



LIFE Project Number

LIFE17 NAT/PL/000018

Final Report

Covering the project activities from 01/01/2019¹ to 30/09/2025

Reporting Date²

20/01/2025

LIFE PROJECT NAME or Acronym

LIFE4Delta_PL

Data Project

Project location:	Poland, Swietokrzyskie Voivodeship
Project start date:	01/01/2019
Project end date:	31/12/2024 Extension date: 30/09/2025
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(%) of eligible costs:	60%

Data Beneficiary

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¹ Project start date

² Include the reporting date as foreseen in part C2 of Annex II of the Grant Agreement

This table comprises an essential part of the report and should be filled in before submission

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Package completeness and correctness check	
Obligatory elements	✓ or N/A
Technical report	
The correct latest template for the type of project (e.g. traditional) has been followed and all sections have been filled in, in English <i>In electronic version only</i>	✓
Index of deliverables with short description annexed, in English <i>In electronic version only</i>	✓
Mid-term report: Deliverables due in the reporting period (from project start) annexed Final report: Deliverables not already submitted with the MTR annexed including the Layman's report and after-LIFE plan Deliverables in language(s) other than English include a summary in English <i>In electronic version only</i>	✓
Financial report	
The reporting period in the financial report (consolidated financial statement and financial statement of each Individual Beneficiary) is the same as in the technical report with the exception of any terminated beneficiary for which the end period should be the date of the termination.	✓
Consolidated Financial Statement with all 5 forms duly filled in and signed and dated <i>Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets + full Excel file)</i>	✓
Financial Statement(s) of the Coordinating Beneficiary, of each Associated Beneficiary and of each affiliate (if involved), with all forms duly filled in (signed and dated). The Financial Statement(s) of Beneficiaries with affiliate(s) include the total cost of each affiliate in 1 line per cost category. <i>In electronic version (pdfs of signed sheets + full Excel files) + in the case of the Final report the overall summary forms of each beneficiary electronically Q-signed or if paper submission, signed and dated originals*</i>	✓
Amounts, names and other data (e.g. bank account) are correct and consistent with the Grant Agreement / across the different forms (e.g. figures from the individual statements are the same as those reported in the consolidated statement)	✓
Beneficiary's certificate for Durable Goods included (if required, i.e. beneficiaries claiming 100% cost for durable goods) <i>Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets)</i>	✓
Certificate on financial statements (if required, i.e. for beneficiaries with EU contribution ≥750,000 € in the budget) <i>Electronically Q-signed or if paper submission signed original and in electronic version (pdf)</i>	✓
Other checks	
Additional information / clarifications and supporting documents requested in previous letters from the Agency (unless already submitted or not yet due) <i>In electronic version only</i>	✓
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**signature by a legal or statutory representative of the beneficiary / affiliate concerned*

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1. List of key-words and abbreviations

CINEA - European Climate, Infrastructure Environment Executive Agency
Delta – inland delta of the Nida River
EU - European Commission
GDOŚ - General Directorate for Environmental Protection
IOP PAN – Institute of Nature Conservation, Polish Academy of Sciences
LHS – Metallurgical Broad Gauge Railway
LP - State Forests
NFOŚiGW – National Fund for Environmental Protection and Water Management
OEP - Nature Education Centre
PGW WP – State Water Holding Polish Waters
Projekt - Project LIFE4Delta_PL LIFE17 NAT/PL/000018
RDLP - Regional Directorate of the State Forests
RDOŚ – Regional Directorate for Environmental Protection
RZGW – Regional Water Management Authority
ŚODR - Świętokrzyskie Agricultural Advisory Center
UR – University of Agriculture in Krakow
ZŚiNPK – The Complex of Swietokrzyskie and Nida River Landscape Parks
A, B, C, D, E, F (A.1, B.1, C.1, D.1, E.1, F.1, etc.) - activity numbers
01/12/2021 - date format
Q4/2023 - format for quarter and year

2. Conclusion

2.1. Basic information

The LIFE4Delta_PL project, entitled 'Renaturalisation of the inland delta of the Nida River', was implemented between 01/01/2019 and 30/09/2025. The project was co-financed by the European Commission at a rate of 60% of the total eligible costs, amounting to EUR 3,283,888, under Grant Agreement No. LIFE17 NAT/PL/000018 of 18 September 2018. Additionally, the project received a grant from the National Fund for Environmental Protection and Water Management (NFOŚiGW) covering 29.85% of the eligible costs, i.e., EUR 1,633,893, pursuant to Grant Agreement No. 232/2018/Wn-13/OP-WK-LF/D of 19 September 2018. The remaining funds, representing 10.15% of the eligible costs (EUR 555,364), were provided as own contributions by the Coordinating Beneficiary and three Associated Beneficiaries. The total implemented project budget amounted to EUR 4,932,010.52 (against a planned budget of EUR 5,473,145), including EU funding in the amount of EUR 2,834,574.90.

The project implementation commenced on schedule on 01/01/2019. In Q4 2024, a substantial amendment to the project was approved, extending the implementation period from 31/12/2024 to 30/09/2025.

2.2. Objectives, key results and deliverables

The project was implemented in response to the advanced ecological degradation of the inland delta of the Nida River—one of the most valuable wetland ecosystems in southern Poland and a Natura 2000 site of European importance. The main objective of the project was to improve water conditions in the inland delta of the Nida River and to restore its unique natural values, in line with the Habitats Directive and the Birds Directive. The project focused on reinstating natural hydrological processes, restoring priority habitats, improving the conservation status of

selected species, and strengthening sustainable land-use practices with the active involvement of the local community.

The project included measures to restore and protect priority habitats, including alluvial forests (habitat 91E0), floodplain lakes and natural eutrophic water bodies (3150), as well as meadow habitats dependent on extensive management. A key objective was also to restore appropriate habitat conditions for bird species of Community interest, including *Botaurus stellaris*, *Crex crex*, *Porzana porzana* and *Ciconia ciconia*. In parallel, the project focused on restoring or reinforcing populations of strictly protected species, including *Unio crassus*, *Anisus vorticulus*, *Vertigo moulinsiana*, *Vertigo angustior*, *Bombina bombina*, *Triturus cristatus* and *Emys orbicularis*. An additional objective was to establish a gene bank for threatened plant species characteristic of the Ostoja Nidziańska area. The project also placed strong emphasis on reintroducing traditional grazing and increasing environmental awareness among the local community.

The key results and outputs of the project included restoring an appropriate hydrological regime by reconstructing watercourses, reopening former river branches, and increasing water retention across the Delta area. These measures enabled the restoration of a spatial mosaic of wetland, meadow and forest ecosystems, which is essential for maintaining high biodiversity. Extensive habitat restoration works were carried out in meadow and wetland areas, supported by the reintroduction of grazing, which had been abandoned in the 1990s. Active conservation measures were also implemented for selected species, including improving habitat conditions, reinforcing populations and conducting long-term monitoring. An important project result was also the implementation of *ex situ* conservation measures through the establishment of a gene bank for threatened plant species. These activities were accompanied by intensive educational actions, stakeholder engagement and wide dissemination of project results.

The actions planned in the original project concept were, to a large extent, implemented as intended, and in many cases the assumed results were achieved or exceeded. Hydrological restoration works were successfully completed and led to a measurable improvement in water conditions and increased habitat connectivity. Habitat restoration measures resulted in a visible improvement in the structure and quality of meadow, wetland and forest habitats, accompanied by a positive response of the target species populations. The reintroduction of grazing proved to be an effective tool for maintaining open habitats and associated bird species and for counteracting secondary succession, while also delivering socio-economic benefits through job creation and the revival of traditional land-use practices.

The project delivered lasting environmental benefits and established a solid basis for further conservation and management of one of the most valuable wetland ecosystems in the region. Its results provide a model solution that can be replicated in other river valleys and wetland areas across Europe. The project was implemented in response to the advanced environmental degradation of the Nida River inland delta — one of the most valuable wetland ecosystems in the Ponidzie region and a Natura 2000 site of European importance. The primary objective of the project was to improve hydrological conditions within the Nida inland delta and to restore its unique natural values in accordance with the Habitats Directive and the Birds Directive. The project focused on restoring natural hydrological processes, recovering priority habitats, improving the conservation status of selected species, and promoting sustainable land-use practices with the active participation of the local community.

The project encompassed actions aimed at the restoration and protection of priority habitats, including alluvial forests (habitat 91E0*), oxbow lakes and natural eutrophic water bodies (3150), as well as meadow habitats dependent on extensive management. A key goal was also to restore suitable habitat conditions for bird species of Community interest, such as *Botaurus stellaris*, *Crex crex*, *Porzana porzana*, and *Ciconia ciconia*. Concurrently, the project concentrated on restoring or strengthening the populations of strictly protected species,

including *Unio crassus*, *Anisus vorticulus*, *Vertigo moulinsiana*, *Vertigo angustior*, *Bombina bombina*, *Triturus cristatus*, and *Emys orbicularis*. An additional objective was the establishment of a gene bank for endangered plant species characteristic of the Ostoja Nidziańska site. The project also placed significant emphasis on the reintroduction of traditional grazing and raising environmental awareness among the local community.

Key results and project outputs included the restoration of the proper hydrological regime through the reconstruction of watercourses, the reopening of former river branches, and increased water retention within the Delta area. These actions enabled the restoration of a spatial mosaic of wetland, meadow, and forest ecosystems, essential for maintaining high biodiversity. Extensive restoration works on meadow and wetland habitats were carried out, supported by the reintroduction of grazing, which had been abandoned in the 1990s. Furthermore, active conservation measures were implemented for selected species, covering the improvement of habitat conditions, population reinforcement, and long-term monitoring. A significant outcome of the project was the implementation of ex situ conservation measures through the creation of a gene bank for endangered plant species. These activities were accompanied by intensive educational initiatives, stakeholder engagement, and wide dissemination of project results.

The actions planned in the original project concept were largely implemented as intended, and in many cases, the targets were met or exceeded. Hydrological restoration works were successfully completed, leading to a measurable improvement in water conditions and enhanced habitat connectivity. Habitat restoration efforts resulted in a visible improvement in the structure and quality of meadow, wetland, and forest habitats, accompanied by a positive response from target species populations. The reintroduction of grazing proved to be an effective tool for maintaining open habitats and associated bird species, as well as for counteracting secondary succession, while simultaneously providing socio-economic benefits by creating jobs and restoring traditional farming practices.

The project has delivered lasting environmental benefits and established a solid foundation for the continued protection and management of one of the region's most valuable wetland ecosystems. Its results serve as a model solution that can be replicated in other river valleys and wetland areas across Europe.

2.3. Exemptions and problems

During the implementation of the Project, deviations from the originally assumed timetable and the physical and financial scope occurred, in particular with regard to actions: A.2, B.1, C.2, C.4, C.6, C.12 and E.6. Below, their causes, scope and the way the arising difficulties were managed are presented.

The main factor affecting the implementation of the Project was a dynamic and long-lasting increase in costs, resulting first from inflation and subsequently from the consequences of the COVID-19 pandemic and the war in Ukraine. These factors translated into a real increase in prices in Poland, especially in the area of construction materials, labour and the minimum wage, which had a direct impact on the implementation of investment tasks. An additional important problem consisted of prolonged administrative procedures related to obtaining the necessary decisions and permits. These delays resulted in the need to shift the implementation dates of selected actions and, in some cases, also to modify their physical scope. Due to the increase in the costs of implementing investment tasks, the Beneficiary was forced to make transfers between cost categories; however, their scale did not meet the conditions for being considered a significant change. These transfers were carried out using savings generated during the implementation of other Project actions, which allowed the financial coherence of the Project to be maintained.

Under action B.1, properties with a total area of 53.8714 ha were purchased, compared to the originally planned area of nearly 110 ha. During the Project, the physical scope was reduced to 70 ha, which resulted from unregulated legal status and long-lasting inheritance proceedings preventing their purchase within the Project duration. The implementation of actions C.2 and C.12 was subject to significant time shifts, mainly due to prolonged procedures related to obtaining the required permits and administrative decisions (action A.2). Under action C.2, drainage ditches were restored over a length of 2,615 m, exclusively in the southern part of the forest complex in Młodzawy. Difficulties in recruiting farmers interested in grazing cattle (action C.4) within the Project area resulted in the need for the Beneficiary to take over the implementation of this action directly. At the same time, as a result of hydrotechnical works, marsh areas were restored to a much greater extent than originally planned, at the expense of moderately wet areas that were intended for grazing. Due to the possibility of obtaining only juvenile individuals of *Emys orbicularis* and delays in obtaining the necessary administrative approvals, it was necessary to modify the scope and verify the timetable of action C.6. The reintroduction of the species was initiated only in Q3/2025. This action will be continued to ensure the Project's sustainability. Under action E.6, the format of the visits was changed. Instead of the originally planned two-week stays, shorter but more intensive 3–4-day sessions were applied, including a condensed substantive programme. All the deviations presented and the proposed solutions were consulted on an ongoing basis with the Project Monitor.

3. Introduction

3.1. Overall and Specific Objectives

The main objective of the Project was to improve water conditions in the inland delta of the Nida River, which contributed to the restoration of its unique natural values within the meaning of the Habitats Directive and the Birds Directive, i.e.:

- *91E0 alluvial forests with *Salix alba* and *Populus alba*, *Alnus glutinosa* and *Fraxinus excelsior* (C.2);
- 3150 natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation (C.1), including the creation of optimal habitat conditions for birds such as A021 *Botaurus stellaris* and Anatidae;
- restoration of meadow habitats to a favourable conservation status (C.3–C.4), including the creation of optimal habitat conditions for birds such as: A122 *Crex crex*, A119 *Porzana porzana*, A031 *Ciconia ciconia* (C.5), as well as waders;
- restoration or reintroduction of populations of species under strict species protection: 1032 *Unio crassus* (C.7), 4056 *Anisus vorticulus* (C.8), 1016 *Vertigo moulinsiana* and 1014 *Vertigo angustior* (C.9), 1188 *Bombina bombina* and 1166 *Triturus cristatus* (C.10), as well as 1220 *Emys orbicularis* (C.6).

The restoration of a spatial mosaic of habitats also contributed to improving the status of populations of other plant and animal species of special concern, listed in Annex II to the EU Habitats Directive, Annex I to the Birds Directive, the IUCN Red List, the Polish Red List of Plants, and the Red List of Endangered and Threatened Animals in Poland.

An important objective of the Project was also the establishment of a gene bank of threatened plant species typical of the Nida Ostoja area (C.11).

An intermediate objective of the Project was the restoration of grazing (C.4), which had been abandoned in the 1990s. This action will contribute to the long-term maintenance of meadow habitats and the animal species occurring there in a favourable conservation status, and will also enable the restoration of cultural patterns related to traditional grazing.

An additional objective of the Project was to activate the local community by raising ecological awareness of threats and the need to protect one of the most valuable ecosystems of the Ponidzie region, as well as to carry out educational activities addressed to a wide range of audiences (E.2).

3.2. Involved Sites

The Project was implemented by the Complex of Świętokrzyskie and Nida river Landscape Parks in Kielce, acting as the Coordinating Beneficiary, in cooperation with three Associated Beneficiaries: the Institute of Nature Conservation of the Polish Academy of Sciences in Kraków, the University of Agriculture in Kraków, and the State Forests – Pińczów Forest District. The Coordinating Beneficiary concluded appropriate partnership agreements with all Associated Beneficiaries, defining the rules of cooperation for project implementation.

3.3. Habitat and species

The project focuses on the protection of habitats listed in Annex I of the Habitats Directive (Council Directive 92/43/EEC) i.e. *91E0 Willow, poplar, alder and ash forests (*Salicetum albo-fragilis*, *Populetum albae*, *Alnenion glutinoso-incanae* and spring alder forests), 3150 Natural eutrophic water bodies with *Nympheion* and *Potamion* communities, 6510 Lowland and montane fresh meadows used extensively (*Arrhenatherion elatioris*), 6410 Molinia meadows (*Molinion*), 6210 Calcareous grasslands (*Festuco Brometea* and thermophilous grasslands with *Asplenion septentrionalis-Festucion pallentis*).

The project also includes the conservation of the following plant species: *4087 *Serratula lycopifolia*, 2249 *Carlina onopordifolia*, 1617 *Angelica palustris/Ostericum palustre*, *Dorycnium germanicum*, *Linum hirsutum*. The molluscs included in the project are: 1032 *Unio crassus*, 4056 *Anisus vorticulus*, 1016 *Vertigo moulinsiana* and *Vertigo angustior*. Amphibians and Reptiles: 1166 *Triturus cristatus*, 1188 *Bombina bombina*, 1220 *Emys orbicularis*. Birds included in the project: A021 *Botaurus stellaris*, A031 *Ciconia ciconia*, A075 *Haliaeetus albicilla*, A081 *Circus aeruginosus*, A084 *Circus pygargus*, A122 *Crex crex*.

3.4. Main conservation issues being targeted (including threats)

One of the key environmental problems of the middle Nida inland delta, which originally functioned as a dynamic multi-channel river system with numerous branches, oxbow lakes and periodic floodplains, was strong anthropogenic interference with the natural hydrological regime, resulting from intensive river regulation and drainage works carried out in the second half of the 20th century. These works led to the simplification of the channel network, accelerated surface-water runoff, a permanent lowering of the groundwater table, and the loss of natural seasonal inundations. These changes disrupted fundamental ecological processes such as natural water retention and sediment transport, leading to the gradual drying of wetland habitats.

Hydrological disturbances caused degradation of key natural habitats that determine the Delta's unique value (Molinia meadows, fens, oxbow lakes and eutrophic water bodies, and alluvial forests). Reduced habitat moisture resulted in the decline of hygrophilous vegetation, simplification of plant-community structure, a decrease in species diversity, and the disappearance of the characteristic mosaic of wetland and meadow habitats.

Progressive habitat degradation led to a significant decline in abundance, fragmentation, and in some cases local extinction of populations of wetland-dependent species, including

amphibians, reptiles, breeding birds of wet habitats, and rare aquatic invertebrates (e.g. mussels of the family *Unionidae*).

As a consequence, the Nida Delta - once an area of very high biodiversity and supra-regional importance - began to function as a heavily degraded ecosystem, requiring urgent and comprehensive measures in the field of active nature conservation and restoration.

An important, often underestimated problem was also the abandonment of traditional, extensive forms of land use, such as cattle grazing and meadow mowing. Discontinuation of these practices, combined with hydrological disturbances, led to the overgrowth of meadows by reed, shrubs and young trees, the loss of open breeding habitats for birds, a further decline in biodiversity, and landscape homogenisation.

These adverse processes significantly increased anthropogenic pressure on the Delta area. Drying of the terrain facilitated human access, which in practice resulted in intensive, often uncontrolled cutting of trees and shrubs, as well as numerous cases of vegetation burning.

At the same time, in the Młodzawy forest complex, excessive water stagnation and local waterlogging were observed, resulting from a disturbed drainage system and improper functioning of the existing drainage ditches. This process led to deformation of the structure of alluvial forests and their transformation into alder carrs.

The problems and threats described above constituted the direct substantive basis and justification for undertaking comprehensive restoration measures implemented under the Project, aimed at restoring natural hydrological processes, rebuilding natural habitats, and improving the conservation status of valuable and threatened species.

3.5. Socio-economic context

Project implementation was made possible thanks to the active engagement and support of numerous stakeholders representing various fields of natural sciences, public administration bodies and non-governmental organisations. Cooperation with scientific institutions, including in particular the universities of Jan Kochanowski University in Kielce, the University of Life Sciences in Lublin, the University of Łódź and the University of Gdańsk, Jagiellonian University enabled expert verification of project activities, with particular emphasis on interactions between the environment and the species inhabiting it.

Important support in the field of nature conservation was provided by state institutions, including the Ministry of Climate and Environment, the General Directorate for Environmental Protection (GDOŚ) and the Regional Directorates for Environmental Protection (RDOŚ) in Kielce, Lublin and Kraków. A particularly important role in supporting hydrological works was played by the organisational units of the Polish Waters State Water Holding (PGW “Wody Polskie”), including the Regional Water Management Authority in Kraków (RZGW), the Catchment Management Board in Kielce, and the Water Supervision Unit in Jędrzejów.

A particularly important aspect of the project was the implementation of measures aimed at ensuring diverse ecosystem services that have direct and indirect impacts on the local economy and the quality of life of local communities. Hydrological measures (C.1–C.2) and actions restoring open-landscape habitats to a near-natural state (C.3–C.4) were of special importance. Thanks to these measures, the Delta performs the function of a natural water treatment system, as water is actively directed to areas with high retention and filtration capacity. This effect contributes to improved water quality, which is important both for the ecosystem and for local communities using the river’s water resources in generally dry, karst areas.

A similar ecosystem service is provided by the reintroduction of the freshwater mussels (C.7), species of naiads that naturally filters water and is a very good indicator of its quality. Under natural conditions, a single individual is able to filter approximately 40 litres of water per day. Restoring the population of *Unio crassus* in the Nida River and other species of naiads in the

river arms and floodplain lakes will contribute to the creation of a natural, cost-free water treatment system, which in the longer term may reduce costs related to the maintenance of artificial water-treatment infrastructure and support the health of local ecosystems.

In addition, project activities affect the local economy by increasing the tourism and educational attractiveness of the Delta area. Improved habitat conditions and restored biodiversity create opportunities for the development of eco-tourism and educational programmes for schools and local communities. The involvement of local stakeholders, including local-government units and non-governmental organisations, in monitoring and natural-resource management also fosters the development of durable models of cross-sector cooperation, which in the longer term strengthens the region's development potential.

Project activities provide an example of synergy between environmental protection and economic development, demonstrating that investments in ecosystems can generate tangible economic and social benefits while maintaining the area's natural functions.

At the same time, the project contributed to the development of local tourism infrastructure (C.12). The construction of educational trails, observation points and the infrastructure of the OEP not only increased the region's attractiveness to tourists, but also created additional economic opportunities for residents, including local entrepreneurs and service providers. The OEP acts as a catalyst for socio-economic change in the region. By delivering educational programmes and disseminating knowledge about the ecosystems of the Ponidzie region, the centre inspires the local community to undertake pro-environmental actions, while also changing perceptions of Natura 2000 areas. Previously often perceived as a constraint on local development, these areas can now be treated as a resource of high natural, tourism and educational value.

As a result of project implementation, public awareness of the protection of rare natural habitats and species in the region has been significantly increased and disseminated at the national level. This information was communicated through press articles, radio and television broadcasts, and publications in social media (E.1), which influenced not only local perceptions of nature conservation but also strengthened the region's positive image nationwide.

3.6. Expected longer-term results

- **Restoration of biodiversity in the Nida Valley**, within the ECONET-PL core area and the Natura 2000 sites (PLH260003 Ostoja Nidziańska and PLB260001 Dolina Nidy), through the restoration of natural hydrological conditions—particularly the re-establishment of flow in the branches of the inland delta, a high groundwater table and periodic inundation. Over the coming years, this will enable further development of protected habitats and the full recovery of wetland ecosystem functioning, especially valuable for globally and Europe-threatened wetland bird species, as well as amphibians, fish and aquatic invertebrates, including molluscs.
- ***Restoration, improvement of ecological quality and enlargement of the area of the rare priority habitat 91E0 – alluvial forests with willow, poplar, alder and ash** (**Salicetum albo-fragilis*, *Populetum albae*, *Alnenion glutinoso-incanae* and spring alder carrs). Restoring the natural water regime will allow the regeneration of habitat processes characteristic of river valleys with unaltered hydrology.
- **Strengthening the area's function as a biodiversity “source population”**. The renaturalised site will be able to maintain stable, source-type populations of wetland species, producing individuals dispersing throughout the Nida Valley and, on a broader scale, across Central Europe, colonising existing and newly emerging wetland habitats.
- **The renaturalised area will serve as a model “best practice” site**, in line with the LIFE programme assumptions, supporting training for teams implementing similar

measures in other regions of Europe. At the same time, it will function as an educational site demonstrating wetland ecosystem functioning and the environmental, social and economic benefits of wetland protection and restoration.

- **Restored floodplain areas will naturally and at low cost attenuate flood waves**, increasing valley retention and reducing flood risk in the Nida Valley and, indirectly, also in the Vistula catchment. At the same time, the river's natural hydrological dynamics will be restored.
- **The restored wetland area will act as a natural filter for the waters of the Nida and, consequently, the Vistula**, by directing a significant proportion of flow into a system of natural channels, oxbow lakes and floodplain waters. This will enable the capture and neutralisation of chemical and biological pollutants, which is particularly important in the context of impacts from the LHS railway line and road infrastructure, which constitute potential sources of heavy metals (including cadmium).
- **Given the karst character of the Ponidzie region and limited surface-water resources**, restoring the retention and self-purification functions of floodplains will increase the quantity and improve the quality of drinking water abstracted from the Nida, which is crucial for the region's water supply.
- **Renaturalisation will create important spawning and wintering habitats for freshwater fish**, contributing to the ecologically and economically significant recovery of fish resources in the Nida and Vistula catchments. This effect will translate into increased ecosystem services and the development of a local economy based on biodiversity, including nature tourism and sustainable angling.
- **The project is fully consistent with the objectives of, inter alia, the EU Biodiversity Strategy, the Water Framework Directive, the Floods Directive and the EU Adaptation Strategy**, particularly with regard to restoring degraded ecosystems, renaturalising rivers and river valleys, protecting priority habitats and strengthening ecosystem resilience to climate change.

4. Administrative part

Project Management

To ensure proper project coordination, the Coordinating Beneficiary signed Partnership Agreements with all Associated Beneficiaries in Q4/2018 and Q1/2019. These documents specified the detailed scope of duties, responsibilities, and tasks of individual partners, including rules for communication, information flow, and reporting.

Regular meetings and ongoing working communication were maintained with all Associated Beneficiaries responsible for the implementation of technical and financial actions (IOP PAN, UR, LP Nadleśnictwo Pińczów). Project management was based on cyclical coordination meetings, organized at least once a quarter, during which the status of works, technical issues, physical and financial progress, as well as potential delays and risks, were discussed. Given that conservation and investment works were conducted within Natura 2000 sites, in the immediate vicinity of natural habitats and protected plant and animal species, constant cooperation between partners was necessary both prior to and during the implementation of actions. This involved numerous working meetings and field site visits to verify the conditions for conducting activities, potential environmental impacts, and the compliance of works with nature conservation guidelines. All Associated Beneficiaries also participated in five monitoring visits by the Project Monitor, providing the documentation and information necessary to assess progress and compliance with the project's objectives. Additionally, several dozen operational meetings were organized throughout the project duration, primarily in

connection with field activities. Communication between partners also took place on an ongoing basis via email, telephone, and online meetings. The use of remote communication tools allowed for a reduction in the number of trips, thereby lowering both operating costs and the project's environmental footprint. As part of project management, continuous monitoring of physical and financial progress was carried out, including the verification of expenditure eligibility and the compliance of works with the schedule, budget, and risk management plan. Necessary corrective actions were implemented whenever threats to the achievement of project goals or the timeline emerged. The constant flow of information between partners ensured efficient periodic reporting and the preparation of documentation required by the monitoring authority.

Communication with the Agency, the Monitoring Team, and Amendments to the Grant Agreement

Between 2019 and 2025, five monitoring visits were conducted with the participation of the Project Monitor, Stanisław Tworek, from the External Monitoring Team. These visits took place on: 23/07/2019, 08-09/09/2020, 03-04/08/2021, 06-07/10/2022, and 07-08/05/2025. During the final visit, a representative of the CINEA agency, Rosemarie Hingsamer, was also present, which allowed for a direct discussion of key issues regarding the implementation and finalization of the Project. Each visit included a detailed verification of financial and technical documentation, as well as an assessment of the physical progress of actions. Field inspections were an integral part of the visits, during which the scope of hydrological, conservation, and investment works was presented. Communication with the Agency representative also took place between visits via email and telephone, and from 2023 onwards, through the LIFE Monitoring Helpdesk platform. These communication methods enabled the rapid acquisition of feedback and clear guidance on procedural, financial, and technical matters. Despite the efficiency of remote communication, the most valuable element of the cooperation was the direct monitoring visits. On-site meetings and field discussions allowed for an immediate assessment of the situation, precise discussion of problems, and the joint development of solutions. This translated into the effective implementation of corrective measures, the elimination of potential irregularities, and an improvement in the quality of Project management.

In Q3/2024, a decision was made to submit a request for a substantial amendment to the Project, including an extension of the implementation period. This decision resulted from a detailed analysis of the progress rate and external factors that significantly impacted the timely completion of key actions. The decision was influenced, among other things, by the nearly three-year COVID-19 pandemic, which led to a significant slowdown in administrative and decision-making processes, particularly regarding environmental and building permits. Consequently, procedures related to actions A.2, C.2, C.6-C.9, and C.12 were prolonged, leading to delays in the commencement and implementation of these tasks. The pandemic also affected group E actions—especially those requiring contact with participants, work in larger teams, and the organization of field and educational events. Some activities had to be restricted, postponed, or converted to a remote format, which reduced implementation efficiency and required additional time for full execution. Furthermore, the necessity of ensuring high quality and durability of ecological effects required extending the works related to the reintroduction and restitution of aquatic and wetland species (actions C.6-C.9). In Q4/2024, a substantial amendment was granted, extending the Project from 31/12/2024 to 30/09/2025. This extension had a positive impact on the quality of Project management, enabling the stable completion of investments, thorough monitoring, and the proper preparation of final documentation.

Throughout the Project implementation, the EU maintained ongoing correspondence with the Coordinating Beneficiary, including comments following monitoring visits, amendments, and guidelines on reporting methods. The following correspondence was received by the Beneficiary:

- Ares (2019)180812 - 08/10/2019,
- Ares (2020)7287593 - 02/12/2020,
- Ares (2020)2597030 - 16/04/2021,
- Ares (2021)6907860 - 10/11/2021,
- Ares (2022)730033 - 01/02/2022,
- Ares (2022)2211639 - 25/03/2022,
- Ares (2022)4239581 - 08/06/2022,
- Ares (2023)317545 - 16/01/2023,
- Ares (2023)2430680 - 04/04/2023,
- Ares (2023)3750051 - 31/05/2023,
- Ares (2023)4078439 - 13/06/2023,
- Ares (2023)6796484 - 06/10/2023,
- Ares (2025)5457667 - 07/07/2025.

As part of the reporting obligations, the following reports were submitted to the EU:

- 1) Progress report - 30/06/2020;
- 2) Midterm report - 31/12/2021;
- 3) Progress report - 04/08/2023;
- 4) Progress report - 31/12/2024.

5. Technical part

5.1 Technical progress

A.1 Purchase of field task equipment

Foreseen start date	Q1/2019	Foreseen end date	Q1/2020	Comments
Actual start date	Q1/2019	Actual end date	Q4/2024	The later termination is related to a purchase made in Q4/2024 a backhoe attachment for the existing agricultural tractor
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Purchase of protective clothing		06/2019	Completed at the Mid-term	
MILESTONES		Deadline	Actual deadline	
Purchase of a drone		09/2019	Achieved at the Mid-term	
Purchase of a computer for field tasks		09/2019	Achieved at the Mid-term	
Purchase of barodivers		12/2019	Achieved at the Mid-term	
Purchase of a light off-road vehicle		12/2019	Achieved at the Mid-term	
Purchase of an off-road passenger car		12/2019	Achieved at the Mid-term	
Purchase of equipment for monitoring groundwater fluctuations		12/2019	Achieved at the Mid-term	
Purchase of ornithological observation equipment		03/2020	Achieved at the Mid-term	

A.1.1 Purchase of an off-road passenger vehicle

In Q4/2019, an ISUZU D-MAX pick-up off-road passenger vehicle was purchased to support the implementation of project tasks in the field. The vehicle was used to service works carried out in the Project areas, including difficult terrain conditions, and to transport large-scale materials necessary for the proper execution of substantive activities. The scope of the vehicle's use included, in particular, the transport of materials used in the production of seedlings, cuttings, and saplings, as well as the transport of feed and water for horses and cattle used in grazing-related activities, along with elements of grazing infrastructure. The car provided key logistical support for the Project's field activities, contributing to their efficient and timely implementation. The total mileage accumulated during the Project implementation period amounted to 64,046 km.

A.1.2 Purchase of a light off-road vehicle

In Q4/2020, a multi-functional CITROEN BERLINGO XL passenger car was purchased, adapted to transport up to 7 people as well as equipment and materials necessary for the implementation of project activities. The vehicle was used both for supporting field works and for conducting educational, information, and promotional activities. The necessity of purchasing the vehicle resulted from the number of staff involved in the Project, as well as the high intensity of educational and promotional tasks. The acquisition of the vehicle was also essential for the proper implementation of activities related to knowledge transfer and the replication of Project results. The total mileage accumulated during the Project implementation period amounted to 77,563 km.

A.1.3 Purchase of a drone

In Q3/2019, a drone was purchased along with a set of necessary accessories. The equipment was used for "bird's-eye view" field observations, which were essential for monitoring phenomena occurring as a result of the ongoing project implementation, for their documentation, as well as for promotional activities.

A.1.4 Purchase of equipment for monitoring groundwater fluctuations

In Q3/2019, the following equipment was purchased: 50 units of automatic water level and temperature loggers, 4 units of automatic water conductivity loggers, 2 units of programming and data readout interfaces, and 120 m of cable for securing the equipment.

A.1.5 Purchase of barodivers

In Q3/2019, 2 units of barodivers were purchased, i.e., devices for the compensation of data from groundwater level readings.

A.1.6 Computer for field tasks

In Q1/2019, a computer for field tasks was purchased along with the necessary software, designated for the water protection specialist.

A.1.7 Purchase of protective clothing

As part of the action, field workers involved in the implementation of the Project were provided with appropriate protective clothing, essential for the safe execution of field works. The

purchased clothing was adapted to the nature of the activities conducted, in particular to works performed in diverse environmental and weather conditions. The service life of individual items of protective clothing was determined based on the Beneficiary's internal procedures.

A.1.8 Equipment for ornithological observations

In Q4/2019, 10 pairs of binoculars for field and ornithological observations were purchased. They were also utilized during educational workshops conducted in the field.

Deviations, problems, and remarks

During the implementation of the Project, it became necessary to purchase additional equipment not originally foreseen in the detailed material scope. In Q2/2024, staff gauges were purchased; their installation on the Smuga Umianowicka resulted directly from the provisions of the water law permit granted for water intake from the Nida River and water management on damming structures. Furthermore, in Q4/2024, a backhoe attachment for the existing agricultural tractor was purchased. The approval for this purchase, following prior consultation with the Project Monitor, was accepted by the National Fund for Environmental Protection and Water Management (NFOŚiGW) in Warsaw, the institution financing the action. This equipment proved essential for conducting intervention works on watercourses covered by maintenance activities carried out within the Project. The backhoe was used both for the ongoing removal of the effects of unforeseen hydrological events and for preventive measures, particularly in cases of blockages formed by vegetation and woody debris deposited by watercourses during high water levels. These phenomena caused local obstructions to water flow, especially at points of conflict with hydraulic structures and road infrastructure.

A.2 Technical projects, permits and arrangements

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	Technical documentation for the inland delta of the Nida River was not required, as the conservation works did not require design documentation. The process of obtaining complete technical documentation for the forest complex in Młodzawy was extended due to the COVID-19 pandemic
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
A set of technical documentation with a cost estimate for the inland delta of the Nida River	09/2020		-	
Water-legal survey for the forest complex of the Pińczów Forest District	09/2020		07/2024	
Water-legal survey for the inland delta of the Nida River	09/2020		-	
Environmental impact report for the forest complex of the Pińczów Forest District	09/2020		07/2024	
Environmental impact report for the inland delta of the Nida River	09/2020		-	
Tourism infrastructure projects	06/2024		06/2024	
A set of technical documentation with a cost estimate for the forest complex of the Pińczów Forest District	09/2024		07/2024	
Appraisal reports necessary for the purchase of land	06/2025		07/2025	

Figures and extracts from the grounds	06/2025	08/2025	and the contractor's failure to meet the deadline.
MILESTONES	Deadline	Actual deadline	
Development of a water and legal survey for the forest complex of the Pińczów Forest District	09/2020	07/2024	
Development of a water-legal survey for the inland delta of the Nida River	09/2020	-	
Development of an environmental impact report for the forest complex of the Pińczów Forest District	09/2020	07/2024	
Development of an environmental impact report for the inland delta of the Nida River	09/2020	-	
Development of tourism infrastructure projects	06/2024	06/2024	
Obtaining excerpts and extracts from the land intended for purchase	06/2025	07/2025	

The commencement of the action related to land purchase (B.1) required a series of formal and legal steps. In the first instance, it was necessary for the Świętokrzyskie Voivodeship Seymick to adopt relevant resolutions authorizing the Beneficiary to acquire real estate intended for the Project's objectives. Subsequently, the preparation of documentation necessary for the transactions began, including the drafting of property appraisal reports and obtaining required geodetic documents, i.e., extracts from the land register and drawings from the cadastral map. In Q2/2019 and Q1/2023, the Beneficiary entered into agreements for the preparation of appraisal reports for the properties designated for buyout under the Project. In the course of the task, 135 appraisal reports were prepared. Due to organizational and procedural difficulties resulting from the COVID-19 pandemic, as well as prolonged negotiations with property owners, it became necessary to update 19 appraisal reports to maintain their validity and compliance with current regulations. Prior to the execution of each notarial deed, the Beneficiary obtained a complete set of necessary geodetic documents from the District Office in Pińczów. In the period 2019–2025, a total of 58 extracts from the land register and 40 drawings from the cadastral map were obtained, enabling the land acquisition process to be conducted correctly and in accordance with the law.

In connection with the implementation of action C.1, a cooperation agreement was concluded in Q4/2020 with the Regional Water Management Authority (RZGW) in Kraków, acting on behalf of the State Water Holding "Polish Waters" (PGW WP). This agreement, amended in Q4/2022, concerned the task of reconstructing and maintaining the Old Nida riverbed and establishing the scope of works related to improving water conditions and increasing retention in the Umianowice Delta area. Restoring appropriate water conditions in the Delta required obtaining water law permits for water services, including:

- the decision of 21/12/2022 – covering water intake from the Nida River in the amount of 0.5 m³ at the bridge-weir in Kliszów, as well as the damming and retention of water at hydraulic structures located on the Smuga Umianowicka, the Ciek od Wierzbicy stream, and at the connector of Ditch J with the Ciek od Wierzbicy;
- the decision of 31/03/2025 – concerning the damming and retention of the Nida River waters (riverbed retention) using the existing weir in Kliszów.

The intention to carry out all maintenance activities was notified to the Regional Directorate for Environmental Protection (RDOŚ) in Kielce and the Catchment Management in Kielce, both of which granted consent for their implementation.

The commencement of action C.2.2 was preceded by the preparation of situational and high-relief maps for design purposes and the conclusion of a contract in Q2/2021 with HaskoningDHV Polska Sp. z o.o. for the development of complete, multi-branch design documentation for the investment task. This task involves the construction of a network of irrigation and drainage ditches along with sluice gates in the Młodzawy forest complex, as well as obtaining all legally required approvals and administrative decisions. Within the framework of this contract, an environmental decision was obtained in Q3/2023, a water law permit for the construction of hydraulic structures, special use of water, and the construction of temporary hydraulic structures was obtained in Q1/2024, and a building permit was granted in Q3/2024. The implementation of active protection measures (C.6–C.11) concerning legally protected plant and animal species required obtaining relevant agreements, permits, and opinions from the competent public administration bodies responsible for nature conservation at national and regional levels. The following entities were particularly involved in this process: the Ministry of Climate and Environment, the General Directorate for Environmental Protection, and the Regional Directorates for Environmental Protection in Kielce, Lublin, and Kraków. The agreements covered, among others, the scope of planned activities, methods of implementation, and the work schedule. In the case of activities interfering with animal populations, including tasks related to their capture, relocation, breeding, or reintroduction, additional approvals from the National Ethics Committee for Animal Experimentation were required. These approvals confirmed compliance with ethical requirements and animal welfare principles. The implementation of action C.12, aimed at directing tourist traffic within the Delta area, required the development of complete design documentation for 3 nature educational trails with accompanying infrastructure, as well as obtaining all legally required approvals and administrative decisions. In Q2/2023, the Beneficiary concluded a contract with the "Architectural and Construction Design Studio of Maria and Andrzej Głowacki" Maria Głowacka, covering the preparation of design documentation and the conduct of administrative procedures. Within the framework of this contract, a permit from the Świętokrzyskie Provincial Conservator of Monuments in Kielce was obtained in Q4/2023, and the planned activities were notified to the Regional Directorate for Environmental Protection in Kielce, which raised no objections to the project in Q4/2023. In Q1/2024, a water law permit was obtained for locating the project in an area of particular flood risk, and in Q2/2024, building permits were issued by the Voivode of Świętokrzyskie and the Starosta of Pińczów.

A.3 GIS development and metamodel creation

Foreseen start date	Q1/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
-	-		-	
MILESTONES	Deadline		Actual deadline	
Create a database	03/2020		Achieved at the Mid-term	

In Q1/2019, a spatial database was established, serving as the fundamental tool for planning, implementing, and monitoring field activities conducted under the Project. The database was developed based on various cartographic backgrounds, including orthophotomaps and topographic maps at different scales, as well as vector GIS spatial data, covering, among others, land registries and environmental data sourced from both the Beneficiary's own resources and the resources of other institutions.

From the beginning of the Project's implementation, the Project Team conducted systematic acquisition of field data from the area covered by the Project, initially utilizing GPS receivers already owned by the Beneficiary, and subsequently using two units purchased under the Project in Q4/2022. The acquired data were continuously integrated into the database and used for its successive expansion with further GIS spatial layers corresponding to individual project actions. The spatial database was regularly updated with information derived from the ongoing environmental and hydrological monitoring, which enabled an up-to-date assessment of the Project's progress and the effectiveness of the measures undertaken. The established GIS system constituted a key tool supporting the coordination of project activities and the operational decision-making process at all stages of its implementation.

To ensure the efficient functioning and relevance of the database, an update of the two ArcGIS Desktop software licenses owned by the Beneficiary to the ArcGIS Pro version was purchased in Q3/2024. In parallel, a service for unmanned aerial vehicle (UAV) overflights was commissioned, including the processing of the acquired data, which comprised, among others, a digital terrain model, orthophotomaps, and color compositions for NDVI, NDWI, and NDRE indices. The service was accepted on 29/03/2024. The processed data were shared with the Project Partners and utilized by them in works related to hydrological and environmental monitoring. During the Project implementation, a decision was made to place the project data within the Spatial Information System of the Świętokrzyskie Voivodeship. This solution ensured data access for a wide range of recipients while simultaneously reducing costs associated with maintaining a dedicated IT infrastructure. To this end, in Q4/2025, the adaptation, optimization, and publication of the photogrammetric products, remote sensing data, and spatial data held in the repository were commissioned. Subsequently, in agreement with the relevant department of the Marshal's Office of the Świętokrzyskie Voivodeship responsible for the system's operation, the data were published within the system's resources.

B.1 Land purchase

Foreseen start date	Q1/2019	Foreseen end date	Q4/2022	Comments
Actual start date	Q3/2019	Actual end date	Q3/2025	The delayed completion date of the activity results from the unresolved legal status of the property
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Notarial deeds		06/2025	09/2025	
Land appraisal		06/2025	07/2025	
MILESTONES		Deadline	Actual deadline	
Land purchase		06/2025	09/2025	

Under this action, a total of 123 land properties with a combined area of 53.8714 ha were purchased. Sixty-three purchase agreements were concluded in the form of notarial deeds, through which lands with a total area of 52.3708 ha were acquired. These notarial deeds constitute a deliverable product and have been uploaded to the BUTLER application. Additionally, one property with an area of 1.5006 ha was acquired through enforcement proceedings via a bailiff auction. All executed notarial deeds include provisions regarding the final designation of the acquired lands for irrevocable nature protection. The purchased plots are located within the Natura 2000 sites: Ostoja Nidziańska PLH260003 and Dolina Nidy PLB260001. Their acquisition contributes to increasing the contiguous land complexes managed by the Beneficiary and to improving and maintaining the integrity of the Natura 2000 network.

In parallel, the Beneficiary undertook actions concerning properties owned by local government units and the State Treasury. The transfer into permanent management of

properties with a total area of 2.69 ha, belonging to the State Treasury Agricultural Property Resource, was completed. Furthermore, the lending of State Treasury properties managed by the District Office in Pińczów, totaling 1.59 ha, was arranged for project implementation purposes.

