Update of the fish listed disease situation in France
Implementation of a plan for eradication

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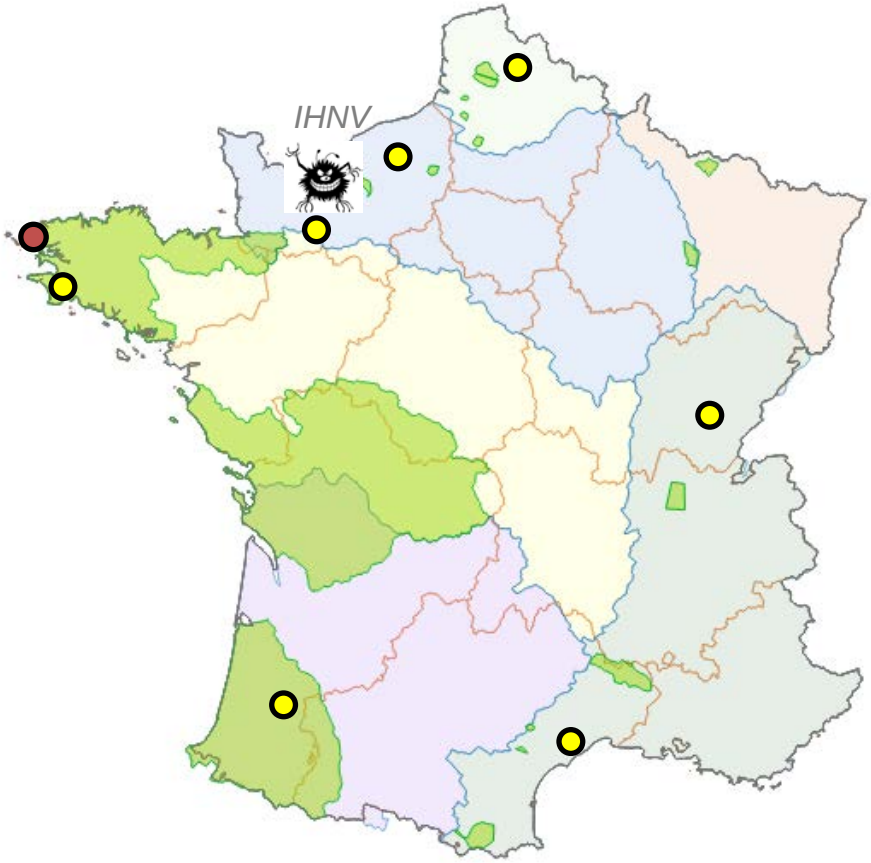
In close relation with:
-**Direction Générale de l'Alimentation**,
Service des actions sanitaires en production primaire,
Sous direction de la santé et de la protection animales, Bureau de la santé animale

Context

France is not free from non exotic listed diseases VHS and IHN according to directive 2006/88 but…



Disease-free big areas
(main production of salmonids)

Updated situation April 2017

Surveillance is implemented
Suspicions are investigated *
Outbreaks are eradicated *

** Financement by the Competent Authority*

… Big **zones** (cf map) + many small **compartments** have **VHS** and **IHN free** status

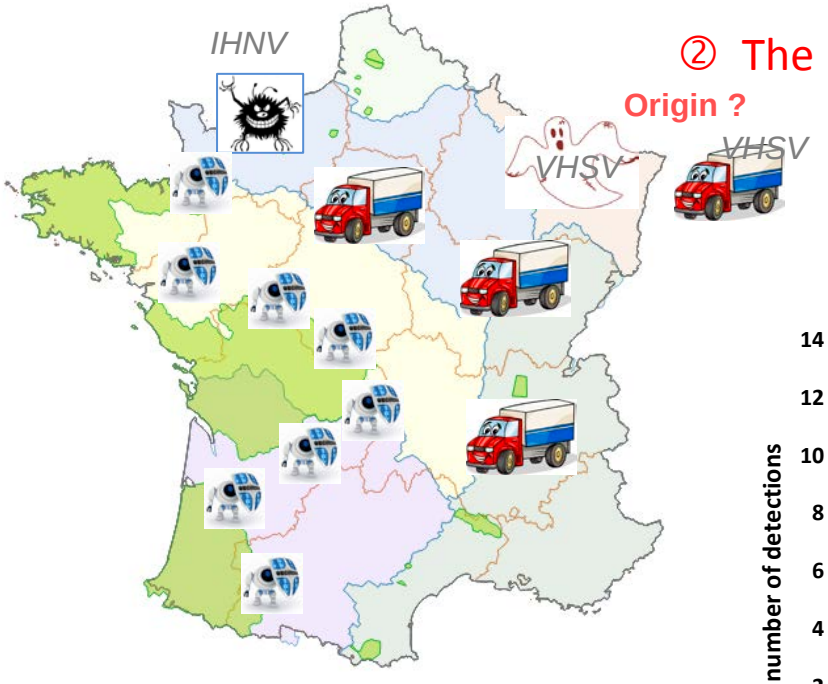
7 official laboratories perform first intention analysis

