



LIFE Project Number
LIFE 15 NAT/DK/000948

Progress Report (second)
Covering the project activities from 30/09/2017 to 31/12/2018

Reporting Date
28/02/2019

**Actions for improved conservation status of the Thick Shelled River
Mussel (*Unio crassus*) in Denmark**

- UC Life Denmark -

Data Project

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(%) of eligible costs	60,0

Data Beneficiary

Name Beneficiary	Næstved Municipality
Contact person	Mrs. Sofia Mulla Kølmeel
Postal address	Rådmandshaven 20, 4700 Næstved, Denmark
Telephone	+ 45 21480937
Fax:	-----
E-mail	somul@naestved.dk
Project Website	http://www.merelivisusaen.dk and http://www.uclife.dk

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2. List of abbreviations

NK = Næstved Municipality / Næstved Kommune

CB = Coordinating beneficiary

GA = Grant Agreement

PM = Project Manager

3. Executive summary

3.1 Assessment as to whether the project objectives and work plan are still viable.

This is the second progress report of the UC Life Denmark project concerning reintroduction and management of the Thick Shelled River Mussel (*Unio crassus*) in Denmark.

During the first 28 months of the project we have focused on gaining knowledge about the host fishes and their susceptibility to glochidia-infection. Many resources have also been used on involving landowners and interest groups in the project and its technical issues and unfortunately subproject 2 has been put on a permanent hold. Therefore we have presented an alternative project plan to EASME in the autumn 2018 and a proposal for an amendment is elaborated further in this progress report (section 3.2.).

The overall project progress is illustrated in a Gantt chart (annex 2).

With the proposed amendment we still believe that the overall project objectives and targets are valid. This will be obtained by extending the project site in subproject 1 and by including additional projects sites in another SAC hosting the largest population of *Unio crassus* in Denmark.

3.2 Problems encountered

Status on subproject 2 (Lower River Suså)

In September 2018 we informed EASME about the project status due to severe problems in fulfilling the project's objectives in subproject 2 in Lower River Suså. Below we have summarized the communication adding some supplementary notes. The communication forms the basis for our proposal for an amendment which we intend to submit during the spring 2019.

At the latest monitor visit in March 2018 we discussed several issues regarding the technical feasibility studies and progress with obtaining the necessary landowner agreements. As mentioned in your letter dated May 7th 2018 our monitor must be kept informed about the process. Due to actual and potential problems encountered for subproject 2 we therefore met with our monitor (Mr. Bent Jepsen) on September 7th 2018 to discuss possible solutions.

The project is facing mayor challenges with regard to the subproject 2 in Lower River Suså.

Despite lengthy efforts, it has so far not been possible to find a compromise that is acceptable to the landowners and which is satisfactory in relation to creating 4-5 km good habitat for the Thick Shelled River Mussel. The landowner at the major barrier at Holløse Mill has expressed, that he will not accept any of the physical changes we have suggested.

In the original project, we had planned to remove the barrier at Holløse Mill and create continuity between River Suså and Torpe Kanal (Action C3). As reported in the first progress report, we had to initiate further biological and technical feasibility studies to present a revised project. We had expected that we through the new technical feasibility studies would find a compromise that would form the basis for agreements with the landowners.

The new technical feasibility studies have been made by a well-renowned and experienced international consultant, Rambøll. We have had a participatory process with usage of social media, large public meetings (one streamed on facebook) and more than 10 meetings with landowners and other interested parties during the process from 2017 to 2018. Nevertheless, we have not been able to find a solution for restoration of Lower River Suså, which is acceptable by all three main landowners.

We expected, that we would overcome the challenges, but there are at this state simply too many constraints (culture, canoeing, green energy, nature on dryland and on wetland, flooding concerns, climate change, etc.) to make a proper restoration of the Lower River Suså. It might be feasible in some years' time, but not likely within the timespan of this project, i.e. before 2021. Therefore, putting the project on a temporary "hold" does not seem to be a solution.

We have considered whether we could use expropriation as a tool to force the landowners to accept the project. This is however not a feasible option. We can only use expropriation, if it is of essential importance to the overall objectives of the Natura 2000 plan. In our opinion, the objective of protecting the thick-shelled river mussel is achievable in other parts of the River Suså system, and hence we cannot expropriate the landowners in Lower River Suså. Furthermore, it is our long-term practice in river restoration projects to negotiate solutions with the involved parties rather than forcing solutions.

Another issue is the occurrence of the invasive zebra mussel. The "Management plan (Action: A1) for UC LIFE Denmark LIFE15NAT/DK/000948 "*Strategies to re-introduce *Unio crassus* and its affiliated host fish in the River Suså*" states that the invasive zebra mussel is highly abundant in the Lower River Suså, and that it is a problem for the re-introduction of the thick-shelled river mussel in Lower River Suså as long as the obstacle is not removed at Holløse Mølle.

The planned Action C3 would have reduced the threat from the zebra mussels, as the restoration of the river would have increased the water velocity on most of the 4,5 km stretch of subproject 2. During the process of the technical feasibility studies and the lengthy landowner negotiations, the compromise that was closest to achieving landowner support, would have improved only 2.5 km of the Lower River Suså. Hence, the zebra mussel would still remain a threat to the thick-shelled river mussel in approximately half of the project area.

Summarizing, based on the knowledge obtained during the feasibility studies and the landowner consultations, there are far too many uncertainties involved in carrying out the project in Lower River Suså. In November 2018 The City Council of Næstved Municipality therefore decided to stop the effort for project realization in subproject 2 at Lower Suså. The City Council also decided to continue with the river mussel effort in an extended stretch of Upper River Suså (subproject 1) in support of the original objectives and to continue the release of host fish.

Proposed solutions to compensate for stopping subproject 2 (Lower River Suså)

The main objective of the project is to contribute to obtaining a favourable conservation status for the thick-shelled river mussel (*Unio crassus*) in Denmark and in the Continental biogeographic region remains valid.

Also, the main objective is to have a population of 10.000 *Unio Crassus* individuals at the end of the project remains unchanged.

According to the original project, the actions will take place on app. 18 km of watercourses distributed in 2 subproject areas.

- Subproject 1 concerns app. 13 km of the Upper River Suså,
- Subproject 2 concerns app. 5 km of the Lower River Suså.

At a secondary level the project will also benefit the habitats of the “water courses of plan to montane level (3260)”, “hydrophilous tall herb fringe communities (6430)”, and the species *Lampetra planeri* (1096), and *Cobitis taenia* (1149) being part of the designation for the specific SAC DK006Y275.

