



Welcome Interested Public!

Inside this issue:

<i>Boulder Rearing Station</i>	1
<i>Daniel Hatchery Update</i>	2
<i>Golden Trout</i>	3
<i>Pinedale Area Amphibians</i>	4
<i>Aquatic Nuisance Species in WY</i>	5
<i>The Green & New Fork Rivers</i>	6
<i>How Many Fish Are In That River?</i>	7
<i>Whirling Disease & Trout</i>	8
<i>Mission Statement</i>	8
<i>Upcoming Features</i>	8

This is the first edition of a newsletter designed to inform interested public of the activities of the Wyoming Game and Fish Department's Fish Division within the Pinedale Region. The Pinedale region encompasses the upper Green River Drainage (upstream of Fontenelle Reservoir) and parts of the Bear River drainage around Cokeville.



Brown trout caught on a tributary of the Green River. (Photo courtesy of Chauncey Goodrich)

The Pinedale Region fisheries staff consists of three fish management biologists, an aquatic habitat biologist, two fish spawning specialists, and six fish culturists (stationed at the Boulder Rearing Station and the Daniel Hatchery). The management personnel are responsible for inventorying and monitoring fish populations, providing input for the protection and conservation of all aquatic life and habitat, and specific management of fish populations through fish stocking recommendations, fish regulation proposals, and species and habitat restoration. The aquatic habitat biologist's mission is to "conserve the best [habitat] and restore the rest." Fish spawning specialists collect eggs

from within Wyoming for distribution to hatcheries statewide. Personnel at Boulder Rearing Station and Daniel Fish Hatchery produce fish for stocking not only in the Pinedale Region, but throughout Wyoming and other states. In turn, fish produced at other Wyoming Game and Fish Department hatcheries are often stocked within the Pinedale Region to meet requests for particular

species or sizes of fish.

It is our intent to produce up-to-date newsletters each spring to keep you informed on findings, progress, and recommendations from the previous year. This newsletter is intended for everyone interested in the aquatic resources in the Pinedale area. The resources we manage belong to all of us. You can contact us at the physical or email addresses listed on the back page.

We hope you find this newsletter useful and informative. We welcome any feedback that you may have, or suggestions for improving this publication.

Boulder Rearing Station Joe Gillis Fish Culturist

Boulder Rearing Station is located 15 miles south of Pinedale on Highway 191. This facility was built in 1952 by the Wyoming Game & Fish Department. This site was chosen be-

cause of the natural springs in the area, which provide ideal thermal conditions for raising trout. These springs provide up to 2,200 gal-

(Continued on page 2)

Pinedale Region Fisheries Staff:

Hilda Sexauer (Fisheries Supervisor)
Pete Cavalli (Fisheries Biologist)
Matt Kondratieff (Fisheries Biologist)
Fish Management Crew

Floyd Roadifer (Habitat Biologist)
Aquatic Habitat Biologist

Brian King (Spawning Coordinator)
Pete Feck (Spawning Specialist)
Spawning Specialists

Doug Slames (Superintendent)
Joe Gillis (Fish Culturist)
Alan Shaffer (Fish Culturist)
Boulder Rearing Station Crew

George Gunn (Superintendent)
Greg Anderson (Fish Culturist)
Eli Cureton (Fish Culturist)
Daniel Fish Hatchery Crew

Boulder Rearing Station (cont.)

(Continued from page 1)

lons of water per minute at a constant temperature of 52°F.

In 2004 the station will stock out over 232,000 fish with a size range of 2-24 inches. Many of these will be stocked in Sublette County while others will find new homes in Lincoln, Uinta and Sweetwater counties. Urban fisheries, including kid's ponds and other waters located close to towns, are stocked with catchable rainbow trout between 8-12 inches long. In addition to rainbow trout the facility also raises kokanee salmon and brown trout. This year, we will stock catchable rainbow trout in Dollar Lake (3,000), CCC ponds (1,500), Little Soda Lake (1,000), and Pine Creek (1,000).

The Boulder Rearing Station is also home to a rainbow broodstock, which consists of 3,600 individuals weighing between 2-6 pounds. The purpose of these fish is to produce approximately four million eggs annually. The eggs are taken from the fish and then transported to other state run fish hatcheries with incubators. One of the main goals is to produce fish that are genetically and physically prepared for the wild. Once the large brood fish reach five years of age they are then stocked out, often weighing over four pounds.