Positive samples are sent to **NRL** for confirmation and characterization

Context

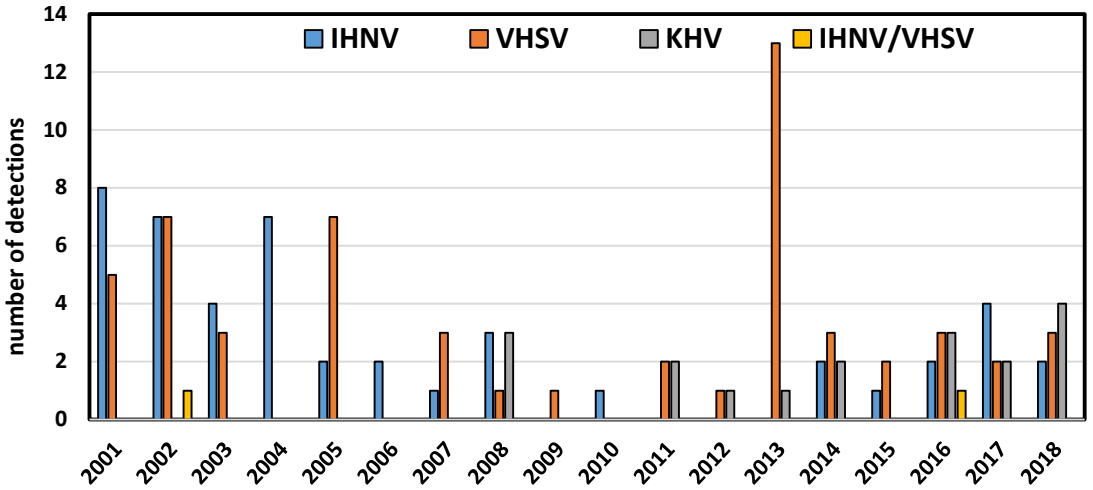
- VHS and IHN outbreaks are regulary detected and eradicated
- Surveillance – **1700 analysis / year**
- Category I farms (free status) - **350 / 600 farms**
- Average farm density - **1 farm/1000 km2**

① The historical IHN in Normandie…



② The recurrent VHS in Moselle…

Number of detections from 2001 to 2018



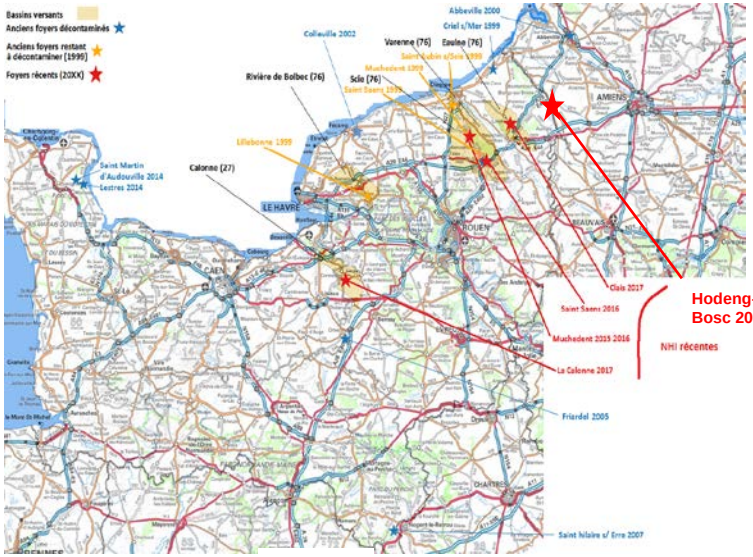
In 2018 :

