CMS

Convention on the Conservation of Migratory Species of Wild Animals

RAPTORS REINTRODUCTION AND REINFORCEMENT PROGRAMMES: EXPERIENCES FROM THE FIELD

RAPTORS MOU

In partnership with

هيئة البيئة - أبوظبي
Environment Agency - ABU DHABI

Raptors Reintroduction and Reinforcement Programmes: Experiences from the Field

About CMS and the Raptors MOU

The Memorandum of Understanding on the Conservation of Migratory Birds of Prey in Africa and Eurasia (Raptors MOU) is an agreement established under the CMS. Its aims to promote internationally coordinated actions to achieve and maintain the favourable conservation status of migratory birds of prey throughout their range in the African-Eurasian region, and to reverse their decline when and where appropriate. It currently covers 94 species of birds of prey and owls, which are found in 131 Range States in Africa, Europe and Asia. 66 Range states have signed the Raptors MOU.

The Coordinating Unit of the Raptors MOU, based in Abu Dhabi (United Arab Emirates), serves as the administrative hub of the Raptors MOU. It supports Signatories, Cooperating Partner and facilitates, supports various conservation activities aimed at promoting internationally coordinated actions to safeguard migratory birds of prey.

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White-rumped Vulture (*Gyps bengalensis*): © Phaerun Sum

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Their experience and continued dedication to raptors conservation have remarkably enriched the quality and depth of this report.

Executive Summary

This report provides an in-depth review of selected raptors reintroduction and reinforcement programmes across multiple countries, with a focus on the regulatory frameworks, methodologies, stakeholder engagement, funding mechanisms, and ecological outcomes. It draws on case studies and semi-structured interviews with key practitioners and policy experts involved in conservation programmes. Methodologies vary across projects and programmes, with release strategies including hacking, fostering, and delayed release, each with differing levels of success. Community engagement and outreach, although limited in earlier programmes, are now recognised as critical for long-term success and stakeholder buy-in.

The findings indicate that the success of reintroduction programmes is dependent on several core components: adherence to regulatory frameworks, comprehensive feasibility studies, removal or minimisation of threats, effective stakeholder collaboration, and long-term financial and technical support. In all successful cases, habitat suitability, threat mitigation and sustained post-release monitoring were foundational to the programme's success.

Despite the achievements, challenges persist. These include financial constraints, administrative bureaucracy, stakeholder conflicts, and human wildlife conflict including occasional livestock predation. Some projects/programmes faced unanticipated outcomes, such as changes in public perception and new tourism opportunities linked to reintroduced species. The lessons learned point towards the importance of prioritising ecosystem health, integrating public engagement, and maintaining transparency in project goals.

Policy recommendations call for enhanced international cooperation, threat removal/ mitigation (e.g., better enforcement of anti-poisoning regulations, retrofitting powerlines or improve siting of electric infrastructures), continued investment in habitat conservation, and alignment with IUCN and national guidelines. The report emphasises that conservation translocations, while not always necessary, can serve as powerful tools when threats are managed and conditions are favourable. Natural recolonisation, where viable, may offer a cost-effective alternative if supported by strong habitat protection measures.

Key words: *Translocation, Conservation, Reintroduction, Reinforcement, Raptors, Vultures, Eagles, Falcons, IUCN Guidelines, Raptors MOU, CMS.*

1. Introduction

Across Africa and Eurasia, many raptors population have undergone substantial declines. According to the IUCN Red List data, 34% of Raptors MOU species are globally threatened (Critically Endangered, Endangered and Vulnerable) or Near Threatened. Vultures are the most endangered group, with 93% of species classified as globally threatened or Near Threatened and eight species listed as Critically Endangered. Eagles follow closely, with 50% of species falling into one of the threatened or Near Threatened categories (Jones *et al*., 2023). The Red List Index (RLI), which tracks changes in extinction risk over time, shows a consistent decline for raptors since 1988. The trend for these migratory raptors is significantly steeper than for birds in general, indicating the urgent need for conservation action. Population trend data further highlights the gravity of the situation with over half (53%) of raptors species in decline, while only 11% are increasing. If conservation efforts are not intensified, the number of raptors threatened will likely rise further in the near future.

The IUCN Guidelines for Reintroductions and Other Conservation Translocations[1] (IUCN/SSC, 2013) are a globally recognised framework that offers principle-based guidance on planning, designing, and implementing conservation translocations.

Translocations are widely used and effective conservation tools, particularly for raptors. It involves moving birds from regions with surplus or stable populations to those where the species has declined or disappeared to establish new populations. Translocations are especially suitable for species with slow reproductive rates and where there is established expertise in captive management and breeding. It mainly involves two types of activities: Reintroduction and Reinforcement. These interventions can deliver measurable conservation outcomes over a period of time. The Red Kite (*Milvus milvus*), once in steep decline in Europe, has made a notable recovery due to targeted conservation, including reintroductions and legal protection.

Reintroduction involves the deliberate movement of organisms to re-establish populations in areas of historical occupancy where the species is currently absent (IUCN/SSC, 2013; Hunter-Ayad *et al.,* 2020).

Reinforcement involves releasing individuals of a species into an area where the species is still present, but in low numbers, to strengthen the existing population either by increasing the number of individuals or by enhancing genetic diversity (IUCN/SSC, 2013).

Both reintroduction and reinforcement are conservation tools increasingly used to halt or reverse declines of raptors, especially in regions where threats such as poisoning, habitat loss and poaching have caused a serious decline in population. These techniques aim to re-establish viable populations and restore ecological

[1] The IUCN Guidelines for reintroductions and other conservation translocations

function, particularly where natural recovery is unlikely due to ongoing or irreversible threats.

Although reintroduction and reinforcement programmes have been implemented globally in alignment with the IUCN/SSC (2013) Guidelines, there remains a lack of consolidated information on the factors that determine their success or failure. The purpose of this report is to address that gap. To do so, it provides an overview of current experiences from the field in reintroducing and reinforcement of raptors across the geographical scope of the Raptors MOU (Africa and Eurasia).

The Raptors MOU aims at conserving migratory birds of prey across Africa and Eurasia. The objective is to ensure that all populations of African-Eurasian migratory raptors (diurnal or nocturnal) are maintained in, or returned to, Favourable Conservation Status.

The Signatories to the MOU commit to undertaking coordinated efforts across the species ranges to maintain or restore favourable conservation status and to reverse population declines wherever necessary and appropriate. To support implementation, the Technical Advisory Group (TAG) has been established. The TAG's role is to assist the Signatories in effectively executing the provisions of the Raptors MOU and its Action Plan by offering expert technical and scientific guidance. Species targeted for reintroduction or reinforcement should be prioritised according to their global conservation status, as assessed by the IUCN Red List, ensuring that resources are directed towards those most at risk.

The information compiled in this document is intended to assist Raptors MOU Signatories, Range States and other stakeholders who are considering raptors reintroduction programmes, by outlining key aspects that ought to be considered when designing and implementing such programmes.

2. Methodology

The study was carried out for a period of 40 weeks, from October 2024 to July 2025. This report employed qualitative research methods, specifically semi-structured interviews, to gather in-depth insights on raptors reintroduction and reinforcement programmes. Participants were selected based on their expertise and involvement in long-term, well-established projects and programmes covering a diverse range of raptors. Selection also took into account the availability of the individuals to participate. Particular attention was given to those affiliated with advisory groups or organizations directly involved in the planning or implementation of raptors conservation initiatives. Semi-structured interviews were chosen for their flexibility and ability to facilitate open-ended dialogue. This format allowed for the inclusion of follow-up questions, enabling participants to elaborate on their experiences and offer insights beyond the scope of the prepared questions. The interviews were conducted online and lasted approximately 30 minutes each. In total, 15 interviews were completed, including 4 interviews in which participants submitted written responses to the interview guide instead of attending a live session.

An interview guide (Annex 1) was developed in advance to ensure consistency across interviews, while still allowing to adapt the conversation based on the participant's responses. This approach supported the collection of rich, qualitative data and facilitated a deeper understanding of the factors influencing the success and challenges of raptors reintroduction and reinforcement programmes. Data collected was analysed thematically to identify key trends, common challenges, and recurring lessons across projects/programmes.

2.1 Limitations

Several limitations should be acknowledged. First, while the majority of interviewees were directly involved in raptors reintroduction or reinforcement programmes serving as project officers or programme managers, some participants contributed from broader institutional roles, such as policy advisors or representatives of NGOs and conservation charities. As such, while their perspectives may lack the on-the-ground specificity of field practitioners, they remain valuable for understanding broader conservation strategies and programme-level outcomes. Second, the reliance on self-reported data introduces the possibility of subjective bias, particularly in the absence of triangulation with quantitative outcomes. Finally, logistical constraints, such as limited availability of key informants and time constraints of online interviews, may have restricted the depth of certain discussions.

Despite these limitations, the study provides a meaningful contribution to understanding raptors conservation practices and policy implementation across different contexts.

3. Methods for Reintroducing and Reinforcing Raptors

The success of raptors reintroduction and reinforcement initiatives depends heavily on the careful application of scientifically grounded methodologies tailored to the biological needs of the species and the ecological context of the release site. Techniques vary based on the origin of the individuals, species-specific behaviour, migratory patterns, and conservation goals. Common methods include soft and hard release strategies, hacking, delayed release, fostering, and various techniques for sourcing and preparing birds for release. Monitoring is equally vital before, during, and after release, to ensure long-term viability and adaptability of the reintroduced individuals and the resulting populations.

3.1 Origins of Released Individuals

Individuals used in programmes may originate from different sources. These include:

- **Captive-bred individuals**: Raised in breeding centres under controlled conditions to boost population numbers, often with minimal human contact to preserve wild behaviours.
- **Rescued wild individuals**: Birds recovered from distress, malnutrition, or injury and rehabilitated in wildlife rescue and recovery centres.
- **Translocated birds from healthy populations:** Wild-caught individuals are transferred to reinforce existing populations or reintroduce species into areas where they have been extirpated.

3.2 Release Methods and Techniques

Soft release methods provide a gradual transition into the wild. Birds are housed temporarily in acclimatisation aviaries at the release site, allowing them to familiarise themselves with the surrounding environment, food sources, and other birds. Supplemental feeding post-release is often provided, especially for inexperienced individuals, to increase survival chances.

Hard release, by contrast, involves the immediate release of individuals into the wild without prior acclimatisation. This method carries higher risks and is generally reserved for situations where holding birds in captivity for extended periods is impractical.

Hacking is one of the most widely used techniques, especially for large raptors like vultures. Young, captive-bred birds are placed in artificial nests at the release site shortly before fledging. They are fed without direct human interaction for several weeks until they develop flight capability and naturally take their first flight. This method, most commonly used when releasing young raptors, builds site fidelity and helps birds develop essential survival skills in-situ.

Delayed release is another technique used primarily for migratory species such as the Egyptian Vulture (*Neophron percnopterus*). Instead of releasing birds immediately after fledging, they are held for an additional year and released the following spring. This allows them to acclimate to the local environment and gain strength prior to migration (Vulture Conservation Foundation, 2025). They are typically housed in open aviaries with conspecifics, which fosters social bonding and adaptation to the new habitat. Fostering in wild nests supports early socialisation and behavioural development. Captive-bred chicks are placed in active wild nests where they are reared alongside or by wild conspecifics. This approach has shown promise in enhancing survival during first migrations and building natural behaviours.

Figure 1: Griffon Vultures (*Gyps fulvus*) near feeding station.

3.3 Site Preparation and Threat Removal

Prior to any release, a feasibility study is essential to assess ecological, social and regulatory viability (Black, 1991). This includes evaluating habitat suitability and local stakeholder perspectives. Factors such as food availability, nesting sites, environmental threats, and human-wildlife conflict risks must be evaluated. The IUCN Guidelines for Reintroductions and Other Conservation Translocations underscore this step as foundational to conservation success.

According to the IUCN guidelines, the removal or minimisation of threats is a critical prerequisite before any conservation translocation can proceed. While complete eradication of threats is often unfeasible, most programmes adopt the pragmatic approach that minimising risks to an acceptable level is sufficient.

Figure 2: Poison baits for Egyptian Vultures.

Most programmes anticipate a degree of loss (due to poisoning, persecution, or electrocution) which is inevitable, but these losses are often advocated for policy reforms to drive further threat mitigation. Before a release, significant efforts are made to identify and address threats at the release sites. This may include retrofitting or insulating dangerous powerlines, engaging with local communities to reduce the use of poison baits (often targeting carnivores but harmful to scavengers), or identifying potential collision risks from windfarms.

3.4 Monitoring Before, During, and After Release

Monitoring is a critical element at every stage of the reintroduction or reinforcement process. Pre-release monitoring includes health assessments, genetic screening, behavioural evaluations of the birds to be released, and habitat suitability analyses. During the release phase, field staff monitor how birds adapt to their new environment, tracking movements, foraging behaviour, and predator avoidance. Birds are often tagged for individual identification to facilitate detailed data collection. Post-release monitoring is essential to assess long-term success. It includes tracking survival, breeding success, dispersal, and threats such as persecution or human disturbance. Regular monitoring of released populations is vital to detect problems early, such as disease outbreaks or low breeding rates, allowing for timely interventions.

Understanding the interaction of reintroduced populations with relation to their environment helps in adjusting management practices, allowing conservation teams to refine techniques, adjust release timing or locations, and improve future outcomes.

Figure 3: Monitoring vulture's movements using special GPS tags.

Monitoring programmes that involve local communities also contribute to local stewardship and awareness, leading to more effective conservation efforts. Sharing monitoring results with the public can enhance community involvement in conservation efforts and boost support for ongoing projects and programmes.

4. Regulatory Framework Governing Raptors Conservation Programmes

The success of raptors reintroduction and reinforcement programmes depends heavily on a comprehensive regulatory framework. This framework ensures that ecological standards, legal compliance, and ethical standards are met throughout the process, from planning and sourcing to release and post-release monitoring. The regulatory landscape is multi-layered, encompassing international policies, national legislation, and best-practice guidelines and manuals.

4.1 International Frameworks

At the global level, several key instruments provide the foundation for responsible conservation translocations. The IUCN Guidelines for Reintroductions and Other Conservation Translocations (IUCN/SSC, 2013) remain the most widely adopted regulatory framework. These guidelines establish core principles, including the need for ecological feasibility studies, risk assessments, adaptive management plans, and long-term monitoring. The guidelines are designed to be used in tandem with national regulations and are referenced by many regional authorities.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) plays a critical role when raptors are moved across international borders. For example, translocations involving White-tailed Eagles (*Haliaeetus albicilla*) from Norway to the UK required CITES permits, as the species is listed under Appendix I.

In the European Union (EU), the Birds Directive provides a legal framework and forms the cornerstone of the EU bird protection law. It requires Member States to maintain or restore populations of all wild bird species by safeguarding their habitats, prohibiting harmful activities, and establishing Special Protection Areas, particularly for endangered and migratory species, within the Natura 2000 network.

Figure 4: Critically Endangered White-rumped Vulture (*Gyps bengalensis*) nesting.

The CMS Resolution 12.10 (Rev.COP14) calls on Parties and invites non-Party Range States to undertake vulture reintroduction programmes in ecologically suitable areas where these species formerly occurred. Such programmes must adhere to the IUCN Guidelines for Reintroductions and Other Conservation Translocations to ensure scientific rigour and conservation effectiveness.

The Raptors MOU encourages the implementation of targeted conservation and recovery measures aimed at maintaining or restoring birds of prey to a favourable conservation status across their range. One of the recommended actions under the Raptors MOU Action Plan is to implement reintroduction or reinforcement programmes, where appropriate and based on the best available scientific

evidence, in line with prevailing international guidelines. These interventions are particularly encouraged where such measures have been demonstrated to improve the (unfavourable) conservation status of targeted species, whether or not captive breeding is involved.

Additionally, the Bern Convention on the Conservation of European Wildlife and Natural Habitats (or Bern Convention) and the Convention on Migratory Species (CMS) also provide a legal basis for species protection, habitat conservation, and coordinated efforts among countries, particularly for migratory raptors.

