Better Training for Safer Food
BTSF

Training on Animal Health Prevention and Control of Aquaculture Animals

Control and eradication of fish diseases‘ outbreaks

L5

Niels Jørgen Olesen

Health and Consumers

Notification of disease and Minimum control measures to be applied under Directive 2006/88

Notification

- **When the presence of a disease listed in part II of annex IV of Directive 2006/88 is suspected the competent authority should be immediately informed. If increased mortality occurs in aquaculture animals it should be immediately notified to the competent authority or to a private veterinarian for further investigation.**

- **When an exotic disease or non-exotic disease is confirmed in a territory, zone or compartment declared free Member States should notify other Member States, the Commission and EFTA Member States within 24 hours**

- **Controlling the subsequent spread of the problem.**

European Commission

Notification of disease and Minimum control measures to be applied under Directive 2006/88

- If a disease is suspected action should be taken to limit its spread through and from the site. This may be easier if the site has been subdivided into sections or zones.

- In the event of a disease related mortality, or a fish kill through other factors, a means of disposal should have been identified as laid down in the Animal by-products Regulation 2009/1069. Information on approved methods for waste disposal can be found on the efishbusiness website.

- The Bio-security measures plan template provides a check list for APB's in reviewing bio-security for their APB or aquaculture related business and is a valuable tool in responding to a disease outbreak.

Minimum control measures on confirmation of an exotic disease listed in part II of Annex IV

When a farm is officially declared infected;

- **a containment area appropriate to the disease in question is established, including a protection zone and surveillance zone, around the farm declared infected must be established;**
- **no restocking to take place and no aquaculture animals moved into, within, and out of the containment area unless authorised by the competent authority; and**
- **any additional measures necessary to prevent the further spread of the disease to be implemented.**
- **Animals of commercial size showing no clinical signs may be harvested under competent authority and introduced into authorised processing establishments presenting no risk of disease spread and with effluent treatment**

Minimum control measures on confirmation of an *exotic disease* listed in part II of Annex IV

- Both live and dead fish showing clinical signs of disease must be removed and disposed of under the supervision of the competent authority in accordance with Regulation (EC) No 1069/2009 laying down health rules concerning animal by-products not intended for human consumption, as soon as possible in accordance with contingency plan provisions in Art 47
- Aquaculture animals which have not reached commercial size, showing no clinical signs shall, in an appropriate timeframe taking into account the type of production and the risk such animals pose for further spread of the disease, be removed and disposed of under the supervision of the competent authority

European Commission

Minimum control measures on confirmation of an *exotic disease* listed in part II of Annex IV

- Where possible, infected farms shall be fallowed after emptying and, cleansed and disinfected. Farms rearing aquaculture animals not susceptible to the disease in question and decisions on fallowing shall be based on a risk assessment

- Member States to take measure to prevent disease spread and following eradication; sampling and surveillance appropriate for the disease in question and with adequate negative results consider lifting control measures

Minimum control measures on confirmation of an *non-exotic disease* listed in part II of Annex IV

- **Following confirmation of a non-exotic disease a Member State can either apply the measures for an exotic listed disease and draw up an eradication plan to regain status. Clinically healthy juvenile fish can be on-grown to market taking care to minimise risk of spread**

- **Where Member States do not wish to regain disease free status the following containment measures need to be in place:**

- **Need to declare farm infected**
- **Establish a containment area, protection and surveillance zone**
- **Restrict live aquaculture animal movements**
- **Remove and dispose of dead fish under supervision of OS in accordance with Regulation 2002/1774 and in a timely manner**

Minimum control measures on confirmation of an *non-exotic disease* listed in part II of Annex IV

- Where diseases listed are confirmed in wild animals the competent authority shall monitor the situation and take appropriate measures to prevent further spread They must inform Member States and the Commission of the measures taken

- There are also provisions for emerging diseases with requirements to take emergency action and report to other MS, EFTA and the Commission. A review by the Commission after 4 weeks should result in either extension of the controls, listing of the disease or the controls repealed

- Also provisions for limiting the impact of diseases not listed within limits of what is appropriate. Commission approval necessary if intra-community trade control necessary

European Commission

Eradication, risk assessment and Contingency planning

Control programmes

Chapter VI deals with control programmes and surveillance and section 1 with surveillance and eradication programmes specifically. Approval for such plans through Commission committee procedures thereby providing trade controls to prevent disease spread.

The programmes must conform to standards set by the Commission and currently in draft, defining numbers and timing for inspection and sampling as well as details of the laboratory methods.

Programmes not be approved unless they contain at least:

(a) a description of the epidemiological situation of the disease before the date of commencement of the programme;

(b) analysis of estimated costs and anticipated benefits of programme;

(c) likely duration and objective of the programme and completion date

(d) description and demarcation of the geographical and administrative area in which the programme is to be applied.

Programmes continue until the area is declared free or programme withdrawn

European Commission

Contingency planning for emerging and exotic diseases

Member States to draw up a contingency plan specifying the national measures required to maintain a high level of disease awareness and preparedness and to ensure environmental protection.

The contingency plan shall:

- *Provide the competent authority with the authority and means to access all facilities, equipment, personnel and other appropriate materials necessary for the rapid and efficient eradication of an outbreak;*
- **Ensure coordination and compatibility with neighbouring Member States and encourage cooperation with neighbouring third countries;**
- **Where relevant, give a precise indication of the vaccine requirements and vaccination conditions considered necessary in the event of emergency vaccination.**

European Commission

Contingency planning for emerging and exotic diseases

Annex VII lays down criteria for contingency plans.

- **Contingency plan approval in accordance to Article 62(2).**
- **Updating and re-approval every five years.**
- **The contingency plan to be implemented in the event of an outbreak of emerging or exotic diseases listed in Part II of Annex IV**

CONTINGENCY PLANS FOR THE CONTROL AND ERADICATION OF DISEASES IN AQUACULTURE

ANNEX VII

CRITERIA AND REQUIREMENTS FOR CONTINGENCY PLANS

Member States shall ensure that contingency plans meet at least the following requirements:

European Commission

Member States shall ensure that contingency plans meet at least the following 12 requirements

1

Legal powers

Emergency funds, budgetary means and financial resources

Central decision-making unit

Local disease control centres;

Adequate resources;

Adequate laboratory facilities and skills

Operations manual

European Commission

Member States shall ensure that contingency plans meet at least the following requirements 2

Emergency vaccination, where appropriate;

Training

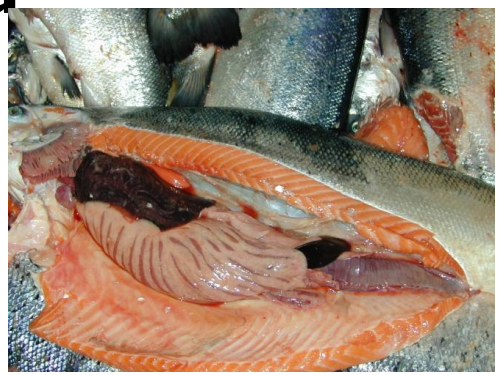
Resources needed to control a large number of outbreaks

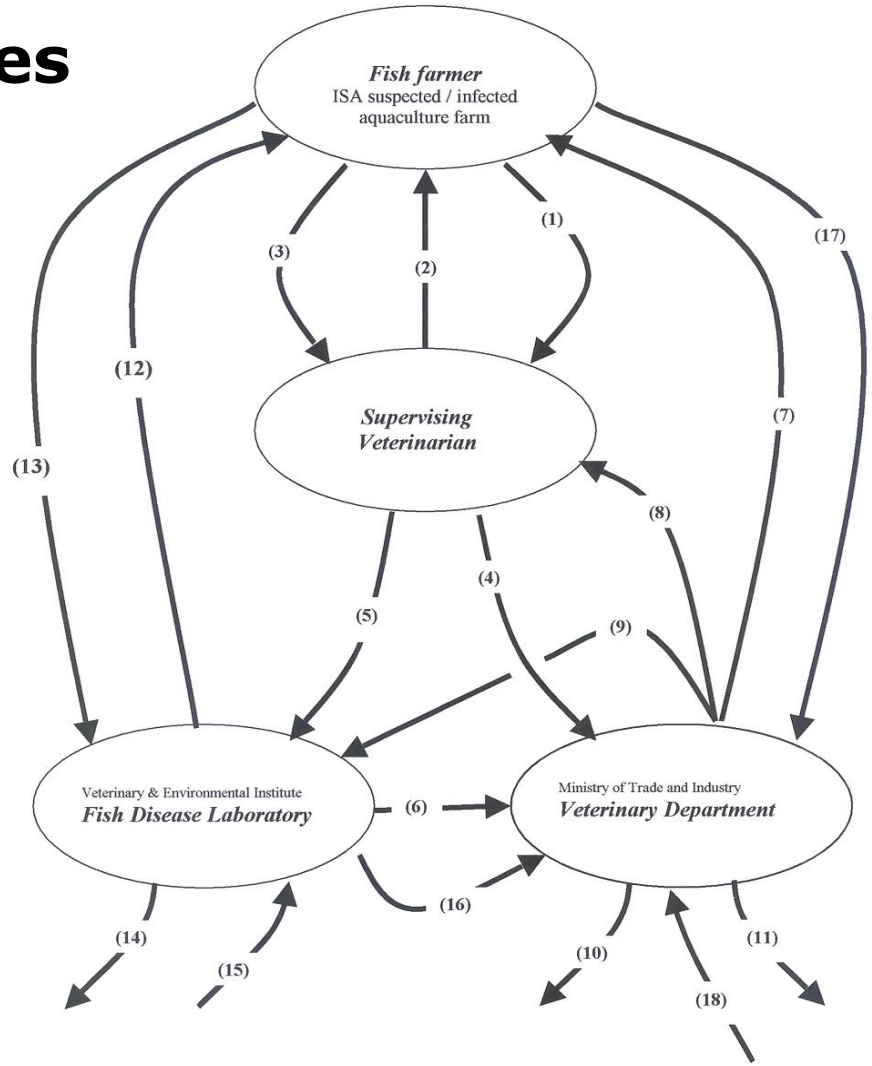
Sanitary slaughter - welfare principles;

veterinary and environmental safety issues

Mass disposal of waste sites for the treatment or disposal of animal carcasses and animal waste.

Flow of information, samples and instruction when outbreak of notifiable or emerging disease is suspected





From Bjørn Harlou, FO

European Commission

Contingency planning: Scenarios of events 1

Classical: Outbreak of serious listed disease in free farm and/or zone

E.g. VHS outbreaks in rainbow trout in River Nidd, Yorkshire, UK 2006-2007

VHS outbreak in Finland 2000-…

VHS outbreak in Norway 2007-2008

First IHN outbreak in Italy and France 1987

European Commission

Contingency planning: Scenarios of events 2

Contingency planning as part of surveillance programmes of serious listed diseases in non-approved free farms and/or zones

E.g. Control and eradication of VHS from Denmark

Establishment of approved disease free zones in France, Italy and Germany

Health and Consumers

European Commission

Contingency planning: Scenarios of events 3

Suspicion/confirmation of listed pathogens in wild fish stocks and in farmed progeny from wild caught fish

Isolation of VHS from wild marine fish in Northern Europe

E.g. First isolation of VHS in USA in salmonids, herring and cod

VHS in the Great Lakes in USA and Canada

Pilchard herpesvirus infection in Australia

European Commission

Contingency planning: Scenarios of events 4

New emergent diseases

E.g. Koi herpes virus in farmed and ornamental carps.

Lactococus garvieae in Rainbow trout farming

Scen 1:

Example of outbreak of serious listed disease in free farm and/or zone:

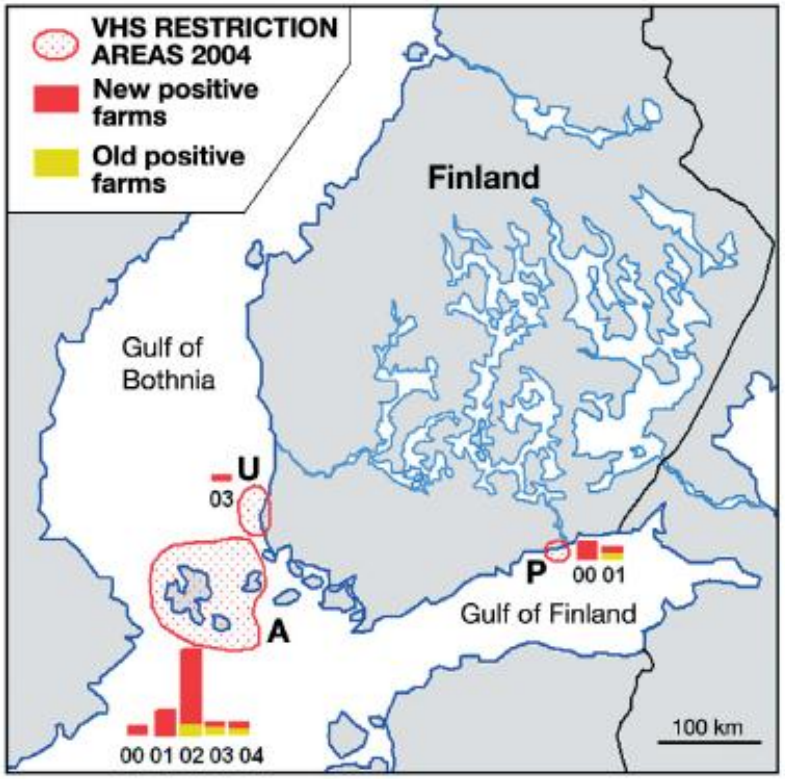
1. VHS outbreak in Finland - 2000

Vol. 72: 201–211, 2006 | DISEASES OF AQUATIC ORGANISMS Dis Aquat Org | Published October 27

Viral haemorrhagic septicaemia (VHS) outbreaks in Finnish rainbow trout farms

Marianne Raja-Halli[1], Tuija K. Vehmas[1], Eija Rimaila-Pärnänen[2], Sanna Sainmaa[1,4], Helle Frank Skall[3], Niels Jørgen Olesen[3], Hannele Tapiovaara[1,*]

