PRO-EEL

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PRO-EEL

Reproduction of European Eel: Towards a Self-sustained Aquaculture

The Challenge

The decline of European eel (Anguilla anguilla) and no signs of recovery has brought attention to the biologically unsustainable exploitation of the stock. In September 2007, the EU adopted the Council regulation 1100/2007 establishing measures for the recovery of the European eel stock. Fisheries of European eel for human consumption utilise fresh water and marine habitats and while aquaculture and restocking rely exclusively on the supply of glass eels caught each year. A controlled reproduction of eels is ever more urgent.

The primary bottleneck concerns development of the methods needed for a stable production of viable eggs and larvae, accomplishing the first critical life stages. The establishment of first feeding and feeding cultures of larvae would be a major breakthrough in European eel research and an important and promising step towards a self-sustained aquaculture of European eel.

The strength of the project is its interdisciplinary approach and the unique expertise of the consortium. PRO-EEL brings together leading institutes in eel reproduction complemented by excellence in disciplines filling gaps in knowledge and technology. A tight collaboration with the aquaculture industry promotes the applicability of developed technology.

Project Objective

The PRO-EEL project aims at reproducing European eel (Anguilla anguilla) in captivity.
The objective is to develop standardised protocols for production of high quality gametes, viable eggs and feeding larvae of European eel. Methodology and technology will be established using small scale tests and validated in full scale experimental facilities.

Key Points

- 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 yolksac larvae.
- Develop suitable and environmentally friendly larval feeds and establish feeding cultures of larvae.

EATiP *Thematic Area of Relevance*

TA1: Product Quality, Consumer Safety and Health
TA2: Technology and Systems
TA3: Managing the Biological Lifecycle
TA4: Sustainable Feed Production
TA5: Integration with the Environment
TA6: Knowledge Management
TA7: Aquatic Animal Health and Welfare
TA8: Socio-Economics and Management

Key Words

eel, reproduction, hormonal control, larval feeds, aquaculture

Project Information

Contract number:
245257
Contract type:
Small or medium-scale focused research project
Research area:
KBBE - From capture based to self-sustained aquaculture
Duration:
42 months (01/04/2010 – 31/03/2014)
Coordinator:
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SEVENTH FRAMEWORK PROGRAMME

Key New Knowledge Expected

Development of protocols for larval production.

Potential Impacts

Policy

- The PRO-EEL project represents a first step towards a self-sustained aquaculture with fry production under controlled conditions which is an indicated goal of the European Commission for the recovery of the European eel stock

RTD

- Increased knowledge about the reproductive physiology of the European eel (a useful model in the fish reproductive research) will lead to enhanced methods inducing maturation.
- New knowledge about functional anatomy of embryos and yolksac larvae will be applied to develop suitable feed.

SME

- Eel producers would become sustainable with no need for supply of caught glass eels.

Knowledge Transfer

- The potential protocols for larval production need to be expanded; hence no clear dissemination plan has yet been developed.

Related Publications/Projects

- Artificial Reproduction of Eel II and IIB (ROE II-IIB). 2005-2007.
- Artificial Reproduction of Eel III (ROE III). 2007-2009.
- Reproduction of European Eel in Aquaculture (REEL). 2009-2010.
- Results of a series of DTU coordinated research projects, which succeeded in producing larvae of European eel that accomplished the yolk sac stage and lived for up to 21 days.
  Tomkiewicz,J. and Jarlbæk,H. (2008). Artificial reproduction of eel: Roe II og IIB. DTU Aqua-rapport: 180-08.
- Tomkiewicz,J. and Sørensen (2009). Artificial reproduction of eel and culture of larvae: ROE III-LC. Project report. Technical University of Denmark. National Institute for Aquatic Resources.