Næstved Municipality is certain, that the main and the secondary objectives are achievable in Upper Suså (Subproject 1) after introducing some modifications of the project activities and by including two additional Danish beneficiaries in the project representing another SAC where the river mussel is present. In addition we intend to include three co-financers.

Continued effort in Upper Suså (Subproject 1)

The riverbed in Lower River Suså is much wider than in Upper River Suså, and therefore we find it necessary and relevant to extent the project area in Upper River Suså from 13 km to up to 36 km (see Figure 1) to ensure the approximately same area of suitable habitat for the thick-shelled river mussel as originally planned.

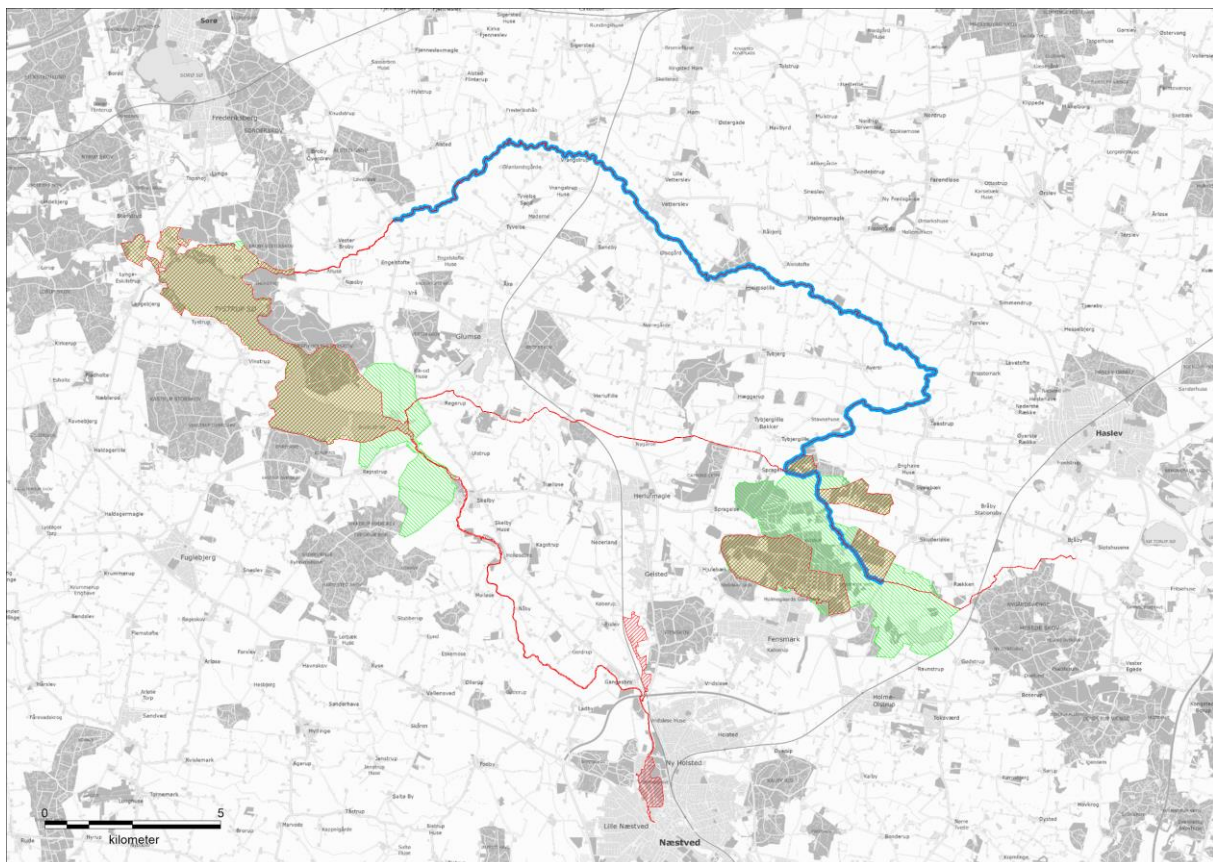


Figure 1: Suggested project area (light blue) in Upper River Suså. Red is SAC and green is SPA, both revised in 2018.

Living *Unio crassus* have been found just upstream of the existing subproject 1 area and near Vrangstrup (to the south).

It will not be sufficient just to extend the project area in Upper River Suså. The “*Management plan (Action: A1) for UC LIFE Denmark LIFE15NAT/DK/000948): Strategies to re-introduce Unio crassus and its affiliated host fish in the River Suså*” mentions a number of activities to improve the habitat for the thick-shelled river mussel and its host fishes. These habitat improvements should also be implemented.

Due to the extension of the project area in subproject 1 we intend to include three co-financers in the project. The co-financers are neighbouring municipalities (Ringsted, Sorø and Faxe) north of the stream and the municipalities administer about half of the area along the stream. In order to work with the habitat improving for the mussel and its host fishes, we will need the necessary authorization procedures by these municipalities. By including the municipalities as co-financers the owner-ship to the project is expected to increase and it will be easier to gain the necessary authorization procedures in the project at the appropriate time. As co-financers they will take part in an expert group, and contribute with local knowledge about the landowners etc. Through their contribution to the LIFE-project they will also contribute to fulfilling the measures of the Natura 2000 plan to obtain a favourable conservation status for the thick-shelled river mussel.

Adding two additional project sites with two Danish beneficiaries

To be able to increase the national perspective of the project we intend to add two additional project sites situated in the SAC DK0088X188 (River system of Odense Å, Sallinge Å, and Hågerup Å), where the *Unio crassus* is part of the designation basis– cf. Figure 2. The SAC hosts (in River Odense and River Hågerup) the largest known population of *Unio crassus* in Denmark and probably the only Danish reproducing stock. The initiatives in the SAC aim to make the population of *Unio crassus* more robust and it will contribute to obtaining a favourable conservation status of the species.

In one of the additional sites (Subproject 3) we plan to work with the removal of an obstacle in River Odense resulting in the elimination of a stowing zone of 3.6 km where new biotopes for the mussel will be restored. In this continuity project the planning documents are already in place and the project implementation is expected to take place during the summer 2020. At the other additional site (Subproject 4) we plan to introduce glochidia infected host fish in River Salling to establish a *Unio crassus* population in that part of the river system where the mussel is absent today. This will occur as part of the on-going restocking and release program which is already running in action C5.

