



Reintroductions of Pine Martens and White-tailed Eagles in Exmoor National Park: Issues and evidence

Sept 2025



By Mary Peberdy, Steven Emery, Keith Howe, and Anne May.

exmoorsociety.com

# Contents

1.	Introduction	4
2.		
3.	Pine Martens	6
3	3.1 Impacts on Native Species	9
3	3.2. Threat to Poultry and Gamebirds	10
3	3.3. Limitation on Grey Squirrel Trapping	12
3	3.4. Bovine Tuberculosis (bTB) Transmission	13
4.	White-tailed Sea Eagles	15
4	4.1. Risk to Vulnerable Species	17
4	4.2. Livestock Predation	19
4	4.3. Eco-tourism benefits	22
5.	Conclusions	22
6.	Recommendations	24
7.	References	27

# **Balancing Conservation and Community**

Species Reintroductions: their opportunities and challenges for Exmoor

As chair of the Exmoor Society, I am pleased to introduce this new report on species reintroductions and their implications for Exmoor. The Society has prepared this evidence-based review in response to the opportunities and difficulties raised by current reintroduction programmes, notably those involving the pine marten and the white-tailed eagle. Our purpose is to provide a clear, balanced assessment that reflects both national conservation priorities and the concerns of those who manage, farm, and care for Exmoor's landscapes.

Through this report, we aim to support constructive dialogue, informed decision-making, and practical solutions that reconcile ecological ambition with sustainable land use and community wellbeing. By highlighting areas where management and mitigation strategies can be strengthened, and by drawing on experiences from elsewhere in the UK, we hope to contribute positively to the long-term stewardship of Exmoor. Above all, our intention is to move the conversation beyond division towards collaborative approaches that will secure a resilient future for Exmoor's people, wildlife, and landscapes.

Chair of the Exmoor Society,

Kate Bullion

September 2025

## 1. Introduction

Species reintroductions are increasingly central to the UK's biodiversity and ecosystem restoration efforts. They also align with national objectives under the Environment Act 2021 and the Environmental Improvement Plan (DEFRA, 2021). These frameworks include the target to increase species abundance by at least 10% by 2042 (EFRAC, 2023:6). Natural England and the England Species Reintroductions Taskforce view reintroductions as pivotal to achieving these goals (EFRAC, 2023:7). A 'full complement of species' is key to England's Natural Capital, the assets our ecosystem can provide which benefit society and the economy (Lusardi et al., 2024:17).

On Exmoor, two high-profile reintroductions are underway: the pine marten, under the Two Moors Pine Marten Project led by the Devon Wildlife Trust, and the white-tailed eagle, led by the Roy Dennis Wildlife Foundation. These projects contribute to national conservation goals but have also provoked concern among land managers, farmers, and rural communities. While this report focuses specifically on these two species, it recognises that Exmoor, or other geographical areas may host additional reintroductions in future years. The evidence base and recommendations provided here are thus designed to not only address the immediate concerns surrounding the current reintroductions, but to support and inform future projects.

Key success factors to any species reintroduction include early stakeholder consultation, clarity on compensation, and science-grounded risk analysis (EFRAC, 2023; DEFRA, 2021). However, stakeholders to reintroductions in England have expressed concerns over the licensing regime, with criticism ranging from excessive bureaucracy to insufficient stringency (EFRAC, 2023:16). Conflicts centre on livestock predation, disease risks, and changes to land-use practices, alongside frustrations over consultation processes that some stakeholders feel were insufficient. In this context, unresolved knowledge gaps and concerns about the framing of reintroductions in the media have contributed to mistrust.

The Exmoor Society has produced this evidence-based report in response to local concerns surrounding species reintroductions, reflecting its commitment to protecting Exmoor's landscape, supporting rural communities, and fostering understanding of the pressures shaping the National Park. As an independent charity dedicated to the balanced stewardship of Exmoor, the Society seeks to ensure that conservation efforts - such as the reintroduction of pine martens and white-tailed eagles - are informed not only by scientific evidence but also by the experiences

and knowledge of those who live and work on Exmoor. This report aims to promote transparent, inclusive dialogue that aligns ecological goals with local values and sustainable land use.

This report first outlines the wider context of recent species reintroductions on Exmoor and the range of responses they have provoked. It then identifies the key concerns raised by stakeholders before turning to a detailed examination of each reintroduction project. The section on pine martens provides a brief overview of the species and past reintroduction efforts, followed by the rationale behind its return to the region. It then addresses the main concerns raised—such as impacts on native species, poultry and gamebirds, restrictions on grey squirrel control, and the potential for bovine tuberculosis (bTB) transmission—while evaluating how the project has responded to these issues. Where possible, the report compares the available evidence to the narratives being presented, highlighting any inconsistencies. This same structure is applied to the white-tailed eagle section, which explores concerns around risks to vulnerable wildlife, potential livestock predation, and questions of fairness and the distribution of costs and benefits. Together, these analyses provide a foundation for recommendations on how such reintroductions might be managed in ways that recognise and address the concerns of the local community.

#### **Methods and Approach**

This report draws on both natural and social science literature to examine the reintroduction of pine martens and white-tailed eagles on Exmoor. Academic databases, including Web of Science and Google Scholar, were used to identify relevant sources. The search terms "white-tailed\*", "sea eagle\*", and "pine marten\*", were applied across all fields. This initial search returned 572 results related to white-tailed eagles and 256 results for pine martens. These results were then reviewed - along with the bibliographies of key papers - to identify a broader range of evidence that informs this report.

Feasibility studies for reintroductions were reviewed and attention paid to the authorship and affiliations behind the key studies to understand potential perspectives and biases. The same approach was applied to analysis of 'grey literature', media coverage, and discussions on social media platforms, which often reflect the polarised nature of public opinion. Primary insights were also gathered through conversations with a representative from Devon Wildlife Trust and local farmers directly affected by or engaged with the reintroduction projects. These conversations provided valuable context on how policies and scientific findings are interpreted and experienced on the ground. The overarching approach of this report is rooted in the aim of fostering dialogue and reducing division. By highlighting both the scientific basis and the lived experiences surrounding these reintroductions, this report seeks to support a more inclusive and constructive path forward.

#### 2. Context

According to the International Union for Conservation of Nature (IUCN, 2013), a species reintroduction involves returning a native species to part of its historic range with the goal of establishing a self-sustaining population.

Exmoor has emerged as a potential stronghold for both pine martens and white-tailed eagles. Historical evidence shows that both species once inhabited the area before their extinction due to deforestation, persecution, and land-use change (Yalden, 2007; Webster, 2001). The white-tailed eagle, as an apex predator and scavenger, contributes to ecological balance. The pine marten, as an opportunistic predator, also redresses over-abundance in prey populations, and manages invasive species such as grey squirrel populations, indirectly benefiting native red squirrels and woodland health (Auster et al., 2023; Vincent Wildlife Trust (VWT), 2021).

Reintroduction activities in Exmoor are being conducted in coordination with national agencies and local organisations. For pine martens, following successful releases on Dartmoor, Exmoor is the next planned location, with feasibility studies indicating ample habitat and natural movement of the species into the region (Devon Wildlife Trust, 2025). For white-tailed eagles, a proposed phased release of up to 20 birds over three years awaits approval from Natural England. Satellite tracking from the reintroduction project on the Isle of Wight shows that eagles frequently visit Exmoor's coastal woodlands, confirming the area's suitability (Roy Dennis Wildlife Foundation, 2024).

The cultural and ecological case for these reintroductions is supported by broader public concern over biodiversity loss and climate change. Charismatic species like the white-tailed eagle (WTE) and pine marten serve as ecological flagships, attracting public support and potentially enhancing rural economies through wildlife tourism, as evidenced by successful models such as the Isle of Mull (Mackrill et al., 2021). These species also help build public support for broader conservation goals (Mackrill et al., 2021). However, that same visibility means they are often at the centre of conflict, especially when issues such as livestock predation, disease risk, and predator control arise.

#### 3. Pine Martens

The pine marten is a native, medium-sized carnivore belonging to the Mustelidae family (Ruiz-Gonzales et al., 2013; Birks, 2020). Historically widespread in Britain, pine martens experienced significant declines due to habitat loss and persecution (Carter et al, 2008; Webster, 2001). They prefer wooded environments and play a significant ecological role as an opportunistic predator,

predominantly preying on small mammals—especially voles—which can comprise over 50% of their diet (Zalewski, 2004; Lynch & McCann, 2007:67; MacPherson, 2014). An ability to adapt their diet according to the food sources available allows pine martens to function as important top-down regulators within ecosystems (Sheehy et al., 2013; Twining et al. 2019, in Cooper, 2023:29).