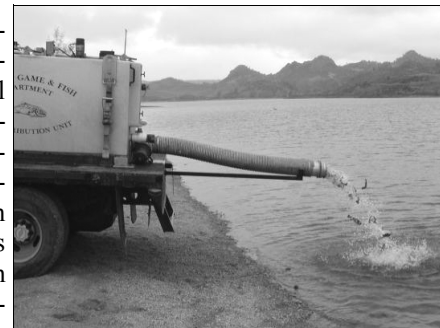
In the fall of 1999, the facility began major renovations. The original water source was an open spring pond. Open water

sources are very susceptible to contamination by natural parasites and diseases such as whirling disease and furunculosis. Each year, pathologists test all state run hatcheries for contaminated fish prior to stocking. Diseased fish are destroyed. To prevent

contamination of the facility's fish, the spring pond was covered and an enclosed underground spring line was installed. In 2001, new concrete raceways were installed along with a new spawning house. These facilities were covered by wire mesh to prevent predation by wildlife.

The Wyoming Game & Fish Department stocks fish only in waters that are located on public land or have public access. Fish that are spawned, reared, and stocked from Boulder Rearing Station into various waters state-wide provide improved fishing opportunities for anglers in Wyoming.

*George Gunn
Daniel Hatchery Superintendent*



Boulder hatchery truck stocking a local lake

Daniel Hatchery Update

The "New and Improved" Daniel Fish Hatchery is in full operation and our staff invite you to come visit, take a tour, and check out what's new. With the discovery of whirling disease in 40-Rod Creek (located immediately adjacent to our facility), a decision was made to protect hatchery brood stocks and production fish by constructing a 186' X 220' building. Construction was completed during the 1999-2000 season. In addition to disease prevention, this facility also protects fish from predators such as osprey, great blue herons, mink, otters, and all other wildlife that enjoy fish dinners. Now that modifications are complete, we are back in full production with 1 brood stock (the Bear River Cutthroat) in full operation (consisting of 5 age classes of fish), and a developing brood stock (the Colorado River cutthroat) currently with 1 age class of fish. During our spawning operations this year, we took over 300,000 eggs and easily met all of our commitments to supply eggs to other State Hatcheries. This year marks the first season since the construction of the Rearing Unit building that the Daniel Hatchery will stock out brood culls. These Bear River cutthroats, (which average 2+ lbs.) will be going to Sulphur Creek Reservoir (south of Evanston) early this summer as a supplement for that fishery, along with about 35,000 smaller Bear River cutthroat, which were previously scheduled. Other planned stocking this year include brook trout in the South Pass area and some high mountain lakes, Bear River cutthroat throughout their native

drainage and up into the Shoshone River, kokanee salmon into the Green River and Flaming Gorge, and for the first time since the mid-1990's we stocked Colorado River cutthroat back into some of their native drainages. In addition, we will be transferring other fish to Boulder Rearing Station, Tillett Springs Hatchery and Dan Speas Hatchery to help them fulfill their future stocking obligations.

Summer is a great time to come tour the hatchery and visit with any of our employees about our operations, fishing, hunting, or anything else you want to talk about. Come and see how your license dollars are being utilized to provide maximum fishing benefit.



New and Improved Indoor Raceway Facilities

We are strongly committed to producing a quality product that will enhance your angling opportunities and help restore native fish to their historical drainages. So stop in and we'll be proud to show you our new facilities.

Golden Trout

Jim Barner
Assistant Fish Production Supervisor

What comes to mind when you think of striking gold? Wealth? Shiny golden nuggets? A sense of being able to buy something you've always wanted? For anglers, this "gold strike" may be the golden trout (*Oncorhynchus aguabonita*) gently sipping a dry fly from the surface or hammering a lure along the shoreline of an alpine lake. The pristine high mountain lakes they inhabit and the wily nature of the golden trout are driving forces for many anglers. If the mystique of the golden trout is not enough, the demanding hike to beautiful alpine areas where they live may be your challenge. Whatever the draw, this colorful fish is worth the effort.

