Green River Region Angler Newsletter

2022

Volume 17

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Fish Management in the Green River Region

It's our pleasure to update you on fisheries management in the Green River Region in this year's edition of the Angler Newsletter. We will provide you introductions to personnel new to the region, updates from the 2021 field season, highlight important public service announcements, and more.

The Green River Fisheries Region is the largest fisheries region in the state and one of the most diverse! The region has a little something for everyone, including trophy lake trout, native Colorado River Cutthroat Trout, Smallmouth Bass, kokanee salmon, Tiger Trout, and more.

We manage aquatic resources for *you*, the people of Wyoming. 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 below. Happy fishing!

The Green River Crew

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

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

Jessica Lockwood
Fisheries Biologist
307-875-3225 ext. 8618
jessica.dugan@wyo.gov

Wes Gordon
Green River AIS Specialist
307-677-1238
wes.gordon@wyo.gov

Wade Lowry
Evanston AIS Specialist
307-875-3225 ext. 8622
wade.lowry@wyo.gov

New to the Crew

New Green River AIS Specialist

In December of 2021, the Green River region of the Wyoming Game and Fish Department welcomed Wes Gordon back to the position of AIS Regional Specialist. Wes started working for the Department in 2010 as a seasonal fisheries technician while attending college.

Upon graduation from Utah State University, Wes accepted a job as a technician with the Wyoming AIS program in 2012. The following year, Wes moved into an AIS supervisory position at the Evanston Port of Entry where he spent two years before transferring to Green River. Wes has been an AIS Specialist for almost a decade, both in the Green River and Casper regions. Currently, Wes oversees staffing and operations at the Anvil Draw, Flaming Gorge, and Kemmerer watercraft check stations. He is also responsible for AIS sampling and monitoring, watercraft inspection/decontamination certification courses, and outreach.

A passion for the conservation and management of water and fisheries resources was instilled in Wes while spending his childhood outdoors camping, hunting and fishing with his family. When Wes is not busy protecting the waters of Wyoming from AIS, you will find him chasing kokanee or small Lake Trout on Flaming Gorge or Fontenelle Reservoir.

New Evanston AIS Specialist

Born in Utah, Wade Lowry completed most of his education before moving to Grand Junction Colorado, where he graduated from high school while taking class at Mesa State College. Later, Wade transferred to Wyoming Western Community College in Rock Springs, Wyoming and took classes in Marketing and Business.

Wade was introduced to retail and customer service at the ripe age of 11, helping at his uncle's pet store TJ's Pets and later co-owned a pet store with his Father in Grand Junction, Colorado. Little did he know at the time, selling fish and interacting in the public realm at a young age would come "full circle." Wade moved into many management and leadership roles throughout his career, eventually leading him back to working with fish and the public in the Wyoming Game and Fish's AIS program. Regardless, his passion working for the Game and fish, protecting Wyoming waters and serving the public runs deep.

In his off time, Wade can be found high on a mountain top camping, hunting, and fishing with his family and close friends or exploring the vastness this wonderful world has to offer. Wade enjoys picking up knowledge of new things. Wade has also served in the Uinta County Search and Rescue, worked in the scouting program, and helped expand and improve the Wyoming State Park in Evanston. Lastly, it is his humble honor to be the father of four.

How to: Advice for fishing in the summer heat

by Jessica Lockwood

Last summer was record breaking, but not in a good way for our aquatic resources. A mild winter and unusually warm spring set the stage for extremely low flows and hot summer temperatures in the Green River. These habitat conditions are problematic for fish for a number of reasons, especially for our coldwater salmonids. Low flows reduce the amount of habitat trout need to survive. Habitat like undercut banks, overhanging vegetation, and submerged woody cover that is often dewatered under low flow conditions. Additionally, the deep pools in a system have less water and provide less cold-water refugia. Just as it takes less time to warm up a cup of water versus an entire pot, low flows ultimately result in warmer water temperatures, and warmer water holds less oxygen, which fish need to survive. To make matters worse, fish metabolism also increases in warmer water increasing their demand for oxygen when there is less available. While we made it through what seemed like a summer-long heat wave without any major fish die-offs, current water conditions and weather forecasts indicate that we'll be experiencing another hot, low flow summer. For those who are still hoping to wet a line this summer, please consider adopting our recommendations described here for when and how to fish in low, warm water conditions.

First, we advise fishing in the early morning, when water temperatures are the lowest. In hot water temperatures (those approaching 75°F), trout become lethargic and stop actively feeding, and fish inactivity decreases your chances of hooking a fish. If you do hook a fish, the stress and acid buildup in the fishes muscle can cause an increase in delayed mortality (you use best release practices and the fish swims under their own steam but later dies); the probability of delayed mortality increases when fishing in warmer water temperatures. This strategy is good for the fisherman and the fish, as it increases the fisherman's chances of catching a fish and increases a fish's probability of surviving the experience. It's a good idea to carry a pocket thermometer, so you can take water temperatures throughout the day to determine when to wrap up your excursion, especially if you practice catch and release fishing. If water temperatures are 70°F or higher, we recommend stopping catch and release fishing completely.

