Welcome to the 2020 Jackson Region Angler Newsletter! We had another great year managing the Jackson area fisheries. Inside you’ll find updates from our work in 2019 and some of the upcoming work for 2020.

As always, please feel free to contact us or stop by with any comments or questions about the aquatic resources in western Wyoming. Your input is important to us as we manage these resources for you. You’ll find all of our contact info on the last page of this newsletter. We wish you tight lines during the 2020 season!
Mountain Whitefish are a native sportfish in Wyoming. Despite their designation as a sport fish, they have historically received little attention from both anglers and managers. Wyoming began more regular monitoring of this species in recent years after whitefish declines began to be noticed across the Rocky Mountain West. Within the Snake River drainage, Mountain Whitefish have always appeared to be quite abundant but population estimates were not conducted until 2009. At that time, several of the more heavily fished rivers in the area were selected as monitoring sites for whitefish. These rivers include Salt River (estimate in 2009), the Greys River (estimate in 2012), and the Hoback River (estimate in 2013). Conducting population estimates for whitefish is very similar to conducting estimates for trout, using the same raft electro-fishing equipment. However, there is one major difference. Mountain Whitefish don’t respond to the same level of electric current as trout, so the settings used on the electrofishing equipment during whitefish sampling are much lower.

In order to evaluate any changes in the whitefish population over time, the Jackson Region fisheries crew decided to begin revisiting these population estimate sites. In 2019, the site on the Greys River, from the Little Greys River to Squaw Creek was sampled. The population estimate of whitefish from this stretch in 2019 was substantially higher than the estimate from 2012 with a total estimate of 658 whitefish per mile and 400 pounds of whitefish per mile. The increase from 2012 to 2019 is a result of more than twice as many small whitefish (≤ 12.9 inches). The reason for this increase is unknown, but is a good sign of a healthy fishery.
**Effects of Roosevelt Fire on Fisheries**

On September 15th, 2018 the Roosevelt Fire started in the Upper Hoback River drainage. This wildfire burned, unconstrained, for almost a month and wasn’t declared “out” until late November. During this time, the Roosevelt Fire burned more than 61,000 acres in the Hoback River and the Beaver Creek drainages. The effects of wildfire on fisheries varies considerably by location, slope, and intensity of burn. Effects can be immediate (mortality associated with elevated stream temperature, for example), or delayed (such as increased sediment, ash and debris settling in riffles, filling pools and clogging culverts).

In order to evaluate immediate and anticipated long-term effects on the fishery and habitat, WGFD biologists spent a week in the headwaters of the Hoback River sampling the fish population at established sites and surveying the habitat.

Hoback River fisheries were evaluated at eight sites (see map on next page). Five sites had been previously sampled in 2012 (1, 4, 5, 6, and 8) and three new sites within the burn area or immediately adjacent to the burn were sampled in 2019 (2, 3, and 7). Two of the previous sampling sites from 2012 were in the burn area (6 and 8) and an additional sampling site was added (7). A site in the highest intensity burn area on the South Fork Hoback River was scheduled for sampling but rain caused the river to blow out and sampling could not be conducted.

In all sampling sites except Site 8 on the Hoback River, there seems to be no change to the fishery due to the Roosevelt Fire (see table on next page). The decrease in the Snake River Cutthroat Trout population at Site 8 may be due to a lack of cover from the burn. In general, riparian vegetation remained intact through most of the burn area which likely provided security, thermal cover, and reduced sedimentation for fish. We will continue to monitor Site 8, as well as the site on South Fork Hoback River that wasn’t sampled in 2019, to evaluate the impacts of this large-scale fire on local fisheries. Overall, we observed minimal changes in the population. For the most part, headwater tributaries were unaffected by the Roosevelt Fire.
Habitat surveys likewise showed minimal effects. Riparian areas provide critical habitat for many species. Willows, alders, dogwood, water birch and sedges work to hold stream banks in place, shade streams and reduce water temperatures. They provide inputs of terrestrial insects that fish feed on, and offer places for small fish to hide and escape predation from larger fish. Riparian areas are also particularly resilient to fire. Maintenance of these habitats is important not only for the conservation of fish and their habitat, but also for increasing the resiliency of our forests to catastrophic wildfire.

