

Southwest England Wildcat Reintroduction Feasibility



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2025

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Photo: David R White

Executive Summary

European wildcats are Great Britain's most threatened mammal. The remaining population, restricted to Scotland, has been assessed as functionally extinct due to interbreeding with domestic cats (hybridisation). A reinforcement programme using animals from a UK captive breeding programme is ongoing. The first releases have survived well, and breeding has been recorded in the first year after release, both very encouraging milestones. Our feasibility programme has benefitted greatly from the work in Scotland and learning from the Saving Wildcats project will continue to be invaluable for wildcat reintroductions elsewhere.

Wildcats were lost from England in the 1800s largely because of prolonged and persistent persecution. They are now subject to the highest form of protection which makes actions that kill or disturb wildcat's illegal. However, without intervention there is no realistic prospect of wildcats recolonising England.

A preliminary feasibility identified Southwest England as being worthy of further investigation for wildcat re-establishment. Documented stories of wildcats still present on Exmoor until the early 19th century provide a recent cultural link to the region.

The IUCN Cat Specialist Group recognises road mortality, persecution, hybridisation, and habitat fragmentation/loss as the main threats to the species across its range. The aim of this study was to increase our understanding and knowledge regarding habitat suitability, public views towards a wildcat reintroduction, and the potential risks and opportunities within the Southwest England context.

Habitat analysis identified sufficient connected habitat, to support a self-sustaining wildcat population within Southwest England. Persecution (both accidental and illegal) and road accidents can significantly impact wildcat populations. Site selection alongside education and support for stakeholders are important mitigations identified.

Implementation of robust monitoring is recognised as essential to understand population status and to address issues.

The risk of wildcats interbreeding with domestic cats is unlikely to be completely eradicated. However, the persistence of genetically secure wildcat populations within the current range, suggest that hybridisation is not inevitable and should not be a barrier to developing a wildcat reintroduction. Our understanding around the mechanisms behind this inter-species breeding are growing. Developing a release strategy with the aim of creating social stability and a genetically diverse wildcat population are predicted to reduce the hybridisation

risk. This will rely on prey-rich habitat, combined with management to reduce the risk of encountering unneutered cats in the farmland environment. Allies within the Domestic Cat Welfare world have been identified. They are keen to work with us to seek solutions and address barriers to both domestic cat welfare and wildcat reintroduction.

Independent research by the University of Exeter has identified that a SW wildcat reintroduction is a socially feasible prospect. This is providing any reintroduction project addresses recommendations that came out of the research. They suggested building knowledge around wildcats and involving communities with the project design should be a key component of a wildcat reintroduction. A Wildcat Management Plan that identifies potential risks and mitigations alongside clear routes for reporting issues should be co-designed before any reintroduction starts.

Further work is required to identify suitable release sites. Identifying communities that support reintroduction is a critical next step. Understanding prey availability was not addressed within this feasibility however will be an important factor in choosing a release area. Designing and undertaking a monitoring programme to collect both baseline and ongoing data is proposed.

Creating balance by restoring species is seen by many as critical for ecosystem restoration. However, recognising the impact of individual species (especially if they are a predator and not a keystone species) is not well understood. A literature review did not highlight any negative impacts on vulnerable species or protected sites. The prediction is that a wildcat reintroduction should result in ecosystem benefits, especially when combined with habitat improvements. Measuring wider benefits will help build support for reintroducing wildcats. Building understanding around predator/predator interactions and predator/prey interactions is seen as a key part of building support.

The benefits of re-establishing a critically endangered species should outweigh the low risk of any localised negative impacts. However, acknowledging concerns and ensuring there is support available for local communities and stakeholders is a key consideration before a project can move forward.

An initial Habitat Regulation Assessment (HRA) undertaken by Forestry England did not suggest that wildcats will adversely affect European protected sites or their conservation features. If a wildcat reintroduction is to go ahead then a more localised HRA may be required.

Rewilding Medicine have produced an England Wildcat Disease Risk Assessment. This will underpin individual

Project Disease Risk Management Plans developed as part of any reintroduction proposal.

The Saving Wildcats project in Scotland has developed disease risk protocols suggesting that disease risks should not be a barrier to an English project.

There is a population of captive wildcats of Scottish descent in the UK. This could provide animals for release as is the case in Scotland. However, it is suggested an independent review is undertaken to assess options for animals used in an English release.

Wildcats could be a Flagship species for woodland and associated habitat restoration across SW England. This will support ambitious habitat restoration plans proposed within the government's 25 Year Environment Plan.

The conclusion is that a SW wildcat reintroduction should be progressed to a 'development phase'. This should aim to build support through education and increasing knowledge whilst ensuring the ecological case is strong and based on the best available evidence. Whilst the goal is to bring back a lost native cat, it is recognised that there is important groundwork to do before there are paws on the ground.

Acknowledgements

Many people have been involved with the wildcat feasibility. Devon Wildlife Trust and the project team would like to express our gratitude for their input, support, and feedback. Special thanks go to Sian Moody for basing her PhD around wildcats and developing the work on unowned cats and understanding hybridisation, Thomas Dando for sharing work undertaken through his PhD, Roger Auster for his thoughtful and in-depth social study, Adam Falconer (Devon Biodiversity Records Centre) for his patience and expertise in analysing data, Peter Cooper for his enthusiasm and camera trapping skills, Alex Parr (Devon Wildlife Consultants) for his literature review, Sophie Perry for helping with camera trap survey and investigating the name woodcats, the team at Saving Wildcats for sharing their knowledge and experience, EuroWildcat for allowing us to join the European-wide wildcat research community and finally the steering group for making this work possible. Many thanks to the many stakeholders, members of the public and farmers who have taken part in various surveys, talks and discussions, every view is valid and important to hear.

We are grateful to Devon Environment fund and Benindi fund for their financial support.

Through a combination of folklore and storytelling, wildcats have acquired a reputation as being fierce and untameable. However, they do not pose any risk to people. They are secretive and elusive, and you would be very lucky to encounter them in the wild.

This spirit is referenced in Shakespeare's *The Taming of the Shrew* (Act 2 Scene 1).

*Thou must be married to no man but me;
For I am he, am born to tame you, Kate;
And bring you from a wild cat to a Kate
Comfortable, as other household Kates.*



The South West Wildcat Project is a partnership between Devon Wildlife Trust, Forestry England and the Derek Gow Consultancy. With support from University of Exeter and Wildwood Trust.

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1. Introduction

1.1 Aims of Feasibility Study

Lost from England and Wales through human persecution over 100 years ago, this project, a partnership between Devon Wildlife Trust, Forestry England, and Derek Gow Consultancy, investigated if European wildcats (*Felis silvestris*), usually referred to as wildcat (or woodcat in England), could once again thrive in Southwest England's rural and woodland landscapes. Results from the key questions set at the start of the project in 2023, and shown in the box below, will help guide an evidence-based decision on whether to proceed with developing a wildcat reintroduction programme. This study although Southwest-wide had a Devon focus recognising its central position in the region making it a strong potential candidate to host a reintroduction from which wildcats could spread.

Key questions the Feasibility Study Investigated:

- Is there enough connected habitat, with sufficient prey to support a self-sustaining wildcat population?
- How do people in Southwest England, including key stakeholders, feel about wildcat reintroduction?
- Could a re-established wildcat population be maintained without an unsustainable level of interbreeding with domestic cats?
- Could the return of wildcats benefit other Southwest England habitats and species?
- What are the risks?
 - Will wildcats impact other species or human activities and can identified risks be mitigated?
 - What risks will wildcats face, and how can these be mitigated?
- What is the optimum source population of animals to be released?

1.2 Why Wildcats

Wildcats are the UK's most threatened mammal and the last extant native cat species following the extinction of Eurasian lynx over 1000 years ago. They are recognised by the International Union for Conservation of Nature (IUCN) as being Critically Endangered in the UK. Despite over two decades of conservation action, the wild population in Scotland remains critically endangered. Their elusive nature and difficulties with identifying true wildcats masked the precarious state of Scotland's remaining wildcats for many years. It is hard to visually differentiate wildcats from a wildcat/domestic hybrid or a tabby domestic cat. After an intensive period of survey and genetic testing, in 2019 the Scottish population was declared no longer viable because of interbreeding with domestic cats (Breitenmoser *et al* 2019).

The species is receiving urgent conservation action and efforts are underway to bolster the remaining population with captive bred animals (of Scottish descent) through the LIFE funded Saving Wildcats Project. The first releases of wildcats into the Cairngorms were in 2023. Intensive monitoring has shown that animals are surviving, and breeding has occurred in the first year after releases. However, there are challenges such as the released animals coming into conflict with gamebird and poultry rearing. Strategies to manage these conflicts are essential.

Elsewhere in Europe, wildcats have been naturally recolonising parts of their former range. In recent years the Netherlands and Belgium have seen wildcats return whilst conservation action in Germany has seen fragmented populations joined up through habitat restoration programmes aimed at creating wildcat corridors.

Their current fragile UK conservation status alongside barriers in the landscape preventing recolonisation, mean without a reintroduction there is no mechanism for them to re-establish naturally in England. No other extant British mammal is in such a precarious extinction situation.

✓ **A wildcat kitten bred as part of UK wildcat breeding programme.**



Photo: David R White

1.3 Why Southwest England?

A Preliminary Feasibility Assessment¹ investigated the biological feasibility of reintroducing the European wildcat to regions of England and Wales. A model was developed using habitat parameters derived from verified wildcat locations in France. This was used to map suitable wildcat habitat across England and Wales. This was assessed against a range of potential risk factors, such as density of the human population, busy road networks, and overlap with habitat likely to be used by feral cats i.e. increasing the risk of hybridisation, that may negatively impact the success of wildcat reintroduction.

The preliminary report identified North Wales, West Wales and Southwest England, as priorities for further investigation. As a direct result of this work, a partnership between Devon Wildlife Trust, Forestry England and Derek Gow Consultancy was formed to explore in further detail the suitability of Southwest England. The map in Figure 1 shows the area identified for further investigation. Other feasibility projects are also underway in Wales and Northern England.

International and national guidelines on species translocations have been used to inform and guide this project, (for further details see Appendix 1).

1.4 Previous Wildcat Reintroductions

To date there has been only one documented project in Britain that has released wildcats. The Saving Wildcats Project in Scotland has used captive bred wildcats, which have been released into the Cairngorms during 2023, 2024 & 2025. Wildcats released are from the captive breeding programme based at the Royal Zoological Society of Scotland's (RZSS) Highland Wildlife Park in the Cairngorms. These animals are part of the UK wildcat studbook held within zoological collections in the UK and demonstrate the critical role these populations represent for conservation action. Released animals are being

carefully monitored and progress is regularly reported (Saving Wildcats, 2023).

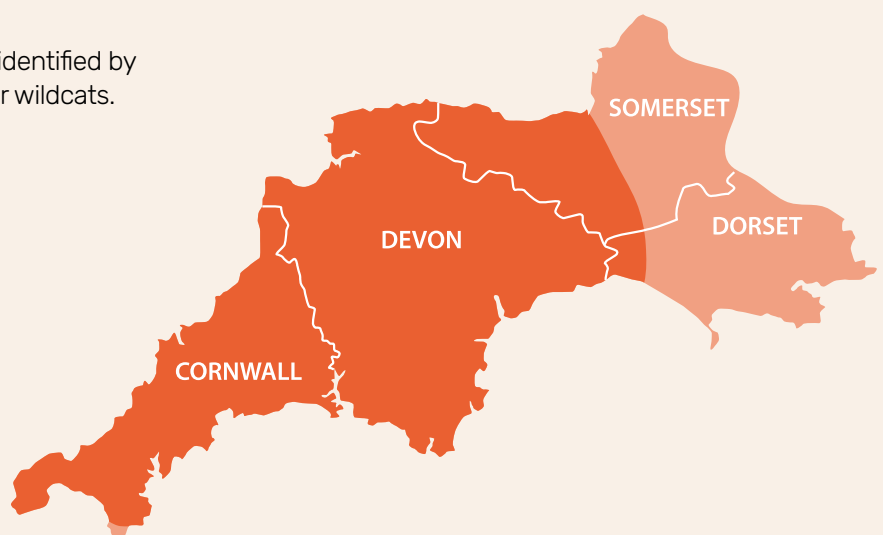
Elsewhere in Europe there have been several projects which aimed to secure new, connected, populations of wildcats and a more resilient conservation status of the species. The earliest recorded projects were in Switzerland; however, the outcomes are largely unknown and involved few animals (Gow & Cooper 2018). In Bavaria, 580 captive bred animals were released between 1984–2008 (Walsh 2020). In 1994 the project was reviewed and determined that *no meaningful population* was being established (Stahl & Artois 1991). Early releases involved zoo animals who had little acclimatisation or opportunity for skill development before release. Later releases involved young animals bred in enclosures designed to help develop essential life skills such as hunting. At the release site they spent time in acclimatisation pens within sibling groups before being released (Gow & Cooper 2018). Recent genetic profiling indicates these reintroduced animals became established in the Spessart Forest, where they were released (Mueller *et al.* 2020).

It is unfortunate that monitoring and documenting both successes and failures was not more rigorous in these projects. With few comprehensively documented wildcat species reintroductions reported, a reintroduction to England is likely to attract considerable international interest.

The Southwest Wildcat project is however benefiting from the learning imparted directly from those involved in current and past undocumented release projects.

The IUCN Re-introductions and other conservation translocations database is a source of case studies across all taxa and from around the world. However, there are currently very few case studies involving cat species. All species reintroductions are complex, and require diligent planning, and expert support. Not all reintroductions are successful. A review of *herpetofaunal* (reptiles and amphibians) case studies (Ewen *et al* 2014) identified the most common issues affecting the projects studied as:

► **Figure 1:** The area of Southwest England identified by MacPherson (2019) as potentially suitable for wildcats.



¹ A preliminary feasibility assessment for the reintroduction of the European wildcat to England and Wales (2019) Jenny MacPherson. Vincent Wildlife Trust & Durrell

- Progress hindered by lack of staffing/resourcing/funding.
- Conflicts with other stakeholders and/or low levels of public support.
- Difficulties in accurate post-release monitoring.
- Scale of habitat degradation and limited availability of release sites.

These are likely to be relevant across reintroduction projects irrespective of the taxa.

This report draws together and summarises key information needed to make an informed decision on whether to proceed to a Development Phase of a Southwest Wildcat Reintroduction Project.

1.5 Aims of a Southwest wildcat reintroduction

At the start of a planned or proposed reintroduction, clear goals and indicators of project success must be identified. Below are the proposed Southwest Wildcat Reintroduction Goals and Project Indicators. If the project were to progress to Development Phases, these would have to be revisited and agreed by a Steering Group which would strategically oversee programme delivery.

Reintroduction Goals:

- A genetically resilient population of wildcats which, with independent oversight, is assessed as having favourable conservation status.
- Wildcats, as a flagship species, have catalysed landscape scale action for nature recovery in woodland, mosaic and connecting habitats.
- Positive co-existence with a re-established species in our shared landscapes.
- Increased levels of responsible pet cat ownership and ethical unowned cat neutering and vaccination measures within release area.
- Policy makers provide proactive and pragmatic support for wildcat conservation measures.

Potential Success Indicators:

- Successful release of animals over 5-10 years (numbers to be defined during Development Phase)
- Released cats meet predetermined survival rates.
- A population of 40-50 animals (including at least 25 females) is achieved within 5 years of first release
- Successful breeding is recorded in the first year after release.
- Wild bred young survive into their first year.
- Positive or neutral attitude to wildcats from stakeholders and local communities involved.
- Monitoring of woodland mosaic habitats and prey availability, indicates positive ecosystem recovery within release zones.



Recommendation

- Strategic oversight of a reintroduction project to be governed through a multi-disciplinary Project Steering Group
- Establish a Forum which meets routinely to provide effective routes for observations, concerns, and recommendations to be raised, and where appropriate, resolved by the Project Steering Group activities.

Photo: stock.adobe.com

2. European Wildcats

2.1 What is a wildcat?

Although resembling a large domestic tabby cat, the European wildcat is a distinct and separate species. They are a member of the *Felidae* (Cat family, see Appendix 2) that includes lions and tigers but also a diverse range of smaller species that are often highly threatened and poorly understood. European wildcats *Felis silvestris* are part of the *Felid* Genus. This also includes African wildcats *Felis lybica* from which domestic cats *Felis catus* were descended around 9500 years ago (Losos, 2023). Domestication began in the Middle East; from where they spread throughout Europe. Domestic cats co-existed with the native wildcat largely without any problem until relatively recently (Jamieson *et al.*, 2023). This report will refer to European wildcat as wildcats. Wildcats can live up to 10 years in the wild and longer in captivity (up to 19 years) (see Bastianelli *et al.*, 2021).



Photo: Tom Mason - tomasonphoto.com

Wildcat

Up to 25% bigger than domestic cat.
Head and body length = 51-75cm.
Weight 3-8kg.
Males bigger than females

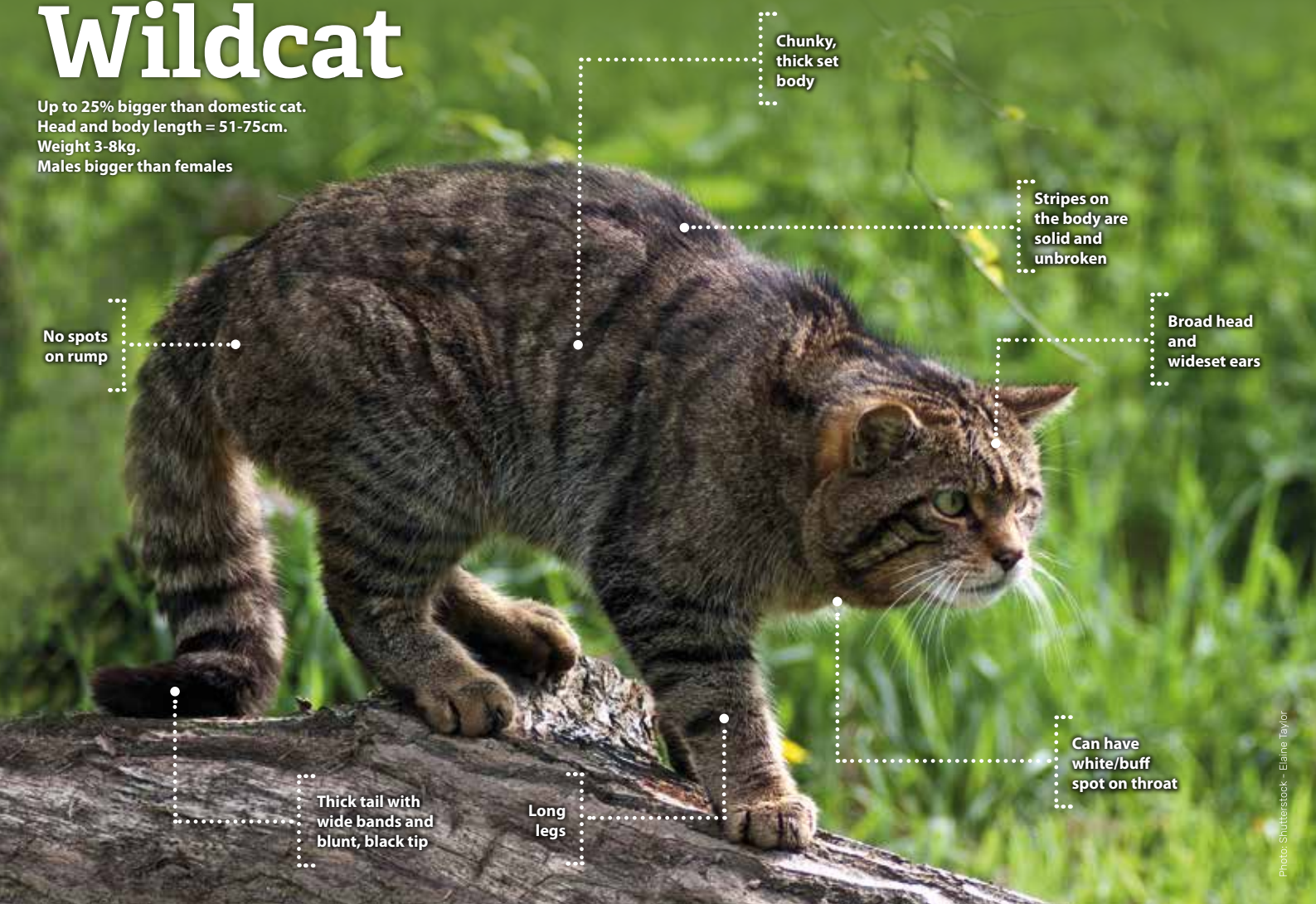


Photo Shutterstock - Elaine Taylor

⬆ Perhaps the European wildcats' most distinctive feature is their large blunt- tipped tail with separate black bands. Domestic cats in comparison have tapered pointed tails.

2.1.1 Diet

Wildcats are obligate carnivores (they only eat meat) and are reliant on hunting live prey. They will however take carrion especially in periods of prey scarcity such as in the winter. Wildcats are terrestrial predators that live at low densities and do have as broad a diet as domestic pet cats (Széles *et al.* 2018). Rabbits (*Oryctolagus cuniculus*) are favoured prey followed by rodents such as mice and voles; together these, on average, make up 75% of the diet (Malo *et al.* 2004; Silva *et al.* 2013; Apostolico *et al.* 2016). The rest of the diet can be made up of other species such as birds, reptiles, amphibians and invertebrates. However, these constitute a much smaller part of their diet (Biro *et al.* 2006; Malo *et al.* 2004 Sarmiento 1996; Germain *et al.* 2009).

The preference for rabbits has been well reported, (Malo *et al.*, 2004; Germain *et al.*, 2009). The energetic profitability of hunting rabbits is high – i.e. the sustenance gains relative to the energy expended predating the species. If rabbits are not available or at low densities, they will preferentially hunt small mammals and then other widespread species. In the absence of rabbits and rodents, wildcats become more opportunistic/generalist predators and will take a wider range of species (Malo., *et al* 2004). Kittens are often observed honing their hunting skills on invertebrates (M. Hartmann, personal communication, Oct 2023).



^ The diet of the wildcat is mainly small mammals.

2.1.2 Habitat

Broadleaved woodland is an important component of wildcat habitat (Nowell & Jackson 1996), especially for females as this is usually where they will have their kittens (usually just one litter a year though information on breeding/productivity is limited). Females occupy areas with dense vegetation and are more likely to avoid areas with roads and built infrastructure. They require habitat heterogeneity to provide safe places to breed and as resting sites as well as providing good hunting opportunities. Females defend their territories which rarely overlap (related females are often adjacent), but males will overlap with several females (Beugin *et al.*, 2016; Jerosch *et al.*, 2017; Götz & Basitanelli, 2024).

Habitats such as rough pasture, hedges, riparian edges, and scrub can support abundant prey populations. Many studies show wildcats ranges include these quite open habitats especially when adjacent to woodland habitats. It has been suggested food and shelter are more important predictors of wildcat presence than size of woodland (Lozano *et al* 2003; Jiménez-Albarral *et al.* 2021; Portanier *et al.* 2022). When prey density is low, home-ranges have been found to be larger in other wild cat species studied (Litvaitis *et al.* 1986, Avenant and Nel, 1998, Herfindal *et al.* 2005). This is likely to be the case for wildcats too.

Wildcats are potentially more of a habitat generalist than previously thought i.e. not a species which solely inhabits native woodlands. In Switzerland the wildcat population has doubled its range in a decade. In 2010 the population was largely associated with habitats with a higher proportion of forest and a low proportion of settlements. However, by 2020, this predictor of occupancy was no longer significant (Nussberger *et al* 2023a). This suggests a preference for woodland habitat when there is availability, but flexibility when this habitat is occupied. In addition, Germain *et al.* (2008) radio tracked wildcats near farms and villages suggesting human habitation isn't universally the negative factor that it was once assumed to be.

Wildcats have become established in agriculturally dominated landscapes where sufficient shelter is available (Eiberle, 1980; Jerosch *et al.*, 2017; Jerosch *et al.*, 2018). A study in Germany investigated wildcats in what may be considered sub-optimal habitat, including agricultural land located outside heavily forested areas, (Jerosch *et al.*, 2017). The wildcats were resident and breeding in this open, cultivated landscape, and levels of hybridisation were low to zero. Female annual home-range was smaller (with one individual having a range of 104 ha including a core area of 60 ha) compared to those recorded in forested habitats. While male annual home-ranges were similar in size (c1000ha) to those in forested habitats, the core areas were smaller than those recorded in adjacent forested habitats. There was more female territory overlap than usually observed, though



Photo: Cath Jeffs



Photo: Cath Jeffs



Photo: Devon Wildlife Trust



Photo: Devon Wildlife Trust



Photo: David R White

this did not include core areas. These observations are likely to be because of high availability of food, minimising competition.

Uniform habitats, such as commercial conifer plantations are not usually valuable wildcat habitat other than as connecting features. They do not provide the understory and habitat structure needed for security and prey when tree canopies have formed. However, these could be enhanced for wildcats by creating rides, broadleaved edges/blocks, lower planting densities, use of lower shade casting species, and promoting understory development.

Snow cover over 10cm has been shown to inhibit wildcat activity. It is suggested that the energy expended by wildcats hunting is too high compared to the chances of finding prey (Sunquist and Sunquist 2002). Prolonged snow cover is not normal in SW England.

Promoting continuous wooded vegetation to create corridors and join woodland will support wildcat expansion across human-dominated landscapes (Parent, 1975; Jerosch *et al.*, 2018).

Wildcat home ranges have been shown to vary widely across Europe, ranging from 1.95 to 50.17 km² for males and 0.69–13.85 km² for females (Monterroso *et al.* 2009) while Bastianelli (2021) suggests ranges of 4.63 km² for females (0.69–53.04km²) and 14.79km² (0.68–54.81km²) for males based on average territory sizes seen from 22 studies across Europe. However, with different methods, age classes, prey densities etc it is hard to make direct comparisons. Wildcats have a home range and a smaller core range within this. Ranges can change size depending on season, with males having larger ranges in the spring (breeding season) and females having larger ranges in the summer when they are providing for their young. Klar *et al.* (2008) estimated the minimum annual spatial requirements of female wildcats to be 185 ha of suitable habitat and 94 ha of optimal habitat. A useful estimate is that wildcats live at low densities of approximately 3–5 cats per 10km².

◀ **Wildcats require a mosaic of habitats, usually focused around diverse broadleaved woodland habitats or mixed woodland, supporting abundant prey species (small mammals and rabbits).**

2.2 Why were wildcats lost from England and Wales?

The extinction of wildcats in England and Wales was driven by persecution – exacerbated by habitat loss. Wildcats have lived in Britain since the last Ice Age and their demise is a relatively recent event.

The mid-1500s saw wildcats considered vermin with a bounty placed on their head as they were considered a threat to human food supplies, such as rabbits (Gow & Cooper, 2023). Centuries of persecution followed, for

example, 311 cats were recorded killed in the parish of Hartland on the North Devon coast between 1629 and 1699 (Lovegrove 2007).

There is no confirmed date for the last English wildcats. They were reported to be plentiful in areas of Cumbria in 1726 (Defoe, 1928), however 150 years later, wildcats were thought to be 'very difficult at present to find in England, save perhaps for a few northern woods' (Watkins 1878). It is likely that by the 1870's they were largely lost from England and Wales, with remote areas of Scotland their final refuges. The history (and demise) of the wildcat in England is documented in Gow & Cooper (2019).

There are sporadic reports of wildcats after the late 1800s, this includes a population at Room Hill, Exmoor, until at least the beginning of the 20th century (Bourne 1963). There is no way to confirm these were indeed native wildcats, but it adds to the mystery and mythology of the species.

In 1988 wildcats belatedly became a protected species in Britain but by then it was too late for wildcats in England.

The narrative around wildlife, including predators, is changing with reinforcements and reintroductions gaining greater acceptability. It is also now widely accepted that fully functioning ecosystems require healthy predator populations. Investigating the return of lost native species is a critical component of restoring natural and balanced ecosystems. A wildcat reintroduction to Southwest England could make an important step towards securing the species as well as catalysing woodland and associated ecosystem restoration.

A Timeline of Wildcats in the UK



4.5 million years ago

Felis branch of cat family develops - includes African wildcat



10,000BC

Domestication of African wildcat begins outside of England.



5000 - 7000 BC

British Wildcat population isolated from European population.



3300 - 1200 BC

Deforestation for agriculture during the Bronze age removed much of the forest cover.



200 - 400 BCE

First domestic cat in Southern England.



1815

Last bounty paid in Devon.



1629 - 1699

311 Wildcats killed for bounty in Devon.



1590

Shakespeare mentions wildcats in Taming of the Shrew - because of untameable spirit!



1566

Act for the Preservation of Grayne put a bounty on wildcats - widespread persecution.



14 - 15C

Wildcats are widely hunted for their fur.



1843

Possible year of extinction in England.



1880s

Last remaining population in Scotland but still persecuted.



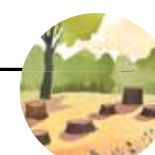
Early 1990s

Report of wildcats on Exmoor - no way to verify.



1915

Recolonisation as game keeping decreased after war across Scotland.



1919

England's woodland cover had reached a record low of just 5 percent.

Whats next for Wildcats?



2023

First releases of captive bred wildcats into Cairngorms.



2019

UK population declared not viable.



1988

Finally, a protected species under Wildlife and Countryside Act.



1970s - 90s

Threat from hybridisation recognised.

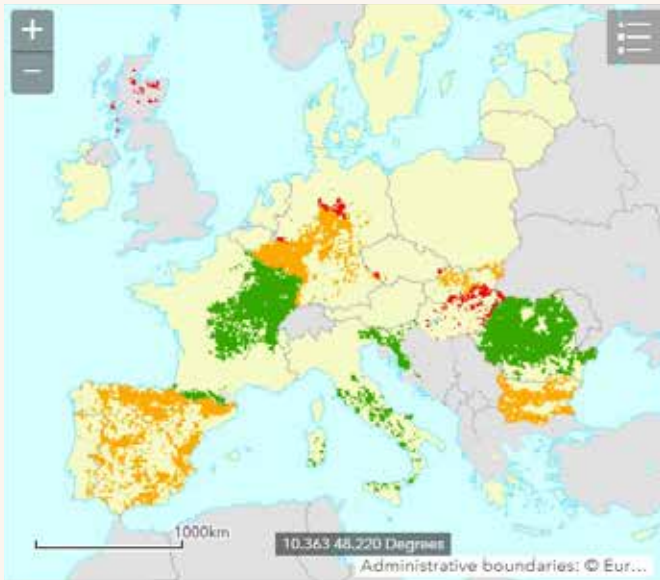


Figure 2: The map shows the 2013–2018 assessments of wildcat status reported by EU member states. Status is assessed against criteria as set out in Habitats Directive. Taken from the European Environment Agency Website.

Key to map:

Green = Favourable

Orange = Unfavourable – inadequate

Red = Unfavourable – bad

Summary of Conservation Status

UK Conservation Status:

- Red List
- Critically Endangered
- Extinct England & Wales
- Scottish population declared functionally extinct in 2019

UK Conservation Action to date:

- Research into wild living cats in Scotland 1990–2000
- Cairngorms project to pilot conservation action 2009–2012
- Scottish Wildcat Conservation Plan 2013
- Preliminary study to identify suitable wildcat habitat in England and Wales 2019
- Saving Wildcats project began 2020
- Wildcats released into Cairngorms 2023–25

Legal Protection:

Protected over most of its European range under national legislation Listed in:

- CITES Appendix II
- EU Habitats and Species Directive Annex IV
- Bern Convention Appendix II

UK

- Wildlife & Countryside Act in 1988
- European Protected Species in 1994

2.4 Current Conservation Status

Formerly the European wildcat was widely distributed in Europe and only absent from Finland, Norway, Sweden and northwestern parts of Russia. This is directly linked to snow depth which prevents hunting during winter months. Wildcats are also found in adjacent Russia and central Asia. Two subspecies are recognised (Kitchener *et al* 2017).

- *Felis silvestris silvestris* – continental Europe, Scotland and Sicily.
- *Felis silvestris caucasia* – Turkey and the Caucasus

Although listed as being of Least Concern in the International Union for Conservation of Nature (IUCN) Red List of Threatened species, this masks a complex and varied picture throughout the current range as illustrated in Figure 2. In many countries they are considered threatened and have been lost from a significant area of their former range. Populations are often fragmented and in decline, e.g. the Iberian Peninsula (Matias *et al.*, 2021). Whilst in some countries, trends in population size and distribution are not well documented and only rough estimates exist.

In Great Britain, wildcats are classed as Critically Endangered. In Spain they are Near Threatened, Endangered in Poland and Vulnerable in Portugal. However, there are also positive trends reported. For example, in Germany and France populations have been growing and increasingly merging with previously isolated subpopulations. There is also welcome evidence of wildcat recolonising some regions of Austria, the Czech Republic and the Netherlands. Monitoring how these newly establishing populations develop and the threats they face could mirror issues that a reintroduced population in England may experience in the future.

The IUCN Cat Specialist Group identifies, illegal persecution, road mortality and hybridisation with domestic cats *Felis catus* as being the principal threats across their range. Other threats identified include disease transmission from domestic cats, use of rodenticides (which is subsequently ingested by wildcats) and in very specific circumstances competition with feral cats for food.

2.5 Current wildcat Legal Status, conservation policy in Great Britain and implications for reintroduction

Wildcats became a protected UK species in 1988 when they were added to Schedule 5 of the Wildlife and Countryside Act 1981 (and amendments). They were afforded further protection as a European Protected Species (EPS) through the Conservation of Habitats and

Species Regulations 2017. This is the national legislation that adopts the EU Habitat Regulations 1994. EPS species are subject to the highest form of wildlife protection: for further details see Appendix 3.