Just as choosing the right times for fishing is important, so is practicing proper catch and release techniques to give trout the best chance to survive once released back to the river. If you are not planning on keeping what you catch, we recommend skipping the bait and instead using artificial flies and lures. Barbless hooks are easier to remove and cause less harm to the fish. Once you hook into a fish, play and land it as rapidly as possible. If a fish is too exhausted to hold itself upright, it has a poor chance of surviving once released. When you land your catch, it is extremely important to keep the fish in the water as much as possible and not squeeze it or put your fingers in its gills. Gently remove hooks to minimize injuries, and if you hook a fish too deeply do not try to remove the hook. Cut the leader if the fish looks like it will recover or consider keeping the fish as table fare.

Lastly, if you have a fishing trip to the Green River planned for mid or late summer, you may want to amend your plans. By June 1st last year, water temperatures in the Green River were exceeding 68°F on an almost daily basis, and water temperatures did not cool down until mid to late August. So before you head out, consider taking a trip to one of Wyoming's high elevation lakes and streams, where you and your catch can beat the heat. And as always, if you have any fishing questions on when, where, or how to fish in the region, you can always call the Green River Regional Office at 307-875-3223.

A biologist's perspective on derbies targeting nuisance species

By John Walrath

Some might say there are too many derbies, but many are tied to specific conservation actions that aim to improve our fisheries. Most water bodies in our region, like Sulphur Creek, Viva Naughton, and Fontenelle reservoirs, have one winter derby a year. The derbies at Sulphur Creek and Viva Naughton reservoirs are events for anglers to enjoy the outdoors while targeting trout and often get a lot of family participation. The derby on Fontenelle Reservoir focuses on the removal of Burbot. Flaming Gorge Reservoir is the only water body in our region that has multiple derbies occurring in winter and spring and has derbies sponsored by Wyoming and Utah entities. Many derbies on the Gorge focus on the removal of Burbot and Lake Trout less than 25 inches. The 2022 schedule of all fishing contests in the Green River region is provided in Table 1.

Half of the derbies on the Gorge are species specific and the contest objectives align with Department objectives. These contests are focused on species that behave invasively or are so abundant they are harming other species in the fishery. In these instances, the contests serve as a tool for the Department to encourage the removal of a large number of the target species, educate the public about the reason their numbers need to be reduced, and spread the word regionally and sometimes nationally. Often times the target species fitting this bill have liberal limits to increase harvest which makes traveling to the water body more appealing and is a great opportunity for anglers to go home with ample supply of quality table fare.

The Green River fisheries management crew (FMGR) currently partners with the sponsors of three fishing contests on Flaming Gorge Reservoir (Burbot Bash, Pupulation Domination and Buckboard Pupulation Control Contest) and one sponsor on Fontenelle Reservoir (La Barge Ding the Ling). The three spring multi-species fishing derbies (Flaming Gorge Derby, Hell on Reel Derby, and Ducks Unlimited Derby) also have a small Lake Trout category for participants. This category exists for the same reasons as mentioned previously with an added benefit of potentially reaching a broader group of anglers given the size of the derbies.

The two derby focal species, Burbot (regionally) and Lake Trout less than 25 inches (Flaming Gorge Reservoir), need to be reduced. Fisheries Biologists are concerned about the high abundance of both species and the impacts they are having on the other fish in the water

Table 1. Waterbody, event date, event name, and target species of all fishing contests in the Green River region for 2022. For some contests, the conservation target species is the sole purpose of the derby or one category within a multi-species derby.

Waterbody	Event date	Event Name	Conservation Target Species
Sulphur Creek Reservoir	Feb 5	Sulphur Creek Ice Fishing Derby	---
Viva Naughton Reservoir	Feb 19 – 20	Kemmerer Lions Club Fishing Derby	---
Fontenelle Reservoir	Jan 14 – 16	LaBarge Ding the Ling	Burbot[1]
Flaming Gorge Reservoir	Oct 20, 2021 – June 12, 2022	Buckboard Pupulation Control Contest	Lake Trout <25 inch[1]
	Jan 28 – 30	Burbot Bash	Burbot[1]
	Feb 12 – 13	Pupulation Domination	Lake Trout <25 inch[1]
	May 14 – 15	Flaming Gorge Fish Derby	Lake Trout <25 inch[2]
	June 12 – 13	Hell on Reels Fish Derby	Lake Trout <25 inch[2]
	June 25 – 26	Ducks Unlimited Fishing Derby	Lake Trout <28 inch[2]