- 2 IHNV positive results
- 3 VHSV positive results

Infectious Hematopoietic Necrosis Virus (IHNV)

① Focus on affected farms in 2 water catchments in Normandie…

- An area containing disease-free farms
- 6 geographical independent water catchments
- First detection in 1992
- Still infected farms in 2 water catchments
- No spreading out of this area since many years



% identity between « normandes » strains :
Max = 100% (same water catchment)
Min = 97,3% (15 nt ≠ / 570)

↝ Comparison of 18 “normands” isolates (+1 outgroup)

Subgroup 2

Isolate 1992 vs 2017 = 2 different virus

Subgroup 1

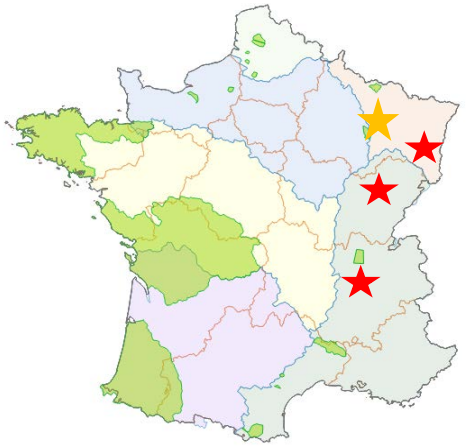
Bayesian analysis
Tree nb 15000

➢ **Hypothesis :**

Several strains circulating since 1992 (perhaps 2 different types, with different origins)

↝ **No or inefficient disinfection = persistence of virus?**
↝ **Various unknown reservoirs??**
↝ **Some existing links via transport of fish**

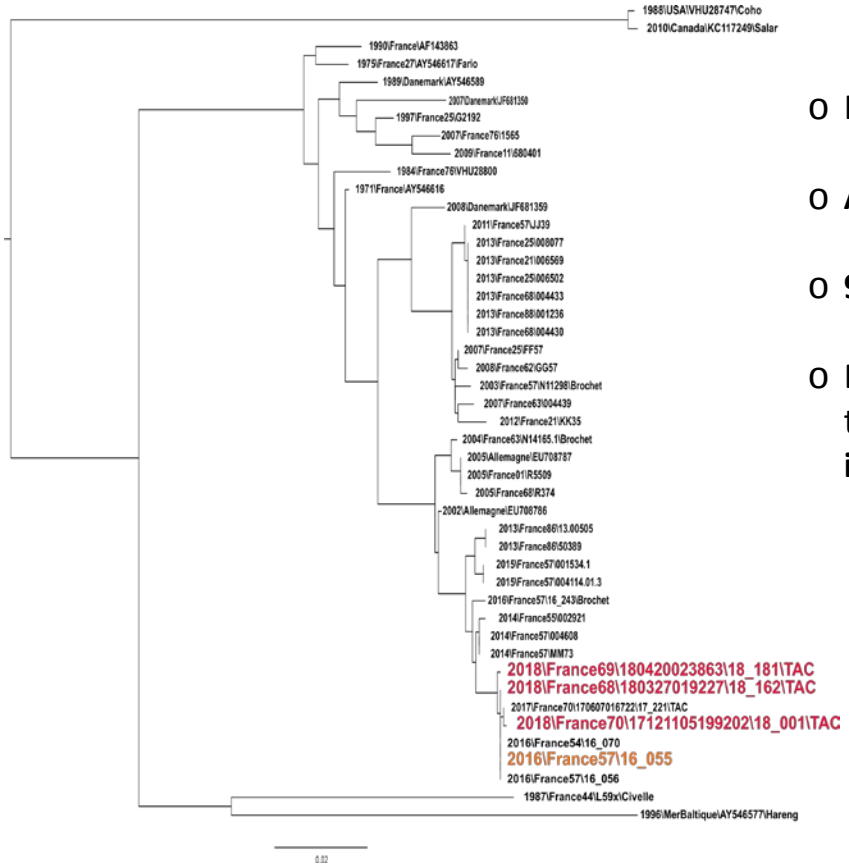
The recurrent VHS in East of France…



- An area with disease-free farms
- Rich in ponds (both extensive aquaculture and put and take fisheries)
- Investigations in 9 ponds in 2016, one pond with positive results