University of Exeter researchers studied public perceptions of pine marten reintroductions in South West England and found that overall there was strong support from local residents, with 84.6% out of the 812 participants in favour of the project (Auster et al., 2023). They studied responses across different sectors and highlighted that the category of individuals working in farming and agriculture were notably less likely to back the reintroduction.

In recent years, the species has garnered attention for its potential role in invasive species management. Due to their naivety to native predators, invasive grey squirrels are particularly vulnerable to predation by pine martens, indirectly benefiting red squirrel populations through competitive release (Sheehy et al., 2014; Twining et al., 2022; Slade et al., 2023). Despite these benefits, the species' slow reproductive rate—females typically breed from their third year and produce only one litter annually—necessitates long-term monitoring and management to ensure population viability (MacPherson, 2014; NERR125; Harris & Yalden, 2008). The Two Moors Pine Marten (TMPM) project conducted a population viability analysis which estimated that, with planned releases across Exmoor and Dartmoor, the population increase would remain stable over 50 years but not exceed 75 individuals - based on factors such as release locations, dispersal, and survival rates (MacPherson et al., 2021:18). However, this estimate does not account for pine martens that may have already been released illegally on Exmoor.

Following the 'People and Pine Martens in Wales' project which worked on developing the national strategy for pine marten recovery by engagement with stakeholders, pine martens were first translocated from Scotland to boost populations in Wales. Building on this successful reintroduction, the Forest of Dean and the South West were identified as suitable areas to support pine marten populations, based on habitat and connectivity assessments (Hamston, 2023). Vincent Wildlife Trust partnered with Gloucestershire Wildlife Trust for the Forest of Dean project, and worked as an expert advisor for the Two Moors Pine Marten project (TMPM, or Project) on Dartmoor and Exmoor. This is a partnership led by the Devon Wildlife Trust, along with six other conservation organisations (Dartmoor National Park Authority, Exmoor National Park Authority, Forestry England, National Trust, Somerset Wildlife Trust, Woodland Trust). Despite widespread support for these reintroductions, oppositions and concerns must be taken seriously, particularly as these polarized positions are directly associated with roles in farming and landownership (Auster et al. 2023). The Project has carried out extensive assessments of the potential ecological and socio-economic effects of this reintroduction, and has already successfully introduced 15 healthy pine martens from Scotland onto Dartmoor (Devon Wildlife Trust, 2025), with further

releases planned to occur on Exmoor. The TMPM project has received a National Lottery Heritage Fund grant of £1.2 million which has covered feasibility and development work and aims to fund delivery including mitigation.

The money allocated has already covered some preparatory work, such as the mitigation of certain bat roosts. The funding should also cover adaptive management and exit strategies, though the thresholds for these are not stated (Hamston, 2023:24). The Project supplies reports and guidance on how to make these adaptations to suit an environment with pine martens in it. There is no obvious indication, however, that the grant provides direct monetary support such as for losses caused by pine martens, or mitigation payments for the heightened costs of practice or infrastructure adaptations incurred by this reintroduction. This applies to the cost of protecting game enclosures from a climbing predator, and to the adaptation of predator-control methods, particularly grey squirrel trapping.

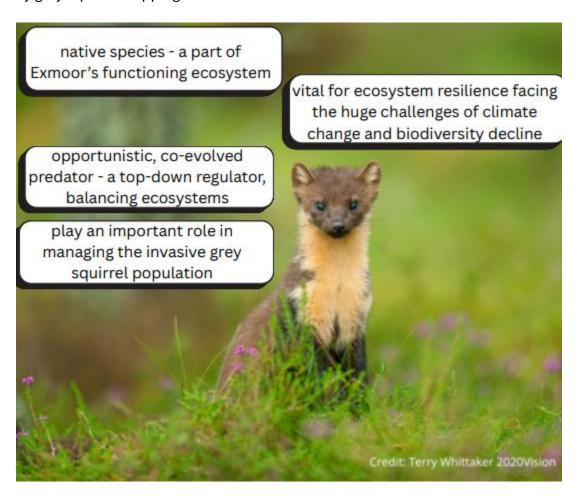


Figure 1: Key arguments in favour of pine marten reintroduction, image adapted from Return of the Pine Marten Appeal | Devon Wildlife

The importance of opportunistic predators is key to support the integration of pine martens back into our ecosystems, as this aligns with efforts to improve the biodiversity on Exmoor, as well as tackling the impacts of invasive species. Whilst these drivers for the reintroduction of pine martens are justified in the Two Moors Pine Marten Project and other pine marten reintroduction feasibility studies, the complexities of how this reintroduction and its effects will be managed provokes concerns.

#### **Concerns and Evidence**

#### 3.1 Impacts on Native Species

A major concern raised by stakeholders, particularly conservationists and groups such as the Game and Wildlife Conservation Trust (GWCT), involves the potential for pine martens to impact vulnerable species negatively, notably ground-nesting birds. In Scotland, capercaillie populations have suffered and some have attributed this in part to pine marten predation (Palencia & Barroso, 2024). Although capercaillie are not found in England, this association has created a precedent for concern. The public perception study highlighted concerns for dormice, horseshoe bats, pied flycatchers, and ground-nesting birds such as curlew (Auster et al., 2023:26).

The Two Moors Partnership hosted workshops addressing these concerns, with action called to adapt nest boxes for pied flycatchers and dormice in order to prevent pine martens from entering, as this was identified as the main risk (MacPherson et al., 2021:27). Similarly to the natural cavities that dormice and pied flycatchers nest in, entrances to bat roosts are usually too small for a pine marten to enter (MacPherson et al., 2021:29). However, evidence of pine martens preying on bats, and the damage a pine marten could do if it was to access a bat colony, means that bat sites on Exmoor must be assessed and mitigation measures put in place to address this risk.

Where mitigation proves insufficient, IUCN Guidelines state that if post-release monitoring shows negative impacts on vulnerable native species, an effective exit strategy must exist with clear thresholds. The TMPM project suggests a range of preventative and adaptive measures to coping with the threats that pine martens could present on Exmoor. However, exit strategies must be feasible and put in place if the impacts call for it, meaning that long-term monitoring frameworks are essential.

Further issues stem from the difficulty of gathering direct data on predation, as carnivores like pine martens are elusive and often nocturnal, making sightings and information-gathering on their predation difficult (Lynch & McCann, 2007). The GWCT argues that it may be "scientifically impossible" to quantify the impact of individual predator species due to lack of baseline data and practical monitoring constraints. In addition, the GWCT underlines the importance of spring traps

to control rat, stoat and weasel numbers, while limiting the potential for secondary poisoning through the use of rodenticides for the conservation of ground-nesting bird species which are of particular concern on Exmoor. The introduction of pine marten as a protected species makes these methods illegal, which is why government guidance on trapping practices is essential, and the need for funding associated with this (EFRAC, 2023).

The TMPM Project acknowledges the challenge of detecting precise ecological impacts and has identified that the key risk to vulnerable species lies with anthropogenic features, such as pine martens getting into nest boxes, or buildings where bats nest. The Project proposes mitigation strategies, such as adapting nest boxes to reduce predation risks to sensitive species like bats and birds using artificial cavities and tip trays. These modifications are considered best practice for predator-aware conservation planning (Cooper, 2023). Furthermore, the introduction of a native predator does not directly threaten native prey populations, as these have developed to respond to cues such as scent as a survival response (Twining et al., 2020), and the Feasibility Assessment for the TMPM Project underlines how therefore, predation 'simply replaces other causes of mortality' (MacPherson, 2014: 22).

However, this is only provided that the habitat provides sufficient refuge for prey species. This calls for careful consideration of site selection for release, taking its local ecological impacts into account. Data on post-release movements of pine martens in Wales and on Dartmoor shows how, though pine martens dispersed during their exploration phase, they settled no further than 8-14 km from their release sites (McNicol et al., 2020). The local densities of pine martens, and the potential predation pressures on other species, needs to be evaluated considering this return to release locations, even though the numbers of pine marten being released are low.

The TMPM Project argues that the complexity of the food web should not be undermined (MacPherson, 2014), as pine martens also indirectly support native species by predating on its other abundant predators, such as grey squirrel and corvid populations (Sheehy et al. 2018). While the risks to vulnerable species must be carefully monitored and managed, pine marten contribution to a balanced ecosystem is one of the main reasons for their reintroduction.

#### 3.2. Threat to Poultry and Gamebirds

Landowners have expressed concern about potential predation on poultry and gamebirds, particularly given that game shooting is a major industry on Exmoor. The GWCT highlights the protection of pine marten under Schedule 5 of the Wildlife and Countryside Act 1981, which restricts options for predator control. According to existing research, the likelihood of significant

predation impacts on gamebirds is low when alternative prey such as voles are abundant (Reynolds & Tapper, 1996, in Cooper et al., 2023; Webster, 2008).

