

Important Facts on Whirling Disease You Need to Know

- Whirling disease is a parasitic condition affecting fish, primarily rainbow trout. Other species of trout and salmon are affected to lesser degrees. Warm-water fish such as bass, walleye and catfish are not affected.
- Whirling disease does not infect humans. People cannot contract the disease from eating or handling infected fish.
- Young fish are most susceptible because the parasite attacks their soft cartilage. Clinical signs of infection include skeletal deformities or whirling motions during swimming. Once trout reach three to four inches in length, cartilage forms into bone and fish are no longer susceptible.
- Larger infected fish generally don't die but are carriers of the disease. In the vast majority of cases, infected adult fish show no signs of the disease, exhibit regular behavior and go on to live normal lifespans.
- As yet, there is no practical cure to treat wild trout infected with the disease.
- The disease is present in many Colorado rivers and in a number of state hatcheries. Once the disease parasite is established in the wild, it can persist indefinitely, depending on environmental conditions. Efforts to reduce the parasite in hatcheries are proving successful.
- Current evidence suggests that stocking of hatchery trout exposed but not necessarily infected with the parasite into waters where whirling disease is known to exist does not increase the level of infectivity.
- The parasite's spores are very hardy and can easily reproduce in the wild, so it's likely that the parasite will continue to spread.
- The Colorado Division of Wildlife has developed strict policies and regulations to help control and prevent the spread of the disease in Colorado.

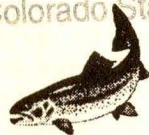
How You Can Help

- Remember that the tubifex worm can hold the whirling disease parasite. Thoroughly wash off any mud from vehicles, boats, trailers, anchors, axles, waders, boots, fishing equipment and anything that can hold the spores or mud-dwelling worms.
- The parasite can persist in water. Drain boats, equipment, coolers, live bait wells and any holder of water. Make sure you don't inadvertently help spread whirling disease by cleaning all equipment after use in lakes or streams.
- Don't transport any fish from one body of water to another, which can help spread whirling disease. It is unlawful in Colorado to move and stock live fish without a special license.
- Don't dispose of fish entrails or other by-products into any body of water.
- Never transport aquatic plants. Make sure boats, engine props, anchors, trailers and wheels are cleared of weeds after every use.

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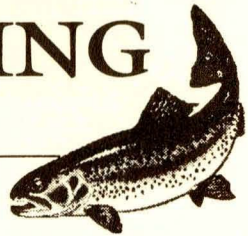
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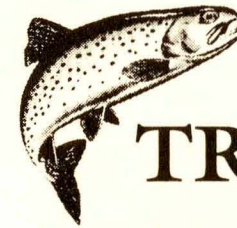
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by the
Colorado Division
of Wildlife

Room #314

Whirling Disease

Whirling disease is a parasitic infection of trout and salmon caused by a microscopic amoeba that produces a spore. The water-borne parasite (*Myxobolus cerebralis*) may not directly kill trout, but fish heavily infested can become deformed or exhibit the erratic tail-chasing behavior from which the disease gets its name. Eventually, heavily infected young fish may die. The parasitic disease probably originated in Europe, where native brown trout have developed a natural resistance to the parasite through co-evolution. But these fish can still carry and transmit the spore.

How it Affects Fish

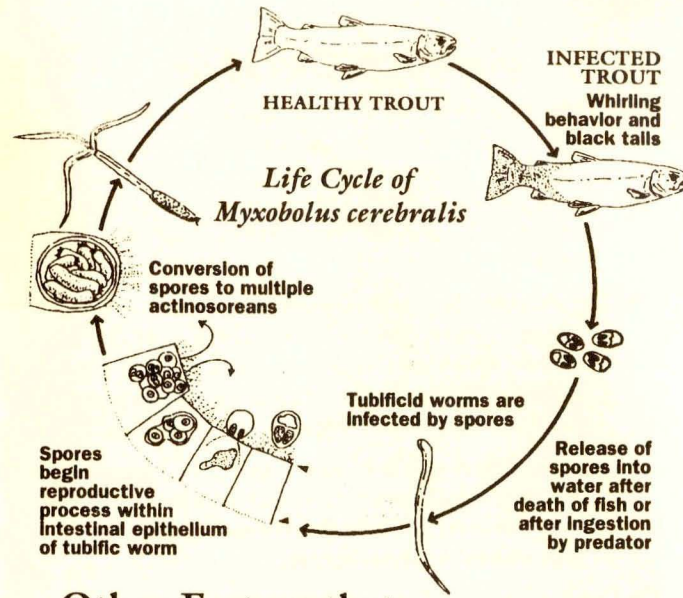
The whirling disease parasite has a two-host life cycle that involves trout and an alternate host, a common bottom-dwelling tubifex worm (see diagram). When an infected trout dies, large numbers of spores are released and then ingested by the tubifex. The spores incubate in with worm's gut, multiplying rapidly. When released from the worm, these water-borne spores can infect susceptible fish by attaching to their bodies, or when fish eat infected worms. Whirling disease spores are hardy, resist freezing, drought and can remain viable for decades.