Golden trout were first stocked in Wyoming in Cook Lake high in the Wind River Mountains in the 1920's through the early 1930's with eggs acquired from the state of California, its native range. It's still noteworthy that the current state and world record golden trout was caught from Cook Lake in 1948. It weighed an incredible 11 pounds, 4 ounces.

From the mid 1930's to the mid 1950's the Wyoming Game and Fish Department conducted annual spawning operations at Cook Lake to provide goldens for stocking lakes throughout Wyoming and other Rocky Mountain states. The Wyoming Game and Fish Department abandoned Cook Lake in 1948 in favor of Surprise Lake, above Pinedale, because of easier access. However, debris from the 1988 Fayette Fire had a huge impact on the Surprise Lake spawning operation, often plugging and overflowing the traps used to collect the spawning fish, and resulted in a decline in the golden trout population. The spawning operation was terminated in 1993, as the numbers of adult fish could not supply adequate egg numbers.

We've looked for a genetically diverse and pure golden broodstock since then. Copper Lake above Cody and Grave Creek Lake and Milky Creek Lakes, both on the Wind River Indian Reservation, have been evaluated as potential egg sources. Copper and Milky Creek Lakes each proved to have low populations of goldens. With the cooperation of the Wind River Indian Reservation Tribal Council and the U.S. Fish and Wildlife Service, Grave Creek Lake has become our current egg source. Genetic evaluation of these fish revealed some rainbow trout influence in their lineage.

The ideal spawning lake to capture golden trout would have limited access and a genetically pure, large, and diverse population that is easy to capture.

Currently, the Wyoming Game and Fish Department is negotiating with California to again acquire eggs from its native streams. While the search for that "perfect spawning site" with the aforementioned criteria continues, cooperative efforts with the Wind River Indian Reservation and the US Fish and Wildlife Service will also continue. Surprise Lake has not been ruled out as a potential spawning site, though parent fish would have to be stocked and marked to identify the future spawners in the lake. Grave Creek Lake will, in the meantime, provide golden trout to be stocked in selected lakes. These lakes represent waters that previously supported golden trout but where no natural reproduction takes place and the species has declined or disappeared.

Eggs were obtained once again in July 2004 from Grave Creek Lake and fish will be ready to stock in 2005 via helicopter. Our search continues for that perfect golden trout spawning site. But your search for your "Pot of Gold" can start now. Regional offices can help you locate alpine lakes that sustain this very special fish.

"Eggs were obtained once again in July 2004 from Grave Creek Lake and fish will be ready to stock in 2005 via helicopter."



Golden trout

Know your Pinedale Area Amphibians Bill Turner, Herpetological Coordinator

During the warm, rainy season in Wyoming, frogs and toads are singing amorously. They are also on the move, trying to find enough food to last them through winter. Have you ever seen one of these creatures and wondered, "What type of anuran (frog or toad) is this?" Here are a few tips on identifying anurans within the Pinedale area.



Leopard Frog

There are three true frogs (Ranidae), one toad (Bufonidae), and one tree frog (Hylidae) in our region. Distinguishing features separate each family. Toads have warty skin and two large bumps behind their eyes called paratoid glands. These bumps are larger than their eyes. Although it may not be distinct, they all have a single, light-colored stripe down their backs. True frogs have smooth skin and two raised lines on their backs (dorsolateral folds). In the case of the Bullfrog, this line is from the eyes to the tympanum (ear). Tree frogs have relatively smooth skin, are very small and have a black line (mask) through their eyes.

"Toads have warty skin and two large bumps behind their eyes called paratoid glands... True frogs have smooth skin and two raised lines on their backs."

Identification of true frogs is the most difficult. The three species present in the Pinedale area include: Bullfrogs, Northern Leopard Frogs and Columbia Spotted Frogs. If you see a frog with two raised lines down the entirety of its back, it isn't a Bullfrog. The lines on the Bullfrog stop at its tympanum, which is the large round feature behind the eye. In male Bullfrogs, the tympanum is larger than the eye. In females, it is smaller. The differences between leopard frogs and spotted frogs are

more subtle. Spotted frogs have warty or bumpy skin. They are not warty enough to be confused with toads and have no paratoid glands, but they are not as smooth-skinned as leopard frogs. Spotted frogs commonly have some red in their coloration, while leopard frogs do not. Leopard frogs generally have a white spot in the center of their tympanum. While both species are spotted, the leopard frog has larger more rounded spots. Finally, the two lines on the back tend to be lightly colored in most leopard frogs.