Raja-Halli et al.: VHS in Finland



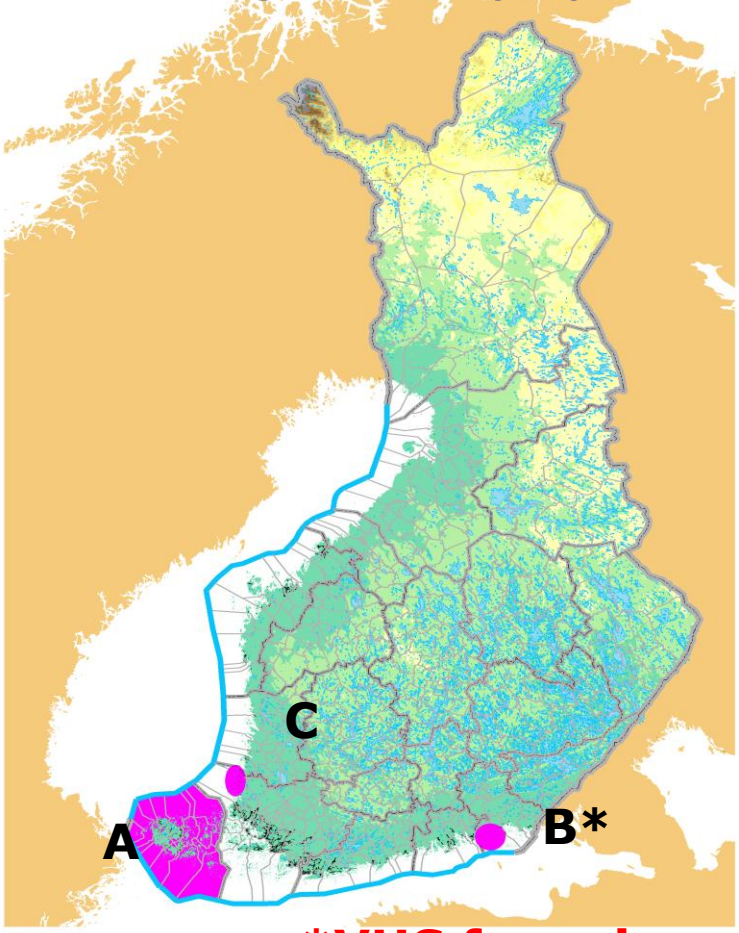
VHS in Finland

- *Genotype Id (Katja Einer-Jensen et al. 2004) in rainbow trout*
- *Resembles old Danish isolates*
- *Infection trials 38% mortality (DFVF)*

- *Mortalities 1-50%*
- *Stress related*

- *(Genotype II in wild herring and lamprey)*

VHS in Finland



Year	Pos.farms/area
2000	5/ A+B*
2001	6/ A+B*
2002	14/ A
2003	3/ A+C
2004	2/ A
2005	9/ A
2006	10/ A
2007	2/ A
2008	4/ A+C
2009	6/ A

***VHS free since 2008**

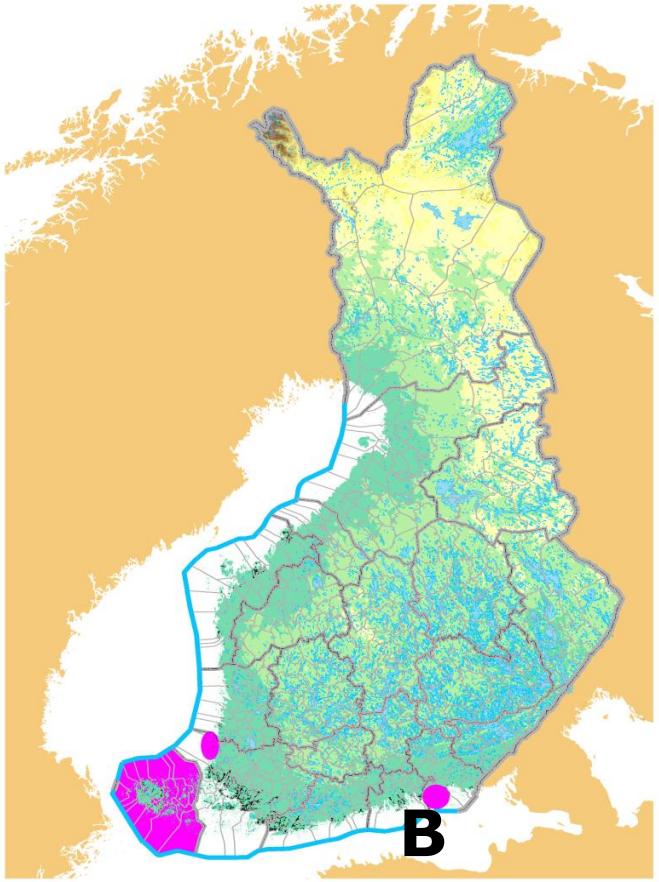
VHS-Restriction zones

VHS eradication in Finland

- *In 2000 an attempt to eradicate all cases, government compensation for the farmer. After eradication of three farms even more cases were found and "automatic" eradication policy was ceased*
- *Since 2001 eradication has been based on movement restrictions at farms, restriction zones, fallow periods (no compensation), planning of the fish traffic*
- *VHS-working group (2002-2005) planned eradication measures and control of risks*

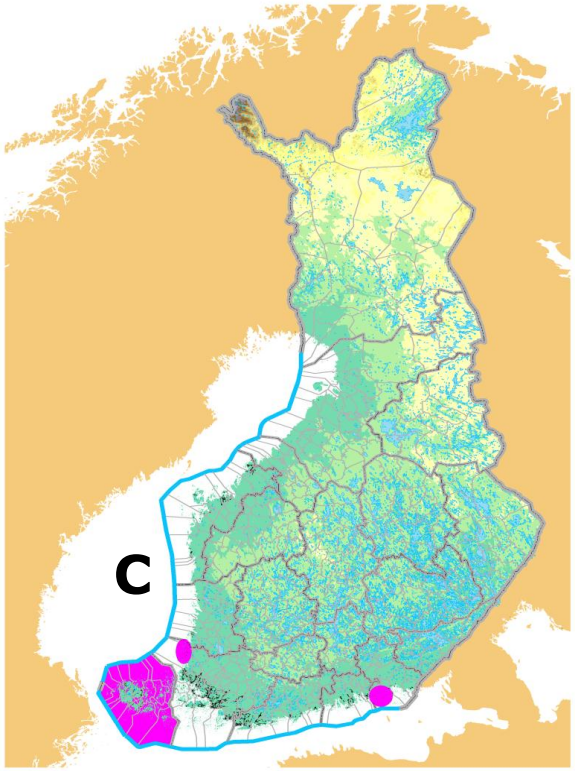
Restriction zone Pyhtää B

- *VHS positive 2000-2001*
- *Farms emptied and equipment disinfected (fully compensated)*
- *Farm kept empty at least 8 weeks*
- *Surveillance program to prove freedom, Inspections and 30 fish every spring and autumn for two years.*
- *No VHS positive samples since 2001*
- *Declared VHS free summer 2008*



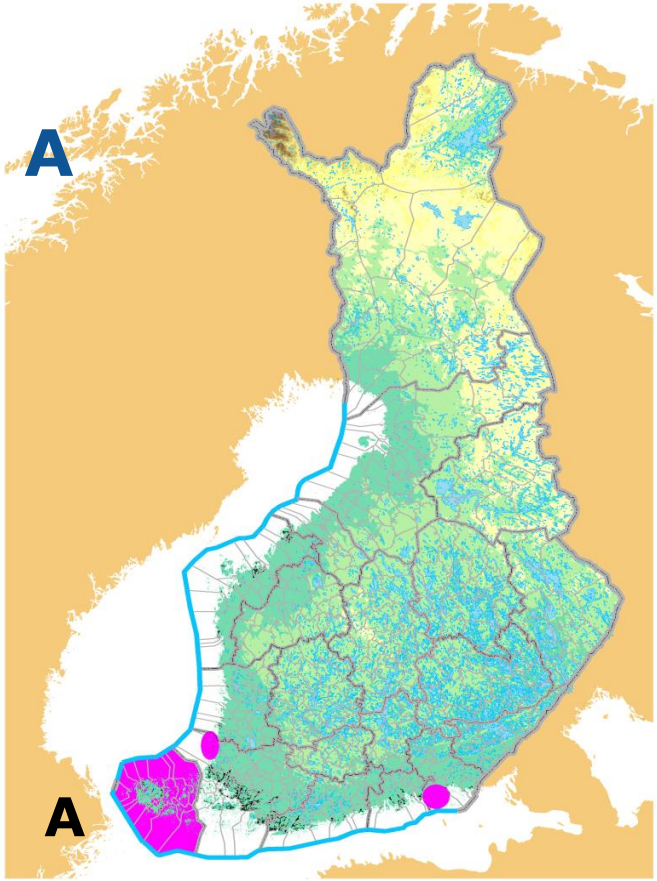
Restriction zone Pyhämaa C

- *positive 2003*
- *Farms emptied and equipment disinfected (no compensation)*
- *Farms kept empty at least 8 weeks*
- *Surveillance program to prove freedom, Inspections and 30 fish every spring and autumn for two years.*
- *No VHS positive samples until autumn 2008*
- *Infection source known in 2003 but unknown in 2008*



Restriction zone Åland area A

- *First positive farm (2000) emptied and disinfected (fully compensated)*
- *Several new positive farms in 2001*



Restriction zone Åland area A

- *Eradication measures not effective!*
- *New VHS-infections in several fallowed and disinfected farms in 2005*

How have the farmers survived with VHS?

- *Major economical losses due to mortalities and handling of dead fish*
- *Mortality in slaughter sized fish during autumn and winter (in cold water)* ⇨ *slaughter before cold water period*

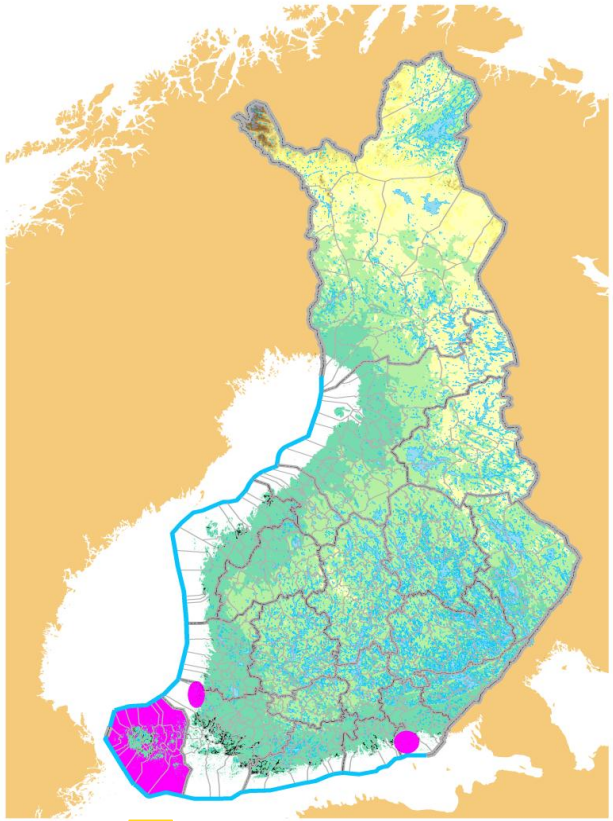
European Commission

How have the farmers survived with VHS?

- *Low stress and good environmental conditions => usually low mortality*
- *Fish farming often includes farming procedures that stress the fish=> mortalities*
- *Other infections (Flavobacter- and Yersinia)<=> low disease resistance*
- *Winter is a major stress factor for fish population with VHS infection*
  - **Have loss of fish in the winter without VHSV**

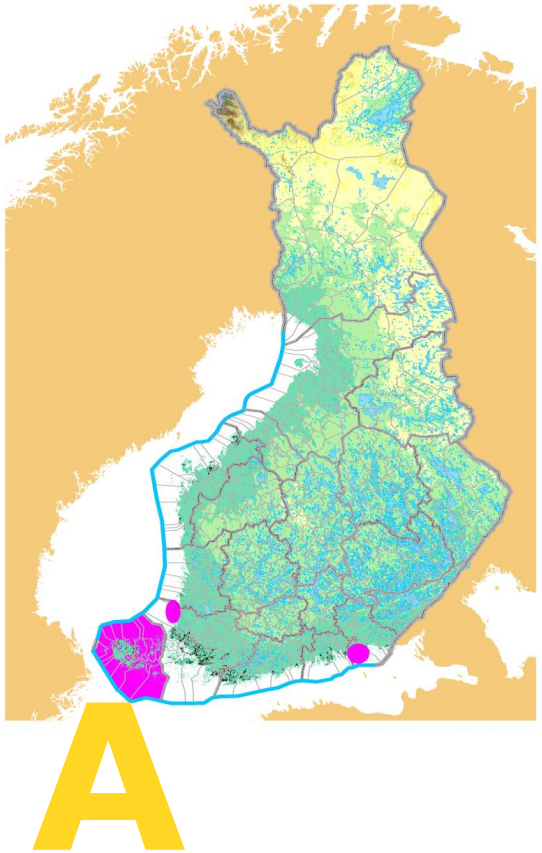
Why wasn't eradication successful in Åland Area A?

- *Small licenses per site => companies own many sites, which might be scattered around on an extensive area => transportation fish, vehicles and staff between sites*



Special challenges in Åland Islands

- *Transportation mostly by well boat or by hauling cages => disinfection problems*



Picture: Lasse Lönnström

Special challenges in Åland Islands

- *Previously mostly two growing seasons at sea*
- *"Summer sites" on outer islands and "winter sites" near the main or bigger islands*
- *All-in-all-out –procedure is possible only from time to time (alternative sites rare due to environmental authorities)*

Special challenges in Åland

- *Centralised slaughter houses with varying degree of sewage treatment, many slaughter houses close to farms and/or winter sites*
- *Same boats may service many farms, e.g. transportation of feed and dead fish*
- *Lack of tap water at many sites => difficulties in disinfection*
- *Long and complicated distances to control farms and take samples, exposed wind, ice, snow, short day light in autumn and winter*

European Commission

Scen 1: Example of Outbreak of serious listed disease in free farm and/or zone

2: VHS outbreak in UK - 2006

Journal of Fish Diseases 2008, 31, 775–784 doi:10.1111/j.1365-2761.2008.00951.x

The first report of viral haemorrhagic septicaemia in farmed rainbow trout, *Oncorhynchus mykiss* (Walbaum), in the United Kingdom

D M Stone[1], H W Ferguson[2], P A Tyson[1], J Savage[1], G Wood[1], M J Dodge[1], G Woolford[1], P F Dixon[1], S W Feist[1] and K Way[1]

The affected farm

17 May '06 *Nidderdale Trout Farm reported mortalities to Cefas.*

An intensive table trout farm with a history of chronic disease problems.

The mortalities at this farm appeared to date back to late ***March 2006****.*

At first thought by farmer and aquatic animal health professionals to be ERM, then later RTFS.