However, due to their opportunistic food habits, pine martens can adapt their diet to include more medium-sized mammals dependent on the abundance of their major food source which, in agricultural environments, is small mammals and fruit (Balestrieri et al., 2011). Despite this flexibility, studies suggest that pine martens rarely prey on poultry or gamebirds, and that due to pine martens' preference for wooded habitats, poultry in open areas is less attractive (Balharry, 1993; Webster, 2008). But, this consideration may be unimportant in Exmoor, except in relation to 'back yard' flocks and the public perception study also shows that there is little concern about poultry (Auster et al., 2023:24).

That said, the risk of a pine marten entering a gamebird pen still persists. Exmoor hosts large-scale game shooting, and there is opposition to pine marten reintroduction due to the potential predation impacts if a pine marten entered an enclosed gamebird pen. They are described as a "serious pest" for pheasant shoots (Balharry and Macdonald, 1999). Pine martens are skilled climbers (VWT, 2021) and can access small openings via 50 mm gaps (Balharry, 1998), leading to multiple kills (Stringer et al., 2018; in Cooper et al., 2023:92; VWT, 2021). In this context, the GWCT highlights the practical burdens of financial investment into infrastructure and labour. According to EFRAC (2023), the cost of release pens effectively doubles when they must also be secured against pine martens.

The TMPM Project promotes effective husbandry as a mitigation measure, for example, by securing coops from predators. This is considered good practice by VWT (2021a), and an investment for the long-term when the financial benefits from pheasant shoots are considered (Balharry and Macdonald, 1999). Also, VWT (2021) and Cooper et al. (2023) emphasise that proactive, community-driven measures can greatly reduce conflict. The Two Moors website links to advice on how to adapt to living alongside pine martens for landowners, including practical measures for gamekeepers. Advice includes encouraging the use of electric fencing all around the enclosure, the use of overhanging fencing so pine martens cannot get in over the top, and advising that a 3m gap in canopy cover is created to prevent access via branches. For these reasons, the landscape impacts of cutting back or removing trees and the associated financial and regulatory complications must be considered. Importantly, the Project acknowledges potential risks – but currently only offers advice and signposting, rather than providing practical support or direct collaboration to implement mitigation strategies.

#### 3.3. Limitation on Grey Squirrel Trapping

While pine martens have shown potential to suppress grey squirrel populations - benefitting native red squirrels - the GWCT cautions against assuming broad or long-term efficacy. Foresters have expressed concerns regarding the limitations on active human management of grey squirrels already by lethal trapping, emphasizing that pine martens cannot replace trapping as a control strategy. Without effective population control methods, grey squirrels will continue to displace red squirrels and pose a threat to woodlands. Concerns include the potential for grey squirrels to develop evolved avoidance behaviours over time (Cooper, 2023:30), and the lack of knowledge or reassurance about when the predatory behaviours of pine martens will take effect as a measure of grey squirrel control.

The Exmoor Society submitted concerns from the farming, forestry, and gamekeeping communities to the TMPM Project. Among these, foresters stressed that pine martens cannot replace (and in many cases restrict) lethal trapping as a control strategy in order to protect broadleaf plantations from grey squirrel bark damage. They noted that alternative methods, such as live trapping or shooting, are significantly more labour-intensive, costly and inhumane. Live traps must be checked every 4 hours and are considerably more ethically charged, considering animal welfare. Furthermore, live traps are very obvious compared to dead traps, and can be meddled with by passers-by. This means that grey squirrel trapping efforts can be disrupted, as live traps are accessible to the public on Exmoor and may attract interference because of the animal welfare concerns they raise. Kill traps for squirrels that meet the standards required to protect pine martens currently do not exist, however, the GWCT suggests spring traps set in an artificial tunnel, with a restricted width so non-target species such as pine martens cannot enter it (GWCT, 2025). However, the Gloucestershire Wildlife Trust highlights that tunnel spring traps fitted with a 45 mm restrictor do not exclude pine martens completely, as juvenile pine martens could still get caught (Gloucestershire Wildlife Trust, 2019).

The TMPM Project provides guidance on what methods can be used to manage grey squirrel populations, highlighting shooting as a good practice method to grey squirrel control. But foresters argue that this will not be able to contain populations to the extent necessary, and that a transition towards these more labour-intensive efforts would require a funding scheme that acknowledges the financial burden. Actions to facilitate pine marten reintroductions could be considered and funded by the Countryside Stewardship scheme for areas where woodland improvement (WD2) or squirrel control and management (WS3) apply (Rural Payments Agency and Natural England, 2023), as FY3 payments for squirrel traps and maintenance can be claimed under this scheme currently. This underscores the need for national policy adjustments to reintroductions but also highlights the importance of local stakeholder lobbying.

The TMPM Project presents pine martens as a *complementary* control agent rather than a replacement for trapping (Cooper et al., 2023). Other research concurs that their role in grey squirrel control is shown to be meaningful (Sheehy & Lawton, 2014; Lanszki et al., 2009). Pine martens have been found to support red squirrel populations by controlling grey squirrel abundance (Slade et al., 2023), suggesting that pine martens exert an asymmetrical effect on squirrel populations, reducing grey squirrel numbers and in turn benefiting red squirrel populations (Sheehy et al., 2014). This is because whilst red squirrels have co-evolved with pine marten to develop anti-predator behaviours, the invasive grey squirrels have not, making them more susceptible to predation (Twining et al., 2020). Studies involving cameras at feeding stations have shown that red squirrels have an enhanced antipredator response, detecting pine marten scent and adapting feeding behaviours accordingly (Reilly and Lawton, 2025). Research from Ireland also supports this, with progressive declines in grey squirrel populations and increases in red squirrel numbers following pine marten releases (MacPherson and Denman, 2015:181).

In summary, the role of pine martens is seen as contributory within a broader mosaic of grey squirrel control methods as an asymmetrical effect on squirrel populations. However, these results are context-dependent (Sheehy et al., 2014). The TMPM Project encourages continued monitoring and adaptive management, while warning against overly deterministic interpretations of ecological interactions. Effective grey squirrel management will require practical trapping methods with funding mechanisms. Therefore, collaboration between national policymakers and local stakeholders will be essential.

#### 3.4. Bovine Tuberculosis (bTB) Transmission

Perhaps the most contentious issue raised by farmers in the stakeholder engagement events run by Devon Wildlife Trust is whether pine martens could play a part in the transmission of Bovine Tuberculosis, bTB, (*Mycobacterium bovis*). Stakeholders have highlighted the uncertainty around disease risk, referencing the need for a precautionary approach in light of England's ongoing bTB eradication efforts, arguing that the absence of clear data should not be construed as evidence of safety.

The issue of bTB in deer on Exmoor has been raised (Collard, 2023), a blood sampling study in the South West finding 16% of deer testing positive, with true seroprevalence estimated at 29.2% (Jinks et al., 2024). The prevalence of bTB in deer is much higher in specific areas on Exmoor, which highlights the importance of evaluating this information when considering release areas for pine martens. Combining this information with evidence that pine martens feed on deer carcasses (Balharry, 1993), and because diversionary feeding using deer entrails has been used in Scotland as a method of dealing with pine marten predating capercaillies (Bamber et al., 2024), pine martens could potentially feed on bTB-infected deer. Research from New Zealand (Cross et

al., 2000; Lugton et al., 2011) has established that ferrets can become infected with bTB by consumption of infected carrion and so could play a part in its transmission. It is important to acknowledge the importance of the type of transmission, as ferrets, like badgers and most likely pine martens, can transmit bTB through their urine. The existence of advice sheets on how householders should manage pine martens in their homes in Ireland, and VWT's (2021b) recognition that pine martens might be drawn to buildings during breeding season, supports the possibility that a pine marten could nest in dens in built structures. This suggests that farm buildings or any hay bale that a pine marten urinates on could become a potential means of transmission. The underlying issue here is the severity of bTB effects for livestock farmers, which must be recognized as a worry for stakeholders affected by the Exmoor reintroduction. This situates pine martens on Exmoor within the wider concern of bTB, overall, a much larger issue.

The Devon Wildlife Trust and the Zoological Society of London (ZSL) conducted a disease risk analysis for the TMPM Project. They concluded that the risk of pine martens transmitting bTB is "very low", largely because pine martens are solitary animals with low population densities on Exmoor, making them unlikely to serve as disease reservoirs. However, this analysis did not fully consider indirect transmission routes—such as the possibility of transmission through urine left in farm environments, or through pine martens scavenging on infected deer carcasses. These pathways are especially relevant given the high prevalence of bTB in deer populations on Exmoor, data which had not yet been published at the time of the original risk assessment (Jinks et al., 2024).