4.2 National and Regional Regulations

At the national level, individual countries have developed specific legal frameworks and best-practice codes to regulate conservation translocations. In the United Kingdom, the regulatory environment is well-structured and informed by both international guidelines and national policies:

- The Scottish Code for Conservation Translocations is developed by NatureScot, Scotland's nature agency responsible for nature conservation. It provides a structured framework for evaluating and implementing conservation translocations in Scotland (National Species Reintroduction Forum, 2014). It aims to minimise risks and conflicts by applying the principles of precaution and proportionality. For low-risk translocations, the code serves as a practical checklist, allowing projects to proceed without unnecessary bureaucracy. In higher-risk cases, it outlines processes for planning, consultation, and impact evaluation. The code applies strictly to conservation-driven translocations and excludes those for agriculture, aquaculture, hunting, forestry, or animal welfare purposes.
- Natural England's Reintroductions and Other Conservation Translocations (Code and Guidance for England) (Department for Environment, Food & Rural Affairs, 2021) supports the UK Government's 25-Year Environment Plan and aligns closely with both the Scottish Code and IUCN guidelines to promote consistent best practice across the UK. Though non-statutory, this guidance informs many aspects of conservation translocations covered by the legislation and is supported by statutory bodies including Natural England and the Marine Management Organisation.
- The Wildlife and Countryside Act 1981 forms the legal foundation for protecting native species in the UK. It regulates the capture, handling, and release of wild birds and enacts international obligations under the Birds Directive and the Bern Convention.

In India, the legal framework is driven by the Wildlife (Protection) Act, 1972, and guided by the National Wildlife Action Plan (2017–2031) [2] . These frameworks, alongside IUCN guidelines, support conservation breeding and reintroduction efforts. The Central Zoo Authority (CZA) plays a key role in establishing protocols for ex-situ conservation and release programmes.
Additionally, the Saving Asia's Vultures from Extinction (SAVE) consortium has developed detailed technical guidance for practical vulture conservation, supporting best practices across South Asia.

Bulgaria's regulatory framework for reintroduction is governed by the Biological Diversity Act (2002) and its implementing regulation under Article 69. It sets the conditions for introducing non-native or reintroducing native species into the wild. The Act establishes the National Ecological Network (NEN) to conserve biological and landscape diversity and regulate the protection of endangered and endemic species.

In Spain, the 2007 Law on Natural Heritage and Biodiversity underpins national conservation efforts and aligns with EU legislation such as the Birds and Habitats Directives. This legal architecture is strengthened by Spain's commitments to international agreements including the Convention on Biological Diversity and the Ramsar Convention.

In Italy, species reintroductions are regulated under the Habitats Act, which transposes the EU Habitats Directive into national law. Reintroductions are typically led by public bodies and require collaboration with local municipalities, scientific institutions, and regional authorities. The Italian Institute for Environmental Protection and Research (ISPRA) issues technical guidance and oversees compliance with national and regional conservation provisions. ISPRA operates under the Italian Ministry for the Environment and plays a key role in authorising and monitoring reintroduction programmes.

4.3 Authorisation and Licensing Processes

Before any reintroduction or reinforcement project or programme can proceed, a rigorous authorisation process must be followed. This typically includes:

- Submission of a detailed project plan including ecological assessments and risk evaluations.
- Completion of a stakeholder engagement strategy.
- CITES permits for international transfers of listed species.
- Permits from the national conservation authority, such as NatureScot or Natural England in the UK.
- Compliance with site-specific restrictions, such as protected area designations or biosecurity protocols.

[2] India's National Wildlife Action Plan 2017-31. Version 3. Available at: https://cza.nic.in/uploads/documents/nwap_2017_31.pdf

All reintroduction initiatives must demonstrate that they align with national biodiversity strategies and international conservation goals. Interviewees highlighted the practical challenges in navigating the regulatory landscape, particularly when timelines for permit approvals are misaligned with the biological needs of the bird species or the timeline of the donor.

However, they also noted that frameworks such as the Scottish Code have provided exemplary models of transparency, consistency, and flexibility. Early engagement with regulatory bodies was repeatedly cited as a best practice that helped streamline the process of reintroductions.

Figure 5: Release of a Griffon Vulture in the wild.

5. Raptors Reintroduction and Reinforcement Programmes

Table 1 – Overview of the Programmes for Raptors Species Reintroduction/Reinforcement in this report.

Project/ programme name	Species	Intervention type	Active years	Methodology	Annual Cost (USD)	Total Cost (USD)	Funders	Countries involved	Resources
The Saker Flacon Reintroduction project	Saker Falcon *(Falco cherrug)*	Reintroduction	2019 – 2024	• Hacking	30,000	149,400+	MBZ Raptor Conservation Fund	Bulgaria	https://w.greenbalkans-wrbc.org/breeding-programme
Saving Asia's Vultures from Extinction (SAVE) programme	White-rumped vulture *(Gyps bengalensis)*	Reinforcement	2008 – 2023	• Soft release • Ongoing provisioning of food • Monitoring the birds	100,000	1.4 million	RSPB, NTNC, Govt. of Nepal, ZSL, Rufford	Nepal	https://save-vultures.org/
Saving Asia's Vultures from Extinction (SAVE) programme	White-rumped vulture *(Gyps bengalensis)*	Reinforcement	2003 – 2019 (ongoing)	• Soft release • Ongoing provisioning of food • Monitoring the birds	1 million	20 million (est.)	RSPB, UK Government, Indian State Governments	India	https://save-vultures.org/
Recovery of the Populations of Large European Vultures in Bulgaria	Griffon Vulture (*Gyps fulvus*)	Reinforcement	2009 – 2021	• Soft release with acclimatization	199,200	2.3 million	LIFE Programme	Bulgaria	LIFE08 NAT/BG/000278
The Egyptian Vulture New LIFE project	Egyptian vulture (*Neophron percnoterus*)	Reinforcement	2018 – present	• Fostering • Hacking • Delayed Release	14,000	98,300+	LIFE Programme, ELSP	Bulgaria (Balkans)	LIFE16 NAT/BG/000874
The LIFE Egyptian Vulture Project	Egyptian Vulture (*Neophron percnoterus*)	Reinforcement	2017 – 2023	• Hacking • Delayed release	974,100	5.8 million	LIFE Programme	Southern Italy & Canary Islands	LIFE16 NAT/IT/000659 https://www.lifegyptianvulture.it/il-progetto/
The South of Scotland Golden Eagle Project	Golden eagle (*Aquila chrysaetos*)	Reinforcement	2018 – 2024	• Soft release	450,000	2.7 million	Heritage Lottery Fund	Scotland	The South of Scotland Golden Eagle Project

Project/ programme name	Species	Intervention type	Active years	Methodology	Annual Cost (USD)	Total Cost (USD)	Funders	Countries involved	Resources
The Red Kite Reintroduction Programme in England	Red kites (*Milvus milvus*)	Reintroduction	1989 – 2010	• Hacking • Monitoring the birds	162,000	3.4 million	RSPB, Natural England, NatureScot	England	https://publications.naturalengland.org.uk/file/113035 https://publications.naturalengland.org.uk/file/141027
The Eagle Reintroduction Wales (ERW) project	White tailed eagle (*Haliaeetus albicilla*) & Golden Eagle (*Aquila chrysaetos*)	Reintroduction	2016 – present	• Soft release	236,500	11.8 million	RSPB, NatureScot	Wales	Eagle Reintroduction Wales
White tailed Eagle Reintroduction Project	White tailed eagle (*Haliaeetus albicilla*)	Reintroduction	1975 – present	• Hacking • Monitoring the birds	236,500	12 million	RSPB, NatureScot	Scotland	Sea eagles in Scotland – 50 years on – Scotland's Nature
White-tailed Eagle Reintroduction in Southern England	White tailed eagle (*Haliaeetus albicilla*)	Reintroduction	2019 – present	• Hacking • Soft release	270,500	694,700	Forestry England, Roy Dennis Wildlife Foundation	England	Forestry England Isle of Wight reintroduction - Roy Dennis Wildlife Foundation

5.1 Overview of Programmes

This section provides an overview of key raptors reintroduction and reinforcement projects and programmes implemented across Europe and South Asia, highlighting the historical context, conservation goals, and geographical focus of each programme. While the scope of this report is limited to these regions, it is important to acknowledge the extensive and highly relevant experience in North America, where such programmes have been implemented since the 1960s.

The Saker Falcon *(Falco cherrug)* restoration project in Bulgaria run between 2019 and 2024, in response to the species dramatic population decline throughout the 20th century, culminating in the last confirmed nesting in Bulgaria in 1998. The programme was mainly implemented by the Green Balkans, while funded by the Mohamed Bin Zayed Raptor Conservation Fund (MBZRCF) and focused on using individuals of European origin. Previously, the Environment Agency, Abu Dhabi, initiated conservation projects in the southern Balkans in 2006, collaborating with local conservationists to develop a captive breeding and restoration program for Saker Falcons in Bulgaria.

In South Asia, particularly Nepal and India, programmes have focused primarily on the reinforcement of White-rumped Vulture (*Gyps bengalensis*), a species that experienced drastic population declines due to the widespread use of Diclofenac in veterinary practice. In Nepal, the conservation breeding programme for the White-rumped Vulture was implemented by

Figure 6: Young Saker Falcon chicks.

Bird Conservation Nepal (BCN) and operated from 2008 until 2023. The initiative focused on reinforcing the local vulture population utilised both captive-bred birds and nestlings taken from the wild and was mainly funded by the UK's Royal Society for the Protection of Birds (RSPB).

Figure 7: A tagged White-rumped Vulture monitored in Nepal (Photo: Ankit Bilas Joshi/BCN).

Although the programme concluded in 2023 due to infrastructural limitations, particularly unreliable electricity for breeding centres, closure was also prompted by improved wild population trends and the successful mitigation of the primary threat, the veterinary use of vulture-toxic Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) such as

Diclofenac. Monitoring of released individuals using satellite telemetry remains ongoing.

India's parallel programme began in 2003 and is still active. It is led by the Bombay Natural History Society (BNHS) and spans across several Indian states including Assam, Haryana (the largest bird population centre), West Bengal, and Madhya Pradesh. The reinforcement programme utilises a diverse origin of birds, including rescued adults, injured individuals, and wild-collected nestlings. The conservation effort continues to maintain a large captive population of over 800 vultures across five breeding centres. The programme was initially funded by the RSPB, and the UK Government for the first eight years, after which financial responsibility has increasingly shifted to Indian state governments. In contrast to Nepal, India's programme has shifted its focus from large-scale releases to evaluating the safety of the environment before scaling up releases. However, with current negotiation under consideration involving whether a small-scale release may proceed while comprehensive environmental safety checks are still underway. This approach has yet to receive full agreement among stakeholders. In such contexts, satellite telemetry plays a vital role in monitoring released individuals, providing real-time data on movement and survival of birds. This also allows to uncover the invisible causes for mortality.

The Griffon Vulture reinforcement project in Bulgaria was conducted from 2009 to 2021 utilising wild born individuals. While locally a reintroduction project, since the species had disappeared from the area, it was considered a reinforcement at the national level due to an existing population in southern Bulgaria. The project's aim was to recover the species and reintroduce it to areas from which it had disappeared. It was implemented by the Green Balkans, the Vultures Conservation Foundation, and the Fund for Wild Flora and Fauna, with funding from the European Commission's (EC) LIFE Programme.

Figure 8: Griffon Vultures at the Green Balkans Rescue Centre.

Another ongoing project, launched in 2018 in Bulgaria, builds upon an initial pilot release in 2016 and aims to reinforce the Egyptian Vulture population in the Balkans. Branded for public outreach as the "School for Egyptian Vultures," the initiative is supported by a 20-year Reinforcement Strategy introduced in 2022, with planned updates every five years. The project seeks to reverse the population decline of this critically endangered species. Only 60 breeding pairs remain in the Balkans, of which half of them are present in Bulgaria's Eastern Rhodopes region. The approach is underpinned by ecological modelling, including the release of

captive-bred and wild-hatched birds, and the protection of wild populations along migratory flyways to reduce mortality. This project utilised birds from the European Endangered Species Programme (EEP) under the European Association of Zoos and Aquariums (EAZA). These included captive-bred birds from European zoos and wild-hatched chicks collected late in the season from nests in Bulgaria. The project is implemented by the Bulgarian Society for the Protection of Birds (BSPB) and Green Balkans, with primary funding from the "Egyptian Vulture New Life", EU LIFE Project.

Figure 9: Captive breeding of Egyptian Vulture at CERM.

Figure 10: Golden Eagle delivering prey to its eyrie.

The LIFE Egyptian Vulture Project is active from 2017 to 2023, focused on reinforcing the population of Egyptian Vulture in southern Italy (Apulia, Basilicata, Calabria, and Sicily) and the Canary Islands in Spain (Fuerteventura and Lanzarote). In addition to direct conservation actions such as reinforcement, the project addressed threats to the species' survival and aimed to encourage demographic recovery and range expansion. Captive-bred individuals were supplied through a partnership with the Endangered Mediterranean Raptors Centre (CERM) in southern Tuscany. The project was funded by the EC LIFE Programme and supported by coordinated and associated beneficiaries from both Italy and Spain.

The South of Scotland Golden Eagle Project (2018–2024) is a reinforcement initiative aimed at restoring the Golden Eagle (*Aquila chrysaetos*) population in southern Scotland. Despite a healthy population in the Highlands, the south of the Central Belt of Scotland, including areas around Edinburgh and Glasgow, showed a marked absence of the species, with only six individuals persisting in the south. The project collected wild-origin chicks from nests in northern regions during summer, rearing them in the south until ready to be released. This initiative is a collaborative effort between RSPB, NatureScot, Scottish Forestry, and the Scottish Land & Estates, with principal funding from the National Lottery Heritage Fund. The project remains active, with ongoing monitoring and long-term support.

Figure 11: A Red Kite chick from the original reintroduction project (Photo: Ian Evans).

The Red Kite Reintroduction Programme in England began in 1989 and extended into the 2010s. Its objective was to restore Red Kites to their historic range in England and to support broader UK-wide recovery. Chicks were sourced from wild populations in Spain, Germany, Wales and Sweden and released at various sites across England and Scotland. The programme addressed the dramatic decline in Red Kite populations due to persecution, egg collection, and habitat loss during the nineteenth century, which had left only 18–20 pairs by the 1970s, largely confined to remote areas of mid-Wales. It was planned and implemented by the RSPB and Nature Conservancy Council and its successor statutory conservation agencies, the Joint Nature Conservation Committee, Natural England and Scottish Natural Heritage. The programme was primarily funded by these bodies, with additional support from private sponsors. The initiative has been successful, with recolonization now continuing through natural dispersal from established populations through much of England and parts of Scotland (although rate of spread in Scotland has been slower due to continuing persecution) (Smart *et al.*, 2010).

The Eagle Reintroduction Wales (ERW) project launched in 2016, is preparing for the reintroduction of White-tailed Eagles (*Haliaeetus albicilla*) and, eventually, Golden Eagles to historic ranges in Wales using wild-origin eaglets from Norway. It is managed by the Durrell Wildlife Conservation Trust in partnership with Gwent Wildlife Trust and the Wildfowl & Wetlands Trust (WWT) to conduct the Welsch reintroduction. A licence application has been submitted to Natural Resources Wales, with processing potentially taking up to 12 months. The first releases are anticipated in summer 2026.

Figure 12: John Love releasing a young White-tailed eagle on the Isle of Rum NNR.

White-tailed eagles had become extinct in the UK in 1918 due to widespread persecution, primarily over concerns about livestock predation. Although initial efforts to reintroduce the species began in 1969, they were unsuccessful. It was not until the late 1970s and early 1980s that a well-funded and coordinated programme was established with significant community engagement efforts. The successful reintroduction used wild-origin chicks from Norway and was led by the

RSPB, the Nature Conservancy Council (NCC), including Scottish Natural Heritage (later NatureScot) and English Nature (later Natural England), with contributions from various funding bodies. These efforts have re-established a viable population in western Scotland. For eastern Scotland, The East Scotland Sea Eagle (ESSE) Project (2007–2012) phase specifically aimed to accelerate population recovery and expand the species range in eastern Scotland.

Figure 13: Juvenile White-tailed Eagles being released on the Isle of Wight.

Building on this success, the White-tailed Eagle Reintroduction on the Isle of Wight began in 2019. The project aims to establish a breeding population of 6–8 pairs within a 60 km radius of the island, with birds spreading from east and west along the South Coast. This initiative is a partnership between Forestry England and the Roy Dennis Wildlife Foundation and has so far used wild-origin birds sourced from nests in Scotland. The programme is ongoing, with 45 eagles already released, and breeding among the released population that has taken place over the last three years.

