ParaFishControl

Towards an improved image of aquaculture products regarding food safety

ParaFishControl Final Conference

“Innovative Strategies to Control Parasites in Aquaculture Farms”

Brussels, 11th March 2020

Dr. Miguel Ángel Pardo, AZTI

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Background

ParaFishControl

- A **zoonosis** is an infectious disease caused by bacteria, viruses or **parasites** that spreads between animals and humans

- Fish parasites (**zoonotic helminths**) can cause infectious disease in humans

- **Nematodes** of the family Anisakidae mainly in marine species
    - *Anisakis simplex* is considered an emergent biological hazard
    - The annual number of anisakiasis cases in Spain is estimated to be between 7,700 and 8,320 (Bao, et al., 2017)

- **Cestodes** and **trematodes** in freshwater species

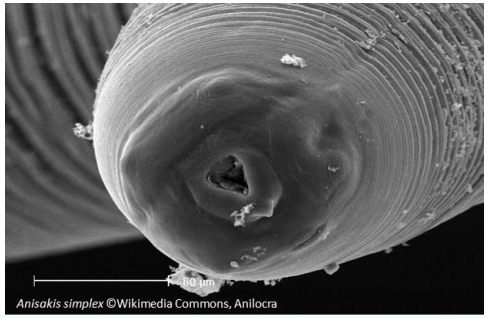
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Background (*A. simplex*)

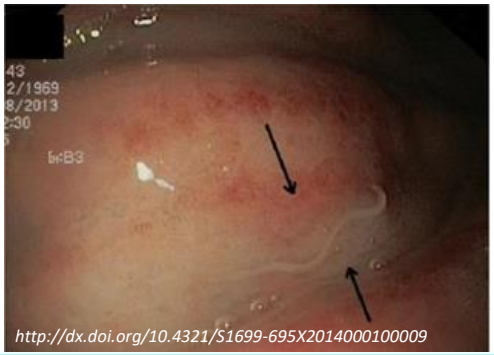
ParaFishControl

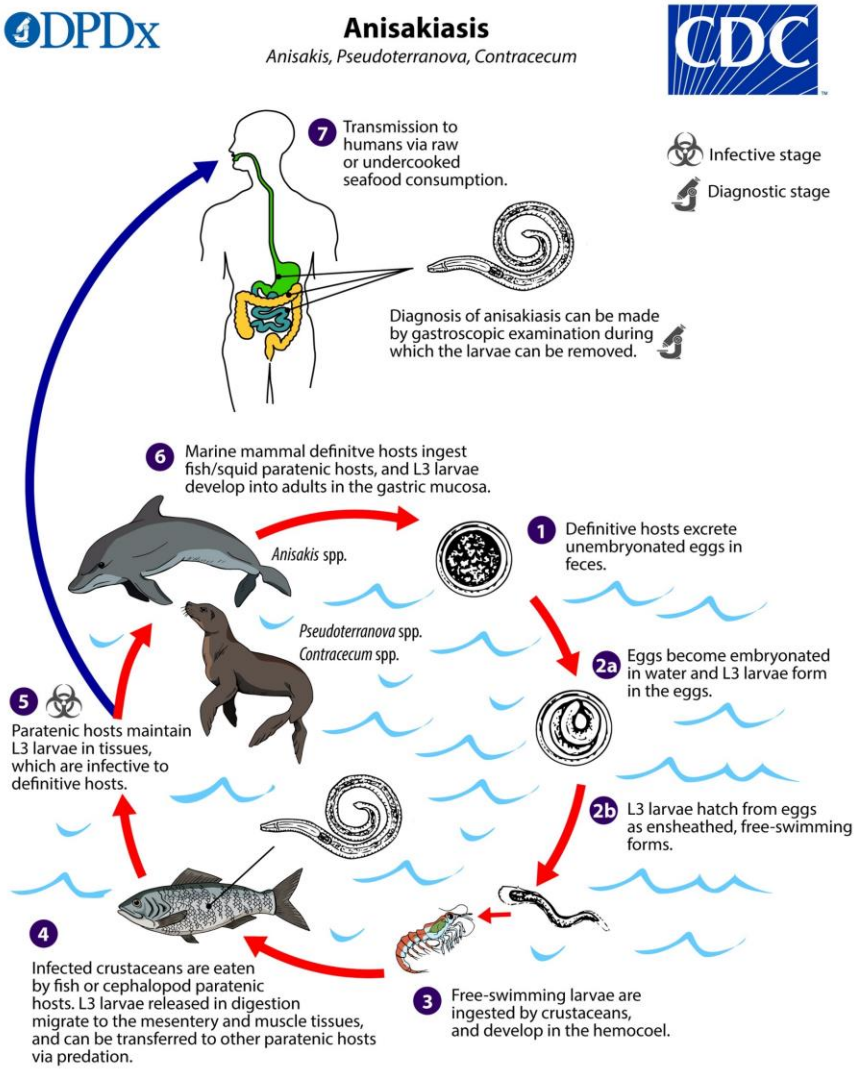
- **Anisakiasis** is a parasitic disease caused by nematodes (worms) that attach to the wall of the esophagus, stomach, or intestine