The TMPM Project has committed to ongoing surveillance and transparency regarding emerging evidence, adhering to best-practice guidelines for reintroductions and responding to any emerging evidence (Cooper, 2023). When stakeholders raised concerns about the scope of the original risk assessment, Devon Wildlife Trust discussed these queries and the up-to-date evidence on bTB-infected deer on Exmoor with ZSL and DEFRA. They stated that a 'zero-risk' scenario is unattainable, and the current research still places the risk levels posed by pine martens at very low. Therefore, the reintroduction will proceed as planned, but they ensure a commitment to post-release health surveillance and adaptive management measures in place to monitor and address these concerns. If post-release monitoring shows negative impacts on bTB in cattle then proportionate mitigation and/or exit strategies should be developed along with clear thresholds for taking action.

The vaccine for cattle is expected within two years, but in the meantime, the financial and emotional toll of bTB on livestock farmers remains acute, which makes even a comparatively small risk from pine martens a source of significant worry. These concerns are compounded by the existing presence of illegally released pine martens already on Exmoor, which cannot be tracked as they will in the TMPM Project. This lack of data on their movements, denning habits, or

potential contact with livestock areas form uncertainties that demand precautionary management of these reintroductions which integrates all potential risks so that effects are monitored. Here the incorporation of citizen science to gather data on pine marten sightings or habitat use across Exmoor could help ensure that stakeholders do not feel 'out of the loop', but instead are a part of strengthening the evidence base so that any risks can be tackled effectively. The uncertainty surrounding the impacts of pine martens represents a common concern that should unite stakeholders to effectively collaborate on this issue.

The concerns expressed by the farming community regarding the potential role of pine martens in transmitting bTB must be acknowledged. However, it is important to emphasise that the control and management of bTB in cattle constitutes a complex challenge involving numerous species and management strategies. The contribution of pine martens to the transmission of bTB is most likely limited; nevertheless, there is a clear need for research and the development of targeted guidance to effectively monitor and manage any impacts associated with pine martens.

# 4. White-tailed Sea Eagles

The white-tailed eagle (WTE), Britain's largest bird of prey, is a native apex predator with a broad and opportunistic diet including fish, waterfowl, and carrion from mammals such as deer and sheep (Mulkeen & O'Connor, 1997; Nadjafzadeh et al., 2016a; Waterman et al., 2025). Records for the historic presence of white-tailed eagles across Exmoor (Evans et al., 2012), combined with evidence from raptor introductions showing the potential for local economies (Carter et al., 2008) and their regulatory potential in ecosystems (Love, 1983; Yalden, 2007) form the argument for their reintroduction. However, apex predator reintroductions often raise concerns regarding conflicts with existing land uses and species conservation priorities (Hipfner et al., 2012). Like the pine marten, the white-tailed eagle was eradicated from the UK due to human pressures (Waterman, 2025) and has since become a focal point for rewilding and trophic reintroduction efforts.

The UK's WTE reintroduction began in the 1970s with translocations from Norway to the Isle of Rum, followed by further releases in Scotland, Ireland, and on the Isle of Wight (Carter et al., 2008; Dennis et al., 2019; Mee, 2017). The Roy Dennis Wildlife Foundation website states that seven white-tailed eagles from the Isle of Wight project have regularly spent time on Exmoor, and that its landscape of coastal woodland provide optimal habitat conditions (Roy Dennis Wildlife Foundation, 2024). The release of young eagles onto Exmoor is labelled as a 'reinforcement of establishing population', as Exmoor is already being visited by the birds. On being granted a

license, it will involve the release of up to 20 birds over three years (Wells et al., 2022; Roy Dennis Wildlife Foundation, 2024).

Population growth of white-tailed eagles has been very successful in Scotland, and monitoring data has been used to predict future population increase and habitat expansion (Sansom et al., 2016). On the Isle of Wight, the current survival rate lies at around 48%, with Exmoor releases planned as a way of reinforcing the establishment of a stable population (Roy Dennis Wildlife Foundation, 2024). The eagles are actively monitored, fitted with a satellite GPS tracker and field data recorded on breeding activity (Forestry England, 2023; Roy Dennis Wildlife Foundation, 2024). The population increase is estimated to be very gradual, as they tend to mature at around 5 years and produce just 1-2 chicks annually (Wells et al., 2022; Forestry England, 2023). The costs for WTE reintroduction schemes are estimated around £200,000-£250,000 (Carver et al., 2022) over 5 years for the Isle of Wight introduction, without the cost of satellite tracking equipment, and with the first 2 years of funding given by a private donor. Beyond ecological motivations, WTE reintroductions are recognized for their socio-economic and public engagement potential. Wildlife tourism linked to eagle watching contributes significantly to local economies; for instance, eagle-related tourism on the Isle of Mull is estimated to generate up to £5 million annually (Molloy, 2011; Dennis et al., 2019:16). This economic benefit mirrors patterns observed in other raptor reintroductions, such as red kite feeding stations in the Chilterns (Waterman et al., 2025). Public support has also played a central role in the success of recent projects. The public survey on the Isle of Wight reintroductions found that 93% of respondents were in favour of the reintroduction project (Dunn, 2022:10), reflecting widespread enthusiasm to see such an impressive species. While the proposed Exmoor reintroductions has generated interest, the results of the public perception survey conducted in January 2025 have not yet been published, limiting understanding of current overall public sentiment in Exmoor.

The reintroduction of WTEs raises particular concerns in agricultural settings. While WTEs typically scavenge rather than actively hunt livestock, concerns persist regarding potential predation and changes in local predator-prey dynamics. The Environment, Food and Rural Affairs Committee (EFRAC, 2023) stresses the importance of early consultation with local communities and advocates for compensation schemes for those impacted by high-risk reintroductions. The National Farmers' Union (NFU) supports this approach, warning that without compensation for livestock loss or land disruption farming resilience could be undermined (EFRAC, 2023:18). However, the government has not yet implemented a national compensation scheme (EFRAC, 2023:18) for the reintroductions in England, whilst the Scottish government announced in March 2025 that an increase in funding will be directed towards the Sea Eagle Management scheme, thus recognising predation on lambs and young sheep and its associated 'emotional and financial

impact' (Scottish Government, 2025). This has raised questions regarding the lack of recognition of potential impacts on the sheep farming industry on Exmoor.



Figure 2: Key arguments for WTE reintroduction, image adapted from White-tailed eagles in the south-west | Roy Dennis Wildlife Foundation

The white-tailed eagle represents an iconic apex predator, integral to coastal ecosystems such as on Exmoor. The Roy Dennis Wildlife Foundation advocates for its role in conservation, however, concerns of conflicting conservation priorities have been raised, as well as how its opportunistic hunting could affect local stakeholders.

#### **Concerns and Evidence**

#### 4.1. Risk to Vulnerable Species

Some stakeholders in feasibility studies express concern that WTEs' dietary flexibility poses risks to already vulnerable bird species (Mayhew, 2013), especially in areas or times when prey choices are limited. Research from Poland shows that in suboptimal territories, where preferred prey is scarce, WTEs may predate on other raptor nests, including taking Buzzard eggs (Mirski & Komar, 2023); research covering the threat that WTE populations could pose to Ospreys concluded that the challenges that the return of apex predators could pose to other protected avian predators is still unknown, as these patterns of coexistence within the raptor community are still being reshaped (Treinys et al., 2011). So far, monitoring of eagles released on the Isle of Wight has

shown that once eagles are at breeding age their scavenging habits turn to stealing from other predator birds such as buzzards, red kites, harriers, peregrines, ravens or herons (Forestry England, 2023).

These insights on coexistence with other species add on to the suggestion that seabird populations could suffer from eagle predation, based on the common occurence of fulmar remains in WTE nests (Reid et al., 2023), as well as remains of razorbills and kittiwakes (Hipfner et al., 2012) all of which are birds which the Exmoor coastline provides habitat for. Furthermore, Lyly et al. (2014:503) suggests more complicated effects on raptor populations than nest predation, where the existence of WTE in an area causes species to adopt risk-sensitive behaviours in this 'landscape of fear' which can then limit their breeding opportunities and success (Lyly et al., 2014:503). This was reinforced by research on the direct and indirect impact of the WTE on black stork populations in Poland, where not only egg stealing, but also habitat competition, has led to the WTE being deemed responsible for a drastic reduction to black stork numbers (Zaeadzki et al., 2022:1224). Mirski and Komar (2023) also suggest that seabird populations are impacted by reducing occupancy of territories due to the presence of WTE, causing suppressive effects on bird populations by inducing fear and behaviour adaptations. Therefore, when their preferred prey is less abundant, the dietary adaptations of WTE could lead to potential conflicts with conservation priorities for other species (Hipfner et al., 2012; Ekblad, 2020), even if these species are not directly predated, but by reducing breeding density and foraging behaviours. This raises questions about the potential effects of introducing an apex predator into complex and sensitive ecological networks.

