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ReCo

Restoration to promote NATURA 2000 (priority) species

The ReCo project Practitioners' Guide (D.2.4.2)

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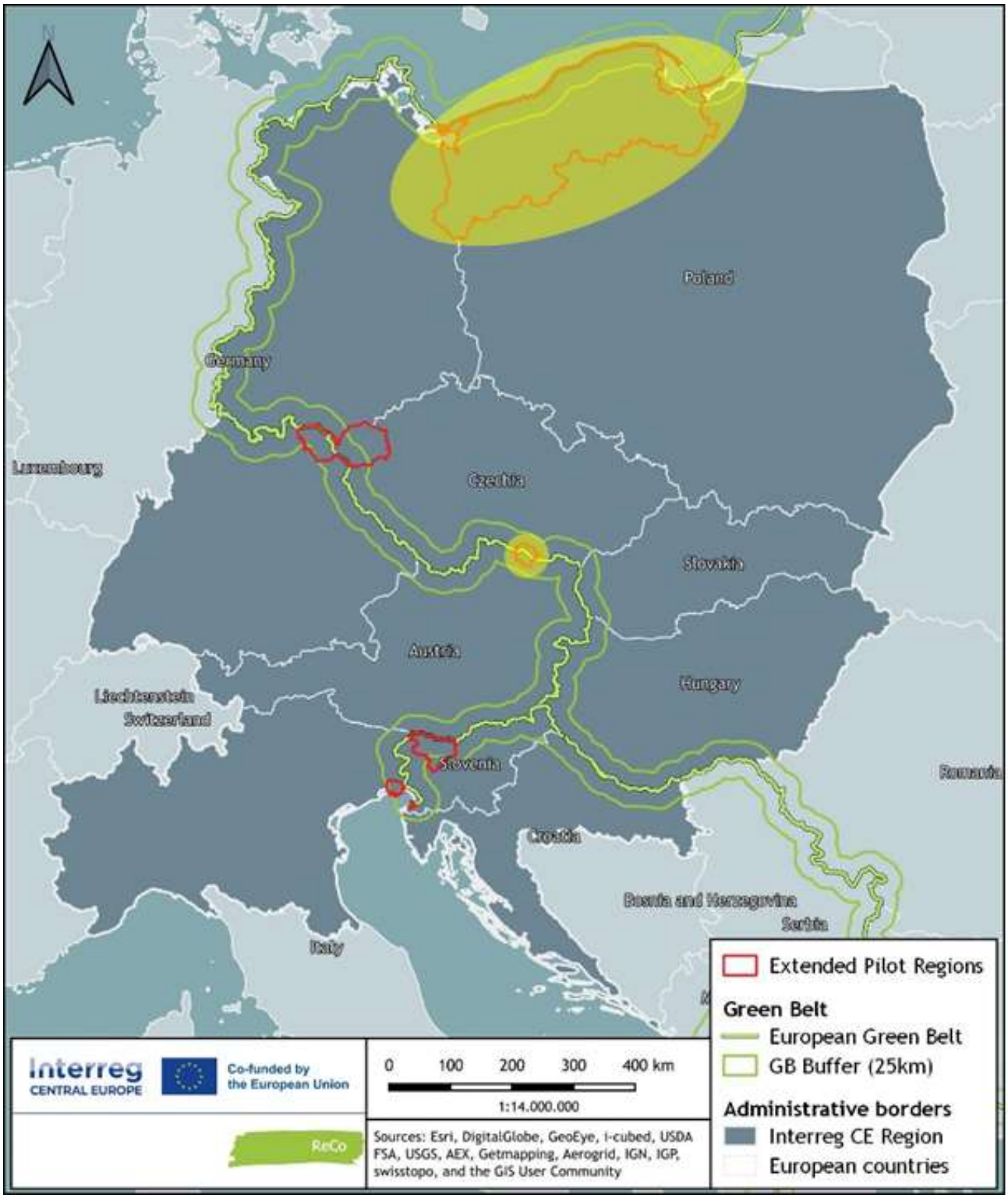
EXECUTIVE SUMMARY

Conserving flagship species and restoring their populations is a powerful driver for broader ecological connectivity along the **European Green Belt**. Under the Interreg ReCo project (*Restoring degraded eco-systems along the Green Belt to improve and enhance biodiversity and ecological connectivity*), two transnational pilot regions focused on **species-oriented restoration** – one on the **European bison** *Bos bonasus* in north-western Poland, and the other on the **European wildcat** *Felis silvestris* across the Austrian–Czech border. These pilots demonstrate how targeted interventions (like reintroductions, telemetry monitoring, and habitat management for focal species) can enhance survival of endangered fauna while also safeguarding the ecosystems they inhabit.

Joint Pilot Action "Species" was implemented in two regions to test innovative conservation approaches, with a strong emphasis on stakeholder involvement and community impact. In Poland's Ińsko Lakeland, cutting-edge GPS tracking and community engagement have improved the outlook for Europe's largest land mammal. In Austria/Czech Republic, the reintroduction and study of wildcats – once thought extinct locally – are reconnecting fragmented forest habitats and raising public awareness. Both pilots contribute to climate adaptation by promoting genetic diversity and mobility of species (so populations can adjust to environmental changes) and by maintaining keystone species that shape resilient ecosystems.

This guide consolidates objectives, methods, and lessons from these species pilots, offering practical guidance to conservation practitioners on boosting species recovery, engaging communities, and aligning such efforts with broader biodiversity goals.



The ReCo project's pilot regions; regions dedicated to species protection are marked with yellow (Author: University of Vienna)

OBJECTIVES AND SCOPE

The primary goal of the ReCo's Joint Pilot Action "Species" was to **enhance the viability of endangered species populations** through direct conservation actions, while simultaneously improving the ecological connectivity of their habitats. This included increasing population numbers and genetic diversity of the target species (bison and wildcat), reducing threats (such as human-wildlife conflicts or genetic isolation), and demonstrating how species-focused interventions can catalyze wider habitat restoration. The species pilots aimed for **community-based leverage effects** – meaning that engaging local stakeholders would lead to additional support and follow-up initiatives benefiting the species. A further objective was to develop and test **innovative methodologies** (e.g. wildlife telemetry, cross-border reintroduction protocols) that could be used in other regions or for other species of conservation concern.

This guide covers two pilot region profiles and the approaches therein. The **European bison pilot** in the Ińsko Lakeland of Poland focused on a large herbivore roaming a mosaic landscape of forests and fields. The **European wildcat pilot** in the Thayatal-Podyjí transboundary national parks focused on a medium-sized carnivore requiring forest connectivity. Despite different species ecologies, both pilots addressed common themes: **habitat connectivity**, **monitoring and research**, **stakeholder engagement**, and **conflict mitigation**. The guide will outline for each pilot the specific actions (from deploying GPS collars to releasing animals), then discuss general techniques in species conservation (like telemetry, ex-situ breeding, etc.), monitoring and indicators used, and how communities were involved. Finally, it presents lessons and policy implications, including how these pilot efforts feed into larger conservation plans (e.g. species action plans, Green Belt connectivity strategy). Practitioners working on species reintroductions, population monitoring, or human-wildlife coexistence will find relevant insights from these case studies.

