



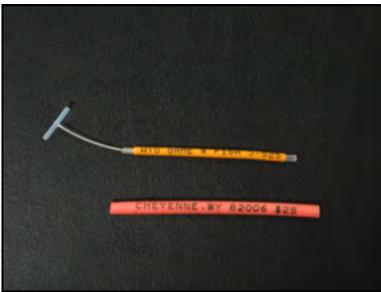
Jackson Region Fisheries Newsletter

Catching Lake Trout Can Be Rewarding

Since 1987, the Wyoming Game and Fish Department has been monitoring the growth and mortality of lake trout in Jackson Lake using angler reward tags valuing between \$5 and \$25 each. Over the last 25 years, more than 700 reward tags have been placed in lake trout caught by the fisheries management crew during their sampling of spawning lake trout in the fall. In 2011 alone, 66 new tags were placed in lake trout and 30 tagged fish were caught and their information turned into the Game and Fish. This is the highest return of tags since the beginning of the program. In addition to the high tag returns in 2011, this was also the year that broke the record for the largest lake trout captured by Game and Fish crews during spawning sampling. The fish was 42.5 inches long and 38 pounds, a very healthy female doing her part to contribute to the population.

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Reward tags

A study done by the U.S. Geological Survey (USGS) in 2007 showed that lake trout growth in Jackson Lake is very slow; it might take up to 10 years for a lake trout to grow to just 20 inches. The information from reward tags shows similar results, with an average growth rate of just over $\frac{1}{2}$ inch per year for fish larger than 20 inches. The USGS study also indicated that lake trout between 14 and 24 inches have poor condition. This is the size at which lake trout switch from eating plankton and invertebrates to eating other fish. Forage fish of the correct size for these lake trout might be hard to find in Jackson Lake. For anglers, this means that lake trout that are this size may be skinny, but, give them time, soon they will begin to eat larger fish and grow more quickly.

The reward tags are located behind the dorsal, or back, fin of lake trout. The tags are either yellow or orange in color and all tag numbers begin with the letter A or J. Make sure to look for this letter when reporting the tag number. If an angler catches a tagged lake trout, they simply need to report the tag number, their name and contact information, the length and weight of the fish, and the location and date they caught the fish, to the Game and Fish Department and they will receive their reward. The fish may be released alive. Anglers will receive a letter that details the individual history of the fish they captured.



Reward Tag in Lake Trout on Jackson Lake

Thanks to all those anglers who have returned tag information. This program is important to the proper understanding and management of the lake trout population in Jackson Lake.

Moving Up The Highways

Wyoming folks navigate a myriad of paved and gravel roads for business and recreation. We pride ourselves on being able to drive in the worst conditions and on the most challenging terrains. However, the human population has nothing on the critters and the routes they have to steer in order to survive and procreate. There are antelope that have the longest migration in the lower 48 states and hummingbirds that head to Wyoming from Mexico. Less observable migrations are those found in our rivers and streams. Fish and amphibian highways are all about allowing movement to diverse habitats to find food, hospitable climates and places to breed. The Wyoming Game and Fish Department (WGFD), and their project partners, work to enhance migration habitat and minimize the barriers along these river highways.

In the last three years, four projects have addressed the river highways in the Jackson Region. These projects are a diverse sample of the types of fish passage projects. The priority is to enhance native species migration in areas where human caused barriers exist. Road culverts, irrigation diversions, mechanical channelization, and dewatering are all possible obstructions to movement. The tools to modify these barriers include modified culvert designs, fish ladders, modified irrigation structures, and removal of abandoned diversions.



New Nickel Spring Culvert

Low gradient spring fed streams are integral to the natural recruitment of native trout by providing ideal spawning habitat. Many of these streams have culverts to provide road crossings. Nickel Spring is a tributary to Flat Creek within the Salt River watershed. Prior to 2011, this spring creek was located in a livestock corral and had a service road crossing with two undersized culverts. The landowner and the Natural Resource Conservation Service removed the corral and designed a stream enhancement project to provide Snake River cutthroat spawning and juvenile habitat over the length of the spring creek and multiple undersized culverts were replaced with one larger culvert to provide fish passage and accommodate the flows and floodplain of the stream. The new culvert provided access to an additional 1 ½ miles of diverse fish habitat.

The Spread Creek Fish Passage Project was completed during the winter of 2011. WGFD partnered with Trout Unlimited (TU), Grand Teton National Park, Bridger-Teton National Forest, and water users Triangle X Ranch and Moosehead Ranch, to complete the project. The Spread Creek Dam had blocked Snake River cutthroat trout and other native fish from migrating out of the mainstem Snake River and accessing over 45 miles of historic spawning and rearing habitat in the middle and upper portions of Spread Creek. This project was developed and directed by TU. The Spread Creek Diversion Dam was removed and the stream channel was regraded to natural elevation. A fish-friendly rock weir diversion structure and a modern water diversion and delivery system were installed at the new point of diversion.