Project advocates argue that WTEs are adaptive predators that tend to focus on the most abundant prey sources. According to Ekblad et al. (2016), their foraging behaviour aligns with ecological theory that apex predators adjust prey preferences based on availability. However, the majority of their diet consists of fish and seabirds (Nadjafzadeh et al., 2015) and the historical evidence for eagle habitat on Exmoor and the justifications put forward by the Roy Dennis Wildlife Foundation argue that Exmoor will provide optimal habitat conditions, with an abundance of fish species for prey (Roy Dennis Wildlife Foundation, 2024).

Additionally, WTEs are described as flagship species for wetland and habitat conservation, with their presence believed to drive broader biodiversity benefits (Sandor et al., 2015; Sergio et al., 2006; Dennis et al., 2019:37). Their role in supporting biodiversity and balancing natural ecosystems is supported by research on intraguild predation, whereby predators prey on other predatory species, reducing their population growth (Lyly et al., 2014:503). Here the 'landscape of fear' effect also applies, in which mesopredator populations such as foxes or pine martens are limited by a top predator such as the WTE (Lyly et al., 2014:504). This feeds into the cascading effects of WTEs, which could indirectly support prey populations. The Eagle Reintroduction Wales

report argues that the ecological role of the WTE represents a balancing act, without which smaller meso-predators such as Buzzards or Red Kites, would occupy larger territories and put further pressure on prey species such as small birds and mammals, highlighting the complexity of food webs, and the importance of apex predators (Prugh et al., 2009).

#### 4.2. Livestock Predation

A key worry that presents itself on Exmoor is the potential impacts of lamb predation. The feasibility studies for WTE reintroductions highlight that whilst the eagles are proven to eat carrion, this implies they will only scavenge, not kill lambs directly. However, farmers and rural organisations, including the National Sheep Association (NSA), dispute this narrative. They argue that the evidence presented often fails to capture the real-world impact on farm businesses. NSA evidence submitted to EFRAC in 2023 emphasises that farmers face not only lamb loss but the destruction of multi-generational breeding lines, especially on marginal land.

WTEs are widely understood to rely primarily on fish and seabirds as their core food sources (Mulkeen & O'Connor, 1997; Nadjafzadeh et al., 2015; Waterman et al., 2025). However, research has shown that they adapt their diet depending on abundance (Ekblad et al., 2016). This is particularly relevant to livestock predation as the size of prey changed in habitats where the usual prey of 500 to 1000g (such as fish and small waterfowl) is less abundant, to a larger proportion of prey over 3000g (Mirski and Komar, 2023:9). In addition to this notable shift toward larger prey species in low-resource environments, research on hunting behaviours found that WTES adapt their hunting efforts under food stress, moving from a sit-and-wait to an active foraging strategy (Nadjafazeh et al., 2016:176). This adaptability aligns with general foraging theory in apex predators, which suggests dietary shifts occur when preferred prey becomes scarce (Ekblad, 2020). This behaviour explains the significant portions of lamb remains that have been found through research on the prey remains in WTE nests, despite terrestrial mammals not representing a key element of their preferred diet (Grant, 2021; Reid et al., 2023). However, distinguishing the prey remains in nests as scavenged or killed remains very difficult (Grant, 2021).

Some stakeholders report that post-mortem results contradict the scavenging hypothesis, showing lambs in good health at the time of death. News articles such as in *The Scottish Farmer* and *The Guardian* have also highlighted increasing tensions over eagle predation in Scotland (Harrison, 2025; Weston, 2024), and several anecdotal reports of the losses farmers have faced, including videos of WTEs carrying lambs away. But it cannot be clearly determined if these lambs were already dead before being taken. The feasibility study for white-tailed eagle reintroduction on the Isle of Wight outlines how in its previous reintroduction projects (Ireland and the

Netherlands) in sheep-farming landscapes, there have been no cases of proven lamb predation, and references a *Farming Independent* article showing how farmer attitudes towards WTEs have changed to support their presence (Dennis, 2019:45). However, a recent article reporting a WTE found dead after assumed poisoning evokes the question of how representative this picture of the farmers' response really is (Armitage, 2025). Furthermore, O'Rourke (2014) describes how conflicts arose through the reintroductions of WTE to Killarney National Park in Ireland due to a lack of early community engagement. This suggests that the Isle of Wight feasibility study underestimates the impacts and conflicts that have surrounded this reintroduction.

The Roy Dennis Wildlife Foundation website states that there have been no proven cases of livestock predation from the Isle of Wight releases. This stands in contrast to the impacts of livestock predation by WTE in Scotland, acknowledged by the Scottish government. To understand this difference in lamb losses between two WTE reintroductions, greater clarification is being sought regarding what the eagles will be fed before release. One of the reasons for lamb-killing by WTEs in Scotland links to the feed provided to the eaglets pre-release which included 'scraps of venison, goat meat or offal' in addition to fish and seabirds (Love and Ball, 1979:26). The potential relevance of pre-release feeding to effects on livestock farming means this should be made explicit to stakeholders on Exmoor before their reintroduction. Currently, the only information given by the Roy Dennis Wildlife Foundation is that 'Food (mainly fish)' will be supplied to the young eagles.

The Exmoor National Park Authority (ENPA) maintains that direct lamb predation is rare, citing research that argues most lamb remains found in nests are scavenged, not the result of active hunting (Marguiss et al., 2004; Whitfield et al., 2012). The feasibility study for the Isle of Wight WTE reintroductions also references findings from Germany, where carrion accounted for 29.5% of WTE diets, which is attributed to scavenging behaviour rather than predation (Nadjafadeh et al., 2015). Marquiss et al's (2003) research looked at evidence of wounds in prey remains and found that, of all eagle pairs studied, only one appeared to hunt lambs actively; the remainder scavenged on existing carcasses. Marquiss et al. (2004) estimated the number of lambs killed annually on Mull at around 33-37, a small number relative to the thousands lost annually for other reasons. This argument of relativity is countered with that of localised effects. Such losses can be extremely significant for individual farmers, which is why mitigation strategies such as NatureScot's Sea Eagle Management Scheme (SEMS) are receiving funding boosts (Simms et al., 2010; Carter et al., 2008). The issue is therefore not about overall numbers but about how to manage the disproportionate effect that WTE reintroductions can have on specific farms, highlighting the need to address localised effects. Recognising these potential impacts is a necessary first step towards managing them effectively.

The changes made to the SEMS included an increase in funding to support farmers and crofters dealing with predation impacts. Acknowledgement of predation cases by the Scottish government challenges what is still currently stated on the Exmoor National Park website, namely that lambs do not make up a significant part of WTE diets. In practice, it more likely points to lack of data for verified cases of predation since eagles were reintroduced on the Isle of Wight. Though research on WTE diets does not contradict the claim, stakeholders argue that the use of that study on the ENPA website to argue against lamb predation worries is misleading, especially in the light of predatory behaviours of WTE acknowledged to have an impact in Scotland. This suggests that the narrative around lamb predation from white-tailed eagles should be revisited and adjusted in light of evidence from Scottish populations.

The Scottish Government has funded various elements surrounding these reintroductions, including commissioning further research into lamb predation (Grant. 2021; Marquiss et al., 2004; Reid et al., 2023; Simms et al., 2010). One report for NatureScot investigated territories that had reported issues with lamb predation, finding that all nests in these areas contained lamb remains (Grant, 2021). Additionally, recent work using nest cameras has been able to confirm that some lamb carcasses are very fresh, suggesting that these were killed rather than scavenged as carrion (NatureScot, 2019). NatureScot acknowledges the additional costs brought on by the need to implement prevention measures against predation, such as indoor lambing. SEMS provides financial support to land managers who implement measures aimed at reducing the risk of livestock predation, through participation in Management Agreements (NatureScot, 2024). The extent of lamb killings by WTE in Scotland is suggested to be due to their breeding season coinciding with lambing season in the Scottish West coast, which is in the late spring, as it is on Exmoor.

Importantly, SEMS also recognises the value of integrating farmer knowledge. Through Management Agreements, land managers collaborate with NatureScot teams to monitor eagle activity and design localised mitigation strategies. Farmers contribute observational data as part of a citizen science approach, which has helped to build trust and strengthen community engagement. This participatory method has proven effective in both recognising and responding to the lived experiences of rural stakeholders. This strengthens stakeholder buy-in and could serve as a framework for collaborative management on Exmoor. Currently, the lack of acknowledgment of risk is contributing to resistance from local land managers.