Samples taken by a Cefas inspector on ***22 May*** *produced CPE on tissue cultures that was confirmed to be VHS by ELISA and PCR on* ***26 May****.*

European Commission

Initial control measures

- On the evening of 26 May, FHI issued 30 day notices, which prohibited the movement of live fish or eggs to or from all fish farms (total of 33) in the Yorkshire River Ouse catchment.
- The Defra/Cefas contingency plan was activated.
- Later that weekend the Environment Agency suspended all S.30 consents in catchment
- As part of the plan, a National Control Centre (NCC) was immediately established at Cefas Weymouth Laboratory to implement the plan and to co-ordinate the control measures
- NCC comprises various representatives from Cefas, Defra, FRS, and the EA.

European Commission

The National Control Centre (NCC) team

Head of NCC (Chairman)
NCC secretariat
Head of FHI
Field operations
Diagnostics
Epidemiology
VEROD
Environment Agency

Health and Consumers

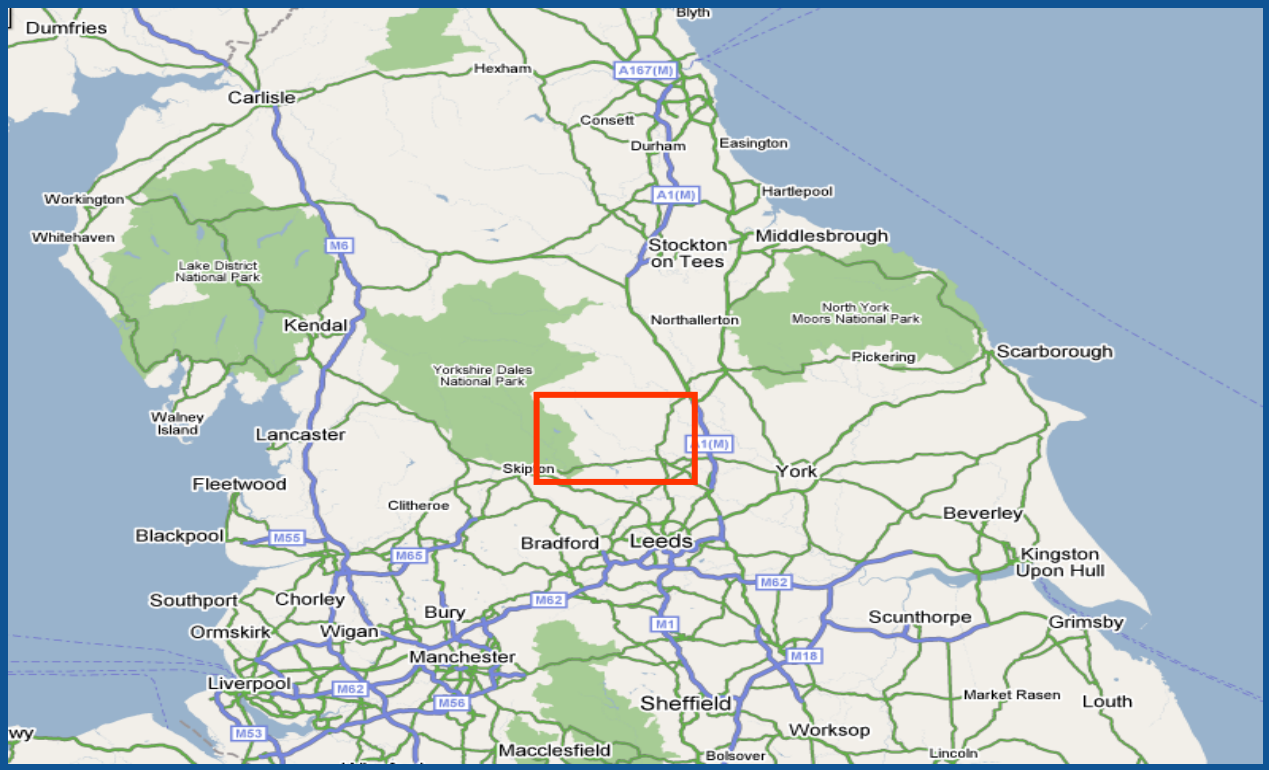
Immediate actions

Saturday and Sunday 27 – 28 May Flow of water through site Stopped and all fish on site culled under FHI supervision with the full co-operation of the site manager

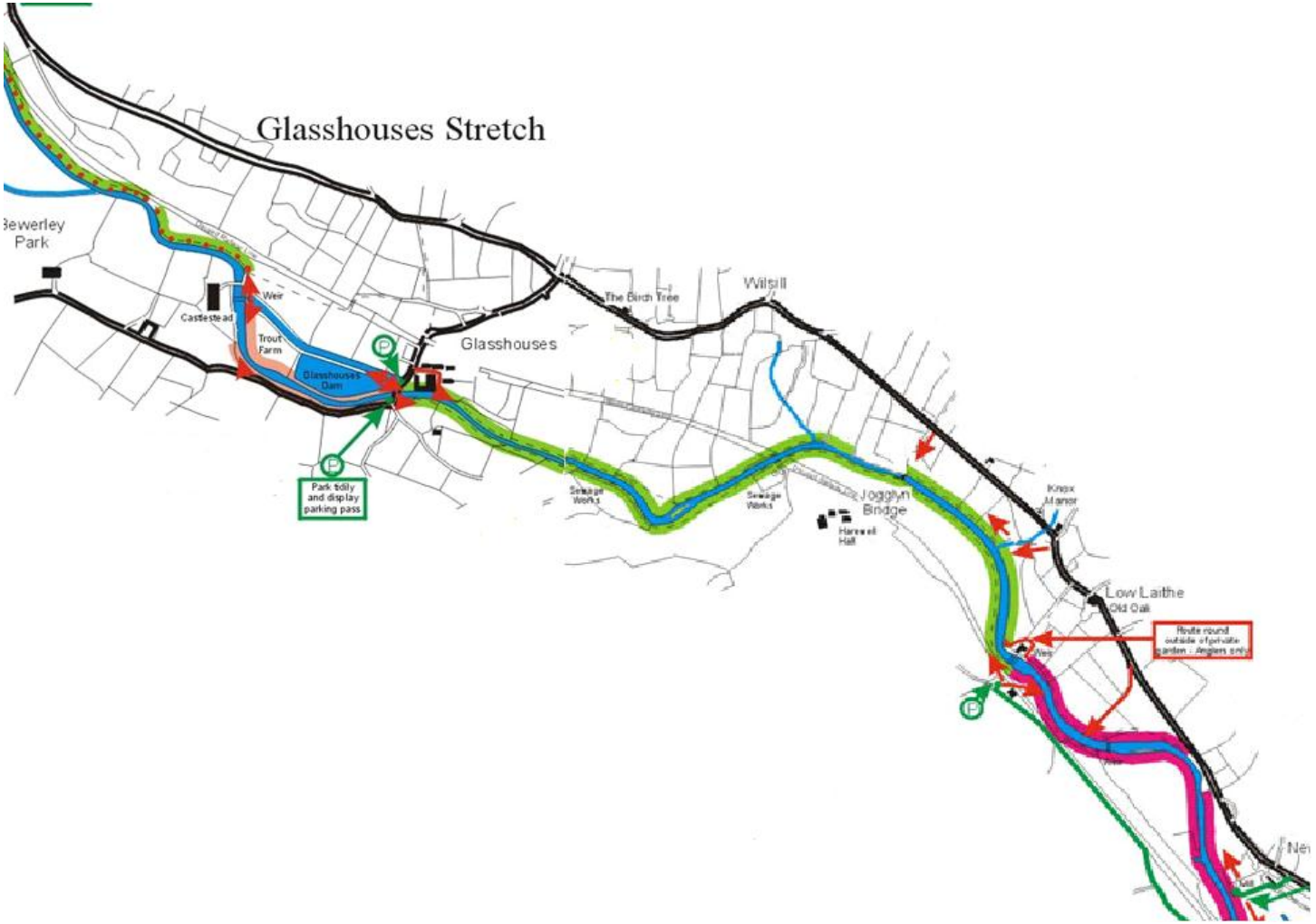
- *Dead fish placed in secure skips.*
- *Commenced farm draining to dry out site prior to disinfection.*
- *Inspectors sampled fish from farm upstream of Nidderdale T.F., and the single supplier of fingerlings to Nidderdale T.F.*
- *Monday 29 May Dead fish transported to a government-approved*
- *secure rendering plant. Fish rendered prior to incineration as required under Animal By-Products legislation*

European Commission

Location of outbreak



European Commission



European Commission

Health and Consumers

European Commission

Health and Consumers

European Commission

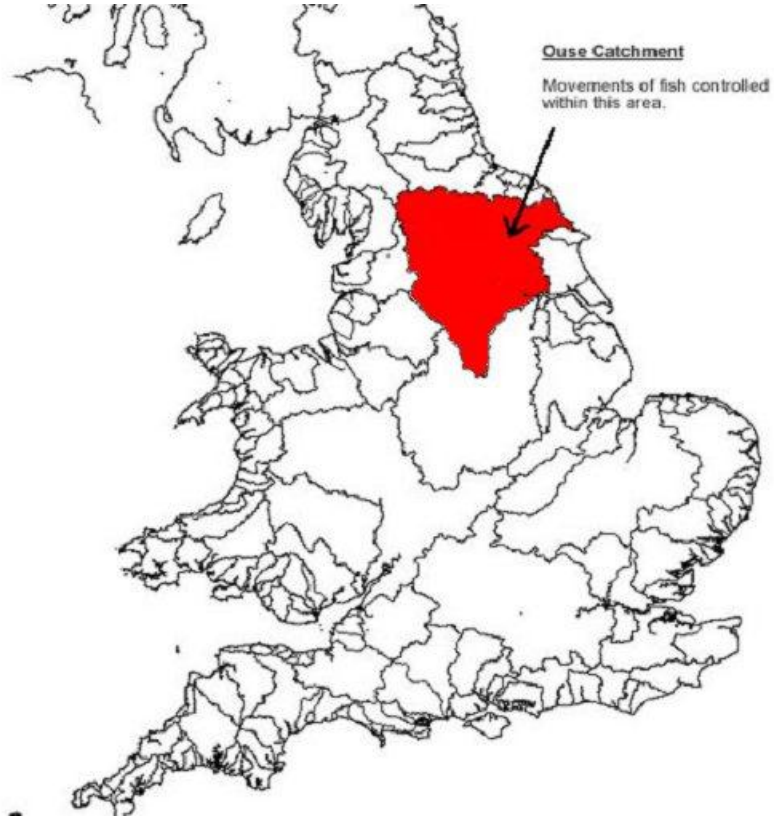
European Commission

Health and Consumers

European Commission

Health and Consumers

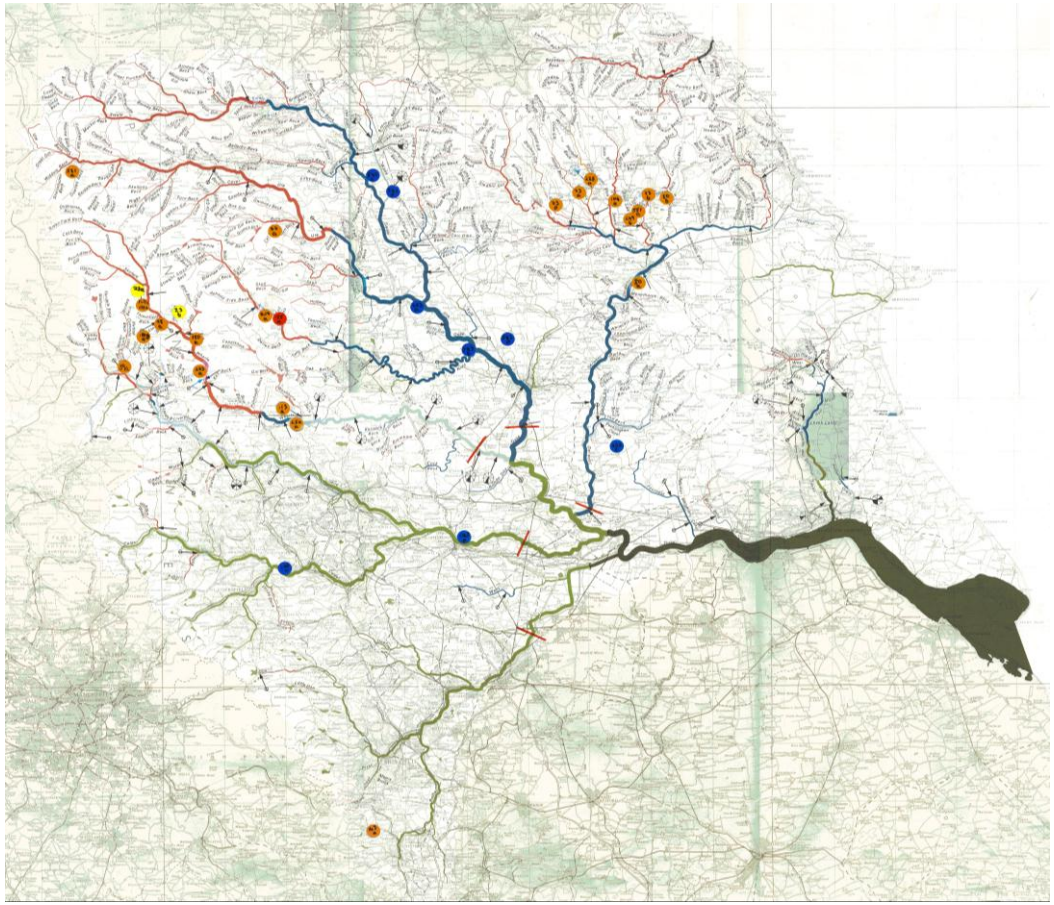
Control measures



- 1 June Defra issued a Designated Area Order on the River Ouse catchment restricting movements of fish to and from the area, other than retail movements of ornamental fish.
- 7 June A second DAO was issued to cover additional parts of Ouse catchment, and designate individual farms within that area; Section 2A Notices issued to control movements of dead fish from designated farms.

European Commission

Controlled area showing rivers and farms



Manpower in initial programme of investigation

NCC team effort

*49 Cefas staff have been involved in **phase 1** of the VHS investigation*

NCC management (4)
Field activities (12)
Field support (12)
Virus diagnostics (15)
Epidemiology (4)
Experimental work (2)

Almost 1000 man-days of Cefas staff time deployed so far
Plus Defra and EA staff !
Cost to industry !
Are your Contingency plans fit for purpose?
Are all the staff fully involved, understand it and signed up for it?

Disease investigation

Farm tests

On 30 May, testing began on all other trout farms (23) within the designated area

Tests for VHS virus were carried out through two complete sampling rounds during June and July.
150 fish per sampling visit on all except 2 farms where 225 fish were sampled in the first round.
A total of 7050 fish were tested.