The two additional subprojects will be taken care off by Odense Municipality and Faaborg-Midtfyn Municipality. It is further noticed that subproject 3 and 4 can be carried without involving private landowners. In the near future the City Councils of the two municipalities will make a decision for entering the project.

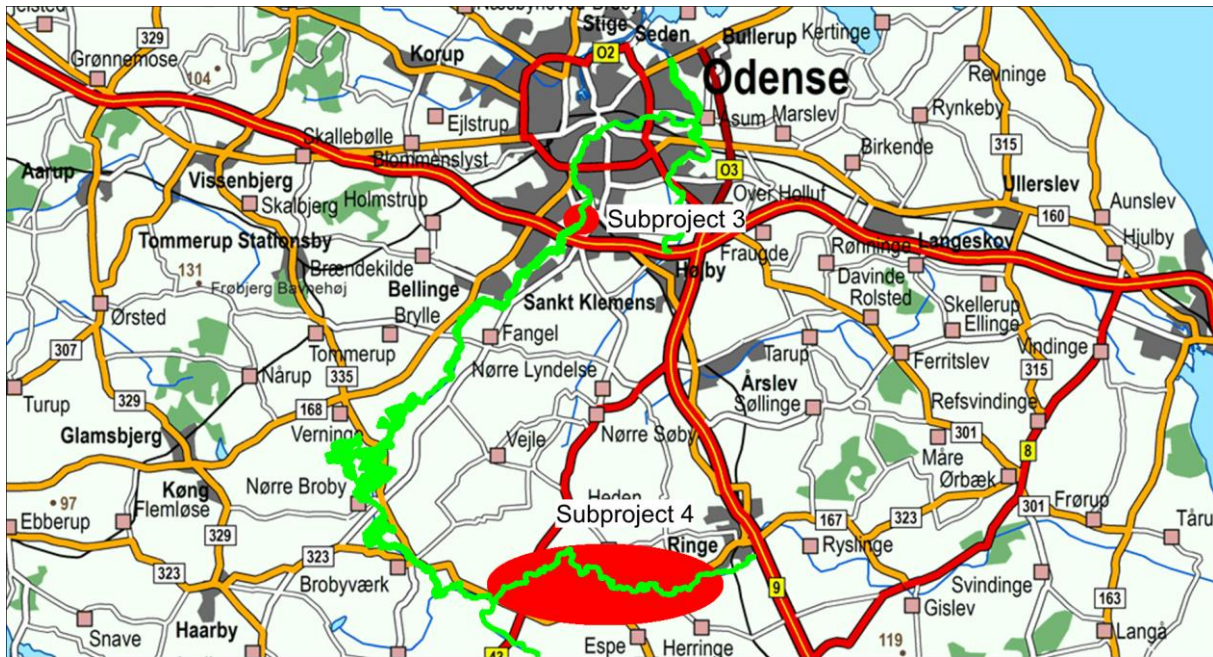


Figure 2: Suggested additional project sites (red) in SAC DK0088X188 (light green).

Suggestion for revised C-actions

The proposed changes described above will be addressed by the following concrete conservation actions:

- Action C1: Improve the river bed - improve watercourse substrate: subproject 1 and 3. The action will include improvements of habitats for both Minnow and European Bullhead, e.g. by placing stones in the river bed.
- Action C2: Improved river banks: subproject 1. Planting of trees that give shadow and improve the temperature conditions in the river.
- Action C3: Removal of obstacle: subproject 3. The principles of this action in subproject 3 resemble the original actions in subproject 2.
- Action C.4: Water plants – control and new plants: subproject 1 and 4. Removing unwanted water plants in subproject 1 (branched bur-reed) and transplantation of indigenous species of water plants.
- Action C.5: Continued reintroduction of host fish infested with glochidia of *Unio Crassus*: Subproject 1 and 4.

We suggest the following E-Actions in Subproject 1 in Upper River Suså:

- Action E1: Establish three shelters and information areas in Upper River Suså (public areas with a canoeing location). There is an increased interest in the thick-shelled river mussel – and with the expanded project area, it would be relevant to establish an information area connected to a tourist/canoeing location.

This action will also target the public involvement in subproject 3 and 4.

In addition, including/enrolment of subproject 3 and 4 will give rise to some minor modifications and adjustments in the project's other actions.

Næstved Municipality expects that the original project objectives (as well as the secondary objectives) can be fulfilled by implementing the conservation efforts in subproject 1, 3, and 4 as described above.

The longer project area of app. 36 km in subproject 1 will give us the flexibility to establish several well-functioning habitats for the thick-shelled river mussels and the host fish. It will furthermore provide flexibility, in the sense that we will have several locations to choose among, when finally deciding where to implement the C-actions. There are many landowners and therefore we are not depending on a few people to be able to achieve project success (as in subproject 2). Thus, if a few landowners decide to stay out of the project this will not prevent the overall project implementation of the revised project.

Compared to the current project plan, we will have to extend the preparatory phase in order to conduct new baseline studies and new feasibility studies. We expect that these studies can be conducted within app. 6-8 months. There will still be some landowner negotiations regarding small areas of land, but the negotiations are expected to be much easier than in subproject 2. Overall, a prolongation of 2 years is proposed.

Suggested budget changes

The proposed changes in River Suså result in a reduced budget for the actions in Næstved Municipality of app. 450.000 €. The suggested actions in subproject 3 and 4 will absorb this surplus with app. 410.000 € and 40.000 €, respectively. The budget changes will be elaborated in the amendment.

Process for amendment

We propose to initiate the amendment process shortly after submitting this progress report and we will ask our monitor for access to e-proposal. This is in accordance with the Communication with EASME in letter dated 11th December 2018. The amendment will be submitted no later than the beginning of June 2019.

Danish revision of designated SAC's

In 2017 and 2018 the Danish Ministry for Food and Environment initiated a process for altering the N-2000 borders. The alteration became valid in the autumn 2018 and the borders can be seen here: <http://miljoegis.mim.dk/spatialmap?profile=natura2000-afgraensning-nov2018gaeldende>. The changed borders affect the designation of SAC DK006Y275 (Suså med Tystrup-Bavelse Sø og Slagmose) in a positive manner because the SAC's have been adjusted and enlarged so that the N-2000 boarder follows the actual course of the River Suså.