- **Symptoms** are abdominal pain, nausea, vomiting, abdominal distention, diarrhea, blood and mucus in stool, mild fever and allergic reactions (rash, itching and anaphylaxis)



Anisakis simplex ©Wikimedia Commons, Anilocra


http://dx.doi.org/10.4321/S1699-695X2014000100009



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Background (*A. simplex*)

ParaFishControl

efsa
European Food Safety Authority

Scientific Opinion on risk assessment of parasites in fishery products
[BIOHAZ. EFSA Journal 2010; 8(4):1543]

- No sea fishing grounds can be considered free of *A. simplex* larvae
- All wild caught seawater and freshwater fish must be considered at risk of containing viable parasites
- The risk of infection after consuming farmed Atlantic salmon, reared in floating cages/onshore tanks and fed compound feedstuffs, is negligible
- Apart from farmed Atlantic salmon, sufficient monitoring data are not available for any other farmed fish (in 2010)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Background

ParaFishControl

It is generally assumed that farmed fish products have a very low or null prevalence of these helminths. However, this assumption has not been demonstrated scientifically

In 2014, SFS-10-2014/2015 call included the topic for new project

ParaFishControl

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Food Risk Analysis (WP7)

ParaFishControl

General objective

To reduce the undesirable presence of zoonotic helminths in aquaculture fish products

RISK ASSESSMENT

Parasite infection: Marine and freshwater surveys

Allergy: Allergenicity tests (*in vivo, in vitro* and *ex-vivo*)

RISK MANAGEMENT

Identification of Critical Points with HACCP risk tool

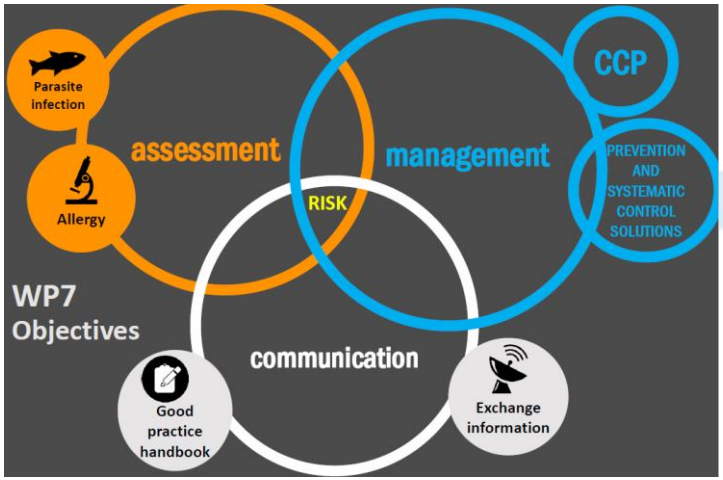
Recommending prevention and systematic control solutions

