



NATUREFIRST

Joint activities with other projects

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LIST OF ACRONYMS

AWOM	Aquatic Warblers on the Move (LIFE project)
BMD	Biodiversity Meets Data (Horizon Europe project)
CAP	Common Agricultural Policy
CCIBIS	Carpathian Countries Integrated Biodiversity Information System
CERV	Citizens, Equality, Rights and Values
COEX	LIFE Human Bear Coexistence Project
DTO	Digital Twin of the Ocean
DDNI	Danube Delta National Institute for Research and Development
EO	Earth Observation
EU	European Union
EuroHPC	European High-Performance Computing
FOP	Fundación Oso Pardo (Brown Bear Foundation)
HE	Horizon Europe
HWC	Human–Wildlife Conflict



ILIAD	Integrated Digital Framework for Comprehensive Maritime Data and Information Services
LUMI	Large Unified Modern Infrastructure
MAMBO	Modern Approaches to the Monitoring of Biodiversity (Horizon Europe project)
MOTIVATE	Monitoring Terrestrial Biodiversity at European Scale (Biodiversa+ BiodivMon project)
MSCA	Marie Skłodowska-Curie Actions
NBS	Nature-Based Solutions
PU	Public
REXUS	Resilient Nexus Systems (Horizon 2020 project)
RIA	Research and Innovation Action
TETTRIs	Transforming European Taxonomy through Training, Research and Innovations (Horizon Europe project)
UI	User Interface
WUR	Wageningen University & Research



TABLE OF CONTENTS

TABLE OF CONTENTS	5
Executive Summary	6
1 Introduction	7
2 List of Collaborating Projects and Description of Joint Activities	8
Overview Table	8
2.1 Biodiversity Meets Data (BMD)	10
2.2 BioDT (Biodiversity Digital Twin)	10
2.3 CERV - “Coexisting with Bears - Conservation Needs Conversation!”	11
2.4 Biodiversa+ TransWILD	12
2.5 ILIAD (Integrated Digital Framework for Comprehensive Maritime Data and Information Services)	13
2.6 FutureMARES	13
2.7 REXUS (Managing Resilient Nexus Systems)	14
2.8 NaturaConnect	14
2.9 LIFE HUMAN BEAR COEX	15
2.10 LIFE Aquatic Warblers on the Move (AWOM)	16
2.11 MOTIVATE (Biodiversa+ BiodivMon)	16
2.12 SaveGREEN / CCIBIS	17
2.13 TETTRIs (Transforming European Taxonomy through Training, Research and Innovations)	17
2.14 MAMBO (Modern Approaches to the Monitoring of Biodiversity)	18
3 Outcomes and potential future work	18
3.1 Tangible Outcomes	18
3.2 Networks and Proposals	19
3.3 Strategic Impacts	19
4. Conclusions	20



Executive Summary

This deliverable consolidates the joint activities that Nature FIRST undertook in collaboration with other European projects. From the outset, the project committed to building links with related initiatives to avoid duplication, share best practices, and strengthen its impact.

Some collaborations stood out, for instance, partners who worked closely with BioDT on a series of scientific papers that are helping to shape the field of ecological digital twins. Through the LIFE HUMAN BEAR COEX project and the Brown Bear Foundation, data and DNA samples were shared and are now part of long-term monitoring in the Cantabrian Mountains. At the Nature FIRST Conference, knowledge partners such as Biodiversity Meets Data and Biodiversa+ TransWILD co-hosted sessions, including a communications workshop and sharing real case studies with the audience. Other exchanges with NaturaConnect, FutureMARES, MOTIVATE, AWOM, and SaveGREEN/CCIBIS connected the project's tools and insights to broader European discussions on connectivity, habitat monitoring, and regional biodiversity infrastructures.

These collaborations helped make outputs more relevant and easier to apply in practice, while also providing partners with professional benefits and new networks. They showed the value of working across disciplines and the importance of pairing scientific tools with stakeholder engagement.

