



EUROPEAN TOP INSTITUTES AIM AT BREEDING EUROPEAN EEL FOR AQUACULTURE.

Towards a Self Sustained Aquaculture

The PRO-EEL project aims at breeding European eel (*Anguilla anguilla*) in captivity. Reproduction of eel in culture has become a focus research area due to a severe decline of natural stocks and an increasing interest to breed European eel for establishing a self-sustained aquaculture. PRO-EEL is a collaborative research project financially supported by the European Commission.

The objective of the project is to expand current knowledge on reproduction and develop standardized protocols for production of high quality gametes (eggs and sperm), viable embryos and feeding larvae of European eel. Methodology and technology will be established using small scale tests and validated in full scale experimental facilities.

Focus is on the primary bottlenecks in the controlled reproduction of eel, by improving our knowledge on their reproductive physiology, develop and apply methods to induce and complete gamete development. New tools are needed for the production of via-

ble eggs and larvae from broodstock in a regular and predictable way. Further challenges include identification of suitable larval rearing conditions and initial feed in order to establish reliable rearing protocols and procedure.

The approach of the project is highly integrative and multidisciplinary. The consortium brings together leading experts in eel reproduction complemented by excellence in disciplines filling gaps in knowledge and technology. It consortium includes 15 partners comprising European research institutes and industry partners, as well as an international collaboration partner country (ICPC).

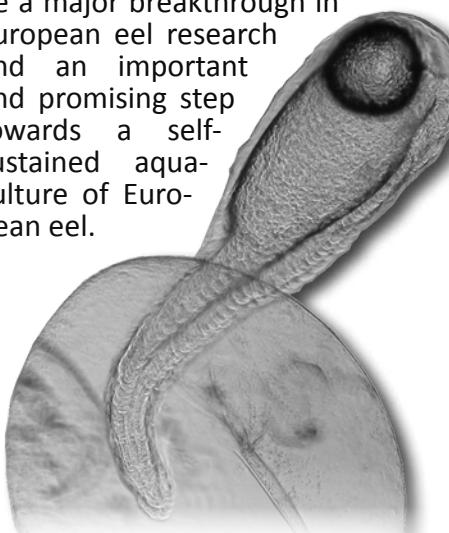
The project builds on cutting edge research tools available within the consortium including recent results of a series of DTU coordinated research projects, repeatedly producing larvae of European eel that accomplished the yolk sac stage and lived for up to 20 days after hatch. PRO-EEL provides the opportunity to improve these results through collaboration among experts in a European context.



Project participants

DTU	Technical University of Denmark (Denmark)
DLO	Foundation for Agriculture Research (Netherlands)
LU	University of Leiden (Netherlands)
CNRS	National Center for Scientific Research, France
ICTA-UPV	Institute for Animal Science and Technology, Polytechnic University of Valencia (Spain)
NOFIMA	Nofima Akvaforsk – Fiskeriforskning A/S (Norway)
UGENT	Ghent University (Belgium)
KU	University of Copenhagen (Denmark)
INRA	National Institute for Agronomic Research (France)
BAS	Billund Aquaculture Service ApS. (Denmark)
WU	Wageningen University (Netherlands)
INSTM	National Institute of Sciences and Technologies of the Sea (Tunisia)
IMR	Institute for Marine Research (Norway)
NTNU	Norwegian University of Science and Technology (Norway)
BIOMAR	BioMar A/S (Denmark)

The long duration of the eel larval stage, i.e. the leptocephalus stage, lasting one year or more, implies that production of glass eels will need further research on feed, ongrowing and culture techniques. However, the establishment of first feeding and continued feeding cultures of larvae will be a major breakthrough in European eel research and an important and promising step towards a self-sustained aquaculture of European eel.



Hatching larva of European eel (*Anguilla anguilla*). Project ROE II.
Photo: Peter Lauesen, Billund Aquaculture Service.

Specific objectives of the PRO-EEL Project

- Acquire specific knowledge on hormonal control and physiology of reproduction in order to improve broodstock nutrition, selection and conditioning and to develop suitable methods for induction of maturation in female and male eels.
- Develop and test new standardised protocols to facilitate stable production of high quality eggs and semen and establish standardised fertilisation procedures to ensure healthy embryonic development for a sustained production of yolk sac larvae.
- Develop physiologically adequate larval feeds and establish feeding cultures of larvae.

PRO-EEL will thereby contribute to a shift from capture based aquaculture, towards a self-sustained aquaculture with fry production under controlled conditions which is an indicated goal of the European Commission. In addition, the European eel is an evolutionary ancient species that serves as a useful model in research on fish reproductive physiology. Increasing knowledge on its reproductive physiology will also contribute towards the protection of this species.

This collaborative research project falls under the European Community's Seventh Framework Programme under the Food, Agriculture and Fisheries, and Biotechnology (Grant Agreement No. 245257).



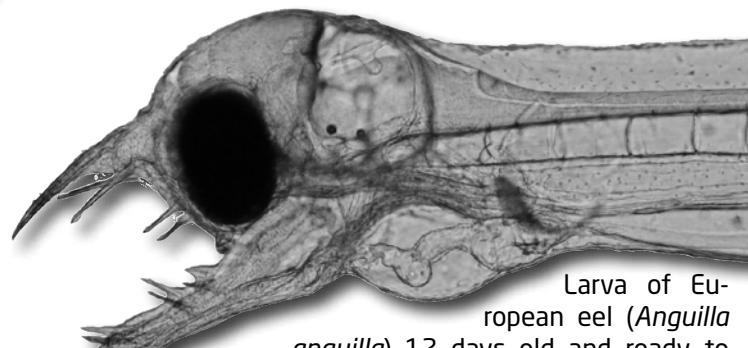
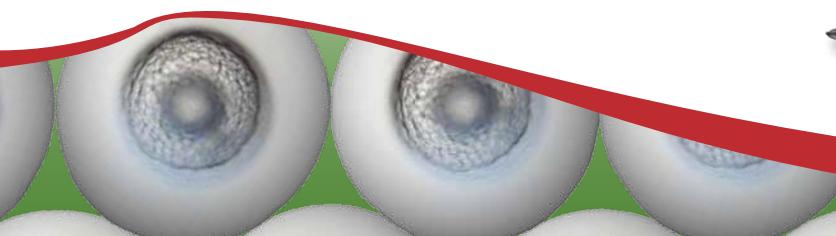
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European eel (*Anguilla anguilla*) larva 5 days after hatch. Project ROE III.
Photo: Jonna Tomkiewicz, Technical University of Denmark.



Larva of European eel (*Anguilla anguilla*) 12 days old and ready to feed. Project ROE III.
Photo: Christian Graver, Danish Eel Producers Association.