



LIFE Project Number  
**<LIFE18 NAT/SE/000959>**

**Progress Report<sup>1</sup>**  
**Covering the project activities from 01/09/2019<sup>2</sup> to 31/12/2020**

Reporting Date<sup>3</sup>  
**<12/02/2021>**

LIFE PROJECT NAME or Acronym  
**<LIFE LOPHELIA>**

Data Project

<b>Project location:</b>	SE0520170 Kosterfjorden-Väderöfjorden, Sweden
<b>Project start date:</b>	01/09/2019
<b>Project end date:</b>	31/12/2025
<b>Total budget:</b>	€ 3,126,528
<b>EU contribution:</b>	€ 1,842,941
<b>(%) of eligible costs:</b>	58,95%

Data Beneficiary

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<sup>1</sup> Progress Report without any payment request (for Progress Reports with payment request, use the Mid-term Report template)

<sup>2</sup> Project start date in the case of the first Progress Report, otherwise date since the last reporting period

<sup>3</sup> Include the reporting date as foreseen in Form C2 of Annex II of the Grant Agreement or as modified in agreement with EASME

## **Section 1 - Overall assessment of the achievements and as to whether the project objectives and work plan are still viable (2 pages max)**

The project is going well and largely according to plan, which means that the project's objectives are still achievable. Here we briefly report what has been done in the different actions:

**Action A.1** – All permits necessary for collecting parental colonies of *Lophelia pertusa* in Norwegian waters were obtained in time, both in 2019 and 2020. Corals were collected. Last spawning season (Jan-Feb 2020) we tested how the larvae reacted to the metallurgic slag compared to natural substrates (coral skeleton). The preliminary results show that larvae explore the slag and attach temporarily. For 2021 year's spawning season, we have already a good batch of embryos in lab for larval experiments. Preparations for the planned experiments are well under way. This year (2021) we will expand our experiments on substrate choice and test larval settling in moving water in two different set-ups. Both set-ups are designed by the beneficiaries at UGOT, and custom made.

A 3D-printer was purchased to be able to produce substrates with different textures and complexity for both laboratory and field settling experiments. The 3D-printer will also be used to produce models of the artificial reefs (ARs) during the design phase, to test the hydrodynamic effects of different designs in a flume (large aquarium with applied water current and laser measuring device).

Settling racks and substrates for field settling experiments have been designed and are being constructed. Some substrates have been casted in concrete from printed models. Other substrates that shall be attached to the racks comes directly from the 3D-printer to get finer textures than is possible with the concrete ones. Pieces of metallurgic slag is attached to the concrete substrates. Slag has been delivered by Höganäs, a metal processing company, and we have been in continuous contact with Björn Haase on Höganäs, who is in charge of the company's efforts to find ways of using their rest products from the metal production. A first round of settling racks are planned to be deployed at all six restoration sites in Feb–March 2021.

**Action A.2** – Together with the Swedish Agency for Marine and Water Management (SwAM) we had meetings with local fishermen in October 2019 and May 2020. SwAM sent out a referral in January 2021 on proposals for new fishing regulations in this and other areas. The regulations in the restoration sites are proposed to enter into force on 15/03/2021.

**Action C.1** – Procurement of high-resolution sonar mapping of the six sites, to get a baseline value for seafloor complexity before deployments of artificial reefs at the sites, has been completed. Work in progress, 50% of the fieldwork is finished and processing the collected data is started. Data delivery at 31/05/2021.

Permits for deployment of temporary objects (instruments for measuring environmental parameters, and racks with settling panels) have also been obtained. Two rounds of deployments of measuring devices have been carried out during 2020, covering four of our six sites. Instrument deployment at the two remaining sites is planned for Feb-March 2021. Measurements of temperature, salinity, current speed and direction, and turbulence have been collected to examine the environmental conditions on the restoration sites. The measurements are done in collaboration with two other projects to make the most of the collected data. A PhD-project on *Lophelia pertusa* larval dispersal in the Skagerrak and the Norwegian project EcoPulse, which studies the effect of internal waves on cold-water coral occurrence and

ecology. Through these collaborations, we will also attain modelled oceanographic data for longer time series, complementing our sporadically measured data.