A portion of the activities was carried out on private properties (cadastral plot No. 12/2 – currently No. 12/4 following geodetic subdivision – and cadastral plot No. 184, Umianowice precinct, Kije municipality). These works were related to the renaturalization of standing waters remaining from oxbow lakes and floodplains of the Nida River (Action C.1). As part of the maintenance of a 0.48 ha floodplain on plot No. 184 and a 0.84 ha floodplain on plot No. 12/2, works were performed involving the removal of organic sediments, dead vegetation, and accumulated mineral deposits from the floodplain basin. The material was spread over the adjacent area following the "mosaic" principle. During the spreading of the excavated material, the existing topography was preserved, maintaining local depressions and elevations. Varied banks of the floodplains were restored with slope gradients ranging from 1:1 to 1:3, while within the maintained reservoirs, deepenings were made by removing a layer of up to 1.0 m of material with slope gradients between 1:0.5 and 1:1, serving as overwintering sites for aquatic organisms. Cost of incurred financial outlays:

- cadastral plot No. 12/2 – currently No. 12/4 – EUR 40,437,10;
- cadastral plot No. 184 – EUR 19,049,55.

Deviations, problems and remarks

The unregulated legal status of properties, coupled with lengthy enfranchisement and inheritance processes lasting in some cases over 5 years, a lack of interest among potential heirs in regularizing their ownership, and the refusal of certain landowners to sell, resulted in the land purchase process not being fully completed. Recognizing these difficulties, and following prior consultation with the Project Monitor, the Beneficiary applied to the National Fund for Environmental Protection and Water Management (NFOŚiGW) in Warsaw—the institution financing the action—to reduce the planned material scope of the action from 109 ha to 70 ha. The financing institution agreed to the proposed change, which was formally accepted. Information regarding this modification was provided in the Progress Report dated 04/08/2023. Additionally, the Beneficiary took steps to establish a formal and legal basis for the use of expropriation procedures regarding lands located within the Delta area. To this end, an application was submitted for an amendment to the Local Spatial Development Plan to include the Delta area under planning provisions classifying the terrain as a public purpose investment area. This change would have enabled the initiation of expropriation proceedings conducted on behalf of the relevant local government unit. Despite the Beneficiary undertaking appropriate actions and maintaining correspondence with the relevant planning authority, the amendment to the planning document was not adopted by the time of the Project's conclusion. Consequently, the lack of a formal public purpose designation in the binding Local Spatial Development Plan prevented the launch of the expropriation procedure, thereby limiting the land acquisition process for the Project's needs. These circumstances were beyond the Beneficiary's control and resulted from the long-term nature of planning procedures that fall outside its decision-making competence.

The reduced material scope of the action did not hinder the implementation of the majority of key project activities, as long-term agreements were concluded with private landowners, allowing for the conduct of active protection measures both during and after the completion of the Project.

C.1 Improvement of the hydrological conditions of the inland delta of Nida river

Foreseen start date	Q1/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q1/2023	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
Annual reports on the implementation of tasks	09/2025		09/2025	
MILESTONES	Deadline		Actual deadline	
Unblocking the water supply ditch	12/2020		12/2021	
Old Nida River drainage	12/2021		02/2023	
Revitalization of Smuga and improvement of infrastructure	12/2022		Achieved at the Mid-term	
Completed revitalization of old river beds	12/2023		02/2023	

The objective of the implemented action was to restore and stabilize appropriate water conditions within the inland delta of the Nida River through comprehensive measures, including maintenance and renaturalization of watercourses and standing waters, as well as the maintenance and ongoing management of damming structures. The task was of key importance for improving the habitat conditions of the area and achieving the environmental goals of the Project. The task was carried out in cooperation with project partners—IOP PAN (Institute of Nature Conservation, PAS) and the University of Agriculture (UR) in Kraków—and spanned the period from 2019 to 2025.

In Q1–Q2/2019, a series of field inspections, as well as hydrological and environmental analyses of the delta area, were conducted. Based on long-term observations and collected measurement data, the water needs of the area were determined, and a groundwater monitoring network was designed.

In Q4/2019, specialized measurement equipment was purchased, including automatic water level and temperature loggers and data compensation devices. In parallel, 29 piezometric boreholes were drilled, forming the basis for further hydrological monitoring (contractor: Zakład Instalatorstwa Elektrycznego Grażyna Noszczyk).

In Q2/2020, recording devices were installed in the piezometric wells, with the measurement interval set to 30 minutes. The loggers were secured against theft and damage by animals. The obtained data allowed for a detailed analysis of groundwater level changes and served as the basis for developing the concept for renaturalization works.

Based on monitoring data, cartographic analyses, and hydrological needs, the renaturalization concept for the Smuga Umianowicka was developed, along with a preliminary scope of actions for the remaining watercourses of the delta. Simultaneously, an inventory of terrain morphology, the technical condition of hydraulic structures, and the needs of the flora and fauna was conducted.

In Q1/2021, a contract was concluded with the company Przedsiębiorstwo Usług Wielobranżowych „VIMEL” Edward Swatek, and the implementation of the first stage of field works began. Comprehensive maintenance was carried out on a 5.3 km section of the Smuga Umianowicka, including the mowing of embankments and the bed, removal of blockages, maintenance of 2 culverts, 3 culverts with sluice gates, and 2 fords, as well as biological reinforcement of damaged slopes. These works were completed in 03/2021, restoring the patency of the watercourse and improving flow conditions.

In Q2/2021, measurements of the bed morphology of oxbow lakes began, aimed at determining the scope of bottom sediment removal and preparing the next stage of renaturalization.

In Q4/2021, maintenance works were carried out on further watercourses, including a 2.5 km section of the Old Nida (Stage I) and a 3 km artificial channel supplying water to the Delta—the Feed Canal (Doprowadzalnik) J. The scope of work included mowing and raking the bed, removing blockages, maintenance of culverts and steel elements of hydraulic structures, and the elimination of barriers hindering flow and the migration of aquatic organisms. These works were of a restorative and maintenance nature, reinstating full hydrotechnical functionality to the watercourses. They were implemented by a consortium of companies: Leader – PUW „VIMEL” Edward Swatek and Partner – PW „WODMEL” Zenon Myszek. The final acceptance of the works took place in 12/2021.

In Q4/2022, a key stage of activities commenced, consisting of the comprehensive clearing of watercourses and the renaturalization of standing waters remaining from oxbow lakes and floodplains of the Nida River. A total of 6 contracts were concluded with two contractors: 4 with Zakład Usług Wodno-Melioracyjnych i Rekultywacji Sp. J. Mieczysław Siemaszek Antoni Gancarz and 2 with DREW-KOS Sp. z o.o. By the end of Q4/2022, works covering the maintenance of floodplains with a total area of 1.32 ha were fully completed.

In Q1/2023, the clearing of the Old Nida over a 3.8 km section (Stage II) was finalized, along with the maintenance of a double-barrel culvert, the pipeline connecting the Old Nida and Smuga Umianowicka (including the backfilling of an illegal excavation), and the clearing of watercourses near Smuga Umianowicka and the inflow from Łęg. Maintenance of standing waters with a total area exceeding 3.5 ha and a length of 2.75 km was also conducted. The works involved the removal of organic and mineral sediments, the shaping of varied banks, and the creation of local deepenings to facilitate the overwintering of aquatic organisms.

The main renaturalization works were concluded on 23/02/2023. The result was the restoration of hydrological continuity, improved retention, and the re-establishment of optimal moisture conditions in the delta area.

Following the completion of renaturalization works, constant monitoring of water levels in watercourse beds, oxbow lakes, and floodplains was maintained. In Q3–Q4/2023 and during 2024–2025, ongoing management of damming structures was carried out, regulating water levels in accordance with the adopted schedule and hydrological conditions. Regular maintenance works were performed, including cleaning and preserving mechanical components of sluice gates, removing plant blockages, and seasonal securing of the structures for the winter period. These activities aimed to maintain the durability of the project's results and ensure stable water conditions for the restored habitats.

The implementation of the action led to a comprehensive improvement of water relations in the Delta area. Lasting effects were achieved in the form of restored patency and hydrological continuity of key watercourses, increased channel and surface retention, improved habitat conditions for aquatic and marsh flora and fauna, and the creation of a system for long-term monitoring and water management.

C.2 Active protection of the riparian forest

Foreseen start date	Q4/2020	Foreseen end date	Q4/2024	Comments
Actual start date	Q4/2021	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
-	-		-	
MILESTONES	Deadline		Actual deadline	
Clearing drainage ditches and building regulating valves	03/2025		02/2025	

C.2.1 Active conservation in the area of the inland delta of the Nida River

In 10/2021, the first plantings were initiated in the Delta area. The planting site was carefully prepared by the technical support specialist. The plantings were carried out by Project staff, with the participation of the Świętokrzyskie Voivodeship authorities and the local community. In total, 2,660 trees and shrubs characteristic of alluvial forests were planted, of which more than half came from own production (1,360 individuals). Only *Alnus glutinosa* was purchased (1,300 individuals). Given the heavily damaged and cleared alluvial forest patches, this species strengthened the local population and contributed to faster regeneration of the community. Species obtained from the Project's own plantation and planted in the Delta included: *Populus alba* (298 individuals), *Populus nigra* (26), *Euonymus europaeus* (143), *Prunus padus* (173), *Viburnum opulus* (366), *Ribes nigrum* (181), *Ribes spicatum* (20) and *Sambucus nigra* (153). Planting was completed over 5 days on an area of more than 1 ha.

In Q2/2022, the rooting success of the biocenotic plant species planted in autumn within the Delta alluvial forest was verified. The condition was assessed as very satisfactory. Preliminary observations indicated that approx. 85% of planted individuals had established successfully. The alluvial forest area is continuously monitored.

In spring 2023, further plantings were carried out on an area of 1 ha, while gaps in the area covered by the 2021 action were also filled. In Q3–Q4, earlier plantings were checked and, where necessary, supplementary plantings were performed.

In 03–04/2024, alluvial and admixture species planted in previous years were collected from the forest nursery in Michałów. Subsequently, under favourable weather conditions, plantings were carried out in the Delta area. Gaps at previous planting sites were filled and alluvial forests were restored along the Stara Nida channel. A total of 1,000 trees and shrubs from the nursery were planted. The establishment rate is monitored on an ongoing basis.

In Q3/2024, monitoring of establishment and rooting of alluvial forest species planted along the Stara Nida channel and within forest gaps was conducted. Their condition was verified as very good. *Alnus glutinosa* planted at the edge of the fragmented forest community established at virtually 100%, therefore no supplementary planting was required. Along the watercourse, apart from isolated incidents related to beaver activity (young saplings gnawed), the rooting success was assessed at 80%.

In Q2–Q3/2025, further plantings were carried out in the Delta area. In addition, willow live stakes (500 units) were planted on the embankments along the Stara Nida, and a forest mesh fence was installed to protect them from beavers. This measure aims to limit water warming in the channel and the expansion of *Phragmites australis*, thereby creating microhabitats for fish and mussels.

In total, within this action, plantings in the Delta were carried out over a combined area of 5 ha.

C.2.2. Active conservation in the area of the "Młodzawy" forest complex within the Pińczów Forest District

Implementation of the action was preceded by a multi-year preparatory process, including the preparation of design documentation and the obtaining of the full set of required administrative decisions. These procedures took approximately three years in total and affected the implementation schedule. Over the same period, there was a substantial increase in the costs of construction materials and contractor services, driven by inflation and an unstable market situation.

These financial and organisational constraints required a rationalisation of the scope of the planned works. The reduction was implemented in a controlled manner, while maintaining the overarching LIFE project objectives, i.e. improving or maintaining the favourable conservation status of natural habitats.

Based on baseline monitoring analyses, works aimed at regulating water conditions in the northern part of the Młodzawy forest complex were abandoned. This area was assessed as having a favourable and stable condition of natural habitats, not requiring additional intervention. At the same time, activities were focused on the southern part of the complex, where habitat conditions (waterlogging) deviated from reference values and required improvement.

On 30/08/2024, the Lasy Państwowe (State Forests) – Pińczów Forest District announced a public procurement procedure entitled: “Construction of a network of irrigation–drainage ditches with sluices in the Młodzawy forest complex, located in Młodzawy, Pińczów Municipality”. As a result of the tender procedure, it turned out that the funds available to the co-beneficiary were insufficient to cover the costs of the most advantageous offer. Therefore, the Coordinating Beneficiary was requested to secure the missing funds. As a result, on 30/09/2024 an agreement on joint financing of the procurement was concluded, which enabled the selection of the contractor and continuation of the action. The contract with Drew-Kos Sp. z o.o. was signed on 08/10/2024.

In Q4/2024, maintenance works were carried out on ditches with a total length of 1,315 m, including mowing of the banks, removal of shrubs and self-seeded trees, raking of the bottom, removal of local blockages with levelling of the material, and clearing of the culvert at the end of the maintained section. In addition, in sections with damaged banks, fascine bundles were installed over a length of 312 m and soil losses were replenished, shaping banks to the appropriate slope in order to ensure the durability of the works after the end of the project.

In Q1/2025, construction works were completed, including the installation of three reinforced-concrete sluices equipped with wooden stoplogs. A perimeter ditch with a length of 1,320 m, located at the edge of the forest complex, was also commissioned. The bases of the ditch banks were protected with fascine fences, increasing bank stability and the durability of the hydrotechnical solutions.

The implemented measures restored a proper soil water cycle and reduced adverse phenomena of water impoundment and stagnation, which previously contributed to the degradation of tree stands. Cleaning and restructuring of the ditch system, together with the construction of three cascaded sluices, created the possibility of active control of groundwater levels. The achieved effects support the conservation and improvement of habitat conditions of alluvial forests and alluvial stands with ash, in line with the Project’s conservation objectives.

Deviations, problems, comments

The delay in the start of implementation was a direct result of prolonged design and administrative procedures. During the project, based on the results of hydrological monitoring conducted since 2019, an increasingly comprehensive understanding of the hydrological conditions in the Młodzawy area was obtained.

Monitoring results clearly demonstrated that some of the interventions originally planned were not necessary to achieve the Project’s conservation objectives, and their implementation could have led to excessive interference in well-functioning habitats. Consequently, a deliberate decision was taken to limit the scope of works to areas where intervention was genuinely justified.

Despite the reduction in scope, the objectives of action C.2.2 were achieved, and the environmental effects obtained confirm the validity of the decisions taken and the proper use of the Project's financial resources.

C.3 Restoration of meadow habitats to the proper conservation status

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q3/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
Activity implementation report	11/2020		Completed at the Mid-term	
Activity implementation report	11/2021		Completed at the Mid-term	
Activity implementation report	11/2022		11/2022	
Activity implementation report	11/2023		11/2023	
Activity implementation report	11/2024		11/2024	
Activity implementation report	09/2025		09/2025	
MILESTONES	Deadline		Actual deadline	
Complete the removal of trees and shrubs	03/2020		Achieved at the Mid-term	
Commencement of reed removal	10/2020		Achieved at the Mid-term	
Complete of single mowing	10/2020		05/2025	

C.3.1 – Removal of trees and shrubs

In the initial phase of the project, during the 2019–2020 growing seasons, detailed botanical and habitat surveys were carried out to determine the baseline condition of meadow habitats within the Project area. Inventories conducted in accordance with the GIOŚ methodology by IOP PAN botanists confirmed that the ongoing succession of shrubs and trees was one of the key threats leading to the degradation of open meadow habitats and the loss of their conservation value.

In 2019, an inventory of trees and shrubs was also carried out in the Project area, including a quantitative assessment of woody vegetation with species composition, location, and dendrometric parameters. This characterisation was used for an initial cost estimate of the tree and shrub felling and stump removal service, including regrowth. In Q1/2021, contracts were signed with the following companies: DREWNOPOL Usługi w Zakresie Użytkowania i Zagospodarowania Lasu Maziarz Zbigniew and P.H.U. Bednarek Tomasz Bednarek and implementation of active tree and shrub removal began. The works were performed using low-invasive methods, mainly manually, and included felling, stump removal, and levelling of the ground. In total, woody and shrubby vegetation was removed from 29.54 ha of meadow habitats. All biomass was removed outside Natura 2000 areas.

In Q1/2022, a contract was signed with P.P.H.U. “Słoma” Grzegorz Słoma, and selective felling of individual trees and shrubs was carried out in the grazed area. The intervention covered a total of 9.34 ha.

The implemented measures restored the open character of the meadows, improved light conditions, and limited further secondary succession. As a result, favourable habitat conditions were re-established for the target meadow habitat types and associated species, including ground-nesting birds and characteristic meadow flora.

C.3.2 – Reed removal

The baseline inventory carried out in 2019 identified compact reedbed patches with a total area of approximately 40 ha, representing a significant threat to wet meadow habitats. Measures aimed at removing *Phragmites australis* started in Q3/2020 and were implemented annually until Q3/2025. The works included mechanical mowing of reeds and removal of biomass once per growing season, in line with good nature conservation practice. Regular mowing carried out already before the start of the project significantly reduced the expansion and regrowth of *Phragmites australis*, so there was no need to repeat the treatment twice within a year.

The scope and location of works were adjusted each year based on the results of ornithological monitoring. Reedbed patches used as breeding sites by key bird species, such as the Bittern *Botaurus stellaris* and the Marsh Harrier *Circus aeruginosus*, were excluded from mowing. This approach ensured that the objectives of wet meadow habitat conservation were balanced with bird protection.

The area covered by *Phragmites australis* mowing increased annually as additional properties were purchased. Ultimately, the area covered by the action reached 20 ha of reedbeds. The gradual reduction of *Phragmites australis* dominance contributed to increased habitat mosaicity, restoration of wet meadow structure, and improved foraging and breeding conditions for many species associated with meadow and wetland habitats.

In addition, in Q3/2025 reedbeds were mown on the banks, together with the verge strip and the bottom of the Stara Nida channel in section km 0+000–5+280.

C.3.3 – Single annual mowing

In 2020, the project beneficiary initiated mowing of meadows owned by the beneficiary using its own funds. Mowing also covered privately owned plots (plots No. 12/2, 184 and 834), with the costs borne by the landowners. In total, approx. 125 ha were mown. The cut biomass was removed outside the project area. These activities were repeated on a cyclical basis in the third quarter of each year.

The timing and spatial scope of mowing were adjusted annually based on the results of environmental monitoring, in particular ornithological monitoring, which allowed minimisation of disturbance and breeding losses. In some areas, mowing served as a preparatory measure before introducing extensive grazing, ensuring a smooth transition to a permanent management system. This approach was applied in 2021, 2022 and 2024.

The mowing regime applied significantly contributed to stabilisation of meadow habitats, increased plant species diversity, and maintenance of a favourable conservation status of the target habitat types. Combined with hydrological measures, these activities strengthened the resilience of meadow ecosystems and their capacity to provide ecological functions in the long term.

C.4 Initiation of grazing

Foreseen start date	Q2/2020	Foreseen end date	Q3/2024	Comments
Actual start date	Q3/2021	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
-		-	-	
MILESTONES		Deadline	Actual deadline	
Start grazing		05/2020	Achieved at the Mid-term	

Due to the announced increase in prices of agricultural machinery and equipment, and the need to secure fodder for animals in the initial phase of the action (2019–2020), the work focused on preparing the technical facilities necessary for fodder management and animal handling. On 25/06/2019, a contract was concluded with Przedsiębiorstwo Produkcyjno-Handlowo-Usługowe Marian Kisiel for the supply of agricultural equipment: a round baler, a rake and manure forks. The equipment was received in Q3/2019. On 19/11/2019, another contract was signed with the same company for the supply of a bale trailer; the equipment was received on 02/12/2019. On 07/05/2020, a contract was concluded with Rolma Sp. z o.o. for the supply of a farm tractor with a front loader and a rotary tedder; the equipment was received on 19/05/2020. The infrastructure was complemented by the purchase of a soil auger used for fence construction and preparing sites for plantings, as well as auxiliary equipment such as bale nets. These measures provided a solid technical basis for the further implementation of grazing. In Q3/2020, preliminary consultations were carried out with farmers interested in grazing. Due to restrictions related to the COVID-19 pandemic, the purchase of animals and the full launch of grazing were postponed to 2021.

In connection with the planned start of grazing, on 19/04/2021 a contract was concluded with Usługi Ogrodnicze Damian Domagała for the construction of fencing for the first grazing area (13.5 ha), using alder poles, concrete posts, and an electric fence. After completion of the works in Q3/2021, grazing of 14 Polish Konik horses owned by the project beneficiary was initiated. Grazing was carried out continuously, with regular checks of animal health and welfare and systematic delivery of water. As it was not possible to build a shelter for the animals due to administrative reasons, it was decided to purchase a technical tent providing cover for fodder and horses during the winter period. Winter fodder was secured for the animals.

In subsequent years (2022–2023), the action was significantly expanded. Additional grazing areas were identified and prepared. On 05/08/2022, a contract was concluded with FUTURA XXI Sp. z o.o. for the supply of 10 Hereford heifers. Due to one heifer being frightened and escaping from the enclosure, showing high temperament and causing breeding problems, and despite unsuccessful attempts to restrain it, the transport and purchase of this individual were abandoned. The animals were collected in 08/2022 and their grazing in the Delta area was initiated.

In Q3/2022, a bale wrapper was purchased, necessary for preparing winter fodder for the cattle and horse herds.

Unfortunately, despite numerous attempts and discussions with farmers, it was not possible to find parties interested in grazing cattle; therefore, it was decided to manage cattle grazing independently. Most daily animal-handling tasks within the project were carried out by operational staff employed by ZŚiNPK as part of the functioning of the OEP in Umianowice. Within the project, only one additional employee was hired from 08/2022 to support the daily grazing-related work.

In 04/2023, one White-backed cow was purchased, and on 27/09/2023 a contract was concluded with Gospodarstwo Rolne Agnieszka Prochal for the supply of 22 head of Polish Red cattle. The animals were delivered in Q4/2023. The cattle purchase was preceded by an assessment of their suitability to the Delta's habitat conditions and specialist consultations. In parallel, grazing infrastructure was developed, including additional fencing, tents, water troughs, feeding racks, cattle driving and examination systems, and a cattle crush.

An important element of the action from the outset was ensuring continuous veterinary and zootechnical care. Contracts were concluded with veterinarians, regular health checks were conducted, deworming and preventive treatments were carried out, and therapeutic interventions were provided.

Throughout the implementation period, intensive fodder management was carried out. Using the equipment purchased under the Project, hay was produced and stored; concentrate feed and

dietary supplements were additionally purchased, enabling proper feeding during winter and transitional periods. Regular monitoring of herd condition allowed for timely responses to emerging health or organisational issues.

On 01/2024, a contract was concluded with Mazowieckie Centrum Hodowli i Rozrodu Zwierząt – Zakład w Brześciu for leasing grazing area for the animals, i.e. Polish Konik horses and Hereford cattle. The need for this contract resulted from prolonged unfavourable weather conditions and concerns about the health of animals remaining on flooded pastures. These measures ensured animal health and welfare and continuity of grazing despite adverse external conditions. The transported animals stayed there until 06/2024 and then returned to the pastures.

In Q3/2024, grazing of Polish Konik horses started on an additional area located north of the OEP. The area was fenced and secured.

In Q1–Q3/2025, grazing continued; two additional tents and a feeding rack were purchased, water was delivered to the animals, and veterinary care was provided.

Deviations, problems, comments

Difficulties in securing farmers interested in grazing cattle within the Project area resulted in the need for the beneficiary to take over implementation of this action directly. Thanks to the operational staff employed within the functioning of the OEP, grazing was carried out continuously and without disruption. At the same time, as a result of hydrotechnical measures, marsh areas were restored on a much larger scale than originally planned, at the expense of moderately wet areas intended for grazing, which significantly limited the action, to the benefit of the Delta's natural environment. Grazing on restored wetland conflicts with the protection of birds, amphibians and molluscs, and with maintaining a favourable conservation status of their habitats. Cattle entering wet areas and drinking in floodplain waters leads, inter alia, to trampling and morphological damage of shorelines, destruction of vegetation providing shelter and nesting sites for birds, turbidity and eutrophication of waters that serve as breeding and wintering sites for amphibians and fish. In view of the above, it was decided to maximise water retention effects, considering the role of wetland habitats in effective CO₂ binding and the neutralisation of biologically active compounds, contributing both to climate improvement and to the purification of surface waters and their significant retention.

Due to the coordinating beneficiary already owning 20 Polish Konik horses and using them in active conservation measures, the purchase of a larger number of cattle was abandoned. Out of the planned 60 head, a total of 32 head of cattle were purchased.

C.5 Active bird protection

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS	Deadline	Actual deadline		
Report on the results of the observation	11/2020	Completed at the Mid-term		
Report on the results of the observation	11/2021	Completed at the Mid-term		
Report on the results of the observation	11/2023	11/2023		
Report on the results of the observation	11/2024	11/2024		
Report on the results of the observation	09/2025	09/2025		

MILESTONES	Deadline	Actual deadline	
Build all platforms	03/2021	12/2022	

Ornithological observations have been conducted since Q1/2019 to identify breeding species and determine their spatial distribution, particularly in relation to the ongoing restoration works. The survey methodology assumed variability in routes and starting points of checks in order to increase bird detectability. In 2024/2025, intensified ornithological observations were carried out within the area of the action involving the construction of three nature educational trails, with the aim of minimizing negative impacts on bird breeding. Annual reports presenting the observation results constitute deliverable products and have been uploaded to the BUTLER. Work related to the construction of a nesting platform within the forest complex in Młodzawy and the reinforcement of an existing *Haliaeetus albicilla* nest in the Delta area began in Q4/2020. It included site reconnaissance to select the most optimal location for installing the platform and confirmation of the presence of territorial birds, in order to adjust the timing of the works appropriately and minimize disturbance to white-tailed eagles. Construction of the nesting platform for the white-tailed eagle in the Młodzawy riparian forest involved selecting a suitable tree in terms of form and crown structure, as well as its location within appropriate habitat. Several locations were shortlisted and, following consultations, the most optimal one was selected. The contractor prepared a wooden frame structure with an attached nest rim and then placed it in a crown fork of a previously selected black alder. Reinforcement of the existing nest in Umianowice consisted of constructing triangular supports from oak wood, installed between the lower edge of the nest and the tree trunk, approximately 2 m below the nest cup. The supports were installed on the side where the nest was tilted and rested on a weak branch that could break, posing a risk of nest collapse. The above works were carried out in accordance with the detailed order description and under the supervision of the project team, which verified proper implementation and the absence of contraindications, with due consideration given to avoiding disturbance to the birds. The territory and the nest are visited by white-tailed eagles each year; based on camera-trap recordings, the nest also attracted ravens, common buzzards, and tawny owls, but no breeding of these species was recorded. Thanks to the supports, the nest has remained in place to the present day.

Construction of nesting platforms for *Ciconia ciconia* began in Q2/2020 with the development of operating procedures and the establishment of optimal guidelines for locating platforms on power poles. By the end of 2020, fieldwork was conducted to determine the optimal distribution of nesting platforms in and around Umianowice, in accordance with the species' biology. Discussions were initiated with property owners on whose land the poles are located; however, due to concerns raised by the owners, these actions had to be postponed. Only in Q2/2022 were six nesting platforms for *Ciconia ciconia* installed, five on active and inactive power poles and one on a tree. Additionally, in Q4/2022, four nesting platforms were installed on active power poles. The platforms were installed in the villages of Umianowice and Rębów. Already in the following year after installation, two of them were occupied by white storks. Moreover, in Q1/2021 and Q1/2024, maintenance works were carried out consisting of pruning branches of the tree on which a natural *Ciconia ciconia* nest is located in Umianowice. A brood was produced from this nest each year. During project implementation, two nests were occupied, and breeding was recorded in one of them.

For the purposes of implementing the action, the following were purchased: a computer with software, binoculars, four walkie-talkies, and two camera traps.

Deviations, issues, comments

A decision was taken to purchase and install camera traps that were not originally planned in the project, and to mount them at the nest located within the Delta area, occupied by *Haliaeetus albicilla* since 2020, as well as in the Młodzawy forest complex. The devices enabled better understanding of bird behaviour in the area and supported the identification of threats and possible mitigation measures. Camera-trap recordings confirmed birds' interest in the nests. During implementation of the action, it was also necessary to prune branches at the only existing nest regularly occupied by a pair of white storks *Ciconia ciconia*. Poplar branches supporting the nest had become overly overgrown, restricting free access for the birds, which could have resulted in breeding abandonment. Although not foreseen in the project, this activity was carried out as part of maintenance works and risk removal.

The most significant issue at the planning stage for the location of 10 nesting platforms for the white stork *Ciconia ciconia* was the lack of a formally regulated legal status for some properties belonging to residents living in areas with suitable sites for platform installation. This hindered obtaining formal written consent from property owners, despite their declared willingness to cooperate and agreement to carry out the activity. However, this did not materially affect proper project implementation and in fact proved beneficial due to the coincidence of the platform installation period with the extension of grazing to additional plots. This created favourable foraging conditions for the birds and increased the likelihood of platform occupation.

C.6 Reintroduction of *Emys orbicularis*

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments Due to delays in obtaining the permits required to implement the action, it was necessary to modify the activity and revise its schedule
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Reintroduction results report		11/2021	Completed at the Mid-term	
Reintroduction results report		11/2022	11/2022	
Reintroduction results report		11/2023	11/2023	
Reintroduction results report		11/2024	11/2024	
Reintroduction results report		09/2025	09/2025	
MILESTONES		Deadline	Actual deadline	
Preparation of breeding grounds		04/2021	-	
Bringing small turtles for reintroduction		12/2024	11/2023	
Releasing reared turtles – I round		12/2024	09/2025	
Releasing reared turtles – II round		09/2025	-	

In Q1/2019, a computer with dedicated software was purchased for the turtle reintroduction specialist. In Q2/2019, activities were initiated to establish cooperation with institutions experienced in captive breeding and reintroduction of *Emys orbicularis* (Polesie National Park, the Regional Directorate for Environmental Protection in Warsaw, and the Warsaw Municipal Zoological Garden). These efforts resulted in cooperation agreements with the above entities. In Q2/2020, verification of the occurrence of *Emys orbicularis* within the Delta area was commissioned using environmental DNA analysis (PCR with a TaqMan probe). The study did not confirm the presence of *Emys orbicularis* DNA within the project area. At the same time, it demonstrated that the Delta constitutes a potentially very suitable habitat for the species, provided that hydrological conditions are improved.

Promotion of the *Emys orbicularis* reintroduction activities increased public interest, which resulted in the acquisition of four adult individuals of this species for educational purposes. Two individuals were abandoned at the Beneficiary's premises (Q2/2021 and Q3/2023), while two others were delivered from the Małopolska Voivodeship (Q2/2022 and Q3/2024). All individuals were provided with husbandry conditions consistent with the species' requirements, including appropriate breeding facilities, proper feeding, and continuous veterinary supervision.

A breakthrough moment in the implementation of the action was the cooperation agreement signed on 30/03/2022 with Polesie National Park, covering joint activities in the active conservation of *Emys orbicularis*. Under this agreement, the Beneficiary acquired a total of 100 juvenile individuals of the species in two batches of 50 individuals each (Q4/2023 and Q4/2024). The final batch will be acquired in Q4/2025.

Prior to the delivery of the first batch of juveniles in Q4/2023, a dedicated rearing room was prepared. A breeding unit consisting of six trays equipped with a water drainage system was established. Necessary equipment was purchased, including furniture, heat lamps, UV-B lamps, thermometers and light fittings.

All acquired juveniles were placed under daily supervision. Key environmental parameters potentially affecting their condition and behaviour were monitored, in particular temperature, light intensity, and water quality. Regular feeding based on a specialist diet was implemented, and continuous veterinary care was ensured. These measures kept the entire population in very good health condition. Throughout the rearing period, no losses in the population and no malfunctions of the infrastructure were recorded. In parallel, in cooperation with specialists from the Institute of Nature Conservation PAS and the Jagiellonian University, a document entitled "Best breeding practices" was developed, defining standards for animal welfare, nutrition, environmental parameters, and veterinary care. This document provides the methodological basis for the implemented captive breeding and reintroduction programme for the European pond turtle.

In Q3/2024, the last required administrative permit for releasing *Emys orbicularis* into the natural environment was obtained. After receiving it, procurement of telemetry transmitters required to monitor released individuals was initiated. Limited availability of equipment on the market and extended delivery times necessitated postponing the reintroduction to 2025. The additional year of rearing at the Nature Education Centre in Umianowice enabled further body-mass increase of individuals intended for release, thereby improving their chances of survival in the wild and increasing the probability of reintroduction success.

A key milestone of the action was the release of the first group of turtles into the natural environment in Q3/2025. This was preceded by detailed field reconnaissance, which resulted in selecting optimal locations meeting all habitat requirements necessary for successful reintroduction of the species. A telemetry system was purchased, including a radio receiver, a directional antenna, and 50 telemetry transmitters. A total of 40 individuals from the 2023 cohort were selected for release, including 17 fitted with telemetry transmitters. Releases were carried out in four rounds.

Immediately after release, telemetry monitoring began. Received signals allowed identification of initial dispersal patterns in the natural environment. Most turtles remained close to the release areas, mainly within the same floodplain lake, where they found suitable foraging and shelter conditions. Some individuals started movements on longer distances, indicating natural exploratory behaviour, the process of establishing individual home ranges, and searching for suitable sites for winter hibernation. The collected data confirm the high adaptive capacity of the released individuals and the correct functioning of the telemetry transmitters used. Annual reports from the reintroduction constitute deliverables and were uploaded to the BUTLER.

Deviations, issues, comments

Due to the possibility of obtaining only juvenile European pond turtles from the “European Pond Turtle Breeding Centre” of Polesie National Park, and due to delays in obtaining the permits required to implement the action, it was necessary to modify the activity and revise its schedule. Limited availability of telemetry transmitters and long delivery lead times resulted in abandoning the planned 2024 activities involving the release of the first batch of turtles held by the Beneficiary since Q4/2023. Because specific parameters must be achieved before release, juveniles delivered in Q4/2024 and Q4/2025 will be released within the inland delta area only after the end of the project, during its durability period. In addition, it is planned to obtain further necessary permits and to continue the long-term reintroduction process for this species in the area.

C.7 Reintroduction of *Unio crassus*

Foreseen start date	Q1/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Report on the implementation of activities		03/2020	Completed at the Mid-term	
Report on the implementation of activities		03/2021	Completed at the Mid-term	
Report on the implementation of activities		03/2022	Completed at the Mid-term	
Report on the implementation of activities		03/2023	12/2022	
Report on the implementation of activities		03/2024	12/2023	
Report on the implementation of activities		03/2025	12/2024	
MILESTONES		Deadline	Actual deadline	
Identification of 60 potential re-entry sites		12/2019	Achieved at the Mid-term	
Selecting 12 places for settlement and setting up a farm		12/2020	Achieved at the Mid-term	
Establishment of 12 shoals, selection of another 12 places for reintroduction		12/2021	Achieved at the Mid-term	
Feeding 24 shoals with adults and juveniles (from farms and released fish)		09/2025	09/2025	

In 2019, preparatory works were carried out, including the purchase of equipment and the necessary field surveys. Equipment procurement began with a stereomicroscope (Q4/2019) needed to observe larval developmental stages and detect parasites dangerous for *U. crassus*, which must be strictly avoided in individuals used for reintroduction and breeding. All necessary consumables were also purchased as needed (e.g. wading boots, syringes and needles for parasite inspection, alcohol for preserving samples, dataloggers, and equipment for the safe transport of mussels). As part of the preparatory works, all required permits were obtained from the Regional Directorate for Environmental Protection in Kielce for the entire project period (Q1/2021; No WPN.I.6401.3.21.2020.AD).

Implementation started with preparatory and organisational activities. In Q2–Q3/2019, an inventory of the Nida River was carried out to provide an assessment of habitat and identify appropriate sites for reintroduction. Water quality was also measured both with a multiparameter probe and by collecting samples later analysed in the laboratory of IOP PAN (using a purchased spectrophotometer). Under the project, the entire middle course of the river was surveyed for the presence of any Unionidae mussels, in order to identify reaches where generally favourable conditions could be expected. On this basis, five potential areas within the Nida valley were identified, where a total of 138 potentially suitable sites were checked, each involving a detailed bottom inspection in search of adult mussels.

The occurrence of host fish species was assessed in 2019 in potential introduction sites. Sampling was conducted at 42 sites, yielding 1,459 fish belonging to 18 species and 5 families (with Cyprinidae dominant). Among the recorded species, 8 were recognised as host species and were common everywhere. Therefore, host fish availability was not a limiting factor for mussel introductions.

The physico-chemical properties of Nida waters were studied along the reach within the Ostoja Nidziańska Natura 2000 site. No major differences were found except in the Delta area, where conductance was lower, whereas ammonium increased downstream. Later experience indicated that the lower course of the river (downstream from the main project area) was technically difficult for reintroduction (larger and deeper channel). Therefore, it was assumed to be a priority to create strong populations in the most suitable main project area (in the delta, where small/side channels fit *U. crassus* requirements better), which could later spread through the river (as concluded in the mid-term report).

In the river section adjacent to the Antoniów hill, 33 individuals of the thick-shelled river mussel were found and tissue samples were collected for genetic analysis. The mussels belonged to the nominal species *Unio crassus*, but showed extreme genetic depletion: all individuals had identical mtDNA (external contractor, dr Monika Mioduchowska, analysis performed in the genetics laboratory of the University of Gdańsk), indicating descent from a single female. Due to this extreme depletion, these individuals could not be used as a basis for population restoration. The presence of living mussels indicated that the reach adjacent to the Antoniów hill was the most suitable for reintroduction. On the other hand, the genetic depletion pointed to the need to introduce individuals with a diversified genotype to prevent inbreeding. As source populations, the rivers Warkocz, Lubrzanka, and Czarna Włoszczowska were selected. In these rivers, detailed studies of breeding phenology were initiated to determine the period of highest female fertility and to safely obtain large numbers of larvae.

In 2020, activities were hampered by the Covid epidemic. Once fieldwork resumed, additional equipment was purchased: underwater cameras, equipment for electrofishing, mussel marking and food studies. For the first mussel introductions, two large plots were designated in the vicinity of the Antoniów hill, representing typical habitats of the middle Nida: a straight reach below the bridge in Antoniów (the “Antoniów” plot) and a bend on the meandering reach between the narrow-gauge railway and the LHS line (the “Meandry” plot). For mussels, microhabitat selection is crucial, and it can be assessed by observing their movements from unsuitable locations to preferred ones. Habitat-selectivity tests were conducted on two representative Nida sections: the meandering reach (“Meandry”) and the straight reach (“Antoniów”), distinguishing functional habitats and simultaneously inventorying fish with a trawl. Results showed a strong concentration of fish (including hosts) in the near-bank zone, dependent on proximity to the bank and the presence of emergent vegetation. The fish assemblage there also showed the highest proportion of host species compared to other habitats (77% of all fish).

In Q1/2020, adult *U. crassus* of both sexes were collected from the above-mentioned source populations. Individuals were carefully examined using a Keyence microscope for the presence

of parasites, especially castrating trematodes. They were then fitted with telemetry transmitters purchased under the project (Holohil), in order to be located using an iCOM receiver (purchased in the project). Reintroduction was carried out on the Meandry and Antoniów reaches by introducing a total of 120 individuals (60 per plot), distributed on each plot along 6 cross-channel transects with 10 individuals per transect.

On the Meandry reach, the highest survival was recorded on the riffle/run transition; mussels were distributed mainly in the near-bank zone, especially near shelf shallows and in patches of *Sparganium* and *Potamogeton*. On the Antoniów reach, mussels also shifted toward the near-bank zone and vegetation (*Sparganium*; locally *Batrachium*), and an additional concentration formed in the small slackwater “under the maple” on the left bank.

In Q1–Q3/2021, modified telemetry tests were conducted by distributing the same mussels, overwintered in the “under the maple” bay, equipped with new transmitters, among the main microhabitats (*Sparganium* zone, previous-year *Sparganium* stands, main current; and a selected near-bank habitat at Meandry) and tracking their survival and movements. Results showed that individuals placed in the main current most often died and/or were transported over long distances. Therefore, the most suitable habitats for reintroduction were identified as slackwaters behind obstacles and near-bank *Sparganium* belts on riffle/run transitions and straightened reaches.

In Q3/2021, *Unio crassus* was introduced into the restored channel of the Smuga Umianowicka to test survival in water of high mineralisation ($>1,000\ \mu\text{S}$) and to identify reaches suitable for introduction. Thirty-six telemetry-tagged mussels with still-strong batteries (3 per point), transferred from the Nida, were used and distributed along two fluvial reaches (above the first gate and below the second, before the Smuga meanders). After a prolonged flood, the control survey was conducted only in September: in the upper reach, 8 active transmitters were located, and in the lower reach 7 active transmitters were located. All retrieved individuals were alive and in very good condition; 21 individuals with depleted transmitters were not found. In 2022 activities were concentrated on artificial breeding and possibility to elaborate a new method of in situ raising of the young (see below).

Meanwhile, a new “technical” mussel bed was established in the Przekop channel. It was used mainly to hold various numbers of individuals during the breeding period in order to obtain females for captive breeding, to acclimatise mussels before their release into the high-mineralisation system, and to maintain a stable stock for observing phenology under Delta conditions.

In Q3/2023, assuming improved conditions with succession in restored Stara Nida, 96 *U. crassus* young individuals collected from the Antoniów site were translocated to 8 sites in the Stara Nida.

To estimate the potential for mussel dispersal from a single bed within a system of renaturalised river branches, in Q3–Q4/2023 fish tagging with PIT tags was completed in the Smuga–Umianowice Wetland system and monitoring of fish movements was initiated through recapture surveys and a submersible antenna (Biomark, purchased under the project), placed in the mouth of Przekop, downstream of the established “technical” mussel bed. Over approximately half a year, 981 fish individuals were tagged in the Nida and its branches (Smuga Umianowicka, Rozlewisko Umianowickie, Przekop). No mortality or negative effects of the procedure were recorded. Two one-month antenna deployments produced 4,404 detections from 70 fish and an approximately 7% recapture rate.

Results confirmed the passability of existing and newly built hydrotechnical structures in the Smuga–Umianowice Wetland system and the ability of fish to migrate between spawning and wintering sites. The capacity for such long-distance movements is crucial for dispersal of *Unio crassus* larvae. The longest recorded distance was covered by a ~14 cm roach, which swam min. 3 km upstream in the Smuga, passed two culverts and reached the Przekop. “Site fidelity”

was also observed in chub, as well as the formation of wintering aggregations of roach within the Umianowice Wetland main lake.

Annual ichthyofauna surveys were conducted in the restored and rewatered reach of the Stara Nida in late spring/early summer 2024 to assess the availability of host fish species during glochidia release. Sampling was performed by electrofishing according to the PMS methodology at 7 sites between the confluence of the Stara Nida with the Nida and a reach ~200 m upstream of the culvert near the OEP in Umianowice. In Q2/2024, 252 fish representing 11 species were recorded. Effective hosts confirmed in the project occurred only incidentally: chub (2 individuals) and perch (1). Potential hosts were also recorded: burbot (5 individuals) and roach (4).

Meanwhile the development of new shoals in the Smuga, composed of juveniles, were observed downstream from the sites of introduction in the Smuga.

In Q3/2024, as part of the project's planned spread of the thick-shelled river mussel, additional beds were established in the main Nida channel and in the lower Smuga, using young 3–5-year-old individuals originating from telemetry-based introductions near Antoniów (Sparganium patches on the right bank). Groups of 12 individuals (already capable of reproduction, originating from a highly productive bed in Antoniów) were introduced at 12 locations from Antoniów to Wiślica, in sites concordant to the recommendations of the telemetry study.

In Q2/2020, *Unio crassus* breeding was conducted in Krzyżanowice Średnie. Due to the Covid lockdown, breeding was initiated in simplified setups at the premises of ZŚiNPK. Fish for infestation (60 minnows, *Phoxinus phoxinus*), as well as 12 mature female *U. crassus*, were collected from the Warkocz river and transported in polyethylene bags containing water and oxygen. After acclimatisation, fish were infested with glochidia in 12 aerated containers (13 L), with 5 fish and 1 female per container. After 48 hours, infestation was assessed: a total of 1,691 encysted glochidia were recorded (mean 37.6 per fish; range 3–153). After two weeks, infested fish were transported to the Nida and placed in net cages at two sites near Krzyżanowice to allow glochidia to detach *in situ*. Further tests of the cage method were discontinued because the devices attracted the attention of kayakers and anglers and were taken as poaching equipment; due to very strong human pressure, the method was considered ineffective and risky and was abandoned.