1 – Species specific contest

A biologist's perspective continued

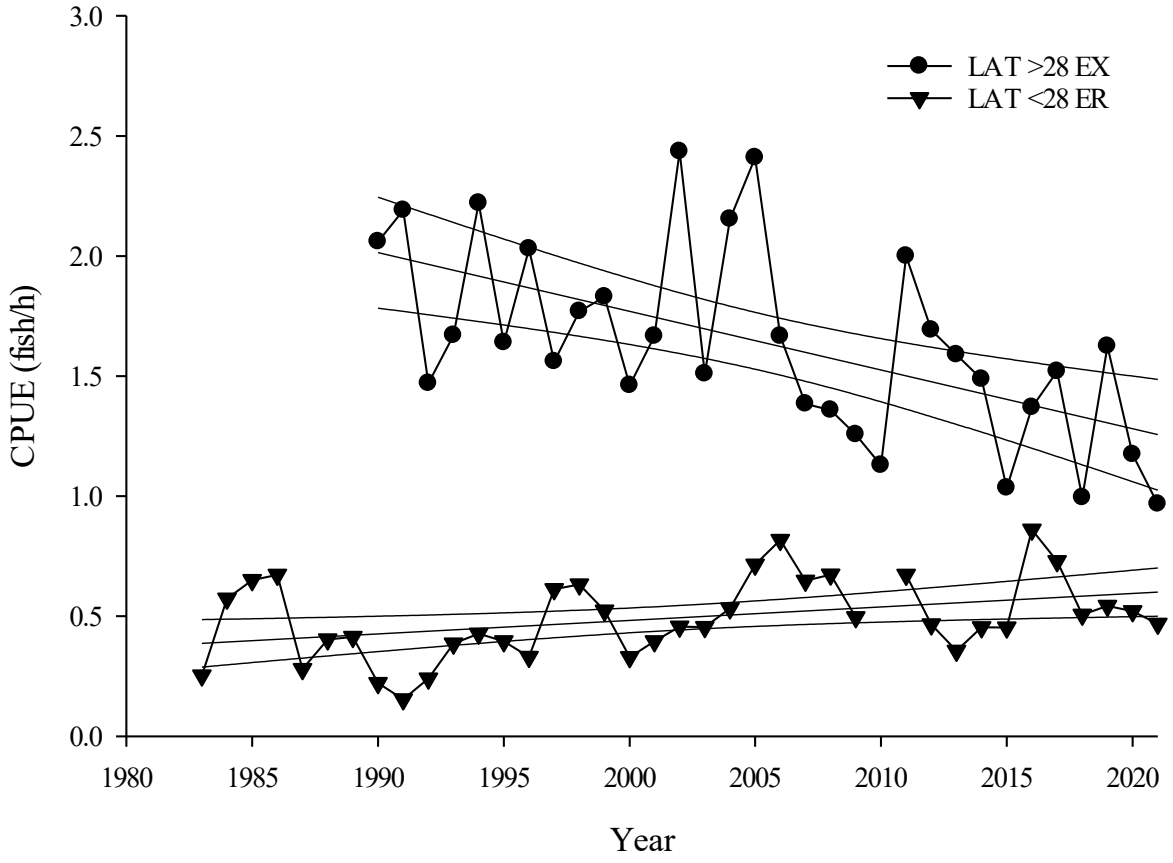


Figure 1. Mean CPUE (fish/h) of LAT ≥28 inches (●) from EX and LAT <28 inches (▼) from ER reservoir wide since 1990. Small LAT (i.e., <28 inches) were omitted from EX sets and trophy LAT (i.e., ≥28 inches) were omitted from ER sets. Curves around EX and ER means represent 95% confidence intervals. Utah data does not include sampling at Antelope Flats.

they share. In both cases, the Department has taken steps to liberalize limits to increase angler harvest. In the case of Burbot, which behave like an invasive species west of the Continental Divide, they were reclassified as a non-game species (allowing unlimited harvest) and we require anglers to kill them immediately when captured. This means that when an angler catches a Burbot, they can either keep it for consumption or legally dispose of it. In the case of Lake Trout <28 inches, the limit is 12 per day and 24 in possession. The regulation on Lake Trout >28 inches is very conservative with only one per day and in possession. We frequently encourage anglers to take advantage of the liberal limits.

A common question fisheries biologists receive is if fishing derbies are having an impact on the populations. Naturally, this is an extremely difficult question to answer. We know that since Burbot derbies started in 2010, nearly 54K have been removed. Although it is tough to quantify the impact of this number, we know those fish are not spawning and recruiting to the population. We also know that they and their progeny are not consuming crayfish or other sport fish. One of the greatest impacts for derbies is their encouragement for anglers to return outside of the tournament to target the species again and take advantage of liberal limits. As one could imagine, it is near impossible to quantify the annual harvest by anglers on the Gorge that participated in a derby but we know people do return and harvest additional fish.

Derbies focused on Lake Trout less than 25 inches are still in their infancy but growing in popularity. It will take a few more years to see any population level response. However, Burbot contests have been going on for much longer and

A biologist's perspective, continued

what we can definitively say is that between regulation changes, angler harvest, and natural processes, the population on the Gorge decreased dramatically in 2010 and has been kept in check at a lower abundance since. This is around the same time derbies started and regulation changes were made. It is our hope that with continued outreach and angler pressure, coupled with increased predation on Burbot by Smallmouth Bass, Bear River Cutthroat Trout, Lake Trout and Burbot (cannibalism) that we could see continued suppression.

