



European Union Reference Laboratory for Fish and Crustacean Diseases

NATIONAL INSTITUTE OF AQUATIC RESOURCES, TECHNICAL UNIVERSITY OF DENMARK

EURL-Fish and Crustacean Diseases work done in 2018

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EURL-Fish work program 2018-1

5 main objectives:

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

1. *Annual workshop*
2. *Scientific working group*
3. *Proficiency test*
4. *Novel molecular methods*

2. TO PROVIDE SCIENTIFIC AND TECHNICAL ASSISTANCE TO NRLs

1. *Training*
2. *Webpage*
3. *FishRefLabNet*
4. *Molecular epidemiology*
5. *Producing virtual teaching material (e-learning)*
6. *Missions*
7. *International meetings*

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
 4. *Production and supply of reagents*

- **5. REQUIREMENTS RELATED TO OTHER LEGISLATION**
 1. *New animal health law*
 2. *Listing susceptible species*

1-1 Organise and prepare for the 22nd Annual Workshop



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

Report of the
22nd Annual Workshop of the National Reference
Laboratories for Fish Diseases

Kgs. Lyngby, Denmark
May 30th – 31st 2018



Lumpfish in experimental trial at DTU



Dissection of fish during a 2017 EURL
training course

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

1-2 Organise scientific working group meetings

No meetings in 2018

1-3 Organise Proficiency tests



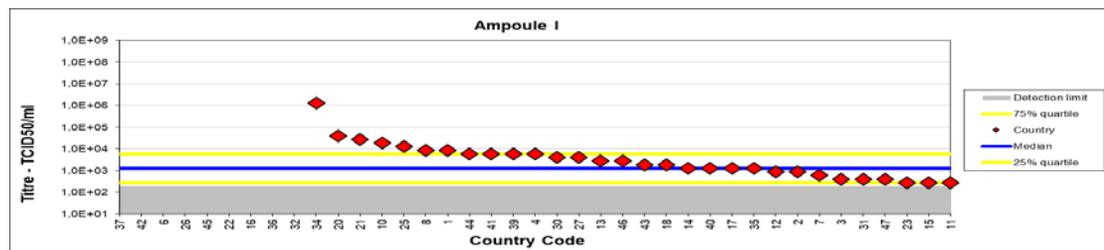
European Union Reference Laboratory for Fish and Crustacean Diseases
National Institute of Aquatic Resources, Technical University of Denmark



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

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 features the DTU logo and the text "European Union Reference Laboratory for Fish and Crustacean Diseases" and "National Institute of Aquatic Resources, Technical University of Denmark". A navigation menu includes "ACTIVITIES", "REPORTS", "MANUALS", "NRL NETWORK", "LEGISLATION", "LINKS", "NEWS", and "CONTACT". The main content area has a blue background with a photo of fish and the heading "What is the EURL for Fish and Crustacean Diseases?". Below the photo is a "Proficiency tests" section with a "1 / 4" indicator and navigation arrows. The text describes the EURL's mission and its role in harmonizing diagnostic procedures for fish and crustacean diseases in Europe.

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
21st November 2018



2.7. International meetings.

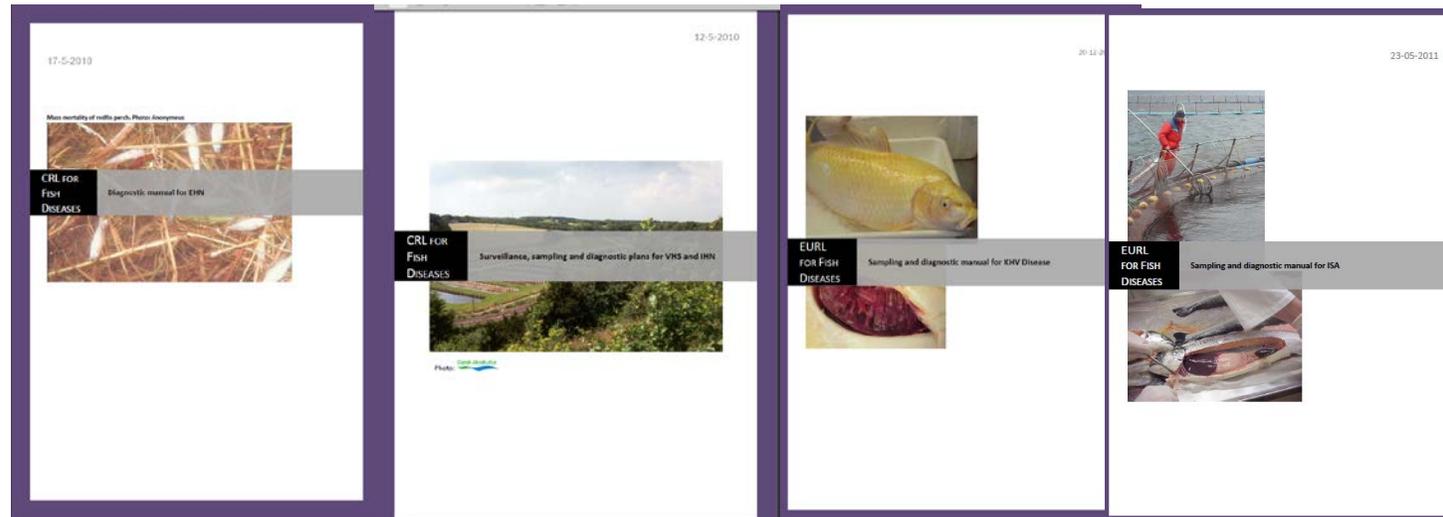
To keep the EURL updated on the newest scientific information on emerging and listed exotic and non-exotic fish diseases, and to disseminate knowledge and scientific data provided by the EURL.