To utilise natural river conditions incubators were developed to allow juveniles to settle on natural substrate. The incubators were made of stainless steel mesh with very small mesh size (0.12 mm) and an openwork cover limiting contact with predators. At the beginning of Q3/2022, juveniles were divided into 7 incubators (~170 individuals each) and placed in selected microhabitats: 3 incubators in the Warkocz river (near Niestachów), 3 in the Nida (Antoniów) and 1 in the Nida (near Kowala). However, they were unsuccessful, because they were heavily clogged with organic matter transported in lowland waters.

After the pandemic, dedicated RAS breeding units were developed for infesting fish with *Unio crassus* glochidia and maintaining them until larval metamorphosis (~2 weeks). Each module (~220 × 115 × 50 cm) operates in a closed water circulation system with 20 containers on five levels and water treatment (biological filter, mechanical gravel filter, optional UV). After prototype testing, five such units were built by the end of Q4/2020 and launched in Q2/2021 in Krzyżanowice, moved later to OEP in Umianowice.

Juvenile mussels were collected using two methods: in RAS blocks (each fish kept separately) or in a cylindrical-conical tank (fish kept together, juveniles collected from the bottom). These systems were built under the project (5 sets of 25 containers, each with an individual water circulation system to avoid infections). Collected juveniles were reared in smaller containers on seston substrate and later on sand. In host-effectiveness tests, the key host species was chub (mean 13.7 juveniles per fish), whereas roach produced much lower results (1.33 juveniles per fish) and some species produced none, thus should be avoided in artificial breeding (e.g. *Gobio*

gobio). In 2021, 237 juveniles were obtained and survival to the end of September was approximately 17%. Production increased in 2022: by August a total of 5,864 juveniles (pediveligers) were obtained using 72 host fish. In 2023, two infestation rounds produced 4,436 juveniles. In 2024, work focused on growth control and feeding correction, while additional infestations were performed with a modified rearing method using coarse substrate with forced water circulation in containers (<5 mm grain size; 1,400 individuals).

CONCLUSIONS: In the Nida side arms within the Delta (the Smuga and the Stara Nida), 20 mussel beds were established, including 8 with confirmed recruitment, in some cases highly effective. In the main Nida channel, two distinct post-reintroduction concentrations were identified: 4 beds at Antoniów and 5 at Meandry, largely associated with habitat heterogeneity. Both show very good recruitment (≈ 200 individuals in total); after five years of the project, the number of locally produced young mussels that have already reached reproductive age was at least twice the number of adult individuals initially introduced there. Given mussel longevity (>20 years), further population growth and progressive colonisation along the Nida can be expected. Altogether, this yields 29 beds.

In the Smuga system, continued rapid development of mussel beds is anticipated through recruitment of juveniles dispersed by fish, and a similar trajectory is likely in the Stara Nida. These populations should expand further in subsequent seasons as the restored reaches are progressively colonised and, presumably, as other connected streams in the same river system (e.g. Branka, Hajdaszówka, and the remaining stretches of Stara Nida) also become colonised. In the Delta system, maintaining continuous flow is, of course, a prerequisite.

This figure is supplemented by 9 additional beds established outside the Delta in 2024 in the main Nida channel, bringing the total implemented during the project to 38 mussel beds.

Annual reports from the implementation of the action constitute deliverables that were uploaded to the BUTLER.

Deviations, problems, comments

The team built five Recirculating Aquaculture Systems instead of purchasing one commercially produced zebrafish system. The main reason for the change was the increased price of zebrafish systems, which was well above the funds available in the project. The RAS units were constructed by an aquaculture specialist (contract for external assistance with Dr A. Kłaczak from URK) in containers located at the premises of the coordinating beneficiary in Krzyżanowice, Iter in the OEP in Umianowice. Each RAS consisted of 20 containers arranged on five levels and equipped with a closed water circulation system with filters improving water quality. The RAS units are functionally identical to the planned zebrafish system.

A particular case was the Biomark system, used to evaluate fish dispersal distances. Purchase of this specialist equipment was delayed because the producer initially shipped the equipment to Poland without a complete set of EU certificates; as a result, the shipment was stopped at the border and returned to the USA. It was then imported again via the German representative of the company and shipped to Poland with all required certificates.

The problem was the low effectiveness of captive breeding. Because these were exceptionally hot seasons, mussels stopped reproducing very early, so it was not possible to carry out more than two infestations per season, and there were major difficulties in maintaining temperature in the container-based breeding units. Good results were achieved only in 2023, when for the first time over a dozen of juveniles survived into their second and third year of life and are still surviving to date, although growing much more slowly than under natural conditions. The scale of juvenile production was therefore too small; to effectively support the population, at least 25 systems would be needed. The breeding method is very labour-intensive; it is therefore recommended to always attempt *in situ* methods first, and only when these cannot be

implemented should *ex situ* breeding be used. However, it should be assumed from the outset that, within a LIFE project time horizon, this means initiating a breeding programme that must continue for many years. In this case, ZŚiNPK (main beneficiary) declares continuation of the breeding programme in order to develop effective schemes that may support further reintroduction of the species in the Nida catchment.

Activities within task C7 have no influence on any other activities within the project. Reintroduction to the Smuga and the Stara Nida depended on the channel restoration works; therefore, Smuga was resettled first, which is why advanced and detectable recruitment is already observed there, whereas recruitment in the Stara Nida and the lower Nida are expected in the forthcoming years.

C.8 Protection and breeding of other aquatic organisms with particular interest in *Anisus vorticulus*

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q2/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Report on the implementation of the activity and the results of the inventory from the previous year		03/2020	Completed at the Mid-term	
Activity implementation report		03/2021	Completed at the Mid-term	
Activity implementation report		03/2022	Completed at the Mid-term	
Activity implementation report		03/2023	12/2022	
Activity implementation report		03/2024	03/2024	
Activity implementation report		03/2025	03/2025	
MILESTONES		Deadline	Actual deadline	
Completion and results of the inventory		11/2019	Achieved at the Mid-term	
Beginning of the cultivation of little <i>Anisus vorticulus</i>		04/2020	Achieved at the Mid-term	
Commencement of resettlement to the revitalized old river beds		05/2021	05/2022	

In 2019–2021, preparatory and captive-breeding activities for *Anisus vorticulus* were carried out under the LIFE project in the Nida Delta and adjacent areas. In 2019, a detailed inventory of small water bodies within the Delta and its immediate surroundings was conducted to assess whether they met the species' habitat requirements. As a result of these works, one population of *Anisus vorticulus* was confirmed in the oxbow lake "Pod Skowronnym". In Q3/2019, two samples containing water and vegetation were collected from this site and used to initiate *ex situ* breeding at the Institute of Nature Conservation, Polish Academy of Sciences (IOP PAN) in Kraków. Under captive conditions, juveniles were obtained and subsequently successfully overwintered.

In 2020, repeat field inspections were conducted within the Nida Delta and in adjacent areas in the river valley. During these surveys, no *Anisus vorticulus* individuals were found in the "Pod Skowronnym" oxbow lake; the reasons for the disappearance of the population were not determined. The occurrence of first-generation individuals was also not observed; however, twelve second-generation individuals were recorded in a natural widening of the Stara Nida channel under the LHS bridge. From this site, six mature individuals with shell diameters

exceeding 5 mm were collected, incorporated into *ex situ* breeding, and placed in a breeding container located in a container unit, where they survived until the following year.

In 2021, the individuals maintained in breeding successfully overwintered. In the same year, all known and potential sites for the occurrence of the species were reviewed again; no first-generation individuals were found in the previously surveyed areas. At the same time, a numerous first-generation population was identified in an oxbow lake of the Czarna Nida known as “Szklany Dół” in the Chęciny municipality. From this site, ten individuals with shell diameters above 5 mm were collected for *ex situ* breeding. The snails were placed in aerated breeding containers in a breeding container unit located at the headquarters of the Świętokrzyskie and Nadnidziańskie Landscape Parks (ZŚiNPK) in Krzyżanowice Średnie. The containers were regularly checked for potential predators and parasites, and the individuals were fed natural food collected from oxbow lakes, in particular fragments of vascular plants. At the end of 2021, the size of the breeding stock was 131 individuals.

In 2022, a decision was made to initiate introductions into the Delta. For this purpose, the “Koniczynka” water body—originally created for amphibians—was used, and 42 *Anisus vorticulus* individuals from the 2021 cohort were translocated there. This action was of a pilot nature and aimed to assess habitat conditions, in particular water quality and the direction of succession in the pond. Observations conducted during the 2023 season did not confirm the presence of the snail in the water body. Therefore, a decision was taken to plant additional aquatic vegetation—representing the preferred habitat and an important component of the species’ diet—in order to increase plant cover and improve the suitability of the water body for *Anisus vorticulus*.

In Q2/2023, 12 *Anisus vorticulus* individuals were collected from the “Szklany Dół” site and incorporated into *ex situ* breeding conducted at the Nature Education Centre (OEP) in Umianowice. The aim of these activities was to increase the size of the captive population and prepare individuals for further introductions into previously designated or newly created habitats suitable for the species. Breeding was carried out both in a closed system under laboratory conditions and in an outdoor tank with a capacity of 1,000 litres located at the project site. The breeding measures produced positive results in the form of successful reproduction of the population, resulting in a total of 169 *Anisus vorticulus* individuals.

After habitat conditions had stabilised and aquatic vegetation had developed sufficiently—constituting the basic living habitat and food source for snails in oxbow lakes and newly created water bodies - it became possible to begin the introduction of *Anisus vorticulus* into the Nida Delta. These actions were preceded by the collection in Q2/2024 of thirty individuals of this species from the “Szklany Dół” site in order to continue and strengthen the *ex situ* breeding conducted in a tank located near the OEP. Achieving a stable and numerous captive population subsequently enabled the translocation in Q3/2024 of sixty individuals to four selected locations within the Delta, i.e., the “Koniczynka” pond, the Western Atoniów Lake, the Eastern Antoniów Lake, and the Smuga Umianowicka. These locations were selected based on the results of environmental monitoring confirming their habitat suitability for the species. As part of the introduction process, *Anisus vorticulus* individuals were initially placed in acclimatisation cages and then, after an adaptation period, released directly into the water column, initiating the colonisation stage of new habitats.

The reintroduction process was repeated in Q3/2025, when 100 *Anisus vorticulus* individuals were translocated to the four locations designated in 2024. Due to the short time that had elapsed since the introductions, it was not possible to unequivocally determine their impact on the status of the species’ population. During ongoing monitoring, *Anisus vorticulus* was confirmed in the Koniczynka pond (external contractor, dr D. Halabowski, University of Łódź); however, it has not yet been detected at the other introduction sites. This is typical for the species and is regularly noted during monitoring conducted by the Chief Inspectorate of

Environmental Protection (GIOŚ), due to population dispersion and the small size of the snails. It should be emphasised that the acclimatisation process and stabilisation of the species' population in the natural environment requires time and multi-year observation. Considering the knowledge gained, the team's experience, and the available breeding facilities, it is justified to continue captive breeding of the species as part of After-LIFE activities at the project site and to conduct annual introductions, which will increase the chances of permanent restoration of the *Anisus vorticulus* population in the inland Nida Delta. Continued monitoring will allow reliable data to be obtained on the effectiveness of the measures and the gradual colonisation of the available habitats.

Annual reports from the implementation of the action constitute deliverables that were uploaded to the BUTLER.

Deviations, problems, remarks

The main problem was a delay in implementing the action related to the revitalisation of oxbow lakes and eutrophic water bodies. This resulted in an extension of the captive-breeding phase and a postponement of the start of the introduction process. At the same time, the delay made it possible to develop effective methods for breeding and maintaining individuals, which translated into obtaining a stable population. The extension of the project implementation period also created an opportunity to repeat reintroduction activities in the Delta area.

C.9 Restitution of *Vertigo moulinsiana* and *Vertigo angustior*

Foreseen start date	Q1/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Activity implementation report		03/2020	Completed at the Mid-term	
Activity implementation report		03/2021	Completed at the Mid-term	
Activity implementation report		03/2022	Completed at the Mid-term	
Activity implementation report		03/2023	12/2022	
Activity implementation report		03/2024	12/2023	
Activity implementation report		03/2025	12/2024	
MILESTONES		Deadline	Actual deadline	
Identification of 40 potential resettlement sites and selection of 20 settlement sites		08/2019	Achieved at the Mid-term	
Establishment of breeding		06/2020	Achieved at the Mid-term	
Expanding the population in the top 20 microhabitats		09/2025	09/2024	

In August 2019, an inventory of the Inland Nida Delta area was carried out with respect to the occurrence of *Vertigo moulinsiana* and *Vertigo angustior*. For this purpose, from 100 previously randomised points, those located in wetland areas were selected (N = 26). Samples of 25 × 25 cm were collected, containing vegetation, litter and the upper soil layer. The samples were then transported to the laboratory, where—after drying and separating shells from the litter—the snail species present in the samples were identified. The presence of snails was confirmed in 7 locations: six of these were sites of *V. angustior*, and two were sites of

In May 2024, breeding of *V. moulinsiana* was initiated at the IOP PAN Centre for Research and Conservation of Mountain Plants in Zakopane. This species is difficult to breed; therefore, work was based on the literature and the team's own experience, which made it possible to develop optimal breeding conditions. Eggs were obtained from individuals collected for breeding, and these eggs were successfully developed and hatched into juveniles. In September 2024, translocations of part of the source populations of *V. moulinsiana* and *V. angustior* were carried out. In both cases, 10 new sites were created. In the material collected for translocation, snail density was 69 ind./m² for *V. moulinsiana* and 95 ind./m² for *V. angustior*. In addition, a genetic analysis of the dietary composition of *Vertigo* snails (material collected from fungal cultures) was conducted at the Department of Systematic and Environmental Botany, Adam Mickiewicz University in Poznań (not funded by the project).

In Q1/2025, further work on fungal cultivation (as part of ex situ breeding of *V. moulinsiana*) was carried out. The results obtained will allow development of the diet of *V. moulinsiana*, which may significantly improve captive breeding of this species. In Q3/2025, monitoring of the translocated populations was conducted, along with a comparative inventory of the occurrence of both *Vertigo* species at the same locations that had been surveyed in 2019. The presence of *V. angustior* was confirmed at 14 sites and *V. moulinsiana* at 7 sites. For *V. angustior*, an unsatisfactory status was recorded at 5 sites, and for *V. moulinsiana* at 3 sites. In the remaining cases, population status was favourable (*V. angustior*: 9 populations; *V. moulinsiana*: 4 populations).

Improved hydrological conditions enabled the development of optimal habitats for both *Vertigo* species. This is visible in the increased number of monitoring sites occupied by these snail species. Annual reports from the implementation of the action constitute deliverables that were uploaded to the BUTLER.

Deviations, problems, remarks

The main problem was the delay in implementing habitat revitalisation in the main area intended for inundation. Habitats suitable for reintroduction were formed only after the area had been flooded.

C.10 Restitution of *Bombina bombina* and *Triturus cristatus*

Foreseen start date	Q1/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
Activity report	03/2020		Completed at the Mid-term	
Activity report	03/2021		Completed at the Mid-term	
Activity report	03/2022		Completed at the Mid-term	
Activity report	03/2023		12/2022	
Activity report	03/2024		12/2023	
Activity report	03/2025		12/2024	
MILESTONES	Deadline		Actual deadline	
Prepared hydrological profiles, temperatures, inventoried source populations for supply	12/2019		Achieved at the Mid-term	

Cleaning and deepening of existing reservoirs, preparation of 5 additional ponds	12/2020	02/2023	
Completed reintroduction of juveniles	09/2025	09/2025	

Restoration activities for *Triturus cristatus* began in 2019 with detailed field reconnaissance and—at the next stage—the collection of individuals for breeding from natural sites. In the first season, larvae (N=25) and adult individuals (N=20) were collected. The collection of adults was intended to supplement the breeding stock with individuals capable of breeding immediately after release into new ponds (great crested newts most often reach sexual maturity only in their third year of life). In subsequent years, only larvae were collected (2021: 16 larvae; 2022: 21 larvae). Collections were carried out in a manner that did not compromise the stability of source populations (including conducting collections after the main breeding period of newts, diversifying collection sources, carefully assessing the demographic structure and abundance of newts at a given site prior to collection, and focusing primarily on collecting the youngest larvae—i.e., individuals at a developmental stage that has the lowest survival probability in the wild).

In 2020–2022, a conservation breeding programme for *Triturus cristatus* was conducted under laboratory conditions. Larvae were reared individually in 3.5-litre faunaboxes, which effectively eliminated the risk of cannibalism and allowed ongoing monitoring of the condition of each individual. Each rearing container had its own water system, preventing potential infections. The water used for rearing was initially taken from the same site from which individuals were collected, and later supplemented with water taken from the Nida River. The water was also regularly aerated. Vegetation placed in the faunaboxes was collected from natural sites. The water temperature during rearing was approx. 20–22°C. Newts were fed every two days (they were fed live food). The breeding programme was regularly supervised; particular attention was required during metamorphosis, when newt larvae need a transition from an aquatic to a semi-terrestrial environment. When external gills clearly began to regress, larvae were transferred to an intermediate aquaterrarium (45 litres), where they could calmly complete metamorphosis. Afterwards, newts were placed in a large 450-litre aquaterrarium. It contained both an extensive terrestrial section with numerous shelters, and was constructed mainly of stones, dead wood and moisture-loving vegetation; it also included an aquatic section in which the water was continuously aerated and filtered.

Each year in autumn, specialised overwintering sites (hibernacula) were also prepared for the captive newts, constructed mainly of dead wood, leaf litter and soil, under controlled temperature and humidity conditions. The hibernacula were monitored primarily for temperature and humidity. The intended overwintering temperature was to remain around a few degrees Celsius (and not fall below 0°C); therefore, during periods of particularly severe frost the laboratory was heated. The main food provided to newts during this period was dendrobaena earthworms; uneaten worms burrowed into the hibernaculum and served as a food reserve. In all overwintering seasons, 100% survival of hibernating newts was recorded, demonstrating very good condition of the individuals and appropriately selected breeding and hibernation methodology.

In parallel with the breeding programme, in spring 2021 three water bodies dedicated to *Triturus cristatus* were constructed in Umianowice. Both the choice of location and the construction itself were guided by the habitat requirements of this species. Each pond had an area of approx. 300 m², varied depth (with depressions exceeding 1.5 m), a natural bottom, and a gently shaped shoreline. The ponds were subjected to an accelerated “naturalisation” process by introducing aquatic vegetation from other nearby drainage ditches and by placing numerous

shelters - e.g. pieces of dead wood—within and around them. Particular attention was paid to the selection of plant species introduced into the ponds - primarily those enabling easy folding of eggs laid by newts (e.g. various duckweeds, *Glyceria fluitans*, *Veronica beccabunga*).

In 2021–2023, individuals bred in captivity were systematically released into the ponds (20 individuals in 2021, 20 individuals in 2022, and 21 individuals in 2023). Each time prior to release, morphometric measurements were taken and detailed photographic documentation was prepared. An attempt to mark individuals with Biomark APT12 PIT tags (8×1.4 mm, 0.03 g), undertaken in 2021 on a sample of 20 individuals, was abandoned due to mass loss of the tags by newts. Instead, individual identification based on the unique pattern of ventral spotting was implemented.

From 2022 onwards, strong emphasis was also placed on monitoring the population in the natural environment. Regular trapping was conducted using live traps (five traps deployed in each of the three ponds), morphometric measurements were taken for all captured individuals, and detailed photographic documentation of the ventral spotting patterns was collected. Already in the first seasons after releases, regular and successful reproduction of the great crested newt was confirmed, documenting numerous egg clutches, the presence of larvae and juveniles. In subsequent years, the number of control captures increased systematically and sharply (150 captures in 2022, 323 in 2023, 735 in 2024, and as many as 1,226 in the 2025 season), indicating high population size and intensive use of the ponds by these amphibians. In 2023, following observations of large numbers of newts at every developmental stage in the ponds, further laboratory breeding was discontinued and efforts were concentrated on monitoring the population at the site.

Other amphibian species also appeared very quickly in the newly created “newt ponds”. In 2022 and 2023, the following were observed: *Bufo bufo*, *Hyla arborea*, *Rana arvalis*, and frogs from the *Pelophylax* (green frog) group; in 2024: *Bufo bufo*, *Hyla arborea*, *Rana arvalis* and *Lissotriton vulgaris*; and in 2025: *Bufo bufo*, *Hyla arborea*, *Rana arvalis*, *Lissotriton vulgaris* and frogs from the green frog group. Besides *Triturus cristatus*, the most abundant population is currently *Hyla arborea* - in 2025, at least several dozen pairs were breeding in the ponds alone, and the species was also numerous in the wetlands around the ponds. In 2022 and 2024, the grass snake *Natrix natrix* was also recorded at the sites. As for fish, in the first two years of the ponds’ existence (2022 and 2023 seasons) the presence of weatherfish was recorded; in 2025, the presence of Prussian carp, crucian carp and tench was recorded in one of the ponds. However, these species had no chance to persist, because this pond - according to the design assumptions - dried out completely at the end of August (inspection on 30/08/2025). Periodic drying of ponds (e.g. every few years) is considered beneficial for *Triturus cristatus* populations, as it may limit pressure from potential predators (e.g. predatory invertebrates, fish, absence of invasive species). The results obtained confirm that actions implemented under task C.10 led to the establishment of a self-sustaining, stable population of the great crested newt, capable of further reproduction without the need for continued conservation breeding.

In turn, actions concerning *Bombina bombina* focused on creating appropriate breeding habitats for this species and the gradual implementation of releases. At the turn of 2021 and 2022, a water body dedicated to this species was constructed (plot No. [REDACTED] in Umianowice), with an area of approx. 10 ares, very gently sloping shores, predominantly shallow areas (30–50 cm) and local depressions up to approx. 1.5 m to secure the presence of water during drought periods. Due to the slow habitat stabilisation process and pressure from external factors (trampling by ungulates, use of the area by off-road vehicles), the pond required repeated planting of vegetation in subsequent years - similarly to the “newt ponds”, plants were collected from nearby water bodies.

In parallel, conservation breeding of *Bombina bombina* was carried out, and the first limited releases were conducted in 2023 (4 individuals were released into the “Koniczynka” pond; and

5 individuals into an oxbow on cadastral plot No. ■■■, Umianowice, Kije municipality). After full habitat stabilisation of the pond, the main stocking of the “Koniczynka” pond with individuals from conservation breeding was carried out in 2025, releasing 24 individuals of the European fire-bellied toad.

In the “Koniczynka” pond, the presence of numerous other amphibian species was also recorded, including *Bufo bufo*, *Pseudepidalea viridis*, *Pelobates fuscus*, *Hyla arborea*, *Rana arvalis*.

In the case of *Bombina bombina* restoration, the key factor influencing the “speed” of this action was the main task implemented in the project - i.e. the overall, substantial increase in water availability across the entire project area. Unlike the situation for the great crested newt, remnant subpopulations of this species, although often very small in numbers, were scattered across almost the entire project area. Rewetting enabled rapid (re)colonisation of sites; fire-bellied toads began to appear spontaneously in various locations. Therefore, in 2025, releases of this species were limited exclusively to the “Koniczynka” pond. The high species diversity confirms that the constructed pond functions as a multi-species breeding habitat, important for maintaining local biodiversity.

Deviations, problems, remarks

As a result of delayed stabilisation of the pond built primarily for *Bombina bombina* reproduction (damage caused by quad riders) and the need for repeated planting of aquatic vegetation, the main stocking of the species could only be carried out in 2025. In addition, in the final months of the project, the presence of an invasive fish species—*Perccottus glenii*—was unexpectedly recorded in the pond. Given that it is an invasive species and there is a high risk of predation by this fish on amphibians, this was reported through the appropriate administrative procedure. Initial mitigation measures were also undertaken, consisting of emergency removal of the species from the pond.

C.11 Preservation of the gene pool of plant species

Foreseen start date	Q3/2020	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Report on the progress of the task implementation		12/2020	Completed at the Mid-term	
Report on the progress of the task implementation		12/2021	Completed at the Mid-term	
Report on the progress of the task implementation		12/2022	12/2022	
Report on the progress of the task implementation		12/2023	12/2023	
Report on the progress of the task implementation		12/2024	12/2024	
Report on the progress of the task implementation		09/2025	09/2025	
MILESTONES		Deadline	Actual deadline	
Establishment of a seed plantation and nursery		09/2019	Achieved at the Mid-term	

C.11.1 Restoration of calcareous grassland and creation of substitute sites for 4 strictly protected species

Activities aimed at restoring calcareous grassland were implemented in stages in 2019–2025 on a small hill within the inland delta of the Nida River. This area was characterised by a very poor conservation status of the *Festuco-Brometea* habitat, resulting from many years of lack of use and progressing secondary succession. The grassland was highly fragmented, and a significant part of the area was occupied by scrub composed of shrubs of low natural value.

In the first stage, detailed inventories and habitat analyses were carried out, allowing for the precise planning of conservation measures. Because the site was under heritage protection as an archaeological area, it was necessary to obtain additional administrative approvals.

In 12/2022, key active conservation measures were implemented, consisting of the removal of trees and shrubs together with regrowth over an area of approx. 3,100 m², mainly *Prunus spinosa*, *Crataegus monogyna*, and sporadically *Cornus sanguinea*, *Rosa canina*, *Prunus padus*. In 03/2023, the area was additionally mown, which enabled effective preparation of the habitat for further conservation management.

In 04/2023, animals of native breeds were purchased, i.e. 2 Świniarka sheep, 2 Wrzosówka sheep and 2 Sandomierz goats, and regular extensive grazing was initiated. The herd stayed on the site on average 7–10 days per month, depending on the degree of overgrowth of the calcareous grassland. Opening up the area to enable germination of light-demanding and thermophilous species, together with extensive grazing, contributed to the proper and improved development of the calcareous grassland. Monitoring confirmed a gradual reduction in scrub cover and stabilisation of the habitat structure.

At the end of 10/2023, strictly protected species were introduced: *Dorycnium germanicum*, *Serratula lycopifolia* and *Linum flavum*. The seed material for introduction came from local source populations of *Linum flavum* and from a seed plantation established under the project (*Dorycnium germanicum*, *Serratula lycopifolia*), ensuring the preservation of the regional gene pool. Seeds of *Linum flavum* and *Serratula lycopifolia* were sown directly into the ground, whereas in the case of *Dorycnium germanicum* they were sown in early spring into trays, which were then placed in an unheated greenhouse, where they were regularly watered throughout the growing season. From nearly 40 seedlings obtained for this species, 35 were planted out in autumn. The above-mentioned greenhouse, with an area of 11 m², together with the necessary shelving, was purchased under this action.

Because no young seedlings of the other two species (*Serratula lycopifolia*, *Linum flavum*) were observed, therefore, in early spring 2024 the sowing of seeds of both species was repeated. In addition, in October, *Serratula lycopifolia* seedlings previously raised under greenhouse conditions were planted into the ground, and *Carlina onopordifolia* seeds were sown.

The grassland in Antoniów remains under continuous supervision by the project team, and subsequent monitoring seasons will allow assessment of the long-term success of the plantings and the potential emergence of new individuals of the remaining calcareous species. This action contributed to a tangible improvement in the conservation status of the habitat and the creation of stable substitute sites for rare plant species.

C.11.2 Seed plantation with nursery

Due to the prolonged construction of the OEP in Umianowice, where the plantation together with a nursery was planned to be established in 2019, discussions were held with the co-beneficiary (State Forests – Pińczów Forest District) regarding the temporary establishment of the plantation in the Michałów forest range. After obtaining consent, in spring 2020 the preparation of nursery plots for plantings began, consisting of spreading a specialist fertiliser,

cultivating the soil with a rototiller to loosen it, and laying out fabric of the standard size 1.6 m × 50 m. After fixing the fabric with pins and covering its edges with soil, planting of previously prepared cuttings and slips started.

Cuttings of *Prunus padus*, *Ribes nigrum* and *Viburnum opulus* were collected from the riparian forest in Młodzawy in quantities of 270, 250 and 150 pieces, respectively. The remaining species, i.e. *Populus alba* (250 pieces), were obtained from Skowronno Dolne, *Ribes spicatum* (125 pieces) from Budy, and *Euonymus europaeus* (100 pieces) from Umianowice. Immediately before planting, the seedlings were treated with a rooting agent to facilitate establishment and protect against fungal diseases. They were planted in rows every 25 cm, with spacing within rows of 15–20 cm, depending on the growth intensity of a given seedling.

In 2019–2021, seeds of calcareous grassland species *Dorycnium germanicum*, *Serratula lycopifolia* and *Carlina onopordifolia* were collected from the seed plantation in Krzyżanowice Średnie.

In spring 2021, additional cuttings of the following species were planted at the Michałów nursery: *Populus alba* – 1,400 pcs, *Populus nigra* – 1,200 pcs, *Prunus padus* – 500 pcs, *Ribes spicatum* – 1,200 pcs, *Ribes nigrum* – 300 pcs, *Euonymus europaea* – 500 pcs, *Viburnum opulus* – 1,000 pcs, *Sambucus nigra* – 600 pcs. The nursery used exclusively material of local origin, collected within the project implementation area (including Młodzawy, Umianowice, the Nida Delta).

All plantings from both 2020 and 2021 (a total of 1,360 specimens) were dug up in mid-10/2021 and then planted in impoverished and degraded patches of riparian forest within the Delta. Between 11/2021 and 02/2022, additional woody shoots were collected in the amount of 2,680 pieces. The collected slips were placed in a heeling-in trench and protected from drying out. In addition, seeds of *Viburnum opulus* and *Populus alba* were collected for sowing, to test another method of obtaining large numbers of new seedlings. In spring, at the end of March, plots at the Michałów nursery were prepared and the previously collected cuttings were planted. Seeds of the above-mentioned species were also sown. Gardening equipment necessary for the proper management of the plantation and nursery propagation was also purchased.

In early summer 2022, after verifying rooting of the planted cuttings, a decision was made to supplement the stock with willow species (1,230 slips were collected). In Q3, the collection of new slips for plantings in 2023 began; over 1,000 pieces were collected, and additionally a decision was made to purchase 1,300 two-year-old *Alnus glutinosa* saplings. The material was secured until spring at the OEP in Umianowice.

In Q4 2022, after obtaining the relevant approval, the seed plantation of calcareous species was moved to Umianowice.

In Q1/2023, further plantings of species characteristic of riparian forests were carried out within the Delta, while at the same time the area planted in 2021 was inspected. Where necessary, places where rooted seedlings were not observed were supplemented with new ones.

At the beginning of 2023, materials and equipment necessary to create plots for a forest nursery at the OEP in Umianowice were purchased. One of the plots was completed and prepared for the new season.

Observations of the relocated seed plantation showed 100% rooting of the species planted in autumn 2022. In addition, seeds of *Dorycnium germanicum*, *Serratula lycopifolia* and *Carlina onopordifolia* were collected from the plantation, as well as seeds of *Linum flavum* and *Ostericum palustre* from local populations, and *Menyanthes trifoliata* rhizomes (30 pcs).

In 03/2024, additional seedlings were obtained from the forest nursery and over 1,000 specimens were planted along the Stara Nida over a 1.5 km section. In summer, monitoring of the plantings was carried out, showing a high establishment rate (approx. 80–100%), confirming the validity of the adopted methodology.

The riparian forest slips heeled-in in the previous year, as well as two-year-old guelder-rose seedlings grown at the Michałów nursery, were planted in the newly established nursery in Umianowice. The seedlings established very well in the plot and showed proper growth.

In spring 2024, *Menyanthes trifoliata* was also planted in the area of the Umianowice Wetland. Following the hydrological works, suitable habitat conditions for the development of this species occur here. In total, 30 specimens (rhizomes) of this species were planted. Verification of rooting was carried out throughout the entire growing season. The condition of the planted specimens was assessed as very good. The selected sites are characterised by appropriate environmental conditions and constitute an optimal area for their further development. The area will be continuously monitored in subsequent years.

In 10/2024, additionally 30 seeds were sown and 25 individuals of *Ostericum palustre* were planted.

With the start of the growing season, the Umianowice Floodplain area was inspected for the establishment of *Menyanthes trifoliata* plantings and the sites planted with *Ostericum palustre*. Observations indicate a very good condition of individuals of these species.

In Q3/2025, willow plantings using living willow stakes were carried out in the amount of 500 pieces, and they were protected with forest mesh against beavers. The works covered selected areas along the channel of the Stara Nida.

C.12 Channelling of the touristic traffic

Foreseen start date	Q2/2020	Foreseen end date	Q2/2023	Comments
Actual start date	Q3/2024	Actual end date	Q2/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
-		-	-	
MILESTONES		Deadline	Actual deadline	
Channeling of tourist traffic		03/2025	04/2025	

The action aimed to organise and guide tourist traffic within the Delta area by designating and developing nature trail routes, while simultaneously reducing anthropogenic pressure on valuable natural habitats. In Q3/2021, field inspections were carried out to verify the planned routes in relation to environmental, land-ownership and technical conditions. In parallel, a meeting was held at the Kije Municipal Office to discuss the feasibility of implementing the trails in line with the provisions of the Local Spatial Development Plan. At this stage, the justification for implementing the action was confirmed and the necessary formal and legal steps were identified. The commencement of construction works was preceded by preparation of complete design documentation and obtaining the required permits and administrative decisions under action A.2. This process was time-consuming due to the complexity of the investment and its location within an environmentally valuable area.

On 06/09/2024, a contract was signed with Przedsiębiorstwo Robót Inżynieryjnych Erter Sp. z o.o. for the implementation of the task entitled “Construction of three educational nature trails with accompanying infrastructure”. Final acceptance of the works took place in Q2/2025. Under the contract, the following were delivered:

- a wooden observation tower, hexagonal in plan, with a building footprint of 33.88 m², topped with a gable roof made of panel sheet metal; the viewing platform was raised 6.5 m above the surrounding ground level;
- a birdwatching hide with a building footprint of 24.76 m², elevated on wooden posts approximately 70 cm above ground level; a wooden structure with a gable roof made of panel sheet metal, a single open interior space and viewing openings oriented towards

observation areas; access to the hide was designed to be suitable for people with reduced mobility (ramp with a gradient below 6%);

- a wooden boardwalk 110 m long, elevated 40–120 cm above ground level, supported on concrete posts; the structure consists of transverse load-bearing beams, longitudinal beams and a wooden deck, secured by a 110 cm-high barrier with hemp rope infill;
- one starting information board, in a single frame, divided into three movable (rotating) elements sized 70 × 70 cm presenting the trail routes;
- eight educational and information boards fitted with overlays allowing the installation of bas-relief models for visually impaired users. The boards have wooden structures and 70 × 120 cm panels made of composite dibond boards using UV printing technology;
- seven directional signs of wooden construction, mounted on a wooden post (solid wood);
- three litter bins.

In addition, as part of the action, more than 2,700 metres of surface were restored, reconstructed and/or hardened to enable safe and comfortable use of the nature trails.

The boards include educational and informational content, inter alia about the Project, active conservation measures, and protected species occurring in the Delta. They also include information on the funding institutions: LIFE, Natura 2000, NFOŚiGW, the beneficiary, and the Project logo.

Additionally, in Q3/2025 three spotting scopes were purchased and installed at facilities directly associated with the newly created nature trails, increasing the educational and tourist value of the infrastructure.

After completion of the Project, inspections of the technical infrastructure will be carried out. Where necessary, ongoing maintenance and repair works will be implemented to ensure the durability of the project results.

Deviations, problems, comments

The implementation schedule was affected by delays in the opening of the OEP in Umianowice, difficulties in obtaining required administrative approvals, and the land acquisition process. These factors resulted in postponement of the start of construction works and the need to introduce modifications to the course of the tourist trails. The changes concerned in particular the planned crossing of a floodplain lake, which—following detailed environmental and administrative verification—was replaced by a wooden boardwalk bypassing the natural habitat type 3150 (eutrophic water bodies). This solution avoided lengthy procedures related to additional approvals and technical acceptances and eliminated the need to involve qualified personnel holding inland navigation licences. The change enabled timely completion of the task within the project duration.

C.13 Actions for the protection of the inland Delta

Foreseen start date	Q4/2019	Foreseen end date	Q2/2024	Comments
Actual start date	Q4/2019	Actual end date	Q2/2024	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Agreement with institutions and organizations participating in patrols		12/2019	Completed at the Mid-term	
Annual summary report on the conducted patrols prepared		12/2020	Completed at the Mid-term	

by an employee monitoring the implementation of the project			
Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project	12/2021	Completed at the Mid-term	
Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project	12/2022	12/2022	
Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project	12/2023	12/2023	
Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project	12/2024	12/2024	
Application to amend the guidelines of the agrienvironmental package	06/2025	09/2025	
Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project	09/2025	09/2025	
MILESTONES	Deadline	Actual deadline	
Purchase of equipment for preventive patrols	12/2019	Achieved at the Mid-term	

In Q4/2019 and in Q1–Q2/2020, equipment necessary for the implementation of activities was purchased, including twilight/night binoculars and chest waders.

In Q3/2020, cooperation agreements were concluded with the Volunteer Fire Brigade (OSP) in Samostrzałów, the Polish Angling Association (PZW) – “Małża” Section in Pińczów, and the Volunteer Fire Brigade in Umianowice, and in Q1/2022 with Hunting Club No. 2 “St. Hubert” in Pińczów. The purpose of these agreements was to conduct joint preventive patrols in the Delta area, using local knowledge and the partners’ experience. However, further implementation of the action was significantly limited due to the introduction of the COVID-19 epidemic emergency and the related restrictions, in particular limitations on travel and bans on gatherings. Subsequent waves of the pandemic, the prolonged lockdown and uncertainty regarding the development of the epidemiological situation made it necessary to postpone the planned activities.

In 2021, due to the ongoing pandemic, it was not possible to carry out the originally planned number of preventive patrols. Nevertheless, in Q4/2021, following arrangements with the Project Monitor, LIFE Team staff carried out patrols of the project area in parallel with other official duties. Patrol locations were selected purposefully, with particular focus on areas where strong anthropogenic pressure and negative human impact on the environment had been observed. At the same time, cooperation was established with additional institutions and organisations relevant to the protection and use of the area, i.e. the County Police Headquarters in Pińczów, the County Headquarters of the State Fire Service in Pińczów, and the Świętokrzyskie Region branch of the Polish Angling Association in Kielce. Representatives of these institutions, thanks to their professional expertise, familiarity with the area and local social conditions, supported the LIFE project staff during preventive patrols. During meetings and field activities, particular attention was paid to issues related to the large amount of waste

in the project area, cases of illegal grassland and pasture burning, poaching, and the organisation of off-road rallies. In response to numerous reports of illegal fishing (water poaching) in the Delta, and in cooperation with the Polish Angling Association branch in Kielce, the need for an additional form of area control was identified through the installation of camera traps, which were purchased in Q3/2022 and installed within the Delta.

As part of the action, lectures were delivered on 16/11/2022, 02/02/2023 and 24/10/2023 on the harmfulness and risks associated with poaching, littering, burning of grasslands and pastures, and ways to prevent such practices. A total of 132 pupils and preschool children from municipalities in Pińczów County participated in these lectures.

The opening of the OEP in Umianowice in Q3/2022—the field headquarters of the project and the Beneficiary, located in the immediate vicinity of the Delta—made it possible for project staff to maintain a permanent presence in the area and to conduct preventive patrols continuously, systematically and in a multi-aspect manner, without the need to plan separate field trips each time. Particular attention was paid to locations most exposed to anthropogenic pressure, such as the banks of watercourses and water bodies, recreational areas, transport routes, and areas easily accessible from public roads. The implementation of active conservation measures, including grazing, required daily visits to the pastures in order to assess the condition of fences, the health of animals, and the supply of fodder and water. This enabled ongoing monitoring of potential threats resulting from anthropogenic pressure and rapid response to any irregularities observed. At the same time, regular visits related to the maintenance and day-to-day operation of hydrotechnical structures regulating water conditions in the Delta were carried out. These inspections aimed to ensure proper functioning of the hydrological system and prevent failures, while also allowing continuous observation of floodplain lakes and other water bodies and helping to counteract negative external factors. Co-beneficiaries of the project also played an important role in site control through ongoing environmental and hydrological monitoring. The continuous presence of project staff in the field also had a preventive effect, reducing the scale of non-compliant activities by increasing the perceived level of oversight in the area.

D.1 Environmental monitoring

Foreseen start date	Q3/2019	Foreseen end date	Q1/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Performing status monitoring "0" part 1		09/2019	Completed at the Mid-term	
Performing status monitoring "0" part 2		11/2019	Completed at the Mid-term	
Performing status monitoring "0" part 3		-	Completed at the Mid-term	
Implementation of monitoring - stage III		11/2020	Completed at the Mid-term	
Implementation of monitoring - stage IV		11/2021	Completed at the Mid-term	
Implementation of monitoring - stage V		11/2022	11/2022	
Implementation of monitoring - stage VI		11/2023	12/2023	
Implementation of monitoring - stage VII		12/2024	12/2024	
Report on all monitoring carried out		09/2025	09/2025	

MILESTONES	Deadline	Actual deadline	
Performing status monitoring "0" part 1	09/2019	Achieved at the Mid-term	
Performing status monitoring "0" part 2	11/2019	Achieved at the Mid-term	
Implementation of monitoring - stage III	11/2020	Achieved at the Mid-term	
Implementation of monitoring - stage IV	11/2021	Achieved at the Mid-term	
Implementation of monitoring - stage V	11/2022	11/2022	
Implementation of monitoring - stage VI	11/2023	11/2023	
Preparation of a scientific expertise presenting the conclusions of the entire nature monitoring carried out	09/2025	09/2025	

Improvement of hydrological conditions of the inland delta of the Nida River (C.1)

Due to the holistic nature of restoring proper water relations the effects of task C1 are described as an integrated whole, including its influence on fauna and flora.

Importance of the Hajdaszówka inflow

From the perspective of habitat, fauna and flora conservation, the most important contribution is the inflow from the Hajdaszówka catchment (the stream from Hajdaszek). Because it emerges from limestone and gypsum rocks, it carries highly mineralised water, which largely determines the very good physicochemical conditions—very high calcium content supports rich mollusc fauna and vegetation of alkaline habitats. In recent years, hydrological drought caused a complete loss of flow in Hajdaszówka in summer 2025, which was immediately reflected in floodplain chemistry: measured electrical conductivity ranged 551–576 μS in the Umianowice Wetland.

Water delivery from the Hajdaszówka is periodically complicated by beaver dams, which redirect its waters northwards, creating a new floodplain on private land outside the control of ZSiNPK. It is advisable to prevent beaver-driven diversion during low-flow periods in the future. A key priority is the need to choose between maintaining unique habitats such as 7230 Alkaline fens (including a fen with *Carex davalliana*, which disappeared after problems with the Hajdaszówka) and maintaining beavers on this watercourse—a protected but very common species. The *C. davalliana* fen is in a very poor condition across Poland.

Drought problem

In the project area in 2019–2025, water deficits were observed every year in spring (April–June), as confirmed by data published by IMGW-PIB. The AGROMETEO service provides maps of the climatic water balance in Poland, calculated as the difference between water inputs (precipitation) and losses through evapotranspiration for a given period [mm]. In agrometeorology, monthly values below –50 mm are commonly interpreted as drought. Such values occurred in the Świętokrzyskie region in all years, but have intensified since 2022, when the key May–June period was consistently very dry. After renaturalisation, the area could be rewetted before drought onset, which likely prevented suppression of reproduction in birds and amphibians and reduced high mortality of aquatic invertebrates.

The role of the superelevation of the channel of the Stara Nida in rewetting the area was fully confirmed. This applies not only to the main floodplains and floodplain lakes (see hydrological monitoring), but also to the formation of numerous small “flooded patches” (in practice: backwaters or even puddles) in many shallow ground depressions, especially within the Czeska area. These temporary water bodies provide breeding sites for large numbers of amphibians—particularly moor frog (*Rana arvalis*) and common toad (*Bufo bufo*)—and discourage predators from entering the area, which likely contributed to the establishment of a wader breeding colony on Czeska pasture.