There is currently no specific licensing regime that applies to wildcats in England on account of their extinction. However in Scotland, NatureScot can issue licences for certain purposes to permit actions that might otherwise constitute an offence in relation to wildcats. A similar framework will need to be implemented in England if a reintroduction were to progress. For example, in the event of a reintroduction, activities such as monitoring the released wildcats is likely to require a licence. Without any legislative structures in place this would cause delays to both the release programme and ongoing management.

Wildcats are currently not listed as a species of principle importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act. These species are identified as those requiring targeted conservation action and funding within England. Adding them to this list would help ensure conservation action can be strategically directed toward this threatened species and associated habitats.

No licence is required to release wildcats in England as they are already resident in Great Britain and are not listed on *Schedule 9 of the Wildlife and Countryside Act 1981*. Schedule 9 is largely made up of non-native species already established in the wild, but also includes some native species (for example, the barn owl). The rationale behind this inclusion is to ensure releases are carried out in an appropriate manner and biodiversity is properly safeguarded. There may be calls for wildcat to be added to this list and therefore prudent for any project to progress as if a licence was required.

Individuals of protected species reared in captivity are not protected by UK wildlife legislation. However, once they are lawfully released into the wild, they typically become protected and the person or project that released the species has no ongoing rights or responsibilities associated with ownership.

Woodland cover in the UK has more than doubled in the last 100 years and now reflects the extent seen in the 14th century. Although 50% of this increase was non-native plantation, in England, 74% of woodland is broadleaved. The Government has committed to increasing woodland cover in England to 12 % by 2060 within its 25 Year Environment Plan². The Environmental Improvement Plan³ sets out government action. In addition to planting commitments there is support for increased protection of existing trees and forests, including ancient woodlands. Wildcats would benefit from these positive woodland aspirations.

Thriving Plants and Wildlife Government *targets that can support wildcat conservation

- Restoring 75% of our one million hectares of terrestrial and freshwater protected sites to favourable condition, securing their wildlife value for the long term.
- Creating or restoring 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits.
- Taking action to recover threatened, iconic or economically important species of animals, plants and fungi, and where possible to prevent human induced extinction or loss of known threatened species in England and the Overseas Territories.
- Increasing woodland in England in line with our aspiration of 12% cover by 2060: this would involve planting 180,000 hectares by end of 2042.

* From: Policy Paper – *At a glance: summary of targets in the 25-year environment plan (Updated February 2023)*. Accessed March 2025.

As the wildcat status in GB is recorded as the highest level of concern, investigating how a reintroduction to England could help to address its conservation should be a high priority. Article 22 (a)⁴ of the Habitats Directive (92/43/EEC) requires Member States to study the desirability of reintroducing specified species that are native to their territory where this might contribute to their conservation status Defra Guidance (2007).

Recommended actions for Statutory Agencies to facilitate an effective wildcat reintroduction

- England Wildcat licensing and advice framework established at the start of the reintroduction programme
- Wildcat to be recognised as a Section 41 Species
- A National Wildcat Conservation Strategy developed and agreed

² In 2018 the 25 Year Environment Plan (25YEP) set out the governments goals for improving the environment, within a generation, and leaving it in a better state than we found it. It details how government will work with communities and businesses to do this.

³ The Environmental Improvement Plan (EIP) 2023 for England is the first revision of the 25YEP. It builds on the 25YEP vision with a new plan setting out how government will work with landowners, communities and businesses to deliver each of our goals for improving the environment, matched with interim targets to measure progress.

⁴ Member States shall (a) study the desirability of re-introducing species in Annex IV, that are native to their territory where this might contribute to their conservation, provided that an investigation, also taking into account experience in other Member States or elsewhere, has established that such re-introduction contributes effectively to re-establishing these species at a favourable conservation status and that it takes place only after proper consultation of the public concerned;

3. Threats to wildcats

The main threats facing wildcats identified by the IUCN cat specialist Group are:

- Road Mortality
- Persecution
- Interbreeding with domestic cats – leading to loss of genetic integrity
- Habitat fragmentation

These should not be taken in isolation as they are often intimately linked as discussed below. Annual survival probability for adult wildcats has been recorded at 0.9 despite high human-caused mortality which suggests low natural mortality (Bastianelli *et al* 2021). There is very little data available on productivity in the wild.

3.1 Road Mortality

Road traffic collision is recognised as a major cause of mortality within wildcat populations. Research investigating the causes of wildcat mortality across multiple studies within Europe found that 52% of all recorded deaths were due to traffic collisions (Bastianelli *et al* 2021). Road density was found to strongly impact wildcat annual survival. For example, in the highest road density area studied, annual survival dropped to 0.67. The mortality risk in wildcat home-ranges increased ninefold,

where there was a corresponding increase in the road density of motorways and primary roads by 1 km/km². Low-traffic roads, such as secondary and tertiary roads, did not significantly affect wildcat's annual survival.

Wildlife green bridges and wildcat fencing along major roads are interventions which have been successfully employed in Europe to improve wildcat conservation status. It enables the species (and other wildlife) to recolonise areas and ensure good genetic diversity and exchange across their range. For example, wildcat mortality was seen to reduce by 83% on motorway sections after fencing, (Klar & Kramer-Schadt 2009). Road infrastructure projects in Germany must consider their impact on wildcats and implement mitigation to prevent potential road casualties. Much can be learned from what has been done in Germany (see Figure 3) and elsewhere in Europe where the species is thriving.

One of the reasons that Southwest England was highlighted as an area potentially suitable for wildcats was due to its relatively low impact road network. However, there are several high-volume roads (>30,000 vehicles a day) for example the M5, A30 and A38 that are of concern and create risk factors to dispersal or individual risk for wildcats that have these roads within their territories.

▼ **Figure 3:** Wildlife bridge connecting forest that has been separated by motorway and wildcat fencing to prevent animals gaining access to the motorway in Germany;

- a.** Wildlife bridge and wildcat fencing along minor road that prevents access onto motorway that runs alongside,
- b.** bare area on wildlife bridge with trail cameras recording usage
- c.** fencing to funnel wildlife across wildlife bridge.



A Highways Agency study (Lanbein, 2010) exploring if the A30 and A38 trunk roads could provide safer crossing points for deer found that they were already using existing road structures such as bridges and underpasses. They concluded that some simple and relatively cost-effective management could increase their value as safe wildlife crossing points. Identification of potential wildcat crossing points, for example where woodland comes to the edge of the road, and the deployment of wildcat fences channelling animals to safe crossing points could help to reduce wildcat/wildlife collisions. Interestingly, several of the pine martens released on Dartmoor in 2024, a species known to be vulnerable to road collisions, have repeatedly found their way safely across the A38 (T. Hamston, pine marten project lead SW England reintroduction, personal communication April 2025). However, promoting and implementing interventions to reduce the risk must be investigated.

Green bridges or wildlife crossings are common across Europe and North America, whilst they remain uncommon in UK.

In a press release in 2015, Natural England reported that green bridges could become an important part of the sustainability of future transport projects by:

- creating a safe crossing point for wildlife movement
- joining up habitats and connecting colonies, as they are also used by wildlife as a home in their own right
- creating a crossing point for people and benefit pollinators
- integrating roads and railways into the surrounding landscape

If wildlife bridges and underpasses could become commonplace, and part of our national infrastructure, the benefits for low density species such as wildcats that need large territories and habitat corridors for dispersal, would be huge.

Recommendations

- Choose release areas/sites with lower road densities.
- Identify potential wildcat crossing points along major roads within release areas and investigate how they can be managed so they are safer.
- Draft and agree a monitoring methodology for wildcat mortality and potential risk areas associated with roads.

3.2 Persecution

Persecution was the main reason that wildcats were lost from England over 100 years ago (Langley & Yalden, 1977). Wildcats are now afforded the highest level of legal wildlife protection. Despite this, across Europe, persecution was found to be the second highest reason for wildcat mortality with 22% of recorded deaths attributed (Bastianelli *et al* 2021). Unfortunately, wildlife crime and the associated drivers, are factors that need to be considered and addressed with any reintroduction.

The RSPB has been investigating raptor deaths for many years. Since 2009 there have been over 1,500 confirmed incidents of raptor persecution in the UK, involving all UK bird of prey species including rare, threatened, and reintroduced species – all afforded legal protection (RSPB 2023). They conclude that many incidents are linked to land managed for gamebird shooting (72% in England in 2022). Of those convicted for crimes relating to raptor persecution between 2000 and 2022, 71% were employed as gamekeepers. Figure 4 shows a heat map of raptor persecution within SW England.

It is important to note that vast majority of game shoots are law abiding and not implicated in any wildlife crime and have been responsible for creating and protecting wildlife habitat.

✓ **Figure 4:** Map taken from RSPB Raptor Persecution Map Hub which shows raptor persecution incidents within SW England 2007-2023.



In Scotland it is reported that wildcat persecution has occurred in recent years despite protection (Helen Senn, RZSS, Saving Wildcats, Personal Communication). Part of this may be a result of misidentification, with wildcats being mistaken for domestic cats.

Domestic pet cats are protected by law and are free to roam (RSPCA and Cats Protection websites), they are considered property under the Criminal Damage Act 1971. All cats (pets and unowned) are subject to the Animal Welfare Act 2006. However, the legality of controlling

unowned domestic cats in England is a grey area. In England, there is no legal definition of an unowned cat; what someone must do to ensure the cat is unowned; or when it can be considered a pest species and legally controlled. The Game and Wildlife Conservation Trust (GWCT, nd) website states that feral cats can be controlled throughout the year (search 24/03/2025) but must be destroyed humanely as they are subject to the Animal Welfare Act (2006). Although there is limited information on number of feral cats involved, GWCT has data available for 1961-2009 through their National Gamebag Census. This shows a decline in feral cats controlled over this period (GWCT, nd).

This creates confusion and puts wildcats at risk. It would be practically impossible to visually differentiate between a wildcat or domestic cat (either owned or feral), especially at night or through a thermal camera. Therefore, any lethal act might result in a crime being committed. Ensuring the legal situation of wildcats is understood and having clear guidance around the status of hybrids is essential. If hybrids are protected as they are in Germany it will avoid further confusion.

Recommendations

- Prioritise landscapes for reintroduction where stakeholder support is high, and potential conflict is likely to be low.
- Raise awareness about wildcats, including identification, positive management, and legal status (including hybrids).
- Provide comprehensive 1-2-1 advice and support to enable farmers and game keepers to live alongside wildcats.
- Statutory agencies should enforce legislation with a clear guidance and licencing frameworks.
- Develop a Wildcat Co-existence Management Plan before any reintroduction starts.
- Investigate how agri-environment schemes can support safeguarding poultry and game alongside targeted habitat enhancement incentives.

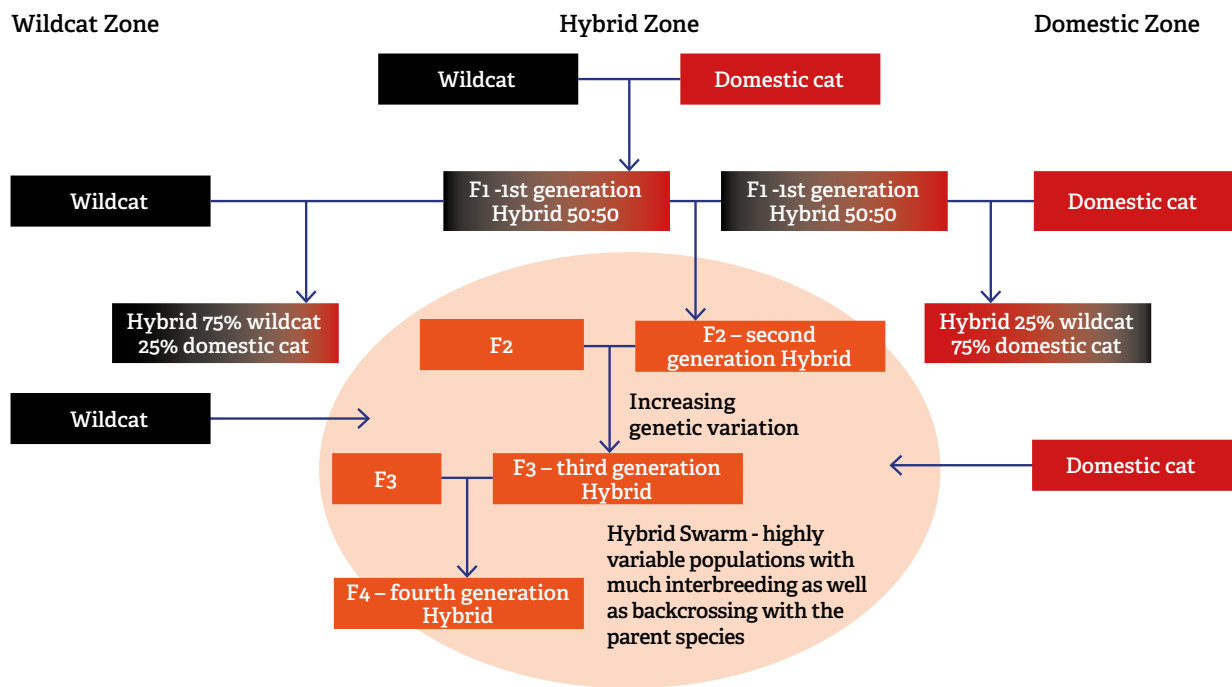
3.3 Interbreeding with domestic cat *Felis catus*

3.3.1 Introduction

It is perhaps not surprising, that loss of genetic resilience through breeding with domestic cats (hybridisation), is the threat that has attracted the most attention from UK conservationists and the public. For many it is perceived as an unsurmountable challenge when potential wildcat reintroductions are discussed.

Hybridisation between subspecies is a common phenomenon in the natural world (Abbott *et al.*, 2013). However, the introduction of a non-native species, in this case domestic cats, where there is no reproductive barrier with a native species (wildcats), has the potential to be very destructive and increases the risk of extinction. For this reason, hybridisation is recognised as a threat to species conservation. Maintaining and promoting biodiversity, including the genetic diversity of wild species, is a legal obligation anchored in national and international laws and conventions, including the Bern

Simplistic model to demonstrate the process of hybridisation



Convention and the Habitats Directive (92/43 CE) and the Kunming–Montreal global biodiversity framework (COP15).

The mechanism driving inter-species breeding between domestic cats and wildcats is complex and not fully understood. Not all wildcat populations are subject to high levels of hybridisation despite the presence of domestic cats. With increased awareness and recent advances in genetic testing, understanding the mechanisms behind hybridisation and how it can be prevented is an issue the wildcat community is urgently looking to understand better. This is further explored in Section 3.3.3.

The offspring (hybrids) of wildcats and domestic cats are fertile. When hybrids survive beyond the initial hybrid generation to interbreed and back cross with parent types over several generations, this becomes what is known as a hybrid swarm (Senn *et al.*, 2018).

Such populations are highly variable with genetic and phenotype characteristics of individuals ranging widely between the two parent types. However, in the case of Scotland's wildcats, it was very hard to differentiate between wildcats and hybrid wildcats, masking their threatened conservation status for many years. Recent genetic research has indicated that hybridisation within the Scottish wildcat population has developed recently, i.e. over the last 60 years (Jamieson *et al.*, 2023; Nussberger *et al.* 2023b). This is thought to have been driven by the small population with limited genetic diversity (Howard-McCombe *et al.*, 2021) which struggled to find other wildcats to breed with.

3.3.2 Wildcat compared to Domestic cat

European wildcat and domestic cat are different species linked by a common ancestor. Domestic cats are not directly descended from European wildcats but from African wildcats whose lineage split from European wildcats approximately 173,000 years ago. They are a result of several waves of domestication. These were linked to the first human farmers, located in the Fertile Crescent of the Middle East, some 10,000 years ago (Doherty *et al.* in print). This process of domestication has led to numerous genetic and behavioural differences that largely relate to how tolerant domestic cats are of humans and human derived food sources (Moody, *in development*). Recent research has identified 34 genes with genomic divergence between domestic cats and wildcats (Kim *et al.* 2023), for example the differences in the cone and rod cells in the eyes may result in improved hunting success in wildcats.

Whilst domestic cats are predisposed to forming attachments with people during early developmental stages, wildcats do not, and even hand reared animals are not suitable as pets. Domestic cats (even if not tame)



Photo: Cath Jeffs

can be seen to tolerate the presence of humans, other cats, and other domestic animals especially if the reward (i.e. food) is worth it. Domestic cats can digest a more diverse range of food types including scavenging human food waste. In contrast wildcats have a shorter digestive tract and can only eat meat. Domestic cats also exhibit distinctive behavioural traits (including vocalisations and body language) that facilitate effective communication with their human companions (Crowley *et al.* 2020).

These differences result in wildcats being suited to a life without human intervention whilst domestic cats are less equipped to survive on natural resources but can thrive with human contact. Indeed, low survival rates have been observed in unowned cats in urban spaces (e.g. 20% survival rate per year (see Jessup, 2004) and rural spaces (54% survival per year (Schmitt, 2007)). Unowned urban cats have been found to live an average of two years compared to ten years for an owned cat (Jessup, 2004). Their poor survival is linked to increased rates of infection and disease, higher risk of starvation, and vulnerability to harsh weather conditions (see Nielsen *et al.*, 2022).

It has been observed that wildcats will preferentially breed with wildcats and will drive out domestic cats from their territory (M. Hartmann, IUCN Cat Specialist Group, personal communication, 2023). Indeed, groups of wildcats have been observed to maintain genetic integrity and hold territories despite domestic cats living nearby (e.g. in southern Spain, Sierra Nevada, (Gil-Sánchez *et al.*, 2015); in northern France (Beugin *et al.*, 2016); and north-eastern France (Germain *et al.*, 2008). Trials to breed wildcats with domestic cats in

captivity commonly resulted in aggressive interactions (Gow & Cooper, 2018). However, if wildcats are in an environment where they are more likely to encounter a domestic cat rather than wildcat, the assumption is this will increase the risk of inter-species breeding. Where wildcats cannot establish territories next to each other it reduces the likelihood of wildcat interactions. This could be because of habitat fragmentation (Beugin *et al.*, 2019), low population density (Howard-McCombe, 2023), or fatalities in their group structure due to persecution or road traffic accidents (for a review of risk factors see Moody, in development).

Both male wildcats and male domestic cats can reproduce throughout the year (Daniels *et al.*, 2002; Germain *et al.*, 2008; Piñeiro *et al.*, 2020) and will be sexually active during female domestic and wildcat reproductive windows. Female wildcats are sexually active for less time than their female domestic counterparts; winter and spring compared to Jan-Oct. However, if a wildcat female loses a litter they can also be in oestrus in late spring/summer. This may be a period of increased risk for inter species breeding. In captivity if the males are kept with the female, wildcats have been observed to have second litters. The wildcats released in Scotland have also been observed to have two litters though generally it has been accepted that wildcats normally have one litter. This may need to be revised as we find new information about productivity.

A study in rural north-eastern France (Germain *et al.* 2008) into the behaviour of domestic, hybrids and wildcats has given a useful insight into how these three cats interact. Domestic cat ranges were smaller, highly overlapping and centred around farm buildings. During autumn to spring i.e. during colder weather, the ranges became even smaller. Wildcats and hybrids had larger home ranges less likely to overlap. Home ranges presented characteristics quite similar for both hybrids and wildcats.

It was observed that although the different cat types had similar daily activity rhythms they were not utilising the same space and cats of opposite sexes have more chances to meet a partner of their own type than one of another type. This was also observed in Switzerland where monitoring indicated quite strong spatial segregation with only 3% of survey plots being utilized by both wildcats and domestic cats (Nussberger *et al.* 2023a). In France they concluded that behaviour barriers may not exist between hybrids and wildcats; hybrids play a key role in hybridisation because of potentially sharing range with both wildcats and domestic cat; and rare excursions outside home ranges (either wildcat, hybrid or domestic) may be the origin of interbreeding (Germain *et al.* 2008). Movement far from their normal ranges has been observed in populations of urban or feral cats (Say & Pontier 2004; Yamane, Doi & Ono 1996) and in wildcats during mating season, (Hubbard *et al.* 1992).

The randomness of excursions outside of home ranges makes predicting and managing hybridisation events difficult. In addition, warmer winters may encourage domestic cat movement outside or normal ranges with Germain *et al.* 2008 suggesting that hybridisation could be more frequent in regions characterized by mild winter than in colder regions. Promoting high domestic and feral cat neutering across a landscape is a way to counteract this.

It was also noted that at the end of the study period in France, all the radio-tracked wildcats and hybrids were alive, but almost half of the domestic cats were dead (Germain *et al.* 2008). This was for a combination of, diseases, collisions with cars or poisoning and suggests wildcats and hybrids are better able to survive in the wild than pure domestic cats. However, other factors such as more contact with rodenticides because of living around farm buildings may be at play.



3.3.3 Hybridisation within wildcat populations

A comprehensive literature review was undertaken to investigate hybridisation across the wildcat’s European range. This identified that:

Rates of hybridisation vary significantly across

Europe: Genetic analysis of wildcat populations over the last eight years⁵ (Moody, *in development*) and presented in Table 1, has found hybridisation rates vary between 3% (Western Germany) to 82% (Hungary). The exception is Scotland, where 100% of the wild wildcat population was found to be hybridised, meaning that 100% of the wildcat population had domestic cat genes in their genome.

The point at which hybridisation becomes problematic for long term population resilience is

not clear. Populations can be resilient to a degree of hybridisation. For example, the rate of hybridisation fell in the Swiss Jura wildcat population, from 21% in 2009 (Nussberger *et al*, 2018) to 15% in 2013 (Nussberger *et al*, 2023a). Interestingly, first generation hybrids (i.e. the offspring of a wildcat and domestic cat) and known as F1 were observed much more frequently than second generation (F2 – hybrid x domestic cat), indicating hybrid cats may prefer to breed with wildcats (Nussberger *et al*, 2023a). Much more research on hybrid cats is needed, but relatively low rates of F1 hybrids may present a low risk of hybridising again if the local wildcats are able to maintain a good population density. However, currently there is no consensus on when the rate of introgression (transfer of genetic material from one species to another through hybridisation and repeated backcrossing) is likely to lead to a hybrid swarm.

▼ **Table 1:** The rate of hybridisation across Europe, using data from 2017 when accuracy increased due to improvements in reference data, sampling, and genetic analysis (Tiesmeyer *et al*, 2020).

Sub-population	Region	Rate of Hybridisation within population sample	Sample size (Hybrid/total n); genetic test; source
Central Germany	Central Germany	3%	0.03 (5/160) *SNPs (Tiesmeyer <i>et al</i> . 2020)
Western Central Europe	Western Central Europe	3.50%	3.5% (37/1071) **MS & SNPs (Germany & Luxemburg: Steyer <i>et al</i> , 2018).
Western Central Europe	Western Central Europe	5%	0.05 (11/234); SNPs; (Tiesmeyer <i>et al</i> . 2020)
Germany	Germany	5%	0.05 (86/1695) MS (Steyer <i>et al</i> . 2016 in Tiesmeyer <i>et al</i> 2020)
Southeast Europe	Romania	5%	0.05 (4/80) SNPs (Tiesmeyer <i>et al</i> . 2020)
Eastern Alpine	Northern Italy	13%	0.13 (3/23) SNPs (Tiesmeyer <i>et al</i> . 2020)
Southeast Europe	Southern Slovenia	13%	(3/22) MS (Urzi <i>et al</i> (2021)
Southeast Europe	Croatia	16%	(9/55) MS (Urzi <i>et al</i> (2021)
Eastern France/Switzerland	Eastern France/Switzerland	16%	0.16 (21/133) SNPs (Nussberger <i>et al</i> . 2018 in Tiesmeyer <i>et al</i> 2020)
Eastern France/Switzerland	Swiss Jura	15%	Nussberger, <i>et al</i> (2023a)
Iberian Peninsula	Iberian Peninsula	21%	0.21 (11/53) SNPs (Tiesmeyer <i>et al</i> . 2020)
Southeast Europe	Serbia	52%	(5/29) MS (Urzi <i>et al</i> (2021)
Southeast Europe	Hungary	61% 82%	46 hair samples SNP (Lanszki & Lanszki-Széles, 2024) 71 post-mortem specimens SNP (Lanszki & Lanszki-Széles, 2024)
Scotland	Scotland	100%	1 (15/15) SNPs (Tiesmeyer <i>et al</i> . 2020)

*Single nucleotide polymorphisms (SNP) are variations at specific locations in an individual’s genome that can be used to detect genetic admixture between two species, revealing insights on the individual’s ancestry and proportion of admixture.

**Microsatellites (MS) are short, repeating pieces of DNA sequences that are highly variable. Analysis requires a sufficient number of samples to compare microsatellites and detect changes, revealing population gene flow, extent of admixture, and indication of ancestral species.

⁵ Genetic analysis of wildcats spans the last 25 years, however, reference data and technique improved from 2017, providing more accurate insights (see Moody, *in development*, for further details.)

Genetic analysis is revealing but limited. The last 20 years has seen significant improvements in accuracy and accessibility of genetic analysis. However, sample size is often small and may be subject to sampling bias. For example, hybrids may be more prone to Road Traffic Accidents, causing a bias in roadkill samples (Senn *et al.*, 2018). Furthermore, the analysis relies on a catalogue of reference data, which until recently has been incomplete (Teismeyer *et al.*, 2020). As the reference data, sampling methods, and ability to perform different genetic tests, improves, insights are arguably becoming more representative (Teismeyer *et al.*, 2020). However, the rates of hybridisation are best viewed as indicative rather than absolute, especially when compared to those performed over 10 years ago.

It is possible for wildcats to maintain genetic integrity in a landscape shared with domestic cats. Germany has the highest rates of cat ownership in Europe, with a reported 15,700,000 cats in 2023 (Statista, 2023), yet German wildcat populations contain the lowest rates of hybridisation (Teismeyer *et al.*, 2020).

The risk of hybridisation is influenced by several interrelated and interactive conditions. A comparative analysis of populations across Europe has revealed a complex matrix of variables, shown in Table 2.

✔ **Table 2:** Understanding what drives interbreeding can help us address the variables that can lead to hybridisation and potentially prevent it.

Factor	Effect
Quality, size, and connectivity of habitat: including abundant and diverse prey availability	Large areas of deciduous or mixed forest with low levels of human habitation support high density wildcat populations subject to little or no hybridisation – for example Germany.
Wildcat population density: Persecution, low prey numbers or habitat loss/ fragmentation, lead to low density wildcat populations which disrupts breeding opportunities.	Low density populations, especially within landscapes supporting un-neutered domestic cats (Gil-Sánchez <i>et al.</i> , 2020 ⁶), are vulnerable to hybridisation (Howard-McCombe <i>et al.</i> , 2023). Hybrids may perpetuate breeding between domestic and wildcat populations (Germain <i>et al.</i> , 2008) though this is a little studied area. High wildcat population densities are less likely to be subject to hybridisation and may buffer the occasional occurrence of introgression (Nussberger, 2023a), especially if combined with high genetic diversity (Howard-McCombe <i>et al.</i> , 2023).
Spatial separation between wildcat habitat and human habitation: In Germany (Matias <i>et al.</i> , 2022), France (Beugin <i>et al.</i> , 2016) and northern Spain (Gil-Sánchez, <i>et al.</i> , 2015) there are examples of wildcat populations living in forested areas that are buffered from human habitation centres (and associated pet cats) by sparsely populated farmland.	Spatial separation created by the presence of larger predators such as red fox using this buffer zone has been suggested as maintaining a barrier between wildcats in the forested habitat and domestic cats around villages (Rodríguez <i>et al.</i> 2020, Gil-Sanchez <i>et al.</i> 2015).
Spatial organisation of Wildcats: Males will overlap with several smaller female ranges	This spatial pattern allows males to guard the females in their range, increasing their reproductive success. This may act as a barrier to females breeding with male domestic cats. Beugin <i>et al.</i> 2016 speculated that this spatial organisation helped understand the low rates of hybridisation rates being seen in a population within France living in a landscape of forest and fields. Factors that disrupt wildcat spatial organisation, such as habitat fragmentation, poor prey availability, persecution, and road fatalities, may increase the hybridisation risk.

Although there is no data to support it, it is a reasonable assumption that domestic cat management may influence rates of hybridisation within wildcat populations. For example, could Germany’s comprehensive approach to domestic cat management⁷ be a factor behind the country supporting a high domestic cat population while maintaining low hybridisation within the wildcat population? Interestingly, similar management policies for unowned cats exist in Spain and Italy (Natoli *et al.* 2019), where hybridisation rates appear to have remained stable. However, there is currently no evidence of any link and

further work is required to investigate this.

There is also no evidence that identifies at what point numbers of unneutered domestic cats become a risk to wildcats or indeed the required wildcat population density needed to maintain genetic integrity in a wildcat population. The Swiss Jura wildcat population has given some clues regarding what happens when wildcat densities are low. This population expanded into areas where domestic cat density was higher than the wildcats. Genetic analysis revealed hybridisation occurred along the expansion line with both male and female wildcats

⁶ Gil-Sánchez *et al.* (2020) observed a low population density of wildcats in Spain across a highly fragmented landscape. Despite this, hybridisation rates remain low, which Gil-Sánchez *et al.* (2020) believe to be due to the low presence of domestic cats in the Mediterranean rural landscape.

⁷ Which includes neutering and vaccinating cats through responsible cat ownership, and resourcing TNVR programmes for unowned cats through local authorities (Deutscher Tierschutzbund e.V., 2022).

seen to breed with domestic cats. However, the authors found domestic cat gene flow stopped as the resulting hybrids then went on to breed with wildcats, not domestic cats (Nussberger, 2014).

A subsequent study of the Swiss Jura wildcats confirmed hybridisation continued along the frontline of the expanding population. This time they found F1s had wildcat mothers and domestic cat fathers (Nussberger, 2018). Similarly, Scottish samples were found to mostly contain male domestic cat genes and female wildcat genes (Tiesmeyer, *et al.*, 2020), though the authors note it is hard to say how the direction of gene flow was influenced by hybrids backcrossing genetic information.

Intact domestic cats have been found to have the same spatial pattern as wildcats, with dominant males having large ranges around smaller female ranges. The dominating male will attempt to guard the females in his range but will also make occasional excursions to find additional mates. New males will attempt to court unguarded females, and females are receptive to this. Thus, a domestic Tom making an excursion may find a willing female wildcat if she is unguarded or her guarding male is elsewhere. There is some evidence to suggest male domestic cats are more likely to interbreed than domestic females but this is not always going to be the case. Further work to help develop our understanding around the dynamics of hybridisation would help guide reintroduction proposals.

3.3.4 Diet and habitat of wildcat hybrids

Studies in Hungary (Biro *et al.* 2006) and north-eastern France (Germain *et al.* 2009) have investigated the diets of hybrids alongside wildcat and domestic cats. Data on the Scottish population also provides an insight into the diet and behaviour of hybrids.

In Hungary, small mammals were the dominant food type across the different cats but were proportionally lower in hybrids who then took a higher proportion of birds (20% frequency in diet) compared to 2-7% in domestic, and 16% in wildcat. This study also found domestic cats were eating household food and domestic animals. It suggested the trophic niche overlap (the habitats they used) between cat groups was high but that food composition and feeding habits of domestic cats differed from wildcats indicating partial resource partitioning i.e. limits direct competition for food resources. Hybrid diet fell between that of wildcats and domestic but was closer to wildcat.

In France hybrids were once again found to inhabit a space between domestic and wildcats with regards diet and habits. However, in contrast to Hungary there was a closer overlap in diet between domestic cat and hybrid. This included pet food being found at a 22% frequency

in the hybrid diet suggesting proximity to human settlements. Interestingly it was only hybrid and domestic cats that were seen to include poultry in diets. The wildcat diet was found to be 90% small mammals and 10% birds; however, it included rodent species that are found near human habitation suggesting wildcats do venture close to farms and small settlements where they could encounter both domestic cats and hybrids. This behaviour was confirmed from radio tracked hybrids and wildcats in northeastern France (Pichenot-Germain *et al.* 2008).

Hybrids will inhabit both wildcat and domestic cat habitat niches and create a high-risk link between the two species which may encourage continued hybridisation.

A mechanism to prevent interbreeding may be to target hybrids for TNVR so that they act as a barrier between wildcats and domestic cats while not being able to exacerbate the problem. However, in the Swiss Jura expanding wildcat populations, first generation hybrids were seen to breed with wildcats rather than domestic cats, which may be enough to stop continued hybridisation. Ultimately this can't be addressed until it is understood what level of hybridisation is acceptable.

3.3.5 Domestic cat (*Felis catus*) status in England

England is a nation of cat lovers with 26%⁸ of households having a pet cat. Up to 85% of the 11 million owned cats are neutered. Of the unneutered cats, 21% do not go outside.

Cats Protection is the largest cat welfare charity in the UK, it champions neutering or spaying as the most effective way to reduce the number of unwanted cats and reduce the serious associated welfare implications. They recommend neutering is most effectively carried out at 4 months which is when female cats can have their first litters.

The high percentage of neutered pet cats present in the UK can be seen as positive for wildcat conservation. However, discussions with cat welfare charities suggest that a crisis could be developing relating to reduced neutering bought on by the cost-of-living crisis, and a shortage of vets. This is highlighted by 13% of people identifying cost as a reason for not neutering in 2024 compared to 10% in 2022. There are no data on the difference between rural and urban owned cat neutering percentages so we cannot assume neutering rates are equal across areas. 72% of owners report their cat is up to date with vaccinations, another positive for wildcat conservation as diseases found in the domestic population will also impact wildcats.

Data regarding unowned domestic cats is, in contrast, limited and data on unowned cats in the rural environment is largely absent. There is no information

⁸ Data from Cats Protection Website – CATS Report 2024

✓ The illustration represents the different forms of domestic cat recognised by International Cat Care (a domestic cat welfare organisation that operates worldwide). Taken from <https://icatcare.org/unowned-cats/the-different-needs-of-domestic-cats/> March 2025



about cats that live with no human contact in the UK and are therefore self-sufficient, but there is an assumption they exist.