RISK COMMUNICATION

Exchanging information throughout interested parties

Good Practice Handbook for Minimum Parasite Infection

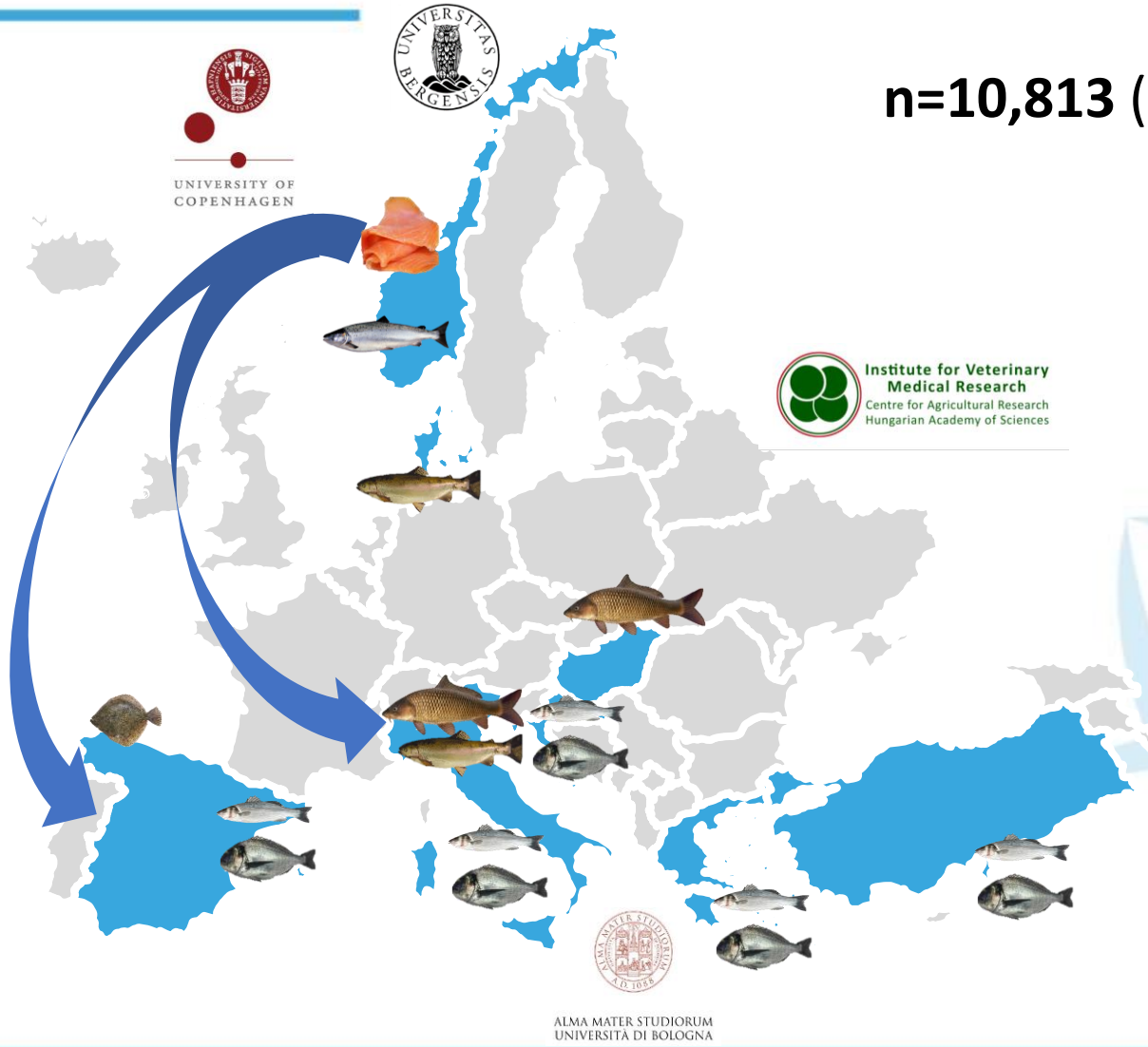
Comprehensible and translational Visual Thinking Strategy



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Sampling (2016-2018)

ParaFishControl



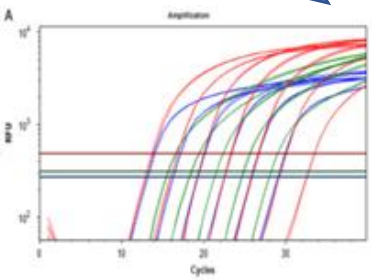
n=10,813 (1,480 runts)