The Exmoor project has outlined the reporting procedure, which was designed with input from farming organisations including the NFU, for any problems that stakeholders experience. This will be evaluated against tracking evidence from satellite tags and advice will be provided around implementing measures such as diversionary feeding. The document states that if damage is significant and continued despite mitigation measures, Natural England would consider re-

capturing the WTEs. The triggers for this exit strategy are assessed by the project Steering Group specific to Exmoor, however, evidence from SEMS in Scotland suggests that integrating citizen science and participatory management could strengthen this framework. Including farmer input in monitoring and mitigation design would help build credibility and increase stakeholder support.

#### 4.3. Eco-tourism benefits

One of the most cited benefits of WTE reintroduction is eco-tourism potential. White-tailed eagles generate substantial visitor interest. For instance, RSPB-commissioned studies estimate that WTE tourism contributes £5 million annually on Mull and £2.4 million on Skye (Molloy, 2011; Dennis et al., 2019:16). Comparable success was observed in the reintroduction of red kites in the Chilterns, where birdwatching supported local tourism economies (Waterman et al., 2025).

The Roy Dennis Wildlife Foundation therefore argues that this economic incentive provides a foundation for long-term coexistence between conservation goals and rural economies, offering opportunities for diversification through wildlife tourism, accommodation, and guided tours. Farmers and rural advocacy groups, however, contend that these benefits are not equitably distributed. The National Sheep Association (NSA) states that the economic narrative often obscures the reality for landowners, many of whom see no direct return from tourism income while shouldering the risks of predation and changing land management practices.

In their 2023 written evidence submission to the Environment, Food and Rural Affairs Committee (EFRAC), the NSA cautioned against "promoting tourism gains without establishing mechanisms for direct compensation or reinvestment into affected rural communities." Particularly, the argument that the economic benefit to the Isle of Mull due to WTE tourism offsets the losses to livestock farmers able to access compensation for lamb predation (Carter et al., 2008:10), fails to acknowledge the overall significance of livestock losses for farmers. It also downplays the complex process involved to access compensation payments. Furthermore, the long-term concern with this argument of income potential is that as WTE become more widespread and numerous, the tourism potential will be further diluted, whereas the effects of WTE presence will still persist.

#### 5. Conclusions

The Exmoor Society is committed to enhancing the conservation and environmental value of the National Park whilst recognising and supporting the important role of our community of land managers, businesses, residents and visitors in making Exmoor the special place that it is. We firmly believe that environment and community must and can go hand-in-hand but that careful

management of this relationship is essential. More specifically, we must also carefully manage the relationship between different members of the community, who may have different interests, concerns and preferences.

We have seen with the controversy over species reintroductions on Exmoor many features typical of environmental conflicts: being characterised by social and ecological complexity, uncertainty and deep-seated value differences between stakeholders. The polarisation of the debate has been further heightened by mistrust.

Our objective for this report has been to better understand the evidence around species reintroductions, the perspectives of different stakeholders and the parameters of the conflict itself. We acknowledge the National policy direction to reintroduce species into the UK and recognise that such projects can bring ecological and conservation benefits. However, this does not mean that every reintroduction is appropriate or should be supported uncritically. Each proposal must be assessed carefully, with particular attention to its management, its wider impacts, and the implications for the people who live and work alongside these species.

Both pine martens and white-tailed eagles can make a potentially positive contribution to the conservation and tourist value of the National Park, but this report has revealed that the concerns raised by stakeholders around the species' themselves and the way in which the reintroductions are being managed need to be taken seriously. The organisations responsible for implementing the reintroductions have taken steps to engage with stakeholders and have provided opportunities for members of the community to find out more and to raise their concerns. There is a sense from some members of the community, however, that engagement did not take place early enough and that when concerns have been raised they have been too easily dismissed, or not taken seriously. Whilst we may debate what is an appropriate and timely level of engagement it is clear that the species reintroductions have led to some members of the community feeling that their voices have not been heard and they have lost trust in the management authorities. This breakdown in trust makes it more difficult to build positive working relationships for cooperative management and has fuelled the development of a deep conflict underlain by considerable anger. This has led to unhelpful and vitriolic discussions on social media etc, which further polarises opinion and makes resolution even harder. It is also important to remember that feasibility survey work, in relation to the pine marten at least, shows high levels of wider public support for species reintroductions.

The evidence presented in this report and the precedent that has been set in Scotland supports the need to establish a pre-emptory compensation approach for farmers at risk of suffering livestock predation by White-tailed eagles. By indirectly compensating farmers through payments for monitoring of eagle behaviour and the implementation of on-farm mitigation measures the

SEMS has encouraged farmers to buy-into the management of the reintroduction process. The development of a similar approach in Exmoor would do a lot to offset the concerns from within the farming community and help re-build positive working relationships.

Across many of the concerns raised in this report the development of clearer mitigation strategies, with consideration of how such strategies may be resourced, would be welcomed by stakeholders. There needs to be a clear strategy for monitoring impacts on gamebirds, wider control strategies for grey squirrels, TB prevalence and transmission, and other species of conservation concern. Furthermore, the stepwise approach to responding to impacts as they emerge needs to be detailed relative to changing interpretations of risk and the thresholds at which intervention is deemed necessary over the short, medium and longer term. Which risks demand precautionary mitigation? At what threshold level will impacts trigger a response from the management authorities? What are deemed reasonable and fair cost burdens on land managers? What additional funds may be needed and how will these be drawn in?

We believe it is necessary and possible to focus on better joint management of the reintroductions and to move the debate beyond divisive language and framings. It is everyone's responsibility to achieve this but the organisations leading the reintroductions have a particular responsibility to be transparent about uncertainties and to be inclusive in decision-making, management and styles of communication.

We hope that this review, and the recommendations it contains, can help support the management and mitigation of the current reintroduction programmes, encourage joint problem-solving rather than division, and inform best practice in future reintroductions that may occur on Exmoor and beyond.

#### 6. Recommendations

The insights from this report signal the need for immediate, medium-term and future-facing responses to address current issues, establish better working relations, and to reevaluate the way in which future reintroductions are approached. Overall, we recommend that a longer-term approach to actively working together will make conflict escalation less likely, create ownership and buy-in to the management efforts and lead to the development of better solutions that work in the interests of everyone.

#### Immediate points of redress

- The management authorities need to be transparent about remaining uncertainties and gaps in knowledge. They should avoid downplaying or dismissing concerns raised by stakeholders as this can heighten mistrust and reduce buy-in and support.
- The precedent from the Scottish experience demonstrates that the impacts of white-tailed eagles on livestock predation need to be taken seriously. The Scottish government has demonstrated a clear need to compensate for the general and specific impacts on farmers. The management authorities should publish a clear and inclusive strategy for managing predation, before waiting for local evidence that it is happening.
- ➤ The management authorities should provide greater clarity on the short- medium and longer-term approach to mitigation for the concerns raised in this report. This should include consideration of risk, thresholds for action and how mitigation measures are to be resourced.
- ➤ It is the responsibility of management authorities and community members to work together, to show respect and avoid vitriolic language which only serves to deepen the conflict.
- Further detail should be provided on the pre-release feeding of white-tailed eagles, and specifically whether, and how much, birds and mammals will form part of the pre-release diet.

#### Working together in the medium-term

- A compensatory management scheme for white-tailed eagles should be implemented similar to that in Scotland. Farmers should be involved in the management of the reintroduction programme by being remunerated to monitor the behaviour and impacts of white-tailed eagles and to implement mitigation measures on their farms.
- Farmers, land-managers and the wider public should be encouraged to monitor and report on the behaviour of pine martens, and in particular their presence and use in or near agricultural buildings and game rearing pens. The identification and monitoring of illegally released pine marten should be a particular concern. A clear mechanism should be established for collecting and reporting this information.
- The management authorities should work with the farming community to lobby Defra and other relevant national bodies for more research into the potential impacts and risks of pine martens on the spread of bovine TB.
- The management authorities should work with gamekeepers on proofing pens from pine martens and seeking additional funding to support this. Access to funding for grey squirrel control via Countryside Stewardship should be explored and lobbied-for via Natural

- England and Defra. Local funding support should also be explored via The Exmoor Squirrel Project (Red Squirrels Southwest).
- Management authorities should work with foresters to find humane solutions to grey squirrel control that are cost-effective and not jeopardised by the presence of pine martens and risk of accidental trapping.
- The wider public should be engaged to monitor relative species abundance and distribution for all species of conservation concern that may be directly or indirectly affected by the reintroduction of predatory species.