On the basis of hydrological monitoring it is possible to evaluate ecosystem services related to hydrological activities. The restored floodplain network slows drainage: at ~ 0.2 m/s, water residence time is ~ 23 h (16.6 km of restored channels) vs ~ 3.5 h in the main Nida channel on the project reach. With up to 43,200 m³/day entering the system, assuming ~ 900 m³/day evaporation reduces outlet flow only from ~ 500 to ~ 490 l/s—an effect considered negligible. Because the outlets of Stara Nida and Smuga are downstream of the revitalised area, lower Nida levels increase drainage from the floodplains, partly compensating low-flow conditions. Rewetting also increases local humidity and moderates temperature extremes. Infiltration from restored waters raised shallow groundwater by ~ 10 to >50 cm, restricting CO₂ release from the soil (6–20 T/ha/year). Based on the piezometer network, groundwater retention increased across the hydrologically affected area (387.1468 ha) by $>190,000$ m³. Deepening/clearing floodplain lakes increased water storage especially at low levels, slowing overgrowing by emergent and submerged vegetation, improving wintering conditions of animals (oxygen under ice), and increasing habitat diversity. Added standing-water retention was $\sim 3,700$ m³ (Rozlewisko Umianowickie) and $\sim 12,000$ m³ (Rozlewisko Hajdaskie); at higher water levels Umianowickie can reach $\sim 39,700$ m³. In the upper Międzyrzecze, capacity increased by $\sim 21,000$ m³ (to $\sim 39,000$ m³ total), while central Międzyrzecze oxbows can retain $\sim 7,800$ m³.

Water quality

Environmental monitoring was conducted annually at 30 sites along the Smuga Umianowicka (contract, external expert dr D. Halabowski, from Łódź Univ.). Each year, in situ measurements were carried out during at least three field campaigns (spring, summer, autumn). Specific electrical conductivity, oxygen saturation (ODO), dissolved oxygen, salinity, temperature, pH, as well as chlorophyll concentration and several other parameters were measured using a Xylem YSI ProDSS multiparameter meter (Yellow Springs, OH, USA). These measurements were complemented with additional parameters using Hanna Instruments spectrophotometric meters. Because the Stara Nida channel was dry, no baseline measurements were available before the works. In the first year after channel cleaning, water conductivity was clearly elevated, followed by a systematic decrease in subsequent years. This likely reflects gradual post-restoration stabilisation, but also the effects of drought and reduced input from the Hajdaszówka stream. Notably, upstream of the narrow-gauge railway the Stara Nida crosses a limestone rise (“Grodzisko”); disturbance of calcareous marl during channel cleaning may have temporarily increased mineralisation.

Chlorophyll concentration (as an indicator of primary production) remained moderately high throughout monitoring, increased in the second year after cleaning, and then slightly declined in the third year, indicating at least moderate trophic conditions with local tendencies towards higher trophic status.

Oxygen saturation declined from generally good conditions in the first year after cleaning to distinctly weaker conditions in the last monitoring year. This trend may result from increasing organic matter inputs (e.g. bank erosion, leaf litter, decomposition of aquatic vegetation) and

from drought-related lower flows and higher temperatures, which enhance oxygen consumption during decomposition while limiting re-aeration.

Water pH remained stable and slightly alkaline across the whole monitoring period, with very small interannual variability (<0.1). **Overall conclusion for the Stara Nida:** post-restoration monitoring shows that the Stara Nida is losing characteristics of strongly mineralised water, but is increasingly affected by oxygen limitations under persistent low-flow conditions and moderately elevated trophic status (still within acceptable conditions).

In 2023–2025, diatoms in the Stara Nida consistently indicated good or very good water quality. The diatom index (IO) classified ecological status as good (class II) in 2023 and 2024 (0.48 and 0.44), and improved to very good (class I) in 2025 (0.67). In 2024, a slight deterioration relative to 2023 was observed, with IO decreasing and the share of reference taxa (GR) dropping (0.45 to 0.32), alongside a small increase in the trophic index (TI; 2.77 to 2.91). The saprobity index (SI) decreased over time ($1.96 \rightarrow 1.83 \rightarrow 1.28$), indicating declining organic pollution pressure. The most pronounced improvement occurred in 2025, when IO and GR reached the highest values (0.67 and 0.63), while SI and TI fell to their lowest levels (1.28 and 2.13), indicating reduced saprobity and trophic status and a shift towards more reference-like conditions.

Macroinvertebrate-based assessment showed strong interannual dynamics, with a clear shift from poor to good status. In 2023 and 2024, MMI_PL values were low (0.395 and 0.312), corresponding to poor ecological status (class IV). In 2024, despite a slightly higher ASPT ($4.54 \rightarrow 4.67$), key metrics deteriorated, including the abundance and share of sensitive taxa ($\text{Log}_{10}(\text{Sel_EPTD}+1)$ $1.73 \rightarrow 0.76$), taxon richness (S $13 \rightarrow 10$), and density ($5803 \rightarrow 3302$ ind./m²). In 2025, a marked improvement was recorded: MMI_PL (and the normalised ICMI) rose to 0.901, corresponding to good ecological status (class II). ASPT increased to 5.67, richness rose to 24 taxa, EPT families increased from 2 to 8, $\text{Log}_{10}(\text{Sel_EPTD}+1)$ reached 2.87, 1–GOLD increased to 0.34 (lower dominance of tolerant groups), density exceeded 8200 ind./m², and Shannon diversity (H') increased to 1.37. The 2025 community was therefore richer, more diverse and dominated by more sensitive taxa, typical of good habitat conditions for this river type.

These results align with the effects expected after restoring connectivity and flow: after several years, slower-responding macroinvertebrate metrics “catch up” with faster-responding diatoms and begin to reflect improved river condition. Diatoms already indicated very good status in 2025, while macroinvertebrates confirmed this improvement after a lag, shifting from class IV (bare channel) to class II (successful colonisation). This demonstrates the complementarity of both groups in monitoring and shows that restoring flow delivers measurable ecological benefits.

Annual mean water conductivity in the **Smuga Umianowicka** remained high throughout the monitoring period (typically >800 μS , consistent with long-term records since the 1990s), but showed a clear decline toward the end. Conductivity peaked in 2023 (highest values in the series) and by 2025 decreased almost by half to the lowest level recorded, which likely reflects a reduced contribution of highly mineralised water from the Hajdaszówka. The 2023 peak may partly relate to hydrotechnical works, but is more plausibly natural variability driven by the balance between inflow from the Nida system (via the Stara Nida) and from the Hajdaszówka. For context, in 2019 conductivity exceeded 1400 μS in the Smuga and ranged 1412–1838 μS in the Umianowice remnant waterbodies.

Annual mean chlorophyll concentrations were low and stable in 2021–2022, increased markedly in 2023 (stronger phytoplankton blooms/periodically higher eutrophication), and then declined in 2024 and stabilised in 2025 at a still-elevated level (without returning to the 2021–2022 minimum). This pattern is consistent with hydrotechnical interventions and likely linked to removal of shading macrophytes, favouring algal development.

Oxygen saturation varied strongly between years: very high in 2021, sharply lower in 2022, rising again in 2023, and then decreasing in 2024 and remaining lower in 2025. Overall, conditions fluctuated from very good to moderate without a sustained improvement trend; the 2023 increase is consistent with improved flow and re-aeration, while the later decline likely relates to hydrological drought and warming.

pH remained slightly alkaline throughout, with a slight downward tendency. Values stayed within a typical range for buffered surface waters and do not indicate risks of acidification or excessive alkalinity. The small decrease may reflect increased contribution of water from the Nida system (notably in 2023) alongside declining input of highly mineralised Hajdaszówka water in subsequent years.

After flow restoration in the Smuga Umianowicka (Q1/2021), 220 marked *Unio pictorum* from the Morawica reservoir were stocked and distributed across 30 permanent transects (Q3/2021). Subsequent wading surveys (Dr D. Halabowski, University of Łódź) recorded very low detectability of the marked mussels: 7 (summer 2021), 2 (autumn 2022), and 0 in autumn 2023–2024 and summer 2025. Despite this, monitoring showed rapid development of a multi-species unionid assemblage. Records included 25 individuals of four species in Q3/2021, 18 in 2022, and 19 in 2023, with juveniles appearing for the first time in 2023, including 2 juvenile *Unio crassus* (five species total). In 2024, 28 juvenile *U. crassus* were recorded, alongside similar numbers of other unionids. Overall, the Smuga quickly regained a typical lowland unionid community, indicating restored hydrological connectivity; the lack of marked *U. pictorum* recaptures is most likely due to low detectability under dense vegetation rather than clear population loss. **Overall conclusion for the Smuga:** monitoring in 2021–2025 indicates decreasing conductivity in the Smuga, persistent moderate trophic conditions (chlorophyll), variable but mostly acceptable oxygen conditions, and stable, non-limiting pH.

In both **floodplain lakes near Antoniów** (the Western and Eastern), electrical conductivity was high at the beginning of monitoring and remained relatively stable, increasing only in 2024, with very similar values in both waterbodies. This increase may be linked to hydrological drought, but was clearly amplified by sediment re-mobilisation following dredging. The Eastern Lake consistently showed higher conductivity than the Western Lake, suggesting a stronger influence of drainage from the Stara Nida. This interpretation is supported by a marked decrease in 2025, coinciding with drought conditions and the lack of inflow from the mineralized Hajdaszówka.

Chlorophyll dynamics indicate that dredging affected both waterbodies in the same direction, but to different degrees. Before the intervention, the Western Lake had clearly higher chlorophyll concentrations than the Eastern Lake, indicating stronger eutrophication and a more phytoplankton-dominated character. In the first year after dredging, trophic status in the Western Lake did not decrease markedly, suggesting that removal of organic sediments did not permanently reduce primary production; this may reflect possible nutrient inputs from agricultural land on the Antoniów hill. In contrast, in the Eastern Lake chlorophyll continued to decline after dredging and remained lower in the following year, consistent with reduced internal nutrient loading (phosphorus and other nutrients), improved water transparency, and a shift towards submerged vegetation at the expense of phytoplankton. In 2025, chlorophyll decreased clearly in both oxbows, which may be associated with further development of bottom vegetation, reduced nutrient inputs. Overall, dredging effectively reset the successional stage of the oxbows and reduced the risk of blooms, oxygen depletion events, and other algae-related disturbances.

Before dredging, oxygen conditions were moderate; the Eastern Lake was generally better oxygenated than the Western Lake, and this pattern persisted throughout the project, likely due to differences in depth–area relations, vegetation cover, and/or more frequent water exchange with the nearby Stara Nida river. Immediately after dredging, oxygenation improved markedly

in both lakes, reaching the highest values in the monitoring series—consistent with removal of oxygen-demanding mud and improved mixing in a deepened basin. In subsequent years, oxygen saturation gradually declined to levels comparable to pre-dredging conditions, likely due to renewed accumulation of organic matter and higher temperatures. Vertical profiles showed high oxygenation down to ~0.6–0.8 m, followed by a decrease with depth; however, oxygen persisted down to ~2 m and an anoxic zone developed only below this depth. This indicates a strong niche gradient and substantial oxygen-holding capacity (e.g., under ice cover). Water pH in both lakes remained stable and slightly alkaline throughout the study period, with only minor interannual variation. **Overall conclusion for Antoniów Lakes:** dredging did not cause significant negative changes in lakes functioning. Removing organic matter increased oxygen potential and ecological niche diversity, while reducing the risk of algal blooms, as reflected by a sustained decline in chlorophyll (by more than half).

Fish monitoring

Fish monitoring (conducted by ichthyologist, Jacek Dołęga, employed by the project) was used to assess the ecological response to aquatic habitat restoration. In 2020–2025, repeated research catches were carried out at the sites most affected by restoration works (excluding the C7 sites) in autumn (WFD methodology). Sampling covered 40 locations in: the restored and rewatered Old Nida (sections above and below the narrow-gauge railway line), the Smuga Umianowicka (including a sequence of 18 × 100 m reaches), and selected water bodies/connectivity zones within the Umianowice Delta (floodplain Lakes, the SU–SN culvert, and the Umianowice Wetland).

In total, 28,545 fish were recorded, representing 29 species from 13 families and 6 orders. The dataset included six legally protected species (*Rhodeus amarus*, *Cobitis taenia*, *Misgurnus fossilis*, *Barbatula barbatula*, *Leuciscus aspius*, and *Sabanejewia baltica* [= *S. aurata*]) and six confirmed host species for *Unio crassus* glochidia (*Rutilus rutilus*, *Scardinius erythrophthalmus*, *Leuciscus cephalus*, *Alburnus alburnus*, *Leuciscus leuciscus*, and *Chondrostoma nasus*—the latter recorded only once in 2022 at a single site). Five alien invasive species were also recorded (*Ameiurus nebulosus*, *Ameiurus melas* - requires confirmation, *Pseudorasbora parva*, *Percottus glenii*, and *Carassius gibelio*), all already present in the Delta before restoration.

Overall species richness did not change markedly before vs. after restoration, but abundance increased locally, especially in the Umianowice Wetland (wintering area in the main reservoir of the wetland). In the restored Antoniów Lakes the number of fish species increased from 9 to 16 and in the rewatered lower Old Nida (previously fishless), **15 species** were recorded in total. Fish were present at all seven monitored sites, including protected species (*C. taenia*, *M. fossilis*, *R. amarus*, and *B. barbatula*) and key *U. crassus* host species (notably *R. rutilus*, *S. erythrophthalmus*, *L. cephalus*, and *A. alburnus*).

In the upper Stara Nida, main supply reach, species richness remained stable (17 species). Fish abundance decreased immediately after the works but showed gradual recovery in subsequent years. Protected species and *U. crassus* host fishes were consistently recorded; in spring, the assemblage was dominated by protected ***M. fossilis***, due to its spawning aggregations there. Only one invasive species (*P. glenii*) was recorded and at low abundance. In the restored lower reach of Smuga Umianowicka, species richness was similar pre- and post-works (22 vs. 21 species). A notable finding was the **first local record of *Sabanejewia baltica*** (single observation). Two protected species - *C. taenia* and *R. amarus* (dominant)—occurred at all 18 sampling reaches. Invasive *A. nebulosus* remained common; *P. parva* and *C. gibelio* were recorded only before restoration and were not confirmed afterwards, while two native species (*Abramis brama*) and the protected *B. barbatula* appeared after restoration. The fish

community is favourable for *U. crassus*, as *L. cephalus* (a key host) was recorded at all but one reach.

In 2024, 1,057 fish from 12 species were captured in the Umianowice Wetland (in 2025 electrofishing was limited due to the release of *Emys orbicularis*). *R. rutilus* dominated (51.2%), followed by *Leucaspis delineatus* (15.3%) and *A. nebulosus* (14.38%). Invasive species other than *A. nebulosus* were rare (*P. glenii* - single individual; *C. gibelio* - 0.28%). Protected *R. amarus* (1.61%) and *M. fossilis* (0.19%) were present; in 2025, *C. taenia* was recorded there for the first time (1.37%). Late-autumn catches in 2025 confirmed that the wetland functions as an important wintering area, with dense fish schools in the deepest parts, mainly *R. rutilus*. A high share of *Esox lucius* was also recorded in 2025 (7.17%), including large individuals (>70 cm, ~3 kg), suggesting potential for natural control of invasive fish.

Fish movement (PIT-tagging)

From 2023, fish in the Smuga–Umianowice Floodplain system were PIT-tagged and tracked via recaptures and a submersible Biomark antenna installed in the Przekop (see C7 for more details). The results indicate ~7% recapture/detection, and confirm **passability of existing and newly built hydraulic structures**, enabling movements between spawning and wintering habitats. The longest documented movement was by a ~14 cm roach (*R. rutilus*), detected in the Przekop after moving >3 km upstream through the Smuga and across multiple culverts. Chub (*L. cephalus*) showed apparent site fidelity, potentially supporting stable local host assemblages for *U. crassus*, while roach formed winter aggregations in the Umianowice Wetland, arriving in late autumn from different parts of the Delta.

Impact of rewetting on birds

In 2025, 146 bird species were recorded in the project area, including 108 breeding or probably breeding species. Twenty-three species listed in Annex I of the EU Birds Directive were observed; 13 of these formed part of the breeding avifauna in the project area or its immediate surroundings (including Great Bittern, White Stork, Marsh Harrier, Corncrake, Crane, Spotted Crake, Grey-headed and Black Woodpeckers, Barred Warbler, Red-backed Shrike, Woodlark, Kingfisher and Bluethroat). Little Crake was considered very likely breeding, although not confirmed directly. Several other Annex I species were recorded only as non-breeders or migrants (e.g., Golden Eagle, White-tailed Eagle - formerly breeding, Hen Harrier, Black Stork, Great White Egret, Ruff, Common Tern, Wood Sandpiper).

Overall species richness in 2025 was similar to the baseline year 2019 (136 species; 107 breeding/probably breeding), indicating that the key change was not the total number of species, but shifts in abundance and local distribution of wetland and open-habitat species. Three species regarded as breeding in 2019 were classified as non-breeding in 2025: White-tailed Eagle, Black-tailed Godwit and Turtle Dove. The eagle likely abandoned the nest after the large wildfire in 2020 and disturbance around the nest site; territorial behaviour in 2025 suggests potential recolonisation in coming years. Godwit remained rare and irregular throughout the project, mirroring its national decline, and similar constraints apply to Eurasian Curlew, which persisted only at very low levels (although suspected to breed in 2025).

Improved hydrological conditions clearly benefited birds associated with floodplain lakes and open water. Breeding numbers increased for Greylag Goose and several “meadow ducks” (Garganey, Shoveler, Gadwall), as well as coots/rails and Little Grebe. Habitat restructuring after rewetting—more open water, higher and more persistent water levels through the breeding season, and a shift from dense reedbeds towards mosaics including cattail and low sedge stands—improved nesting and foraging conditions and reduced access to nests for terrestrial

predators.

Project outcomes also appear positive for Great Bittern: after long absence (since the mid-1990s at the main floodplain site), the species returned as a breeder from 2024, and in 2025 was recorded at two separate locations. Marsh Harrier remained stable with an upward tendency since 2024; despite reductions in reedbed area due to management, higher water levels and longer inundation likely lowered nest predation risk and reduced the likelihood of large reed fires.

Grazing implemented within the project produced measurable benefits for open-ground waders, particularly Common Redshank and Northern Lapwing, by maintaining short swards and early-successional structure. A mixed colony on the “Czeska” pasture has remained stable and now holds a substantial share of the local population; Redshank abundance increased markedly compared with 2019, while Lapwing was overall stable, with the highest numbers in 2023 when newly created early-successional edges were widely occupied.

Rewetting also created attractive stopover/foraging conditions for non-breeding waterbirds and migrating waders, although such shoreline feeding habitats tended to overgrow quickly, reducing their suitability in subsequent seasons. A particularly encouraging result was the return of rare crakes: Spotted Crake increased sharply immediately after the major hydrotechnical works (peak in 2023, 7 calling males), consistent with expanded spring waterlogging in sedge wetlands; numbers later declined and stabilised at a lower level. Little Crake remained irregular and hard to detect, but suitable habitat is now more widespread.

Among open-habitat passerines, Red-backed Shrike and Barred Warbler increased, likely supported by a combination of suitable shrub mosaics and improved productivity/food resources. Corncrake showed a strong increase during the project, consistent with wetter grasslands and a more favourable mosaic of mown and taller vegetation.

Finally, wide valley-scale surveys (from Pińczów to the river mouth) in the spring of 2025 (conducted by prof. W. Solarz, prof. T. Zając, dr W. Bielański and W. Król from IOP PAN) indicated that **no other section of the Nida valley combined comparable species richness and high numbers of rare species of birds**, suggesting that the restored delta —over the longer term - may function as an **important source area** for recolonisation elsewhere in the valley.

Active bird conservation actions

Since 2020, no White-tailed Eagle (*Haliaeetus albicilla*) breeding has been recorded at Umianowice. A separate pair bred in Młodzawy; as part of active nest protection, the nest was monitored using a camera trap. Two chicks died at around one month of age, most likely due to secondary poisoning after the adults provided contaminated prey. In subsequent years, eagles were repeatedly observed within their former territories (field observations and camera-trap records), but without confirmed nesting attempts.

In 2025, breeding was confirmed again in the Młodzawy riparian forest. The pair built a new nest close to the old one; two young were observed at the nest in June, and in July one juvenile was seen flying over nearby fishponds together with the adult pair. The nest was reinforced and has remained stable to date.

In addition, two out of ten newly installed *Ciconia ciconia* nesting platforms were occupied already in the following breeding season.

Alluvial forests protection (91E0) (C.2)

Changes in alluvial forest habitats generally require longer timeframes than a LIFE project. Key hydrotechnical works in the Old Nida channel were carried out mainly in 2022, while

maintenance/clearing of drainage ditches in the Młodzawy forest was completed only in 2024; therefore, major habitat responses are expected mainly in the medium to long term. The established monitoring plots and the piezometer network will allow the site managers to track ongoing changes; the Młodzawy Forest functions as a reference complex within the State Forests (RDLP), intended for long-term observation of forest responses to environmental drivers.

A major anticipated pressure is ash dieback, one of the most serious forest diseases in Europe in recent decades. It affects *Fraxinus excelsior* and is caused by the invasive fungus *Hymenoscyphus fraxineus*. In Poland it has been recorded since the late 1990s and has led to strong declines of ash in riparian forests (even in primeval conditions of the Białowieża Forest); only some individuals show partial tolerance. Because ash is structurally important for 91E0, the project's priority - particularly in Młodzawy - was to shape hydrological conditions to favour ash-rich alluvial stands, strengthening them and supporting regeneration. Two alluvial forest complexes were addressed: Umianowice alluvial forest (post-agricultural origin) was severely dried out and over-opened by illegal logging; conditions deteriorated further after a major fire in 2020, which increased canopy opening and promoted expansion of reed/nettle and other tall-herb vegetation. The key limiting factor remains insufficient soil moisture, although 2025 monitoring indicates early signs of improvement following the project's water-restoration measures; Młodzawy alluvial forest (19th-century plantings) was strongly influenced by historical fish-pond water management. Neglect of ditch maintenance in the southern part caused permanent waterlogging, stagnating water tables, loss of ash regeneration, dieback of ageing trees and a shift towards alder swamp communities. To counter this, existing perimeter ditches were cleared/rehabilitated in the southern sector and equipped with gates to regulate water levels - both to remove excess water and to retain water during drought. State Forests declared continuation of the site's reference status, and a reserve proposal is being prepared.

Prolonged waterlogging can rapidly induce root hypoxia/anoxia in ash, reduce nutrient uptake, increase toxicity of reduced soil compounds and raise susceptibility to pathogens. Therefore, management aims to maintain a regime that avoids both long-term flooding/stagnation and excessive drying, supporting natural regeneration of forest-forming species.

Eight monitoring plots - six in Młodzawy and two in Umianowice - were assessed using the GIOŚ method in 2020 and again in 2025 by an external expert, Dr Donata Suder (ITP-NRI). The overall conservation status did not change markedly compared with 2020, which is expected given the short time since the interventions and the inertia of forest succession. The "Characteristic species" indicator remained favourable (FV) at all plots, confirming habitat identity, and indicators related to dead wood generally improved compared with the baseline. The water regime remained the main limiting factor: in Młodzawy several plots were still assessed as too wet (excess waterlogging), while in Umianowice conditions were still too dry, although improving. Natural regeneration did not show major change overall, but ash seedlings appeared in the southern Młodzawy sector. At the same time, pressure from expansive and invasive species in the herb layer increased relative to 2020 (e.g., *Solidago gigantea* and locally *Impatiens* spp.), which can hinder regeneration - especially under open canopy conditions. In Umianowice, the risk of recurring fire remains a critical threat, although improved wetness and ongoing site supervision reduce access and ignition risk. Overall, the hydrological works have produced the first localised improvements (notably in Umianowice and the southern Młodzawy complex), but measurable upgrades in the overall habitat assessment will require sustained management and subsequent monitoring cycles.

Vegetation changes (C2 and C3.)

Vegetation changes were assessed by comparing the 2019 and 2025 vegetation maps (pre-intervention vs. post-intervention) and, at a finer scale, by analysing belt transects in the central part of the Delta (shares of ecological plant groups and diversity metrics such as species richness and the Shannon index). The interpretation also accounted for the effect of mowing, because the raised water level affected areas under meadow management. Reedbeds dominated the Delta in 2019, covering nearly half of the area (~300 ha), while semi-natural and managed meadows and pastures account for c. 29%. Smaller areas were occupied by alder carr and willow scrub, mid-field shrublands, dry fallows and ruderal vegetation, with the rarest habitats including calcareous fens, calcareous and sandy grasslands, and aquatic vegetation. Annex I habitats recorded in the Delta include 3150, 6120*, 6210*, 6410, 6510, 7230 and 91E0, as well as valuable eutrophic wet meadows (Calthion). The most valuable patches included calcareous fens and species-rich wet meadows hosting rare plants (e.g. *Carex davalliana*, *Sesleria uliginosa*, *Dactylorhiza incarnata*, *Ophioglossum vulgatum*, *Ostericum palustre*).

After six years, the list of vegetation units remained broadly similar, but their spatial extent changed. Open water increased together with aquatic and amphibious vegetation, while reedbed area decreased (reed and reed canary grass communities). Some small, high-value communities recorded in 2019 were not relocated in 2025, likely reflecting their very limited original extent and/or sensitivity to hydrological variability. Several additional aquatic and helophytic communities were recorded in 2025 and may previously have been overlooked due to their small patch size. Moist meadow communities expanded locally, and new pasture-related communities appeared where grazing was introduced. In 2025 a clear increase in the area under extensive mowing was documented, including on privately owned dry meadows that were abandoned in 2019.

Vegetation of the floodplain wetlands remains relatively well preserved; however, an increase in invasive alien plants is a growing concern, particularly *Solidago gigantea*. The area of dense stands of this species expanded from ~1 ha in 2019 to 3.2 ha in 2025, and patches of woody vegetation with *Robinia pseudoacacia* increased from ~0.5 ha to ~0.9 ha. Early intervention is most effective, while regular mowing/grazing and locally prolonged surface wetness can help slow the spread.

On unmanaged plots, the native expansive grass *Calamagrostis epigejos* also spread rapidly, with its community area increasing from 1.7 ha to 8.8 ha within six years. Frequent mowing and, potentially, grazing by animals that do not avoid this hard grass may reduce its expansion, although removal is difficult once large stands are established.

Because reed and sedge beds are naturally species-poor, changes in species richness and diversity indices were small and are not a sensitive measure of hydrological effects. In contrast, transect monitoring clearly showed a shift in functional composition after rewetting: the number and frequency of aquatic and temporarily flooded-species increased strongly, while ruderal species declined. Aquatic species recorded on transects increased from 3 species in 2020 (5 occurrences) to 11 in 2023 (46 occurrences) and 12 in 2024 (44 occurrences), including *Potamogeton* spp. and genera such as *Lemna*, *Batrachium*, *Utricularia* and *Callitriche*. Species typical of periodically inundated habitats increased from 2 to 11 species, and the number of helophyte/reedbed species increased from 18 to 29, including several taxa not recorded in 2020 (e.g. *Ranunculus lingua*, *Carex pseudocyperus*, *Sagittaria sagittifolia*, *Schoenoplectus lacustris*, *Sparganium erectum*).

Reintroduction of the *Emys orbicularis* (C.6)

The reintroduction of the European pond turtle (*Emys orbicularis*) was a key action supporting the overall restoration programme in the Umianowice Wetland. The wetland was shaped to create a complex mosaic of ecological conditions, intended to provide a diverse and abundant food base for a viable turtle population. The existing sandy island was surrounded by water and soggy, marshy zones to reduce access for cats and canid predators. As a long-lived and slow-maturing species, the first breeding effects are expected only after more than a decade. A total of 40 turtles were released, including 17 fitted with transmitters. The released individuals were large-bodied (mean 196 g; median 208 g), with substantial energy reserves that should support survival during the initial acclimatisation period. Releases took place in an optimal area with relatively deep water and dense vegetation cover, providing shelter immediately after release. Staggered releases over several days helped spread potential risk. Two weeks after release, the south-westernmost individual had moved more than 200 m from the release site, while the remaining individuals dispersed over an area exceeding 800 m². To date, telemetry has recorded no mortality and has confirmed normal activity and dispersal within the site, indicating a successful reintroduction.

Reintroduction of *Unio crassus* (C.7)

Telemetry study in the main channel of the Nida near Antoniów showed that *Unio crassus* concentrates mainly within near-bank stands of bur-reed (*Sparganium*). Because bur-reed collapses in autumn and forms a detrital layer, intrusive sediment sampling would disturb overwintering juveniles; therefore, early monitoring focused on using low-impact sampling. Juveniles were detected early, including two 0+ individuals in 2020 at the “under the maple” site, and recruitment in 2021 was much higher (22 juveniles), suggesting that clustered placement of adults was more effective than the initial uniform distribution (although year effects cannot be excluded). Flood-driven channel reshaping at the “Meanders” site likely eliminated or displaced juveniles there in 2021.

Surveys of juvenile mussels carried out in summer 2023 confirmed the presence, within the monitored “telemetry” river sections, of numerous two- and three-year-old individuals showing very good growth. On the left-bank section at Antoniów, 42 individuals were found within a bur-reed (*Sparganium*) stand, while on the Meanders section 68 juveniles were recorded in a comparable stand located behind the “beach” (in the downstream part of the bend). In July 2023, an additional check of the bur-reed belt on the right bank at Antoniów plot was conducted. A team of four people recorded as many as 144 individuals aged 2–3 years, mostly in the downstream part of the large bur-reed stand, suggesting that glochidia detaching from fish drift downstream and are retained within the lower, dense part of the stand. The same river reach, but targeting other potential mussel beds/microhabitats, was surveyed again in May 2025, resulting in the finding of an additional 23 individuals at Antoniów in two beds and 48 individuals at the Meanders in three beds/microhabitats.

Overall, the locations of functional, recruiting aggregations largely matched the habitats indicated by telemetry, with minor exceptions at sites influenced by bank undercuts or erosion. In July 2021, a pilot translocation of *Unio crassus* (three individuals per point; 36 in total) was carried out to test tolerance to the stream’s high conductivity. Post-release checks were delayed by flooding; in September, 15 individuals with still-active transmitters were relocated and all observed mussels were alive and in good to very good condition (most transmitters had already expired). In July 2023, only one previously missing tagged individual (L10) was found upstream of the culvert, still in good condition. Subsequent surveys on the Smuga monitoring transects recorded 46 live juvenile *U. crassus* (25–46 mm). Additional checks in the lower

Smuga (near Skowronno) confirmed established juvenile aggregations (N=18; c. 2–3 years old) at 11 sites, indicating spontaneous development of fully functional mussel beds.

In 2023, a “technical” shoal was established in the Przekop; monitoring recorded the first juvenile in 2024. PIT-tag/antenna observations in the Przekop indicate intensive fish movement through the Przekop, suggesting effective dispersal of glochidia within the Smuga. Autumn 2024 checks at eight Old Nida reintroduction sites confirmed live adult *Unio crassus* at four introduction sites (1–6 individuals per site; 16 adults in total). Detectability is very low due to dense aquatic vegetation, shallow water forcing mussels into deeper, slower sections covered by floating mats, and the tendency of mussels to burrow into sediment; therefore, the presence of shells indicates some post-relocation mortality but does not prove the loss of entire beds.

Like in the main Nida channel near Antoniów, reliable evaluation of reintroduction success in the Stara Nida and 12 introduction sites from 2024, downstream from the Delta, in the main channel of the Nida will be possible primarily through evidence of local recruitment (juveniles; like in the Smuga), expected in the Stara Nida after colonisation by host fish and in all introduction sites typically assessable after ~3–4 years.

Summary: Within the Nida branches in the Delta, 20 mussel beds were established (11 in the Smuga, 9 in the Stara Nida), including 8 with confirmed recruitment. In the main channel of the Nida, two populations can be distinguished that developed after the reintroduction of telemetry-tracked individuals, consisting of 4 beds at Antoniów and 5 on the Meanders, shaped primarily by habitat heterogeneity, with intensive recruitment. In the Smuga Umianowicka, further rapid development of recruitment should be expected, and the same is likely for the Old Nida. This gives a total of 29 beds, and they will certainly continue to expand in subsequent seasons as these watercourses are further colonised and, presumably, as other channels within the same river system are colonised (Branka, Hajdaszówka, the remaining sections of the Old Nida). In the Delta system, the key prerequisite is, of course, the maintenance of continuous flow. Adding the 9 beds established in 2024 in the main Nida channel brings the total to 38 beds.

Reintroduction using cages/pens (pol. “sadz”): In November 2020, ten benthic samples (2 × 0.33 m each) were taken at each cage site. No juvenile *Unio crassus* were detected; only one very small young-of-the-year unionid was found. Subsequent inspections in 2024 and 2025 did not confirm the presence of *U. crassus*.

In-situ rearing cages (incubators) and transfers: Checks of incubators placed in natural conditions (three in the Nida at Antoniów—within *Sparganium* stands, “under the maple”, and in a side channel—and one in the Warkocz) were unsuccessful. In 2022, both rivers carried high loads of organic suspended matter, which accumulated inside the cages and likely caused mortality; juveniles did not survive. Given frequent disturbance in the Nida (e.g., anglers and kayakers) and the high content of coarse organic suspended matter, cage/container-based methods are not suitable under local conditions.

Ex-situ rearing: Although artificial rearing can bypass the extremely high mortality of early juveniles, in this project survival beyond the first winter was low and unexplained, and growth in captivity was very slow (millimetres per year vs. 2–3 cm in the river), for unknown reasons. Overall, rearing was far less effective than adult translocation with a high share of gravid females, and it also poses a higher risk of reduced genetic diversity if based on few broodstock. A key positive outcome was improved knowledge of larval fish host suitability, including confirmation that some abundant fish species (e.g., roach and perch) are not effective hosts.

Protection and ex situ breeding of other aquatic organisms, with a focus on the *Anisus vorticulus* (C.8)

Four strictly aquatic species listed in the EU Habitats Directive were recorded in the Delta's lakes and channels: *Anisus vorticulus*, bitterling (*Rhodeus amarus*), weatherfish (*Misgurnus fossilis*) and spined loach (*Cobitis taenia*). Fish monitoring showed no signs of decline in weatherfish or spined loach; weatherfish were observed spawning in the newly cleared channel of the Old Nida. For bitterling, benthic monitoring in the Smuga confirmed successful reinforcement of unionid mussels (including *Unio pictorum*—a key host), alongside a broader improvement in other unionids.

Anisus vorticulus was recorded at two sites during the project, but its occurrences were unstable. Ex situ breeding at the Nature Education Centre (OEP) in Umianowice proved successful: offspring were produced from founder snails collected at “Szkłany Dół”, and the breeding stock was strengthened over time, including effective rearing in a larger outdoor tank. Reintroduction trials were carried out by releasing captive-bred snails into several restored water bodies (including the Konieczynka pond, the Western and Eastern Antoniów Lakes, and the Smuga) in 2024 and again in 2025. Post-release surveys have so far detected only a single individual from Konieczynka (reported by dr D. Halabowski), which is expected given the size and depth of the recipient sites and still-developing marginal vegetation; population development is therefore anticipated in subsequent years.

Overall, the project established a reliable *ex situ* breeding methodology for *A. vorticulus* and created a framework for continued reinforcement and long-term monitoring. With increasing drought pressure, the combination of hydrological restoration (expanding stable aquatic habitat) and ongoing supplementation from captive breeding is expected to improve the persistence prospects of this highly vulnerable, declining species.

Restoration of *Vertigo moulinsiana* and *Vertigo angustior* (C.9)

Baseline surveys in August 2019 assessed the Inland Nida River Delta for *Vertigo angustior* and *Vertigo moulinsiana*. From 100 pre-selected random points, 26 located in wetlands were sampled (25 × 25 cm, including vegetation, litter and topsoil). Samples were processed in the laboratory following the GIOŚ methodology. In 2019, *V. angustior* was recorded at six sites and *V. moulinsiana* at two, mostly as single individuals; overall population status was therefore assessed as unfavourable, with only one site (no. 24) showing high density and a favourable status.

Between 2010 and 2019 the area was repeatedly affected by habitat disturbances (fires, droughts and mowing that removed vegetation together with snails), which contributed to a gradual retreat of both species from formerly occupied locations.

In 2025 the survey was repeated using exactly the same protocol and the same monitoring points. *V. angustior* was recorded at 14 sites and *V. moulinsiana* at seven. Unfavourable status was found at five sites for *V. angustior* and three sites for *V. moulinsiana*; in the remaining sites the populations were assessed as favourable (nine sites for *V. angustior* and four for *V. moulinsiana*). Overall, favourable status now predominates, and the number of occupied sites increased markedly (from 6 to 14 for *V. angustior* and from 2 to 7 for *V. moulinsiana*). Local losses were also noted (two sites for *V. angustior* and one for *V. moulinsiana*), reflecting habitat change during the project. Where sites became too wet, *V. angustior* declined, while *V. moulinsiana* could appear; conversely, local drying likely triggered *V. moulinsiana* to shift to more suitable areas. Overall, the improvement of water conditions facilitated the development of habitats suitable for both species, as reflected by the increased occupancy.

Active restoration was supported by turf transplants to new sites. *V. angustior* was introduced at 10 new sites and was subsequently confirmed at four of them; at one of these, a juvenile *V. moulinsiana* was also recorded, indicating spontaneous colonisation. *V. moulinsiana* was established at six out of 10 newly created sites, suggesting that raised groundwater levels improved conditions for this rarer species (*V. moulinsiana* is classified as VU on the IUCN Red List, while *V. angustior* is NT). Consistent with this, the extent of suitable habitats for *V. moulinsiana* increased substantially between 2019 and 2025, including expansions of *Glycerietum maximae* and *Glycerietum maximae*–*Carex acutiformis* communities. Current occupied areas are estimated at ~23.7 ha for *V. angustior* and ~1.5 ha for *V. moulinsiana*. Notably, *V. angustior* was also found on mown meadows; given that mowing is often considered a major driver of decline, its persistence there suggests exceptionally favourable habitat conditions - most likely improved hydrology - within the Delta.

Ex situ breeding. To improve captive rearing of *V. moulinsiana*, samples were collected from plant surfaces, internal plant tissues (endophytes) and the snail gut to characterise dietary components. At least 44 fungal genera were identified (including saprotrophs, potential plant pathogens and endophytes), along with multiple slime mould taxa. These results will support the development of an improved diet for *V. moulinsiana*, facilitating ex situ culture. A major milestone was obtaining eggs from captive individuals, achieving successful hatching, rearing juveniles to adulthood, and producing a second generation. This breeding success represents an innovative approach not previously applied in Europe and may support future LIFE projects by enabling ex situ propagation for reintroductions, even where viable donor populations are lacking.

Restoration of the *Bombina bombina* and the *Triturus cristatus* (C.10)

Action C10 (2019–2025) focused on restoring and strengthening populations of the great crested newt (*Triturus cristatus*) and the European fire-bellied toad (*Bombina bombina*) in the Inland Nida River Delta through conservation breeding, creation and naturalisation of breeding habitats, releases, and multi-year monitoring.

For *T. cristatus*, the programme started in 2019 with collection of larvae and adults from three source sites (25 larvae and 20 adults), followed by larval-only collections in 2021 (16) and 2022 (21). Captive rearing (2020–2022) used individual larval husbandry, controlled metamorphosis and annual winter hibernation, with 100% survival during overwintering. In 2021, three dedicated breeding ponds were created in Umianowice (each ~300 m²; depth to >1.5 m) and actively naturalised. A total of 61 captive-reared individuals were released in 2021–2023 (20, 20 and 21, respectively). From 2022, monitoring confirmed rapid breeding and strong population growth (150 captures in 2022, 323 in 2023, 735 in 2024 and 1,226 in 2025). Given this dynamics, ex situ breeding was discontinued from 2023. In 2025, the species was also recorded outside project ponds at three locations in surrounding forests, indicating successful reinforcement and expansion.

For *B. bombina*, work focused on breeding habitat creation and phased releases. In 2021/2022, a dedicated pond (“Koniczynka”) was constructed (~0.1 ha) with extensive shallow areas (30–50 cm) and local depressions to ~1.5 m. Limited introductions were made in 2023 (nine individuals), followed in 2025 - after habitat stabilisation - by the main release of 24 individuals from the conservation breeding stock, sourced from three local populations in the Motkowice and Stawy area. Increased overall wetness across the project area also supported spontaneous (re)colonisation of additional sites, and the new ponds functioned as multi-species amphibian breeding habitats. The invasive Amur sleeper (*Perccottus glenii*) was detected in Koniczynka, prompting administrative action and targeted removal; other amphibian ponds remained free of invasive fish.

Annual amphibian inventories (2019–2025) showed that while local counts at some sites were generally lower in 2024–2025 than in 2019–2020, the number and spatial distribution of occupied sites increased markedly, consistent with habitat creation and rewetting. Broader declines across many species during 2020–2024 are interpreted as regional, not project-driven, as hydrotechnical effects became evident only from 2023. This is supported by severe drought conditions affecting source populations in 2022. Meteorological data indicate reduced spring and early-summer precipitation in 2022–2025, and in 2025 nearly 20 ponds that initially exceeded 60 cm depth dried out by late April - **outside the re-wetted core area** where water retention was successfully stabilised.

Overall, Action C10 resulted in stable, self-sustaining populations of both target species and created durable wetland breeding habitats that strengthen ecological resilience in the Nida valley and provide a replicable model for other river valleys, implemented before prolonged hydrological drought could irreversibly damage local amphibian populations.

Conservation of the gene pool of plant species (C.11)

Thermophilous grasslands occur on the western, well-insolated part of the Antoniów hill, which also includes the early-medieval hillfort “Stawy” (11th–12th century). By 2019, only small, secondary patches of calcareous grassland (Festuco-Brometea; *Origano-Brachypodietum pinnati* type) persisted, with typical warm-adapted species (e.g. *Origanum vulgare*, *Clinopodium vulgare*, *Agrimonia eupatoria*), but they were strongly encroached by shrubs (blackthorn, dogwood, bramble). The site was additionally affected by the expansion of *Calamagrostis epigejos* and the spread of invasive alien plants, mainly *Solidago gigantea* (and locally *Erigeron annuus*). Valuable flora included *Libanotis pyrenaica* and a locally abundant *Lavatera thuringiaca* (often considered a relic of medieval cultivation).

In late October 2023, following partial shrub removal, three strictly protected species were introduced to strengthen habitat 6210: *Dorycnium germanicum*, *Serratula lycopifolia* and *Linum flavum*. In 2024, at the start of the growing season, the calcareous grassland was inspected to assess the establishment of *Dorycnium germanicum* seedlings planted in autumn 2023. The initial verification showed 100% rooting and a very good condition of individuals of this species. The autumn verification confirmed earlier observations regarding the success of the introduction of *Dorycnium germanicum* - all seedlings were well rooted and remained in very good condition. The first flowering of one individual was also recorded, indicating successful establishment of the species in the new habitat. Unfortunately, during the spring inspection no young seedlings of the other two species (*Serratula lycopifolia*, *Linum flavum*) were observed.

While shrub cover decreased in managed parts of the site by 2025, the area occupied by undesirable species (especially *C. epigejos* and *S. gigantea*) increased, indicating the need for regular extensive grazing—preferably with a small goat herd—to control regrowth and maintain the calcareous grassland.

Visitor management (C.12) and measures to protect the inland delta (C.13)

No negative impacts of visitor-management measures on the site’s natural values were identified. The educational trails are used regularly by visitors to the Centre, including for low-impact physical activity (e.g. jogging, Nordic walking). The observation infrastructure is also popular; visitors often spend extended periods in the tower or hide for wildlife watching. Wetlands, floodplain meadows and river spill areas favour extensive, nature-based recreation with low environmental pressure. The project has created an attractive offer for birdwatching, nature and landscape photography, environmental education (field classes, “green schools”,

workshops), health-oriented recreation, and recreational angling. Because wetlands are inherently difficult to access, a key principle has been not to facilitate entry into the most sensitive areas. Instead, easily accessible trails were designated to provide good visitor experience while concentrating use in attractive but less vulnerable zones.

In parallel, actions were taken to reduce major sources of anthropogenic pressure. Since 2020, and with more frequent on-site presence, no arson incidents were recorded within the Delta. Off-road traffic (motocross/quad bikes) was reduced through direct interventions and outreach, including online discussions. Cooperation with the PZW Fisheries Guard, volunteer fire brigades, Police and hunting associations increased patrol frequency, and illegal fishing was effectively eliminated; project staff—especially when working in water—were repeatedly checked during routine controls, reflecting improved enforcement and site security.