- In **2018** : **3** independent positive results

① In an establishment, epidemiological link (transport) with a 2017 outbreak
② In a pond (put and take fishery), mortality on rainbow trout (pond already declared infected in 2013)
③ In a put and take fishery of a fishing association, mortality on rainbow trout after introduction of fish



- la genotype
- **At least 99.8%** nt identity with **2016 isolates from East**
- **99.7% to 99.8%** within **2018** isolates
- Epidemiological investigations : probably a commercial link (a fish trader has transported some fish in or in a close environment of the 3 **infected sites**)

Fish transport seems to be, quite obviously, at the origin of most outbreaks

And some atypical cases…

➢ VHS in the East Haute-Saône in 2017

June 2017

Sanitary control in **fish farm A : No clinical sign**

Positive Virology

Sequencing : **99,9% identity with former Moselle isolates**
Not the same water catchment → epidemiological link via movements

October 2017

Epidemiological link with **fish farm B**

Negative virology

Positive Serology : 69 pos / 99 serums

December 2017

Naive Rainbow trout as control
CTRL **after 6 weeks on farm B** : **no clinical sign**

Virology: pos

Sequencing : 1 nt ≠ isolate from fish farm A

⇨ test *in vivo* on rainbow trout from ANSES rearing: **100% mortality at D16** post-infection

➢ Hypothesis : Rainbow trout strain resistant to VHS??