### Future preparedness

- ➤ The management authorities such as the ENPA should avoid taking a position on reintroductions too early in the process of consulting with stakeholders. Doing so gives the impression that engagement is about seeking approval for a plan that is already in train, rather than first working with stakeholders to fully evaluate risks and benefits and ensuring fair processes and outcomes.
- ➤ Stakeholders should be engaged as early as possible when new reintroduction schemes are devised. There is a need to establish long-term forums for engagement between conservation (and other) management organisations, land managers and the wider community. Such forums can help establish stronger working relationships, build trust and reduce the likelihood of conflicts arising. Particular initiatives can then be discussed early, with the involvement of interested parties and developed together. The engagement and discussion forums should precede the management intervention, rather than the other way around.

#### 7. References

- AHDB (2025) 'Bovine tuberculosis' Available at: Bovine tuberculosis | AHDB (Accessed: 11 July 2025)
- Armitage (2025) Irish minister calls for co-operation in white-tailed eagle investigation.

  Available at: https://www.farminglife.com (Accessed: unknown).
- Auster, R. E. et al. (2023) Perceptions of Pine Marten Reintroduction in South-West England: Results from a Q-Method stakeholder study and regional public survey. University of Exeter.
- Auster, R. E. et al. (2023) Pine Martens and Woodland Management in the UK.
- Auster, R. E. et al. (2023) Pine Martens and Grey Squirrel Control.
- Balestrieri, A 'Food habits of genetically identified pine marten (Martes martes) expanding in agricultural lowlands (NW Italy)', Acta Theriologica 56: 199-207
- Balharry, D. (1993) 'Factors affecting the distribution and population density of pine martens (Martes martes) in Scotland', University of Aberdeen
- Balharry, E. A. and Macdonald (1999) 'Cost-effective electric fencing for protecting gamebirds against Pine Marten predation' Mammal Review 29(1):67-72
- Bamber, J. A. et al. (2024) 'Evaluating diversionary feeding as a method to resolve conservation conflicts in a recovering ecosystem', Journal of Applied Ecology, 61, pp. 1968–1978.
- Birks, J.D.S. and Messenger, J. (2010) Evidence of Pine Martens in England and Wales 1996–2007. Ledbury: The Vincent Wildlife Trust.
- Burke, B. J. et al. (n.d.) 'Reintroduction of white-tailed eagles to the Republic of Ireland: A case study of media coverage', Irish Geography.
- Carter, I. et al. (2008) 'The role of reintroductions in conserving British birds', British Birds, 101, pp. 2–25.
- Carver, S. et al. (2022) 'Pre-feasibility study: White-Tailed Eagle (WTE) Reintroduction in Cumbria', University of Cumbria Report, Funded by Natural England
- Caryl, F. M. et al. (2012) 'The seasonal diet of British pine marten determined from genetically identified scats', Journal of Zoology 228(4):252-259
- Cooper, P. et al. (2023) Restoring our lost wildlife: A review of the ecological, social and economic factors in the potential reintroduction of six mammal species to Cornwall.

  Derek Gow Consultancy Ltd. for Cornwall Council.
- Cross, M. L. et al. (2000) 'Oral Infection of Ferrets with Virulent Mycobacterium bovis or Mycobacterium avium: Susceptibility, Pathogenesis and Immune Response', Journal of Comparative Pathology, 123(1), pp. 15–21.

- DEFRA (2021) Reintroductions and other conservation translocations: Code and guidance for England.
- Dennis, R., Doyle, J., Mackrill, T. and Sargeant, L. (2019) 'The feasibility of reintroducing White-tailed Eagles (Haliaeetus albicilla) to the Isle of Wight and the Solent', Roy Dennis Wildlife Foundation, Forestry Commission.
- Devon Wildlife Trust (2025) Bringing back pine martens. Available at: Bringing back pine martens | Devon Wildlife Trust (Accessed: 20 June 2025)
- Dunn, M. (2022) 'Public perceptions on the reintroduction of white-tailed eagles to the Isle of Wight and the Solent'.
- Ekblad, C. et al. (2016) 'Landscape-scale gradients and temporal changes in the prey species of the white-tailed eagle (Haliaeetus albicilla)', Annales Zoologici Fennici 53(3-4): 228-240
- Ekblad, C. et al. (2020) 'Diet and breeding habitat preferences of White-tailed Eagles in a northern inland environment', Polar Biology 43:2071-2084
- Environment, Food and Rural Affairs Committee (EFRAC) (2023) Species Reintroduction: Fifth Report of Session 2022–23. House of Commons.
- EFRAC (2023) Species Reintroductions in England: Environmental Food and Rural Affairs Committee Report.
- Evans, R. J., O'Toole, L., and Whitfield, D. P. (2012) 'The history of eagles in Britain and Ireland: an ecological review of placename and documentary evidence from the last 1500 years', Bird Study 59(3):335-349
- Exmoor National Park Authority (2024) Press Release: Sea Eagles on Exmoor.
- Forestry England (2023) 'White-tailed eagle project: October 2023 update' Available at: White-tailed eagle project | October 2023 update | Forestry England (Accessed: 10 July 2025)
- Game and Wildlife Conservation Trust Scotland (2025) 'Rail traps in or near red squirrel woods' Available at: Rail traps in or near red squirrel woods Game and Wildlife Conservation Trust (Accessed: 11 July 2025)
- Gloucestershire Wildlife Trust (2019) 'Controlling grey squirrels in forests and woodlands in the UK', UK Forestry Standard: Technical Note. Available at: Grey squirrel trapping best practice guidance.pdf (Accessed: 28 July 2025)
- Grant, J. R. (2021) 'Report to NatureScot on white-tailed eagle work with respect to collection and analysis of prey remains from territories associated with, or possibly implicated in, lamb predation in 2024', NatureScot
- Hamston, T. et al. (2023) 'The Feasibility of Reintroducing Pine Martens (Martes martes) to the Southwest of England, UK', Pine Martens Bounce Back: The Two Moors Pine Marten Project
- Harris, S. and Yalden, D. W. (2008) 'Mammals of the British Isles: Handbook' Mammal Society. Harrison, P. (2025) 'Sea eagles threaten West Coast lambing', The Scottish Farmer

- Hipfner, J. M. et al. (2012) 'Unintended consequences: How the recovery of sea eagle
  Haliaeetus SSP. Populations in the northern hemisphere is affecting seabirds', Marine
  Ornithology 40: 39-52
- Horton, H. (2021) 'Norfolk white-tailed eagle reintroduction project cancelled', The Guardian.

  Available at:Norfolk white-tailed eagle reintroduction project cancelled | Conservation |

  The Guardian (Accessed: 1 June 2025)
- Horton, H. (2024) 'Ministers urged not to play culture wars over species reintroductions in England', The Guardian, 26 January. Available at: https://www.theguardian.com (Accessed: 1 June 2025).
- IUCN (2013) Guidelines for Reintroductions and Other Conservation Translocations. Gland, Switzerland: IUCN Species Survival Commission.
- Jinks, R. et al. (2024) 'Estimating the seroprevalence of tuberculosis (Mycobacterium bovis) infection in a wild deer population in southwest England', BioRxiv.
- Jordan, N.R. (2011) A strategy for restoring the pine marten to England and Wales. Ledbury: The Vincent Wildlife Trust.
- Lanszki, J. et al. (2007) 'Comparison of Red Fox Vulpes Vulpes and Pine Marten Martes Martes Food Habits in a Deciduous Forest in Hungary', Wildlife Biology 13(3):258-271
- Love, J. A. and Ball, M. E. (1979) 'White-tailed sea eagle Haliaeetus albicilla reintroduction to the Isle of Rhum, Scotland 1975–1977', Biological Conservation.
- Lugton, I. W. et al. (2011) 'Epidemiology of Mycobacterium bovis infection in feral ferrets (Mustela furo) in New Zealand: II. Routes of infection and excretion', New Zealand Veterinary Journal, 45(4), pp. 151–157.
- Lusardi, J. et al. (2024) State of Natural Capital Report for England 2024: Risks to nature and why it matters. Natural England Research Report Number NERR13.
- Lyly, M. S. et al. (2015) 'Avian top predator and the landscape of fear: responses of mammalian mesopredators to risk imposed by the golden eagle', Ecology and Evolution 5(2): 503-514
- Lynch, A. B. and McCann, Y. (2007) 'The diet of the pine marten in Killarney National Park', Biology and Environment: Proceedings of the Royal Irish Academy, 107B(2), pp. 67–76.
- MacPherson, J.L., Croose, E., Bavin, D., O'Mahony, D., Somper, J. and Buttriss, N. (2014)

  Feasibility assessment for reinforcing pine marten numbers in England and Wales. The Vincent Wildlife Trust.
- MacPherson, J. and Denman, H. (2015) 'Pine Martens in Britain and Ireland' The Royal Forestry Society 109(3):181-185
- MacPherson, J.L. (2017) 'Pine marten translocations: the road to recovery and beyond', In Practice: Bulletin of the Chartered Institute of Ecology and Environmental Management, 95, pp. 32–36.