Sometimes it helps to imagine what the fishery would look like now if we hadn't adopted the liberal regulations, promoted the Burbot fishery so strongly and partnered with derby sponsors. Department fisheries biologists are convinced there would be a much higher abundance of Burbot in the reservoirs had no action been taken. Their higher abundances would mean higher predation on sport fish, thereby creating poorer fisheries for anglers. The exact impact of Lake Trout and Burbot on other sport fisheries is still unknown and is currently being evaluated. However, even if one of either species consumed five sport fish and there was an arbitrary population size of 50,000; that's 250,000 fewer sport fish swimming around for anglers annually. Even without an exact number, every Lake Trout less than 25 inches or Burbot harvested is a savings to sport fish.

Ultimately, we hope that by partnering with contest sponsors when fish management and contest objectives align we can positively impact the Gorge by removing more fish and recruiting more anglers to the fishery. It's a win-win when the anglers are having a good time and helping to manage the fishery through targeted harvest. The over-arching goal is to remove enough fish, whether it be Burbot or Lake Trout <25 inches, to bring the whole fishery back into a healthy balance so all sport fish can flourish.

Many thanks to the contest sponsors (Flaming Gorge Chamber of Commerce, Buckboard Marina, and La Barge Activities Committee) for all their hard work and commitment to these successful contests and to the thousands of anglers that have participated in these contests over the years. We look forward to seeing you again at future events.

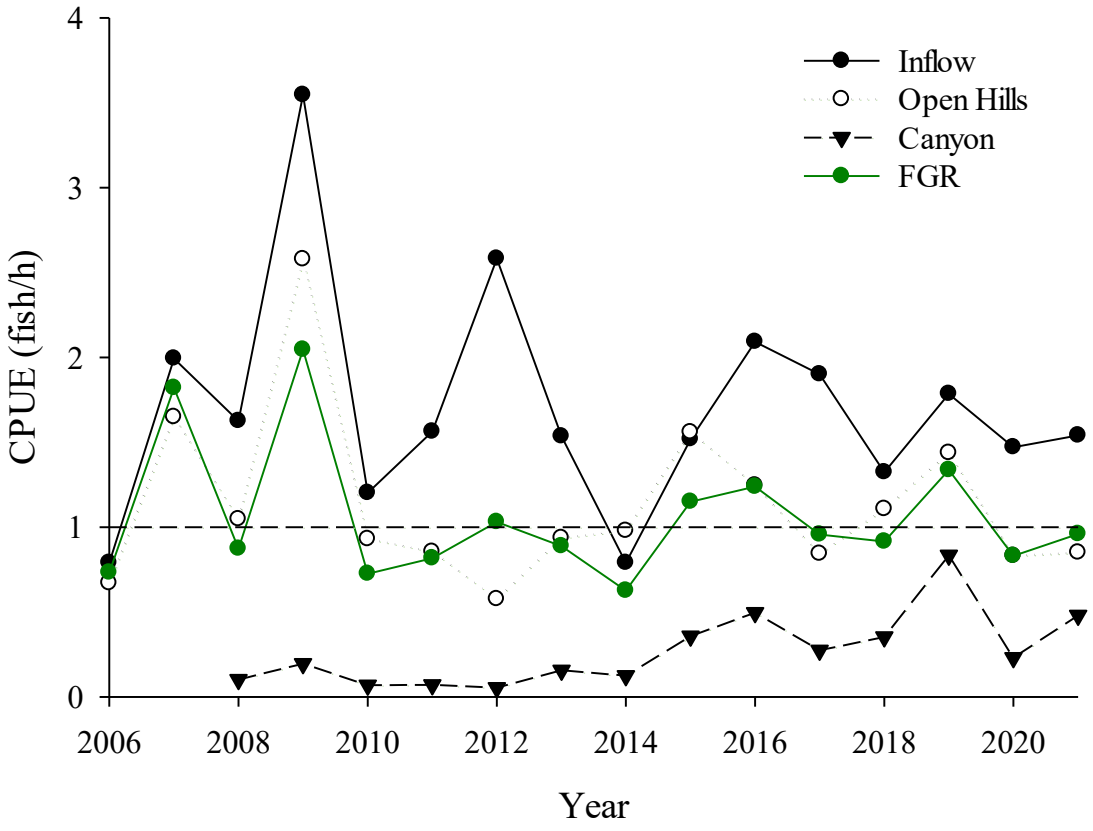


Figure 2. TM catch rates (fish/h) for BBT by region (Inflow (●), Open Hills (○), and Canyon (▼)) and reservoir wide (●) since 2006. Error bars represent one standard error. Straight dashed lined represents the management objective for BBT in the reservoir.

Attention Public: we need your help!

By Jessica Lockwood

One thing we all can agree on and be proud of is the state of Wyoming contains an abundance of natural resources. However, Wyoming Game and Fish personnel are few and cannot be everywhere. Luckily, you, the public, can help manage our resources by being the Department's eyes and ears and can keep Department personnel apprised of situations you see while enjoying our State's resources. Below are some brief stories that highlight wins for our resources because of the public's prompt response to situations they observed while out and about and others that ended in no action because of delays in the flow of information.