All tests were negative

Disease investigation

Wild fish tests

With the full support of angling organisations three sampling rounds of wild fish from the River Nidd undertaken to date to determine:

- *VHS impact at population level in wild fish in affected catchment*
- *whether VHSV infection had become established in wild stocks that could act as a source of re-infection of Nidderdale TF in future*
- *whether infection had spread downriver, threatening spread to other river systems in Designated Area by wild fish movements.*

VHS virus was isolated from a single pooled sample of grayling captured immediately below outlet of the affected farm

A total of 308 Grayling, brown trout and rainbow trout taken from the river adjacent to the affected farm tested negative for VHSV.

Apart from the first sample all subsequent tests proved negative for VHSV.

European Commission

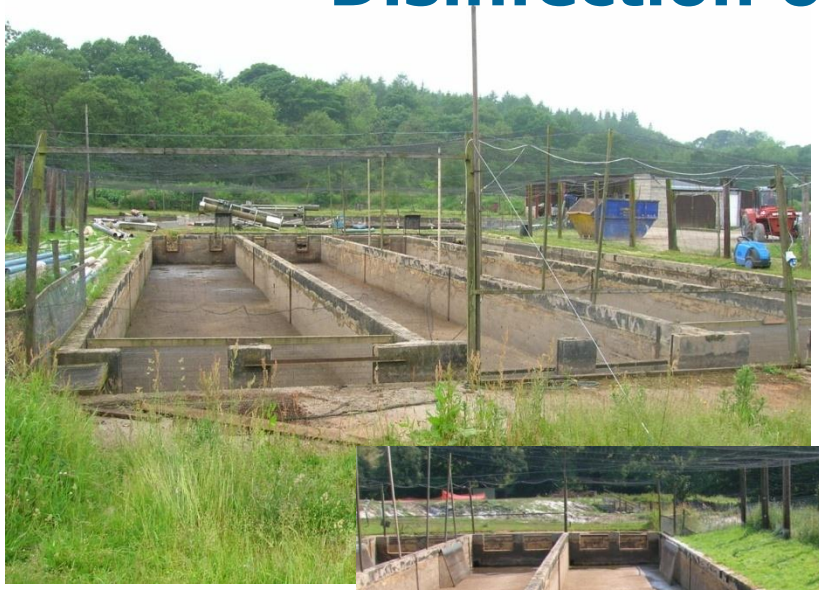
Disease investigation

On 21 July Defra announces the 2nd round of negative test results on farms, and that live fish movements between farms on different rivers within the designated area now will be considered, except that no live fish movements permitted out of the VHS affected area. Only dead and gutted fish allowed to be moved out of the entire designated area.

No unusual mortalities raising suspicion of VHS reported from any other farms within the designated area or elsewhere in GB.

The evidence suggests this was an isolated outbreak without further spread but investigations continued and vigilance remained high both within official services and the industry.

Disinfection of the affected site



- *Disinfection of the site under FHI supervision started in early June (after drain down)*
- *The farm was disinfected using a combination of sodium hydroxide and quicklime (7 tonnes of quicklime used).*
- *Disinfection completed by 26 June*
- *Removal of 200 tonnes of treated silt to agricultural land was completed in August and the site lay fallow until November.*

European Commission

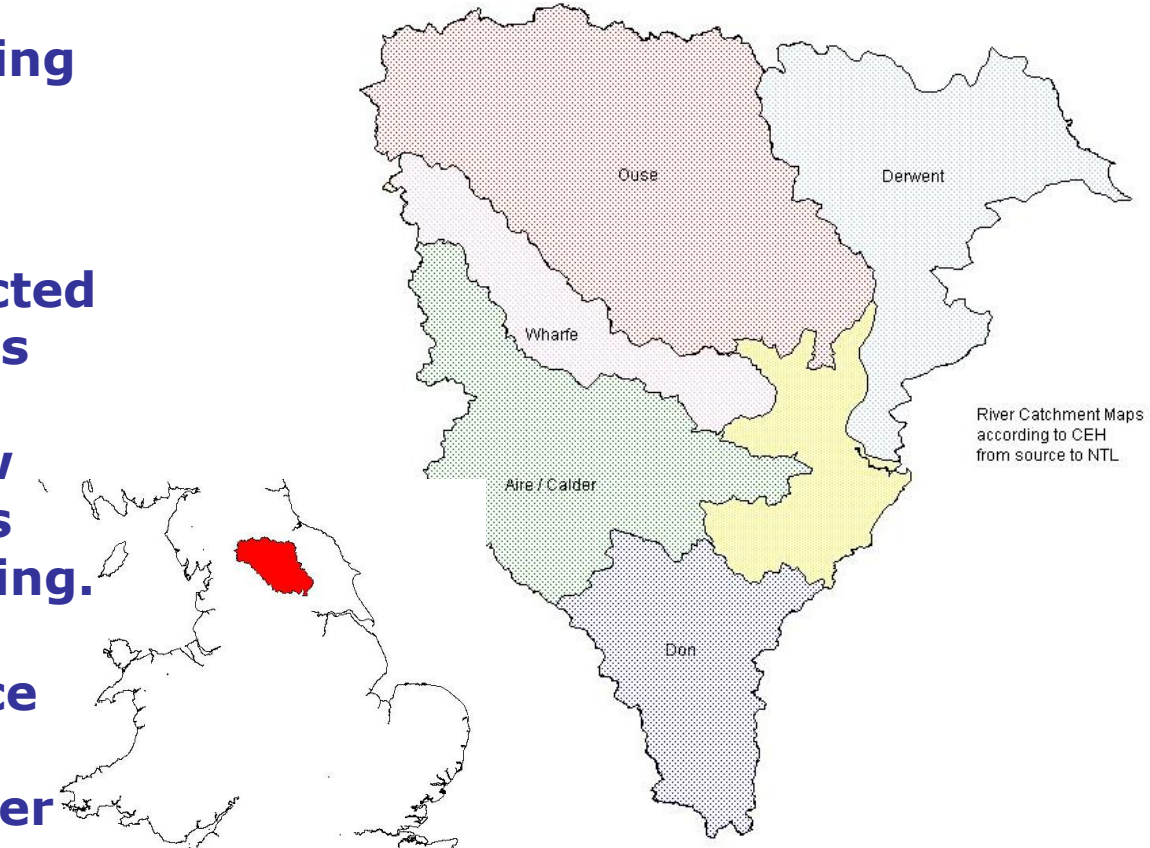
Disinfection of the affected site

European Commission

Disinfection of settlement lagoon

Controlled area and buffer zones

Further wild fish sampling at points in the 'buffer zone' separating the 5 zones in the current designated area subjected to surveillance and tests for VHSV as water temperatures fell below 14ºC and at other times through winter and spring. Absence of positives strengthened confidence that the virus was not being spread to the other rivers by wild fish migration.



European Commission

Lessons learned exercise

Contingency planning has benefited from a thorough and objective analysis of the response to the outbreak

Even though only one trout farm found positive for VHS, more than one third of rainbow trout farms in England affected by controls and necessary response was substantial

- *Could CEFAS cope with more cases and to the EU timetable for controls and epizootilogical investigations and what are the manpower cost consequences?*

- *Does VHS pose a threat for wild fish and angling interests? A year ago CEFAS would have been unsure of the threat posed by VHS on wild fish at the population level. Experience from last years outbreak suggests the risk from a direct disease impact is very low with the strain we encountered*

2006 Classical VHS outbreak in Rainbow trout farm on River Nidd. Only 1 farm affected

Highly pathogen isolate Genotype !a (Continental VHSV type).

Immediate zoning and stamping-out, fallowing. Intensive survey.

Disease free status re-achieved 2009

Scen. 1: Example of Outbreak of serious listed disease in free farm and/or zone 3: VHS outbreak in Norway - 2007

Vol. 85: 93–103, 2009
doi: 10.3354/dao02065

DISEASES OF AQUATIC ORGANISMS
Dis Aquat Org

Published June 10

OPEN ACCESS

Outbreak of viral haemorrhagic septicaemia (VHS) in seawater-farmed rainbow trout in Norway caused by VHS virus Genotype III

O. B. Dale[1], I. Ørpetveit[1], T. M. Lyngstad[1], S. Kahns[2], H. F. Skall[2], N. J. Olesen[2], B. H. Dannevig[1,*]

VHS outbreak in sea farmed Rainbow trout in Storefjord, NO Nov 2007. Genotype III

Infection trial by immersion revealed high mortality in RT

Fig. 4. Localisation of Genotype III isolates. Isolate 1 in white box is the Norwegian VHS outbreak isolate NO-2007-50-385. Isolates 2 to 5 in grey boxes are isolates with 10 to 13 nucleotide differences from NO-2007-50-385. Isolates 6, 7 and 9 in black boxes are isolates with ≥18 nucleotide differences

Conclusions: Contingency planning:
Scenario 1 " The classical outbreak"

Critical points:

Time laps from de facto infection to alert and action

Laboratory identification and characterisation: reliability and speed of further studies (genotyping, infection studies etc.).

Restricted possibilities for firm action: No financial compensation for stamping-out.

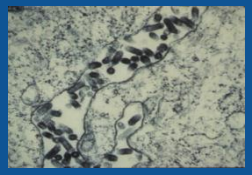
Unclear case definition of pathogen- non-pathogen isolates

European Commission

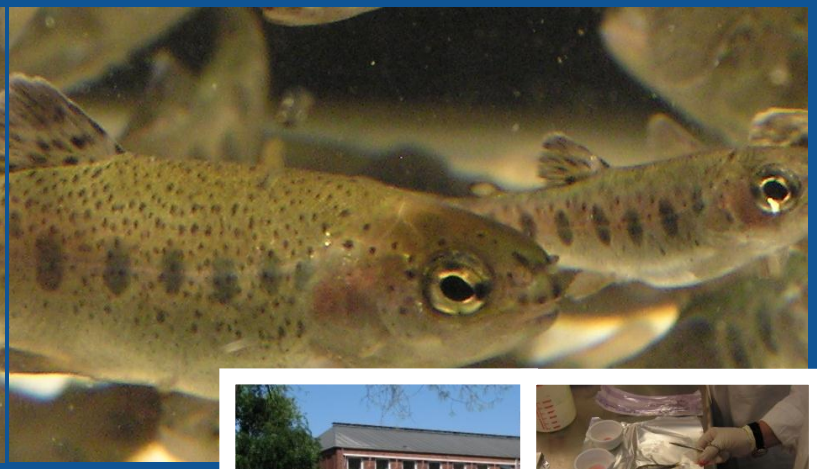
Scenario 2:
Contingency planning as part of surveillance programmes of serious listed diseases in non-approved free farms and/or zones