Currently there is no standard way of describing the different lifestyles of domestic cats. This can create confusion when talking about feral cats. Feral cats are the same species as domestic cats but have not been socialised to humans. As a result, offspring will generally avoid people (McDonald and Skillings, 2021). However, some unowned cats were socialised as a kitten and may tolerate humans to varying degrees (McDonald and Skillings, 2021), though their sociability to humans can vary over time and between individuals. Cats Protection do not link feral cats to habitat and therefore a feral cat could be in the urban or rural environment.

Free roaming domestic cats in both urban or rural environments may be feral, unowned, stray, or lost or abandoned pet cats. They can form colonies where there is a good food supply. This is usually linked to humans, for example availability of waste food, around farm buildings or where people feed them (Schmidt, Lopez and Collier, 2007). The unowned cat population in UK urban areas was recently calculated to be 247,429 (McDonald and Skillings, 2021). Unowned cat densities increase as human densities increase, meaning higher numbers of cats are found in built up urban areas (Flockhart, Norris and Coe, 2016). No data currently exists on the number of unowned cats in rural UK.

Over population of cats is a key concern for cat welfare organisations (e.g. i-cat-care) as it can lead to unhealthy animals, increased disease risks, and can be a nuisance to

people and/or wildlife (see McDonald and Skillings 2021). Well-cared for domestic cats have been observed to have up to three litters per year, and capable of birthing up to 11 kittens in a litter, with an average of 3-6 kittens per litter (Ng, *et al*, 2023). Lower rates of reproduction have been observed in unowned cats: one large study observed 50 litters from cat colonies in Canada and recorded a mean of 1.4 litters per year, and a median of 3 kittens per litter (Nutter, Levine and Stoskopf, 2004).

Trap Neuter Vaccinate and Return (TNVR) schemes (often referred to as TNR) are supported by most cat welfare charities to manage cat colonies. This is seen as an ethical option to manage populations, and for

Research* into TNVR from USA has shown it can:

- Stabilised and reduced the number of colonies
- Decreases euthanasia rates in shelters
- Leads to improved cat health and well being
- Is economically efficient (when compared against the cost of other management – shelters and euthanasia)
- Is supported by public as a humane way of managing cat populations.

TNVR should be seen as a long-term commitment and not a one-off solution.

* Safe Harbour Animal Coalition website 2024

unsocialised cats. Cats are trapped, taken to a vet and health checked. They are then neutered and usually vaccinated. After a short recovery period they are released where they were caught (if appropriate). Animals that are released are marked so they are not targeted for capture again. Clipping off an ear tip is an internationally recognised method to indicate animals have been part of a TNVR scheme.

In 2024 it became a legal requirement for pet cats to be microchipped in England. This enables unowned cats to be identified, which should facilitate TNVR schemes run by welfare charities. It is illegal to neuter without the owner's permission, and the vet can face disciplinary sanctions if they are found to have done this.

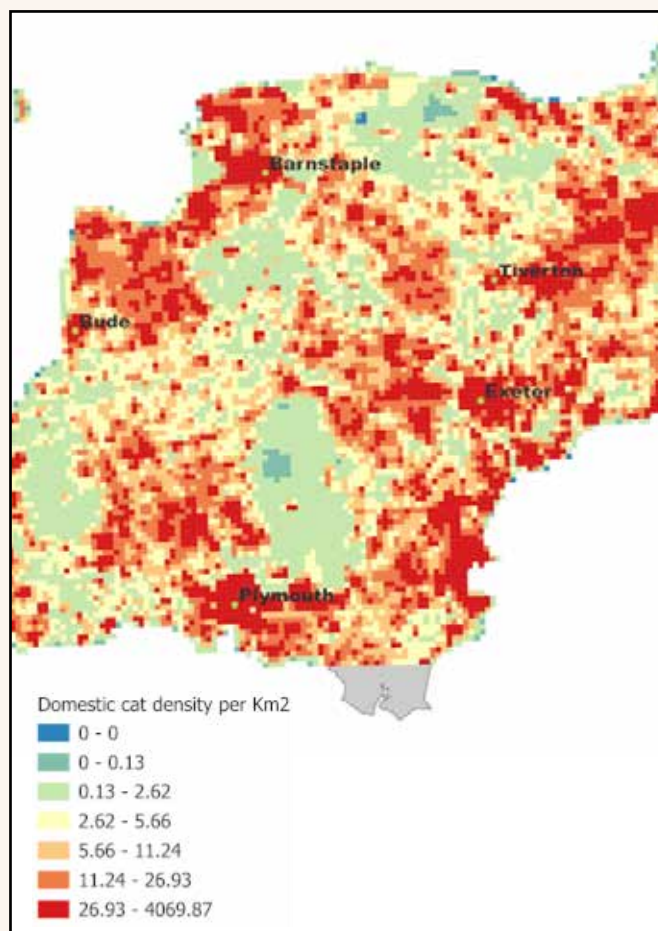
This has hampered efforts by the Saving Wildcat team in Scotland as it can be difficult to identify if the cat has an owner. This is a barrier that should not be an issue in England, now the mandatory microchipping law is in place. The crucial role microchipping plays in the welfare of cats and wildcat reintroduction is clear and any reintroduction project should actively champion full uptake.

3.3.6 Domestic cats in SW England

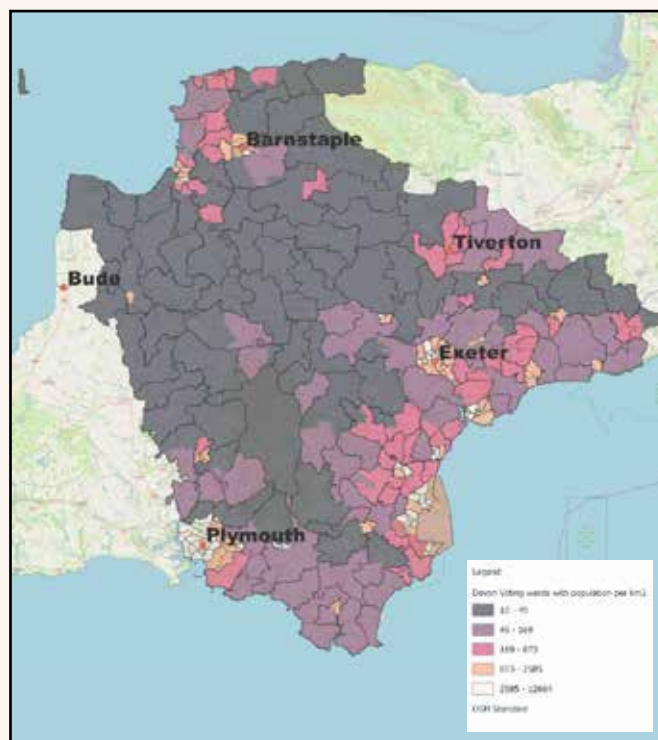
Data available on owned domestic cats (ALPA, 2023) indicates that pet cat density is higher around urban areas within Southwest England (Map 1 in figure 5). In contrast there are large areas which have much lower densities, these tend to correspond with low human population such as on Dartmoor, Exmoor, Bodmin and south of Barnstaple (Map 2 in figure 6). Interestingly the area north of Bude (around Hartland Point) and east of Bude has high densities of pet cats despite being an area of low human density. There are very few square kilometers identified as containing no pet cats, indicating how widely spread they are.

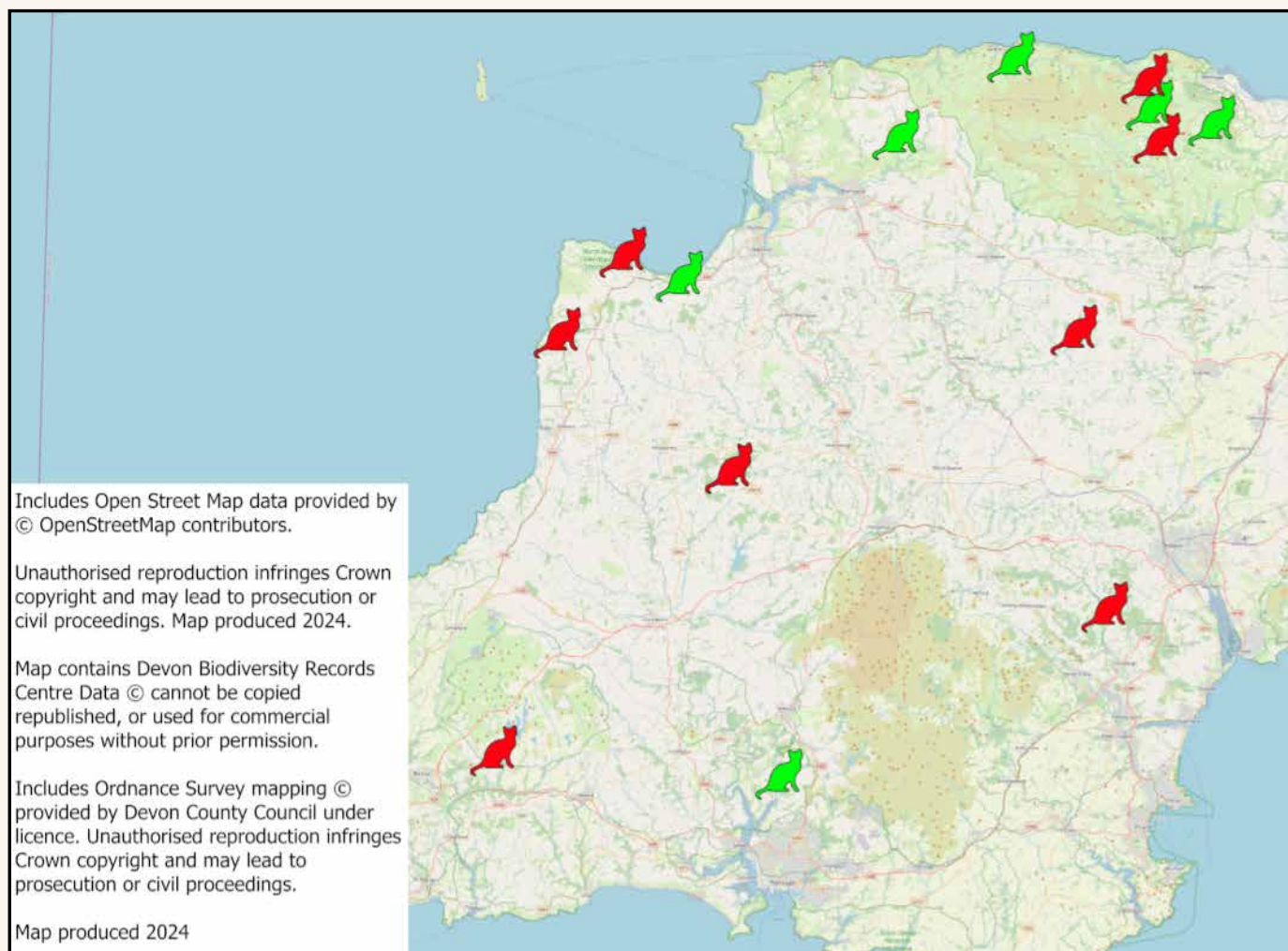
As neutering rates are high within pet cats, the risk to wildcats may come from unowned cats within the rural environment. However, with no data on these cats, assessing the risk is difficult. We uncovered contrasting views on cat presence in the Devon countryside, from there are many feral cats (local cat welfare organisation & public) to there are hardly any (Devon farmer/game shoot).

✓ **Figure 5:** Domestic pet cat density per km² (using data from ALPA 2023). Brighter red indicates high densities whilst blue/green tones indicate densities of less than 3 cats per km².



✓ **Figure 6:** Human density by voting ward in Devon. Dark gray indicates the lowest densities of 10-49 people per km².



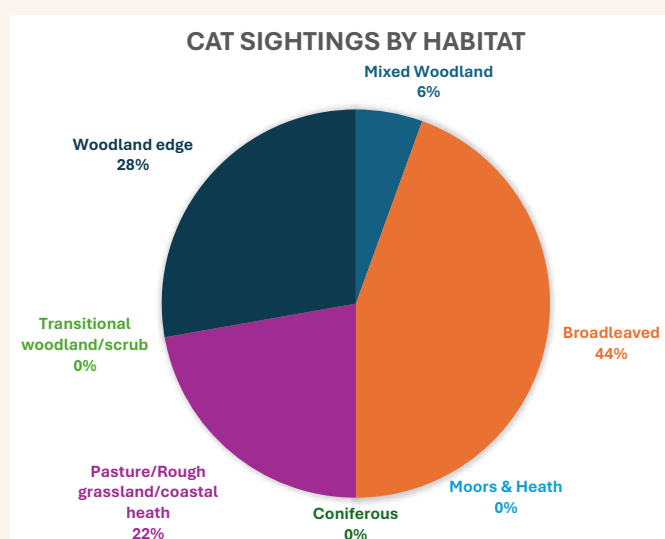


^ **Figure 7:** Map to indicate where cat surveys were undertaken and if domestic cats were recorded.

Key to map:

Red cats = Sightings

Green cats = No sightings



^ **Figure 8:** Chart to show the location of cat sightings by habitat. Almost 50% were in broadleaved woodland whilst there were none recorded in coniferous woodland or moorland habitats.

3.3.7 Free roaming cat survey in SW England

To investigate the level of domestic cat activity in potential wildcat habitat, trail cameras were employed across 14 sites and habitats in the SW study area see Figure 7. This includes data from Dando, 2024. Between 7-9 cameras were set up in a grid across study sites along suitable wildlife trails. Cameras were in place for 3 weeks and were set to capture images whenever triggered. A naturally occurring valerian scent lure was placed on posts in front of each camera which was topped up every week. Surveys in 2021 and 2023 were undertaken during Sept, Oct, and Nov whilst in 2024 a survey was undertaken in June/July.

Few cats were recorded when compared to other predators. For example, in over 500 hours of being in situ, there were 42 cat sightings compared with 364 fox sightings. It was usually not possible to identify if individuals were owned or neutered and therefore impossible to evaluate risk. Cats are known for being harder to detect than other species and the prediction is that unowned feral cats will be shyer than owned cats. Future surveys should consider keeping cameras in place for at least a month and should use more cameras, circa 20 per site.



▲ Domestic cat recorded as part of the camera trapping survey. Note that lure stick has been knocked over.

Cats were recorded across a variety of habitats including woodland and woodland edge, see Figure 8. These are areas they may encounter wildcats. No domestic cats were recorded in conifer woodland or moor & heath habitats which will not be prime wildcat sites. There were also no records from the one camera recorded as being in transitional wood/scrub. The low sample size may be a factor in this.

3.3.8 Farm cats in Devon

Farm cats are predicted to pose a risk to wildcats as they can be a source of unneutered and free roaming cats in locations which may overlap with wildcat habitat. A recent study has estimated approximately 300,000 cats living on UK farms that are not considered pets (McDonald *et al.*, 2023).

A survey was launched as part of a PhD⁹ (University of Exeter), to gain insight into the number of farms in Devon which have ‘farm cats’ and if these populations are managed. Farm cats, sometimes called barn cats, differ from pet cats because they do not typically live in human homes, are not considered to be pets, and may receive varying levels of human care (Roberts *et al.*, 2018). This was a self-selecting survey so may have some bias to those who have cats. Of those who responded 69% said they currently, or continuously, have farm cats, while only 6% said they never have farm cats. Respondents most commonly have 1-3 farm cats while approximately 20% had 4+ farm cats. (Mode 2 cats/Mean 3 cats per farm).

Responses indicated that farm cats are often valued by the farmer for pest control but are typically not seen as owned and therefore populations are more likely to be left unmanaged. Despite this, almost 70% of respondents said their farm cats are neutered, and just over half who do allow their farm cats to breed, report neutering the kittens.

Although the neutering rate was lower on farms than for pet cats^{9a}, it was higher than expected. A similar survey carried out in Scotland (reported in Campbell *et al.* 2023) also reported a 70% neutering rate for farm cats and 15% for unowned cats, however only 39% had cats on their farms suggesting that Devon farms may be more likely to have cats than farms in Scotland. A 2018 survey of cats on farms found just 50% of farm cats were neutered (Robert *et al.*, 2018), suggesting neutering practices may have improved in recent years. More research is needed

to understand the management of farm cat populations.

With approximately 8,541 farm holdings in Devon (Stewart, 2022), this study suggests there may be high numbers of farm cats living across Devon. Farms with colonies of 8 or more farm cats reported no neutering, suggesting that cat densities in rural Devon could be very location specific.

Understanding movement to and from farms can provide insights into how farm cats may be dispersing and the potential for them to encounter wildcats.

- 52% said new cats arrive from outside of the farm each year.
- 38% said cats leave the farm each year.
- 26% said kittens disperse from farm on own.

There was an average of 0.7 kittens dispersing from farms surveyed. If extrapolated across Devon’s agricultural holdings, this equates to a crude estimate of 5,978 kittens dispersing each year. If a survival rate of 20% for the first year is assumed (see Jessup, 2004), this figure reduces to approximately 1195 unneutered kittens. However, as breeding can start at 4 months, they may start contributing to the cat population very quickly. These are approximate figures and may be subject to bias (for example the study may have attracted those farmers with cats) but provides an indication of the unneutered and unowned rural cat population in Devon.

Although offering an insight into the current situation with farm cats, continuing to develop our understanding and build on the relationships within both the farming communities and cat welfare charities will be essential if the wildcat project moves to the next step.

The study in Scotland suggested the largest barrier to neutering and vaccination was farmers felt it was not their responsibility (49%), that they did not have time (16%), or that they could not catch the cats (14%). Developing a strategy that helps farmers overcome these barriers will be an important next step.

Survey reflections:

- Reasonably high rates of neutering, though lower than rates for pets (85% in pets (CP Cats Report 2024)).
- Farm cat densities appear generally low, **but** some farms have high numbers.
- The survey provides a clear indication of unneutered cats moving into the countryside.
- More cats stay on farms than leave them.
- Campaigns for responsible farm cat ownership will need to be location specific. Farms could be priority sites for TNVR of dispersing cats.

3.3.9 Cat welfare organisations and wildcat conservation

The future of wildcats in England is closely linked to how we manage domestic cats, be they owned or unowned. In addition, the social feasibility work reported in Section 8, has identified that people who like and own cats could be very supportive of a wildcat reintroduction. However, this work also identified concerns about wildcats being released and adding to the crisis that cat welfare organisations are currently dealing with. For example, Cats Protection reported an increase of 71% in abandonment cases in the last three years.

Cat welfare policies and priorities currently align well with the needs of a wildcats' conservation programme. For example, Cats Protection has *supporting and encouraging the neutering of cats* as one of its three primary objectives; alongside improving peoples' understanding of cats and their care. Although this is based around domestic cats, CP could play a key role in helping to raise awareness within a range of audiences about wildcats as our remaining native cat species. We know from our social feasibility programme described in Section 8 that the greater knowledge people have about wildcats the more likely they will support a reintroduction.

International Cat Care, a global charity promotes cat friendly solutions for feral and street cats, recommend TNVR as a humane and effective way to manage unowned cats.

Local Devon charity Hector's House Cat Rescue is working to rescue and rehabilitate stray and feral cats alongside other local charities.

All these charities have indicated their interest in working with us if the decision is made to progress to a wildcat reintroduction. It will be important to also consider protocols for if wildcats end up in welfare facilities or wildlife hospitals. Training and support around identification and the legal status will be needed for wildcats captured by mistake, or because of injury.

3.3.10 Predicted wildcat and domestic cat habitat overlap in SW England

Wildcats have traditionally been linked to extensive tracts of woodland which have the added benefit of limiting interactions between wildcats and domestic cats. In the UK (including SW England), there are no large unpopulated tracts of woodland, rather it is a farmed landscape heavily shaped by humans. However, farmed landscapes especially with woodland, connecting hedges and river valleys are increasingly recognised as suitable habitat for wildcat. It is also the area where the risk of wildcats and domestic cats overlap is heightened.

Building a picture of farm cat populations and gaining better understanding of the presence of feral cats living a completely wild existence will help define the risk to wildcats. However, our current understanding is that

▼ **Wildcats and Domestic cats are more likely to encounter each other in Farmland habitats.**

Urban Area

- High density of people
 - Artificial food supply
 - High density of domestic cats (owned, stray and unowned).
- Dependant on human support to some degree.
- High % of owned cats neutered
 - Avoided by pure wildcats



Low likelihood of hybridisation

Low intensity lowland Farmland

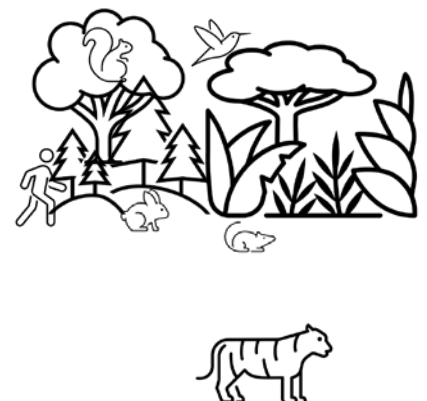
- Low human population
- Potential high densities of favoured prey (including pest species)
- Potentially high population of un-neutered farm cats (but unknown). Still usually dependant on some human support.
- Source of cats to become feral.
- Wildcats avoid human habitation, but farmland habitats used.
- Potential conflict with livestock



Potential for domestic cats and wildcats to come into contact

Extensive Broadleaved/mixed Forest

- Very low human population
- Good wildcat habitat
- Avoided by most domestic cat types (but may support a truly feral cat?)
- Potentially good and varied prey base
- Not widespread in UK



Low likelihood of hybridisation

factors such as habitat quality and wildcat density influence levels of hybridisation, rather than numbers of unneutered cats considered in isolation. The insights gained from studies in rural France and Germany where wildcats are living alongside farm cats (domestic cats) are invaluable to shape future approaches. It would be useful to foster close links with wildcat projects working in these areas.

Developing our relationship with domestic cat organisations already working in the area will help increase understanding and could result in a joint strategy that benefits both domestic cats and wildcats.

3.3.11 Conclusions

The literature review suggests that wildcat populations can be maintained with limited interbreeding with domestic cats, for example in Germany. However, hybridisation is a key threat that needs to be addressed.

The current evidence suggests the likelihood of interbreeding increases when animals are at low densities such as would be the case in a reintroduction. Identifying mitigations that support wildcats to develop stable social structures and decrease contact with unneutered domestic cats, alongside adaptive management, is critical in reintroduction project design.

Responsible cat ownership and TNVR programmes will reduce numbers of unneutered cats and are likely to be a key project requirement. A focus on cats inhabiting farms will be required. Animal welfare organisations are essential partners in this undertaking.

Hybrids can inhabit a world between wildcats and domestic cats. Neutering hybrids may help reduce interactions between wildcats and domestic cats. Potential management such as this will be explored during the Project Development Phase.

Hybridisation will not equate to immediate reintroduction project failure. However, the level of interbreeding and gene flows within a population needs to be closely monitored. The point this moves from undesirable to unacceptable, should ideally be determined in advance. Our understanding around this is likely to grow as research into hybridisation is a priority within the EuroWildcat network. If interbreeding is determined as preventing wildcats from becoming established, an agreed exit strategy should be implemented.

⁹ Sian Moody's PhD is a multispecies ethnography of wildcat conservation, where she's exploring the social and ethical dimensions of multispecies life and capturing the story of wildcats and the work involved in conserving them.

^{9a} 85% pet cats neutered (Cat's Protection Cats Report, 2024).

Recommendations:

- Identify sources of unneutered cats within potential release area – through survey and stakeholder/community engagement.
- Look to develop an agreed Domestic Cat Management Plan within Devon/Proposed Release Area – to include funded TNVR programme if appropriate.
- Develop a release plan that looks to mitigate factors that promote hybridisation.
- Start discussions around hybridisation and status of hybrids.
- Education around wildcats with Welfare organisations and Wildlife Hospitals
- Make links with wildcat projects operating within farmed landscapes in Europe



Photo: Cats Protection

▲ A Cats Protection (CP) volunteer has just trapped a feral cat. Trap Neuter Return is likely to be an important part of any wildcat reintroduction project and local cat welfare partners will play an important role in safeguarding wildcats.

3.4 Habitat loss and fragmentation

Woodland loss and reduction in condition will have contributed to the decline of England's wildcats. The UK is one of Europe's least wooded countries. However, this is not a new phenomenon with much of England having been cleared of woodland as early as 1000 BCE, well before the Romans arrived. By the time of the Domesday book in 1086 only 15% of England was recorded as woodland or wood-pasture, by 1350 this had reduced to perhaps 10% (Rackham, 1986). Further widespread clearance occurred from the early 1800s fuelled by the Industrial and Agricultural Revolutions. By 1919, England's woodland cover had reached a low of just 5 percent (Reid *et al* 2021).

Although woodland clearance would have impacted wildcats, the low input agriculture that replaced it is likely to have offset these impacts by providing good prey habitat availability e.g. rough grassland and crops. However, in 1566 the Act for the Preservation of Grain, resulted in *bounties being paid for the enemies of the production of grain* – this included wildcat on account of rabbits being part of human and wildcat diets (Gow & Cooper, 2019). The fact wildcats would have also controlled pest species was overlooked. This persecution continued until they were eventually lost from England.

The 20th century brought about a renewed focus on preserving and restoring woodlands. Today, England has approximately 10 percent tree cover, with efforts underway to protect and expand these vital ecosystems (Downey *et al*, 2025). This is a similar level of woodland cover as seen in the 14th Century when wildcats were still plentiful. Despite the UK's woodland cover having more than doubled in the last 100 years, a large proportion are from non-native tree planting, managed primarily for timber production (Forestry Commission, 2003). Some forestry operations pose a risk to wildcats, for example if their dens are located within timber stacks or windblown trees. Identifying potential conflicts and employing tried and tested solutions from Scotland and continental Europe will be important.

The State of the UK's Woods and Trees report 2021 reports that existing native woodland health is threatened by fragmentation, and poor ecological condition, which has led to a decline in woodland wildlife abundance and diversity. All factors that can negatively and disproportionately impact species such as wildcats.

Devon has higher levels of woodland cover (11.8%) than the England average (though it is lower than the UK average of 13%) (Woodland Trust, n.d). Many of these woods are fragmented and under threat from climate change, Invasive Non-Native Species (INNS), diseases, and unsympathetic management practices (Woodland Trust, n.d).



Photo: David R White

Alongside woodlands, Devon has an internationally important hedgerow resource; in fact, it has more hedges than any other place in the UK. Currently there are 53,000 km (33,000 miles), forming a network across the county (Devon Hedge Group, 2025). These play a crucial role as a wildlife rich habitat but also as they perform key functions in connecting woodlands and as corridors for wildlife to move through the landscape and colonise new areas. Managing hedges more sympathetically e.g. not carrying out annual flailing, would contribute healthy habitats that function for wildcat conservation.

Recommendations:

- Promote the habitat needs of wildcats so they can be incorporated into woodland restoration/creation plans
- Co-create and promote guidance on how to manage woodland, scrub, hedges and rough grassland for wildcats
- Create partnerships with organisations promoting woodland expansion and nature friendly management
- Develop guidance on avoiding conflict with wildcats in English Forestry operations.

4. Identification of suitable wildcat habitat

The ecology and habitat requirements of wildcats are relatively well known, and areas occupied across Europe have helped guide the search criteria employed to identify potential landscapes for reintroduction.

A release area should look to create a population that has maximum chances of being self-sustaining.

The IUCN criteria to achieve this are suggested to be:

- Minimum population of 40 to establish viable population
- Minimum population of 50 animals to combat inbreeding
- Minimum population of 500 individuals to maintain evolutionary potential

Structurally diverse woodland for dens and resting sites is especially important for breeding females. Therefore, woodland was used as the focal point for identifying suitable core areas. These were then combined with suitable adjacent habitat to identify the extent of habitat potentially available.

Features identified in published research as impacting wildcat population such as proximity to urban areas and road network were assessed. Other factors such as human population density, domestic cat densities and location of potential land use conflicts (e.g. game bird rearing) were also investigated.

Identifying areas with a diverse and abundant source of prey is something that must be prioritised in the next phase of the project. The presence of rabbits and small mammals are key influencers of wildcat distribution and abundance.

There were no existing sources of data currently available to measure this as part of this current study. The State of Nature report 2023¹¹ has identified that between 1980 and 2016 the distribution of small mammals (mice, voles and shrews) in the UK has declined by 29% (Burns *et al*, 2023).

With so many different species that are reliant on these as prey, it is important to understand and take quantifiable steps to increase populations. Wildcats would act as a charismatic flagship species, driving habitat improvements that would benefit small mammals.

¹¹ State of Nature 2023 - report on the UK's current biodiversity

¹³ Average home ranges of 4.63 km² (463ha) for females and 14.79km² (1479ha) for males from Bastianelli *et al* (2021) equates to 4.7 cats per 10km²

4.1 Method

Local data (held and managed by Devon Biodiversity Records Centre) and national datasets were used to map suitable habitat. Appendix 5 provides further details of the methodology. The geographical focus was concentrated on Devon and north Somerset. Woodlands were selected using the National Forest Inventory 2023 (NFI) and Centre for Ecology and Hydrology (CEH) Landcover 2023. Woodland sites with 2.7km² of broadleaved or mixed woodland habitat more than 200m from major roads (>30,000 vehicles per day) and access to a water source were brought forward as potential 'forest cores'. Areas considered too close to urban areas were removed (up to 900m from large settlements and 200m from small settlements).

Core woodlands were buffered up to 5km and an assessment of suitability for wildcats was made from the data sets available. Where the buffered area of these forest cores intersected with a major road, the buffered area was clipped to the edge of the road.

Areas were considered suitable if they contained a high proportion of both broadleaved woodland and other habitats deemed suitable for wildcats whilst containing a low human density.

4.2 Results

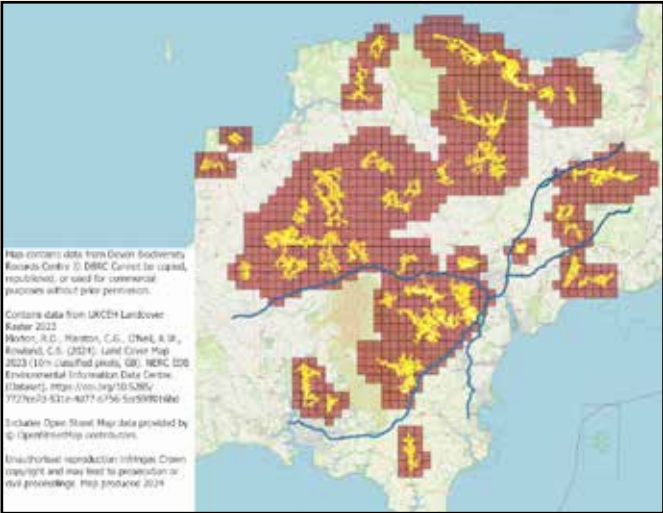
The data search identified a network of core woodland sites across Devon and into North Somerset. A total of 33,000ha (330km²) of woodlands within the CEH data set and 19,000ha (190km²) within the NFI data set, were identified as suitable. When adjacent habitat was analysed, these woodlands were found to be located within 323,5000 ha (3235km²) of potentially suitable wildcat habitat. The map in Figure 9 illustrates the habitat identified. The analysis indicated good connectivity between woodlands.

Using an estimate of 3-5¹³ wildcats per 10km², the total area identified could support in the region of 234-390 individuals.

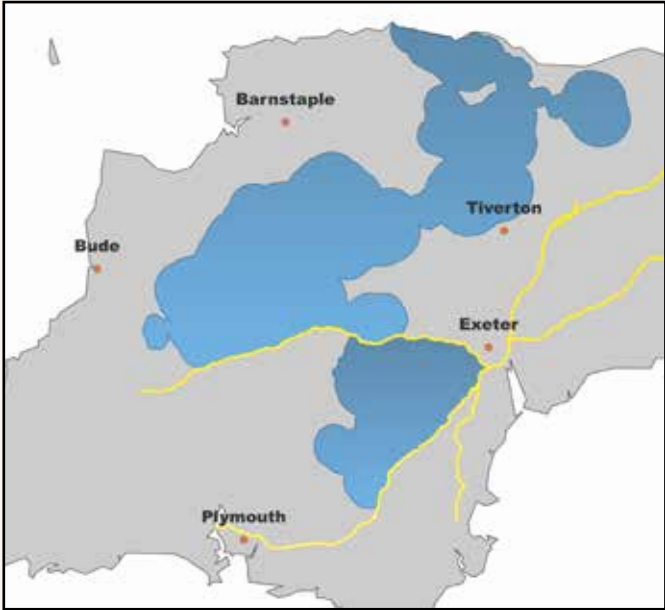
Further analysis was undertaken to identify the best-connected habitat. Woodlands with narrower buffers of suitable habitat, or those isolated from other core areas, were discarded. The map in Figure 10 identifies 259,679ha (2596.79km²) of land which is considered the most connected habitat. This potentially represents the most suitable area to focus on for a wildcat release site. There may be a situation where a site outside this boundary

could make a good release site, for example it is under sympathetic ownership and management. However, for wildcats to become established they need to be able to move through a well-connected landscape and this needs careful consideration.

✔ **Figure 9:** Network of woodland cores (yellow) and associated habitats (purple) identified as suitable for wildcat



✔ **Figure 10:** Map identifying the most connected wildcat habitat in blue and yellow represents the high volume road network.