PILOT REGION PROFILES (SPECIES CONSERVATION PILOTS)

1. European bison conservation – *Ińsko Lakeland (West Pomerania, Poland)*

1.1. Goals

Secure and expand the population of the **European bison** in the Ińsko Lakeland region and north-west Poland, ecologically connected with the European Green Belt corridor. Specifically, the pilot aimed to **improve migration routes and connectivity** between bison subpopulations, reduce the risk of inbreeding by encouraging natural herd mixing, and minimize human–bison conflicts such as crop damage or road accidents. The European bison, as a keystone herbivore, shapes habitats through grazing; conserving it also helps maintain open wooded pastures and meadows that benefit many other species.

1.2. Actions

The pilot implemented a combination of high-tech monitoring, direct management, and conflict mitigation measures. A centerpiece was the deployment of **ten GPS telemetry collars** on bison in the region. These state-of-the-art collars transmit real-time location data, enabling researchers to analyze bison movements, habitat preferences, and range size with unprecedented detail (over **1.1 million location points** have been collected, including historical data). Using this data, the team mapped out the bison's travel corridors and identified key crossing points where herds frequently encounter roads or other barriers. In parallel, conservation strategies were enacted: a **herds management program** was outlined (including potentially translocating individuals or splitting overly large herds to prevent local overpopulation). Although no new bison were introduced during the pilot, plans for **natural diversification** were set in motion – coordinating with other Polish bison reserves to exchange animals in the future for genetic health.

For conflict mitigation, the pilot supported an **early warning system** operated by a regional bison emergency team. This system integrates the GPS data with alerts to rangers and local farmers when bison approach villages or crop fields, so they can take preventive action (like scaring bison away or safeguarding crops). Contact was maintained with road authorities about implementing **wildlife crossing structures** at identified hotspot areas to reduce collision risk. On the habitat side, while large-scale habitat restoration was not the focus, habitat preference analyses were conducted in order to effectively protect preferred habitats of the European bison, in the locations most frequently selected by the animals.

1.3. Stakeholders

Led by the Green Federation "GAIA" (a Polish environmental NGO) in partnership with the West Pomeranian Nature Society, the pilot's success hinged on broad stakeholder inclusion. Local **communities and farmers** were deeply involved – many attended consultations and contributed observations on bison movements or damage incidents. Forest districts were key stakeholders, given bison range over large territories including public forests. Notably, a nearby **military training ground** is part of the bison's range; the project engaged military officials to coordinate access and joint monitoring on that land. Local government and road agency representatives participated, especially regarding traffic safety solutions. An important participant in the activities was the University of Vienna, which developed habitat maps of the pilot region and supported the analysis of spatial data from the bison GPS transmitters. The pilot also networked with Poland's broader bison conservation community (like Białowieża National Park experts) for technical guidance.

Community outreach included public meetings to address concerns (bison are generally beloved in Poland but can cause farm losses) and education on how to behave safely if encountering bison. Through these efforts, locals shifted from seeing bison as solely a nuisance to a shared regional treasure that they can help protect.

1.4. Outcomes

By the project's end, the bison population in Ińsko Lakeland was stable at around 110 individuals, with indications of natural herd mixing across the landscape (evidence that some collared bison moved between subgroups). The extensive GPS dataset has generated invaluable ecological insights – for example, analyses show distinct seasonal movement and day-night activity patterns, as well as habitat use (information useful for planning protection of the pilot region). The collision risk maps produced led the county to budget for new road signs and investigate a potential wildlife overpass on a frequently crossed road. The early warning system proved effective: since implementation, response teams successfully averted several potential conflicts (e.g. guiding a herd away from crops), reducing damage and improving local tolerance. Perhaps the most significant outcome is the **institutionalization of bison monitoring and response** – the Green Federation "GAIA" and the West Pomeranian Nature Society committed to continue tracking the collared bison beyond the pilot, and local authorities have integrated bison conservation into their environmental planning.

This pilot serves as a model for large herbivore conservation in human-dominated landscapes, demonstrating how technology and community engagement can ensure coexistence with a species that once nearly went extinct.

Free-living bison herd in Western Pomerania (Author: Aneta Kozłowska)

1.5. Transferability and replicability potential

The Ińsko Lakeland pilot offers a robust, data-driven approach to **megafauna management** in human-modified landscapes. Its use of **GPS telemetry**, barrier mapping, and community-based mitigation strategies make it highly transferable to other regions managing large herbivore populations.

The pilot's methods for identifying and addressing **migration barriers**, including infrastructure recommendations for transport corridors, can be adopted in areas where road networks intersect herbivores ranges or corridors for other large mammals (e.g., moose, deer, elk). The **involvement of diverse stakeholders**, including farmers, local governments, foresters, conservation NGOs, and even military forces, ensures replicability in varied socio-political contexts.

The combination of **technological tools** (collar data), **early-warning systems for conflict mitigation**, and policy-aligned conservation goals ensures not just ecological viability but social acceptance, which is critical for successful replication across Eastern Europe, especially in other bison habitats like the Carpathians or Baltic states.

2. European wildcat reintroduction – Thayatal & Podyjí national parks (Austria/Czech Republic)

2.1. Goals

Re-establish a viable population of the **European wildcat** in the transboundary Thayatal (Austria) and Podyjí (Czech Republic) national parks, thereby enhancing the species' range and genetic diversity in Central Europe. Wildcats had been largely extirpated from Austria (and have never been found in the Czech part of the pilot region), so a key goal was to confirm any remnant or returning individuals. Another major aim was to study wildcat behavior and habitat use in this region – identifying which habitats and corridors are crucial so that conservation measures can be focused there. By using the wildcat as a **flagship species**, the pilot also sought to raise awareness about the importance of connected forest corridors for wildlife (benefiting other species like wolf, deer, etc.) and to strengthen cross-border cooperation in species management.

2.2. Actions

The pilot followed a phased approach: first **detecting and confirming wildcat presence**, then conducting a controlled reintroduction and intensive monitoring. Initial surveys involved setting up **camera traps** and collecting hair or scat samples for genetic analysis across Thayatal and adjacent areas. These efforts paid off – they confirmed that wildcats, likely dispersing from a known population in the Austrian Danube region, had indeed reached Thayatal (with one female genetically linked to the Danube population). This finding underscored the need for **corridors** between these distant populations. Next, in collaboration with a wildlife rescue center in France (Centre Athénas), two young wildcats (one male, one female) that could not be returned to their exact original wild locations were selected for **translocation** to Thayatal. These cats were health-checked, fitted with **VHF/GPS collar transmitters**, and then soft-released into a suitable area of the national park in early 2025.

