



# European Union Reference Laboratory for Fish and Crustacean Diseases

NATIONAL INSTITUTE OF AQUATIC RESOURCES, TECHNICAL UNIVERSITY OF DENMARK

## EURL-Fish and Crustacean Diseases work program 2019-2020

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# EURL-Fish work program 2019-2020

## 5 main objectives:

- **1. TO ENSURE AVAILABILITY AND USE OF HIGH QUALITY METHODS AND TO ENSURE HIGH QUALITY PERFORMANCE BY NRLs.**

*1. Annual workshop fish diseases*

*2. Annual workshop crustacean diseases*

*3. Scientific working group*

*4. Proficiency test fish diseases*

*5. Proficiency test crustacean diseases*

*6. Diagnostic methods*

*7. Crustacean tank facilities*

# **EURL-Fish work program 2019-2020**

## **2. TO PROVIDE SCIENTIFIC AND TECHNICAL ASSISTANCE TO NRLs**

- 1. Training Courses*
- 2. Website [www.eurl-fish-crustacean.eu](http://www.eurl-fish-crustacean.eu)*
- 3. EURL Contact Lists*
- 4. Missions to NRLs for fish diseases*
- 5. International conferences and meetings*
- 6. Confirmatory diagnosis*
- 7. Pathogen characterization*

# EURL-Fish work program 2018 -2

- **3. TO PROVIDE SCIENTIFIC AND TECHNICAL ASSISTANCE TO THE EUROPEAN COMMISSION AND OTHER ORGANISATIONS**

1. *Diagnostic manuals*
2. *Survey and diagnosis*
3. *Emerging diseases*

- **4. REAGENTS AND REFERENCE COLLECTIONS**

1. *Pathogen library*
2. *Pathogen characterization*
3. [www.fishpathogens.eu](http://www.fishpathogens.eu)
4. *Production and supply of reagents*

- **5. REQUIREMENTS RELATED TO OTHER LEGISLATION**

1. *New animal health law*
2. *Listing susceptible species*

# *1-2 Organise scientific working group meetings*

No meetings in 2018

# 1-3 Organise Proficiency tests



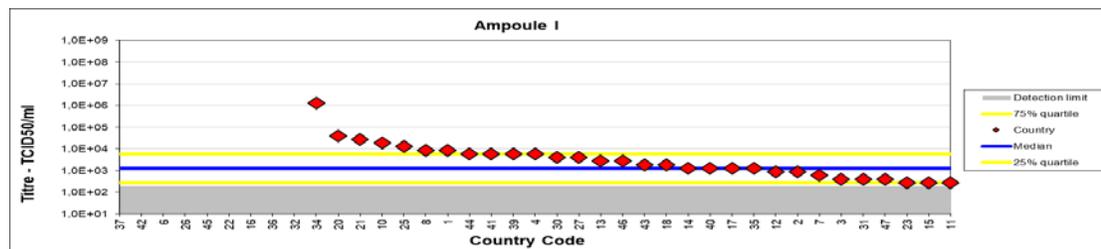
European Union Reference Laboratory for Fish and Crustacean Diseases  
National Institute of Aquatic Resources, Technical University of Denmark



## EURL for Fish Diseases

Report of the Inter-Laboratory Proficiency Test 2018  
for identification and titration of  
VHSV, IHNV, EHNV, SVCV and IPNV (PT1)  
and identification of  
CyHV-3 (KHV), SAV and ISAV (PT2)

Organised by the  
European Union Reference Laboratory for Fish and Crustacean Diseases,  
National Institute of Aquatic Resources, Technical University of Denmark,  
Kgs. Lyngby, Denmark



# 1-4 Novel molecular methods

*For the EURL to have molecular diagnostic methods of the highest scientific standards and to be able to provide these methods to all Member State NRLs.*

1. PRV-3 qPCR for surveillance purposes (validation of pooling procedures)
2. BKD: *Renibacterium salmoninarum* qPCR for surveillance purposes.