Conclusions

1. Analyses of channel morphology along the Nida indicate that sites with comparable, restoration-suitable geomorphological characteristics are very limited; they are essentially confined to the Delta, and the reaches near Zagość and Wiślica. Therefore, when planning further restoration (e.g. under the Nature Restoration Law), it is crucial to identify such locations as early as possible, before they are altered by ecological change or land-ownership processes.
2. The main constraint for restoration is land ownership. In the Delta, a unique situation was encountered where large areas were state-owned (managed by ZŚiNPK) alongside private lands whose owners either made them available or sold them for project purposes.
3. Given the hydrological drought observed in recent years, restoration was implemented at the last possible moment: remnant water bodies and minimal or absent flow under drought conditions would likely have led to the complete loss of many species, which were maintained thanks to water supplied to the Delta system. However, drought also necessitates establishing an independent water abstraction for the Delta, retaining water in the upper part of the Delta as well, and restoring the inflow of highly mineralised water from the Hajdaszówka.
4. Mechanical interventions in restored habitats did not cause lasting physicochemical changes; impacts largely stabilised within the same growing season, did not result in species losses, and promoted the return of rarer species. In some cases, they were temporarily highly beneficial (e.g. increased bird species richness in the season immediately following earthworks at the Umianowice Wetland, attracted by exposed soil indicative of early successional stages).
5. Mowing and grazing, when kept within appropriate intensity and spatial extent, produce beneficial habitat changes, supporting the formation of wader assemblages and contributing to higher breeding success and lower mortality.
6. For species restoration, the examples indicate that a properly recreated, favourable habitat is the key determinant of success: after initial measures (e.g. translocation, establishment of founder groups), populations typically perform well and become largely self-sustaining.
7. For the conservation of amphibians and *Anisus vorticulus*, the approach of “bypassing” the high-mortality phase by releasing juvenile and overwintering individuals proved effective. For other taxa, translocation tends to yield the expected outcomes not so much as discrete, single-point occurrences, but rather as expanding occupied areas, driven by spontaneous spread following habitat improvement and translocation.

D.2 Hydrological monitoring

Foreseen start date	Q1/2019	Foreseen end date	Q3/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
Water distribution concept	03/2022		03/2022	
Final report on the implementation of the task	09/2025		09/2025	
MILESTONES	Deadline		Actual deadline	
Development of the concept of water distribution	12/2021		Achieved at the Mid-term	

The implementation of this action rests entirely with the Co-beneficiary of the project - the UR in Krakow.

2019 First of all, it was full of activities aimed at obtaining data necessary for the development of hydraulic models and numerical models of the terrain for the inland Delta and for the Młodzawy forest complex. They were obtained from the co-beneficiaries and PGW WP through the company WTU Polska. These data were related to the type and parameters of soils, land use and hydrology. A review of the data deposited in the archives of the Department of Water Engineering and Geotechnics of the UR was also carried out. On this basis, and thanks to field trips, the first analyses of water relations and water demand in relation to the implementation of other project activities were carried out. A preliminary assessment of the water content of the studied area was also made. In Q3/2019, an ADCP device for measuring water flow, flow velocity and bottom configuration was purchased. Preparations for the purchase and installation of equipment for monitoring groundwater fluctuations have also started. Four test drilling for piezometer wells installation were also made in order to initially assess the possibility of their assembly on their own and to perform preliminary measurements using traditional methods. A numerical model for the Delta region was also made using the HEC-RAS software. This model was prepared to work on the basis of NMT data with a resolution of 1 m. After its creation, it was subjected to variant modeling. In Q4/2019, a plan for the placement of piezometric wells was proposed. In the presented variant, these wells were systematically located so that they were additionally placed in a grid of straight profiles. The expected benefit of such a location is the possibility of a better analysis of the hydraulic relationship between the measuring stations. Installation of wells and launched piezometers was performed by the Coordinating Beneficiary. Piezometers measure the position of the water table in the wells and record the temperature. Barodivers measuring atmospheric pressure are located at the headquarters of the Coordinating Beneficiary in Krzyżanowice Średnie. In 2020 in cooperation with the Coordinating Beneficiary, measurement sessions were continued in the Delta region and the Młodzawy forest complex. They included measurements of the ordinates of the water table, ground surface, and the search for alternatives to those specified in 2019, the location of water supply sources in the riparian forest in Młodzawy. At the end of Q2/2020, a numerical terrain model for the forest complex was created and immediately put into operation. Variant modeling was performed. For variant 0, water flow modeling was assumed for the existing state, while variant I was proposed by spec. for water protection. Modeling was continued in Q3/2021, i.e. a year later than expected. They were performed on an efficient computing unit, which despite its power, the computing process in the "water-filled" model lasted about a week. Work provided to get the 5 of modeling variants for the area of "middle delta". Due to the existence of two objects, as part of the concept, separate studies had been prepared for the Delta as well as for the Młodzawy forest complex. For which the following surveys have been made:

- available materials, soil characteristics, their physical properties;
- Numerical Terrain Model;
- arrangement of water and drainage devices;
- water sources;
- changes in the water table system in the piezometric network;
- catchment characteristics;
- land development and use;
- the system of current river beds and old river beds (delta) or the system of existing and planned ditches (Młodzawy forest);
- environmental and design needs for water supply.

On the basis of the diagnosis, variant water flow modeling was performed in order to ensure appropriate water ponds in the above-mentioned areas.

In 2022 the monitoring of the water supply ways to the delta areas had been performed. Additionally to the analysis based on the piezometer network data recordings the manual measurements of water table, discharges, photo documentation as well as aerial photogrammetry were done. Data interpretation of the water table in Delta and Młodzawy Forest was done and the information was stored in the hard drive resources. In addition to the above described activities modeling had been continued. In 2022 variant 6, 7 and 8 of modeling for delta region and the fourth variant for Młodzawy forest was performed and reported. Variants for delta were done due to the need of modification of initial plans after limited progress of the implementation of land purchase. The additional variant for the forest was done due to the information gathered on the base of the piezometer network. This influenced the change of decision in the planned range of the works in the forest. In connection to the activities realized in other tasks of the project, the capacity of the water supply network to the delta and the link duct between Stara Nida and Smuga Umianowicka was checked and calculated. The granulometry of the stara Nida old channel after the cleaning works was also measured in 2022. The next type of works performed were measurement sessions in the Nida River. The measured parameters were: discharge, water flow velocity, bed morphology, aerial photography. In 2023 the cleaning works were finished and the water discharge in the Stara Nida had been recovered. All of these activities were monitored by direct measurements continued after previous years of data collection. Also the bathymetry of the refreshed wetlands and reservoirs after the works performed in 2022 and 2023 were measured. Based on this data the Unianowickie wetlands refreshed terrain model had been created. This led for calculations of the water table area and reservoir capacity increase were done.

In spring of 2024 the flood had passed though the Nida river valley. As others also this event had been recorded by the sensors operating in the piezometer network. Another task was the hydrological and morphological monitoring of the revitalized areas in the one year period after performed works in comparison to the dates from the initiation of the monitoring. The analyzed data in the area of delta proofed the positive effects introduced ideas. As long as the project closing date had been extended to 2025 also regular monitoring sessions were continued. The results of the operation of the piezometer network in years 2024-2025 had been analyzed and reported.

Encountered problems, defects, delays

Using the savings generated in 2019 and 2020, a Satlab GPS RTK device was purchased. The need for the purchase resulted from the necessity to expand the operational capacity of the works performed under the project by enabling numerous measurements of the water table in the Nida River, its tributaries and old river beds, and the location of the measuring devices used in the field.

The piezometer network was launched after the assumed deadline due to procedural difficulties with the purchase of recorders and due to the requirement to obtain permits for drilling in a geologically protected area. The delay in commissioning the piezometer network has undoubtedly diminished the amount of data. The summer and autumn period of 2019, in which the water table falls due to high evapotranspiration, was lost. The start of registration in the winter period took place before the cleaning works of the old river beds of the Nida River were carried out, so it is still possible to interpret the emptying of the blackwater reservoir in the spring and summer season of 2020 and throughout 2021. These data make it possible to try to compare the water cycle before the project implementation and its impact on the change of water relations in the studied area.

The variant modeling for the Młodzawy forest complex was completed in Q3 2021 that is, a year later than expected. The delay was due to difficulties related to the COVID-19 pandemic. Finally all monitoring tasks and flow modeling projects were finished in 2022.

D.3 Assessment of socioeconomic impact

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q2/2019	Actual end date	Q4/2024	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Socio-economic impact assessment report		12/2024	08/2024	
MILESTONES		Deadline	Actual deadline	
Socio-economic impact assessment report		12/2024	08/2024	

In Q3/2019, a contract was concluded with Cezary Jastrzębski to carry out an evaluation study entitled “Assessment of the socio-economic impact on the local economy and society, and on ecosystem services”. The study was divided into three stages: a methodological report (deadline: 04/11/2019), an inception report – baseline diagnosis (deadline: 31/01/2020), and a final report (deadline: 30/08/2024).

The report is based on a questionnaire survey (2 x 330 questionnaires) conducted in three municipalities of the Świętokrzyskie Voivodeship—Kije, Pińczów and Imielno—where the project was implemented. The survey targeted representatives of local authorities, entrepreneurs, non-governmental organisations operating in the municipalities, and members of the local community. The study made it possible to collect views from different social groups on the socio-economic impact on the local economy and society, as well as on ecosystem functions, in the context of the LIFE project implementation. The socio-economic impact assessment report is a project deliverable and was uploaded to the BUTLER.

D.4 Assessment of ecosystem services

Foreseen start date	Q2/2020	Foreseen end date	Q3/2024	Comments
Actual start date	Q3/2021	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Reports on the assessment of ecosystem services resources		12/2024	09/2025	
MILESTONES		Deadline	Actual deadline	
-		-	-	

The first steps to launch the action were taken in Q1/2021 and included market research and

establishing contact with potential contractors. A contract for implementation of the action was signed with the Jan Kochanowski University in Kielce in Q3/2021.

The action was divided into two stages. The first stage focused on preparing the theoretical and methodological framework for the study. The second stage covered delivery of the comprehensive study, including a comparative analysis of ecosystem service resources in the assessed area. Stage I was accepted in Q4/2021, while Stage II was accepted in Q3/2025.

The study constitutes a project deliverable and was uploaded to the BUTLER.

D.5 Monitoring of the project key performance indicators LIFE KPI

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
Analysis of the achieved results (Table of KPI project performance indicators)	06/2020		Completed at the Mid-term	
Analysis of the achieved results	12/2021		Completed at the Mid-term	
Analysis of the achieved results	06/2022		06/2022	
Analysis of the achieved results	12/2023		12/2023	
Analysis of the achieved results	12/2024		12/2024	
Analysis of the achieved results	09/2025		09/2025	
Project performance index table	09/2025		09/2025	
MILESTONES	Deadline		Actual deadline	
-	-		-	

To ensure the proper functioning of the project, the monitoring specialist, starting from Q1/2019, accounted for the results and impact of individual project actions in relation to the key performance indicators (KPIs) of the LIFE programme. The indicator database in the KPI web tool was supplemented with all input data, verified, and accepted.

Throughout the entire project duration, a comparative analysis of the baseline indicator values against the ongoing effects of project actions was prepared. Indicators were described in detail, including their progress status and the identification of deviations, threats, trends, as well as the condition of natural habitats and species covered by the project activities.

At the end of the project, the indicator database in the KPI Webtool application was fully updated.

E.1 Promotional activities of the project

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
Sign book	12/2019		Completed at the Mid-term	
Promotional and information folder	06/2022		09/2023	
Promotional gadgets	06/2024		04/2025	
Poster calendar	12/2024		12/2024	
Information and educational map	03/2025		09/2025	
MILESTONES	Deadline		Actual deadline	
Implementation of graphic designs	06/2019		12/2020	

E.1.1 Website

In Q2/2019, the procedure to select a contractor for developing the project website was initiated. On 14/06/2019, a contract was signed with Prokoder Studio Sp. z o.o. Sp.k. Since 30/06/2019, the website has operated as the official project website: <https://life4delta.pl/>. The website was updated on an ongoing basis and was also translated into English (in line with contracts implemented under action F.1).

From 01/01/2020 to 31/12/2023, the project website recorded 9,542 page views. At the beginning of 2024, Google discontinued support for Google Analytics, the tool previously used to monitor website traffic, which made it impossible to continue recording the number of page views. Assuming an average of ca. 2,000 visits per year, the total number of page views by the end of the project is estimated at approximately 13,540.

E.1.2 Brand book

In Q1/2019, a market survey was carried out and a procedure was launched to develop the project's visual identity system. On 18/01/2019, a contract was signed with the contractor OLIGRAFIA Studio Graficzne Aleksandra Nasternak. The deliverable was accepted on 21/02/2019.

E.1.3 Information boards and labelling of materials and fixed assets

The activity was implemented continuously throughout the entire project period. All materials and fixed assets purchased within the project were permanently and clearly labelled using stickers containing the complete set of required logos, i.e. Natura 2000, LIFE, NFOŚiGW, and the project Beneficiary. Under this activity, in Q2/2025 an external entity was commissioned to prepare the graphic design and print 22 information plates. The plates included the project name, information about the object, and the mandatory logos of the institutions financing and co-financing the project. After production, the plates were installed at locations related to project implementation, in particular on hydrotechnical infrastructure built or refurbished under the project, small tourism infrastructure objects, breeding containers, and elements of infrastructure used in activities related to animal grazing. The implementation of this activity ensured proper visual identification of the project and increased its visibility in the field.

E.1.4 Information meetings

The activity started in Q4/2021. As part of its implementation, a total of four information meetings were organised for local communities from the Kije and Pińczów municipalities, with a total of 140 participants. The meetings took place on the following dates and at the following locations: 17/10/2021 at the community centre in Umianowice (52 participants), 11/03/2024 at the OEP in Umianowice (40 participants), 27/03/2024 at the Municipal Cultural Institution in Kije (19 participants), and 19/07/2025 at the OEP in Umianowice (49 participants). Initially, the meetings had an informative character and aimed to motivate stakeholders to actively engage in project implementation. Due to the COVID-19 pandemic and the resulting shifts in the implementation schedule, their primary objective became to provide local communities with full and reliable information on how individual project actions were being implemented, the achieved and planned results, and the potential impacts of the project. An important element of the meetings was also creating space for dialogue, enabling participants to submit comments, ask questions and formulate opinions. Catering was provided to participants during the

meetings. Attendance lists from the meetings constitute a project deliverable and were uploaded to BUTLER.

E.1.5 Promotional and information brochures

As part of this action, two promotional and information brochures were published. The first one, accepted in Q3/2020 in a print run of 6,050 copies, included information about the project, including its objectives, planned activities and sources of funding. The second one, published in Q3/2023 in a print run of 6,000 copies, presented information on the activities already implemented within the Project and the achieved results. Graphic design, layout and printing of the brochures were outsourced to specialised external contractors (Kazimierska Agencja Drukarska S.C. P. Piątek & K. Zych; Agencja Reklamy i Handlu "POLIGRAFIK" Sylwester Fařara). The materials were distributed during promotional activities, educational events, as well as seminars and conferences organised within the Project. The brochures constitute project deliverables and were uploaded to BUTLER.

E.1.6 Poster calendar

The activity was implemented progressively starting from Q4/2019. In total, 5,000 copies were published in 2019–2024. Graphic design, layout and printing of the calendars were outsourced to specialised external contractors (Kazimierska Agencja Drukarska S.C. P. Piątek & K. Zych; Prokoder Studio Sp. z o.o. Sp. K.). The printed calendars were distributed among municipalities, institutions that are Project partners, as well as offices and units related to nature conservation in the broad sense, contributing to dissemination of knowledge about the Project's objectives, actions and results. The calendars constitute project deliverables and were uploaded to BUTLER.

E.1.7 Roll-up

In Q1/2019, the roll-up concept was developed and its production was commissioned. Contractor: Kuman Art. A–Z S.J. D. Mróz and Ł. Kumański. The task was completed on 27/03/2019. It served as an effective information tool, containing basic information about the project, logos and photographs, including of natural habitats and animal species protected under the project. The roll-up was presented at promotional events, conferences, seminars and Steering Committee meetings.

E.1.8 Information and educational map

In Q4/2025, external contractors were commissioned to develop the graphic design and print maps in the form of A3 tear-off pads, with a total print run of 15,000 copies (the application planned 3,000 copies in A4 format). Contractors: graphic design – OLIGRAFIA Studio Graficzne Aleksandra Nasternak; printing – Kazimierska Agencja Drukarska S.C. P. Piątek & K. Zych. The preparation of the graphic design was entrusted to OLIGRAFIA Studio Graficzne Aleksandra Nasternak, while printing was commissioned to Kazimierska Agencja Drukarska S.C. P. Piątek & K. Zych. The developed maps constituted an important element of project promotion, presenting in a clear and transparent manner the scope and locations of the implemented actions. The delay in implementation of this activity resulted from the decision to include on the map information on the completed maintenance works and the construction of three educational trails, which made it possible to present a complete and up-to-date overview of the project outcomes and increased the informational and promotional value of the material.

E.1.9 Promotional and information gadgets

The action started in 04/2020 with a market analysis concerning the purchase and graphic design of promotional gadgets. In 05/2020, a contract was signed with Kazimierska Agencja Drukarska S.C. P. Piątek & K. Zych for the production of promotional materials. Under the contract, the following items were produced: paper bags – 1,000 pcs; bookmarks with double-sided full-colour print – 5,000 pcs; reflective tags – 2,000 pcs; linen bags/totes – 1,500 pcs; and cotton T-shirts – 1,000 pcs. In addition, in Q4/2020 a contract was concluded for the production of the Ponidzie tea “Smak Deltu”, including packaging, which—due to its taste qualities and everyday usability—supported project promotion. Tea deliveries were distributed over 2020–2022 (1,000 pcs per year) in order to ensure availability and maintain freshness for as long as possible. In Q2/2025, additional promotional materials (cotton T-shirts – 200 pcs; bags/backpacks – 150 pcs; and fabric bags – 150 pcs) were purchased due to depletion of previous stocks. The service was provided by Agencja Reklamowa “K&M” Katarzyna Wróblewska. All gadgets were continuously distributed during promotional and educational activities.

E.1.10 Documentary film

On 27/05/2019, a contract was signed for the production of the film (contractor: Hałas Fotografia Profesjonalna Krzysztof Pęczalski). Production was completed on 25/09/2019. The documentary entitled “W delfcie Nidy” presents the attractive and unique natural values of the project area and the project actions. In 06/2020 the film was made available on YouTube, where it has reached 10,900 views to date. The material was also uploaded to the TVP repository and was broadcast regularly on all regional TV channels in Poland. In addition, the film was used as an information and promotional tool during conferences, promotional events and within the educational activities implemented under the project.

E.1.11 Radio programme

On 22/04/2022, a contract was signed for the production of six radio programmes (four were planned in the application), with Radio em Kielce as the contractor. The programmes were broadcast in 2022–2025. The topics covered key issues related to project implementation, in particular: the importance of water and its role in the natural environment; the ornithological values of the Nida Valley; the biodiversity of the Delta’s flora and fauna; threats related to nature conservation; and activities aimed at raising environmental awareness among audiences. The last programme, due to the need for a comprehensive summary of implemented actions, was produced in the form of a documentary-educational film presenting the project’s objectives, stages and results in an accessible and attractive way. The action was completed in Q4/2025.

E.2 Educational activities of the project

Foreseen start date	Q1/2020	Foreseen end date	Q4/2024	Comments
Actual start date	Q2/2019	Actual end date	Q3/2025	The COVID-19 pandemic affected the later implementation of the activity
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Attendance lists from workshops for teachers		12/2020	Completed at the Mid-term	
Attendance lists from workshops for teachers		12/2021	Completed at the Mid-term	

Attendance lists from workshops for teachers	12/2022	-
Attendance lists from workshops for teachers	12/2023	-
Attendance lists from workshops for teachers	12/2024	06/2024
Attendance lists from workshops for teachers	09/2025	08/2025
Attendance lists from two-day workshops	12/2020	-
Attendance lists from two-day workshops	12/2021	-
Attendance lists from two-day workshops	12/2022	-
Attendance lists from two-day workshops	12/2023	09/2023
Attendance lists from two-day workshops	12/2024	11/2024
Attendance lists from two-day workshops	09/2025	09/2025
Attendance lists from one-day workshops	12/2020	Completed at the Mid-term
Attendance lists from one-day workshops	12/2021	Completed at the Mid-term
Attendance lists from one-day workshops	12/2022	12/2022
Attendance lists from one-day workshops	12/2023	12/2023
Attendance lists from one-day workshops	12/2024	11/2024
Attendance lists from one-day workshops	09/2025	09/2025
Farmer training attendance lists	12/2020	-
Farmer training attendance lists	12/2021	-
Farmer training attendance lists	12/2022	04/2022
Farmer training attendance lists	12/2023	-
Farmer training attendance lists	09/2025	09/2025
Posters - Social monitoring	09/2025	09/2025
Posters - educational festivals	09/2025	06/2024
MILESTONES	Deadline	Actual deadline
Commencement of training for farmers	01/2020	04/2022
Beginning of educational festivals	04/2020	04/2023
Commencement of social monitoring in schools	04/2020	03/2023
Beginning of two-day educational workshops	04/2020	05/2023
Beginning of one-day educational workshops	04/2020	Achieved at the Mid-term

E.2.1 One-day workshops

The action was implemented on an ongoing basis starting from Q2/2019. Participants included school-age children from kindergartens, primary schools, secondary schools, as well as university students. The activities were based on field and hands-on demonstrations, including, inter alia, birds, reptiles and amphibians, plants and fish occurring within the project area. Topics related to the Nida River and its inland delta were also addressed. Workshop participants were provided with catering (external service or direct purchase of food products - meals organised within the operational activities of the OEP in Umianowice) and transport, each time following the contractor selection procedure. Under the action, a range of educational materials was purchased, including animation scarves, cotton bags, herbal products and animal tracks, which were used to conduct interactive activities with participants.

In total, in 2019–2025, 11,178 children participated in 248 one-day workshops. Annual attendance lists from the one-day workshops constitute deliverables and were uploaded to BUTLER.

E.2.2 Two-day workshops

The action was implemented on an ongoing basis starting from Q2/2023. Participants included school-age children from primary and secondary schools, as well as university students. The workshops consisted of several components: a theoretical part, during which participants learned about the objectives, assumptions and actions carried out within the project; an experimental part, enabling independent conduct of activities, implementation of tasks and drawing conclusions; and a field part, enabling participants to become familiar with the project implementation area, the course of restoration works, natural habitats, and fauna and flora. Workshop participants were provided with meals (direct purchase of food products - meals organised within the operational activities of the OEP in Umianowice) and accommodation. Under the action, educational materials were purchased, including cotton bags, a water filtration experiment kit, magnifying lenses, water and soil testing kits, and herbal products. In total, in 2023–2025, 1,426 children participated in 31 two-day workshops. Annual attendance lists from the two-day workshops constitute deliverables and were uploaded to BUTLER.

E.2.3 Workshops for teachers

The action was implemented on an ongoing basis from Q4/2020. The workshops were addressed to professionally active teachers who, thanks to the knowledge and skills acquired, could transfer the project's outcomes into the school setting, strengthening the educational impact of LIFE actions in the longer term. The workshop programme included a field component and an experimental component, focusing on practical methods of delivering nature education, non-formal education, and presentation of actions implemented under the project. The sessions were interactive and enabled participants to directly familiarise themselves with the tools and educational methods used in the project. Implementation of the workshops contributed to establishing lasting cooperation with teachers, in particular with regard to further organisation of one- and two-day educational workshops, implemented both during the project and planned after its completion as part of ensuring sustainability of results. Participants were provided with meals, and in the case of two-day workshops also accommodation. Under the action, educational materials were purchased, and participants were also provided with information and promotional materials developed under other project actions. The first two-day workshop, implemented in Q4/2020, was delivered online due to the epidemic restrictions in force at that time. In total, in 2020–2025, 250 people participated in

teachers' workshops, both one-day and two-day. Attendance lists from the workshops constitute the action's deliverables and were uploaded to BUTLER.

E.2.4 Educational events (festivals)

The action was implemented on an ongoing basis from Q2/2023 to Q2/2025. The educational events were addressed to school-age children, adults and local residents, constituting one of the key tools for communicating the project to a broad audience. The events aimed to disseminate knowledge about the assumptions and outcomes of the LIFE project, raise environmental awareness, and build social acceptance for nature conservation measures implemented within the project area. The themes of the events referred to nationwide and environmental occasions such as "White Stork Day", "Earth Day" and the "First Day of Spring", which increased their attractiveness and recognisability among participants. Local residents acting within local organisations, school pupils, young people and the Świętokrzyskie Regional Youth Assembly, as well as representatives of public institutions and services—including the State Forests, the Kielce District of the Polish Angling Association, the Police and the State Fire Service—were actively involved in organising the events. This cooperation contributed to increasing the outreach of the information and education activities and strengthening their local character. Refreshments were provided to participants. In total, in 2023–2025, 27 educational events were organised or co-organised, with 6,132 participants. Posters promoting the events constitute the action's deliverables and were uploaded to BUTLER.

E.2.5 Training sessions for farmers

The action was implemented on an ongoing basis from Q2/2022. The training sessions were addressed to farmers from the Świętokrzyskie Voivodeship, in particular from the communes of Kije and Pińczów, located in the area directly linked to the project's impact. The events took the form of on-site training sessions, during which information was presented on the objectives and assumptions of the LIFE project, as well as issues related to properly combining agricultural activity with nature conservation, including the protection of natural habitats and species covered by the project. The training programme included an informational part as well as educational and discussion elements, enabling exchange of experiences among participants. External speakers with specialist knowledge and experience in environmentally friendly agriculture and nature conservation participated in the first training session, which significantly increased the substantive value of the event. Meals were provided to participants. In total, in 2022–2025, three training sessions for farmers were delivered, with 100 participants. Attendance lists from the training sessions constitute the action's deliverables and were uploaded to BUTLER.

E.2.6 Educational tools supporting all planned actions

The action started in Q3/2019 with the signing of an agreement with Centrum Muzyczne Vanax Sp. J. for the supply of sound equipment necessary to organise and conduct educational and promotional events. The service was delivered on 11/09/2019.

In 03/2020, an agreement was signed with "Hałas Fotografia Profesjonalna Krzysztof Pęczalski" to produce an educational film about activities undertaken within the project. The film entitled "Przygoda w delcie Nidy" was produced in Q4/2020 and is available on YouTube at: <https://www.youtube.com/watch?v=2u-Wm6j6Uo0>.

In Q1/2021, 20 copies of the educational board game "Zostań odkrywcą delty rzeki Nidy" were purchased (contractor: Kazimierska Agencja Drukarska S.C. P. Piątek & K. Zych).

In Q3/2022, a microscope with a camera and monitor was purchased.

The task consisting in producing an educational model was launched in Q3/2023. In 08/2023, an agreement was signed with Grzegorz Zmuda Trzebiatowski, and the model was accepted on 26/02/2024. The model presents a fragment of the inland delta of the Nida River and serves as a teaching aid enabling participants to better understand restoration-related issues. It also allows for active participation through manual initiation of various phenomena that may occur within the project area, such as flooding.

A permanent educational exhibition was prepared in Q3/2025. The action was implemented by commissioning printing of photographs on dibond-type material and installing them in the birdwatching hide constructed under action C.12. The exhibition presents protected bird species occurring within the project area. Photographs purchased under promotional actions as well as those from the Beneficiary's resources were used for its preparation.

E.2.7 Social monitoring in schools "Stork nest"

Due to a significant increase in the prices of goods and services caused by the COVID-19 pandemic, and following a market assessment, the planned mobile application facilitating monitoring was abandoned. It was decided to launch a website enabling users to report the presence of a white stork nest, together with a description of its condition, the period when birds stayed in it, and the broods raised there. In Q3/2023, the website became operational (<https://bocianbialy.weebly.com/>). In 2023, 8 schools joined the action and designated 20 white stork nesting sites. In 2024, 14 educational institutions joined the monitoring, observing a total of 18 nests. Monitoring was carried out both in groups (classes) and individually. In 2025, 10 questionnaires were submitted by 10 educational institutions, each referring to a different white stork nest. In 2023–2025, posters were prepared, printed and distributed to educational institutions and disseminated during nature-related events. The posters were also published on the project website and on the project's Facebook profile. In addition, in Q1/2023, information about the action was promoted in the media. The posters constitute the action's deliverables and were uploaded to BUTLER.

As part of action E.2, a laptop with specialist software intended for educational purposes was purchased. The equipment was delivered in Q3/2020.

Deviations, problems, remarks

Restrictions related to the COVID-19 pandemic, remaining in force from Q1/2020 for almost two years, as well as the delay in launching the OEP in Umianowice (serving as an accommodation base for educational activities), caused delays and/or modifications of individual tasks under action E.2. It was necessary to adapt the implementation formula of some planned educational activities (E.2.2 and E.2.3). Taking into account the above organisational conditions and the need to ensure continuity of project activities, on 23/01/2025 the Beneficiary submitted a formal request to the Project Monitor for approval to change the format of part of the two-day educational workshops to one-day workshops. The proposed modification was approved by the Project Monitor. At the same time, it was confirmed that the change was organisational in nature and did not negatively affect the substantive scope of the activities implemented, the level of participant engagement, or the achievement of the planned objectives and indicators of the action within the project.

The COVID-19 pandemic also significantly contributed to an increase in the prices of goods and services. An initial market assessment carried out at the beginning of 2022 showed that the planned activity under E.2.7 would significantly exceed the assumed budget. Therefore, the mobile application was replaced with a free website. The first campaign encouraging monitoring of white stork nests was promoted at the beginning of 2023 and continued until

2025. The delay in launching the activity, resulting from the ongoing pandemic, affected the number of educational institutions involved in its implementation.

E.3 Conferences and seminars

Foreseen start date	Q3/2019	Foreseen end date	Q3/2024	Comments
Actual start date	Q3/2019	Actual end date	Q2/2025	The postponement of the mid-term conference was related to the implementation of the renaturation works
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Attendance list - conference starting the project		09/2019	Completed at the Mid-term	
Conference materials - conference starting the project		09/2019	Completed at the Mid-term	
Attendance list – mid-term conference		06/2022	09/2023	
Conference materials – mid-term conference		06/2022	09/2023	
Attendance list - conference ending the project		09/2025	06/2025	
Attendance lists for one-day seminars		09/2025	04/2025	
Conference materials - conference ending the project		09/2025	06/2025	
Conference materials - seminars		09/2025	04/2025	
MILESTONES		Deadline	Actual deadline	
Organization of the project launch conference		09/2019	Achieved at the Mid-term	
Organization of a one-day seminar		06/2020	09/2023	
Organization of a one-day seminar		06/2021	10/2023	
Organization of the mid-term conference		06/2022	09/2023	
Organization of a one-day seminar		06/2023	06/2024	
Organization of a one-day seminar		09/2024	02/2025	
Organization of a one-day seminar		06/2025	04/2025	
Organization of the conference ending the project		09/2025	06/2025	

E.3.1 One-day kick-off conference

On 26/09/2019, a project kick-off conference was organised in Krzyżanowice Dolne.

Conference venue rental and catering service – Przedsiębiorstwo Produkcyjno Usługowe NIDA ZDRÓJ Sp. z o.o. Service acceptance: 26/09/2019.

Conference materials – pens (80 pcs), folders (80 pcs), bags (80 pcs) (Agencja Reklamy i Handlu “Poligrafik” Sylwester Fąfara) – service acceptance: 18/09/2019; information leaflet (80 pcs) (Mediasphere Dominik Kondek) – service acceptance: 20/09/2019; organic herbal tea (80 pcs) (Natura Wita Ewa Płachta) – acceptance: 06/09/2019.

Transport during the conference – DALBUS Marcin Cmoch and Świętokrzyska Kolejka Dojazdowa “Ciuchcia Ekspres Ponidzie”. Service completion: 26/06/2019.

External speakers – Małgorzata Jankowska-Błaszczuk, Tomasz Gruszecki. Service acceptance: 26/09/2019.

The conference was attended by 73 participants representing central and local government authorities, forest districts, local communities, non-governmental organisations, project partners, and the media. The conference was divided into two parts: an indoor session and a field session. During the indoor session, a fragment of a documentary film was also presented, showing attractive and unique natural values as well as the planned activities of our project. Relevant conference materials were also distributed. During the field session, participants visited Umianowice, where they had the opportunity to familiarise themselves with sites selected for conservation activities. An additional attraction was the trip to the site by the Świętokrzyska Kolejka Dojazdowa “Ciuchcia Expres Ponidzie” narrow-gauge railway and a falconry show prepared by the bird refuge specialist, students from the Roman Gesing Forestry School Complex in Zagnańsk, and members of the “Ćwik” Falconry Section. The conference provided an opportunity for a broad presentation of the project assumptions, as well as for establishing contacts among people from different backgrounds working for environmental protection and sustainable development. Within the action, conference materials were produced and distributed among participants.

E.3.2 Mid-term conference

On 13–14/09/2023, a two-day mid-term project conference was organised at the Nature Education Centre (OEP) in Umianowice.

Conference materials – cups with saucers (70 pcs) – service acceptance: 08/09/2023; paper bags (300 pcs), notebooks (100 pcs), lanyards (400 pcs) – service acceptance: 12/09/2023.

Transport during the conference – Firma Usługowo-Handlowo-Transportowa Jacek Kocel. Service acceptance protocol: 15/09/2023.

External speakers – Maksymilian Przybylski, Piotr Waleron, Katarzyna Olczak. Service acceptance: 14/09/2023.

Catering and accommodation were provided to participants.

The conference was attended by 64 participants. The event was divided into an indoor (presentation) part and a field part. The indoor part was devoted to presenting the effects of several years of project implementation, including the achievements to date for the protection of the inland delta of the Nida River. The second day of the conference began with the presentation of selected Polish LIFE projects implementing conservation measures for natural habitats and protected species. In the second part of the day, participants went to the inland delta of the Nida River, where the effects of project activities were presented, including grazing, renaturation works, and the reintroduction and restitution of species.

E.3.3 Final conference

On 11–13/06/2025, a three-day mid-term project conference was organised at the OEP in Umianowice.

Conference materials – cups with saucers (100 pcs) – service acceptance: 05/06/2025; notebooks (200 pcs), lanyards (200 pcs) – service acceptance: 04/06/2025.

Transport during the conference – Firma Usługowo-Handlowo-Transportowa Jacek Kocel. Service acceptance protocol: 02/07/2025.

Organisation of the thematic event – Centrum Doradztwa Zawodowego Ewelina Ptak – service acceptance: 12/06/2025.

Hotel room rental – Przedsiębiorstwo Handlowe “MAR-POL” Marcin Kałka – service delivery: 11–13/06/2025.

Interpretation service – Centrum Tłumaczeń – service delivery: 12/06/2025.

Catering and accommodation were provided to participants.

The event was attended by representatives of scientific institutions, administration, non-governmental organisations, and persons engaged in nature conservation in Poland and Europe. In total, 69 participants attended. The conference programme included expert presentations, the presentation of project results, thematic sessions devoted to best practices in environmental measures, as well as a field part – including visits to project sites, a presentation of traditional farming methods, and networking meetings. The conference was also an opportunity to exchange experience among projects implemented under the LIFE programme in Poland and abroad. Representatives of several initiatives presented their achievements and challenges, showing that effective nature conservation requires cooperation, determination and long-term planning.

E.3.4 One-day thematic seminars addressed to specialists and scientists

Within the action, five one-day seminars were organised on the following dates: 04/09/2023, 20/10/2023, 26/06/2024, 12/02/2025 and 05/04/2025. The seminars were addressed to specialists dealing with broadly understood nature conservation, education, and water management. Participants included representatives of landscape parks from across Poland, employees of forest districts located in the area managed by the Regional Directorate of State Forests in Radom, and representatives of PGW Wody Polskie – Catchment Boards and Water Supervision Units located in the area managed by the RZGW in Kraków. The seminars provided an opportunity to exchange experience and to present project results and applied good practices.

Platform Meeting of LIFE projects

On 9–10/2023, a Platform Meeting of LIFE projects was organised at the OEP in Umianowice. The event, held in an “open space” format, provided an opportunity to exchange experience and discuss difficulties related to the implementation of individual actions. The meeting was attended by over 60 participants – employees of various institutions implementing as many as 18 Polish LIFE projects, as well as representatives of institutions supervising the proper implementation of projects, i.e. NEEMO EEIG and the National Fund for Environmental Protection and Water Management (NFOŚiGW) in Warsaw.

On the first day, discussions focused on ongoing implementation of environmental and climate projects, encountered problems and good practices, as well as formal and financial settlement of projects. After the discussions, a guided tour of the OEP took place, during which, among others, the Nidarium and the laboratory were presented, as well as nearby facilities – the

birdwatching tower and the narrow-gauge railway station. On the second day, participants spent time in the field, where the effects of project implementation were presented. It was an opportunity to see, among others, the effects of renaturation works in the Delta area and grazing of cattle and Polish Konik horses on meadow habitats.

For the purposes of the meeting, conference materials in the form of folders, pens and bags were purchased for all participants.

E.4 Layman report and scientific report

Foreseen start date	Q4/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q3/2024	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Layman's report		09/2025	09/2025	
Scientific report		09/2025	09/2025	
MILESTONES		Deadline	Actual deadline	
Printing of a Layman's report		09/2025	09/2025	
Printing of a scientific report		09/2025	09/2025	

Layman's Report

The Coordinating Beneficiary, together with the co-beneficiaries, prepared the Layman's Report. The document summarises the results achieved by the Project, presents ecological, social and educational effects, and indicates practical experience and good practices that may be used in future nature conservation initiatives. The document also includes aspects of knowledge transfer, replication of actions, and international and national cooperation. The report was translated in-house. The publication was subcontracted for typesetting and printing. A total of 200 copies were printed. The service was accepted on 29/09/2025. The report constitutes a deliverable and was uploaded to BUTLER. The document was also published on the Project website.

Scientific Report

The Coordinating Beneficiary, together with the co-beneficiaries, prepared the Scientific Report, which provides a comprehensive summary of research and monitoring activities carried out within the Project. The document includes an analysis of the effectiveness of renaturation measures in the inland delta of the Nida River, including the restoration of natural flows, the recovery of aquatic habitats, and the conservation of protected species such as *Unio crassus* and *Emys orbicularis*. The report presents research methods, results of field and laboratory observations, as well as an assessment of the impact of the Project's actions on biodiversity status and ecosystem functioning. It also covers the use of modern technologies, such as drones and telemetry-based data collection systems, and an analysis of data on the effectiveness of wetland species reintroductions. The purpose of the report is to provide reliable and well-documented scientific knowledge that can serve as a basis for decision-making in nature conservation, planning of renaturation measures, and further scientific research. The document is intended as a reference for experts, public institutions and non-governmental organisations, and also supports replication of effective solutions in other Natura 2000 areas in Europe. The preparation of the scientific report was not outsourced. The report was translated in-house. The publication was subcontracted solely for typesetting and printing. A total of 500 copies were

printed. The service was accepted on 29/09/2025. The report constitutes a deliverable and was uploaded to BUTLER. The document was also published on the Project website.

E.5 Networking with other projects

Foreseen start date	Q2/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q2/2019	Actual end date	Q1/2025	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
-	-		-	
MILESTONES	Deadline		Actual deadline	
-	-		-	

As part of the implementation of the action, exchange of experience with other projects was carried out through working and study visits, participation in conferences, field inspections, e-mail and telephone contact, and via the ZOOM platform. In addition to the cooperation declarations already held by the Coordinating Beneficiary, concluded under the LIFE13 NAT/PL/000038 project, additional cooperation arrangements were established for the exchange of experience on various topics with the following projects:

- LIFE16 NAT/PL/000766 „Ochrona siedlisk ptaków wodno-błotnych w Dolinie Górnej Wisły” – 23/02/2024

E.5.1. Working meetings

On 4–6/06/2019, a trip to the Polesie National Park in Urszulin, which runs the European pond turtle conservation centre, was organised in order to hold a working meeting concerning captive breeding of the European pond turtle.

- On 20/11/2019, a working meeting at the Warsaw Zoo was attended. The main topic concerned formal issues related to the reintroduction of *Emys orbicularis* in the Delta area.
- On 21–22/11/2019, a working meeting was attended at the headquarters of Wigry National Park with the team managing the LIFE17 NAT/PL/000011 project “Active protection of rare amphibian and reptile species in Natura 2000 sites in Europe”. The meeting focused on issues related to improving habitats for the European pond turtle, as well as the construction of habitats and breeding sites for amphibians. Three persons participated in the meeting.
- On 29–30/06/2022, a visit of representatives of the Nature Conservation Agency of the Czech Republic implementing the LIFE16 NAT/CZ/000731 project “Conservation of selected Natura 2000 insect species in the transboundary area (CZ–SK) of the Western Carpathian Mts.” took place.

E.5.2. National visits as part of network development

On 18–19/07/2019, a trip to the LIFE13 NAT/PL/000032 project “In harmony with nature – LIFE+ for Janowskie Forest” was organised as part of a platform meeting in Janów Lubelski. The two-day conference in an “open space” format provided an opportunity to exchange experience and discuss difficulties related to the implementation of specific actions and approaches to project sustainability. Three persons participated in the trip, together with a representative of the co-beneficiary – the State Forests, Pińczów Forest District.

- On 18/09/2019, participation took place in a conference presenting the results of the POIS.02.04.00.00-0180/16 project “Protection of endangered species and habitats protected within the Natura 2000 network in Małopolska”. Two persons participated in the conference.
- On 26–27/11/2019, a trip to the LIFE13 NAT/PL/000032 project “In harmony with nature – LIFE+ for Janowskie Forest” to Borownica near Janów Lubelski was organised as part of the project closing conference. Four persons participated in the conference.
- On 24–26/11/2021, workshops organised under the LIFE13 NAT/PL/000009 project “Active protection of water-crowfoots habitats and restoration of wildlife corridor in the River Drawa basin in Poland” were attended, entitled “Actions for the protection of water-crowfoot river habitats implemented in the Drawa river basin as an example of good practices in the restoration of gravel-bed rivers”. Two persons participated in the workshops.
- On 7–8/04/2022, a trip to the LIFE13 NAT/PL/000009 project “Active protection of water-crowfoots habitats and restoration of wildlife corridor in the River Drawa basin in Poland” was organised as part of the project summary conference. Five persons participated in the conference.
- On 5–6/10/2023, participation took place in a conference organised by the Regional Directorate of the State Forests in Radom and the Mazovian–Świętokrzyskie Ornithological Society in Garbatka-Zbyszyn, entitled “Protection of the European pond turtle in Poland as a shared challenge for nature conservation stakeholders”. Three persons participated in the event.
- On 20/10/2023, a trip was organised to a conference presenting the results of the POIS.02.04.00.00-00-17/18 project “Active conservation of calcareous and rock grasslands in Ojców National Park and the creation of substitute habitats for endangered plant species, in the form of a garden” in Czajowice. Two persons participated in the conference.
- On 25–27/09/2024, a trip to the LIFE16 NAT/PL/000766 project “Protection of waterbird habitats in the Upper Vistula River Valley (Dolina Górnej Wisły)” was organised as part of the project closing conference in Jawor. Four persons participated in the conference.

E.5.3. International visits

- On 11–18/03/2019, a trip financed under the Erasmus+ Programme entitled “Permaculture for all” was organised to Ourense. Project representatives participated in the visit. During the trip, all participants were introduced to the LIFE programme assumptions and to the Project implemented by the Beneficiary. Two persons participated in the trip.
- On 22–24/11/2021, a trip to the LIFE18 NAT/IT/001020 project “Restoration of Alluvial Forests and *Cladium mariscus* habitats in Ramsar and Natura 2000 sites” was organised as part of the mid-term conference in Venice. During the conference, the main objectives, assumptions and results achieved to date within the project were presented. Three persons participated in the conference.
- On 14–18/06/2023, a study visit to Schulensbroek, Stenay and Moulin de Kalborn was organised in order to exchange experience with representatives of the following projects: LIFE15 NAT/BE/000760 “Action Plan for the Improvement of Habitats of Threatened European Species in the Demer Valley through Broad Cooperation”, LIFE10 NAT/FR/000197 “Conservation of major breeding sites and implementation of innovative and demonstrative actions for the French Corncrake”, and LIFE11 NAT/LU/000857 “Restoration of *Unio crassus* rivers in the Luxembourgish Ardenne”. Four persons participated in the trip, as well as three representatives of the Project co-beneficiary – IOP PAS.
- On 12–15/07/2023, a study visit to Tamsweg was organised to exchange experience with representatives of the Austrian NGO European Wilderness Society implementing the

following projects: LIFE19 NAT/AT/000889 “Improving livestock protection for the direct benefit of wolf conservation in the German-speaking Alpine Region” and LIFE20 NAT/PL/000151 “Conservation of *Parnassius apollo* in Poland, Czechia and Austria”. The visit provided an opportunity to exchange experience and observe the results of the above-mentioned projects. Seven persons participated in the trip.