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.



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

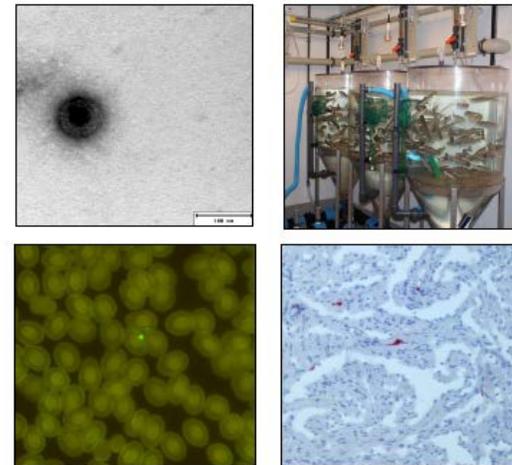


3.3. Emerging diseases.

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	Prevalent No.	Remarks
Italy	Alessandro Turchetti	Italian Consortium for Aquaculture (ICITA) - Veneto Pathology Department	14.03.2018	Prionus (red) and salmonellosis	10	18.1715	NGEN, Nigen (PCR)
Japan	Ken Yano	National Institute of Aquaculture Science, National Institute of Education Agency, National Food Sanitation Agency	21.03.2018	Cell suspension, ERY, salmonellosis	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 reference	5	18.1689	For reference only
Norway	Espen 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. unidirectional NGEN, 2. salmonellosis reference	2	18.1715	For NGEN/NGENAD project
Italy	Alessandro Turchetti	Italian Consortium for Aquaculture (ICITA) - Veneto Pathology Department	21.03.2018	Cell lines in 25/25/25	20	18.1630	Test for Avianity
Spain	Carolina Palencia	ICITA (ICITA) - Institute of Aquaculture "Theresa Isidoro"	01.03.2018	Salmonellosis (red) salmonellosis	5	18.1629	Material for diagnostic purposes only
UK (Fish Crustacean)	Mark Tomkins	United States Corp. of Commerce, National Institute of Aquaculture (NIA)	07.03.2018	Salmonellosis (red) salmonellosis	10	18.1713	Prionus BVDV to be tested for BVDV, PEV, PACTV, VHSV
Norway	Espen Rønnevik	Norwegian University of Life Sciences	12.03.2018	Head	5	18.1638	Prionus BVDV to be tested for BVDV

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Republic of Macedonia	Atanasija Crnkovic	University of Ss. Cyril and Methodius	03.04.2018	Salmonellosis (red) salmonellosis	1	18.1614	Confirmation of BVDV
Senegal	Yves Gueye	Institute of Veterinary Medicine of Senegal	08.04.2018	Salmonellosis (red) salmonellosis	4	18.1682	Confirmation of BVDV and BVDV
France	Thomas Bouteiller	IFREMER - Aquaculture Department	08.04.2018	Head, salmonellosis	2	18.1678	Q-PCR, PEV
UK (England)	James Dean	CEFAS, Weymouth Laboratory	08.04.2018	ERY with head, salmonellosis	2	18.1726	NGEN, Nigen, salmonellosis, BVDV, PACTV, VHSV
Senegal	Yves Gueye	Institute of Veterinary Medicine of Senegal	08.04.2018	Cell suspension in medium	4	18.1682	Confirmation of CgVIV (BVDV) and CgVIV
Spain	Teresa Toldosa	Veterinary and Food Laboratory	04.04.2018	Salmonellosis (red) salmonellosis	10	18.1718	Confirmation of BVDV and sequencing
Italy	Alessandro Turchetti	Italian Consortium for Aquaculture (ICITA) - Veneto Pathology Department	13.07.2018	Cell suspension, salmonellosis with VHSV	13	18.1697	VHSV reference from Italy from 2014, 2017 used for the NGEN/NGENAD project. Sequencing and to be tested for BVDV
Brazil	Vald Emanoel	Marinha Institute of Fish Health Unit	17.08.2018	Salmonellosis (red) salmonellosis	5	18.1475	PACTV positive material
Chile	Elizabeth Sepulveda	Faculty of Veterinary Science, Universidad Austral de Chile	09.10.2018	Salmonellosis (red) salmonellosis	1	18.1619	Participates reference material
Spain	Andrés López	The Veterinary Service	06.10.2018	Cell suspension, salmonellosis with VHSV	2	18.1714	Salmonellosis reference
South Korea	Hyung-Jin Kim	SPCA	23.11.2018	Cell suspension, salmonellosis with VHSV	10	18.1643	Cell suspension, Prionus VHSV / Chlamydia (PCR)