5.2 Methodologies

This section outlines the translocation and release techniques used in raptors conservation efforts, evaluating different suitability for different species and regional contexts.

The Saker Falcon programme in Bulgaria employed the wild hacking technique, commonly used in raptors conservation, using individuals of European origin. In this method, young birds are placed in protective enclosures where they are fed without human interaction to avoid imprinting. Once ready, the hack boxes are opened, allowing the birds to gradually explore and become independent.

Figure 14: Aviaries for Saker Falcons in Bulgaria.

Despite its success, this method faced several challenges, including delays caused by the COVID-19 pandemic, outbreaks of avian pox (a disease caused by Avi poxvirus that affects both featherless and mucous membrane areas), and budget constraints due to inflation. Additionally, the programme required adjustments in the falcon's diet to improve egg hatchability and emphasized strict hygiene and biosecurity standards, alongside the training of avian veterinarians.

In Nepal and India, the soft release methodology was adopted for the White-rumped Vulture. In Nepal, both captive-bred and wild nestling birds were utilised, while in India, the birds included wild-caught injured individuals from kite festivals[3], adult birds, and nestlings. Birds were provisioned with food twice a week post-release and closely monitored via satellite telemetry. This approach was informed by international best practices, including the Gyps programme in France, Spain, and Bulgaria which are supported by the EC LIFE Programme, as well as the California Condor reintroduction efforts in the United States. Nevertheless, the method had its own difficulties. In both countries, post-release survival was variable, and in India, feeding stations had to be relocated due to soil contamination from nematodes. Additionally, released birds showed higher susceptibility to electrocution than wild populations, prompting the need to plan electrocution aversion training, a measure adopted in Israel. Ethical concerns with the Aversion Training, however, limited the implementation of some of these strategies.

Electrocution Aversion Training

Electrocution aversion training is a method used to reduce bird mortality from power lines by teaching birds to avoid hazardous structures through mild aversive stimuli, such as shocks or loud noises.

Birds learn to associate discomfort with power lines and avoid them. While effective in reducing contact, the method is temporary and requires regular reinforcement.

Ethical considerations are crucial to ensure training remains humane. This approach should be combined with other mitigation measures, such as retrofitting dangerous power lines and identifying high-risk areas. Collaboration among conservationists, researchers, and utility companies is essential for comprehensive and lasting bird protection.

[3] The Kite Festival in India, widely celebrated during Makar Sankranti, is a vibrant cultural event marked by kite flying. However, it poses significant threats to birds. Common injuries from contact with kite strings or *manja* include broken wings, lacerations, blunt trauma, feather loss, and broken beaks.

Figure 15: Released vultures join wild vultures at the carcass outside. (BCN, Nepal, 2018).

For the Griffon Vulture project in Bulgaria, a soft release method was applied using wild-born individuals from other countries. Birds were kept in acclimatisation aviaries for a period of 3 – 4 months before release (Fozzi *et al.,* 2023). During this time, strict care protocols are observed to minimise stress and maximise post-release adaptation.

Figure 16: Veterinary care for Griffon Vulture.

Captive-bred individuals, on the other hand, were released using the hacking method, with birds placed in artificial nests that mimic wild conditions. The programme had to carefully adapt international best practices to local conditions, taking into account regional food availability, and climate conditions The release period was closely tied to weather patterns, drawing importance of local context in project planning.

In contrast, the Egyptian Vulture reinforcement project in the Balkans adopted a science-driven approach by testing three release methodologies over three years to determine the most effective strategy. These methods included:

1) Fostering – Captive-bred chicks were inserted into wild nests and raised by wild pairs (50% survival rate).
2) Hacking – Birds were placed in secure artificial nests (hacking sites) on cliffs, with no parental care (22% survival rate).
3) Delayed Release – Birds were kept in captivity for their first year of life and then transferred to adaptation aviaries the following spring. After a two-month acclimatisation period, they were released (67% survival rate).

Birds undergo a detailed pre-release training regime designed to enhance their survival skills in the wild. This comprehensive training process (referred as Vulture School) prepares the birds for post-release challenges. Birds are housed in aviaries near vulture feeding stations to observe and interact with wild individuals, promoting social learning. They are exposed to diverse food types such as tortoise shells filled with meat, reptiles, and small carcasses, while avoiding potentially contaminated roadkill. The aviaries also support flight development and include trees to encourage safe roosting.

Figure 17: Adaption aviaries for Egyptian Vultures in the Balkans

Birds undergo regular veterinary checks and physical conditioning to build strength and survival skills. This detailed training programme presents significant logistical and financial demands but has resulted in a 67% survival rate, higher than that of wild-hatched chicks.

The project's success depends on the technical execution of release strategies as well as continued investment in captive care, veterinary oversight, and adaptive management, informed by survival data.

Figure 18: The first supplementary feeding station for vultures in Albania.

The LIFE Egyptian Vulture project employed two primary release techniques: hacking (used for 16 juveniles) and delayed release (used for 12 individuals). In Italy, due to the scarcity of wild breeding pairs, the fostering method was not feasible.

Figure 19: Release of vultures by hacking in Matera Canyon.

Birds were bred in captivity at the CERM in Tuscany and released at around 90 days of age. The hacking method was preferred due to its higher success rate compared to delayed release in this context. However, high-quality captive breeding required a high degree of technical expertise, veterinary care, and financial investment to maintain genetic diversity and ensure long-term viability of the released population.

Figure 20: Captive-bred chicks being hand-fed with an Egyptian Vulture puppet.

The South of Scotland Golden Eagle Project employed both summer and winter translocations using a soft-release approach. The project's methodology was grounded in established protocols used in other raptors project in the UK, including those for Ospreys (*Pandion haliaetus*), White-tailed Eagles and Red Kites. Summer translocations involved selecting Golden Eagle chicks aged between five and eight weeks from twin nests across the Highlands and Islands of Scotland. These chicks were transported to the south of Scotland, reared in aviaries with minimal human contact, and subsequently released. Winter translocations occurred for three years and involved capturing free-flying sub-adult eagles (birds that had left their natal territories but had not yet established breeding territories). Deer carcasses were used as bait and birds were caught using bow traps monitored via remote cameras. Once captured, these birds were tagged and released immediately in the south.

While the soft-release methodology has been widely successful across raptors, the project experienced an unprecedented behavioural challenge. In the second year of releases (2019), a female eagle from the 2018 cohort, nicknamed "Beaky", returned to the release site and killed two newly released birds. This incident occurred four to five days post-release when the juveniles had begun to forage. Although Beaky had established herself 12 km from the release site, telemetry data showed that she returned, possibly viewing the site as her natal territory and defending a food source.

Figure 21: “Beaky,” adopted and named by St. Peter’s Primary School, Galashiels.

Remarkably, Beaky later paired with a surviving male from the release cohort, and the two established a territory and successfully bred. While scientifically fascinating, the event was devastating from a conservation perspective and necessitated a change in protocol. The project opted to use different release sites each year, presenting logistical challenges due to Scotland’s open access laws and the need for quiet and undisturbed environments.

The Red Kite reintroduction programme sourced young chicks from Spain, Germany, Sweden, and Wales, rearing them in captivity under strict protocols to prevent human imprinting. There were simultaneous releases in north-east of Scotland and south of England. Pre-fledgling red kites from Spain were reintroduced in Black Isle in Scotland while migratory red kites from Sweden were reintroduced in Chiltern. Chicks were housed in specially designed cages where food was placed on feeding ledges in such a way that humans were never seen (Carter and Grice, 2002). This technique was the most reliable, ensuring that the chicks associated their caregivers with their own species rather than humans. Visual barriers, spy holes, and minimal noise exposure were used to maintain a naturalistic rearing environment.

Birds were released around the time of natural fledging, with supplementary food provided at nearby dumps and left on top of the quarantine/release cages to aid acclimatisation and dispersal. Nearly 1,000 birds were released across nine sites in England and Scotland between 1989 and 2013. Once self-sustaining populations were established, the programme transitioned to reinforcement using chicks from established populations, such as those in the Chilterns.

This approach proved highly successful. In Scotland, release locations included northern Scotland, Dumfries and Galloway in the southwest, Stirling in central Scotland, and the northeast coast near Aberdeen. In England, multiple release sites were active simultaneously. As the population grew, fewer birds were sourced from Spain and Sweden. With new populations established, chicks from UK breeding pairs were translocated to ‘seed’ additional areas through a programme of rolling releases.

Challenges included the complex CITES and animal health paperwork required for transnational transport and release. However, the method's effectiveness was evident as the reintroduced birds began to recolonize former habitats, reducing the need for further external reinforcement.

The Welsh Eagle Project's methodology closely aligned with global best practices for raptors reintroduction. Prediction of bio-geographic areas highlighted for more focus work for Golden Eagle and White-tailed Eagle reintroduction in Wales, illustrating the historic and current distribution of records across Wales (Figure 24) (Williams, 2021).

The approach involved mimicking the natural biology of the species including sourcing, collection, quarantine, monitoring and release which shadowed the natural biological cycles. This global methodology has been used for *Haliaeetus* species and other raptors over the last 50-years.

Figure 22: Norwegian eagle experts and the ERW team studying White-tailed Eagles in Norway (Photo: James Byrne).

Eaglets are sourced from Norway at approximately seven weeks of age, when they are fully feathered, capable of thermoregulation, and semi-independent. Once translocated to Wales, the birds undergo a four-week quarantine period for health checks and acclimatisation. At 11–13 weeks (natural fledging age) they are released into the wild.

Figure 23: A Golden Eagle egg from Scotland.

The release project spans five years, with 8–12 eaglets released annually to create a mixed age structure. This approach supports natal philopatry, where birds return to breed at their release site upon reaching sexual maturity. It is anticipated that the first breeding pairs will establish territories approximately five years post-initial release.

The project also integrates long-term monitoring to assess adaptation, dispersal, and survival. Preliminary observations highlight the importance of releasing birds at natural fledging age. Birds released too late (i.e., post-fledging) exhibit wider dispersal and lower survival rates, while those released at the appropriate developmental stage are more likely to imprint on the release site and remain within the area.

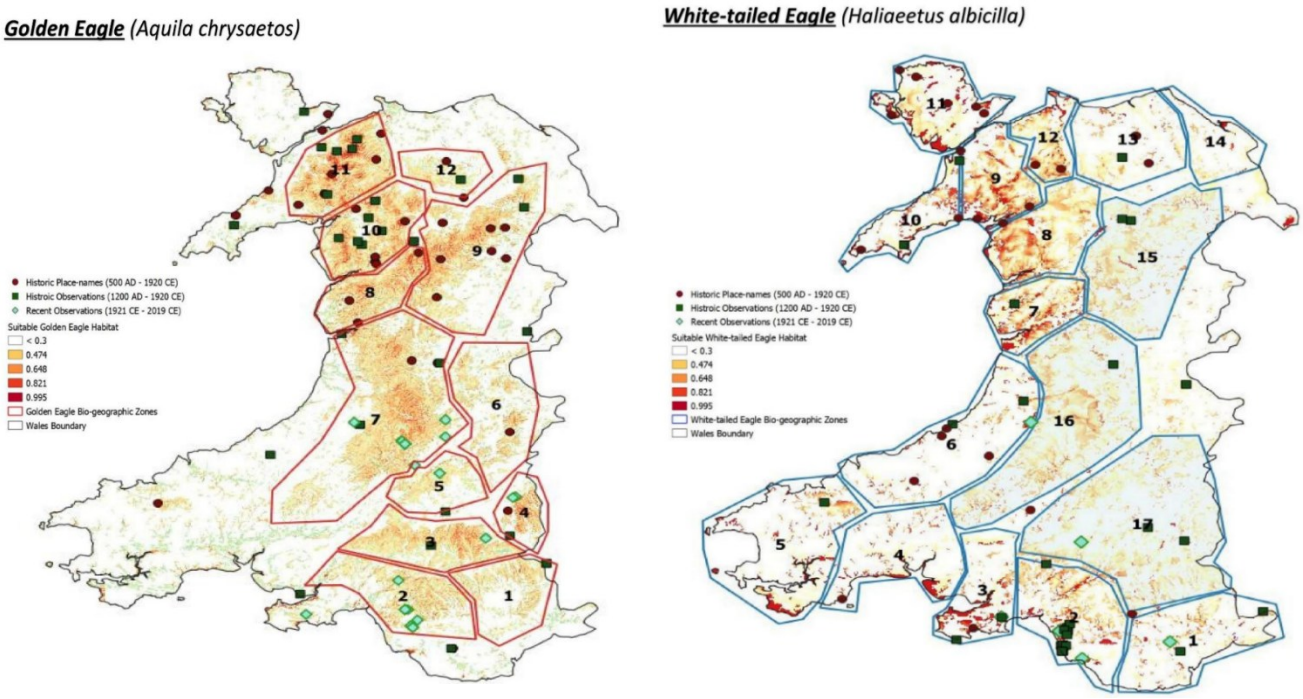

Figure 24: Bio-geographic zones of priority for Golden Eagle and White-tailed Eagle reintroduction in Wales (Williams, 2021).

The White-tailed Eagle reintroduction project used wild-origin eaglets sourced from Norway (about 20), translocated to Scotland at around three weeks of age. These birds were reared in large aviaries with no human contact, similar to the approach used for red kites. Feeding was conducted via hatch systems, and cages offered views over natural coastal habitats to simulate the bird's native environment.

At fledging age, the cages were opened, allowing the eagles to leave and begin their lives in the wild. In recent years, all individuals were fitted with satellite transmitters for monitoring post-release movements and survival. The programme conducted releases at multiple sites across Scotland's west and east coasts.

Over time, the population grew, and today there are approximately 150–160 breeding pairs in Scotland, indicating a self-sustaining population (NatureScot, 2021). As White-tailed Eagles take around five years to reach breeding maturity, the release programme had to span several years before successful wild breeding was observed.

Figure 25: A juvenile Sea Eagle on the Isle of Rum NNR (© John Love, NatureScot).

Figure 26: The fist White-tailed Eagle chick in southern England in 240 years.

The southern England White-tailed eagle project collected juvenile eagles aged 5–7 weeks from nests in Scotland, specifically, from nests containing two chicks, so one chick remained with the adults. The collected birds were translocated to the Isle of Wight on the south coast and housed in large, secluded aviaries for 5–6 weeks, without human interaction. At fledging age, the birds were released and provided with fish-based supplementary feeding through autumn and winter. Satellite tracking allows for real-time monitoring of individual movements.

Figure 27: The nest where the project's first chick was raised and fledged.

The project has faced challenges, including significant impacts from avian influenza outbreaks in 2022 and 2023. Poor weather conditions in Scotland also reduced the number of viable chicks. Originally designed as a five-year project targeting 60 birds, the project was extended beyond 2024 to accommodate these unforeseen disruptions. Discussions are underway to expand releases to other areas in southern England, particularly where eagles have begun to establish temporary range.

5.3 Costs, Sources of Funding and Types of Stakeholders Involved

5.3.1 Costs and Sources of Funding

The financial scale of these conservation efforts varied significantly[4]. In Bulgaria, the Saker Falcon restoration cost approximately $30,000 per year between 2019 and 2024, with additional funds allocated for long-term monitoring. In contrast, Nepal's White-rumped Vulture programme operated at an annual cost of around $100,000 over 14 years, totalling approximately $1.4 million. This programme was primarily funded by the UK's RSPB, with additional support from the Government of Nepal, National Trust for Nature Conservation (NTNC), the Zoological Society of London and the Rufford Foundation. India's programme is the most resource-intensive, averaging $1 million annually for 20 years, with major costs associated with maintaining a large captive population (800 individuals) and infrastructure across five breeding and release centres. The Griffon Vulture reinforcement project, funded through the

[4] UN Operational Rates of Exchange - Rates

EU's LIFE Programme, had a budget of approximately $2.3 million. The Egyptian Vulture reinforcement project in the Balkans operates on a more modest budget. Annual costs include between $13,150–$14,000 for monitoring and GPS tracking of released birds; an additional $13,150 - $14,000 for breeding and overwintering costs. Initial establishment funding for the first five years came from the "Egyptian Vulture New Life" LIFE project, with subsequent support now provided by the UK-based Endangered Landscapes and Seascapes Program (ELSP).

The LIFE Egyptian Vulture initiative in Italy and Canary Islands (2017–2023) had a total budget of $5.8 million, also supported by the LIFE Programme.