Contains data from UKCEH Landcover Raster 2023 Morton, R.D., Marston, C.G., O'Neil, A.W., Rowland, C.S. (2024). Land Cover Map 2023 (10m classified pixels, GB)

✔ **Woodland edge provides good wildcat habitat, providing both cover and foraging.**



Photo: Cath Jeffs

4.3 Key findings and next steps

Our desk-based study has indicated that there is sufficient habitat to support a population of wildcats across the area investigated. A well-connected network of woodland surrounded by suitable wildcat habitat has been identified across Mid to North Devon and east Dartmoor. Habitat mapped could support an estimate of 234–390 wildcats. This estimate should be treated with caution as it doesn't consider prey density, habitat quality, or factors around human caused mortality such as persecution.

Dando (2024) also concluded that Southwest England retains large clusters of woodland patches (175 in total) able to sustain a viable population. He suggests a carrying capacity of 495 (351–837) individuals however his study area was wider. A report investigating a possible wildcat reintroduction to Cornwall (Cooper *et al* 2023) suggested that although Cornwall is one of the most sparsely wooded counties in England, it supports a network of woodland cover along the many steep sided river valleys. The authors suggest northeast Cornwall as containing the largest block of suitable woodland. With ambitious woodland restoration projects ongoing in the county, opportunities for wildcats to colonise from releases in Devon will be enhanced. Woodlands on the Somerset/Wiltshire border were identified during a preliminary assessment of sites (Gow & Cooper, 2018). This builds up a picture of Southwest England as an area supporting wildcat habitat.

The map in Figure 10 potentially represents the most suitable area to focus on for a wildcat reintroduction. However, wildcat habitat goes wider than this and there may be a case for sites outside this boundary, for example if they are under sympathetic ownership and management. This needs careful consideration recognising that wildcats require well-connected habitat to establish at a population scale and to mitigate against factors such as hybridisation.

The next step (outside scope of current analysis) will be to identify a release area and the release sites within the habitat identified. The IUCN has developed clear guidelines on what needs to be considered.

A release area should:

- Meet all the species' requirements
- Be appropriate habitat all life stages of the species
- Be adequate for all seasonal habitat needs
- Be large enough to meet the required conservation benefit i.e. support a wildcat population
- Have adequate connectivity to suitable habitat if that habitat is fragmented
- Be adequately isolated from suboptimal or non-habitat areas which might be sink areas for the population

A release site should:

- Meet all practical needs for effective release with least stress for the released organisms
- Enable released organisms to exploit the surrounding release area quickly
- Be suitable for media and public awareness needs, and any community involvement

Further analysis of data collected in this study can be used to create a list of potential candidate release areas and to identify the most suitable sites where risks and opportunities can be explored further.

Recommendations:

Further assessment is required to shortlist the best release areas and potential release sites.

- Site visits to assess habitat condition.
- Prey abundance and diversity surveys designed and implemented.
- Incorporate social, cultural and economic analysis of opportunities and potential risks and conflicts.
- Identify opportunities for habitat improvement/ prey restoration – links to other projects/ activities or sympathetic land managers.

5. Wildcats and their interactions with other species

5.1 Introduction

Although wildcats are a native species they have been missing from local ecosystems for an extended period. It is therefore important to identify impacts their reintroduction could have on habitats or vulnerable species. We have a legal responsibility to also understand impacts on protected sites and species.

Predation is a complex process and communicating clearly what impact wildcats may have on other species is important. Understanding how wildcats fit within the local environment has been identified as an important question to answer as part of any wildcat reintroduction proposal with the social feasibility work – see Section 8.

With current knowledge this may be difficult to qualify as there has been little research looking at how wildcats impact habitat or influence other species responses, however, this is something to explore if a reintroduction is to go ahead.

There is currently little evidence to suggest domestic cats are having population scale impacts on birds in the UK (Palmer, 2022), however, this is not universally accepted and may impact the debate around wildcats. While domestic cats do kill millions of individuals per year, Lockwood (2024) concluded there is no measurable effect at a population level, because British prey species have evolved alongside similar terrestrial predators (including wildcat). The situation in the UK contrasts with the negative impacts of feral cats on native wildlife where cats are non-native predators, for example on offshore islands and countries such as Australia. Ensuring this is communicated clearly needs to be a key outcome of a wildcat reintroduction.

Natural England, the public body whose purpose is to help conserve, enhance and manage the natural environment for the benefit of present and future generations, must be satisfied that reintroducing wildcats will not have a negative impact on European Protected Sites and Species, direct impacts to Sites of Special Scientific Interest, and the features they have been designated for. This is discussed in Section 7.

The SW Wildcat partner organisations, conservation bodies and the public will want to see that a wildcat reintroduction will have a positive effect on ecological

restoration with any potential unacceptable risks identified and mitigated for.

If population scale impacts on vulnerable species are identified, mitigation measures will need to be developed alongside appropriate monitoring and evaluation plans. As part of any wildcat reintroduction, providing advice and support to secure positive habitat improvements should be included. This will lead to net habitat gains in extent and condition supporting both wildcats and species associated with their habitats.

5.2 Bats

Bats are an integral part of woodland and woodland edge ecosystems within Southwest England and are a designated feature of many protected sites. An extensive literature review has not identified evidence of wildcats preying on bats; for example, a scat analysis of wildcat populations in the Champagne Region of France revealed no evidence of bat remains from 7,694 identified prey remains (mentioned in Roils & Nadal, 2018). This contrasts with domestic cats which are known to catch bats (Ancillotto *et al* 2013); perhaps because of the prevalence of bat roosts associated with human structures where domestic cats are often found. Wildcats are unlikely to engage in arboreal predation and are therefore unlikely to predate upon tree roosting bats or other roosting sites within caves or buildings. In the study area important roosts are already subject to terrestrial predator proofing.

Therefore, a wildcat reintroduction is unlikely to have any impact on bat populations within SE England.

5.3 Birds

Birds constitute a much smaller part of diet than small mammals (Sarmiento 1996; Biró *et al.* 2006; Germain *et al.* 2009). A study looking at diet in wildcats in Portugal found that birds made up less than 5% in consumed biomass at a frequency of between 6.82 -11.21% (Malo *et al* 2004). Birds have been recorded up to a frequency of 16% in a study in Hungary, although 70% of diet was still made up of small mammals (Biro *et al* 2006). This higher frequency of birds in the diet could be linked to the high hybridisation rates seen in the Hungarian wildcat population perhaps exacerbated by a lack of

small mammal prey. It is recorded that wildcats rely more heavily on birds in the absence of rabbits, with the percentage of birds consumed in wildcat-rabbit overlap being 6.82% compared to 11.21% in populations where rabbits are absent (Malo *et al* 2004).

There is little data on bird species taken by wildcats, with many studies only identifying to Order/Family. Passerines have been recorded as being the most common type of bird taken. However, Passerines make up over half the world's species of birds; from goldcrest to raven, so it is not surprising that this group is well represented.

Wildcats are generally visual predators and utilise visual stimuli over olfactory stimuli (smell). Most cats require movement to trigger a predatory response but can lie in wait in a 'watch' posture for a long time (Turner and Bateson, 2000). This behaviour can favour mammalian predation, for example watching the entrance to a burrow. It is suggested that birds are more likely than mammals to avoid capture since they can escape vertically where cats cannot follow (Leyhausen, 1979). Birds that forage on or near the ground are likely to be vulnerable to wildcat predation. In Hungary, wildcats preyed on woodcock *Scolopax rusticola* and pheasants *Phasianus* (Biro *et al.* 2004). In Mediterranean mountain habitats, red-legged partridge *Alectoris rufa* is a common prey item (Moleón & Gil-Sánchez., 2003). These are all birds that forage at ground level.

No evidence of nesting birds or eggs being targeted was identified in the literature review; however, eggs have been recorded in the wildcat diet (Moleón & Gil-Sánchez., 2003). This suggests any nesting bird or chicks encountered by chance, are potential prey. It has been suggested that domestic cats are poor at tree climbing (Van't woudt, 1990). Wildcats being generally larger and heavier (certainly in the case of males) are not likely to

prioritise arboreal hunting over terrestrial hunting if prey availability is good.

In a landscape already including the red fox, an olfactory dominant predator known to take ground nesting birds, it is suggested that wildcats are unlikely to significantly increase the impact of predation on ground-nesting birds. Wildcats have been shown to avoid open areas as they are vulnerable to aerial predators, this may include areas favoured by ground nesters such as waders, however if there is cover, such as long grass, ground nesting waders may be seen as easy prey. The presence of fox in open habitats can also deter wildcats (Rodríguez, *et al* 2020). Where ground nesting birds are at very low population levels, any predation could have a catastrophic impact. Breeding lapwing and curlew are at critically low levels in Devon having been lost from much of the county. There are currently only a few curlew pairs on Dartmoor and c20 lapwing pairs on Exminster Marshes. Terrestrial predator fencing has been used to protect breeding waders on nature reserves, however adaptations may be required to make them 'wildcat proof'. Fencing is obviously not appropriate in all landscapes, such as Dartmoor.

Studies into domestic cat predation within the UK indicate birds preyed on are frequently in poor health (Baker *et al.* 2008). This suggests that domestic cats are taking birds that may not have survived to breed. As wildcats live at a much lower population density than domestic cats and as mammals are the favoured prey, it is considered unlikely that wildcats will negatively affect long-term bird numbers. If wildcats prey on species which specialise in predating birds, for example, corvids and more significantly grey squirrels, this could produce a positive impact on bird populations.

Important bird assemblages are found across several SW European Protected sites both Special Protection Areas

✓ **Terrestrial predator exclusion fences are used at nature reserves such as at Powderham Marshes. The aim is to protect Devon's remaining lapwing (a ground nesting bird) population. With numbers critically low any predation has a significant effect on productivity. Adjustments may be needed to exclude the nimble wildcat if they are attracted to this area.**



Photo: Cath Jeffs

(SPA) and Special Areas of Conservation (SAC). These have been investigated to identify potential conflicts with wildcats , see section 7 and Appendix 5 for details.

Woodland bird assemblages

Exmoor and Quantock Oakwoods SAC, South Dartmoor Woods SAC and Exmoor Heaths SAC all include, maintain or restore the abundance of the woodland bird assemblages in site condition assessments.

Breeding woodland birds identified are pied flycatcher *Ficedula hypoleuca*, wood warbler *Phylloscopus sibilatrix*, redstart *Phoenicurus phoenicurus* and lesser spotted woodpecker *Dryobates minor*. Table 3 shows the status of these birds. All are summer visitors apart from lesser spotted woodpecker which is resident. Predation is not currently listed as a conservation concern for any of these species (BTO, 2025).

Both lesser spotted woodpecker and wood warbler are red listed in the UK and are at very low numbers. They both tend to forage mid to high canopy. Wood warbler nest low down including on the ground; however, their numbers are so low (and they have been lost from many SW woodlands) that the likelihood of a low-density predator finding them is slim. Pied flycatcher, redstart and lesser spotted woodpecker all nest in tree cavities, with pied flycatcher also widely using nest boxes (redstart can also use nest boxes on occasion).

Wildcats are not known as nest raiders, instead relying on movement and stealth to catch prey. There is no evidence of wildcats recognising bird boxes as a source of food, however existing strategies to keep out mammalian

predators from nest boxes should also be highly effective wildcat deterrents. Any predation by wildcats on these woodland species will be opportunistic and not likely to cause population level impacts.

Breeding woodland birds could benefit from reintroducing wildcats if predation on invasive grey squirrels can suppress populations. This could lead to improved breeding productivity for species which are vulnerable to squirrel nest predation.

Wintering bird assemblages on intertidal habitat

The Exe Estuary and Tamar Estuary SPAs are designated for wintering waders and waterfowl. Intertidal habitat is not recognised as suitable wildcat habitat so there is unlikely to be an impact from wildcats.

Breeding nightjar and Dartford warbler

East Devon Heaths SPA includes nightjar and Dartford warbler as qualifying features in the summer (breeding birds). Neither species have been flagged up as species that are impacted by wildcat predation in literature. Nightjar as a ground nester could be perceived to be at high risk. A review of available data does not support this.

Moorland breeding bird assemblages

There is reference to moorland breeding bird assemblages within Exmoor Heaths SAC, but no details of species involved or targets. Wildcats are unlikely to venture onto open moor, preferring to stay within cover so they are not likely to be impacted. However, in Scotland some hybrid individuals were found to use heathland/ grouse moorlands (Cambell 2023). Areas used were not intensively managed and consequently had relatively

▼ **Table 3:** Status of woodland birds using data taken from BTO (2025).

Species	UK birds of conservation concern status	Birds directive Annex 1	UK Status	Conservation Concerns	Breeding and feeding habits
Common Redstart	Amber	No	Increased from declines in late 1960s early 1970s, some declines in last 5 years and range contractions	Currently no conservation concerns	Nest in tree cavities and sometimes nest boxes. Rarely descend to ground level.
Lesser spotted woodpecker	Red	No	Sustained decline – 81% from 1997–2022	Reasons behind declines remain unclear – could be related to habitat, climate change or interspecies competition	Feeds in canopy. Nests in tree cavities.
Pied flycatcher	Amber	No	Population stable after declines in late 1990s early 2000s	Problems are thought to be outside breeding season so not in UK control	Feed in mature oaks, may descend to ground when feeding. Nest in tree cavities and nest boxes.
Wood warbler	Red	No	Rapid and significant decline since 1995 –81% decrease (1995–2022)	Largely unclear but likely to be habitat. Woodland management could be important.	Nests low down in scrub or on the ground. Feeds in canopy.

high vegetation heights and a higher diversity of plants, providing cover and potentially supporting more prey species (e.g., mountain hare, water voles, field voles and ground-nesting birds). Wildcats are going to be attracted to areas supporting high prey densities, and although they will not be targeting rare species these species may be taken opportunistically.

Populations nesting near woodlands or other cover could be vulnerable. If further evidence identifies this as a risk, it will be considered in more detail during the proposed Project Development Phase.

Predation of rare birds or those identified as features of protected sites will be opportunistic and unlikely to cause population scale impacts. Ground nesting waders may need further consideration as the small populations involved makes them vulnerable to any predation.

5.4 Dormouse

Hazel dormice *Muscardinus avellenarius* are a European Protected Species that has undergone a long decline in Britain. Monitoring in established woodlands shows a continuing decrease in abundance. Between 2000 and 2022, the National Dormouse Monitoring Programme shows the population has fallen by 70%. Southwest England, in particular Devon and Somerset, are strongholds for Hazel dormice and conservation action to enhance populations remains a priority. Concerns regarding the possible impact of a wildcat reintroduction on dormouse have been raised.

Dormouse species have been recorded within wildcats' diet; however, this is predominantly edible dormice *Glis glis*. This is a native species in Europe but is classified as a non-native invasive species introduced to the UK in the early 20th century, with a restricted Southeast England distribution. In a literature review, hazel dormice were considered opportunistic prey with eight recorded wildcat predation events (Juškaitis, 2023).

Predation is not listed as a factor behind the decline of hazel dormouse in the UK. It is instead primarily caused by habitat loss, fragmentation and unsympathetic woodland management. Across Europe, dormouse species can be as much as 81.2% of the consumed biomass in the diet of tawny owl *Strix aluco* (Juškaitis, 2023). Due to the relative abundance of tawny owls compared to the predicted abundance of wildcats, wildcat predation on dormice is unlikely to impact dormouse numbers or population viability. There is no evidence that wildcats will target dormouse boxes.

In common with potential benefits to threatened bird species, wildcats may exert population level impacts on grey squirrels which are known predators of dormice.

Any predation on hazel dormouse is likely to be opportunist and not likely to cause population impacts.

5.5 Water Vole

Water vole *Arvicola amphibious* is a medium-sized vole that wildcats are known to predate. In Mediterranean mountain habitats, the closely related southwestern water vole *Arvicola sapidus* is considered a valuable food source for wildcats, constituting up to 22.8% of consumed biomass (Moleon and Gil-Sanchez, 2003). Wildcats can forage within wetland and riparian habitats where they will encounter water vole, however water voles are rare in the southwest peninsular, and interactions between the two animals are likely to be minimal. Water voles occur largely outside of the region's international designations (NBN Atlas, 2024¹⁴).

If further water vole populations are established and spread across SW England then they could potentially create a valuable food source for predators such as wildcats. Wildcats may play a role in deterring mink, who predate on water voles..

An awareness of where water vole reintroductions are being undertaken should be a consideration when deciding potential wildcat reintroduction sites. It may be prudent to avoid these areas until water vole populations are considered established, but this should be considered on a case-by-case basis.

5.6 Eurasian Otter

Wildcats and otters will forage in terrestrial and aquatic habitats for small mammals, fish and invertebrates. However, the overlap between otter and wildcat prey is small, with none of the shared prey species being identified as considerable components of either species' usual diet (Bouros & Murariu 2017; Reid *et al.*, 2013; Lanszki *et al.*, 2014). There is the potential that competition between the two carnivores may decrease the percentage of time otters spend foraging terrestrially, increasing the predation pressure on fish and waterfowl. Fish, such as bullhead *Cottus gobio*, eel *Anguilla anguilla*, Atlantic salmon *Salmo salar*, allis shad *Alosa alosa* and twaite shad *Alosa fallax*, are features of designated sites within SW England. However, fish species are often already the predominant part of the otter diet, and any increased predation pressure is unlikely to impact these species.

¹⁴ NBN Atlas – UK's largest collection of biodiversity information

5.7 Reptiles and Amphibians

Reptiles are taken by wildcats across their range but are more frequently prey in Mediterranean areas (Széles, 2018). In total reptiles make up only a small component of the wildcat diet (Malo *et al.* 2004; Biro *et al.*, 2005). In Europe, the main reptilian prey items are *Lacertas* (typical lizards). There are only two species of *Lacertas* native to the UK: the widespread common lizard *Zootoca vivipara*

and the rare sand lizard *Lacerta agilis*. The population density of *Lacertas* across most of the European wildcat range is considerably higher than that of the UK. In England wildcats would be unlikely to encounter sand lizards as they are confined to dune and heathland habitats.

The nocturnal activity of some lizards on the continent during the warmest months makes them available for wildcats (Moleón & Gil-Sánchez., 2003). In the UK, reptiles are diurnal and as wildcats are generally nocturnal this creates an ecological barrier reducing encounters between them and potential predation impact. For example, smooth snakes *Coronella austriaca* have relatively recently been reintroduced to heathland in southeast Devon, they are active during the day and rarely bask in the open (ARC, nd), the risk from wildcats is therefore low.

It is worth noting that in England, domestic cats are seen as notable reptile predators with slow worm *Anguis fragilis* being the species most recorded followed by grass snake *Natrix helvetica* (Woods *et al.* 2003). Comparisons of the diets of wildcats and domestic cats in Hungary (Biro *et al.* 2004) indicate that domestic cats feed on reptiles more frequently than wildcats, whilst (Széles, 2018) reported that feral cats (i.e. cat independent of human households) consumed more reptiles than both domestic cats (defined as house cats and dependant on humans for food) or wildcats. Data from across Europe, illustrated that the composition of the diet resulting from reptiles, was small for all cats studied; 1.04% (house cat), 1.92% (wildcat) and 4.46% (feral cats) (Széles, 2018). If feral cats in England show a similar pattern of predation, there could be a positive effect on reptile populations if wildcats displace feral cats.

Amphibians are active at night so could be encountered by wildcats; however, they make up less than 0.5% of the wildcat diet (Széles, 2018). Great crested newt *Triturus cristatus* are the only protected amphibian species present within Southwest England. No data searches have identified great crested newts as part of the wildcat diet. Domestic cat predation on great crested newts is potentially a contributing factor to the decline of some populations, however, these newts were within sub-optimal newt habitats (Thorbjørnsen 2023). Great crested newt populations will be more resilient to predation pressure within natural settings likely to be used by wildcats.

Wildcat predation is unlikely to impact reptile or amphibian populations, however local impacts could be possible and populations of vulnerable species at release sites should be assessed.

5.8 Fish

Studies of wildcat diet in Europe and Scotland have not indicated any significant predation upon any fish species by wildcat, with negligible remains observed within scat analysis (Malo, *et al.*, 2004, Biro *et al.*, 2006). It is unlikely wildcat will significantly predate on any fish species.

5.9 Invertebrates

Wildcats prey on invertebrates and may take a significant number of individuals (Malo *et al.*, 2004; Biro *et al.*, 2006). However, invertebrates are usually a minor proportion of total wildcat-consumed biomass. Beetles *Coleoptera* and crickets *Orthoptera* are the most frequently consumed invertebrates. Blue ground beetles and great bush crickets are large-bodied rare invertebrates with a SW England distribution. There is considerable range overlap on the continent (NBN Atlas, 2024¹⁵) but there was no data to suggest any negative impacts. Both species spend a large proportion of their time arboreally. As wildcats mostly forage terrestrially, these species are unlikely to be frequently preyed on by wildcats and are unlikely to be impacted by them.

Southern damselfly and marsh fritillary are components of several international designations throughout the SW region. Wildcats are unlikely to spend considerable time within either species' breeding habitats, therefore any predation upon these species is likely to be incidental.

Wildcats have also been confirmed to feed on aquatic crustaceans such as crayfish. Arthropod consumption in the diets of wildcats in the Iberian Peninsula was 0.25% of prey items recorded (Malo *et al.*, 2004). It is considered unlikely the native rare, white-clawed crayfish (*Austropotamobius pallipes*) will be encountered by wildcats.

5.10 Predator Interactions & impact on prey

Devon landscapes currently support a diverse population of carnivores – although this is much depleted with the extinction of many apex predators. This competitive guild of predators includes weasel *Mustela nivalis*, stoat *Mustela erminea*, polecat *Mustela putorius*, otter *Lutra lutra*, red fox *Vulpes vulpes*, badger *Meles meles* and more recently pine marten *Martes martes*. Non-native species domestic cat *Felis catus* and American mink *Neovision vision* are also present. There is overlap with prey species, for example stoats, like wildcats, will take rabbits preferentially, while field voles are a staple prey item for many species. However, each predator fulfils different niches by exploiting different habitats or hunting methods. For example, as good climbers, stoat and pine martens will take roosting birds and raid nests (although not a significant proportion of their diet), something wildcats are not known for.

Predators are also prey for larger predators to eat or to reduce competition for food resources. If predators of nesting birds such as grey squirrel, or stoat are kept at lower densities this may improve breeding success for birds impacted.

Study on the behaviour of polecats and American mink in Britain indicate that the two species adjust their activity patterns to reduce competition, with mink becoming more active in daytime (Harrington and Macdonald 2008). These behaviours are an example of separation in both time and space between predators and this can also extend to their prey species. This was illustrated in a study into Goshawk *Accipiter gentilis* where the presence of breeding goshawk was seen to deter the smaller sparrowhawk *Accipiter nisus* from an area. It also discovered that abundance of smaller prey species (favoured by sparrowhawk) was higher nearer goshawks nests whilst the goshawks larger preferential prey species abundance was low and increased further away from the nest (Burgas *et al.* 2021).

There is a growing body of evidence regarding the positive effect of restoring native predator assemblages. For example, restored populations of otter can reduce the number of American mink (*Neovision vision*), a non-native species that has decimated water vole populations (Bonesi & Macdonald 2004). Meanwhile, polecat have made a largely unreported comeback during the 20th century. From their remaining refuge in mid-Wales, Shropshire and Herefordshire they have now repopulated their former range across Wales and England. There are suggestions this native predator is impacting mink which could support water vole recovery.

The recent reintroduction of pine martin to SW England can be expected to reduce non-native grey squirrel populations (Sheehy *et al* 2018). This could take us a step closer to restoring native red squirrels as well as benefiting the woodland habitats and species that are currently being negatively affected by grey squirrel damage.

Although the benefit to ecosystems from wildcats being reintroduced is unclear, there is no evidence to suggest any negative impacts, though highly localised events may occur. Hopefully a valuable lesson to be taken from the recovery of other native predators, is that wildcats are not another pressure on our native wildlife. Instead, they should be recognised as a valuable component of thriving ecosystems and will help promote equilibrium in systems that have been disrupted by persecution, habitat loss and the introduction of Invasive Non-Native Species.

5.11 The cumulative impact of ongoing or proposed species reintroductions

There is little data available to make any meaningful conclusions into the impacts of returning several missing predators to the Devon environment. However, in the

case of pine martens (in progress) and white-tailed eagle *Haliaeetus albicilla* (in prep) their distribution and habitat selection are not necessarily going to significantly overlap. Pine marten and wildcats will both prey on small mammals though wildcats are likely to be foraging in more open treescape habitats, while pine martens will be focused on woodland habitats. There is no evidence to suggest wildcats and white-tailed eagles will compete for prey, and eagles are a known predator of wildcats while pine marten are predators of wildcat kittens (Götz *et al* 2022).

As discussed above evidence is building that returning missing predators will enhance the ecosystems they are returned to. If habitat improvements are built into reintroduction projects, then this will enhance conditions for a range of species.

Perhaps the biggest challenge is associated with the perception that more predators will exert an adverse impact on vulnerable or declining wildlife populations. Predator-prey relationships are complex, and food chains are rarely simple as they will be impacted by a range of factors, including habitat, behaviour and other predators. Although understandable, concerns that because wildcats eat birds this will result in a negative impact on rare birds, does not consider the complex nature of predator-prey or predator-predator interactions. It is likely that wildcats will interact with smaller predators that take birds, this could exert a positive impact on certain prey species, though intensive monitoring would be required to identify any impacts.

The social research reported in Section 8 has identified that it is important to identify the evidence-based benefits of wildcats and how they contribute to the overall health of their ecosystem. It is recognised that building knowledge within communities will help build support for wildcats and a reintroduction.

Monitoring and research will be essential to better understand interactions, and this can be used to support further releases/restoration projects.

Recommendations:

- Choose a release site that avoids, where possible, species particularly vulnerable to predation.
- Once a release site is identified, investigate any potential impacts on near by protected sites.
- Develop stakeholder engagement with regards vulnerable species.
- Establish a clear mechanism for monitoring and reporting any problematic wildcat predation before releases take place.

6. How do wildcats contribute to a healthy ecosystem?

Increasingly it is recognised that returning missing species including predators is beneficial, if not essential, to ecosystem function. *Felids* will directly impact entire food webs, however, their influence on ecosystem dynamics remains understudied with a bias towards big cats. A recent global review of trophic cascades and wild cats (Tossens *et al* 2024) found evidence that *felids* may act as drivers of ecosystem change and suggested that recognising their ecological role can aid in promoting their conservation status recovery. They urged further work, to include small cats.

Wildcats are mid-ranking predators within the food chain and will mainly prey on animals smaller than them – typically herbivores. They can positively impact ecosystems through:

- Influencing prey population dynamics – reducing boom and bust cycles which may lead to decline in habitat condition.
- Creating diverse predator populations and enhancing biodiversity – wildcats may take a variety of prey and can deter other smaller predators; this helps prevent any single species dominating and maintains a diverse community.
- Disease control within prey populations – sick and weakened animals will be targeted and may reduce disease risk.
- Carrion disposal – wildcats will feed on carrion especially if live prey is scarce. This recycles nutrients and cleans up carcasses.

An example of cats impacting prey and enhancing habitat is seen in the reintroduction of bobcats to an island in USA. The reintroduction led to a reduction in white-tailed deer abundance. Despite the stated objective of controlling herbivore populations, the re-establishment of understory vegetation, including live oak seedlings, exceeded expectations (Soorae 2013).

It is suggested that the indirect effects of predators may have greater impacts on prey than direct predation (Schmidt *et al* 2008, Zanette *et al* 2011), sometimes described as *the landscape of fear*. Recent research on golden cats in Africa (Tossens, in progress, reported by Geib, 2024), has found that cat urine acts as a deterrent to small prey animals. An experiment resulted in prolific

seed germination around cat urine and is an indicator of how the forest dwelling golden cat may positively impact on its forest environment. A similar effect has been seen with big cat dung deterring deer (Kitchener 1991). Wildcats may exert similar, but as yet unknown effects, and could have a positive impact on woodland regeneration.

Wildcats are captivating and charismatic animals. England, as a nation of cat lovers, could regard wildcats as a flagship species to help catalyse habitat improvements at a landscape scale – both in extent and condition. This has been reported in Germany (Mueller *et al* 2020) where since 1984 wildcats have been a conservation priority used to support the preservation of natural habitats. From near extinction, the species has recolonised areas and the population is increasing, all due to positive conservation action and legal protection. Friends of the Earth Germany (BUND) have been instrumental in connecting fragmented forests to ensure safe corridors for wildcats. This ambitious project established 20,000km of habitat and raised the profile of the species (BUND, nd).

Wildcat establishment has been observed to lead to the displacement of domestic cats from habitats such as woodlands (Marianne Hartmann IUCN Cat Specialist Group pers com). This could reduce domestic cat impact on native wildlife as they take a wider variety of prey and can be present in densities manyfold greater than wildcats. In addition, promotion of optimum cat welfare management through neutering should lead to a reduction in domestic cats in the natural environment.

Grey squirrels are acknowledged to be one of the most damaging Invasive Non-Native Species exerting a negative impact on native UK habitats and wildlife. As they forage largely on the ground, with only 14% of their foraging time budget in the canopy (Kenward & Tonkin 1986), they are potentially at a high risk of wildcat predation. A reduced grey squirrel population would bring significant ecosystem benefits.

Predators do not just affect their prey but also other predators. For example, middle sized predators can experience population increases because of the absence of top carnivores (Conner & Morris 2015). The absence of top predators in England, may assist wildcats to become established if a reintroduction was to be undertaken. However, competition between medium sized predators

can also determine species success and affect predator densities. For example, a study in Spain determined that the presence of red fox was deterring both domestic cat and wildcats from foraging in the open meadows. This behaviour created a barrier between the domestic cats who stayed near the villages and the wildcats who kept closer to the forests. This could therefore minimise potential for hybridisation to occur (Rodríguez *et al* 2020).

Even smaller predators such as pine marten may impact wildcat breeding success as kittens are vulnerable to predation. However, as predator numbers are closely related to prey this will be the main driver affecting carrying capacity. Detailed monitoring would identify if a wildcat population exceeded carrying capacity and mitigation measures may include translocation to other landscapes. However, it is more likely that if prey is limited wildcats will increase territory size and animals without established territories (sub adults) will move in search of more productive territories.

Recommendations:

- Implement robust wildcat monitoring throughout release period to record numbers and distribution.
- Consider monitoring grey squirrel population within a suitable study area.
- Create a baseline for potential prey availability within release area. Develop protocol for repeat survey to assess impacts.
- Investigate opportunities to monitor trophic-level characteristics that could be a result of wildcat establishment.
- Promote opportunities to be involved with project monitoring e.g. universities, students.
- Promote wider benefits of wildcats being re-established.



Photo: Tom Mason - tommasonphoto.com

7. Habitats Regulations Assessment

7.1 Introduction

European Protected Sites, known as Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) are safeguarded by the Conservation of Habitats and Species Regulations 2017 as amended (known as the Habitats Regulations) and are considered our most important ecological sites. Any project/development proposal, including in this case a species reintroduction, should be evaluated on the impact it could have on the features i.e. the habitats or the species that have been identified as being integral to the site. This is known as a Habitats Regulations Assessment (HRA) and is required when a project is being carried out on a European site or where it may exert an indirect impact.

The process can have up to 3 stages depending on what is determined to be the risk. See Box below.

The process to determine the impact on a European Protected Site:

- 1. Screening** – to check if the proposal is likely to have a significant effect on the site's conservation objectives. If not, there is no need to go through the appropriate assessment or derogation stage.
- 2. Appropriate assessment** – to assess the likely significant effects of the proposal in more detail and identify ways to avoid or minimise any effects. An appropriate Assessment is necessary if:
 - There's a risk of a likely significant effect on a European site
 - There is not have enough evidence to rule out a risk
- 3. Derogation** – to consider if proposals that would have an adverse effect on a European site qualify for an exemption.

Forestry England in their role as lead Competent Authority are undertaking Screening for a potential SW England Wildcat Reintroduction. A precautionary approach has been taken and the risk associated with a potential wildcat reintroduction investigated across a suite of European Protected Sites. This will help guide any decision on continuing to develop a wildcat reintroduction in SW England. It is important to note that if a project

is developed a site specific HRA Screening will be undertaken as needed.

7.2 Method

The screening methodology evaluates the potential for wildcats to utilise a designated site and the potential for wildcats to impact a designative feature or it's conservation objective while utilising the site. Natural England's Designated Sites View database was used to gather data on designated sites within the search area, shown in figure 11; this included any qualifying features and relevant supplementary advice on conservation objectives/targets associated with those features. Potential impact was based on a literature review undertaken by Devon Wildlife Consultants and report author to assess wildcat habitat usage and prey across their current range.

7.3 Results

The European sites reviewed are shown in Appendix 5, along with the qualifying feature, relevant supplementary advice on conservation objectives (targets) and the potential impact to the designation or qualifying feature.

This initial assessment, indicates that the reintroduction of wildcats is unlikely to cause significant effects on the Annex 1 habitats which they may utilise according to current information.

Bats are featured in several European Protected Sites. However, there is no evidence of wildcats preying on bats from wildcat diet studies undertaken across Europe. For this reason, bats are assessed to be unlikely to be impacted by the introduction of wildcat.

No known wildcat prey mammals are included as European Protected Site qualifying features or within relevant targets of the sites investigated.

Bird assemblages feature within SACs and SPAs. Potential habitats overlap and information on feeding and nesting habits was used to identify potential vulnerability to wildcat predation. Although wildcats will predate birds there is no evidence of wildcats causing population scale declines or impacts. In addition, habitats not recognised as suitable for foraging wildcats were discounted, for example intertidal. As a result, European Protected Site bird assemblages are considered unlikely to be impacted by the introduction of wildcat.