E.g. Control and eradication of VHS from Denmark

Establishment of approved VHS and IHN free zones in France, Italy and Germany



The Danish experience in VHS-IHN control

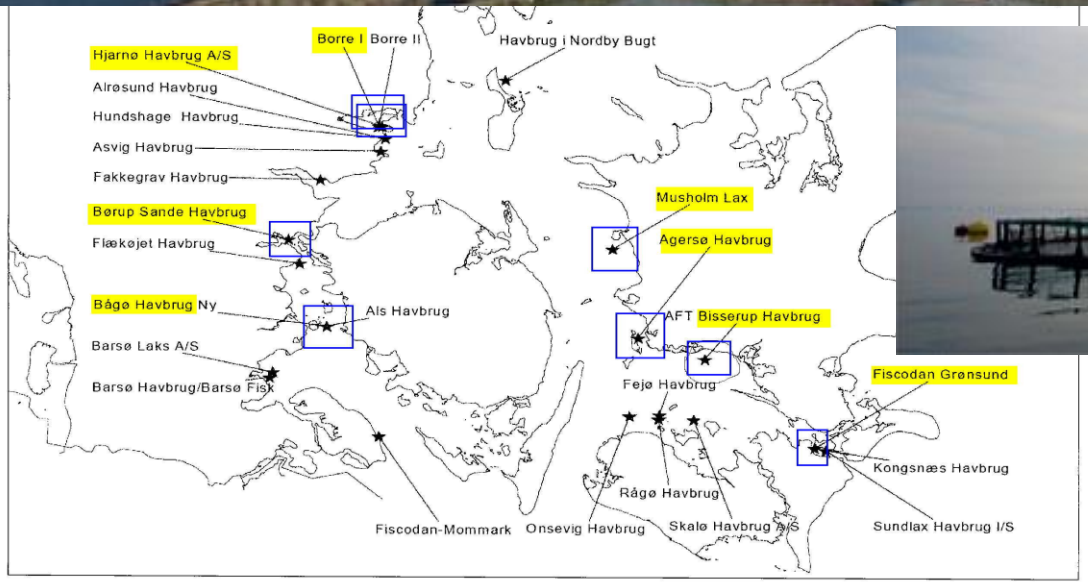


Health and Consumers

European Commission

Freshwater fish farms in Denmark: approx 32.500 t in 2009

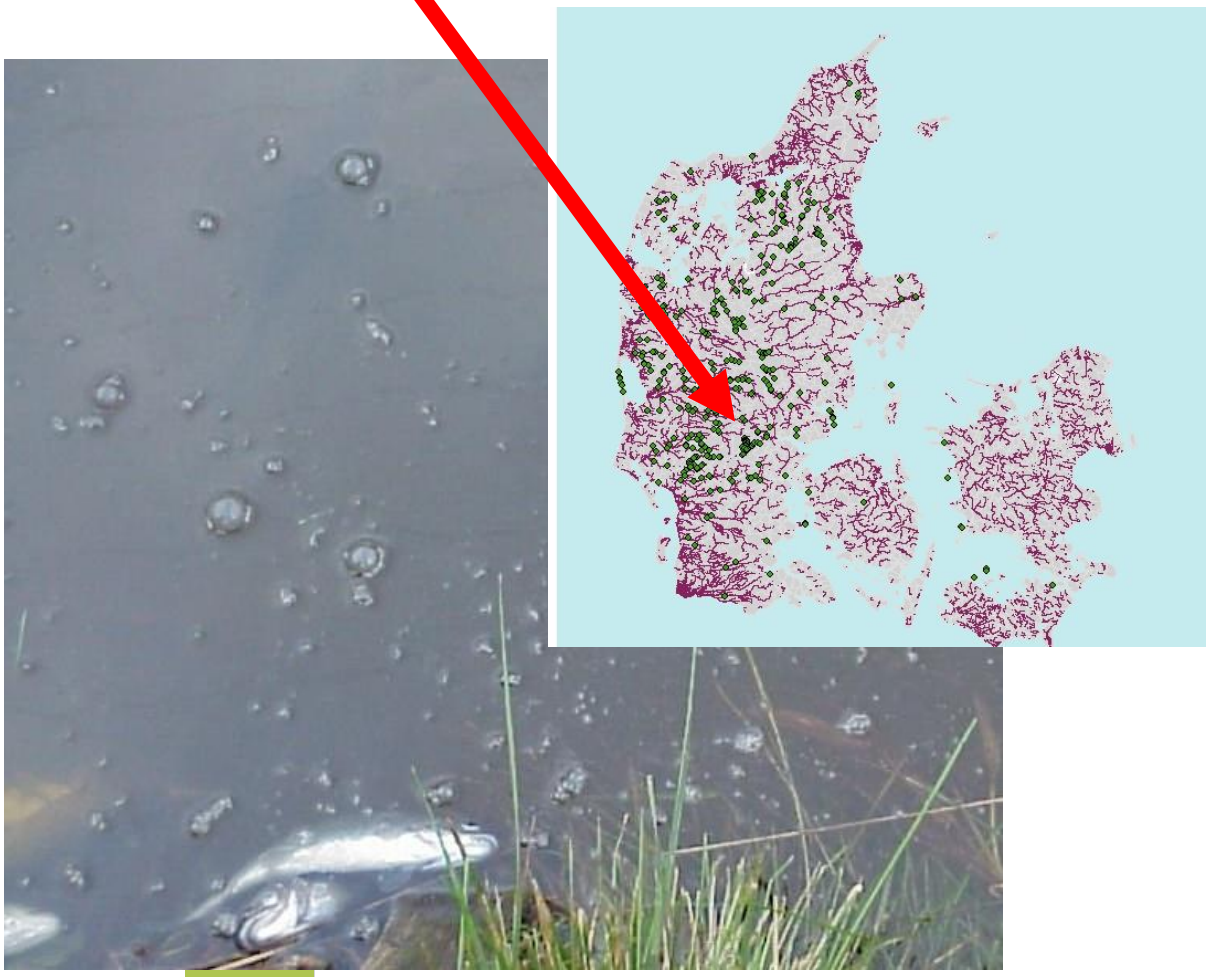
Marine fish farms, approx 11.000 t in 2009



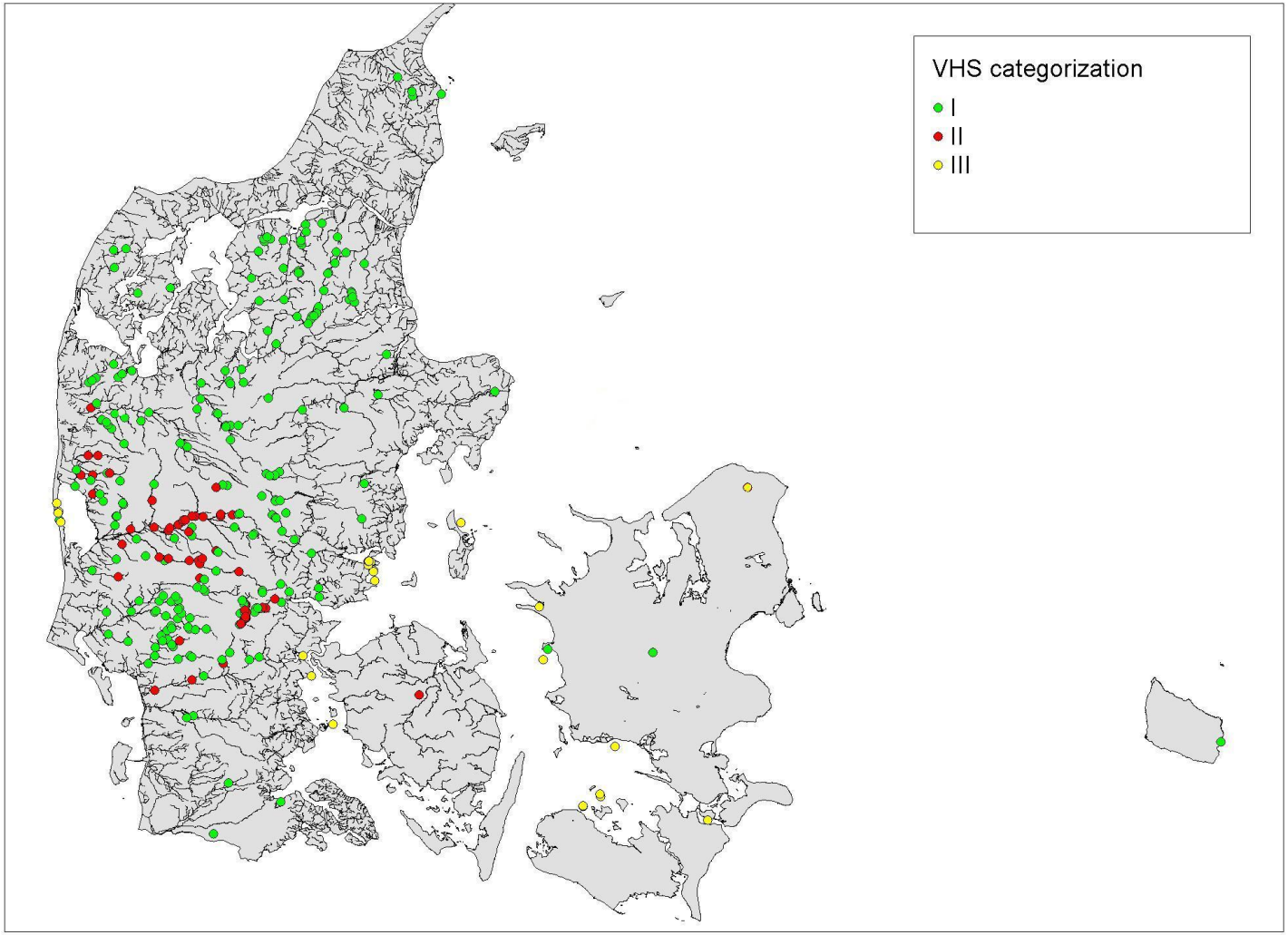
Figur B.6.3.1. Placeringen af danske havbrug 2001. (Fiskeridirektoratet 2002).

VHS - Egtved Disease - first isolation in 1962

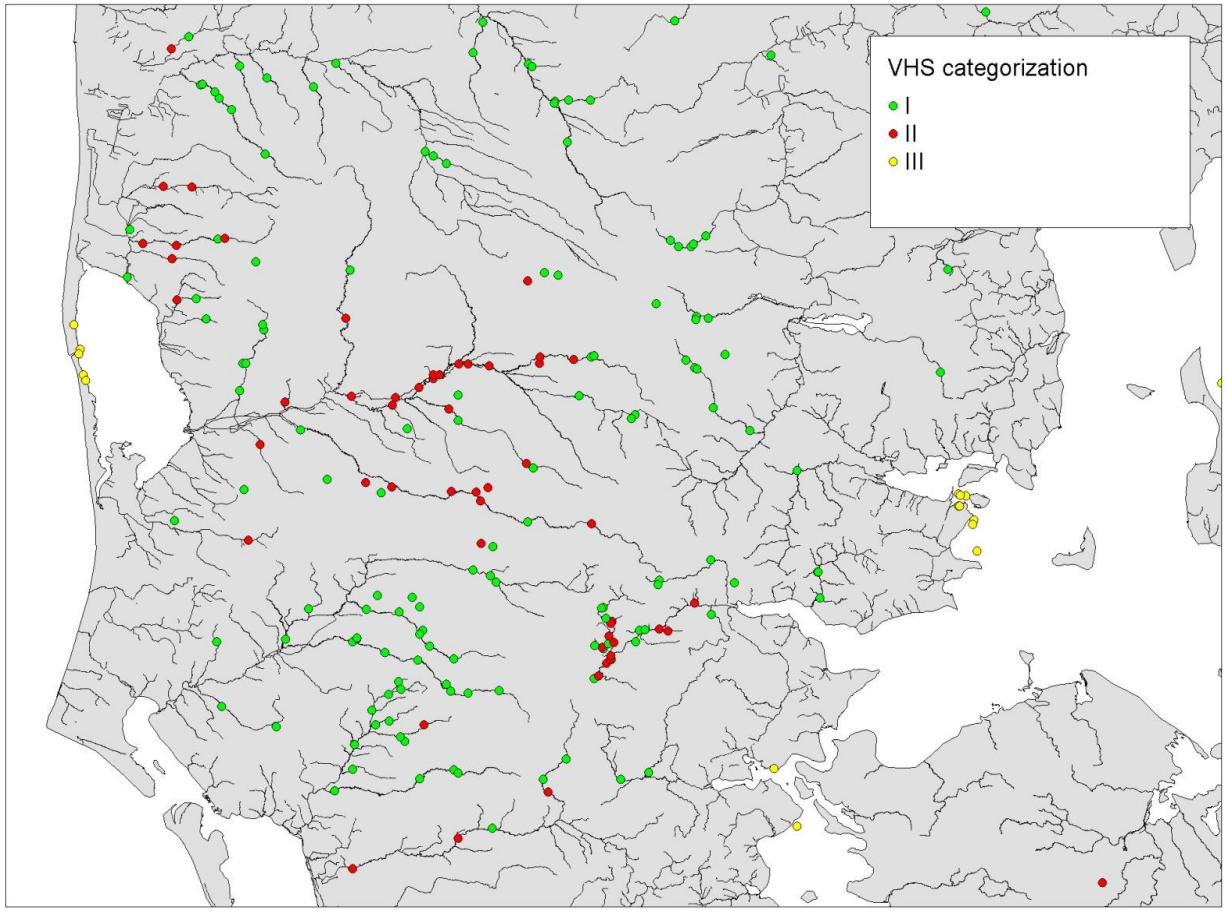
VHS outbreak



Distribution of fish farms in DK (VHS categorisation)



Fish farms - central Jutland



VHS eradication

Fish Health Control in Denmark

All fish farms inspected 1 x annually

Sampling every 2nd year

Brood stock farms inspected 2 x annually

Sampling every year

IPN and BKD free brood stock farms inspected 2 x annually

Sampling 2 x annually

Inspections conducted by official veterinarians

Eradication of VHS in Danish Aquaculture

Initiated in 1965 by the fish farmers in colaboration with the National Veterinary Institute as a volontary programme

Danish Veterinary and Food Administration prepared the legislative basis and controls for the programme during 1970'ies

All costs for the eradication – culling, fallowing and cleaning and disinfection - paid by individual fish farmer

Programme continued until 2009 where final measures were initiated

Handling of VHS outbreaks until 2009

Removal of all fish and gametes *(slaughter and culling)*

- **Undersized fish occasionally sold to farms specialised for seasonal production**

Cleaning and disinfection

Fallowing

Restocking with approved healthy fish

All costs paid by the individual farmer

VHS eradication

Preventative measures

Order nr. 755/2005

All fish farms shall be protected against introduction of birds (primarily herons) by wires and net.

Separate loading facilities from dams and avoid water discharge to farm and river.

Prevent escape of rainbow trout to the wild

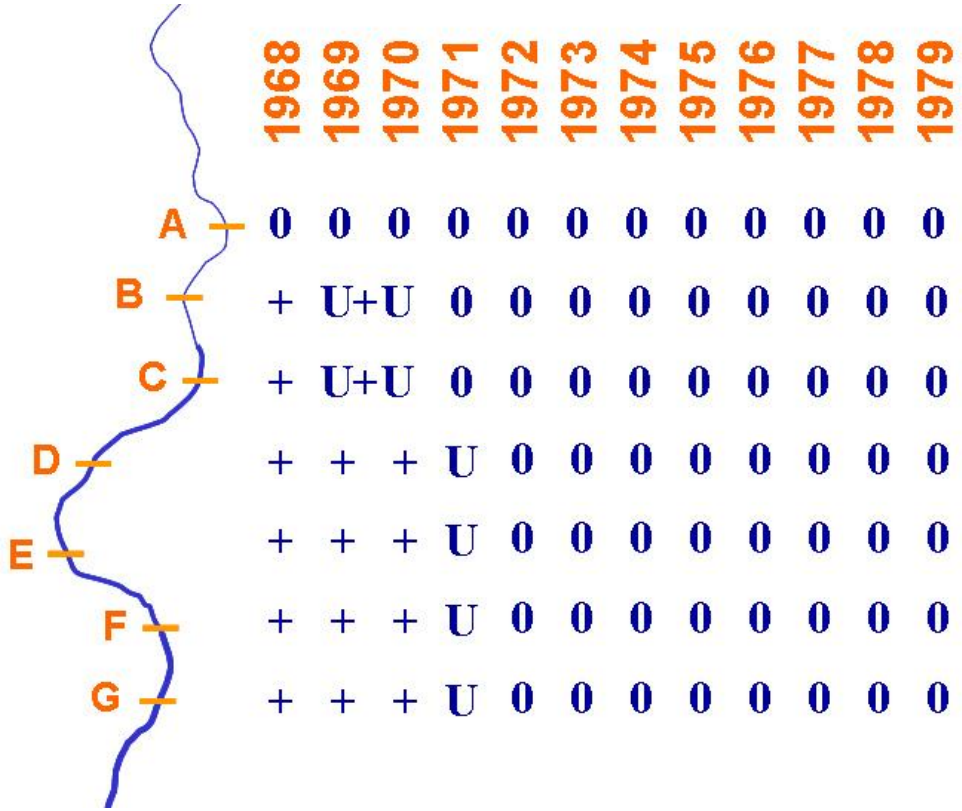
Do not use fresh fish for feeding

Do not move fish from marine environment to fresh water.