Habitat assessment of the two sites affected by the 2018 fire Bare Creek (Site 6) and Hoback River (Site 7), revealed both positive and potentially concerning fire impacts. At both sites, the fire burned old floodplain terraces and uplands dominated by conifers (lodge pole pine and subalpine fir), largely leaving the riparian corridor unaffected. Understories burned and conifers were left black and standing. Large sediment and wood inputs to the Hoback River are therefore anticipated in coming years.

Map of 2012 and 2019 sampling sites in or near the Roosevelt Fire burn area. Black dots indicate sampling locations outside the burn and red dots indicate sampling locations inside the burn.
Roosevelt Fire, Continued...

Comparisons between 2012 and 2019 Bare Creek habitat surveys show a 10% increase in conifer encroachment (pre-fire). The fire tended to concentrate on these conifers, considerably reducing conifer encroaching and lending a competitive advantage for the reestablishment of sedges and willows. The march of conifers towards stream channels happens when riparian plants no longer self propagate or are outcompeted by the large trees that block the sun. Conifer encroachment coincides with a reduction in soil moisture and a drop in water table. Once the water table has receded, it is even more difficult for the important water-loving woody plant species of the riparian zone to recolonize.

Fire-toppled conifers throughout the upper Hoback will open the door for a resurgence in the riparian plant community. They will also, however, contribute to increased bank erosion. Large wood in the river creates great fish habitat once it is stabilized. If unstable, however, it can cause bed and bank scour, and channel readjustment. An increase in bank erosion and large wood inputs to the Hoback River in the coming years will instigate a chain of downstream events as the river works to reestablish equilibrium. Similar events (landslides for example) are relatively common in the Upper Hoback, which is a geologically-active drainage. Key to the ability of the drainage to heal itself, are intact riparian areas and floodplain connectivity. Over the coming years, the habitats will change and the distribution of fish may shift slightly, but the overall health of the watershed will remain intact. This is what we call “resiliency”.

Restoring Snake River Cutthroat Trout to Game Creek

Game Creek is a small tributary to Flat Creek on the South Park Wildlife Habitat Management Area. This stream is most commonly known for its popular biking and hiking trail, but that beautiful little creek where dogs stop to cool down or take a drink used to be a thriving spawning stream for Snake River Cutthroat Trout. In 1954, Harold Hagen wrote about this stream in his book “Guide to Fishing in Jackson Hole.” Hagen identified Game Creek as a good place to fish for cutthroat trout in the early season as it held spawning fish and typically cleared up before many other streams. Unfortunately, today, the story is much different and cutthroat trout have vanished from Game Creek.

Historical sampling records from 1953 and 1961 indicate that Game Creek was 100% cutthroat trout. By 1980, only 3 of the 39 (8%) fish captured during sampling were cutthroat and by 2016, no cutthroat trout were found during any sampling upstream of the highway.
Restoring Cutthroat Trout, Continued...

The disappearance of cutthroat trout can be traced back to two events. The first was the periodic stocking of brook trout. Game Creek was first stocked with cutthroat trout in 1941. Stocking continued until the 80’s with cutthroat trout being stocked the majority of years. However, brook trout were stocked in 1954, 1966, and 1970, and again from 1978-1983. This introduction of brook trout was an important factor in the decline of cutthroat trout.

The second event that led to the disappearance of cutthroat trout was the rerouting of the highway to the west side of the Snake River in the 1960’s. This road construction included a new culvert for Game Creek. Unfortunately, this new culvert no longer allowed for fish passage from Flat Creek. The loss of the influx of cutthroat trout in the spring was detrimental to the ability of that species to persist in the face of competition from brook trout.

