



# Green River Region Angler Newsletter

**2020**  
Volume 15

<i>Green River side-channel restoration</i>	2
<i>New marina owners</i>	3
<i>Lake trout - A glance through time</i>	4-5
<i>AIS - Conserve way of life</i>	6-7
<i>Flaming Gorge Reservoir research</i>	8-9
<i>Muddy Creek native fish repatriation</i>	10
<i>Green River trout population estimates</i>	11-12
<i>Native fish research</i>	13
<i>Divide and Conquer</i>	14
<i>Regional stocking</i>	15
<i>Historical photo archive</i>	16

## *Fish Management*

Welcome to the 2020 issue of the Green River Region Angler Newsletter. This year's edition features news regarding Flaming Gorge Reservoir, an update from the AIS program, trout population estimates on the Green River, update on a roundtail chub project, information on the Green River side-channel project, and other insightful reads.

The Green River Fisheries Region spans from Fontenelle drainage in the north to Flaming Gorge Reservoir in the south, from the Bear River in the west to the Little Snake in the east, and includes all the lakes, reservoirs, rivers, and streams in between. Ours is the largest fisheries region in the state and one of the most diverse! From trophy lake trout to native Colorado River cutthroat trout, smallmouth bass, kokanee salmon, tiger trout and more, Green River has a little something for everyone.

We manage aquatic resources for *you*, the people of Wyoming, so your input is very important and we appreciate your comments. Please feel free to contact us at 307-875-3223, or using the information provided on the last page of this newsletter. Happy fishing!

## **WGFD Mission**

“Conserving Wildlife - Serving People”

## The FMGR Crew



**Robb Keith**  
Fisheries  
Supervisor



**John Walrath**  
Fisheries  
Biologist



**Troy Laughlin**  
Fisheries  
Biologist



**Wes Gordon**  
AIS  
Specialist



**Jessica Warner**  
Evanston  
AIS  
Specialist

## *Fish Division Mission*

“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 capability of habitats with public desires.”

## Green River Side-Channel Restoration Project



River system health is dependent on a variety of processes that benefit terrestrial and aquatic wildlife. Habitat complexity and diversity is essential to meet the life history requirements of multiple species. The Green River between Fontenelle and Flaming Gorge reservoirs has been the focus of numerous habitat improvement projects that range from riparian willow plantings to main-stem habitat improvements. Recently, concern has risen about the lack of lateral connectivity and off-channel habitats that provide nursery and rearing areas for early life stages of aquatic species. Side-channels offer refuge areas for juvenile fish species which increases chances of survival and the potential to increase recruitment to the overall population. Unfortunately, many of the side-channels have been cut off from the main-stem as a result of the construction of Fontenelle Dam.

The Seedskadee Chapter of Trout Unlimited (SCTU) has partnered with the Wyoming Game and Fish Department (WGFD), the Seedskadee National Wildlife Refuge (SNWR), and Trout Unlimited to identify and prioritize potential side-channels within the SNWR that can be re-opened and maintained at low flows. In 2018, SCTU competed in the Trout Unlimited Embrace A Stream grant program. Over \$6,000 in funding was raised through this effort to aid in project development and implementation.

In the fall of 2019, SCTU contracted an engineering company to analyze LiDAR data (infrared imaging) to identify potential side-channels for the project. Analysis criteria focused on side-channels that have potential to flow at 1,000 cubic feet per second, excavation efforts, and average excavation depth. Out of the 40 potential channels, nine are promising, meaning minimal effort is required to open and maintain at low flows. Of the remaining 31 channels, nine are ranked as potential and the rest were identified as difficult or impossible to keep connected.

Side-channels will be visited to assess presence/absence of fish and water pre and post excavation. After each channel is opened, SNWR and SCTU volunteers will improve bank stability by planting willows or cottonwoods. Fish populations and riparian function will undoubtedly improve for many years to come with the implementation of this project.

The side-channel project came forth due to the chapter and public's interest in wanting to keep the Green River fisheries around for future generations. The Seedskadee Chapter of Trout Unlimited has a history and passion for trout in the Green River and a working partnership with SNWR project leader, Tom Koerner, allowing this project to be possible.

## *New Marina Owners - Flaming Gorge Reservoir*

October 2019 brought with it what felt like the start of winter, spawning Kokanee, and new marina owners at Flaming Gorge Reservoir. We are thankful for the many years the Tanner family operated Buckboard Marina and their dedication to support one of our state's popular fisheries. We wish the Tanners the best with their endeavors and are excited to welcome the new owners of Buckboard Marina at Flaming Gorge Reservoir, LLC; the Valdez family.

Improvements to the property began immediately. Folks visiting will notice a fully remodeled store with a wide array of merchandise and a walk-in cooler. The shop was extended to add a showroom floor and asphalt was added to the shop and store fronts. Additional improvements will continue to be made such as a small restaurant near the water front, modifications/replacements of marina slips, the addition of five RV camping spots, improved roads, and shower facilities.



Aerial view of the marina boat slips.

Newly remodeled store at Buckboard Marina.