- ***Disinfection of effluent water from cutting plants***
- ***Obliged disinfection of transport vehicles at Danish borders***

Order nr. 755/2005

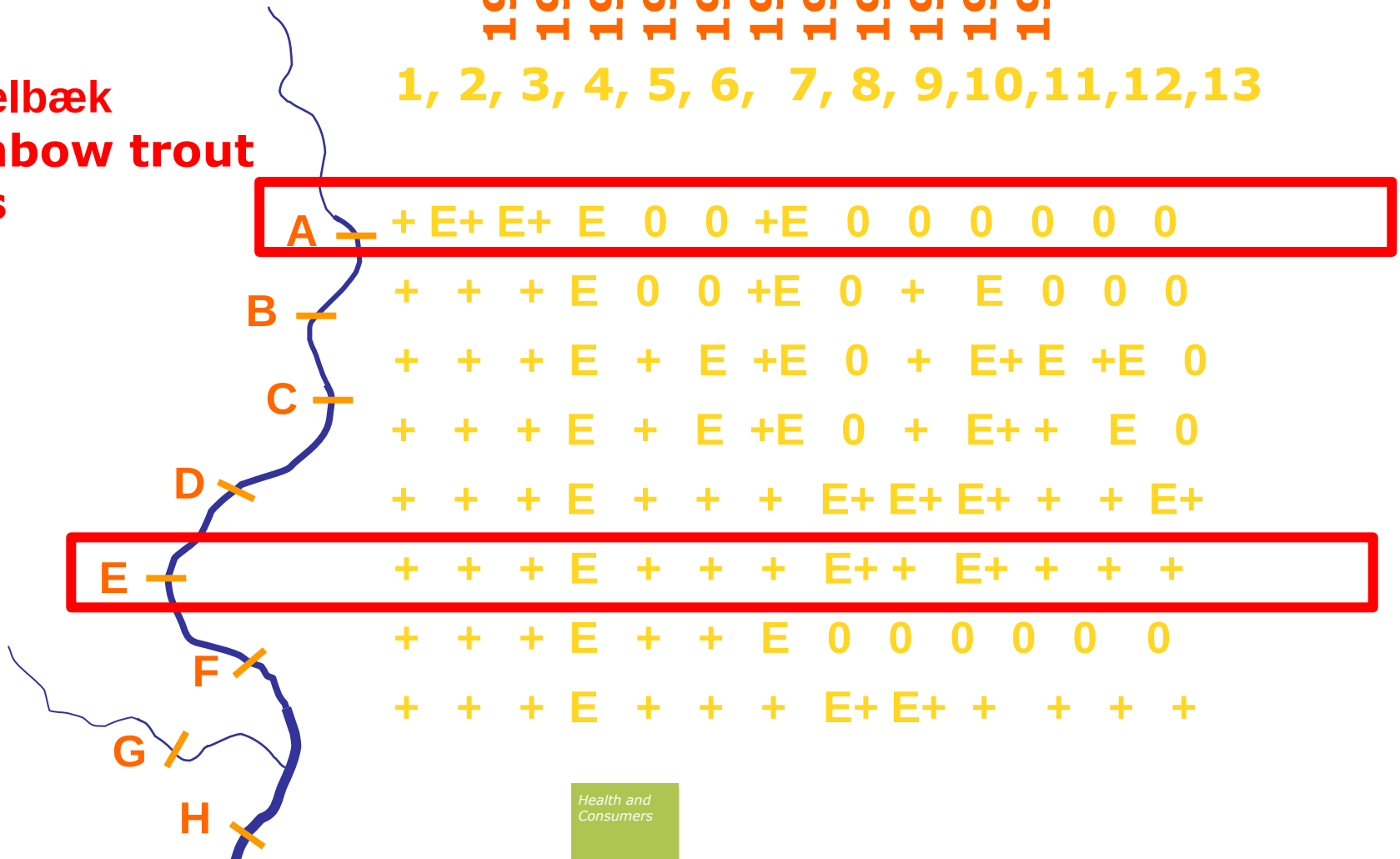
Eradication in small river systems



VHS eradication

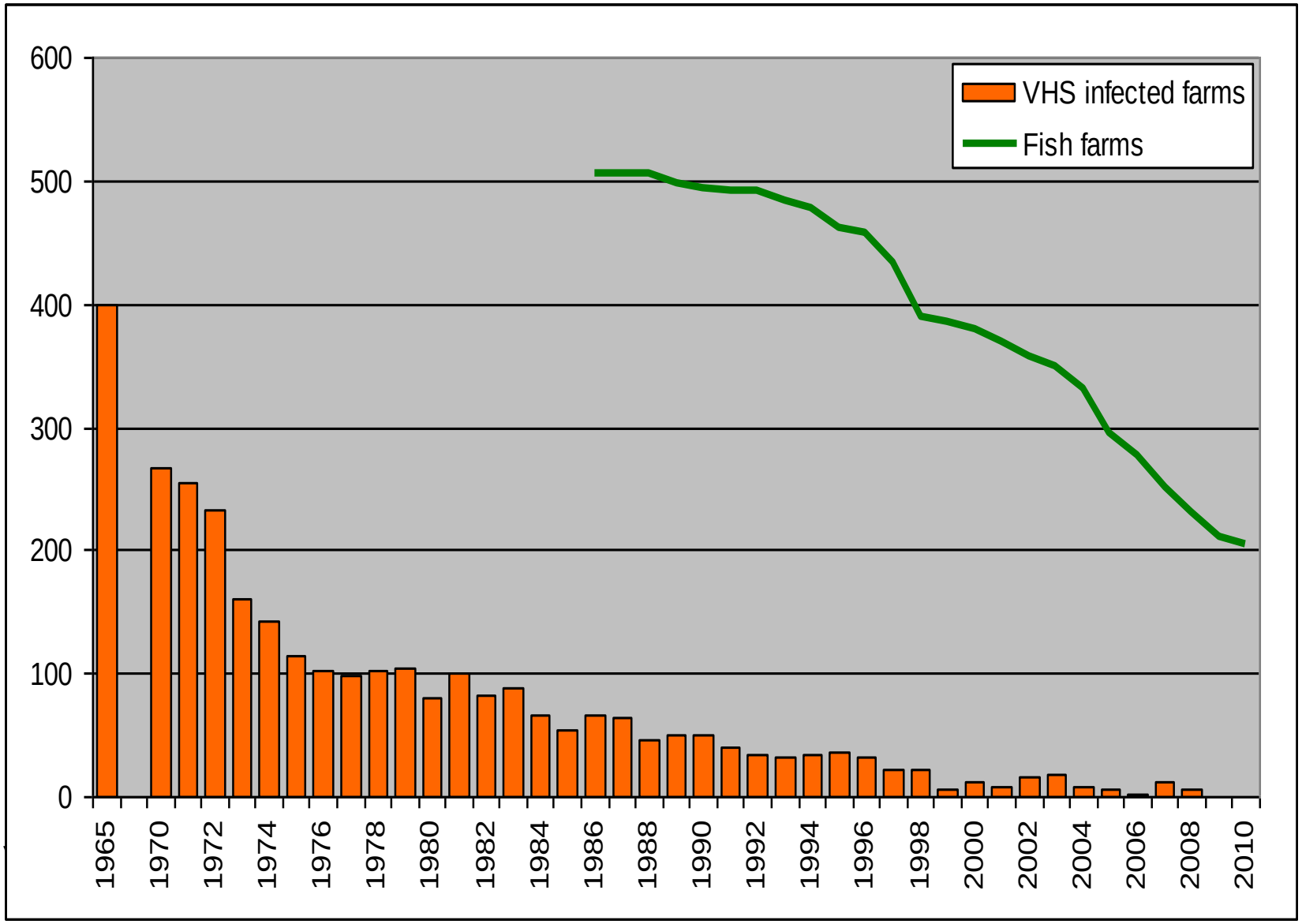
European Commission

Eradication of VHS in Danish freshwater fish farms



Health and Consumers

VHS eradication in DK



Directive 91/67
Commission decision 2002/304

Approved zones and farms

Non-approved zone obtained status as a programme zone for a period of 10 years

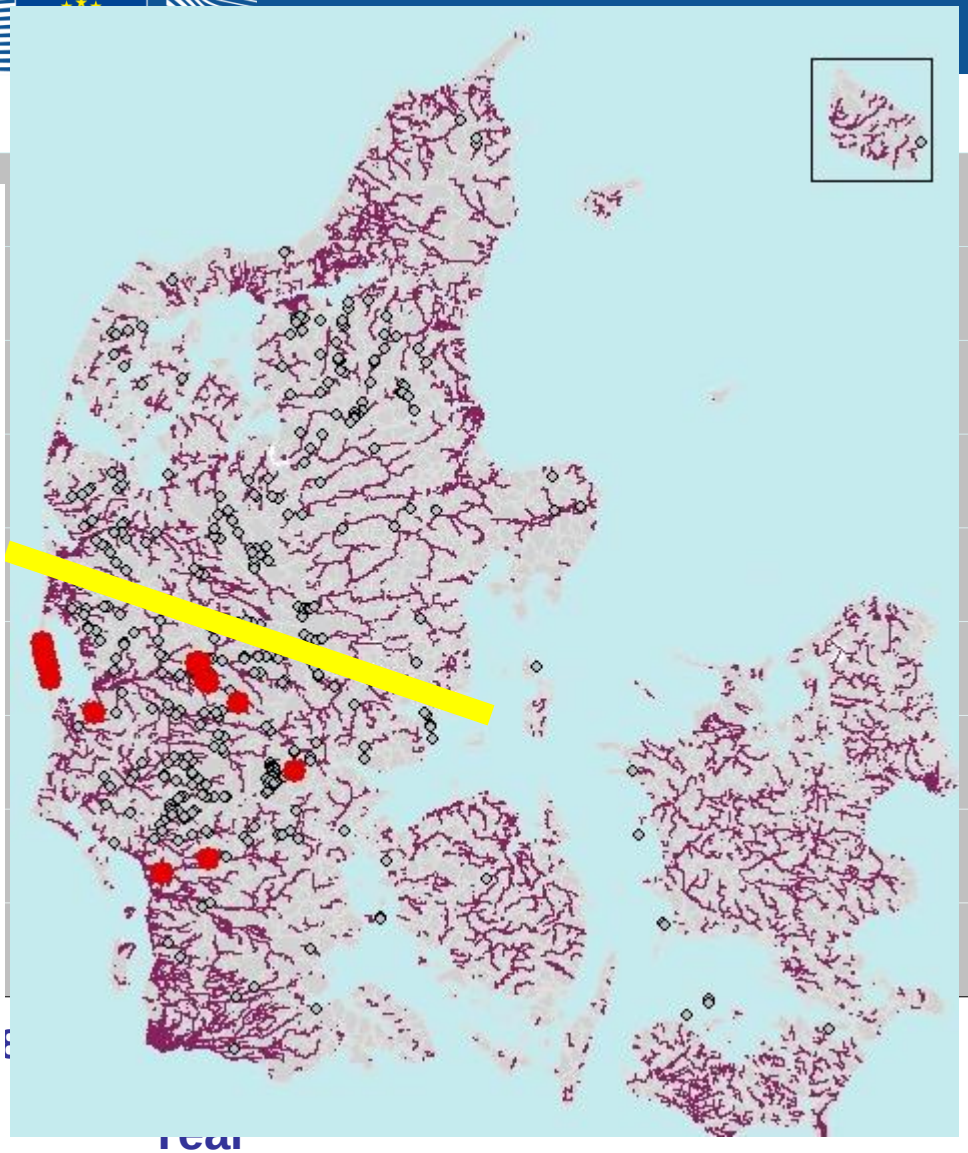
The aim was to obtain VHS-free status for the whole Danish territory

National legislation allowed to regulate control and eradication of VHS in non-approved zones

2008: 12 infected

450

Year	No. of outbreaks
2000	13
2001	9
2002	16
2003	18
2004	8
2005	6
2006	2
2007	12
2008	6



Year

Programme for final VHS-eradication 2009-2013

- *Application for an eradication-programme, May 2008.*

  Approved Autumn 2008

  Funded by the  *European Fisheries Fund after national priority*

  Order 216, of March 23, 2009: "Order on specific measures and compensation in connection with eradication of VHS"

  No VHS infected fish in Denmark by 1st April 2009

Structure of the VHS eradication programme

***Eradication programme 2009-13**:*

Mandatory immediate stamping out

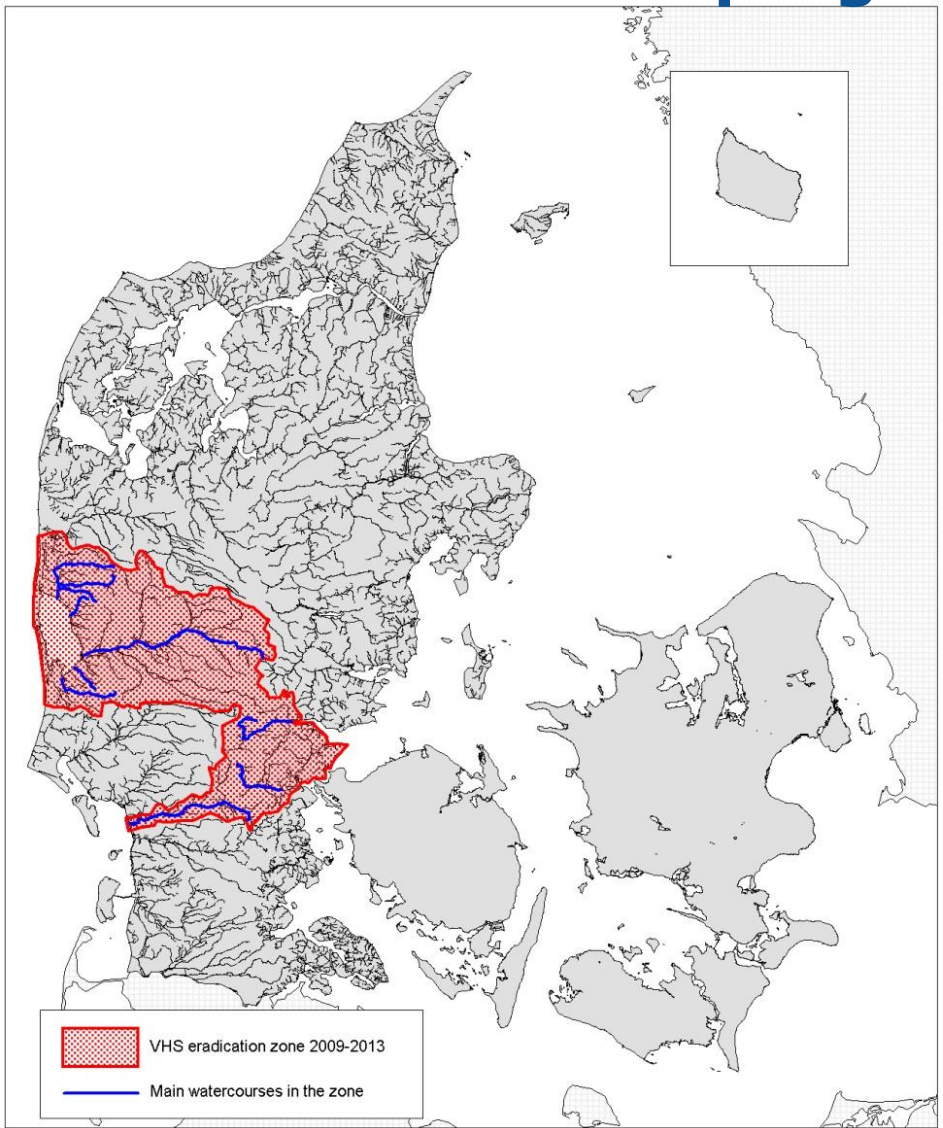
Valuation and compensation of the killed fish