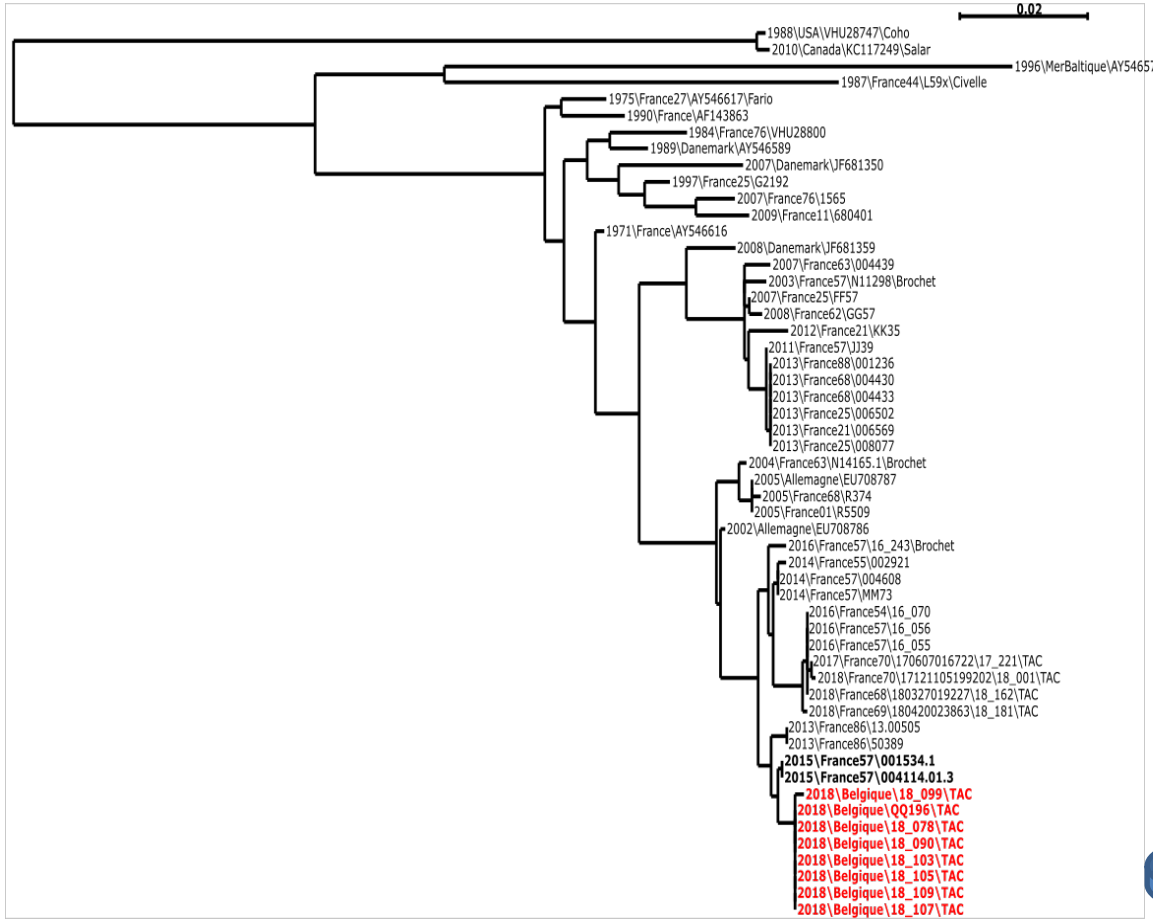
And some atypical cases…

➢ Belgian VHS (august 2018-december 2018)

Belgium : First detection in a farm ; no **mortality**

9 sites (farms or put and take fisheries) with epidemiological link in Belgium ⇨ sampling, détection, sequencing

France : In the farm: Investigations following transport to the first farm (TRACES) → all negative results



⇨ **At the NRL** : Sequencing performed on complete G gene

⇨ **100% nt identity between all the belgian isolates**

99,6% identity with Moselle 2015 isolates

But

Very different phenotypes!!!

Test *in vivo* : 100% mortality

Resistance of trout strain???

National Plan for VHS and IHN Eradication and monitoring in France

➢ **Aim: qualification all of the whole metropolitan territory free from VHS and IHN, processing by areas, in order to:**

① Inhance the animal health status at national level

② Secure trade and intra EU movements

③ Simplify movments between free zones and compartments, no more need of sanitary certificates at national level

④ Avoid future outbreaks of VHS and IHN, expensive for fish farmers as well as French administration, and psychologically damaging

Project leader:

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DE L'AGRICULTURE
DE L'AGROALIMENTAIRE
ET DE LA FORÊT

Direction Générale de l'Alimentation

Co-funded by European Maritime and Fisheries Fund

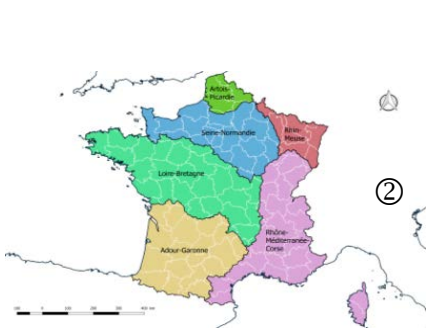
National Plan for VHS and IHN Eradication and Monitoring in France

➢ Program main description:

① First idea: to begin with big zones

Limitation : administrative divisions ①

are different of water bodies ②



②

①

AND not enough category I status fish for restocking the zones beginning the program (status II)

② New Strategy : to begin with compartments (establishments) to get enough cat I status fish

Based first on a voluntary approach from professionals at establishment (compartment) level

Then the programme can be mandatory (decree signed on 27/06/2018)

➢ Cost support:

Operators : support most of the expenses – PNES = public-private partnership

French administration participates to the expenses for the granting of free status (category II) (50 % of analysis, samples costs, financial participation to sanitary visits), the suspicions and the eradication (100 % of visits, analysis and animal value)

European Maritime and Fisheries Fund (EMFF) would reimburse 50 % of the charges supported by French state.

National Plan for VHS and IHN Eradication and Monitoring in France

➢ Preliminary work:

Report of all fish establishments with authorization delivered by the competent authority

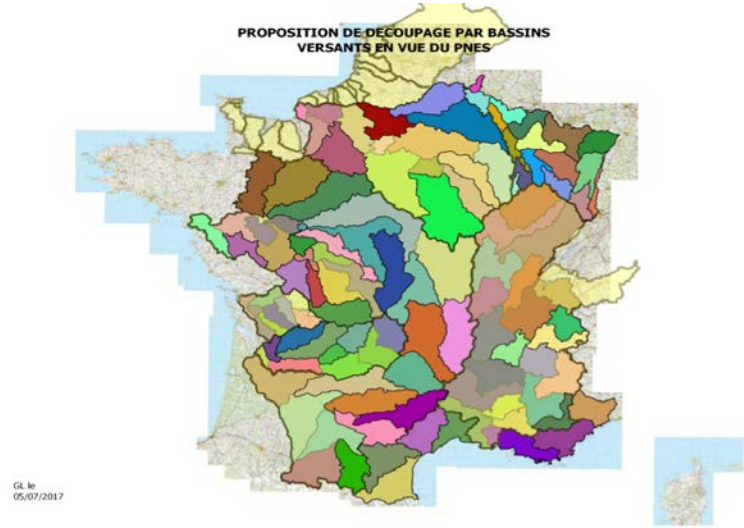
Mapping : hydrologic situation / other fish establishments / species and state of development