## 2-1 Training:

**Facilitate and provide training in laboratory diagnosis: EURL training courses Copenhagen, October 8th - 19th 2018**

**Course 1: Methods for implementation of surveillance procedures for listed fish diseases**

**Course 2: Introduction to histopathology in fish and crustacean diseases**



# Sub-activity 2.2 Webpage

*To provide the Member State NRLs with a fast entrance to information from the EURL.*

[www.eurl-fish.eu](http://www.eurl-fish.eu)

The EURL website was constantly updated during 2018 with reports and news from the EURL. The website has been accessed 6.098 times; in total 18.882 pages of the website has been accessed during 2018.



The screenshot shows the homepage of the European Union Reference Laboratory for Fish and Crustacean Diseases. The header is blue and contains the DTU logo on the right and the text "European Union Reference Laboratory for Fish and Crustacean Diseases" and "National Institute of Aquatic Resources, Technical University of Denmark" on the left. Below the header is a navigation menu with the following items: ACTIVITIES, REPORTS, MANUALS, NRL NETWORK, LEGISLATION, LINKS, NEWS, and CONTACT. The main content area features a large image of several fish on ice. Below the image is a slide titled "Proficiency tests" with a red heart icon, the number "1 / 4", and navigation arrows. To the right of the image is a text block titled "What is the EURL for Fish and Crustacean Diseases?" which provides information about the laboratory's funding, location, and functions. Below this text is another paragraph explaining the main purpose of the EURL and its coordination of activities with National Reference Laboratories (NRLs) in EU member states.

European Union Reference Laboratory for Fish and Crustacean Diseases  
National Institute of Aquatic Resources, Technical University of Denmark

ACTIVITIES | REPORTS | MANUALS | NRL NETWORK | LEGISLATION | LINKS | NEWS | CONTACT

What is the EURL for Fish and Crustacean Diseases?

The European Union Reference Laboratory (EURL) for Fish and Crustacean Diseases is funded by the European Commission and is situated within the Unit for Fish and Shellfish Diseases at DTU Aqua – the National Institute of Aquatic Resources at the Technical University of Denmark. The functions and duties are concerned with harmonizing diagnostic procedures for notifiable fish and crustacean diseases in Europe. The research group for Fish and Shellfish Diseases at DTU Aqua has since 1994 been designated as the EU reference laboratory for fish diseases. From July 2018, the functions and duties were expanded to also include crustacean diseases. The functions and duties are described in Council Directive 2006/88/EC.

A main purpose of the EURL is to ensure the quality of diagnostics of fish and crustacean diseases in Member States and to harmonize the procedures and methodologies applied. The work is mainly concerned with the exotic and non-exotic diseases mentioned in [Council Directive 2006/88/EC](#).

The EURL coordinates those activities of the National Reference Laboratories (NRLs) for Fish and Crustacean Diseases in EU that aim to harmonize diagnostic techniques and disseminate information of mutual interest. Details of our Work Programme is decided at the Annual Workshops of the NRLs for Fish and Crustacean Diseases.

Proficiency tests 1 / 4

## ***2.3. FishRefLabNet.***

***To ensure that relevant and important information rapidly can get from the EURL directly to the Member State NRLs.***

The e-mail list FishRefLabNet have been continuously updated during 2018 and now contain 145 people with interest in our work. The list now includes all the NRL contacts for the Crustacean Diseases.

## ***2.4. Molecular epidemiology.***

### ***To improve knowledge on disease spreading mechanisms within the EU.***

Molecular epidemiological analyses for Piscine orthoreovirus were done. PRV represents a treat to farmed salmonids in Europe.

For PRV-3 we studied its possible introduction in Europe in 2017, as well as its characterization, prevalence and molecular characteristics

## ***2.5. Producing virtual teaching material (e-learning).***

***To provide the Member State NRLs with “hands on” videos to be used for teaching of staff members.***

In 2018 the EURL created a YouTube channel called “EURL for fish disease”. This channels is used for uploading teaching material regarding proficiency testing and upcoming courses. Currently one video showing how to open proficiency test ampoules has been uploaded.

*Link to the YouTube channel [here](#)*

## ***2.6. Missions. To ensure a high standard of diagnostic capabilities of all Member State NRLs.***

A mission to the NRL in Norway was successfully organized in December 2018.

