LIFE Project Number

LIFE19/NAT/SE/000333

Mid-term
Covering the project activities from 01/01/2021 to 30/04/2024

Reporting Date[1]

31/10/2024

LIFE PROJECT NAME

Ecostreams for Life

Data Project

Project location:	Counties of Västerbotten, Jämtland and Västernorrland in Sweden
Project start date:	01 /01/2021
Project end date:	31/12/2026 **Extension date:** 31/12/2027
Total budget:	17 038 931 €
EU contribution:	9 166 422 €
(%) of eligible costs:	54 %

Data Beneficiary

Name Beneficiary:	County Administrative Board of Västerbotten
Contact person:	Ms Johanna Hägglund
Postal address:	Storgatan 71B, 901 86, Umeå, Sweden
Phone:	+46 10 225 43 73
E-mail:	Johanna.hagglund@lansstyrelsen.se
Project Website:	www.ecostreamsforlife.com

[1] 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

Please note that the evaluation of your report may only commence if the package complies with all the elements in this receivability check. The evaluation will be stopped if any obligatory elements are missing.

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 *In electronic version only*	✓
Index of deliverables with short description annexed, in English *In electronic version only*	✓
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 *In electronic version only*	✓ **(BUTLER)**
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 *Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets + full Excel file)*	✓
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. *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**	✓
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)	✓
Mid-term report (for all projects except IPs): the threshold for the second pre-financing payment has been reached	✓
Beneficiary's certificate for Durable Goods included (if required, i.e. beneficiaries claiming 100% cost for durable goods) *Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets)*	✓
Certificate on financial statements (if required, i.e. for beneficiaries with EU contribution ≥750,000 € in the budget) *Electronically Q-signed or if paper submission signed original and in electronic version (pdf)*	✓
Other checks	
Additional information / clarifications and supporting documents requested in previous letters from the Agency (unless already submitted or not yet due) *In electronic version only*	✓
This table, page 2 of the Mid-term / Final report, is completed - each tick box is filled in *In electronic version only*	✓

**signature by a legal or statutory representative of the beneficiary / affiliate concerned*

1. Table of contents

2. List of keywords and abbreviations

Keywords
Life project, Rivers, Freshwater, River restoration, connectivity, natural processes, increased biodiversity, water quality improvements, re-wetting, project communication, otter, freshwater pearl mussel, small liverwort, Atlantic salmon, brown trout, noble crayfish, sculpin, dead wood, Natura 2000, Öreälven, Hemlingsån, Moälven, Åreälven, Rörströmsälven, Ammerån.

Abbreviations

CAB	County Administrative Board
CABJa	County Administrative Board of Jämtland
CABVb	County Administrative Board of Västerbotten
CABVn	County Administrative Board of Västernorrland
EC	European Commission
FMU	Fisheries management unit
FPM	Freshwater pearl mussel
GA	Grant Agreement
HD	Habitat directive
IAS	Invasive Alien Species
KAU	Karlstad University
LOU	Law of Public Procurements
LOVA	Local Water Conservation Projects (Translated)
MtR	Midterm report
NAP	National plan for re-examination of hydropower (Translated)
SAA	Swedish Anglers Association
STA	Swedish Transport Administration
SwAM	Swedish Agency for Marine and Water Management
TUM	Technical University of München
WFD	Water framework directive

3. Executive Summary

Objectives
The project has a holistic (catchment) perspective and five main objectives:

1. To improve the conservation status (Habitats directive) and the ecological status (WFD) of aquatic habitats and aquatic species of Community interest. This by restoring habitat quality, wetland and stream hydrology and stream connectivity. Consequently, green (blue) infrastructure will be enhanced.

2. To enhance ecosystem structure and function of boreal rivers to improve resilience in a climate change perspective. Well-functioning, diverse ecosystems are expected to better withstand changes induced by climate change.

3. To spread the results and experiences to regional, national, and international actors in the field of river restoration.

4. To preserve and further develop aquatic ecosystem services, aiming at an inter-connection of conservation action with sustainable development of local, green economies. The project areas are in sparsely populated regions with few opportunities for employment. Conservation actions will improve riverine habitats and enhance native fish populations, which will establish prerequisites for the development of sustainable (green) tourism.

5. To improve knowledge and awareness of river ecology and N2000-related values among stakeholders and the public through dialogue processes. Specifically, to enhance "water friendly" forestry practices and to avoid unwanted introduction of invasive species (signal crayfish). Within the extended efforts to increase public awareness special attention will be paid to school kids.

Project Process and outputs
The project work is separated into different actions, A, C, D, E and F, where outputs can be read in the technical part.

A-Actions Preparatory actions

C-Actions Concrete conservation actions

D-Actions Monitoring actions

E-Actions Dissemination actions

F-Actions Project management

4. Introduction

The project takes place in the counties of Västerbotten, Västernorrland and Jämtland. The rivers targeted are Öreälven (SE0810434), Hemlingsån (SE0710153), Moälven (SE0710164), Ammerån (SE0720359), Åreälven (SE0720286) and Rörströmsälven (SE0720297). These water systems vary mainly of habitat 3210 Fennoscandian natural rivers and 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation.

The rivers and streams in the project have been heavily influenced by measures to facilitate large-scale timber floating during the 19th and 20th centuries. Extensive efforts were made to reduce the risk of timber getting stuck by narrowing and channelizing. Big boulders and dead wood (whole trees) were removed or even blasted. As the natural heterogeneity of the river decreased, general water velocity was elevated and gravel as well as finer fractions were flushed out of the riffles and deposited further downstream. Another important negative effect of the changed river morphology is that the channelized river is not able to flood its riverbanks and have access to the floodplain. Whereas a natural river would respond to high flows by expanding into adjacent riparian forests and wetlands all along its course.

Another impact on the targeted rivers is commercial forestry. Current forestry practices are detrimental to the rivers of the forest landscape. Often riparian buffer zones along waterways are lacking or are inadequate within these forestry landscapes. Trees are cut with heavy vehicles which make deep tracks in soft ground, and if these tracks lead out into a water course, problems of soil erosion – turbidity and siltation - appear in the streams and lakes. To increase forest growth, wetlands have historically been drained.

30 old dams and 251 dysfunctional road culverts occur in the project areas reducing the possibility for fish, other aquatic organisms, and otter to move freely in the water systems.

This project aims to restore the rivers to bring back the natural functionality in terms of both ecology, biology and hydromorphology. The targeted species are freshwater pearl mussel, Atlantic salmon, otter, small liverwort, noble crayfish, and sculpin.

The project has a holistic (catchment) perspective and five main objectives:

1. To improve the conservation status (Habitats directive) and the ecological status (WFD) of aquatic habitats and aquatic species of Community interest. This by restoring habitat quality, wetland and stream hydrology and stream connectivity. Consequently, green (blue) infrastructure will be enhanced.

2. To enhance ecosystem structure and function of boreal rivers to improve resilience in a climate change perspective. Well-functioning, diverse ecosystems are expected to better withstand changes induced by climate change.

3. To spread the results and experiences to regional, national, and international actors in the field of river restoration.

4. To preserve and further develop aquatic ecosystem services, aiming at an inter-connection of conservation action with sustainable development of local, green economies. The project areas are in sparsely populated regions with few opportunities for employment. Conservation actions will improve riverine habitats and enhance native fish populations,

which will establish prerequisites for the development of sustainable (green) tourism.

5. To improve knowledge and awareness of river ecology and N2000-related values among stakeholders and the public through dialogue processes. Specifically, to enhance "water friendly" forestry practices and to avoid unwanted introduction of invasive species (signal crayfish). Within the extended efforts to increase public awareness special attention will be paid to school kids.

The project will create local jobs for consultants, supervisors, and excavator contractors etc. The Fishery Management Units (FMU) will gain from the publicity of this project and the restoration work, this will lead to a more positively trend in sold fishing licenses and the targeted areas will have a sustainable (green) tourism. The project will enhance the local economy in these rural areas.

Knowledge and experience gained during the project will be used for implementation in future restoration projects and passed on to other actors within the field. The project will be an active part in the development of a national manual for river restoration. This will lead to improved guidelines, directives, and methods. Lessons learned from the project will, also after the project, be passed on to forestry companies, private forest owners, water boards, fishery management units, politicians, schools, and NGO's. In total, more than 2000 people are expected to be reached.

The restoration objectives in this project rivers are:

- 140km/474 ha of river sections restored, remediating historic timber floating impact.
- 466 spawning grounds for salmon and brown trout re-created. Will increase habitat area also for grayling spawners and young pearl mussels.
- Migration barriers at 22 dams and 199 road culverts remediated, opening 845 km of streams for aquatic fauna migration.
- An increase of salmon smolt output from today's c.34000/year to 37400/year at the end of the project and to 62000/year when full recovery of the system occurs (c. 2040).
- Increased population sizes and distribution of freshwater pearl mussels. After the project, the total number of individuals will have increased to c. 1 8800 000 (mainly juveniles) in the areas of reintroduction. The project rivers will provide 300 ha of restored mussel habitat. Thus, there is a potential for 3 million new mussels being established year 2050.
- 10-20 percent increased populations of otter.
- *Scapania* species returned to the restored dead wood habitats in the riparian zones. The goal is 17 new populations at the end of the project.
- Reduced risk for Noble crayfish decline due to introduction of IAS signal crayfish.
- Hydromorphological/connectivity impact remediated in >83 waterbodies. After the natural recovery, Good Status for the respective quality factor or for the entire water body will occur.
- Increased ecosystem resilience with a climate change perspective due to enhanced structure and function of ecosystems

The projects dissemination goals:

- Detailed, adaptive management plans, enhancing sustainability of the fishery for stream fish populations, developed, and implemented after information and education of stakeholders.
- Increased numbers of visiting anglers (>10% more licenses sold) because of the improved stocks and sustainable use of stream fish. Local green economy enhanced with c. 10 new enterprises established.
- Enhanced public awareness of aquatic conservation needs. Focus on schools (c. 300 pupils in total).
- >400 persons in forestry practices educated in "best practice" forestry methods for protection of aquatic habitats.
- Project results and experiences well be spread to regional, national and international actors within the field of river restoration.

5. Administrative part

Project management
CABVb is the coordinating beneficiary of the project. The project management team consists of two Project Managers, Johanna Hägglund and Mattias Sundqvist, who have shared a full-time role (100%) since January 1, 2023, with the role expanded to 125% as of January 1, 2024. Due to the significant workload for the Coordinating Beneficiary, CABVb determined that two Project Managers with an increased time allocation are essential, as coordinating the entire project requires more capacity than a 100% role can manage. This expansion also aims to reduce vulnerability in case one of the managers is unavailable. From January 1, 2021, to January 1, 2023, Johanna Hägglund managed the role alone at 100%.

CABVb is responsible for reporting to the Agency, maintaining contact with the Monitor, and gathering necessary information from partners. Routine decisions regarding the project's progress are made by CABVb, while larger decisions or issues are escalated to the steering group, which meets at least twice a year. The steering group includes representatives from all project partners, and it is critical that each participant has the authority to make decisions, such as approving suggested changes to the grant agreement.

CABJa and CABVn each have a Deputy Project Manager, Anna Rost and Madelen Rytterstam, respectively. The CABs hold regular digital meetings, at least twice a month, to ensure the project progresses efficiently across the three counties.

Beneficiaries
A total of 15 beneficiaries are involved in the project. These are CABVb, CABJa, CABVn, STA, TUM, KAU, SAA, SwAM, SCA, Sveaskog, Holmen Skog, Billerud AB and three municipalities: Åre, Ragunda and Strömsund.

The beneficiaries share information and knowledge with each other to enhance the ecological value of the project areas. The project management organizes physical partner meetings at least every two years. Additionally, separate working groups have been established to focus on specific topics, such as Permit Processes, Road Culverts, and Dams, to facilitate knowledge exchange. However, interest in these groups has been limited, making it challenging to coordinate meetings with so many different stakeholders. As a result, working group meetings are now scheduled when collaboration is specifically needed. All partners are also invited to participate in digital LIFE seminars twice a year to share experiences both among themselves and with other LIFE projects.

Problems encountered
Due to the prevailing Covid-19 during the start of the project, the startup-meeting was arranged as a digital meeting. Physical meetings in the start of the project are important for the relationship between partners. It is difficult to create relationships later only depending on digital relationships on because of the distance between the counties and the different needs for every partner in the project.

Misunderstanding is a risk in the project since there are long distances between the counties and project managers and many partners involved. The Project Managers arrange digital

meetings every other week, and physical meetings at least two times per year. One meeting in the autumn to summarize the field season and to plan for the year ahead, and meeting one in the spring, to validate the work plan to the upcoming field season.

The changes due to amendments to the Grant Agreement.
In 6.1 Technical progress, per Action, all foreseen dates are based on the dates in Grant Agreement according to Amendment 1 (Ref. Ares(2024)345613-14/05/2024). The amendment covered:

Part A: Project prolongation
Part B: Modification of Reporting Schedule
Part C: Modification of Associated Beneficiary's organization number.

Deliverables in BUTLER
All deliverables due in the reporting period of this report have been uploaded via BUTLER. However, there appears to be an error with the progress report, as it is divided into several deliverables and actions. The project has submitted a comprehensive progress report for all actions via email on February 28, 2023. Additionally, several deliverables have not been submitted in BUTLER's deliverable section, and the report for 'Action C1 and C2 Restoration Progress Report' was attached on October 28, 2024 just to be on the safe side. However, the report applies to all actions, and it is peculiar that progress reports are categorized as separate deliverables when they are only submitted as reports.

The project requests the removal of these deliverables, as they are included in the Progress Reports generated throughout the project.

The deliverables in question are:

- Action C1 and C2 Restoration Progress Report
- Action C7 Progress Report
- Action C5 and C6 Progress Report
- Action C1 and C2 Restoration Progress Report
- Action C5 and C6 Progress Report

6. Technical part

6.1. Technical progress, per Action

A. Preparatory actions, elaboration of management plans and/or of action plans

A1 - Pre-restoration: compilation and completion

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2022-06	Actual (or anticipated) end date: 2025-12

Activities undertaken and outputs achieved
The activity includes work to collect already existing monitoring and survey data to produce a baseline and to complement additional information needed. CABJa and CABVn have conducted additional river mapping along the watercourse sections that are being restored, while all CABs have collected additional information required for the restoration process. The project's cultural heritage expert has before restoration visited watercourse sections and 464 cultural structures that may hold cultural and historical value, in all three counties. This has resulted in 4 draft reports with cultural historical assessment. These structures have been assessed from a cultural heritage perspective, weighing this against the ecological benefits. This approach has made it clear which structures can be removed during restoration and which should be preserved and highlighted.

Planned output and time schedule
There has been no problem to meet the time schedule in this action.

Type	Name	Deadline
Deliverable	Report on baseline key indicators	30/03/2022 - Done
Milestone	Data-set on "pre-project data" completed	31/12/2021 - Done
Milestone	Compilation of all pre-project data completed	28/02/2022 - Done

Major problems or modifications
There was more data missing than first predicted in Västernorrland and Jämtland as there were no river mapping / action plan carried out before project start. In Västerbotten there was one, but it was deficient because it was made according to an older inventory methodology. However, CABVb decided to work with the existing mapping and combine it with field mapping just before restoration. CABVn and CABJa have therefore allocated time to perform river mapping/ action plans in action A1.

The project cultural heritage expert, visiting and evaluating all river sections and dams to be restored, had a budget allocated to both Action A2 and A3 at the respective three counties, but more accurately, it should have been assigned solely to A1, at CABVn as he is hired there. As a result, the original action budget has been exceeded because the cultural heritage expert focused their time on A1. This, combined with the mapping of actions mentioned in above paragraph, contributed to the overrun of action budget.

Outline the perspectives for continuing the action after the end of the project
CABVb has mapped the waterways in the upper parts of the Öre River (upstream of the Ecostreams stretches). This is to prepare for future restoration projects.

Tables, photographs

See Butler for Deliverables

A2 - Information to local stakeholders, permits and licenses from landowners

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2026-06	Actual (or anticipated) end date: 2026-06

Activities undertaken and outputs achieved
To be able to restore the six project rivers, permits from the Environmental Court are a vital part in most of the cases. These permits have been sought either for entire river systems or for systems divided into several parts. To minimize conflict and comply with Swedish law, all stakeholders and interested parties must be given the opportunity to provide input on the planned measures. Meetings have been held with landowners, FMUs, forestry professionals, cultural experts, Sami reindeer herders, canoeing and other stakeholders. Four permits have already been approved by the court, three are processing at the court and additionally six will be handed in to the court in future (Table 1. List of watercourses/sections/dams requiring environmental court judgments and their status).

Before submitting the permit application, consultation meetings with landowners and stakeholders are essential. Obtaining the landowners' consent to the restoration actions and adding it to the application can be highly beneficial, as it shortens the court's processing time. Additionally, separate field meetings with landowners are being held as desired to discuss specific details regarding the restoration on their land or other related matters. A continuous contact with attentive landowners is a way to earn trust and work with a long-term and sustainable approach. Permissions from the Environmental Court are also required for some of the project's larger dams. One permit has been submitted to the court, one is still in the planning stages, and two are currently undergoing consultations. Some of the work by CABVb performed in this action during 2021 are funded by other funds (LOVA).

Planned output and time schedule
Since 7 out of 12 applications to the court have been submitted, there is no concern with meeting the milestones in this action. Three of the five remaining applications consider dams and are not as time consuming as the river restoration applications.

Type	Name	Deadline
Milestone	Start-up meetings completed	30/06/2021 - Done
Milestone	First permit acquired from the environmental court	31/12/2021 - Done
Milestone	All permits from the environmental court obtained	01/05/2026

Major problems or modifications

At the beginning of the project, the permit process was delayed due to an unexpectedly high number of landowners, missing baseline data and long processing times at the Environmental Court. This impacted the work plans for the initial years, making it necessary to extend the project to achieve the goals. With the amendment (Ref. Ares(2024)345613) of extension, there is now enough time to complete the applications and accommodate the lengthy court processing times and thereafter complete the restoration work. Additionally, CABVn has faced challenges with the court representatives in Västernorrland County, who have insisted on on-site inspections for all submitted applications. This has been very time-consuming, as the representatives seem unfamiliar with river restoration and require additional explanations for concepts like embankments[2]. In contrast, this has not been an issue in Jämtland and Västerbotten counties, which is another reason why CABVn has not been able to restore as much as the CABVn and CABJa.

CABVb has spent more time than budgeted on this action. The process of contacting landowners for consent proved to be more difficult and time-consuming than expected. Many landowners only responded after multiple reminders via phone and letter. As a result, the personnel budget for this action has been exceeded. CABVb has obtained all necessary permits except one and will be able to manage the budget overrun within the regulatory framework.

Tables, photographs

Table 1. List of watercourses/sections/dams requiring environmental court judgments and their status

CAB	River/section/dam	Submitted to environmental court	Permits obtained
CABVb	Öreälven section 1	Yes	Yes
CABVb	Öreälven section 2	Yes	Yes
CABVb	Öreälven section 3	Yes	Yes
CABVb	Långedsdammen	No	No
CABJa	Ammerån	Yes	Yes
CABJa	Rörströmsälven	Yes	Yes* (permit received 2024-06)
CABJa	Åreälven	Yes* (submitted 2024-10)	No
CABVn	Hemlingsån	No	No
CABVn	Moälven	Yes	No
CABVn	Gafseldammen	No	No
CABVn	Västborgardammen	No	No
CABVn	Torrvattnets damm	Yes	No

*Submitted or received after 2024-04-30

[2] Piles along the water course created during river clearings and consisting of boulders and gravel pushed aside by crawler tractors or crawler excavators.

A3 – Elaboration of work plans

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2027-03	Actual (or anticipated) end date: 2027-03

Activities undertaken and outputs achieved
Each year, a work plan is developed, providing an overview of the planned activities for each action. This plan encompasses the work of all beneficiaries and is prepared by the CABs, with input from partners who provide necessary information. To date, four work plans have been created, with each one being produced at the beginning of the year.

Planned output and time schedule
The project is following the schedule of deliverables.

Type	Name	Deadline
Deliverable	Workplan 2021	31/05/2021 – Done
Deliverable	Workplan 2022	15/04/2022 – Done
Deliverable	Workplan 2023	31/03/2026 – Done
Deliverable	Workplan 2024	31/03/2024 – Done
Deliverable	Workplan 2025	31/03/2025
Deliverable	Workplan 2026	31/03/2026
Deliverable	Workplan 2027	31/03/2027

Major problems or modifications
It is somewhat challenging to reach all beneficiaries and obtain clear answers about their plans for the year. However, if they do not provide information, their work will not be included in the work plan. Unfortunately, this makes it difficult to track what the partners were supposed to accomplish, for example. However, this is not seen as an urgent issue. The work plan gives project management an overview of the activities planned for the year, but it is not set in stone.

See Butler for Deliverables

A4 – Public procurement

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2026-12	Actual (or anticipated) end date: 2027-06

Activities undertaken and outputs achieved

The process of purchases and public procurement in the project will follow Swedish law (LOU 2007:1091). Procurement activities in the project is carried out by the CABs and STA, both of which have extensive experience in public procurement. A significant portion of the required external services and equipment will be contracted through existing framework agreements, in line with Green Public Procurement (GPP) policies. See Table 2 for all procurement performed.

Planned output and time schedule

Type	Name	Deadline
Milestone	Procurement procedures established at all CAB:s	31/12/2021 – Done

Tables, photographs

Table 2. Project procurement listed by beneficiary, service, name and supplier.