**Grand Opening - May 30**

**Prizes awarded for Population Control Contest**

## Lake Trout - A Glance Through Time

Why are lake trout all of a sudden a concern at Flaming Gorge Reservoir? This is a common question asked by anglers. In short, the issue of too many small lake trout has been developing for decades. To grasp a better understanding of the population and ease discussions, we often break lake trout out into three different groups: trophy ( $\geq 28$  inches), small (20-28 inches) and juvenile ( $\leq 19$  inches). We are fortunate to have 30 years of netting data which we use to track changes in a population. Netting data collected during the last two years revealed the highest numbers of small lake trout since it started in the 1980s. Inversely, the trend in the number of trophy lake trout has been slowly decreasing. These trends are concerning and bring us to the biggest question of all, why.

When trophy lake trout netting started (1990), their abundance was already high. During this same general time frame (1987-1995) the numbers of small lake trout were at their lowest. Age and growth information collected in 1990 showed that juvenile and small lake trout were growing very fast (some of the fastest growing lake trout in the country) and by the time they were eight years old, many achieved trophy size. The reason lake trout were growing fast prior to 1990 was due to their low numbers and abundant forage. Small lake trout were living in a reservoir with abundant food resources and little to no competition for them. Some of the trophy fish sampled in 1990 are still in the population today, but they are getting old ( $>40$  years) and starting to die of old age.

Prey populations were changing in the late 1980s to early 1990s. Sage brush that was once abundant and the preferred habitat for prey fish like Utah chub was decomposing after 20+ years of being submerged. As a result the abundant Utah chub populations declined and lake trout were forced to seek alternate prey. Reservoir wide the existing lake trout population, especially trophy sized fish became more dependent other species, like kokanee and rainbow trout. This change spurred research to better understand the seasonal diet of lake trout and their impact on kokanee. Results indicated too many lake trout in the reservoir which would eventually overwhelm the kokanee fishery. In response to this, management agencies increased the lake trout limit slightly from 2 per day to 3 per day, reduced the daily limit on kokanee from 8 per day to 3 per day and an aggressive kokanee stocking program was implemented. Since the 1990s, the stocking goal for kokanee has been 1.0 to 1.5 million per year.

Step forward in time to the early 2000s and one could argue that there were no significant changes in the abundance of trophy and small lake trout, especially if only looking at a few years. There were slight increases in small lake trout and trophy lake trout were still abundant. Looking at several years of netting data, a different picture emerges. Between 1983-1990 and 2000-2007, the small lake trout abundance increased by 25%.



Full limit of 12 lake trout.



Pulsed gastric lavage being performed on a lake trout.