Frogs lay eggs in large masses covered with gelatinous material. You can see them in the slow moving parts of streams. Bullfrog egg masses are at least one foot across and may be up to five feet long. Leopard frog eggs masses are wrapped around vegetation, about one to six inches in diameter and contain 65,000 eggs. Spotted frog eggs are about the same size as leopard frogs, but their egg masses are floating, not attached to vegetation and contain less than 2000 eggs.

Our sole tree frog is the Boreal Chorus Frog. These small frogs have black markings and no raised lines on their backs (true frogs only) or paratoid glands (toads only). They can be brown, green, gold or even red. They are the first anurans to call in the spring and last ones to cease calling in the fall. Males call for females all day and all night. Their song is clicking like slowly running one's thumbnail across a comb. At night, you can identify them by their calls and watch them fill their vocal pouches with air. They lay their eggs in small masses that are about one inch in diameter. Each mass usually contains about 150 small eggs.

True toads lay their eggs in long strings instead of masses. There is only one species of toad in the Pinedale area, the Boreal Toad. This toad is unusual for several reasons. Unlike most anurans, it rarely calls. Males will call if handled, making a peeping song like a chick. This toad is also unusual because it is adapted to high-altitude life and prefers to be above 6,000-foot elevation. One population segment of



Boreal Toad

this toad (not the one in Pinedale) is a candidate for protection under the Endangered Species Act. Many people feel that a fungal infection (chytrid fungus) is responsible for this species decline.

So, the next time you encounter an anuran, take time to determine what species it might be. Tadpole identification is more difficult so we don't cover it here. However, if you want to learn more about tadpoles, there is an identification guide on the Internet: (<http://www.pwrc.usgs.gov/tadpole/>).

Aquatic Nuisance Species in WY

*Matt Kondratieff
Pinedale Fisheries Biologist*



What is a “nuisance species”? Species that are introduced into habitats where they are not native are called “exotics,” “nuisance species,” or “aliens.” These species can outcompete native species for food, space, and other resources, sometimes even causing the extinction of native species. Some exotic organisms are parasites that can negatively influence the growth and survival of native species populations. Not all non-native introductions are detrimental -- some can be ecologically harmless, and some are beneficial (such as many agricultural introductions in this country). The outcome of an introduction is risky and complex, and the consequences are not always foreseeable. Once established, exotic species are extremely difficult, or even impossible, to eliminate.



White sucker

Introduced species were a leading cause of native fish extinctions in the United States over the past century, second only to habitat alterations. Of the 40 fish species that have gone extinct in the United States over the past 100 years, 68% of these extinctions were caused, at least in part, by introduced fish species (Miller et al. 1989)*. Damage caused directly or indirectly from aquatic species introductions in the U.S. is costing us money. Overall costs associated with damages and losses due to invading non-native species in the U.S. were about \$138 billion in 2000. Of this total cost, aquatic invasive species comprise a significant portion, with about \$6.3 billion for managing introduced mollusks (like zebra mussels and Asian clams), approximately \$1 billion for managing introduced fish species, and \$100 million goes to managing nuisance aquatic weeds. Additional costs for managing introduced fish disease organisms and parasites, which may accompany their illegally transported fish hosts, are unknown. However, the amount is probably in the hundreds of millions of dollars when considering costs associated with recent renovations to hatchery facilities for preventing spread of whirling disease by hatchery fish. With more money going into managing aquatic nuisance species, less money is available for managing desired fisheries and making habitat improvements.

Some examples of illegal fish introductions in Wyoming are:

- 1) Burbot (ling) illegally introduced in Big Sandy Reservoir.

Now they threaten native game and non-game species in the Green River, as well as world-renowned sport fisheries downstream in Flaming Gorge Reservoir. This illegal introduction has resulted in significant new costs associated with efforts to eradicate this species.