Partner	Involved action	Contracted service	Name of procurement	Supplier
CABVb	C1-C4	River restoration	Procurement of contract work - Restoration of river stretches using excavators including operators	Swerock AB, Sjölunds Spår & Maskin AB, S Hedmans Entreprenad AB, Sorsele Frakt AB
CABVb	C5	Changing road culverts	Single-stage procedure - Construction contract: Replacement of 8 road culverts that act as barriers for fish and other aquatic animals, Västerbotten County	Kaj Johanssons
CABVb	C1-C4	River restoration	Single-stage procurement for restoration of river stretches using excavators including operators	Procurement cancelled due to lack of bids
CABVb	C1-C4	River restoration	Single-stage contract procurement - Restoration of river stretches using excavators including operators, Västerbotten County	Sjölunds Spår & Maskin AB, Future Condict AB, Sorsele Frakt AB, Kaj Johanssons Åkeri AB, Svenska Infragruppen Entreprenad AB
CABVb	C1-C4	River restoration	Procurement for restoration of river stretches using excavators including operators - Ecostream	Inlandets El och Entreprenad AB, S Hedmans Entreprenad AB
CABVb	C5	Changing road culverts	Single-stage procedure - Construction contract: Replacement of 8 road culverts that act as barriers for fish and other aquatic animals, Västerbotten County	Kaj Johanssons Åkeri AB
CABVb	C6	Dam removal	Direct procurement of project management consultant for the restoration of dams in Öreälven	Å-design
CABVb	C6	Dam removal	Direct procurement for dam	Bilfrakt Botnia AB

			restoration in Öreälven	
CABVb	C6	Dam removal	Single-stage procurement for dam restoration in Västerbotten County	Bilfrakt Botnia AB
CABVb	C6	Dam removal	Single-stage contract procurement - Removal of migration-blocking dams in Västerbotten County	Sjölunds Spår & Mark AB
CABVb	C6	Dam removal	Single-stage procurement for the replacement of 21 road culverts that act as barriers for fish and other aquatic animals, Västerbotten County	Vägsäk AB, Stefan Berggren Schakt AB
CABVb	C1-C4	River restoration	Direct procurement after two advertised procurements for the restoration of cleared river stretches using excavators including operators in Västerbotten County	Sjölunds Spår & Mark AB, Sorsele Frakt AB
STA	C5	Changing road culverts	Construction contract: Replacement of 3 road culverts in Jämtland	Veidekke Entreprenad AB
CABVn	C1-C6	Excavator	Open procedure procurement for machine services	BGT Liden AB, Maskinring Norrland, ML Rental AB, Sjölunds Spår och Maskin AB, Svenska Infragruppen Entreprenad AB
CABVn	C2	Helicopter for transportation of spawning gravel	Open procedure procurement for helicopter services	Kallax Flyg AB
CABVn	C5	Changing road culverts	Inspection of road drums through direct procurement with competitive bidding	Norra Skog AB
CABZ	C1, C5	Excavator	Contractors according to framework agreements	Reaxer AB
CABZ	C1	Excavator	Contractors according to dynamic purchasing system excavator services.	Per Lundin Entreprenad Skog & Mark
CABZ	C1	Excavator	Contractors according to dynamic purchasing system excavator services.	Maskinring Z Ek. för
CABZ	C1, C4, C5	Excavator	Contractors according to dynamic purchasing system excavator services.	Birger Hellbergs Entreprenad AB

A5 – Training of foremen and excavator operators

Foreseen start date: 2021-01	Actual start date: 2021-03
Foreseen end date: 2024-06	Actual (or anticipated) end date: 2027-06

Activities undertaken and outputs achieved
In 2021, the training of foremen, coordinators, and excavator operators was conducted separately in each county due to Covid-19. In 2022, CABVb organized a course for excavator operators and foremen, with participation from staff and operators from CABVb and CABVn. However, CABJa did not participate, as the restoration start dates vary between counties - CABJa starts earlier than CABVb, which conflicted with the training schedule. Additionally, CABJa already had experienced staff in 2022, and the distance between the counties posed a logistical challenge. 2023 marked the first year that all three counties gathered and completed the training together.

The procurement process ensures that experienced machine operators are selected. The operators participate in a start-up meeting where basic safety protocols and other key information are reviewed. They are also required to have completed first aid training. Teams are assembled based on the operators assigned and the location, aiming for a good fit between team members. Depending on the operator, team leader, and site, coordinators are introduced for additional support over several days as needed. Teams are visited regularly each week during the active season to provide guidance and assistance. The "introduction" can sometimes be ongoing, and when teams move to new challenges, additional support and guidance may be required.

Planned output and time schedule
The last milestone: “Fourth course for excavator operators and foremen/coordinators executed” will not be reached during 2024 as the first course were held during 2022. The fourth course is hence assessed to be arranged during 2025.

Type	Name	Deadline
Deliverable	Plan for training sessions/seminars	15/05/2021 – Done
Deliverable	Course program	16/06/2021 – Done
Milestone	First course for excavator operators and foremen/coordinators executed	30/06/2021 – Done (2022)
Milestone	Fourth course for excavator operators and foremen/coordinators executed	30/06/2024

Major problems or modifications
The budget may need to be modified if training is to be arranged every year at CABVb. The trainings are costly and time-consuming to plan. This is something for the project management to evaluate and review for the upcoming years.

Outline the perspectives for continuing the action after the end of the project
Similar trainings will be arranged in future restoration projects. It is assessed as important to meet other coordinators, machine operators and foremen, to discuss and calibrate among different topics is important.

A6 – Final audit

Foreseen start date: 2027-10	Actual start date:
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved
This activity will take place in Q3-Q4 during 2027.

Planned output and time schedule

Type	**Name**	**Deadline**
Deliverable	Final Audit Report	31/03/2028

C. Conservation actions

C1 - Habitat restoration - Restoration of stream sections

Foreseen start date: 2021-04	Actual start date: 2021-06
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved
To date, 61 kilometers of watercourses have been restored, representing 44% of the total goal. The effort required to restore a stretch of river can vary significantly depending on the size and characteristics of the watercourse. For instance, restoring a small creek or tributary may be a quicker process, while working on a wide river stretch can take several weeks. As a result, measuring restoration progress solely in meters can be somewhat misleading, as it doesn't fully capture the complexity and scale of the work involved.

Recognizing this, we plan to include the restored area as an additional parameter in the Final Report to better express the project's impact. Alongside the goal of restoring 140 kilometers of river, we also aim to restore 474 hectares of associated river habitats. This dual approach will provide a more comprehensive understanding of the restoration achievements, reflecting both the length and the area of the ecosystems restored.

Table 3 below lists watercourses and subareas which have either been fully restored or where restoration is started. To get a complete overview of the subareas and statuses, see annex "10.1 C1 Restoration table".

Table 3. Number of meters restored river stretches per sub area. Only subareas where river restoration have started or are done are stated below.

Target river		Watercourse name	Restored stretch (m)	Subareas started	Subareas done
Öreälven		Öreälven, main stem	8679	1, 2, 5, 9, 10, 12	3
Öreälven		Tällvattsbäcken/Djuptjärnsbäcken	1544	15	
Öreälven		Vargån/Tällvattsbäcken	4376	16	
Öreälven		Vargån	19055		17, 18, 19, 20, 21
Hemlingsån		Handskesjöbäcken, Holmsjöbäcken, Locksjöån	163	28	
Hemlingsån		Holmsjöbäcken	577		29
Moälven		Pengsjöån/Norra Anundsjöån	1240	34	
Moälven		Solbergsån	3429	36	35
Rörströmsälven		Tannån	6851	38	
Rörströmsälven		Staversån	2000	41	
Ammerån		Borgan	6070		48
Ammerån		Laxsjöbäcken	5274	49	
Ammerån		Ammerån	2100	51	
Ammerån		Malån	100		46

Planned output and time schedule
The project has not fully achieved the target of restoring 50% of the watercourses by 30/11/2023. This shortfall is primarily due to delays in handing in application to court, lengthy court processes, and a shortage of staff in CABVn. With 44% of the restoration completed, the 50% target is not far away and assesses to be successfully met during field season 2024, however not evaluated yet.

Type	Name	Deadline
Deliverable	Progress report	31/03/2023 - Done
Milestone	50% of selected river sites restored	30/11/2023 – Not achieved
Milestone	100% of selected river sites restored	31/10/2027

Major problems or modifications
The cost of restoration has risen significantly since the beginning of the project, with fuel expenses for machinery being a major contributor to the increased budget. To mitigate these rising costs, additional funding has been sought from other sources, including national funds such as LOVA and Projektlistan[3].

The GA states that Enån in Jämtland County, part of the Åreälven, was to be restored within Ecostreams. However, after a more thorough survey, the project concluded that no historical log driving took place in Enån. Therefore, we propose reallocating the resources initially intended for Enån to Henån instead. Henån, a tributary to Åreälven and part of Ecostreams, has a greater restoration need than was planned in the original application. Dedicating more time and funds to Henån would allow for the complete restoration of the stream within the project and aligns well with the project's holistic approach.

Outline the perspectives for continuing the action after the end of the project
The restoration process involves returning the watercourses to their natural state and allowing natural processes to occur in, along and around the watercourses. Hence, there is nothing in the restoration action that will require future management. However, there are still significant restoration needs within the project watersheds, that Ecostreams did not cover.

In the future, additional projects will be pursued in the catchment areas to restore the areas that were not addressed by Ecostreams. The plan is to apply for a new project which will continue the restoration of cleared watercourses within the Öreälven, Moälven, and Ammerån river systems.

[3] National fundings for water conservation actions

Tables, photographs

Figure 1 Before and after restoration in Solbergsån, Moölven, Västernorrland

Figure 2 Before and after restoration in Tannån, Rörströmsälven, Jämtland

Figure 3 Before and after restoration in Vargån, Västernorrland

See Butler for Deliverables

C2 - Habitat restoration - Stream spawning sites

Foreseen start date: 2021-04	Actual start date: 2021-06
Foreseen end date: 2026-09	Actual (or anticipated) end date: 2027-09

Activities undertaken and outputs achieved
As part of the restoration efforts under action C1 and by adding gravel to a system with helicopter, spawning sites for fish have been created. A total of 11 732 m^2 spawning area have been created, corresponding to 1 953 spawning sites, 419% of total goal (Annex 10.2 C2 Spawning sites). Depending on the hydromorphological characteristics of the watercourse and the availability of gravel, either individual spawning beds or larger spawning areas have been established during restoration. The spawning areas can consist of multiple spawning sites. Based on experience from previous projects, such as ReBorN LIFE, the same method has been used to calculate the number of spawning beds within a larger spawning area. The calculation assumes that a single spawning bed/spawning pit has an average size of 6 square meters, allowing the number of spawning beds to be estimated within larger spawning areas.

Planned output and time schedule
In certain watercourses, particularly those with hydromorphological type Cx, such as Öreälven, Solbergsån, and parts of Norra Anundsjöån, conditions have been exceptionally favorable for creating spawning areas. As a result, all numerical targets for spawning sites have already been met.

Since the creation of spawning beds is being conducted as part of action C1, which will continue into 2027, it is likely that additional spawning beds will be established even after the action's foreseen end date of September 2026. This will occur wherever conditions are suitable, as these habitats are vital for salmon and trout.

Type	Name	Deadline
Deliverable	Progress report	31/03/2023 - Done
Milestone	50% of spawning sites restored	30/11/2024 - Done
Milestone	100% of spawning sites restored	31/10/2026 - Done

Outline the perspectives for continuing the action after the end of the project
No need for future management or maintenance of the spawning sites, as the natural processes of the watercourse take place.

Tables, photographs
Annex 10.2 C2 Spawning sites

See Butler for Deliverables

C3 - Habitat restoration - Wetland hydrology

Foreseen start date: 2023-01	Actual start date: 2023-01
Foreseen end date: 2025-09	Actual (or anticipated) end date: 2026-09

Activities undertaken and outputs achieved
Starrmyrans and Stenmyrans wetlands in Stenmyrans Nature Reserve (Ia, Strict Nature Reserve), CABVb have during autumn 2023, been prepared for restoration by cutting trees along the ditches to be restored. Restoration takes place during 2024. It's necessary to pre-cut trees for the machine to be able to drive along the ditchtes and to perform the restoration actions by refilling and plugging the ditches. Both Starrmyran and Stenmyran empties in Öreälven.

Planned output and time schedule
No practical work with restoration of wetlands has yet taken place in Västernorrland and Jämtland. But is assessed to start during field season 2025. Hence there is a possibility that the Milestone of "100% of the ditches selected for plugging has been fixed" will not be reached during the foreseen deadline.

Type	Name	Foreseen Deadline
Milestone	100% of the ditches selected for plugging has been fixed	31/10/2025

Major problems or modifications
CABVn was originally scheduled to restore in two areas as outlined in the GA (Figure 3). Proposals were submitted for both, and field visits were conducted with landowner Holmen. However, Holmen declined the restoration activities in VnC3_001, citing the forest's high productivity. As a result, CABVn has decided to focus solely on the southern area, VnC3_002, where efforts are now concentrated on restoring hydrology. So far, approval has been granted for part of this area (after 30/4). The plan is also to collaborate with the ongoing wetland initiative in the region to maximize the scale of the restoration efforts.

Any complementary action outside LIFE
In the GA, only Starrmyran in Västerbotten was planned for restoration. However, CABVb's wetland coordinator expressed interest in restoring the northern area, Stenmyran, in coordination with the Ecostreams restoration of Starrmyran. As a result, a collaborative effort in planning and execution is now proceeding to maximise the restoration efforts.

Outline the perspectives for continuing the action after the end of the project
Generally, no management of restored wetlands is needed. However, in some cases, some clearing of vegetation as trees and bushes on the wetland are necessary management after restoration.

Future wetlands will be restored in the counties and project areas in the national "Wetland initiative", which aims to achieve the national environmental goal "Myriad wetlands", ongoing to 2030.

Tables, photographs

Figure 4. Tree cutting along the ditches in Starrmyran, Västerbotten, during autumn 2023. Chainsaw operator Kalle is taking a quick break.

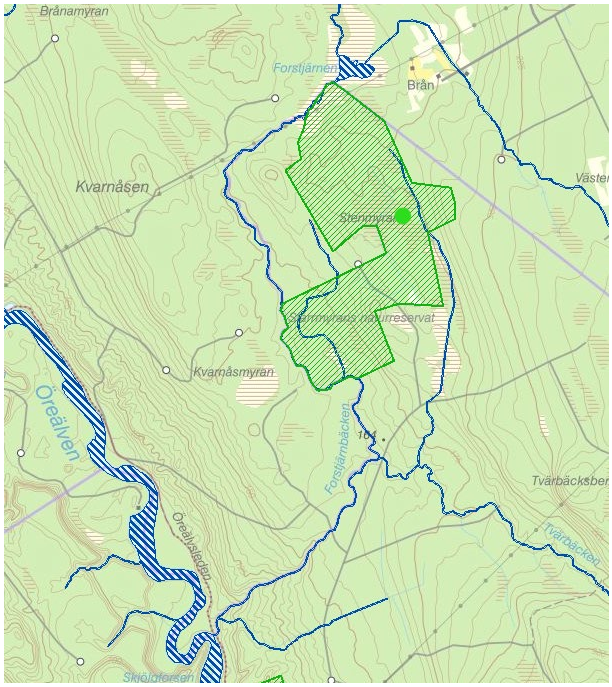


Figure 5. Stenmyrans nature reserve (green polygon) in Västerbotten county. The ditches in Starrmyran (sourthern parts of the reserve) Stenmyran (northern parts of the reserve) empties in Forstjärnbäcken which empties in Öreälven.

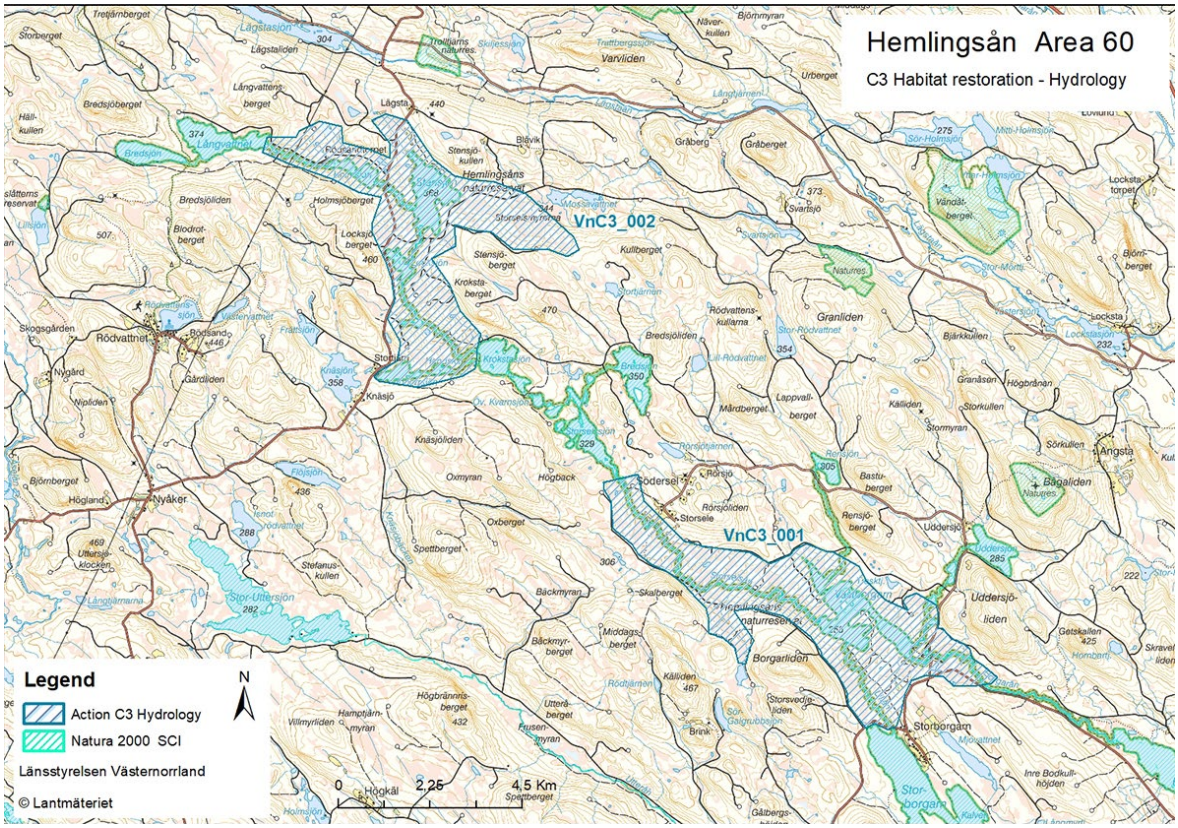


Figure 6. Planned areas for C3 wetland restoration for CABVn.

See Butler for Deliverables

C4 - Habitat restoration - Dead wood habitats in the riparian zone

Foreseen start date: 2021-07	Actual start date: 2021-07
Foreseen end date: 2027-09	Actual (or anticipated) end date: 2027-09

Activities undertaken and outputs achieved

To date, 56 sites have been created. The sites consist of aggregation of logs in piles, which facilitates dispersal between logs keep the wood and act to moist (Annex 10.3 C4 Scapania sites). During restoration (Action C1) and dam removal (Action C6), it is sometimes possible to find very old wooden debris, which is preferred by scapania species. This type of substrate is in several sites mixed with “new” wooden debris. In some sites, the logs are carefully placed in a transverse gradient in the riparian zone. This is to ensure that some of parts of the substrate to hopefully match the selective scapania species habitat requirements.

Planned output and time schedule

Although the 100% milestone for establishing dead wood habitat has already been achieved (165% achieved), it is likely that this work will continue during the restoration efforts under action C1. This will occur where suitable substrate and locations are available, given the critical role of wooden debris in riparian zones for enhancing natural river processes and supporting biological diversity. It would be valuable to have an assessment or evaluation of the constructed log sites, based on the experiences gained from the project. Additionally, it would be useful to explore whether Microscapania gemmae can be spread, and how this can be done in the best way without jeopardizing the survival of the populations. The project management will contact a consultant to develop ideas on how such an evaluation could be conducted.

Type	Name	Deadline
Milestone	50 % of sites restored	30/11/2023 - Done
Milestone	100 % of sites restored	31/10/2027 - Done

Major problems or modifications

No problems encountered.

Any complementary action outside LIFE

Outline the perspectives for continuing the action after the end of the project

See Butler for Deliverables

Tables, photographs

Figure 7. Dead wooden debris site just in front of coordinator Jonathan.

Figure 8. Two dead wooden debris sites along the outer bend of a restored river stretch. The logs are positioned in a gradient up the river bank, to ensure the logs get different amout of water coverage during floodings.

Figure 9. Three sites from above. Notice how the piles are aggregated and positioned along the river bank slope.

C5 - Connectivity - Road culverts

Foreseen start date: 2021-04	Actual start date: 2021-04
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved

A total number of 80 hindering road culverts have been remediated which is slightly over 40% of the total 199 barriers (Annex 10.4 C5 Road culverts). 73 of those are remediated within the project period, 7 were remediated before project start, by other actors. Summarized, those remediated culverts have reopened 209 kilometers of reconnected habitats, which corresponds to 25% of the 845-kilometer goal together with action C6. Both C5 and C6 reopens 44% of the goal.

Depending on the road type, size and surrounding characteristics, different solutions for culverts/bridges are used. Below, in Table 4 is a sample of remediation-types.

Table 4. Different solutions to remediate hindering road culverts. Depending on surrounding characteristics different methods are preferred. The table continues on the other page.

 *Figure 10. Bank culvert. Executer: STA*	Replacement of existing culvert to bank culvert in concrete with beams at the bottom with the aim of retaining material (stone/gravel) in the culvert and supplemented with dry culvert to facilitate passage for otters.
 *Figure 11. Arch culvert. Executer: Holmen*	Arch culverts in width 1400 to 3600 mm

 *Figure 12. Total removal of barrier JC5_093. Executer: Billerud*	Total removal of road crossing the watercourse. Is executed when the road is not necessary anymore. Here, the road will not be used.
 *Figure 13. Smaller bidge for pedestrians, bikers and skiers. Executers: CABJa*	Removal of obstructing road culvert, replaced with simpler bridge. Here for pedestrians, cycling and cross-country skiing.
 *Figure 14. Bridge. Executer: CABVn*	Replacement of road culvert with a beam bridge which handles heavier traffic.
 *Figure 15. Round culvert. Photo: Erik Degerman*	Replacement with a round culvert which is buried below water surface to get the effect of an arch culvert. Often performed where the ground is less load bearing.