Taken together, the collaborations documented in this deliverable have yielded measurable outcomes and laid the groundwork for sustained cooperation. They support Nature FIRST's long-term objectives of strengthening biodiversity monitoring capacity and accelerating the uptake of conservation technologies.



1 Introduction

Collaboration with other European projects was built into Nature FIRST from the start. The grant agreement explicitly stated that the consortium would establish direct contacts with related initiatives and explore ways to identify synergies, set up common indicators and frameworks, and carry out joint communication and dissemination activities. The reasoning was simple, as biodiversity challenges are complex, and no single project can address them in isolation. Working together with complementary initiatives increases efficiency, reduces duplication, and creates a stronger, more lasting impact.

This deliverable provides an overview of how Nature FIRST partners engaged with other European projects during the reporting period. The focus is on activities that support shared learning, method alignment, and opportunities to reach broader stakeholder groups. Collaborations ranged from scientific co-publications and data sharing to joint conference sessions and thematic workshops.

The value of these exchanges was evident in the outcomes: partners not only produced concrete outputs but also gained professional and personal benefits, such as stronger networks, closer stakeholder relationships, and new skills.

Respondents from an internal impact evaluation survey emphasised that collaboration requires openness, trust, and time to build, but that the results are well worth the effort. As one of the final conference panels, *“From Ego to Eco,”* put it, effective partnerships demand a shift in mindset from competition to cooperation, from project-level goals to system-level perspectives.

Taken together, the collaborations described in this report demonstrate how joint activities amplified the reach and relevance of Nature FIRST. By sharing data, aligning methods, co-developing tools, and engaging in open discussions with other projects, the consortium was able to adapt its outputs to diverse ecological and social contexts, strengthen capacity across disciplines, and expand the impact of its work. These activities also laid the groundwork for continued cooperation, ensuring that the project’s results will remain connected to the wider European research and conservation landscape.



2 List of Collaborating Projects and Description of Joint Activities

This section details the collaborations achieved with other EU-funded projects and initiatives, including synergies realised and collaborations at a technical level. The table below summarises all collaborations covered in this section.

Overview Table

Project/Initiative	Description of Collaboration
Biodiversity Meets Data (BMD)	At the Nature FIRST Conference (25–26 June 2025), BMD was one of our Knowledge Partners. Naturalis, as project coordinator, hosted a booth and contributed to a panel session on scaling innovation for biodiversity conservation.
Biodiversa+ TransWILD	At the Nature FIRST Conference (25–26 June 2025), the TransWILD team at the University of Trento co-organised a communication workshop with dotSPACE.
BioDT (Biodiversity Digital Twin)	BioDT and Nature FIRST had frequent interactions at conferences, leading to a series of joint scientific publications. These include a perspective paper on what digital twins are and their potential role in ecology, as well as further papers (published, under review, and in preparation) on the components of digital twins, ecology-specific challenges, and a proposed standard protocol for documenting and communicating DTs in environmental science.
CERV - “Coexisting with Bears - Conservation Needs Conversation!”	Joint organisation of the Tuşnad EcoBear Conference in Romania under the CERV project, which provided a platform to present the Human-Bear Conflict Radar. The event also created the link with Robin Rigg that led to the article <i>“Digital twins for conflict management: the Human-Bear Conflict Radar”</i> in <i>Carnivore Damage Prevention News</i> (Davison et al. 2025).