CL 99%
MoE 4-8%

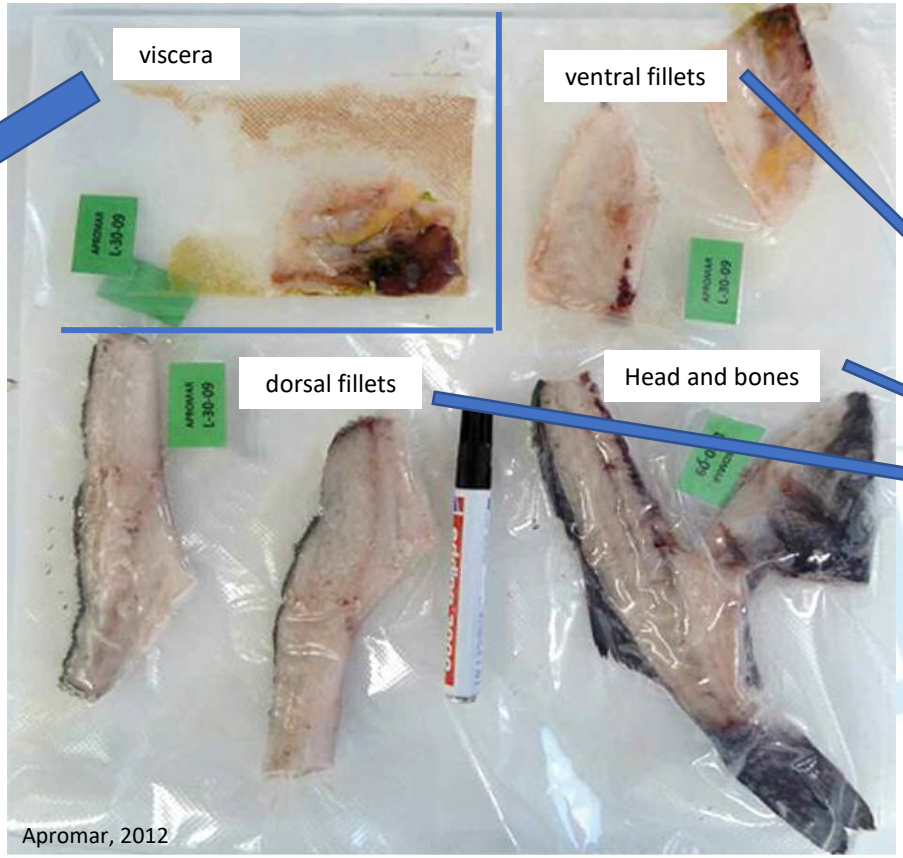
www.parafishcontrol.eu

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Detection



Real Time PCR



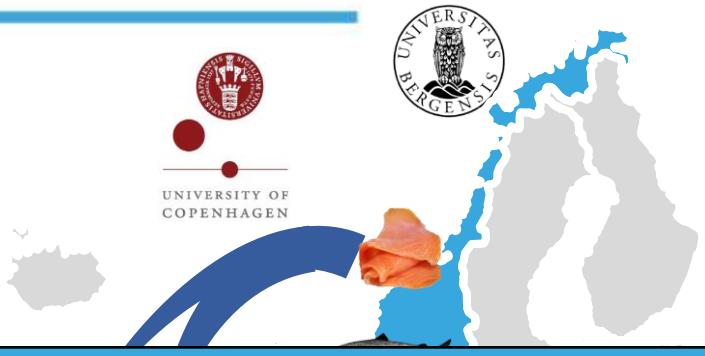
Apromar, 2012

Visual inspection and UV-press method

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Results

ParaFishControl



n=10,813 (1,480 runts)