In the winter of 1994, WGFD received a report of dead trout in a little side channel on the downstream section of Dodge Bottoms. Because the report was timely, fisheries biologists were able to determine that rapidly reduced flows from Fontenelle Dam had trapped the fish in a pool in the side channel. The pool had become oxygen depleted, killing 56 quality to trophy size trout. As a result, WGFD in cooperation with Seedsdkadee National Wildlife Refuge fixed the side channel, so it flows at all release levels. The incident also helped to establish the current stable winter flows from October – March.

In July 2016, a concerned angler promptly told the Department about trout stranded in the canal that connects Big Sandy and Eden reservoirs. Because of the angler's quick thinking, WGFD was able to assemble a fish salvage crew and collect the remaining fish and return them to Big Sandy Reservoir, resulting in 255 BNT, 323 RBT, and 5 CCF being saved. The new irrigation district manager was approached about the situation and was open to the idea of turning the water off over a series of days to give fish a chance to return to the reservoir. If the incremental turnoff still resulted in numerous trout being stranded in the canal, the irrigation district was also open to looking into options for screening the outflow.

In the winter of 2019-2020, the WGFD fielded numerous complaints that no one could find yellow perch in Woodruff Narrows Reservoir. Fisheries Biologist suggested several different strategies for people to try and were at a loss as to why no one could find any perch. It was only when an angler called the office in February 2020 that it all made sense. During the conversation, WGFD learned the angler observed clouds of dead perch the previous July. The notification was greatly appreciated to help determine why yellow perch catch rates decreased substantially, but a more timely notification would have assisted biologists with the opportunity to determine the cause of the observed die-off.

In July 2021, the WGFD learned of the illegal release of goldfish into the Rock Springs Bitter Creek Dog Park Pond. The crew sampled the pond in August 2021 and determined the goldfish had been living and reproducing in the pond for at least a year; discussions with park patrons confirmed the goldfish introduction was not a recent event. Further reconnaissance has confirmed the presence of illegally stocked goldfish in other ponds in Rock Springs. Because WGFD was late in learning of the goldfish introduction, we are at a disadvantage in promptly responding to the situation and still don't know how widespread the introductions are and what the ultimate consequences of the introductions will be.

The above paragraphs are just a few examples illustrating how public reporting impacts our resources. All reports are taken seriously and we appreciate the public taking the time to inform us on their observations. The more prompt the notification, the better our chances are of having a meaningful impact on the situation. The Green River Region is the largest in the state and contains many waters and quality fisheries. We do our best to keep up with any important changes as they occur in our waters, but we can't make it everywhere each year. One of our most valuable resources for staying informed on important events in the region is you; the public. We urge the public to contact us when you observe anything out of the ordinary. We also want to thank those members of the public that do report events as they happen, because it allows us an opportunity to respond and make a difference.

New Fish Stocking Reports

By Jessica Lockwood

Please visit https://wgfd.wyo.gov/Fishing-and-Boating/Fish-Stocking to access stocking reports with information on where, when, and what species have been stocked around the state. Information is updated monthly, and historical stocking information is available. Click the links to view past stocking reports for 2018 and 2019 or create a custom report for a specific county, species, water, and stocking year. Reports can be exported as .csv files and saved for your convenience.

Stay vigilant for all AIS while recreating in Wyoming

By Wes Gordon

As spring begins in southwest Wyoming, folks are busy getting their waders, fly rods, and kayaks ready to hit the water. Before you go, be aware that a couple new species were discovered you should familiarize yourself with. These two new species are New Zealand Mud Snail (NZM) and Curly Pondweed (CPW), both of which were found in Flaming Gorge Reservoir last year. They are also both listed as Aquatic Invasive Species (AIS) in Wyoming.

New Zealand Mud Snails are native to New Zealand and were most likely introduced into the United States by ships from Europe. Since their introduction, they have been spread around the country by anglers, paddlers, and the transport of game fish. New Zealand Mud Snails are asexual and are all female clones, meaning it only takes one individual to start a new population. They are very prolific and can outcompete native snails, and overcrowd the existing invertebrate community. They can also have a negative impact on your favorite fishery. The presence of NZM could potentially impede the Department's ability to stock fish, if they were to get into one of our hatchery facilities.

New Zealand Mudsnsnails

The second newly discovered species, Curly Pondweed, is native to Eurasia, Africa and Australia. Populations now exist across most of the United States and Canada, including Wyoming. Curly Pondweed competes with native plants and can reduce the diversity of the vegetation community. It can also form dense mats, obstructing recreation and water delivery. Curly Pondweed is easily spread through fragmentation and rhizomes, one small fragment can start a whole new population. Additionally, CPW buds (turions) can remain viable up to two years. It is important to be aware of your surroundings and not move fragments of CPW from place to place in the same water or to new waterbodies.