Removing a fish population from a stream is not an easy task and can only be done under the right conditions. Luckily Game Creek provides the conditions and the opportunity for brook trout removal. The use of rotenone is the only approved method for fish removal. Rotenone is found in the roots of plants in the bean family in South America and has been approved by the FDA. Rotenone works by disrupting oxygen uptake within the cells of gill breathing organisms. This means that rotenone does not affect organisms without gills.

In order to remove brook trout from Game Creek, biologists plan to apply rotenone to the stream during one day in the summers of 2020 and 2021. Treatments are conducted on subsequent years in order to make certain that all brook trout are removed. The application will take place in late August when water levels are low. This allows biologists to apply the least amount of rotenone possible. This timeline also allows for the treatment of the stream to take place prior to the brook trout spawn (they are fall spawners). Game Creek will be detoxified prior to entering Flat Creek to contain the chemical to that stream.

Once both treatments are complete, Snake River Cutthroat Trout will be stocked back into Game Creek to provide angling opportunities. Eyed-eggs will also be stocked to help establish a self-sustaining population. The removal of brook trout and restoration of cutthroat trout will not only return a native species to a spawning stream, but will protect Flat Creek and the Snake River from invasion by brook trout.

By 2022, we hope that your dogs and bikes are spooking cutthroat trout from deep pools instead of brook trout and this small stream is helping to provide even more of these beautiful native fish to Flat Creek and the Snake River.
The Snake River is arguably one of the best fisheries in the Jackson area and one of the best wild cutthroat trout fisheries in the country. Every year the Jackson region Fisheries Management Crew conducts a population estimate on the wild cutthroat fishery to monitor fish numbers, health, and growth.

Population estimates on the Snake River are always conducted in early October when releases from Jackson Lake Dam have been reduced. Lower flows are important for the Snake River sampling so that fish are more concentrated and the number of braided channels is reduced. This results in higher confidence in our estimates. During this sampling, the same five-mile reach of river is electrofished with two rafts for three days during the same week. Each time a fish is captured, it is given a unique fin clip or mark. The ratio of marked to unmarked fish allows us to estimate the total number of fish per mile. We record the lengths and weights on all cutthroat trout to track fish growth and estimate the number of pounds per mile in the river.

One of three sections of the Snake River are sampled each year. In 2019, a 5.1 mile section above Wilson Bridge was sampled on October 7, 8, and 11. Typically we try to conduct a population estimate on Snake River Cutthroat Trout every three years on a given section. Our management objective above Wilson Bridge is to have at least 250 Snake River Cutthroat over nine inches per mile. In 2019, this estimate was 604 fish, which is slightly higher than 522 in 2016.

The Snake River, and its watershed, is widely renowned for its excellence as a wild trout fishery and unmatched scenery. Truly a great place to fish, either by wading or from a boat, and the population numbers to show it.
Snake River Population Estimate, Continued...

Population estimates for Snake River Cutthroat Trout from a mark-recapture estimate on the Snake River above the Wilson Bridge from 2008 to 2019. Error bars depict standard error (±) for Snake River Cutthroat Trout ≥ 5.0 in.

Pounds of fish per mile estimates for Snake River Cutthroat Trout from a mark-recapture estimate for on the Snake River above Wilson Bridge from 2008 to 2019. Error bars depict standard error (±) for Snake River Cutthroat Trout ≥ 5.0 in.
**If You Build It:**  
**A story of Cutthroat Trout success in the Upper Gros Ventre**

The Upper Gros Ventre River Ranch Tributary Restoration Project was a Trout Unlimited lead partnership to reconnect and restore four tributary streams in the headwaters of the Gros Ventre River for native Snake River Cutthroat Trout and other riparian-dependent species. The Upper Gros Ventre River Ranch is located approximately 25 miles upstream from lower Slide Lake. The Ranch is surrounded by the Bridger-Teton National Forest (BTNF) and is located approximately 30 miles east of Grand Teton National Park. The 990 ac property, donated by retired U.S. Senator Herb Kohl (WI) to The Trust for Public Land, was transferred to the BTNF in 2017. Prior to the land transfer, TU worked with partners to better understand and restore the ecological function to this headwater tributary network.