CL 99%
MoE 4-8%

No zoonotic helmints were detected (n=10,813)

azti tecnalia

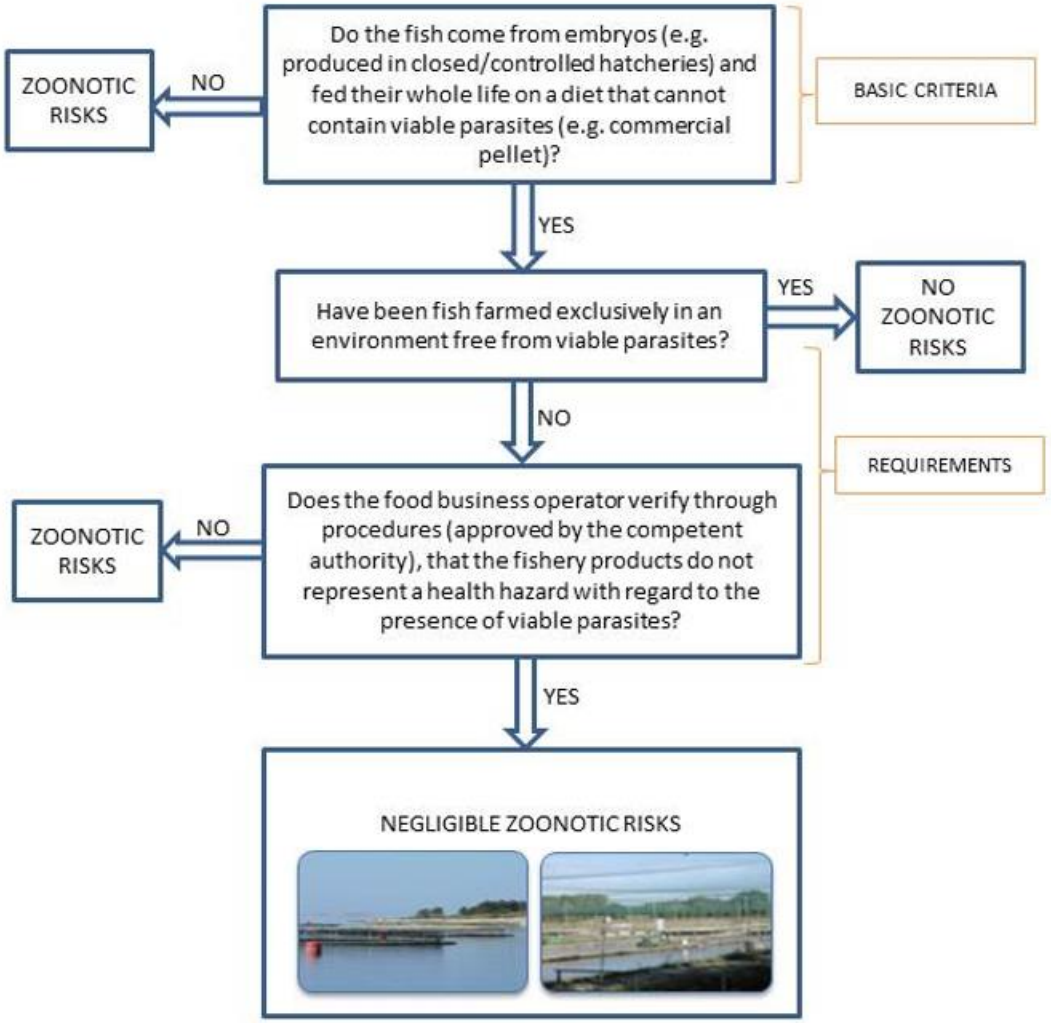
IIM Instituto de Investigaciones Marinas de Vigo

ELKEDE

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Conclusions



Flow chart to evaluate the zoonotic risk due to parasites along the production chain

HOWEVER, ZERO RISK DOESN'T EXIST

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Smart solutions to reduce risk

ParaFishControl

Voluntary Control System (VCS)

The proposal of VCS is based on this certification, aimed at the aquaculture sector, raises the profile of aquafarming businesses which, in addition to implementing measures to prevent the presence of anisakis, implement an exhaustive analytical control plan that allows them **to confirm that aquaculture products do not represent a health hazard regarding to the presence of zoonotic parasites**

This certification includes:

- Sampling plan
- Externals (single annual) and internal audits (conducted throughout the year)
- Exhaustive analytical plan (by Real Time PCR)
- Auditing documental control (registers, batch control, claims management)
- Etc…