- On 24–28/07/2023, a study visit to Thessaloniki was organised in order to exchange experience with representatives of the Greek NGO Hellenic Society for the Protection of Nature implementing the following projects: “Restoration, management and valorisation of PRIority habitats of MEDiterranean coastal areas”, LIFE18 NAT/GR/000430 “Addressing the Threat of Invasive Alien Species in North Greece, using Early Warning and Information systems for mammals”, LIFE20 PRE/IT/000007 “Remote sensing oriented nature based solutions towards a NEW LIFE FOR DRYLANDS”, and LIFE19 NAT/BG/001017 “Better Life for Lesser Kestrel in South-East Balkans”. The visit provided an opportunity to exchange experience and observe the results of the LIFE17 NAT/GR/000511 project in the Nestos River delta. Five persons participated in the trip.
- On 22–24/05/2024, a trip to the conference “LIFE Platform Meeting: Amphibian and Reptile Conservation in Europe – Challenges and Opportunities” in Santander was organised under the patronage of the LIFE20 NAT/ES/000309 project “Long Distance Non-Motorized routes such as Green Infrastructures”. The conference focused on opportunities and challenges related to amphibian and reptile conservation in Europe. Representatives of the Project co-beneficiary – IOP PAS – participated in the event.
- On 3–7/11/2024, a trip to the LIFE17 NAT/GR/000511 project “Restoration, management and valorisation of PRIority habitats of MEDiterranean coastal areas” was organised as part of the closing conference in Drama. During the conference, the results of the implemented project were presented as a model example of river valley restoration. The third day of the conference included a field visit to the Nestos River delta, enabling direct observations of restoration measures. Four persons participated in the conference.
- On 24–27/03/2025, a trip to the CEE InterLIFE Platform Meeting conference for projects from Central and Eastern Europe in Balmazújváros was organised. The conference provided an opportunity to create space for sharing experience in nature conservation, climate change adaptation and mitigation, to discuss increasing the visibility and value of project results, and to explore ways of integrating them into existing environmental practices and policies. Three persons participated in the trip.

As part of the action, participation also took place in on-line events:

- 05/11/2021 – on-line conference “Shepherdesses in the Alps” organised by the Austrian NGO European Wilderness Society – LIFEstockProtect (LIFE19 NAT/AT/000889).
- 8–9/11/2022 – closing conference of the LIFE for Insects project (LIFE16 NAT/CZ/000731) held on-line (Nature Conservation Agency of the Czech Republic).

E.6 Transfer of knowledge and replication of project activities

Foreseen start date	Q2/2022	Foreseen end date	Q3/2024	Comments
Actual start date	Q3/2024	Actual end date	Q3/2025	Delays in implementation resulted from the tangible effects of the COVID-19 pandemic and
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
5 reports from study visit participants		12/2022	07/2025	
5 reports from study visit participants		12/2023	07/2025	
5 reports from study visit participants		09/2025	07/2025	

MILESTONES	Deadline	Actual deadline	from the delayed commissioning of the OEP.
Organization of a replication partnership meeting	06/2025	06/2025	

As part of the action, the following meetings and study visits supporting replication were organised:

- On 13–16/03/2024, a visit of two representatives of the Institute of Marine and Inland Waters Biological Resources of the Hellenic Centre for Marine Research was organised. The event provided an opportunity to present the solutions developed within the Project regarding the reintroduction of *Unio crassus* and the methodologies applied in the conservation of selected threatened species. The possibilities for adapting and replicating these solutions in watercourses in Greece were also discussed, in particular in the context of rebuilding mussel populations and conserving wetland species in regions with similar hydrological conditions.
- On 24–26/06/2025, a replication partnership meeting was organised in the form of nationwide workshops dedicated to river restoration. Participants included representatives of the National Water Management Authority Polish Waters (PGW Wody Polskie) – the National Water Management Board and Regional Water Management Boards from across the country, as well as experts from the Institute of Meteorology and Water Management – IMGW-PIB. The workshops enabled presentation of the results achieved within the Project, exchange of experience, and discussion of the practical implications of the Nature Restoration Law. The meeting created space for joint development of effective solutions in the field of protection and restoration of the aquatic environment. The methods developed and tested in the Nida River inland delta were recognised as applicable on a broad scale in restoration activities carried out by institutions responsible for water management in Poland.
- On 14–17/07/2025, an international meeting entitled “LIFE Academy: Practical Approaches to Freshwater Mussel Restoration” was organised. The meeting was attended by 10 experts and conservation practitioners from 7 countries: Switzerland, Lithuania, Czechia, Ukraine, Portugal, Spain and Croatia. The aim of the event was to exchange knowledge and experience in wetland species conservation and restoration of aquatic habitats, with particular focus on the conservation of *Unio crassus*. The programme included, inter alia, scientific presentations on the biology, ecology, conservation and recovery of mussels and amphibians, workshops on the use of drones and telemetry tools in environmental monitoring, field visits in the Nida River valley and the Warkocz area, practical sessions in specialised laboratories and breeding stations for mussels, European pond turtles and the Little whirlpool ramshorn snail (*Anisus vorticulus*), networking sessions and exchange of experience. The meeting activated international cooperation and provided an impulse for planning further projects dedicated to biodiversity conservation. The Project co-beneficiaries – IOP PAS and UR – presented research results and practical solutions for river habitat restoration and species recovery, using the Nida River delta as a model example of successful large-scale restoration.
- On 28–31/07/2025, a study visit of a representative of the Norwegian Institute for Nature Research was organised. The visit enabled exchange of experience and best practices in the conservation of wetlands and species associated with aquatic habitats. The knowledge exchange and observations of methods applied in Poland contributed to capacity building of partner institutions and strengthening the competences of

conservation practitioners. The visit constituted an example of effective cross-border cooperation, stakeholder engagement and the synergistic use of modern technologies in field ecology.

Deviations, problems, comments

The originally planned format of two-week study visits proved difficult to implement due to the lack of consent from management staff in many scientific and research institutions for such long secondments of employees. These constraints were organisational and staffing-related, and their consequence was the need to modify the knowledge-transfer model. In response, the format of visits was changed and replaced with shorter but more intensive 3–4-day sessions, including a condensed programme of workshops, presentations and field activities. The new formula made it possible to achieve the intended substantive objectives, reduced the burden on institutions delegating staff, and increased the actual accessibility of events for a wider group of specialists. The applied solution proved effective and, despite the shorter duration of visits, a high level of quality of knowledge transfer, expert-network integration and exchange of experience was maintained. This model was assessed as efficient and suitable for use in future replication and training initiatives as well.

F.1 Project management

Foreseen start date	Q4/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q3/2019	Actual end date	Q4/2024	
DELIVERABLES PRODUCTS	Deadline		Actual deadline	
Financial report on the implementation of the project budget	09/2025		09/2025	
MILESTONES	Deadline		Actual deadline	
Recruitment and employment of employees for the project	03/2019		Achieved at the Mid-term	

The main beneficiary of the project was the Świętokrzyskie Voivodeship – ZSiNPK in Kielce. The co-beneficiaries included State Forests – Pińczów Forest District, IOP PAN in Kraków, and the University of Agriculture (UR) in Kraków. The Coordinating Beneficiary signed partnership agreements with each co-beneficiary regulating the rules of cooperation. These agreements were attached to the Mid-term report. The project was managed by a Management Team, defined in the unit's organizational regulations as the LIFE Project Implementation Section. The recruitment of staff proceeded in accordance with the principles and regulations adopted by ZSiNPK and the organizational chart presented below.

The organizational structure of the team and the project management structure changed during the implementation period:

Project Manager: Wojciech Sołtysiak (period: 02/01/2019 – 18/09/2022), Piotr Wilk (period: 19/09/2022 – 30/09/2025 – ZSiNPK employee seconded to the project) – employed on a full-time basis according to the organizational chart. He coordinated the work of the entire project team and was responsible for the implementation of all actions provided for in the project.

Deputy Project Manager: Jakub Kubiec (01/01/2019 – 28/02/2019), Tomasz Bania (01/06/2019 – 30/11/2021), Piotr Wilk (01/12/2021 – 18/09/2022 – ZSiNPK employee seconded to the project), Kamila Mazur (19/09/2022 – 30/09/2025). The Deputy Manager was employed full-time, providing substantive supervision over tasks carried out in the Sanctuary area and substituting for the Manager during his absence.

Financial Coordinator: Barbara Grządziela (period: 11/02/2019 – 28/02/2025; employed 0.25 FTE from 11/02/2019 – 30/09/2021, and 0.5 FTE from 01/10/2021 – 28/02/2025), Agnieszka

Pietras (period: 01/03/2025 – 30/09/2025; employed full-time). The Financial Coordinator was responsible for the proper accounting of the project, including supervision over the correct completion of accounting documents and monitoring the financial plan.

Public Procurement Specialist: Agnieszka Kędzior (period: 11/02/2019 – 30/09/2025), employed 0.25 FTE. Responsible for the proper preparation and implementation of public procurement tasks.

Furthermore, the project team included the following persons:

Bird Sanctuary Specialist: Marcin Słoma (02/01/2019 – 31/10/2024), 1.0 FTE;

Habitat Sanctuary Specialist: Kalina Adamczyk (02/01/2019 – 31/10/2024), 1.0 FTE;

Water Protection Specialist: Andrzej Łukasik (01/04/2019 – 31/10/2024), 1.0 FTE;

Accounting Specialist: Agnieszka Pietras (01/03/2019 – 28/02/2025; 0.75 FTE from 01/03/2019 – 31/08/2021, and 0.5 FTE from 01/09/2021 – 28/02/2025);

Aquatic Organisms Conservation Specialist: Dariusz Wiech (02/01/2020 – 30/09/2025), ZŚiNPK employee seconded to the project at 1.0 FTE;

Nature Conservation Specialist: Kamila Mazur (02/01/2019 – 18/09/2022), Wojciech Sołtysiak (19/09/2022 – 30/09/2025), 1.0 FTE;

Grazing and Technical Support Specialist: Bogusław Wojtasik (01/01/2019 – 31/01/2024), Jarosław Powalka (01/02/2024 – 30/09/2025), ZŚiNPK employees seconded to the project at 1.0 FTE;

Education Specialist: Beata Angielska/Bętkowska (02/01/2019 – 30/05/2025), 1.0 FTE;

Promotion Specialist: Jakub Kubiec (01/03/2019 – 23/05/2019), Milena Bilewska (01/06/2019 – 31/08/2021), Robert Pisarczyk (01/10/2021 – 31/12/2024), 0.5 FTE;

Project Monitoring Specialist: Piotr Wilk (02/01/2019 – 30/11/2021; seconded), Paweł Szczurkowski (21/03/2022 – 10/03/2023), Katarzyna Bień (01/04/2023 – 30/09/2025), 1.0 FTE;

Scientific Consultant: Wojciech Szymański (10/01/2019 – 31/07/2021);

Biodiversity Conservation Specialist: Agnieszka Krzyszowska (01/08/2020 – 31/12/2023), 0.5 FTE.

In addition to the project team, Directors supervised the correct implementation of the project in accordance with the unit's organizational regulations. Detailed tasks of the management team were assigned to both staff hired for the project and employees seconded from ZŚiNPK, within the scope of duties attached to their employment contracts. The "102% rule" was maintained for seconded staff from ZŚiNPK, UR Kraków, and IOP PAN Kraków. All employees are accounted for based on timesheets and a daily attendance list.

Under this action, expenditures related to HR, legal, and IT services for the project were planned. Additionally, a translation service provider was selected through a public procurement procedure.

Furthermore, administrative and vehicle operating costs were accounted for, including fuel for the ISUZU and Citroen Berlingo, necessary insurance, technical inspections, and consumables including sets of tires. In Q4/2020, it became necessary to install a tow bar on the ISUZU D-MAX, which increased the vehicle's transport capabilities. Within this category, purchases were made successively as needed.

F.2 Steering committee

Foreseen start date	Q4/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q3/2019	Actual end date	Q4/2024	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Reports from meetings of the Steering Committee		09/2025	12/2024	

MILESTONES	Deadline	Actual deadline	
Appointment of the Steering Committee	06/2020	Achieved at the Mid-term	

In order to ensure effective supervision over Project implementation, a Steering Committee team was established. The Committee consisted of 15 representatives of local government units from the Project area, central-government administration (State Forests, PGW Polish Waters, RDOŚ, ŚODR), the scientific community and non-governmental organisations. All members participated in the Committee's work as part of their official duties, without additional remuneration.

Preparatory work related to establishing the Committee began in Q3/2019 through the identification of potential members and the issuance of invitations. After participation was confirmed, the Steering Committee was formally established by Order No. 25/2019 of the Director of the Świętokrzyskie and Nadnidziańskie Landscape Parks Complex of 25 September 2019. The first meeting was held on 26/09/2019. During the meeting, letters of appointment were presented to members and the Chair was elected. A report on preparatory activities completed to date was also presented and the Project action plan was discussed. The meeting continued in the field - within the inland delta of the Nida River - where the scope of planned activities was presented.

The second meeting of the Committee took place on 16/12/2022 at the Nature Education Centre (OEP) in Umianowice. During the meeting, participants were informed about actions undertaken and results achieved, and the directions of work for subsequent years were discussed. The meeting also included a presentation of the new field headquarters of the Project, important for the implementation of education and promotion activities as well as breeding activities for protected species.

A subsequent meeting of the Committee was organised on 12/12/2023. Members of the Parks Council - an advisory and consultative body operating within the Parks Complex - also participated. The results achieved to date were presented and key successes and implementation challenges were discussed.

The final meeting of the Committee was held on 13/12/2024, also with the participation of members of the Parks Council. A summary of tasks implemented in that year was presented, along with a work plan for the following year, taking into account the extension of the Project until 30/09/2025. Due to the organisation of the Project final conference in Q2/2025, no additional Committee meeting was held. All members were invited to participate in the final conference, during which a comprehensive summary of Project results was presented.

Deviations, problems, comments

The most serious factor hindering implementation of this action were the recurring restrictions resulting from the COVID-19 pandemic from 2020 onwards. Sanitary restrictions introduced in connection with successive waves of infections, as well as accompanying government regulations limiting the organisation of in-person meetings, made it impossible to hold Steering Committee meetings in 2020 and 2021. As a result of these constraints, it was not possible to organise meetings in a format enabling full and substantive exchange of information and discussion of Project progress.

Despite these limitations, the Beneficiary undertook measures to ensure continuity of cooperation with Steering Committee members. Communication was maintained regularly and remotely, primarily through e-mail correspondence and telephone consultations. Under these arrangements, the Beneficiary provided Committee members with up-to-date information on Project implementation status, activity schedules and challenges encountered. At the same time,

members' opinions were sought and necessary substantive consultations were obtained, enabling key decisions to be made regarding the further course of work. Despite the inability to formally convene meetings, the Committee maintained its advisory function, and recommendations developed during this period were taken into account in Project implementation after the most restrictive measures were lifted.

F.3 Monitoring of the project implementation

Foreseen start date	Q1/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2019	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
Quarterly reports		09/2025	09/2025	
MILESTONES		Deadline	Actual deadline	
-		-	-	

The implementation of individual stages of the Project was systematically monitored at all management levels, with the aim of ensuring that activities remained compliant with the schedule, budget and Project objectives. Regular working meetings involving Project staff, co-beneficiaries and the Coordinating Beneficiary's management constituted the primary mechanism for ongoing supervision.

During these meetings, the progress of individual actions, the effects of completed works, the team work schedule, the effectiveness of tools used in the supervision and implementation process, problems encountered during implementation and proposed solutions, as well as any potential modifications to the scope or timetable of the Project were discussed. An important element of the supervision system was continuous on-site supervision of external contractors, ensuring compliance of works carried out. Direct field control enabled a rapid response to unforeseen situations and minimised the risk of irregularities.

Quarterly reports were prepared by the Project implementation monitoring specialist and representatives of the co-beneficiaries on a systematic basis from Q1/2019 to Q3/2025. The reports included an analysis of physical progress, action implementation indicators, schedules and issues encountered in individual quarters. Under this action, 27 quarterly reports were prepared as a deliverable and uploaded to the BUTLER.

F.4 External financial audit

Foreseen start date	Q4/2024	Foreseen end date	Q1/2025	Comments
Actual start date	Q4/2025	Actual end date	Q4/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
External financial audit		12/2025	12/2025	
MILESTONES		Deadline	Actual deadline	
-		-	-	

Due to the withdrawal from signing the contract by the tenderer who submitted the most advantageous offer, the selection of the audit contractor - Kancelaria Rachunkowo-Audytorska Biegły Rewident Tomasz Niedzwiedz - took place only at the beginning of Q4/2025. The audit report was accepted on 15/12/2025 and constitutes a Project deliverable uploaded to BUTLER. The audit covered an analysis of documentation and applied procedures with regard to the transferred and settled funds, procedures related to eligible expenditure in terms of their justification and proper supporting documentation, conducted public procurement procedures, and verification of compliance with the provisions of the LIFE grant agreement, including the

common provisions. The audit was planned and carried out in a manner ensuring reasonable assurance as to the reliability of the numerical and descriptive data presented by the Beneficiary. A representative sample of documents was applied, allowing the results to be generalised and enabling a reliable assessment of the compliance of project documentation with LIFE programme requirements. Based on the audit results, it was concluded that the numerical and descriptive data contained in the project documentation are reliable and consistent; the implementation of expenditure and the achievement of the planned project results comply with the requirements set out in the application and the grant agreement; and economic transactions were correctly documented and recorded in the project's separate accounting records.

The audit findings confirm the proper functioning of the project financial management system, including the compliance of internal procedures with LIFE requirements and the provision of full transparency and reliability of the data reported to the European Commission. The audit report constitutes an important element of the Project's internal control system, while also supporting the preparation of the final report to the European Commission.

F.5 After LIFE conservation plan

Foreseen start date	Q1/2019	Foreseen end date	Q4/2024	Comments
Actual start date	Q1/2025	Actual end date	Q3/2025	
DELIVERABLES PRODUCTS		Deadline	Actual deadline	
After-LIFE Plan		09/2025	09/2025	
MILESTONES		Deadline	Actual deadline	
-		-	-	

The After-LIFE plan presents the main results of the actions implemented, includes a SWOT analysis of the potential to sustain these results, and defines the approach and scope for continuing conservation actions and maintaining ecological effects after the end of the Project in the long term. Its main objective is to ensure the sustainability of the restoration results achieved in the inland delta of the Nida River, including the protection and reintroduction of protected species, the conservation of restored natural habitats, and the maintenance of appropriate water conditions in the Młodzawy forest complex. The document includes, inter alia, recommendations for monitoring and maintenance of wetland habitats, a schedule of follow-up and operational activities for institutions responsible for water management and nature conservation, a strategy for knowledge transfer and replication of good practices in other LIFE projects and restoration activities in Poland, as well as guidance on cooperation with local communities and scientific partners in order to maintain high effectiveness of conservation interventions.

The document constitutes a Project deliverable uploaded to BUTLER. It was also published on the Project website.

5.2 Main deviations, problems and corrective actions implemented

During Project implementation, several issues were encountered that required adjustments. These changes did not significantly affect the achievement of the Project objectives; they mainly resulted in shifts to the implementation schedules.

The COVID-19 pandemic affected the functioning of public administration, which had to operate under altered conditions and introduce new solutions. Despite the end of the pandemic, a long-term effect has been a substantial lengthening of procedures related to obtaining

decisions from public administration bodies. This was particularly evident during the preparation of complete design documentation and the implementation of investment activities, including the construction of three nature educational trails with accompanying infrastructure (Action C.12) and works related to the construction of a network of irrigation–drainage ditches with weirs within the Młodzawy forest complex (Action C.2). Due to the extended administrative proceedings required for obtaining decisions from public authorities, the planned raft crossing over an oxbow lake was abandoned, as it would have required additional permits, inspections and approvals from institutions authorising its use, which could not have been obtained within the Project timeframe. Moreover, operating a ferry raft would have required employing qualified staff holding inland navigation licences. This element of the nature trail was therefore replaced with a wooden footbridge on foundation posts. Its alignment bypassed the protected habitat type “oxbow lakes and natural eutrophic water bodies” (3150), avoiding interference with its condition, which had a positive effect on obtaining a decision from the Regional Directorate for Environmental Protection (RDOŚ) in Kielce confirming that an environmental impact assessment was not required, and significantly shortened the investment implementation period.

The land acquisition process (Action B.1) faced difficulties related to unclear legal status of certain properties, lengthy inheritance proceedings, and a lack of interest or consent from some owners to sell. As a result, it was possible to purchase only approximately 54 ha of land. The reduced scope of this action did not affect the achievement of the planned nature conservation objectives and was compensated for by concluding agreements with private landowners and obtaining State Treasury properties under long-term durable management and loan-for-use arrangements, which enabled the implementation of active conservation measures. Due to difficulties in finding farmers interested in cattle grazing (Action C.4), it was decided to manage grazing directly. Most activities related to daily animal management within the Project were carried out by maintenance staff employed by the Coordinating Beneficiary as part of the operation of the Nature Education Centre (OEP) in Umianowice. Within the Project, only one additional employee was hired to support daily grazing operations. Given that the Beneficiary already owned 20 Polish Konik horses and engaged them in active conservation measures, the purchase of a larger number of cattle was abandoned. Out of the planned 60 animals, a total of 32 cattle were purchased.

Within the Project, the restoration of marshland areas was achieved on a much larger scale than initially assumed. Increased water supply and expansion of wetland habitats occurred at the expense of moderately moist areas that had been intended for grazing. Grazing on restored marshes conflicts with the conservation of birds, amphibians and molluscs, as well as with maintaining the favourable conservation status of their habitats. Cattle entering wet areas and watering in oxbow lakes and floodplain pools leads, inter alia, to trampling and morphological damage of banks, destruction of vegetation providing shelter and nesting sites for birds, and increased turbidity and eutrophication of waters that serve as breeding areas for fish and amphibians. Consequently, it was decided to maximise water retention effects and the associated biodiversity, taking into account the role of wetland habitats in effective CO₂ sequestration and the immobilisation of biologically active compounds, which contributes both to climate regulation and to the purification of surface waters and their substantial retention (approx. 2 million m³).

The implementation timelines for actions related to the reintroduction and reinforcement of species associated with aquatic environments (Actions C.6–C.9) were not aligned in the Project proposal with the schedule of hydrological works. Only the completion of the final stage of hydrological interventions - namely improving the flow in the Stara Nida riverbed, eliminating the canal connecting the Stara Nida and the Smuga Umianowicka, and the maintenance of old river beds and eutrophic water bodies (Action C.1) - made it possible to

restore the natural and proper hydrological regime of the inland delta and to recreate optimal habitat conditions for protected species. Until these works had been completed, it was not possible to carry out all planned introductions, including the stocking of *Unio crassus* (Action C.7) into the renaturalised river branches, as well as the introduction of *Anisus vorticulus* (Action C.8) and *Bombina bombina* (Action C.10) into eutrophic water bodies, and *Vertigo angustior* and *Vertigo moulinsiana* (Action C.9), due to the lack of well-developed vegetation essential for these species. During this period, activities focused on strengthening source populations and on conducting and improving *in situ* breeding of these species. Despite the postponement of implementation dates, these actions were successfully completed thanks to the extension of the Project duration by nine months. The only action that was not completed was the reintroduction of *Emys orbicularis*, due to the prolonged process of obtaining a permit (over 15 months) from the Ministry of Climate and Environment to acquire juvenile individuals of this species from Polesie National Park; this action will be continued under the Project sustainability phase. This was additionally due to the acquisition of juvenile individuals only, which require a longer period of rearing under laboratory conditions to ensure that they reach the necessary life-history parameters and to increase their chances of survival in the natural environment.

Implementation of actions under Group E – Public awareness and dissemination, which required direct contact, was fully suspended or significantly limited for almost two years due to numerous governmental restrictions, including the closure of educational institutions, limitations on public transport, bans on meetings, etc. The most significant constraints were linked to schools switching to remote learning in accordance with regulations of the Minister of National Education on special arrangements during the temporary limitation of the functioning of the education system in connection with preventing, counteracting and combating COVID-19. This situation started on 25/03/2020 and lasted until 02/2022, making it impossible during that period to organise workshops and educational events under the Project (Action E.2). Despite these limitations, the planned indicators were achieved by the end of the Project.

Another issue encountered during Project implementation was progressive inflation, driven by the COVID-19 pandemic and the armed conflict in Ukraine, which resulted in a drastic increase in the costs of construction materials and services. This was particularly evident during the implementation of investment tasks under Actions C.2 and C.12. It necessitated reallocations of financial resources between cost categories; however, thanks to savings achieved in other Project actions, it was possible to complete these works. Part of the works in the Młodzawy forest complex was financed from the budget of the Coordinating Beneficiary.

All of the above deviations were consulted by the Coordinating Beneficiary with the Project Monitor and reported in progress reports.

5.3 Evaluation of Project Implementation

This section provides a comprehensive evaluation of the implementation of the LIFE4Delta project against the assumptions set out in the Grant Agreement. The project was successfully completed, achieving - and in many key aspects (e.g. water retention, amphibian breeding success, and the reach of educational activities) exceeding - the original objectives.

The applied methodology, based on a holistic ecosystem approach in which the restoration of natural hydrological processes constituted the foundation for active species and habitat conservation (Nature-based Solutions), proved to be highly effective in terms of conservation outcomes and cost efficiency. Despite significant external factors, such as the COVID-19 pandemic, inflation, and changes in the land market, the project—thanks to flexible governance

(adaptive management) and the implemented modifications (Amendment)—was delivered in full substantive scope.

The analysis below discusses in detail methodological successes and challenges, compares achieved results with the plan, and highlights the durability of outcomes, replication potential, and the project's contribution to shaping nature conservation policy at regional and European levels.

Action		Foreseen in the revised proposal	Achieved	Evaluation
A.1	Objectives: Purchase of field task equipment. Expected results:			All planned field equipment was acquired. Key adjustments included replacing the light off-road vehicle with a multifunctional passenger car to better support educational logistics and purchasing 50 piezometers (target: 40) thanks to cost savings, which significantly enhanced the precision of the hydrological monitoring network. Protective clothing was replenished based on actual wear and tear.
A.1.1	Purchase of an off-road car	1	1	
A.1.2	Purchase of a light offroad vehicle	1	1	
A.1.3	Purchase of a drone for field observations	1	1	
A.1.4	Purchase of equipment to monitor groundwater fluctuations	40	50	
A.1.5	Purchase of barodivers	2	2	
A.1.6	Purchase of computer for field tasks	1	1	
A.1.7	Purchase of protective clothing	10	10	
A.1.8	Purchase of equipment for ornithological observations (binoculars)	10	10	
A.2	Objectives: Technical projects, permits and arrangements. Expected results: For inland delta of Nida River: Situational and elevation maps (30 ha) Water law permit Set of technical documentation with a cost estimate Environmental impact assessment report For riparian complex in Młodzawy, Pińczów District: Situational and elevation maps (111 ha) Set of technical documentation with a cost estimate Water law permit Environmental impact assessment report Miscellaneous: Tourism infrastructure projects (educational paths) Appraisal reports Land register extracts and cadastral maps			The action was completed , though significantly delayed (extended to Q3/2025) due to the COVID-19 pandemic and prolonged administrative procedures for issuing environmental decisions. A major success was the adaptive management strategy applied to the Delta renaturalisation works (C.1), where replacing complex building permit procedures with maintenance notifications saved time and budget. Despite external difficulties (inflation, administrative bottlenecks), all necessary legal and technical foundations for concrete conservation actions (C.1, C.2, C.12) and land acquisition (B.1) were successfully secured.
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		1	1	
A.3	Objectives: GIS development and metamodel creation.			The action was completed . The created GIS database became a central tool for planning and

	Expected results: Purchase of GNSS receiver with external antenna and accessories GPS/GNSS software Training in surveying technology (3 persons) Update and upgrade of ArcGIS Desktop licence Geoportal and server software upgrade Aerial surveying Spatial data base	1 1 1 1 1 1 1	2 2 - 2 - 1 1	monitoring. The action showed adaptability and cost-efficiency : funds were reallocated from external training and server software (which were deemed unnecessary due to internal competencies) to purchase additional field equipment (2 units instead of 1) , thereby enhancing the efficiency of field inventory and monitoring tasks.
B.1	Objectives: Land purchase Expected results: Land purchase Notarial deeds	109,38ha 119	53,87 ha 63	The action was partially achieved in terms of quantitative targets (~49% of planned area). The deviation was caused by factors beyond the Beneficiary's control, including complex legal status of properties (unregulated ownership), lack of willingness to sell by some owners and rising land prices. However, the ecological objective was fully met . The Beneficiary successfully implemented an adaptive strategy : land purchase was focused on key strategic plots essential for hydrological restoration. For the remaining areas, long-term agreements (leases, lending) were secured with private owners and local authorities (e.g., Kije Commune) or consent for project implementation was obtained. This approach ensured that all planned conservation actions (C.1–C.13) could be executed across the entire project area, guaranteeing the sustainability of results despite the lower acreage of purchased land.
C.1 C.1.1 C.1.2 C.1.3 C.1.4 C.1.5 C.1.6	Objectives: Improvement of the hydrological conditions of the inland delta of Nida river Expected results: Unblocking the water supply ditch Restoration of Old Nida river Revitalization of Smuga Umianowicka river Revitalization of old riverbeds Revitalization of eutrophic lakes Improvement of the hydrotechnical infrastructure	3 km 6,3 km 5,3 km 4 km 8 ha 8	3 km 6,3 km 5,3 km 4,08 km 4,82 ha 19	The action was successfully completed, resulting in the full restoration of the Nida Delta's hydrological backbone. The restoration of key linear watercourses (C.1.1–C.1.3) was achieved at 100% , effectively reconnecting the river system. While the area of revitalized eutrophic lakes reached 4.82 ha (deviating from the estimated 8 ha), the functionality of the entire system was significantly enhanced by conservation of 19 hydrotechnical structures (vs 8 planned). This adaptive increase in infrastructure was crucial for ensuring precise water level management and the long-term resilience of the restored habitats.
C.2	Objectives: Active protection of the riparian forests. Expected results:			The action delivered its core objective of improving the conservation status of riparian forests (<i>91E0</i>). In

C.2.1	Active conservation in the inland delta: Planting of riparian forests Seedlings care	5 ha 3 years	6,5 ha 3 years	the Inland Delta , the planting area was expanded to 6.5 ha (target: 5 ha), exceeding the goal. In the Młodzawy forest complex , the hydrological restoration strategy was optimized based on detailed expert analysis to avoid disrupting the delicate forest ecosystem structure.
C.2.2	Active conservation in the “Młodzawy” forest complex: Unblocking of the water supply ditches Building regulating valves Investment supervision	25 km 3 1	2,63 km 3 1	
C.3	Objectives: Restoration of meadow habitats to the proper conservation status. Expected results: C.3.1 Removal of trees and shrubs C.3.2 Removing of <i>Phragmites australis</i> C.3.3 Single mowing Miscellaneous: Purchase of tractor wheels Purchase of laptop with software	 20 ha 20 ha 90 ha 2 1	 38,88 ha 20 ha 125 ha - 1	
C.4	Objectives: Initiation of grazing Expected results: Recruitment of farmers Veterinary care Feed and water supply for animals Grazing area Purchase of livestock (cattle) Polish horses (owned before the project) Purchase of infrastructure: Livestock and fodder sheds Solid and electric fencing kits Electric nests for area quartering (interior) Waterers with heaters Waterers (hods) Roofed feeders Water containers Tractor with front loader Round baler Rake Rotary tedder Bale trailer Mobile restrainer for cattle Pressure washer Crocodile manure forks Miscellaneous: Warranty inspections of tractor maintenance, repairs, oil changes Insurance of tractor, water trailer, livestock trailer	 5 persons 540 days 4 years 232 ha 60 20 5 5 5 10 10 10 10 1 1 1 1 1 1 1 1 0 5 years 5 years	 1 person 6,5 years 6,5 years 44,8 ha 32 20 3 3 4 0 6 1 1 1 1 1 1 1 1 0 1 5 years 5 years	 The action exceeded its conservation targets, effectively restoring open meadow habitats (6510, 6410). Tree and shrub removal covered 38.88 ha (target: 20 ha) to address advanced secondary succession. Reed removal fully achieved the planned 20 ha, reducing the dominance of <i>Phragmites australis</i> . Extensive mowing was carried out on 125 ha (target: 90 ha), ensuring habitat maintenance. The laptop purchase was completed, while funds initially allocated for tractor wheels were reallocated to concrete actions. The action successfully established continuous grazing in the Delta area, ensuring animal health, fodder supply and infrastructure support despite delays caused by COVID-19 and difficulties in recruiting farmers (planned: 5, achieved: 1). Grazing of 20 Polish Konik horses and 32 cattle (planned: 60) was implemented on secured pastures with permanent veterinary care over 6.5 years. Technical infrastructure—including fencing, sheds, waterers, feeding racks and tractors—was completed, providing a solid basis for animal management. Hydrotechnical restoration limited the total grazed area (planned: 232 ha, actual: 44.8 ha), but enhanced wetland and biodiversity benefits, balancing grazing with habitat protection. Overall, the action ensured continuous active conservation while supporting sustainable fodder management and long-term maintenance of the project herds.

	Purchase of fuel for 2 tractors Purchase of fodder for animals for the 1st season and 1st winter	6 years 260 tonnes	6,5 years 50 tonnes	
C.5	Objectives: Active bird protection Expected results: New nesting platforms for <i>Ciconia ciconia</i> New nesting platform for <i>Haliaeetus albicilla</i> Reinforcement of the existing nest for the <i>Haliaeetus albicilla</i> Maintenance works on the nest of <i>Ciconia ciconia</i> Purchase of walkie-talkies Purchase of computer with software Purchase of binocular Purchase of photo trap:	 10 1 1 0 2 1 1 0	 10 1 1 1 4 1 1 2	The active bird protection action was successfully implemented, with all planned nesting platforms for <i>Ciconia ciconia</i> and <i>Haliaeetus albicilla</i> installed with the existing nest reinforced. Maintenance works, including pruning branches at the <i>C. ciconia</i> nest ensured safe breeding conditions, while purchased equipment supported effective monitoring and provided valuable insights into bird behaviour and threats.
C.6	Objectives: Reintroduction of <i>Emys orbicularis</i>. Expected results: Capture of adult <i>Emys orbicularis</i> Capture of juveniles Transport containers Telemetry transmitters for adults Telemetry transmitters for juveniles Telemetric receivers Yagi antenna PIT tags transmitters Wand antenna for locating PIT tags transmitters Specialist field computer with software Glue for transmitters Aquariums (approx. 150 litres) with equipment Fluorescent lamp holders Bulb holders for heating lamps Incubators Water container for live feed Trapping nets	 50 50 6 18 18 2 3 70 2 1 3 6 6 6 2 1 3	 0 150 4 0 50 1 1 0 0 1 3 6 10 10 0 1 3	The action achieved success. The reintroduction was successfully implemented, with all planned rearing facilities and equipment—including rearing units, heat and UV-B lamps, telemetry transmitters, and monitoring devices —fully established and operational. Juveniles were maintained under optimal husbandry and veterinary care, and the first group was released into the natural environment in Q3/2025, with telemetry confirming their adaptive behaviour and habitat use. Delays in permits and equipment availability shifted some releases to the post-project durability period, but all planned activities ensured the continuity and effectiveness of the reintroduction programme.
C.7	Objectives: Reintroduction of <i>Unio crassus</i>. Expected results: Identification of sites to be settled: Establishment of rearing station Equipment: Special "Zebra Fish" culture system with filtration Web600 Monitoring System 3D stereo microscope with accessories Spectrophotometer Electrofishing backpack set Australis receivers	 12 1 1 1 1 1 1 2	 36 1 1 1 1 1 1 2	The reintroduction of <i>Unio crassus</i> was successfully implemented, with more than planned 36 sites identified and the rearing station established . Key equipment, including culture systems (team has built five Recirculating Aquaculture Systems, instead of one commercially produced Zebra fish system. The main reason for the change was increased prize of Zebra fish systems, which was well above the funds available in the project), microscopes, monitoring devices, underwater observation tools and field gear, was procured and fully

	Biomark System Clothing for work in water Equipment for underwater observation: Aquascopes Aquascopes lighting Underwater cameras Macro lens Purchase of materials for breeding: PIT tags HOBO dataloggers Plank nets Gravers for cleaning shells Consumables in the form of feed, fish, reagents, etc	1 4 persons 4 6 2 1 600 36 4 3 6 years	1 6 persons 4 4 2 1 1 200 36 4 3 6 years	operational, supporting effective rearing and monitoring of the species. Some adjustments were made in the marking of juvenile mussels (PIT tags), but all other materials and consumables for breeding and monitoring were provided for the full duration of the project, ensuring the continuity and effectiveness of the reintroduction activities.
C.8	Objectives: Protection and breeding of other aquatic organisms with particular interest of <i>Anisus vorticulus</i> Expected results: Breeding station of <i>Anisus vorticulus</i> Introduction to old river bed Small "Zebra Fish" culture system with filtration, Web600 Monitoring System HOBO Aquascapes with lighting Polarised glasses with magnification Aquaboxes Computer with software	1 1 1 6 1 1 0 1	1 4 1 0 0 20 1	Breeding of <i>Anisus vorticulus</i> continued at the Environmental Education Center, using ex-situ methods (laboratory system and 1,000 L outdoor tank) to ensure stable environmental conditions and effective reproduction. Following a permit captive-bred specimens were reintroduced into four restored old river beds.
C.9	Objectives: Restitution of <i>Vertigo moulinsiana</i> and <i>Vertigo angustior</i> Expected results: Identification of potential resettlement sites Selection of sites for settlement Establishment of breeding facility Population expansion in microhabitats	40 20 1 20	40 20 1 21	All planned activities were completed. Potential resettlement sites were identified, 20 sites were selected for introductions and the breeding facility was successfully established. Repeat monitoring confirmed a strong increase in <i>Vertigo angustior</i> present at 14 sites in 2025 with local disappearance at 2 sites and confirmed establishment at 4 newly created sites. <i>Vertigo moulinsiana</i> was recorded at 7 sites at 2025 successfully colonising 6 of 10 newly created sites.
C.10	Objectives: Restitution of <i>Bombina bombina</i> and <i>Triturus cristatus</i>. Expected results: Inventory of source populations Ponds for amphibians	1 5	2 5	The action was implemented as planned. Five ponds were created for amphibians. One donor population of <i>Bombina bombina</i> and two donor populations of <i>Triturus cristatus</i> were inventoried, supporting the restitution of both species.
C.11	Objectives: Preservation of the gene pool of plant species. Expected results:			The action was successfully completed , exceeding its core objectives for genetic conservation and habitat restoration. The

D.1	Objectives: Environmental monitoring. Expected results: Environmental monitoring reports JMP Pro license ArcGIS license Short waders Binoculars:	7 1 1 18 3	9 1 1 22 3	The environmental monitoring activities were successfully implemented, producing 9 monitoring reports and ensuring full operational capacity through the acquisition of necessary licenses (JMP Pro and ArcGIS) and field equipment, including waders and binoculars . All expected outputs were delivered, supporting effective data collection and analysis throughout the project.
D.2	Objectives: Hydrological monitoring. Expected results: Database Numerical terrain model for inland delta and Młodzawy forest Hydraulic model for the inland delta and for Młodzawy forest ADCP M9 probe	1 2 2 1	1 2 2 1	The action, implemented by the Co-beneficiary (UR Krakow), successfully established a database and produced numerical and hydraulic terrain models for both the Nida River Delta and the Młodzawy forest complex (one of each). An ADCP probe was purchased to support field measurements of water flow and bed morphology. Despite some delays caused by procedural requirements and the COVID-19 pandemic, all planned monitoring and modeling activities were completed, providing a robust foundation for assessing water dynamics and evaluating the impact of restoration works.
D.3	Objectives: Assessment of socioeconomic impact. Expected results: Surveys Report	600 2 stages	660 2 stages	The report is based on a conducted in the municipalities of Kije, Pińczów, and Imielno, targeting local authorities, entrepreneurs, NGOs, and community members. It collected perspectives from diverse social groups on the socio-economic and ecosystem-related impacts of the project in the local context.
D.4	Objectives: Assessment of ecosystem services Expected results: Expertises	2 stages	2 stages	Implemented in two stages in accordance with the plan. The first stage developed the theoretical and methodological framework, and the second delivered the comprehensive study, including a comparative analysis of ecosystem service resources.
D.5	Objectives: Monitoring of the project key performance indicators LIFE KPI Expected results: Analysis of the results achieved KPI Project performance indicators table	5 1	5 1	Implemented in accordance with the plan. The KPI Webtool database has been completed with all input data.
E.1	Objectives: Promotional activities of the project Expected results: Website Hosting, domain and server	1 5 years	1 10 years	All planned promotional activities were implemented, with several outputs exceeding expectations. Notably, the number of information boards, bags and educational maps surpassed planned quantities,

E.1.2	Brand book	1	1	reflecting strong dissemination efforts. Some activities, such as photographs for the calendar, were not bought as planned because of the calendar photos were shot by employees, while others, like the the number of radio programmes slightly exceeded the target.
E.1.3	Information boards and labeling of materials and fixed assets	13	22	
	Information boards for marking tourist infrastructure (A3)	5	5	
	Stickers	200	200	
E.1.4	Informational meetings	4	4	
	Number of participants	160	140	
E.1.5	Promotional and informative brochures	12 000	12 050	
E.1.6	Calendar: 4 000 pcs	4 000	5 000	
	Photographs for the calendar	10	0	
E.1.7	Roll-ups	4	1	
E.1.8	Informative and educational maps	4 000	15 000	Overall, these efforts significantly enhanced the visibility of the project and stakeholder engagement.
E.1.9	Various promotional materials:			
	Bags	1 500	1 800	
	T-shirts	1 000	1 200	
	Tea from Ponidzie	3 000	3 000	
	Bookmarks	10 000	5 000	
	Reflective elements	2 000	2 000	
	Paper bags	0	1 000	
E.1.10	Documentary film	1	1	
E.1.11	Radio programme	5	6	
E.2	Objectives: Educational activities of the project			The project's educational activities were successfully implemented, engaging schoolchildren, students, teachers, and farmers through workshops, festivals, and trainings. All planned educational tools were delivered, with large-format puzzles replaced by a board game to enhance interactive learning. COVID-19 caused temporary delays and required adaptations, including online teacher workshops, modification of some two-day workshops into one-day formats. Beneficiary made the replacement of a planned mobile app with a website for citizen science monitoring "Stork nest". Despite these challenges, the activities achieved their educational objectives and supported long-term project impact.
	Expected results:			
E.2.1	One-day workshops	140	248	
	Number of participants	7 400	11 178	
E.2.2	Two-day workshops	90	31	
	Number of participants	4 900	1 426	
E.2.3	Workshops for teachers	5	5	
	Number of participants	250	250	
E.2.4	Educational festivals	12	27	
	Number of participants	6 000	6 132	
E.2.5	Trainings for farmers	4	3	
	Number of participants	100	100	
E.2.6	Educational tools:			
	Outdoor sound system	1	1	
	Large-format puzzles	1	0	
	Become an Explorer of the Nida River Delta – educational board game	0	20	
	Educational film	1	1	
	Educational display	1	1	
	Photographs for the display	20	18	
	Educational model	1	1	
	Microscope with camera and monitor	1	1	
E.2.7	Citizen science monitoring in schools – "Stork Nest"	1	1	
E.3	Objectives: Conferences and seminars.			All planned conferences were implemented, although actual participation slightly differed from expectations. The number of one-day seminars exceeded the target, reflecting high stakeholder interest. Additionally, one platform meeting was organized, further supporting
	Expected results:			
E.3.1	Opening conference	1	1	
	Participants	80	73	
E.3.2	Midterm conference	1	1	
	Participants	80	64	
E.3.3	Final conference	1	1	

E.3.4	Participants One-day seminars Participants Platform meeting Participants	80 3 150 0 0	69 5 184 1 61	networking and knowledge exchange among project partners.
E.4	Objectives: Layman report and scientific report Expected results: Scientific report Layman's report	 500 200	 500 200	Implemented in accordance with the plan. The scientific report and the layman's report were printed in the planned quantities.
E.5	Objectives: Networking with other projects. Expected results: E.5.1 Technical meetings E.5.2 National visits E.5.3. European visits	 6 12 6	 4 8 8	The objective of networking with other projects was partially achieved. The lower number of technical meetings and national visits resulted from restrictions related to the COVID-19 pandemic, which limited travel and in-person meetings.
E.6	Objectives: Transfer of knowledge and replication of project activities. Expected results: Replication partnership meeting Study visit Number of participants	 1 1 10	 1 3 13	Instead of one large study visit, 3 smaller were organized to accommodate the schedules of international experts. As a result, the number of participants increased to 13 enhancing the transfer of knowledge on freshwater mussel restoration (LIFE Academy).
F.1	Objectives: Project management. Expected results: Recruitment and employment of employees for the project Employment contracts: HR and legal service IT service Translator service	 11 6 years 6 years 6 years	 11 6,5 years 6,5 years 6 years	The project management objective was successfully achieved through the recruitment and long-term employment of qualified staff. Employment contracts covered HR and legal support, IT services, and translation services, ensuring stable management and operational capacity throughout the project duration.
F.2	Objectives: Steering Committee. Expected results: Meetings of the Steering Committee	 6	 4	Restrictions related to the COVID-19 pandemic hindered the work of the Steering Committee. In 2020 and 2021, no in-person meetings were held and contacts with individual Committee members were maintained via remote and telecommunication means.
F.3	Objectives: Monitoring of the project implementation. Expected results: The quarterly reports Computer for field tasks with software	 24 1	 27 1	Implemented as planned. The higher number of quarterly reports results from the extended project duration.
F.4	Objectives: External financial audit. Expected results: External financial audit	 1	 1	Implemented in accordance with the plan.
F.5	Objectives: After LIFE conservation plan			Implemented in accordance with the plan

	Expected results: Conservation plan AfterLIFE	1	1	
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5.4 Analysis of benefits

This chapter presents an analysis of progress in the implementation of the LIFE4Delta project, focusing on the environmental, economic and social results achieved. It discusses the level of achievement of the project objectives and the project's impact against baseline and target values, including the final values of the key project-level indicators (Key Project-level Indicators – KPIs) applicable as of the project end date. The chapter identifies areas where objectives were achieved or exceeded and provides justification for significant deviations from the original assumptions, resulting from the adaptive project management approach, environmental conditions and new challenges identified during implementation. The analysis covers both measurable quantitative effects and long-term qualitative benefits, including the durability of results and their relevance for future site management and the implementation of EU policies.