4. Administrative part

4.1 Description of project management

The project management is taken care off in action F1 as follows:

- NK is the coordinating beneficiary and has established a secretariat to support the project. The secretariat is composed of a project manager and an economic controller (Gert Magnus Hansen). Originally Malene Callesen Dall and Bent Hummelmoose

possessed the position as PM, but the function has been taken over by Sofia Mulla Kølmeel by December 2018 as communicated with the e-mail of 10th December 2018 to EASME and Neemo monitor Bent Jepsen.

The PM is supported by an assistant project manager.

NK is the sole partner in this project. The Head of Center of Planning and Environment, Pernille Balslev-Erichsen, is chairman of the internal steering group. Team manager, Niels Hav Hermansen is project owner of the project after Charlotte Thiel Weber Johansen. NK is a political organisation, and the Technical Board is regularly informed about the progress of the project.

- The project group takes care of the day to day activities in the project. The project group consist of Malene Callesen Dall, Søren Madsen, Palle P. Myssen, Sofia Mulla Kølmeel, and Elisabeth Bruun. Malene Callesen Dall, Palle P. Myssen and Søren Madsen are supported by the PM, Pernille Balslev-Erichsen and Niels Hav Hermansen in the daily work when necessary. For example support is given in relation to handling public information and dissemination and in relation to the political level in the municipality.

4.2 Previous reports and amendments

This is the second progress report according to the reporting scheme in the GA. According to the communication with the EASME during the autumn 2018 this progress report substitutes the planned Mid-Term report.

4.3 Organigram

The organigram (in Danish) from the GA is still valid.

4.4 Comments to EASME's letter dated 2nd February 2018

This communication regard an evaluation of the first progress report and deals with the remarks below.

Action A1: The remark concerns archaeological surveys to be conducted in subproject 2 (Lower Suså). Due to proposed changes this survey is no longer relevant. Further we appreciate the acknowledgement of the revised time planning in relation to tendering selection in action C5.

Action C1: We appreciate the acknowledgement of the revised time-table.

Action C5: We appreciate the acknowledgement of the alternative stocking- and release plan as well as the revised time-table. However, we are asked to analyse the effects of reintroduction done four times instead of five times of *Phoxinus phoxinus* and to present the research on which we base the change in strategy of controlled glochidia-infection of European Bullhead (*Cottus gobio*).

Regarding the re-introduction most of it will take place at four individual releases. However, already in 2018 we made a small release of uninfected *Phoxinus phoxinus*. The challenge is to achieve fish with a sufficient age to be infected and therefore the time-table was revised. With the changes proposed above a longer period will be available for re-introduction of the infected host fish, although at the moment the contract with the supplier runs for only 4 years.

Regarding the European Bullhead we have learned that this species becomes immune to glochidia-infection in the same way as the Minnow (cf. the stocking-release plan). Collecting of various aged European Bullhead followed by infection under controlled conditions, will therefore most probably be very unsuccessful. The most effective way to introduce European Bullhead into the project's watercourses will be by making a yearly collect (in Swedish rivers in Skåne) and release event during the spring in River Suså. This is expected to result in a population of European Bullhead in the River Suså, which, by time, will support the lifecycle of the mussel.

Action D2 and D3: As mentioned we will report on socio-economic indicators and eco-system services in coming reports.

Account codes: The remark concerns the account codes. The provided account codes are still valid.

4.5 Comments to EASME's letter dated 7th May 2018

This communication regards a project visit by the external monitor and deals with the remarks below.

Reporting: Thank you for repeating the rules and requirements for receiving a secondary intermediary payment.

Action A1: The remark concerns the process of the technical feasibility studies. As noted we have kept our technical monitor informed about by the progress by e-mail 20th of July and 4th of September 2018.

Concerning the reintroduction plan it is attached in ANNEX 1 and it was provided by e-mail to our technical monitor on 28th of May 2018.

Action E1: We appreciate the acknowledgement to purchase an underwater "drone". It was purchased in July 2018 and has been used for surveys of the river bottom in River Suså. Some of the underwater videos are available on the project's website (<https://www.merelivisusaaen.dk/video-grid-gallery/>).

Action E2: This remark concerns postponement of an exchange of experience event. We appreciate that this is possible.

Timesheets: We appreciate that the provided timesheets are acceptable.

Financial reporting: This remark concerns the version of the Exel sheet which must be used for financial reporting. We note that the latest version always must be used.

4.6 Comments to EASME's letter dated 11th December 2018

This communication regards a project visit by the external monitor in September 2018 in relation to handling the problems in subproject 1.

According to de decision in the letter the planned mid-term report is replaced with this progress-report. A new schedule for future reports will be part of the proposed amendment. However, based on the planned future activities we expect that the mid-term report will be due no later than 30th June 2020.

5. Technical part

According to the original GA the primary objective of this project is to contribute to obtain a favourable conservation status of Thick Shelled River Mussel (*Unio crassus*) in Denmark. The present conservation status of the mussel in the Danish continental biogeographic region is very poor, and is in danger of further deterioration in the coming years. The primary objective will still be valid upon the proposed amendment although the activities will be revised.

To increase the mussel's population in the River Suså, the main initiative in the project is to stock the mussels' host fish (Minnow (*Phoxinus phoxinus*)) and infect it with mussel glochidia. Thereafter the infected host fish will be released in the Suså, and eventually the glochidia will be released and establish themselves in the river substrate. We will also re-introduce the European Bullhead (*Cottus gobio*) as a host fish for the mussel on a somewhat smaller scale.

We will also improve the physical conditions in the River Suså by e.g. removing obstacles and improving the bottom substrate to support the host fish population in the future.

The project operates on two individual stretches of River Suså. Subproject 1 concerns app. 13 km of the upper River Suså while subproject 2 concerns app. 5 km of the lower River Suså. Infected host fish will be released in both subprojects; while the physical improvements of River Suså will take place in subproject 2 (lower River Suså) only.

5.1 Activities

Below we address the project progress, action by action. The progress is also illustrated in the Gantt chart in ANNEX 2.

5.1.1 Action A.1 – Biological and technical documentation

Biological and technical surveys are performed to support management and restoration works. Overall, action A1 is in progress and most of the deliverables are in place. However, due to the problems experienced in subproject 2 with landowner reluctance, some of the deliverables are no longer relevant.

NK performed a technical investigation of the possibilities for watercourse improvements in subproject 2 prior to the LIFE application. An additional technical investigation (ANNEX 3) was performed by Rambøll A/S during 2018 for subproject 2 to conduct further biological and technical investigations in order to present a revised and improved project. The investigation sketches different alternative solutions to the removal of the obstacle at Holløse Mølle and for establishing connectivity to Torpe Kanal.