ILIAD (Digital Twin of the Ocean)	dotSPACE was a partner in the flagship project ILIAD DTO, leading to cross-over knowledge sharing. DDNI contributed their data to EMODnet, a core contribution to ILIAD DTO.
FutureMARES	Wageningen University & Research contributed to FutureMARES.
REXUS	WWF Romania participated in REXUS (water–energy–food nexus), creating opportunities for exchange on integrated resource management.
NaturaConnect	WWF Romania also contributed to NaturaConnect, supporting the design of a coherent, resilient, and well-connected Trans-European Nature Network.
LIFE Human Bear Coex	Workshops were held between LIFE Human Bear Coex (coordinated by Fundación Oso Pardo) and Nature FIRST to exchange approaches on preventing and mitigating conflicts in Cantabrian municipalities with higher bear densities. Data and DNA samples were shared within FOP's monitoring programme in the western Cantabrian range.
LIFE Aquatic Warblers on the Move (AWOM)	The AWOM project engaged with Nature FIRST through participation in the field site workshop in Ancares-Courel, Spain (28-30 May 2025).
MOTIVATE (Biodiversa+ BiodivMon)	MOTIVATE also participated in the field site workshop in Spain (28-30 May 2025), sharing approaches for harmonised habitat assessment and biodiversity monitoring using time-series, modelling, and remote sensing.
SaveGREEN / CCIBIS	Contact with SaveGREEN, coordinated by WWF CEE, facilitated the integration of Nature FIRST habitat maps into CCIBIS, thereby enhancing access to conservation data across the Carpathian ecoregion.
TETTRIs (Transforming European Taxonomy through Training, Research and Innovations)	Contact was established with TETTRIs around May 2025 to join as Knowledge Partner at the final conference. Nature FIRST partners were introduced into follow-up proposals.



MAMBO (Modern Approaches to the Monitoring of Biodiversity)	Outreach to Nature FIRST's “sister” project MAMBO (Modern Approaches to the Monitoring of Biodiversity) identified strong complementarities (AI-driven monitoring, workflow alignment).
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2.1 Biodiversity Meets Data (BMD)

About the project:

Biodiversity Meets Data is a Horizon Europe initiative (2025–2029) that will provide a unified “Single Access Point” for biodiversity monitoring tools, AI-powered taxon identification services, FAIR data mobilisation, analysis environments (VREs), and a Web-GIS viewer for terrestrial, freshwater, and marine data.

Insights from collaboration:

At the Nature FIRST Final Conference, Biodiversity Meets Data (BMD) joined the panel “*From Tools to Action: Scaling Conservation Solutions for Global Impact*,” together with representatives from the World Resources Institute (WRI), Sensing Clues, and 3edata. Naturalis, BMD's coordinator, spoke about the need to scale conservation tools by bringing existing solutions together in a single portal for Natura 2000 site managers, emphasising the importance of clear data standards, practical relevance for end-users, and the inclusion of local knowledge.

The discussion also addressed wider challenges such as funding and long-term sustainability. Naturalis pointed out that while public funding can open access to important tools, it often leaves open the question of how they will be maintained once projects end — a concern that echoed Nature FIRST's own thinking about uptake and continuity.

For Nature FIRST, these exchanges provided insight into how its outputs could be better aligned with BMD's focus on sustainability and user-centred design, reinforcing stakeholder engagement and supporting continued use of tools beyond the lifetime of individual projects.

2.2 BioDT (Biodiversity Digital Twin)

About the project:

BioDT (Biodiversity Digital Twin) is a Horizon Europe project (2022–2025) coordinated by CSC - IT Centre for Science. The project develops digital twins to model species dynamics and ecosystem responses to environmental change, bringing together FAIR data, AI-driven modelling, and the power of high-performance computing on the European High-Performance Computing (EuroHPC) Large Unified Modern Infrastructure (LUMI) supercomputer. Its prototypes address urgent biodiversity challenges, including species' responses to climate change, genetically detected biodiversity, invasive species dynamics, and interactions between species and humans.



BioDT is closely linked to major European research infrastructures such as GBIF, eLTER, DiSSCo and LifeWatch ERIC, and supports EU and global policy goals including the Biodiversity Strategy 2030, the Green Deal, Destination Earth, and the UN SDGs. By offering interactive, spatially explicit predictive tools, BioDT aims to improve evidence-based decision-making for biodiversity conservation and restoration.