7.4 Forestry England HRA Screening Conclusions

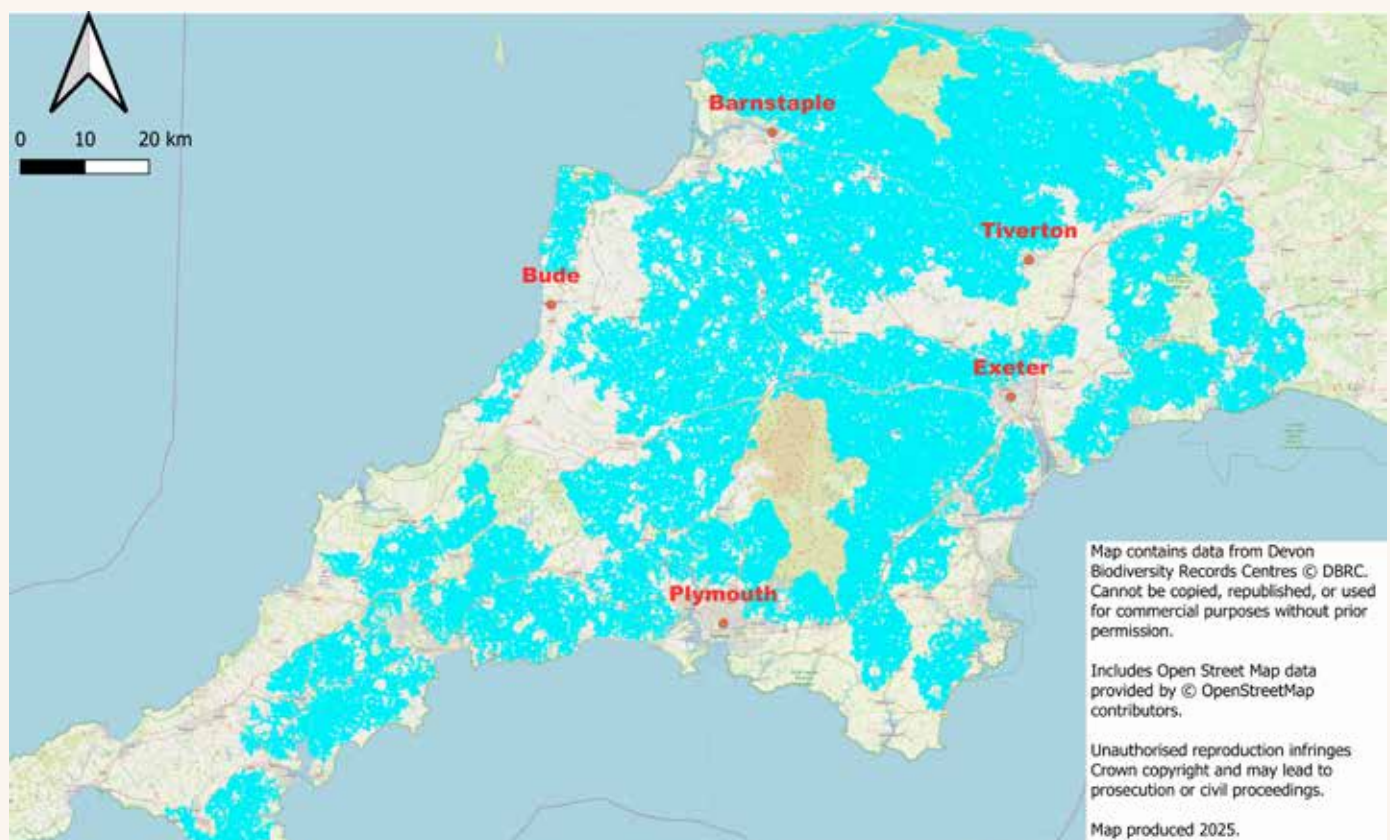
The initial analysis suggests that a wildcat reintroduction to Southwest England is unlikely to significantly harm the designated features of the internationally protected sites assessed. This work is ongoing and potential impacts needs exploring further.

If a reintroduction progresses, protected sites near any release area should be reviewed and any new information taken into account. A mechanism to identify/address wildcat impacts should be in place before any releases.

Recommendations:

- Continue to develop understanding around potential impacts of wildcats on European Protected Sites.

✓ **Figure 11:** This map identifies wildcat habitat connectivity across South West England (Dando, 2024). European protected sites within this area were assessed as part of the Habitats Regulations Assessment for the potential impact wildcats could have on the designated features.



8. How do people view a wildcat reintroduction?

8.1 Stakeholder Engagement

A Project Officer was employed by Devon Wildlife Trust to develop a feasibility study and start engaging with Southwest England stakeholders. With no specific reintroduction focal area, engagement began with conservation NGOs and government agencies active in the area. Contact with the SW public has been through talks, project literature, DWT website and media events.

Questionnaires completed before and after talks and presentations indicated that support for a wildcat reintroduction increased once people had been given further information. This highlights the importance of raising people's understanding of wildcats if the project progresses.

Networking with other organisations involved with wildcat reintroduction and conservation has been very important for gaining knowledge needed to develop a potential SW wildcat release project. Liaison was within UK, with the

Saving Wildcats team, and Europe via the EuroWildcat network. This has been invaluable in developing a wide knowledge base regarding wildcats and the threats they face. There has also been knowledge exchange with people undertaking predator projects elsewhere in the UK, for example Forestry England staff from the white-tailed eagle reintroduction on the Isle of Wight and DWT staff involved with pine marten reintroduction in Devon.

Natural England has been kept informed of the project and a Conservation Translocation Scoping form has been submitted. NE are strongly encouraged to be a key adviser during Development and Implementation Phases.

At this stage of feasibility there has not been targeted engagement with groups representing shooting, farming, small holders etc. However, individuals involved with these activities were involved in independent University of Exeter research into wildcat reintroduction perspectives.

Student participation in the project has been very

▼ **Figure 12:** Potential stakeholders were identified at the start of the project along with issues and considerations that may need to be addressed within a wildcat reintroduction.

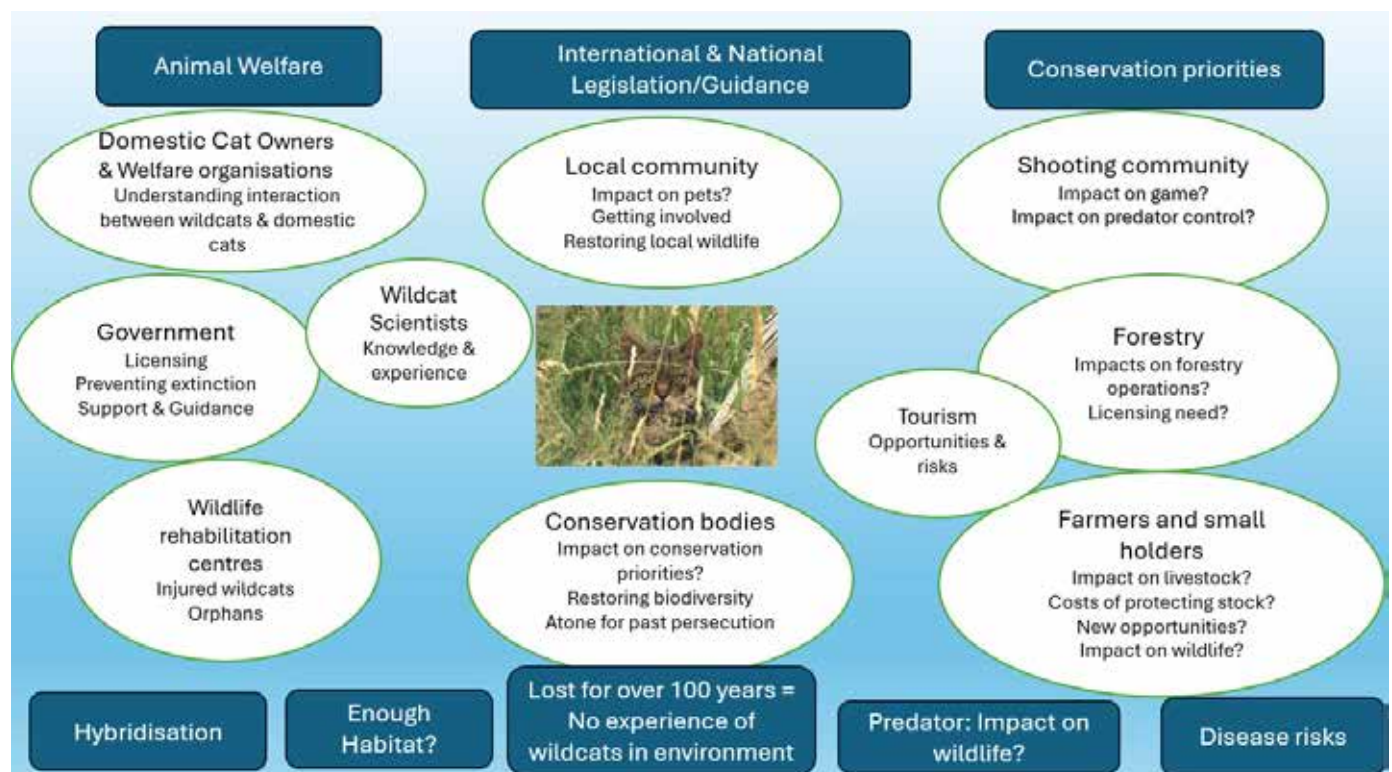


Photo: Slowmotionjll - stock.adobe.com

Photo: Slowmotionali - stock.adobe.com

University of Exeter have amassed considerable expertise with designing and delivering Social Feasibility projects aimed at exploring public perspectives to reintroducing species. They have worked with DWT on several projects (including beaver and pine marten). They were commissioned to undertake an independent research programme on behalf of the Steering Group. The aim was to explore the perspectives of people living in Southwest England to a possible wildcat reintroduction. The full report (Auster *et al*, 2024), including details of methodology, results and researcher reflections is available online.

As well as informing the feasibility stage of the project, if the reintroduction was to proceed, this information would be invaluable in designing a well-informed community engagement and communications plan.

8.3.1 Research Approach Taken

The study explored both stakeholders i.e. those who may be interested in or impacted by a wildcat reintroduction (for example poultry keeper, cat welfare organisation etc – see Figure 12) and the wider Southwest England public

▼ **Figure 13:** Word clouds developed from peoples answers to reintroduction survey. In (a) the questions were about Wildcats and in (b) it referred to Woodcats (Perry 2024).



perspectives. A mixture of methods was used. Firstly Q-methodology, which aims to advance understanding of perspectives that exist, and identify where points overlap or diverge. Participants were asked to sort a set of pre-determined statements which were informed by stakeholder interviews completed in a previous PhD project (Dando, 2024). Throughout sorting, participants were encouraged to discuss how they have interpreted the subject and why they have responded in the way they have. Analysis compared how participants sorted the statements and identifies different perspective types with shared held beliefs.

The results from the Q-Method study informed the development of a wider survey that was delivered through two channels.

- Through an online market research company to be statistically representative by age and gender across Southwest England (1000 participants).
- An open, potentially self-selecting online survey delivered via partner and media networks (1425 participants).

As well as gaining an understanding of perspectives on a potential reintroduction the survey aimed to gauge the participants current knowledge of wildcats.

8.3.2 Results from Statement Sorting

Stakeholder statement sorting identified four distinct perspectives. These are described below and summarised in Figure 14.

Restoration Naturalist: More than 50% of stakeholders across a wide range of stakeholder groups were associated with this perspective. This group strongly likes the idea of wildcat reintroduction and there being more wildlife in the local landscape. They see wildcats as adding value to the wildlife experience and could help deliver a wilder landscape which could benefit wildlife tourism. Ensuring we understand the impacts of wildcats on other wildlife is identified as a potential issue but the impact from domestic cats on native wildlife is seen as a greater threat. Interbreeding between domestic cats and wildcats is perceived as a threat. This group supports transparency, openness and a conflict management plan if a reintroduction takes place. This group showed high knowledge of wildcat ecology.

Environmental Guardian: This group does not feel that wildcats need help as they occur elsewhere in Europe and existing local wildlife should be the priority. There is a view that reintroductions are just being done for the sake of it and because they are headline grabbing. Just because wildcats were once native is not a good enough reason to bring them back. There is concern they will eat livestock and stop forestry operations but there is recognition that



current anti-predation measures to protect poultry or gamebirds should work for wildcats. Wildcats may need to be controlled and there is concern for their impact on local wildlife, however if grey squirrels are part of their diet this is seen as a positive. A view that some farmers may be pro to wildcats because they could control vermin. Hybridisation is seen as a problem. They believe there is a strong possibility of unintended consequences and therefore the need for a clear conflict management plan.

Sceptical Pragmatist: This group dislike the idea of wildcat reintroduction and strongly disagree that just because they were once native, they should be reintroduced. There is a feeling that a reintroduction will not be ethical on welfare grounds as you cannot remove all the current threats or the reasons why they became extinct in the first place. There is a view that there is not enough habitat, and hybridisation cannot be overcome. They are concerned that they will eat livestock and will not be tolerated by farmers. Concern was expressed that wildcats may pose a disease transmission risk. They are not convinced that wildcats are interesting animals or will help rural businesses and tourism. Strong opinion that there should be a clear conflict plan at the start of any reintroduction. They would prefer to see feral cats rather than wildcats as they are a known entity.

Wildlife Advocate: This group strongly believe that wildcats are an interesting animal with a story to be told. They feel like they are not knowledgeable about wildcats but like the idea of a wildcat reintroduction and having more wildlife in the countryside. They believe there is enough prey and habitat and do not see any conflict between humans and wildcats. There is uncertainty about any problems associated with domestic cats and wildcats but agreement that neutering domestic cats is important. They strongly support transparency and openness, and the need for a conflict management plan. An interesting observation that came out of this group is that the anti-farmer narrative that accompanies reintroduction is more of a problem than the species itself.

✓ **Figure 14:** Four perspectives and associated variables from the key interest groups involved in the Q survey. The full report can be viewed at www.doi.org/10.5281/zenodo.14283637

Wildlife Advocate

- Like the idea of more wildlife and is supportive of wildcat reintroduction
- Although less familiar with wildcats, issues with domestic cats seen as unlikely
- Support transparency, openness and a conflict management plan.

Distinguishing Traits (survey insights)

Statistical models to test relationships between 'wildlife advocate' and demographic variables did not meet the criteria for goodness of model fit.

Restoration Naturalist

- Favourable to wildcat reintroduction for conservation and wilder landscapes
- Think reintroduction will have benefits for wild experiences, wilder landscapes and nature tourism
- Predicts few negative outcomes, but a conflict management plan needed from the start.

Demographic associated (survey insights)

Positively associated with:

Higher wildcat knowledge scores
Ages 18-24, 25-34 or 35-44
Occupation in Education

Negatively associated with:

Occupation in Farming & Agriculture
Ages 55-64
People who do not have cats

Environmental Guardian

- Conserving existing wildlife should be the priority, wildcats occur elsewhere
- Need to be able to manage conflicts: legally protecting wildcats could create difficulties
- Risk for some poultry and concern about unintended consequences

Distinguishing Traits (survey insights)

Positively associated with:

Occupation as Students
Ages 18-24
People who do not have cats
Occupation in Environment, Nature & Wildlife

Negatively associated with:

Higher wildcat knowledge score
Ages 45-54 or 35-44
Occupation in community & social service, Tourism or education

Sceptical Pragmatist

- Unsupportive of wildcat reintroduction, believe the ecosystem has changed too much
- Hybridisation with domestic cats is considered impossible to overcome
- Concerned that wildcats may predate poultry and game birds and may pose a disease risk

Distinguishing Traits (survey insights)

Positively associated with:

Occupation in farming & agriculture, building & maintenance or student
Ages 55-64, 65-74
People who do not have cats

Negatively associated with:

Higher wildcat knowledge score
Ages 18-24, 25-34, or 35-44
Occupation in education

8.3.3 Headline findings from the wider public surveys

The survey found that the public are broadly in support of a wildcat reintroduction with 70.8% of the representative sample agreeing that wildcats need help. This increases to 83.4% in the open sample. Supportive views increased with higher wildcat knowledge scores and interestingly amongst participants that own domestic cats.

In both surveys, a minority took a position of disagreement (10% representative and 11.1% open). The farming demographic was associated with this view. However, it should be noted this group held mixed views and not all were negative to a wildcat reintroduction. It is therefore important that this group should not be viewed as only expressing one view but treated as individuals. Negativity was linked to concern for the environment and livestock but also unowned cats.

Within the representative sample only 18.9% knew what a wildcat was and only 7.7% answered all knowledge questions correctly. Knowledge about wildcats increased within the open sample (58.2% correctly identified a wildcat and 42.5% answered all knowledge questions correctly). This group may be expected to be more environmentally aware because of the networks the survey was circulated around or were already interested so made the effort to respond.

8.3.4 Key findings from social research

A common thread was the value people placed on wildlife and local ecosystems. Interestingly, this created contrasting opinions on a wildcat reintroduction. For example, not supporting because of the perceived negative impact on vulnerable local species or strongly supportive because of reinstating a native species. This led to researchers to identify that 'a clear project justification that identifies how wildcats will enhance the local environment in terms of conservation gain' is essential. This will be relevant across all the perspective groups identified. Alongside this a clear monitoring plan should be developed to measure environmental gains.

The surveys highlighted a lack of knowledge regarding wildcats amongst the Southwest population. This is perhaps not surprising as there is no experience of wildcats in England within living memory. However, this is also true in Germany where the species is more common and there have been years of conservation action (Sabrina Streif - FVA Wildlife Institute Baden-Württemberg, Germany pers com) so is perhaps more a result of the lack of awareness of small cats in general. The species being referred to as Scottish Wildcat in recent decades, is also likely to have contributed to the narrative that wildcats are not relevant in the English context.

Importantly the research has shown that an increased knowledge and understanding of wildcats leads to greater support for a wildcat reintroduction i.e. the Restoration Naturalist as opposed to the Sceptical Pragmatist or Environmental Guardian. Negativity about wildcat reintroduction is likely to be based upon previous experience and beliefs. Addressing these beliefs could help build support.

To improve knowledge and develop support for a wildcat reintroduction researchers recommend:

- Developing a strong outreach and education campaign around wildcats.
- Creating opportunities for the public to get involved and gain lived experience of wildcats and the project, for example analysing the footage from trail cameras.
- Targeted community engagement within the release area.

Cat owners were identified as potentially being an engaged and supportive group. With hybridisation a key risk, a willingness to engage with responsible cat ownership messaging would be very beneficial to the development of a reintroduction.

There was a clear consensus across participants that a conflict management plan needs to be in place before the start of any reintroduction programme. This needs to identify a forum for engagement and needs to provide reassurance and evidence that concerns will be listened to, recorded and addressed. Local players will be essential in its development.

Key Learning identified from social research to help deliver a successful reintroduction project:

- Develop a clear justification of how wildcat reintroduction contributes to a healthier Southwest ecosystem.
- Increased knowledge about wildcats will build support for a reintroduction.
- A conflict management plan should be developed at start of project. To include potential disease risks and how these are to be managed.
- Develop a clear and evidence-based assessment of the risk of hybridisation and actions needed to mitigate it. Ensure plans are included in communications about project.
- Justification of costs may need to be addressed.

8.4 Is there support for wildcat reintroduction?

The University of Exeter study has provided valuable insight into the range of perspectives that a potential wildcat reintroduction project will need to consider. Although identifying that the Southwest public broadly support the concept of a reintroduction, this view is not universally supported. However, the research team felt that with careful planning and sensitive management of concerns, actions can be put in place to address conflicts and identify benefits for local ecosystems and/or society. The research team have concluded that if the findings presented are effectively addressed, **a wildcat reintroduction is a socially feasible prospect.**

Recommendation:

- Fully implement the recommendations from the UoE Social Feasibility



Photo: Tom Mason - tommasonphoto.com

9. Economic Impact

There is little evidence of wildcats having a negative economic impact on human activities elsewhere in Europe. Any impacts are likely to be localised and small scale. There could be positive impacts through wildlife tourism with people going to areas hoping to see wildcats.

Wildlife tourism is a growing and important industry for the UK. It is well documented that iconic species have become a major draw for visitors which have economic benefits for local communities. For example, the reintroduction of white-tailed eagles to Mull in Scotland has been estimated to add £1.7 million per year into the local economy; the Osprey Centre at Loch Garten also in Scotland attracted 33,048 visitors in 2005; and in Wales the Red Kite Feeding Centre alone attracted 33,350 visitors in 2004 (Campbell et al., 2007).

In Devon, the beavers along the River Otter have attracted visitors which has been seen to increase revenue for

local businesses. The economic benefit was greatest where businesses actively sought to maximise the opportunity (Auster et al., 2020). It might be expected that the reintroduction of wildcats into remoter areas of Southwest England could offer economic benefits for rural communities.

Wildcat experiences are being offered through wildlife watching tours in Spain as seen from the WildWatching Spain website.



✓ **Figure 15:** Density of poultry and gamebirds across the UK (APHA, 2024). The source data is from APHA's Sam database July 2023. The dataset holds information from registration of poultry holdings ≥ 50 birds. Premises with less than 50 birds are encouraged to register and so a proportion of these premises will be included within the Sam extract.

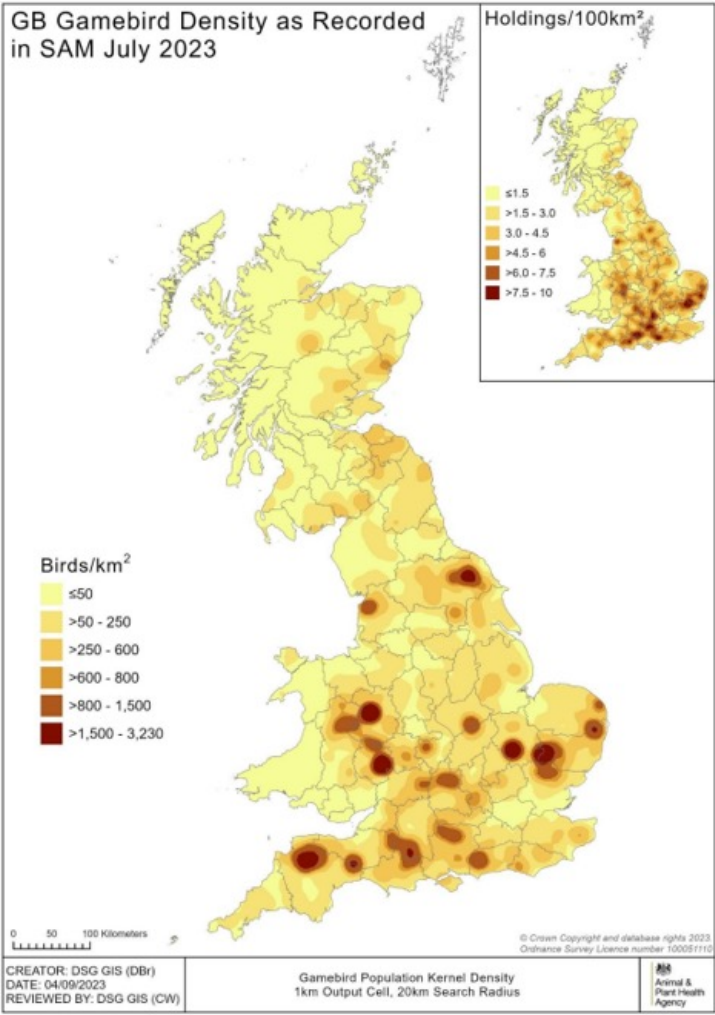
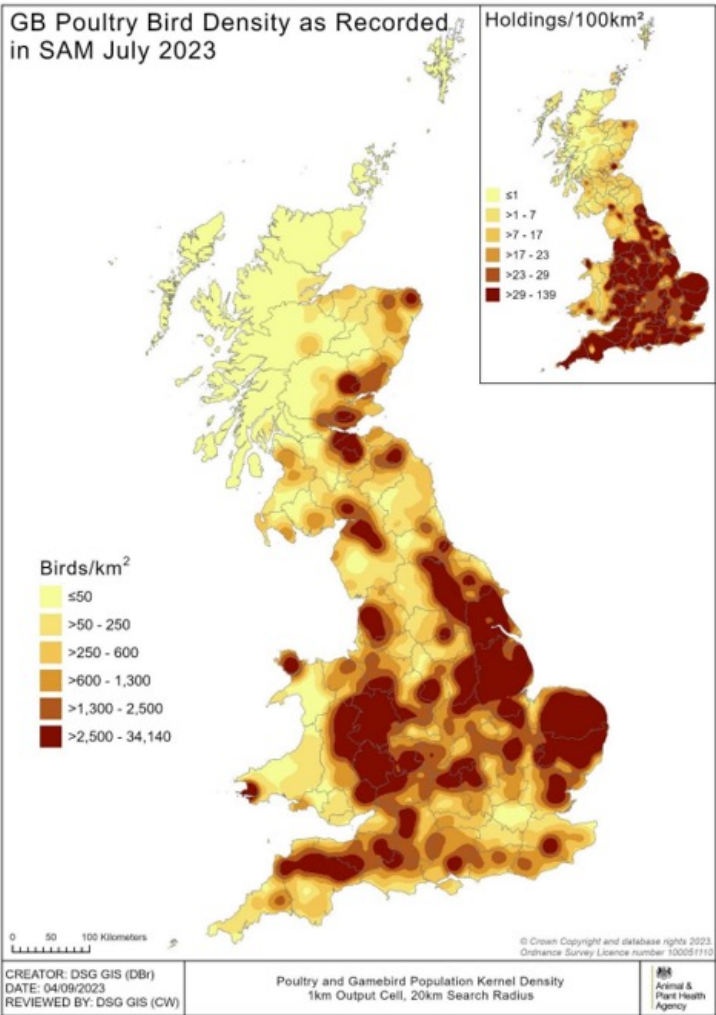




Photo: Cath Jeffis

▲ **Figure 16:** Stakeholders may need support to make management changes and help ensure pets and livestock are secure.

Government data is available for poultry and reared gamebirds across the UK. Figure 15 indicates the Southwest, and Devon in particular, have high densities of these activities

Game shoots are an important part of the rural Devon economy. For example, the economic value of game shooting on Exmoor to the UK economy is estimated at £32.5 million (Shootinguk, n.d.).

As well as the potential for direct predation, the presence of the wildcat around pens or cover may deter game from areas from where the shoot would normally expect their target species to be. Working closely with shooting estates within any release area is critical so that conflicts can be reduced.

Devon is one of the top eight counties in England for number of poultry (12,239,930 birds) and has the highest number of holdings (3468) registered as keepers (APHA, 2024). Unfortunately, there is no data regarding free ranging animals which is where we might expect the highest risk of conflict arising from wildcats to be.

Unlike other predators such as fox that can be legally controlled, wildcats are a protected species and non-lethal methods need to be employed if they target livestock.

People may need to amend livestock management regimes to prevent wildcat predation. For example, the photo in Figure 16 shows a free-range chicken enterprise near Exeter. There are no fences (even the field gate is open onto the road) and the chickens have free access between housing and field. Chickens are likely to be locked in at night which will protect them from nocturnal predators. However, even nocturnal predators may be active during the day especially if hungry or feeding young. Therefore, this setup may prove attractive to wildcats and actions may be required to secure the flock. Having to make changes may represent a barrier to landowners supporting a reintroduction and will need to be managed sensitively and constructively. There are some good examples from Europe, including agri-environment scheme measures, that assist farmers to protect their livestock. In Germany there are also active volunteer groups that can help with physical measure such as installing fencing. Although these schemes relate to lynx, the interventions and outcomes are comparable.

10. Source of Wildcats for Release

Identifying a source of wildcats for release in England is a critical action, fundamental to any reintroduction. Ensuring animals are from a genetically diverse population is important especially as it is recognised that low diversity can potentially lead to greater vulnerability to hybridisation and disease at the population level (Howard-McCombe *et al*, 2023).

A captive wildcat population is currently held in UK zoological collections. These animals, descended from wildcats originally living in Scotland, are from a wild population that was severely depleted (reducing genetic diversity) around 100 years ago. The UK wildcat studbook is managed by the Royal Zoological Society Scotland (RZSS) who also lead the Saving Wildcats Project in Scotland. Studbooks are there to oversee managed captive populations, with the aim of preventing inbreeding whilst enhancing genetic diversity. In 2010, nine captive UK animals met the criteria for being classified as a wildcat and it was suggested that new individuals needed to be added to the captive breeding population to increase genetic diversity, and thus genetic resilience (MacDonald *et al*, 2010).

UK captive wildcats were genetically assessed for levels of hybridisation in 2017; only those that passed the minimum genetic threshold were used for breeding. Most score higher than the minimum threshold of 75%; equivalent to a wildcat having one domestic cat grandparent. By 2022 there were 150 animals in the breeding programme (Saving Wildcats, 2023). The captive population breed well, and management and husbandry are well understood and documented (D. Barclay, Wildcat Studbook Manager RZSS, personal communication). The most suitable animals have been established in the Saving Wildcats conservation breeding for release centre managed by RZSS.

It would make sense if wildcats already in the UK could be the donor population for English releases. However, a reintroduction imperative is to create a population best adapted to *today's* conditions in England and animals released should be those that are felt to have the best chance of becoming established. The metapopulation of wildcats in NW-Europe (considered the same subspecies), as well as being the closest population of wildcats to Southwest England, may provide animals well adapted to current conditions (M. Hartmann, IUCN Cat Specialist Group, personal communication).

Similar numbers of wildcats are currently housed in zoos across Europe to wildcats housed in zoos in the UK (Pizzi

et al, 2025). Wildcats within European zoos may not have undergone genetic testing, and this would need to be assessed if animals are to be considered for entry into an English captive breeding programme. The small number of suitable animals likely to be available, combined with organising imports via different institutions in different countries (each requiring separate animal health certificates completed by the exporting country's official veterinarians) are further complications when considering animals from European zoos.

Capturing and importing wild-living wildcats from Europe was explored within the English Wildcat Disease Risk Assessment (DRA) (Pizzi *et al*, 2025). This concluded that sourcing wild origin wildcats from Europe is unlikely to be viable. Trapped animals would need to spend 120 days in quarantine and undergo health and genetic screening. After quarantine, the wildcats would legally be able to be imported as from any other European approved facility as described further in this section. However, the DRA report highlighted that a high proportion of wild-caught wildcats are likely to fail to meet the criteria for being accepted as founder-animals because of the high prevalence of incurable viral diseases recorded in wild-living wildcats in Europe. As well as incurring significant costs trapping unsuitable animals, the disease status of the captured wildcat may present ethical decisions for the donor countries on whether those wildcats should be re-released. Furthermore, there is no guarantee of gaining permission to remove wild-living wildcats from donor countries and there are broader ethical questions around capturing wild living animals for captive breeding (Hutchings, 2006; Moody, *in development*), especially if alternative sources are available.

A potential source of wild-living wildcats could be those entering wildlife rescue or rehabilitation centres. Most are likely to be unsuitable, for example if they have disease; age-related issues; or are simply individuals failing to cope in the wild. However, animals that have suffered debilitating injuries making them unsuitable to return to the wild could be suitable for captive breeding. There is no data to suggest suitable numbers of such animals would be available, but this may be worth investigating.

Import of live captive animals into England from Europe is relatively straight forward if between approved establishments. This is through the Balai Directive (Article 4 of Council Directive 92/65/EEC). The British and Irish Association of Zoos and Aquariums (BIAZA) has an Animal Transfer Policy which provides guidance on



▲ Mother and kitten wildcat at Duisburg zoo, Germany.

optimising welfare and due diligence when transporting animals (BIAZA, 2023). European wildcats are listed as an Annex A species on CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora). As such they can only be imported for specific reasons even if captive bred. The Animal Imports team at Defra provide support and information on importing animals into the UK, including the requirements and checks needed. The England Wildcat DRA provides a framework to manage disease risks and the procedures involved with importing animals.

A review into captive versus wild caught carnivore reintroductions (Jule *et al*, 2008) identified that reintroduction projects using wild-caught animals are more likely to succeed than projects using captive-born animals. Part of this will be linked to hunting ability with released animals needing to be successful immediately if they are to survive. In a wild situation they will learn from their mother who will support them to develop the skills needed to survive alone. However, soft release methods where captive reared animals are given support after release, for example by providing food near the release site, can help to improve outcomes. Much is dependent on the species involved and the conditions they are reared in. For example, the Iberian Lynx *Lynx pardinus* reintroduction in Spain involved captive reared animals and is seen as a major conservation success story (IUCN, 2024).

It is suggested that captive wildcats can learn all they need to survive in the wild from well-designed breeding pens (Marianne Hartmann IUCN Cat Specialist Group, personal communication). Access to complex habitat with lots of hiding places and suitable climbing structures (constructed wilderness) can help kittens develop the muscles and skills needed for hunting. Catching prey is genetically fixed in wildcats but the killing bite needs to be learnt. Mothers in the wild will bring live, small prey to their kittens to help them develop this essential skill.

This is not possible in a captive situation as live prey is not fed but well-designed enrichment can help develop appropriate skills. Indeed, wildcats in captivity have been seen to take wildlife entering their pens. Invertebrates such as grasshoppers are an important prey item that help kittens hone their hunting skills. A kitten's learning phase is complete by 5/6 months, following which they become independent. The Scottish released wildcats have shown good survival skills and indicate that captive born wildcats can be suitable for release.

In captivity they do not make bonds with their keepers though they can become confident with a single person. Any trust is lost when they are trapped. Human avoidance training is not thought to be necessary though keeping human contact to an absolute minimum is recommended if animals are to be released (M. Hartmann, IUCN Cat Specialist Group, personal communication).

The review of options suggests that captive wildcats from Europe should be considered as a potential source of animals for developing a captive breeding programme, either on their own or to augment UK-decent animals. Animals used should be under guidance from experts such as the IUCN Cat Specialist Group and assessed against risks identified within the DRA and other information such as genetics, welfare considerations, or availability of animals.

Recommendation:

- Commission a report into the best source of animals for establishing an English population. To include genetics, morphology, and local habitat adaptations.
- Develop and agree a release strategy that includes where to source animals using best available knowledge.