**Action D.3** – The KPI webtool is finalised, and the data is submitted for verification.

**Action E.1** – A project website is up and running since Feb 2020. Notice boards are posted at six locations: the Kosterhavet Visitor Centre, the Tjärnö Marine Laboratory, at the National Park Entrances at Saltö, Rossö and Strömstad Tourist Centre and at Väderöarna guest harbour. We also had information about the project in a slide show in the visitor centre during the summer months, 30 000 people visited the centre during these months. A communication plan approved by the Steering Committee is ready. After the press release (15/06/2020) there has been interest from journalists. We were interviewed in the regional radio channel P4-Väst. There was an article on our project on the International Day for Biological Diversity at havet.nu (a web jointly run by several universities with extensive marine research and activities). We were also interviewed by Dagens Industri, a daily newspaper in trade and industry, resulting in articles following in many smaller newspapers and an interest in the project by a large industrial company specialising in underwater technology. A freelancing journalist has taken interest in our project and have published two articles: one in Formas (a government research council for sustainable development) online magazine Extrakt, and one in the major daily newspaper Göteborgs-Posten. There have also been articles in more local media (Trossen, Strömstad tidning, Allihopa), as well as in our social media.

**Students visits:** Our project has attracted attention from several students. One student from Malmö University interviewed us on cold-water corals and the effect of climate change, for a seminar project that she was going to present for her peers. Another student, from Västsvenska gymnasiet (high school) visited us for an interview on the effects of climate change on cold-water corals as part of her high school work. We have also had a weeklong visit from four high school students from Uppsala who do high school work on corals and sustainable development. Several university students have approached us and asked about possibilities to do Bachelor and Master projects within LIFE LOPHELIA.

**Action E.3:** – The process of replication and transfer has already started since we have been approached by a H2020-proposal consortium, iMERCES, which in one of the WPs aim to restore populations of *L. pertusa* in Scottish and Irish waters. In this proposed project, we will deliver knowledge on larval biology and settlement substrate selection by *L. pertusa* and hydrodynamic performance of reef structures to inform restoration unit design. The proposal was submitted in Jan 2021.

**Action F** – Agreement between partners. Continuous financial control of the project. Arrangement of kick-off and study visits at the University of Azores in Oct 2019. Participation and presenting project at kick-off meeting in Brussels in Nov 2019. Formation of a Steering committee, who have had four meetings. Monthly meetings with partners. Start-up of web-platform to share documents and photos between partners. Meetings with the EASME project monitor in Feb and Nov 2020.

**IMPACT so far:** The LIFE LOPHELIA project has become internationally recognized and we have become involved in an EU Biodiversa proposal which was submitted in Dec 2020. We have also been approached by a proposed EU-LIFE project consortium (LIFE ECOREST) aiming to restore cold-water gorgonian corals in the Mediterranean. If this project will get funded, we plan interactions between the projects.

## **Section 2 - Identified deviations, problems and corrective actions taken in the period (max 2 pages)**

All deliverables and milestones that are schedule to be completed are ready. There are no deviations from plan of Key Project Indicators, the indicators are reported in the KPI-webtool in 11/02/2021. Some problems, deviations and actions taken is presented below in the different actions:

**Action C.1.1.** We have had some problem with the procurement of the of high-resolution sonar mapping. At the first procurement, in late April 2020, we did not get any tenders in due time. This announcement was prolonged with one week, due to an interested company, that asked for one week longer. They had hard time counting on the assignment due to lack of people (due to corona). But despite this we received no offers on this procurement. A second procurement procedure were published in the beginning of July. Only one tender was received in the second procurement, and far above budget. After this we realized that the budget for C1.1 were set to low even though in the budget calculations we assumed a basis from a company that conduct similar surveys. Since this detailed mapping with AUV and sonar is very important for the success of the project the County Administrative Board of Västra Götaland decided to contribute with 2 million SEK (approximately 195,034 euro) to the LIFE LOPHELIA project so that this survey could be carried out. After negotiation with the company with the tender we agreed on a lower budget and slightly different scope of the survey. The delay is unfortunate but not critical. There will still be time to collect the necessary data and the mapping is under way.

**Action C.1.2.** The procurement of the multi-sediment traps for monitoring of sedimentation is not completed. Ideally the sediment traps would have been in place by the end of 2020 for first deployments early in 2021. The work with the procurement procedure is ongoing and first deployments are now scheduled for summer 2021. The delay is unfortunate but not critical. There will still be time to collect the necessary data.

**Action E.1** Study trips and networking with other LIFE projects, within Sweden and EU is postponed for the future due to covid-19.

**Action E.2.1.** Conferences we have planned to participate in were cancelled and moved to next year due to covid-19. This may mean that there will be fewer in total for us. Though we will try to compensate this during following years.