Trout and salmon native to the United States did not evolve in areas with the whirling disease spore. Consequently, most native species have little or no natural resistance. Young fish are at greatest risk because the parasite attacks their soft cartilage, causing nerve damage, skeletal deformities and in some cases death. Once a fish reaches three to four inches in length, cartilage forms into bone and the fish is no longer susceptible to effects from whirling disease. However, they remain carriers of the parasite.

Whirling Disease in Colorado

Whirling disease was first observed in the United States around 1958. The parasite was accidentally introduced in Colorado in the 1980s through imported trout from a private hatchery. It's now found in at least 20 states, including West Virginia, Pennsylvania, New York, Ohio, Michigan and most western states.

Whirling disease is thought to be a major factor in the declines of wild rainbow trout populations in certain Colorado waters. It's suspected that the outbreak of the disease may be linked to other environmental factors that aren't yet apparent. The parasite has been confirmed in 13 of Colorado's 15 major river drainages, including the Colorado, South Platte, Gunnison, Arkansas and Rio Grande rivers.



Other Factors that May Affect Colorado's Trout

Division of Wildlife research on trout in the Colorado River in 1994 found that wild rainbow trout were hatching but not surviving. Whirling disease has been implicated as one of the causes. Other environmental factors, such as a phenomena called nitrogen gas saturation, are also apparently playing a role in the disappearance of rainbow trout. Current research is exploring other factors which may influence trout mortality.

The Affect on Fishing

Overall, whirling disease has had little impact on recreational fishing in Colorado. Mature stocks of healthy fish continue to thrive in most waters, and whirling disease has not been identified in any wild populations of native Colorado cutthroat trout. The full effects of whirling disease in the wild probably won't be apparent for several years. But the parasite's presence in state hatcheries has required that stocking schedules be modified. Meanwhile, the Division of Wildlife is working to stop the spread of the disease and raise disease-free fish to release into the wild.

Prevention and Control of Whirling Disease

HATCHERIES Eight of Colorado's state hatcheries have tested positive for whirling disease. In some cases, this has amounted to only two spores. (More than 4 million spores can fit on

the head of a pin). Routine fish health sampling indicates diminishing infections at some sights, a result of measures to reduce or eliminate whirling disease in hatcheries. Many hatchery trout will carry few, if any, spores. But as a precaution, the Division of Wildlife will consider these trout "positive" until repeated hatchery tests find no spores. Additional steps, including the installation of an ultraviolet system at the Roaring Judy Hatchery to kill spores that cause whirling disease, are underway.

STOCKING

A policy implemented in spring 1995 prevents the stocking of trout from hatcheries testing positive into waters where whirling disease has not been found. This includes wilderness areas and streams where native trout may be restored. Trout from positive hatcheries will be stocked into waters where the parasite has been found to minimize the risk of contaminating other watersheds. Only trout from negative testing hatcheries can be stocked into waters where the parasite has not been found.

The Division of Wildlife is developing a comprehensive policy to determine where and when stocking will occur. This policy is being developed by a group composed of anglers, federal land management agencies, business interests, tackle manufacturers, private trout growers and others. The goal is safeguard the aquatic resource while continuing to provide quality recreational fishing for trout and other fish in Colorado.

RESEARCH

An exhaustive Division of Wildlife research project has greatly increased the knowledge about whirling disease. Colorado is coordinating its resources with other states to study the parasite. In February 1996, the Division of Wildlife and the U.S. Fish & Wildlife Service will host a national conference of fishery biologists to share information on the disease and develop a comprehensive strategy for future research. This cooperation will maximize all efforts, avoid duplication of research and hopefully result in a better understanding of how to control the spread of the whirling disease parasite.

As a member of the Colorado Fish Health Board, the Division of Wildlife is taking the lead on developing ways to insure that the state's aquatic habitat remains healthy. Through public awareness, research and continued fish health programs, the impact of the whirling disease parasite, and other pathogens, can be minimized or eliminated in the many of the state's waters.