- MacPherson, J. et al. (2021) 'Initial Feasibility Assessment for the Two Moors Pine Marten Reintroduction Project', Vincent Wildlife Trust and Devon Wildlife Trust
- Marquiss, M. et al. (2003) 'White-tailed eagles and lambs, predation or scavening?', in Helander, B., Marquiss, M. and Bowerman, W. (eds.), Sea Eagle 2000
- Marquiss, M. et al. (2004) 'The impact of White-tailed Eagles on sheep farming on Mull, Centre for Ecology and Hydrology 48
- Mayhew, M. (2013) 'Stakeholder consultation report, white-tailed eagle project'. Available at:
  Microsoft Word Stakeholder Consultation Report 2014.docx
- Mayhew, M. et al. (2015) 'Public perceptions of a white-tailed sea eagle restoration program', Restoration Ecology.
- McNicol, C.M. et al. (2020) 'Post-release movement and habitat selection of translocated pine martens Martes martes', Ecology and Evolution, 10(11), pp. 5106–5118.
- Mirski, P. and Komar, E. (2023) 'The White-Tailed Eagle, the Apex Predator, Adjusts Diet towards Larger Prey in Suboptimal Territories', Diversity 15(747)
- Mee, A. et al. (2016) 'Reintroduction of white-tailed eagles Haliaeetus albicilla to Ireland', Irish Birds, 10, pp. 301–314.
- Mee, A. et al. (2016) 'White-tailed Eagle Reintroduction in Ireland', in Reintroduction Biology of Birds.
- Mulkeen, S. and O'Connor, T. P. (1998) 'Raptors in towns: towards an ecological model', International Journal of Osteoarchaeology 7(4):440-449
- Nadjafzadeh, M. et al. (2015) 'Spatial, seasonal and individual variation in the diet of Whitetailed Eagles Haliaeetus albicilla assessed using stable isotope ratios', Ibis International journal of avian science 158(1):1-15
- Nadjafzadeh, M. et al. (2016) 'Sit-and-wait for large prey: foraging strategy and prey choice of White-tailed Eagles', Journal of Ornithology
- NatureScot (2019) 'White-tailed Eagle Action Plan Questions and Answers' Available at:

  White-tailed Eagle Action Plan Questions and Answers | NatureScot (Accessed: 10

  July 2025)
- NatureScot (2024) 'Sea Eagle Management Scheme 2024 Report for Stakeholders'. Available at: https://www.nature.scot/doc/sea-eagle-management-scheme-2024-report-stakeholders (Accessed: 20 July 2025)
- NFUonline (2024) NFU writes to The Guardian on species reintroduction. 6 February. Available at: https://www.nfuonline.com (Accessed: 2 June 2025).
- O'Rourke, E. (2013) 'The reintroduction of the white-tailed sea eagle to Ireland: People and wildlife', Land Use Policy, 38, pp. 129–137.
- Palencia, P. and Barroso, P. (2024) 'Disentangling ground-nest predation rates through an artificial nests experiement in an area with western capercaillie (Tetrae urogallus) presence: martens are the key', European Journal of Wildlife Research 70:87

- Pidd, H. (2025) 'It was a wildlife conservation triumph, then came the corpses podcast' https://www.theguardian.com/news/audio/2025/jan/10/it-was-a-wildlife-conservation-triumph-then-came-the-corpses-podcast (Accessed 29 May 2025)
- Prugh, L. R. et al. (2009) 'The Rise of the Mesopredator', Bioscience 59(9):779-791
- Reid, R., Grant, J. R., Broad, R. A., Carss, D. N. and Marquiss, M. (2023) 'The breeding season diet of White-tailed Eagles in Scotland', Scottish Birds, 34(4), pp. 305–318.
- Reilly, E. and Lawton, C. (2025) 'Red squirrels exhibit antipredator behavioural changes in response to a native predator, the pine marten', Royal Society Open Science 12: 250661
- Roy Dennis Wildlife Foundation (2024) White-tailed Eagle Reintroduction in Southern England.

  Available at: https://www.roydennis.org
- Roy Dennis Wildlife Foundation (2025) 'White-tailed Eagle Project Frequently Asked Questions' Available at: https://www.roydennis.org/white-tailed-eagle-project-frequently-asked-questions-old/ (Accessed: 28 July 2025)
- Rural Payments Agency and Natural England (2023) 'FY3 Squirrel traps and maintenance', Gov.uk. Available at: https://www.gov.uk/countryside-stewardship-grants/fy3-squirrel-traps-and-maintenance (Accessed: 20 July 2025)
- Sandor, A. D. et al. (2014) 'Nest-site selection, breeding success, and diet of white-tailed eagles (Haliaeetus albicilla) in the Danube Delta, Romania', Turkish Journal of Zoology 38
- Sansom, A., Evans, R. & Roos, S. (2016) 'Population and future range modelling of reintroduced Scottish white-tailed eagles (Haliaeetus albicilla). Scottish Natural Heritage Commissioned Report No. 898
- Sheehy, E. et al. (2013) 'A non-invasive approach to determining pine marten abundance and predation', European Journal of Wildlife Reseach
- Sheehy, E. et al. (2018) 'The enemy of my enemy is my friend: native pine marten recovery reverses the red squirrel by suppressing grey squirrel populations', The Royal Society: Proceedings B 285
- Simms, I. C. (2010) 'A pilot study into sea eagle predation on lambs in the Gairloch area Final Report', Scottish Natural Heritage Commissioned Report No. 370
- Sheehy, E. and Lawton, C. (2014) 'Population crash in an invasive species following the recovery of a native predator: the case of the American grey squirrel ad the European pine marten in Ireland', Biodiversity and Conservation 23:753-774
- Slade, A. et al. (2023) 'Indirect effects of pine marten recovery result in benefits to native prey through suppression of an invasive species and a shared pathogen', Ecological Modelling 476
- The Scottish Government (2025) 'Sea eagle management boost' Available at: https://www.gov.scot/news/sea-eagle-management-boost/ (Accessed: 20 July 2025)

- Treinys, R. et al. (2011) 'Coexistence of protected avian predators: does a recovering population of White-tailed Eagle threaten to exclude other avian predators?', European Journal of Wildlife Research 57:1165-1174
- Twining, J. P. Et al. (2018) 'Seasonal, geographical, and habitat effects on the diet of a recovering predator population: the European pine marten (Martes martes) in Ireland', European Jounnal of Wildlife Research 65(51)
- Twining, J.P. et al. (2020) 'Native and invasive squirrels show different behavioural responses to scent of a shared native predator', The Royal Society.
- VWT (2021a) The Two Moors Pine Marten Project Overview.
- VWT (2021b) 'The Pine Marten in Ireland: A guide for householders'.
- VWT (2025) 'Gun Clubs and Poultry Keepers' pinemarten.ie A national resource about pine martens in Ireland. Available at: Gun Clubs and Poultry Keepers PineMarten.ie (Accesed: 17 July 2025)
- Waterman, J. et al. (2025) 'The return of raptors to Scotland's skies: Investigating the diets of reintroduced red kites and white-tailed eagles using stable isotopes', Plos One 20 (1)
- Webster, J. A. (2008) 'A review of the historical evidence of the habitat of the Pine Marten in Cumbria', Mammal Review 31(1):17-31
- Well, P. J. and Heydon, M. (eds) (2022) 'Reintroduction and Conservation Translocations: Case studies from the UK', Natural England 1 (125)
- Weston, P. (2024) 'I'm used to people thinking I'm lying': are Scotland's sea eagles killing hundreds of lambs?' The Guardian
- Yalden, D. W. (2007) 'The older history of the white-tailed eagle in Britain, British Birds, 100.
- Zawadzki, G. et al. (2022) 'The avoidance of living in the vicinity of a top predator: the coexistence of the black stork and the white-tailed eagle in NE Poland', The European Zoological Journal 89: 1223-1237



Cover Image: Sea Eagle by Kathleen Everitt Pine Marten by Glen McCall

Charity number: 1160912

The Exmoor Society, 34 High Street, Dulverton, TA22 9DJ www.exmoorsociety.com / info@exmoorsociety.com / @exmoorsociety