main categories:

- Raising awareness of wildcats and their conservation.
- Responsible cat ownership.
- Working with estates and land management.
- Research and monitoring.

Raising awareness of wildcats and their conservation

From the outset it was agreed that raising awareness of the wildcat and its plight was critical to the success of any wildcat conservation project. Two key groups that the CWP wanted to influence were domestic cat owners and gamekeepers.

The CWP chose a strong brand to help focus the Project messages. The 'Highland Tiger' brand provided a link to conservation efforts directed at high-profile big cats in other countries and the work required to sustain our own last remaining native felid species. A number of awareness-raising materials were developed using this brand, including a dedicated website, social media, postcards, and a short DVD, which was distributed to people in a position to reach a wider audience, such as schools and societies. The CWP also enjoyed positive and widespread coverage in all media, and gave a total of 52 presentations in the Cairngorm area to a combined audience of over 2,000 people.

In addition to the broad public awareness-raising work, the CWP targeted specific conservation messages at key sectors, such as local cat-welfare groups, vets, farmers and gamekeepers, through the use of printed media or face-to-face presentations and workshops.

Responsible cat ownership

Domestic cats pose a serious conservation threat to Scottish wildcats through introgressive hybridisation and, potentially, disease transmission (Macdonald *et al.*, 2004). They may in some circumstances also compete with wildcats for resources such as territory, food and mates. They are fairly widespread in the CNP, particularly around settlements and farms.

To reduce the threats posed by domestic cats, the CWP delivered a series of actions to encourage neutering and vaccination of domestic cats. Neutering removes the domestic cat's capacity to hybridise with wildcats but also (potentially) limits the growth of the domestic cat population, reducing further the risk of competition and disease transmission. Vaccination of pet cats and screening feral cats for disease also aimed to reduce the likelihood of fatal diseases being spread to wildcats.

Responsible cat ownership involved two important partners: the local veterinary community and Cats Protection, the UK's largest cat welfare organisation. The majority of unneutered and unvaccinated cats in the National Park were thought likely to be farm cats, and vets agreed to be unofficial ambassadors for the CWP during their dealings with farming clients, making enquiries about cats on farms and advocating neutering where possible. They also agreed to provide data on neutering and vaccination so as to help identify trends and patterns over time.

Cats Protection has a network of volunteer branches across Scotland and their expertise, policies and resources were important to help achieve the project objectives. Volunteers were trained in feral cat 'trap-neuter-release' (TNR) methods and the coverage provided by the Cats Protection network contributed significantly in important areas for the CWP, including a significant proportion of the eastern side of the National Park. Over 20 new volunteers were recruited, most of whom were attracted by the wildcat conservation angle. In addition two new branches were instigated, increasing the coverage of volunteers carrying out TNR in the National Park.

The CWP also produced a leaflet promoting the need for responsible cat ownership (Fig. 2). This was endorsed by all local veterinary practices and the TV vet, Joe Inglis. The leaflet outlined the reasons why neutering domestic cats is important for both cat welfare and wildcat conservation, as well as providing contact details of local vets and an explanation of the support that Cats Protection could provide. The leaflet was made widely available across the National Park to vets, Cats Protection volunteers, and National Park rangers, as well as at various local events, visitor centres, and local shops and supermarkets selling cat food.

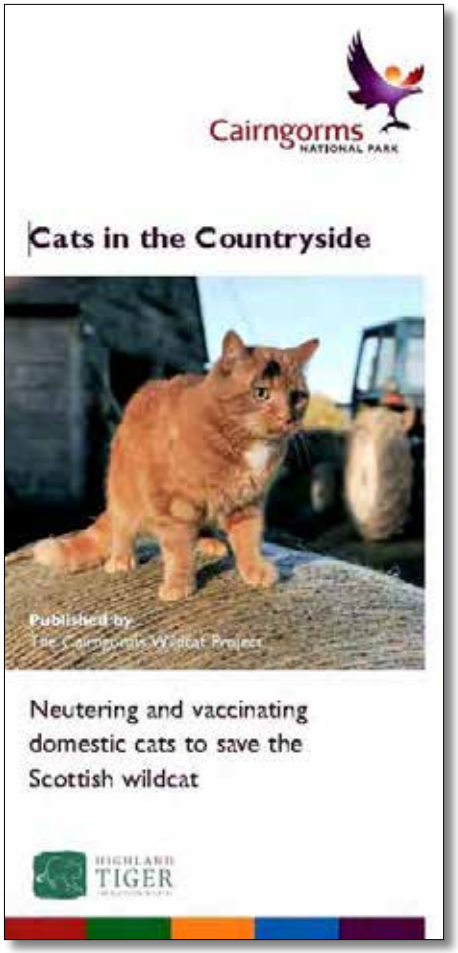

Fig 2. Cairngorms Wildcat Project *Cats in the Countryside* leaflet.