The South of Scotland Golden Eagle Project was primarily funded by the UK Heritage Lottery Fund, which raises funds through UK lottery ticket sales and supports a wide range of heritage and conservation initiatives across the country. Additional contributions were provided by the RSPB, LEADER (a European programme which ceased following UK's exit from the EU), and a number of smaller private donations. The total cost of the project over its implementation period was approximately $2.7 million.

The UK Red Kite reintroduction programme had an annual operating cost of approximately $162,000. Funding was equally spilt between the RSPB, and the UK government's statutory agencies, Nature Conservation Council, Joint Nature Conservation Committee, English Nature (now Natural England) and Scottish Natural Heritage (now NatureScot). At the time, EU membership provided a crucial policy and funding framework that enabled reintroductions of this nature.

The LIFE Programme

The LIFE Programme, launched in 1992, is the European Union's main funding mechanism for environmental and climate action. It is managed by the European Commission and supports projects that conserve nature, tackle climate change, promote clean energy, and advance EU environmental policies.

The programme has a budget of $6.2 billion for 2021–2027, for initiatives in areas such as biodiversity, clean technology, and waste management. It operates through sub-programmes for environment and climate, encouraging partnerships among public and private sectors, NGOs, and research institutions.

The reintroduction of White-tailed Eagles to Scotland was a long-term and high-cost endeavour, with annual expenditure during the intensive release phases ranging from $202,700 to $270,000. Funding was jointly provided by the RSPB and NatureScot, with clear outline of roles and responsibilities between the two organizations.

The East Scotland Sea Eagle (ESSE) Project alone cost approximately $337,900 per year, with ongoing monitoring of the broader reintroduced population costing $101,300 annually. Early phases were primarily funded

through public sector, support from NatureScot and charitable funding through the RSPB, supplemented by private donations.

The southern England White-tailed Eagle project, initiated in 2019, operates at an annual cost of approximately $270,500. It is delivered through a partnership between Forestry England, an executive agency of England's Forestry Commission (a government department responsible for managing the nation's forests) and the Roy Dennis Wildlife Foundation (a conservation charity). Funding in recent years has been supported by the government's Department for Environment, Food and Rural Affairs (DEFRA) through Forestry England's National Forest Wilding Programme. The White-tailed Eagle is specifically mentioned in the UK government's 25-Year Environment Plan as a priority species for restoration.

Long-term funding and sustained financial commitment are critical to the success of raptors reintroduction and reinforcement projects and programmes. These initiatives often span decades, requiring continuous investment in captive breeding, habitat management, threat mitigation, monitoring, and stakeholder engagement. As seen across projects in India, Nepal, and Europe, annual costs vary widely, from $30,000 to over $1 million, depending on the scale, species, methodology, and conservation context. Stable funding enables the execution of technical interventions and supports the gradual restoration of raptors population. Consistent financial backing from governments, NGOs, private and multilateral donors, and programmes like the EU LIFE initiative ensures these projects can address emerging threats and deliver measurable conservation outcomes over time.

5.3.2 Types of Stakeholders Involved

The Saker Falcon programme in Bulgaria was a tri-party collaboration. The Mohamed bin Zayed Raptor Conservation Fund (MBZRCF) provided the financial backbone of the initiative. The project was funded by the Environment Agency – Abu Dhabi (EAD) from 2006 to 2016. During the initial three years (2006–2009), efforts were focused on developing a comprehensive feasibility study. This was followed by the establishment of a breeding group and implementation of pilot release programmes from 2010 to 2014. A structured five-year reintroduction phase was launched in 2015. Later, in September 2019, the MBZRCF restarted the five-year release programme and provided veterinary training in advanced avian veterinary techniques. Funding was secured through to the end of 2024. Green Balkans conducted the fieldwork as well as engaged in monitoring of the released falcons and bird management, while the Bulgarian government facilitated necessary permissions and policy support.

In Nepal, Bird Conservation Nepal (BCN) was the primary implementer and served as a knowledge hub for the project. Local communities, particularly those involved in cow shelters, were integral in providing carcasses for food and maintaining social cohesion around the release sites. The NTNC managed the breeding and veterinary

facilities, while the Department of National Parks and Wildlife Conservation under the Government of Nepal provided logistical and legal backing. Additionally, Saving Asia's Vultures from Extinction (SAVE) provided expertise and Chitwan National Park hosted the breeding operations, while international support came from RSPB, Zoological Society of London, and the Rufford Foundation.

India's programme involved a complex network of national and state-level actors. BNHS served as the focal organization and collaborated with state forest departments and SAVE provided expertise for the programme. While early funding came from RSPB and the UK Government, Indian state governments began contributing more significantly over the last 6-7 years. Local community engagement in India was less pronounced, though local actors did support with food provision and social ties in the region.

In Bulgaria, the Griffon Vulture initiative involved the Bulgarian national government and the Spanish national government, a consortium of conservation NGOs, protected area managers, and local communities. Major contributors included Green Balkans (responsible for field implementation) and the Vulture Conservation Foundation, which coordinated release strategies, planning and bird procurement. Fund for Wild Flora and Fauna (charitable organization) implemented direct conservation measures including, feeding, threat mitigation, and releasing. The Bulgarian Ministry of Environment and Water, along with managers of protected areas, played a critical role in coordinating inter-agency cooperation.

The ongoing Egyptian Vulture reinforcement project in the Balkans involved multiple key stakeholders. The Bulgarian Society for the Protection of Birds (BSPB) leads on release,

Figure 28: Twice a week food provision for Vultures at Vulture Conservation Breeding Centre in Pinjore, Haryana, India.

planning, post-release monitoring, and administrative processes. Green Balkans manages the recovery and breeding centre, provides veterinary care, and prepares birds for release, including winter care for the birds prior to release. The EEP within the EAZA coordinates with zoos and breeding centres, identifies birds for release, and facilitates international transfers. Prague Zoo is the primary provider of chicks. In addition, the Bulgarian Ministry of Environment plays a critical role by granting permits and facilitating compliance with national policies.

The LIFE Egyptian Vulture project in Italy and Canary Islands featured a multi-layered partnership structure with support from the Ministry of Ecological Transition, Carabinieri Forestali, local stakeholders, NGOs, volunteers, municipalities, national and regional parks. Italy's coordinating beneficiary was E-Distribuzione (national electricity distribution company), while Spain's associated beneficiary was Endesa Distribución (national electricity distribution company). Other partners included Federparchi-Europarc Italia, Gesplan (the regional government of Canary Islands), the Italian Institute for Environmental Protection and Research (ISPRA), and regional administrations of Basilicata and Puglia. Threat mitigation efforts involved collaboration among various entities: E-Distribuzione worked on the insulation of dangerous powerlines; Federparchi managed communications; Regions-ISPRA oversaw supplemental feeding; and ISPRA led population reinforcing and monitoring. ISPRA also partnered with the Carabinieri Forestali to address illegal killing through poaching and poisoning investigations.

The south of Scotland Golden Eagle project was a collaborative partnership involving multiple key stakeholders. It was led by the RSPB alongside governmental partners including NatureScot, Scottish Forestry (responsible for forestry policy and management), and Scottish Land & Estates, which represents landowners and estate managers involved in farming, forestry, and game management. The inclusion of landowners and estate managers was crucial to the project's success, given that habitat

Figure 29: Aviaries at CERM.

access, gamekeeping practices, and land-use traditions had historically contributed to the decline of Golden Eagles through persecution. To address these issues and foster support, the project placed significant emphasis on stakeholder engagement and community outreach. A full-time stakeholder engagement officer worked extensively with farmers, foresters, and gamekeepers (groups often historically opposed to raptors conservation) to build trust, share information, and reduce perceived conflicts. Another staff member focused on public outreach, delivering presentations and activities in schools and communities, including live displays with a trained falconry eagle. A major achievement of the outreach programme was the establishment of the annual Eagle Festival in the town of Moffat, which has become both an educational event and an eco-tourism attraction that supports the local economy.

Figure 30: The Moffat Golden Eagle Festival, 2021.

The Red Kite reintroduction programme was jointly implemented by the RSPB and the respective government agencies in the Great Britain (Nature Conservancy Council and Joint Nature Conservation Committee) and then later in England and Scotland (English Nature/Natural England and Scottish Natural Heritage/NatureScot). These organizations were responsible for securing licences, sourcing birds from countries such as Spain, Sweden, Germany, and Wales, and overseeing the captive rearing and release processes (Carter, 2019). Public engagement was also a core component, project teams held regular public meetings, press events and provided special sessions for stakeholder groups such as farmers, landowners, and gamekeepers. Open days, where these groups were invited to see the birds and learn more about the project, were essential in building support in recent years. Monitoring was comprehensive and transparent. Stakeholders were kept informed about the movements of released birds, causes of mortality (through post-mortem analysis), and productivity rates. In northern Scotland, illegal poisoning by gamekeepers managing grouse moors remained a significant challenge, severely limiting the growth of red kite populations, despite similar breeding success to that of their counterparts in England (Smart *et al*., 2010; Newton, 2020). The highly social nature of red kites meant that expansion into new areas occurred slowly, necessitating multiple releases at different sites. Overall, widespread consultation, effective communication, and public visibility of the birds helped shift public perception and led to a broad base of support for the reintroduction in the early years.

The Eagle Reintroduction Wales (ERW) Project is currently managed by a consortium of NGOs, including the Durrell Wildlife Conservation Trust, Gwent Wildlife Trust,

and the Wildfowl & Wetlands Trust (WWT). The project collaborates closely with Norwegian Institute for Nature Research (NINA) in Norway to source juvenile White-tailed Eagles and relies on multiple UK governmental bodies for licensing and oversight, including Natural Resources Wales, DEFRA and the Animal and Plant Health Agency (APHA).

Prior to receiving licences, the project team undertook extensive public and stakeholder consultation across southeast Wales and the Severn Estuary. This included public talks, drop-in sessions, and workshops, which helped shape an adaptive management and monitoring framework, as well as a conflict mitigation and coexistence strategy.

For the White-tailed Eagle reintroduction project, the Nature Conservancy Council and RSPB ran the project and managed with obtaining licences and permissions through detailed stakeholder consultations. In the later years, engagement with key rural groups, such as the Scottish Land & Estates, the National Farmers Union of Scotland, and the Scottish Crofting Foundation, was essential to mitigate opposition, particularly from those concerned about potential impacts on livestock and land use.

Birds were sourced from Norway through collaboration with the NINA. Volunteers, including members of the Royal Air Force (RAF) and Norwegian Air Force, assisted in locating and accessing nests with multiple chicks to ensure minimal disruption to the donor populations. This pro bono support

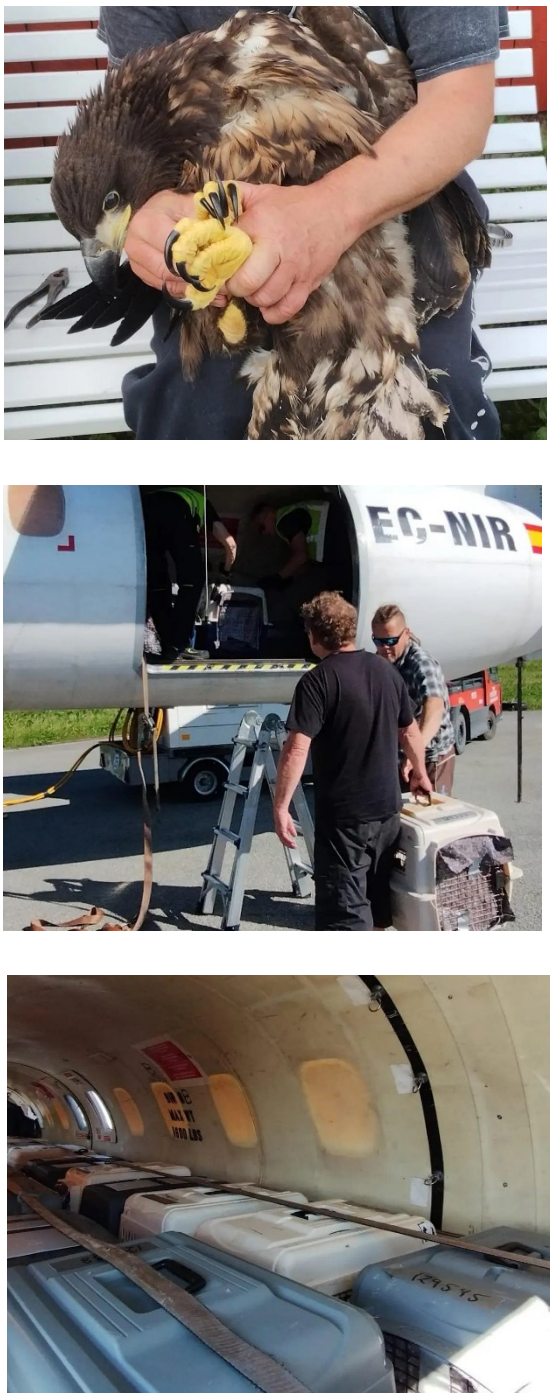

Figure 31: Twenty-seven Norwegian Sea Eagle chicks transported to Ireland for the ERW project.

from the RAF was critical as the transportation was also done as a training exercise for the RAF crew. The eagles were transported to northeast Scotland via military flights.

Figure 32: Roy Dennis and George Waterson with a newly arrived Norwegian White-tailed Eagle at the start of the project (Photo: RSPB).

Figure 33: Arrival of Norwegian White-tailed Eagle chicks at RAF Kinloss, 22 June 1980.

A dedicated White-tailed Eagle Project Team oversaw coordination for the ESSE Project, comprising representatives from NatureScot, RSPB, Scottish statutory forestry bodies (who provided the release site and a proportion of the population nests in commercial forests), academic experts, and reintroduction specialists.

Monitoring transitioned over time from professionally led surveys to citizen science-based efforts via the Scottish Raptor Monitoring Scheme. There was extensive outreach with the wider public and stakeholders with the ESSE Project. This extended to volunteer surveillance of the first project's nesting pair and liaison with farmers and landowners.

A steering group oversees the White-tailed Eagle project in southern England, comprising representatives from conservation organizations, farming interests, landowners, and the game shooting community. Public and stakeholder engagement was a key aspect of the project's feasibility assessment, including early public consultations and a follow-up public perception survey. This survey, conducted by Forest Research (the research agency of England's Forestry Commission), showed increasing public support, with 93% of respondents expressing support in 2023, up from 86% in 2019 (Dunn, 2022). The project also encourages community involvement through citizen science, eco-tourism, and digital engagement. Thousands of members of the public have contributed by sharing sightings, photographs, and social media updates. These efforts have played a significant role in raising awareness and normalizing the presence of eagles in the landscape.

5.4 Success Vs. Failure Factors

The Saker Falcon restoration in Bulgaria is widely viewed as a success. Over the course of the programme, 73 captive-bred Saker Falcons of European origin were released using the wild-hacking technique. In 2023

alone, 19 falcons were released, and 2 breeding pairs successfully raised 6 chicks in the wild. GPS transmitter fitted on one bird confirmed patterns of exploration and returning to the hack area, demonstrating promising survival and dispersal behaviour. From a situation where the species was eradicated nationally, the programme has now documented at least four breeding pairs in the wild, contributing to the reestablishment of a genetically viable population. The programme also served as a training ground for local avian veterinarians, further enhancing its long-term sustainability.