Soft release involved keeping them in an acclimatization enclosure for a few weeks at the release site before full release, to reduce homing behavior. Once released, the cats were closely tracked by the park's research team via radio-telemetry. This was the **first telemetry study of wildcats in Austria**, marking a milestone. In parallel, habitat enhancement measures took place: Thayatal park staff managed some of the meadow and woodland edges to improve rodent habitat (ensuring ample prey for the wildcats). They also removed invasive shrubs in certain areas to maintain a mix of open and dense cover (wildcats hunt in ecotones). Meanwhile, on the Czech side, **three new ponds and a small wetland** were created in a historically wet meadow near Znojmo to enrich habitat structure and prey availability – these aquatic features attract amphibians and rodents, which are wild-

cat prey, and generally boost biodiversity. The pilot also included ongoing genetic monitoring: any road-killed cats or mystery kittens in the region are now routinely DNA-tested to distinguish wildcats from hybrids or feral domestic cats, to keep tabs on the population's genetic purity.

European wildcat (Author: Dieter Manhart)

2.3. Stakeholders

The core stakeholders were the Thayatal National Park and Podyjí National Park administrations. They worked in concert, reflecting the fact that wildlife crosses the Austria-Czech border freely. The University of Vienna's conservation biology team was an important stakeholder. International partners like Centre Athénas (France) and experts from Germany (where wildcat conservation has been ongoing) contributed expertise on handling and monitoring. Locally, **hunters and foresters** were engaged: wildcats can be mistaken for feral cats, so educating hunting associations was crucial to prevent accidental shooting (in fact, stakeholders like hunters became allies once they learned the wildcat's protected status and ecological role).

The local communities, especially in villages around the parks, were informed through public talks – the return of the "small tiger" was promoted as a positive story of ecological

restoration, garnering public goodwill. Both national park visitor centers featured new displays about the wildcat, its tracking, and how visitors could help (e.g. by reporting sightings or not disturbing den sites). Local government officials were kept in the loop; the interest from political representatives was high since this was a headline-grabbing conservation effort (one of the first wildcat releases in the region).

2.4. Outcomes

The release and telemetry study are ongoing, and there are still many other open questions that the Thayatal National Park wants to answer together with its partners from the Podyjí National Park. The wildcat is the flagship species of the Thayatal National Park and the innovative study has attracted a lot of attention from the public, stakeholders such as hunters, political representatives and the scientific community. The study will run for a total of one year in order to obtain the best possible data on wildcats. In the meantime, initial results are being analysed and interpreted. The wildcat is a highly mobile species that serves as an umbrella species for a connected landscape and functioning wildlife corridors. Documenting their migration behaviour will help to improve the basis for improvements of a connected landscape in the long term on the basis of facts. The innovative research approach also sets a milestone in wildcat research, improving the long-term monitoring of this strictly protected FFH species.

The study has started to answer open questions, such as whether the Thaya River is a barrier; preliminary data implies that while wildcats mostly stay on one side, they can cross given suitable cover or low water levels. Public and stakeholder reaction has been extremely positive. The wildcat has become a **flagship for connectivity** – its presence has heightened calls to maintain forest corridors between Thayatal, Podyjí, and the larger Austrian/Danube population. Going forward, the data gathered will inform a planned **Wildcat Action Plan** for the region, and possibly justify additional releases to ensure a breeding nucleus. Importantly, the pilot cemented a partnership between the Austrian and Czech park teams, who are now committed to long-term joint monitoring. This collaborative model can be applied to other cross-border species conservation efforts.

2.5. Transferability and replicability potential

This pilot serves as a model for **cross-border conservation of elusive carnivores** in fragmented landscapes. The core techniques, i.e. release of GPS-collared wildcats, creation of habitat corridors (trees, hedgerows), and the restoration of stepping-stone biotopes, are applicable in other regions where carnivorous mammals face connectivity barriers.

The **replicability potential is high**, particularly in Natura 2000 forested areas with moderate fragmentation, where small-scale but targeted corridor enhancements can recon-

nect habitat patches. The pilot's methods for telemetry deployment, combined with citizen science (lure sticks, camera traps), form a technical and participatory blueprint for species monitoring.

Moreover, its integration with spatial planning, community engagement, and involvement of both Austrian and Czech authorities provides a **governance model** for transboundary species reintroductions. These features make it suitable for replication in the Carpathians, Western Balkans, and other regions with recovering or reintroduced wildcat populations.

River Thaya at the height of the Umlaufberg peak (Author: Ralph Mirau)

RESTORATION TECHNIQUES AND METHODS

1. Overview

The species pilots employed a suite of conservation techniques tailored to the target animals, many of which can serve as models for other species restoration initiatives. Species conservation requires a toolbox that spans capturing high-tech data, on-theground habitat tweaks, and socio-political arrangements. The pilots underscore that **no single method works in isolation**: it's the integration of methods – telemetry informing conflict mitigation, reintroductions paired with habitat enhancement, monitoring guiding management – that yields success. Practitioners planning similar projects should adopt a **holistic approach**, selecting and combining methods that address the biological needs of the species and the human context in which conservation must operate.

2. Reintroduction and translocation

Careful reintroduction was central to the wildcat pilot. This involved international coordination to source individuals, veterinary screenings, genetic considerations (choosing animals genetically similar to the extinct local lineage), and soft release techniques to maximize survival. Best practices gleaned include using acclimatization enclosures to let animals adjust to local conditions and monitoring them closely post-release. Though the bison pilot did not physically translocate animals during ReCo, it laid groundwork for potential **genetic rescue translocations** by identifying herd splits and candidates for exchange. The principle here is applicable widely: augmenting isolated populations with new individuals to increase genetic diversity (often done with bison elsewhere and could be replicated in Ińsko if needed).

3. Wildlife telemetry and tracking

Both pilots showcase the power of **telemetry technology**. In the bison pilot, the use of GPS collars provided high-resolution movement data that far exceeded what ground observation alone could achieve. This method allowed the team to map habitat use, identify critical corridors, and detect patterns (like bison resting sites, feeding grounds, and crossing points) which directly informed management actions (e.g. where to focus connectivity improvements or conflict mitigation). In the wildcat pilot, VHF/GPS collars enabled researchers to gather novel data on an elusive species' territory size and behavior in a region where it hadn't been studied before.

Best practices and lessons learned include:

- ensure collars are fitted by experienced personnel and that weights are below the recommended percentage of body weight for the species (for minimal impact),
- develop a protocol for data retrieval and analysis, and integrate it with conservation actions – as seen, mapping telemetry data against infrastructure and land use was a crucial step for the bison. Additionally, telemetry can feed early warning systems (like the bison conflict mitigation) by alerting managers when animals approach risky zones; with costs of GPS technology coming down, this method is increasingly accessible for species projects.