Laboratory visit at the  
National Reference Laboratory for Fish Diseases

Norwegian Veterinary Institute Oslo - Norway  
21<sup>st</sup> November 2018



## ***2.7. International meetings.***

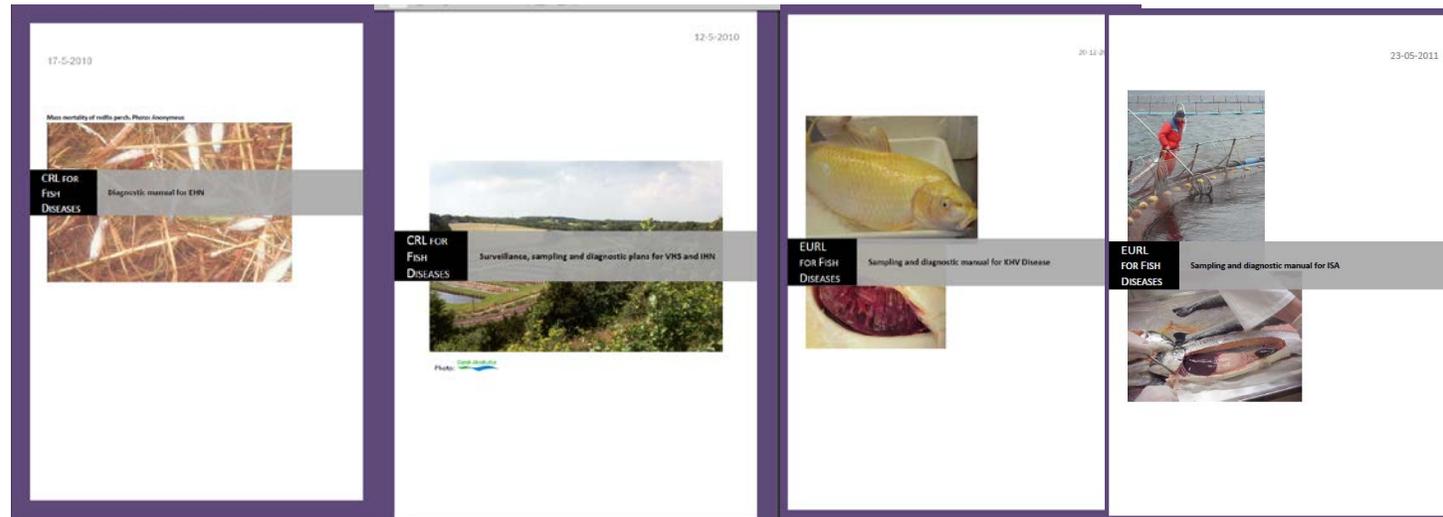
***To keep the EURL updated on the newest scientific information on emerging and listed exotic and non-exotic fish diseases, and to disseminate knowledge and scientific data provided by the EURL.***

EURL employees and members of the fish and crustacean unit at DTU participated in 9 international meetings and conferences and gave 23 oral presentations. The Unit authored 18 publications in Peer reviewed journals.

# 3. TO PROVIDE SCIENTIFIC AND TECHNICAL ASSISTANCE TO THE EUROPEAN COMMISSION AND OTHER ORGANISATIONS

## 3.1. Diagnostic manuals.

To have updated diagnostic manuals for all listed fish diseases available for Member State NRLs on the EURL website [www.eurl-fish.eu](http://www.eurl-fish.eu).



# 3.2. Survey and diagnosis. "collate and forward information on exotic and endemic diseases, that are potentially emerging in Community"

Report on Survey and Diagnosis of Fish Diseases in Europe 2017



The grid contains 47 numbered slides, each representing a different section of the report. The slides cover various topics including:

