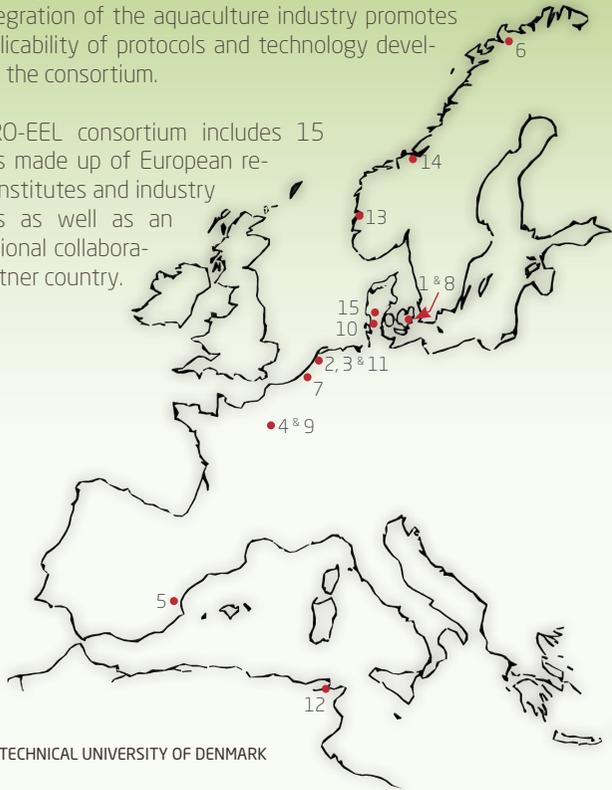


Project consortium

PRO-EEL brings together leading institutes and experts in European eel reproduction combined with excellence in the field to fill gaps in scientific knowledge and technology. The integration of the aquaculture industry promotes the applicability of protocols and technology developed by the consortium.

The PRO-EEL consortium includes 15 partners made up of European research institutes and industry partners as well as an international collaboration partner country.



•1 DTU - TECHNICAL UNIVERSITY OF DENMARK
DTU

•2 DLO - FOUNDATION FOR AGRICULTURE RESEARCH
IMARES
WAGENINGEN

•3 LU - LEIDEN UNIVERSITY
Universiteit Leiden

•4 CNRS - NATIONAL CENTER FOR SCIENTIFIC RESEARCH
CNRS

•5 ICTA-UPV - INSTITUTE FOR ANIMAL SCIENCE & TECHNOLOGY
UNIVERSIDAD POLITÉCNICA DE VALENCIA

•6 NOFIMA - NORWIGIAN INSTITUTE OF FISHERIES & FOOD RESEARCH
Nofima
marin

•7 UGENT - GHENT UNIVERSITY
UNIVERSITEIT GENT

•8 KU - UNIVERSITY OF COPENHAGEN

•9 INRA - NATIONAL INSTITUTE FOR AGRONOMIC RESEARCH
INRA

•10 BAS - BILLUND AQUACULTURE SERVICE
Billund
Aquaculture

•11 WU - WAGENINGEN UNIVERSITY
WAGENINGEN UNIVERSITY
WAGENINGEN

•12 INSTM - NATIONAL INSTITUTE OF MARINE SCIENCES & TECHNOLOGIES
INSTM

•13 IMR - INSTITUTE FOR MARINE RESEARCH
IMR

•14 NTNU - NORWEGIAN UNIVERSITY OF SCIENCE & TECHNOLOGY
NTNU - Trondheim
Norwegian University of Science and Technology

•15 BIOMAR - BIOMAR A/S
BIOMAR

reproduction of european eel : towards a self-sustained aquaculture



reproduction of european eel : towards a self-sustained aquaculture



PRO-EEL

2010 - 2014

Contact and further information

Project homepage
www.pro-eel.eu

Project coordinator

Dr. Jonna Tomkiewicz
Technical University of Denmark
National Institute of Aquatic Resources
Tel: +45 35 88 34 08
E-mail: jt@aqu.dtu.dk.

Project funding

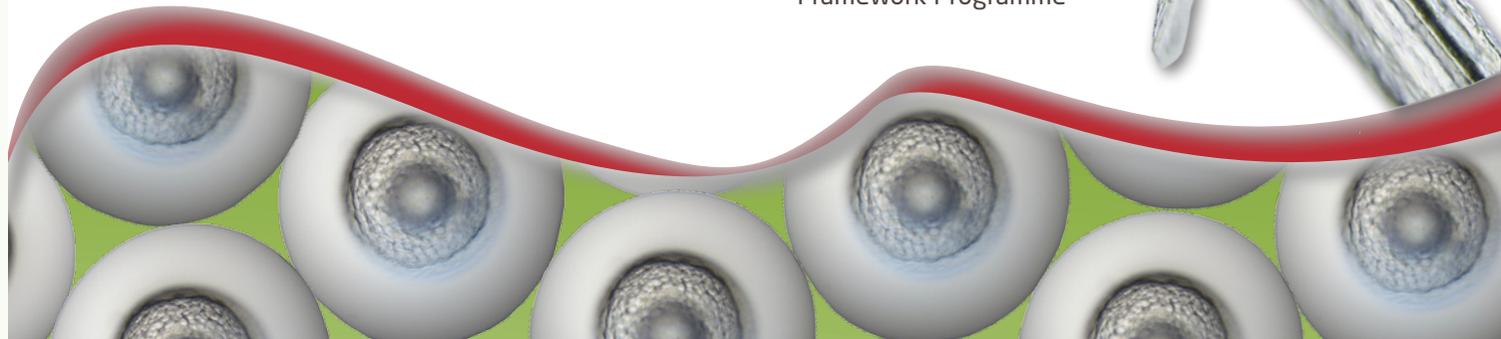
PRO-EEL is a collaborative research project supported financially by the European Commission under the theme "Food, Agriculture and Fisheries, and Biotechnology" within the 7th Framework Programme and the research area: "KBBE-2009-1-2-13: From capture-based to self-sustained aquaculture". Grant Agreement No. 245257.