4. Habitat management for species needs

Although classified as "species" pilots, both included significant habitat management elements recognizing that species thrive only in suitable habitats. For the wildcat, specific actions such as maintaining a **mosaic of open and wooded patches**, creating **ponds/wetlands** to support prey, and planting native trees in gaps were done to enhance the habitat's carrying capacity. For the bison, a known practice is creating salt licks or designated grazing lawns to entice bison away from roads or farms. The lesson is that even if the focus is a species, **manipulating habitat structure** (creating travel corridors, food plots, denning sites, etc.) is often necessary. Practitioners should identify the limiting habitat factors for the species and address those – for example, if wildcat survival is limited by den sites, one might install artificial den boxes in safe locations; if bison movement is hindered by fences, working with landowners to remove or modify fences becomes a method.

5. Human-wildlife conflict mitigation

A major aspect for large mammals like bison is managing interactions with humans. The pilot supported a proactive conflict mitigation method via an **early warning system** that can serve as a template for others. By analyzing movement data to predict when and where conflicts might occur (e.g. a bison herd nearing a village or a busy road), the project set up a communication line to alert responders (rangers or volunteer wardens). This approach can be replicated with any species that can be tracked and causes periodic conflicts, in other contexts. Additionally, stakeholder inclusion (workshops, as detailed above) is itself a method: building local tolerance through education and involvement reduces conflict long-term. Where appropriate, direct compensation or damage prevention tools were advocated – e.g. in Poland, farmers are eligible for compensation for bison damage by national law, but the project also promoted preventive measures such as hay storage to deter bison. It's a known best practice to combine monitoring with on-ground conflict prevention (scare devices, physical barriers, community-based guarding teams).

The key method lesson is to **anticipate conflicts and act before they escalate** – technology (like GPS alerts) and community networks (local "rapid response teams") are effective tools for this.

Conservation Breeding Centre of European bison – "Dzika Zagroda" in Jabłonowo (Author: Jakub Skorupski)

6. Genetic monitoring and management

Maintaining genetic health is crucial in species restoration. The wildcat pilot used genetic analysis to confirm species presence and connectivity between populations. Continuing this, they plan to monitor any kittens born for genetic purity (to ensure they are not hybrids with domestic cats, which is a known threat in wildcat conservation). For bison, genetic management is about avoiding inbreeding; the pilot collaborated with the broader bison network to plan exchanges.

Establishing genetic baselines via DNA sampling of the population (through dung or tissue) and then monitoring heterozygosity over time helps gauge if management actions are needed. In reintroduction projects, sourcing from genetically diverse stock is a method to improve outcomes – the wildcats from France were presumably chosen in part due to genetic considerations (the text notes relatedness to Danube population, implying a desire to bolster that link). Practitioners should embed genetic monitoring into their projects from the start (working with conservation geneticists for sample collection and analysis protocols).

View to the river Dyje from a point of Sealsfield stone near Popice (Author: Petr Lazárek)

7. Transboundary coordination mechanisms

For species with ranges crossing borders, a method beyond field techniques is creating formal coordination. In the wildcat pilot, although not spelled out, the implicit method was a cross-border management agreement between Thayatal and Podyjí National Parks – they acted in concert, which is why the pilot could release cats on one side and build ponds on the other as complementary actions. This shows the importance of joint planning documents that outline roles and data sharing across jurisdictions. For example, they might have agreed on common monitoring protocols or a shared database for wildcat sightings.

The bison pilot, while within one country, similarly had to coordinate across different jurisdictions (forestry, park, provinces, military land). A replicable approach is to set up a joint task force or working group for the species that includes all relevant authorities. Such institutional methods ensure that conservation actions are harmonized rather than fragmented.

MONITORING APPROACHES AND INDICATORS

The species pilots used a mix of **cutting-edge telemetry**, **field surveys**, and **community feedback** as their monitoring toolkit. The indicators range from hard data (movement points, population counts, genetic indices) to softer measures (public acceptance, incident frequency). Importantly, monitoring for these pilots is not just data collection for reporting's sake – it's directly feeding into management decisions. For instance, telemetry data is being analyzed to propose new wildlife crossings, and wildcat movement data will guide where to focus future corridor protection. This demonstrates the best practice of treating monitoring as an integral, decision-driving part of conservation projects. As these pilots continue, the ultimate indicators of success will be a growing, like a self-sustaining bison population well integrated with the human landscape.

Effective monitoring in species-focused projects is vital to measure success (are populations increasing?, are individuals behaving normally?) and to inform adaptive management. The pilots implemented comprehensive monitoring schemes, with key approaches and indicators liste below.