Fish killed by CO_2, minced and rendered in biogas plant

Sanitary slaughter of healthy fish (if favourable)

Cleaning and disinfection conducted by the fish farmer

VHS eradication zone for EU funded programme



VHS eradication

Structure of the VHS eradication programme

Preventing measures year 2009:

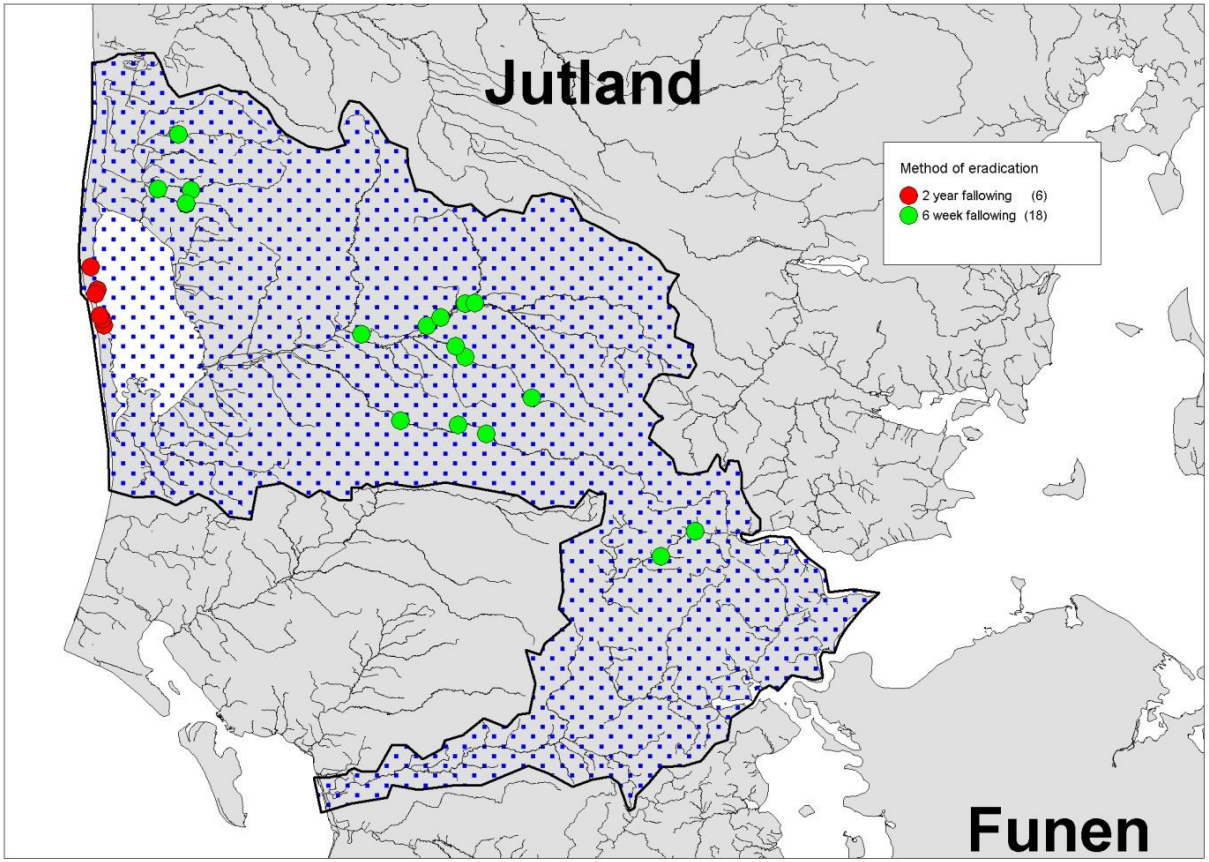
Main fallowing of 7 (6) brackish water farms (two years)

Auxiliary fallowing of 19 fresh water farms (six weeks)

Removal of wild living rainbow trout in high risk watercourses by electro-fishery

"With assistance of cormorants"

Fallowing of risk farms in 2009



VHS eradication

Structure of the VHS eradication programme

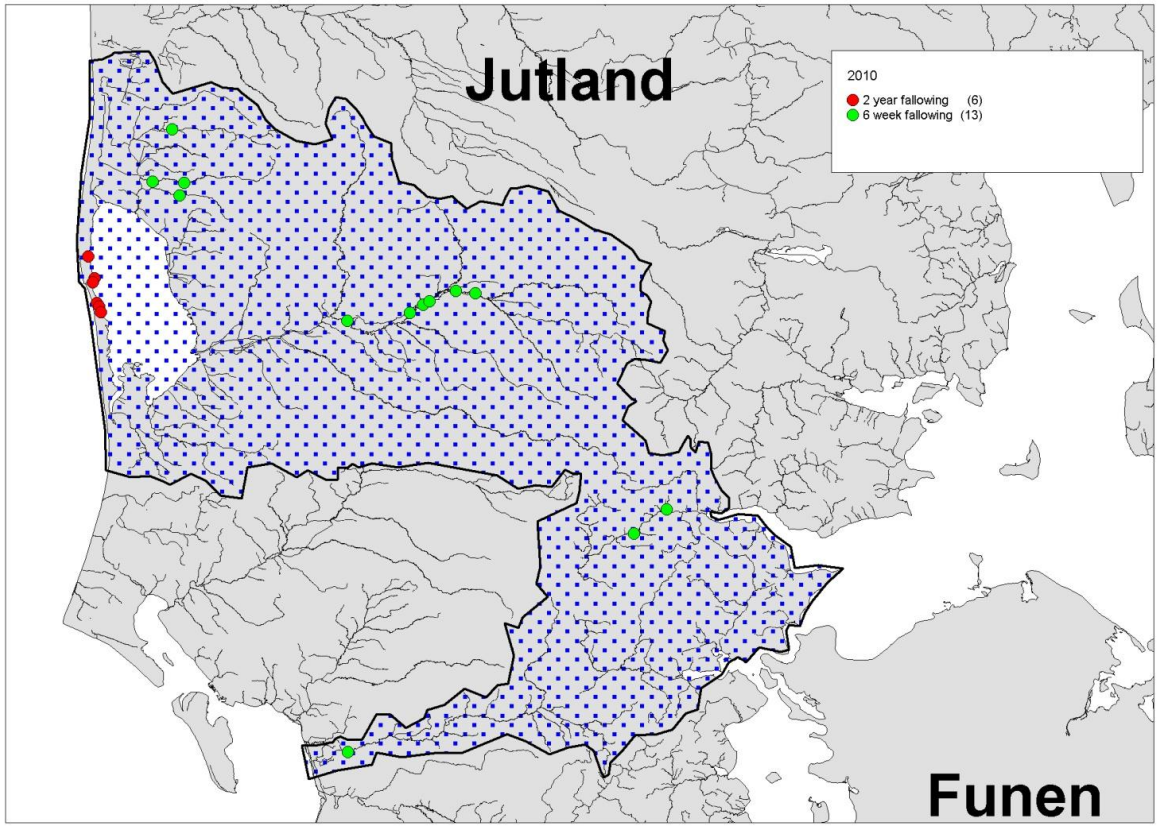
Preventing measures – year 2010:

Main fallowing of 6 brackish water farms (two years)

Auxiliary fallowing of 13 fresh water farms (six weeks)

Removal of wild living rainbow trout in high risk watercourses by electro-fishery + after flooding

Fallowing of risk farms in 2010



VHS eradication

Planned approved VHS free status 2013 (Category I)

Four year surveillance programme

Sampling of 1 x 30 fish per farm for two years

Sampling of 2 x 30 fish per farm for the following two years

Budget

Total budget 48,5 mill DKK = 6.5 mill €

2009: 2.1 mill. €
2010: 2.1 mill. €

Fallowing and compensation

2011: 1.1 mill. €
2012: 0,6 mill. €
2013: 0,6 mill. €

Compensation

Compensation

Main fallowing: 0,33 mill € pr year (0,33 € pr kg feed)

Auxiliary fallowing: 0,70 mill € pr year (Max. 0,33 € pr kg feed)

Removal of wild living rainbow trout: 0,01mill. €

DK Fish Health Status

Disease	Category I	Category II	Category III	No
IHN	343	0	0	343
VHS	254	61	28	343
ISA	343	0	0	343
IPN	47	10	0	343
BKD	33	33	0	343

European Commission

Background for the success

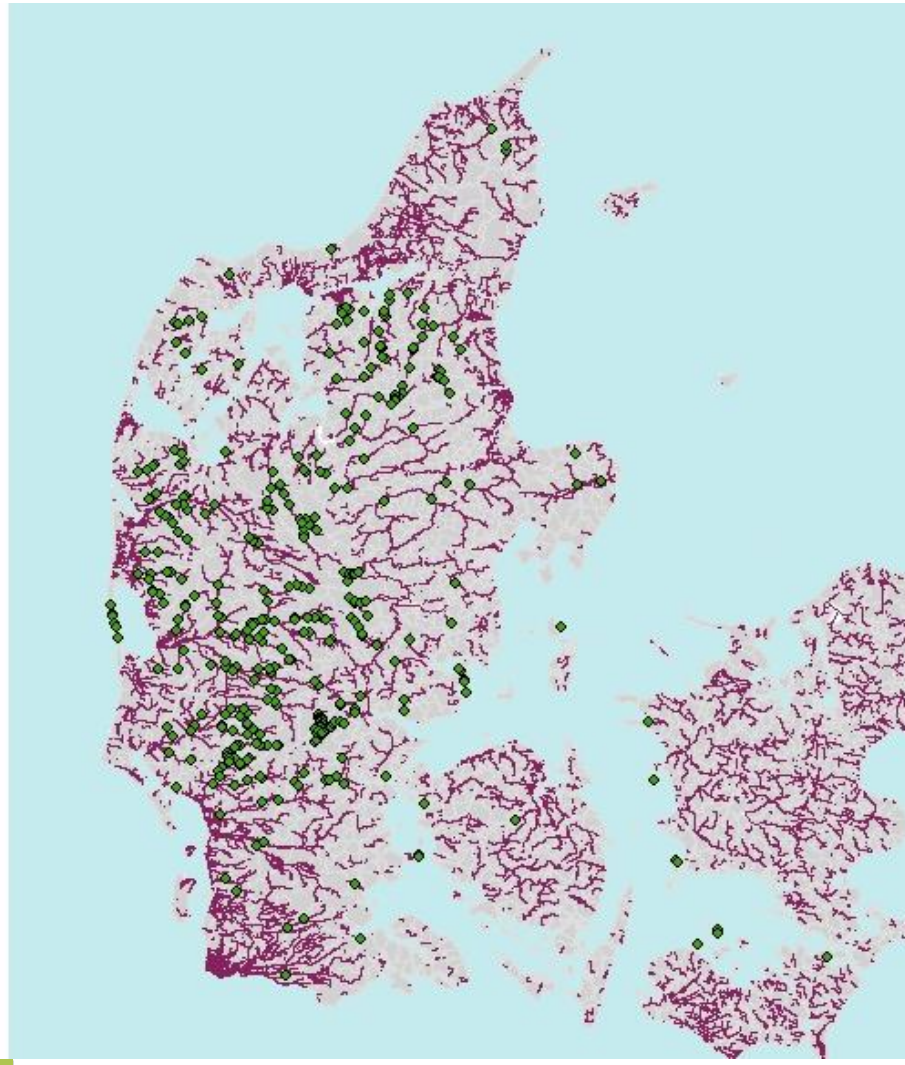
Favourable epidemic situation

Declared wish from the industry

Financial support

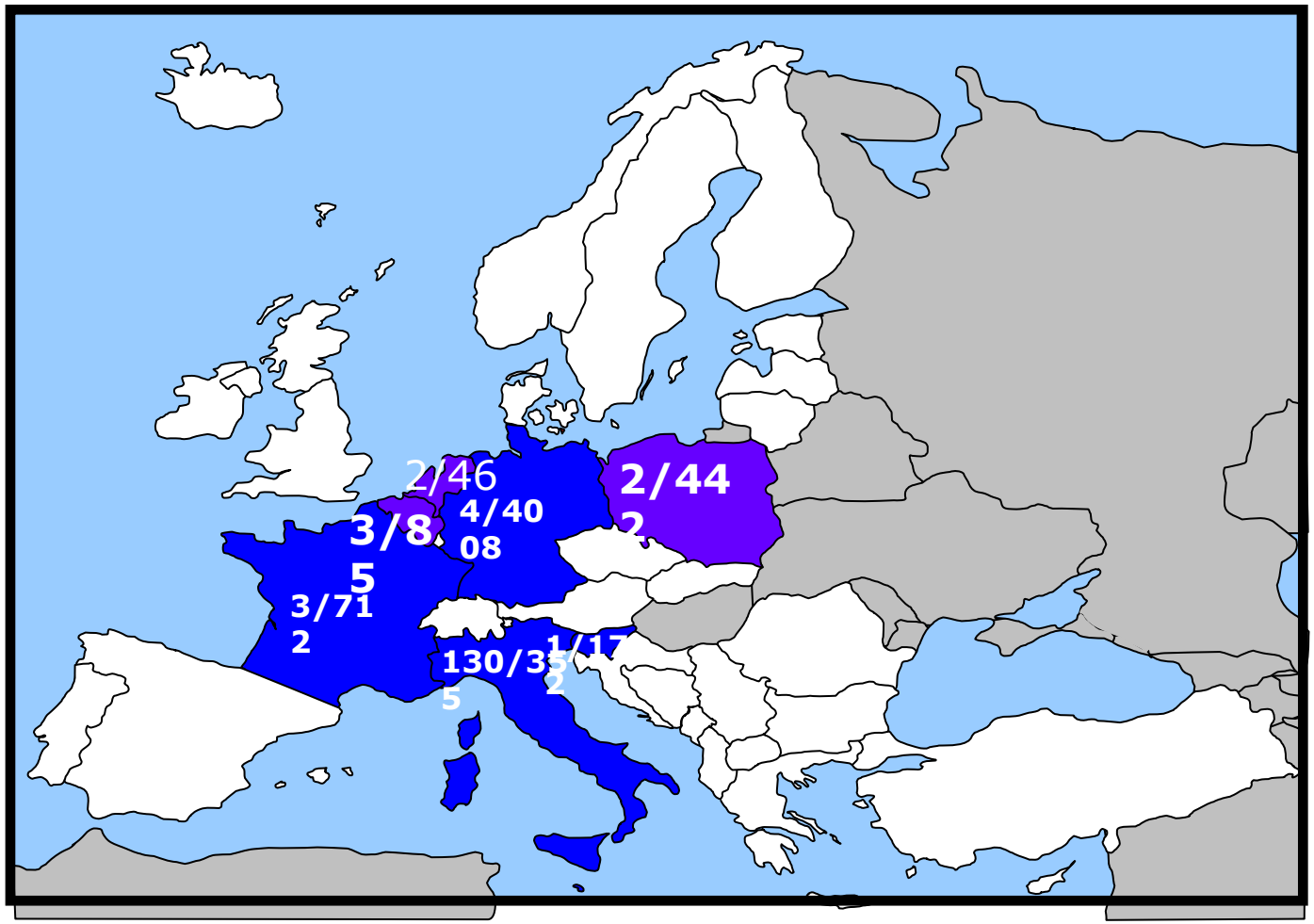
Preventive measures in place for years

Immediate eradication is mandatory!