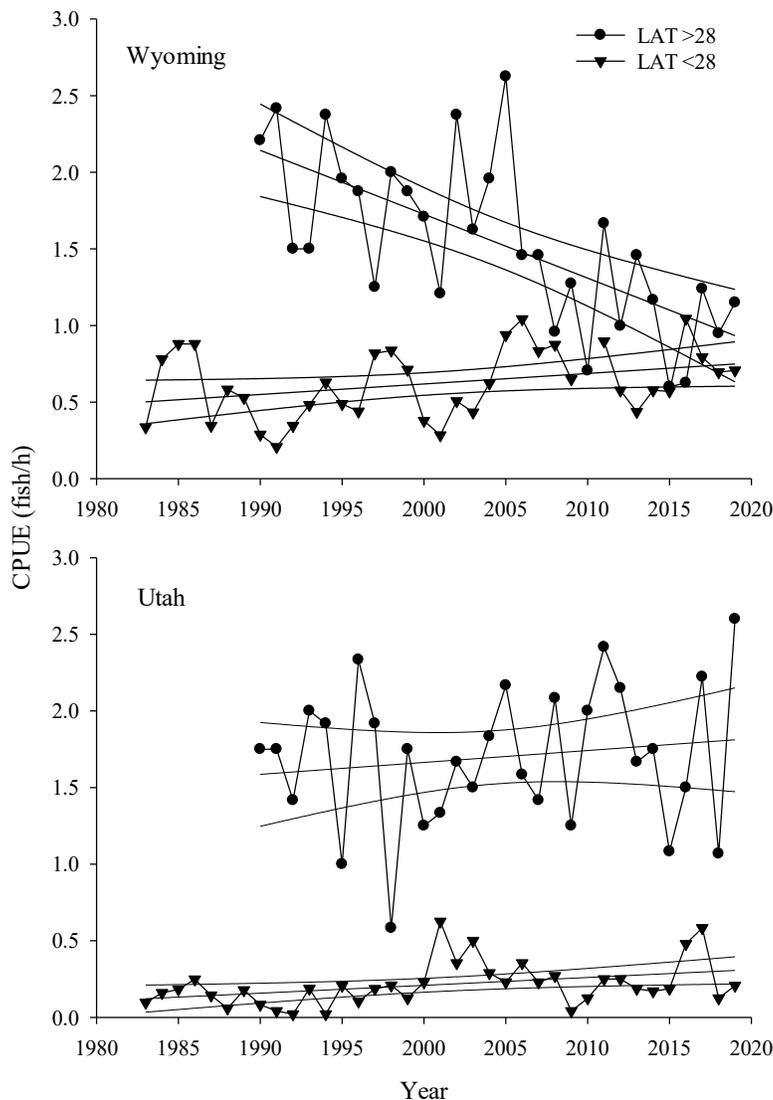
## Lake Trout - A Glance Through Time

As the number of small lake trout continued to build in the 2000s the fishery was further challenged when biologists discovered illegally introduced burbot. The burbot population rapidly expanded, peaking in the late 2000s during which time major declines were seen in crayfish and small smallmouth bass. Biologists also documented burbot consuming other fish species, like kokanee and rainbow trout, which further reduced the available forage for the increasing numbers of small lake trout in the reservoir. Burbot are not to blame for the lake trout trends but they have exacerbated the issue of prey competition being they are another mouth to feed.

Irrespective of the introduction of burbot, and as a result of an imbalance between their abundance and food resources small lake trout abundance has slowly increased while their growth has decreased. Age and growth work completed in 2015 determined that it now takes approximately 15 years to produce a trophy fish, whereas in the 1990s this only took 8-years. Some lake trout may never obtain trophy size, and it's not uncommon to see 20-25 inch fish that are 15-20 years old. This population trend has been seen in many lake trout populations in the west and ultimately crashed prey populations. Interested anglers can read the peer reviewed article, Western Lake Trout Woes, to learn more about lessons learned from other populations.

There is a limited amount of food available in Flaming Gorge Reservoir and if the population of lake trout less than 28 inches is not decreased, they could overwhelm and eventually crash the available prey populations (kokanee). Ensuring lake trout have the resources they need to grow fast while they are young will maintain and possibly improve the trophy fishery. However, we first need to thin the 'herd' leaving those that remain with more food to grow. Lake trout densities were deemed too high for the available resources in 1990 and current densities are even higher, further straining prey resources. For over a decade, managers have been encouraging anglers to take advantage of the liberal lake trout limit. Many are listening and doing their part, especially during ice fishing season. Now it's time for the kokanee anglers to do their part and start harvesting the small lake trout they are catching.

The fishery as a whole is still doing very well and the measures we have adopted so far are meant to keep it that way. If we wait to react until a prey population like kokanee crashes, it will be too late and take decades to reestablish what was lost. So we want anglers to know that the Gorge is still an amazing fishery and that with each small lake trout they harvest, we'll be that much closer to keeping it one of Wyoming's gems.



## *Don't Move a Mussel - Conserve a Way of Life*

With the boating season upon us here in the Green River region, many will start thinking about getting watercraft ready to get out and enjoy Wyoming waterways. As anglers, sportsmen and watercraft users, we have a responsibility to protect and conserve the resources we enjoy. However, Zebra and Quagga mussels and other Aquatic Invasive Species (AIS), threaten our water resources and our way of life.

Zebra and Quagga mussels are freshwater bivalves in the family Dreissenidae and are species of concern in Wyoming. Originating from eastern Europe and western Asia, Dreissenid mussels were first introduced into the Great Lakes in the 1980's by international cargo ships and have rapidly spread across the United States. Dreissenid mussels are the only freshwater mussel that have byssal threads, allowing them to attach and hitchhike on watercraft and other watersports gear. Veligers (larval mussels) are microscopic and can survive in standing water for up to 30 days.

Why should we care about Dreissenid mussels? The impacts of an infestation are far reaching and will affect all of us in one way or another. Dreissenid mussels can cause damage to your watercraft by clogging intakes to motors and other internal systems, in addition to causing biofouling to the outside of your watercraft and equipment. This results in expensive and time-consuming maintenance. Dreissenid mussels can also impeded water



Example of standing water being drained at an inspection station.

delivery systems for both municipal and irrigation water supplies, driving up the costs to consumers.

Dreissenid mussels are also deleterious to the ecosystem by filtering out beneficial nutrients. Infestations have been shown to cause a bottom up collapse of the food chain, resulting in the loss of sport and native fisheries. The filtration of nutrients decreases productivity and allows light to penetrate deeper into the water column, causing potential toxic algae blooms.

Imagine if Flaming Gorge Reservoir were to become infested; what would the consequences be? Many nearby communities (Sweetwater and Daggett counties) rely heavily on the recreational opportunities it provides. Flaming Gorge is a destination fishery for world class kokanee salmon and lake trout, bringing in millions to local economies. Imagine shorelines and beaches covered with billions of sharp mussel shells and the impact this would have on camping and recreational

opportunities. Additionally, it is likely that if Flaming Gorge Reservoir were to become infested with zebra or quagga mussels, it would restrict or severely limit launching access. We can all agree that the best course of action is to prevent an infestation in the first place.

Watercraft are a vector of spread for Dreissenid mussels. Whether mussels are attached to the outside of the watercraft or stowed away inside internal compartments, such as ballast tanks, bilge compartments, live-wells or sea strainers, the spread of invasive mussels and other AIS is preventable by taking the time to clean, drain, and dry your watercraft and equipment. Please remember to clean and remove any visible vegetation and debris from your watercraft immediately after use. Also, remove bilge plugs and open water barriers before leaving a waterway and leave them out or open during transport to ensure any unseen water drains. If you have a ballast system, be sure to check your sea strainers and we

# Conserve a Way of Life cont'd

recommend you leave the sea strainers out during transport to aid in drying the ballast system.