AENOR
Asociación Española de Normalización y Certificación

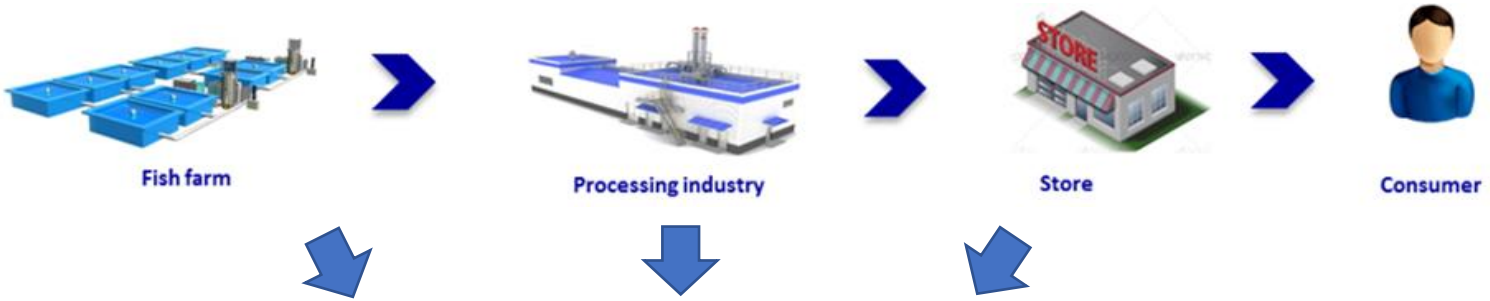
CERTIFIED

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Smart solutions to reduce risk

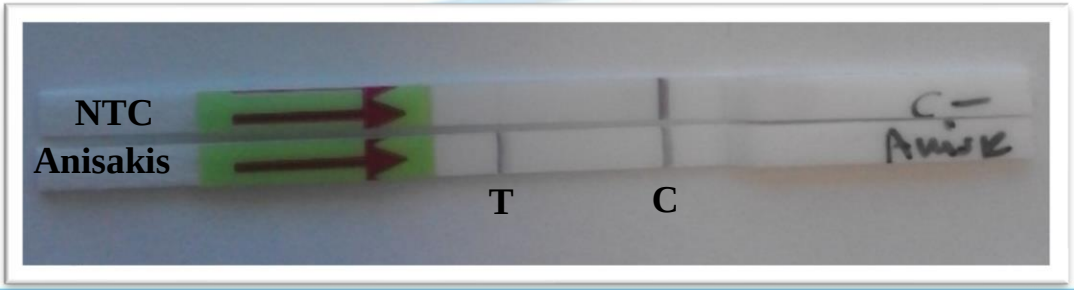
ParaFishControl

Under this future scenario and to enforces the certification of aquaculture products we have also developed…



Smart and portable solutions

- An app for mobile devices based on the intercalibrated uv-press method (CSIC)
- Digestion portable system make it available for farmers (KU)
- A portable molecular kit for the detection of *Anisakis simplex* (AZTI)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Impact for the Aquaculture Industry

ParaFishControl

- **Improvement of image** of European Aquaculture
- Increase of the **commercial value** of fish products from aquaculture
- Possible **exemption from the freezing treatment** for fish products intended to be consumed raw/undercooked following the Commission Regulation (EU) No 1276/2011 (already done for Atlantic salmon)

9.12.2011 EN Official Journal of the European Union L 327/39

REGULATIONS

COMMISSION REGULATION (EU) No 1276/2011

of 8 December 2011

amending Annex III to Regulation (EC) No 853/2004 of the European Parliament and of the Council as regards the treatment to kill viable parasites in fishery products for human consumption

(Text with EEA relevance)

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Acknowledgments

ParaFishControl

UNIVERSITY OF COPENHAGEN

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Institute for Veterinary Medical Research
Centre for Agricultural Research
Hungarian Academy of Sciences

azti tecnalia

hcmr
ΕΛΚΕΘΕ

IIM
Instituto de Investigaciones Marinas de Vigo

UNIVERSITAS BERGENSIS

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.

Thank You

ParaFishControl

mpardo@azti.es

Miguel Angel Pardo

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 634429. This output reflects the views only of the author(s), and the European Union cannot be held responsible for any use which may be made of the information contained therein.