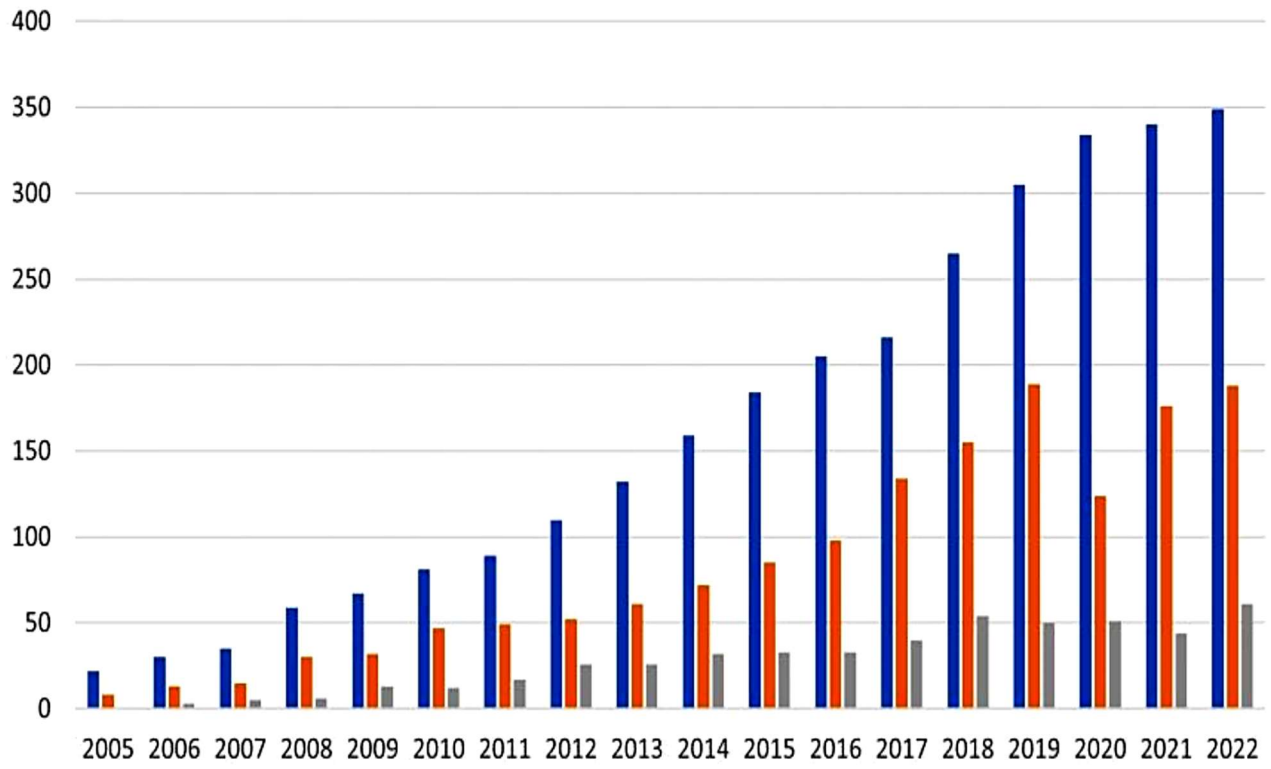
1. Telemetry data monitoring

Given the heavy use of GPS/VHF collars, a primary monitoring approach was continuous **telemetry tracking**. For bison, automated GPS data collection (with points gathered every few hours) allowed for near real-time monitoring of herd movements. Researchers monitored this data via software that could flag unusual movements (e.g. if a collar was stationary for too long, possibly indicating mortality or a dropped collar, the team could investigate). The **indicators derived** from telemetry include home range size, daily movement distances, habitat utilization percentages (e.g. % time in forest vs. open areas), and identification of corridors or choke points. These indicators help determine if the bison have sufficient space or if they are under stress (small range might indicate barriers or abundant food in a confined area, large range might indicate searching for resources).

For wildcats, VHF tracking required field teams to triangulate signals daily, in the beginning with an extension of triangulation to every fortnight. Indicators recorded were the establishment of a stable home range (which suggests the released animals acclimated), movement patterns (did they cross the border or major obstacles?), and habitat selection (using GPS fixes to note which areas the wildcats frequented at night vs. day). A key indicator was also survival and health – each collared wildcat's survival over the year is the ultimate success metric, and the collars also had activity sensors hinting at their behavior (resting, active, possible mortality signal if no movement). If a wildcat had shown signs of repeatedly attempting to cross a busy road, managers should be ready to consider interventions (like safe crossing structures or guiding the animal if feasible).

2. Population surveys and demography

Photopoint monitoring (taking repeat photos from set points) has been a simple but effective tool to visually document the reduction in shrub cover and the re-emergence of open meadow habitat. Besides collared individuals, the pilots monitored the broader population. In Poland, total bison counts are conducted annually or seasonally by the West Pomeranian Nature Society staff and volunteers, often via coordinated observations or aerial surveys. An indicator here is the population size and structure (number of adult males, females, calves). An increasing trend or stable calf recruitment rate would indicate a positive trajectory. So far, the population shows a stable upward trend with regular calving reported, which is cautiously optimistic. For wildcats, population monitoring is trickier due to low numbers. The pilot relied on camera traps and genetic sampling to detect any un-collared wildcats in the area. An ideal indicator is evidence of breeding – e.g. camera trap photos of kittens or finding a lactating female would signal that a breeding population is establishing. Although that might be beyond the immediate timeframe, it remains a key long-term indicator. The teams also remain watchful for any roadkill or dead individuals as negative indicators (none reported so far).



Number of free-living European bison population in north-western Poland: blue - total number of individuals, orange - number of females, grey - number of calves (Author: the West Pomeranian Nature Society)

3. Health and genetic monitoring

Health checks are part of monitoring for reintroduced animals. The wildcats underwent veterinary checks before release, and their condition (weight, parasite load) was monitored opportunistically (e.g. when changing a collar battery or if recaptured). No issues were reported, implying they were adapting well – their **body condition** and lack of disease are indicators of success. Genetic samples (like shed fur or scat) continue to be collected in both pilots. For bison, genetic monitoring is periodic (every few years, analyzing genetic diversity of the herd via blood or dung). A key indicator will be the **genetic diversity (heterozygosity)** of the bison population over time – if it starts dropping, that flags a need for introducing new blood. For wildcats, genetic tests on any new individual detected will confirm if it's from the released ones or a wild-born, and whether any domestic cat hybridization is occurring. The presence or absence of hybrid allels in kittens would be an important indicator of the population's integrity (so far so good – all evidence points to pure wildcats in the area as per initial genetic findings).

4. Behavioral and ecological indicators

Monitoring extended to the animals' behavior and impact on the ecosystem. In the bison pilot, researchers are analyzing **activity patterns** from collars (diurnal vs nocturnal activity) and seasonal movement shifts. If bison start expanding their range seasonally, it might indicate searching for food, which could influence habitat management (e.g. placement of winter feeding stations). For wildcats, an interesting indicator is whether they exhibit typical territorial behavior – for instance, are they marking territory, which could be inferred from revisiting the same spots frequently. Also, are they avoiding human areas? If telemetry shows they stay within the core of the national park and avoid villages, that's a good sign of minimal conflict potential. The pilot also considered **ecological interactions**: in Thayatal, they are observing any effects on prey populations (rodent and hare numbers, etc.) to ensure wildcats are not depleting their food base – though in a healthy ecosystem this is not a concern, it provides context for carrying capacity.

5. Community and conflict monitoring

Given the human dimensions, the pilots monitored the incidence of human-wildlife interactions. In the bison area, a log of conflict incidents (crop damages, fence breakages, road encounters) is kept. A reduction or stabilization of incidents, coupled with the fact that more are being managed proactively (like guided away rather than resulting in damage), is an indicator of improved coexistence. The early warning system's effectiveness can be measured by the number of responses vs. actual damages. For wildcats, since they pose little threat, the "conflict" monitoring is more about tracking public sentiment and any issues like someone mistaking a wildcat for a feral cat.

COMMUNITY ENGAGEMENT AND STAKEHOLDER INVOLVEMENT

The overarching result of the engagement efforts is a much higher degree of **social acceptance** for the conservation measures. For bison, local communities increasingly view them not as pests but as a regional emblem that can even be an ecotourism draw (some entrepreneurs discussed starting bison safari tours). For wildcats, the fear of predators (albeit small ones) is replaced with excitement about having "tigers" in the woods again. The involvement of hunters and farmers – typically key stakeholders – in both pilots is a blueprint for others: when those who potentially bear costs of conservation are made partners in the process, solutions that balance human and wildlife needs emerge.

In conclusion, the pilots prove that **people-centered conservation** is not just a slogan. By deeply engaging communities – through education, involvement, and shared problem-solving – species restoration projects can achieve outcomes that purely ecological work alone might not. The community becomes the guardian of the project's legacy, which is the ultimate aim for enduring conservation impact. Both species pilots placed strong emphasis on working **with and for local communities**, recognizing that long-term species conservation depends on human support and tolerance. The engagement strategies and their outcomes are outlined below.