Planned output and time schedule
The project is slightly behind schedule and has not reached the numerical 50% target by November 31, 2023. However, the delay is minimal, with over 40% of all objectives completed. The 50% target is assessed to be reached during 2024 or 2025. The delays have been caused by high workloads at the CABs, ground freezing, difficulties in reaching landowners/common property associations, and some private landowners who either do not want the action carried out or have been challenging to work with. It will be difficult to meet the numerical target for the number of road culverts to be addressed during the project period. However, the target for the length of reopened watercourses is expected to be achieved by 2027.

Type	Name	Deadline
Deliverable	Progress report	31/03/2023 – Done
Milestone	50 % of the road culverts restored	31/11/2023
Milestone	100 % of the road culverts restored	31/10/2027

Major problems or modifications
Due to increased costs (inflation, fuel, and materials) for replacing road culverts, other funding has been sought. The funds come from various sources, including national grants like NAP, Projektlistan and LOVA. Some objects have been totally funded by other means, and some partially to cover the increased costs, see Table 5. The increased costs in combination with the low calculated budget has overall been the most difficult challenge to handle in this action. See chapter 6.2 for a deeper discussion.

It has been challenging to reach all private landowners when the property is owned by a common property association, as well as the members of road associations which delays the work a bit. In the past, contact details for road associations were not required in declaration of water activities, but in CABVb's most recent water activity declaration, the receiving authority requested additional documentation related to the road association, which was extremely difficult to obtain. It seems that the outcome and workflow can depend on the assigned authority or case officer assigned to the matter. It is standard practice that a different County Administrative Board than the applicant to receive the water activity declaration to avoid any conflict of interest.

It is challenging to find replacement culverts within the systems. Some road culverts are owned by common property associations, making them too time-consuming or even impossible to address due to the difficulty in reaching all landowners, whose consent is required for the restoration. These culverts are deprioritized in the project, but project management is open to revisiting these cases to explore other potential options.

Modifications
Some culverts are assessed to not need a full remediation, but more of a restoration action up- and or downstream the culvert to make it passable. For example, Sveaskogs large culvert at object VbC5_078 was assessed to be replaced with a bridge in the GA. However, after evaluation with CABVb, it was decided that the culvert is sufficiently large and in good condition. A more practical solution is to place boulders at the outlet to slow down the water flow.

Many of the watercourse names in CABJa's objects were incorrect in the GA, but they have been corrected in the reporting table (Annex 10.4 C5 Road culverts reporting table).

Any complementary action outside LIFE

-

Outline the perspectives for continuing the action after the end of the project

Since the late 1990s, STA has been working on this type of restoration and will continue to address migration barriers in favor aquatic animals. STA is highly positive about ongoing collaboration with the CABs and will continue to prioritize the replacement of culverts in watercourses where other restoration efforts are being carried out by different stakeholders For Sveaskog, Billerud, SCA and Holmen: Restoration of watercourses is an important aspect in their overarching strategy for sustainable forestry. They will continue to address migration barriers both within various projects they participate in and through own initiatives. When forest roads are upgraded or new ones are built, its ensured that culverts or half pipes do not hinder the passage of aquatic organisms. In future restoration projects managed by the CABs, remediating hindering road culverts are a natural part of the conservation actions as the needs of restorations are high.

Tables, photographs

Table 5. Remediated culverts, financial source and any changes per beneficiary. For a full description of each object, see Annex 10.4 C5 Road culverts reporting table.

Beneficiary	Culverts done	Financed partially or totally by other than Ecostreams	Changes
STA	JC5 033 JC5 037 JC5 096		• JC5_032 Not doable. Under railroad. More complicated to perform as it was assessed to be significantly more expensive than budget and railroad traffic have to be cancelled for two weeks and brook trout (IAS) occurs in the system.
CabVb	VbC5 001 VbC5 003 VbC5 004 VbC5 008 VbC5 009 VbC5 012 VbC5 013 VbC5 014 VbC5 016 VbC5 017 VbC5 018 VbC5 019 VbC5 021 VbC5 022 VbC5 023 VbC5 024 VbC5 025 VbC5 026 VbC5 040 VbC5 043 VbC5 054 VbC5 058 VbC5 072	*VbC5 004* *VbC5 008* *VbC5 009* *VbC5 014* *VbC5 019* *VbC5 021* *VbC5 022* *VbC5 025*	• VbC5_072, VbC5_040 and VbC5_043 were already remediated when project started. • VbC5_002 and VbC5_011: roads and culverts were removed before project start, no barrier: passable. • VbC5_015 is not a culvert but a high flow pipe to VbC5_014. • VbC5_020 and VbC5_053 was not hindering. • VbC5_066 excluded due to new construction of Vargträsk wind power farm. Company Vargvind has already reported this to CABVb. • VbC5_004, VbC5_008, VbC5_009, VbC5_014, VbC5_019, VbC5_021, VbC5_022 and VbC5_025 were uplifted from project and financed with other fundings
CABJ	JC5 001 JC5 003 JC5 004 JC5 005 JC5 043 JC5 049 JC5 050 JC5 057 JC5 060 JC5 065 JC5 066 JC5 069 JC5 070 JC5 072 JC5 073 JC5 074 JC5 079	*JC5 001* *JC5 003* *JC5 005*	• A lot of the names of the watercourses were incorrect in the GA, its corrected in the reporting table (Annex 10.4 C5 Road culverts). • JC5_001, JC5_003 and JC5_005 were partially financed with other fundings

CABVn	VnC5 003 VnC5 004 VnC5 005 VnC5 006 VnC5 007 VnC5 008 VnC5 009 VnC5 010 VnC5 011 VnC5 023 VnC5 024	*VnC5 003* *VnC5 004* *VnC5 005* *VnC5 007* *VnC5 008* *VnC5 009* *VnC5 010* *VnC5 011* *VnC5 024*	• VnC5_025 Discovered a lot of brook trout (invasive sp.) upstream the road culvert. Do not want to contribute to the further spread. Additionally, this object is far up in the system and the ecological advantage is not as great as other objects more downstream. Uncertain if this object will be remediated. • VnC5_012, VnC5_013 Not doable because of elevated values of PFOS/PFAS in the soil. Don't want to risk spreading. • VnC5_014 Not justifiable to make a remediation here as it's positioned upstream VnC5_012 and VnC5_013. Have not been sampled for PFOS/PFAS but is close to those objects.
Sveaskog	VbC5 050 VbC5 060 VbC5 061 VbC5 062	*VbC5 060* *VbC5 061* *VbC5 062*	• VbC5_060, VbC5_061 and VbC5_062 were partially financed with other funds.
Holmen	VbC5 068 VbC5 070 VbC5 074 VnC5 020	*VbC5 070* *VbC5 074*	• VnC5_020 was already remediated when project started. • VbC5_070 and VbC5_074 were partially financed with other funds.
SCA	JC5 029 JC5 030 JC5 031 JC5 034B* JC5 035 JC5 036 JC5 038 JC5 040 JC5 041 JC5 042		• JC5_034B* is a new culvert added to the project and is replacing JC5_034, which was not included in SCA's documentation from start. However, JC5_034 might be a replacement for JC5_039. • JC5_039 is assessed by SCA as "Not doable" because a road association owning the road. • JC5_028 was already remediated when project started
Billerud	JC5 080 JC5 088 JC5 089 JC5 090 JC5 091 JC5 092 JC5 093 JC5 095		
Total	**80**	**22**	

Figure 16. Example of before and after a remediated road culvert by beneficiary STA. The smaller culvert in the after pictures is an otter passage.

See Butler for Deliverables

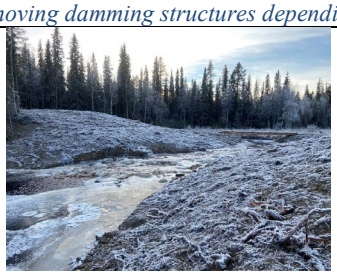
C6 - Connectivity - Dams

Foreseen start date: 2021-04	Actual start date: 2021-04
Foreseen end date: 2027-09	Actual (or anticipated) end date: 2027-09

Activities undertaken and outputs achieved

14 out of 22 dams are removed, which corresponds to just above 63% of the numeric goal (Table 7 and Annex 10.5 C6 Dams). It has reopened more than 160 kilometres of connected habitats, which corresponds to 19% of the 845-kilometre goal (together with action C5, reopened connectivity is 44%). Depending on cultural historical values, ongoing land usage in the area and other interests, different solutions are used to remove the migration obstacles in the dams (Table 6).

Table 6. Different solutions of removing damming structures depending on interests, land use and cultural historical values.

  *Figure 17. Total removal of dam and dam embankment. Executor: CABVb, Lermyrdammen, complementary action, other fundings.*	Total removal of dam, concrete structures, and dam embankment.
  *Figure 18. Partially removal of dam. The wood damming structures) were removed but the brick wall structures and dam embankment was not. Executor: CABVb, Previous project.*	Partial removal, when structures as brick wall, embankments and foundation must be preserved.

Additionally, a dedicated working group for dams has been established, creating a platform for discussing potential actions, solutions, and challenges. This allows for collaboration and knowledge sharing between the various teams within each CAB. The formation of this group ensures that issues related to dams are addressed in a coordinated manner, fostering communication across different departments, and improving the overall approach to dam management and restoration efforts.

Planned output and time schedule

Type	Name	Deadline
Deliverable	Progress report	31/03/2023 – Done
Milestone	50 % of dams removed	30/11/2023 - Done
Milestone	100 % of dams removed	31/10/2027

Major problems or modifications
Due to rising costs related to inflation, fuel, and materials for excavator operations, additional funding has been sought to mitigate the budget shortfall for certain projects.

CABJa has replaced object JC6_002, as Rännbäcken runs through a golf course in Staa, is channelized in some sections and heavily straightened. The dam itself consists of earthen embankments, and there is likely a culvert where the dam gate used to be. The stream only extends 600 meters upstream of the dam, with a low water flow. Instead, object JC6_003* (added) in Tannån, a tributary of Rörströmsälven, has been addressed.

Any complementary action outside LIFE
- Lövträskdammen, Norrån, Öreälven, restored 2023 in project GRIP on LIFE (2,2 km)
- Hålbäcksdammen, Angsjöbäcken, Öreälven, 2022 by CABVb, other funds (2 km)
- Lermyrdammen, Sörbäcken, Öreälven, restored 2022 by CABVb, other funds (8 km)
- Långraningsdammen, Sörbäcken, Öreälven, 2022 by CABVb, other funds (2 km)
- Dam in Balån, Öreälven was restored 2022 by CABVb, other funds (13 km)
- Dam in Pengsjöån, Moälven, was restored 2023 by a FMU (3,2 km)

Total 30,4 kilometres of reopened watercourses by complementary restored dams.

Öreälven, Hemlingsån, Moälven, Rörströmsälven, Åreälven and Ammerån, is part of the National Plan for the Review of Hydropower Facilities.

Outline the perspectives for continuing the action after the end of the project
CABVb has developed a dam removal strategy and initiates projects, both large and small, to restore watercourses affected by old, obstructive, and ownerless dams. The number of these ownerless dams, which fragment the watercourses connectivity, is substantial and the need for removal/restoration of there are of high importance.

The removed/restored dams require no future management, as they have been restored using a sustainable approach. However, the surrounding old dam structures left after a partial removal of dam, are often dilapidated, and may need removal in the future due to the risk of collapse.

Tables, photographs

Table 7. Restored dams, any other financed objects and changes per beneficiary. For a full description of each object, see Annex 10.5 C6 Dams.

Beneficiary	Dams done	Financed partially or totally by other than Ecostreams	Changes
CABVb	VbC6_002 VbC6_003 VbC6_004 VbC6_005 VbC6_007 VbC6_008 VbC6_009 VbC6_010 VbC6_011 VbC6_012 VbC6_013 VbC6_014	*VbC6_002* *VbC6_003* *VbC6_004* *VbC6_005* *VbC6_007* *VbC6_008* *VbC6_009* *VbC6_013* *VbC6_014*	
CABVn	VnC6_006		
CABJa	JC6_003		JC6_003 is an added dam to the project, due to JC6_002 was not possible to restore. See Major problems or modifications above.
Total	14		

See Butler for Deliverables

C7 - Species - Freshwater pearl mussel reintroduction

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-09

To address Issue 5 from the letter by CINEA (Ref CINEA Letter 03102022), this action is broad and includes many components. The project management agrees that it has been challenging to delineate the areas of responsibility for each partner. To outline the responsibilities:

- CABVn has been coordinating with the other beneficiaries, arranging meetings etc.
- TUM is responsible for the genetic studies being conducted,
- KAU is studying host fish preferences of the mussels from various watercourses, and
- SAA is handling both the fieldwork related to host fish infestation, juvenile rearing in the lab, as well as the relocation of mussel populations.

A table outlining the measures if C7 was created in the proposal of project, but it did not clearly specify the responsibilities of each partner. Now, the table has been updated to reflect the responsibilities of each partner (Table 10). However, the table have some minor errors/changes, see under "*Major problems or modifications".*

A more extensive review is planned for late 2024, during which the Project Manager and coordinator from CABVn will ask each beneficiary involved in Action C7 to assess the tasks remaining based on the table, including any necessary changes, and to create a detailed timeline for the remaining project years. The intention is to submit these timelines via Monitor/Helpdesk before 2024 has ended.

Activities undertaken and outputs achieved

TUM – Genetics

eDNA sampling

In September and October 2021, Prof. Juergen Geist, Prof. Ralph Kuehn, and Dr. Bernhard Stoeckle collected 79 water samples from six selected rivers in Sweden to detect the possible presence of freshwater pearl mussels using eDNA analysis. Sampling was conducted in the rivers Ammerån, Hemlingsån, Moälven, Öreälven, Vajbäcken and Rörströmsälven. Due to road conditions and safety concerns, some predefined sampling locations were adjusted or skipped. The sampling procedure was demonstrated and discussed with the Swedish project participants during an on-site meeting in September 2021. For detailed sampling locations and results, refer to Annex 10.6 C7 Report on DNA analysis. The eDNA testing yielded a 39% positivity rate, indicating the presence of the target species in the sampled areas, particularly in the mid-sections of Ammerån and Moälven, as well as the downstream section of Öreälven and the upstream section of Hemlingsån. Notably, no positive results were obtained in the Rörströmsälven and Vajbäcken, however, it's crucial to note that mussel presence remains a possibility despite the absence of positive results. This could be due to ambient environmental conditions, DNA binding or degradation varying among sites (Stoeckle et al. 2017). These findings have the following implications: Caution needs to be

taken during stream restoration efforts, especially in locations exhibiting a strong upstream signal, to avoid harming the existing population by the work carried out. It is recommended to revisit sites post-restocking or after implementing restoration measures for an evaluation. A new positive detection or an increase in signal strength would signify the success of the measure.

Population genetic analyses

For the characterization of population structure, a total of 310 individuals (3 to 30 per population) from 17 freshwater pearl mussel populations were sampled from Ecostreams watercourses in Sweden during September and October 2023. The non-invasive haemolymph sampling technique, which is harmless to the mussels, was used, and the mussels were released back to their original locations immediately after sampling. A new, sterile needle was used for each haemolymph sample, and the samples were labeled and stored in cold containers, with ice packs regularly changed to preserve the biological material. These samples were compared with others collected from the same region in 2008. The 17 analyzed populations are listed in Table 8, and the sampling locations are shown in Figure 15. These populations represent stock populations for SAA mussel rearing.

Table 8. Sampling sites and sample sizes used in the population genetics analysis

POP ID	Sample size	Population	Project watercourse	Coordinates (WGS84)	Year
SSA	20	Sågbäcken	Moälven	63.466523, 17.841165	2023
SNA	20	N. Anundsjöån	Moälven	63.544051, 17.964409	2023
SFS	13	Forsån	Moälven	63.407594, 18.557018	2023
SML	20	Moälven	Moälven	63.448838, 18.124504	2023
SSX	30	Saxån	Upstream Rörströmsälven	64.525232, 15.53101	2023
SKB	20	Skyttelbäcken	Moälven	63.581769, 17.638092	2023
STR	30	Storån	Ammerån	63.777095, 15.031318	2023
SBL	13	Bölesån	Moälven	63.55458, 17.595059	2023
SGJ	20	Galasjöån	Moälven	63.394941, 18.285383	2023
SHB	18	Hädanbergsån	Moälven	63.570878, 18.084614	2023
SOA	22	Öreälven	Öreälven	63.681963, 19.620553	2023
SBY	8	Byån*	-	62.582112, 17.76294	2023
SMG	3	Mingbäcken*	-	62.223677, 17.495249	2023
SHD	15	Hemlingsån nedre	Hemlingsån	63.645003, 18.548776	2023
SHM	12	Lillån	Hemlingsån	63.70689, 18.239118	2023
SMO	26	S. Anundsjöån	Moälven	63.528401, 17.72386	2023
SHN	20	Hemlingsån övre	Hemlingsån	63.721931, 18.192309	2023

*Complementary sampling outside Ecostreams.

KAU – fish host studies

The 2022 and 2023 surveys, detailed in the host fish studies reports (10.7 C7 2022 host fish studies and 10.8 C7 2023 host fish studies) by Magnus Lovén Wallerius and Martin Österling, aimed to determine whether salmon or trout serves as the host fish for freshwater pearl mussels in selected rivers in Västernorrland County. In August 2022, mussels were collected from Moälven and the lower part of Hemlingsån and transported to Karlstad University, while salmon and trout fry were obtained from Gammelkroppa Lax AB on August 23rd. The pregnancy of all mussels was monitored weekly in the lab, with infection methods following those described by Österling and Wengström (2015). After infection, the fish were placed in aquariums, with infection levels checked the following day and afterwards monitored weekly or bi-weekly by examining their gills for about a month. The results showed that salmon, but not trout, served as the host fish for mussels from Moälven, as salmon retained the larvae throughout the study while trout quickly shed the glochidia. Similarly, for Hemlingsån, salmon was confirmed as the host fish, as trout shed the larvae early, while salmon consistently displayed high infection rates during the month-long study.

In 2023, the surveys were extended to Södra and Norra Anundsjöån, the lower part of Hemlingsån, and Borgarån (referred to as Upper Hemlingsån), using the same methodology as in 2022, but with more mussels collected. The results showed that trout served as the host fish in Södra Anundsjöån, while salmon was the host in Norra Anundsjöån. None of the mussels from Hemlingsån released glochidia in 2023.

SAA - Augmentation

Consists of two main components: *fieldwork* and *mussel rearing* in lab. The fieldwork itself includes three key activities: *pregnancy checks, cage trials,* and *artificial infestation:*

Field work

a) **Pregnancy check**
   Involves collecting mussels and checking for pregnancy. The maturation level of the mussel larvae (glochidia) is also examined using a stereomicroscope and rated on a 5-point scale, with grade 5 indicating fully developed glochidia.

b) **Cage trials**
   Consist of placing pregnant mussels together with captured host fish in flow-through tanks submerged in the relevant watercourse. The duration of their stay in the tanks depends entirely on the maturation level of the glochidia and whether the mussels are ready to release them.

c) **Artificial infestation**
   Involves infecting captured host fish on-site. This method requires a pregnant mussel to release fully mature glochidia while personnel are present. The larvae are then collected and mixed with host fish in a bucket. Once the fish have been infected with glochidia, the degree of infestation is documented, and the host fish are returned to the watercourse.

Accurate timing of the mussels' pregnant phase is essential for the success of the fieldwork. As a result, a comprehensive survey was conducted in the summer of 2021 to assess their pregnancy status. It was discovered that the mussels became pregnant earlier than anticipated, which led to a missed opportunity for cage trials and artificial infestation 2021. However, this

finding offered valuable insights for better planning of the fieldwork throughout the remainder of the project. A total of 80 field visits have been conducted so far, during which 33 pregnancy checks, 41 cage trials and 6 artificial infestations were carried out. In total, 1002 fish have been infected. It is estimated that the total number of glochidia on the infected fish ranges between 31,993 and 101,868.

Mussel rearing

Mussels were collected from the watercourses during 2021 and 2022 and were divided into separate tanks and systems named after the watercourses (See Table 9). In 2022, three mussel populations (Galasjöån, Bölesån, and Sågbäcken) collected 2021, showed signs of pregnancy. Brown trout were infested with larvae from these three mussel populations, but all glochidia from trial Sågbäcken were shed from the host fish within a few months. During late summer 2022, many of the host fish in trial Bölesån died due to disease. In May and June 2023, juvenile mussels were collected, with a total of 901 from Galasjöån and 40 from Bölesån. However, by October 2023, all remaining juveniles had died, preventing the release of the juveniles into the wild.

During 2023, work to infect host fish could begin using mussels that were brought to the facility in 2022. By October 2023, infected fish were confirmed in all watercourses. However, the majority of the fish were weakly infected, and during the winter and spring of 2024, many glochidia were shed prematurely from the host fish. This early release rendered the glochidia unusable.

From the rearing, 1148 juvenile mussels have been positioned back in their originating watercourses during 2024 (Galasjöån and Skyttelbäcken).

Table 9. Field trials and mussels collected for rearing to facility in Gothenburg for respective watercourse. The table is updated 2024-10-04 and includes data after 2024-04-30.