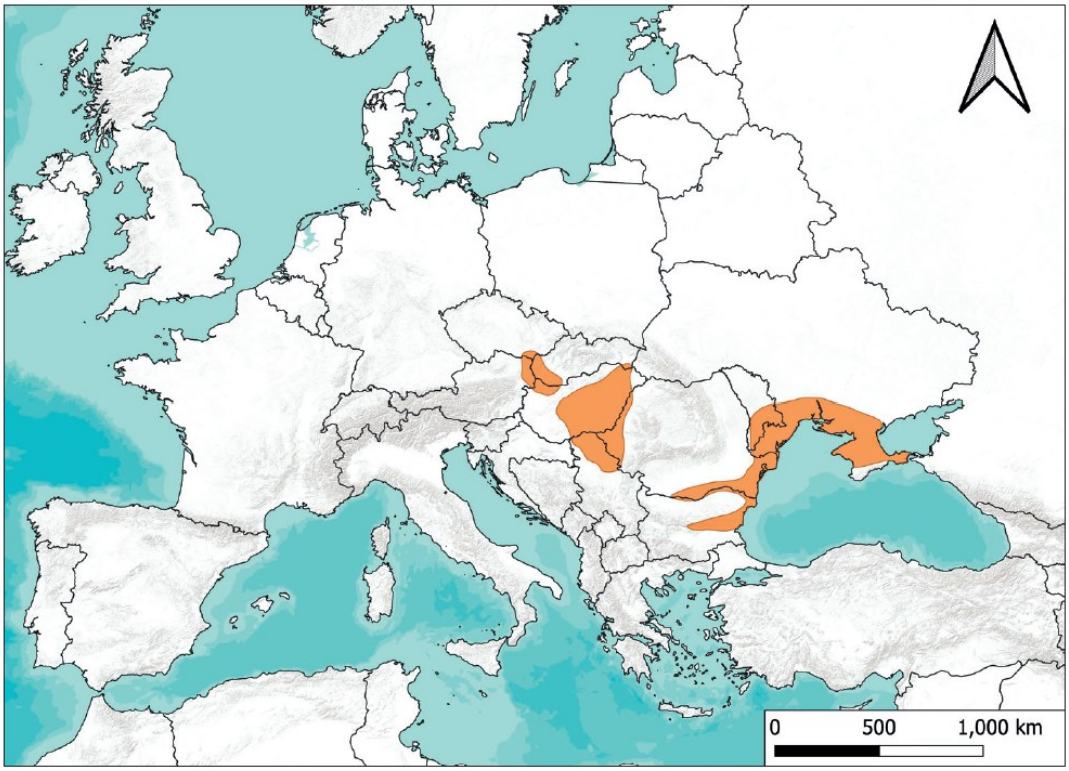

Figure 34: Breeding range of Saker Falcon in Europe from 2012 to 2022 (Prommer *et al.*, 2025).

Figure 35: Feeding Saker Falcon chicks.

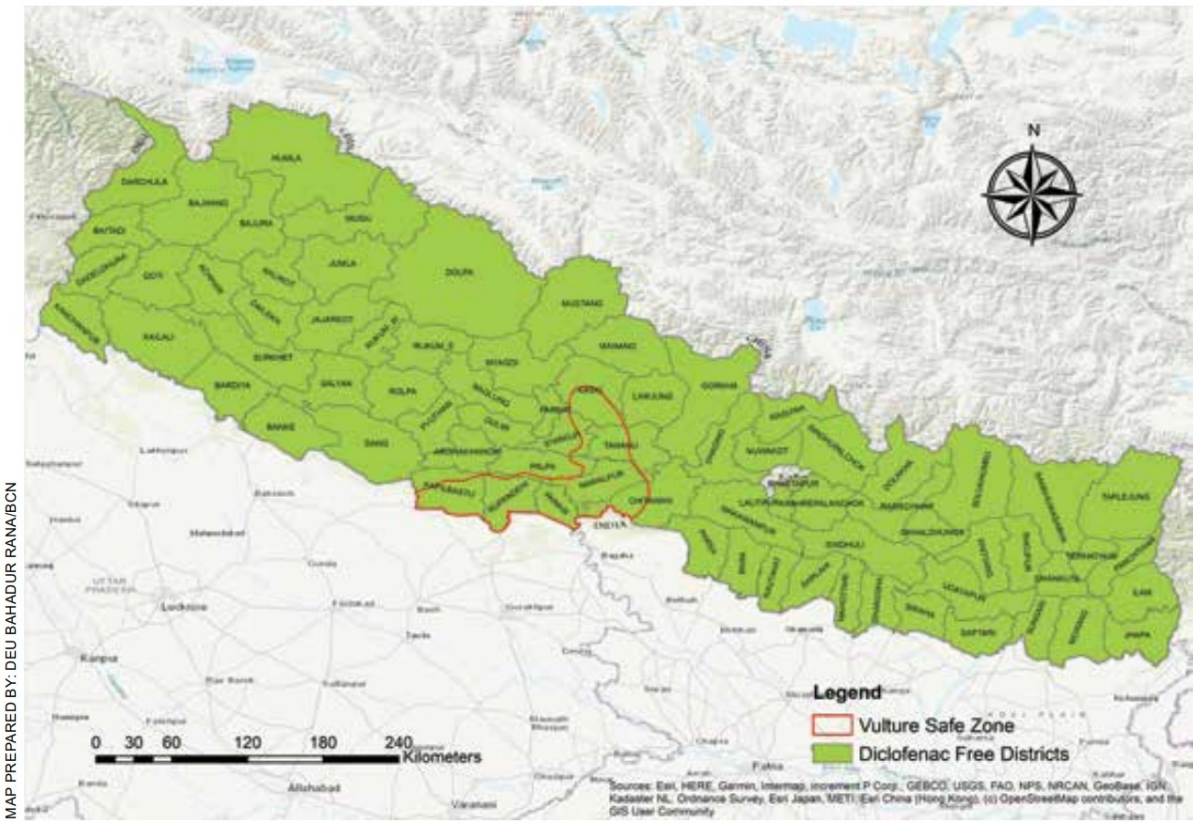

Figure 36: Diclofenac-free districts and Vulture Safe Zones in Nepal (Bombay Natural History Society, 2022).

Similarly, the White-rumped Vulture reinforcement in Nepal is regarded as a successful programme. With the primary threat of NSAID poisoning being significantly reduced, and the wild population showing signs of recovery, the need for continued ex-situ conservation diminished (Figure 36) (Bombay Natural History Society, 2022). In India, however, perceptions are mixed. Although the infrastructure and breeding success are notable, ongoing environmental threats have hindered release efforts. Furthermore, a lack of clear communication around the programme's evolving goals has led to frustration among policymakers and funders, who expected more visible release outcomes.

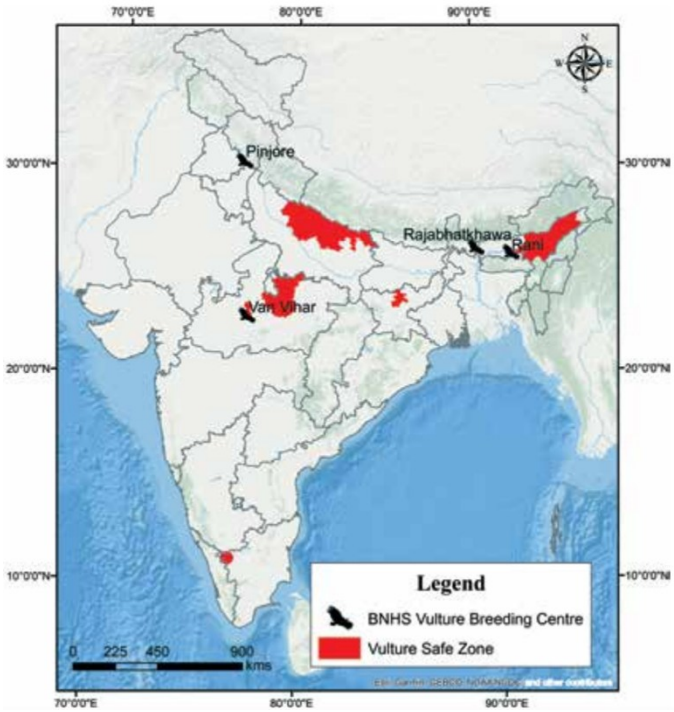

Figure 37: Vulture Safe Zones locations in India (Bombay Natural History Society, 2022).

The Griffon Vulture project in Bulgaria is considered a success, with the establishment of 30 – 45 breeding pairs in release. In Vrachanski Balkan Nature Park, the seasonal home range of the Griffon Vulture was estimated at 54.17 km² for the 50% core area and 2,249.32 km² for the 95% home range, based on location data from 10 tracked individuals (Peshev *et al.,* 2021) (Figure 38). The new population is constantly growing and native population in the south increased, aided by effective planning, availability of birds, consistent funding, and active threat monitoring. The positive outcomes from this project also facilitated the reintroduction of other vulture species in the same habitat. For instance, the Cinereous Vulture (*Aegypius monachus)* programme commenced four years ago and has already resulted in 16 breeding pairs. Plans are currently underway to start the Bearded Vultures (*Gypaetus barbatus)* reintroduction project in 2025.

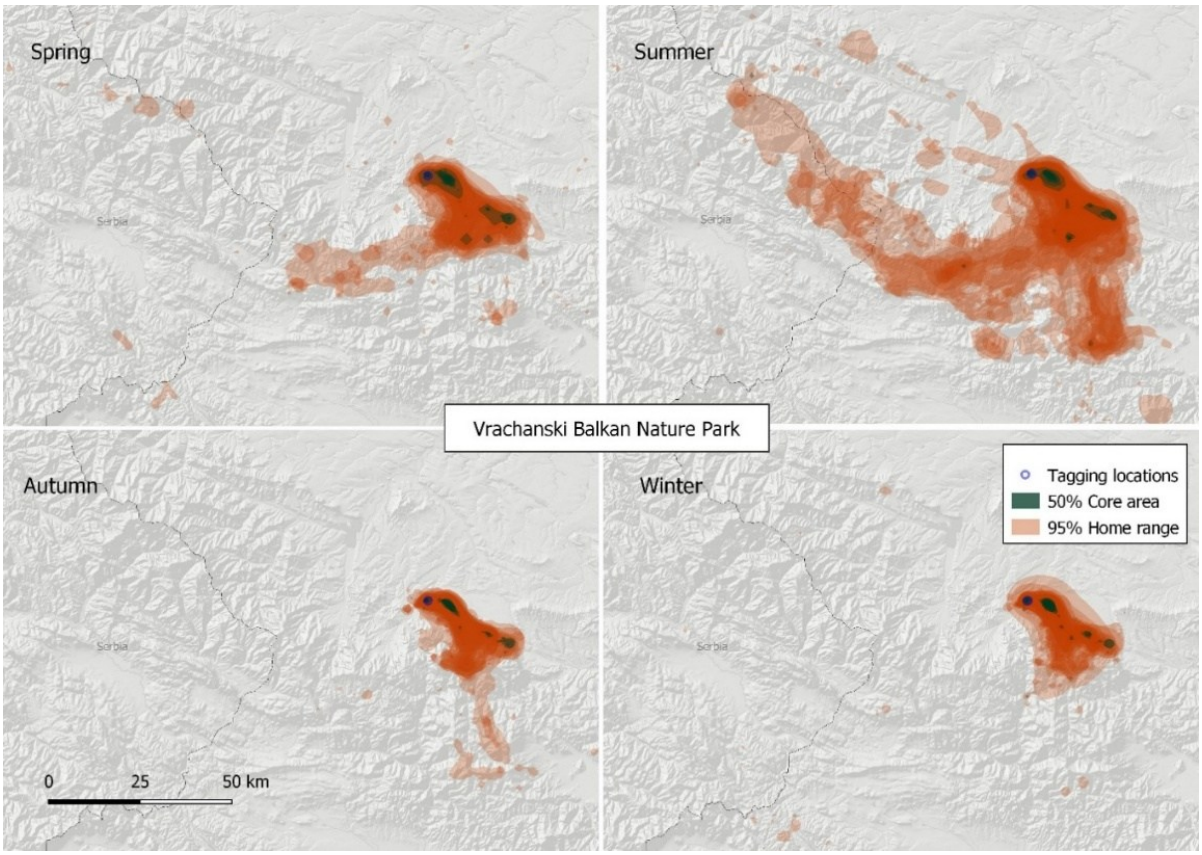

Figure 38: Seasonal home ranges of Griffon Vulture in the Vrachanski Balkan Nature Park (Peshev *et al.*, 2021).

In the Balkans, the reinforcement project of the Egyptian Vulture is widely considered a success. The Eastern Rhodopes in Bulgaria represents the core of the Egyptian Vulture population with the highest number of breeding pairs as well as the largest concentration of non-breeding individuals in the Balkans (Figure 39) (Arkumarev *et al*., 2022). Six years after the start of the initiative, four released birds have successfully formed breeding pairs, and in 2024, two of these pairs produced chicks in the wild. This marks the first confirmed increase in the Bulgarian Egyptian Vulture population in over 40 years and signals both the effectiveness of the release project and the value of threat reduction measures.

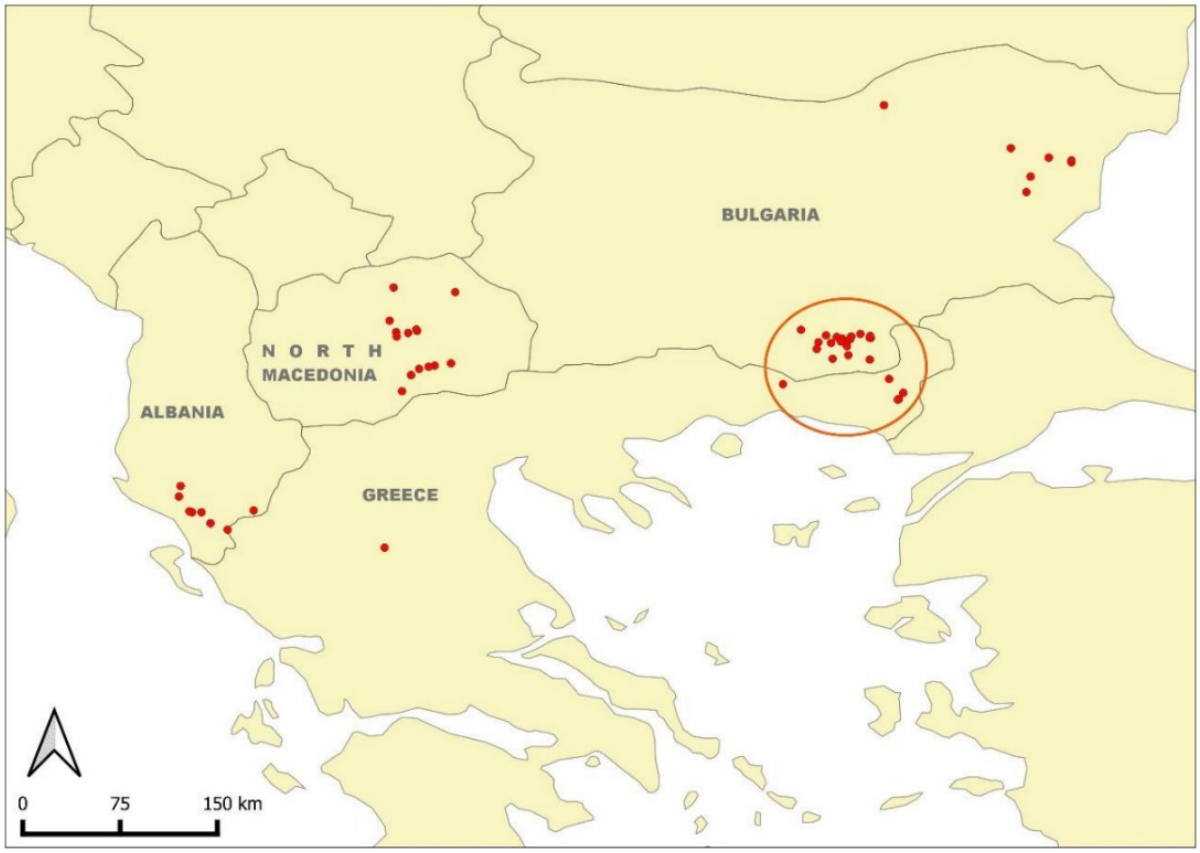

Figure 39: Active territories of Egyptian Vulture in the Balkans in 2020 (Arkumarev *et al*., 2022).

For the LIFE Egyptian Vulture project in Italy, E-Distribuzione insulated 1,096 pylons, exceeding the target of 500, to reduce electrocution risk. Additionally, six supplementary feeding sites were established on the Italian mainland and maintained during the March–September period. Twenty-eight juveniles were released over the project's duration. One female from a previous release survived, bred, and contributed three fledglings before her untimely death while crossing the Strait of Sicily. However, the project faced high juvenile mortality, confirmed by GPS tracking, mainly due to poaching, poisoning, and electrocution (Figure 41). Only 2 of the 28 released birds are currently tracked, indicating low degree of success.

Conversely, the Canary Islands project in Spain, shows positive trends. E-distribución retrofitted 220 pylons (177 in Fuerteventura and 43 in Lanzarote), tagged 287 juveniles, and equipped 35 birds with GPS loggers. As a result, approximately 90% of the local population is now marked. The Canary population does not migrate; hence, local threat mitigation was effective, and breeding territories rose from 67 in 2017 to 107 in 2023 (+59.7%), with notable gains in both Fuerteventura and Lanzarote. Sustained threat mitigation and annual releases of at least 15 birds are still needed to maintain progress.