Insights from the collaboration:

BioDT has been a key partner, working closely with Wageningen University & Research and Sensing Clues. Both Nature FIRST and BioDT are the first Horizon Europe projects to develop ecological digital twins. Joint outputs include:

- Davison, A. M., De Koning, K., Taubert, F., & Schakel, J. (2025). *Automated near real-time monitoring in ecology: Status quo and ways forward*. *Ecological Informatics*, 89, 103157. <https://doi.org/10.1016/j.ecoinf.2025.103157>
- De Koning, K., Broekhuijsen, J., Kühn, I., Ovaskainen, O., Taubert, F., Endresen, D., Schigel, D., & Grimm, V. (2023). *Digital twins: dynamic model-data fusion for ecology*. *Trends in Ecology & Evolution*, 38(10), 916–926. <https://doi.org/10.1016/j.tree.2023.04.010>
- In-review papers addressing DT components and challenges:
 - Taubert, F., Banitz, T., Brewster, C., Davison, A., Groeneveld, J., Khan, T., de Koning, K., Kusch, E., Rolph, S., Grimm, V., & Nikolova, N. *The process and challenges of developing digital twins for ecology*. Submitted to *Methods in Ecology and Evolution*.
 - Khan, T., de Koning, K., Endresen, D., Chala, D., & Kusch, E. *TwinEco: A Unified Framework for Dynamic Data-Driven Digital Twins in Ecology*. Under review.
- A forthcoming paper on standards for documenting DTs.

Exploratory discussions were held on creating a grassland digital twin for Nature FIRST's Spanish field site.

2.3 CERV - “Coexisting with Bears - Conservation Needs Conversation!”

About the project:

CERV - “Coexisting with Bears - Conservation Needs Conversation!” is a project funded through the Citizens, Equality, Rights and Values (CERV) Programme and runs from 2024 to 2026. It is coordinated by WWF Romania and involves partners in Romania, Bulgaria and Hungary who are working together to improve dialogue and develop practical approaches for living alongside brown bears in areas where encounters and conflicts are becoming more common.

The project places particular emphasis on involving local communities, including young people, women and groups that are often left out of decision-making. It organises community workshops,



stakeholder meetings and communication activities to encourage open discussion, build trust and create more inclusive ways of managing bear conservation. Another goal is to develop approaches that can be repeated in other regions and feed into national restoration plans and European biodiversity strategies. In this way, CERV supports both the reduction of conflict on the ground and the protection of bear populations, while also contributing to the broader aims of the EU Biodiversity Strategy for 2030.

Insights from the Collaboration:

The Tuşnad EcoBear Conference (3rd field site workshop, October 2024) was organised as part of the CERV project - “Coexisting with bears - Conservation needs Conversation!”, and was supported by Nature FIRST. It was hosted by the Project Bag Association and WWF Romania, in collaboration with the Mayor’s Office of Băile Tuşnad. The conference brought together a wide range of international experts to discuss the state of brown bear management across Europe and to share best practices and lessons learned for reducing human-wildlife conflict.

It was at this event that Nature FIRST first connected with Robin Rigg, a biologist with over 25 years of experience in large carnivore ecology and coexistence with people, and a member of the IUCN Large Carnivore Initiative for Europe and the Slovak Wildlife Society. This connection led to the article “*Digital twins for conflict management: the Human-Bear Conflict Radar*” published in *Carnivore Damage Prevention News* (Davison et al. 2025), which helped share the outcomes of the collaboration with a wider international audience.

2.4 Biodiversa+ TransWILD

About the project:

TransWILD (*Transformative Wildlife Management to Enhance Biodiversity Protection and Ecosystem Services Provision in Shared and Protected Multi-Use Landscapes across Europe*) is a Biodiversa+–funded initiative running from April 2023 to March 2026. Coordinated by Humboldt University of Berlin, the project involves partners from Bulgaria (Bulgarian Academy of Sciences), Italy (University of Trento), Norway (NINA), and Spain (Technical University of Madrid).

TransWILD aims to enhance wildlife conservation outcomes in Europe’s shared cultural and protected landscapes by evaluating how landscape structure and land use diversity impact the benefits and costs associated with wildlife presence. They also examine human-wildlife interactions through situational stakeholder assessments, cost-effectiveness analyses, and governance efficiency evaluations. Furthermore, TransWILD facilitates the integration of academic and stakeholder insights into co-developed coexistence scenarios and management strategies.