		Field work		Mussel Rearing	
Main River	**Tributary**	**Cage Trials (N)**	**Artificial Infestation Trials (N)**	**Mussels for Rearing (Qty)**	**Date of mussel collection**
Öreälven				21	2022-07-07
	Kvarnbäcken	0	0		
Hemlingsån				34	2022-09-13
Moälven				43	2022-07-07
	Norra Anundsjöån	1	0	27	2022-09-13
	Bölesån	8	2	15	2021-08-31
	Skyttelbäcken	7	0	20	2022-09-13
	Sågbäcken	0	0	15	2021-09-02
	Södra Anundsjöån	0	0	15	2022-09-13
	Forsån	7	1	13	2022-09-13
	Galasjöån	9	1	20	2021-08-31
	Hädanbergsån	8	0	18	2022-09-13
Rörströmsälven		0	0	-	-
Ammerån		1	2	21	2022-09-14

CABVn
This role was previously held by Håkan Söderberg, who has now retired, and the position will be taken over by Madelen Rytterstam. A new role description will be developed as the project management has observed challenges in communication. The previous coordinator, Håkan, held meetings with the project partners at least once a year, typically in winter, to prepare for the upcoming season. With a focus on Västernorrland County, he tracked what activities needed to be completed and approximately when. Communication was maintained with all three partners through phone calls and emails.

Planned output and time schedule

TUM
77 eDNA samples are already analyzed and evaluated (action C7 completed). A report was sent in June and November 2022 and Prof. Geist presented some results in March 2024. A second eDNA sampling campaign is planned in the first quarter 2026 (in accordance with the actions timetable) to evaluate the success of the restoration measures implemented throughout the project. Haemolymph samples from 17 populations were taken for the ongoing conservation genetic analyses, what is in accordance with the plan (action D2, ongoing until September 2026).

SAA
The goal for the number of released juveniles (Table 10) is unlikely to be met due to difficulties in the rearing process. Efforts to improve the conditions at the facility are ongoing throughout the project period.

The target for cage trials and artificial infestation (Cage infestation) will not be achieved as stated in the application, as there are no mussels available to work with in Rörströmsälven and Ammerån. As compensation, greater efforts are being made in the watercourses where fieldwork is possible. In the Moälven catchment area, more work is being carried out each year than initially outlined.

Type	Name	Deadline
Deliverable	Progress report	31/03/2023 – Done
Milestone	e-DNA screening completed	31/12/2022 – Done
Milestone	First introduction of propagated mussels completed	30/09/2026
Milestone	All planned reintroductions completed	30/11/2027

Major problems or modifications

KAU

The plan was to collect more pregnant mussels in 2022 than was ultimately possible, as there were simply not enough mussels available. However, it was still possible to determine with a high degree of certainty that salmon is the host fish in these watercourses. Table 10 indicates that fish host laboratory studies should be conducted in Ammerån, but since there is no salmon there, host fish studies are not relevant for that location. The total of three rivers listed with "Yes" for the fish host laboratory is therefore accurate and refers to the Öre River, Hemlingsån, and Moälven. However, it should be reconsidered whether the Öre River should be included in the host fish studies. The freshwater pearl mussel populations in the Öre River are extremely small, and further collection may harm the remaining population. Additionally, KAU encountered difficulties in determining whether the mussels were pregnant, which may have affected the accuracy of the studies.

SAA

Field work

There are difficulties in planning the fieldwork because mussels from different watercourses become pregnant at varying times, with differences of over a month between watercourses. Other circumstances surrounding selected watercourses have made it difficult to conduct fieldwork:

- In Öreälven, fieldwork cannot be carried out because the location where mussels have been found in the main channel is inaccessible for field activities. Kvarnbäcken, a tributary to Öreälven, could serve as an alternative, but the host fish population is currently too fragile.
- In the main channel of Moälven, Sportfiskarna have transferred the few existing freshwater pearl mussels to the rearing facility in Gothenburg. However, in 2024, a new site with mussels was discovered in the main channel, meaning fieldwork in Moälven cannot begin until summer 2025 at the earliest.
- In Sågbäcken (Moälven), pregnant mussels are found each year, but unfortunately, there are no host fish present in the stream, preventing the execution of cage trials or artificial infestation.
- No mussels have been found in either Ammerån or Rörströmsälven. However, in Ammerån's tributary, Storån, cage trials and artificial infestation have been conducted.
- During field visits in 2023, high water flow in the Södra- and Norra Anundsjöån (Moälven) made it impossible to carry out any field activities.

Mussel rearing

The juvenile mussels produced in the rearing facility are extremely sensitive and require intensive maintenance and strict monitoring. The original goal was to allow the mussels to grow in the rearing facility and release them back into the wild only once they exceeded 1 mm in size. The rearing has been successful in producing juvenile mussels, and in a controlled environment, they have shown good growth. Unfortunately, for unexplained reasons, they have died after approximately five months. Due to the difficulties in keeping the juvenile mussels alive for a longer period in rearing, the decision of releasing them at an

earlier stage was discussed during the FPM project group meeting and will be carried out in future years.

This year, no reproductive behavior has been observed in any of the adult mussels and they are not becoming pregnant. The mussels appear undernourished, and efforts are being made to increase their nutrient intake. It is likely that the mussels in the facility will be replaced during the year. This would mean reintroducing the mussels back to their respective watercourses and gather other mussels from the watercourses to the facility. This process requires permits from the relevant County Administrative Boards in the form of species protection exemptions and the right to collect large mussels. Due to the lack of reproductive behavior, there will be no infected host fish in the facility during 2025.

The cultivated fish being used are particularly vulnerable to high water temperatures, making them more susceptible to disease. During summer 2023, approximately 90% of the fish in the facility—both trout and salmon—were affected. The fish were treated with a broad-spectrum medication (ESHA 2000, which is safe for mollusks) and responded well to the treatment, although the majority of the fish died. An attempt was made to purchase fish from another facility, but they also fell ill at high temperatures. Two ideas are being considered for the coming years. The first is to purchase older fish (one-year-olds), which are likely less susceptible to diseases than younger fry. The second idea is to collect glochidia from the project's watercourses and bring them to the facility to infect the fish there. This would allow the fish to avoid being in the facility during early July, when water temperatures are very high, and instead only be present from August onwards.

Actions to prevent spread of crayfish plague

The water used in the rearing facility comes from Stora Delsjön, which is home to the invasive signal crayfish (Pacifastacus leniusculus). The signal crayfish can carry crayfish plague (Aphanomyces astaci) without showing symptoms. Crayfish plague is a fungal disease that affects the native European crayfish (Astacus astacus) and is spread through spores. Although mussels cannot contract crayfish plague, they can act as vectors if moved between water bodies. The lifespan of the spores is not fully understood, but studies suggest that spores can infect crayfish after six days, though not after 15 days, when isolated in a solution at 14°C. In a sterile laboratory environment at 2°C, a lifespan of five days was measured, with some spores remaining viable for up to two months. Another study investigating the degradation time of A. astaci DNA at 20°C concluded that the lifespan of spores is likely shorter than three days.

Due to these findings, SAA requires a plan to mitigate the risk of spreading crayfish plague from the rearing facility in Gothenburg to the watercourses involved in the project. At the facility, juvenile and adult mussels are kept in separate systems. The water for the adult mussels is unfiltered from the lake, making them the most likely source of crayfish plague spores. The juvenile mussels are kept in closed systems where the water is boiled and cooled lake water, as spores die at 70°C.

e-DNA is used to detect spores in the water where the juvenile mussels are kept. Unfortunately, the e-DNA method also detects dead spores, making it impossible to confirm whether all spores had been eliminated. Therefore, the juvenile mussels were kept in the closed system for 15 days before being released.

Outline the perspectives for continuing the action after the end of the project

Regular monitoring of stream sections with restoration measures using eDNA should be continued after the end of the project. This will allow for the long-term assessment of the success of the measures. Due to the long development time of the freshwater pearl mussel, developments within populations may only become visible after a lag phase of several years (up to a decade).

The genetic monitoring of source populations for supportive breeding programs also provides valuable information beyond the project. An ongoing genetic monitoring should be maintained to verify that the genetic variability within the source population remains sufficiently high and is not compromised in subsequent offspring cohorts. This continuous assessment ensures the preservation of genetic diversity in the offspring cohorts is vital for the success and resilience of the captive breeding program.

The freshwater pearl mussel has a national action program for threatened species and conservation measures will be prioritized. The field activities, including cage trials and artificial infestation, have proven to be a successful method and could continue in the project's watercourses even after the project ends. SAA would prefer a close collaboration with the CABs and for them to take a leading role in such continued efforts after the project period. Currently, the staff at SAA working with freshwater pearl mussels are based in Gothenburg, which makes it challenging to manage a potential project in northern Sweden.

Tables, photographs

Table 10. Responsible beneficiaries of each activity in C7.

Beneficiary	**TUM**		**KAU**	**SAA**		
Responsible area	Genetics		Fish host laboratory	Augmentation		
Activity / Target river	eDNA sampling sites	Populations for conservation genetic analyses		Cage infestation sites (yearly)	Captive breeding number of released juveniles	Relocation of 5000 adults
Öreälven	38-45	2-3	Yes	2-5	225 000	No
Hemlingsån	2-4	0-2	Yes (lower part)	1-3	65 000	Yes
Moälven	21-25	8-12	Yes	10-15	650 000	No
Rörströmsälven	8-10	2	No	1-2	130 000	Yes
Ammerån	17-20	2	Yes	1-2	130 000	Yes
Total	**110**	**18**	**3**		**1 200 000**	

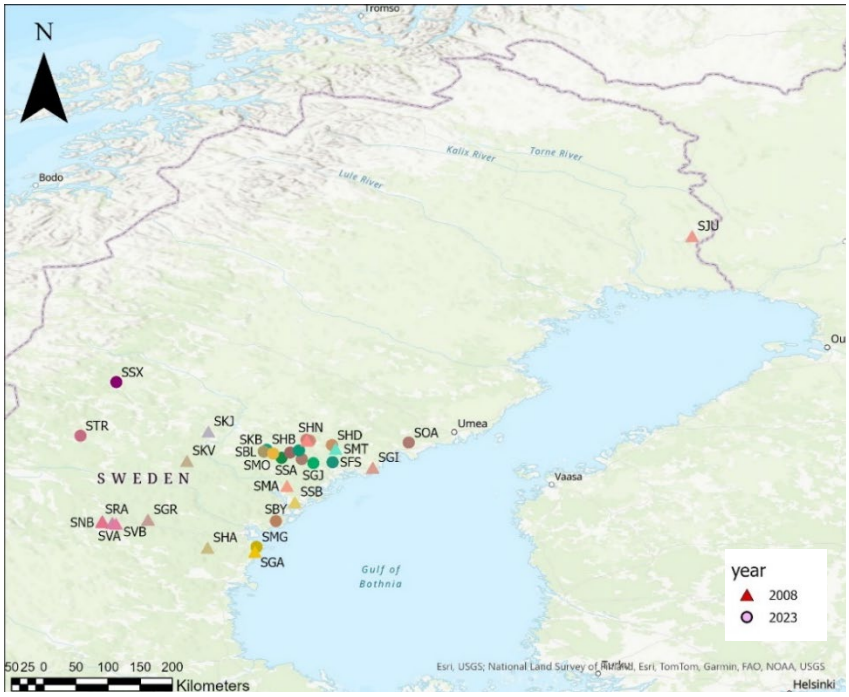


Figure 19. Sampling locations of genetic samples from freshwater pearl mussel populations in Sweden; with POP ID (population codes). Triangles indicate samples from 2008, circles indicate samples from 2023.

Figure 20. A pregnant mussel from Bölesån, 2024. Swollen gills are visible in the image on the left, and the larval mass in the gills is more clearly visible in the image on the right.

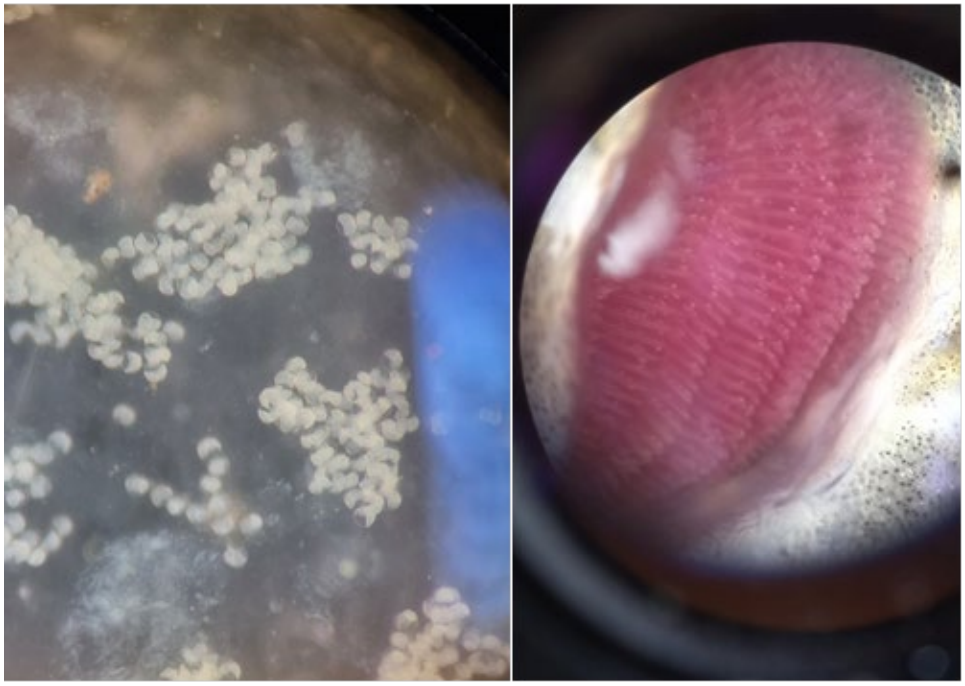


Figure 21. On the left: Glochidia at maturity level 4 from Bölesån, 2024. On the right: Glochidia attached to the gills of a brown trout from Storån, 2023.

Figure 22. On the left: Niklas Wengström examines infestation on a host fish in Bölesån 2023. On the right: cage infestation trial in Bölesån 2023.

See Butler for Deliverables

C8 - Management plan - Sustainable fish populations

Foreseen start date: 2021-10	Actual start date: 2022-01
Foreseen end date: 2027-06	Actual (or anticipated) end date: 2027-06

Activities undertaken and outputs achieved
Meetings with all FMUs have taken place, and the development of the management plans is ongoing (Table 11). However, it has occasionally been difficult to motivate the FMUs to fully engage in the creation of new plans, as many feel the current ones are sufficient and have not encountered significant issues. Despite this, the aim is to ensure that the new management plans are not only functional but also easily accessible and user-friendly. To achieve this, a more engaging and popular science approach will be adopted for many of the plans, making them simpler to understand and more appealing for a wider audience. This ensures that the plans are practical and usable for both experts and the general public alike.

Planned output and time schedule
The process of developing management plans has been relatively slow, as the CABs place great importance on ensuring that all FMUs are actively involved in the work. The milestone "All fish population management plans completed" will not be met at 31/12 2024.

Type	Name	Deadline
Deliverable	Fish population management plans	31/03/2025
Milestone	All fish population management plans completed	31/12/2024
Milestone	Management plans accepted at FMU councils	30/06/2027

Major problems or modifications
For CABVn, in collaboration with the FMU, it has been concluded that there is no need for a fisheries management plan for Hemlingsån. This is due to the low angling pressure, particularly with limited interest in targeting species like salmon and trout.

CABVb has proposed that creating a popular science version of the plans would be more effective in engaging stakeholders. And CABVn intends to produce a highly simplified version, focusing only on the most critical information. This approach is intended to avoid the risk of the plans being overlooked or not followed due to their complexity. The goal is to make the plans both practical and accessible, ensuring that they are not only informative but also easy to implement in the long term.

Outline the perspectives for continuing the action after the end of the project
As the FMUs accepts the management plans, which also means they are committed to the principles of adaptive management outlined in these plans. This acceptance is a significant step towards ensuring the long-term sustainability of the actions initiated during the project. By embracing adaptive management, the FMUs are prepared to continuously monitor, evaluate, and adjust their management strategies based on changing conditions and new

information. This flexible approach will allow them to respond to alterations, ensuring that the progress made during the project can be maintained and even expanded in the future.

Tables, photographs

Table 11. Rivers to develop management plans and its status.

River Management plan	Status
Ammerån	Under development
Rörströmsälven	Under development
Åreälven	Under development
Hemlingsån	Not applicable
Moälven	Under development
Öreälven	Under development

See Butler for Deliverables

D. Monitoring of the impact of the project actions

D1 - Hydromorphology and habitats

Foreseen start date: 2021-07	Actual start date: 2021-07
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved
This action is divided into three sub-actions: D1.1, D1.2, and D1.3. Below is a description of what has been done in each sub-action.

- **D1.1 Monitoring habitat change in streams**

- **Rewetted area and change in morphology**

Performed by using laser measurements and/or drone photography. 63 of 67 sites in Västerbotten have been documented with drones before restoration, and 27 of these have been documented after restoration. However, the increase of rewetted area has not yet been calculated. CABJa has documented 9 sites with drones, before and after restoration and used laser technology on 20 sites to calculate the increase in width and depth. However not compiled yet. CABVn has used laser technology on 13 sites.

- **Hydrology**

All CABs have started the hydrology monitoring (Table 12). CABVb have conducted sawdust releases at all three sites before restoration and 1st release after restoration. CABVn have conducted two sawdust releases before restoration but will need to repeat them due to very low water levels. CABJa have instead of release of IBECO dye, have considered a method performed solely using drones and software calculating the change in hydrology. Read more about the method change under major problems and modifications.

Table 12. Overview of the performed and planned hydrology-monitoring and methods chosen.

Beneficiary	Tributary name	Method chosen	Performed release before restoration	Performed 1st release after restoration	Performed 2nd release after restoration
CABVb	Övre Vargån	Sawdust	Yes	Yes	No (2024)
	Nedre Vargån	Sawdust	Yes	Yes* (2024)	No (2025)
	Djuptjärnsbäcken	Sawdust	Yes	Yes* (2024)	No (2025)
CABVn	Hemlingsån	Sawdust	Yes	No (2025)	No (2026)
	Pengsjöån	Sawdust	Yes	No (2026)	No (2027)
	Not decided yet	Sawdust	No	No (2026)	No (2027)
CABJa	Tannån	Drone	Yes	No (2025)	No (2026)
	Staversån	Drone	Yes	No (2025)	No (2026)
	Henån	Drone	Yes*	No (2025)	No (2026)

*Performed after 2024-04-30

- **Hydromorphology, ADCP**

During 2022, an ADCP raft was rented and used to collect baseline data at 6 sites before restoration. One transect was successfully completed in the main channel of the Öreälven, with another taken in the tributary Vargån. In Jämtland and Västernorrland, two transects were completed per county, all in tributaries. Selecting suitable sites was initially difficult,

especially before understanding the raft's capacity. In the main channel of the Öreälven, crossing the river by foot was challenging and required additional planning to access sites from both riverbanks. By the time the work reached Jämtland and Västernorrland counties, more experience made it easier to identify appropriate and feasible sites. Generally, the sites needed to be wadable, located near a bridge, and in watercourses with gentler currents.

- **D1.2 Spawning sites**

No spawning bed monitoring has been conducted yet. This will take place continuously, two years after restoration, with the earliest monitoring expected in autumn 2024.

- **D1.3 Dead wood in the riparian zone**

This sub action is now part of D2.3, as the description in the GA outlined how the coverage and establishment of Microscapania would be monitored under D1.3. Additionally, this monitoring is part of tracking the expected results of Action C4.

Planned output and time schedule

There are no concerns about meeting the listed milestones and deliverables on time. While this action is divided into multiple sub actions, which can be somewhat overwhelming due to the various monitoring tasks, but it is assessed to be under control.

Type	Name	Deadline
Deliverable	Monitoring protocol	31/03/2022 - Done
Milestone	All monitoring data collected	30/09/2027
Milestone	All D1 monitoring data compiled and analysed	15/11/2027

Major problems or modifications

Rewetted area and change in morphology

CABVb have extensive experience with drone monitoring and will only use drones instead of both drones and laser. The drone dataset will be larger due to that all river stretches will be documented, instead of just a share of them, and as a result, the evaluation more accurate.

Hydrology

According to the GA, the dye Rhodamine was initially chosen for the hydrology monitoring. However, after discovering its potential health risks, it was replaced with IBECO-Yellow, a non-toxic, eco-friendly tracer commonly used in plumbing to detect water leaks. The dye, mixed with water, was poured into the streams, but it became invisible in the dark waters of Vargån and Djuptjärnsbäcken in CABVb, even with a stronger concentration. As a result, CABVb and CABVn decided to use sawdust instead, which floats well and contrasts against the dark water. Although sawdust only shows surface water movement and eventually sinks in turbulent flows, the results were clear and effective, especially given its natural composition and visibility in dark waters.

As the tracer dye IBECO-Yellow was ineffective for both CABVb and CABVn, CABJa conducted a test to evaluate its suitability for the project area in Jämtland county. The tracer dye was tested in the clearest water available, but it was deemed an inadequate method as

visibility was very poor. In Rivers of LIFE project, a drone method combined with the software PIVlab has been used to assess flow velocities from drone footage. This method displays flow velocities in meters per second with color coding. Based on test results from Rivers of LIFE, this approach appears to meet the monitoring requirements for Ecostream. CABJa therefore requests to use this method in place of tracer dye.

Hydromorphology
Initially, there were challenges in determining how much current and turbulence the ADCP raft could handle. It was not suitable for larger watercourses with stronger currents but performed very well in smaller streams with milder flows. The ADCP raft has been difficult to rent but should not pose a problem if planned well in advance for future monitoring. According to the Grant Agreement (GA), the raft is to be used only in main channels, but at 5 out of 6 sites, it had to be shifted to tributaries. The GA also specifies that this monitoring should be done three times: once before restoration and twice after. However, it may be necessary to reduce this to just one post-restoration measurement due to the high cost of renting the raft and the time-consuming nature of the process. Additionally, the CABs lack the expertise to interpret the data, so a consultant will need to be procured. During 2025, a consultant will be consulted regarding the number of post-monitoring assessments.

Dead wood in the riparian zones
The Grant Agreement (GA) contains varying instructions on how dead wood should be monitored (D1.3 and D2.3). As action D1 focuses on morphological changes, while D2 is more related to species monitoring. Despite this, the GA mentions that Microscapania should be monitored under D1. Recording all dead wooden debris during restoration proved to be too extensive as there can be hundreds, or even thousands of trees in a restored watercourse, only sites of dead wood intended for Microscapania is registered. A collaboration meeting was held on April 12, 2023, and the project management decided to fully focus on monitoring the species Microscapania. This will also serve as an opportunity for the CABs to learn more about wood-inhabiting liverworts. See further details under D2.3.