During 2018 we also performed water quality measurements (BOD, nitrate, nitrite, redox, temp., pH, ortho-P, and ammonium) at 12 occasions. The results are reported in ANNEX 3. The water quality measurements are part of the project plan for the release of glochidia infected host fish.

The project plan for the release of host fish was elaborated by Lea Schnieder (researcher at the University of Karlstad) and the report (ANNEX 1) was available in April 2018. The release plan answers a number of questions related to the stocking and infecting of the host fish and to the mapping of relevant river stretches for release of infected host fish. The plan also describes an exit strategy and presents a cost/benefit analysis.

This action also includes an archaeological survey prior to the construction works in subproject 2. Due to the landowner reluctance (please see action A3) this survey was not initiated during the reporting period and due to the proposed amendment the survey is no longer necessary.

In addition, the action also includes a detailed project for the possible construction works in subproject 2. Due to the landowner reluctance (please see action A3) these planning documents have not been elaborated during this reporting period and due to the proposed amendment the planning documents are no longer necessary for this subproject.

Overall, the biological and technical surveys, the release plan and the water quality measurements have been performed according to the project plan, although with some minor delays compared to the original time table. Due to the landowner reluctance the remaining two products (archaeological survey and detailed planning) will not be initiated due to the changes that will be introduced in the proposal for an amendment.

The overall time table for this action and additional deliverables will be revised in the amendment.

5.1.2 Action A.2 – Authorization procedures

In relation to the construction works and the stocking and releasing of host fish, the necessary authorization procedures must be in place.

The authorisation procedure for the release of host fish has been taken care of by the supplier of fish (Fyns Laksefisk / Elsesminde – cf. action C5) and is in place in relation to the release of Minnow (*Phoxinus phoxinus*) and European Bullhead (*Cottus gobio*) in subproject 1 (Øvre Suså).

The authorisation procedure necessary for the construction works in subproject 2 has not been initiated due to the difficulties with the landowners at this site. Thus the focus has been put on the landowner negotiations instead of the authorization procedure. If the landowner agreements cannot be succeeded the authorization procedure can be considered to be redundant and therefore Action A2 is highly dependent on the progress in action A1, A3 and B1.

The overall intention with this action is still valid as compared to the GA. However the exact content and the overall time table for this action will be revised in the amendment and authorization procedures may be relevant in subproject 1.

5.1.3 Action A.3 – Landowner negotiations

The aim of this action is to perform negotiations and obtain agreements with the private landowners in connection to subproject 2. The agreements will pose as the framework for the compensation for land rights, reduced fishing income and reduced power production.

During the course of the project NK has put a large effort into involving the landowners, users and interest groups into the preparation of the planning documents (cf. action A1) in particular in relation to subproject 2. During 2016 and 2017 the dialogue was very intense with several meetings and fruitful discussions. The conclusion of these meetings in the end of 2017 was to conduct further investigations (the Rambøll report in Action A1) which ended up in the revised feasibility study in June 2018 concerning subproject 2. The study was presented by the advisor on a public meeting in July 2018 which was followed by a public hearing in the autumn 2018. Upon the hearing NK received 18 answers from organisations and individual persons and the response was collected in a White Paper. The response to the revised feasibility study was rather negative giving no support to the solution with the greatest potential for the development of biotopes for the Thick Shelled River Mussel (*Unio crassus*). Some limited support was obtained for a less favourable solution, which however has the drawback that it was very expensive with a corresponding poor cost-benefit.

The White Paper together with a project summary was presented to the NK City Council 20th November 2018 and the council decided to terminate the subproject 2 due to the landowner reluctance. The council also decided to enhance the effort for achieving a favourable conservation status of the Thick Shelled River Mussel (*Unio crassus*) in subproject 1 to be able to fulfil the objectives of the GA.

The action will be revised in the proposed amendment.

5.1.4 Action B.1 – Economic compensation to landowners

The aim of this action is to pay compensation to the 3 private landowners in subproject 2, and to compensate for lost fishing rights and power production rights. Payment of the compensation depends on succeeding in Action A3.

Due to the landowner reluctance described in action A3 and in section 3.2 this action is on hold and it will not come into force in subproject 2. Economic compensation to landowners in subproject 1 eventually will come into force and the extent will be further elaborated in the proposed amendment, where subproject 1 becomes extended.

5.1.5 Action C.1 – watercourse bottom substrate

This action was dedicated to subproject 2. Due to the decision to abandon the activities at this site the action is no longer relevant in its original form.

However, in the proposed amendment the action will be revised to fit with subproject 1.

5.1.6 Action C.2 – planting of vegetation along the watercourse

This action was dedicated to subproject 2. Due to the hold of the activities at this site the action is no longer relevant in its original form.

However, in the proposed amendment the action will be revised to fit with subproject 1.

5.1.7 Action C.3 – Re-meandering of watercourse and establishment of continuity

This action was dedicated to subproject 2. Due to the hold of the activities at this site the action is no longer relevant in its original form.

However, in the proposed amendment the action will be revised to fit with a continuity project (the proposed subproject 3) implemented by the proposed new associated beneficiary Odense Municipality.

5.1.8 Action C.4 – Planting of water-plants

This action was dedicated to subproject 2. Due to the hold of the activities at this site the action is no longer relevant in its original form.

However, in the proposed amendment the action will be revised to fit with subproject 1 and to fit with a project hosted by one of the additional beneficiaries.

5.1.9 Action C.5 – Reintroduction of Minnow (*Phoxinus phoxinus*) and European Bullhead (*Cottus gobio*) infected with mussel glochidia

This action concerns collection, stocking and glochidia-infection of the mussels host fish; Minnow (*Phoxinus phoxinus*) and European Bullhead (*Cottus gobio*). According to the GA, this work was scheduled to start at the beginning of the project period in late 2016.

The collection, stocking and glochidia-infection strategy has been adapted according to the revised plan presented in the first PR and as acknowledged by EASME upon the evaluation of the PR.

During the autumn 2017 a tendering procedure for the stocking, infection, and release program for the host fish was conducted with two companies. The selection was based on “lowest price” and Fyns Laksefisk (Elsesminde) was assigned for the task.