Figure 40: E-Distribución R. D. modified 220 pylons (177 in Fuerteventura and 43 in Lanzarote) to reduce the risk of electrocution.

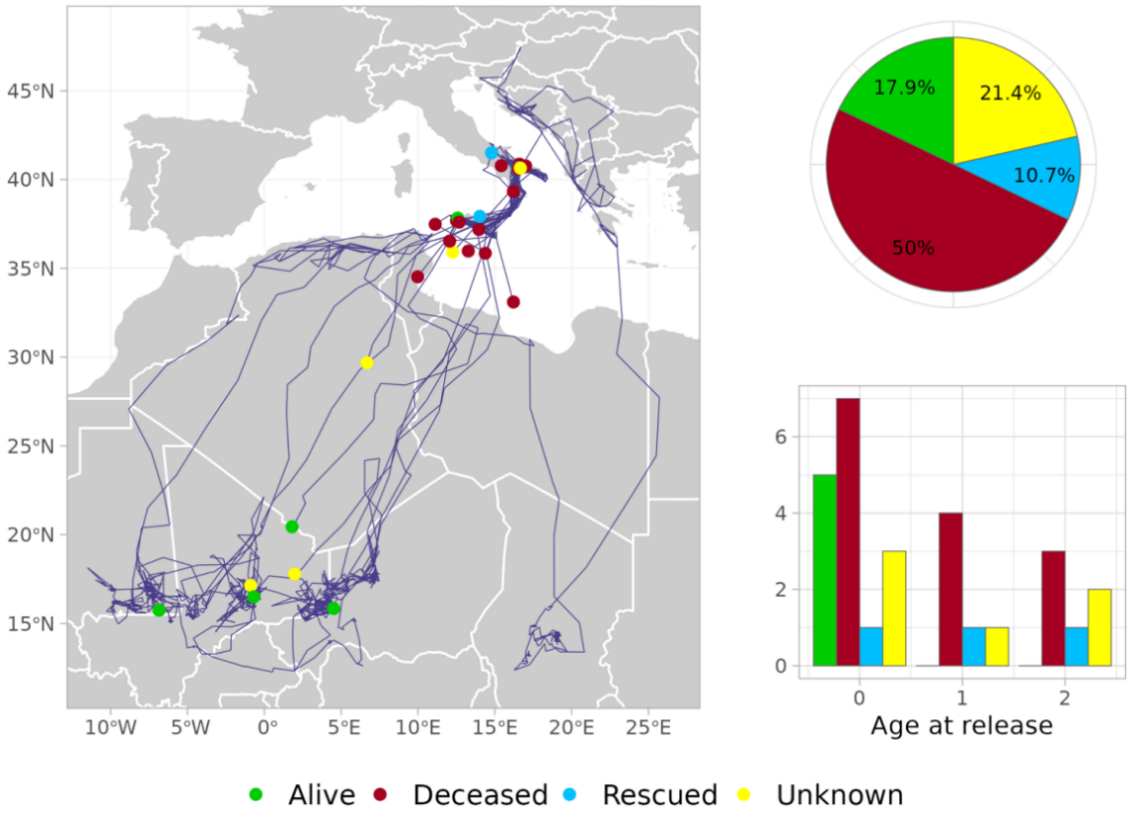

Figure 41: Survival outcome of released birds in Italy (Andreotti, 2024).

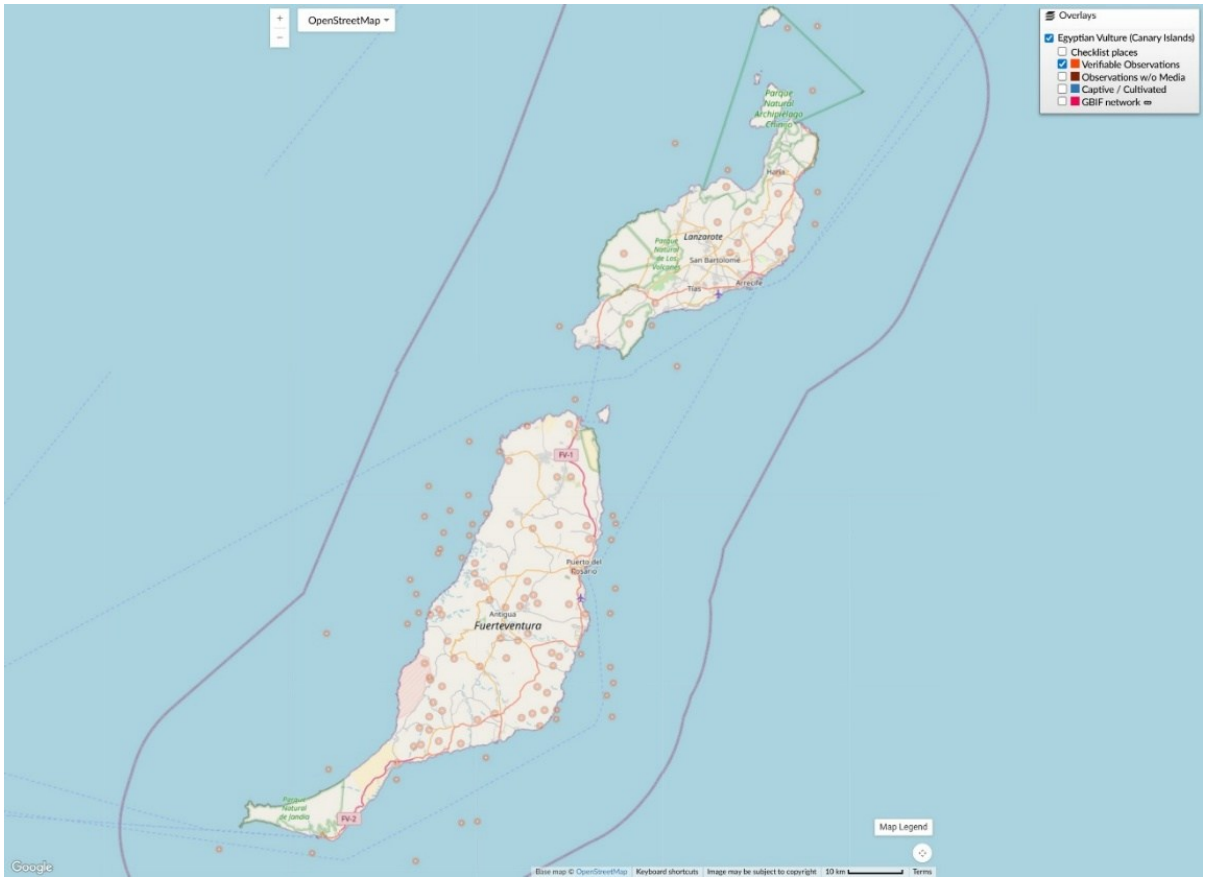

Figure 42: Recent sightings of Egyptian Vulture in Fuerteventura and Lanzarote (iNaturalist, 2025).

The South of Scotland Golden Eagle Project has proven highly successful. Historically, the primary factors contributing to the Golden Eagle's decline in this region were extensive persecution and habitat loss driven by land-use changes, particularly the expansion of commercial forestry. Legal protection, introduced approximately a century ago, facilitated population recovery in most parts of Scotland. However, in the South of Scotland, recovery stagnated due to geographical isolation from populations in the Highlands, as confirmed by satellite tracking data that showed minimal eagle movement between regions. A map of southern Scotland showing the probability of each sample location being an active golden eagle range, based on the proportion of times it was predicted as 'active' in out-of-bag samples (Figure 43). Probabilities are derived from the random forest model using the full training data, with golden eagle place names indicated (Fielding and Haworth, 2014). Through targeted translocations and extensive public engagement, the project has addressed both ecological and social barriers to recovery. Public attitudes, historically shaped by conflict with land-use interests such as sheep farming and grouse shooting, was a major challenge. Dedicated staff facilitated dialogue with landowners, gamekeepers, and forestry workers, successfully reducing persecution incidents. The population has since increased from just 6 individuals and 3 territories to nearly 50 birds occupying 17 territories in 7 years.

Community outreach, including the now well-established Moffat Eagle Festival, has fostered local pride and ecotourism opportunities. This success is attributed to early and sustained collaboration between conservationists, raptor specialists, and land management stakeholders, groups that have traditionally experienced significant tensions in the UK. With the translocation phase complete, ongoing monitoring continues, and future plans aim to support eagle recolonisation into northern England.

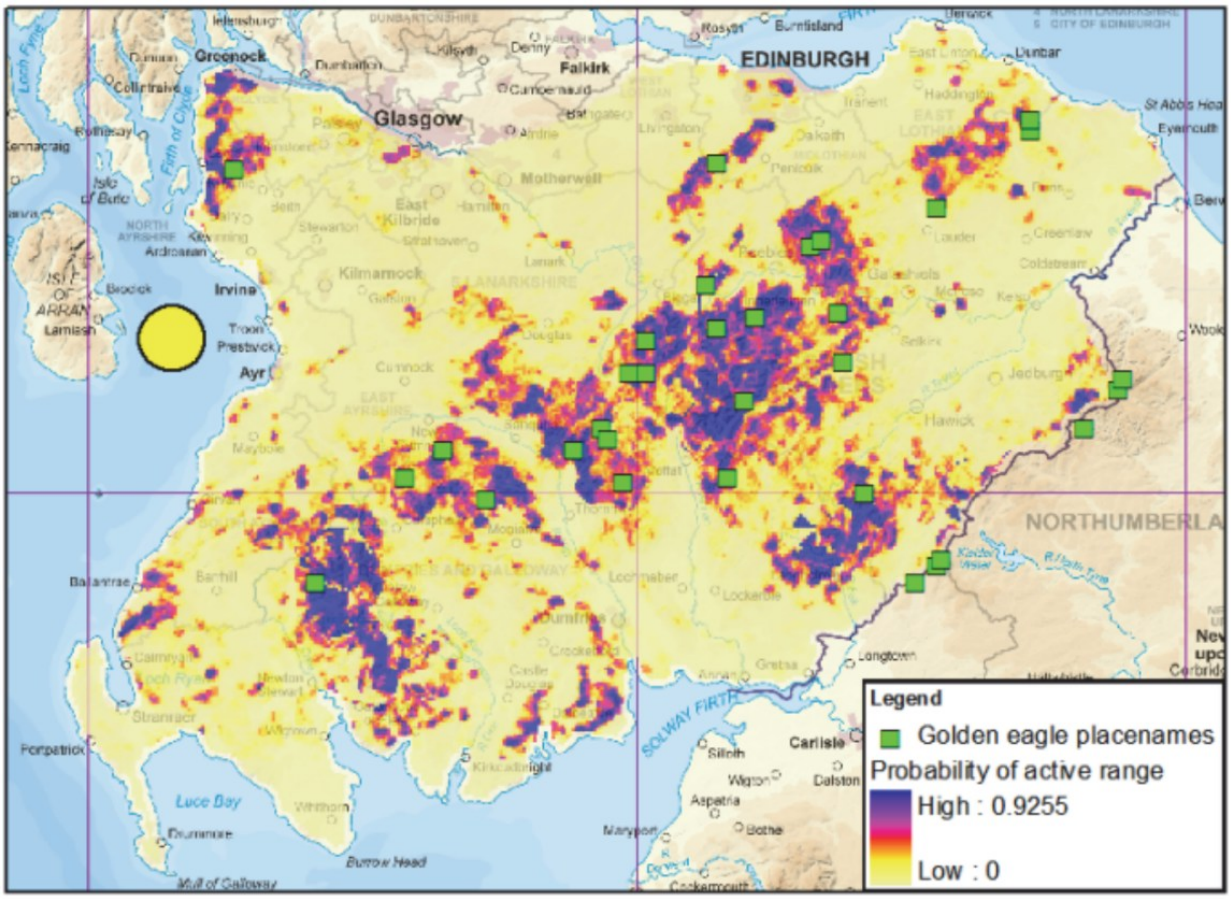

Figure 43: Map of southern Scotland showing predicted Golden Eagle breeding habitat probabilities with markers (Fielding and Haworth, 2014).

The Red Kite Reintroduction Programme in the UK has also been a remarkable conservation success. The species adaptability to modern agricultural landscapes, abundant food supply, and suitable nesting habitat contributed to rapid recovery. Despite some losses due to persecution and poisoning, breeding success was high, and natural dispersal allowed the population to expand steadily. Particularly, explosive growth occurred in southern England, where the Breeding Bird Survey (BBS) showed a staggering 18,669% increase over a 21-year period up to 2016 (Harris *et al*., 2018). The Chilterns now host some of the highest breeding densities globally, with southern England alone supporting around 15% of the world's red kite population (Carter, 2019). This success is especially significant given the species

continued decline in parts of continental Europe due to ongoing threats.

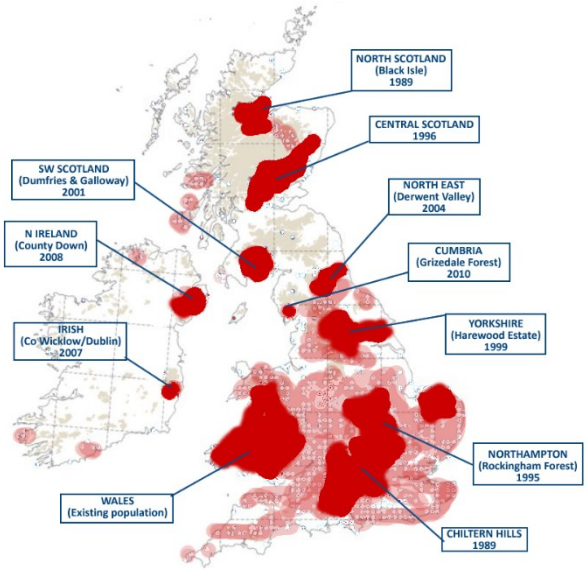

Figure 44: Change in Red Kite breeding distribution between 1968–72 and 2008–11 (Yorkshire Red Kites, 2020).

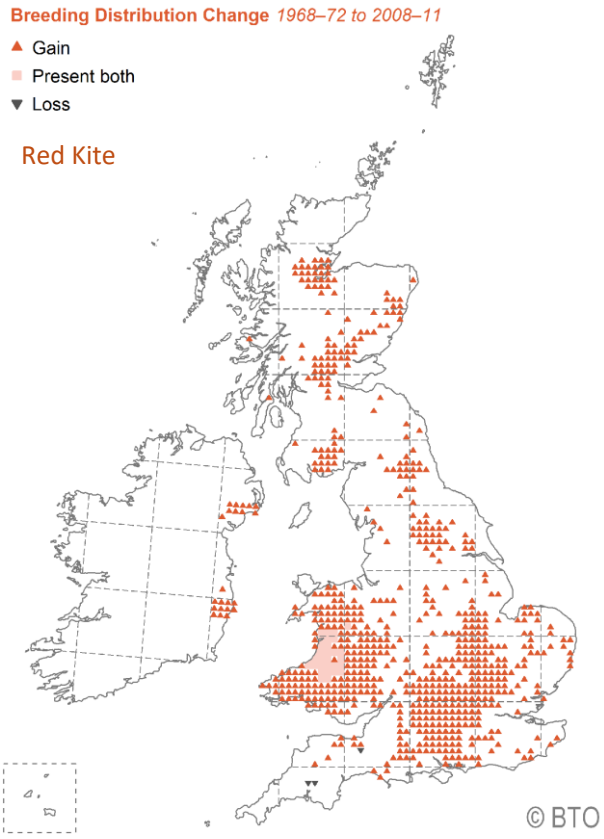

Figure 45: Main Red Kite release sites and distribution, with density gradients shown in red (BTO, 2013a).

The White-tailed Eagle Reintroduction project, initiated in the 1980s in Scotland, has restored a self-sustaining population. With up to 200 breeding pairs now established across the Scotland, of which 150–160 pairs cross the west and east coasts of Scotland. Ecotourism emerged as a major benefit from the programme, particularly on the Isle of Mull, where an RSPB economic study estimated annual revenue of $6.6 – 10.8 million linked to eagle tourism (Morling, 2022). Local businesses, including tour operators and accommodations, have directly benefited. A key factor in this success has been open and transparent engagement with stakeholders, including those initially opposed to the project. Ongoing dialogue, evidence-based responses to concerns, and demonstration of tangible local benefits have helped shift perceptions positively.