Insights from the Collaboration:

At the Nature FIRST Conference, TransWILD co-facilitated a communications workshop with dotSPACE and Bulgarian-Dutch journalist Iva Tontcheva-Boesten. Around 20 participants joined,



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with more than half being non-communications professionals, highlighting the importance of equipping diverse stakeholders with effective communication skills.

The workshop shared case studies on brown bear communication and emphasised that the potential of communication is often underestimated: when done effectively, it can trigger a chain reaction: *Message → Engagement → Understanding → Trust → Support → Action → Change*. Participants also discussed how media should be seen as a partner rather than a barrier, capable of amplifying conservation messages by providing visibility, context, and credibility.

Finally, the workshop underlined the role of communication as a bridge between different actors (governments, local communities, experts, and the public), helping to align interests and build shared solutions. These insights directly support TransWILD's mission of strengthening coexistence strategies through inclusive dialogue and stakeholder engagement.

2.5 ILIAD (Integrated Digital Framework for Comprehensive Maritime Data and Information Services)

About the project:

ILIAD is an EU-funded initiative under Horizon Europe and the Green Deal mission, running from February 2022 to July 2025. This project develops an interoperable, data-rich Digital Twin of the Ocean (DTO) that integrates Earth observation, modelling frameworks, and digital infrastructures to support policy and green deal priorities.

Insights from the collaboration:

Within ILIAD, dotSPACE contributes expertise on Earth observation and stakeholder engagement, while DDNI provides marine monitoring data through EMODnet. Together, these links align Nature FIRST approaches with the technical and governance standards of the ocean digital twin ecosystem. In addition, ILIAD hosted a dedicated webinar on digital twins, which Nature FIRST partners helped to promote, strengthening cross-project visibility and shared outreach.

2.6 FutureMARES

About the project:

FutureMARES (H2020, 2020–2024) investigated the impact of climate change on marine biodiversity and ecosystem services, with a focus on developing and testing nature-based solutions (NbS). The project combined ecological modelling, long-term monitoring data, and socio-economic analysis to assess the risks and benefits of NbS, such as habitat restoration, conservation, and nature-inclusive harvesting. Its work spanned multiple case studies across Europe and beyond, evaluating how NbS can enhance climate adaptation while supporting food security, sustainable fisheries, and livelihoods. By engaging policymakers, practitioners, and local communities, FutureMARES produced targeted policy briefs, guidelines, and a final white paper,



positioning NbS as practical, evidence-based strategies for addressing both biodiversity loss and climate resilience at the EU and international levels.

Insights from the collaboration:

Wageningen University & Research's involvement with FutureMARES created opportunities for cross-disciplinary knowledge-sharing in marine and transitional ecosystems.

2.7 REXUS (Managing Resilient Nexus Systems)

About the project:

REXUS (H2020, 2021–2024) focuses on operationalising the Water–Energy–Food (WEF) Nexus by moving from conceptual frameworks to practical, implementable solutions. The project develops participatory system dynamics models and applies them in a set of pilot sites across Europe and Latin America, addressing climate pressures, competing resource demands, and governance challenges. By involving policymakers, businesses, NGOs, and local communities in co-creation, REXUS seeks to design climate-resilient governance approaches that optimise resource use across sectors. The project also aims to deliver a decision-support platform and a set of transferable Nexus methodologies, intended to guide EU strategies on sustainability, circular economy, and biodiversity conservation.

Insights from the collaboration:

WWF Romania, as a partner in both Nature FIRST and REXUS, acted as a bridge between the two projects. While there was no formal joint activity, their participation in the REXUS Lower Danube pilot created opportunities to transfer perspectives on Nexus trade-offs, nature-based solutions, and cross-sector stakeholder engagement into the Nature FIRST consortium.