![Map of the project implementation area located approximately 25 miles upstream from Lower Slide Lake in the Gros Ventre River drainage.](image)

An unused, dilapidated network of irrigation infrastructure, AKA “the Common Sense Ditch” caused dewatering and physical barriers to fish passage throughout this network of four Gros Ventre River tributaries. Over time, this loss of longitudinal and floodplain connectivity reduced important habitat for juvenile cutthroat trout within the watershed (historic data from WGFD and BTNF indicate that Lafferty Creek provided habitat for small Snake River Cutthroat Trout. In 2016, the project team identified the four impaired Gros Ventre tributaries: Jones, Lafferty, Lloyd, and Mud creeks for targeted restoration efforts. And now, after a century of land and water manipulation, four streams totaling 15.5 stream miles once again provide critical trout habitat and cold, clean water to the Gros Ventre River. Project implementation took place during the Fall of 2017, prior to the property’s transfer to the BTNF. Fisheries sampling concluded this past Fall of 2019.
Before the restoration work took place, all four creeks were sampled in late summer 2017 and no fish of any species were observed or collected (See table below). After the restoration work was complete, all 4 creeks were sampled in July 2018 and again in September 2019. Multiple Snake River Cutthroat Trout were found utilizing Lloyd, Lafferty, and Jones creeks in 2018. Despite sampling late in the season, cutthroat were observed using both Lafferty and Jones creeks in 2019, with some cutthroat observed jumping from the Gros Ventre River into Jones Creek. No fish were observed post restoration in No-Name Creek, as it goes dry below the road by mid-summer. No fish were found in Lloyd Creek in 2019, and very little water was reaching the Gros Ventre River that late in the summer. Mottled Sculpin were observed in Lloyd, Lafferty, and Jones creeks in both 2018 and 2019. Many of the sampled cutthroat were yearling size (4” or smaller), but healthy 7-8 inch fish were observed both years in Lafferty and Jones creeks.

<table>
<thead>
<tr>
<th>Year</th>
<th>No-Name Creek</th>
<th>Lloyd Creek</th>
<th>Lafferty Creek</th>
<th>Jones Creek</th>
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<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
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<td>0</td>
<td>3</td>
<td>15</td>
<td>8</td>
</tr>
<tr>
<td>2019</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>

The WGFD prioritizes projects that maximize resource benefits. This project area is now accessible by the public for hiking, hunting, and fishing. What is more, the work completed to restore season-round, cold water flows to this tributary network, will provide valuable juvenile rearing habitat for Snake River Cutthroat Trout. Connecting stream miles and ensuring instream flows is vital to the persistence of these sensitive species. Kudos to Trout Unlimited for this great project.

A young of the year Snake River Cutthroat Trout sampled from Lafferty Creek after completion of stream restoration work.
McNeel Feedground Fish Passage and Irrigation Improvement

Construction was completed on the Upper Hoback River on McNeel elk feedground in October 2018. Equipment mobilized the day after the Roosevelt fire travel ban lifted and construction took less than two weeks (photo below). A gravel push-up dam had historically been constructed each irrigation season using heavy equipment in the channel to manipulate flows. These structures cause downstream bank erosion and can be barriers to upstream fish movements. The Hoback River is an important Snake River Cutthroat Trout spawning system and so connectivity for fish to move from spawning and rearing habitats to holding habitats is extremely important.