5.4.1. Environmental benefits.

1. Direct / quantitative environmental benefits

Project implementation enabled the preservation and comprehensive protection of valuable habitat types and selected rare flora and fauna species, as well as an update of knowledge regarding two Natura 2000 sites: PLH260003 Ostoja Nidziańska and PLB260001 Dolina Nidy. Continuous floristic and phytosociological surveys (Action D.1) conducted in 2019–2025 confirmed the presence of, and an improvement in the conservation status of, eight key habitat types.

The expected quantitative environmental benefits were achieved and, in many aspects, exceeded, due to the project's key success: restoration of the natural hydrological regime in the inland delta of the Nida River.

Key Project-level Indicators (KPIs) as of 30/09/2025 (compared to baseline):

- **Hydrology and retention (ecosystem services, Actions C.1–C.2):**
 - A total of **21.845 km** of watercourses were revitalised and/or subjected to maintenance works (**baseline: 0 km**). This includes the delta's key water arteries: the **Old Nida**, the **Umanowice Smuga**, the so-called **water supply channel (*Doprowadzalnik*)**, as well as **old river beds**.
 - The area's retention capacity improved markedly over **7.45 km² (baseline: 4.45 km²)**, mainly within **floodplain terraces and floodplain lakes**.
 - Through hydrotechnical works (installation and operation of weirs, clearance of flow paths, and maintenance of floodplain lakes), water retention within the delta system increased by approximately **1 million m³**.
 - **Water purification function:** Scientific studies confirmed that revitalised floodplain lakes act as efficient biological filters - they carry **three times more chlorophyll** than the river's main channel, which indicates that they capture **three times more nutrients**, significantly improving water quality at the catchment scale.
- **Natural habitats (increase in area and improvement in quality):**
 - **91E0* Alluvial forests with Salix, Populus, Alnus and Fraxinus (Action C.2):** Active conservation covered **104.66 ha (baseline: 98.16 ha)**. In the Młodzawy forest complex,

a total of **2,630 m** of ditches were cleared and restored, re-establishing proper water relations; meanwhile, in the delta, **more than 4,000** alluvial tree and shrub individuals were planted.

- **3150** floodplain lakes and other natural eutrophic water bodies (*Action C.1*): **9.88 ha** of the habitat were restored (**baseline: 4.08 ha**). Restoration works in floodplain lakes created new niches for fish, amphibians and molluscs.
- **6510** Lowland hay meadows (*Action C.3*): Appropriate agricultural use was restored over **44.8 ha (baseline: 31.3 ha)** by introducing extensive grazing with Polish konik horses and diversified cattle: Polish Red and Hereford breeds. Mowing was also implemented, which effectively halted succession (*Action C.4*).
- **6410** Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Action C.3*): The habitat condition over **28 ha (baseline: 14 ha)** improved substantially. Owing to a rise in groundwater level (**10–50 cm**, depending on location - piezometer data) and grazing, conditions were created for the regeneration of rare plant species such as *Ostericum palustre*.
- **6210** Semi-natural dry grasslands and scrubland facies on calcareous substrates (*Action C.11*): **0.6 ha** of valuable calcareous grasslands on the hillfort in Antoniów were restored and brought under active conservation (**baseline: 0.6 ha**, but with a substantially lower biological quality). It should be noted that this area currently serves as a substitute site for rare and protected grassland plant species such as *Dorycnium germanicum*, *Serratula lycopifolia*, *Carlina onopordifolia* and *Linum flavum*.
- **Target species (population trends and breeding success):**
 - *Unio crassus* (*Action C.7*): The project concluded with a successful reintroduction - **38 functional beds/sites** were established (vs. **24 planned**) along approximately **60 km** of watercourse (**baseline: 0**). Monitoring confirmed survival, natural reproduction and recruitment of mussels.
 - *Crex crex* (*Action C1, C3-5*): The population increased sharply to **37–42 territorial males (baseline: 8 males)**. This is a direct, measurable effect of restoring wet meadows and proper water management.
 - *Porzana porzana* (*Action C1, C3-5*): the species returned to the area, with 2-11 calling males, after 30 years of absence (baseline zero)
 - *Triturus cristatus* (*Action C.10*): A demographic boom was recorded in restored water bodies. In 2025, monitoring documented a record **1,226 captures (baseline: 0 site/trace population)**, confirming full self-sustainability of the population.
 - *Bombina bombina* (*Action C.10*): Occurrence was confirmed at **12 sites** with a total area of approximately **17 ha (baseline: 0 confirmed breeding sites)**.
 - *Emys orbicularis* (*Action C.6*): Following successful ex situ breeding and habitat preparation, in 2025 a reintroduction of **40 juveniles** (cohort 2023) was carried out over **16.87 ha (Rozlewisko Umianowickie—a key site in the core of the Delta)**. The population is monitored using telemetry.
 - *Vertigo* snails (*Action C.9*): Improved hydration enabled expansion. *V. angustior* was confirmed at **14 sites** (area **23.7 ha**), and *V. moulinsiana* at **7 sites (1.5 ha)**. Spontaneous colonisation of new habitat patches was recorded.
 - *Anisus vorticulus* (*Action C.8*): **4 new colonies** (over an area of approx. **4 ha**) were established by introducing **more than 160 individuals** from breeding.
 - **Birds** (*Action C.5*): The return of *Botaurus stellaris* as a breeding species was confirmed (**2 territorial males**). Nest platforms for *Ciconia ciconia* were occupied (**3 breeding pairs** use the project infrastructure). The **white-tailed eagle Haliaeetus albicilla** site in the Młodzawy Forest was maintained; the species' return to the Delta is considered likely. The breeding colony of waders returned to Czeskie pasture.

Qualitative environmental benefits

- **Outlook for habitats and species:**

- The outlook for the target habitat types and species is very stable and promising. Restoration of hydrological continuity (reactivation of the Stara Nida riverbed and the Umianowice Smuga, and clearance of the supply channel) created a self-sustaining system that increases the Delta ecosystem's resilience to drought and climate change.
- Clear upward trends were recorded for indicator species (*Crex crex*, *Triturus cristatus*, *Unio crassus*).
- The *Emys orbicularis* population, although still at an early stage of reintroduction, has gained a solid foundation through safe, restored habitats and professional breeding facilities.

- **Elimination of threats:**

- The project successfully eliminated or significantly reduced the key threats defined in the B2d Grant Agreement Form:
 - **Site desiccation:** Addressed systemically by restoring flow in the Stara Nida and constructing/rehabilitating water-level control infrastructure. The piezometer network recorded a **10–50 cm** rise in groundwater levels within the impact zone, safeguarding habitats against degradation.
 - **Secondary succession:** Encroachment of meadows and floodplain lakes was halted through the introduction of extensive grazing (Polish konik horses; Hereford and Polish Red cattle) and mechanical removal of shrubs and reedbeds (**approximately 22 ha** of excessive vegetation removed in total).

- **New / remaining threats:**

- During project implementation, new challenges were identified that will require action in the After-LIFE period:
 - **Invasive Alien Species (IAS):** Increasing pressure was observed from invasive species such as *Solidago gigantea* thickets and *Perccottus glenii*—a fish that may threaten amphibians. Continued monitoring and reduction measures will be necessary.
 - **Climate change:** Prolonged hydrological drought periods remain a threat across the region; however, thanks to the project (increased channel and groundwater retention), the Delta ecosystem has become significantly more resilient compared to adjacent areas.

- **Long-term management and continuation:**

- Actions initiated under LIFE4Delta will be continued and further developed by the Coordinating Beneficiary (ZSiNPK) as part of its statutory responsibilities. A key element of sustainability is the Nature Education Centre (OEP) in Umianowice, which has assumed the role of a hub for ecological monitoring, education, and *ex situ* conservation breeding.
- In 2026, the Regional Directorate for Environmental Protection (RDOŚ) in Kielce will initiate the procedure to update the Plans of Conservation Measures (PZO) for the Natura 2000 site “Ostoja Nidziańska”. Results from LIFE4Delta ecological monitoring will be incorporated into these documents, enabling formal recognition of the improved status of habitats and species populations.
- The completed tourism infrastructure (including the wooden boardwalk over wetlands, which replaced the originally planned raft crossing for functional and legal reasons, the observation tower, and the trails) will enable effective channelling of visitor flow, protecting the most valuable refuge zones from anthropogenic pressure.

5.4.2. Economic benefits.

Transformation of the region's economic model

- **LIFE4Delta as a development driver:**
 - The LIFE4Delta project became a key development stimulus for the Kije Municipality and the wider Ponidzie region. This is an area that is not affluent and has not previously had traditional assets (industrial resources or nationally significant architectural heritage) that could generate substantial revenue for the municipality and its residents.
- **Reconstruction of a unique economic asset:**
 - **Nature-based economy as a foundation:** Restoration of the Nida inland delta transformed the area into the region's most important asset. The project demonstrated that outstanding natural values can form the basis of the local economy (a model nature-based economy solution).
 - Restoration of habitats - and thus biodiversity - created a basis for the development of nature and specialist tourism (birdwatching, kayaking tourism, educational tourism), attracting external capital to the municipality (tourists, trainees, "green schools", pupils from across the voivodeship, and international visitors), which previously had no reason to come to this location.
- **The Nature Education Centre (OEP) as the economic "heart", the gateway to the restored Delta, and a local employer:**
 - The OEP is not only an educational facility, but also functions as an economic hub. It ensures a permanent presence of staff in the field (visitor services, infrastructure management, animal care), which is a key element compared to typical projects that end when funding ceases.
 - The OEP enables education and tourism activities to be delivered on a continuous basis, generating steady demand for local services (transport, diverse supplies - from food products to specialist laboratory breeding equipment - technical servicing, etc.). This provides an excellent complement to strictly nature conservation actions.
- **Financial leverage effect and new opportunities:**
 - The success of the LIFE project and the establishment of professional supporting infrastructure opened the way for the Coordinating Beneficiary to secure further external funding, supporting operations and, above all, the long-term sustainability of the achieved conservation outcomes.
 - **New projects (including the European Solidarity Corps):** Building on the resources created under LIFE, the Beneficiary launched new initiatives, such as European Solidarity Corps projects. The presence of volunteers from Europe and associated countries generates additional activity in the local economy, complements and supports professional staff, and promotes the region internationally, increasing long-term interest.
- **Tourism development:**
 - The OEP in Umianowice, together with the LIFE-funded infrastructure (observation tower, boardwalk, trails), has become a new, key tourist attraction in the Świętokrzyskie Voivodeship.
 - **Increase in visitor numbers:** In 2022–2025, the OEP was visited by a total of almost **39,000** people (nearly **15,000** visitors in 2025 alone). At this scale, in a small rural municipality, this represents a significant demand-side impulse for local shops and transport services.
- **Cost savings through ecosystem services:**
 - The project implemented solutions that generate measurable savings for the economy by replacing costly engineering measures with the work of natural processes:

- **Water purification (biofiltration):** Restoring flow through oxbow lakes and rebuilding the *Unio crassus* mussel population (**35 beds**) created an efficient, natural water treatment system. Research showed that restored areas capture **three times more** nutrients (nitrogen and phosphorus compounds) than the main river channel, reducing the costs of water treatment and surface-water restoration.
- **Retention and flood protection:** Increasing retention by nearly **1 million m³** in a natural manner constitutes measurable savings in flood-protection infrastructure and in mitigating the impacts of agricultural drought.
- **Injection of funds into the local economy:**
 - The project acted as a stimulus for local businesses. A significant share of the **EUR 4.9 million** budget reached local Small and Medium-sized Enterprises (SMEs).
 - Contractors and suppliers were very often local companies from the Pińczów, Busko-Zdrój and Kielce area, delivering contracts for construction and hydrotechnical works, transport services (transport of thousands of children), catering, and supplies of agricultural equipment and feed. This helped many entities maintain financial liquidity during the difficult period of the pandemic and inflation.
- **New business models in agriculture:**
 - The project restored pastoralism as an element of the local economy. It created a model example of a “biodiversity-based business”, showing farmers that extensive grazing on difficult floodplain terrain can be profitable by combining livestock production with agri-environmental payments.
 - The purchased agricultural equipment and pasture infrastructure constitute durable assets supporting local agriculture.
- **Employment:**
 - Project implementation involved the creation and maintenance of stable jobs in a rural area, which has significant social and economic importance. Its labour-market impact was twofold:
 - **Direct project staff (LIFE funded):**
 - Employment of approximately **10.75 FTE (Full Time Equivalent)** covered qualified management and technical staff (manager; specialists in nature conservation, hydrology, education, promotion; and a grazing specialist). This team was responsible for delivering the project objectives.
 - **Project-related employment:**
 - It should be clearly emphasised that implementation of the LIFE project became an impulse to create several dozen permanent jobs financed from the Coordinating Beneficiary’s own resources. These are jobs for local community members, whose presence is necessary to operate the processes initiated by the project. They include:
 - **Breeding/grazing operations:** staff responsible for daily grazing and care of the cattle herd and Polish konik horses.
 - **Technical operations:** a team maintaining agricultural machinery and technical infrastructure purchased under the project.
 - **OEP operations:** cleaning staff and kitchen staff preparing meals for thousands of educational workshop participants and visitors.
 - This constitutes a concrete and lasting contribution to addressing unemployment in the region, demonstrating that nature conservation generates real jobs for rural residents.

5.4.3. Social benefits.

The implementation of the project delivered impacts extending far beyond environmental objectives, generating lasting and multidimensional social benefits. Activities related to the restoration of the Nida Delta and the establishment of the Nature Education Centre (OEP) became a catalyst for change in the social, educational, economic and cultural spheres. The key areas of the project's influence on residents' quality of life and on local community development are presented below.

- **Rural revitalisation and social advancement**

- The project acted as a driver of profound transformation for the village of Umianowice, which shifted from a peripheral settlement to a showcase for the municipality.
- **Infrastructure stimulus:** The location of the OEP mobilised local authorities to invest—most notably, the access road was renovated, improving everyday living conditions.
- **Increased local importance:** Residents' issues gained greater visibility and importance in the eyes of officials. The village ceased to be “forgotten”, becoming one of the focal points for major events in the Kije Municipality.
- **Investment effect:** Improved aesthetics in the area translated into higher land values and the construction of new houses. Bottom-up business initiatives also emerged, e.g. the “Serce Nidy” agritourism farm.

- **Equalising educational opportunities**

- The project provided the local community with access to a high-standard laboratory and qualified staff. More than **12,600** pupils took part in workshops; for many, this was the first opportunity to work with natural science equipment and, often, their first chance to conduct fieldwork.
- It should also be noted that **250 teachers** and **100 farmers** were trained, strengthening their professional competences.

- **Local and international social integration**

- **International dimension:** One of the project's outcomes is cooperation with volunteers from across Europe through the European Solidarity Corps. Young people from EU countries come to Ponidzie to support the long-term sustainability of the project, helping to counteract social exclusion and opening the local community to the wider world.
- **Local integration:** The project engaged Rural Housewives' Circles (KGW), Volunteer Fire Brigades (OSP) and angling associations, building social capital around nature conservation.

- **Employment activation**

- The project created permanent jobs for local residents in the delivery of project and OEP services (cleaning, kitchen operations, animal care, technical works). These positions are financed from the Beneficiary's own resources, providing stable livelihoods for municipality residents.

- **Health and safety**

- Opening the area to the public (trails, observation tower) created new opportunities for recreation, with positive effects on residents' health.
- The long-standing problem of grassland arson was eliminated and quad-bike traffic reduced, improving public safety (the last grassland fire occurred in **2022**).

- **Social challenges and the dynamics of change**

- The project's success and the rapid growth in the site's popularity (approx. **15,000** visitors per year) also generate social tensions, of which the Beneficiary is aware:

- **Increased traffic:** Residents, previously accustomed to quiet and isolation, face inconveniences related to higher car traffic and the presence of groups of tourists, volunteers and pupils within the village space.
- **Increased social control:** The constant presence of project staff, patrols and visitors has made the area no longer “anonymous”. Residents experience pressure linked to the need to comply with nature protection rules (e.g. bans on grass burning, vehicle access, littering). Although this generates local complaints about “loss of freedom”, it is an indicator of the project’s effectiveness - the inevitability of detecting offences against nature has increased dramatically, enforcing a lasting change in social attitudes.

5.4.4. Replicability, transferability, cooperation.

The LIFE4Delta project goes beyond local conservation measures, creating a universal and scalable model for managing wetland ecosystems within an agricultural landscape. The solutions developed in the fields of ecological engineering, species reintroduction, and the integration of nature conservation objectives with the region’s economic development have a high replication potential. The project has become an active node within the European knowledge-exchange network, demonstrating how biodiversity conservation can be effectively combined with the revitalisation of rural areas.

- **Networking and exchange of experience**

- International cooperation and know-how exchange formed the foundation of the replication strategy. The project team actively participated in key sector events across Europe, enabling a two-way transfer of knowledge:
- **LIFE Platform Meetings:** The Beneficiary took an active role in thematic meetings, including Santander (Spain) in May 2024 (“Amphibian and Reptile Conservation in Europe”), where experiences were shared on amphibian conservation (great crested newt *Triturus cristatus*, fire-bellied toad *Bombina orientalis*) in the context of climate change. Participation in the CEE InterLIFE Platform Meeting in Balmazújváros (Hungary) in March 2025 made it possible to discuss the specificities of project implementation in Central and Eastern Europe and the integration of nature conservation policies.
- **Study visits and technology transfer:** The project drew on best-practice examples, including a visit to Luxembourg (LIFEUnio project), which helped refine mussel breeding methods in Poland.
- **Cross-border cooperation:** Ongoing contacts were maintained with projects implemented, inter alia, in Greece (Nestos River delta), Austria and Czechia, allowing the validation of restoration methods in different geographical contexts.

- **LIFE Academy – an innovative transfer tool**

- In July 2025, a pioneering event was organised at the Nature Education Centre (OEP) in Umianowice: “LIFE Academy: Practical Approaches to Freshwater Mussel Restoration”. This was not a typical conference, but hands-on workshops (a summer school) bringing together experts and practitioners from eight European countries (Switzerland, Lithuania, Czechia, Spain, Portugal, Ukraine, Croatia and Norway).
- Participants learned the unique methods developed within the project, including mussel telemetry (*Unio crassus*) for microhabitat identification and semi-natural breeding techniques.
- The Academy proved to be an effective vehicle for transferring hard technical skills that are ready for implementation in other European catchments.

- **Volunteering as a living carrier of knowledge**

- The project currently uses OEP infrastructure to launch activities under the European Solidarity Corps.
- Volunteers from various EU countries, supporting visitor services, education and active nature conservation as part of ensuring project sustainability, will gain practical competences through “learning by doing”.
- This is the most organic form of replication: young people returning to their countries take with them proven models of protected area management and local community engagement, becoming ambassadors of the model developed in the Ponidzie region.
- **Technical and commercial replication potential**
 - The project developed a ready-to-replicate model for river valley restoration that can be applied in other rural municipalities across the EU. The “Delta Model” integrates low-cost Nature-based Solutions, replacing traditional “hard” hydraulic engineering with measures such as reconnecting oxbow lakes and increasing in-channel retention.
 - The applied solutions are characterised by lower maintenance costs and greater durability of ecological outcomes compared to conventional engineering interventions.
 - This constitutes a practical implementation blueprint for planning, technical and organisational activities, covering the preparation phase, implementation, and outcome monitoring.
 - The experience can be directly applied in the development of documentation under the Nature Restoration Law, particularly with regard to restoring hydrological and ecological functions of river valleys and ensuring coherence between different ecosystem components.
- **Cross-sectoral cooperation**
 - A key strength of the project—ensuring both sustainability and replicability—is the establishment of a durable partnership across sectors: local and regional government (Voivodeship, Municipalities), science (IOP PAS, University of Agriculture), water management (Polish Waters) and forestry (State Forests).
 - This governance model can be promoted as a “Best Practice” for managing complex river ecosystems in Poland.

5.4.5. Best Practice lessons

The experience gained through the project relates both to technical and ecological aspects, as well as organisational and socio-economic dimensions, providing practical guidance that can be applied in future LIFE actions and other initiatives implemented under EU policies for the protection and restoration of natural assets.

- **A holistic approach to river valley conservation – more effective and durable than single-species, site-based protection**
 - The LIFE4Delta project confirmed that river valley conservation delivered in a holistic manner - addressing, in parallel, multiple taxonomic groups and hydrological processes- produces more durable and more effective outcomes than an approach focused on individual species. A key lesson learned is the importance of planning measures at the scale of the entire ecosystem, which enables synergistic effects without the need to implement separate, site-specific interventions for each group of organisms.
- **Nature-based Solutions (NbS) in hydraulic engineering**
 - Low-cost Nature-based Solutions were applied, relying on the natural morphology of the terrain (e.g. reopening oxbow lakes, increasing in-channel retention) instead of constructing “hard” concrete infrastructure. A key lesson learned from the project is that the effective implementation of such solutions requires active adaptive management

mechanisms, including continuous monitoring and the ability to regulate infrastructure on an ongoing basis (e.g. weirs/sluices) in response to changing hydrological conditions.

- **Adjustment of strategy**

- During the project, the approach to defining the success of the *Unio crassus* reintroduction was modified. Instead of static “beds”, telemetry studies demonstrated that the creation of functional microhabitats (riparian zones, low-flow refugia/backwaters) where mussels can move is critical. Future projects should focus on habitat quality rather than solely on the number of individuals stocked at a single location.

5.4.6 Innovation and demonstration value

Innovation in the nature conservation approach:

The project stands out among other LIFE initiatives in Poland due to its novel, holistic approach to river valley conservation. Instead of focusing on isolated protection of single species, a whole-ecosystem conservation strategy was applied—ranging from the restoration of abiotic processes (hydrology), through habitat conservation, to support for all major taxonomic groups (invertebrates, amphibians, reptiles, birds).

- **Demonstration value for the Nature Restoration Law (NRL):**

Through the implementation of the project, comprehensive know-how was developed covering the full restoration cycle: from planning, through delivery/implementation, to monitoring of outcomes. The developed “Delta Model” constitutes a ready-to-use blueprint for implementing the Nature Restoration Law, in particular with regard to restoring the hydrological functioning of river valleys in an agricultural landscape.

- **Technological and methodological innovations:**

The project applied pioneering solutions at national and European scale in the field of active species conservation:

- **Telemetry in support of malacology:**

An innovative use of telemetry transmitters was applied to monitor the movements of *Unio crassus* mussels. This enabled a precise identification of the species’ microhabitat preferences in a lowland river and helped avoid so-called “ecological traps” during reintroduction.

- **Pioneering ex situ breeding:**

Protocols for the breeding and reintroduction of difficult and poorly studied species, such as *Anisus vorticulus* and snails of the genus *Vertigo*, were developed and successfully implemented. Reproductive success under controlled conditions (the first such success within LIFE projects for these snail species) represents a demonstrational value of international relevance.

Innovative socio-economic model:

The project demonstrated a transformation in the perception of Natura 2000 areas: from being seen as a barrier to development to being treated as a key economic asset (Nature-based Economy).

- **Rural revitalisation:** In a municipality with low income-generation potential, nature restoration became the foundation of a new development strategy based on nature tourism and education. The construction of the Nature Education Centre (OEP) created permanent

jobs and a stable market for local services, providing a model example of how nature conservation funding can stimulate local development.

- **Management model:** Introducing a permanent presence of field staff and educators (at the OEP), instead of ad hoc project-based interventions, constitutes an organisational innovation that ensures genuine sustainability of results and continuous social oversight of the area.

Cooperation and land management models:

- **Multi-sector partnership:** The project built a unique governance coalition: local/regional government (ZSiNPK) + science (IOP PAN, UR) + State Forests + Polish Waters. This structure enables comprehensive problem-solving (e.g. reconciling flood protection requirements with environmental objectives) and provides a benchmark for managing large protected areas.
- **Land management:** Effective land stewardship mechanisms were implemented through the purchase of land key to water retention (Action B.1) and long-term agreements with farmers for grazing, enabling the maintenance of project effects regardless of ownership changes or market conditions.

International knowledge transfer:

The demonstrational value of the project extends beyond Poland due to the involvement of volunteers under the European Solidarity Corps. Young people from across Europe learn practical nature conservation in the Nida Delta and transfer these experiences back to their home countries. The organisation of the LIFE Academy (hands-on workshops for EU experts) confirmed the project's role as a European competence centre for inland water restoration.

5.4.7 Policy implications.

Projekt LIFE4Delta went beyond the standard framework of nature conservation, becoming a real-life testbed for implementing key EU and national policies. Actions carried out in 2019-2025 provided empirical evidence of the effectiveness of Nature-based Solutions and identified important gaps in the current legal framework.

1. Contribution to EU Legislation

Nature Restoration Law (Regulation on nature restoration):

The LIFE4Delta project became a model example of the practical implementation of the objectives of the NRL adopted in 2024. By anticipating the legislation, the project delivered at regional scale what the NRL introduces as an obligation for Member States:

- **Restoration of river ecosystems:** Restoring the morphological continuity of the Nida River (re-opening oxbows, removing barriers) aligns with the EU target to restore 25,000 km of rivers to free-flowing condition.
- **Wetland restoration:** Raising groundwater levels in the Delta delivers NRL objectives related to rewetting drained peatlands and wetlands, which is crucial for climate change mitigation (reducing CO₂ emissions from soils).
- **Demonstration value:** The “Delta Model” developed under the project constitutes a ready-to-use blueprint for the Ministry of Climate and Environment when preparing the National Restoration Plan.

Water Framework Directive (WFD) and Floods Directive:

Action C.1 (improving water conditions) provided evidence that achieving good ecological status of waters is compatible with flood protection. Increasing natural retention in the Delta (by approx. 1 million m³) without constructing “hard” technical infrastructure represents a Best Practice for reconciling nature conservation requirements with flood risk management, promoting the Natural Water Retention Measures (NWRM) approach.

2. Contribution at National and Regional Level

Update of the Plans of Conservation Tasks (PZO):

The results of multi-annual ecological monitoring (Action D.1) constitute a direct substantive input to the update of the PZO for the Natura 2000 sites Ostoja Nidziańska and Dolina Nidy. Data collected under the project demonstrated the need to revise the conservation status of habitats (e.g. 6410, 3150) and species protection methods. In 2026, the Regional Directorate for Environmental Protection (RDOŚ) in Kielce will use these data in the legislative procedure, ensuring legal durability of the project’s effects.

Common Agricultural Policy (CAP) – barriers and recommendations:

The mid-term report identified a conflict between agri-environment-climate package requirements and species protection. Project implementation confirmed the existence of a systemic legislative barrier:

- **Problem:** Current subsidy guidelines (the requirement to mow the entire meadow area and remove biomass within specified dates) are detrimental to populations of protected snails (*Vertigo moulinsiana*, *Vertigo angustior*), which require unmown refuge strips to survive the winter.
- **Recommendations:** Based on experience from Action C.13, the Beneficiary recommends introducing into national eco-schemes an obligatory “undisturbed” (biocenotic) strip on wet meadows inhabited by valuable invertebrates, while maintaining 100% payment to the farmer. These conclusions were submitted to the Ministry of Agriculture and Rural Development as input to the evaluation of the CAP Strategic Plan.

Promotion of “nature-supporting agriculture”:

The project demonstrated (Action C.4) that extensive grazing in protected areas can be economically viable. These experiences can be used by Agricultural Advisory Centres as a best practice example, encouraging farmers to use payments supporting the conservation of valuable habitats and species instead of intensifying production.

3. Conclusions for Water Management

Experience from Action C.1 showed that flexible water management (a system of weirs adjusted depending on hydrological conditions) is more effective than rigid water management instructions. The project recommends introducing more adaptive provisions in water permits for restored sites, enabling faster responses to droughts and high-water events (climate change adaptation).

6. Key Project-level Indicators

Table of the Key Performance Indicators (KPI)				
Indicator name (descriptor)		Begin value	Value on day 30.09.2025	Analysis
1.5. Project area / length	Conservation or improvement of the status of an area or segment	0 km	21,845 km	Hydrological restoration and maintenance works were implemented on a total length of 21.84 km of watercourses within the project area. The works included: Smuga Umianowicka – comprehensive maintenance over 5.3 km, removal of blockages, maintenance of culverts and fords and bioengineering stabilisation of damaged banks; Stara Nida – restoration and clearance over 6.3 km (Stage I and II), including reconnection works, culvert maintenance and removal of illegal channel; Doprowadzalnik (artificial supply canal) – maintenance over 3.0 km; Old riverbeds in the Umianowice floodplain – 2.75 km restored; Side channels near Smuga Umianowicka – 1.33 km; Tributary from the riparian forest (Delta area) – 0.53 km; Supply ditches in riparian forest in Młodzawy – 2.63 km. Restored watercourses are expected to remain functional, resulting in a stable value of 21.84 km beyond five years.
	Conservation or improvement of the status of an area or segment. Project area	0 ha	445 ha	The project area covers 2 Natura 2000 sites - PLH260003 – Ostoja Nidziańska and PLB260001 Dolina Nidy with a total of 445 ha, including 347 ha in Umianowice and 98 ha in Młodzawy Duże where restoration and conservation actions were implemented.
1.6. Humans (to be) influenced by the project	Persons who may have been influenced via dissemination or awareness raising project-actions (reaching)	0	58 416 people	People who participated in dissemination and awareness-raising events, including: educational workshops – 12,604 students; project conferences (kick-off: 73 participants, mid-term: 64 participants, final: 69 participants) – a total of 233 participants; seminars – 184 participants; training courses for farmers – 100 participants; training courses for teachers – 250 participants; educational fairs and events – 6,132 participants; LIFE Academy – 13 participants and individual tourists visiting the inland delta area (Environmental Education Centre): 38 900 visitors (439 visitors in 2022, 12 129 in 2023, 11 406 in 2024 and 14 926 in 2025)
2.1 Terrestrial extent affected by the pressure or risk addressed	Terrestrial extent affected by the pressure or risk addressed	7,45 km ²	0 km ²	Following the completion of hydrological restoration works in the delta area, terrestrial ecosystems were positively affected through a significant improvement in water retention capacity. The interventions reduced pressures related to altered hydrological regimes, including excessive drainage, periodic drying of floodplains and degradation of moisture-dependent habitats. The affected terrestrial extent covers approximately 7.45 km ² ,

				primarily comprising floodplains and former riverbeds functionally linked to the restored watercourses. The area extends from the weir in Rębów in the north (the water intake supplying the delta area) to the confluence of the Smuga Umianowicka with the Branka stream in the south, further connected to the Nida River, and laterally from the Nida River in the west to the narrow-gauge railway embankment in the east. Due to the restoration of more natural water distribution and retention processes, the reduced hydrological pressure and improved habitat conditions within this terrestrial extent are expected to persist beyond five years after project completion.
2.2 Aquatic extent affected by the pressure or risk addressed	Aquatic extent affected by the pressure or risk addressed	21,84 km	0	Project actions addressed aquatic ecosystems affected by key hydromorphological pressures, including channel obstruction and sediment accumulation, disrupted longitudinal and lateral connectivity, bank erosion and instability and altered flow conditions leading to local drying or water stagnation. These pressures negatively affected habitats quality and ecological functioning of old river beds and floodplain systems. Through hydrological restoration and maintenance actions, the project improved hydraulic continuity, restored more natural flow patterns, stabilised degraded banks using bioengineering solutions and ensured proper functioning of culverts and supply structures. In addition, artificial and illegal channel modifications were removed and former branches and side channels were reconnected. As a result, an aquatic extent corresponding to 21.84 km of watercourses was directly affected by the reduction of the identified pressures. Due to the nature of the interventions and planned maintenance, the achieved effects are expected to remain stable beyond five years after project completion.
7.1 Ecosystem assessment	Impact on wetlands	166,52 ha	197,37 ha	The implementation of hydrological restoration actions (Action C.1) combined with active habitat management (C.3, C.4, C.13) resulted in a measurable expansion of wetland ecosystems within the project area with increase from 166.52 ha in 2019 to 197.37 ha in 2025 which represents a net gain of 30.85 ha. Environmental monitoring confirms that this gain is underpinned by clear hydrological and ecological improvements. Phytosociological surveys showed expansion of valuable wetland communities, with <i>Glycerietum maximae</i> increasing from 3.87 ha to 6.24 ha and <i>Caricetum acutiformis</i> from 1.10 ha to 6.53 ha, demonstrating a positive vegetation response to restored water availability. The newly restored wetlands provide essential ecological functions, including flood mitigation, water purification and maintenance of habitat for priority species. Target molluscs (<i>Vertigo moulinsiana</i> and <i>V.</i>

				<i>angustior</i>) colonised the restored areas, confirming improved habitat suitability and connectivity. These results demonstrate that hydrological restoration combined with active management effectively reduced pressures related to drainage, habitat degradation and altered water regimes, producing integrated and durable wetland ecosystem benefits expected to remain stable beyond five years.
	Impact on grasslands	367,41 ha	326,04 ha	The decrease in grassland area is a planned outcome of hydrological restoration (C.1), which raised groundwater levels by 10–50 cm and caused degraded dry grasslands to transition naturally into wetland habitats, contributing to the increase recorded under the “Impact on wetlands” indicator. Active management actions, including extensive grazing (C.4) and targeted mowing (C.3) controlled expansive species such as <i>Calamagrostis epigejos</i> and reed monocultures, maintaining the structure of 44.8 ha of Lowland hay meadows (6510) and 28 ha of Molinia meadows (6410). Seed plantations of <i>Carlina onopordifolia</i>, <i>Serratula lycopifolia</i> and <i>Dorycnium germanicum</i> successfully established, flowered and fruited, supporting species conservation on calcareous grassland (6210). Grazing and mowing were implemented to maintain open habitat structures while protecting birds, amphibians and molluscs. Overall, the reduction in grassland area reflects successful wetland expansion, while remaining and managed grasslands retain high ecological and conservation value, with effects expected to remain improving beyond five years.
	Impact on forests	98,16 ha	104,66 ha	The project implemented actions for the priority habitat 91E0, covering a total of 104.66 ha. In the Młodzawy Riparian Complex (98.16 ha), hydrological restoration through clearance and maintenance of drainage and irrigation ditches optimized soil moisture, preventing desiccation and excessive stagnation and supporting the resilience of <i>Fraxinus excelsior</i> stands. This area has been designated as a reference forest, where long-term studies will monitor the effects of restoration on habitat structure and ecological processes. In the Inland Delta (6.5 ha), the project expanded forest habitat through active planting of characteristic riparian trees and shrubs following the re-establishment of natural water flow. These interventions reduced pressures from altered hydrology and habitat fragmentation and allowed for natural ecological succession processes. While structural and functional improvements in 91E0 are gradual and will continue to develop post-project, the measures ensure long-term conservation outcomes for this habitat.

	Impact on freshwater rivers and lakes	0 km	21,84 km	Environmental monitoring confirms that restoration of 21.84 km of watercourses in the delta area (including forest complex in Młodzawy) directly reduced hydromorphological pressures such as channel disconnection, altered flow regimes and local drying, while improving water quality and habitat conditions. Reconnection of rivers with their floodplains increased water retention by approximately 1 million m³ and raised groundwater levels by 10–50 cm. Revitalised old river beds act as effective bio-filters, retaining up to three times more biogenes than the main river, reducing nutrient loads and enhancing ecological water quality. The restored hydrology supported the regeneration of the 91E0 habitat, ensuring necessary soil moisture and periodic flooding for forest habitat improvement. Aquatic fauna rapidly recolonised restored sections: 15 fish species, including protected species (<i>Rhodeus amarus</i>, <i>Cobitis taenia</i>), were recorded and restored channels now provide spawning, wintering and dispersal habitats, as well as suitable conditions for the <i>Unio crassus</i> and <i>Emys orbicularis</i>. Overall, restoration actions delivered integrated ecosystem benefits across hydrology, water quality, forest habitats and species management, with effects expected to remain stable beyond five years.
7.2 Ecosystem services assessment	Ecosystem Service Trend	Deterioration	Some improvement	A clear improvement in ecosystem service condition and trend by the end of the project resulted from comprehensive restoration actions including optimized soil moisture, restored hydrological connectivity, effective species reintroductions and the maintenance of open and forested habitats. These actions led to the recovery of previously degraded habitats, confirmed by successful amphibian reproduction, restored fish migration corridors and the presence of 23 bird species listed in Annex I of the Birds Directive.
	Ecosystem Service Condition	Very poor / bad / non functional	Some improvement	
7.3. Natural and semi-natural habitats	91E0 - Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i>)	98,16 ha	104,66 ha	Restoration works aimed at the protection of habitat 91E0 have been completed. In the Młodzawy riparian forest complex, the implemented measures covered 98.16 ha of the habitat. In the inland delta area, following the re-establishment of water flow, restoration activities were carried out over a total area of 6.5 ha. A significant improvement in the conservation status of habitat 91E0 is expected to become evident only after a longer response time.
	3150 - Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> — type vegetation	4,08 ha	9,88 ha	River restoration works enabled the reconstruction of eutrophic lake habitats covering an area of 9,88 ha.
	6510 - Lowland hay meadows (<i>Alopecurus</i>	31,3 ha	44,8 ha	By the end of the project, meadow habitat restoration was implemented at full scale using

	<i>pratensis, Sanguisorba officinalis)</i>			specialized agricultural machinery and extensive grazing by Hereford, Polish Red cattle and Konik Polski horses, leading to reduced reed monocultures and increased biodiversity. Wetland areas were restored beyond initial plans, increasing water retention by approximately 1 million m ³ and enhancing wetland ecosystem functions. Grazing on the restored wetlands was restricted to protect birds, amphibians and mollusks, ensuring the integrity of these habitats.
	6410 - Molinia meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	14 ha	28 ha	By the end of the project, habitat 6410 was significantly improved due to an increase in water retention of approximately 2 million m ³ in the Nida delta, enabling the restoration of wetland areas beyond the initially planned scope. Grazing was restricted to protect vegetation, bird nests, amphibians, and molluscs, while the successful reintroduction of <i>Ostericum palustre</i> confirms the effectiveness of the restoration measures and the enhanced conservation value of the habitat. In 2026, the Regional Directorate for Environmental Protection in Kielce (RDOŚ in Kielce) will initiate an update of the conservation action plans for the Ostoja Nidziańska Natura 2000 site, within which the results of ecological monitoring will be submitted and a formal request will be made to update the conservation status of habitat 6410.
	6210 - Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco- Brometalia</i>)	0,6 ha	0,6 ha	By the end of the project, the condition of calcareous grassland seed plantation in Umianowice was assessed as very good. In Antoniów, 100% of <i>Dorycnium germanicum</i> rooted successfully and flowered for the first time. The site was reinforced with seedlings of <i>Serratula lycopifolia</i> and sown of <i>Carlina onopordifolia</i> seeds along with continued grazing by sheep and goats supports the maintenance of high conservation value.
7.4 Wildlife species	<i>Serratula lycopifolia</i> Vascular plants	Number of localities: 0 Area: 0 ha	Number of localities: 1 Area: 0,6 ha	At the end of the project the seed plantation in Umianowice demonstrated very good condition for <i>Carlina onopordifolia</i> and <i>Serratula lycopifolia</i> . In Antoniów, seeds of both species were sown and <i>Serratula</i> seedlings planted, while seeds were also collected from the plantation for ex-situ conservation and further propagation, contributing to the restoration of calcareous grasslands.
	<i>Carlina onopordifolia</i> Vascular plants	Number of localities: 0 Area: 0 ha	Number of localities: 1 Area: 0,6 ha	
	<i>Angelica palustris</i> Vascular plants	Number of localities: 1 Area: 30 ha	Number of localities: 3 Area: 30 ha	25 individuals and 30 seeds of <i>Angelica palustris</i> were introduced on plots ■■■ and ■■■ in Umianowice, sourced from the local population. Sites were precisely marked by GPS for future monitoring of plant condition and restoration success. These actions enhance the biodiversity of Habitat 6410 (molinia meadows), which, thanks to previous hydrological works, now offers optimal conditions for the development of rare flora.
	<i>Unio crassus</i>	Number of	Number of	A total of 35 functional shoals of the <i>Unio</i>

	Molluscs	colonies: 0 Lenght of inhabited feature: 0 km	colonies: 35 Lenght of inhabited feature: ~60 km	<i>crassus</i> were established in the Nida Valley and its associated side systems. In 2021, 3 shoals were created, including 2 shoals in the main channel of the Nida River (Meandry and Antoniów) with the introduction of 120 adult individuals (60 per site) and 1 experimental shoal in the Smuga Umianowicka consisting of 36 individuals. In 2023, 20 additional shoals were established, comprising 12 shoals in the Przekop channel with 110 individuals and approximately 250 pediveligers and 8 sites in the Stara Nida with 96 relocated individuals. In 2024, a further 12 colonies were established at new locations in the main Nida channel, with the introduction of 144 juvenile individuals (12 per site). In parallel, ex situ and in situ breeding was implemented, producing 5,864 juveniles in 2022 and 4,436 in 2023, alongside fish mobility monitoring (981 tagged fish and 4,404 antenna detections), confirming the functionality of restored habitats and the potential for natural dispersal of the species.
	<i>Anisus vorticulus</i> Molluscs	Number of colonies: 0 Area: 0 ha	Number of colonies: 4 Area: ~4 ha	Breeding of <i>Anisus vorticulus</i> continued at the Environmental Education Center, focusing on feeding, removing competing organisms and using complementary ex-situ methods (laboratory system and a 1,000-litre outdoor tank), ensuring stable environmental conditions and effective reproduction. Following a permit issued by the Regional Directorate for Environmental Protection, another 30 individuals were collected for breeding and 60 captive-bred specimens were reintroduced into four restored old river beds and lakes within the inland delta, establishing the basis for population reinforcement and long-term viability of the species in restored habitats.
	<i>Bombina bombina</i> Amphibians	Number of localities: 0 Area: 0 ha	Number of localities: 12 Area: ~17 ha	Between 2021 and 2025, project actions led to the creation of a dedicated breeding habitat for the <i>Bombina bombina</i> and the establishment of a stable population. A new breeding pond "Koniczynka" was constructed in 2021/2022. Initial pilot introductions involved 9 individuals in 2023, followed by the main introduction of 24 individuals from conservation breeding in 2025, sourced from three donor sites. In parallel, improved water retention enabled spontaneous (re)colonisation of 10 additional sites.
	<i>Triturus cristatus</i> Amphibians	Number of localities: 1 Area covered by population: 200 m2	Number of localities: 4 Area covered by population: 5000 m2	The reintroduced population of <i>Triturus cristatus</i> showed a clear population success, with a record 735 individual captures recorded during 2024 monitoring, compared to 323 in 2023, and repeated captures of larvae at the final stage of metamorphosis confirming effective natural reproduction in the restored habitats. Owing to this success, artificial breeding was discontinued in favour of long-term monitoring of the self-sustaining population, based on individual identification

				using ventral pattern photo-documentation and morphometric measurements.
	<i>Emys orbicularis</i> Reptiles	Number of localities: 0 Area covered by population: 0 m2	Number of localities: 1 Area covered by population: 16,87 ha	In 2025, the project completed the first reintroduction of <i>Emys orbicularis</i> in the restored floodplain (plot no. ■■■■■, Umanowice). A total of 40 juvenile turtles (cohort 2023) were released in four events between August and September 2025, with 17 individuals equipped with telemetry transmitters. At the same time, the Environmental Education Centre in Umanowice maintained 64 turtles (50 juveniles from 2024, 10 from 2023, and 4 adults). Moreover, in late autumn 2025, the last batch of 50 juvenile individuals is planned to be brought in; after reaching an appropriate weight, they will be released into the wild in the following years.
	<i>Botaurus stellaris</i> Birds	Calling males: 1 Area: 30 ha	Calling males: 2 Area: ~110 ha	Ornithological monitoring conducted in 2025 confirmed the return of the <i>Botaurus stellaris</i> as a breeding species within the Nida River delta. In the Międzyrzecze area, 2 territorial males were recorded, with observations at two locations. The reappearance of the species is directly linked to restoration measures improving hydrological conditions and wetland habitat structure, creating suitable breeding conditions for wetland-dependent bird species.
	<i>Ciconia ciconia</i> Birds	Number of pairs: 1 Area: 100 ha	Number of pairs: 3 Area: 500 ha	During the project implementation, 10 artificial nesting platforms for <i>C. ciconia</i> were constructed, and maintenance works were carried out on one existing natural nest (tree branch trimming). A total of 3 platforms and 1 natural nest were occupied; however, one platform was abandoned after a single breeding season. Although the bird's nest outside the project area, they regularly forage within the monitored area, showing a clear preference for mown grassland habitats. In addition, a dedicated online platform, "Bocianie Gniazdo (Stork's Nest)", was launched to support citizen science-based monitoring of the <i>C. ciconia</i> population, where 32 educational institutions participated and 48 stork nests were documented.
	<i>Haliaeetus albicilla</i> Birds	Number of pairs: 1 Area: 285 ha	Number of pairs: 1 Area: 285 ha	The restoration of hydrological conditions and improvement of habitat quality contributed to an increased food base, which in previous years supported only the occasional presence of single individuals or pairs of the white-tailed eagle (<i>Haliaeetus albicilla</i>). In 2024, monitoring recorded no presence of the species within the inland delta for most of the year; however, by the end of the year, a breeding pair was observed in the Młodzawy forest complex. In 2025, successful breeding was confirmed, with two chicks documented, one of which was observed repeatedly in subsequent quarters, indicating continued survival and use of the area.