Curly Pondweed

Waders, boots, decoys, fishing gear, kayaks, rafts and other hand launched watercraft, are all primary vectors of spread for NZM and CPW. It's important to stay vigilant and do your part. Be a good steward and do your best, to clean, drain, and dry your gear, after every use, every time.

Currently, our management efforts to control the spread of NZM and CPW focus around outreach and education. We want our sportsmen and recreationalists to be informed and to share their knowledge with others. The spread of these species and others can have an impact on all recreationalists and our environment. The AIS program in Wyoming is a great first line of defense, but we all have a part to play in preventing the spread of these species.

New Zealand Mud Snails and Curly Pondweed can be transported in mud on wading boots.

Prevent the spread of New Zealand Mud Snail and Curly Pondweed

By Wes Gordon

- Know where current populations of NZM and CPW exist. For Wyoming distribution of AIS visit the Wyoming Game and Fish Department (WGFD) website.
- Brush all mud and debris off your waders and gear when leaving a water, and if possible scrub with a mild detergent like 409 or a light bleach solution before recreating on another waterway.
- **Clean, Drain, Dry** your kayaks, rafts and other non-motorized watercraft. Transport your kayaks, canoes, etc. upside -down when possible.
- Remove all visible vegetation from your watercraft and trailer when exiting FGR or any other water. Be sure to discard any vegetation on dry land and not back into the water, as a single fragment of CPW can start a new population.

Stay vigilant for all AIS, continued

Wyoming's AIS regulations state any watercraft being trailered 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, all bilge plugs and water barriers are required to remain out and open during transport.

Wyoming is one of the few remaining states without any Zebra or Quagga mussels present 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 a list of inspection locations and suspect and positive waters visit the WGFD website.

While you are out enjoying all the great recreational opportunities Flaming Gorge has to offer, take note of and report any encounters of NZM or CPW. For questions, comments or concerns, or to report an AIS sighting, please contact the Green River Regional office at 307-875-3223.

Table 1. Summary of watercraft inspections completed in the Green River Region in 2021.

Inspection Type	Number
Total Inspections	26,115
High Risk Inspections	2,093
Decontaminations	523
Watercraft with Mussels or Shell Fragments	41

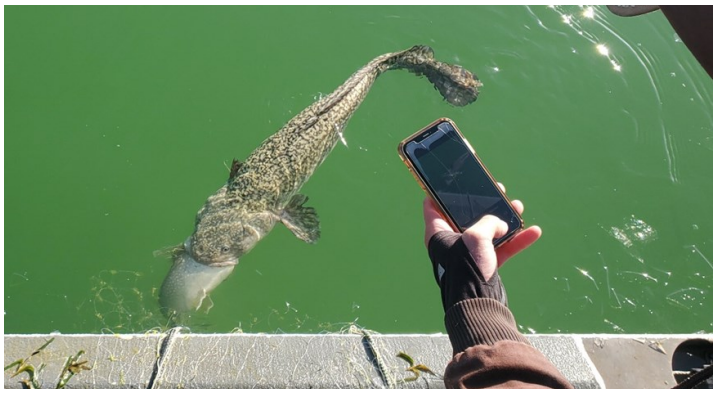
Research continues on Flaming Gorge Reservoir

By Travis Neebling

If you have read the past four or five Angler Newsletters, you've likely seen multiple articles highlighting the concerns of small Lake Trout in Flaming Gorge Reservoir. In summary, the Department is concerned that there may be too many small (less than 28 inch) Lake Trout and that as these fish become more piscivorous (i.e., prey on other fish) that the Kokanee population may suffer. In 2019, Travis Neebling, Reservoir Research Biologist for the Department began a collaborative research project with Drs. William Fetzer and Sarah Collins, and graduate student Chance Roberts, all with the University of Wyoming. Together, they trying to determine the most appropriate gears and sampling strategies for monitoring small Lake Trout. They are also mapping the food web in Flaming Gorge Reservoir, figuring out who is eating who, and at what size Lake Trout become piscivorous.

Netting occurred throughout the reservoir beginning in the summer of 2019 and concluding last spring. Right now, biologists are analyzing the data, looking at catch rates, and how catch varies by season and region of the reservoir. Biologists are also looking at the size, condition, and age of Lake Trout captured and how diet varies by these factors. We expect to have a detailed update in the next Angler Newsletter as well as some public presentations next winter.

Crews braved icy conditions in late March, 2021.



A 35 inch Burbot attempting to consume a 20 inch Lake Trout during netting.

Determining the origin of Kokanee in the Gorge

By Aaron Black

Kokanee waiting to be processed..

Although kokanee naturally reproduce in Flaming Gorge Reservoir, a large number are stocked annually by Wyoming Game and Fish Department, Utah Division of Wildlife Resources, and U.S. Fish and Wildlife Service hatcheries. The primary reasons for stocking are to ensure that the demands of anglers are met and to maintain a prey resource for Lake Trout. Previously, the natal origin (i.e., stocking vs. natural reproduction) of kokanee were unknown in the reservoir. For the last few years, a University of Idaho graduate research project has focused on identifying the natal origin of kokanee in Flaming Gorge Reservoir. The project was finalized in the fall of 2021. Identifying the natal origin of kokanee helps fishery managers determine stocking success and natural recruitment in the system.