1. Stakeholder Workshops and Consultations

Similar to the habitat pilots, each species pilot convened multi-stakeholder meetings. In the bison project, this meant inviting an array of parties – local community leaders, farmers, forestry officials, transport authorities, even army representatives – to discuss bison management. These workshops were a platform to share the GPS findings (e.g. showing maps of bison paths) and collaboratively identify solutions like how to handle a bison entering a village. The inclusive approach led to innovative ideas such as the joint emergency response protocol, which was formulated with input from community members and officials.

In the wildcat pilot, stakeholder engagement had a strong **educational** bent, as park authorities held sessions with hunters, landowners, and local residents to inform them about wildcat protection status and dispel myths (e.g. clarifying that wildcats pose no threat to people, and distinguishing them from feral cats). Getting hunter buy-in was crucial – by involving them early and even letting them participate in camera trapping, the project turned a potential source of opposition into a partner. These consultations foster a sense of shared purpose and are essential for cross-border cooperation too (Austrian and Czech stakeholders got to voice any concerns openly, aligning cross-border support for the wildcat).

2. Public awareness and education campaigns

Both pilots ran outreach campaigns spotlighting their flagship species. For instance, the message emphasized that the wildcat's return signifies a healthier, more connected environment, benefiting society by restoring natural heritage. Similarly, the bison pilot built on the existing cultural significance of bison in Poland. By explaining how understanding bison movements helps prevent accidents, public appreciation for the science was garnered. These campaigns cultivated a narrative of coexistence and pride (bison as an "iconic species" of the region that locals can brag about, wildcats as a sign of pristine nature returning).

3. Community participation and citizen science

In the bison pilot, while technical work was done by scientists, there was room for citizen involvement. Local volunteers were trained to be part of the **Bison emergency response team** – essentially community rangers who could help gently herd bison away from conflict areas or be eyes on the ground when a GPS alert triggers. This not only expanded the team's capacity but also gave volunteers a sense of responsibility and adventure. Some community members also contributed to **data gathering**; for instance, residents reported sightings of bison outside the known range, which helped validate the GPS data or fill gaps for uncollared animals.

In the wildcat project, citizen science opportunities were more limited due to the species' secretive nature. There was also an element of public participation in naming the released cats, which the park did to **create a connection** (a subtle way to get the public invested in the animal's survival). The pilot also welcomed volunteers engagement. These forms of participation meant the projects weren't an exclusive domain of experts; they became community projects with many hands contributing.

4. Addressing concerns and celebrating successes

Engaging stakeholders also means openly addressing any concerns. The bison team faced concerns from farmers about crop damage and from drivers about safety. By addressing these head-on (through rapid response to incidents, and considering crossings), they showed respect for community needs, which in turn reduced pushback. In the wildcat case, when initial monitoring showed the released cat settling in, the parks invited the public for guided walks and talks about the wildcat, effectively celebrating the return of the species. Such events reinforce positive reinforcement loops with stakeholders.

LESSONS LEARNED AND BEST PRACTICES

From the ReCoproject species-focused pilots, several key lessons and best practices have emerged that can guide future conservation efforts for endangered fauna. The species pilots taught that effective conservation requires a **blend of innovation and pragmatism** – high-tech tools and local wisdom, ambitious goals and careful stepwise implementation. They illustrated that **saving a species is about more than the species**, as it's about restoring ecological processes (bison shaping landscapes, wildcats controlling rodent populations) and human relationships with nature. By following these lessons and best practices, practitioners can enhance their chances of not just saving species on paper, but truly integrating these animals back into the fabric of our shared landscapes.

1. Use science and technology to drive management

Embracing modern technology like GPS telemetry provided insights that were game-changing. A best practice is to invest in **good data** – it may be tempting to cut costs on monitoring, but these pilots show that data (movement patterns, genetic info) is the foundation for effective interventions. For instance, thanks to GPS data, the bison project was able to pinpoint exactly where to focus mitigation (wildlife crossings, warning system) rather than relying on guesswork. The lesson is to make monitoring an integral part of the conservation action, not an afterthought. Additionally, share data transparently with stakeholders. In wildcat conservation, the telemetry study set a milestone and will improve long-term monitoring of this protected species, demonstrating the value of being the first to implement a new research approach in a region.

2. Plan for connectivity – the species will show you why

Both pilots underscored that isolated populations are vulnerable. The discovery that a Thayatal wildcat was genetically linked to a distant Danube population, yet separated by large gaps, highlighted the urgent need for **corridors**. The bison's fragmented herds and collision issues underlined the same point: wildlife need connected landscapes to thrive. A lesson learned is that small protected areas alone are not enough; conservation must operate at the landscape scale. Best practice is to incorporate connectivity goals explicitly: identify potential corridors and work on protecting or restoring them (e.g. through reforestation or agreements with landowners) as part of species action plans. The wildcat is now seen as an **umbrella species for a connected landscape** – focusing on it helped bring attention to broader connectivity issues. Future projects should similarly leverage focal species to catalyze landscape-level thinking.

3. Human dimensions are critical

Reducing human-wildlife conflict and increasing local stewardship were as important as the biological interventions. The bison pilot demonstrated that **coexistence measures** (like early warning, compensation, community engagement) are indispensable for any large animal conservation in human landscapes. A best practice is to involve communities in designing these measures – their buy-in ensures the measures are practical and actually used. The substantial stakeholder involvement in ReCo's species pilots likely prevented what could have been setbacks (for example, if a bison caused a major accident or a wildcat was shot due to misidentification, public support could evaporate). Instead, no major conflicts occurred, which is a testament to proactive engagement. Thus, the lesson is clear: **conservation success = wildlife gains + community gains**. One can't succeed without the other.

4. Transboundary and cross-sector collaboration yields greater benefits

The wildcat project in particular highlighted the value of **cross-border cooperation**. By working jointly, Austrian and Czech staff were able to cover more ground, share expertise, and ensure wildcats don't fall through administrative cracks. Similarly, cross-sector involvement in the bison pilot (NGOs, local government, foresters, local community, scientific bodies, and even non-traditional partners like the military) created a robust support network for the species. A best practice is forming **multistakeholder working groups** for species that roam widely – this fosters communication and quick resolution of issues. The lesson is that silos (whether political or institutional) hinder effective species conservation; breaking them down multiplies resources and influence.