Wyoming's AIS regulations state any watercraft being transported into the state between March 1 and December 30 must undergo a mandatory inspection before launching on any waterway. This requirement is extended year-round if your watercraft was last used on an infested or suspect water. Additionally, bilge plugs and all water barriers are required to remain out and open during transport. For a list of infested waters and inspection locations and authorized inspectors check out the Departments site provided below.

Wyoming is one of the few

remaining states without any Zebra or Quagga mussels presents and it is important to stay vigilant by following the clean, drain, dry motto and to seek out a watercraft inspection or decontamination when required. In doing so, we as anglers, sportsmen, and watercraft users are doing our part to lead by example and preserve our way of life.

For questions, comments or concerns, or to report an AIS sighting, please contact the Green River Regional office at 307-875-3223. Information about positive waters changes frequently. The websites provided below contain information that is updated regularly.

## Reasons for the success of Wyoming's AIS Program

- All watercraft entering the state are required to get an inspection before launching.
- Border check stations provide convenient and consistent inspections.
- Passionate and dedicated personnel.
- Hands on inspection and decontamination protocol.
- Bilge plug regulation requires all plugs to be pulled.
- Education – Wyoming AIS program educates boaters about the threats of AIS and prevention.
- Proactive sampling and monitoring.

The screenshot shows the Wyoming Game & Fish Department website. The top navigation bar includes links for 'APPLY OR BUY', 'HUNTING IN WYOMING', 'FISHING & BOATING', 'PUBLIC ACCESS', and 'WILDLIFE IN WYOMING'. Below this is a 'FISHING AND BOATING' section with a sidebar menu on the left containing items like 'Fish Stocking', 'Fishing Challenges', 'Fishing Regulations', 'Master Angler', 'Places to Fish in Wyoming', 'Aquatic Invasive Species Prevention', 'AIS Boating Information', 'AIS Construction and Fire', 'AIS Raffle', 'Threats', 'Drain Clean Dry', 'AIS Decal', 'AIS Resources', 'Don't Let it Loose', 'Boating and Watercraft', 'Fishing News', 'Fish Consumption Advice', 'Fish of Wyoming', 'State Record Fish', 'XStream Angler Instream Flow', 'Fish Habitat Information', 'Cut Slam', 'Stream Classification', 'Private Fish Stocking', and 'Fishing Contests'. The main content area is titled 'AIS Inspection Location List' and contains text explaining the inspection requirements and a map of Wyoming with red pins indicating inspection locations. A legend below the map identifies the types of inspection locations: Standard Inspection required (white), High risk Inspection required (red), and See list: High risk inspection required if any waters in last 30 days are on list or boat has any standing water (yellow).

<https://wgfd.wyo.gov/Fishing-and-Boating/Aquatic-Invasive-Species-Prevention/AIS-Inspection-Locations>

The map shows the United States with states colored in red, yellow, or white. A legend indicates: Standard inspection required (white), High risk inspection required (red), and See list: High risk inspection required if any waters in last 30 days are on list or boat has any standing water (yellow). Below the map is a list of high-risk waters by state:

<b>COLORADO</b>	<b>NEVADA</b>	<b>SOUTH DAKOTA (cont.)</b>
• Green Mountain Reservoir	• Colorado River	• McCook Lake
<b>MONTANA</b>	• Lake Mead (Hoover Dam)	• Missouri River
• Tiber Reservoir (Lake Elwell)	• Lake Mohave (Davis Dam; AZ/NV)	<b>UTAH</b>
• Canyon Ferry Reservoir	<b>NORTH DAKOTA</b>	• Lake Powell, UT/AZ
<b>NEBRASKA</b>	• Red River	• Lake Superior (Ontario)
• Carter Lake (border w/Iowa)	• Sheyenne River	• Lake Ontario (Ontario)
• Cunningham Lake	• Lake Ashtabula	• Lake Erie (Ontario)
• Lake Yankton (Cottonwood Lake)	<b>SOUTH DAKOTA</b>	• St. Lawrence River (Quebec/Ontario)
• Lewis and Clark Lake	• Lake Sharpe (Big Bend Dam)	
• Missouri River	• Lake Francis Case (Fort Randall Dam)	
• Offutt Base Lake	• Lewis and Clark Lake (Gavins Pnt Dam)	
• Zorinsky Reservoir	• Lake Yankton (Cottonwood Lake)	

[https://wgfd.wyo.gov/WGFD/media/content/PDF/Fishing/AIS\\_INFESTED\\_WATER.pdf](https://wgfd.wyo.gov/WGFD/media/content/PDF/Fishing/AIS_INFESTED_WATER.pdf)

## *Flaming Gorge Reservoir - Research Projects*



Some of the laboratory equipment used to conduct microchemistry analyzes.