The otolith is a hard, calcified structure located in the fish's head used for balance and hearing. Otoliths grow throughout a fish's life and accumulate material the same way the rings of trees are made. As otoliths grow they incorporate the chemicals from the water the fish is living in. Otoliths are essentially a record keeper of a fish's life. Scientists can analyze the otolith and broadly describe the areas a fish inhabited, how fast it grew, and its age.

The water at hatcheries in Wyoming and Utah have different chemical compositions than the water in Flaming Gorge Reservoir. This means the otoliths collected from a fish reared in a hatchery will have a different chemical composition than a fish born in Flaming Gorge Reservoir. This gives us the ability to identify if a kokanee was reared naturally in the reservoir or if it was reared in a hatchery before stocking. Using microchemistry analysis, we can identify the chemical composition of a particular section of the otolith representing its juvenile stage and match that to the chemical composition of the environment (i.e., water from Flaming Gorge Reservoir and hatcheries).

We used otoliths sampled from kokanee in 2018 to 2020 to determine the natal origin of kokanee in Flaming Gorge Reservoir. Suspended gill nets were set throughout the reservoir at various depths to randomly sample the kokanee

Retrieval of suspended gill nets..

Sectioned otolith.

population at large. Recreational creel surveys were conducted at popular boat ramps around the reservoir to sample angler harvested fish. Comparing the natal origin of the population at large (i.e., from suspended gill nets) and angler harvested fish allows us to determine the proportion of each in the population as well as their vulnerability to anglers. In total, 319 kokanee otoliths were analyzed from fish collected using suspended gill nets, and 281 kokanee otoliths were analyzed from angler harvested fish. Comparisons of natal origins were broken down by year class to identify the strength of a given cohort. Hatchery-produced kokanee represented 20 to 51% of the population by year class (Figure 1). Similarly, hatchery-produced kokanee represented 18 to 50% of the recreational creel by year class. This suggests that regardless of the natal origin, natural and hatchery-produced kokanee are equally vulnerable to anglers. Overall, this information will be used to guide management decisions to further improve the kokanee fishery in Flaming Gorge Reservoir.

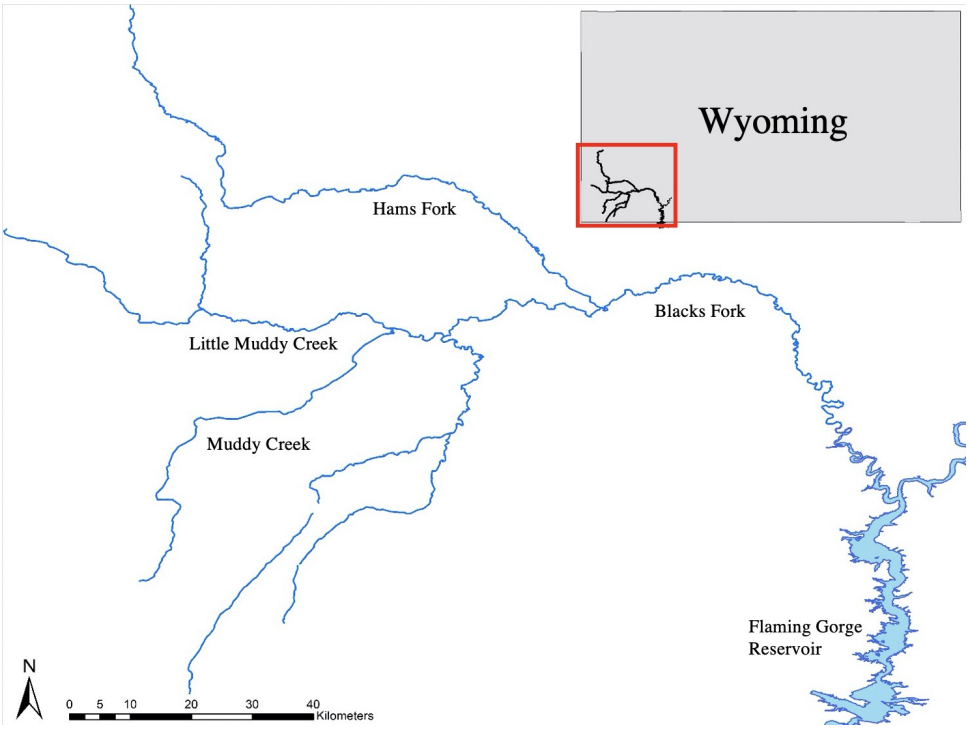
Tracking native fish movements in the Blacks Fork

By Alissa Tiemann

As mentioned in previous newsletters, we continue to research the movement behavior of the Roundtail Chub and Flannelmouth Sucker, two native fish species found in only a few isolated tributaries of the Green River. 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. However, today, they only occupy approximately 45% of their historic range as a result of habitat alteration and invasive species such as the White Sucker. Although not known as a target for sportfishing in Wyoming, they are an important part of the aquatic ecosystem.