During 2018 Fyns Laksefisk raised the necessary facilities for the stocking of Minnow and during the winter 2018/2019 they are working on the facilities for carrying out the glochidia-infection of the fish. During 2018 Minnow was collected from Hågerup Å on Fyn and 300 individuals were released in May 2018 in subproject 1 according to the revised time-table. As planned European Bullhead was collected in Sweden and re-introduced in Øvre Suså (subproject 1) in November 2018. However this was done with only 300 individuals and not 375 as planned. Thus in 2018 the revised stocking-release program almost followed the revised time table.

The stocking of Minnow has been initiated with parental fish from Hågerup Å on Fyn. During the initial start Fyns Laksefisk gained experiences (e.g. in relation to feeding the fish and collect eggs) with the stocking and in December 2018 2.000 individuals had been raised and are ready for infection during 2019 followed by immediate release. However, for 2019 this is less than foreseen in the revised time table (10.000 individuals). In addition, the summer 2018 was extraordinary warm and dry and therefore the spawning took place much earlier than expected and partly before our facilities were up and running. Based on the stocking experiences so far it is expected that future stocking will be much more effective.

Considering the glochidia-infection of Minnow, it must be assured that the infection actually occurs from *Unio crassus*. Therefore we have introduced a DNA test (cf. Action D1) because it is impossible to make a visual species determination. Further, the DNA test was carried out to estimate the number of *Unio crassus* in River Suså. Please see action D1 for details.

Thus it is still expected that it is realistic to release 40.000 infected Minnows and 1.500 European Bullheads as stated in the revised time table with a release in Øvre Suså (subproject 1). Action C5 is still in accordance with the GA and we still believe that the objectives of the GA are valid with respect to the expected density of the mussel in the river bed at project closure taking the proposed amendment (with a prolonged stretch of subproject 1) into consideration. In addition, with the proposed amendment infected Minnows will also be introduced in other streams than Suså which is expected to increase to success of this action and supporting the project’s objectives.

In the proposed amendment the action will be revised according to the proposed changes.

5.1.10 Action D.1 – Baseline and impact monitoring

This action monitors the effect of the project actions by use of a number of indicators in the two subprojects as follows:

- A) Physical index
- B) Occurrence of Thick Shelled River Mussel (*Unio crassus*)
- C) Occurrence of Minnow (*Phoxinus phoxinus*) and eventually European Bullhead (*Cottus gobio*)
- D) Photos
- E) Arial photos (only subproject 2)
- F) LIFE performance indicators

Most of the baseline monitoring was reported in the first PR. During this reporting period, the mapping of Thick Shelled River Mussel (*Unio crassus*) was supplemented with a DNA test of the collected mussels (23 pcs.) to achieve a definite picture of the species composition. The test showed that only 6 out of the 23 collected individuals actually are *Unio crassus* while the remaining 17 individuals are other species (*Unio tumidus* and *Unio pictorum*) of river mussels.

All of the collected *Unio crassus* individuals are old. The collected mussels were pit-tagged and replaced in a favourable location in River Suså according to recommendations of the release plan. Due to the extraordinary warm and dry summer in 2018 the water temperature was high and the water flow extremely low although the river did not dry out completely. The extreme weather conditions probably were the reason why two of the tagged *Unio crassus* died during the summer.

Based on the very few living *Unio crassus* it appears to be difficult to collect enough individuals in River Suså for the coming infection of Minnow. Therefore a DNA test was also performed on individuals from the largest Danish population in River Odense (on Fyn). The results were compared to DNA results from *Unio crassus* populations in Skåne (Sweden – several watercourses) and the overall conclusion is that the *Unio crassus* populations in River Suså, River Odense and in Skåne rivers show the same genetics. These results are part of the stocking-release plan and the conclusion is that both the populations in River Odense and in Skåne rivers may function as donor populations.

The DNA results have proved to be very valuable considering the future collection of mussels for infection of Minnow. Apparently, a visual assessment of *Unio crassus* is at high risk of being flawed and we therefore propose to introduce a routine DNA test to make sure that infection actually occurs from *Unio crassus*. This will be part of the proposed amendment.

In the proposed amendment the action will be revised according to the proposed changes and taking the additional subprojects into consideration.

5.1.11 Action D.2 – Socio-economic monitoring

This action monitors the socio economic impact of the project based on five indicators:

- A) Activity at local companies
- B) Recreational fishery
- C) Increased settlement

- D) Employment due to project implementation
- E) Press coverage and a communication strategy

The baseline monitoring was reported in the first PR and during this reporting period no further activity has taken place.

In the proposed amendment the action will be revised according to the proposed changes and taking the additional subprojects into consideration.

5.1.12 Action D.3 – Monitoring of ecosystem services

This action monitors the ecosystem services of the project based on three indicators:

- A) Natural dynamics in watercourses
- B) Recreational possibilities and tourism
- C) Protection of certain gene pools

The baseline monitoring was reported in the first PR and during this reporting period no further activity has taken place.

In the proposed amendment the action will be revised according to the proposed changes and taking the additional subprojects into consideration.

5.1.13 Action E.1 – Public information

Public information is implemented by use of the following activities:

- A) Website
- B) Information signs
- C) Layman report
- D) Public meetings, advisory boards, green boards, guided tours

Action E1 will be performed throughout the entire project period. During this reporting period, we have performed the following activities:

A) The website has been maintained regularly and in particular the website has been used to present the various technical reports during the public process. The website also hosts the project's database with the various project documents (cf. action E3). The website will undergo a major change according to the proposed amendment and the changes are already taking place.

D) During this reporting period we have continued our effort into informing the general public and the landowners about the project. Meetings with the landowners and the interest organisations have taken place at the following dates from September 2017 and onwards:
26th of February 2018
21st of March 2018
4th of June 2018
20th of June 2018

On 20th June 2018 meeting (cf. action A3) the revised project documents were presented for the landowners and interest organisations. On the meeting it became clear, that the landowners and the canoeing society reluctance were very serious. On May 8th 2018, we had a public guided tour “Mød den tykskallede malermusling” (**Fejl! Henvisningskilde ikke fundet.**) where about 20 people participated.



Figure 3: Public meeting at River Suså in May 2018.

The advisory board is composed of persons representing the interest groups mentioned above. In addition the Næstved Municipality “Green board” including various NGOs receives information about the project at their regular meetings.

The information signs and the layman report are due later.