### Kokanee Microchemistry Project

As mentioned in prior newsletters, we continue to look at the contribution of hatchery kokanee in the Flaming Gorge Reservoir fishery. In fall 2019, the project lead switched to a graduate student with the Idaho Cooperative Fish and Wildlife Research Unit at the University of Idaho. He has been busy writing his thesis proposal and preparing otoliths for analysis.

The project is in its final year of data. Kokanee naturally reproduce in the system, but a large number of kokanee are stocked annually from Wyoming Game and Fish Department, Utah Department of Wildlife Resources, and U.S. Fish and Wildlife Service hatcheries. The primary reason for stocking is to ensure that the demands of anglers are met. Currently, over 2,000 otoliths have been collected from kokanee since 2017 and many will be analyzed at a lab at UC Davis using microchemistry equipment. The otolith is a hard, calcified structure located in the fish's head and aids in balance and hearing. Otoliths can be used to identify the origin of the fish (hatchery versus natural) by analyzing the chemical composition of the otolith. Hatcheries in Utah and Wyoming have different water chemistry signatures than Flaming Gorge Reservoir and identifying those differences will give us the ability to better understand the proportions of natural and hatchery-produced kokanee in Flaming Gorge Reservoir.

Kokanee were sampled using gill nets and will be used to identify the proportion of the population that is composed of hatchery fish. Creel surveys were also used to sample kokanee. Data from the creel will provide insight on the proportion of kokanee caught by anglers that are of hatchery origin. In addition, weirs on major tributaries and gill nets at shoreline locations have been used to gather information on the origin of spawning fish. Sampling will continue this year with netting in June and creel surveys throughout early summer. Spawning kokanee will also be sampled this fall. Results from this project will aid fisheries managers to ensure there is efficient allocation of resources (hatchery-produced kokanee). Understanding the proportions of natural and hatchery-produced kokanee in Flaming Gorge Reservoir can help to adjust management decisions and improve kokanee fishing.

### Lake Trout Food Web Project

Ask many local anglers and they will tell you, there are a lot of small (less than 28 inch) lake trout in the Gorge. In an attempt to better understand the lake trout population and what affect they are having on kokanee numbers, the Wyoming Game and Fish Department began a new research project in 2019.

## *Flaming Gorge Reservoir Research Projects cont'd*

The research project is being led by the Department's Aquatic Assessment Crew. They teamed up with a graduate student and professors, all with the University of Wyoming. Together, they are mapping out the food web in Flaming Gorge Reservoir. To figure out who is eating who, they are collecting and analyzing lake trout stomach content. This type of analysis tells you what a fish ate most recently. To get a long-term picture of who is eating who, the researchers are using a relatively new technique called stable isotope analysis. Tissue is collected from a fish's liver and muscle, and then analyzed for elements including carbon, nitrogen, and sulphur. The ratio of these elements allows the researchers to place each fish into the correct level of the food web, incorporating their diet over a period of weeks or months. The goals of this project are to better understand what lake trout are eating at different times of the year (e.g., spring vs summer) and at different times in their life (e.g., juvenile vs adult). Researchers then plan to model the amount of prey a lake trout needs to consume to grow at a certain rate and then estimate what impact this may have on the Flaming Gorge fishery in the future.

Data collection began in 2019 and will continue in 2020. Preliminary results should be available in 2021.

### Juvenile Lake Trout Netting Project

Another component of the lake trout project is trying to increase our efficiency of netting lake trout less than 19 inches. Our current netting catches few individuals less than 19 inches, but by the time they are 20 inches they might be greater than seven years old. To gain a better understanding of younger year classes we need to capture smaller fish. Knowing the



Pulsed gastric lavage system used to collect diet samples from trophy lake trout. This is a non-lethal collection method.

abundances of smaller year classes gives us an 'early warning system' if there's a drastic increase in small lake trout.

During 2019 the Aquatic Assessment Crew spent time on the reservoir each month sampling with different types of nets to determine which had the best capture efficiency for juvenile lake trout. Numerous lake trout were sampled throughout the reservoir with the gears and only 1.2% were trophy lake trout. This means, the gears were very effective at avoiding the capture of trophy lake trout.

Efforts last year successfully determined what net type best sampled juvenile lake trout and now that a net has been selected, sampling this upcoming year will be more robust. Additionally, this year's effort will focus on determining if there are particular habitats that juvenile lake trout are occupying throughout the year.

## *Native Nongame Species Repatriation*

The Muddy Creek drainage, located southwest of Rawlins has been the focus of a nearly two decade long project dedicated to the restoration of four native fish species. The WGFD and BLM initiated a progression of ongoing watershed restoration efforts in order to rehabilitate populations of native Colorado River cutthroat trout, flannemouth sucker (FMS), bluehead sucker (BHS), and roundtail chub (RTC), by removing nonnative fishes. Restoration efforts have included mechanical and chemical removal of nonnative white sucker and creek chub that compete for resources and hybridize with native species. To date, over 35 miles of habitat has been restored for three species (FMS, BHS, and RTC) and more in the headwaters for CRC.

Prior to restoration efforts in McKinney Creek and reaches of Muddy Creek, FMS, BHS, and RTC

were salvaged from the creeks and transported to the Boulder Fish Hatchery. Following two consecutive years of chemical treatments in the above creeks, genetically pure BHS and RTC were repatriated into the restored reaches in spring 2019. The limited number of FMS ( $n=41$ ) remained at the facility for future brood source development.