⁷ Marianne Hartmann has studied and bred wildcats for release for over 30 years. She provides expert advice on the design of enclosures that support wildcats for wild living (IUCN/SCC, 2024).

11. Disease Management

The IUCN has established guidelines for the Disease Risk Analysis process within species reintroductions. A level of attention to disease and parasite issues proportional to each translocation situation is recommended. To meet this requirement and to develop an understanding of the risks involved with reintroducing wildcats, Forestry England commissioned a Wildcat Disease Risk Assessment⁵ that could be used to underpin all English wildcat reintroductions. The aim was to identify all current risks or emerging risks, and how these can be mitigated; whilst ensuring it was compliant with UK animal health and welfare legislation. A comprehensive disease screening protocol is well established in the Saving Wildcats project and the English DRA will guide protocols needed for any English project.

Sources of wildcats considered as part of the analysis, included captive populations within Great Britain; captive populations in Europe; and wild origin wildcats from Europe (trapped, rescued, or rehabilitated wildcats).

The England DRA identified 126 hazards (shown in Appendix 6), of which 64 have been previously reported as occurring in wildcats in Europe in published peer-reviewed literature.

- 101 hazards were infectious or parasitic diseases.
- 25 hazards were non-infectious.

Of these:

- 23 hazards were evaluated as high risk, (8% of these were non-infectious hazards).
- Viral diseases made up a large proportion (42 %) of the hazards evaluated as high risk.

A total of 16 disease hazards across all categories are not currently found in the UK and would only present a risk if

imported in a wildcat from outside the UK. Two of these were evaluated as high-risk, Rabies and Echinococcus, however they both become low-risk hazards when mitigations are in place. Nine legally notifiable diseases in the UK were identified as hazards.

After mitigation, 114 hazards are reclassified as low risk and a further 11 as medium risk and only a single hazard, hybridisation, remained high risk even after mitigation.

Wildcats are susceptible to the same diseases as domestic cats and can be the source of Zoonotic disease i.e. infectious disease that can move from animal into humans. Keeping groups of cats together, can facilitate disease spread. This can be between animals but also to the animal care givers, i.e. keepers, vets etc.. Captive facilities, animal movements and pre-release pens need good biosecurity i.e. measures to stop the spread or introduction of harmful organisms to human or animals (either the captive population or other livestock, pets, or wildlife). Disease outbreaks within any reintroduction facilities could be very damaging by removing important breeding animals (and their genetics) or by impacting productivity as kittens are often more vulnerable.

The results from the DRA suggest that infectious disease hazards identified pose their main risk to groups of cats such as in a captive breeding facility, or from their risk of causing zoonotic disease in animal care workers.

Recommendation:

- Implement the England Wildcat Reintroduction DRA
- Develop a Project specific Disease Management Plan based on the framework developed within the English Wildcat DRA

¹⁸ Dr Romain Pizzi, Dr Jonathan Cracknell, Dr Roisin Campbell-Palmer (2025) Disease Risk Analysis for the reintroduction of the European wildcat (*Felis silvestris*) within England. Rewilding Medicine Ltd.



Photo: David R White

12. Is a wildcat reintroduction feasible in Southwest England?

12.1 Have the feasibility questions been answered?

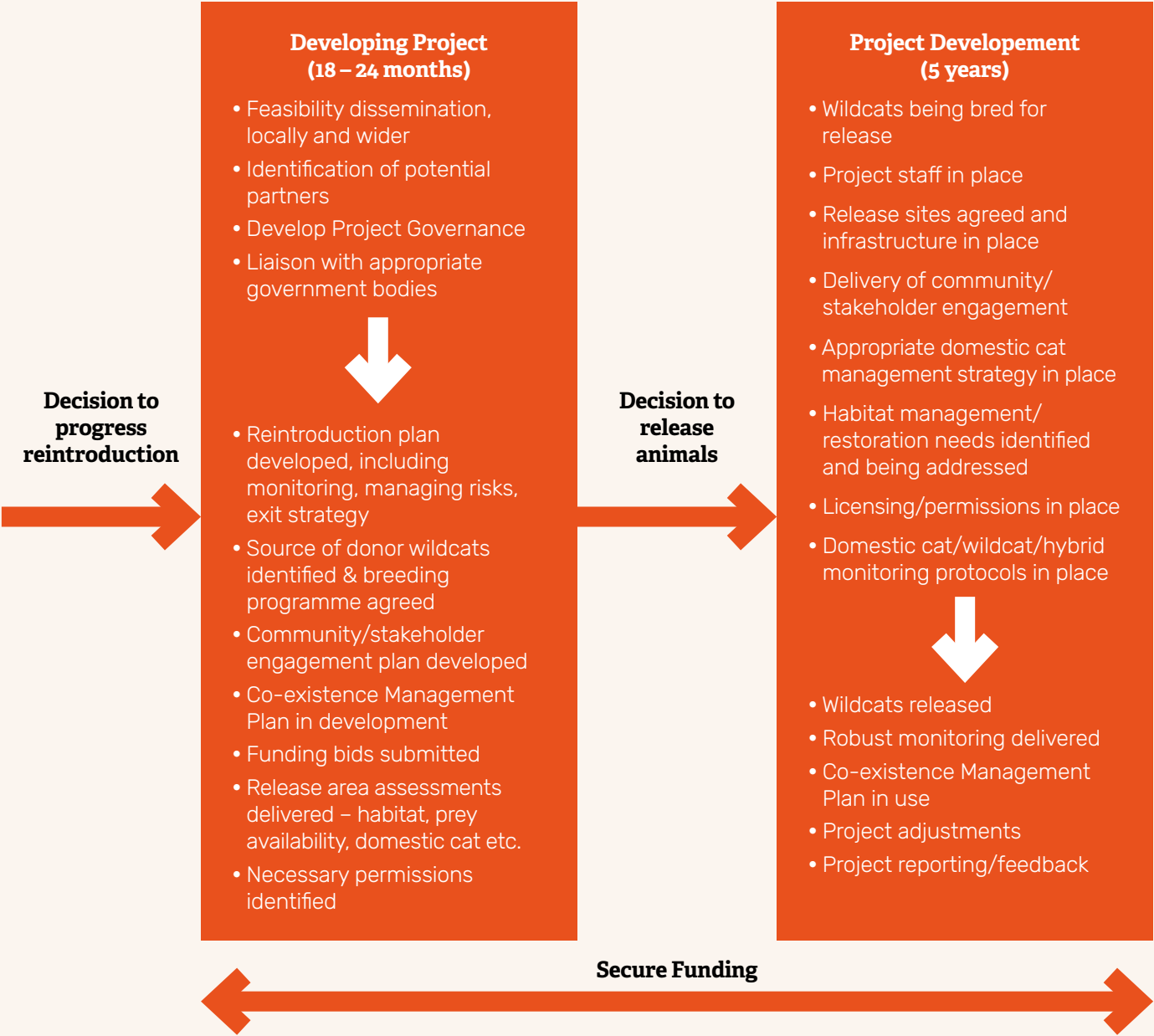
Feasibility Question	Answers, further information required, and actions needed if a release project goes ahead.
Is there sufficient, connected habitat, with sufficient prey to support a self-sustaining wildcat population?	Habitat assessments show there is sufficient, well-connected habitat to support the minimum number of animals needed for a self-sustaining population. Prey assessments (numbers and diversity) to be completed for candidate release sites.
How do people in Southwest England, including key stakeholders, feel about wildcat releases?	The majority of public (>70%) could be supportive of a wildcat reintroduction, but concerns are raised regarding possible impact on wildlife and livestock. Potential conflict with certain sectors is acknowledged. Clear routes to address problems will be co-created through a Wildcat Management Plan.
Could a re-established wildcat population be maintained without an unsustainable level of interbreeding with domestic cats?	This is the issue with the most uncertainty. However, there is evidence from Europe that wildcat genetic integrity can be maintained even where they overlap with domestic cats. Knowledge around hybridisation is developing. Links with scientists through the EuroWildcat network ensures access to new information/research. Clear need to identify unneutered cats within potential release zones and a tailored approach to management developed. Build acceptance that hybrids are likely but do not mean complete failure. Protocol for how hybrids will be managed within population required. Genetic monitoring is essential. The genetic integrity of establishing population should be continuously assessed and management protocols adapted as knowledge develops. Develop partnerships with those leading domestic cat welfare programmes and implement joint solutions to benefit domestic cats and wildcats. Wider factors increasing risk of hybridisation (e.g. road mortality, prey availability) must be addressed within release strategy.
Could the return of wildcats benefit other Southwest England habitats and species?	Clear evidence from Germany demonstrates that wildcats have helped to drive a landscape scale habitat restoration programme. Wildcats will rely on an abundant prey base of widespread species. Habitat enhancements to give wildcats the greatest chance of success will benefit a host of other species Predators including cat species are increasingly recognised as providing wider ecological benefits to the ecosystems they inhabit. Returning missing predators is an integral part of ecological restoration. A comprehensive Communications Plan is required. This needs to explore accessible routes for introducing the complexities and benefits of predator / prey relationships.

Feasibility Question	Answers, further information required, and actions needed if a release project goes ahead.
How may a wildcat population impact other species or human activities and can identified risks be mitigated?	No impact on European Protected Sites or Species has been identified. There is also unlikely to be any population scale impacts to vulnerable species. NE is currently being consulted. Any negative economic impacts are primarily associated with poultry and game bird rearing. Impacts will be localised and may require mitigation – this should be explored on a case-by-case basis. The Wildcat Management Plan will set out advisory staff support available alongside general information to ensure impacts are avoided. A wildcat hotline will be set up to ensure any observed impacts are responded to by experts.
What risks will released animals face, and how can these be mitigated?	Persecution and roads mortality are known threats to wildcats across the European range. SW England has a lower density of high traffic volume roads and people than average in England. Wildcats are a protected species, education to ensure people know what a wildcat is and the protection they are subject to is essential before releases starts. Site specific risk factors to be identified at potential release sites and mitigations recommended. People involved in activities where conflict may arise, such as forestry, game rearing and free-range poultry, need to be given all the information needed to ensure their livestock are protected and management techniques are not going to negatively affect wildcats. Develop a Disease Risk Management Plan, underpinned by England DRA.
What are the potential source populations of animals to be released?	There are captive populations within UK and Europe. Population modelling has shown that removing animals from UK captive breeding population is sustainable and will not damage this critical resource. We recommend that an independent assessment on how to create the most resilient (and practical) English Wildcat population, including source animals, is required.

12.2 Key Recommendations and Next Steps

If a reintroduction was to proceed, we propose that there would be a discrete Development Phase followed by a Delivery phase which is when actual releases would take place as outlined in Figure 17. A risk register for a potential SW wildcat reintroduction can be found in Appendix 7. Liaising closely with the Saving Wildcats team throughout project development will embed current best practice and will make the most of the valuable learning that has been gained from the Scottish reintroduction. It will be important to adapt this for the conditions found in South West England.

✔ **Figure 17:** Suggested actions for developing a wildcat reintroduction.



Much of the literature around wildcats identifies how important connected prey-rich habitats combined with low human-induced mortality is in determining the health of wildcat populations. Any release site needs to provide the best opportunity for establishing wildcats whilst mitigating known risks. Figure 18 identifies factors that are known to impact wildcats and the actions that can help to address them. The aim is to develop a high density of wildcats in an area which current understanding suggests should help reduce or prevent hybridisation.

Any releases must be carefully managed and monitored. A combination of appropriate radio tracking, camera trapping and other suitable techniques such as scent dogs or drones needs to be developed at the next phase of project development. As well as recording success of animals released, it assists in understanding if release management needs changing or to address certain situations. For example, releasing a male in an area that just supports wildcat females. Genetic monitoring of the developing population is also an essential aspect to put in place.

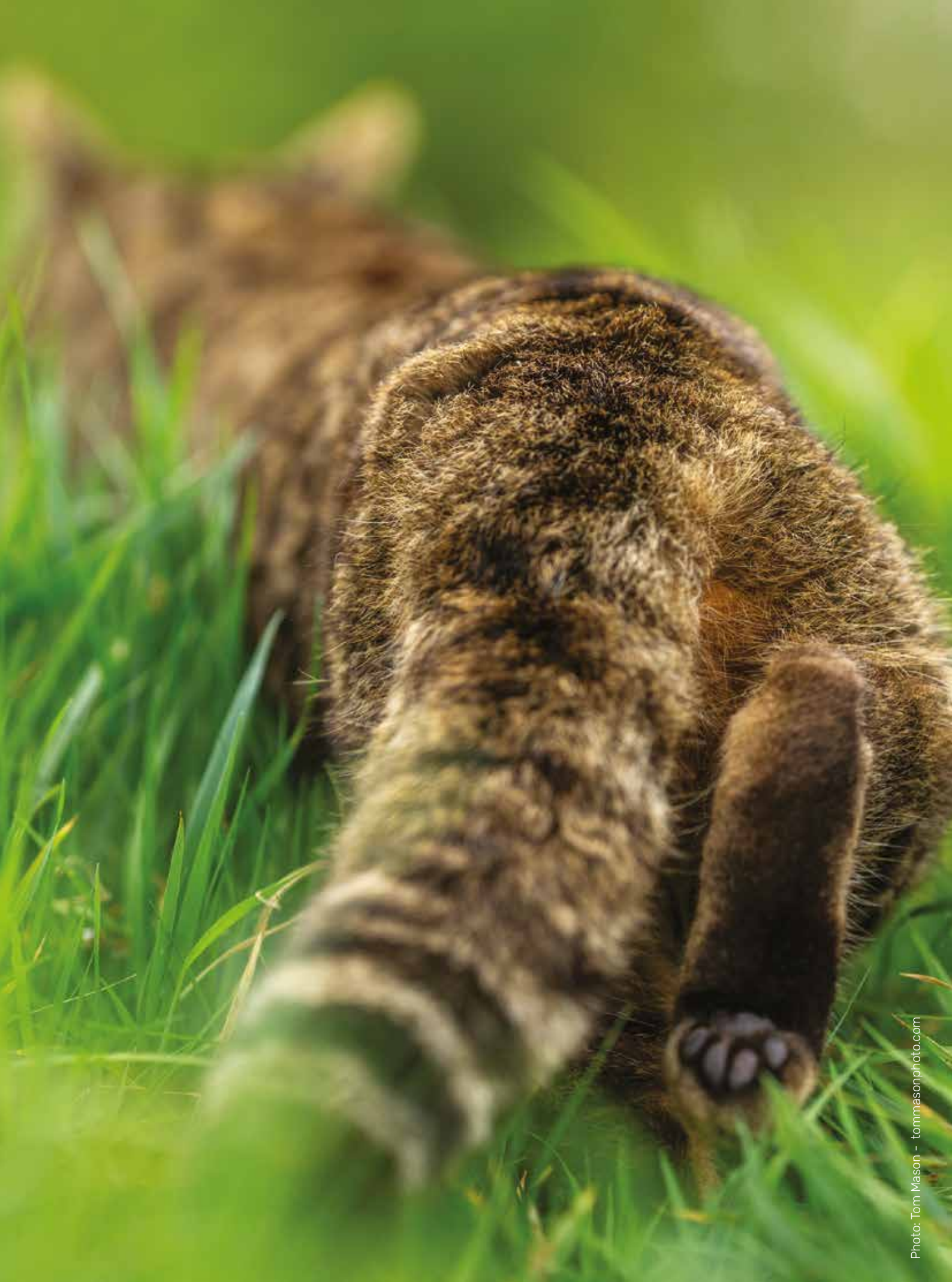
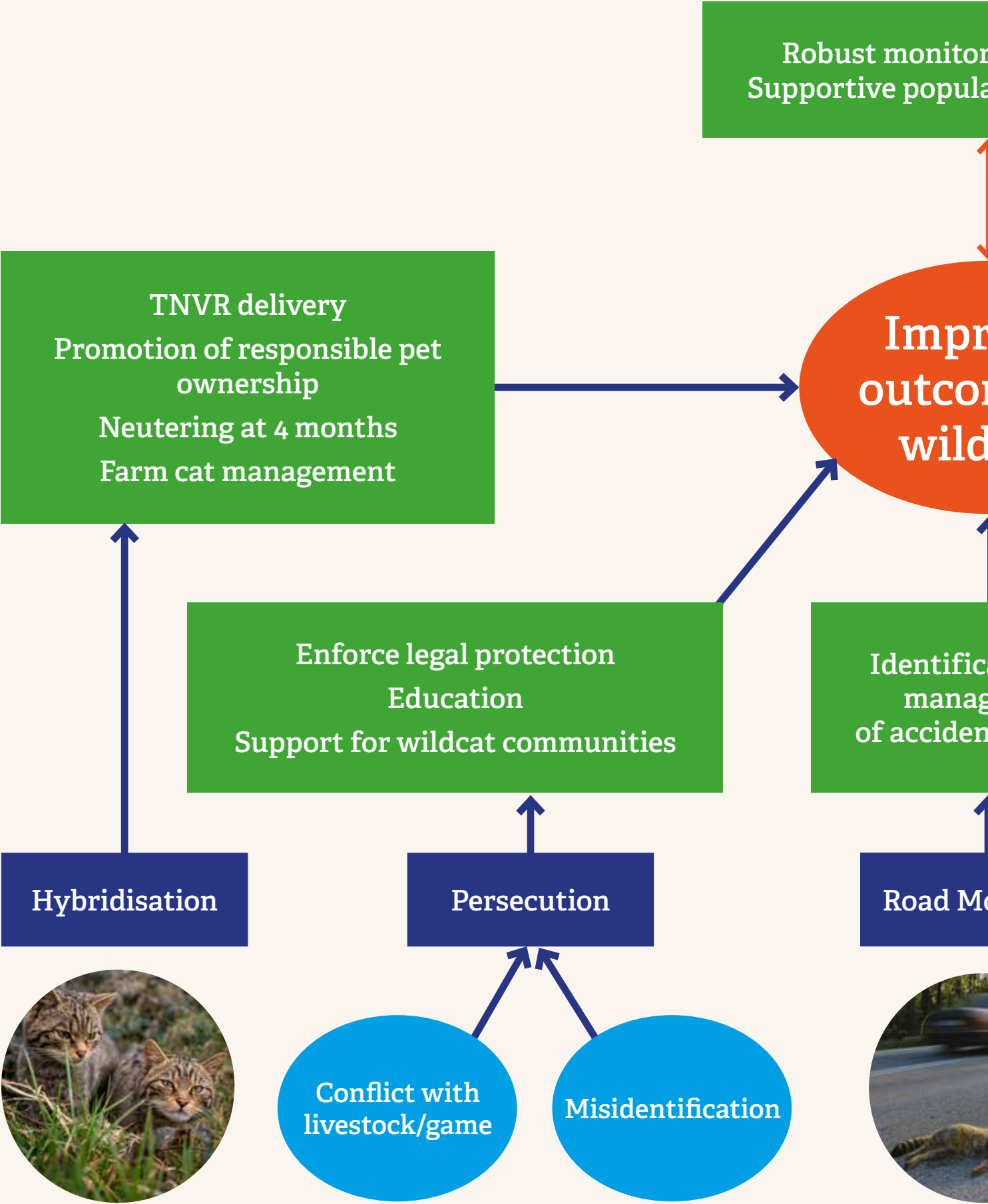


Photo: Tom Mason - tommasonphoto.com

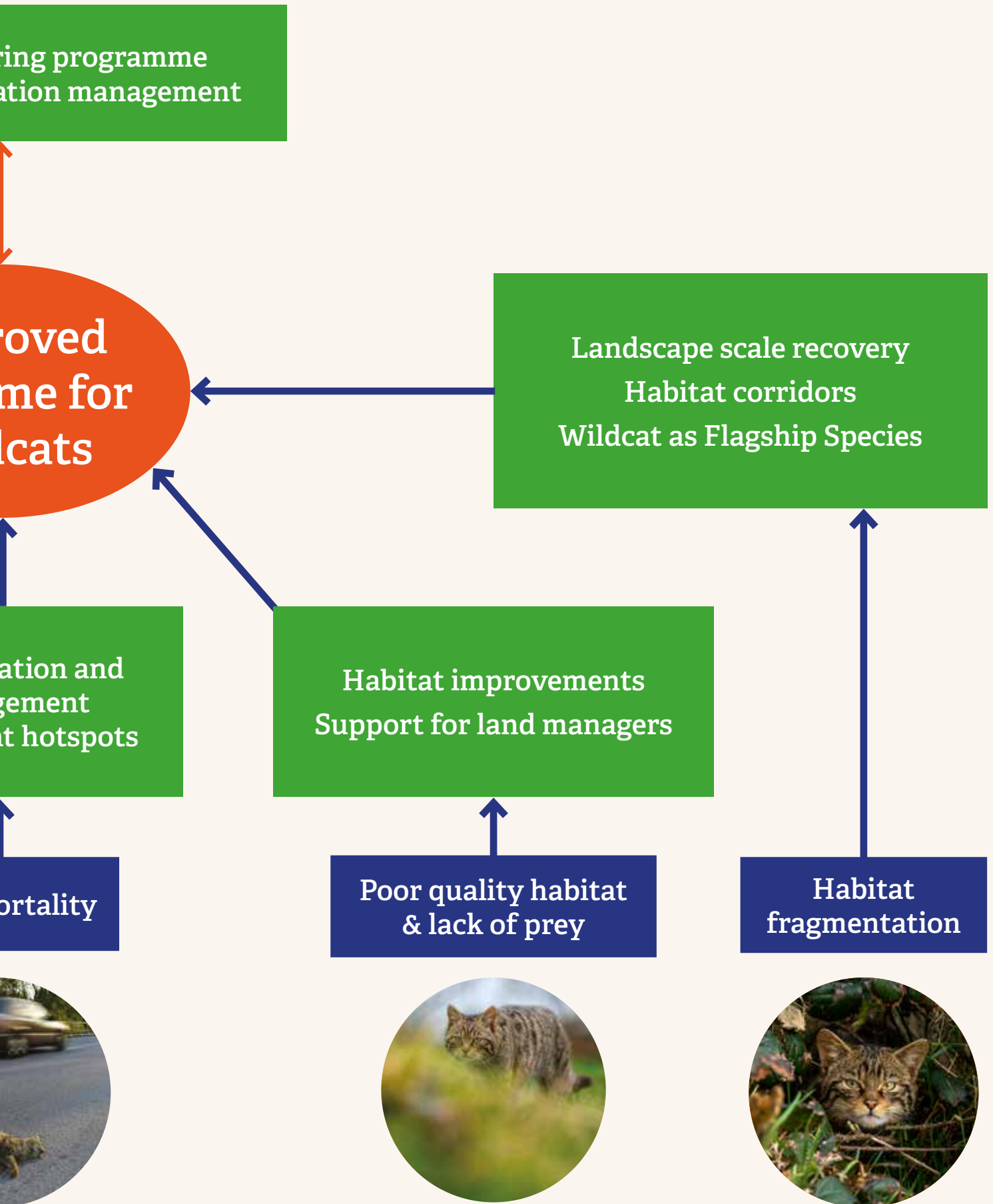
✔ **Figure 18:** A reintroduction project needs to ensure management is in place to promote a healthy wildcat population. This will prevent hybridisation.

Actions (in green) needed to address issues (in blue) that create low wildcat numbers/densities. Actions will help support a healthy wildcat population.



support wildcat population development and will be essential for mitigating factors that are known to increase risk of

y population and reduce hybridisation risk.



Photos: Tom Mason - tommasonphoto.com, Benny Trapp - AdobeStock

12.3 Policy and Legislation (outside scope of the SW wildcat feasibility)

- Government agencies to co-create a National/English wildcat recovery policy.
- Include European wildcat as a Section 41 species to open funding and species recovery opportunities within England.
- Identify how agri-environment schemes could support wildcat conservation:
 - Through landscape scale enhancement plans.
 - Options for farmers to manage their farm cat populations,
 - Support owners to ensure poultry/game are secure.
 - Support woodland owners to create safe habitat.
- Develop wildcat licencing to support reintroduced populations and monitoring success of releases.
- Provide guidance on formal wildcat / hybrid definitions and associated legal protection and guidance frameworks.
- Clarify the status of hybrids – potentially giving equal protection to prevent ambiguity around persecution (as is the situation in Germany).
- Provide guidance on how to deal with injured or orphaned wildcat kittens that may be bought into wildlife centres.
- Guidance on what favourable conservation status of wildcats in England looks like.

12.4 Southwest England specific actions (though transferable to other areas)

Activity	Outcomes	Outputs
Develop and agree Project Governance and structure	Strong leadership for project Input from experts within community and wider	Regular Steering Group meetings Regular Technical Group meetings (wider group of interested parties and experts)
Identify suitable release areas identified as high-quality habitat and low potential conflict risk	Release area with release sites agreed Community support for reintroduction Cat welfare organisations and vets engaged Knowledge of farm cats increased Stakeholders support, or are neutral to a wildcat reintroduction	Site options report complete incorporating: • Fertile domestic cat survey (including farm cats) • Community engagement programme delivered • Baseline prey survey • Domestic cat Man Plan Wildcat Coexistence Management Plan embedded in communities
Develop reintroduction strategy	Robust and well thought out release strategy – but with flexibility to be adaptable IUCN support for project Favourable Wildcat Conservation Outcome agreed	Disease Risk Man Plan in place Trial release delivered (if appropriate) Reintroduction delivery plan in place
Produce Wildcat Coexistence Management Plan	Clear route for potential conflict resolution and community engagement	A robust and endorsed Management Plan (potentially facilitated by a neutral) and codesigned with the people affected
Ensure source population is in place/ developed	Healthy, suitable animals available for release IUCN support for animals' suitability	Options report on best possible English source population (to guide project) Appropriate number of animals available for release

Activity	Outcomes	Outputs
Increase awareness of wildcats and their plight and how they are an important part of our native wildlife	Wildcats recognised and valued as a native English/SW species Support for the reintroduction of a missing predator	Education material produced (to include hybridisation) Community Engagement Programme in place
Increase awareness on how to identify wildcats and how to live alongside them	Stakeholders support or are neutral to a wildcat reintroduction No Persecution due to misidentification Coexistence with wildcats	Stake holder engagement programme Advice materials available Support available and a mechanism in place to listen to anyone concerned about wildcats Wildcat Coexistence Management Plan codesigned with stakeholders who may be impacted
Shared vision for domestic cat management within release area	Responsible pet ownership Active unneutered cat management Positive farm cat management	Forum for developing cat management within release area Active TNVR programme where needed
Secure Funding for Full release programme	Well-resourced project	Wildcats released

13. Feasibility Conclusions

This 2.5-year, multi-disciplinary programme has explored in depth the feasibility of reintroducing wildcats to Southwest England. We have significantly advanced our knowledge and understanding of the potential to reintroduce this species. Some key questions have been answered to a high degree of confidence, and others require further investigation.

This work has identified a core network of woodland and associated wildcat habitats across Devon and into Somerset. Habitat analysis has confirmed functional habitat connectivity that will support wildcat movement through the landscape. The extent of habitat identified is predicted to support the minimum number of wildcats needed to establish a viable population.

Our work has identified knowledge gaps regarding prey availability and associated population dynamics which needs to be addressed. No robust data was available on small mammal populations within the landscapes being assessed. However, camera surveys recorded good numbers of mesopredators such as fox and badger, which could be indicative of a strong prey base. Ongoing field vole survey associated with the pine marten reintroduction project will yield useful data. We propose developing wildcat prey availability survey methodology based around a metric that includes, presence and abundance of favoured prey.

The risk of hybridisation represents a risk, in common across the species' range. However, this is not inevitable according to current research. Habitat availability, human-caused mortality, and habitat fragmentation are all factors identified in influencing hybridisation. The likelihood of impacts is magnified in small, isolated, or declining populations. The initial reintroduction phase can increase the vulnerability of animals to hybridisation as animals disperse at low population densities. Release design needs expert consideration to support the formation of a healthy wildcat population, whilst minimising contact with unneutered domestic cats.

Extensively managed farmland and small field networks have been identified as suitable habitat for wildcats. However, farmland is where wildcats are more likely to encounter domestic cats. Identifying unneutered cats in release areas is a key priority. Farm cats have been identified as a source of unneutered cats. Farmers and land managers have indicated willingness to engage with a future programme to reduce the risk presented by unneutered cats through high welfare veterinary and vaccination interventions. The project will continue to develop relationships with farmers, supported by cat welfare organisations and vets to manage the risk of hybridisation.

The identification of release sites was outside the scope of this study, however suitable habitat was mapped in high resolution. This can be interrogated to identify priority release areas/sites. The optimum landscape is one which meets the ecological needs of wildcats and where risks to the released animals are minimised. Social, environmental and economic factors will all need to be considered with community support recognised as being essential for success.

The independent social feasibility study carried out by the University of Exeter demonstrates that public support for a wildcat reintroduction could be high, although a minority have concerns. The research team have confirmed that a wildcat reintroduction is a socially feasible prospect if issues raised within their report are addressed.

Conservation fatigue, the belief that the ecosystem is no longer able to support wildcats, or concerns about introducing another predator to Devon have been suggested as factors which may reduce levels of support for wildcat reintroduction. Any future programme will need to address any concerns which are raised and co-develop solutions. In addition, we have identified the need to work alongside all key stakeholders and the public to increase our collective understanding of the critical role a diverse guild of predators play in a vibrant and healthy ecosystem.

Sourcing the animals for release which are most likely to thrive is an important but potentially complex consideration. It is recommended that further work is needed to assess where wildcats for release in England are sourced. Working with species experts will be essential.

The England Wildcat Disease Risk Assessment (DRA) developed alongside this feasibility has been designed to underpin any English wildcat reintroduction. Any wildcat reintroduction within England can use it to develop individual DRA-project management plan to ensure local conditions are evaluated and risks mitigated. Veterinarian and expert support will be essential in this process.

Much can be learnt from the landmark reinforcement work led by the Saving Wildcat team in Scotland. Already it has shown that captive bred animals can be successfully released. Further valuable lessons will be gained over the next couple of years as the project develops. Projects in England and Wales are also progressing their feasibility phases. It is essential that all projects continue to collaborate, and share knowledge, skills and evidence, in recognition that we are pioneers in this field.

Wildcats are the UK's rarest mammal; their loss was the result of human persecution. Without further human intervention wildcats have no realistic prospect of

recolonising England and their status in the UK hangs in the balance. Attitudes towards wildlife have changed and reintroduction of other species have been met with overwhelming levels of support. The woodland cover now supported in England is far greater now than it was when they became extinct. It is therefore imperative that the feasibility of reintroduction and subsequent project development is pursued diligently with the communities which may share their landscapes with wildcats for generations to come.

No reintroduction is without risk. However, a comprehensive plan in a suitable area, with an appropriate source population and with long term community support could bring back a charismatic species from the brink of extinction; whilst also acting as a catalyst for large scale nature recovery.

This feasibility programme has considered all aspects of a wildcat reintroduction as set out within IUCN and Natural England Reintroduction Guidelines. It has significantly advanced our knowledge base around the steps needed to return the species to Southwest England. Our recommendation is that funding is sought to embark on a Development Phase for Southwest England prior to a commitment to reintroduce wildcats.

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Appendices

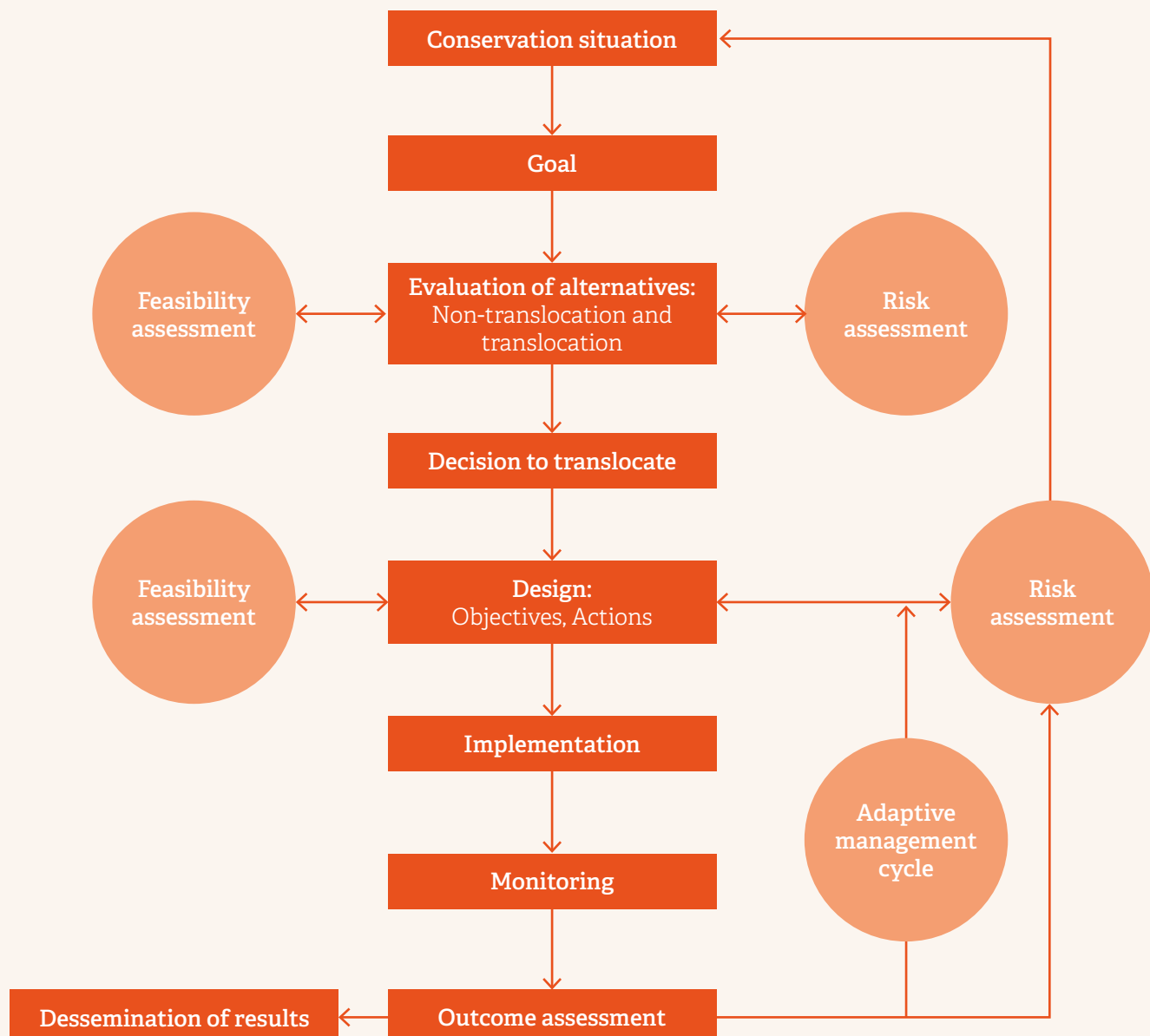
Appendix 1: Guiding principles for the Feasibility Project

Translocation is the overarching term to describe *the human-mediated movement of living organisms from one area, with release in another*. Reintroduction is defined as the *intentional movement and release of an organism inside its indigenous range from which it has disappeared*. Wildcats being re-established in Southwest England would therefore be considered a **reintroduction**.