New Spread Creek Diversion Construction

Moving Up The Highways, Cont.

During the winter of 2012, more spring creek barriers were removed. The Upper Spring Creek Fish Passage project involved removing two migration barriers: the JA Williams Irrigation Diversion and the Teton Science School (TSS) Irrigation Diversion. The two diversions were dilapidated and were believed to block migrating trout and other native fish. Spring Creek provides critical habitat for fish that reside in the Snake River, a fishery of national importance. Adult trout migrate into Spring Creek for spawning. The stream also provides nursery habitat for maturing fry. The resulting juvenile fish return to the Snake River. The JA Williams Irrigation Diversion was modified to include a fish ladder and the TSS Diversion was moved and replaced with a new headgate structure to allow for better control of irrigation flows and fish passage. Now native fish from the Snake River will have access to the entire 13 miles of Spring Creek at all times of the year.



New JA Williams Diversion

The Eastside Canal Fish Passage Project is located on the Wyoming Game and Fish Commission's Diversion Dam Public Access Area on the Salt River. This project removed a barrier to Snake River cutthroat trout, brown trout, and other native fish migration. Trout Unlimited constructed a "rock-ramp" fish ladder on the south side of the diversion structure to provide a low-velocity, low-gradient area that will be passable by all fish in the Salt River. The total project cost for oversight, design, permitting, supplies, and installation of the rock ramp fish ladder was funded by the Bureau of Reclamation, WY Wildlife and Natural Resource Board and the USFS Resource Advisory Committee.



**Construction of the Fish Passage Structure on the Eastside Canal
Diversion**

These four examples are river highway projects that the local landowners and resource stakeholders have implemented to improve and expand native fish habitats. These partners are developing future projects to continue increasing fish passage in the Jackson Region. So the next time you plot a course to the grocery store or the latest vacation destination, remember how easy we have it. The paved and gravel roads provide us all the passage we need. Our goal is to make the commute for fish as streamlined as it is for our Wyoming residents.

Understanding the Life of a Sensitive Species

Wyoming is home to 49 native fish species. Thirty of those species are classified by Wyoming as Species of Greatest Conservation Need (SGCN). For species to acquire this SGCN classification they need to have low or declining populations due to several limiting factors including habitat loss or nonnative introductions. Within the SGCN classification there are rankings of Native Species Status (NSS) 1-4, where NSS1 is imperiled and has extreme limiting factors (likelihood of extirpation is high) and NSS4 has either a stable population and severe limiting factors or vulnerable population and moderate limiting factors (likelihood of extirpation is moderate). To determine why certain species are classified as NSS1 versus NSS4, information must be gathered on populations through research studies. These studies typically gather information on life history characteristics including distribution (where they occur), movement, age structure, spawning, and disease susceptibility.

One of Wyoming's native fish species, bluehead suckers, is ranked as a NSS1. Their populations are declining primarily because of habitat loss and low genetic diversity, due to nonnative fish introductions. Bluehead suckers are found in the Bear, Colorado, Green, and Snake River drainages in western Wyoming. There has been extensive research conducted on the species in the Colorado and Green rivers, but no research has been done in the Snake River. The lack of knowledge of the upper Snake River population (from Yellowstone National Park border to Palisades Reservoir) prompted a study to investigate distribution, movement, age and growth, and disease, so we have a better understanding of how well this population is doing.



Sampling for Bluehead Suckers on Pacific Creek

Prior to this study bluehead suckers were known to occupy the Snake and Gros Ventre Rivers and Ditch Creek in the upper Snake River drainage. Since this study began we have documented them in five additional tributaries and another section of the Gros Ventre River.



