APHIS Factsheet

Veterinary Services

May 2013

Questions and Answers: Infectious Salmon Anemia and the Pacific Northwest

Infectious salmon anemia (ISA) is a serious fish disease caused by a highly pathogenic virus. ISA mainly affects farmed Atlantic salmon and has not been found in the Pacific Northwest. The U.S. Department Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) is working with fish health partners to help protect U.S. aquaculture and wild fish populations from this disease.

About ISA

Q. What is infectious salmon anemia?
A. ISA is a viral disease, primarily of farmed Atlantic salmon, that causes severe anemia in infected fish. The fish develop pale gills and may swim close to the water surface, appearing to struggle for air. However, the disease can also develop without the fish showing any external signs of illness—the fish maintain a normal appetite and then suddenly die.

Because the signs of ISA are not unique to the virus and occur with other fish diseases, testing is the only way to tell if a fish has ISA.

Q. Which fish are most susceptible to the ISA virus?
A. ISA has caused high death rates in Atlantic salmon under farmed and laboratory conditions.

Several species of marine and freshwater fish can be infected with ISA without showing any apparent signs of disease. However, ISA has not caused die-offs in wild populations of any species.

Q. Where was ISA first detected?
A. Outbreaks of ISA were first identified in Norway beginning in 1984. Since then, outbreaks in farmed Atlantic salmon have occurred in eastern Canada, Chile, the Faroe Islands, Maine, Norway, and Scotland.

Q. Can people get ISA?
A. No. Fish with ISA pose no human health threat.

Q. Can you cure ISA?
A. At this time, there is no cure for ISA. However, in farmed Atlantic salmon, you can manage the disease by conducting regular surveillance, cleaning and disinfecting net pens and equipment between uses, employing proper quarantine measures, following good fish husbandry practices, and promptly removing infected fish. You can also protect your fish by purchasing eggs and brood stock that are proven to be free of the ISA virus. Together, these steps reduce ISA outbreaks in farmed Atlantic salmon.

Q. Is ISA present in the United States?
A. ISA was found in Maine in 2001. In 2002, Federal and State partners began a surveillance and testing program to look for the disease and control its spread in farmed Atlantic salmon. This program is highly successful—there have been no confirmed cases of ISA in the United States since early 2006.

ISA and the Pacific Northwest

Q. Is ISA found in the Pacific Northwest?
A. No. While some media reports indicate that ISA virus is found in both farmed and wild salmon from British Columbia, Canada, these statements are not accurate. In October 2011, university researchers from British Columbia reported finding ISA in wild salmon from British Columbia; however, the Canadian Food Inspection Agency (CFIA), the Federal agency with authority for fish health in Canada, tested fish tissue samples from British Columbia using internationally approved methods and found no ISA virus present. ISA has never been confirmed in the Pacific Northwest.

Q. How are we addressing ISA concerns in the Pacific Northwest?
A. In response to concerns about the possibility that ISA could occur in the Pacific Northwest, the U.S. Aquatic Animal Health Task Force, led by USDA-APHIS, collaborated with Federal, State, and Tribal agencies and developed an enhanced surveillance plan for ISA. The U.S. Aquatic Animal Task Force includes members from APHIS, the National Marine Fisheries Service (U.S. Department of Commerce), and the Fish and Wildlife Service (U.S. Department of the Interior).

The surveillance plan details how these fish health managers will look for the disease and what type of screening tests to use. The plan builds on existing State, Tribal, Federal, and industry health infrastructures and activities. It focuses on the States of Washington and Alaska and calls for testing both wild and hatchery stocks of Pacific Salmon and farmed Atlantic salmon.

Q. Are the U.S. and Canadian surveillance efforts for ISA similar?
A. Both countries refer to the World Organization for Animal Health (OIE)-recommended testing methods for detecting the ISA virus. APHIS is working with CFIA and Canada's Department of Fisheries and Oceans (DFO) to ensure that our surveillance efforts are in line with each other and with the OIE.

Q. Why do we need an enhanced surveillance program? What are the benefits?
A. ISA is a serious disease of farmed Atlantic salmon. There is no scientific evidence that Pacific salmon are at risk, but a surveillance program would help to quickly detect, contain, and control the disease if it were found in the future. In turn, early detection and control efforts could better protect fish health and reduce the potential for economic impacts to the aquaculture industry.

Q. What are the potential economic impacts of an ISA outbreak?
A. When ISA occurred in Maine in 2001 and 2002, 17 marine net-pen sites—containing approximately 1.5 million fish—were depopulated. The United States spent $8.6 million combating ISA in Maine between 2001 and 2007, including the cost of indemnity to farmers for animals destroyed. Given the comparatively larger size of the Atlantic salmon industry in the Pacific Northwest (Washington and British Columbia, Canada), if ISA were found there, it is likely that the economic impact would be even greater.

Managing ISA

Q. What steps are fish producers taking to prevent ISA?
A. There are several simple steps that fish producers use to help prevent ISA from infecting their facilities. These basic biosecurity steps include the following:

- Keeping equipment clean and disinfected and not sharing equipment between sites
- Not transferring fish between sites
- Quickly removing any potentially sick fish to avoid infecting others
- Keeping fish of different ages separate
- Using a clean water source
- Controlling access to their facilities
- Obtaining eggs and brood stock that are free of the ISA virus

These same steps would also help manage the disease if it were found at a facility.

Testing for ISA

Q. How do you know if a fish has the ISA virus?
A. Testing is the only way to know if a fish has the ISA virus. ISA testing is a multistep process that uses OIE-recommended methods.

The initial tests look for viral genetic material in fish tissues. If these tests show evidence of the ISA virus, laboratory officials conduct additional tests (e.g., genetic sequencing and cell cultures) to confirm infection. As part of the Pacific Northwest surveillance plan, the initial testing is completed by one of three laboratories, all of which work closely with APHIS.

If it is likely that a fish population has the ISA virus, it is necessary to test additional fish from that population in order to isolate the virus. This testing is completed by personnel at APHIS' National Veterinary Services Laboratories (NVSL).

Q. Who conducts the testing for ISA?
A. As outlined in the surveillance plan, several U.S. laboratories screen samples for ISA, following APHIS-approved test protocols. However, all suspect and presumptive cases are confirmed by NVSL. As the U.S. reference laboratory for animal diseases, NVSL has the expertise to make a final determination on whether the ISA virus is present or not.

Q. What do "negative," "suspect," "presumptive positive," and "confirmed positive" mean?
A. A **negative** result means that testing found no evidence of the ISA virus.

A **suspect** result means that preliminary testing was done, but the results were inconclusive. To make a final determination, we must test more samples from the same population and monitor that population further.

A **presumptive positive** result means that NVSL is testing the samples and most of the results are positive; however, final testing is still underway.

The **confirmed positive** result means that the sample meets all of the internationally recognized criteria (i.e., successfully growing the virus under laboratory conditions, genetic identification) to be called positive for the ISA virus.

More Information

Q. Where can I find more information about ISA and the ISA virus?
A. For more information about the ISA virus and ISA disease surveillance programs, go to www.aphis.usda.gov/animal_health/animal_dis_spec/aquaculture/index2.shtml.