5. Adaptive management and patience

The pilots reinforced that restoring species is a gradual, iterative process. Not everything will go as planned – one must adapt. For instance, if the released wildcat had failed to thrive or left the area, the plan was ready to adapt by potentially trying another release or adjusting strategy. The bison pilot's adaptive step was recognizing they needed more collars than initially planned to get sufficient data – they ramped up to ten collars. Another aspect is patience: building trust with communities took time, but it paid off in more meaningful cooperation toward the end. The best practice here is **monitor, evaluate, refine** – treat the project as a learning process. The pilots benefitted from peer reviews and reflections (the ReCo peer-review excursions allowed teams to get feedback and new ideas). Encourage such reflections and be willing to change tactics in light of new evidence.

6. Leverage charisma and cultural value of species

European bison and wildcats both hold a certain charisma – the former as a symbol of wilderness and a conservation success story (having been saved from extinction), the latter as a mysterious, elusive feline that sparks imagination. The pilots leveraged these aspects for public engagement. A takeaway is that **storytelling** around a species can galvanize support. For example, framing the bison as "gentle giants reclaiming their home range" or the wildcat as "the return of a native legend" helped capture media interest and public goodwill. Best practice is to identify culturally resonant themes (perhaps historical presence of the species, or its role in folklore) and incorporate that into outreach. When people care about the animal, they are more likely to support measures that help it.

7. Securing long-term commitment

Finally, a vital lesson is ensuring that pilot actions transition into long-term programs. ReCo's species pilots were designed with continuity in mind – the Green Federation "GAIA" and partners will keep monitoring bison beyond the project, and the national parks will continue wildcat surveillance. They also set the stage for informing national/EU strategies. The lesson is to **embed projects into existing institutions or frameworks** so that the work doesn't end when the initial funding does. By aligning pilot goals with national park mandates and involving governmental bodies, the pilots created institutional ownership of the outcomes. The best practice here is early planning for post-project: training local personnel, obtaining commitments or policy changes during the project (like getting wildcat conservation into official management plans), and even modest fundraising to carry on essential activities.

POLICY AND REPLICATION POTENTIAL

The findings and successes from Joint Pilot Action "Species" are poised to influence conservation policy and encourage replication in other regions. To facilitate replication, ReCo partners are preparing detailed **practitioners' guides and factsheets** (like this one) for distribution. The European Green Belt network will likely disseminate these at conferences and through Interreg channels. One idea on the table is a "Bison school" or "Wildcat workshop" where ReCo team members host training for other project managers, sharing practical know-how (collar fitting, stakeholder mediation, etc.).

In essence, the policy and replication potential is very high. These pilots did not occur in isolation; they were designed as demonstrations to be learned from and built upon. The collaborative, transnational nature of the work itself has created a network of practitioners and authorities who are now advocates for these approaches. The fact that joint guides (like the present one) and plans are outcomes of ReCo means the knowledge is being packaged for others. Policymakers have taken note – local to European – and the momentum is in favor of scaling these successes outward. If the lessons are heeded, we can expect to see more regions adopting GPS-based wildlife monitoring, early warning systems for conflicts, and cross-border species management agreements, all inspired by what was accomplished under ReCo's Joint Pilot Action "Species".

1. Contribution to species action plans and strategies

The pilots are feeding valuable information into regional and national conservation strategies. In Poland, the knowledge gained from tracking bison (home range sizes, corridor locations, conflict hotspots) is informing the ongoing development of a **bison management strategy**. Specifically, data on how bison use human-dominated landscapes will help shape guidelines on land-use planning (e.g. maintaining open corridors between forest patches) and emergency response measures countrywide. At the European level, these results support the EU's bison conservation efforts by providing a model for integrating local communities into large herbivore management.

For the wildcat, Austria currently has no large wildcat population; the pilot's outcome serves as a pilot case that could be expanded into a broader **Austrian Wildcat Action Plan** covering other regions, and it reinforces the goals of the existing EU wildcat species action plan by demonstrating cross-border cooperation. The evidence that wildcats use cross-border corridors can be used to argue for international ecological corridor preservation in EU policy forums. Both pilots ultimately contribute to the EU Biodiversity Strategy's goal of **reversing species decline** and enhancing trans-European nature networks. The ReCo project's outputs include integrating pilot lessons into the **Transnational Restoration & Connectivity Strategy** and policy recommendations, as noted earlier, ensuring these species-focused lessons inform high-level policy directives as well.

2. Informing green infrastructure and land-use policy

The bison pilot's finding – pinpointing where bison cross roads – has direct implications for **transport and spatial planning policy**. Local authorities in West Pomerania are already considering this data for road safety improvements; if codified, it could lead to policies requiring wildlife crossings in infrastructure projects in key areas (a trend aligning with EU initiatives for green infrastructure). For example, the fact that certain rail lines intersect bison paths could push for wildlife underpasses in future rail upgrades. Additionally, the recognition of military training areas as de facto wildlife refuges (as seen with bison using one) could influence land-use planners to formally account for biodiversity on such lands.

On the wildcat front, an insight is that seemingly small protected areas can host wider-ranging species if corridors are intact. Thus, land-use policies in the region might evolve to implement **wildcat-friendly measures**: e.g. maintaining hedgerows and wooded strips in agricultural zones between Thayatal and other forest complexes, or forest management policies that ensure continuous cover. The pilots provide the hard data and success stories needed to advocate for these green infrastructure elements.

3. Replication potential in other regions

Both pilots serve as **proof-of-concept** that can be replicated for similar species or in similar contexts:

- **the bison pilot model** – using telemetry and stakeholder engagement to manage a reintroduced large herbivore – can be applied to other emerging bison populations in Europe (for instance, bison have been reintroduced in Romania, Germany, etc., where managing human interaction is crucial); it's also a template for other large mammals like elk, wild horse, or moose in Europe's mosaic landscapes; key transferable practices are the early warning conflict system and multi-sector coalition, as well as the use of data to guide corridor protection; already, interest has been shown by conservation groups in the Carpathians to adopt the ReCo telemetry approach for monitoring bison there.,
- **the wildcat pilot approach** – combining reintroduction with habitat enhancement and crossborder monitoring – could be replicated for species like the Eurasian lynx or even the **European mink** in transboundary areas; any region considering carnivore reintroductions can learn from the soft-release and intensive tracking strategy to ensure animals adjust well; moreover, the public engagement component (turning a secretive species into a public mascot) is a model for overcoming the visibility challenge of small carnivores; parks in other parts of Central Europe have expressed interest in how Thayatal/Podyjí managed to pull off a successful wildcat release and generate public excitement, indicating strong replication potential.

4. Mainstreaming into EU-level initiatives

The pilots coincide well with Europe-wide initiatives such as the proposed **EU Nature Restoration Law**, which encourages rewilding and species reintroductions. The on-ground experience from ReCo can provide valuable case studies to EU policymakers about the feasibility and challenges of rewilding in populated landscapes. For example, evidence from the bison pilot can illustrate how large herbivores contribute to ecosystem restoration (grazing creating open habitats, etc.), supporting policy arguments for rewilding as a restoration tool. Likewise, the success of the wildcat pilot can feed into the Pan-**European Green Belt initiative** and the Trans-European Network for Green Infrastructure by highlighting a specific instance of cross-border species recovery. By presenting these outcomes in policy forums and biodiversity platforms, ReCo partners aim to ensure the pilots have influence beyond their local areas. The integration of pilot insights into the European Green Belt as a **priority region for EU Biodiversity Strategy** implementation is already noted as a goal.