Working with estates

The CWP worked with the gamekeeping community to establish a practical protocol for predator control activities that minimised the risks of harming wildcats. Five estates participated in the CWP by adopting the protocol and reporting on their feral cat control activities and any wildcat sightings.

As part of their game-bird management, estates routinely and legally control mammalian and avian predators, including foxes, corvids (except ravens), weasels, stoats and mink. Foxes are often controlled using lamping techniques, which employ a powerful spot-lamp at night to detect fox 'eye-shine', and feral cats are often shot during this work. The colour and size of the eye-shine can be used to discriminate between species, but not between wildcats and feral cats. So if feral cats are shot on the basis of a cat body-shape or cat eye-shine, there is a risk of a wildcat being shot inadvertently.

Trapping, using baited live-traps or snares, reduces the risks of errors as animals are caught alive. These traps must, by law, be checked at least once every 24 hours, and both trap types should allow non-target species to be released unharmed. With spotlighting, snaring and cage-trapping, the safety of an endangered and legally protected species is heavily dependent on the judgement of the gamekeeper. It was important, therefore, to ensure that sufficient information was available to support gamekeepers as wildcats can potentially be caught as an incidental result of legal predator control. In order to facilitate communication, the Scottish Gamekeepers Association (SGA) was invited to be a partner in the project and provided an important conduit to members, promoting clear and consistent messages about wildcat conservation and responsible predator control.

A workshop with gamekeepers helped to design a draft protocol to aid field identification of wildcats (Fig. 3) and help encourage wildcat-friendly predator control activities. The protocol encouraged gamekeepers, when engaged in routine feral cat control work, not to shoot if there was any doubt about a cat's identity. To improve confidence in wildcat identification, the CWP also provided laminated identification cards with a diagram of coat markings based on the Kitchener *et al.* (2005) description. These were intended to be small and durable enough to be carried in a trouser pocket or glove compartment, and were distributed widely to Cats Protection volunteers as well as gamekeepers, including those on the five estates.

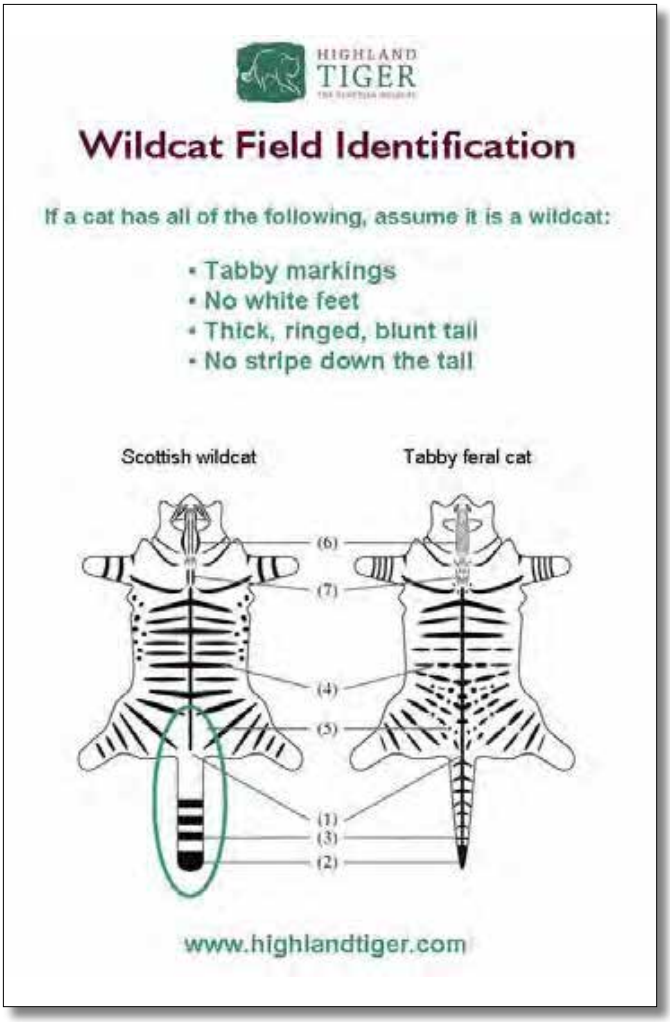

Fig 3. Cairngorms Wildcat Project – wildcat field identification guide.

Wherever possible, gamekeepers were encouraged to use live cage traps for feral cat control rather than rely on night-time shooting or snaring. The Project's protocol encouraged the estate to re-home, via Cats Protection, any errant pets caught in cage traps, while feral cats were neutered via Cats Protection or humanely dispatched by estate staff.

