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Livsmedelsverket • Finnish Food Authority

IHNV outbreak in Finland in 2021

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IHNV in Åland Islands, May 2021

- IHNV was detected in May 2021 in Denmark, and the Danish animal health authorities notified Finnish colleagues about the epidemic and fish movements from the infected sites to two sea-cage fish farms in Finland in Åland Islands
- The first of the two farms inspected and sampled on May 24th
 - No abnormal mortality or symptoms had been reported
 - During the inspection, some abnormally swimming fish were detected
 - In autopsy, the fish showed findings related to IHNV, including hemorrhages in skin and muscle, dark color, and protruding eyes
 - Organ samples arrived in the virology laboratory on May 25th
 - **IHNV was detected in pooled organ suspensions by real time RT-PCR on May 26th**
 - On May 27th, sequencing of partial G (glycoprotein) gene of IHNV genome indicated that the virus belonged to **IHNV genotype E**
 - Cytopathic effect typical for IHNV was detected on both EPC and BF-2 cell lines, and IHNV was confirmed by ELISA

IHNV in Åland Islands, May–June 2021

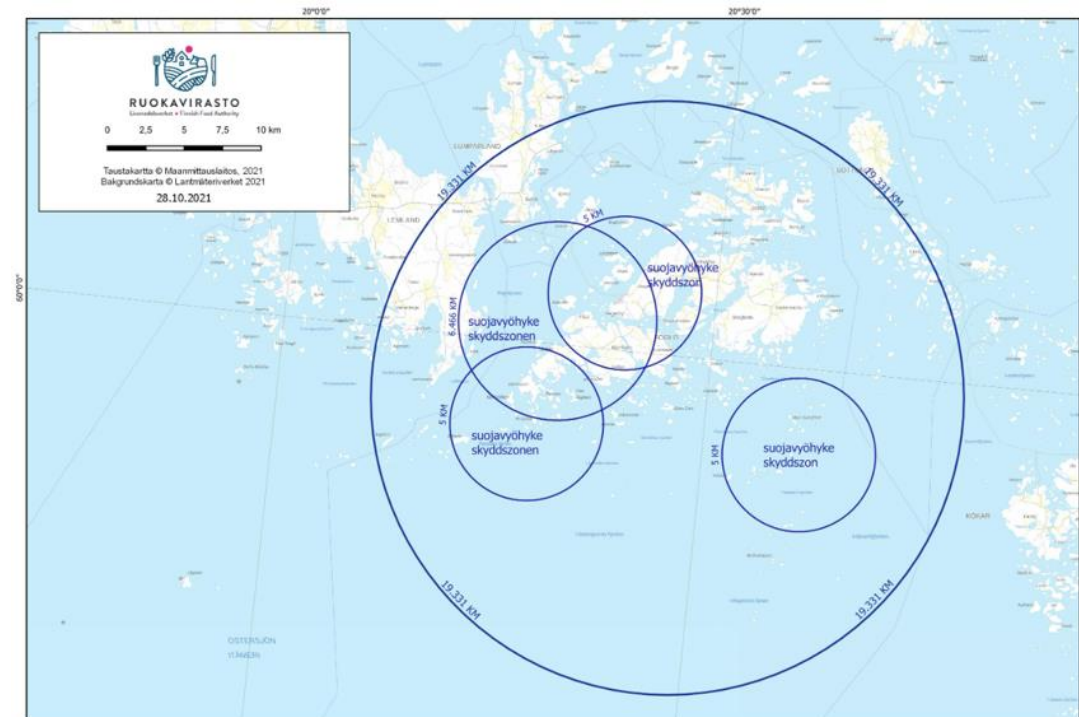
- The second farm was inspected and sampled on May 26th
 - **Presence of IHNV was confirmed on June 1st**
- Epidemiological investigation was carried out to find out where the infection had possibly been spread in Finland
 - There had been no fish movements from the two positive farms
 - 15 fish farms were tested, and 50 wild fish from the area
- **IHNV was detected in the third sea-cage farm on June 4th**
 - Located approximately 2 km from the first two farms
 - The infection had probably traveled there by water from the first two farms
- A restricted zone was immediately established around the infected farms