The ESSE project is widely regarded as a conservation success. The White-tailed Eagle population in East Scotland has been growing steadily since the early 2000s, with an estimated 200 breeding pairs now established across Scotland. Several factors contributed to this success including strong ecological planning, long-term financial and institutional continuity, formation of a multi-agency project team, and adaptive management practices. While initial community engagement was limited, later efforts to foster public support and stakeholder trust proved instrumental.

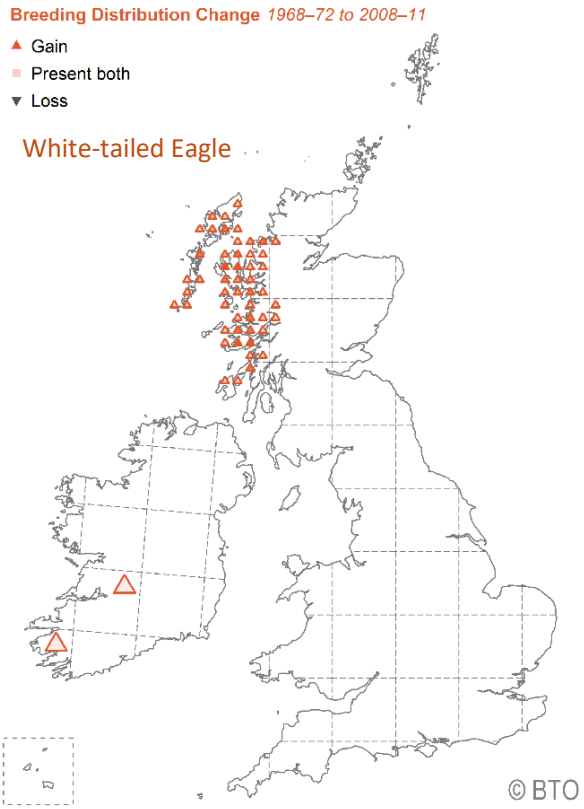

Figure 46: Change in White-tailed Eagle breeding distribution between 1968–72 and 2008–11 (BTO, 2013B).

Similarly, the White-tailed Eagle Project in southern England has made encouraging progress. The successful fledging of six chicks, one in 2023, two in 2024 and most recently, three chicks in 2025, by the first established breeding pair exceeded expectations and has further strengthened public and stakeholder confidence. Despite initial concerns about potential impacts on livestock and other wildlife, intensive monitoring, over 5,000 hours of field observation, has shown no evidence of sheep predation or disruption to local ecosystems. Public support for the project has grown steadily, as shown by follow-up surveys indicating increased approval since the project's inception (Dunn, 2022). Data from satellite transmitters have contributed to a better understanding of the eagles' behaviour and habitat use. All released birds have moved back to the South Coast upon reaching breeding age (Figure 48) (Roy Dennis Wildlife Foundation, 2024).

Future plans to expand the programme to areas such as Exmoor in southern England are being considered, reinforcing the momentum of rewilding efforts in southern England. The project continues to benefit from the stakeholder engagement strategy and transparent communication about ecological impacts and successes. Moreover, none of the predicted adverse effects (such as disruption of other bird populations or negative agricultural impacts) have occurred. The eagles have integrated well into their new environment, with ample natural prey and the capacity to live in areas of relatively high human density.

Figure 47: The Exmoor coastline provides a breeding habitat for White-tailed Eagles.

Most projects and programmes in the UK emphasized early and continued engagement with local stakeholders, including landowners, farmers, local councils, and community groups.

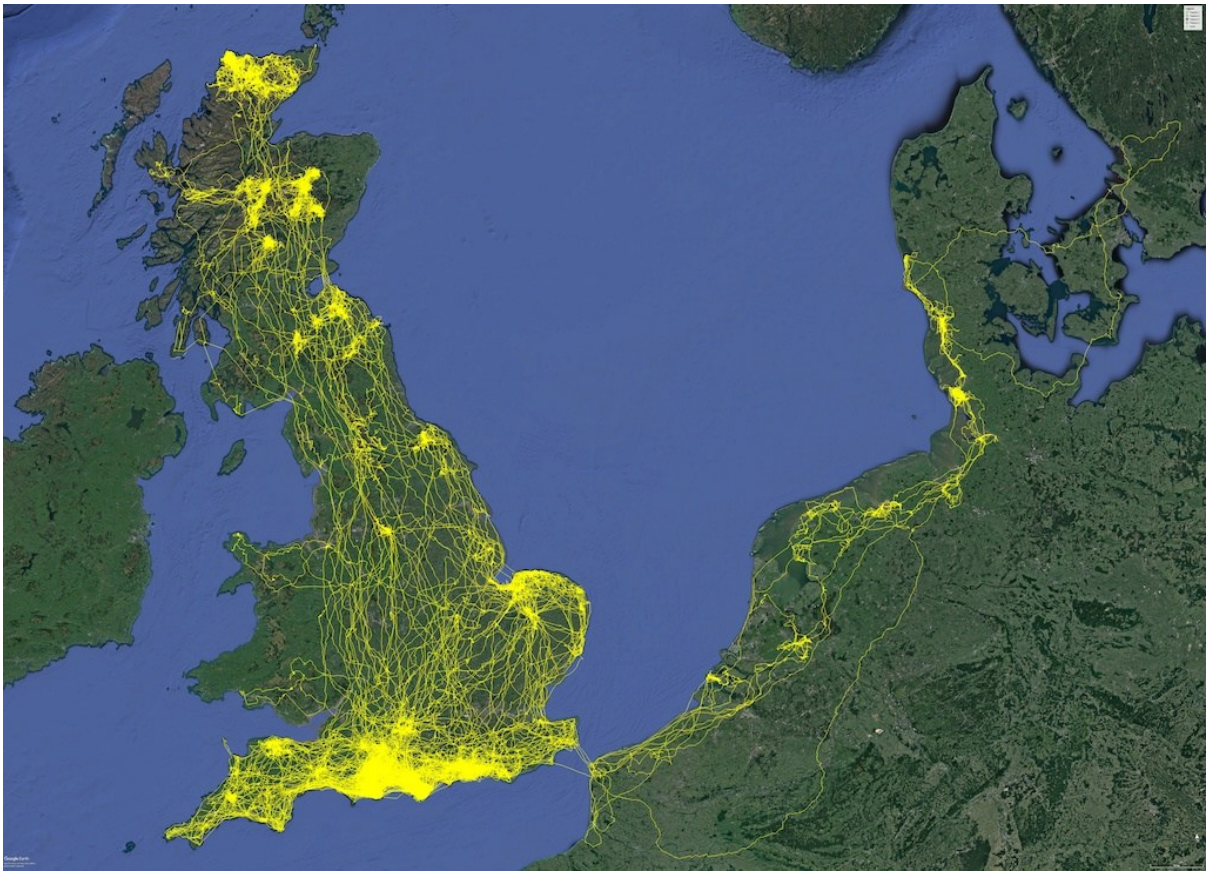

Figure 48: Satellite tracking illustrating the movement of released White-tailed Eagles to January 2024 (Roy Dennis Wildlife Foundation, 2024).

This inclusive approach has helped build trust and support across different sectors and regions, which is vital given the historical tensions between raptors conservation and rural land management in the UK.

5.5 Challenges

Most projects and programmes encountered several anticipated and unforeseen challenges.

In Bulgaria, the Saker Falcon restoration programme faced both operational and technical challenges. The COVID-19 pandemic and avian diseases disrupted operations, while inflation constrained available resources.

Technical challenges included ensuring biosecurity, improving hatch rates, and managing breeding pairs.

In India and Nepal, infrastructural limitations, such as unreliable electricity and soil contamination, created operational delays. The greatest shared challenge was mitigating electrocution risks to released vultures, a threat that disproportionately affected captive-reared birds. Additionally, the high costs of breeding and difficulties in removing NSAIDs in India, created a sense of political impatience and public confusion about the programme's purpose.

In the Bulgarian Griffon Vulture project, human-related challenges loomed largely

including maintaining international partnerships, administrative burden, project reporting, and coordinated threat response. These issues were addressed through stakeholder engagement, shared leadership, motivation and a strong commitment to collective goals.

Figure 49: Juvenile Egyptian Vulture from a zoo in Jerez, Spain, arrived at the Green Balkans Wildlife Rehabilitation and Breeding Centre.

For the Egyptian Vulture project in the Balkans, post-release mortality of birds migrating to distant areas in the Middle East and Africa presents a pressing challenge. Thus, maintaining international partnerships along the flyway is essential to diagnose mortality causes and mitigate threats in foreign landscapes. Additional challenges include securing ongoing funding, sustaining captive breeding output (at least 10–15 reproducing birds annually), and expanding breeding capacity in captivity. These have been partially addressed through the inclusion of new birds in the breeding programme (such as Egyptian Vultures confiscated from Lebanon and Syria), strengthening zoo partnerships, sharing husbandry protocols, and obtaining funding for the future of the project (currently from the UK-based ELSP project). International collaboration continues to be critical to identify mortality causes and support population reinforcement efforts.

Following the conclusion of the LIFE Egyptian Vulture project in Italy and Canary Islands, activities have continued under the AFTERLIFE framework. These include ongoing juvenile releases planned over the coming years, however, the limited budget allocated to these actions presents several operational challenges. One major difficulty encountered was administrative bureaucracy with considerable time required to establish procurement processes, contracts, and agreements. While the initial setup of administrative processes was time consuming, no significant issues have occurred since.

The South of Scotland Golden Eagle Project faced significant early resistance from local communities and raptor conservationists, many of whom feared that illegal persecution of birds of prey remained prevalent and that released eagles would not survive. This mistrust was compounded by logistical setbacks, including difficulty in sourcing donor chicks. In its first 3 years, the project was only able to translocate 6 eagles, falling short of its annual target of releasing 10 birds. This was partly due to initial restrictions on sourcing chicks from Special Protection Areas, which host some of the strongest eagle populations. Additionally, some donor estates were unwilling to participate, citing the failures of a prior golden eagle reintroduction effort in Ireland, where many

birds died post-release. It took sustained outreach, improved health screening (conducted by qualified veterinarians at donor nests) and demonstration of high post-release survival rates (83%) to build credibility. The COVID-19 pandemic and avian influenza further interrupted translocations and public engagement, necessitating a shift to online outreach. Digital platforms were used to maintain outreach during lockdowns and stricter biosecurity measures were applied.

Figure 50: Historic image of Red Kites on release day.

The Red Kite reintroduction also encountered regional disparities in success. While populations in southern England grew rapidly, the Black Isle population stagnated, due to ongoing illegal persecution associated with intensive grouse shooting (Smart *et al*., 2010; Newton, 2020). Outdated attitudes toward birds of prey persisted in some upland communities, leading to hostility and misinformation. Red Kites were wrongly blamed for declines in waders and other ground-nesting birds, when in fact agricultural changes are the primary drivers. The programme overcame these barriers through persistent public relations efforts, community engagement, and education, which eventually helped win public support and allowed for further reinforcement of northern populations.

The White-tailed Eagle reintroduction in Scotland, although widely regarded as successful, continues to face resistance, particularly from sheep farmers on the west coast. Poor animal husbandry such as lambing in exposed conditions, leads to natural mortality from hypothermia or drowning, with eagles often wrongly blamed for predation. Despite a Scottish Government study showing minimal eagle predation on healthy lambs, misinformation persists (RSPB, 2023; Weston, 2024). Some farmers and politicians remain vocal in their opposition, using emotionally charged narratives to influence public perception. In response, the project has employed nest cameras to provide transparent evidence of eagle diet, and NatureScot has implemented a compensation scheme for verified eagle-related losses. Despite this, a residual minority remains strongly opposed.

A key challenge for the ESSE project was the initially low breeding success rate, necessitating further releases and revised management strategies. Similar concerns over predation, particularly on lambs, became evident during the early phases and have remained a source of tension with farming communities. In response, a National Sea Eagle Stakeholder Group and two regional forums were established, including representatives from the agricultural sector, RSPB, forestry agencies, and NatureScot. These groups facilitate discussion, research,

and the development of mitigation measures. A Sea Eagle Management Scheme, funded by the Scottish Government and administered by NatureScot, offers financial and practical support to farmers affected by predation. Additionally, strict protection status for the species has, at times, conflicted with commercial forestry operations. In response, forest management guidance was collaboratively developed and is currently under review to reflect evolving conditions and population growth.

Figure 51: Juvenile White-tailed Eagle at the east Scotland release site (© Lorne Gill, NatureScot).

Similar concerns have been raised in southern England, where the reintroduction of White-tailed Eagles has prompted fears from game bird shoot operators and livestock farmers. Stakeholder engagement proved vital in addressing these issues. Large public forums initially proved counterproductive, as shared concerns often escalated. Instead, more effective outcomes were achieved through one-on-one conversations with the locals, supported by sharing GPS tracking data. Geofencing (creates a virtual geographic boundary around a physical location, allowing users to track when something enters or leaves a location) capabilities allowed project officers to provide detailed movement data to share with concerned livestock manager and confirm the eagle's whereabouts or refute claims of eagle involvement in livestock incidents. This evidence-based and responsive approach has been instrumental in building trust and reducing conflict.

5.6 Unanticipated Effects and Other Lessons Learnt

The projects and programmes generated key insights and lessons that can inform future conservation translocation and long-term species recovery.

The Saker Falcon restoration project in Bulgaria did not report any negative unintended outcomes. Instead, it emerged as a replicable success model that could be adapted for similar restoration initiatives in other countries.

In Nepal, the unexpectedly strong recovery of wild vulture populations shifted the programme's function from breeding for survival to testing environmental safety, a lesson that India has since attempted to apply. However, the evolving function of such programmes, from species preservation to habitat monitoring, needs to be communicated more effectively to stakeholders, particularly political authorities, to maintain support.

Key lessons from the Bulgarian Griffon Vulture project highlight that every reintroduction must be tailored to local ecological, logistical, and social contexts.

The partnership structure, long-term financial and human commitment emerge as essential factors for success of the programmes.

Figure 52: Tagging of Griffon Vultures.

The success of the project in the Balkan region inspired other conservation efforts, increasing competition for captive-bred birds. Moreover, it also led to stronger inter-institutional collaboration and methodological improvements. The project was built on rigorous scientific and veterinary standards, with publicly available annual reports, ensuring transparency. Key lessons include the need for science-based planning, adherence to IUCN guidelines, and awareness that reintroduction is complex, costly, and potentially unpredictable. Continued investment, flexibility, and long-term commitment are essential for meaningful conservation impact.

The Egyptian Vulture project in Italy and Canary Islands recorded early setbacks, including the loss of juveniles to poisoning and electrocution. These prompted stricter partner selection, greater stakeholder commitment over extended timescales, and integrated threat mitigation strategies. Lessons learned emphasize that efficient bureaucratic planning is necessary to avoid delays in critical actions while expert networking improves the effectiveness of each project component.

The reintroduction of large birds of prey across the UK has delivered a number of important lessons beyond the expected biological and ecological outcomes. These lessons, shaped by both positive and negative experiences, reveal the complexity of species restoration.

One of the most compelling outcomes from the South of Scotland Golden Eagle Project has been the success in stakeholder engagement, particularly with land managers who have historically been associated with raptors persecution. The project took a bold step by openly sharing satellite tag data with these stakeholders, an approach initially perceived as risky. However, rather than exacerbating tensions, this transparency built trust between conservationists and land users. This has served as a powerful demonstration of how mutual understanding and access to reliable data can shift perceptions and lead to collaborative efforts.

The project is now seen as a model of best practice in engagement and is being referenced in other conservation initiatives across the UK. Nevertheless, the project has also encountered significant external pressures, particularly from the expansion of renewable energy developments, such as wind farms. While renewable energy is a critical national priority, it poses a significant threat to Golden Eagles, which are either killed by turbine blades or avoid wind farms entirely, thereby losing valuable foraging territory. Balancing the needs of conservation with energy development remains an ongoing challenge, particularly in a policy landscape where economic incentives for energy infrastructure can outweigh ecological considerations.

Figure 53: Golden Eagle at the National Botanic Garden of Wales.

Conservationists involved in the project continue to advocate for more ecologically sensitive planning, advising on suitable siting to minimise habitat conflicts, but this remains a difficult and politically charged issue. One of the key internal lessons from the South of Scotland project has been the importance of perseverance. In the early years, when chick numbers were low and public scepticism high, maintaining momentum was difficult. However, the team's sustained efforts eventually yielded success with improved survival rates, increased public support, as well as transformation in the relationship between the conservation sector and rural land managers. Trust-building, patience, and long-term commitment proved to be essential components of the project's effectiveness.