Once the protocol had been disseminated and promoted, the Project Manager met regularly with staff from the estates to gather information. A record was maintained of the number of gamekeeping staff employed, the amount of effort invested in cage-trapping and night shooting, and the number of feral cats caught or shot. As many cat records as possible were collated from the estates, including sightings by staff and members of the public, and photos, including from opportunistic camera-trapping, as well as any road traffic carcases available.

Research and monitoring

Research and monitoring under the CWP focussed mainly on the use of camera-trapping to survey and monitor the wildcats. An intensive camera-trap study was initiated, and repeated, on the five target estates with three aims:

1. Assess the numbers of wildcats, hybrid cats and domestic cats.
2. Assess changes in the numbers of cats during the project.
3. Investigate the ecology of wildcats, hybrid cats and domestic cats to inform future management of cats for wildcat conservation.

Twenty pairs of camera-traps (Cuddeback Capture® or Capture® IRs) were set out in a grid of 4 x 5 pairs on each of the five participating estates. The survey protocol followed that of Kilshaw and Macdonald (2011), and cameras were placed preferentially (but not exclusively) under cover near open habitat at locations showing one or more of the following features (Scott *et al.*, 1993; Daniels *et al.*, 2001; Lozano *et al.*, 2003; Ballesteros-Duperón, 2005; Potočnik *et al.*, 2005; Theil, 2005):

- On or near paths or game-trails.
- Along linear features such as drystane dykes, stock fences and riparian belts.
- At bottlenecks for animal movement such as holes in otherwise animal-proof fencing (such as deer-fence with narrow-gauge mesh).

Cameras were set in pairs to minimise data loss from camera failure and to maximise the likelihood of photographing both sides of visiting cats. Camera pairs (stations) were baited using a combination of lures including feathers, scent (Hawbaker's Wildcat Lures Nos. 1 and 2) and meat (chicken leg, pheasant or deer offal). Scent and meat lures were refreshed at the beginning of weeks 3, 5 and 7 although no meat bait was used on two of the estates. Surveys lasted up to 84 days.

Individual cats were identified based on pelage markings, thus the location, date, time and identity was known for each cat photographed (or 'captured').

The first 60 days of each survey were used to assess population change and density (Kilshaw and Macdonald, 2011). The low numbers of wildcats captured, combined with only two years data, precluded the use of complex capture-mark-recapture (CMR) models in most cases. Changes in cat

populations between the two years were assessed using a t-test, paired by estate, on the number of cats of each group (wild, hybrid, domestic) captured, i.e. the minimum number alive (MNA).

Outside the intensive camera-trapping periods, estate staff assisted with opportunistic camera-trapping. In addition, the CWP loaned out cameras to key individuals and organisations for smaller-scale opportunistic camera-trapping around the National Park. Cameras were looked after by National Park rangers or by staff from partner organisations, local conservation groups or wildlife enthusiasts given best practice information developed during the intensive camera-trapping sessions on the estates. Several cat photos were taken at different sites across the National Park, thus adding to the understanding of wildcat distribution and behaviour.

Records of sightings and road-kill carcases can also provide a useful source of data about the potential distribution of wildcats. Members of the public were encouraged to report sightings via a form on a website. Records were classified as 'possible wildcat', 'probable hybrid' and 'feral cat' taking account of the evidence available to substantiate the record (e.g. photograph or carcase) and the information provided. All records were subsequently logged on a Geographic Information System (GIS) and passed to the North East Scotland Biological Records Centre (NESBReC) to be forwarded for public access through the National Biodiversity Network (NBN).

The public were encouraged to report road-kill carcases to the CWP and, where possible, these were stored in freezers. The carcases of some of the tabby-marked cats that were shot on the estates were also retained in freezers for analysis. In total, 56 carcases of tabby-marked cats were retrieved via the CWP and sent to the National Museums of Scotland (NMS) in Edinburgh for analysis of pelage and skull morphometrics, to determine their taxonomic status.

Lessons Learnt, Further Work and Future Recommendations

The SAF wildcat project addressed three fundamental elements of a successful wildcat conservation programme: clarifying the identity of the Scottish wildcat, developing methods for survey and monitoring and testing practical conservation methods *in situ*.