However, GRIP on LIFE's AI tool (complementary action) may potentially be used to measure the presence of dead wood along restored sections.

Any complementary action outside LIFE
A complementary action is being carried out in GRIP on LIFE, where an AI model is being developed to detect dead wood using drone imagery. Data from Ecostreams has been used to train the model. This could enable a potential analysis of dead wood in relation to hydromorphology at the end of the project.

Tables, photographs

Figure 23. Example of drone documentation, before and after restoration. When calculating rewetted area, the area of the river is assessed with GIS, and new area is subtracted by the old area to get the increase.

Hydrology: Sawdust monitoring (still images from

Figure 24. D1.1 Hydrology, (still images cut from film) from above. Sawdust released before (above) and after restoration (below). Still images captured at 10 seconds, 20 seconds, 30 seconds and 40seconds.

Figure 25. ADCP-raft in action.

See Butler for Deliverables

D2 - Species - Freshwater pearl mussel, salmon and scapania species

Foreseen start date: 2021-04	Actual start date: 2021-04
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved
This action is divided into four sub-actions: D2.1 Mussels, D2.2 Fish, D2.3 Scapania, and D2.4 Otter. Below is a description of what has been done in each sub-action.

D2.1 Mussels – glochidia infestation
CABVb have monitored 5 sites, 3 in main channel of Öreälven and 2 in tributary Kvarnbäcken during 2021, as it's a known site for freshwater pearl mussel. However, the 2 sites in Kvarnbäcken are now removed from the monitoring due to scarce population of host fish. Those 2 sites will be replaced with new sites during 2024. However, Kvarnbäcken sites are the only two sites in Västerbotten with glochidia infestation. All other sites had no glochidia infestations or no fishes caught. See Major problems and modifications below.

CABJa have conducted pre-restoration glochidia monitoring on 10 sites, 5 in Ammerån and 5 in Rörströmsälven, 4 in main channels and 6 in tributaries, all monitored pre-restoration during 2022. No glochidia larvae found on host fishes.

CABVn has conducted electrofishing and monitored glochidia attachment at sites where SAA conducted cage infestation trials in action C7. However, Hemlingsån was mistakenly left out of the initial monitoring, so the number of sites in Moälven was reduced from 7 to 5 sites. Additionally, three sites have been added in Hemlingsån, which will be baseline monitored during the 2024 field season. After this, all sites will have been monitored pre-restoration. In total, CABVn will have future monitoring on 8 sites, all in tributaries.

All glochidia monitoring performed so far can be seen in Table 13. When all monitoring efforts are carried out, a summarized report will be created and annexed in Final Report.

Table 13. Glochidia monitoring sites, status, and infestation rate regarding pre-restoration monitoring.

Beneficiary	Site name	Type of restoration/action at site	Coordinates	Pre-restoration monitoring	Average infestation rate (%)
CABVb	Öreälven, Långed	C1, river restoration	N 7061082 E 1691350	Yes, 2021	0
	Öreälven, Bjurholm	C1, river restoration	N 7094680 E1666766	Yes, 2021	0
	Öreälven, Provåker	C1, river restoration	N 7107007 E 1659888	Yes, 2021	0
	Kvarnbäcken, nedre*	C5, road culvert C6, dam removal	N 7123039 E 1653129	Yes, 2021	50%
	Kvarnbäcken, övre*	C5, road culvert C6, dam removal	N 7121100 E 1656724	Yes 2021	No host fish
CABJa	Ammerån, 1	C1, river restoration	N 535825 E 7026113	Yes, 2022	0
	Ammerån, 2	C1, river restoration	N 538818 E 7017415	Yes, 2022	0
	Ammerån, 3	C1, river restoration	N 547928 E 7009707	Yes, 2022	0
	Ammerån, 4	C1, river restoration	N 557915 E 7006009	Yes, 2022	0

	Ammerån, 5	C1, river restoration	N 557928 E 7006099	Yes, 2022	0
	Rörströmsälven, 6	C1, river restoration	N 569055 E 7096922	Yes, 2022	0
	Rörströmsälven, 7	C1, river restoration	N 569973 E 7099091	Yes, 2022	0
	Rörströmsälven, 8	C1, river restoration	N 569673 E 7099785	Yes, 2022	0
	Rörströmsälven, 9	C1, river restoration	N 570732 E 7101711	Yes, 2022	0
	Rörströmsälven, 10	C1, river restoration	N 569179 E 7106396	Yes, 2022	0
CABVn	Moälven, Forsån	C7 cage infestation	N 7036154 E 675946	Yes, 2022	26,7%
	Moälven, Galasjöån	C5 Road culvert, C7 Cage infestation	N 7034766 E 663761	Yes, 2022	50%
	Moälven, Sågbäcken*	C5 Road culvert	N 7040702 E 641558	Yes 2022	0
	Moälven, Bölesån	C5 Road culvert, C7 Cage infestation	N 7050114 E 628403	Yes, 2022	0
	Moälven, Skyttelbäcken	C5 Road culvert, C7 Cage infestation	N 7053845 E 631058	Yes, 2022	33,3%
	Moälven, Hädanbergsån	C5 Road culvert, C7 Cage infestation	N 7052884 E 653134	Yes, 2022	31,3%
	Norra Anundsjöån*	C1 restoration	N 7049605 E 647310	No (water levels too high)	

*Sites removed from monitoring

D2.2 Fish

- **Electrofishing**

Is performed on 45 sites each year; CABVb monitors 15-, CABVn monitors 10-, and CABJa monitors 20 sites. The sites are stated in Table 14 below. Analysis of fish reproduction will be conducted during 2027 when all data is collected. Due to high water levels in Jämtland 2023, not all sites were possible to monitor. CABVn misinterpreted the GA of how often this monitoring should be performed but will continue to conduct monitoring the following years.

Table 14. Overview of sites for electrofishing monitoring. The table continues on the next page.

Bene-ficiary	Site no	Name of site	Coordinates		Monitored year			
			N	E	2021	2022	2023	2024
CABVb	1	Hundedsforsen	7059669	731306		Yes	Yes	-
	2	Långedsforsen, övre	7061477	731133	Yes	Yes	Yes	-
	3	Långedsforsen, nedre	7061566	731112		Yes	Yes	-
	4	Laxforsen	7071079	727472		Yes	Yes	-
	5	Sågforsen	7071920	727501		Yes	Yes	-
	6	Holmforsen	7074348	721821	Yes	Yes	Yes	-
	7	Hummelholm, ned Troll	7074738	719487		Yes	Yes	-
	8	Tallberg	7082348	714021		Yes	Yes	-
	9	Storforsen	7084730	712611		Yes	Yes	-
	10	Lagnäset	7094608	706320	Yes	Yes	Yes	-
	11	Näslandsforsen	7101791	703437		Yes	Yes	-

	12	Provåker	7107401	698707		Yes	Yes	-
	13	Långforsen	7108243	698426		Yes	Yes	-
	14	Malmby	7112288	696965	Yes	Yes	Yes	-
	15	Skangselet	7130045	687286		Yes	Yes	-
CABVn	1	Borgarån, Långforsen	7067005	665239	Yes			-
	2	Gräsbäcken Nedan trumman	7078837	623248	Yes			-
	3	Hemlingsån, Stenvallkurva	7062913	674539	Yes			-
	4	Lillan Nedströmsselet	7068332	660035	Yes			-
	5	N. Anundssjöån Vintermyrforsen	7058341	644901	Yes			-
	6	N. Anundssjöån Fällforsnedre	7055195	646414	Yes			-
	7	Rensjöbäcken Träsktjärnsvägen	7071001	660018	Yes			-
	8	Solbergsån Simpforsen	7072678	630653	Yes			-
	9	Uddersjöbäcken Uppströmstjärnen	7070754	662748	Yes			-
	10	Utterån nedgammaldamm	7060707	660076	Yes			-
CABJa	1	AmmerånBorgan	7026288	536490		Yes	Yes	-
	2	AmmerånHuvudfåra	7036018	523150		Yes		-
	3	AmmerånLaxsjöbäcken	7030242	537339		Yes	Yes	-
	4	AmmerånMålånUppströms trumma	7017447	538812		Yes	Yes	-
	5	AmmerånMålånNedströms trumma	7017485	538834		Yes	Yes	-
	6	ÅreälvenGevsjöströmmen/Kvarnforsen	7032902	381993		Yes		-
	7	ÅreälvenHenån	7021074	408571		Yes	Yes	-
	8	ÅreälvenTångböle	7027921	381561		Yes	Yes	-
	9	ÅreälvenVälabäckenNedstr. trumma	7020607	410025		Yes	Yes	-
	10	RörströmsälvenHocksjökvarnforsenStickbron	7098885	569805		Yes		-
	11	RörströmsälvenStaversån	7106416	569175		Yes	Yes	-
	12	RörströmsälvenStormyrforsen	7106846	568916		Yes		-
	13	RörströmsälvenTannån	7095110	578020		Yes		-
	14	RörströmsälvenTannån	7094372	573077		Yes		-

- **Snorkeling**

Snorkeling surveys is a non-invasive method used to estimate the adult fish population in our watercourses. The number of fish observed primarily depends on the water's visibility. Three snorkelers, equipped with masks and drysuits, float downstream in parallel, maintaining as straight a line as possible. The snorkelers count adult fish, categorizing them by species and size. The same sites are surveyed each year, as long as water flow and safety conditions approve. Snorkel surveys were conducted in all counties in 2021, but due to dark waters, it was difficult to observe fish in Västerbotten and Västernorrland counties. In 2022 and 2023, all snorkeling was carried out at sites in Jämtland and will continue to be so.

Table 15. Snorkeling monitoring results.

Project river	Site name	Date	Trout <20 cm	Trout 20-30 cm	Trout >30 cm	Grayling <20 cm	Grayling 20-30 cm	Grayling >30 cm	Site length (m)
Åreälven	Tegefors lekdyk	2022-09-22	1	2	3	0	0	45 (Arctic char)	200
Åreälven	Staa- Landsvägsbron lekdyk	2022-09-22	0	0	4	0	0	0	300
Åreälven	Brattlandsströmmen lekdyk	2022-09-22	0	0	4	0	0	0	600
Åreälven	Sandedan	2022-08-18	0	4	2	0	0	0	100
Åreälven	Katrina	2022-08-18	3	8	2	0	0	0	400
Åreälven	Undersåker	2022-08-18	1	2	2	0	0	0	400
Åreälven	Raset	2022-08-18	0	2	0	0	0	0	400
Åreälven	Nedan björks stuga-2020	2020-08-06	0	0	0	3	9	0	400
Ammerån	Rönningsforsen	2022-09-08	0	0	0	0	4	2	200
Ammerån	Grundforsen	2022-09-08	0	0	0	0	9	3	100
Ammerån	Krokforsen (Poolen)	2022-09-08	0	0	1	2	12	8	200
Ammerån	Strandbäcken	2022-09-08	0	0	0	2	0	0	400
Ammerån	Tallkurvan	2022-09-08	0	0	0	0	0	0	300
Ammerån	Högremsforsen	2022-09-08	0	0	0	2	5	1	200
Ammerån	Kvarnflyn	2023-09-15	0	1	0	0	2	2	300
Ammerån	Rakvätan	2023-09-15	0	0	1	1	2	3	200
Ammerån	Hovdet	2023-09-15	0	1	0	6	9	7	600

- **Fish counter**

A fish counter was installed to monitor migrating fish in Henån during the 2023 field season, but due to Storm Hans in August 2023, all infrastructure surrounding the counter was washed away. As a result, the counter was only operational for about three weeks. Data collection on fish migration was expected in September, but the counter had already been washed away. The camera will be reinstalled in 2024 for further documentation.

There are two fishways in Moälven, one in Norra Anundsjöån and one at Sågfallet in Utterån, where fish counters have been installed by other stakeholders. Additionally, for Hemlingsån, a fish counter is located at a fish elevator by the first power plant in Gideälven. It will be investigated whether data from these sources can be used, and data usage from Sågfallet has been approved.

- **Smolt Trap**

To complement the fish counter monitoring, which only monitors fish in Jämtland, data from a smolt trap in the Öreälven and Moälven is being used in Västerbotten and Västernorrland. The smolt trap in Öreälven has been in place from 2021 to 2023, providing available data on smolt production in the river. In Moälven, the smolt trap has been in place 2019, 2021, 2022 and 2023. A summarized report will be written when all data is collected, during 2027.

D2.3 Scapania

All sites created under Action C4 have been documented. A selection of these sites will be revisited in 2027 for monitoring establishment of Microscapania.

D2.4 Otter

So far, no otter monitoring funded by Ecostreams has taken place. However, existing data from environmental monitoring is available. The project management will soon develop a plan for an extensive Ecostreams-funded effort in 2026 or 2027 to gain a clearer understanding of the otter population distribution in the areas.

Planned output and time schedule

All monitoring is considered under control. However, the large number of sub-actions can sometimes be overwhelming and challenging to coordinate with the restoration work. Almost all baseline data required for the monitoring efforts has been collected.

Type	Name	Deadline
Deliverable	Monitoring protocol	31/03/2022 – Done
Milestone	All monitoring data collected	30/09/2027
Milestone	All monitoring data for D2 compiled and analysed	15/11/2027

Major problems or modifications

D2.1 Mussels, glochidia infestation

CABVn: According to the Grant Agreement (GA), three sites in each river, plus two tributaries, are to be monitored. However, it was not possible to conduct electrofishing in the main channels in Västernorrland, so all sites have been shifted to tributaries. Additionally, this monitoring will also be linked to Action C5 (culvert replacement) and SAA's role in C7 (cage trials), not just C1 (restoration). This approach ensures that monitoring is completed within the project timeframe and allows for interesting before-and-after comparisons of the other actions.

CABVb: Two monitoring sites in the Kvarnbäcken tributary, one of the few areas in the Öre River where documented freshwater pearl mussel populations exist, will be excluded due to the extremely low presence of host fish. CABVb does not want to stress the fish through electrofishing, as it may risk the survival of both the fish and the mussels. To address this, CABVb will add two additional main channel sites in 2024. The decision to choose main channel sites is based on eDNA results from TUM survey and that restoration efforts occur

adjacent to those sites, which will allow for before-and-after restoration results. The final electrofishing may probably still be conducted in Kvarnbäcken, as STA has replaced a culvert at the mouth of the stream, potentially increasing the fish population in the system. A decision whether to electrofish in Kvarnbäcken will be made closer to the project's end.

D2.2 Fish

- **Snorkeling**

The snorkeling survey proved difficult to carry out in Västernorrland and Västerbotten due to the humic (dark) waters. As of 2021, snorkeling is only conducted in Jämtland County instead of all three counties.

- **Fish counter**

Due to the limited budget for fish counters and the expertise in managing them being available at CABJa, it was decided early in the project that the entire budget for purchasing fish counters would be allocated to CABJa. It was assessed as not enough for all three counties.

Outline the perspectives for continuing the action after the end of the project

Electrofishing is part of CABVb's and CABJa's environmental monitoring programs, and the majority of the sites will continue to be monitored after the project ends. Otter surveys are also included in the monitoring program and will continue post-project. The smolt trap is expected to return to the Öre River after 2028. The CABs hope to revisit the spawning beds created in Ecostreams within the framework of other projects to assess how well they hold up over time. As well as document certain sections with drones during a longer period.

Complementary actions

Several electrofishing surveys are conducted by various stakeholders across all project waterways, each with different purposes. All collected data is stored in a national database, meaning that all data from additional electrofishing activities in the project waterways will be compiled in the Final Report.

Photographs

Figure 26. Smolt trap monitoring in Öreälven.

Figure 27. Glochidia monitoring in Gravanäsforsen, Öreälven (new site for 2024).

Figure 28. Snorkeling monitoring in action.

See Butler for Deliverables

D3 - Ecosystem functions

Foreseen start date: 2025-04	Actual start date:
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved

No activities undertaken. Assessment will be made of the impacts of the concrete conservation actions on the ecosystem functions in the project watercourses. Most likely a consultant will be procured to assess the impacts.

Planned output and time schedule

Type	Name	Deadline
Deliverable	Ecosystems Functions Improvement - Laymans report	31/03/2028
Milestone	All data for ecosystem functions analysis collected	30/08/2027

D4 - Socio-economic impact

Foreseen start date: 2025-01	Actual start date:
Foreseen end date: 2027-09	Actual (or anticipated) end date: 2027-09

Activities undertaken and outputs achieved
No activities undertaken so far.

Planned output and time schedule

Type	Name	Deadline
Deliverable	Report on the socio-economic impact of the project	31/10/2027

D5 - Project performance indicators (KPI)

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved

The baseline for Key indicators were established during autumn 2021. The project foresees no issues with the set KPIs and will continue to work according to plan, with an evaluation of the KPIs to be conducted at a later stage in the project.

Planned output and time schedule

Type	Name	Deadline
Milestone	Baseline for Key indicators fully established	31/08/2021 – Done
Milestone	Indicator tables ready for Midterm Report	31/10/2024
Milestone	Indicator tables ready for Final Report	31/12/2027

Major problems or modifications

E. Public awareness and dissemination of results

E1 - Dissemination planning and execution

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved

E1.1 Dissemination plan
A communication plan was developed early in the project and is revised as needed.

E1.2 Development of dissemination pack

Notice boards
Notice boards have been created and placed at several strategic locations. The signs provide information about the ongoing work and safety measures related to excavators. Each notice board includes a QR code leading to the project website for more detailed information. The notice board are tailored to the activities in each county.

Brochures and film
Two brochures have been produced. The first was created in collaboration with the Rivers of Life project and explains why and how watercourses are being restored (Deliverable: First brochure produced). It was printed in XX copies. The second brochure focuses specifically on Ecostreams for LIFE (Annex 10.9 E1 Project brochure) and available on website. A project film is created and is accessible on YouTube:
(https://www.youtube.com/watch?v=Siw37CrgZBA)

Website
A website (www.ecostreamsforlife.com) has been established, providing general information about the project, its objectives, and conservation plans for each Natura 2000 watercourse. The website is continuously updated with details on ongoing actions and achieved results. See Table 15 for website data for unique visitors, session length etc.

Social media and press
A decision was made not to create a dedicated Facebook page for the project. Instead, existing, and well-established CAB Facebook pages are being used to share information. Examples include "Fiske och vattenvård i Jämtlands län", "Fiske och vattenvård i Västerbotten", "Sportfiskarna Regionkontor Jämtland-Härjedalen", "Natur i Västernorrland", and "Länsstyrelsen Västerbotten." An Instagram account has also been created, where images and videos from the project's activities are shared. The account currently has 465 followers, and the response to the posts has been overwhelmingly positive.

Several press releases have been issued, and the project has appeared in both local and national media on multiple occasions (Annex 10.10 E1 Ecostreams in media).

The project has created a newsletter, to better spread information and knowledge about what's going on for all beneficiaries to the other. The newsletter is also send out externally, to give information and provide transparent insights (Annex 10.11 E1 Newsletter nr1 and 10.12 E1 Newsletter nr2).

E1.3 Networking

Participation in six LIFE network meetings has taken place. These meetings have been highly valuable for gaining experience from other projects and receiving updates from monitors and CINEA. The project has been presented, primarily through lectures, at eight international conferences. Interest in the project has been significant, as demonstrated by the acceptance of all submitted abstracts.

The project has participated in eight national conferences/meetings. The presentations about the project have received very positive feedback, and there has been a strong interest in learning more about the project's objectives and outcomes. See Table 16 for an overview.

Planned output and time schedule

No problems meeting milestones and deliverables according to plan.

Type	Name	Deadline
Deliverable	Dissemination plan	31/12/2021 – Done
Deliverable	First three notice boards up	30/05/2022 – Done
Deliverable	First brochure produced	28/02/2023 – Done
Deliverable	Ecosystems Functions Improvement - Layman's report	31/03/2028
Milestone	Website and Facebook page up and running	30/04/2021 – Done

Major problems or modifications

Outline the perspectives for continuing the action after the end of the project

The dissemination and networking of Ecostreams' work will likely continue beyond the project's completion. CABVb, with its established project office, is well-positioned to support and carry on these efforts.

Tables, photographs

Table 16. Website data from project start to 2024-04-30.

Page views	Sessions	Unique visitors	Average time spent	Type of unit
6 812	**2 201**	**1 243**	**4m, 42s**	**All**
1 698	608	418	3m, 47s	Mobile
5 098	1 591	824	5m, 1s	Computer
16	5	5	19m, 19s	Tablet

Table 17. Networking meetings and conferences attended.