2.8 NaturaConnect

About the project:

NaturaConnect (Horizon Europe, 2022–2026) supports EU Member States in designing and implementing a Trans-European Nature Network (TEN-N) that will help deliver the EU Biodiversity Strategy for 2030 target of protecting 30% of land, with one-third of this area under strict protection. The project combines advanced spatial prioritisation tools, biodiversity and ecosystem service modelling, and climate resilience analysis to identify priority areas and corridors for conservation. Importantly, NaturaConnect also embeds strong stakeholder engagement, bringing together national authorities, NGOs, scientists, and land managers to ensure that connectivity solutions are both socially acceptable and ecologically effective. By producing practical policy guidance, planning tools, and capacity-building activities, the project helps translate EU conservation targets into national and regional action, supporting the creation of a resilient, coherent, and well-connected European protected area network.



Insights from the collaboration:

WWF Romania's engagement with Nature FIRST and NaturaConnect has centred on integrating connectivity modelling insights into local conservation planning. For example, connectivity modelling under NaturaConnect supports approaches like WWF Romania's emerging Bear Smart Community concept, confirming the importance of ecological corridors for large carnivore conservation in the Carpathians. These network modelling methods align with Nature FIRST's field-derived tools such as HWC mapping and Human–Bear Conflict Radar, offering convergent evidence for policy-relevant planning at regional and cross-boundary scales. In addition, Nature FIRST and NaturaConnect partners participated in the Tusnad EcoBear conference (3rd field site workshop, October 2024) and the Nature FIRST Final Conference (June 2025), contributing perspectives on connectivity, large carnivore management, and the role of cross-project collaboration in achieving EU biodiversity targets.

2.9 LIFE HUMAN BEAR COEX

About the project:

The LIFE22 NAT ES HUMAN BEAR COEX project (2023–2027) seeks to promote coexistence between humans and brown bears in the Cantabrian Mountains of northern Spain, where bear populations are recovering and coming into closer contact with people. Coordinated by Fundación Oso Pardo (FOP), the project's goal is to reach zero habituated bears in high-density municipalities and significantly reduce conflicts around food sources, crops, and livestock. Activities include implementing best-practice prevention measures, such as securing attractants and protecting apiaries, building the capacity of local authorities and communities, and developing municipal action plans tailored to coexistence. In addition, the project integrates ecological monitoring with social engagement, ensuring that conservation objectives are aligned with local development needs. It also aims to generate replicable models that can be transferred to other bear ranges across Europe.

Insights from the collaboration:

Through workshops and joint activities with Nature FIRST, HUMAN BEAR COEX partners, and FOP shared practical experience in preventing and mitigating human–bear conflicts. Collaboration included the collection and exchange of bear monitoring data and DNA samples, integrated into FOP's long-running population monitoring programme in the western Cantabrian range. These exchanges provided opportunities to connect ecological monitoring with Nature FIRST's human–wildlife conflict mapping.



2.10 LIFE Aquatic Warblers on the Move (AWOM)

About the project:

The LIFE AWOM project (LIFE23-NAT-NL; 2025–2030) is the first multi-country LIFE initiative addressing the staging and wintering areas of the globally threatened Aquatic Warbler (*Acrocephalus paludicola*) across Belgium, France, Spain, Portugal, and Senegal, complementing LIFE4AquaticWarbler on the breeding grounds to form the largest coordinated flyway-scale conservation effort for the species. AWOM develops a climate-resilient site network and demonstrates habitat restoration techniques at Natura 2000 staging sites and a wintering site in Senegal, with benefits extending to other marshland birds and wider climate adaptation and green infrastructure objectives. Importantly, the project also contributes to national restoration plans, Prioritised Action Frameworks, and Common Agricultural Policy (CAP) programming, while actively disseminating scientific results and technical innovations. AWOM partners joined the Nature FIRST Spanish field site visit, exchanging approaches on monitoring and wetland management that enriched shared perspectives on integrating site-level evidence into broader conservation frameworks.

Insights from the collaboration:

Through networking activities, AWOM partners participated in the Nature FIRST Spanish field site workshop in Lugo, where they exchanged monitoring and wetland management approaches and connected with other relevant stakeholders, thereby helping to integrate site-level evidence into broader conservation and policy frameworks.