- **Taxonomy** – the lack of a clear identity for the Scottish wildcat had undermined progress on conservation of the species for about 20 years. Whilst work was progressing on a practical field description, drawing together knowledge of morphology and genetics provided a catalyst for further progress. The provision of 'strict' and 'relaxed' descriptions of the wildcat, aligned to genetic information, gave the confidence to develop methods for field survey as the basis for further conservation action. These identification criteria have subsequently been refined for application in different applied conservation scenarios, for example to determine which cats are appropriate for neutering and for conservation breeding.
- **Survey methods** –SAF-funded work demonstrated the value of camera-traps to survey and monitor the Scottish wildcat. The method was trialled and developed further as part of the Cairngorm Wildcat Project (CWP) and provides a legacy protocol which can be used elsewhere. In Cairngorm this, combined with the recovering of cat carcases, indicated that feral cats and hybrids live in the same areas as wildcats, but are more numerous and widespread than previously thought. It clearly demonstrated the active risk to wildcats from hybridisation and disease transmission.
- **Public engagement** – the CWP recognised early the benefits of good public engagement and adopted a suite of methods to promote this. The success of this approach was demonstrated by a notable increase in awareness and involvement in the project, including financial donations to the Highland Tiger fund.
- **Working with estates** – the project also recognised the important role played by estate managers in conserving the wildcat. The involvement of the SGA clearly opened up opportunities to disseminate the project

Key Management Messages

- One of the major successes of the CWP is the effective partnerships formed between conservation and land management interests. The SWCAP partnership now embraces more than 20 partner organisations. Such a diverse partnership brings challenges, but also great strengths, with so many individuals and organisations committed to the same cause.
- Having a common understanding of wildcat identification criteria, despite the taxonomic complexities, is probably the foremost factor that has allowed conservation action for the Scottish wildcat to progress. Having a sound scientific basis is essential for making sound management decisions. Refinement of management criteria will continue as our knowledge of the status of wild-living populations improves.
- Conservation action sometimes needs pragmatic decisions. CWP trialled approaches in the field that have been adopted by Scottish Wildcat Action, and which recognise that we are trying to protect a group of cats that look like wildcats, but may not all be genetically pure wildcats.
- Trials of practical conservation management are essential as a building block for learning. Many of the lessons from CWP have been extended and incorporated into a national wildcat conservation action plan.

messages and encouraged gamekeepers to adopt wildcat-friendly management regimes. The protocol for wildcat-friendly estate management has also had a legacy, having been adopted in the work of Scottish Wildcat Action in wildcat priority areas. This work also contributed to the development of the Wildcat Friendly Predator Control option now available through the Scottish Rural Development Programme in wildcat priority areas to assist land managers in their efforts to take a more precautionary approach.

- **Responsible cat ownership** – Direct engagement with the local veterinary surgeries and Cats Protection branches helped to promote neutering and vaccination of domestic and feral cats. Whilst it was difficult to gauge if any increase in the numbers of cats being neutered and vaccinated could be attributed to the project, the number and distribution of Cats Protection volunteers clearly widened opportunities to reduce the risks in the CNP.
- **Resourcing** – Roll-out of the full package of measures in the CWP required a dedicated staff resource. The efficacy of some of the measures trialled, for example the promotion and co-ordination of TNR, has been reviewed and greater prominence has been given to volunteer co-ordination under Scottish Wildcat Action. The Scottish Wildcat Action work in priority areas has a dedicated staff of six, a project manager, a communications co-ordinator and four project officers covering the six priority areas. Working with local communities, land managers, vets and volunteers is a large part of the project to ensure there is an enduring impact. Much of the programme of Scottish Wildcat Action work draws on earlier experience from CWP. Hence there is a strong legacy of SAF in ongoing wildcat conservation action.

Of the original SAF aims, significant progress has been made with clarifying wildcat identification and in raising awareness of the threats to wildcats. More limited progress was made with developing our understanding of distributions and abundance, but tools have been developed that will assist this process in the future. The emphasis on some of the original SAF aims over others also largely reflected stakeholder views, which clearly favoured a trial of practical conservation measures. This work took precedence over developing habitat management recommendations and the identification of stronghold areas, but these outstanding aims have become part of the Scottish Wildcat Conservation Action Plan (SWCAP), with priority areas being identified in 2014 (Littlewood *et al.*, 2014).

Further Information

- http://www.snh.gov.uk/about-scotlands-nature/species/mammals/land-mammals/wildcats/ – SNH webpage on wildcats.
- http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=1672/ – SNH Wildcats booklet in About Scotland's Nature series.
- http://www.snh.org.uk/pdfs/publications/wildlife/wildcatconservationactionplan.pdf – the Scottish Wildcat Conservation Action Plan (2013).
- http://www.scottishwildcataction.org/ – Scottish Wildcat Action website.

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The SAF Partners

- Scottish Natural Heritage
- Cairngorms National Park Authority
- Royal Zoological Society of Scotland
- Scottish Gamekeepers Association
- Forestry Commission Scotland

The Species Action Framework Handbook

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