Category	Name	Date	Organizer	No participants from Ecostreams	Place/country
LIFE Networking	Nordic-Baltic platform meeting	14 April 2021	LIFE MagniDucatusAcrola	1	Digital
Workshop/ meeting	Restoration meeting	12 October 2021	CABJa	1	Jämtland
Networking, national	Vattendagarna 2021	13-14 October 2021	Sveriges förening för limnologi	1	Östersund, Sweden
Networking, national	LIFE CONNECTS Conference 2021	23-24 November 2021	Life Connects	1	Lund, Sweden
Networking, international	Presentation of the EU river restoration project "Ecostreams for Life"	28 March 2022	CABJa, CabVn, CabVb	5	Digital
National networking	Berättarkväll	31 March 2022	Naturum Vålådalen	1	Vålådalen, Jämtland
National networking	Berättarkväll	21 September 2023	Naturum Vålådalen	1	Vålådalen, Jämtland
Networking, national	HaVs + Norrlandslänen	31 August-1 September 2022	CABJa	15	Östersund, Sweden
Workshop/ meeting	Watch graylings with CABJa	22 September 2022	CABJa	1	Jämtland
LIFE Networking	Nordic-Baltic platform meeting Litauen	4-6 October 2022	BEF Lithuania	1	Klaipeda, Litauen
Networking, national	Sportfiskemässan	15-19 March 2023	Sportfiskemässan / Sports fishing conference	1	Älvsjö, Sweden
LIFE Networking	LIFE-nätverksträff svenska Life	21-22 March 2023	Ecostreams for LIFE, Rivers of LIFE	2	Östersund, Sweden
Networking, international	Natuaral rivers processes as a base for river-related protected areas &	20-22 April 2023	Clean Baltic Coalation	1	Drawa, Poland

	river restaoration				
Networking, national	Flora faunakonferans	26 April 2023	Artdatabanken	1	Uppsala, Sweden
Networking, national	Almedalen	28 June 2023	SwAM	1	Visby, Sweden
LIFE Networking	River Dee	3-5:e Juli 2023	Rivers of Life	1	Östersund, Sweden
Networking, international	VXII Ichtyology Congress Prague	4-8 September 2023	European Ichthyological Society	1	Prague, Czech Republic
Networking, international	CrayfIT Pavia, Italien	5-8 September 2023	Life Claw	1	Rom, Italy
LIFE Networking	Nordic-Baltic platform meeting Finland	12-14 September 2023	Flying Squirrel LIFE CoastNet LIFE Biodiversea LIFE IP Hydrology LIFE Our Saimaa Seal LIFE Metsähallitus, Parks & Wildlife Finland	2	Espo, Finland
Networking, international	Nasjonalt seminar om restaurering av vassdrag og våtmarker: Restaurering av fiskens leveområder	16 September 2023	Norsk vannforening	1	Digital, Norway
Networking, international	Dam removal cecis - Latvia	20-21 September 2023	LIFE GoodWaterIP	1	Cesis, Latvia
Networking, international	International Workshop LIFE Dordogne River	9-11 October 2023	LIFE Dordogne	1	Dordogne, France
Networking, national	Koordinatorträff	16-18 October 2023	County administration board of Gävleborg	7	Hamra, Sweden
Networking, national	Nat. Konf. Hotade Stormusslor	24-26 Oktober 2023	Karlstads Universitet	1	Karlstad, Sweden
Networking, national	Silver and pearls	7-8 November 2023	Life Revives	5	Luleå, Sweden
LIFE Networking	LIFE Nätverksträff	20-21 March 2024	Life Connects	1	Kristianstad, Sweden
Networking, international	Free Flow	15-17 April 2024	World Fish Migration Foundation	2	Groningen, Netherlands

Figure 29. Project worker Fredrik Schaerström with a notice board in Västernorrland.

See Butler for Deliverables

E2 - Demonstration areas

Foreseen start date: 2022-01	Actual start date: 2023-01
Foreseen end date: 2025-12	Actual (or anticipated) end date: 2026-12

Activities undertaken and outputs achieved
Three demonstration areas will be established within the project regions, one in each county. Each county will have its own theme: Västerbotten, Öreälven, will focus on salmon, Västernorrland, Hemlingån, on the freshwater pearl mussel, and Jämtland, Ammerån, on cultural history, particularly log rafting history.

The locations for the demonstration areas are nearly finalized, with only agreements with landowners pending. The goal is to create appealing excursion destinations with informative content that sparks curiosity and is easy for the general public to understand.

Planned Output and Time Schedule
The development of the content for these areas has taken longer than expected due to time constraints. Meeting the target by November 30, 2025, will be challenging to achieve. The most optimal target would be to have the fully completed demonstration areas by November 30, 2026, and the project therefore wishes to postpone this deliverable. Additionally, it would be more accurate to refer to it as a milestone, not a deliverable. This change would be helpful to obtain in connection with this report.

Type	Name	Deadline
Deliverable	All demonstration areas complete	30/11/2025

Major problems or modifications
There seems to be a shift in budget between E2 and E3. The budget on E3 is for Demonstration areas and vice versa. However, the project management is aware of this and can distinguish between the action chronology and respective budget. At the CABs, E2 is Replicability and transferability plan and E3 is Demonstration areas.

Outline the perspectives for continuing the action after the end of the project
The demonstration areas are expected to be frequently visited during meetings, even after the project has ended. The goal is to create content that won't require revisions, using durable materials for posts and signs that can withstand weather conditions. After the project concludes, the landowners will take over the management, with a fixed management period of up to 30 years.

Tables, photographs

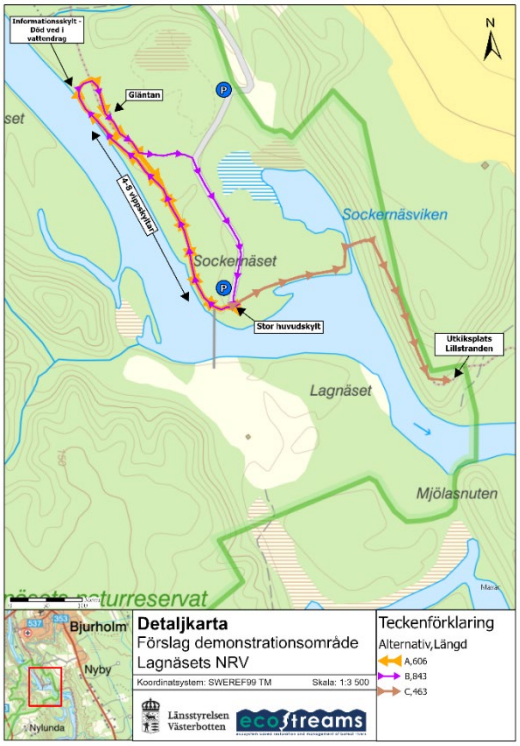


Figure 30. Ideas of tracks in demonstration site Öreälven.

Figure 31. The idea is to use these foldable signs, both to increase curiosity and to protect the signs from sunlight.

E3 - Replicability and transferability plan

Foreseen start date: 2021-01	Actual start date: 2024-01
Foreseen end date: 2026-12	Actual (or anticipated) end date: 2025-12

Activities undertaken and outputs achieved
A draft for the plan is started.

Planned output and time schedule

Type	Name	Deadline
Deliverable	Replicability and transferability plan	30/11/2024

Major problems or modifications
There have been delays in this area due to setbacks in the project, as mentioned in previous actions. Additionally, more actions need to be carried out within the project for the plan to become relevant, ensuring there are actual measures and data to work with. It is proposed that the delivery of this deliverable be postponed by one year to 2025-11. However, the foreseen end date is set to 2026-12 but the deliverable is set to 2024-11, which might be skewed.

There seems to be a shift in budget between E2 and E3. The budget on E3 is for Demonstration areas and vice versa. However, the project management is aware of this and can distinguish between the action chronology and respective budget. At the CABs, E2 is Replicability and transferability plan and E3 is Demonstration areas.

E4 - Project organised meetings, excursions, workshops, seminars etc.

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2026-12	Actual (or anticipated) end date: 2027-09

Activities undertaken and outputs achieved
Due to the pandemic, it was not possible to arrange a physical kick-off event. As a substitute, a digital kick-off was organized over two days.

A total of eight school events have been organized by SAA (Table 17). These events have been highly appreciated by both teachers and students. During the sessions, various topics have been covered, including studying benthic fauna, species identification, exploring the local environment, games, and simple actions such as adding dead wood and moving boulders to learn about and improve the environment. The aim is to foster interest in nature and underwater ecosystems from a young age.

Together with Life Connects and Rivers of Life, a digital seminar series was created 2022, focusing on topics related to the actions of freshwater actions in LIFE projects. All LIFE projects in Sweden, including their partners, and other colleagues in the same sector are invited to participate. So far, four seminars have been held on the topics of dam removal, freshwater pearl mussels, cultural heritage, and invasive species, with around 50-70 participants per seminar. These events have provided valuable opportunities for knowledge sharing, networking, and collaboration across different sectors and stakeholder groups. The aim has been to foster deeper engagement with the project's goals and to facilitate the exchange of expertise and calibration between participants Moving forward, the plan is to hold two seminars per year until the end of Ecostreams in 2027.

Strömsund Municipality have arranged a public meeting at Folkets hus in Strömsund. The County Administrative Board gave a presentation on the restoration efforts planned within the Ecostreams project for the coming years. Most of the time was spent reviewing the action plan for the Ammerån river and discussing general fishing in the region. The municipality briefly explained its role in the project.

Planned output and time schedule

Type	Name	Deadline
Milestone	First workshop completed	31/10/2022 – Done
Milestone	First two excursions for the public and schools arranged	30/09/2023 – Done
Milestone	All excursions for schools and the public completed	30/11/2026

Major problems or modifications

In 2021, Strömsund Municipality and the Jämtland County Administrative Board decided that a joint effort was needed to inform the municipality's residents about what would happen in the coming years. Invitations were widely distributed to residents through newspapers and Facebook. This was not an excursion or solely intended for immigrants, as stated in the GA; rather, everyone who was interested was invited, and an information meeting was deemed necessary to reach the municipality regarding Ammerån and the Rörströmsälven river.

The planned trips, including bus tours organized by Ragunda, Strömsund, and Åre, have been delayed due to the pandemic and staff turnover. The current plan is for them to launch these trips during 2025.

The field excursions managed by CABVb, CABVn, and CABJa have also faced delays, largely due to the pandemic and the prioritization of starting the C-actions. These excursions are intended to provide hands-on learning experiences and site visits that align with the project's restoration and conservation goals. Once initiated, they will offer participants valuable insights into the ongoing work, as well as opportunities to engage directly with the landscapes and ecosystems being restored. The goal is to ensure that these activities are launched as soon as practical, providing both educational value and stakeholder engagement, likely starting during 2025.

Tables, photographs

Table 18. SAAs organised meetings with school pupils.

Category	Name	Date	Organizer	River system	Participants
School groups	Kyrkslättens skola F-6	30/8-2022	SAA	Åreälven	20
School groups	Duveds skola 7-9	9/8-2022	SAA	Åreälven	20
School groups	Stamgärdets skola 3-6	9/9-2022	SAA	Åreälven	25
School groups	Duveds fritidshem 12-16	28/9-2022	SAA	Åreälven	15
School groups	Kyrkslättens skola f-6	4/4-2023	SAA	Åreälven	30
School groups	Anders.Olofskola 4	30/5-2023	SAA	Ammerån	15
School groups	Anders.Olofskola 5	31/5-2023	SAA	Ammerån	15
School groups	Anundsjöskolan åk3	5/10-2023	SAA	Moälven	25

Table 19. Workshops/meetings arranged by the project.

Category	Name	Place	Date	Organizer	Topic	Participants
Workshop/ meeting	Project meeting Gothenburg	Gothenburg	18-20 April 2023	Ecostreams for LIFE	Project Ecostreams, Freshwater pearl mussel	20
Workshop/ meeting	Life workshop	Digital	29 April 2022	Ecostreams for Life, Life Connects, Rivers of Life	Dam removal	50-70
Workshop/ meeting	Life workshop	Digital	3 September 2022	Ecostreams for Life, Life Connects, Rivers of Life	Freshwater pearl mussel	50-70
Workshop/ meeting	Life workshop	Digital	31 Mars 2023	Ecostreams for Life, Life Connects, Rivers of Life	Culture in the rivers	50-70
Workshop/ meeting	Life workshop	Digital	15 Mars 2024	Ecostreams for Life, Life Connects, Rivers of Life	Crayfish	50-70
Workshop/ meeting	Restoration excursion	Östersund	15 October 2021	(Ecostreams, Rivers)	Practical restoration	78

See Butler for Deliverables

E5 - Final seminar

Foreseen start date: 2026-07	Actual start date:
Foreseen end date: 2027-09	Actual (or anticipated) end date: 2027-09

Activities undertaken and outputs achieved
No activities undertaken so far.

Planned output and time schedule
The final seminar might be arranged later during summer 2027 than foreseen deadline below.

Type	Name	Deadline
Milestone	Final seminar	10/06/2027

E6 - Dialogue on water forestry interactions and on invasive species

Foreseen start date: 2021-01	Actual start date: 2023-01
Foreseen end date: 2027-09	Actual (or anticipated) end date: 2027-09

Activities undertaken and outputs achieved
A plan for forest owner meetings has been developed, but no meetings have been conducted yet. The plan includes 15 digital meetings and 15 physical meetings focused on logging techniques, riparian buffer zones, forest machine paths, and permanent stream crossings. The target audience includes forest owners, with an emphasis on the importance of green and blue infrastructure and managing invasive species. Since a share of forest owners today do not necessarily live near their forests, the project management decided to offer both digital and physical meetings. The digital meetings provide an opportunity for forest owners with families and children to participate, as the challenges of balancing family responsibilities and forest managing must be difficult. This approach allows us to adapt to the modern digital society we live in. Additionally, based on experiences from previous projects like ReBorN LIFE, it is observed that physical meetings often attract a homogenous group of older men. By offering digital options, we aim to broaden the perspectives and include a more diverse range of forest owners. The campaign "Stop the Signal Crayfish" is also part of the initiative. Preparations and communication efforts involve film editing, creation of excursion guides, and setting up platforms for digital meetings. The program spans between 2024 and 2027, covering areas in Västerbotten, Västernorrland, and Jämtland.

Planned output and time schedule
First milestone “Forestry dialogue – first meeting” has not been met. Focus has been on establishing a feasible plan for the meetings first. In the beginning of project meetings were low prioritized due to pandemic and lack of time among project staff. Starting the extensive work on all C- and D-actions has been time-consuming and there have not been resources to start this action fully. The program of forest meetings will start during 2025, instead of 2024 as planned.

Type	Name	Deadline
Deliverable	Plan for forestry dialogue	31/03/2022 – Done
Milestone	Forestry dialogue – first meeting	31/10/2021
Milestone	100% of all meetings held	31/10/2027

Major problems or modifications
The initially 30 field meetings is modified by dividing it in two themes: digital and physical excursions. This is to reach a broader audience among forest owners, facilitate participation, and provide an opportunity for those living far from the forest and watercourse to join.

Any complementary action outside LIFE
Project Friskare Skogsvatten (Healthy watercourses in forests) have completed two meetings in Öreälven. First at Balån, tributary April 2023, 6 participants. The second one in Lagnäset, Öreälven main stem, in September 2023 with 100-150 participants.

See Butler for Deliverables

F. Project management

F1 - Project management by County Administrative Board of Västerbotten

Foreseen start date: 2021-01	Actual start date: 2021-01
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved
Since the project started, Johanna Hägglund has served as Project Manager, responsible for the overall implementation. However, following her maternal leave and sick leave, the complexity and demands of the role became more evident. As of January 2023, Mattias Sundqvist was hired to share the Project Manager responsibilities with Johanna. Since then, the role has been divided between the two, with Johanna and Mattias working together at 125-150% capacity. During Johanna's maternal leave and sick leave, Deputy Project Manager Anna Rost stepped in to take on the overall Project Manager role.

So far, 33% of person-days have been spent on this action. The need for project management will increase in the later stages, and Johanna and Mattias will increase their time commitment accordingly.

Planned output and time schedule

Type	Name	Deadline
Deliverable	Mid-term report	31/10/2024
Deliverable	Final report	31/03/2028
Milestone	Project manager hired	31/01/2021 – Done

Major problems or modifications
Being the sole project manager for such a large project proved to be more demanding than one person could provide. Therefore, CABVb expanded with one more project manager since 2023-01-01. This has contributed to closer collaboration between CABs, established clear frameworks, reporting documents and more regular meetings.

See Butler for Deliverables

F2 - Project organisation

Foreseen start date: 2021-01	Actual start date: 2021-02
Foreseen end date: 2026-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved
Seven steering group meetings have been arranged by CABVb. Where the project management have updated about status of the project. The steering group committee is responsible to make decisions about larger changes, such as the Amendment. The steering group meetings have been semi-digital with the option to meet physically or digitally. This because the great distances between project areas.

Regular (twice/month) project management meetings are arranged with the Project Managers and Deputy Project Managers. Technical coordinators, economists and informants are called in if necessary.

CABVb has arranged two meetings with a reference group for active salmon anglers on the Öreälven. There, information has been exchanged about how the project conducts river restorations and the anglers have been able to raise questions, concerns, thoughts, and ideas about this and how the restorations can possibly be adapted to fishing and possible favorite spots.

CABJa has a reference group consisting of sport fishers, municipalities, and fishing management areas. No physical meetings have been held; instead, we send annual updates to these groups about what has happened in their municipalities/areas. Meetings are offered if they wish to have them.

CABVn participates in annual meetings with fisheries management areas (FMUs) and sends out project information approximately 1–2 times per year.

Planned output and time schedule

Type	Name	Deadline
Milestone	First meeting project management team	31/03/2021 – Done
Milestone	Reference group established for first meeting	31/05/2021 – Done

Major problems or modifications
Reference groups could not be created in all counties. The CABJa and CABVn has communication with FMUs by e-mail and arranges meetings is desired.

Tables, photographs

Table 20. List of Steering group meetings, Monitor meetings and other Project Management meetings arranged.

Category	Date	Place	Participants
Steering Committee	3/3-2021	Digital/Umeå	Beneficiaries
Steering Committee	25/5-2021	Digital/Umeå	Beneficiaries
Steering Committee	2/12-2021	Digital/Umeå	Beneficiaries
Steering Committee	17/3-2022	Digital/Umeå	Beneficiaries
Steering Committee field trip	21/6-2022	Ammerån, Östersund	Beneficiaries
Steering Committee	28/3-2023	Digital/Umeå	Beneficiaries
Steering Committee	21/11-2023	Digital/Umeå	Beneficiaries
Project management group	6-7/5-2021	Umeå	Project Management
Project management group	17/5-2022	Digital	Project Management
Project management group	26-27/10-2022	Bredbyn	Project Management
Project management group	4-5/5-2023	Umeå	Project Management
Monitor meeting	4-5/5-2021	Digital	Project Management
Monitor meeting	18/2-2022	Digital	Project Management
Monitor meeting	7-8/9-2022	Umeå	Project Management
Reference group	28/4-2022	Öreälven	Sportfishing interests
Reference group	29/6-2022	Öreälven	Sportfishing interests

Figure 32. Reference group meeting with salmon anglers in Öreälven, CABVb.

Figure 33. Steering group field meeting in Ammerån, Östersund, June 2022.

F3 - After-LIFE Plan

Foreseen start date: 2026-10	Actual start date:
Foreseen end date: 2027-12	Actual (or anticipated) end date: 2027-12

Activities undertaken and outputs achieved
The After LIFE plan will be developed during 2027.

Planned output and time schedule

Type	Name	Deadline
Deliverable	After LIFE plan	31/01/2028

6.2. Main deviations, problems and corrective actions implemented

Rising costs

Perhaps the most significant challenges have been the substantial increase of fuel and material cost in the beginning of the project (due to Covid-19 pandemic and war between Russia/Ukraine). This affected the estimated budget in actions C1, C2, C3, C5 and C6. Entrepreneurs flagged for higher transportation- and work costs as the fuel costs increased vastly. To cover a part of the increased costs, CABVb, CABVn, CABJa, Sveaskog and Holmen have uplifted certain objects (C5, C6) and parts of river restoration stretches from the project and paid for them with other funds. All stretches and objects which have been financed by other means are stated explicitly in Annexes; 10.1 C1 restoration table, 10.4 C5 Road culverts and 10.5 C6 Dams. It has been challenging to motivate beneficiaries to seek additional funding, likely due to a perceived lack of control as prices surged, combined with insufficient time to revise, and plan the projects included in the application before submission.

For example, Sveaskog did not have sufficient staff at the time of the project application to thoroughly review the proposed objects for restoration. As a result, some of the proposed measures were not entirely aligned with how they would have preferred to address certain objects. This lesson has been carried forward to future projects, where Sveaskog now better monitor proposed measures before submitting project applications. This also leads to more accurate cost estimates and budgeting. The project management believe that all beneficiaries with remediating road culverts as action have the same conception and will not rush with handing in applications before all beneficiaries are aware of all assigned actions and the responsibility for the work to be carried out. CABVb encourage all partners so apply for other fundings as needed and handle as above mentioned, to be able to reach this projects objectives.

Organizational Shortcomings

At Sveaskog, the appointed accountant did not have the practical time to work on the project. Starting in 2024, Sveaskog will have a dedicated accountant responsible for the relevant actions. At CABVn, there was a delay in hiring a technical coordinator, and the unit working on the projects does not have the same level of experience or strategy of running LIFE-projects as CABJa and CABVb, thus have not establishing a "project office" with additional staff. The deputy project manager at CABVn has, at times, worked alone on the project due to colleague’s parental leave, temporary leave of absence, etc. At CABVb, the project manager has been on parental leave and sick leave without a formal substitute. The deputy project manager at CABJa took on the substitute role for overall management, but the absence of a dedicated person at CABVb was noticeable. Internally within the Swedish Transport Administration, a lack of resources such as project managers and specialists in land agreements has led to delays. Additionally, there is a desire from STA for enhanced collaboration and information sharing regarding actions in watercourses where STA's culverts

are located. This would ensure that the correct culverts are included in the project and appropriate solutions are chosen.

With the amendment for the project extension, there are no longer concerns about having enough time to complete the necessary actions to reach the targets before the project's end. However, motivating beneficiaries who lack dedicated personnel on-site, or where there is high staff turnover resulting in poor handovers, remains a challenge, as new staff members may not fully understand their role and the beneficiaries' responsibilities in Ecostreams.

6.3. Evaluation of Project Implementation

Please evaluate the following aspects of the project:
Methodology applied: discuss the successes and failures of the methodology applied.

Cultural Heritage Expert (A1)	
Successes:	A new approach which was trialled in this project, where instead of collaborative meetings with cultural heritage experts at each County Administrative Board, a cultural heritage expert (antikvarie) was employed within the project. This expert has been highly valuable as they are readily available to address additional questions beyond regular evaluations.
	The documentation of cultural objects removed during restoration is notably improved under this method. Having designated time for documentation has reduced the stress previously associated with this task.
	Outcome: Comprehensive documentation and equivalent assessment of all cultural heritage objects.
Failures:	It is uncertain whether the outcomes are dependent on the individual (person-dependent), and thus an evaluation with specialists in both natural and cultural environments is necessary to determine if this method can be generalized.

