



*Exophthalmia (popeye) in an infected fish.*  
Photo courtesy of Dr. Mohamed Faisal.

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# VIRAL HEMORRHAGIC SEPTICEMIA

# VHS



*Lake St. CLAIR Gizzard Shad with hemorrhagic skin.*  
Photo courtesy of Dr. Mohamed Faisal.

**VHS is an extremely serious disease of fresh and saltwater fish.**

**And it's spreading across the Great Lakes region of the United States and Canada.**



## What is VHS?

Viral hemorrhagic septicemia (VHS) is an extremely serious viral disease of fresh and saltwater fish. It is spreading into the Great Lakes region of the United States and Canada. VHS has been found in Lake Huron, Lake St. Clair, Lake Erie, Lake Ontario, Lake Michigan, and the St. Lawrence River in New York. The virus has also infected several inland lakes in New York, Michigan, and Wisconsin. The disease can cause large-scale fish kills and have severe economic consequences.

## What are the symptoms?

At a low level of infection, fish might not display any symptoms. As the infection becomes greater, however, fish will display widespread hemorrhages (bleeding) throughout body surface (eye, skin and fins) and within the internal organs (swim bladder, intestine, kidney etc). Because of the bleeding, gills and liver might appear pale. Sick fish will often be listless, swim in circles, and are frequently observed at the surface of the water.



*This VHS infected fish exhibits widespread hemorrhages.*  
Photo courtesy of Dr. Jim Winton.

**NOTE: Confirming VHS infection requires sophisticated laboratory testing. A diagnosis cannot be made based solely on observation because many different diseases of fish have very similar symptoms.**

## Fish Species Affected

*To date, VHS has caused large-scale mortality in*

- black crappie in Budd Lake (Michigan)
- bluegill in Budd Lake (Michigan)
- common carp in Lake Ontario
- freshwater drum in Lake Ontario, Lake Erie and Lake Winnebago (New York)
- gizzard shad in Lake St. Clair, St. Clair River and Lake Erie
- Great Lakes muskellunge in Lake St. Clair
- round goby in Lake Ontario
- white bass in Lake Erie
- yellow perch in Lake Erie and Lake St. Clair

*VHS has also been confirmed in smaller fish kills in*

- black crappie
- bluegill
- lake whitefish
- rock bass
- smallmouth bass
- walleye

*Species known to carry VHS virus include (The disease has not killed any of these species to date.)*

- burbot
- channel catfish
- Chinook salmon
- emerald shiner
- lake trout
- northern pike
- rainbow trout – steelhead
- rock bass
- shorthead redhorse
- silver redhorse
- spottail shiner
- trout perch
- white sucker







## Will the virus affect humans?

**No.** The virus does not have any impact on humans, through direct contact or via fish consumption.

## Have we found VHS in Minnesota waters?

**No.** The Minnesota Department of Natural Resources is actively monitoring and testing for the VHS virus. So far the virus has not been detected within the state or in Lake Superior.

## How does the disease spread between waters?

**1. Moving infected fish from one body of water to another.** This includes live gamefish caught in an infected water and live baitfish caught or used in an infected water and transported and used in another.

**2. Moving infected water and equipment from one waterbody to another.** Examples would be the discharge of infected water and fish from ships, discharge of infected water from live wells on fishing boats, and discharge of infected bilge water from recreational and fishing boats.

**3. Stocking or releasing infected fish or water** from infected fish hatcheries.

**4. The natural migration and movement of infected fish** from one waterbody to another.

## Great Lakes Distribution of VHS Early Stages of Invasion

● = Positive Locations



If you would like to find out the most recent VHS infected sites call the DNR Pathology Lab at 651-259-5096.

# PREVENTION

## How can we prevent the spread of VHS?

- **Do not move live fish between waterbodies.** DISPOSE of unwanted baitfish and fish parts in the trash.
- **Do not move any water between waterbodies.** DRAIN water from boat, motor, bilge, livewells and bait containers before leaving the water access.
- **SPRAY, DRY boat, trailer, and recreational equipment,** especially after leaving known VHS infected waters.
  - Power-wash boat hulls and gear with hot water (preferably 140 F)
  - or-
  - Rinse then dry the boat and gear completely for 12 hours.



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# REPORT

## If you catch a suspected diseased fish:

- Place the fish in a clean plastic bag and keep it in an iced cooler or refrigerator as quickly as possible (do not freeze).
- Call the local DNR fisheries office or the DNR Pathology Lab at 651-259-5096 right away for instructions.
- Do not risk spreading the VHS virus by bringing potentially diseased fish to DNR offices or hatcheries.

## If you observe a fish kill:

- Call the State Duty Office (651-649-5451 or 1-800-422-0798) to report the waterbody, date, fish species, and number of dead or dying fish.
- Don't collect fish samples from a fish kill.



Wisconsin DNR