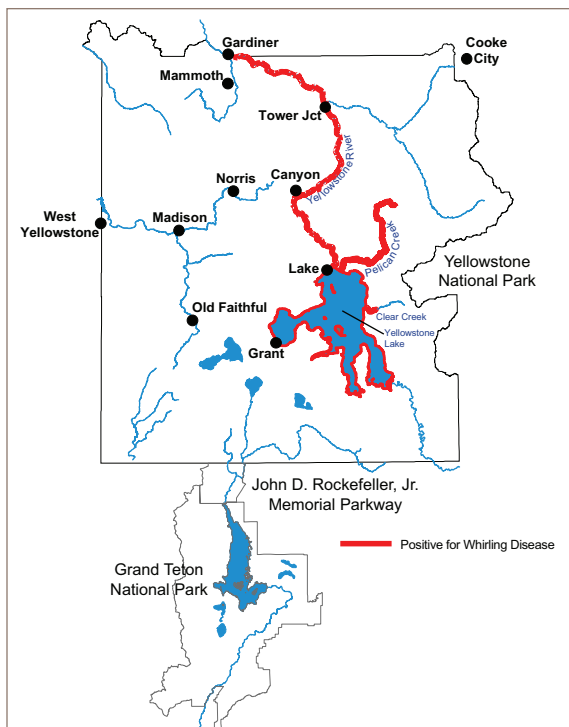


Aquatic Invaders: Whirling Disease



In 1998, whirling disease was detected in Yellowstone's cutthroat trout. This disease is caused by a non-native microscopic parasite that can infect trout and salmon; it does not infect humans. The parasite attacks the developing cartilage of fish between 1–6 months old and causes deformities of the bony structures. An infected fish may have a deformed head and tail, blackened areas of the tail, and whirling swimming behavior. It may be unable to feed normally and is vulnerable to predation.

Studying the Disease

Yellowstone National Park's cutthroat trout spawning streams, which vary widely in thermal, hydrological, and geological characteristics, provide an exceptional opportunity

Whirling Disease

Whirling disease is caused by a parasite attacking the developing cartilage of young fish, resulting in skeletal deformities and sometimes whirling behavior. Affected fish cannot feed normally and are vulnerable to predation.

History/Background

- The disease was first described in Europe more than 100 years ago. It was detected in the U.S. in the mid-1950s, and in Yellowstone in 1998.
- It most likely came to the U.S. in frozen fish products.
- Whirling disease has been con-

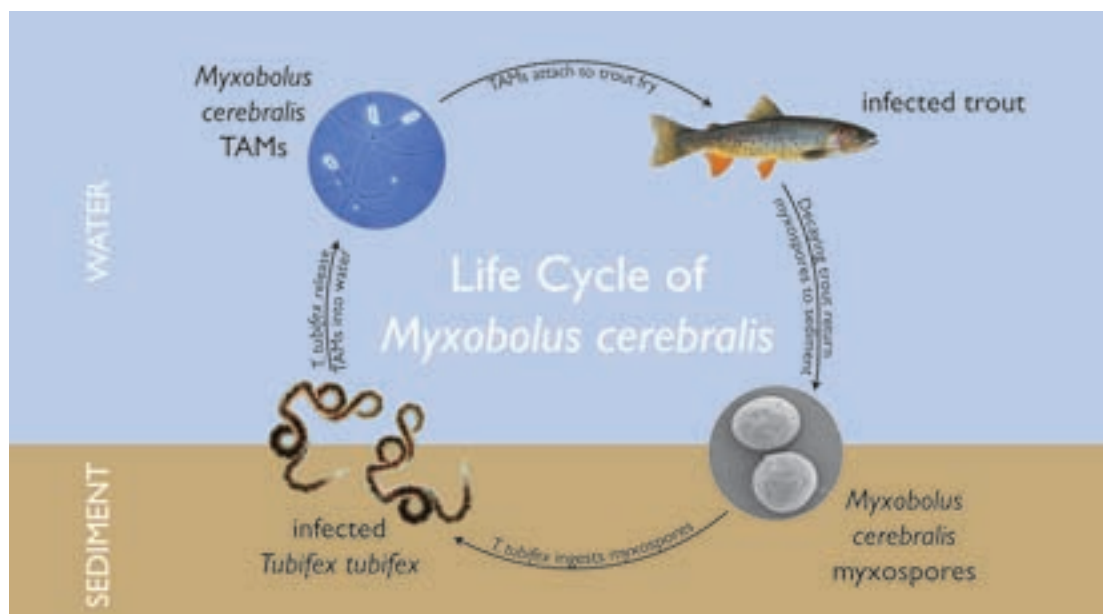
firmed in 25 states and appears to be rapidly spreading throughout the western United States.

- Recent laboratory tests suggest cutthroat trout are highly susceptible. Lake trout and grayling appear immune to the disease, and brown trout are resistant, but can be infected and can carry the parasite.
- There is no treatment.

Current Status

- Testing for whirling disease continues throughout the park.
- Pelican Creek's migratory cutthroat trout population is almost gone.

to study whirling disease in native trout. Park staff have been working with Montana State University's Department of Ecology to measure how the infection rate might vary in different stream conditions. They are also investigating if certain fish-eating birds help to disperse the parasite. Research has shown that the parasite can pass through the gastrointestinal tract of some birds, such as great blue herons, and remain alive.



No effective treatment exists for wild trout infected with this disease or for the waters containing infected fish. Therefore, the park is emphasizing prevention by educating people participating in water-related activities—including anglers, boaters, or swimmers—to take steps to help prevent the spread of the disease. This includes thoroughly cleaning mud and aquatic vegetation from all equipment and inspecting footwear before moving to another drainage. (See

page 157 and instructions in the park's fishing regulations.) Anglers should not transport fish between drainages and should clean fish in the body of water where they were caught.

Remember: CLEAN, INSPECT, DRY!



Round goby



Bighead carp



Zebra mussels (above) clog water intakes, crowd out bottom invertebrates, and reduce lake productivity.

Not shown: three zooplankton species that can displace native zooplankton that are important food for cutthroat trout. These exotic zooplankton have long spines, which make them difficult for young fish to eat.

More Invaders On Their Way?

Several exotic aquatic species are spreading through the United States, among them the species shown here. Fisheries biologists believe they are moving toward Yellowstone. Their arrival might be avoided if anglers remember:

- It is illegal to use any fish as bait in Yellowstone National Park.
- It is illegal to transport fish among any waters in the Yellowstone region.
- It is illegal to introduce any species to Yellowstone waters.
- To clean all of their gear properly. (See *page 157*.)

Eurasian water-milfoil

Eurasian water-milfoil (*below*) has spread to 46 of the 48 contiguous United States. In 2007, it was found in Montana. Wyoming and Maine are the only states still free of this aquatic invader.

This exotic aquatic plant lives in calm waters such as lakes, ponds, and calm areas of rivers and streams. It grows especially well in water that experiences sewage spills or abundant motorboat use, such as Bridge Bay.

Eurasian water-milfoil colonizes via stem fragments carried on boating equipment, which is another reason why boats should be thoroughly cleaned, rinsed, and inspected before entering Yellowstone National Park.