Joint Training in Action A5	
Successes:	The concept of joint training sessions fosters a shared understanding across counties.
Failures:	Logistically challenging to travel with large groups to the Västerbotten County Administrative Board (CABVb) as counties start restoration seasons at different times, making scheduling difficult.
	Needs for training vary significantly across counties.
Recommendation:	A flexible approach with calibration meetings in certain years and training in others might better meet varying needs.

Restoration Methodology in Action C1	
Successes:	Over 20+ years of experience has allowed the development of best practices, deepening the focus on analysing clearing processes, considering hydrological and geological conditions, and defining appropriate conditions and habitat types (hymotypes) for each site.
	By using bulldozers, work on gravel-dominated, transport-limited sections can be completed 4-7 times faster, though this varies case by case. Factors such as the size of the restoration area and the proportion of total costs for mobilization in shorter projects can influence efficiency.
	Improvements to the biotope mapping have been made, a crucial part of restoration planning.

Failures:	Measuring restoration solely in meters can be misleading, as watercourses within Natura 2000 areas vary greatly in size. Restoring 10 meters in a large river is far more resource-intensive than in a small stream.
Recommendation:	For future projects, restoration efforts would be more accurately measured in area (square meters) rather than linear meters.

Method for Spawning Gravel Distribution Using Helicopter in Action C2	
Successes:	In 2023, CABVn used a helicopter to place spawning gravel high up in a restored river stretch, with the expectation that natural processes will distribute the gravel downstream.
Next steps:	This method requires follow-up and will be included in the method evaluation in the Final Report.

Method for Remediating Road Culverts in Action C5	
Successes:	Previous expertise from the ReMiBar project (LIFE10NAT/SE/000045) was utilized; however, updated guidelines are needed to ensure culverts are adequately sized to allow passage at all flow levels and maintain structural integrity.
Failures:	Cost calculations and dimensions for the road culverts from the ReMiBar project were too low. Insufficient culvert dimensions can compromise passageways and infrastructure, potentially causing water to bypass the arch and degrade the structure over time.
Recommendation:	National-level guidelines are needed to guide stakeholders in these types of restoration measures. A discussion among stakeholders in Ecostreams to establish these goals and start guideline development is advisable.
	When addressing culverts on private properties, independent post-action inspections ensure contractors meet procurement requirements, minimizing risks that contractors may cut corners, which can compromise functionality.

Compare the results achieved against the objectives and expected results foreseen in the proposal

Action	Foreseen in the revised proposal	Achieved	Evaluation
C1, C2, C3, C4, C5, C6	Objectives: To improve the conservation status (Habitats directive) and the ecological status (WFD) of aquatic habitats and aquatic species of Community interest. This by restoring habitat quality, wetland and stream hydrology and stream connectivity. Consequently, green (blue) infrastructure will be enhanced. Expected results: Improved status in evaluations of Habitat directive and WFD after project end.	Unknown by now	Revisions of the status according to the Habitats Directive are conducted every six years and formulated in Article 17. The latest reporting was submitted to the EU on April 29, 2019, and is expected to be updated in 2025. Since the project ends in 2027, the results from the project will not be fully assessable until the reporting in 2031. Regarding the Water Framework Directive (WFD), the current management cycle is valid until 2027 and will be reclassified thereafter
C1, C2, C3, C4, C5, C6	Objectives: To enhance ecosystem structure and function of boreal rivers to improve resilience in a climate change perspective. Well-functioning, diverse ecosystems are expected to better withstand changes induced by climate change.	Where restoration have been carried out	The restoration enhances the water retention capacity of the landscape. This is already evident in the few follow-ups conducted under D1.1 Hydrology.
E1, F1	Objectives: To spread the results and experiences to regional, national, and international actors in the field of river restoration.	Yes, and will continue	Results are disseminated regionally, with knowledge exchanged nationally and internationally through participation in and organization of meetings, as well as presentations at both national and international conferences
D3	To preserve and further develop aquatic ecosystem services, aiming at an inter-connection of conservation action with sustainable development of local, green economies. The project areas are in sparsely populated regions with few opportunities for employment. Conservation actions will improve riverine habitats and enhance native fish populations,	Unknown	Ecosystem services will be monitored later in the project

	which will establish prerequisites for the development of sustainable (green) tourism.		
E1, E4, E6	To improve knowledge and awareness of river ecology and N2000-related values among stakeholders and the public through dialogue processes. Specifically, to enhance "water friendly" forestry practices and to avoid unwanted introduction of invasive species (signal crayfish). Within the extended efforts to increase public awareness special attention will be paid to school kids.	Partially	Meetings with stakeholders have been arranged, along with school stream activities, brochures, and seminars. However, several meetings remain to be conducted within the project, particularly concerning water-friendly forestry, and these will be evaluated at a later stage in the project.

Indicate which project results have been immediately visible and which results will only become apparent after a certain time period.

- The restoration activities under C1, C2, C3, C4, C5, and C6 are immediately visible; however, the effects on fish and other animal populations may take longer to manifest. For example, the reproductive cycle of the freshwater pearl mussel depends on the presence of host fish, and its juvenile mussels grow very slowly within the substrate, taking several years to become noticeable.
- Additionally, it is challenging to measure aspects such as people's perceptions and knowledge regarding Natura 2000, water conservation, etc. Although numerous meetings are held with the public, stakeholders, and experts, measuring direct effects remains difficult.

If relevant, clearly indicate how a project amendment led to the results achieved and what would have been different if the amendment had not been agreed upon.

- The amendment made it possible to secure the remaining permits in time and allowed for an additional field season for restoration activities, which will be especially needed in the counties of Västernorrland and Jämtland.
- The amendment also enabled adjustments to the reporting schedule and, consequently, the project's payments. Since 40% of the budget had not been utilized by the originally scheduled date for the midterm report, it was essential to adjust the reporting schedule to align better with the project's progress, ensuring a smoother reporting process and fund allocation.

Indicate the <u>effectiveness of the dissemination</u> activities and comment on any major drawbacks.

- Keeping up with the E-activities has been challenging, and these will be prioritized in the near future, hence difficult to assess its effectiveness.
- The target audience in the regions is limited due to low population numbers, and multiple projects and stakeholders are organizing events focused on natural

environments and forestry. Efforts will be made to collaborate clearly with other stakeholders to create effective dissemination, as a certain amount of people will only attend a certain number of meetings.
- Media: participation is maximized as much as possible.
- The website serves as an effective information channel.
- Social media channels is appreciated.

Policy impact

Describe project achievements which supported legislation (regional, national, EU)
The project contributes to:
- National environmental objectives (Flourishing Lakes and Streams, A Rich Diversity of Plant and Animal Life, and Thriving Wetlands)
- Agenda 2030 (Goal 6: Clean Water and Sanitation, and Goal 15: Life on Land)
- Norms set in the Water Framework Directive (WFD)
- Favorable conservation status according to the Species and Habitats Directive

Describe how the project delivered the results foreseen in the Grant Agreement form B3 "EU ADDED VALUE OF THE PROJECT AND ITS ACTIONS". In addition, if in the Grant Agreement Form B1, the project has been labelled as significantly climate related and/or biodiversity related, cover these elements as well.
- Restoration of 61 of 140 km/474 ha of river sections contributing to the achievement of the habitat directive objectives for habitats 3210 and 3260.
- Re-creation of 1953 of 466 spawning grounds for Atlantic salmon, trout and grayling spawning and at the same time addition of habitat for young pearl mussels.
- Creation of 56 of 45 sites with reintroduced dead wood to provide Scapania habitats. Not evaluated establishment yet (Foreseen target: 20 sites).
- Connectivity removed barriers at 14 of 22 dams and 82 of 199 road culverts remediated opening up c. 369 of 845 km of stream for aquatic fauna migration.
- Enhanced school pupils, 165 of 300 pupils, in awareness of aquatic conservation needs.

Not evaluated yet:
- Hydromorphological and/or connectivity impact remediated in >83 waterbodies in line with WFD.
- Increased population sizes and distribution of freshwater pearl mussel, due to restored habitat (ca. 300 ha new potential habitat after restoration) and the increased stocks of host fish (brown trout and Atlantic salmon). At project end, 10 000 adults and 1 880 000 juveniles in the project areas.
- Increased population size and distribution of otter, Atlantic salmon and Scapania mosses
- Risk reduced for introduction of alien species threatening noble crayfish.
- Increased ecosystem resilience in a climate change perspective (to be future monitored as more restoration takes place).
- Adaptive management plans for fish, enhancing sustainability of the fishery.
- Enhanced public awareness of aquatic conservation and the risk for invasive species.
- At least 400 landowners involved in forestry informed/educated of/in "water friendly" forestry.

6.4. Analysis of benefits

- **Environmental benefits**
  - **a. Direct / quantitative environmental benefits:**
    - i. i. 61 kilometers of restored watercourses, which is in line with the expected project progress. This contributes to achieving favorable ecological status in accordance with the Habitats Directive and the Water Framework Directive (WFD), specifically targeting habitat types 3210 and 3230. The restoration benefits species such as salmon, freshwater pearl mussels, brown trout, Microscapania, sculpin, and crayfish.
    - ii. 1953 spawning beds have been created. This exceeds the initial target, which may have been set too low in the application. Therefore, the creation of spawning beds will continue in alignment with restoration efforts under Action C1, as they play a crucial role in improving conditions for the target species—salmon and the freshwater pearl mussel's host fish, brown trout.
    - iii. 96 of 221 migration barriers have been removed, which is in line with the expected project progress. This work improves access to habitats for the target species.
  - **b. Qualitative environmental benefits**
    - i. Restored watercourses, spawning beds, and the removal of migration barriers—directly contribute to the qualitative improvements in ecosystem health. These efforts improve habitat connectivity and ecological functionality, leading to long-term benefits for key species, biodiversity, and overall water quality in the project area. The continued focus on creating favorable conditions for both the physical environment and biological communities demonstrates significant qualitative environmental improvements, promoting resilience in aquatic habitats.

What is the outlook for the targeted habitat type and/or species?
The outlook for the targeted habitat types is promising, as the restoration efforts are focused on re-establishing natural processes, which reduce the need for continuous management.

Overall, it is challenging to monitor trends as many of the target species have long reproductive cycles. However, for otters, the trend is positive in Sweden, and the action plan for otters has been concluded as the species has increased in Sweden and is no longer considered endangered. The otter population has particularly recovered after the ban on environmental toxins such as PCB. Additionally, measures taken by the STA, such as road crossings for medium-sized mammals, have contributed to reducing otter mortality. Conservation efforts focused on otter habitats around watercourses and wetlands have also had positive effects.

For salmon, spawning and nursery areas are being secured, and long-term management plans are in place to sustain fish resources in the watercourses. However, it should be noted that salmon management in the marine environment is still a matter of debate, which the project cannot influence.

Substrate for Microscapania is being introduced into the system through action C4, and restoration efforts ensure the future supply of dead wood by re-establishing natural processes in the watercourses.

As for the freshwater pearl mussel, it is still too early to draw conclusions. If the project successfully restores hydrology and expands suitable habitats for the freshwater pearl mussel, which have been lost due to previous canalization, the outlook is promising. With the gained knowledge on genetics, host fish relationships, juvenile reintroductions, and the relocation of strong populations, we can, in potential future conservation needs, understand what measures are needed and where. The hope is that the restoration and natural processes will take over, creating favorable conditions for the freshwater pearl mussel and thus no future actions needed.

Did the project eliminate the threats defined in Form B2d of the Grant Agreement?

Threat 1: Altered river morphology and flow regime due to historic timber floating activities are being *eliminated* via restoration of watercourses.

Threat 2: Forestry practices *remains* as commercial forestry is one of Sweden's largest industries. However, the meetings in E6 can contribute to a continued discussion with the forest companies of best practice forestry in riparian zones.

Threat 3: Fragmented Connectivity are being *eliminated* as action C5 and C6 continues.

Threat 4: Overfishing - management of fish populations will be *eliminated* in the water systems as the Fisheries Management plans in action C8 takes place. However, as mentioned above, the Baltic Sea management of anadromous fish species cannot be taken account for in the management plans of the rivers. Consequently, the threat remains even though the project implements management plans.

Economic benefits; state the number of full time equivalent (FTE) jobs created, showing a breakdown in qualified/non-qualified staff.

Through large-scale measures requiring external assistance over several years, the project creates job opportunities for contractors in the project areas. Additionally, site supervisors are employed each field season to oversee the restoration work. Full-Time Equivalent (FTE) has not been analyzed in this report.

Social benefits (e.g. positive effects on employment, health, ethnic integration, equality and other socio-economic impact etc.).

To be evaluated in Final Report.

Replicability, transferability, cooperation… State the project's likelihood of replication (high/low/zero).

A network for the installation of road culverts is a desire to establish within the project. By sharing effective working methods among stakeholders and developing guidelines, it could have a ripple effect and help prevent improperly installed culverts. The goal is to spread information nationally. If guidelines can be developed, the likelihood of project replication is high, as the need to replace obstructive road passages remains significant.

Best Practice lessons: briefly describe the best practice measures used and if any changes in the strategy employed could lead to possible adjustment of the best practices.
CABVb and CABJa are part of a national network that is involved in developing best practices for the restoration of watercourses that have been cleared for floating timber. The methods are used in Ecostreams and evaluated annually to continuously improve and develop the work.

Innovation and demonstration value: Describe the level of innovation, demonstration value added by EU funding at the national and international levels
The work under C4, dead wood for Microscapania, is a pilot component of the project. If the results prove to be positive, there will definitely be demonstration value in these methods. Additionally, the cage infestation conducted by SAA under C7 also holds demonstration value. The method of collecting glochidia masses, which are then combined with host fish, allows the fish and mussels to be kept in captivity for a shorter duration than regular cage experiments. However, the timing of the mussels' reproductive cycle is crucial, and more trials in each watercourse are needed to determine when each population becomes pregnant and ready to release glochidia. Furthermore, the host fish trials at KAUs are an incredibly important basis for nature management methods.

Policy implications
CABs are likely to work extensively with the new restoration legislation, and the results and methods from the project will serve as the foundation for the plans. The CABs also contribute knowledge to future action plans within the restoration legislation

7. Key Project-level Indicators

The work is proceeding in line with the set KPIs, with no significant deviations from the established goals. However, KPI 11.1, which aims to reach 35,000 unique visitors to the website by the end of the project, may be set too high, as there are currently 6,812 page visits and 1,242 unique visitors.

Similarly, the target for school pupils, set at 300, may also be difficult to achieve, as well as the goal for professionals and experts in the field, which is set at over 400 individuals trained in best practice forestry methods for the protection of aquatic habitats.

8. Comments on the financial report

8.1. Summary of Costs Incurred

Summary of cost incurred 01/01/2021 – 30/04/2024 for all partners in comparison with the approved budget eligible for EU contribution in the Grant Agreement:

PROJECT COSTS INCURRED				
	Cost category	Budget according to the grant agreement in €*	Costs incurred within the reporting period in €	%**
1.	Personnel	5 069 774	2 234 297,68	44%
2.	Travel and subsistence	548 535	232 175,92	42%
3.	External assistance	8 641 152	2 568 205,22	30%
4.	Durables goods: total non-depreciated cost	1 288 243	16 408,30	1%
	- Infrastructure sub-tot.	*1 172 961*	*4 429,97*	*0%*
	- Equipment sub-tot.	*115 282*	*11 978,33*	*10%*
	- Prototype sub-tot.	-	-	-
5.	Consumables	131 524	92 752,21	71%
6.	Other costs	59 685	54 332,63	91%
7.	Overheads	954 434	363 866,00	38%
	TOTAL	**16 693 347**	**5 562 037,96**	33%

*) If the Agency has officially approved a budget modification through an amendment, indicate the breakdown of the revised budget. Otherwise, this should be the budget in the original grant agreement.
**) Calculate the percentages by budget lines: e.g. the % of the budgeted personnel costs that were actually incurred

So far 33% of the total budget is consumed which is in line with the progress at an aggregated level. By 30/04/2024 we are about halfway through the project if we see to time left. The project ends 31/12/2027. For the moment we do not see that any official budget modification needs to be made. See Annex 10.21 Consolidated Financial Statement and Annex 10.22-10.47 for Individual Financial Statements per beneficiary that shows more detailed information.

If we see to the progress in the individual costs categories “Personnel”, “Travel”, “External Assistance” and “Consumables” they are in line with the progress in ongoing actions, according to the budget development. In the cost category “Durable goods” there has been less costs consumed compared to budget at this stage. This is because costs that was originally budgeted as “Infrastructure” and “Equipment” under “Durable goods” now is taken mainly as costs in “External Assistance” and to a minor extent in “Consumables”. The reason for this is due to depreciation rules within the partner organizations, that partners does not depreciate the costs that was initially budgeted to be depreciated- hence they are viewed as costs in “External assistance” and “Consumables” according to Program rules.

All Infrastructure costs are budgeted in action C5. As mentioned in chapter 6.1, C5 - connectivity – Road culverts, we are slightly behind schedule regarding work in action C5. This contributes for less costs in “Infrastructure” and “External assistance” (due to the view on depreciation).

The shift of costs from Durable goods combined with increased costs (inflation, fuel, and materials) puts a bigger strain on the budget for “External Assistance” and “Consumables”.

Regarding “External Assistance” we have already addressed some increased costs by funding objects in action C5 (budgeted as “Infrastructure”) by other means, see chapter 6.1, C5 - connectivity – Road culverts, table 4. This contributes to the fact that we still are on track in holding the budget in “External Assistance”.

Costs incurred in the cost category “Other direct costs” is higher than foreseen. The main reason for this is higher costs for Court fee permits and overall, many small differences between budget and outcome. We also have some costs that were not in the original budget, for example, garage for equipment (12 711 EURO), drone software (939 EURO) and costs in action E4, F1 and F2 (6 035 EURO). Total of 19 685 EUR, which compared to the whole project budget in “Other direct costs of 59 685 EURO equal around 33 % of costs that was not originally budgeted in those actions alone. All these costs have been necessary for the project outcome and can be accommodated within the existing budget, see annex 10.63 Other costs. not budgeted, example, for an indicative summarization of these costs.

We do not see that an official budget modification must be made and that our estimate is to stay within the flexibility of the 20 % limit for “Durable Goods”, “External Assistance”, “Consumables” and “Other direct costs” that are mainly affected by the deviations from the budget.

We have so far only made changes by moving budget posts between partners, except for work in Action A1, concerning work in cultural heritage by Senior officer cultural history, where budget also has been moved from Action A2 and A3 to Action A1 (169 344 EURO), see Annex 10.48 Budget moved between action A1, A2 and A3. Originally the budget for cultural history was distributed to all three County Administrative Boards but all budget was moved to CABVn because the person performing the work with cultural heritage had his employment there.

No costs have been moved between different budget categories that effect budget transfers within the limit of 20 % budget transfers of the overall eligible costs between the different budget categories. This is shown in the consolidated cost statement for the project, 10.20. Consolidated Financial Statement 240430, which indicates that the budget shift is 0 %.

The deviations can be handled within the existing budget.

We do not see that we will have a problem with the “2% rule” since the sum of Ecostreams public partners own contribution to the project exceeds the sum of the salary costs charged by them (by at least 2%) for personnel costs not considered additional. Since the partner SwAMs own contribution to the project is budgeted to 5 384 891 EURO alone this will not be an issue in the project, see Annex 10.59 Decision SwAM Financing Ecostreams for more details.

8.2. Accounting system

The beneficiaries accounting systems are described in this section. Ecostreams fifteen beneficiaries have been divided into six different groups, based on their type of organization:

- County Administrative boards (CABVb, CABVn, CABJa)
- Municipalities (Ragunda, Strömsund, Åre)
- National Administrative Authorities (SwAM, STA)
- Research and development (KAU, TUM)
- Private Forest Companies (Billerud, Holmen, SCAa, Svea Skog)
- Non-profit Organization (SAA)

The individual presentation of their accounting system can be viewed in annex 10.49-10.58.

County Administrative Boards (Beneficiaries no 1-3)

CABVb, CABJa, CABVn

The accounting systems used by all the County Administrative Boards are Unit4 ERP and Visma Proceedo. Unit4 ERP is used for time registration, travels, vacation etc. For ecommerce including supplier invoice management, the Visma Proceedo system is used.

Approving costs: Every employee can make a purchase, but it must be approved by the manager at the operative department. When the invoice is registered in the accounting system the person who made the order receives an e-mail from the system that says they have a new invoice to handle. They then register the right account, project code etc. in the system. When this is done the invoice goes to the manager for attestation. Upon attestation the invoice is recorded in the accounting system and paid. For CABVb, CABVn and CABJa Proof of payment is stored at the local finance department at the respective County Administrative Board.

Procurement/ selection procedure: The Public Procurement Act is regulating procurement at all County Administrative Boards. All County Administrative Boards also have their own procurement policy. There are some differences between the County Administrative Boards regarding limits for reporting purchases to the procurement coordinator. For CABVb, CABVn and CABJa, purchases must be reported to the procurement coordinator when it falls outside the scope of an existing procurement contract and exceeds SEK 100,000.

Time registration: The system used for time registration is the electronic system Unit4 ERP. There are different versions of this system: one where only absence and holidays are attested by manger, and another version where all time (absence, holidays and worked time) is attested by manager. In both versions the employees record and approve their worked hours and absence in Unit4 ERP. The employees approved their absence and worked hours in Unit4 ERP, and the managers attested timesheets via email. CABVb, CABVn and CABJa uses electronic attestation of time sheets (by employee and their manager).

The time is registered daily in the time unit hours. Every employee must report their time at least once a week. Then it goes to the manager for attestation. All time is registered; actual time worked, sick leave, holiday etc. Time reporting is conducted monthly, in the same month

that the salary is paid. The actual accounting is carried out a few days into the following month. The project codes that each employee enters for the time reports are debited with the salary costs, including hours.