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Iran	Hossein Arabshahi	Qazvin University, Faculty of veterinary medicine	23.11.2018	PTA, Clark with salmonellosis	2	18.1636	To be tested for BVDV, BVC, CgVIV, 2 and BVDV
Norway	Toralf Wasteson	Norwegian Veterinary Institute, Hordaland	11.12.2018	Cell suspension, salmonellosis with BVDV	4	18.1716	NGEN, Nigen, BVDV (in house in work)
Norway	Toralf Wasteson	Norwegian Veterinary Institute, Hordaland	11.12.2018	Chlamydia (PCR) in BVDV	2	18.1716	PACTV positive material
Norway	Toralf Wasteson	Norwegian Veterinary Institute, Hordaland	11.12.2018	Salmonellosis (red) salmonellosis	4	18.1716	BVDV 2 positive material, BVDV sequencing, BVDV (PCR)

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.

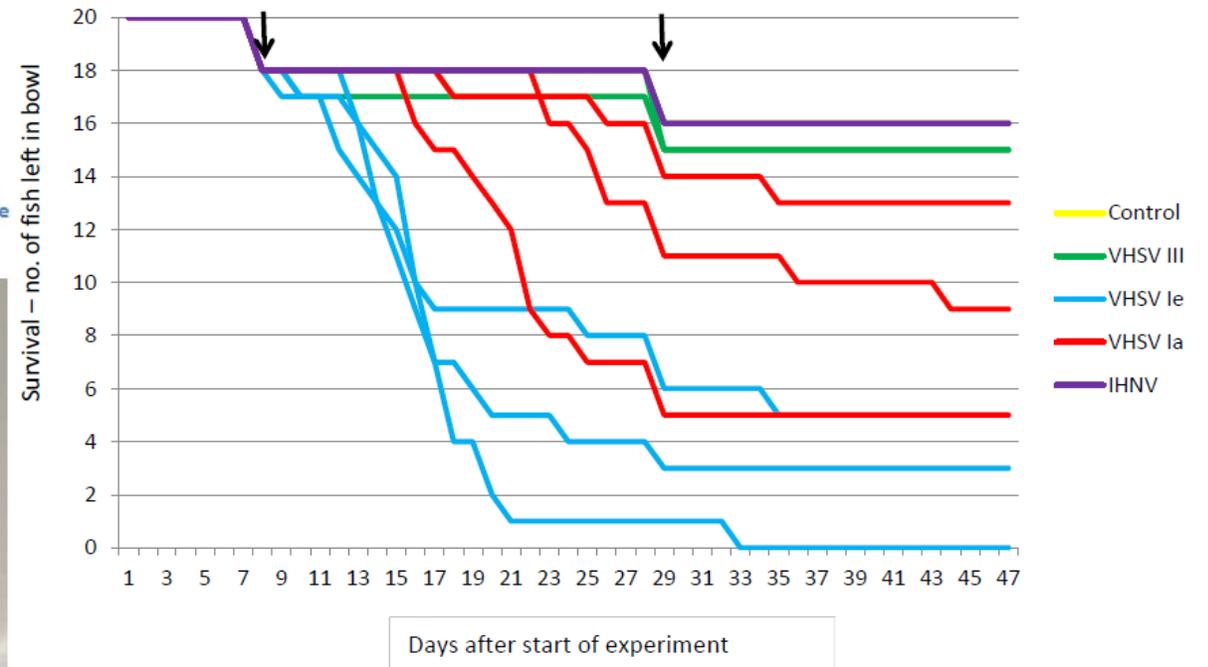
5.2. Listing susceptible species. For the EU Member States to have an updated list of susceptible species for the listed fish diseases

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