Work done to organise surveillance in **Extensive aquaculture :**

- mostly **carp** and **pike** (no trout production in ponds)
- many « put and take fisheries » also usually called « ponds » in France

  (Those with high risk are reglemented through authorization)

➢ Zones and compartment definition:



Mapping

Definition of zones (from sources to an impassible barrier)

Many compartments dependent on the status of the

surrounding waters = indicator of the wildlife status

Declaration of zones after having enough category I or II fish for restocking

National Plan for VHS and IHN Eradication and Monitoring in France

➢ Monitoring plan:

Sanitary visits and sampling in accordance with the directive 2006/88 EC :

Who are involved??

- Operators

- Sanitary veterinarian

- Designated laboratories

A or B programme (on 2 or 4 years)

Temperatures < 14° C

➢ In case of positive detection:

⇨Notification to the competent authorities ⇨ Establishment declared infected

⇨Epidemiological investigations and notification to the European commission

⇨Eradication

⇨Implementation of a new program

National Plan for VHS and IHN Eradication and Monitoring in France

➢ At the end of the program

Notification to the European commission :
Submission of Annex IV, results of monitoring and sampling

⇩

Recognition of Free status for the compartment

⇨ Beginning of monitoring to maintain this status

Some questions remain:

How to declare free zones on the basis of these compartments ?

Could dependent compartments be considered as witnesses of the wild ?

Shouldn't the risk of dependent compartments depend on the status of the surrounding waters ?

In order to improve the security regarding final sending of annex IV and opinion from the European Commission and Member States,

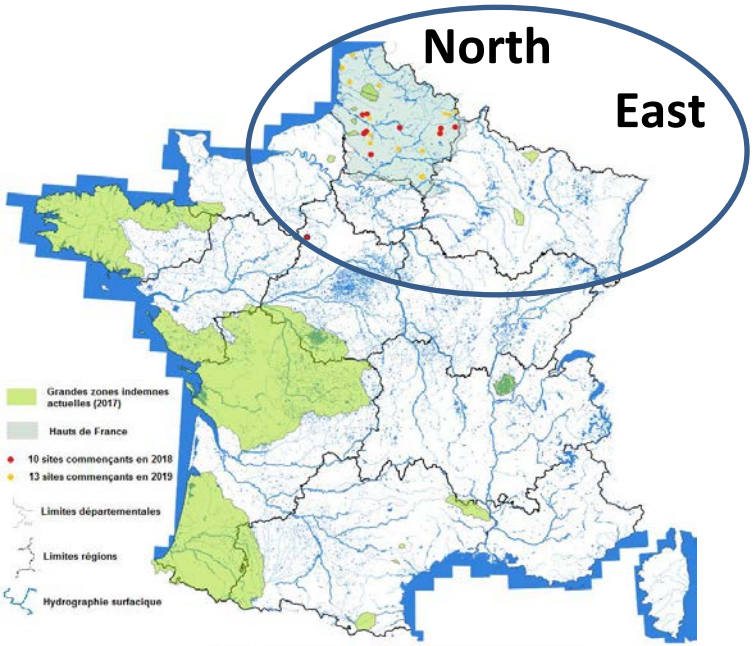
<u>the annex II should be sent at the beginning of the programme</u>

⇩

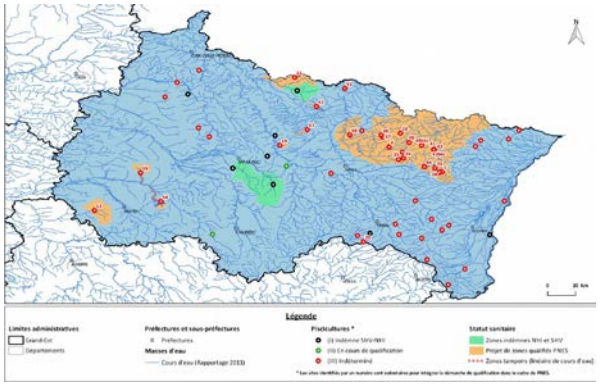
Opportunity to get comments, request for more clarification if needed, …