- 2) White suckers introduced into local rivers and lakes hybridize and compete for resources with native Wyoming fishes, including bluehead and flannelmouth suckers and roundtail chubs, potentially threatening the long-term persistence of native species populations.
- 3) Trout populations within Sulphur Creek are threatened by highly predacious, illegally introduced walleye and smallmouth bass. Walleye that were illegally planted into Sulphur Creek reservoir have been found to be infested with an unidentified parasite—potentially spreading to other species found within the reservoir, including trout.
- 4) Catchable-sized rainbow trout were illegally introduced into Salt Creek (a.k.a. Thomas Fork) of the Bear River during the summer of 1998. Presence of these fish threatened genetically pure populations of Bonneville River cutthroat trout.
- 5) Recently, red-side shiners, speckled dace, and fathead minnows have been found living in Soda Lake. They were probably illegally introduced from fishermen dumping live fish into the lake at the conclusion of a fishing trip. The impacts these fish will have on brook and brown trout populations are unknown.

*Miller, R. R., J. D. Williams, and J. E. Williams. 1989. Extinctions in North American fishes during the past century. *Fisheries*. 14(6):22-38.

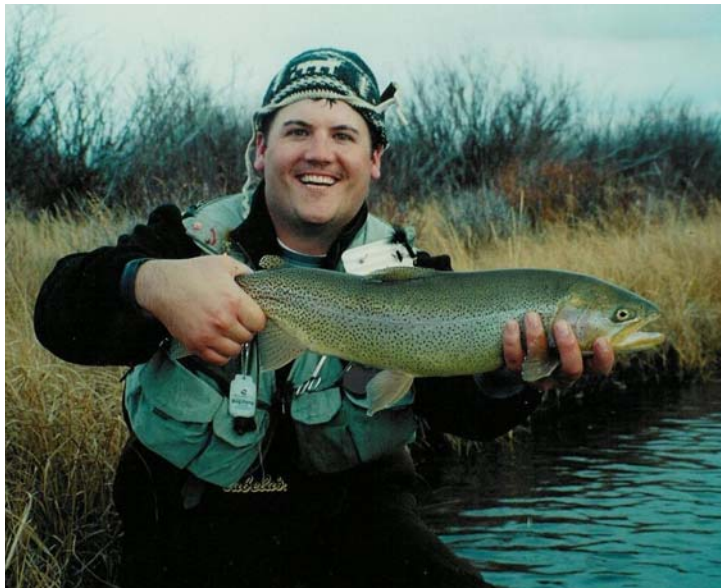
Help conserve Wyoming’s fisheries & reduce the spread of unwanted Aquatic Nuisance Species:

- 1) Use of live bait fish is PROHIBITED in ALL waters of the Green River drainage.
- 2) Never move live fish (including live bait fish) or fish eggs from one body of water to another for any reason.
- 3) All fish must be killed before leaving the water of capture. It is illegal to transport live fish in live wells away from the water that fish was captured in. Substantial fines exist for transporting live fish in Wyoming.
- 4) Never release any aquarium fish or bait fish into natural waters.
- 5) Report any unlawful actions that you see or hear about as soon as possible to the Wyoming Game & Fish Department at 1 (800) 442-4331. Rewards are available for information leading to the conviction of individuals participating in illegal fish introductions.

The Green & New Fork Rivers: Angling opportunities and fisheries management in two popular trout fisheries

Pete Cavalli

Pinedale Fisheries Biologist



Angler with a nice rainbow on the New Fork River (photo courtesy of Chauncey Goodrich)

The Green River and the New Fork River are among the most popular fisheries in the Pinedale region, because they provide good numbers of large trout and ample public access. Both rivers offer multiple options for float trips, as well as numerous locations where anglers can find places to fish from shore. Brown trout make up a large proportion of the fish found in these rivers, and all of them are “wild” (i.e., not raised in hatcheries). Rainbow trout and cutthroat trout are also found in these rivers, and many of them are hatchery-raised fish.

The Green and New Fork Rivers are broken down into several sections that are governed by various regulations on creel limits and fishing gear, so nearly anyone fond of fishing for trout in rivers can find an area that will suit their preferences. With all of the different fish populations, regulations, and angler use patterns found in these rivers, it is a challenge to successfully manage these waters. In order to help us determine the existing conditions in each of these fisheries, we have established several monitoring stations on each river.