A total of 232 BHS and 648 RTC was reintroduced into McKinney and Muddy creeks in mid June 2019. Fish were released at five different locations within the system (four in Muddy Creek; one in McKinney Creek). Locations were chosen based on previous studies identifying core habitats and areas with good vehicle access. We did not want to over stress the fish by packing them in long distances to release sites. All fish were in excellent body condition and appeared healthy upon release.



Three species fish salvage effort being conducted by WGFD and BLM personnel.



Roundtail chub



Bluehead sucker



Colorado River cutthroat trout



Flannemouth sucker

## *Green River - Trout Population Estimates*

Fishing in the Green River below Fontenelle Dam has been excellent in recent years. Anglers have reported great catch rates of all trout species in the river with some exceptional fish measuring over 25 inches being caught. Trout in the river are managed with a variety of fishing regulations and closures as well as an annual stocking program. Not all trout species in the Green are stocked however, with some populations being wild and maintained through natural recruitment. Brown Trout are the only trout species not stocked in the river. Wyoming Game and Fish Department personnel annually sample at least one reach of the Green River between Fontenelle Dam and Flaming Gorge Reservoir to monitor the stocked and wild trout populations.

The most recent population survey was completed in the spring of 2019 and results were very encouraging. The reach of the Green River that was sampled extended from just below Fontenelle Dam to the Slate Creek campground. Species sampled included rainbow trout, brown trout, snake river cutthroat trout, bear river cutthroat trout. Rainbow Trout catch rates have consistently increased over the past several sampling events and 2019 was the highest population estimate ever documented. Our population estimate yielded a result of 1,086 fish/mile and a biomass estimate of 1,920 pounds/mile for rainbow trout greater than 6 inches in length (Table 1). Rainbow trout averaged 16.2 inches in length (range: 5.6-26.3 inches) and 1.8 pounds. The body condition of rainbow trout



Raft electrofishing on the Green River at night.

was above average and the majority of fish appeared very healthy. The brown trout population estimate was similar to previous sampling events and yielded a result of 292 fish/mile and a biomass estimate of 538 pounds/mile (Table 1). Again, the brown trout population is not stocked and is solely reliant on natural reproduction. Brown trout averaged 17.2 inches (range: 5.3-28.2 inches) and 1.9 pounds. Since the last time the Dam reach was sampled, we did see a slight decrease (12%) in the number of brown trout per mile, but observed an increase



Collecting data from fish captured and giving unique 'trip marks' for calculating a population estimate.

## Green River - Trout Population Estimates cont'd

Number sampled, mean length (inches), number per mile with standard error, mean weight (lbs), and pounds per mile with standard error from three pass population estimate for fish captured in 17495 feet of stream at elevation 6,390 feet in the Green River (Fontenelle Dam to Slate Creek campground) on Apr 04, 2019.

Species	Size Group	Number	Mean Length	Number/mi $\pm$ SE	Mean Weight	Pounds/mi $\pm$ SE
RBT	$\geq 6.0$	1093	16.2	1,086 $\pm$ 80	1.77	1920 $\pm$ 147
BNT	$\geq 6.0$	292	17.2	289 $\pm$ 41	1.88	538 $\pm$ 36

(13%) in the biomass estimate, indicating that a larger portion of bigger fish was collected in 2019. Anglers have reported catching larger brown trout in this section compared to previous years. Both cutthroat trout species were sampled in relatively low numbers that a population estimate was not reliable. However, all cutthroat appeared healthy and were in great body condition. The low numbers of cutthroat sampled in the Dam section is not surprising as these species are stocked in lower densities compared to rainbow trout and are stocked in lower reaches of the Green River.

The Wyoming Game and Fish Department annually stocks 35,000 rainbow trout, 25,000 snake river cutthroat trout, and 15,000 bear river cutthroat trout that range from 6 to 9 inches in length throughout numerous reaches of the Green River. Stocked fish maintain the populations of spring spawners that experience relatively low natural recruitment success. Previous studies in the Green River have indicated that in order for stocked species to over-winter, they need to reach 12 to 14 inches in length by their first winter to increase chances of survival. Stocking



Preparing the raft and checking equipment before electrofishing.

larger sized fish has allowed them to attain these lengths and better compete for winter habitat. This, coupled with good water years, has resulted in the increase in abundance estimates we have observed. We encourage anglers to take advantage of the healthy fishery in the Green River.

## *Native Species Research*

There are a few mystery fish in the Green River Basin making of which, information is limited. The roundtail chub and flannelmouth sucker are two of these lesser known fish. Historically, these species were two of the most abundant fish found in the Upper Colorado River due to impressive adaptations that have enabled them to survive in extreme environmental conditions. Today, they occur in approximately 45% of their historic range as a result of habitat alteration and introduced species such as the white sucker. Although not known as a target species for sportsman, they are an important part of the aquatic ecosystem.