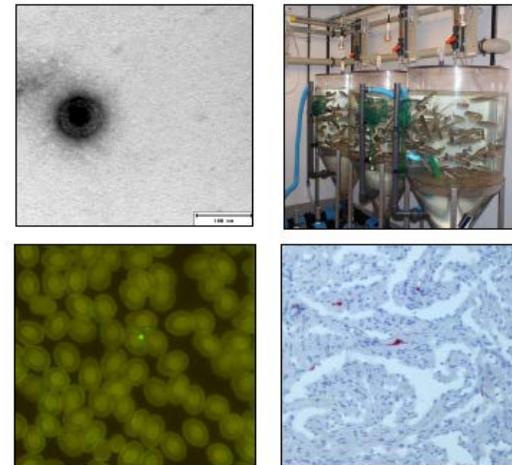
- Survey & Diagnosis of fish diseases in Europe (2017)** (Slide 1)
- Survey & Diagnosis of fish diseases in Poland - Community 2017** (Slide 2)
- Report** (Slide 3)
- Current situation** (Slide 4)
- Current situation** (Slide 5)
- Development of fish farming in Europe including survey and data** (Slide 6)
- Development of fish farming in EU 2007-2017** (Slide 7)
- Development of fish farming in EU 2007-2017** (Slide 8)
- EU-IPF Producer Report per Species** (Slide 9)
- Species** (Slide 10)
- RT production** (Slide 11)
- Sea production** (Slide 12)
- Sea production** (Slide 13)
- Sea production** (Slide 14)
- Sea production** (Slide 15)
- Sea production** (Slide 16)
- Sea production** (Slide 17)
- Sea production** (Slide 18)
- Sea production** (Slide 19)
- Sea production** (Slide 20)
- Main diagnosis** (Slide 21)
- EU-IPF of sea, brackish, continental fresh, and inland brackish, according to category for 2017** (Slide 22)
- EU-IPF of sea, brackish, continental fresh, and inland brackish, according to category for 2017** (Slide 23)
- EU-IPF of sea, brackish, continental fresh, and inland brackish, according to category for 2017** (Slide 24)
- EU-IPF of sea, brackish, continental fresh, and inland brackish, according to category for 2017** (Slide 25)
- Ecological risk** (Slide 26)
- EU-IPF in Europe 2017** (Slide 27)
- EU-IPF in Europe 2017** (Slide 28)
- EU-IPF in Europe 2017** (Slide 29)
- EU-IPF in Europe 2017** (Slide 30)
- EU-IPF in Europe 2017** (Slide 31)
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- EU-IPF in Europe 2017** (Slide 45)
- EU-IPF in Europe 2017** (Slide 46)
- EU-IPF in Europe 2017** (Slide 47)

### 3.3. Emerging diseases.

***For the EURL to have the most updated and highest scientific knowledge of emerging and re-emerging fish diseases in Europa***

In 2018, activities on emerging diseases have focused on PRV-3 infection in salmonids

*Piscine orthoreovirus.*  
Distribution, characterization and  
experimental infections in salmonids



Philosophiae Doctor (PhD) Thesis

Niccolò Vendramin

# 4. REAGENTS AND REFERENCE COLLECTIONS

**4.1. Pathogen library. For the EURL for fish and crustacean diseases to have an updated library of crustacean pathogens relevant for the EURL and Member State NRLs.**

The EURL received a large number of reagents and pathogens in 2018 (>250 units).