Teton Range During Aerial Tracking

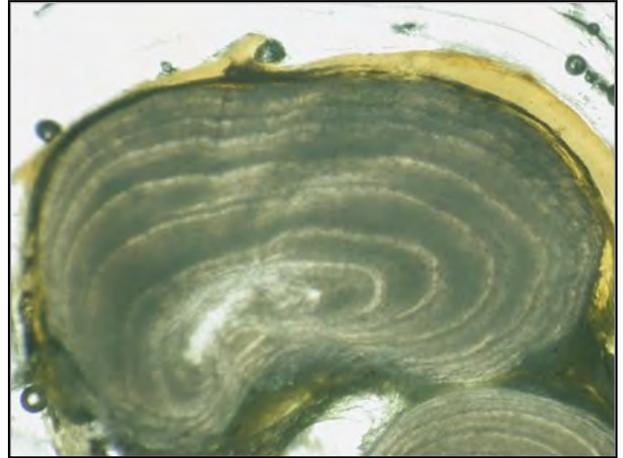
Movement

To determine seasonal movement patterns, 60 bluehead suckers had radio transmitters surgically implanted into their abdomens. Those fish were tracked year round to locate areas that are seasonally important to them. We found that bluehead suckers use the Snake River from Jackson Lake Dam to Palisades Reservoir. Some important areas include Oxbow Bend (below Jackson Lake Dam) and the Snake River Canyon (from South Park boat ramp to Elbow boat ramp) during winter. The fish use the Snake River from Jackson Lake Dam to Palisades Reservoir during spring, summer, and fall. Distances traveled have ranged from just a couple of miles to ~80 miles. Fish tend to make upstream movements in the fall and downstream movements in the spring.

Understanding the Life of a Sensitive Species, Cont.

Age and Growth

To understand the age and growth of bluehead suckers in the Snake River, pectoral fin rays were collected, embedded in epoxy, and sectioned to determine ages. Each year, fish lay down a new layer of bone on their fins, creating a ring. These rings can be counted, very similar to the technique used to age a tree. Once age is determined, growth is calculated based upon the average length of each age class of fish. These data are important because it lets fish managers know if a fish population is healthy (many age classes and good growth) or in poor condition (only older fish and poor growth). Ages of bluehead suckers ranged from 4 to 24 years, which is encouraging because the variety in ages indicates reproduction is occurring.



Bluehead Sucker Fin Ray Cross Section



Bluehead Sucker Infested with Black Spot Disease



Bluehead Sucker Not Infested with Black Spot Disease

Disease

Bluehead suckers are prone to getting parasites that are acquired from snails. These parasites cause them to be covered in small black spots, which is why it is commonly referred to as “black spot disease”. “Black spot disease” can cause mortality in some species of fish, but their effect on bluehead suckers is unknown. We wanted to determine the prevalence rate of “black spot disease” and if it is a problem for the population in the Snake River. We found that 71% of the bluehead suckers sampled had “black spot disease”. Of that 71%, 32% had very little black spot present and 26% were heavily infested. The remaining 42% had a moderate amount of black spot. The area with the highest prevalence occurred in the upper sections of the Snake River from Jackson Lake Dam to the Highway 22 (Wilson) Bridge. To determine if “black spot disease” has an effect on the health of the fish we compared the condition of fish with and without “black spot disease”. If “black spot disease” did have an effect on the health of the fish they would be in poor condition (skinny). We found that “black spot disease” is not having an effect on the condition of these fish, but it does make them look bad.

From this research we are able to piece together information from all populations of bluehead suckers and have a better understanding of what is needed to sustain healthy populations of this species across their

Remove It and They Will Come: Trout Movement in Spread Creek

In the fall of 2010, Trout Unlimited, state and federal agencies, and private landowners worked together to remove an impassible water-diversion dam on Spread Creek, a tributary to the Snake River. For over 40 years, the dam blocked upstream passage for native fishes including Snake River cutthroat trout. Removal of the dam will also benefit numerous other native fishes whose movements are largely unknown.



Historic Dam on Spread Creek Prior to Removal



Preparing to Put Tags in Trout on Spread Creek

In 2011, researchers from the US Geological Survey in Bozeman, MT initiated a project with help from biologists from the Wyoming Game and Fish Department in the Jackson office and Jackson Hole Trout Unlimited to monitor cutthroat trout movement patterns in Spread Creek after the removal of the dam. Small electronic tags were implanted into 258 cutthroat trout varying in size from 6 to 15 inches. These fish are relocated by walking the stream with a handheld antenna or when the fish passes by an antenna that has been placed along the stream bank.

Biologists documented Snake River cutthroat trout from Upper Spread Creek moving as far as 14 miles downstream, past the historic dam site, and likely migrating all the way to the Snake River. Movements will continue to be monitored in 2012, providing more insight into the connectivity with the Snake River and the biology of Snake River cutthroat trout.

In the future, biologists look to better understand Snake River cutthroat trout behavior, life-history patterns, and how the population in Spread Creek responds after the removal of the historic dam using radio-telemetry. During this research, the biologists also hope to better understand linkages between climate conditions and Snake River cutthroat trout age structure and physiological processes.

The success of this project has greatly benefitted from numerous volunteers from the Jackson community, Trout Unlimited, US Forest Service, and the US Fish and Wildlife Service. If interested in volunteering or have questions, please contact Robert Al-Chokhachy with the US Geological Survey (ral-chokhachy@usgs.gov).