Reintroductions are increasingly used as a conservation tool; however it should not be considered as an easy option and should be a last resort when other strategies have not or cannot work.

To help ensure that such programmes are given the best chance of success, Guidelines for Reintroductions and Other Conservation Translocations (IUCN 2013) have been developed. Figure 1 demonstrates the standard stages of conservation translocation project development.

✔ **Figure 1:** IUCN reintroduction process guidance



For a project to proceed there should be strong evidence that the threat(s) that caused any previous extinction have been correctly identified and removed or sufficiently reduced. An assessment of the potential benefits and possible negative impacts, covering ecological, social and economic aspects must be completed. The reintroduction risk analysis should be proportional, and this should be balanced against the scale of expected benefits when determining if a reintroduction should take place.

A species reintroduction release area should:

- Meet all the species' biotic and abiotic requirements,
- Be appropriate habitat for the life stage released and all

life stages of the species, be adequate for all seasonal habitat needs,

- Be large enough to meet the required conservation benefit,
- Have adequate connectivity to suitable habitat if that habitat is fragmented,
- Be adequately isolated from suboptimal or non-habitat areas which might be sink areas for the population.

The table below provides further details on aspects of planning, design and implementation that should be considered if a reintroduction is to move to the development stage.

Planning a translocation		Goals, objectives and actions Monitoring programme design Exit strategy
Feasibility and design	Biological feasibility • Background biological and ecological knowledge • Models, precedents for same/similar species • Habitat • Climate requirements • Founders, genetic considerations • Disease and parasite considerations Social feasibility Regulatory compliance Resource availability	
Risk assessment	Assessing the risk landscape Risks to the source population The ecological consequences of translocation Disease risk Associated invasion risk Gene escape, interspecific hybridisation Socio-economic risks Financial risks	
Release and implementation	Selecting release sites and areas Release strategy	
Monitoring and continuing management	Survey/monitoring before release Monitoring after release Continuing population management	
Dissemination of Project outcome	Why, how, outcomes	

Appendix 2: Cat Family Tree and Where Wildcats Sit Within It

✓ Family Felidae (Cats) Taxonomy as described in: Illustrated Checklist of the Mammals of the World. Vol 2 Burgin C., Wilson D. E, Mittermeier R.A., Rylands A.B., Lacher T.E., & Sechrest W. 2020. Lynx

Recognised sub species are shown in brackets.

Sub Family: Pantherinae (Roaring cats)		Sub Family: Felinae (Purring cats)	
Genus: Panthera Jaguar <i>P. onca</i> Leopard <i>P. pardus</i> (8) Lion <i>P. leo</i> (2) Tiger <i>P. tigris</i> (2) Snow leopard <i>P. uncia</i> (2) Genus: Neofelis Indochinese clouded leopard <i>N. nebulosa</i> Diards clouded leopard <i>N. diardo</i> (2)	Genus: Pardofelis Marbled cat <i>P. marmoratan</i> (2) Genus: Catopuma Bay cat <i>C. badia</i> Asian Golden cat <i>C. temminckii</i> (2) Genus: Caracal African golden cat <i>C. aurata</i> (2) Caracal <i>C. caracal</i> (3) Genus: Leptailurus Serval <i>L. serval</i> (3) Margay <i>L. wiedii</i> (3) Ocelot <i>L. pardalis</i> (2) Andean mountain cat <i>L. jacobita</i> Central Chilean colocolo <i>L. colocolo</i> Southern colocolo <i>L. pajeros</i> Brazilian colocolo <i>L. braccatus</i> Northern colocolo <i>L. garleppi</i> Munoz's colocolo <i>L. munoz</i> Northern oncilla <i>L. tigrinus</i> (2) Eastern oncilla <i>L. emiliae</i> Southern oncilla <i>L. guttulus</i> Kodkod <i>L. guigna</i> (2) Geoffroy's cat <i>L. geoffroyi</i>	Genus: Lynx Bobcat <i>L. rufus</i> (4) Canadian Lynx <i>L. canadensis</i> Eurasian lynx <i>L. lynx</i> (6) Iberian lynx <i>L. pardinus</i> Genus: Acinonyx Cheetah <i>A. jubatus</i> (4) Genus: Puma Puma <i>P. concolor</i> (2) Genus: Herpailurus Jaguarundi <i>H. jaguarundi</i> Genus: Otocolobus Pallas's cat <i>O. manual</i> (2) Genus: Prionailurus Rusty spotted cat <i>P. rubiginosus</i> (3) Flat headed cat <i>P. planiceps</i> Fishing cat <i>P. viverrinus</i> (2) Common leopard cat <i>P. bengalensis</i> (2) Sudanese leopard cat <i>P. javanensis</i> (2)	Genus: Felis Jungle cat <i>F. chaus</i> (3) Black-footed cat <i>F. nigripes</i> Sand cat <i>F. margarita</i> (2) Chinese mountain cat <i>F. bieti</i> African wildcat <i>F. Lybica</i> (3) (Domestic cat <i>F. catus</i>) European wildcat <i>F. silvestris</i> (2)

Appendix 3: Wildcat European Protected Species Legislation

With regards European wildcat it is an offence to:

1. Deliberately or recklessly:

- Capture, injure or kill any wild animal of a European protected species;
- Harass such an animal or group of animals;
- Disturb such an animal while it is rearing or otherwise caring for its young;
- Obstruct access to a breeding site or resting place, or otherwise deny the animal use of the breeding site or resting place;
- Disturb such an animal while it is occupying a structure or place used for shelter or protection;
- Disturb such an animal in a manner that is, or in circumstances which are, likely to significantly affect the local distribution or abundance of the species to which it belongs; or
- Disturb such an animal in a manner that is, or in circumstances which are, likely to impair its ability to survive, breed or reproduce, or rear or otherwise care for its young.
- Disturb such an animal whilst migrating or hibernating

2. It is an offence to damage or destroy a breeding site or resting place (note that this applies regardless of whether or not the damage or destruction was carried out deliberately or recklessly).

3. Possess or control, transport, sell or exchange, or offer for sale or exchange, any live or dead animal or plant European Protected Species which has been taken from the wild, or any part of, or anything derived from such an animal or plant.

These offences apply to all stages of the animal's life.

Appendix 4: Wildcats Species Distribution Model methodology

Below is a summary of the methodology used to produce the species distribution models for potential Wildcat reintroduction sites. The methodology is adapted from the methods used in Thomas Dando's PhD *Social and ecological feasibility of a European wildcat *Felis silvestris* reintroduction*, with some minor alterations based on feedback from species experts.

Summary: Woodlands were selected from both the National Forest Inventory 2023 and the CEH Landcover raster 10m resolution 2023 for the sake of comparison. All broadleaved or mixed woodlands were buffered by 50m and then dissolved before having the 50m buffer removed in order to close gaps that prevented woodlands being read as contiguous in QGIS. Woodland sites with 2.7km² of broadleaved or mixed woodland habitat more than 200m from major roads (>30,000 vehicles per day) and access to a water source were then separated and brought forward as potential 'forest cores' for wildcat release.

Urban land use areas from the CEH Landcover rasters had a variable buffer based on size applied and forest cores were altered to remove areas overlapping with the buffered urban areas. Any forest cores dropping below 2.7km² in size were then removed from further consideration.

The remaining cores had three buffers applied: 1km, 3.5km, and 5km. Where the buffered area of these forest cores intersected with the 200m exclusion area around a major road, the buffered area was clipped to the edge of the road exclusion area. UKCEH Land use data was then clipped to each of these buffered areas to map the potential habitat within the area.

Each of these land use maps around the buffered areas was then analysed using a R script to produce percentages of the land use types present around each buffer. These were then compared to the following criteria: Broadleaved woodland comprises more than 13% of the total area, Urban land use comprised less than 5% of the total area, and suitable habitat comprises more than 26% of the total area. Suitable habitat was defined as any grassland type, heathland, and coniferous woodland. The largest buffered area for each forest core that met these criteria was taken as a "valid core". Where buffered areas around valid cores overlapped, the areas were merged, and the same process was repeated for all cores forming a joined network.

The individual cores and networks that came out as valid were then overlaid with various datasets that represent potential threats or opportunities for Wildcat populations within the network.

Methodology: W1 land use code polygons were selected from the UKCEH Landcover raster 10m resolution 2023, as well as all broadleaved and mixed broadleaved woodlands from the National Forest Inventory 2021 dataset. These were then buffered by 50m in QGIS and dissolved in order to remove gaps and breaks in geometry to form contiguous woodland parcels. The woodlands were then buffered by negative 50m to remove the buffer in areas where gaps had not been closed. The field calculator tool was then used to calculate the area of each woodland parcel in km². Woodlands with a total size of 2.7km² were retained as potential Forest Cores.

Given that wildcats are averse to human contact and at risk from high traffic roads, we next created some exclusion zones to remove areas of the forest cores that were unlikely to be utilised by wildcats. To do so, we took u1 urban land use data from the UKCEH landcover rasters and buffered them according to size as follows:

- Large settlements: Area $\geq 1\text{km}^2$ – 900 m buffer
- Small Settlements: Area $> 0.5\text{ km}^2$ and $< 0.999\text{ km}^2$ – 200m buffer
- Farms and outliers: Area $< 0.5\text{ km}^2$ – 50m buffer

Using data from Devon County Council, roads with an average of 30,000 vehicles per day were selected and buffered by 200m. The buffered urban and roads data were then combined and the forest cores were run through the QGIS difference tool to remove sections of woodland that overlapped with the road and urban exclusion areas. The forest cores then had their sizes recalculated and any woods that had dropped below the 2.7km threshold were removed from consideration. At the end of this process, we had two datasets of forest cores, one derived from UKCEH landcover and the other derived from the NFI woodlands. Each woodland in each dataset was then provided with an id number using the row number in the field calculator.

Each forest core was then buffered by 3 distances: 1km, 3.5km, and 5km with each buffer saved to reference the appropriate ID number of the forest core. Where this buffered distance overlapped a road with 30,000 or more vehicles per day. The buffer was cut to match the road exclusion zone to represent the barrier caused by the road feature. The UKCEH Landcover raster was then clipped to each buffer distance for each core and saved with the buffer distance and core id recorded.

The cut landcover rasters were then analysed using R code, which calculated the number of pixels in each raster per land use, and then calculated the percentage of the total number of pixels for each land use type as a

total of the whole. This data was output to individual csv files per buffer distance and core identity. These csv files were then read into another R script, which analyses the percentage cover of each land use type and compares them to the following criteria:

- Broadleaved woodland comprises more than 13% of the total area
- Urban land use comprised less than 5% of the total area
- Suitable habitat comprises more than 26% of the total area.

Suitable habitat was defined as Suitable habitat was defined as any grassland type (g1, g2, g3, g4), heathland (h, h1), and coniferous woodland (w2).

Any buffer zones that met the above criteria were labelled as “valid” cores and separated from “invalid” cores. Any cores with no valid buffers were discarded.

The largest valid core for each forest core was then taken and mapped, where cores overlapped they were merged to form a habitat network. These networks were then run through the above R codes and put through the same validity tests. Where networks were valid, they were retained, when they were not the network was discarded we reverted to the valid individual cores.

Maps with additional datasets were then overlaid to identify potential threats and opportunities for wildcats. The datasets compared are as follows:

- The Roadkill Lab roadkill records
- Devon Wildlife Trust Pine Marten Release zones
- Natural England Gamebird Release Licences 2021
- Animal and Plant Health Agency Domestic Cats per Km²
- Natural England Statutory Protected areas (SSSI, SAC, SPA)
- Devon Revised Ancient Woodland Inventory

- Devon Wildlife Trust Reserves locations
- National Trust Properties Locations
- RSPB Rare ground nesting birds areas
- DBRC Greater Horseshoe Bat Roost Locations
- Defra Countryside Stewardship Schemes

Additionally, an estimated territory capacity for each network was calculated. This was done by taking the area in km² of each buffered area after removing any overlap with the ocean. This value was then divided by 4.63 for females and by 14.79 for males. These figures were derived using the mean territory size described in Bastianelli *et al* (2021)¹ s paper.

¹ Matteo Luca Bastianelli, Joseph Premier, Mathias Herrmann, Stefano Anile, Pedro Monterroso, Tobias Kuemmerle, Carsten F. Dormann, Sabrina Streif, Saskia Jerosch, Malte Götz, Olaf Simon, Marcos Moleón, José María Gil-Sánchez, Zsolt Biró, Jasja Dekker, Analena Severon, Axel Krannich, Karsten Hupe, Estelle Germain, Dominique Pontier, René Janssen, Pablo Ferreras, Francisco Díaz-Ruiz, José María López-Martín, Fermín Urra, Lolita Bizzarri, Elena Bertos-Martín, Markus Dietz, Manfred Trinzen, Elena Ballesteros-Duperón, José Miguel Barea-Azcón, Andrea Sforzi, Marie-Lazarine Pouille, Marco Heurich

Survival and cause-specific mortality of European wildcat (*Felis silvestris*) across Europe

Biological Conservation - Volume 261 (2021)

² Dando, T (2024). Social and ecological feasibility of a European wildcat *Felis silvestris* reintroduction. University of Exeter. PhD Thesis. <https://hdl.handle.net/10871/137175>

³ UKCEH Landcover Raster 2023

Morton, R.D., Marston, C.G., O'Neil, A.W., Rowland, C.S. (2024). Land Cover Map 2023 (10m classified pixels, GB). NERC EDS Environmental Information Data Centre. (Dataset). <https://doi.org/10.5285/7727ce7d-531e-4d77-b756-5cc59ff016bd>

⁴ National Forest Inventory - © Forestry Commission copyright and/or database right 2023. All rights reserved.

⁵ Attribution statement: © Natural England copyright. Contains Ordnance Survey data © Crown copyright and database right 2024.

Adam Falconer
DBRC
September 2023

Appendix 5: List of SW England European Protected sites assessed as part of this study

Information taken from <https://designatedsites.naturalengland.org.uk/> (accessed March 2025).

European Designation	Qualifying feature	Relevant Supplementary Advice on conservation objectives - Targets	Impact of wildcat reintroduction
Blackstone Point SAC	S11441 Shore dock, <i>Rumex rupestris</i>		N/A
Breney Common and Goss & Tregoss Moors SAC	H4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> H4030 European dry heaths H7140 Transition mires and quaking bogs S1065 Marsh fritillary butterfly Euphydryas (Eurodryas, Hypodryas) aurinia		Suitable habitat, wildcat unlikely to negatively affect qualifying habitat features. Wildcat will eat invertebrates but no evidence of negative population level impacts on any butterflies found in widespread literature review
Bristol Channel Approaches/ Dynesfeydd Mor Hafren SAC	S1351 Harbour porpoise <i>Phocoena Phocoena</i>		N/A
Carrine Common SAC	H4020 Temperate Atlantic wet heaths with <i>Erica ciliaris</i> and <i>Erica tetralix</i>		Potentially suitable habitat but no woodland, no evidence that wildcat will negatively affect qualifying habitat features.
Crowdy Marsh SAC	H7140 Transition mires and quaking bogs		Not suitable habitat
Culm Grassland SAC	H4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> ; H6410 Molinia meadows on calcareous, peat or clay-silt soil; S1065 Marsh fritillary, <i>Eurodryas aurinia</i>	Restore the open character of the feature H4010, with a typically scattered and low cover of trees and scrub (less than 10% cover)	Potentially suitable for wildcats but open sites less attractive. Unlikely to be significant. Wildcat will eat invertebrates but no evidence of negative population level impacts on any butterflies found in widespread literature review
Dartmoor SAC	H4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> H4030 European dry heaths H7130 Blanket bog H91A0 Old sessile oak woods with Ilex and Blechnum in the UK S1044 Southern damselfly, <i>Coenagrion mercuriale</i> S1106 Atlantic salmon, <i>Salmo salar</i> S1355 Otter, <i>Lutra lutra</i>	Ensure invasive and introduced nonnative species are either rare or absent, but if present are causing minimal damage to the H91A0 feature.	Majority of site which is made up of open moorland is unlikely to be attractive to wildcats. Woodland habitats very suitable. Potential positive impact as wildcats will prey on grey squirrels an invasive species. No evidence that wildcat have an impact on qualifying species listed.

European Designation	Qualifying feature	Relevant Supplementary Advice on conservation objectives - Targets	Impact of wildcat reintroduction
Dawlish Warren SAC	H2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('White dunes') H2130 Fixed dunes with herbaceous vegetation ('Grey dunes') H2190 Humid dune slacks S1395 Petalwort, <i>Petalophyllum ralfsii</i>		Site not likely to be attractive to wildcats. High numbers of people use site or adjacent.
East Devon Heaths SPA	A224 European nightjar, <i>Caprimulgus europaeus</i> (Breeding) A302 Dartford warbler, <i>Sylvia undata</i> (Breeding)	Restrict the predation and disturbance of breeding Nightjar caused by native and non-native predators. Restrict the predation and disturbance of breeding Dartford Warbler caused by native and non-native predators.	Site could be attractive to wildcats. Unlikely to impact qualifying species. No evidence that wildcat have an impact on breeding nightjar or Dartford warbler populations from literature review. Nightjars breed on the ground but little evidence that wildcats specifically target nesting birds.
East Devon Heaths SPA	4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 1044 Southern damselfly		Suitable habitat, wildcat unlikely to negatively affect qualifying habitat features. Unlikely to be significant. Wildcat will eat invertebrates but no evidence of negative population level impacts on any butterflies found in widespread literature review.
Exe Estuary SPA	Avocet, <i>Recurvirostra avosetta</i> - A132-A, nb Black-tailed godwit, <i>Limosa limosa islandica</i> - A616, nb Dark-bellied Brent goose, <i>Branta bernicla bernicla</i> - A675, nb Dunlin, <i>Calidris alpina alpina</i> - A672, nb Grey plover, <i>Pluvialis squatarola</i> - A141, nb Oystercatcher, <i>Haematopus ostralegus</i> - A130, nb Slavonian grebe, <i>Podiceps auritus</i> - A007, nb Waterbird assemblage		Negligible impact, site not likely to be attractive to wildcats. The estuary feeding habitat utilized by non-breeding wintering birds is unlikely to be used by wildcats. Birds at high tide roosts may attract predators such as wildcat but they tend to avoid open areas, so predation is unlikely.
Exe Estuary Ramsar	Dark-bellied brent goose, <i>Branta bernicla</i> - Wintering Waterbird assemblage - Wintering		As above

European Designation	Qualifying feature	Relevant Supplementary Advice on conservation objectives - Targets	Impact of wildcat reintroduction
Exmoor and Quantocks SAC	H91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the UK H91E0 Alluvial woods with <i>A. glutinosa</i>, <i>F. excelsior</i> S1308 Barbastelle bat, <i>Barbastella barbastellus</i> S1323 Bechstein's bat, <i>Myotis bechsteini</i> S1355 Otter, <i>Lutra lutra</i>	Maintain or restore the abundance of the species listed below to enable each of them to be a viable component of the Annex 1 habitat H91A0 & H91E0: Breeding woodland birds including particularly strong populations of pied flycatcher <i>Ficedula hypoleuca</i>, wood warbler <i>Phylloscopus sibilatrix</i> and redstart <i>Phoenicurus phoenicurus</i> together with the rarer Lesser Spotted woodpecker <i>Dryobates minor</i>. H91A0 & H91E0: Ensure invasive and introduced nonnative species are either rare or absent, but if present are causing minimal damage to the feature.	Site likely to be attractive to wildcats. Suitable habitats, wildcat unlikely to negatively affect qualifying habitat features. No evidence of wildcat having population scale impacts on any woodland bird populations in extensive literature search. Summer migrants will be present at a time when there are other food sources available. Wildcats likely to prey on bird species that forage low down or on ground such as black birds, robins and wood pigeons. Potential positive impact as wildcats will prey on grey squirrels an invasive species. Potential positive impact as wildcats will prey on grey squirrels an invasive species. No evidence of bats being a prey species for wildcats in extensive literature review. No evidence of otters being negatively impacted by wildcats in extensive literature review.
Exmoor Heaths SAC	H1230 Vegetated sea cliffs of the Atlantic and Baltic coasts H4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> H4030 European dry heaths H7130 Blanket bog H7230 Alkaline fens H91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the UK	Cliffs: Assemblage of breeding seabirds including Guillemot <i>Uria aalge</i> and Razorbill <i>Alca torda</i> but also Fulmar <i>Fulmarus glacialis</i> and Herring Gull <i>Larus argentatus</i> (previously Kittiwake <i>Rissa tridactyla</i> but not present in last 7-10 years) Maintain the abundance of the species listed below to enable each of them to be a viable component of the Annex 1 habitats H4010 & H4030: Assemblage of moorland breeding birds. Maintain the open character of the H4010 & H4030 features, with a typically scattered and low cover of trees and scrub (<20% cover) Maintain the abundance of the species listed below to enable each of them to be a viable component of the Annex 1 habitat: Assemblage of breeding woodland birds including strong populations of pied flycatcher <i>Ficedula hypoleuca</i>, wood warbler, <i>Phylloscopus sibilatrix</i> and redstart <i>Phoenicurus phoenicurus</i>. Barbastelle bat (feeding), Otter <i>Lutra lutra</i> (feeding, shelter and breeding)	Site likely to be attractive to wildcats, open areas less suitable. Wildcat unlikely to negatively affect qualifying habitat features. No evidence found of wildcat having population scale impacts on seabirds. No species are listed in the supplementary advice. No evidence of wildcat having population scale impacts on any moorland bird populations in extensive literature search. Summer visitors will be present at a time when there are other food sources available. Wildcats likely to prey on bird species that forage low down or on ground such as black birds, robins and wood pigeons. Open habitats with little cover are less attractive to wildcats. No evidence of wildcat having population scale impacts on any woodland bird populations in extensive literature search. Summer visitors will be present at a time when there are other food sources available. Wildcats likely to prey on bird species that forage low down or on ground such as black birds, robins and wood pigeons. No evidence of bats being a prey species for wildcats in extensive literature. No evidence of otters being negatively impacted by wildcats in extensive literature review.

European Designation	Qualifying feature	Relevant Supplementary Advice on conservation objectives - Targets	Impact of wildcat reintroduction
Fal & Helford SAC	1110 Sandbanks which are slightly covered by sea water all the time 1140 Mudflats and sandflats not covered by seawater at low tide 1160 Large shallow inlets and bays 1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) 1130 Estuaries 1170 Reefs 1441 Shore dock <i>Rumex rupestris</i>		N/A
Falmouth Bay to St Austell Bay SPA	Black-throated diver Great northern diver Slavonian grebe		N/A
Hestercombe House SAC	S1303 Lesser horseshoe bat, <i>Rhinolophus hipposideros</i>		Unlikely to be suitable. No evidence of bats being a prey species for wildcats in extensive literature review. In addition, location of roost in attics of house make predation from wildcats unlikely. Mitigations in place for other terrestrial predators likely to further deter wildcats.
Holm Moor and Clean Moor SAC	H6410 Molinia meadows on calcareous, peat or clay-silt soil H7210 Calcareous fens with <i>C. mariscus</i> and species of <i>C. davallianae</i> H7230 Alkaline fens		Potentially suitable habitat, wildcat unlikely to negatively affect qualifying habitat features.
Phoenix United Mine & Crow's Nest SAC	H6130 Calaminarian grasslands of the <i>Violetalia calaminariae</i>		Potentially suitable site. Wildcats unlikely to negatively affect qualifying habitat or species features.
Plymouth Sound and Estuaries SAC	H1110 Sandbanks which are slightly covered by sea water all the time H1130 Estuaries H1140 Mudflats and sandflats not covered by seawater at low tide H1160 Large shallow inlets and bays H1170 Reefs H1330 Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) S1102 Allis shad, <i>Alosa alosa</i> S1441 Shore dock, <i>Rumex rupestris</i>		N/A

European Designation	Qualifying feature	Relevant Supplementary Advice on conservation objectives - Targets	Impact of wildcat reintroduction
Polruan to Polperro SAC	1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts 4030 European dry heaths 1441 Shore dock <i>Rumex rupestris</i>		Potentially suitable site. Wildcats unlikely to negatively affect qualifying habitat or species features.
Quants SAC	1065 Marsh fritillary butterfly <i>Euphydryas (Eurodryas, Hypodryas) aurinia</i>		Potentially suitable site. Wildcats unlikely to negatively affect qualifying species features.
South Dartmoor Woods SAC	H4030 European dry heaths H91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the UK	Maintain the abundance of the species listed to enable each of them to be a viable component of the Annex I habitat feature H91A0: Assemblage of breeding woodland birds; including pied flycatcher <i>Ficedula hypoleuca</i> , wood warbler <i>Phylloscopus sibilatrix</i> , redstart <i>Phoenicurus phoenicurus</i> . High brown fritillary butterfly, Pearl-bordered fritillary butterfly, Small pearl-bordered fritillary butterfly. Ensure invasive and introduced nonnative species are either rare or absent, but if present are causing minimal damage to the feature.	Suitable wildcat habitat, open moorland habitats less attractive. Wildcats unlikely to negatively affect qualifying habitat or species features. No evidence of wildcat having population scale impacts on any woodland bird populations in extensive literature search. Summer visitors will be present at a time when there are other food sources available. Wildcats likely to prey on bird species that forage low down or on ground such as black birds, robins and wood pigeons. Potential positive impact as wildcats will prey on grey squirrels an invasive species.
South Hams SAC	H1230 Vegetated sea cliffs of the Atlantic and Baltic coasts H4030 European dry heaths H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco-Brometalia</i>), (note that this includes the priority feature "important orchid rich sites") H8310 Caves not open to the public H9180 Tilio-Acerion forests of slopes, screes and ravines S1304 Greater horseshoe bat, <i>Rhinolophus ferrumequinum</i>		Site not likely to be attractive to wildcats. High numbers of people use site or adjacent. No evidence of bats being a prey species for wildcats in extensive literature review. Mitigations to prevent terrestrial predation will prevent wildcat access.
Sidmouth to West Bay SAC	1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts 9180 Tilio-Acerion forests of slopes, screes and ravines 1210 Annual vegetation of drift lines		Site unlikely to be attractive to wildcats.
River Axe SAC	3260 Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation		Potentially suitable site. Wildcats unlikely to negatively affect qualifying habitat or species features.

European Designation	Qualifying feature	Relevant Supplementary Advice on conservation objectives - Targets	Impact of wildcat reintroduction
River Camel SAC	H4030 European dry heaths H91A0 Old sessile oak woods with Ilex and Blechnum in the UK H91E0 Alluvial woods with <i>A. glutinosa</i>, <i>F. excelsior</i> S1106 Atlantic salmon, <i>Salmo salar</i> S1163 Bullhead, <i>Cottus gobio</i> S1355 Otter, <i>Lutra lutra</i>	H91A0 & H91E0: Ensure invasive and introduced nonnative species are either rare or absent, but if present are causing minimal damage to the feature.	Potentially suitable site. Wildcats unlikely to negatively affect qualifying habitat or species features. Potential positive impact as wildcats will prey on grey squirrels an invasive species.
The Lizard SAC	1230 Vegetated sea cliffs of the Atlantic and Baltic Coasts 3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara spp.</i> 3170 Mediterranean temporary ponds 4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> 4030 European dry heaths 4040 Dry Atlantic coastal heaths with <i>Erica vagans</i>		Site unlikely to be attractive to wildcats.
Tintagel-Marsland-Clovelly Coast SAC	H1230 Vegetated sea cliffs of the Atlantic and Baltic coasts H4030 European dry heaths H91A0 Old sessile oak woods with Ilex and Blechnum in the UK	H91A0: Ensure invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the feature	Potentially suitable site. Wildcats unlikely to negatively impact qualifying habitat or species features. Potential positive impact as wildcats will prey on grey squirrels an invasive species.
Tamar Estuaries Complex SPA	Avocet, <i>Recurvirostra avosetta</i> - A132-A, nb Little egret, <i>Egretta garzetta</i> - A026, nb		N/A

Appendix 6: Hazards identified from England DRA

Hazard			UK Status				Risk Assessment			Who is at risk						Further information
Disease	Agent	Reported in European wildcats	*Zoonosis infectious disease	Notifiable Disease in UK	Disease not currently in UK	Widespread in domestic cats in UK	Risk rating	Rating after mitigation	Mitigations advised	Public Health	People working with wildcats	Individual Wildcat	Livestock, pets or wildlife	Released wildcat population	Captive breeding programme	
VIRAL																
Aujeszky's disease (pseudorabies)	Suid herpesvirus 1			x	x		Low	Low	Yes			x				Wildcats would be a deadend host and not a source of infection.
Avian influenza	Influenza A virus		x				High	Medium	Yes		x	x	x	x	x	Highly unlikely disease would be introduced by wildcats.
Bluetongue	Bluetongue virus			x			Low	Low	Yes			x				Wildcats are unlikely to be a source of infection.
COVID	SARS-Coronavirus (CoV-2)	x	x				Medium	Low	Yes		x					No clinical signs have been recorded in wildcats.
Cowpox	Orthopoxvirus		x				Medium	Low	Yes		x		x			No evidence of disease in wildcats but cats.
Feline Calicivirus (FCV)	Feline Calicivirus	x				x	High	Medium	Yes						x	Common and highly contagious disease. Particular risk for facilities housing many cats.
Feline gammaherpesvirus	Felis catus gammaherpesvirus 1 (FcaGHV1)					x	Low	Low	No							Not associated with any disease in cats.
Feline Immunodeficiency Virus (FIV)	Feline Immunodeficiency Virus	x				x	High	Medium	Yes			x	x	x	x	Cats may be infected but be asymptomatic. Immunosuppression.
Feline infectious peritonitis (FIP) and Feline enteric coronavirus (FECV)	Feline coronavirus (FCoV)	x				x	High	Medium	Yes			x	x			Only a small number of domestic cats are infected.
Feline leukaemia virus (FeLV)	Feline leukaemia virus	x				x	High	Medium	Yes			x	x			Infected cats have a decreased life expectancy.
Feline panleukopenia (Feline parvovirus, feline infectious enteritis)	Feline panleukopenia virus (Carnivore protoparvovirus 1)	x				x	High	Medium				x	x	x	x	Highly contagious and resistant to many disinfectants. Already vaccinated wildcats should be protected.
Feline Rotavirus	Rotavirus		x			x	Low	Low	Yes		x	x				Minor role in clinical disease in cats & dogs.
Feline spongiform encephalopathy	Pathogenic prion protein (PrP ^{Sc})			BSE			Low	Low	Yes			x	x			Rare worldwide, need to ingest bovine protein. Negligible risk.
Feline syncytial virus	Feline foamy virus (FeFV or FFV)					x	Low	Low	No							Not associated with clinically significant disease.
Feline viral papillomatosis	Papillomavirus					x	Low	Low	Yes							Not associated with clinically significant disease.
Feline viral rhinotracheitis (FVR) (Feline Herpes Virus (FHV))	Felid alphaherpesvirus 1	x					High	Medium	Yes			x	x		x	Particular risk in breeding facilities because they will remain carriers.
Rabies	Rabies virus (lyssavirus)	x	x	x	x		High	Low	Yes (if animal is from outside UK)	x	x	x	x	x	x	Once symptoms of disease manifest, infection is fatal. Rabid animals are only source of infection.
Stagging disease	Borna disease virus 1 (BoDV-1) and Rustrela virus (RusV)						Low	Low	None identified							Rare in domestic cats despite widespread in wildcats.
West Nile Virus	West Nile Virus		x	x	x		Low	Low	Yes (if animal is from outside UK)	x						Infected cats not a direct source of infection. Signs in cats.
BACTERIAL																
Anthrax	<i>Bacillus anthracis</i>		x	x			Low	Low	None identified			x				Outbreaks rare. Noncontagious zoonotic disease. Wildcats unlikely to be source of infection.
Bordetella	<i>Bordetella bronchiseptica</i>	x	x			x	Medium	Low			x				x	Transfer of infection to human is rare.
Brucellosis	<i>Brucella abortus</i> , <i>B. mellitensis</i> , <i>B. suis</i> , <i>B. canis</i>		x	x			Low	Low	Yes	x		x	x			Infection through contact with an infected animal or byproducts. Small risk of infected wildcats to livestock.
Campylobacteriosis	<i>Campylobacter jejuni</i> and other <i>Campylobacter</i> spp.		x				Medium	Low	Yes		x	x				Usually self limiting infection. Widespread in domestic cats and common in raw chicken.