Part of a fisheries manager’s annual work schedule includes spending time estimating the number of fish inhabiting various waters found in our region. The number of fish per mile of river is estimated because it is simpler, quicker, and more cost effective than trying to determine the exact number of fish that live in any given section of river. We manage hundreds of miles of streams and rivers, not to mention hundreds of lakes, so we cannot get to every fishery each year. Most of our more heavily fished waters, like various sections of the Green and New Fork Rivers, are sampled on a three to five year rotation, while some of the more re-

mote waters have not been sampled in over a decade.

Trout population estimates in any given section of river tend to fluctuate annually for a variety of reasons. Changes in habitat quality certainly affect trout numbers, but changes to a whole host of other factors, such as weather, fishing pressure, regulations, stocking programs, the abundance of predators and competitors, and prevalence of diseases, can also play a part. To illustrate this point, consider

data collected from the Green River near Forty Rod Creek and from the New Fork River near the airport (Figure 1).

These two sampling stations have similar species assemblages, and the total trout densities are similar, on average. However, the number of any given species at each station varies greatly from one sampling occasion to the next. Neither of these sampling stations has experienced any radical changes to physical habitat in the recent past, and they are only separated by about 20 miles, so their annual climatic conditions are similar. Given these consistencies, one might believe that the number of fish should be similar. Unfortunately, biology is not as exact as physics or chemistry, because the number of factors that can affect an animal is nearly infinite, but the number of those factors that can actually be controlled by managers is quite small. Even in laboratory settings, it is difficult to accurately predict how an organism will respond to a change in one particular variable, so the causes for changes noted in natural populations are often unknown. Fishing regulations changed on the New Fork River in 1994, whirling disease was discovered there in 1998, and drought has been affecting the area for several years. The drought has also affected the Green River, as have the elimination of brown trout stocking in 2000 and rainbow trout stocking in 2002. All of these factors have

“The Green and New Fork Rivers are broken down into several sections that are governed by various regulations on creel limits and fishing gear, so nearly anyone fond of fishing for trout in rivers can find an area that will suit their preferences.”

(Continued on page 7)

The Green & New Fork Rivers (cont.)

(Continued from page 6)

probably affected fish numbers in some way, but these factors alone are not completely responsible for the changes noted in fish numbers. All of this variability makes fisheries management as much of an “art” as a “science”.

The high degree of variability found in trout numbers through time might seem discouraging at first glance, but the Green River and the New Fork River have both provided good fisheries even when trout numbers have been at a low point. Catch rates will not always be high at any particular site, but that is true of any fishery. These rivers offer so many opportunities



Electrofishing with a throwing electrode on the New Fork River

that determined anglers can nearly always find a productive place to fish. Local tackle shops often have current information about what gear to try, and numerous guides can help anglers to find the best places to fish. Anglers just need to be sure to familiarize themselves with the fishing regulations for the section of river they intend to fish before heading out.

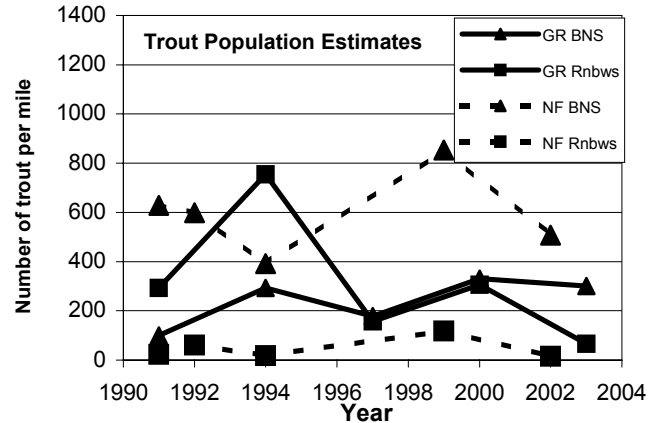


Figure 1: Population estimates for brown trout (BNS) and rainbow trout (Rnbws) collected in the Green River near Forty Rod Creek (GR) and the New Fork River near the airport (NF).

How many fish are in that river?

Pete Cavalli
Pinedale Fisheries Biologist

“Electricity causes fish to involuntarily swim toward the point where it is entering the water...”