2.11 MOTIVATE (Biodiversa+ BiodivMon)

About the project:

MOTIVATE (*Monitoring of Terrestrial Habitats by Integrating Vegetation Archive Time-Series in Europe*) is a Biodiversa+ BiodivMon project (2023–2026) that aims to enhance the monitoring of terrestrial habitats and plant biodiversity in Europe. It does this by mobilising and harmonising vegetation-plot time-series data (through the ReSurveyEurope network), integrating them with modelling approaches and satellite/remote-sensing products. The project develops upscaling pipelines and user-oriented interfaces to translate scientific data into indicators that are compatible with EU directives such as the Habitats Directive and the EU Biodiversity Strategy for 2030. MOTIVATE's ambition is to bridge the gap between long-term ecological monitoring and the policy frameworks that depend on robust, comparable biodiversity indicators.

Insights from the collaboration:



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Partners from the MOTIVATE project joined the Nature FIRST field site workshop in Spain, where they exchanged experiences and perspectives on biodiversity monitoring. The interaction highlighted areas of thematic convergence, particularly around harmonising monitoring methods and linking site-level observations with European reporting needs.

2.12 SaveGREEN / CCIBIS

About the project:

SaveGREEN (Interreg Danube, 2020–2023) focused on safeguarding and restoring ecological connectivity across the Danube-Carpathian region by ensuring that green infrastructure and ecological corridors remain functional alongside development. One of its lasting outputs is the Carpathian Countries Integrated Biodiversity Information System (CCIBIS), a centralised online portal that provides access to spatial conservation data, ecological maps, and relevant publications from across the Carpathians. CCIBIS supports the implementation of the Carpathian Convention Biodiversity Framework and contributes to national and transboundary policy by serving as a reference point for planners, NGOs, and researchers.

Insights from the collaboration:

3eData has established contact with SaveGREEN and Nature FIRST habitat maps for relevant areas will be incorporated into CCIBIS, improving access and reuse of spatial products across the Carpathian ecoregion and aligning with regional connectivity frameworks.

2.13 TETTRIs (Transforming European Taxonomy through Training, Research and Innovations)

About the project:

TETTRIs (Horizon Europe, 2022–2026), coordinated by CETAF, addresses Europe's pressing shortage in taxonomic expertise. The project builds capacity in taxonomy by developing training programmes, modernising collections, creating a centralised knowledge platform, and testing innovative technologies for species identification. TETTRIs also engages citizen scientists and institutions near biodiversity hotspots to broaden participation. By linking taxonomy with monitoring needs, TETTRIs underpins the scientific accuracy of biodiversity data that supports EU and global conservation policies.

Insights from the collaboration:

We established contact with the TETTRIs (Transforming European Taxonomy through Training, Research and Innovations) project coordinator, CETAF, mentioned in the call to which Nature FIRST responded. Partners Sensing Clues and Semantic Web Company were introduced as



potential partners in the proposal developed in response to the call HORIZON-CL6-2025-01-BIODIV-03: Strengthening taxonomic approaches for biodiversity, but unfortunately, they were not selected. Although initially confirmed, due to key persons not being available, TETTRIs was also unable to join us as a Knowledge Partner for the final conference.

2.14 MAMBO (Modern Approaches to the Monitoring of Biodiversity)

About the project:

MAMBO (Horizon Europe, 2022–2026) develops, tests, and demonstrates next-generation tools for biodiversity monitoring. Its core focus is on combining AI-enabled recognition technologies (images, audio, video) with high-resolution habitat mapping from satellites, drones, and LiDAR. MAMBO builds workflows within a virtual laboratory, ensuring that outputs are open, standardised, and useful for policy. The project aims to reduce data fragmentation and provide timely, accurate indicators to support the EU Biodiversity Strategy and monitoring obligations under the Birds and Habitats Directives. Pilot studies across Europe are testing the scalability of these innovations, while engagement with policymakers and stakeholders ensures that the outputs directly inform conservation practice and governance.

Insights from the collaboration:

Multiple outreach efforts were made to connect with MAMBO, awarded under the same call and therefore closely aligned with Nature FIRST's objectives. While collaboration with the project as a whole did not materialise, it did lead to the collaboration with Naturalis and BMD as described above.