The Red Kite reintroduction programme produced remarkable positive effects, particularly in community engagement and local economic development. In areas like Dumfries and Galloway, the creation of a "Red Kite Trail" became a major attraction, drawing ecotourism and benefitting local businesses such as hotels, pubs, and cafes. These businesses contributed financially to the trail in exchange for promotion as kite-friendly establishments. The kites have become a familiar and welcome sight, specifically in urban and peri-urban areas where food sources such as roadkill and garden handouts are more plentiful than in intensively farmed countryside.

Figure 54: Red Kite Trail, Galloway (Photo: Calum Murray, RSPB, Scotland).

The main constraint on their continued expansion remains illegal persecution, especially in upland areas associated with grouse moor management. Without these human-caused losses, it is estimated that the UK could support over 50,000 breeding pairs, more than double the current global population (Carter, 2019). The most recent estimate of red kites is 4,400 pairs from 2016 (Woodward *et al.*, 2020) Despite occasional concerns about predation of wader chicks on wetland reserves, these impacts were manageable and did not significantly affect the overall success of the project. Indeed, the presence of Red Kites may help restore a more natural balance between predators and prey. One of the most important lessons from this programme is the value of early and inclusive stakeholder consultation. Ensuring that landowners, farmers, statutory bodies, and local communities were involved from the outset was key to the project's acceptance and success.

Figure 55: A Red Kite released 30 years ago (Photo: Ian Evans, Natural England).

The White-tailed Eagle reintroduction in Scotland has emphasised the importance of long-term commitment. These eagles mature slowly and reproduce infrequently, typically producing only one or two chicks every other year. As such, success cannot be achieved within a standard five- or ten-year project cycle. Instead, the development of a self-sustaining population requires decades of monitoring, management, and community engagement. A critical lesson from this effort has been the necessity of transparency. Being open about both successes and setbacks has helped build trust and legitimacy. Actively involving local stakeholders, reporting on data, and responding to concerns in a timely and honest manner were fundamental components of the project's approach.

The southern England White-tailed Eagle project has built upon these lessons. Recognising the sensitivity of introducing a large predator into one of the most densely populated parts of the UK, the project has placed a strong emphasis on social science and community consultation, including conducting a post-release public perceptions survey. Forestry England have now embedded a social scientist within their species recovery work to define and instigate best practice to social science and engagement for species translocations for a number of species. This cross-species learning is proving valuable for refining community engagement strategies and institutional practices. The data gathered from satellite-tagged eagles has been critical in understanding their movements and behaviour, with some birds travelling as far as Scotland, France, and Germany before returning. This information has proved valuable in identifying nesting territories and potential expansion zones for future

releases. Key operational lessons from the programme include the importance of adequate resourcing, not only for capital infrastructure and feeding in enclosures but also for staffing. Having a consistent, local project officer who is well-known within the community proved to be a pivotal factor. This individual acted as a trusted point of contact, preventing minor concerns from escalating into major conflicts. The ability to respond swiftly to issues using geofenced tracking data also played a vital role in maintaining stakeholder confidence. Public perception surveys and continuous community outreach ensured that engagement remained an ongoing process rather than a one-off activity at the point of release.

Figure 56: Sea Eagle soaring in the sky.

Across all projects/programmes in the UK, a recurring challenge has been the persistence of myths and misconceptions for raptors, highlighting the critical need for long-term planning, transparent communication, and early stakeholder engagement. Whether addressing public fears, managing ecological impacts, or responding to political and economic pressures, these projects/programmes have demonstrated that conservation success is not solely about the biology of the species involved, it is equally about people, trust, and persistence.

6. Case Study: Natural Recolonization and Raptors Conservation in the Netherlands

Raptors species such as the White-tailed Eagle, Red Kite, and Peregrine Falcon (*Falco peregrinus*) have naturally recolonised the Netherlands without formal reintroduction efforts. In the late 1990s, proposals were made by a national NGO to reintroduce White-tailed Eagles to the Netherlands as part of wider European rewilding strategies. However, conservationists advised against active reintroduction, anticipating that the growing populations in neighbouring Germany and Poland would spread naturally. This proved accurate: in 2006, the first breeding pair was recorded in the Netherlands, and the population has since grown to over 45 pairs, supported by improving habitat quality, maturing forests, and abundant prey such as geese.

Similarly, the Red Kite population, once nearly absent due in the Netherlands to poisoning and persecution, has revived as threats declined and populations in Belgium and Germany expanded. The Peregrine Falcon has also benefitted from natural recolonisation, aided by post-DDT recovery and reduced human persecution (Beran and Hlaváč, 2011).

The success of these natural recoveries was contingent on the removal of key threats (primarily organochlorine pesticides like DDT and illegal persecution) and the presence of suitable habitat. In line with IUCN guidelines

(Section 3), re-establishment should only proceed when the cause(s) of previous extinction are clearly identified and removed or sufficiently reduced (IUCN/SSC, 2013). Caution against premature reintroduction is advised, particularly in Africa, where threats such as poisoning remain unresolved. For instance, proposals to reintroduce vultures (e.g., African White-backed (*Gyps africanus*) and White-headed Vultures (*Trigonoceps occipitalis*) are currently on hold until threats are mitigated. Raptors face threats from persistent agrochemicals and the potential risks from newly developed pesticides like neonicotinoids. Although direct persecution has largely ceased in the Netherlands, it is important to remain vigilant and monitor the long-term effects of environmental contaminants on raptors health and reproduction.

Key lessons from this case emphasise the importance of weighing up the different nature recovery tools in the toolbox. Sometimes, habitat-focused conservation, effective threat mitigation, and long-term monitoring are more efficient approaches. In situations where neighbouring populations are stable or increasing, natural recolonisation of the area can occur over a reasonable timeframe, reducing the need for resource-intensive reintroduction efforts. This approach can allow for strategic investment in habitat improvement, which delivers broader ecological benefits across larger group of species. A pragmatic approach to decision-making must consider effectiveness, timeliness, and the cost-benefit of any conservation tool to the recovery of species and ecosystems, alongside the urgency of the nature crisis.

This case highlights the importance of government buy-in, long-term funding, enforcement of anti-poisoning legislation, and public education. The Netherlands strong citizen science network has also played a crucial role in monitoring and supporting raptors population. In contrast, regions like East Africa face challenges due to limited enforcement capacity and lower public awareness, making recovery efforts more difficult. Programmes in regions like Andalusia, Spain, where proactive anti-poisoning initiatives are supported by government investment, serve as exemplary models of emphasising the importance of government commitment and adequate funding. These experiences bring light to the potential for natural recolonisation in well-managed landscapes and the critical need to address underlying threats before initiating reintroduction.

Figure 57: Juvenile Peregrine Falcon resting (Photo: Andras Kovacs).

Translocations are an important tool, but their suitability must be carefully evaluated before proceeding with any project. Feasibility studies (both remote and field-based) are

central to this decision-making process. Such studies, which often require several years, provide the evidence base and justification for whether reintroduction or reinforcement is appropriate. Consistent with international best practice, including IUCN guidelines, feasibility assessments encompass ecological modelling, prey availability analyses, population viability assessments, and evaluations of social acceptance through consultation and stakeholder engagement. Together, these assessments guide sound and responsible decision-making for conservations projects.

7. Conclusion and Policy Recommendations

Raptors reintroduction and reinforcement programmes have proven to be effective methods in reversing population declines, restoring ecological function, and re-establishing some species in their former ranges. The evidence collected through this report demonstrates a spectrum of successful interventions, particularly where releases were guided by an evidence based, strong scientific methodology, availability of medium to long-term resources, supported by collaborative partnerships (including a multi-organisational project team), and embedded within legal frameworks.

Programmes like the Red Kite reintroduction in the Great Britain, Griffon Vulture restoration project in Bulgaria, and the Egyptian Vulture reinforcement project in the Balkans illustrate how carefully designed and well-resourced efforts can lead to demonstrable conservation gains. Similarly, the White-tailed Eagle reintroduction in Scotland and southern England has shown the value of long-term planning, public engagement, and adaptive management.

Key success factors included:

- Science-based methodologies tailored to species ecology
- Long-term investment in pre- and post-release monitoring
- Community engagement and stakeholder buy-in
- Communication and education
- Long term institutional support from both governments and NGOs
- Secure, long-term, multi-source funding

Conversely, several common challenges were identified, including bureaucratic delays in issuing permits, biosecurity risks, public opposition, and unresolved threats in the release environment. In some cases, such as the White-rumped Vulture programme in India, impressive breeding success has not yet translated into large-scale releases. This is mainly due to institutional changes that have caused delays in safety checks of the release sites.

Moreover, populations of long-distance migratory birds present greater challenges for successful reintroduction or reinforcement, as such projects are typically more effective at addressing localised threats. This is evident in the Egyptian Vulture reinforcement project in Italy and Canary Islands. In such cases, satellite

tagging has proven essential for identifying, mapping, and evaluating threats across the species migratory flyways. However, to effectively address these threats, particularly those occurring outside of the breeding grounds, it is crucial to establish strong partnerships and networks of cooperating entities, including governments and NGOs. These collaborations enable the validation of data gathered through satellite tracking and facilitate targeted threat mitigation along the flyways. The variability in success across different species and regions highlights the importance of tailoring interventions to specific ecological, social, and governance contexts. Reintroduction programmes can raise awareness and catalyse conservation actions far beyond their immediate implementation sites; however, they are inherently resource-intensive and expensive. Therefore, such interventions must be carefully planned, with rigorous assessment of their necessity, feasibility, and potential conservation impact prior to initiation.

Ultimately, while reintroduction and reinforcement are not a panacea, they are increasingly appropriate in regions where natural recovery is limited by persistent threats. If well-planned and embedded in national biodiversity strategies, such projects/programmes can significantly contribute to raptors conservation outcomes.

7.1 Policy Recommendations

To support the long-term sustainability and replicability of raptors reintroduction and reinforcement, the following policy recommendations are proposed:

A. Follow the AEWA and IUCN Guidelines for Reintroduction and Reinforcement Programmes

The Agreement on the Conservation of African-Eurasian Migratory Waterbirds (AEWA), developed under CMS, serves as an intergovernmental treaty focused on the conservation of migratory waterbirds and their habitats. The AEWA guidelines[5] provide best-practice guidance aimed at improving the success of re-establishment as a conservation tool for migratory species. Complementing this, the IUCN Guidelines provide a scientifically grounded framework to ensure effective and ethical implementation of projects. These guidelines are designed to complement national legislation, enabling alignment with regional conservation priorities while upholding international best practices in planning, implementation, and long-term monitoring of reintroduction efforts.

B. Ensure Threat Mitigation Before Release

All reintroduction efforts should be conditional upon the verified mitigation or removal of key threats such as poisoning,

[5] UNEP/AEWA/MOP4/Res. 4.4 (2008) Developing International Best Practice for the Conservation of Threatened Waterbirds Through Action Planning and Reestablishment. Available at: https://www.unep-aewa.org/en/document/

electrocution, and habitat degradation as specified in the IUCN Guidelines. Experience from multiple regions has shown that releases are unlikely to succeed where significant threats persist. Some threats can only be effectively addressed through government regulation while other threats are beyond the capacity of NGOs to resolve independently. Therefore, a multi-stakeholder approach is essential to ensure long-term threat reduction. Governments should strengthen appropriate legislation and enforcement mechanisms (e.g. banning harmful veterinary drugs like diclofenac), while other actors, such as electric companies can play a crucial role in retrofitting dangerous power lines.

C. Involvement of Local Communities and Landholders

Community mistrust and historic persecution of raptors remain serious barriers. Programmes must prioritize transparent outreach and public consultation, hire community liaison officers and support income generating activities such as ecotourism and community benefits (e.g. Moffat Eagle Festival in Scotland and Red Kite Trail in Galloway, Scotland). Research further shows that inclusive, well-connected stakeholder networks are effective, particularly when trust building, neutral mediation and clear communication are prioritised (Grossmann *et al.*, 2020). Supporting “bridge-builders” who link multiple groups and expanding participation ensures shared ownership Dedicated stakeholder engagement strategies should be integrated, including community members, landowners, hunting associations, and local authorities. Addressing human-wildlife conflict, particularly around livestock predation and game management, remains a decisive factor in programme success. Mechanisms such as compensation schemes, school programmes, community monitoring networks, and local eco-tourism initiatives can help align conservation goals with livelihoods.

D. Invest in Monitoring and Adaptive Management

Comprehensive pre- and post-release monitoring is critical to track outcomes, inform adaptive changes, and assess success or failure. All projects should use satellite telemetry and individual marking and share monitoring data with regulatory bodies and public, in the most appropriate form and detail. Additionally, build in review cycles and protocols for adaptive management to ensure greater success of the programmes.

E. Institutionalise Long-Term Funding Mechanisms

Reintroduction and reinforcement programmes demand sustained investment beyond initial release phases, particularly for post-release monitoring, veterinary care, community engagement, and adaptive management. Adaptive management, in particular, demands flexibility from donors, as project methods, targets, and timelines may need to be adjusted in response to monitoring outcomes. Governments, international donors, and conservation finance platforms should explore blended finance models, including public-private

partnerships, conservation trust funds, and eco-tourism revenues, to support the full lifecycle of such initiatives.

F. Build National and Regional Capacity

Capacity gaps remain in areas such as veterinary care, captive management, and ecological modelling. Successful reintroductions require a multidisciplinary team, including wildlife veterinarians, animal husbandry specialists, ecological modellers, wild bird experienced professionals, communicators and public relation experts. In many countries, such expertise is limited yet essential. To address this, governmental agencies, academic institutions, and NGOs should collaborate to deliver targeted training programmes aimed at building and sustaining the full range of skills required for effective species reintroduction and reinforcement initiatives.

G. Promote Policy Coherence Across Sectors

Reintroduction efforts should not be treated as isolated projects but integrated into broader conservation frameworks, such as national biodiversity action plans, species recovery strategies, and landscape-level restoration initiatives. Many threats to raptors stem from non-conservation sectors (agriculture, energy, transport). Conservation authorities must engage with power utilities to mitigate electrocution as well as with veterinary authorities to control harmful drugs and Land-use planners to protect nesting habitats. This integration can support legal recognition, secure resources, and align with global targets.

Figure 58: Adult Red Kite (© Michele Mendi).

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9. Annex 1 – Interview Guide

Date of interview	
Name	
Position	
Affiliation	
Email	

#	Question
Section 1: basic information	
1	Have you been closely involved with any raptors reintroduction or reinforcement programme?
2	If yes, pick a programme. What species was/were involved?
3	Was this a reintroduction or reinforcement programme? Or other similar?
4	What was the name of the programme?
5	What was the exact aim of the programme?
6	During what years was the programme in operation?
7	Why did the programme end? (was this programmed or could it not continue due to some external factor, e.g.)
Section 2: the method using	
8	What was the reintroduction/reinforcement methodology used in the project?
9	Why was that methodology opted for?
10	Did that methodology lead to any particular challenges?
11	What was the origin of the animals used in the programme?
Section 3: stakeholders	
12	What countries were involved in the programme?
13	What roles did they play?
14	What agencies were involved in the programme's implementation? Were they governmental or non-governmental? Do you recall their names and the roles each played?
15	Were communities involved in the programme? In what way?
Section 4: funding	
16	What was the cost of the programme?

17	Who funded the programme?
18	Did any activities continue to take place after the programme came to a close? E.g., monitoring, awareness…
Section 5: outcomes and review	
19	What is the general perception on the success of the programme: was it seen as successful or not?
20	Why was it seen that way?
21	What were key factors in the success or failure?
22	What were the main challenges of the programme?
23	How were those challenges addressed?
24	Were there any spillover/unanticipated side-effects (good or bad)?
25	What are some main lessons learnt that other projects should account for?
26	Are you aware of any national or international regulations or best-practice manuals governing or relevant to raptors reintroduction/reinforcement work?

The Convention on the Conservation of Migratory Species of Wild Animals (CMS) is an environmental treaty of the United Nations that provides a global platform for the conservation and sustainable use of migratory animals and their habitats. This unique treaty brings governments and wildlife experts together to address the conservation needs of terrestrial, aquatic, and avian migratory species and their habitats around the world.

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