There are various ways to estimate the total number of fish in a section of river, but the most common method used in Wyoming involves the use of electricity. To employ this method, known as electrofishing, a generator is used to produce an alternating current (AC), which is then converted to direct current (DC) by an electronic apparatus that is specially designed for electrofishing. The gear also allows the current to be

modified in other ways to optimize our ability to catch fish. After the current is converted to the form needed, it is passed through the water.

Electricity causes fish to involuntarily swim toward the point where it is entering the water (the anode), and they temporarily lose their ability to move when they get very close to the anode. At this stage, they are easy to catch with a dip net. Stunned fish are removed from the current and placed in a tub of water that is insulated from the electricity; recovery from the effects of being shocked occurs quickly. Fish are then weighed and measured, which gives us a good picture of the size structure and general condition of the population. Finally, the fish are marked (usually

by removing a small piece of one fin) before being released into the water. The mark is needed to calculate an estimate of the number of fish in the population. Each section of river has to be sampled several times in order to make a population estimate, and the marks are used to determine if an individual fish was captured previously. The number of marked and unmarked fish collected during each sampling event is then plugged into a simple mathematical formula that gives an estimate of the total number of fish in the area.



Raft electrofishing operation

Wyoming Game and Fish Department

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WE'RE ON THE WEB
<http://gf.state.wy.us>



Upcoming Features

Look for these upcoming features in the May 2005 edition of the Pinedale newsletter:

- Soda Lake Fisheries
- Little Soda Lake: history and current status
- North Piney Lake Colorado River cutthroat trout spawning operations
- LaBarge Creek cutthroat restoration project
- Golden trout stocking in the Winds-where to fish
- How beavers help create healthy streams
- Lake trout bioenergetics study on Boulder Lake
- Huston's Public Access Area

Fish Division Mission Statement

As stewards of Wyoming's aquatic resources, we are committed to conservation and enhancement of all aquatic wildlife and their habitats for future generations through scientific resource management and informed public participation. We will use an integrated program of protection, regulation, propagation, restoration, and control to provide diverse, quality fisheries resources and angling opportunities. Our efforts will balance the productive capacity of habitats with public desires.

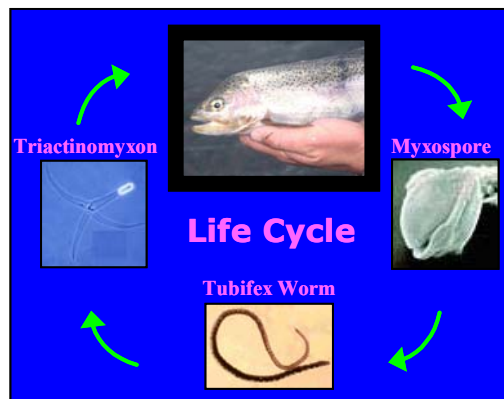
Whirling Disease and Trout Matt Kondratieff Pinedale Fisheries Biologist

Whirling disease is caused by the internal parasite, *Myxobolus cerebralis*. This parasite has a complex, multi-host lifecycle that involves two separate hosts (*Tubifex* worms and trout). Part of the parasite's life cycle includes injection of disease cells into the host by launching coiled filaments, similar to the stinging cells (cnidocytes) found in anemones or jellyfish. This parasite was not found in the United States until the late 1800s and was likely transported by boat from Europe.

where entire year-classes of fish are missing in some waters where the disease is present. To date, negative consequences from whirling disease on Wyoming's wild trout fisheries have not been as significant as in our neighboring states. However, our geographic proximity to these highly effected states means that we are at high risk for whirling disease infection.

What can you do to slow the spread of whirling disease?

- 1) Clean all equipment such as boats, trailers, waders, boots, and float tubes of mud before leaving the river or lake.
- 2) Do not transport any river or lake water in coolers, buckets, boats, or live wells from one water body to another.
- 3) Don't transport live fish between bodies of water. This practice could spread the disease and is illegal.
- 4) Don't dispose of fish heads, skeletons, or entrails into any body of water. Fish parts should be disposed of in the garbage or burned.
- 5) If you observe symptoms of whirling disease in fish or observe illegal fish transport, contact the regional Game and Fish office (307) 367-4353.



Whirling disease life cycle

Whirling disease has had devastating effects on wild trout across the Western United States, particularly in Colorado and Montana,