The gravel push-up dam was replaced with a permanent rock cross vane and the irrigation ditch was outfitted with headgates (photo above). These upgrades should prevent the need for future push-up dam construction. The cross vane is constructed to allow for fish to move up and downstream, transport the river’s cobbles bed load, and also provide the necessary head to feed the irrigation ditch. This design has been used in rivers throughout Wyoming, from the Green to the Encampment, with great success. We are excited to have a stable, fish-friendly irrigation diversion on the map in the Hoback drainage and hope that the successes at this site translate to future projects throughout the region.

Looking upstream at the newly-constructed, stable cross vane diversion structure.
Each rock measures 5-7 feet in diameter!

Construction of the McNeel elk feedground irrigation diversion.
Fences Make Good Neighbors

In August of 2019, approximately 1,200 feet of modular, 6 foot high fence was built around a section of Horse Creek on the WGFD Wildlife Habitat Management Area and elk feedground. Volunteers from Trout Unlimited, Backcountry Hunters and Anglers, the USFS, and the Jackson community pitched in to complete this project which will have benefits for aquatic and terrestrial critters. The fence, which is made of recycled oil field drill stem pipe, is necessary to reduce the amount of time elk spend in the river bottom during the winter and to encourage the native riparian vegetation to recover. Many factors have worked together to cause severe bank erosion and channel shifting at the downstream extent of Horse Creek on the WGFD property. Reestablishment of deep-rooted vegetation will go a long way toward healing the erosive banks, along with some hands-on grading and planting to give the system a jump on its natural recovery potential.

In order to track the recovery of the system, some long-term monitoring protocols were put in place within the fenced off area. The first of these is called a “greenline” and consists of characterizing the vegetation growing immediately adjacent to the stream channel by the rooting depth and density of each species. Each species is given a “stability rating” which indicates how well the stream banks will be able to resist erosion. When the stream channel cuts into a high terrace and the new stream-side vegetation consists of sage brush and upland pasture grasses where willow and sedges once predominated, erosion is bound to follow. A bunch willow, such as Bebb’s (Salix bebbiana) or Geyer’s (S. geyeriana) might have a stability rating of eight or higher, whereas an upland pasture grass is more likely to have a rating of three or less.
Another method of monitoring changes in the riparian plant community is to track woody species recruitment and the amount of cover provided by woody species. Woody species in this area largely limited to narrowleaf cottonwood and several species of willows. In a situation where animal browse impedes the growth of woody plants, the ability of small seedlings thrive and recruit to yearling and mature plants is limited. Excluding animals from the site will allow the plants to naturally recover and increase plant survival, allowing individual seedlings to make it to adulthood.

Right now, Horse Creek willows show limited recruitment and cottonwoods show none. As plants increase in density and height, the amount of cover, or shade, they provide also increases. Estimating the percentage of cover provided by woody species across a belt transect is an indication of habitat quality and, of course, relates to stream bank stability. Woody species cover across the Horse Creek floodplain is estimated to be about 20%. We anticipate a much larger number in coming years.

Horse Creek is an important WGFD asset and we have always and will continue to work to ensure that it is functioning at a high level and offering opportunities for resource users. Between the Snake River Cutthroat Trout stream, the elk feedground, irrigated pasture and public access, this is another backyard gem. The area is open to public walk-in access from May 1st - November 30th and can be relatively easily accessed from the Camp Creek drainage.
Aquatic Invasive Species (AIS) Program

A Look Back at 2019

The Jackson/Pinedale AIS program experienced a busy year in 2019. The crew conducted 5,313 inspections over the course of the boating season. Of these inspections, 198 (3.7% of the total) were deemed high risk for transporting invasive species due to the waters they had last boated on during the previous 30 days. The crew performed 16 watercraft decontaminations to neutralize the potential threat these watercraft posed to our local fisheries and water resources. The AIS program continues to stress to boaters the importance of adopting “Clean, Drain, Dry” practices. Watercraft that are clean of mud and debris and contain no standing water pose no risk of transmitting AIS into our state waters.

Weekly watercraft inspection totals in the region during the 2019 check station season.