<http://cordis.europa.eu/fp7>



The aim of the PRO-EEL project is to breed the European eel (*Anguilla anguilla*) in captivity. Eel reproduction has become a crucial area of research due to a severe decline in the natural stock, resulting in an urgent need to shift from capture-based aquaculture to the breeding of eels for a self-sustainable aquaculture.

PRO-EEL is an international research project under the European Commission's Seventh Framework Programme

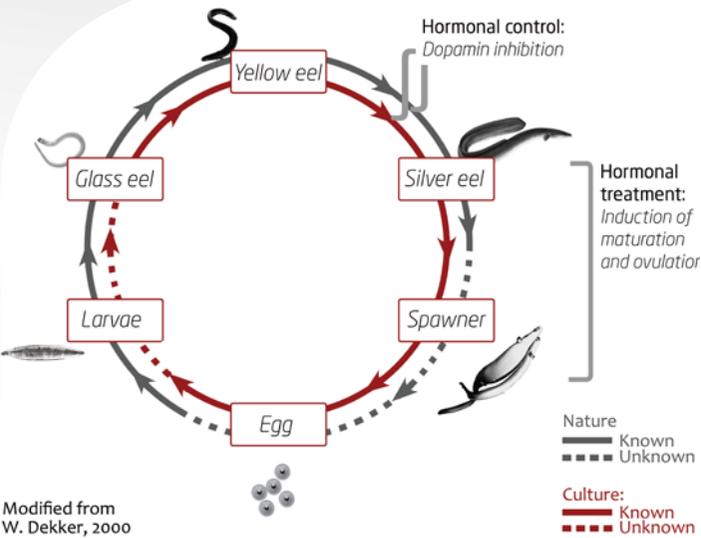


PRO - EEL

Objective The aim of the PRO-EEL project is to increase our knowledge about European eel reproductive and nutritional physiology in order to enable successful maturation and offspring production. This includes selecting appropriate broodstocks, enhancing egg and sperm quality, improving fertilisation methods and developing culture conditions favourable for the production of viable eggs and larvae. Another important area is the definition of suitable larval rearing conditions and initial feed for the larvae, which is crucial for their healthy development.

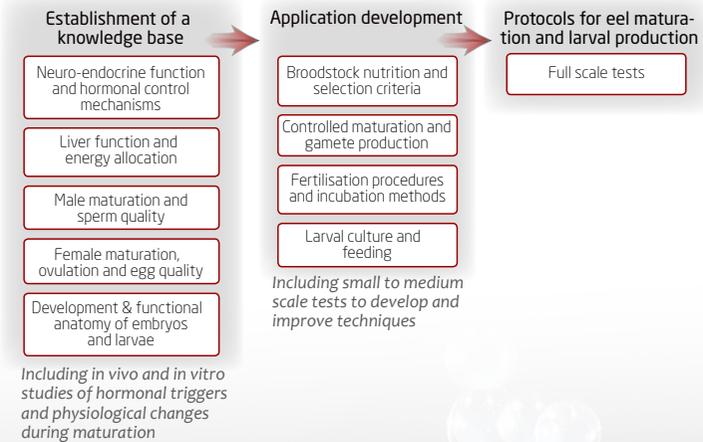
Reproduction of eels The silvering process, which prepares the eels for the long migration back to the Sargasso Sea, also involves the activation of hormonal control mechanisms that stunt the development of ovaries and testes. This inhibiting mechanism is released as the silver eels approach the spawning area, but how and when this occurs is not known. It is due to this inhibiting mechanism that eels do not breed in European waters or in captivity.

Concept PRO-EEL research is gradually leading from enhancing knowledge about eel physiology and hormonal control to its application in breeding stock selection, induced maturation, egg production and larval culture. Application development takes place in small to medium scale tests and the resulting standardised protocols for the selection of broodstocks, production of high quality gametes, *in vitro* fertilisation, incubation and larval rearing are subsequently subjected to full-scale testing.



Reproduction in captivity therefore uses hormonal treatment of female and male eels to develop eggs and sperm. The fish are stripped and fertilization carried out *in vitro*. The lack of information about the natural reproduction and early larval development has hampered the development of suitable methods to obtain viable eggs and larvae in attempts to breed European eels.

New scientific methods and technology may help to overcome the difficulties in finding efficient treatments to yield a stable production of viable eggs and larvae and establish adequate conditions for larval culture. PRO-EEL is building on recent results from international research projects including a Danish project, REEL, which has managed to produce larvae from European eels which have survived for up to 20 days post hatch.



Life cycle Little is known about adult eels and their breeding habits in the wild. European eels are believed to spawn in the Sargasso Sea, where their larvae are first observed. The larvae move with ocean currents toward the European continent over a period of three hundred days, after which they transform into a juvenile stage, the glass eel. In freshwater and estuarine habitats the glass eels grow and develop into yellow eels. At an age of 5 to 20 years they commence the silvering process that indicates the onset of sexual maturation and become silver eels, at which point they begin their migration back to the Sargasso Sea.

The development of standardised protocols for the stable production of viable eggs and larvae and the establishment of first feeding in larval culture will be an important and promising step towards a self-sustained aquaculture for European eels. The PRO-EEL project will thereby contribute to a shift from capture-based aquaculture towards a self-sustainable aquaculture with fry production under controlled conditions, which is one of the European Commission stated goals.