



Yellowstone National Park is as wondrous as it is complex. Here, Lewis River in winter 2000.

## Park Issues

### Aquatic Invaders

During the late 1880s when the Army administered Yellowstone National Park, the U.S. Fish Commission (a predecessor of today's U.S. Fish and Wildlife Service) stocked non-native fish in some park waters. These stockings comprise the first known, deliberate introductions of non-native fish to Yellowstone. Four trout species were widely introduced—brook, brown, lake, and rainbow. Rainbow trout hybridize with native cutthroat trout, thus diluting genetic diversity. All four compete with and prey upon native fish.

Other invasive aquatic species, such as the New Zealand mud snail and the microorganism causing whirling disease, probably arrived via unaware boaters and anglers carrying the organisms from other

fishing locations around the country.

Angler and boater introduction of aquatic invasive species remains a serious threat to Yellowstone's aquatic ecosystem because exotic aquatic species



New Zealand mud snails shells resting on a dime.

### Aquatic Invaders

#### The Issue

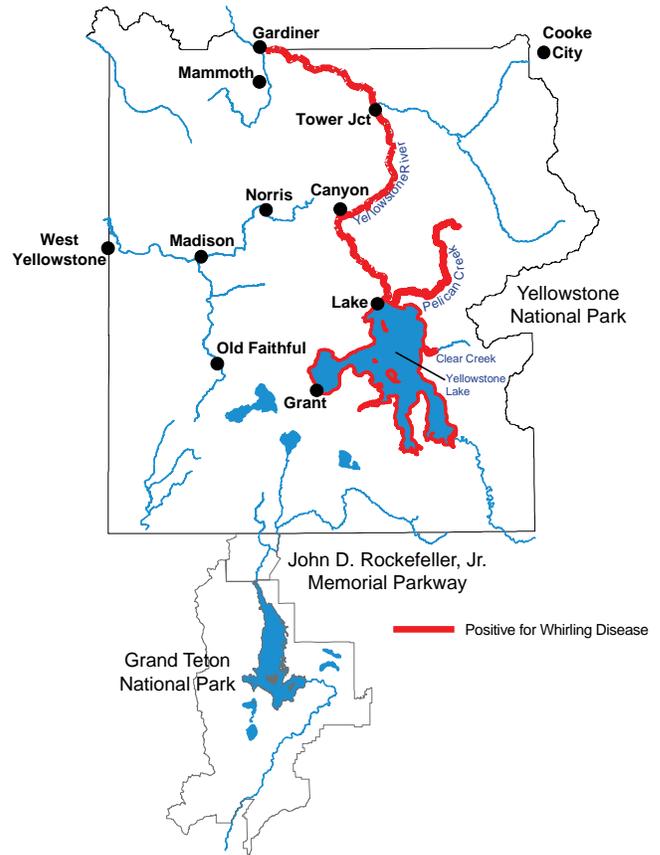
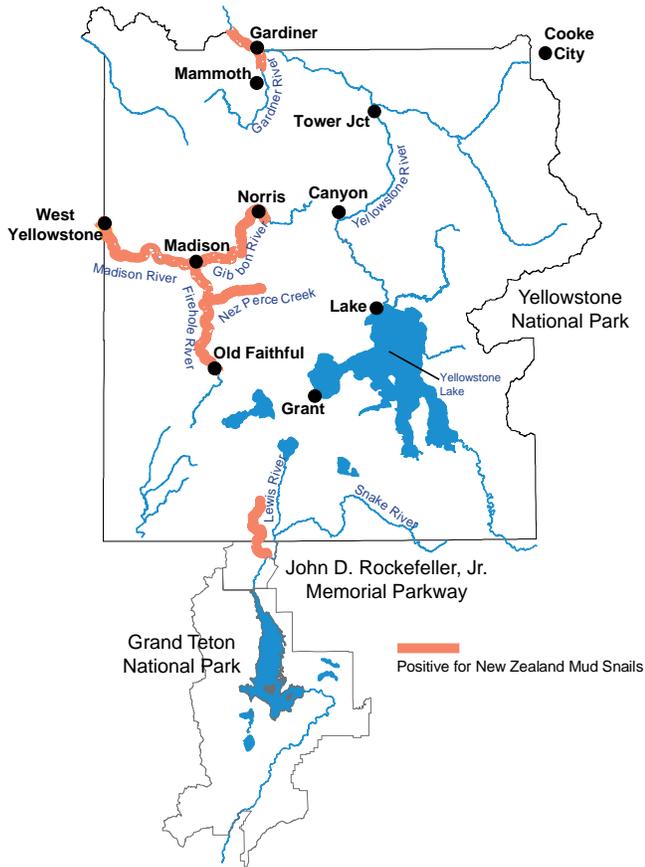
Aquatic invaders can irreversibly damage the park's ecosystems.

#### Current Status

- In the U.S. currently, more than 250 exotic (from another continent) aquatic species and more than 450 non-native (moved outside their natural range) aquatic species exist.
- At least 7 invasive aquatic species exist in Yellowstone's waters: two mollusks, four fish, one exotic

- disease-causing microorganism (whirling)
- Park staff continues to educate visitors about preventing the spread of aquatic invasive species.
- Read and follow the instructions provided in the fishing regulations, which include:
- Remove all plants, animals, mud, sand, and other debris from your boat and equipment.

- Do not dump water from other sources into Yellowstone waters.
- Drain your boat bilge area, live well, and other compartments away from park waters.
- Dry all equipment in the sun for 5 days or use high-pressure, hot (>140°F) water (available at car washes outside the park) to clean your boat, trailer, waders, and equipment.



Locations of New Zealand mud snails (left) and whirling disease (right) in Yellowstone National Park.

occur in waters all across the United States. We may never know exactly how whirling disease or mud snails were introduced to the park’s waters, but anglers can help prevent other species from arriving.

For this reason, Yellowstone is publicizing this issue through a brochure and other information available to anglers and boaters in the park. The park’s efforts join those of other agencies around the country working to protect the nation’s aquatic ecosystems.

**Mud Snails**

About one-quarter inch long, the New Zealand mud snail forms dense colonies on aquatic vegetation and rocks along streambeds. The snails crowd out native aquatic insect communities, which are a primary food for fish. They also consume a large amount of algae, which is a primary food for native aquatic invertebrates. Strategies for dealing with this invader are being developed.

**Lake Trout**

The lake trout is a large and aggressive predatory fish that can decimate cutthroat trout populations in Yellowstone Lake. If this happens, the impacts will reach far beyond the cutthroat trout population; it



Nonnative lake trout predate on native Yellowstone cutthroat trout. The smaller fish in photo are native Yellowstone cutthroat trout removed from lake trout stomachs.

could be an ecological disaster.

Hydroacoustic work (using sonar-based fish finders) confirmed lake trout concentrations in the western portion of Yellowstone Lake. These surveys also revealed medium-sized (12–16 inches) lake trout tended to reside in deeper water (greater than 130 feet) than Yellowstone cutthroat. Now biologists can more easily target lake trout without harming cutthroat trout. Hydroacoustic data also provides