AIS sampling and monitoring was conducted on 15 waters in 2019. Plankton tows and water quality surveys were conducted at 45 sites to detect larval (veliger) mussels and to document temperature, pH, dissolved oxygen, conductivity, water clarity, calcium and hardness. Shoreline surveys were conducted at 48 sites to detect juvenile and adult mussels, crayfish, clams, snails, and aquatic plants. No new invasive species were detected during the 2019 field season.

Existing populations of New Zealand mudsnails were re-sampled in the Salt River (photo to the left) and upper Snake River. Distribution spread was not significant from the time of the initial introductions.
AIS Program, Continued…

2020 Watercraft Inspection Season

Per regulation, all watercraft entering Wyoming by land from March 1 through November 30 are required to undergo an inspection for AIS. In addition, an AIS decal is required for boats to legally launch on state waters. The inspection station located at the Alpine Port of Entry opened on May 2, 2020. Hours of operation at Alpine are Monday-Wednesday 7am to 5pm and Thursday-Sunday 7am to 7pm. The Salt River Pass US-89 check station south of Afton will open Memorial Day weekend and be open Thursday to Sunday 8am-6pm. Boat inspections in Jackson can be found year round at the Game and Fish regional office (420 North Cache St.) Monday to Friday 8am to 5pm. Calling ahead to schedule an inspection is highly recommended.

Boating Season during the COVID-19 Pandemic

As the country and the state grapple with the impacts of the COVID-19 pandemic, the AIS program is preparing its check stations to operate in our new reality. Family and household units will likely look to boating and fishing as appropriate activities to participate in while observing social distancing practices. Due to this, Game and Fish is anticipating its watercraft inspection stations to remain busy. Maintaining clean and mussel free fisheries and water resources continues to be a priority during the COVID-19 outbreak. We ask for your understanding and patience during this time. The AIS program will work diligently to complete your watercraft inspection in a timely manner. Please do not be surprised if you see AIS inspectors wearing masks and personal protective equipment (PPE). This for their safety and yours. We ask that boaters observe social distancing practice and follow instructions given by AIS inspectors in order to complete a thorough and efficient inspection. Communication by both parties will be key to our success in protecting our waters. We thank you for your understanding and hope you have a healthy and happy boating and fishing season.

Watercraft ready for inspection at the Teton Pass check station.
Important Dates to Remember in 2020

Fishing licenses are now valid 365 days from the date of sale instead of by calendar year, allowing you more fishing for the same price!

- March 1—November 30 — **AIS Inspections.** All watercraft entering from out of state must be inspected prior to launching in Wyoming.

- May 1 — **Winter Closures for Wintering Wildlife Lifted.**

- June 6 — **Jackson Kids Fishing Day.** Cancelled due to COVID-19. We look forward to the 30th Anniversary Celebration at R Park next year.

- June 6 — **Wyoming’s Free Fishing Day.** The Wyoming Game and Fish Commission has declared June 6, 2020 Free Fishing Day to coincide with the beginning of the National Fishing and Boating week. On this date, residents and nonresidents may fish Wyoming waters (excluding Wind River Indian Reservation and Yellowstone National Park) without a fishing license or conservation stamp.

- August 1— **Flat Creek on National Elk Refuge opens to fishing.** The National Elk Refuge is closed to fishing from November 1 to July 31. Fishing is permitted by the use of artificial flies only, and fishing is restricted to daylight hours.

- September 10-13 — **Jackson Hole One Fly.** The Jackson Hole One Fly Foundation hosts an annual fishing event to generate, manage and grant funding for projects and education which environmentally benefit the future of trout and fly fishing.

- October 1-31— **Jackson Lake closes to fishing.** Jackson Lake is closed to all fishing for the month of October in order to limit disturbance to spawning Lake Trout.

We welcome all questions and comments on this newsletter or about the fisheries resources within the Jackson Region. Please feel free to call or send an email to:

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