

Scientific studies have demonstrated that grayling and bull trout are very resistant to infection. However, regardless of species, when each infected fish dies, many thousands to millions of the parasite spores are released to the water. These parasitic spores are virtually indestructible -- they can withstand freezing and desiccation, and can survive in a stream for 20 to 30 years. The parasite is sure to continue to spread to drainages now clean, since it is so easily and unknowingly transported by animals, birds and humans.

How does Whirling Disease affect recreational users?

- **Anglers** – Anglers are most impacted by whirling disease because it affects the health of one of the most popular fish sought by anglers. Stocking or natural movement of live, infected fish is the primary route by which whirling disease is disseminated. However, the parasite can also be spread by humans and particularly anglers. To prevent the spread of whirling disease to additional populations of trout and salmon, anglers must adapt the prevention procedures listed below.

Where is Whirling Disease currently found?

- The minute parasitic organism, native to the Eurasian continent, was introduced into North American waters in the late 1950s. Currently, it is found in 22 states including: Alabama, California, Colorado, Connecticut, Idaho, Maryland, Massachusetts, Michigan, Montana, Nevada, New Hampshire, New Jersey, New Mexico, New York, Ohio, Oregon, Pennsylvania, Utah, Virginia, Washington, West Virginia and Wyoming, in several European countries, South Africa, and in New Zealand.



The Whirling Disease
Foundation
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What is the potential for Whirling Disease to spread elsewhere in U.S.?

- Infected fish and fish parts are the primary vector for transmitting whirling disease. It may also be transmitted by birds and it is possible fishermen could carry the disease on fishing equipment. However, live infected fish are the main vector for the spread of the disease.
- It is important to not transport live fish or carry fish or fish parts from one water system to another.
- If you are fishing in waters known to be infected by whirling disease, care should be taken to rinse all mud and debris from equipment and wading gear, and drain water from boats before leaving the infected drainage.

How can I prevent the spread of Whirling Disease?

Anglers, boaters and others can make a difference in reducing the chances of spreading whirling disease. Distribution of the parasite is expanding rapidly in some areas, so you should assume its presence if you don't know otherwise. Recommended precautions, offered

by the Whirling Disease Foundation, will help prevent not only the spread of whirling disease, but also other disease-causing organisms and aquatic pests.

- Never transport live fish from one water body to another. .
- Do not use trout, whitefish, or salmon parts as cut bait.
- Dispose of fish entrails and skeletal parts properly.
 - Never discard fish parts in or near streams or rivers. Because an infected fish may harbor tens of thousands of myxospores, simply disposing of infected fish parts in a clean drainage could provide enough spores to start an infection.
 - Do not discard fish parts in a kitchen disposal. Whirling disease myxospores can survive most wastewater treatment systems. Instead, discard in dry waste that would go to a landfill.
- **Rinse all mud and debris from equipment and wading gear (including felt of your wading boots), and drain water from boats and boots** before leaving an infected drainage. This is good practice for preventing transfer of other aquatic hitchhikers as well.
- Although the above precautions will remove most spores from your gear, consider the following if fishing in heavily infected waters:
 - Rinse, then thoroughly dry your boots, waders and other fishing equipment. This is generally sufficient to kill the TAM stage of the parasite
 - Chlorine (regular household bleach) is a very effective disinfectant, and one of the few that can kill all stages of the parasite if used at the proper concentration. However, chlorine is a very strong chemical and can harm your equipment with prolonged exposure, so make sure you rinse the chlorine off your waders and other equipment after you disinfect, and dry in the shade.
 - To kill the TAM stage, use 1 part chlorine to 32 parts water. It must stay in contact for about 10 seconds to assure disinfection.
 - To kill the mature myxospore that may be found in the mud from an infected stream is much more difficult and hard on equipment.
 - 50% solution (1 part chlorine to 1 part water) - dip waders into a solution of the bleach or wipe or spray on.
 - 10% solution (1 part chlorine to 9 parts water) and soak your equipment for 10 minutes.
 - Quaternary ammonium compounds are also effective in killing both parasite stages. These disinfectants are commercially available for disinfecting fishing equipment (Bright Water™) or for the pet/veterinary trade (Roccal-D™, Parvosol™).
 - Equally effective is water heated to nearly boiling (200 degrees F) poured over your gear and allowed to cool.

What else can I do?

- [Follow procedures](#) to eliminate the spread of all nuisance species.
- [Help inform others.](#)
- [Get involved in policy and legislative solutions.](#)

- Support the [Whirling Disease Foundation](#)
- Clubs, local communities and/or outfitters can
 - Provide clean water and a hose at boat ramps and popular fishing spots on heavily infected waters for rinsing equipment.
 - Provide some means for brushing boots, such as a simple boot scrubber, near the hose.
 - Post maps of the known distribution of whirling disease at popular fishing sites so anglers and boaters know if they are either fishing in a heavily infected water or have been in one in the recent past.
 - Post instructions for preventing the spread of whirling disease and other aquatic nuisance species.

References

- Information provided by the Whirling Disease Foundation (www.whirling-disease.org) (<http://www.whirling-disease.org/whirling/FAQ.html>) and the Proceedings from the 7th Annual Whirling Disease Symposium.
- Montana Fish, Wildlife & Parks
- Wild Trout Research Laboratory Operated by the Montana Water Center on the campus of Montana State University-Bozeman (<http://water.montana.edu/programs/fish/troutlab/default.htm>)