In 2018, the Wyoming Game and Fish Department began documenting the distribution of roundtail chub and flannelmouth sucker throughout the Blacks Fork and Hams Fork drainages. Biologists believe these fish are moving from the mainstem Blacks Fork into the Hams Fork and Muddy Creek tributary systems to spawn. To determine their movement, biologists sampled each drainage and implanted fish with passive integrated transponder (PIT) tags. These tags uniquely identify each fish and allow biologists to track their movements using six

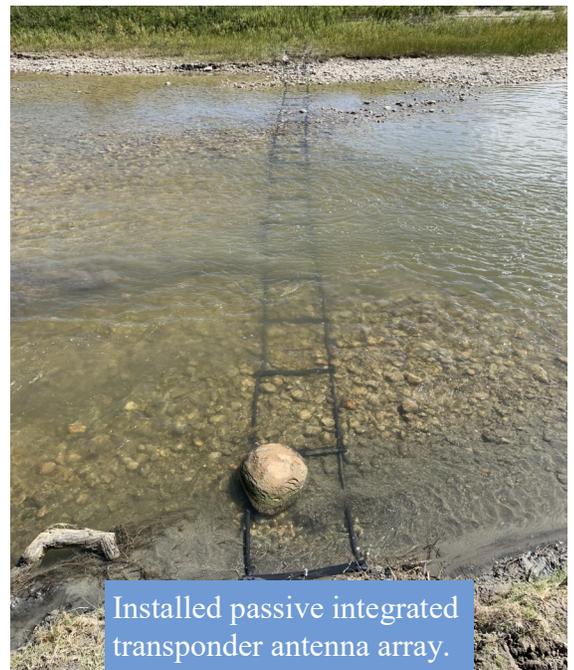
PIT tag antennas installed throughout the subbasin.

Four antennas are installed in the Blacks Fork, one in Muddy Creek and one in the Hams Fork. Antennas were installed flush against the substrate, allowing tagged fish to pass over the array, providing movement data. So far, 371 flannelmouth suckers and 737 roundtail chub have been tagged. While data collection is still in the early stages, interesting behavior has been observed. One roundtail chub travelled over 74 miles- the waterway equivalent of a trek from Green River to Evanston on Interstate 80!

For the next two years, the Wyoming Game and Fish Department will fund a University of Wyoming research project to track and analyze the movement behavior of these fish. Movement is a key component to survival as it enables fish to respond and adapt to altered environmental conditions. The primary research goals are to better understand seasonal and spawning movement patterns and the impact of flow and temperature. This project will help identify important habitat requirements and inform future management and conservation efforts for native fish populations.



Seining in the Blacks Fork River for three species.



Installed passive integrated transponder antenna array.

# Divide and Conquer

We do what we can to manage the State’s fisheries to the best of our abilities. One way we do this is by splitting up the watersheds to even the workload by distance from the Green River Regional Office, local sport fisheries, Colorado River cutthroat trout, native three species, and east versus west. This ensures we both contribute to all aspects of the fisheries work in our region. There is a lot of water and quality fisheries in our region, so we can’t make it everywhere each year. Luckily, our wardens are amazing at keeping us informed about what is going on in their districts and help us collect additional creel information from anglers. If you have questions about a particular water body or want to share an experience, please reach out to us. We love hearing from the public and staying engaged helps us manage the fisheries. Troy Laughlin manages the basins in blue and John Walrath manages the basins in red. Robert Keith the fisheries supervisor oversees the biologists and the AIS specialists in Green River and Evanston.

## Red Basins



Robert Keith  
Fisheries Supervisor  
Phone: 307-875-3225 ext. 8620  
Email: robert.keith@wyo.gov