The project has received substantial attention from the press at several occasions since PR#1:

- 22.01.2018, Læserbrev, Sjællandske Medier, 'Susåen er under angreb'
- 23.01.2018, Læserbrev, Sjællandske Medier, 'Projekt Torpe Kanal og Susåen'
- 25.01.2018, Læserbrev, Sjællandske Medier, 'Susåen tilbage til naturen'
- 17.05.2018, Pressemeddelelse, 'Fynske elritser får ny bolig i Susåen'
- 22.05.2018, Pressemeddelelse i Ugebladet, 'Fynske elritser skal hjælpe truet musling'
- 23.05.2018, Facebook opslag fra Næstved Kommune, 'Fynske elritser får ny bolig i Susåen'
- 23.05.2018, TV-indslag, TV2 Øst, 'I dag blev 300 baby-karper sluppet løs i Susåen'
- 08.10.2018, Artikel, Sjællandske Medier, 'Turisme vinder over vandmiljøet'
- 10.10.2018, Læserbrev, Sjællandske Medier, 'Det er naturen, som har vundet på Susåen'
- 04.12.2018, Artikel, Fyens Stiftstidende, 'Ulken kommer: Fynske fiskefolk hjælper Sjællands største å'
- 19.11.2018, Pressemeddelelse, Länsstyrelsen Skåne, 'Framgångsrikt musselprojekt exporteras till Danmark – 450 stensimpor fiskas upp från Fyleån'
- 19.11.2018, Artikel, Ystad Lokaltidningen, 'Skånska stensimpor ska rädda musslor i Danmark'
- 21.11.2018, Artikel, Folkbladet, 'Fiskflytt från Skåne ska rädda musslorna'
- 21.11.2018, Artikel, Kuriren, 'Fiskflytt från Skåne ska rädda musslorna'

- 21.11.2018, Artikel, Ystads Allehanda, 'Här flyttar Fyleåns fiskar till Danmark'
- 21.11.2018, Artikel, SVT nyheter, 'här är den skånska fisken som renar danskt vatten'
- 22.11.2018, Artikel, Aftonbladet, 'Skånsk fisk ska hjälpa hotad mussla rena danska vatten'
- 23.11.2018, Artikel, Fiskejournalen, 'Svenska stensimpor ska rädda musslor i Danmark'

This action will be revised according to the proposed amendment and it will take into consideration the extended effort in subproject 1 as well as the new efforts in subproject 3 and 4.

5.1.14 Action E.2 – Capacity building

In this action, we will strengthen our knowledge about Thick Shelled River Mussel (*Unio crassus*) management by

- A) Arranging a workshop
- B) Visiting other projects working with the same topic.

The initial workshop was reported in the first PR as well as the knowledge exchange visit to the Swedish UC4LIFE project (LIFE10 NAT/SE/000046).

During this reporting period two knowledge exchange visits (April 2018 and November 2018) took place with the Rest-unio project in Luxemburg (LIFE11 NAT/LU/000857). Reports from the visits are available in ANNEX 5 and ANNEX 6. In the GA only one visit was planned with the Rest-unio project. However, a second visit was considered relevant in relation to a seminar about river mussels arranged by the Rest-unio project; Monitoring and restoration of freshwater mussel habitats.

In addition, the project participated in the LIFE platform meeting in Finland in June 2018.

The overall aim of this action has been fulfilled, but we will eventually consider additional activities in relation to the proposed amendment.

5.1.15 Action E.3 – Replication

In this action, we publish knowledge gained in the project, so it is accessible to professionals and the broader public. We publish the knowledge in a database, which is accessible here: <http://www.merelivisusaaen.dk/database/>. The web-site is undergoing a reconstruction due to the proposed project changes and the coming amendment.

The database was established in the spring 2017 and it is updated regularly. Currently the database holds app. 40 documents representing our own project. Later on we will expand the use of the database, and eventually include reports and documents from other LIFE projects.

5.1.16 Action F.1 – Project Management

The project organization is described above (section 4). The day to day administration is very simple because the Municipality of Næstved is the sole participant in the project. We have organised the project with an internal steering group, where the Head of the Center for

Planning and Environment, Pernille Balslev-Erichsen, is the chairman. The other members of the steering group are Steen Andersen and Birgitte Gussenhoven Eriksen. Birgitte Gussenhoven Eriksen will not be part of the steering group in the future because of the change in the PM. The Technical Board is responsible for the projects' economy and must approve the budget and costs of the project.

NK is a political organisation, and the Technical Board is informed on a regular basis about project progress. All meetings are open to the public and can be followed on Facebook and on the municipality website (www.naestved.dk).

During this reporting period the second NEEMO extern monitoring inspection took place on the 7th of March 2018. As stated in section 4.4, we have noted EASME's comments to the inspection dated the 7th May 2018. In addition, our external monitor visited the project on 7th September 2018 in order to discuss the problems with project implementation in subproject 2.

A permanent bookkeeper, Sabine Meyer, keeps the accounts for the project. She is responsible for collecting all financial supporting documents relevant to the project, and to update the account regularly. Economic controller, Gert Magnus Hansen, is ensuring that the bookkeeping is correct.

In the GA, Malene Callesen Dall is mentioned as the project's contact person at Næstved Municipality. This was changed to Mr. Bent Hummellose but now Sofia Mulla Kølmeel is the project's contact person and PM. Sofia Mulla Kølmeel is available on somul@naestved.dk and phone +45 21480937. Sofia Mulla Kølmeel has participated in the project group since the beginning of the project in 2016 and participates in the LIFE Semi aquatic project as well.

The PM is supported by an assistant project manager. After a tendering procedure in early 2017, this task is taken care of by Claus Paludan from Bangsgaard og Paludan ApS. The PM and the assistant project manager are in frequent contact on relevant issues related to the project's administration.

To ensure that the tendering procedures follow internal and external rules, and to ensure all relevant documentation, we have organized a logbook. The logbook will keep track of tendering letters, tendering offers, award decisions, award letters and contracts. Relevant documents will be journalized. We also keep a document describing the internal work flow in tendering procedures.

According to the proposed amendment this action will be revised in order to include the additional beneficiaries and the co-financiers. The project organization will be revised accordingly.

5.1.17 Action F.2 – Supervision of the construction works

This action is connected to the actual conservation actions in action C1, C2, C3, C4, and C5. Due to the practical problems with the implementation of these conservation actions the supervision has up to now been conducted for the Action A1. Action F2 will be revised in the proposed amendment.

5.2 Envisaged progress until next report

The overall project progress is illustrated in the Gantt chart (ANNEX 2) and the next activity report (probably a midterm report) is due on the 30th of June 2020.