3 Outcomes and potential future work

3.1 Tangible Outcomes

Nature FIRST's links with other projects did not remain on paper, but they generated clear results. Brown bear data collected in Spain were fed directly into the Brown Bear Foundation's *Ursus* monitoring programme, securing continuity for population tracking and providing a stronger base for work on genetics and conflict prevention. The collaboration with BioDT resulted in a steady stream of scientific outputs, including a perspective paper already published in *Trends in Ecology & Evolution*, a contribution to *Ecological Informatics*, two manuscripts under review, and one more in preparation. These papers set out conceptual and methodological foundations for ecological digital twins.

Other joint activities created new channels to disseminate knowledge: the TransWILD communications workshop, the BMD panel at the final conference, and the AWOM field site visit all provided concrete opportunities to share case studies, methods, and approaches with a



broader circle of practitioners. Finally, the project's spatial products are being adopted by the Carpathian Countries Integrated Biodiversity Information System (CCIBIS), making them accessible and useful to a much wider community beyond the consortium.

3.2 Networks and Proposals

Collaborations also broadened the professional networks of Nature FIRST partners. Our internal impact evaluation survey found that partners valued these exchanges for strengthening relationships with stakeholders and creating opportunities to extend their work. Some reported that the knowledge gained would be used to develop or deploy additional tools, expand services, or strengthen stakeholder relationships. Engagement with BioDT, for example, helped anchor Nature FIRST outputs within wider European efforts on digital twins, positioning them for easier integration and scaling across multiple domains in the future.

The internal impact evaluation survey also emphasised that multidisciplinary approaches were key, as working effectively across disciplines and maintaining clear communication were seen as essential conditions for success. This reinforces the importance of including diverse perspectives, encompassing not only technical expertise but also skills such as communicating scientific findings, to avoid working in silos.

In addition to the collaborations described in this deliverable, Nature FIRST partners are already taking these lessons forward in new joint proposals. These initiatives are not covered in this report, including a COST Action on Human-Wildlife Conflict and an MSCA Staff Exchange with international partners. Both build directly on the networks and capacities developed during the project and are intended to sustain and expand its impact in the years to come.

3.3 Strategic Impacts

Our collaborations increased both the relevance and the usability of Nature FIRST's outputs. Methods were tested and adapted in different contexts, from human–bear coexistence work in Spain to Nexus pilots under REXUS. The result was a set of tools and approaches that were not only scientifically sound but also practical and usable.

Collaboration also helped to bring innovations into the field more quickly. Examples include apiary protection measures adopted in Spain and conflict-mitigation strategies piloted with municipalities in the Cantabrian Mountains. Beyond these practical gains, partners themselves reported that the collaborations enriched their professional networks, gave them new skills, and increased the visibility of their work.

The exchanges with other projects also opened doors for interdisciplinarity. Even when collaboration did not materialise (as in the case of MAMBO or TETTRIs), the contact gave Nature FIRST partners a view of complementary expertise in areas such as AI-based monitoring and taxonomic capacity. These are promising areas for future engagement.



4. Conclusions

Collaboration with other projects was an explicit part of Nature FIRST's design, and the findings of our internal impact evaluation survey underline that it has been central to the project's achievements. The joint activities resulted in practical outcomes, including the integration of bear data into long-term monitoring and the production of scientific papers, while also creating opportunities for knowledge exchange and capacity building.

These collaborations helped partners to strengthen stakeholder relationships, build new skills, and improve the uptake of project outputs in real-world contexts. The final conference, described by participants as a launchpad rather than a conclusion, conveyed a clear message: lasting change requires both structure and imagination, as well as partnerships built on trust and shared purpose.

Nature FIRST's joint activities also highlighted that collaboration is not just about sharing outputs but about changing how projects work: moving from competition to partnership, creating open systems, and redefining success to include the growth of partners, not only one's own organisation. By avoiding silos and working across disciplines, the project laid the foundation for future cooperation. These synergies will continue to support biodiversity monitoring, human-wildlife coexistence, and conservation practices well beyond the project's lifespan.