Technical Report 2018 from the EURL for Fish and Crustacean Diseases

Annex 10 Reagents received in 2018

Country	Name	Institute	Date of receipt	Material	Accession	Isolated No.	Remarks
Italy	Alessandro Turchetti	Italian Consortium for Aquaculture (ICITA) - Veneto Pathology Department	14.03.2018	Prionus (red) and salmonellosis	10	18.1715	NGEN, Ngen (PCR)
Japan	Ken Yano	National Institute of Aquaculture Science, National Institute of Education Agency, National Food Sanitation Agency	21.03.2018	Cell suspension, ERY, isolated	5	18.1716	To be used in cell lines
Philippines	Trudy Garcia	Department of Laboratory Services, Veterinary Research Unit	14.03.2018	ERY cell culture, BVDV, isolated	5	18.1689	For isolation and
Norway	Egon Rønnevik / Arnegeir Hjeltnes	Norwegian University of Life Sciences	14.03.2018	Cell suspension, head kidney	1	18.1714	Confirmation of BVDV and BVDV
Italy	Alessandro Turchetti	Italian Consortium for Aquaculture (ICITA) - Veneto Pathology Department	14.03.2018	1. Isolated NGEN, 2. Isolated NGEN	2	18.1715	For NGEN/NGENAD project
Italy	Alessandro Turchetti	Italian Consortium for Aquaculture (ICITA) - Veneto Pathology Department	21.03.2018	Cell lines in 25/25	20	18.1630	Test for Avianity
Spain	Carolina Palencia	ICITA (ICITA) - Institute of Aquaculture "Theresa Isidoro"	01.03.2018	Salmonella (S. enteritidis) strain ATCC 35961	1	18.1629	Isolated for diagnostic purposes
UK (Fish Crustacean)	Mark Tomkins	United States Corp. of Commerce, National Institute of Aquaculture (NIA)	07.03.2018	System for 10/100/1000 (1000) (1000) (1000) (1000) (1000)	10	18.1713	Prionus BVDV to be tested for BVDV, PEV, PACTV, VHSV
Norway	Egon Rønnevik	Norwegian University of Life Sciences	13.03.2018	Head	5	18.1638	Prionus BVDV to be tested for BVDV

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Republic of Macedonia	Atanasija Crnkovic	University of St. Cyril and Methodius	03.04.2018	Salmonella, E. coli, E. coli	1	18.1614	Confirmation of BVDV
Berlin	Yvonne von Steudnitz	Institute of Veterinary Medicine of Berlin	08.04.2018	Salmonella, E. coli	4	18.1682	Confirmation of BVDV and BVDV
France	Thomas Boute	IFREMER - Aquaculture	08.04.2018	Head, E. coli	2	18.1678	Q-PCR, PEV
UK (England)	James Dean	CEFAS, Weymouth Laboratory	08.04.2018	ISE with BVDV, BVDV, isolated	2	18.1726	NGEN, Ngen, confirmed AAD, preliminary use
Berlin	Yvonne von Steudnitz	Institute of Veterinary Medicine of Berlin	08.04.2018	Crustacean, E. coli	4	18.1682	Confirmation of CrPV (CPV) and CrPV
Spain	Teresa Tardieu	Veterinary and Food Laboratory	04.04.2018	Crustacean, E. coli, E. coli	10	18.1718	Confirmation of BVDV and sequencing
Italy	Alessandro Turchetti	Italian Consortium for Aquaculture (ICITA) - Veneto Pathology Department	13.07.2018	Cell suspension, isolated with VHSV	13	18.1697	VHSV, isolated from Italy from 2014, 2017 used for the NGS/NGAD project. Sequencing and to be tested in BVDV
Brazil	Vald Eneas	Marine Institute, Fish Health Unit	17.08.2018	Salmonella, E. coli, E. coli	1	18.1475	PACTV positive materials
Spain	Elisavete Berqueño	Family of Veterinary Science, Universidad Complutense de Chile	09.10.2018	Salmonella, E. coli, E. coli	1	18.1619	Participates reference material
Brazil	And Eiler	The Veterinary Institute	06.10.2018	Cell suspension, isolated with VHSV	2	18.1714	Salmonella reference
South Korea	Hyung-Pil Kim	SPCA	23.11.2018	Cell suspension, isolated with VHSV	10	18.1643	Cell Testing Project (CTP) / Characterization (CC)

Technical Report 2018 from the EURL for Fish and Crustacean Diseases

Iran	Hossein Arabi	Qazvin University, Faculty of Veterinary Medicine	23.11.2018	PTA, Crustacean, E. coli	2	18.1636	To be tested for BVDV, BVC, CrPV, CrPV and CrPV
Norway	Toralf Wastes	Norwegian Veterinary Institute, Hordaland	11.12.2018	Cell suspension, isolated with BVDV	1	18.1716	Isolated for BVDV (in house in work)
Norway	Toralf Wastes	Norwegian Veterinary Institute, Hordaland	11.12.2018	Crustacean, E. coli, E. coli	2	18.1716	PACTV positive materials
Norway	Toralf Wastes	Norwegian Veterinary Institute, Hordaland	11.12.2018	Salmonella, E. coli, E. coli	1	18.1716	BVDV positive material, Gen sequencing, (Shimoda, Food)