At this stage, we have major delay in almost all of the concrete conservation actions due to the landowner reluctance in subproject 2 (Nedre Suså). Above we have presented a solution on how to handle this major problem and a proposal for an amendment will be presented no later than June 2019. The amendment will be composed to ensure that the project's objectives regarding the conservation status of *Unio crassus* of the GA can still be reached – please see section 3.2. The progress is dependent on the evaluation of the proposed amendment and its associated revised time table. The time of the approval of the amendment will of course have an influence on the beneficiaries' ability to start the proposed initiatives.

NK will ensure continued and correct administration of the project. This work will continuously be supported by the assistant project manager.

5.3 Impact

At this stage, the project has had no direct impact on the project's target species. So far we have worked on preparatory activities (e.g. action A1, A3 and C5), which has given valuable advice to the coming work with the technical documentation and the actual restoration works. However, due to the reluctance from the landowners and interest organisations the project will be adjusted according to the proposed amendment. In order to collect data on the success of the host fish release program an electro-fishing survey will take place at the end of the project period.

Indirect impact

The success of obtaining the EU grant has inspired other municipalities in Denmark to prepare LIFE Nature applications in order to support their implementation of the national Natura-2000 plans. In the autumn 2018 the project was contacted by a Swedish project (LIFE Connects) applying for LIFE support for a *Unio crassus* project running from 2019 and onwards. If this application is approved a cooperation between the two projects will be initiated.

Table of indicators

Please see section 5.1.10.

Policy implications

So far, we have not recognised any policy barriers to the full implementation of our project. The knowledge gained in this project so far, has not had any influence on regional, national or EU legislation.

5.4 Outside LIFE

So far there are no planned complementary activities which can add to the LIFE project's actions.

6. Financial part

The account information presented in this report is updated up until the 31th of December 2018 and is reported parallel to the technical report.

To compute the action by action costs, we have modified the EU Excel financial statement spreadsheet.

The principles for financial reporting are discussed routinely by the PM and the assistant project manager.

6.1 Costs incurred

With the use of the present accounting system, expenses can be tracked on the main cost categories and on actions.

We save all supporting documents related to the account (tender documents, invoices, payment documentation, timesheets etc.) in or files. Overall the project economy is considered to be sound and favourable and the national financing is still available.

Costs per cost categories

Budget breakdown categories	Total cost in €	Costs incurred from the start date to 31.12.2018 in €	% of total costs
1. Personnel	331.860	193.814,43	58,4
2. Travel and subsistence	12.082	4.251,70	35,2
3. External assistance	1.431.539	158.738,44	11,1
Infrastructure	na	na	na
Equipment	na	na	Na
Prototype	na	na	na
5. Land purchase / long-term lease	139.580	0	0
6. Consumables	3.280	43	1,3
7. Other Costs	32.160	2.164,48	6,7
8. Overheads	126.760	To be computed later	To be computed later
TOTAL	2.077.261	359.011,98	17,3

* excluding overhead

Overall, we have spent 17 % of the budget. This is a relatively low consumption compared to the length (28 month) of the reporting project. The overall reason is that we have been unable to pay the compensation to private landowners due to the landowner reluctance. Following this the concrete conservation actions (except Action C5) cannot be implemented. In the

proposed amendment, we plan to expand subproject 1 and to include additional project sites to be able to establish the appropriate biotopes for *Unio crassus* in accordance with the objectives of the GA.

In regards to the cost categories, we have spent app. 58 % of the personal costs during 28 months. This is a little bit more than the share of the project period so far (44 %) and can be attributed to the very intense work in subproject 2 to obtain the necessary support from landowners and interest organizations.

The travel costs are quite low, despite the fact that we have attended the larger part of the knowledge exchange activities at this stage. This leaves some resources free for future knowledge exchange activities or other additional travel costs such as for the coming LIFE platform meetings.

We have had only relatively low costs in the other cost categories reflecting the problems with the realization of subproject 2.

Personnel costs

Below we have made a chart of the use of man-power in the various action categories. Our most important comments at this stage are as follows:

- The estimated person-days spent in relation to A actions is high and reflects our effort with the technical feasibility studies and handling of the negotiations with the landowners and the interest organizations. According to the proposed amendment it must be expected that more resources must be allocated to A-actions considering the extension of the projects site in subproject 1 and the two additional project sites.
- We do not have any budget for personnel in relation to B and C actions as these tasks are taken care off in A and F actions.
- The estimated person-days spent in relation to D actions reflect our effort with the ex ante monitoring in regard to biology, socio-economy and ecosystem services.
- The estimated person-days spent in relation to E actions reflect our effort with obligatory activities (e.g. website and replication) as well as with public involvement in the project. As explained above this has been an important activity in order to obtain local ownership to the project.
- Concerning the F actions the person-days spent corresponds very well with the project period that has passed so far. According to the proposed amendment it must be expected that more resources must be allocated to Action F1 considering the proposed prolongation of the project period and the uptake of additional partners.

Action type	Budgeted person-days	Estimated % of person-days spent
All projects when applicable Action A: Preparatory actions	196	93
NAT and CLIMA projects Action B: Purchase/lease of land and/or compensation payment for payment rights	0 (part of action A)	
ENV projects Action B: Implementation actions	XXXXX	
GIE projects Action B: Core actions	XXXXX	
NAT projects Action C – Concrete conservation actions	0 (part of action A and F)	0
CLIMA projects Action C: Implementation actions	XXXXX	
ENV and GIE projects Action C: Monitoring of the impact of the project action	XXXXX	
NAT and CLIMA projects Action D: Monitoring and impact assessment	92	38
ENV and GIE projects Action D: Public awareness/communication and dissemination of results	XXXXX	
NAT and CLIMA projects Action E: Communication and Dissemination of results	132	58
ENV and GIE projects Action E: Project management	XXXXX	
NAT and CLIMA projects Action F: Project management (and progress)	582	41
TOTAL	1002	53

7. Deliverables

Please see table in section 8.

8. Annexes

Progress report number 2 contains the following annexes (on USB memory stick).

Annex number	Description	Deliverable (yes / no)
1 – Action A1	Reintroduction plan for infected host fish	YES
2	Gantt chart	No
3 - Action A1	Additional technical survey (Rambøll 2018)	YES
4 - Action A1	Water quality measurements	YES
5 – Action E2	Knowledge exchange report – Rest-unio visit	YES
6 – Action E2	Monitoring and restoration of freshwater (mussel) habitats – Rest-unio visit	YES