Scen. 1: Example of Outbreak of serious listed disease in free farm and/or zone: 2: IHN outbreak in Italy and France 1987

Number of trout farms considered to be infected with IHN in Europe 2008



European Commission

Scen. 3: Suspicion/confirmation of listed pathogens in wild fish stocks and in farmed progeny from wild caught fish

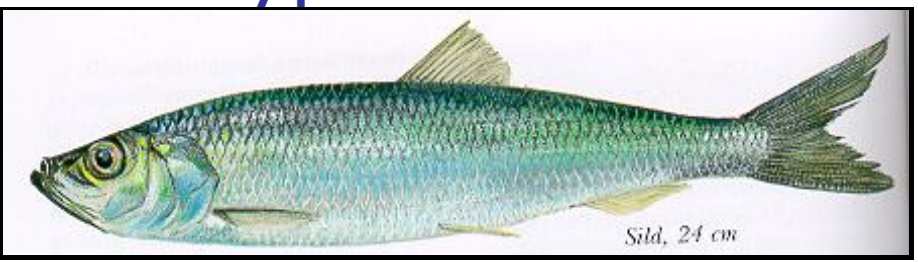
Isolation of VHS from wild marine fish in Northern Europe

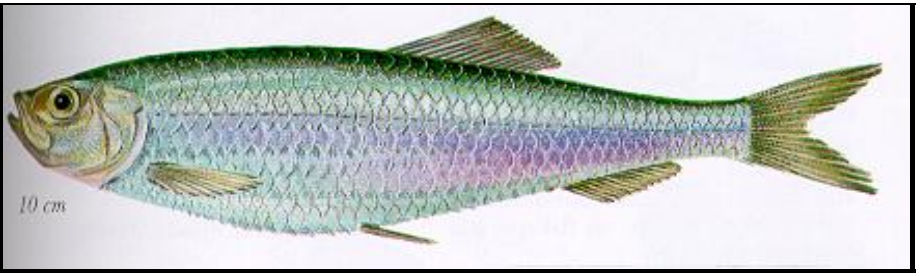
Health and Consumers

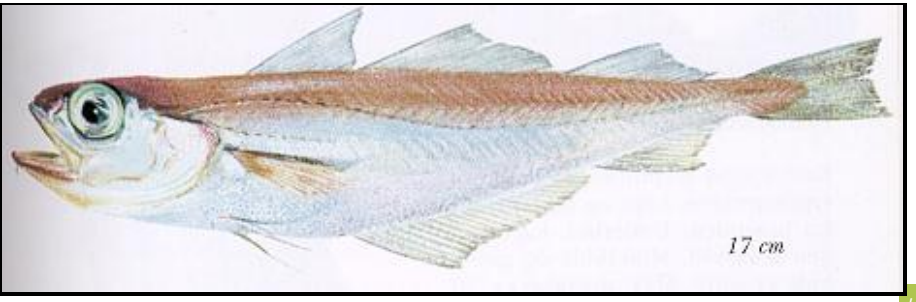
VHS in Wild caught fish

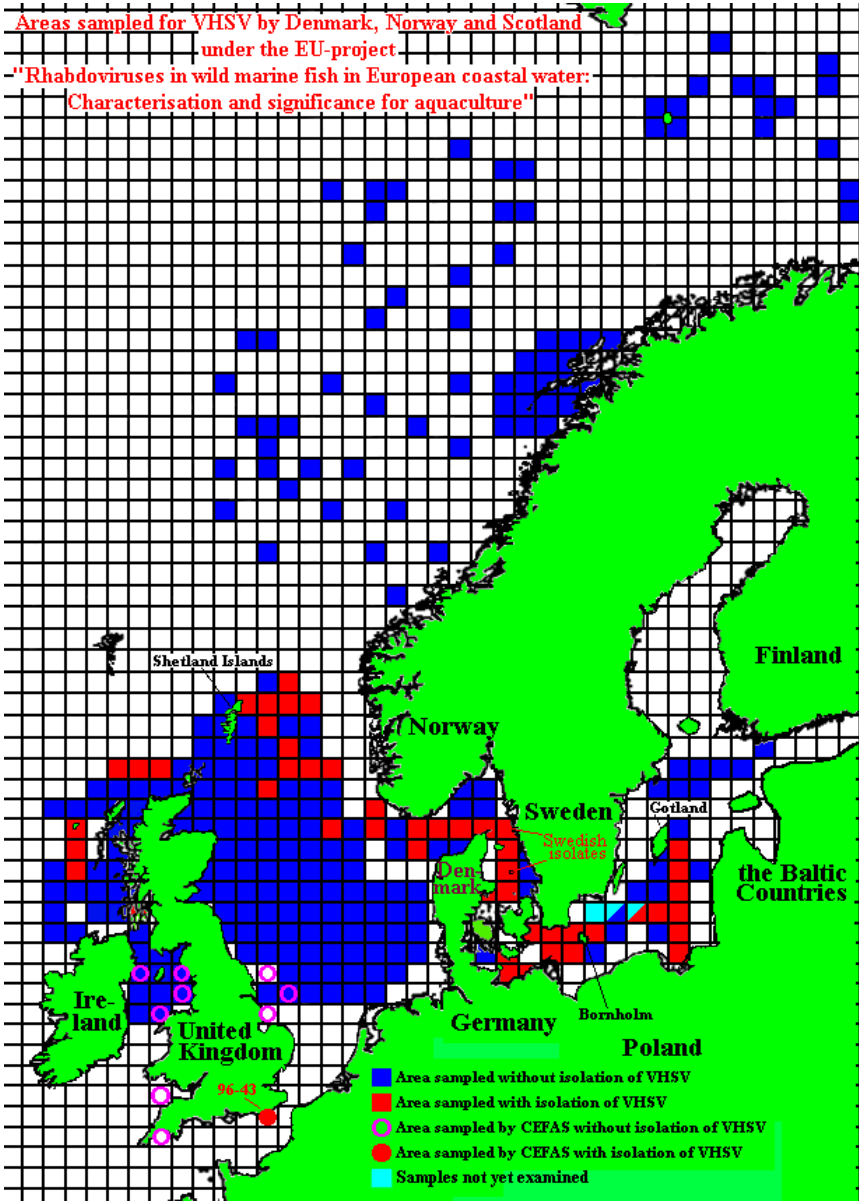
European Commission

VHSV Genotype Ib, II and III, especially in sprat, herring and Norway pout









Scen. 3:

VHS from wild marine fish in Northern Europe

No proven connection to any mortality in wild stock, but preliminary studies indicate that Atlantic herring fingerlings are susceptible with significant mortalities

Non to low pathogenic for rainbow trout and Atlantic salmon

Pathogenic for turbot

No action – no notification.

European Commission

Scen. 3: Suspicion/confirmation of listed pathogens in wild fish stocks and in farmed progeny from wild caught fish

First isolation of VHS in USA in salmonids in 1988 and later in herring and cod and

Photo courtesy of Garth Traxler, Pacific Biological Station

VHS in the Great Lakes in USA and Canada

Photo courtesy of Andy Noyes, NYSDEC

Health and Consumers

European Commission

- *VHSV Type IVa – West coast isolates: No-low mortality in salmonid fish and gadoids*
- *Unlike in Europe*
  - *Mass mortalities in Pacific herring.*
  - *VHS Type IVb in the Great Lakes: Mass mortalities*

Photo courtesy of Garth Traxler, Pacific Biological Station

Photo courtesy of Andy Noyes, NYSDEC

European Commission

Gleenwood Springs Hatcheries

Makah National Fish Hatchery

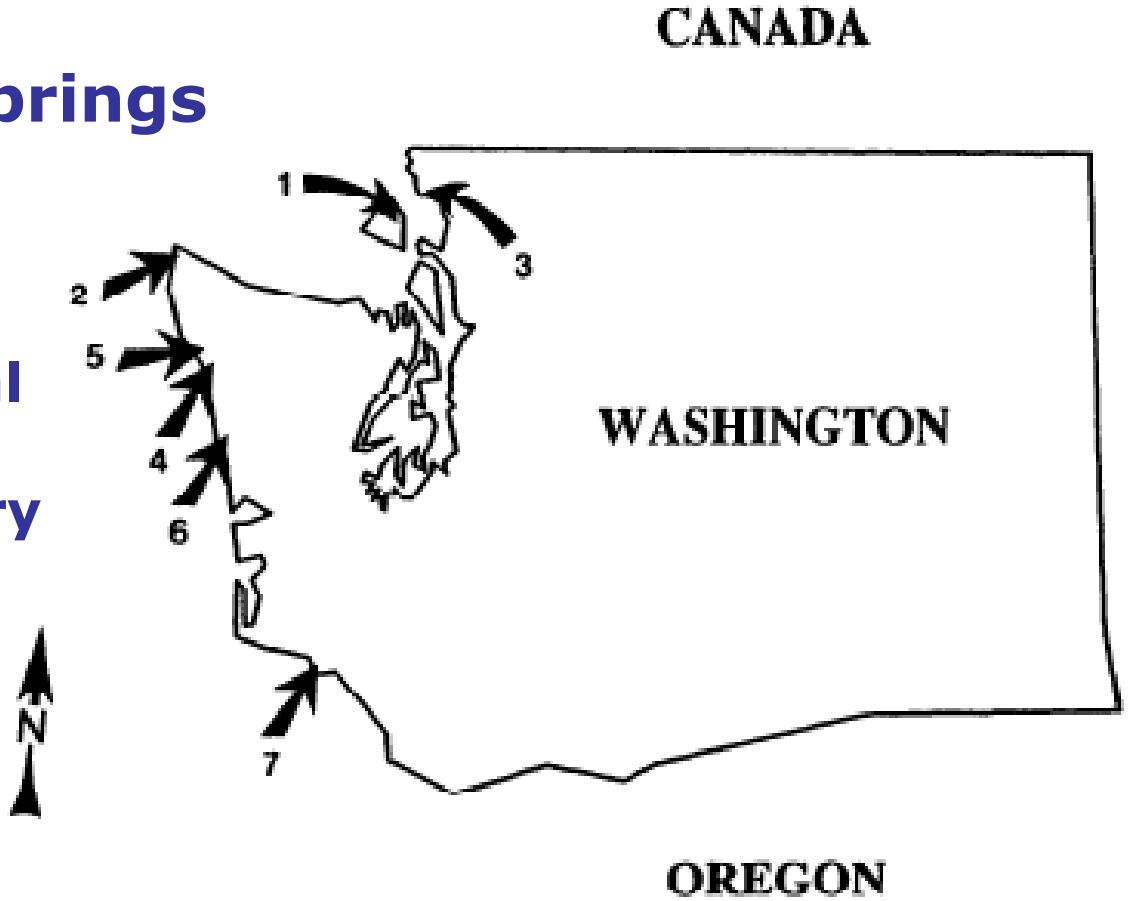


Fig. 1. Locations in Washington State, USA where North American VHSV has been isolated from chinook and coho salmon in 1988, 1989, 1991 and 1994: (1) Gleenwood Springs Hatchery; (2) Makah National Fish Hatchery; (3) Lummi Bay Seaponds; (4) Bogachiel River; (5) Soleduck River Hatchery; (6) Queets River/Shale Creek Hatchery; (7) Elokomin River Hatchery.

European Commission

Scen. 3: Suspicion/confirmation of listed pathogens in wild fish stocks and in farmed progeny from wild caught fish

Actions:

In wild fish: containment, surveillance, trade regulation. West coast: No actions

Great Lakes: Biosecurity awareness, transboundary collaboration, significant trade and movement restrictions

In hatcheries for restocking: containment, removal/destruction of infected stocks/ or whole stock, fallowing, enhanced surveillance.

European Commission

New emergent diseases of unknown aethiology

CyHV3 - Koi herpes virus in farmed and ornamental carps.

ISA outbreak in Norway in the eighties

Lactococcus garvieae in Rainbow trout farming

European Commission

Laboratory diagnostics:

Un clarity about how to deal with listed pathogens, especially with low pathogenic strains. For VHS virus all isolates from farmed fish are treated equally, with strict measures, but discussions about the role of infectivity and strain differentiation delayed decision making in e.g. Norway and to some extend in Finland.

Different approaches in OIE on strain definitions and lack of clear cut diagnostic means for simple strain differentiation, e.g. EHN, SVC.

European Commission

Laboratory diagnostics 2:

Constant awareness of laboratory skills through

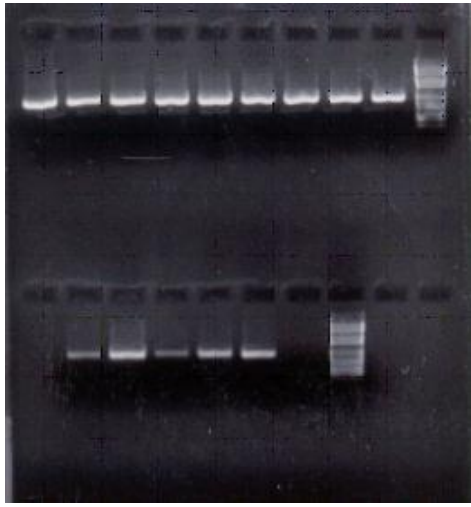
Quality assurance

Networking with other laboratories

Regular proficiency testing

Training

Communication between inspectors and laboratory personnel



European Commission

Preparedness and contingency planning Is very important for the outcome of disease outbreaks and spreading.

Most important in planning is an efficient infrastructure and that the pre requirements and legal power are in place

Specific operational manual are very useful for well known specific diseases where most features can be predicted, e.g. ISA, IHN.

But rapid response, flexibility, and qualified actions are the most important elements.

Generic plans according to various scenarios might therefore be the way forward.