Municipalities (Beneficiaries no 4-6)

Ragunda, Strömsund, Åre

Ragunda and Åre have not reported any costs yet. Their activities are planned to be executed later in the project. Since they have no reported costs, they have not reported any information about their accounting systems either. This information is planned to be included in the final report.

The accounting system used by Strömsund is Ådata. Visma Window Personec P is the payroll system used for payroll runs, reports, employment contracts, travels, vacation etc. For ecommerce including supplier invoice management, the Visma Proceedo system is used.

Approving costs: Every employee can make a purchase, and it must be approved by the manager at the operative department. All municipalities have an order of delegation which is strictly followed when authorizing payment. When the invoice is registered in the accounting system the person who made the order receives an e-mail from the system saying that they have a new invoice to handle. They then register the right account, project code etc. in the system. When this is done the invoice goes to the manager for attestation. After the attestation the invoice is recorded in the accounting system and then paid.

Procurement/ selection procedure: All the municipalities follow The Public Procurement Act. For instance, every municipality has a procurement coordinator. Each beneficiary also has its own internal policy guidelines on how to do purchases and what to consider securing an effective and economic selection procedure. Normal practice is to use an already existing framework contract. If a contract is not available for the task, the purchaser must follow The Public Procurement Act as well as their internal procurement rules.

According to Strömsunds guidelines for direct procurement purchases under 100 000 SEK does not have any requirements for written documentation. Purchases above SEK 100 000 must be documented, and at least three suppliers must be contacted.

Time registration: For Strömsund Time registration within the Ecostreams project is made by manually completed timesheets. The time is registered monthly in the time unit hours, the time report is printed, and the manager manually signs them in the beginning of the following month. The actual accounting is carried out at the end of the following month.

National administrative authorities (Beneficiaries no 7-8)

SwAM, STA

The accounting system used by SwAM is Agresso/Unit 4 ERP. Agresso is used for time registration, travels, vacation, invoices, and management etc.

The accounting system used by STA is Agresso/Unit 4 ERP and the invoice management system CDI. All invoice management and certification of costs takes place in CDI, it is then transferred to Agresso/Unit4 where payments are made from and where the accounting is saved.

Approving costs

Every employee in SwAM can make a purchase. The employee has the responsibility to register project code etc. in the system. The head of unit receive the invoice for attestation before the invoice is recorded in the accounting system and paid.

STA´s invoices are received electronically in the invoice management system CDI where it is distributed to the person who placed the order and who is listed as the recipient on the invoice. After delivery check and attestation, the invoice goes to the manager for approval and then payment.

Time registration

SwAM register time daily in the electronic system Unit 4 Agresso/Unit4 ERP. All worked time and absence is registered in the system. All employees are required to report their time at least once a week and will get an automatic reminder by e-mail if this is not done. When the week is done the employee mark the week as ready. Then the manager electronically certifies the registered time. SwAM have electronic attestation of worked time and absences.

Not applicable for STA that doesn’t report personnel costs in Ecostreams.

Procurement/selection procedure

Both SwAM and STA is obliged to follow the Public Procurement Act. They also have their own respective procurement policies to follow. Personnel in SwAM must contact the procurement coordinator if the purchase is above SEK 100,000 to secure that the procedure is correct.

Research and development (Beneficiaries no 9-10)

KAU, TUM

The accounting systems used by Karlstad University is Raindance.

The accounting system used by TUM is SAP Financial Management System.

Approving costs:

Every employee in KAU can make a purchase in Raindance, but it must be approved by the manager at the operative department. Heads of department can approve invoices up to 250 000 SEK. Higher amounts are approved by the faculty dean.

At TUM expenditure authorization, review, and approval for purchases are conducted by the head of the chair. Payments are approved through a dual-control (four-eyes) verification process conducted by the chair management within the SAP system, after which they are forwarded to TUM's finance department for processing.

Procurement/ selection procedure:

KAU is a government agency that is obliged to follow The Public Procurement Act (LOU) and the university's procurement policies. It also means that the framework agreements that exist locally, regionally, or nationally must always be used if possible, depending on the nature of the purchase.

The limit for direct procurement is 700 000 SEK but direct procurements over 100 000 SEK must be documented. The procurement function at KAU should always be contacted if the procurement exceeds 100 000 SEK.

TUM adheres to all applicable procurement regulations in Germany, including specific guidelines for Bavaria regarding value thresholds. Generally, the threshold for direct procurement is set at €1,000. For any procurement exceeding this threshold, a procurement record must be prepared, which includes a comparison of at least three offers, the invoice, the proposals, and a justification for the selected offer based on best value for money or lowest price and ensuring "absence of conflicts of interest." This documentation must be retained alongside the invoice to comply with audit and regulatory requirements.

Time registration:

Karlstad University has no time accounting system. Kau uses manual time reports.

TUM does not have a centralized digital timekeeping system. For the LIFE project, employee working hours are recorded monthly in a legally compliant manner, with each employee entering their hours into a timesheet, which is then reviewed and countersigned by their supervisor.

Private Forest Companies (Beneficiaries no 11-14)

Billerud, Holmen, SCAa, Svea Skog

Holmen have not reported any costs in the project yet. They have planned activities that are to be executed and financed by the project further ahead. Since they have no reported costs, they have not reported any information about their accounting systems. This information will be included in the final report when they also have reported costs in the project.

The accounting systems used by Billerud Skog och Industri AB is Agresso and by AB Marma Skog 76 Edison accounting. The original invoices are taken into Basware under Billerud as the regular business is carried out there. Transactions are transferred to Agresso, where we then invoice the costs to the landowner AB Marma Skog 76. Marma has no forestry operations of its own.

SCAa work in a few different systems. For approving and paying invoices they use an invoice tracking system called Invoicetrack. All invoices are then sent to SAP where they have all their accounting and data. For time registration and travel they use a system called Agda. All invoices for SCAa are processed and cleared in Invoicetrack if the invoice has the correct reference to different projects etc. The invoice is processed with an account and an order number specific to different projects. It is then transferred to SAP where they can see the cost on the order number for the project. They can also see the invoice and check that it has the correct reference according to the project instructions in SAP.

The accounting system used by Sveaskog is Microsoft D365, ERP and ExFlow for the incoming vendor invoices.

Approving costs: For Billerud, SCAa and Svea Skog every employee can make a purchase, but it must be approved by the manager at the operative department. Depending on the amount additional approvals may be necessary in their respective organization.
For SCAa production managers are the only ones authorized to handle resource acquisition.

Time registration: Not applicable since Billerud, Holmen and Svea Skog does not report personnel costs in Ecostreams and SCAa has not reported any personnel costs in the project yet.

Procurement/selection procedure: Billerud, SCAa and Svea Skog are not obliged to follow The Public Procurement Act. They do however have internal procurement policies based on securing sufficient quality for the purpose at the lowest possible cost. All companies value high experience with similar projects with good outcome and local knowledge from the area from their contractors.

Regarding resource acquisition SCA has a 28-page checklist that includes an assessment of suppliers based on various criteria, including safety, working conditions, and quality that must be met if a purchase is to be made.

Time registration: Not applicable for Billerud and Svea Skog since they have no budgeted personnel costs. SCAa haven't reported personnel costs yet. Since they have no reported personnel costs, they have not reported any information about their time registration policies and systems.

Non-profit Organisation (Beneficiary no 15)

SAA

SAA uses the BrilJant accounting system which consists of the following systems:

- Business accounting. Including customer and supplier ledgers
- Project reporting
- Time accounting
- Salary
- Expense - Accounting of Company cards

Approving costs: Supplier invoices are sent digitally to the central finance department. The person concerned checks the invoices, accounts with "account-department-project number, and certifies". Employees who have company cards report these in the Cost System.

Time registration: The employee must report at all worked time. Employees send their timecard on the first working day after the end of the month. The manager certifies the timecard on the third working day after the end of the month. Everything is done digitally. Hourly employees report their working hours manually in Excel templates. The timecard is then certified by their chief.

Procurement/selection procedure: SAA are not obliged to follow The Public Procurement Act they do however have guidelines in their selection procedure:

- The association's staff strive for cost efficiency.
- In case of major purchases, the responsible administrator strives to obtain offers from at least three different suppliers for the product in question and based on this information, take a decision on the purchase.
- It is not always the case that cheapest is best. It must be decided on a case-by-case basis and weighed against any other business that exists with the relevant party. Long-term relationships can often be fruitful and provide discounts across a wide range of goods and services.
- Environmental considerations are considered when choosing a supplier.

Reference to the LIFE-project Ecostreams and procedure of approving costs

All beneficiaries are informed, and regularly reminded, about the importance of ensuring that the invoices contain a clear reference to the project. In connection with the order the supplier is asked to mark the invoice with the project reference. Unfortunately, it happens that the project reference is missing. In these cases, the invoice is permanently marked with the reference in the invoice processing systems and accounting systems. The persons responsible for the project and the financial administrator at each beneficiary ensures that the invoices are marked with the project reference before registering the cost into the Individual Financial Statement of the beneficiary.

Project codes in the beneficiaries accounting system

Beneficiary no	Beneficiary short name	Project codes in the accounting system
1	CABVb	42307, 42305
2	CABJa	4190100;4190124
3	CABVn	41300033
4	Ragunda	7235
5	Strömsund	21001
6	Åre	MI262101
7	SwAM	40323
8	STA	Åtgärd 19247, uppdrag 169402***, 175185***, 179509***, 182248***, 186561***
9	KAU	6278
10	TUM	5103700, 54736, 54756, 42941
11	Billerud	Agresso 810000, 810001, Edison ID 01000
12	Holmen	011047
13	SCAa	11231, 1402084530
14	Svea Skog	53190051
15	SAA	10194*

8.3. Partnership arrangements

The first pre-financing from the European Commission was received by the Coordinating beneficiary on 20/10/2020. The transactions of the first pre-financing between the coordinating beneficiary and the associated beneficiaries were executed 16/11/2021 for all associated beneficiaries except for the partner TUM which was executed 22/02/2022, as the Partnership Agreements were set and signed. Details about the transactions between beneficiaries can be found in annex 10.64 Distribution of EU funds between beneficiaries.

Contribution from Associated beneficiary SwAM are intended to cover costs for the projects three County Administrative Boards (CABVb, CABJa and CABVn), see Annex 10.59 Decision SwAM Financing Ecostreams for SwAM´s decision. This contribution is transferred to Coordinating Beneficiary CABVb on a yearly basis. Parts of the transactions are thereafter transferred to CABJ and CABVn according to plan. Thus far funds for 2021, 2022 and 2023 have been distributed among the County Administrative Boards. In the Consolidated Financial Statement all SwAMs contribution that has been transferred to CABVb is noted as Beneficiary's own Contribution for SwAM with a total of 2 692 445 EURO (450 000+1 121 222+1 121 223). This contribution has been distributed among the three County Administrative Boards by CABVb which has also forwarded CABJa and CABVn parts of SwAM´s contribution. For details about the distribution between the County Administrative Boards see annex 10.60 Distribution of SwAM contribution between County Adm Boards. This way of presenting SwAM´s contribution leads to the Consolidated Financial Statement not being in balance between costs and income at this stage. This will be sorted in the future final financial report.

See Annex 10.61 Contribution SwAM, clarification of distribution in the Cons Fin Statement, for further explanation and cross reference between SwAM´s Financing decision, the distribution of SwAMs contribution between the County Administrative Boards and how it is reported in the Consolidated Financial Statement.

8.4. Certificate on the financial statement

The Coordinating Beneficiary is aware of the requirements in Art. II.24.2. The process of subcontracting an auditor is ongoing. We will either appoint an internal auditor from one of the other County Administrative Boards or use our framework agreements for financial services to appoint an auditor. The project partners affected by the requirements of an audit, according on how the budget is divided at this stage, is CABVb, CABJa and CABVn.

8.5. Estimation of person-days used per action

Estimation of person days used per action 01/01/2021 – 30/04/2024 for all partners in comparison with the approved budget in Grant Agreement:

Action type	Budgeted person days	Estiamted % of person days spent
A 1 Pre-restoration: compilation and completion	135	342%
A 2 Information to local stakeholders, permits and licenses from landowners	645	170%
A 3 Elaboration of work plans	315	55%
A 4 Public procurement	130	40%
A 5 Training of foremen and excavator operators	170	122%
A 6 Final audit		
C 1 Habitat restoration - Restoration of stream sections	5275	35%
C 2 Habitat restoration - Stream spawning sites	111	2%
C 3 Habitat restoration - Wetland hydrology	79	20%
C 4 Habitat restoration - Dead wood habitats in the riparian zone	45	163%
C 5 Connectivity - Road culverts	151	123%
C 6 Connectivity - Dams	192	53%
C 7 Species - Freshwater pearl mussel reintroduction	1626	62%
C 8 Management plan - Sustainable fish populations	380	6%
D 1 Hydromorphology and habitats	150	62%
D 2 Species - Freshwater pearl mussel, salmon and Scapania species	307	10%
D 3 Ecosystem functions	50	0%
D 4 Socio-economic impact	0	0%
D 5 Project performance indicators (KPI)	25	0%
E 1 Dissemination planning and execution	735	16%
E 2 Replicability and transferability plan	37	6%
E 3 Demonstration areas	300	4%
E 4 Project organised meetings, excursions, workshops, seminars etc.	785	25%
E 5 Final seminar	99	0%
E 6 Dialogue on water forestry interactions and on invasive species	225	0%
F 1 Project management by County Administrative Board of Västerbotten	2593	33%
F2 Project organisation	1770	83%
F 3 After-LIFE Plan	10	0%
TOTAL	**16340**	**49%**

See Annex 10.62 Person Days Spent 240430 for a more detailed summarization of person days spent distributed per partner and action.

Comments on major deviations:

Overall: We have consumed 49 % of budgeted person days spent but only consumed 44 % of the budgeted personnel costs in Euro. We see this mainly because of the currency conversion SEK to EURO. The budget is in EURO and 14 out of 15 partners have SEK as their currency. Fluctuations in the currency conversion leads to lower costs in EURO

compared to budgeted person days spent in EURO, due to a high SEK to EURO conversion.

A1: Pre restoration: compilation and completion: This action has been more time-consuming than budgeted as explained in chapter 6.1 – A1. The action is almost completed, and the increased cost will be accommodated within the existing total project budget.

A2 Information to local stakeholders, permits and licenses from landowners: This action has been more time-consuming than budgeted. The project management considers it very important that the work in Ecostreams is done correctly and in accordance with laws and regulations thereof the high number of person days spent. However, the increased cost will be accommodated within the existing total budget of the project.

A5 Training of foremen and excavator operators: This action has been more time-consuming than budgeted. The increased cost will be accommodated within the existing total project budget.

A-actions overall: We have consumed 595 more days than budgeted if we see to all A-actions combined. This means that we must allocate more person days/budget from other actions to compensate for the lack of person days/budget left in the A-actions. Especially since we have more work in action A1, A2, A3 and A5 that must be made, see chapter 6.1 Technical progress, per action for status in respective A-action. Since the total consumption of person days spent (49 %) and total personnel cost in EURO (44 %) is in balance we see that this can be handled within the existing personnel budget, but the future development will be monitored.

C2 Habitat restoration – Stream spawning sites: This action has been conducted as part of action C1. Person days spent has not been separated to action C1 for the work that has been made in action C2 so far. The action planned numerical output on created spawning sites has already been met. Since the action is conducted as part of action C1 time will be put on this action as well to balance this out.

C4 Habitat restoration – Dead wood habitats in the riparian zone: This action has been more time-consuming than budgeted. The increased cost will be accommodated within the existing total project budget.

C5 Connectivity - Road Culverts: We have restored slightly under 50 % of the road culverts so far. This action has been more time-consuming than budgeted and there are still work to be done in this action. Our assessment is that the increased costs will be accommodated within the existing total project budget, but the development will be monitored.

F2 Project Organisation: Parts of the costs reported under action F2 is reported under wrong action and will be corrected and moved to mainly C actions, particularly action C1. This mean that action F2 is better balanced towards the budget then presented in this midterm, but the future development will be monitored.

9. Envisaged progress until next report

The next report is Progress Report 2, due on January 31, 2026. Based on the results available today and the goals set for the project's completion, interim targets have been established for the period leading up to January 31, 2026, when the progress report is due. These interim targets are summarized in Table 21, which also outlines the deliverables and milestones that will be fulfilled during the period between this report and the next. Working with goals and interim targets, rather than GANTT charts, best describes our approach, as it is challenging to capture the intensity of various activities throughout the year.

Table 21. Envisaged progress until next report and deliverables and milestones met under the period.

Deliverable/ Milestone (D/M)	**Action**	**Interim targets to achieve until Progress report no 2**
	A1	All cultural heritage reports completed
	A1	All mapping prior to river restoration completed
	A2	All permits handed in to court
M	A3	Work plan 2025 completed
D	A3	Work plan 2025
	A5	All joint courses completed. Depending on om need and budget, additional courses may be arranged.
M	A5	Fourth course for excavator operators and foremen/coordinators executed
	C1	Target: Restored 125 km, 85% of the goal
M	C1	50% of selected river sites restored
	C3	100% of wetlands restored
M	C3	100% of the ditches selected for plugging has been fixed
	C5	At least 170 road culverts remediated, or 85% of the connectivity goal achieved.
M	C5	50 % of the road culverts restored
	C6	At least 19 dams removed, or 85% of the connectivity goal achieved
M	C8	All fish population Management plans completed
D	C8	Fish population management plans
	D1	Hydrology: All pre- and 1st monitoring after restoration completed
	D1	Hydromorphology: A plan for ADCP-raft complete
	D1	85% of drone monitoring sites mapped pre-restoration
	D1	Spawning bed monitoring started
	D2	Glochidia post-restoration monitoring started
	D2	Plan for extra Otter monitoring complete
	D3	Documents for hiring a consultant started
	D4	Documents for hiring a consultant started
	E2	All demonstration areas started
D	E3	Replicability and transferability plan
	E4	Excursions for the public started in all three counties
	E4	Excursions for the newly arrived immigrants started in Åre-, Strömsund and Ragunda municipalities
	E6	First physical and digital meetings completed
M	E6	Forestry dialogue - first meeting

10 Annexes

10.1 C1 restoration table
10.2 C2 Spawning sites
10.3 C4 Scapania sites
10.4 C5 Road culverts reporting table.
10.5 C6 Dams
10.6 C7 Report on DNA analysis
10.7 C7 2022 host fish studies
10.8 C7 2023 host fish studies
10.9 E1 Project brochure
10.10 E1 Ecostreams in media
10.11 E1 Newsletter nr1
10.12 E1 Newsletter nr2
10.20 Consolidated Financial statement 240430, signed
10.21 Consolidated Financial statement 240430
10.22 Indivudual Financial Statement CABVb 202404, signed
10.23 Indivudual Financial Statement CABVb 202404
10.24 Individual Financial Statement CABJa 240430, signed
10.25 Individual Financial Statement CABJa 240430
10.26 Certificate for Nature and Biodiversity Projects CABJa 240430, signed
10.27 Individual financial statement CABVn 240430, signed
10.28 Individual Financial Statement CABVn 240430
10.29 Certificate for Nature and Biodiversity Projects CABVn 240430, signed
10.30 Individual Financial Statement KAU 240430, signed
10.31 Individual Financial Statement KAU 240430
10.32 Individual Financial Statement STA 240430, signed
10.33 Individual Financial Statement STA 240430
10.34 Individual Financial Statement SwAM 240430, signed
10.35 Individual Financial Statement SwAM 240430
10.36 Individual Financial Statement Strömsund 240430, signed
10.37 Individual Financial Statement Strömsund 240430
10.38 Individual Financial Statement TUM 240430, signed.
10.39 Individual Financial Statement TUM 240430
10.40 Individual Financial Statement Billerud 240430, signed
10.41 Individual Financial Statement Billerud 240430
10.42 Individual Financial Statement SCAa 240430, signed
10.43 Individual Financial Statement SCAa 240430
10.44 Individual Financial Statement Svea Skog 240430, signed
10.45 Individual Financial Statement Svea Skog 240430.
10.46 Individual Financial statement SAA 240430, signed
10.47 Individual Financial statement SAA 240430
10.48 Budget moved between action A1, A2 and A3
10.49 Accounting System CABVb, CABJa, CABVn
10.50 Accounting System Strömsund
10.51 Accounting System SwAM
10.52 Accounting System STA
10.53 Accounting System KAU
10.54 Accounting System TUM
10.55 Accounting System Billerud

10.56 Accounting System SCA
10.57 Accounting System Sveaskog
10.58 Accounting System SAA
10.59 Decision SwAM Financing Ecostreams
10.60 Distribution of SwAM contribution between County Adm Boards
10.61 Contribution SwAM, clarification of distribution in the Cons Fin Statement
10.62 Person days spent 240430
10.63 Other costs, not bugeted, example
10.64 Distribution of EU funds between beneficiaries

List of deliverables

Name of deliverable	Action	Deadline	Achieved
Plan for training sessions/seminars	A5	2021-05-15	✓
Work plan 2021	A3	2021-05-31	✓
Course program	A5	2021-06-15	✓
Dissemination plan	E1	2021-12-31	✓
Report on baseline key indicators	A1	2022-03-30	✓
Monitoring protocol	D2	2022-03-31	✓
Monitoring protocol	D1	2022-03-31	✓
Plan for forestry dialogue	E6	2022-03-31	✓
Work plan 2022	A3	2022-04-15	✓
First three notice boards up	E1	2022-05-30	✓
First brochure produced	E1	2023-02-28	✓
Action C5 and C6 progress report	C5	2023-03-31	?*
Work plan 2023	A3	2023-03-31	✓
Action C5 and C6 progress report	C6	2023-03-31	?*
Action C7 progress report	C7	2023-03-31	✓
Action C1 and C2 restoration progress report	C1	2023-03-31	?*
Action C1 and C2 restoration progress report	C2	2023-03-31	?*
Work plan 2024	A3	2024-03-31	✓

* See thoughts about these deliverables under Administrative part, Deliverables in BUTLER