

Report on the outcomes of a Short-Term Scientific Mission¹

Action number: CA22163

Grantee name: Laura Gentile

Details of the STSM

Title: Sharing knowledge to support eel larval weaning

Start and end date: 09/06/2024 to 28/06/2024

Description of the work carried out during the STSM

Achievement of Planned Goals and Expected Outcomes

1. **Research Objectives:** The first week of the visit began with a meeting with the entire research team to clarify the mission's objectives and identify the best methods to achieve them. We discussed the different larval maintenance protocols and possible modifications. During this week, I collaborated with the research leader to follow the initial phase of reproductive trials and larval rearing up to feeding. I observed various reproductive events and how they were managed by the host, making comparisons with the protocols used in my research group. This phase fostered moments of sharing and exchanging experiences, allowing me to understand how to optimize the procedures.
2. **Collaborative Efforts:** The second week was dedicated to sharing my experiences on larval maintenance and discussing the formulation of the best possible diet. We decided on the basic ingredients essential for larval growth, based on the results obtained from previous experiments conducted in Bologna. I formulated an initial diet and, thanks to the availability of the ingredients and larvae, we immediately administered it to different larval batches present in the facility. Of three larval batches at 12 days after hatching, we chose the two with the least deformities. the number of larvae in the tank was about 200 larvae. The diet was fed twice a day, the larvae presented an active feeding behaviour towards the diet. 70% of the larvae had 100% full intestines.

At the end of this second week, the different methods of larval rearing were compared, and here too there are differences in the protocols. First of all, the larval rearing water used by WUR is reconstructed salt water while UniBo again uses UV-treated and filtered natural seawater. The environmental variables also differ in that UniBo maintains the larvae at a temperature of 20 °C and a salinity of 35 ppm, which is then reduced to 20 ppm in 4/5 days through a reduction protocol. WUR in contrast keeps the larvae at 18 °C and a salinity of 36 ppm which is drastically reduced to 25 ppm at the start of exogenous feeding. During

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this week due to the presence of different larval batches, I was also able to note the different malformations in the larvae and compare them with those that were observed by UniBo

3. **Assessment of Resources and Future Planning:** During the second week, we evaluated the available equipment, including tanks and systems for larval feeding. We explored the possibility of managing different environmental parameters simultaneously. Additionally, a list of ingredients already present in the facility and those needed for my return in September was drafted. This week was organisational and allowed me to provide all the necessary information for drafting an experimental protocol.
4. **Synthesis and Protocol Planning:** The final week represented the conclusion of the mission. Rich in new information, we synthesized the different approaches, discussing them thoroughly. We then designed an optimal protocol for larval maintenance, which will be tested in the coming months.

Description of the STSM main achievements and planned follow-up activities

The result of this short mission was first and foremost the fine-tuning of the experiments that we will do in September-December. We were able to align ideas and wrote a breeding protocol as envisaged in the objectives of WG3. This meeting made it possible to achieve the various objectives to improve the mobility of me as researcher, to create collaboration, and thanks to this short mission the collaborations between WUR and UniBo were strengthened.

In particular, we also made progress about the objectives of Working Group 3, to the first year's goal of gathering state-of-the-art knowledge and, subsequently, to the goals of filling knowledge gaps and designing an optimal protocol. We could compare the different protocols to obtain good larvae to use as a starting point. We have also taken action with respect to progressing with deliverable 4; Report on an optimal hatchery protocol for rearing larvae up to the glass eel stage. At the end of the next research period we will be able to draw up a protocol for larval rearing and write an article that will then be submitted to a peer-reviewed journal with an high impact factor.