## ***4.2. Pathogen characterization.***

***For the EURL to be able to identify and characterize isolates of listed viral fish pathogens on request from the Member State NRLs.***

**Support to NRLs in molecular characterization of IHNV isolates occurring in their country.**

**Infection trials were conducted with IHNV from Finland in order to assess and compare the Finnish IHNV virulence to rainbow trout.**

**Isolates from the first outbreak of IHN in Estonia in 2018 were likewise sequenced and characterized.**



***5.1. New animal health law. To prepare regulations related to the new animal health law.***

**Giving advice to the content of delegated act, lists of susceptible species and consultancy concerning specific questions raised by the Member states to the Commission.**

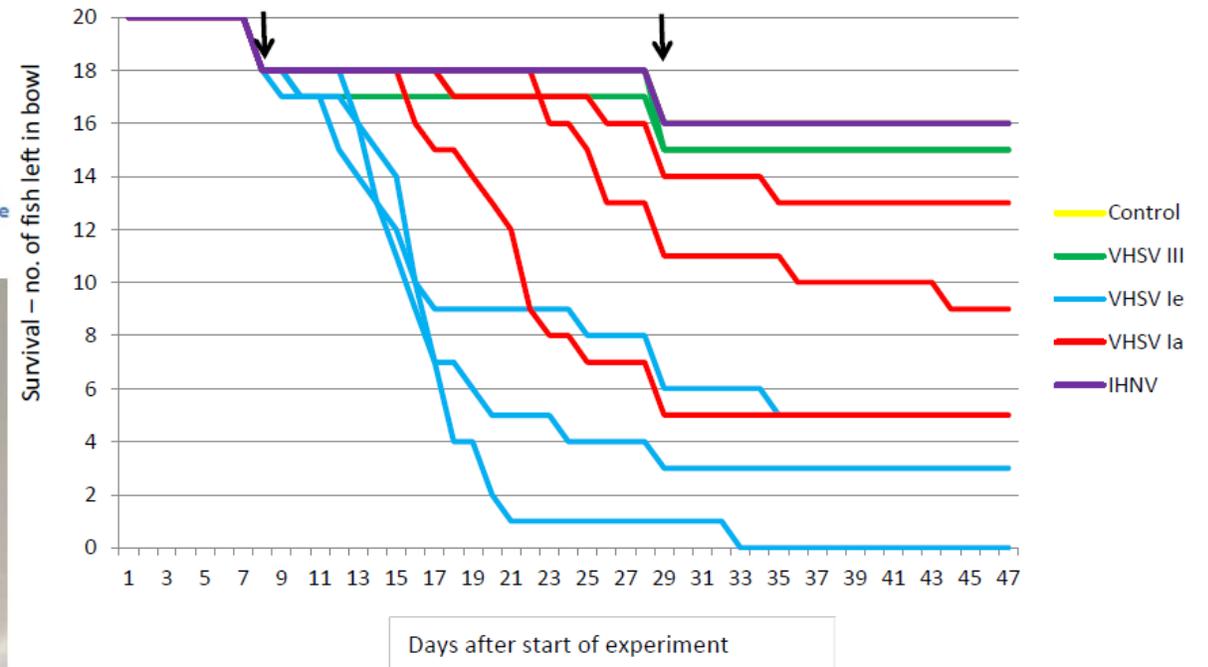
## 5.2. Listing susceptible species. For the EU Member States to have an updated list of susceptible species for the listed fish diseases

experimental infection trials were conducted on Sea bass juveniles with 1 IHNV and 4 VHSV isolates.

Figure 2: Bleeding in the cranial region of a sea bass infected with VHSV. The orange elastomer tag is also just visible below the dorsal fin.



Figure 1: Survival curves of sea bass injected with control medium, IHNV or VHSV. Arrows indicate days on which 2 fish were sampled from each bowl (except day 28 for two of the VHSV 1e bowls where few fish remained).



# Thank you for your attention