Sampling of Upper Spread Creek

To Stock or Not to Stock the Hoback River?

The Hoback River is a large free-flowing tributary to the Snake River located between the Gros Ventre and Wyoming mountain ranges in northwest Wyoming. From its headwaters to its confluence with the Snake River, the Hoback River is 49 miles long and drains an area roughly 613 square miles. The native fish community in the Hoback River is largely intact, with the exception of a few isolated populations of introduced trout. Snake River cutthroat trout and mountain whitefish comprise the majority of the fish within the river. Native non-game fish in the Hoback River include Utah sucker, bluehead sucker, mountain sucker, speckled dace, longnose dace, Paiute sculpin, and mottled sculpin.



Hoback River at Stinking Springs

In 1939, cutthroat trout stocking in the Hoback River began and continued on a regular basis through most of the 20th century. A variety of sizes and numbers of cutthroat trout were stocked. Frequent stocking also occurred in several Hoback River tributaries. Reasons for stocking were to improve overall angler catch rates and to increase opportunities for anglers. Stocking practices during the majority of the 1980's and 90's involved stocking large numbers of catchable cutthroat to improve angling in the lower reaches of the river, an area presumed to lack suitable habitat for fish. From 1985-1998, an average of 23,848 Snake River cutthroat (5,443 lbs) were annually stocked into the river below Elkhorn Store. The largest number stocked was 33,084 in 1992.

Beginning in 1999, a comprehensive effort was initiated to investigate the role of stocking in the management of the Hoback River fishery. The project involved annually reducing the number of cutthroat trout stocked from approximately 12,500 in 1999 to zero in 2005. Stocked Snake River cutthroat were marked for identification prior to their introduction. The results of this project showed that when hatchery fish were stocked into the Hoback River, they outcompeted the wild fish and generally made up a substantial proportion of the trout in the river (around 50%). However, these hatchery fish had very low survival from year to year so annual stocking was critical to the angler success.

Since stocking was stopped in 2005, the wild SRC population has increased and is currently around 500 Snake River cutthroat trout per mile within the study section (Hoback Campground to Bryan Flats). It seems that the wild fish have taken the place of hatchery fish in the river and are much more capable of surviving and reproducing from year to year. A creel study done in 2011 showed that angler catch rates of cutthroat trout are currently comparable to catch rates during periods of intense stocking in the 1990's.

The Hoback River is just another good example of Mother Nature knows best.



Electrofishing the Hoback River

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**“Conserving Wildlife
Serving People”**

22nd Annual Kids Fishing Day

This year kids fishing day will be held on the **2nd of June at the Jackson National Fish Hatchery**. Registration begins at 10:30am and all activities will be concluded by 2:00pm. A free lunch will be provided for those attending. All kids, age 13 and under, are invited to participate and parents can listen in for a great learning experience. Activities include aquatic insects, fly tying, boating safety, and fish identification.

Bridger-Teton Nation Forest, Jackson Hole Jaycees, Jackson National Fish Hatchery, Teton Conservation District, Teton County EMS, Teton County Parks and Recreation Department, Jackson Hole Trout Unlimited, US Fish and Wildlife Service, US Geological Survey Jackson Field Station, and Wyoming Game and Fish Department are local sponsors of the event.

Thanks to this years newsletter contributors: Robert Al-Chokhachy, Rob Gipson, Brian Hines, and Lara Gertsch. Photos by: Rob Gipson, Brian Hines, Diana Miller, Tracy Stephens, Mark Gocke, and Robert Al-Chokhachy.

Regulation Changes in 2012

Anglers, beginning in January 2012, the waters of Wyoming are under new fishing regulations. Changes to the old regulations are significant in some areas. Statewide, creel limits on lakes and streams have been separated. Within lakes and reservoirs, the statewide daily creel allows up to six trout of any size, with the exception of lake trout which will have a separate creel limit of six, only one over 24 inches. This lake trout limit is also in effect on streams, including the Snake River below Jackson Lake Dam. The statewide daily stream creel limit is now three trout with no more than one trout to exceed 16 inches. The current regulation of only one cutthroat trout over 12 inches is still in effect in Area 1 (Snake River Drainage). Other statewide changes include reducing the mountain whitefish creel limit to 6 whitefish and removing the size restriction for brook trout.

Another change for most Snake River tributary streams is a delayed closure date of December 1st rather than the past November 1st closure date. There are some exceptions to this, including Flat Creek, which will maintain a November 1st closure date. The December 1st closure is consistent with local big game winter range closures. The Snake River proper will remain open to catch & release fishing only from November 1st through March 31st.

