

# Viral Hemorrhagic Septicemia or VHS

Pictured Rocks National Lakeshore  
National Park Service  
U.S. Department of the Interior



## VHS – a fish disease new to the Great Lakes region

Pictured Rocks National Lakeshore and other National Parks around Lake Superior are very concerned about preventing VHS, a fish disease caused by a virus that has recently appeared in the lower Great Lakes and some inland lakes which has the potential to significantly impact native fish populations and recreational fishing opportunities in our area. Pictured Rocks National Lakeshore, Isle Royale National Park, Apostle Islands National Lakeshore, Grand Portage National Monument, and the Grand Portage Band of Lake Superior Chippewa are working with other federal and state agencies, Great Lakes Commission, and other organizations to prevent or slow the spread of VHS within parks and tribal waters.

### What is VHS?

VHS (Viral Hemorrhagic Septicemia) is an acute fish disease caused by a virus (called VHSV) that was first noticed in Europe. It spread to the Pacific Northwest in 1988, where it infected migrating salmon. Later, VHSV was found off the Atlantic coast of Canada, and since 2003 it has killed fish in each of the lower Great Lakes, as well as a few inland lakes in the Lower Peninsula, Wisconsin, New York, and southern Ontario. Until the virus reached the Great Lakes, scientists thought only marine fish were susceptible. Since 2006, 28 new species of freshwater fish have died from VHS. These include lake whitefish, rainbow trout, muskellunge, walleye, yellow perch, brown trout, largemouth bass, smallmouth bass, rock bass, northern pike, bluegill, pumpkinseed, burbot, and emerald shiners.



Photo: Dr. Mohamed Faisal, Michigan State University

**VHSV does not affect humans, even if a diseased fish is eaten. There are no human health problems associated with VHSV.**

### Does VHS kill fish?

Yes, VHS can kill large numbers of fish in a short period of time. The virus causes bleeding in the fish's organs, especially the liver, spleen, and intestines, and the ultimate cause of death is usually kidney failure. Sick fish often appear listless, swim in circles, or hang just below the surface. Sick fish may have bulging eyes and a red, mottled appearance, and the internal organs will be blotchy red. Some fish may carry the disease without any outward signs of sickness. Scientists predict that VHSV will infect more fish host species in the Great Lakes area.



Photo: Dr. Mohamed Faisal, Michigan State University

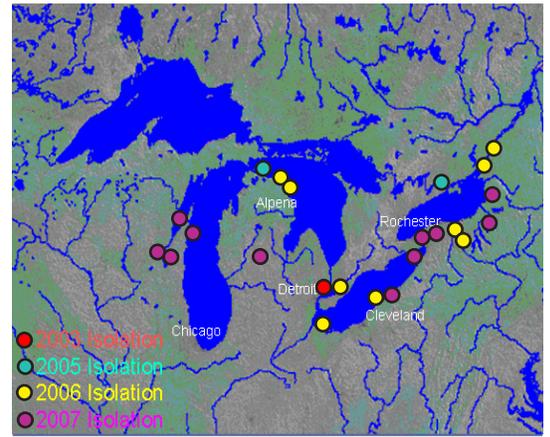
### How do fish get VHS?

Fish are most likely to get VHSV by eating an infected fish. Fish may also pick up VHSV when they are in groups, especially when they are stressed and the water is cold. VHS can be in urine, feces, and sexual fluids and can be transmitted to other fish through wounds or the gills if the virus is quite concentrated in the water. In some fish species the virus also can be transmitted from an infected female to the surface of her eggs. Outbreaks of the disease often occur during spring spawning runs when the water is cold, many fish are close together, and the fish are stressed.

## Where Is VHS found?

VHS has been confirmed in Lake Michigan (Green Bay, Little Sturgeon Bay, and Algoma in Wisconsin), Lake Huron (Cheboygan, Rogers City, and Alpena), St. Clair River, Lake St. Clair, Detroit River, Lake Erie, Niagara River, Lake Ontario (Bay of Quinte and Rochester), and the St. Lawrence River. VHS has infected several inland lakes in southern Ontario, New York, Wisconsin (Lake Winnebago), and Michigan (Budd Lake near Harrison).

VHSV distribution in Lakes Michigan and Huron was very spotty in 2007, indicating that the infections there are recent. However, VHSV is widespread in Lake Erie and Lake St. Clair (where it has been for a few years) and the smaller, inland lakes where it is found.



## How does VHS spread from one lake to another?

There are a number of ways that VHSV can move from one body of water to another including: 1) moving infected fish, either game fish or bait fish, from one water to another (freezing does not kill VHSV); 2) moving infected water in ballast tank, in live wells of fishing boats, and in bilges of recreational and fishing boats; 3) planting or releasing infected fish and/or the water containing them from one water body to another; and 4) natural movement of infected fish from one water to another. Fish movement through the Soo Locks is limited.

*Freezing live bait will not kill the virus. VHSV in dead bait fish can still infect another fish.*

It is unlikely that VHSV will move from one lake to another on waterbirds and waterfowl, because a relatively high concentration of the virus in water is needed to affect its host. VHSV can not be transported through the feces or urine of fish-eating birds, because birds' body temperatures kill the virus.

## What can I do to help stop the spread of VHSV?

- By Superintendent's Order, Pictured Rocks PROHIBITS use as bait for fishing, any fish or fish part, including fish roe, amphibians, or crayfish, in NPS administered waters within the Lakeshore Zone of the National Lakeshore.
- Michigan State law prohibits the movement of any Prohibited Fish Species, or parts of fish, including roe, from an infected water body to a VHS-free management area.
- The launching of any watercraft, that has not been decontaminated prior to launch into NPS administered waters within the Lakeshore Zone of the National Lakeshore. Decontamination is defined as cleaning and drying the boat and all associated equipment so that they are dry and free of any vegetation, animals and mud and that the bilges, live wells and other compartments are also clean, dry and free of all organic material.
- Dry your waders, boat trailer, fishing gear, nets, etc., before fishing in another body of water.
- If you find dead fish, contact a park employee for a collection kit.
- Animal and Plant Health Inspection Service of the U.S. Department of Agriculture prohibits carrying live fish across state lines without a disease-free certification.
- This disease has the potential to significantly impact fishing resources important to us all.



Photo: Dr. Mohamed Faisal, Michigan State University

**Please remember - You have a responsibility to ensure that the bait and equipment you are using is VHS-free.**