	Recommended Mitigations from English Wildcat Disease Risk Assessment														
Information	Quarantine	Diet Management	**Biosecurity - husbandry, PPE etc	Disease Screening of wildcats	Vaccination of wildcats	Domestic cat management	Release site selection to reduce overlap with dom cats	Mosquito control at holding facilities in Europe	Health/behaviour screening	Avoid contact with Immunocompromised humans	Parasite treatment/ control	Additional risk assessment for those pregnant and working with wildcats or domestic cats.	People testing positive for Covid should not work with wildcats	Follow legal requirements of animal importations from Europe	Infected wildcats should be excluded from captive breeding programme
and pose no risk of spreading infection	x	x (before importation)												x	
roduced by wildcat releases.			x												
f disease for livestock		x												x	
n wildcats			x										x		
t causes mild symptoms in domestic			x												
se in domestic and wild cats. A any cats.			x	x	x										
ts															
omatic alternatively they can develop				x		x									x
go on to develop fatal symptoms				x		x									x
expectancy			x	x	x	x	x								x
ny chemical disinfectants. Only brought to captive facilities				x	x	x	x								
humans			x												
e meat contaminated by BSE,		x												x	
nt disease in cats															
nt disease in cats				x											
cause of risk to kittens, Infected cats				x	x										
it is untreatable and invariably results ce of virus.	x				x									x	
read presence in rodents									x						
fection for humans. Minimal clinical								x						x	
otic disease, rarely reported in felids. ection														x	
. In kittens infection can be severe.			x		x only in event of outbreak										
ected animal or its tissues or raw dcat passing infection to human or									x					x	
read in domestic & wild animals in UK			x												

Capnocytophaga	<i>Capnocytophaga canimorsus</i> and <i>C. cynodegmi</i>		x			x	Low	Low	Yes		x					Normal oral flora in cats
Chlamydia	<i>Chlamydomphila felis</i>	x				x	Medium	Low	Yes			x				Cats under 9 months more affected at breeding facilities
Clostridium enteritis	<i>Clostridium perfringens</i> , <i>C. difficile</i>		x				Low	Low	Yes		x	x				
Corynebacterium	<i>Corynebacterium felinum</i>	x					Low	Low	Yes		x	x				Only a single case within a Scottish wildcat
Feline bartonellosis	<i>Bartonella henselae</i>	x	x			x	Medium	Low	Yes		x	x				Fleas are the main vector. Most infect cats but some can develop heart disease (CSD) in people. This can become fatal
Feline infectious anaemia	<i>Mycoplasma haemofelis</i> , <i>M. haemominutum</i> , and <i>M. turicensis</i>	x				x	Low	Low	Yes			x				Can result in disease, especially in immunocompromised cats or concurrent disease
Feline respiratory Mycoplasma	<i>Mycoplasma felis</i>					x	Low	Low	Yes						x	Mycoplasma may be normal respiratory disease in captive cats. No v
Haemophilus felis	<i>Haemophilus felis</i>					x	Low	Low	No							Rarely causes disease
Helicobacter	<i>Helicobacter felis</i> , <i>H. heilmanni</i> , and other <i>Helicobacter</i> spp.	x	x			x	High	Medium	Yes		x					There have been increased rates of m Helicobacter infections in humans. He potentially zoonotic as they have bee
Leptospirosis	<i>Leptospira</i> spp.	x	x			x	Medium	Low			x					Cats usually acquire infection from hu consequence to wildcats in most cases spread infection.
Lyme disease	<i>Borrelia burgdorferi</i> and other <i>Borrelia</i> spp.		x				Medium	Low	Yes		x	x				Ticks on cats could potentially act as for humans
Mycobacterial infection	<i>Mycobacterium tuberculosis</i> complex, including <i>M. bovis</i> , <i>M. microti</i> , and <i>M. avium</i> complex (MAC), and Feline leprosy caused by <i>Mycobacterium lepraemurium</i>		x				Medium	Low	Yes		x	x				Cats seem to be inherently resistant t could cause delay to release program and treatment. Difficulties with diagn required are not viable nor recommen breeding or release and individual inf
Pasteurellosis	<i>Pasteurella Multocida</i>		x			x	Medium	Low	Yes		x					Part of the normal oral and respirator
Plague	<i>Yersinia pestis</i>		x	x			Low	Low	Yes	x						Plague is currently not present in Wes of introduction via imported wildcats
Protothecosis	<i>Prototheca wickerhamii</i> and <i>P. zopfii</i>						Low	Low	No			x				Very rare in cats and does not appear infected cats (could be a risk to huma
Q fever	<i>Coxiella burnetii</i>	x	x			x	Medium	Low	Yes		x					Domestic cats have been implicated a
Salmonellosis	<i>Salmonella</i> spp.		x			x	High	Low	Yes		x					
Streptococcus	<i>Streptococcus canis</i> , <i>S. equi zooepidemicus</i> and other spp.		x			x	Low	Low	Yes		x					Normal flora in oral cavities of cats. T been recorded. No specific vaccinatio
Tetanus	<i>Clostridium tetani</i>		x				Medium	Low	Yes		x	x				Occasionally occur in cats, cases recor scratches.
Tick-bite fever	<i>Anaplasma phagocytophilum</i> , but also other <i>Anaplasma</i> spp., <i>Ehrlichia</i> spp. and <i>Rickettsia</i> spp.	x	x			x	Medium	Low	Yes	x			x			Risk from imported wildcats. Infection and poses a zoonotic risk if introduced mammals.
Tularaemia	<i>Francisella Tularensis</i>		x	x	x		High	Low	Yes			x				Risk from imported wildcats
Tyzzer's disease	<i>Clostridium piliforme</i>		x			x	Low	Low	Yes			x				Cases are rare in cats, stressed kittens immunosuppressive diseases more vul become infected through oral ingestio die within a matter of days.
Yersiniosis	<i>Yersinia enterocolitica</i> and <i>Y. pseudotuberculosis</i>		x				Medium	Low	Yes					x	x	Rodents are the natural reservoirs of cats can also serve as hosts.
FUNGAL																
Adiaspiromycosis	<i>Emmonsia crescens</i>						Low	Low	No			x				Most commonly found in small mam occasionally other species.
Aspergillosis	<i>Aspergillus fumigatus</i> , <i>A. felis</i> ,						Low	Low	No			x				Cats with the disease are not contagi
Cryptococcosis	<i>Cryptococcus neoformans</i> - <i>Cryptococcus gattii</i> species complex						Low	Low	Yes			x				Cats with the disease are not contagi
Encephalitozoonosis	<i>Encephalitozoon cuniculi</i>		x				Low	Low	Yes		x	x				Despite a high prevalence in rodents clinically affected

			x							x					
and vaccinations are recommended in					x (within captive facilities)										
			x							x					
ildcat known.			x												
ted domestic cats show no clinical disease. Causes cat scratch disease al in imunocompromised people.			x							x	x				
munocompromised cats or cats with									x						
ry flora. May exacibate an outbreak of vaccine available			x												
morbidity and mortality associated with helicobacter spp. from cats are n isolated from infected humans.			x							x					
unting rodents.The disease is of little s, but asymptomatic carriers can			x												
q source of infection with Lyme disease											x				
to M. tuberculosis infection. Outbreak me due to difficulties in identification osis as well as prolonged treatment nded in captive wildcat programs for ected would need euthanasia.		x	x						x	x					x
ry tract bacterial flora of cats			x							x					
stern Europe and has a negligible risk Europe.			x								x			x	
t transmissible to humans from ns with compromised immunity).									x						
is a source of infection for humans			x								x				
		x								x					
ransmission to humans from cats has n but core vacs reduce risk			x		(x)					x					
rded in humans due to cat bites or			x		x										
n is not currently present in the UK, d as well as a risk to domestic and wild				x					x		x			x	
			x	x										x	
s or cats with other ulnerable. Animals with the disease on of the bacterial spores and usually			x							x				x	
Yersinia, but other mammals including			x	x						x					
imals and burrowing rodents, but															
ous to humans and other animals															
ous to humans and other animals			x												
and rabbits, only sporadic cats are			x							x					

Ringworm	<i>Microsporium canis</i> and other dermatophyte spp.		x			x	Medium	Low	Yes		x	x	x			Arthrospores may remain infective for long periods, transmitted by direct contact or by faeces to cats, other animal species and humans.
PROTOZOANS																
Babesiosis	<i>Babesia pascalis</i> and <i>B. canis</i>	x					Low	Low	Yes			x	x			Sometimes found in cats including wildcats, but is prevalent in Europe, but is present in the UK. Infection to other animals.
Coccidia	<i>Cystoisospora (Isospora) felis</i> and <i>C. rivolta</i>	x				x	Low	Low	Yes			x			x	Most cats are infected at a young age, but infection is usually mild. High faecal shedding of oocysts of disease, especially in kittens. Could be a risk in captive facilities.
Cryptosporidium	<i>Cryptosporidium felis</i>	x	x				Low	Low	Yes		x	x				Clinical disease in cats is rare, and infections are usually self-limiting. It is potentially zoonotic but rare in humans.
Cytauxzoonosis	<i>Cytauxzoon europaeus</i> , <i>C. otrantorum</i> , and <i>C. banethi</i>	x	x			x	Medium	Low	Yes							Risk from imported wildcats. Release of infected cats could infect domestic cats.
Giardia	<i>Giardia duodenalis</i>	x	x			x	Medium	Low	Yes		x	x				Infected cats may develop diarrhoea with no obvious symptoms. May act as a zoonotic agent to humans.
Hepatozoonosis	<i>Hepatozoon silvestris</i> and <i>H. felis</i>	x				x	Low	Low	Yes							Rarely results in clinical disease in cats.
Leishmaniasis	<i>Leishmania infantum</i>		x				Low	Low	No							Only sporadic feline disease cases have been reported, not present in UK. If infected wildcat, host is essential.
Neospora	<i>Neospora caninum</i>	x					Low	Low	No				x			Widespread in UK. Cats do not appear to be a source of infection. Does not cause disease in humans.
Toxoplasmosis	<i>Toxoplasma gondii</i>	x	x			x	High	Low	Yes		x	x				The cat is essential to the <i>T. gondii</i> life cycle. In hosts they can reproduce sexually. Domestic cats are clinically affected. Risk to humans if immunosuppressed.
Trichomoniasis	<i>Trichomonas foetus</i> and <i>T. blagburni</i>	x				x	High	Low	Yes						x	Clinical signs in cats are usually self-limiting, but sometimes take months to resolve. Rare in wildcats. Strains of the disease are different from those in humans.
ECTOPARASITES																
Demodex otitis externa	<i>Demodex cati</i>					x	Low	Low	Yes			x				Demodex are a normal skin mite living on the skin, already present in the UK. Likely to be a zoonotic agent.
Ear mites	<i>Otodectes cynotis</i>	x				x	Low	Low	Yes			x				The mite does not live in the environment, but between cats for transmission. May cause illness.
Fleas	<i>Ctenocephalides felis</i>	x	x			x	High	Low	Yes		x	x				Can cause severe irritation and fleas can transmit numerous diseases.
Harvest mites	<i>Neotrombicula autumnalis</i>	x	x				Low	Low	Yes			x				Widespread in UK. While harvest mites are not known to infect cats, they likely act as a meaningful source for humans.
Lice	<i>Felicola subrostratus</i>	x					Low	Low	Yes			x				Lice can also carry Feline bartonellosis to humans. Due to the widespread use of flea treatments, parasites such as fleas, lice infections are rare in cats. Transmission occurs by close contact.
Mange	<i>Sarcoptes scabiei</i>	x	x				Low	Low	Yes		x	x				Not common in cats but could pose a risk to humans. Sarcoptic mange has been described in cats.
Red mite	<i>Dermanyssus gallinae</i>						Low	Low	Yes			x				Widespread in UK. Ectoparasite of birds, including mammals and humans. Due to their small size, they build up rapidly and not be noticed. They can transmit infectious diseases in a building. Infection is rare in cats.
Ticks	<i>Ixodes ricinus</i> , <i>I. hexagonus/canisuga</i> , <i>Haemaphysalis erinacei</i> and others	x	x				Medium	Low	Yes	x	x	x	x			Vectors of disease, including infection to humans. Wildcats from Europe.
ENDOPARASITES																
TREMATODES (flukes)																
Biliary fluke	<i>Metorchis bilis</i>	x	x				Low	Low	Yes			x				Definitive hosts are mammals that eat fish in the UK and seems to have minimal impact on wildcats. Most infections appear asymptomatic. An infected wildcat would not act as a definitive host due to the parasite's lifecycle.
Cat liver fluke	<i>Opisthorchis felinus</i>		x			x	High	Low	Yes	x			x			This fluke infects the liver in mammals. Infection range from asymptomatic infection to severe liver disease. Consequences for any individual impact on wildcats are likely to be mild, but inadvertent introduction to UK rivers, snails, and fish and affect domestic animals, and people (if eaten).
Liver fluke	<i>Pseudoamphistomum truncatum</i>						Low	Low	Yes							The infection is already present in the UK, but appears to cause little notable pathology in wildcats. Reported causing notable pathology in humans.

for about a year and are easily omites (surfaces or unanimate objects) nans			x	x					x	x					
ldcats but rarely cause disease. More ticks in the UK. Could be a carrier for				x							x				
, and clinical disease is uncommon and oocysts is associated with clinical signs d lead to environmental contamination			x	x											
ection resolves on its own in almost all rely affects humans			x	x					x	x					
d wildcats could be carriers for				x							x			x	
and weight loss, but many cats show rier of infection to other animals &				x						x					
ts present in wildcats in Europe				x							x				
ve been reported worldwide. Vectors was imported it would be a dead-end															
r to be an important source of cats															
e cycle because Felidae are the only espite a high prevalence, only sporadic mans, mainly in pregnancy or if			x							x		x			
miting in untreated cases but can ecorded in Scottish wildcats. Cat om bovine and porcine strains.			x	x					x						
g in the hair follicles of cats and is e present on wildcats.			x	x					x						
ment and requires direct contact ause irritation rather than clinical									x		x				
are vectors in transmission of											x				
es are zoonotic wildcats would not human infection.									x		x				
s, an infection that can affect cats and of ectoparasitic treatments for other are now rare except in some feral tact.									x		x				
risk of passing on to humans. in a single dead wildcat in Spain			x						x						
ds but can affect a wide range of host to their rapid life cycle numbers can They can act as vectors to spread other station is rare in cats.			x						x		x				
ns not currently in UK. Risk if imported				x					x		x				
at fish raw. Parasite is already present impact, only been reported in wild omatic in wildcats and domestic cats. a direct source for human infection,		x	x	x											
ls, including humans, and signs of ection to severe illness. The orted wildcat that was infected would uction could establish the parasite in ther wildlife such as otters, as well as ng undercooked or raw infected fish)		x		x							x			x	
the UK in otters and rivers in England, thology in otters, and has not been n cats in the UK		x		x											

NEMATODES (roundworms)																
Aelurostrongylus	<i>Aelurostrongylus abstrusus</i>	x					Medium	Low	Yes			x				Drinking water can be a source of infection, but is occasionally fatal in kittens or immature wildcats in Europe, but do not appear to affect overall health of the population
Bladder worm	<i>Capillaria plica</i> and <i>C. feliscati</i>	x					Low	Low	Yes			x				Present in UK cats, rarely cause disease
Capillariasis	<i>Capillaria Aerophila</i> , <i>C. putorii</i> , and other spp	x	x				Medium	Low	Yes		x	x				Present in UK in foxes, causes sporadic cases in wildcats. Introduction of another Capillaria species by importing wildcat from Europe
Cylicospirura	<i>Cylicospirura felineus</i> , <i>C. subaequalis</i> , and <i>C. petrowi</i>	x			x		Medium	Low	Yes			x				Most infections are asymptomatic, but have been reported in felids.
Dirofilaria	<i>Dirofilaria immitis</i>	x	x		x		Medium	Low	Yes		x					Sporadic cases occur in UK on imported cats. Prophylactic treatment for imported cats
Eyeworm	<i>Thelazia callipaeda</i>	x	x		x		High	Low	Yes	x			x			Emerging in Europe and has a high potential to spread in UK, most likely through import of dogs. It may do pose a risk
French heartworm	<i>Angiostrongylus chabaudi</i> and <i>A. vasorum</i>	x			x		High	Low	Yes			x	x			Affects wild and domestic cats in Europe. Imported from Europe
Gastric worms	<i>Ollulanus tricuspis</i>					x	Medium	Low	Yes			x				Infects domestic cats and wild felids, but is not common in the UK and is present in UK & Europe.
Giant kidney worm	<i>Diocotophyma renale</i>						Low	Low	Yes			x				The parasite is found worldwide, but is not common in Europe
Hepatic capillariasis	<i>Capillaria hepatica</i>		x				Medium	Low	Yes		x					Infection has been reported occasionally in horses, dogs, and zoo primates. Few have been reported in the UK.
Hookworm	<i>Ancylostoma tubaeforme</i> and <i>Ancylostoma spp.</i>		x			x	Medium	Low	Yes		x					Multiple hookworm species infect cats and dogs. Hookworms are found in cats and red foxes in the UK
Stomach worms	<i>Physaloptera spp.</i>	x					Low	Low	Yes			x				The parasite is found in the UK and is common in Europe
Strongyloides	<i>Strongyloides felis</i> , <i>S. tumefaciens</i> , <i>S. planiceps</i> and <i>S. stercoralis</i>	x				x	High	Low			x	x			x	Can cause severe disease or death in humans
Toxascaris	<i>Toxascaris leonina</i>		x			x	Medium	Low	Yes		x		x		x	Common in domestic cats, particularly in kittens. Asymptomatic but sometimes may result in poor body condition. Infections are occasional in humans
Toxocarasis	<i>Toxocara cati</i>	x	x			x	High	Low	Yes		x		x		x	Common parasites infecting domestic cats. Kittens are most at risk of severe infection. Infection can cause pathology in cats, humans and dogs. Cats are more vulnerable to severe infection.
Trichinosis	<i>Trichinella spiralis</i>						Low	Low	No							Trichinella roundworm infections occur in humans. It is a serious human health concern however it is rare in cats. Cats infected and pose no threat to humans
Troglostrongylus brevior	<i>Troglostrongylus brevior</i>	x			x		High	Low	Yes				x			Common parasites in European wildcats. It may appear to have a serious impact on the population. The disease can occasionally be fatal in kittens. The introduction of the parasite through imported cats could establish the parasite and pose a risk to cats in the UK
Uncinaria stenocephala	<i>Uncinaria stenocephala</i>		x				Medium	Low	Yes		x				x	The hookworm Uncinaria stenocephala is found in cats. Northern hookworm is found in cats, but is not common in kittens more severely but rarely a problem
CESTODES (tapeworms)																
Cysticercosis	<i>Taenia hydatigena</i>						Low	Low	Yes				x			Found in dogs, cats red fox and livestock. It has clinical significance to an individual with a severe allergic reaction. It is a source to impact domestic livestock economically important livestock diseases
Diphyllobothriasis	<i>Diphyllobothrium latum</i>				x		Medium	Low	Yes				x			Should an imported infected cat enter the UK, it could establish a local population, posing a risk to a local waterway, establishing the parasite in the waterway
Echinococcosis	<i>Echinococcus multilocularis</i>	x		x	x		High	Low	Yes	x						Introduction of parasite through imported cats is a significant risk to human health
Flea tapeworm	<i>Dipylidium caninum</i>		x				Low	Low			x					Already present in the UK in domestic cats and dogs
Hydatigera	<i>Hydatigera kamiyai</i>	x					Medium	Low	Yes				x			The tapeworm is already present in the UK. It is an infection in local rodent population
Joyeuxiella	<i>Joyeuxiella pasqualei</i>				x		Medium	Low	Yes				x			There is a risk of the parasite being introduced into the UK from Southern Europe

infection for cats. The disease can be fatal in immunocompromised cats. Common in cats with a serious impact on the				x							x				
se									x		x				
ic disease in domestic cats and <i>Leishmania</i> spp not present through			x	x							x				
ut cases of peritonitis have been									x		x			x	
ed dogs. Cats are imperfect hosts. Screening of cats rather than screening is required.											x			x	
potential to become established in the UK from Europe, but imported wildcats											x			x	
Europe. Could be imported in wildcats				x							x			x	
and occasionally pigs, foxes and dogs,											x				
is rarely reported from domestic cats		x									x				
ally in the UK in wood mice, rats, and human cases have been reported in			x								x				
ts. Widespread in domestic and feral			x						x		x				
very common in free-ranging wildcats									x						
heavily infected kittens									x		x				
y young animals. Most infections are fatal. Result in diarrhoea with mucous or loss of appetite. Occasionally found in people.			x						x		x				
cats as well as European wildcats, and other mammals. Migrating <i>Toxocara</i> larva can be found in other mammals. Children more			x						x	x	x				
ur in all mammals. This is a disease of cats. For wildcats unlikely to be clinically significant if infected.															
cats in mainland Europe but do not pose a health risk to the overall health of the population. The disease is fatal in kittens or immunocompromised cats. Though imported wildcats from Europe pose a health risk to individual domestic				x							x			x	
la, sometimes referred to as the 'cat scratch' disease. Will affect dogs and foxes in UK. Will affect cats and dogs in UK cats.			x								x				
lock in UK. Infection is of minimal concern for domestic cats, but an infected cat could act as a reservoir for wild deer. <i>T. hydatigena</i> is an important parasite									x		x				
for the UK this poses little threat to the domestic cat. Theoretically infect crustaceans and fish in aquaculture									x		x			x	
ported wildcats from Europe poses									x		x			x	
ic and wild carnivores									x		x				
ne UK. Infected wildcat could cause									x		x				
roduced if untreated wildcats were									x		x			x	

Joyeuxiella	<i>Joyeuxiella pasqualei</i>				x		Medium	Low	Yes				x			There is a risk of the parasite being imported from Southern Europe
Mesocestoides	<i>Mesocestoides litteratus</i> and <i>M. vogae</i>	x	x				Medium	Low	Yes			x	x			Already present in UK. A wildcat infection could act as a source of infection for rodents. In the rare case that a wildcat metacystodosis, this could have a severe health, causing emaciation and death
Rabbit tapeworm	<i>Taenia pisiformis</i>						Low	Low	Yes				x			An infected wildcat is unlikely to have a tapeworm. A wildcat could act as a source of infection for rodents
Sparganosis	<i>Spirometra</i> spp.	x	x		x		Low	Low	Yes	x						Single report of infected wildcat. It is likely to be imported from Western European wildcats
Taenia taeniaeformis	<i>Taenia taeniaeformis</i>	x				x	Medium	Low	Yes				x			Parasitic tapeworm, found in the intestine of wildcats. Wildcat could be source of infection for humans
ACANTHOCEPHALA (Thorny-headed worms)																
Acanthocephala	<i>Acanthocephala</i> spp.	x					Low	Low	Yes							Possibly present in UK. Do not appear to be a direct risk to humans. Infected cats do not pose a direct risk to humans

* Infectious disease that has jumped from animals to humans

** Measures to stop the spread or introduction of harmful organisms to human, animal and plant life.

roduced if untreated wildcats were									x		x			x	
ected is unlikely to have any clinical fection for local wild lagomorphs and at suffers from peritoneal vere impact on that cat's welfare and l.									x		x				
e any clinical effects, but an infected ion for local wild lagomorphs and									x		x				
nighly unlikely that even wildcats ould be infected.									x		x			x	
stines of wildcats and domestic cats. for rodents									x		x				
r to cause clinical signs in individuals. k to humans.									x		x				

Risk Identified				Who/What is at Risk								
Non-infectious Hazard	Risk rating	Final rating after mitigations	Are Mitigations advised	Individual Wildcat	Captive breeding population	Released wildcats	Native Wildlife			Stakeholder education & support	Diet in captivity	
INTOXICATION												
Anticoagulant rodenticides	Medium	Medium	Yes			x				x	x	
Botulism	Low	Low	Yes					Rare in cats			x	
Carbamates and organophosphates	Low	Low	Yes	x						x		
Dieldrin and other organochlorines	Low	Low	No					Banned substances in UK				
Ethylene glycol	Low	Low	No					Rare in domestic cats and not likely in wildcats				
Lead Toxicosis	Low	Low	Yes	x		x				x		
Metaldehyde (slug pellets)	Low	Low	Yes	x						x		
Pyrethrins and Pyrethroids	Low	Low	Yes		x			Reported in domestic cats could affect captive wildcats				
CONGENITAL/ DEVELOPMENTAL												
Heart disease	Medium	Low	Yes	x	x							
Idiopathic epilepsy	Low	Low	Yes	x	x							
Maternal neglect	High	Low	Yes		x							
Portosystemic shunt	Low	Low	Yes	x	x							
DEGENERATIVE												
Chronic kidney disease	Medium	Low	Yes	x				More likely to affect older cats				
Degenerative Joint Disease	Low	Low	Yes	x				More likely to affect older cats				
Dental disease	Medium	Low	Yes	x							x	
Feline injection site sarcoma	Low	Low	No	x								
Hyperthyroidism	Low	Low	Yes	x								
Neoplasia	Medium	Low	Yes	x								
Feline triaditis and pancreatitis	Medium	Low	Yes	x	x							
ENVIRONMENTAL												
Hybridisation	High	High	Yes	x		x		Jeopardise success of release programme		x		
Persecution	Low	Low	Yes	x		x				x		
Inbreeding	Medium	Low	Yes		x	x						
Road Traffic Accidents	Medium	Medium	Yes		x	x						
Starvation	Medium	Medium	Yes	x								
OTHER												
Antimicrobial resistance	Low	Low	Yes	x	x	x	x					

Mitigations recommended														
Husbandry of captive wildcats	Veterinary administration/oversight of treatments eg worming	Enforcement of legislation	No use of slug pellets in or around captive facilities	Health/behaviour Screening	Animals with potentially genetic condition removed from breeding programme	Animals with one or more canines missing should not be released	Genetic screening of founder population	Promotion of responsible cat ownership	Release site selection	TNVR program	Population and genetic modelling and monitoring	Mitigations to reduce road mortality	Monitoring or released animals	PMs for animals found dead
x														
	x													
		x												
			x											
	x													
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				x	x									
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							x	x	x	x				
	x								x					
							x				x			
									x			x		x
									x					x
x	x			x										

Appendix 7: Risk Register of a potential SW England wildcat Reintroduction

Threat/Risk	Potential impact	Mitigation
Welfare of animals for release	Unacceptable levels of stress and disease in wildcats being managed as part of release programme. Could result in deaths and loss of important breeding stock. Could threaten project and cause adverse publicity.	Ensure high standards of care throughout all stages of release programme, including captive breeding. Management will seek to reduce stress and reduce handling. Good husbandry plans will be adopted, paying attention to DRA guidelines.
Adverse impact on source population	Ensuring the donor population is not impacted is a key consideration. Could cause negative publicity and withdrawal of support and funding for project i.e. from IUCN, grants and government agencies.	Careful management required – depends on source population. Expert advice sort, for example from Captive Population stud book manager.
Genetic integrity of reintroduced population	Animals released are not suitable for local conditions. They may be vulnerable to increased hybridisation risk or target poultry or game species as easier to hunt – create conflict.	Seek expert advice to select donor population to ensure released animals are best adapted to local environment. Ensure animals used are <i>Felis silvestris silvestris</i> . Develop Genetic Risk Analysis and implement genetic monitoring post release. May be necessary to release further animals to increase the genetic diversity of establishing population. Needs to be consensus on how hybrids are treated i.e. protected or removed from population.
Released animals do not adapt to wild	Animals are not able to catch sufficient wild prey, this may lead to starvation or increased reliance on human sources of food. This could bring them into conflict with humans. Could cause negative publicity.	Animals will be health checked and will be those felt best adapted to being released. Captive bred animals will have been raised in well-designed pens that give them the best chance of developing the skills needed in the wild. Camera trapping will be used to monitor animals along with GPS/radio tracking. Any worrying behaviour of released animals will be investigated, and supportive management or recapture will be provided if felt needed.
Adverse impact on prey including rare species	This could cause negative publicity and a lack of local support for releases. The impact of predators and the positive benefits they bring to the environment is poorly understood both by the scientific and wider communities. Despite being a native species that has co-evolved with their prey this is not sufficient to ally many people's fears. Studies have shown rabbits as preferential prey followed by small mammals. Where these prey are not available, as opportunists they will switch to other prey. There are likely to be cases where wildcat will predate a rare species and this needs to be acknowledged.	Consultation with ecologists from elsewhere in European range has not identified concerns. However, released wildcats in Scotland have been seen to prey on a range of species including brown hare and curlew. Ongoing data will continue to be sort to widen understanding of potential impact. Release sites will be chosen that hold a diverse prey base and sites with rabbits will be prioritised. Although the HRA did not identify any major concerns, England has depleted biodiversity with some species at a very low level. In these instances, any losses could potentially be unsustainable. A mechanism for intervention will be identified in local Wildcat Management Plan. Consideration should be given to scat analysis to understand diet of released animals. Habitat improvements using wildcat as a 'flagship species' will be part of the reintroduction programme to ensure a good source of common and widespread prey species. Education to increase peoples understanding of predator-prey relationships and how this impacts the environment will be vital.
Spread of disease to pets/livestock	Negative publicity for project and withdrawal of funding. Animals released may need to be removed.	All animals to be released will have been vaccinated for typical cat diseases. Adhere to England Wildcat DRA and implement post release monitoring recommended.

Threat/Risk	Potential impact	Mitigation
Wildcats die of disease	Negative publicity for project and withdrawal of funding. Animals released may need to be removed.	Implement recommendations within DRA.
Road Mortality	Negative publicity for project and withdrawal of funding. Further releases may have to be stopped before programme has been completed.	Choose release area away from major highways. However, small high hedge banked roads may also be a threat. Ensure there is a clear mechanism for road casualties to be recorded and remains collected for analysis. Hotspots need to be identified and management to reduce collisions investigated.
Resistance from public	This is linked to other risks already identified and a lack of knowledge around wildcats and how they fit within the local environment. It could create a lot of anxiety which could have a negative impact on support and engagement with other conservation projects and not just wildcats.	Develop community engagement programme and resources. Ensure visible presence within release areas. Look to engage local people with project through volunteering opportunities and education activities. Demonstrate how wildcats enhance the local environment.
Conflict with poultry owners	Gamekeepers have no knowledge of wildcats as a predator in the environment so will not be prepared. Loss of birds can impact people's livelihoods as well as causing distress for those involved. Widespread predation is likely to cause negative impact on support for project. Could take up a lot of project time to resolve. Could lead to persecution either illegal or mistaken identity.	Implement recommendations of co-designed local Wildcat Management Plan Provide guidance on preventing predation i.e. design of pens, scaring tactics etc.
Conflict with pets	Negative publicity and distress to those involved.	Implement recommendations of co-designed local Wildcat Management Plan. Promote responsible pet ownership.
Conflict with forestry operations	As an EPS, this could impact normal forestry operations. Could generate negative publicity.	Provide pragmatic management advice to help support forest/ woodland managers. Look to ensure this is co-designed with those involved with industry. Seek advice from those involved in forestry in Scotland and Europe to gain experience and practical advice. Look at developing knowledge with ecologists to help guide management and preventing conflict for example use of scent dogs to locate wildcat dens.
Persecution	Persecution is the main reason for wildcats being originally lost and could have a devastating impact on a release programme. Losing key animals and creating gaps in range, are all factors that can make wildcat susceptible to hybridisation. Despite now being a protected species persecution could still happen. Lethal control is a standard way of controlling feral cats and wildlife such as fox. Misidentification could result in persecution. Unfortunately, illegal persecution of legally protected wildlife occurs. Wildcats coming into conflict with humans can lead to these outcomes.	Provide education on legal protection status and how to identify a wildcat. Ensure there is a clear route for people to find information and obtain support and guidance. Any consultation process needs to recognise potential conflict and what can be done to avoid this. Need to support communities with learning to live alongside wildcats/predators. Needs to be a long term and visible presence. Identify release areas with less potential risk of conflict i.e. away from shooting estates.

Threat/Risk	Potential impact	Mitigation
Wildcats breed with domestic cats	Any hybridisation could be seen as a failure of project and cause negativity.	Work with others to promote responsible cat ownership including neutering at 4 months. Engage with communities, cat welfare charities, vets and government agencies to identify unneutered cat populations within release areas and work to secure a better neutering outcome eg TNVR. Adaptive management may be needed, i.e. release males in an area with only females. Need to have an exit strategy or agreed plan - i.e. what level of hybridisation is acceptable.
Wildcats to do not become established	Not all reintroductions are successful. This is going to be a challenging project that needs careful planning and a well-resourced execution. Could cause negativity and damage support for conservation organisations if it is viewed as a failure.	Clear milestones agreed at start of project, develop a strong leadership team to ensure clear decision making, provide adaptive project management and to agree exit strategies. Need to manage expectations of public, landowners, organisations and local communities. Even if not successful it can provide valuable learning. Ensure good communication between organisations involved with wildcat projects elsewhere in UK and Europe to share learning.
Insufficient funding for full length of project, including when wildcats are established, and people are adapting to living alongside them	Preparing the rollout of a release programme through education, community support and securing the donor population is a long-term commitment. Not securing sufficient funding could jeopardise the whole programme and could put English wildcat conservation back decades.	Seek long term funding streams and ensure government include wildcats as an England priority species.
Scottish Wildcat reintroduction does not recover wildcat population	A negative outcome from project in Scotland could create unease and negativity about wildcat reintroductions elsewhere.	Ensure learning is captured and used to inform project development and interactions with the local communities in Southwest England.
No specific wildcat licenses currently available	Monitoring effectiveness of reintroduction could be difficult if perceived to cause disturbance and no license is available. No mechanism for essential licensing activities for facilitating co-existence with wildcats leading to negativity.	Ensure Natural England and licensing team are aware of project timescales to ensure enough lead in time for licensing to be developed.



Devon
Wildlife Trust



University
of Exeter



Devon Wildlife
Consultants