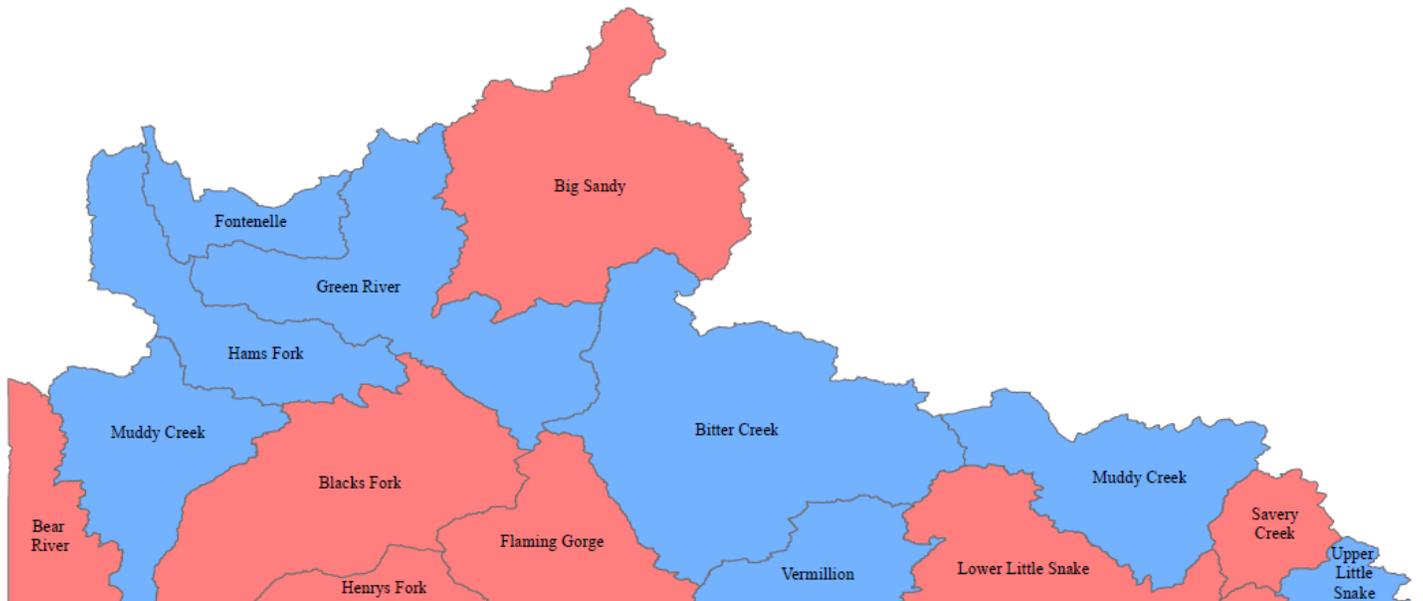


John Walrath  
Fisheries Biologist  
Phone: 307-875-3225 ext. 8617  
Email: john.walrath@wyo.gov

## Blue Basins



Troy Laughlin  
Fisheries Biologist  
Phone: 307-875-3225 ext. 8618  
Email: troy.laughlin@wyo.gov



## *2020 Stocking Requests*

In 2020 the Green River region will receive fish from 8 of the 10 state hatcheries and rearing stations scattered around the state and one federal hatchery in Utah—Jones Hole National Fish Hatchery. The state facilities include Auburn Fish Hatchery, Boulder Rearing station, Clarks Fork Fish Hatchery, Dan Speas Fish Hatchery, Daniel Fish Hatchery, Dubois Fish Hatchery, Ten Sleep Fish Hatchery, Tillett Fish Hatchery and Wigwam Rearing Station. The majority of the waters stocked in the region are listed below. More information about the state hatcheries and rearing stations can be found on the Department website under Fishing & Boating. K=Thousands M=Millions

<b>Waters</b>	<b>Brown Trout</b>	<b>Bear River Cut</b>	<b>Channel Catfish</b>	<b>Colorado River Cut</b>	<b>Rainbow Trout</b>	<b>Kokanee</b>	<b>Snake River Cut</b>	<b>Tiger Trout</b>
<b>Arrowhead Spring Pond</b>					<b>750</b>			
<b>Bear River</b>		<b>2.3 K</b>						
<b>Big Sandy Reservoir</b>	<b>22.5 K</b>				<b>22.5 K</b>			
<b>Big Sandy River</b>	<b>15 K</b>							
<b>Blacks Fork River</b>	<b>2 K</b>			<b>2 K</b>				
<b>Diamondville Pond</b>			<b>150</b>				<b>700</b>	
<b>Flaming Gorge Reservoir</b>		<b>200 K</b>			<b>330 K</b>	<b>1.2 M</b>		
<b>Fontenelle Reservoir</b>		<b>15 K</b>			<b>50 K</b>	<b>75 K</b>	<b>800</b>	
<b>Green River</b>		<b>15 K</b>			<b>35 K</b>		<b>25 K</b>	
<b>Herald's Slough Pond</b>					<b>1.2 K</b>			
<b>High Savery Reservoir</b>				<b>8 K</b>		<b>15 K</b>		<b>10 K</b>
<b>Jim Bridger Pond</b>					<b>3 K</b>		<b>500</b>	<b>2K</b>
<b>Kemmerer City Reservoir</b>					<b>10 K</b>			
<b>Kemmerer Community Pond</b>					<b>1.7 K</b>			
<b>Lyman City Pond</b>			<b>150</b>		<b>800</b>			
<b>Mountain View Pond</b>				<b>700</b>				
<b>Murray Reservoir</b>					<b>2 K</b>			
<b>Robbers Gultch Reservoir</b>					<b>1 K</b>			
<b>Rock Springs Pond</b>					<b>1.3 K</b>			
<b>Savery Creek &amp; Little Savery Creek</b>	<b>1.8 K</b>				<b>4 K</b>			
<b>Sulphur Creek Reservoir</b>	<b>15 K</b>	<b>20 K</b>						<b>15 K</b>
<b>Sweetwater Kids Pond (Jamestown)</b>					<b>750</b>			
<b>UP Ice Pond (Evanston)</b>		<b>4 K</b>			<b>3.6 K</b>			
<b>Viva Naughton Reservoir</b>					<b>60 K</b>			<b>10 K</b>

# Historical Photo Archive



1984 - Green River electrofishing



1978 - Purse seining Flaming Gorge Reservoir



1986 - Netting Flaming Gorge Reservoir



1981 - Boulder placement Green River



1986 - Lake trout tagging



1993 - Fin clipping



1986 - Habitat improvement



1978 - Fish distribution