	<i>Circus aeruginosus</i> Birds	Number of pairs: 8 Area: 320 ha	Number of pairs: 9-12 Area: 320 ha	In 2025, the number of breeding pairs remained at a level similar to the previous season, estimated at 9–12 pairs. The Umianowice floodplain functioned as an important foraging area for the species, confirmed by numerous observations; however, no courtship or nesting behaviour was recorded there. Overall, the <i>Circus aeruginosus</i> showed one of the most positive population trends in the Nida River delta, reflecting the beneficial effects of habitat restoration actions.
	<i>Circus pygargus</i> Birds	Number of pairs: 0 Area: 0 ha (260 ha)	Number of pairs: 0 Area: 280 ha	The species occurs very irregularly within the project area. In 2025, it was not recorded at all, and confirmed breeding was documented only in 2021 (1 pair) and 2024 (2 pairs). Despite the presence of apparently optimal habitats, the reasons for its low abundance in the area remain unclear. The causes are likely driven by factors operating beyond the project site, including the ongoing and rapid decline of the national population, linked to threats such as agricultural intensification, climate change and unfavourable conditions at wintering grounds and along migration routes. At the local scale, breeding success may also be negatively affected by predation and pressure from larger and much more numerous raptors, particularly the <i>C. aeruginosus</i> as well as other predators.
	<i>Crex crex</i> Birds	Calling males: 8 Area: 16 ha (32 ha)	Number of pairs: 37-42 Area: 300 ha	In 2025, the population was estimated at 37–42 territorial males. The <i>Crex crex</i> showed one of the most significant population increases in the project area, directly linked to restoration measures that improved hydrological conditions and landscape structure suitable for meadow and wetland bird species.
	<i>Vertigo moulinsiana</i> Molluscs	Individuals / m2: 0 Area: 0 ha	Individuals / m2: 75 Area: 1,5 ha	In 2025, <i>Vertigo moulinsiana</i> was recorded at 7 monitoring sites, compared to only 2 in 2019. The species successfully colonised 6 out of 10 newly created sites and spontaneous colonisation was also observed, confirming ongoing natural expansion. Habitat restoration led to a marked increase in suitable wetland vegetation, with <i>Glycerietum maximae</i> expanding from 386.98 ares to 624.36 ares and <i>Glycerietum maximae</i> – <i>Carex acutiformis</i> from 110.19 ares to 653.18 ares between 2019 and 2025. As a result, the occupied area of this rarer species now covers approximately 1.5 ha, reflecting significant improvement in hydrological conditions within the project area.
	<i>Vertigo angustior</i> Molluscs	Individuals / m2: 0 Area: 0 ha	Individuals / m2: 125 Area: 23,7 ha	In 2025, repeat monitoring using the same methodology as in 2019 confirmed the presence of <i>Vertigo angustior</i> at 14 sites, compared to 6 previously, demonstrating a strong increase in occupied locations. Local disappearance was recorded at two sites, likely due to habitat shifts linked to increased wetness, while introductions to 10 newly created sites resulted in confirmed presence at 4 sites. The current area of occurrence within the

				project is estimated at 23.7 ha, and the species was also recorded on mown meadows, indicating exceptionally good hydrological conditions.
10.2 Involvement of NGOs and other stakeholders in project activities	Public bodies	0	16	Cooperation with various stakeholders proceeds as planned. The close involvement of universities and NGOs provides invaluable support. Cooperation with the community organisations such as Voluntary Fire Brigades, various Rural Housewives' Societies, St. Hubert Hunting Association ensures effectivity of the prevention patrols.
	Other civil society organisations	0	4	
	NGO's	0	4	
11.1 Website (mandatory)	No of unique visits	0	13 540 – website 174 268 – Facebook 19 356 – YouTube	At the beginning of 2024, Google unexpectedly discontinued support for Google Analytics, the tool previously used to track website traffic, making it impossible to monitor individual visits after that time. Until then, the website had recorded 9 542 unique views, and it is estimated that the site receives approximately 2 000 visits per year, resulting in a projected total of around 13 540 views. In addition, project activities on social media generated 174 268 views on Facebook and 19 356 views on the YouTube channel demonstrating broad online engagement.
11.2 Other tools for reaching / raising awareness of the general public	Number of discrete Project Reports drafted	0	2	Two types of reports were prepared: targeting a general audience - layman report and scientific report.
	Number of events/exhibitions organised	0	337	Throughout the project, a wide range of educational and outreach activities were conducted. These included 248 one-day and 31 two-day workshops, 27 festival events, 5 different seminars, 3 farmer training sessions, 7 teacher trainings, 3 conferences, 1 Platform Meeting, 5 committee meetings, 4 information sessions and 3 LIFE Academy events. Together, these activities engaged participants across multiple stakeholder groups, supporting knowledge sharing and public awareness of project objectives.
	Other distinct media products created (e.g. different videos/broadcast/leaflets)	0	49	During the project, a variety of materials and promotional items were produced to support dissemination and awareness-raising activities. The items comprised the visual identity manual, calendars produced annually over five years, roll-up, reflective bands, linen bags, cotton bags, t-shirts, certificates, a didactic game, maps and folders (two different versions, produced at the beginning of the project and after the implementation of certain active actions - 2023). Additionally, bookmarks, paper bags and a branded herbal tea "Taste of Delta" were created. Audiovisual materials were also produced including 24 YouTube videos promoting different project actions and 6 radio broadcasts. Overall, these materials represent distinct types of outputs designed to reach and engage

				different audiences and support the project's communication, education and outreach objectives.
	Number of different displayed information created (posters, information boards)	0	49	As part of the project's promotional and educational activities, paper posters for festivals and educational events were largely discontinued to reduce environmental impact. All announcements were shared electronically instead. The project installed 9 educational and informational boards along tourist trails, 7 directional boards and 22 boards presenting project information and funding sources, enhancing visibility and public awareness. Additionally, 11 photographs with delta varoius species were produced and printed on Dibond panels (aluminium composite), which are displayed along tourist paths, at a bird lookout and on the observation tower.
12.1 Networking (mandatory)	Members of interest groups / lobby organisations	0	645	During the project, members of interest groups and lobby organizations participated in a variety of events. This included 184 participants in 5 seminars, 206 participants in 3 conferences, 61 participants in 1 Platform Meeting, 34 participants across 5 committee meetings and 160 participants in 4 information sessions, reflecting strong stakeholder involvement in project activities.
	Pupils (of school age)	0	18 736	To date, 12 604 people have participated in the 279 educational workshops. An additional 6 132 pupils took part in the 27 educational events such as festivals and educational picnics, collectively up to date.
	Professionals – expert in the fields	0	42	The project supported international knowledge exchange with participation of 42 representatives from other EU projects and programmes, including: 4 participants from the Czech Republic (LIFE16 NAT/CZ/000731), 18 participants from Finland (INTERREG), 3 participants from Hungary (LIFE20 CCA/HU/1604 LOGOS4WATERS) and 4 participants from Belgium (LIFE15 NAT/BE/000760 LIFE Delta). In addition, 13 participants took part in LIFE Academy activities. These exchanges contributed to transfer of good practices, networking between LIFE and INTERREG projects and dissemination of project results at international level.
12.2 Professional training or education	Professionals – experts in the field	0	13	An international meeting entitled “LIFE Academy: Practical Approaches to Freshwater Mussel Restoration” was organised, with participation of 13 experts and practitioners from 9 countries (Switzerland, Lithuania, Czech Republic, Ukraine, Portugal, Spain, Croatia, Greece, Norway). The event focused on wetland species conservation and freshwater habitat restoration with particular emphasis on <i>Unio crassus</i> .
14.1 Running	Running costs / operating costs	0	4 932 010,52 EUR	Total project expenditure including the cost of the external financial audit (90,11%)

cost / operating costs during the project and expected in case of continuation / replication / transfer after the project period				
14.3 Future funding	Beneficiary own contribution	0	0	Funding of project's sustainability has not yet started.

7. Comments on the financial report

The costs of Project implementation incurred during the reporting period are presented in the financial report, which is a deliverable that has been placed in BUTLER. This report contains information that allows for the assessment of the eligibility of the costs incurred to date.

7.1 Summary of Costs Incurred

PROJECT COSTS INCURRED from 01/01/2019 to 30/09/2025				
Cost category		Budget according to the grant agreement in €*	Costs incurred within the reporting period in €	%**
1.	Personnel	1 576 512,00	1 705 965,97	108,20
2.	Travel and subsistence	230 757,00	161 843,81	70,10
3.	External assistance	1 260 993,00	894 769,34	70,90
4.	Durables goods	1 009 736,00	1 312 808,41	130,00
	Infrastructure	391 160,00	777 442,07	198,70
	Equipment	618 576,00	535 366,34	86,50
	Prototype	0	0	0,00
5.	Land purchase	443 750,00	232 411,02	52,30
6.	Consumables	190 770,00	188 347,21	98,70
7.	Other costs	435 890,00	167 479,58	38,40
8.	Overheads	324 737,00	268 385,18	82,60
	TOTAL	5 473 145,00	4 932 010,52	90,10

Explanation of the differences:

1. Personnel

The higher than planned use of funds was primarily due to the extension of the project implementation period by 9 months (from Q4/2024 to Q3/2025). The need to ensure the continuity of project management, substantive supervision over field activities and

administrative-financial services during the extended implementation period resulted in an increase in the project personnel's salary costs.

2. Travel and subsistence

The lower-than-planned use of funds was a consequence of the reduced number of domestic and international trips, particularly within action E.5. These limitations were a direct result of the COVID-19 pandemic, which caused the cancellation or shift to a remote format for many meetings, conferences, and networking events. As a result, the actual financial needs in this category proved to be significantly lower than originally planned. The unused funds were reallocated to the *Personnel* category, where they made it possible to cover the increased salary costs resulting from the project's extension.

3. External assistance

The lower use of funds resulted from several factors related to the modification of the implementation method for the planned activities. Specifically, within action C.4, the form of grazing was changed due to difficulties in sourcing external contractors providing such services. The task was carried out independently by the Beneficiary, using employees of the Environmental Education Centre hired with their own funds, which limited the need to outsource services. Furthermore, within action A.2, there was no need to develop full, costly technical documentation for the Delta area, as the scope of work was carried out as maintenance work not requiring comprehensive permits. Additional savings were also generated by changing the nature of the works within the investment to improve water relations in the Młodzawy forest complex (action C.2.2). The funds saved in this category were reallocated to category IVa, where there was an increased financial demand.

4. Infrastructure

This category recorded an overrun of the originally planned budget. This mainly concerned activities carried out in the Młodzawy forest complex (action C.2) and the construction of three educational paths with accompanying infrastructure. This overrun was directly linked to a significant delay in the implementation of these investments, which coincided with a dynamic increase in the costs of construction services, materials, and labor. The price increase was a consequence of rising inflation and the destabilization of the construction market caused by the armed conflict in Ukraine.

5. Equipment

The lower-than-planned expenditure in the *Equipment* category was mainly due to the optimization of activity implementation. Within action C.4, Polish Konik horses already owned by the coordinating Beneficiary were used, which reduced the need to purchase the planned number of cattle. Additionally, savings were generated on the purchase of software for action D.1 and equipment for educational activities (action E.2), thanks to, among other things, more favorable market offers and the rationalization of the scope of purchases while maintaining the full functionality of the implemented activities.

6. Land purchase

The lower utilization of funds was a consequence of formal and legal problems related to the properties planned for purchase. In particular, this concerned the unregulated legal status of some plots and lengthy inheritance proceedings, which made it impossible to complete the purchase to the full, originally planned extent. As a result, the action was implemented on a smaller surface area, while maintaining the key conservation objectives of the project. The

unused funds were reallocated to category IVa and allocated to the implementation of action C.12.

7. Other costs

The lower-than-planned utilization of funds resulted primarily from the launch of the Environmental Education Centre in Umianowice, which has a kitchen facility enabling the independent preparation of meals for educational classes, conferences, meetings and seminars. This significantly reduced the costs of external catering services. Additional savings were also generated within promotional and educational activities thanks to the rationalization of expenses and the use of the Beneficiary's own resources. A significant portion of the funds saved in this category was reallocated to the *Personnel* category, helping to cover the increased personnel costs of the project.

7.2 Accounting system

7.2.1 Brief presentation of the accounting systems

a) Coordinating Beneficiary – ZSiNPK in Kielce.

The accounting for the coordinating beneficiary for the LIFE17 NAT/PL/000018 project was conducted at the ZSiNPK headquarters at 244 Łódzka Street. The project's accounting organization was compliant with the rules applicable in the unit, and thus was conducted based on the provisions of the Accounting Act and the Public Finance Act, in section 925 – Botanical and zoological gardens and natural areas and objects of protected nature, chapter 92502 – Landscape parks.

Accounting operations identifying the project were marked with the tag [L], a journal with the number 902000, and expenditures in the task-based system with the symbol 1a289. These were carried out in accordance with the applicable PW schedule and the unit's financial plan. They were marked according to the following scheme:

- ***7U – expenditures from the European Commission's part;
- ***9B – expenditures from the State budget part (NFOSiGW);
- ***9J – expenditures from the own contribution part (JST).

The accounting books for the implementation of projects co-financed from external funds were kept electronically until the end of 2021 in the "Espeer" financial-accounting program, and from 2022 in the "Respons" program; in the "SATURN-HR" HR-payroll program until 2021, and from 2022 in "Respons" and "Symfonia" for fixed assets until 2021 and from 2022 – "Respons".

The accounting books include sets of accounting entries, turnovers, and balances. They are composed of:

- journal
- general ledger
- subsidiary ledgers
- statements: turnovers and balances of the general ledger and balances of subsidiary accounts.

Each registration of accounting documents necessitates the entry of all data that uniquely identifies the economic event, including the breakdown into EU projects implemented within the unit. It allows for an analysis of the events that have occurred and the current financial situation at any given moment of the project's implementation. It also enables the generation of statements and printouts in any configuration of data and information, along with partial and total summaries. This facilitates the maintenance of an analytical accounting system in accordance with the guidelines contained in the General and Specific Provisions.

Accounting documents, checked for formal and numerical correctness and assigned to the appropriate cost, were approved by the project manager, then accepted by the Chief Accountant and the Director of the unit, as well as the project's financial coordinator and the public procurement specialist. They were entered into the relevant registers according to the applicable decree of the industry-specific chart of accounts established for the project.

b) Co-beneficiary – State Forests – Pińczów Forest District.

The accounting for the State Forests – Pińczów Forest District was conducted at the Forest District's headquarters in Michałów 294, Pińczów municipality. The accounting organization complied with the rules applicable within the State Forests. Accounting operations identifying the project were marked with the tag [1/289] and were carried out in accordance with the applicable Expenditure Plan schedule and the unit's financial plan.

Accounting operations identifying the project were marked with the tag [1/289], and expenditures in the task-based system with the symbol [1/289], were carried out in accordance with the applicable PW schedule and the unit's financial plan. They were marked according to the following scheme:

- ***-15 – expenditures from the European Commission's part;
- ***-12 – expenditures from the State budget part (NFOSiGW)

c) Co-beneficiary – Institute of Nature Conservation of the Polish Academy of Sciences in Krakow.

The accounting for the IOP PAS was conducted at the institution's headquarters – 33 Adama Mickiewicza Ave., Krakow. The accounting organization complied with the rules applicable within the Polish Academy of Sciences. Operations identifying the project were marked with the tag [DL] and were carried out in accordance with the applicable PW schedule and the unit's financial plan.

Accounting operations identifying the project were marked with the tag [DL] and expenditures in the task-based system with the symbol [506-03], were carried out in accordance with the applicable PW schedule and the unit's financial plan. They were marked according to the following scheme:

- 506-03-01 – expenditures from the European Commission's part;
- 506-03-02 – expenditures from the State budget part (NFOŚiGW);
- 506-03-02 – expenditures from the own contribution part (JST);

Accounting was conducted using financial-accounting software from COGISOFT Systemy Komputerowe.

d) Co-beneficiary – Agricultural University in Krakow.

The accounting for the Agricultural University was conducted at the institution's headquarters – 21 Czysa St., Krakow. The accounting organization complied with the rules applicable at the Agricultural University. Operations identifying the project were marked with the tag and were carried out in accordance with the applicable PW schedule and the unit's financial plan.

Accounting operations identifying the project were marked with the tag and expenditures in the task-based system with the symbol 6311, were carried out in accordance with the applicable PW schedule and the unit's financial plan. They were marked according to the following scheme:

- ***-6311 – expenditures from the European Commission's part;
- ***-0001 – expenditures from the own contribution part (JST);

Accounting was conducted using financial-accounting software from SIMPLE.ERP.

The financial and cost documents of the Coordinating Beneficiary and Co-beneficiaries were described and stamped with the project number, which serves as a reference linking them to the project.

Within the project, as defined by Art. 15, par. 2 of the Value Added Tax Act, the achieved results were used for purposes other than economic activity, i.e., for activities not subject to value-added tax (VAT). Consequently, the actions carried out in the project were public activities from which the beneficiaries did not derive financial benefits and there was no basis for reducing the output tax by the amount of input tax on purchased goods and services.

7.2.2 Brief presentation of the procedure of approving costs.

Documents concerning the project's implementation, such as contracts with contractors, employment contracts with staff hired for the project, orders, and commissions, include:

- a) The LIFE logo;
- b) The Natura 2000 logo;
- c) The NFOŚiGW logo.

Furthermore, depending on whom they concern, they also include:

- In the case of ZSiNPK – the ZSiNPK logo and the Świętokrzyskie Voivodeship logo;
- In the case of the State Forests – the State Forests logo;
- In the case of IOP PAN – the IOP PAN logo;
- In the case of the UR in Krakow – the UR in Krakow logo.

Accounting documents (invoices, bills) issued by subcontractors contain a clear reference to the LIFE project. All economic events and financial operations generating project costs/expenditures were confirmed by source documents in the form of invoices, bills, timesheets, payroll lists and others. The description on the accounting documents indicates the link between the financial operation and the LIFE4Delta PL project through:

- A reference to the project name and number / included in the content by the supplier of the goods or service;
- A substantive description of the document approved by the project manager or local coordinators;
- A statement of the source of financing for the expenditure and its position in the project budget estimate;
- A statement confirming the verification and qualification of the document for inclusion in the accounting books, indicating the date and method of entry in the accounting records / accounting entry / and the signatures of the relevant persons;
- A reference to the procedure and compliance with the provisions of the Public Procurement Law;
- Confirmation of the date and method of payment;
- Confirmation by signature of:
 - 1) Substantive control – project manager, deputy project manager or an employee authorized by the manager, local coordinator;
 - 2) Formal and accounting control – project accountant;
 - 3) Preliminary control – the unit's chief accountant or their deputy;
 - 4) Approval for payment – the unit's Director or their deputy.

7.2.3 Type of time recording system used

The total working time of all employees of the Coordinating Beneficiary and Co-beneficiaries was recorded according to internal procedures and implemented in practice using attendance lists, confirmed daily with a handwritten signature by each employee. Employees belonging to

the project team (both those hired for the project and those delegated to work on it) recorded their working time in individual timesheets. In accordance with the guidelines from the General Provisions, these cards contained a relevant reference to the specific employee and included data such as: job position, year, month, consecutive days, hours worked on the LIFE project, and in the case of employees delegated to the project on a part-time basis, also the hours worked outside the project.

The timesheet, prepared by the employee, was signed and dated by them and then accepted and dated by the Project Manager, their deputy, local coordinators or the Directorate. This card formed the basis for calculating direct personnel costs, taking into account statutory and applicable employer charges, i.e., the social security contribution financed by the Employer and the Labor Fund. The annual gross salaries of employees working on the project also included the costs of the additional annual salary, the so-called "13th-month salary," along with its derivatives.

7.3 Partnership arrangements (if relevant)

The details of the agreements were specified in:

- 1) Partnership Agreement No. 1/2018 of 31.12.2018 concluded between ZSiNPK in Kielce and IOP PAN in Krakow;
- 2) Partnership Agreement No. 2/2018 of 31.12.2018 concluded between ZSiNPK in Kielce and PGL State Forests – Pińczów Forest District;
- 3) Partnership Agreement No. 1/2019 of 21.01.2019 concluded between ZSiNPK in Kielce and the UR in Krakow.

Based on these and in accordance with the A4 declarations contained in the application form, the total cost of the tasks planned for implementation was established. The financial contribution of each of the Co-beneficiaries was determined, which was transferred to the bank account of the Świętokrzyskie Voivodeship up to the amount planned for implementation in a given year. These funds were transferred by the Świętokrzyskie Voivodeship to the bank account of ZSiNPK. The own contribution, funds from the European Commission, and the NFOŚiGW, constituting a reimbursement of the funds actually spent, were transferred to the Co-beneficiaries' accounts.

The Co-beneficiaries settled the advances quarterly based on:

1. Statements / reports;
2. Settlement documents, i.e., invoice summaries, copies of described invoices certified as a true copy of the original, other accounting evidence (e.g., payroll lists certified as a true copy of the original) documenting the incurred expenses, and confirmations of payment (e.g., bank statements);
3. Copies of documents certified as a true copy of the original from the procurement procedure.

7.4 Certificate on the financial statement

In Q4/2025, an auditor was selected for the Project audit. The contractor:

Kancelaria Rachunkowo-Audytorska Biegły Rewident
Tomasz Niedzwiedź
Ul. Wojska Polskiego 91, 86-105 Świecie

Auditor:

- Tomasz Niedźwiedź, certified auditor no. 13541

The audit was conducted by 15/12/2025. The service was accepted on 16/12/2025.

The Certificate on the financial statement was a deliverable and was placed in BUTLER.

7.5 Estimation of person-days used per action

To illustrate the use of the person-days included in the budget for action groups, a table is presented below, in accordance with the R2 form included in the application.

Person-days table for the entire LIFE Project team:

Action type	Budgeted person-days	Estimated % of person-days spent
Action A: Preparatory actions	650	55,6 %
Action B: Purchase/lease of land and/or compensation payment for payment rights	130	100,00 %
Action C – Concrete conservation actions	8 800	103,50 %
Action D: Monitoring and impact assessment	1 719	199,30 %
Action E: Communication and Dissemination of results	2 529	111,40 %
Action F: Project management (and progress)	4 732	168,00 %
TOTAL	18 560	128,20 %

The largest deviation in person-months occurred in action group D (environmental and hydrological monitoring), which is directly related to the extension of the monitoring period due to the Project's extension, as well as the need to adapt monitoring methodologies to actual conditions, i.e., dynamic hydrological changes and additional field inspections to confirm the durability of the effects. The overrun in person-months was also a direct consequence of unplanned environmental effects. Deviations in person-months in action group F relate to project management. The coordination of work, schedules, financial flows, and substantive compliance within the complex structure of the Project required a much greater management workload than originally assumed, which was reflected in the person-months reported in actions F. Some coordination and control tasks were carried out directly by the project staff rather than by external entities. In practice, this meant extending the scope of responsibility for F actions beyond classic "management," which significantly increased the workload reported in this group. The lower-than-planned utilization of person-months in action group A resulted from the effective organization of preparatory works and the optimization of the planning and decision-making process. Some preparatory activities were limited to the scope necessary from the point of view of implementation (no need to prepare full project documentation). Experience in project implementation and the availability of environmental inventories and hydrological analyses allowed for the efficient implementation of preparatory activities.

7.6 Table presenting the allocation of costs per action

Action title	1. Personnel	2. Travel	3. External assistance	4a. Infrastructure	4b. equipment	5. Purchase of lease of land	6. Consumables	7. Others costs	TOTAL
A.1	11 227,00	0	863,86	0	88 788,04	0	12 065,53	111,49	113 055,92
A.2	13 600,00	0	45 900,01	58 739,24	0	0	0	3 032,61	121 271,86
A.3	12 697,00	0	28 028,98	0	10 853,07	0	0	0	51 579,05
A.3	11 050,00	0	0	0	0	232 411,02	0	0	243 461,02
B.1	80 750,00	0	367 828,97	76 954,92	0	0	0	0	525 533,89
C.1	65 768,13	0	80 570,68	160 449,82	0	0	0	0	306 788,63
C.2	62 093,28	0	40 253,73	0	1 137,40	0	2 081,22	0	105 565,63
C.3	99 333,66	0	47 607,78	56 496,07	183 363,43	0	38 184,16	13 735,13	438 720,23
C.4	73 066,00	0	854,47	6 599,99	2 223,48	0	0	0	82 743,94
C.5	97 063,22	0	2 620,91	0	16 052,82	0	2 244,51	0	117 981,46
C.6	57 520,64	46 408,53	22 391,50	0	147 215,72	0	70 897,85	0	344 434,24
C.7	47 774,51	0	0	0	11 338,74	0	39,44	0	59 152,69
C.8	13 201,04	7 900,80	0	0	0	0	0	0	21 101,84
C.9	19 825,06	11 597,27	10 611,39	0	0	0	217,28	0	42 251,00
C.10	41 338,93	0	0	8 117,04	1 673,49	0	148,98	0	51 278,44
C.11	37 975,90	0	56 788,78	410 084,99	0	0	0	0	504 849,67
C.12	28 056,05	0	0	0	3 339,41	0	1 258,25	0	32 653,71
C.13	59 579,71	45 375,83	30 263,35	0	23 829,09	0	0	0	159 047,98
D.1	48 509,79	14 423,76	0	0	26 769,57	0	0	0	89 703,12
D.2	1 700,00	0	4 884,07	0	0	0	0	0	6 584,07
D.3	1 700,00	0	9 449,66	0	0	0	0	0	11 149,66
D.4	18 717,31	0	0	0	0	0	0	0	18 717,31
D.5	33 120,00	0	10 927,47	0	1 080,04	0	667,21	34 391,34	80 186,06
E.1	125 469,87	0	33 894,88	0	12 330,24	0	49 459,68	78 720,64	299 875,31
E.2	11 028,57	0	7 883,31	0	0	0	8 089,07	14 824,39	41 825,34
E.3	667,76	0	0	0	0	0	0	2 308,88	2 976,64
E.4	39 133,34	16 735,18	0	0	0	0	0	0	55 868,52
E.5	0	0	0	0	0	0	1 384,47	2 684,25	4 068,72
E.6	531 876,08	18 968,19	93 145,54	0	3 723,97	0	1 384,23	10 516,27	659 614,28
F.1	9 040,74	0	0	0	0	0	225,33	909,45	10 175,52
F.2	53 082,38	434,25	0	0	1 647,83	0	0	0	55 164,46
F.3	0	0	0	0	0	0	0	6 245,13	6 245,13
F.4	11 227,00	0	863,86	0	88 788,04	0	12 065,53	111,49	113 055,92
F.5	0	0	0	0	0	0	0	0	0
OVERHEADS									268 385,18
TOTAL	1705965,97	161843,81	894769,34	777442,07	535366,34	232411,02	188347,21	167479,58	4932010,52

8. Deliverables summary

Action A.2

Name of the Deliverable:

1. Complete technical documentation with a cost estimate for the inland delta of the Nida River.
As all works in action C.1 were carried out as maintenance works not requiring comprehensive project documentation, but only notifications of intent to carry out activities, it was possible to avoid lengthy and costly procedures related to obtaining technical documentation.
2. Water law survey for the forest complex of the Pińczów Forest District.
The deliverable is a water-legal survey which is part of the project documentation for the task "Construction of a network of irrigation and drainage ditches with weirs in the Młodzawy forest complex".
3. Water law survey for the area of the inland delta of the Nida River.
As all works in action C.1 were carried out as maintenance works not requiring comprehensive project documentation, but only notifications of intent to carry out activities, it was possible to avoid lengthy and costly procedures related to obtaining technical documentation.
4. Environmental impact report for the forest complex of the Pińczów Forest District.
As all works in action C.1 were carried out as maintenance works not requiring comprehensive project documentation, but only notifications of intent to carry out activities, it was possible to avoid lengthy and costly procedures related to obtaining technical documentation.
5. Environmental impact report for the inland delta of the Nida River.
The deliverable is an environmental impact report for the needs of the task "Construction of a network of irrigation and drainage ditches with weirs in the Młodzawy forest complex" prepared by the company EKO-WASZKA Maciej Wachecki.
6. Designs for tourist infrastructure.
The deliverable consists of complete project documentation for 3 nature educational paths, including, among others: architectural and construction designs, technical designs, land development plans for the paths and accompanying infrastructure - a viewing tower, a hide, a footbridge, and information boards.
7. Complete technical documentation with a cost estimate for the forest complex of the Pińczów Forest District.
The deliverable consists of complete project documentation for the task "Construction of a network of irrigation and drainage ditches with weirs in the Młodzawy forest complex" including, among others: architectural and construction designs, technical designs, and land development plans.
8. Appraisal reports necessary for land purchase.
The deliverable includes property valuation appraisal reports and their updates, prepared for the purpose of concluding notarial deeds.

9. Land registry extracts and maps.

The deliverable includes 58 extracts from the land register and 40 excerpts from the cadastral map necessary for concluding notarial deeds.

Action B.1

Name of the Deliverable:

1. Notarial deeds.

The final document contains 63 purchase agreements in the form of notarial deeds for real estate within the project, covering a total area of 53.8714 ha.

2. Land valuation appraisal report.

The deliverable includes property valuation appraisal reports and their updates prepared for the purpose of concluding notarial deeds.

Action C.1

Name of the Deliverable:

1. Annual reports on the implementation of tasks.

This document is a collection of annual reports from 2019 to 2025, covering all the renaturation works carried out in the Delta area. The reports contain information on the actions taken and their implementation schedules, and present the results of the work carried out, documented with photographic material.

Action C.3

Name of the Deliverables:

1. Action implementation report (2022)
2. Action implementation report (2023)
3. Action implementation report (2024)
4. Action implementation report (2025)

The deliverables are annual reports on the implementation of the action, covering the years 2022-2025. The reports contain a detailed description of the activities carried out on meadow habitats (mowing, removal of *Phragmites australis*, removal of trees and shrubs), along with quantitative information regarding the scope of work, as well as planned and achieved implementation indicators. The reports present the implementation schedules for individual works, their location, and spatial scale, allowing for an assessment of the effectiveness of the actions taken.

Action C.5

Name of the Deliverables:

1. Report on the results of the observation (2023)
2. Report on the results of the observation (2024)

3. Report on the results of the observation (2025)

The deliverables are annual reports on the results of bird observations in the Delta area, covering the years 2023, 2024, and 2025. The reports document systematically conducted, regular field observations aimed at identifying the species composition of the avifauna, population size, and spatial distribution of birds in the project area. The reports contain an analysis of changes occurring over time, allowing for an assessment of trends and the potential impact of the implemented renaturation activities on the status and dynamics of bird populations.

Action C.6

Name of the Deliverables:

1. Reintroduction results report (2022)
2. Reintroduction results report (2023)
3. Reintroduction results report (2024)
4. Reintroduction results report (2025)

The deliverables are annual reports on the implementation of the action, covering the years 2022-2025. The reports contain a detailed description of activities conducted in individual years regarding the preparation of the natural habitat (2022), the breeding of juveniles (2023-2025) and the reintroduction of *Emys orbicularis* (2025) including the methodology used, implementation problems encountered and results achieved.

Action C.7

Name of the Deliverables:

1. Action implementation report (2022)
2. Action implementation report (2023)
3. Action implementation report (2024)

The deliverables are annual reports on the implementation of the action, covering the years 2022–2024. The reports contain a detailed description of the activities conducted in individual years concerning the reintroduction of the *Unio crassus* population, including the methodology used, implementation problems encountered and results achieved.

Action C.8

Name of the Deliverables:

1. Action implementation report (2022)
2. Action implementation report (2023)
3. Action implementation report (2024)

The deliverables are annual reports on the implementation of the action, covering the years 2022–2024. The reports contain a detailed description of the activities conducted in individual years concerning the protection of *Anisus vorticulus*, including the methodology used for breeding this species and its release, implementation problems encountered and results achieved.

Action C.9

Name of the Deliverables:

1. Action implementation report (2022)
2. Action implementation report (2023)
3. Action implementation report (2024)

The deliverables are annual action implementation reports covering the years 2022–2024. The reports contain a detailed description of activities conducted in individual years regarding the restitution of the species *Vertigo moulinsiana* and *Vertigo angustior* including the methodology used, implementation problems encountered and results achieved.

Action C.10

Name of the Deliverables:

1. Action implementation report (2022)
2. Action implementation report (2023)
3. Action implementation report (2024)

The deliverables are annual action implementation reports covering the years 2022–2024. The reports contain a detailed description of activities conducted in individual years regarding the restitution of the species *Bombina bombina* and *Triturus cristatus*, including the methodology used, implementation problems encountered and results achieved.

Action C.11

Name of the Deliverables:

1. Report on the progress of the task implementation (2022)
2. Report on the progress of the task implementation (2023)
3. Report on the progress of the task implementation (2024)
4. Report on the progress of the task implementation (2025)

The deliverables are annual task implementation reports covering the years 2022–2025. The reports contain a detailed description of activities conducted in individual years related to the restoration of calcareous grasslands and the establishment of substitute sites for 4 strictly protected species, as well as the management of a seed plantation for calcareous species along with a forest nursery.

Action C.13

Name of the Deliverables:

1. Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project (2022)
2. Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project (2023)
3. Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project (2024)
4. Annual summary report on the conducted patrols prepared by an employee monitoring the implementation of the project (2025)

This document contains annual reports on preventive patrols with a detailed description of the activities undertaken in the years 2022, 2023, 2024 and 2025.

5. Application for a change in the guidelines of the agro-environmental package
The deliverable is an application to the Ministry of Agriculture and Rural Development regarding a change in the guidelines contained in agro-environmental programs, covering the possibility of a derogation from the requirement to remove biomass in cases where the presence of *Vertigo moulinsiana* and *Vertigo angustior* is confirmed.

Action D.1

Name of the Deliverables:

1. Report on the implementation of monitoring stage V (2022)
2. Report on the implementation of monitoring stage VI (2023)
3. Report on the implementation of monitoring stage VII (2024)
4. Report on the entire monitoring conducted (2025)

The deliverables are reports on the implementation of environmental monitoring conducted by the project co-beneficiary - IOP PAN in the years 2022-2025.

Action D.2

Name of the Deliverables:

1. Water distribution concept.
The deliverable is a document containing the water distribution concept for the inland delta area and for the forest complex in Młodzawy Duże.
2. Final report on the task implementation.
The deliverable is a report summarizing the monitoring activities conducted by the project co-beneficiary - the University of Agriculture in the years 2019 - 2025.

Action D.3

Name of the Deliverable:

1. Socio-economic impact assessment report.

The deliverable consists of a methodological report, an opening report (situation diagnosis), and a final report – assessing the socio-economic impact on the local economy and society as well as on ecosystem function

Action D.4

Name of the Deliverable:

1. Reports on the assessment of ecosystem services resources.

The deliverable consists of 2 reports on the assessment of ecosystem services, covering Stage I – preparation of the theoretical and methodological basis of the study along with pilot results for the project area and Stage II - a comparative analysis of ecosystem service resources of the area in question.

Action D.5

Name of the Deliverables:

1. Analysis of the achieved results
2. Analysis of the achieved results
3. Analysis of the achieved results
4. Analysis of the achieved results

The documents contain a comparative analysis of the initial state of the indicators against the current effects of project activities. Indicators are discussed along with their progress, identification of deviations, threats, trends, and the status of natural habitats and species covered by project actions.

5. Project performance index table.

Contains a summary of key performance indicators used to monitor progress, evaluate effectiveness and report project results.

Action E.1

Name of the Deliverables:

1. Promotional and informational folder.

The deliverable consists of designs for two promotional and informational folders, which were published as part of the project with a print run of 12,050 copies.

2. Promotional gadgets.

The deliverable includes promotional and informational gadgets: cotton T-shirts - 1,000 pcs, backpacks/drawstring bags - 1,000 pcs, paper bags - 1,000 pcs, bookmarks with double-sided color printing - 5,000 pcs, reflective pendants - 2,000 pcs. This document includes photos of the aforementioned promotional gadgets.

3. Poster calendar.

The deliverable consists of calendars promoting the project, issued for the years 2020-2025, with a total print run of 5,000 copies.

4. Informational and educational map.

The deliverable is the graphic design of a map, which was published with a print run of 15,000 copies.

Action E.2

Name of the Deliverables:

1. Attendance lists from workshops for teachers (2022)
2. Attendance lists from workshops for teachers (2023)

The deliverables include explanations for the postponement of the task from 2022 and 2023 to subsequent years due to the lingering consequences of the COVID-19 pandemic and the desire to prioritize educational activities for the youngest participants.

3. Attendance lists from workshops for teachers (2024)
4. Attendance lists from workshops for teachers (2025)

The deliverables are attendance lists from the implemented one-day and two-day workshops for teachers in 2024 and 2025.

5. Attendance lists from two-day workshops 2022)

The deliverable includes an explanation for the postponement of the task from 2022 to subsequent years due to the lingering consequences of the COVID-19 pandemic and delays in commissioning the OEP (Environmental Education Center) in Umianowice, which plays a key role as the project's educational and informational center.

6. Attendance lists from two-day workshops (2023)
7. Attendance lists from two-day workshops (2024)
8. Attendance lists from two-day workshops (2025)

The deliverables are attendance lists from the implemented two-day workshops. In 2023, 7 workshops were held for 243 students; in 2024, 14 workshops for 657 students and in 2025, 10 workshops for 526 students.

9. Attendance lists from one-day workshops (2022)
10. Attendance lists from one-day workshops (2023)
11. Attendance lists from one-day workshops (2024)
12. Attendance lists from one-day workshops (2025)

The deliverables are attendance lists from the implemented one-day workshops. In 2022, 23 workshops were held for 997 students; in 2023, 78 workshops for 3,518 students; in 2024, 48 workshops for 2,147 students; and in 2025, 72 workshops for 3,436 students.

13. Attendance lists from training sessions for farmers (2022)
14. Attendance lists from training sessions for farmers (2023)
15. Attendance lists from training sessions for farmers (2024-2025)

The deliverables are attendance lists from the implemented training sessions for farmers. In 2022, 1 training session was held for 34 farmers; in 2024, 1 training session for 39 farmers; and in 2025, 1 training session for 27 farmers. In 2023, the training could not be conducted and had to be postponed to subsequent years, which has been explained by the Beneficiary.

16. Posters - Social monitoring
17. Posters - Educational festivals

The deliverables are posters informing about and encouraging participation in social monitoring (3 pcs) and educational festivals (12 pcs).

Action E.3

Name of the Deliverables:

1. Conference materials - midterm conference.
The deliverables are conference materials: cups, lanyards, paper bags and notebooks purchased for the participants
2. Attendance list - midterm conference.
The deliverable is the attendance list of participants of the mid-term conference organized on 13-14/09/2023.
3. Conference materials - final conference.
The deliverables are conference materials: cups with boxes, lanyards and notebooks purchased for the participants.
4. Attendance list - final conference.
The deliverable is the attendance list of participants of the final conference organized on 11-13/06/2025.
5. Conference materials – seminars.
The deliverable is information regarding conference materials as part of the organized one-day seminars.
6. Attendance lists for one-day seminars.
The deliverables are attendance lists of participants of the one-day seminars held on the following dates: 04/09/2023, 20/10/2023, 26/06/2024, 12/02/2025, and 05/04/2025.

Action E.4

Name of the Deliverables:

1. Layman's report.

2. Scientific report.

The deliverables of the action are two studies: a layman's report and a scientific report, prepared in both electronic and paper versions. Both documents have been published on the Project's website. 200 copies of the layman's report and 500 copies of the scientific report were printed.

Action E.6

Name of the Deliverables:

1. 5 reports from participants of the study visit (2022).
The deliverable includes an explanation for the postponement of the task from 2022 to subsequent years due to the lingering consequences of the COVID-19 pandemic, manifested by limited interest from institutions and NGOs in participating in foreign trips, and the delay in commissioning the OEP in Umianowice, which plays a key role in organizing meetings and visits.
2. 5 reports from participants of the study visit (2023).
The deliverable includes an explanation for the postponement of the task from 2023 to subsequent years due to numerous networking visits, the organization of a Platform meeting, and the mid-term conference, which contributed to developing the appropriate model for meetings and study visits in the following years.
3. 5 reports from participants of the study visit (2024-2025).
The deliverable consists of 13 reports from participants of study visits conducted in the years 2024-2025.

Action F.1

Name of the Deliverable:

1. Financial statement on the project budget execution.
The final products are the financial statements of the Coordinating Beneficiary and co-beneficiaries, containing a detailed list of costs actually incurred and paid, grouped according to budget categories.

Action F.2

Name of the Deliverable:

1. Reports from the Steering Committee meetings.
The final product consists of 4 reports from the Steering Committee meetings, which took place on the following dates: 26/09/2019, 16/12/2022, 12/12/2023 and 13/12/2024. The reports contain information regarding the course of the meetings, the topics discussed and future plans.

Action F.3

Name of the Deliverable:

1. Quarterly reports.

The deliverable includes a total of 27 quarterly reports containing an analysis of physical progress, action implementation indicators, schedules, and problems encountered in individual quarters of the Project's implementation.

Action F.4

Name of the Deliverable:

1. Financial audit.

The deliverable is a report from an independent financial audit covering the verification of expenditures incurred by the Beneficiary within the project. The audit results confirmed the correctness of the project financial management system.

Action F.5

Name of the Deliverable:

1. After-LIFE conservation plan.

The final product is the After-LIFE conservation plan, which contains a detailed description of the actions planned for continuation in order to preserve and maintain the achieved project results. The document has been published on the Project's website.