National Plan for VHS and IHN Eradication and Monitoring in France

➢ **First results:**



Sites cibles de la surveillance pour la qualification indemne de la tranche 1. Partie Hauts de France



	Sampling and sanitary visits	Number of fish	Virolocical analysis	Positive results
2017	1	80 rainbow trout	8	0
2018	43	2260 (1550 trout and 710 pike)	226	0
Schedules for 2019	134	9400	940	

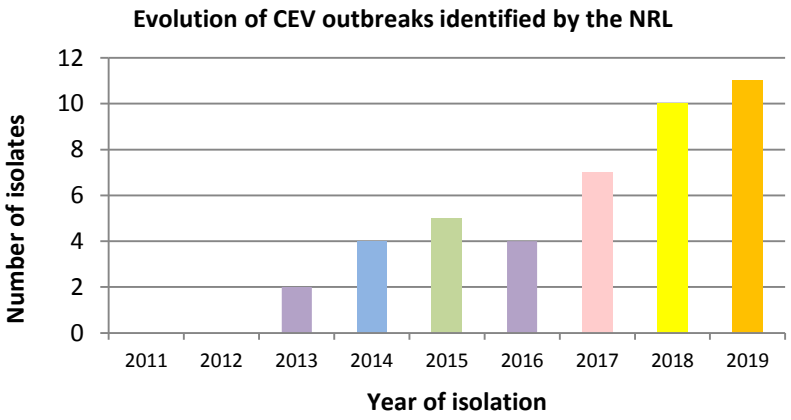
To date, no positive result was obtained (regarding more than 700 analysis in the programme for 2019 – additionnal to the usual analysis)

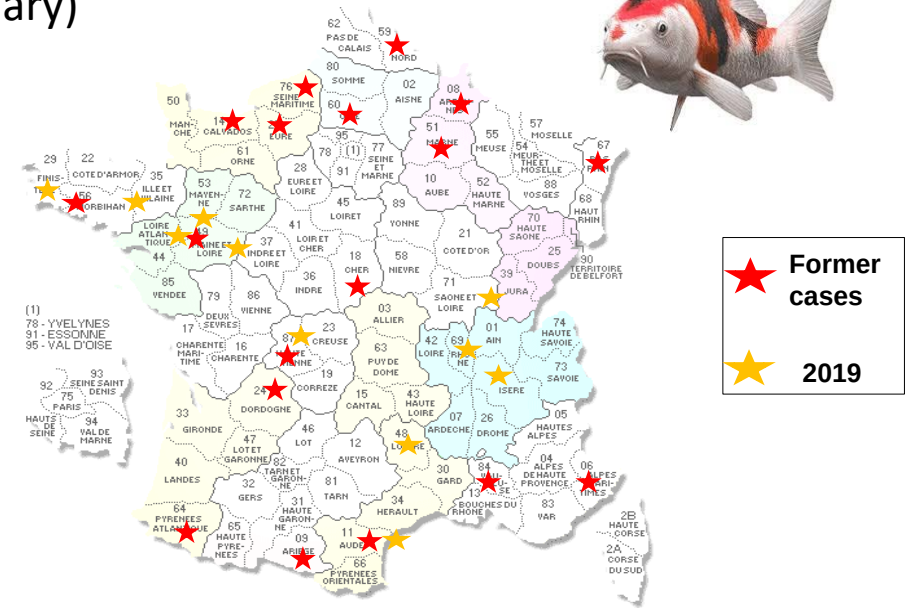
Conclusion - Perspectives:

- Until last year, some sporadic IHN or VHS outbreaks ⇨monitoring is efficient
- A lot of dependent compartments reflecting the **health status of the environment**
- France will become **free from VHS and IHN = a security for the EU and the other MS.**

- Emerging diseases : number of **CEV** reported cases is **increasing**…

Earlier detection in the year (first case in January)





- Better understanding of sanitary issue
- Information from veterinarians and NRL to professionals

anses
French agency for food, environmental and occupational health & safety

The French National Reference Laboratory And Ministry of Agriculture thank you very much for your attention!!

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