IHNV in Åland Islands, October 2021

- After the summer, IHNV was further detected in two more farms:
 - in the fourth farm on October 5th
 - in the fifth farm on October 22nd
- These farms located further (approximately 6–20 km) from the first three positive farms
- It is not clear how the virus spread to these farms, but transmission especially via boat traffic has been suspected
- The restricted zone was extended to cover each of the positive farms





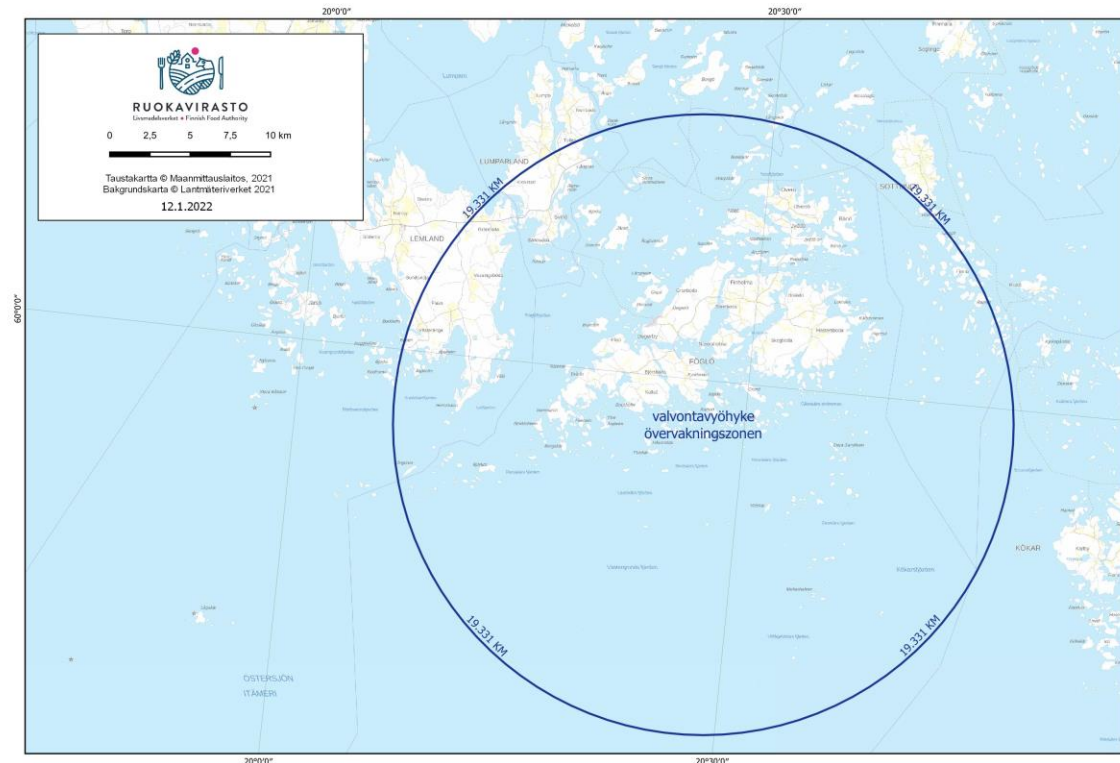
Measures on affected farms

- All IHN sensitive fish from the infected farms were euthanized or slaughtered
- Sea-cages and other equipment from the farms were washed and disinfected
- After disinfection, a fallowing period of at least six weeks was carried out