5. Sustainability and long-term funding

Policy support will also be crucial for sustaining the efforts initiated. For bison, long-term viability might depend on policy decisions like creating larger core areas or regulating human activities in key corridors. The pilot's positive outcomes will bolster proposals for such measures (e.g. perhaps upgrading the Ińsko Landscape Park protections or designating new Natura 2000 areas encompassing bison ranges). In terms of funding, having proven concept, the project partners are now better positioned to secure continued funding from national or EU sources. The mention that data will inform EU-level strategies suggests that future EU funding (LIFE program or similar) could be tapped to scale up these pilots. The wildcat pilot, if it leads to breeding, could justify an EU LIFE project to expand wildcat reintroductions to link Austrian and Czech populations with those in Germany – an idea that is being floated.

VISUAL AIDS

Visual tools greatly supported the species pilots and will be key in communicating their replication. Some of the effective visual aids and how they were used include:

- **species distribution and movement maps** – for the bison pilot, maps showing the collared bison's home ranges and movements overlaid on the landscape were one of the most potent visuals; these maps highlighted corridors, cluster areas (core habitats), and conflict points (intersections with roads), making it easy for stakeholders to grasp spatial issues; in replication, including such maps in reports to authorities can quickly convey where action is needed (e.g. "here is where a wildlife crossing should go"),
- **infographics on conflict mitigation** – as an example a simple infographics for villagers could served – one showing a bison icon approaching a field with a phone alert symbol, explaining the early warning system process; another diagrammatically explained "If you see a bison near your property, do X, Y, Z" with friendly illustrations; these visual instructions transcend language barriers and were accessible to all age groups,
- **before-and-after and comparison photos** – visuals in the wildcat pilot could include side-by-side images: one of a captive wildcat in the rescue center vs. one of a wildcat roaming in Thayatal caught on camera post-release; this kind of comparison beautifully tells the story of rewilding; for bison, photos comparing a road with and without a wildlife crossing (using an illustrative example from elsewhere) could help persuade local authorities of the concept,
- **photographs and videos** – high-resolution photographs of the species were used in media releases and educational material; they help put a face to the project and evoke empathy; for replication, assembling a visual "story" (maps, photos, clips) of the pilot's journey can inspire other regions to undertake similar initiatives,
- **interactive tools** – the bison team utilized an interactive online map (with restricted access) for stakeholders, where one could see near real-time bison positions; this not only was a management tool but also built trust and transparency with stakeholders (they could see that the project wasn't hiding anything about bison locations); while public access to such sensitive data is limited, a slightly delayed or filtered version is a powerful educational visual on a project website, showing daily or weekly movements to engage the community,
- **charts and graphs**, like the bison population trend over years, or pie charts of bison habitat use (forest vs. meadow vs. wetland) were used in reports to summarize outcomes quantitatively.

In producing practitioner guides and reports, incorporating these visual elements is essential. They make the content relatable and easier to understand at a glance, which is important for busy decisionmakers and the public. Visual aids like the ones from these pilots serve as templates; new projects can replace data with their own but keep the format (for example, using the bison corridor map as a template for mapping corridors of another species). In conclusion, well-crafted visual aids – whether maps, photos, or infographics – are more than just decoration; they are strategic tools in conservation. They help communicate the why, where, and how of interventions succinctly and persuasively. For the species pilots, visuals were crucial in turning data into action: a map convinced an official to fund a crossing, a photo of a wildcat in the wild convinced a skeptic that reintroduction works. Future practitioners are encouraged to allocate effort to developing strong visual communications, as part of the overall strategy to achieve ecological and social goals in conservation projects.

Collared bisons (Author: Aneta Kozłowska)

APPENDIX 1 – SUMMARY OF SPECIES CONSERVATION PILOT ACTIONS UNDER THE ReCo PROJECT

Pilot region	Target species	Key conservation actions	Techniques used	Lead partner & partners	Expected outcomes
Ińsko Lakeland (PL)	European bison *Bos bonasus*	GPS monitoring, conflict mitigation, barrier removal, stakeholder engagement.	Telemetry collars, migration analysis, transport infrastructure recommendations, habitat mapping, stakeholder meetings, early warning system for human-wildlife conflict prevention.	Green Federation "GAIA" (Poland)	Improved gene flow, reduced conflicts, data-informed management. Replicable in other lowland areas with bison or similar megafauna. Early warning systems and participatory management serve as models for conflict mitigation.
Thayatal National Park (AT) & Podyjí National Park (CZ)	European wildcat *Felis silvestris*	Habitat connectivity, reintroduction, telemetry, installation of wildlife camera traps and monitoring system, genetic sampling (non-invasive), creation of corridor quality maps, awareness-raising (with local communities, hunters, foresters), engagement of schools and stakeholders in citizen science.	Wildlife cameras, telemetry collars, habitat restoration.	National Park Thayatal (Austria), National Park Podyjí (Czech Republic), Austrian Federal Forests, Czech and Austrian conservation agencies, local schools and community groups	Corridor establishment, wildcat monitoring data, and restoration manual. High potential for replication in other transboundary forested landscapes. The non-invasive monitoring and mapping methodologies can be applied where wildcat presence is suspected. The pilot also demonstrates successful models of school and public engagement, and cross-border cooperation, relevant to other fragmented habitats.

APPENDIX 2 – CONTACTS TO EXPERTS RESPONSIBLE FOR JOINT PILOT REGIONS

Joint Pilot Region	Ińsko Lakeland (West Pomerania, Poland)	Thayatal National Park (Austria)	Podyjí National Park (Czech Republic)
Name of organisation	Green Federation "GAIA"	Thayatal National Park	Podyji National Park Administration
Name of contact person	Mr. Jakub Skorupski, PhD, Eng.	Mr. Julian Haider	Mr. Zdeněk Mačát
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The ReCo project's (www.interreg-central.eu/projects/reco) consortium consist of:

- Bavarian Branch of Friends of the Earth Germany (Lead Partner, Germany),
- DOPPS – BirdLife Slovenia (Slovenia),
- Ametyst, NGO (Czech Republic),
- Federacja Zielonych "GAJA", NGO (Poland),
- WWF Italy (Italy),
- Thayatal National Park (Austria),
- University of Vienna (Austria),
- Landscape Research Institute (Czech Republic),
- BSC – Business support organisation ltd., Kranj (Slovenia),
- Podyji National Park Administration (Czech Republic),
- Ministry of the Environment of the Czech Republic (Czech Republic).