Measures on affected farms

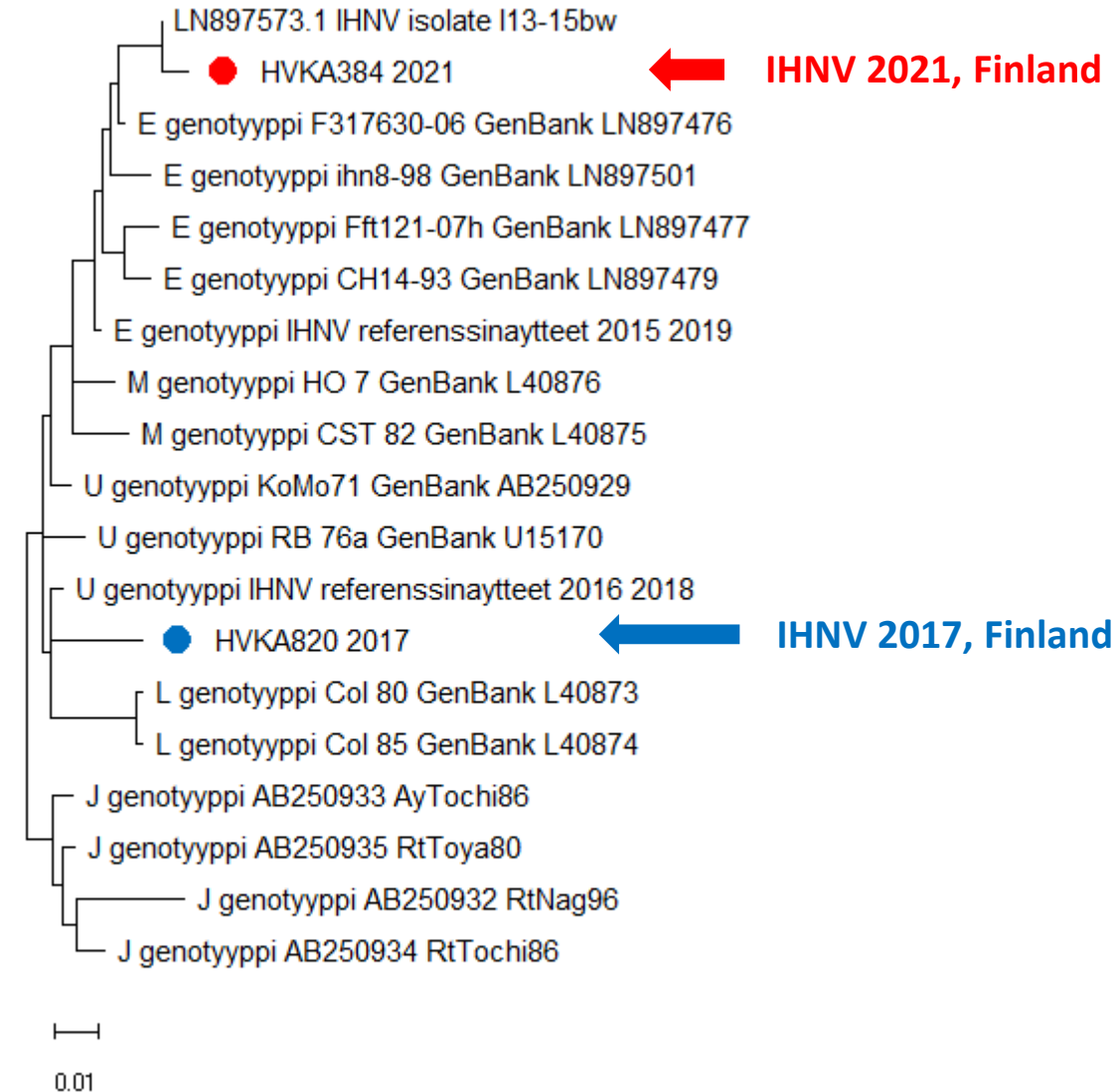
- Last rainbow trouts were slaughtered just before last Christmas
 - Approximately 500 000 kg of rainbow trout were euthanized, and 900 000 kg were slaughtered
- Eradication was completed in March 2022
- First new trouts were moved to infected sites in early April 2022
- On April 27th, 2022, surveillance program of two years started in the surveillance zone which corresponds to the original restricted zone





Phylogenetic analysis of the virus

- Partial G (glycoprotein) gene of IHNV genome was sequenced
 - the virus belonged to genotype E
- All viruses from the Finnish farms in 2021 were identical
- In addition, the Finnish isolates were identical with the Danish isolates
- The previous IHNV outbreak in Finland in 2017–2018 was caused by IHNV that was closest to genotype U





Current situation

- Currently, Finland is officially declared free of IHN, with exception of the coastal compartment corresponding the surveillance zone in Åland Islands
 - After the 2017–2018 IHN outbreak, the surveillance program in those zones was completed and the areas were declared free of IHN on September 15th, 2021
- Surveillance program of two years has started in the surveillance zone in Åland Islands to regain IHNV free status, on April 27th, 2022
 - Official control visits and sampling of 75 fish twice a year on fish farms, about 10 farms
 - In addition, wild fish from the area will be tested
 - So far, the first 75 fish from the first two farms have been tested and found negative for IHNV
- The surveillance zone is expected to regain an official IHN-free status in the end of 2023 or in the spring of 2024



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Thank you!