Due to concerns about declining fish populations, the Wyoming Game and Fish Department began documenting the distribution of these two species throughout the Blacks Fork, Hams Fork and Muddy Creek drainages. To understand fish movement within the subbasin, biologists sampled each drainage and implanted fish with a passive integrated transponder (PIT) tag. These tags uniquely identify each fish allowing biologists to track their movements using nine PIT tag antennas installed around each priority tributary within the study area. Antennas were installed flush against the substrate, allowing tagged fish to pass over the array, providing movement data.

As of 2020, a graduate student through the University of Wyoming took the lead on the project to further assess the movement behavior of these fish. This research found most Roundtail Chub adults only make localized movements within a smaller home-range (the area an animal uses on a regular basis). However, a few individuals travel longer distances for spawning, typically from the lower Hams Fork to the Muddy Creek tributary. In contrast, during some years, almost half of the Flannelmouth Sucker population exhibited predictable long-distance spawning movements from the lower Blacks Fork into the Muddy Creek tributary. She also found, both species tend to display site fidelity, meaning if a fish survives this arduous spawning journey, they will return to almost the exact location from which they left. Additionally, tagging drainage and fish life stage are directly linked to when and why these fish are moving throughout the subbasin. This project will help identify important habitat requirements and inform future management and conservation efforts for native fish populations.



Map of the major tributaries of the Black Fork Drainage. PIT antennas were installed at the confluences to monitor fish movements.

Roundtail Chub (left) and Flannelmouth Sucker (right) are native to southwest Wyoming.

A new beginning for Big Sandy Reservoir

By John Walrath

Recreationalists might have noticed that Big Sandy Reservoir had an ample amount of sandy beach in 2021. The reservoir draw down presented an opportunity for the Department to eradicate illegally introduced Burbot, a source population of non-native White Sucker, and restart the trout fishery. After coordination with the Bureau of Reclamation, Big Sandy Reservoir was chemically treated September 22–24, 2021.

Opportunities to chemically treat a large reservoir are extremely rare. On its own, Big Sandy Reservoir is not a good candidate for one either. The main reason being that the species sought for eradication would still be present in the river above and would repopulate the reservoir. Adding to that, reservoir treatments are often times cost and labor prohibitive. However, in the fall of 2020, a native sucker restoration project was scheduled for the Big Sandy River. The river treatment sought to eradicate Burbot, White Sucker, and Longnose Sucker from the system, the same undesirable species present in the reservoir. Coincidentally, the Bureau of Reclamation was also finalizing plans to enlarge Big Sandy Reservoir during the same timeframe as the river treatment. This presented an opportunity to not only restore the river above the fish barrier for native suckers but also remove the Burbot and non-native suckers from Big Sandy Reservoir. The planned river treatment eliminated the concern that undesirable fish would recolonize the reservoir from upstream populations and the reservoir enlargement would lower the reservoir to 1/3 its typical volume in the fall; dramatically decreasing expense. The opportunity to treat both the river and the reservoir and accomplish several fisheries goals was too great to pass up.

Treatments require a lot of planning. Each chemical treatment also has a defined treatment area. Any chemical leaving the treatment area is typically neutralized with potassium permanganate at what is called a detox station. Even for a small reservoir with a steady inflow and outflow, a detox station would have to be operated, 24 hours a day, for four to six weeks, maybe longer to insure all the chemical leaving the treatment area has either been neutralized or degraded to safe levels before reaching downstream fish communities.

Under normal operation, Big Sandy Reservoir stops releasing water around the middle of September. This means there is no water leaving the reservoir.

Loading barrels of powdered rotenone onto a jet boat to be used on Big Sandy Rerservoir.

A new beginning for Big Sandy Reservoir continued

Combining the river and reservoir treatment with no outflow from Big Sandy Reservoir meant there was no need for detox stations at either treatment. All the applied chemical would stay within the defined treatment area without risk of harming fish communities below. This significantly reduced the cost of both treatments by eliminating both the need to purchase potassium permanganate and the labor cost associated with operating a detox station for a month or two.

Historically, Brown Trout fishing in the reservoir was phenomenal. Many local anglers have frequently made reference to the days of trophy Brown Trout and how poor in comparison they felt the fishery was now. Burbot were also illegally introduced into the reservoir in the early 1980s. Burbot directly affected trout in the system through predation and indirectly by consuming prey items like crayfish that are also important forage for trout. White Sucker constituted much of the fish biomass in the reservoir and would be a major contributor to water turbidity by displacing sediment as they feed on the bottom. They also compete directly with the stocked trout by grazing on the zooplankton the trout depend on for survival and growth. Between Burbot predation and a large proportion of the biomass in the reservoir being suckers the stocked trout struggled to produce a quality fishery. Anglers often commented on high catch rates of suckers and poor catch rates of trout. They would even ask us if we had already treated the reservoir, as a way of reasoning why they caught no fish.

Anglers should know the Department is dedicated to reestablishing a trout fishery and that it will take a couple years to do so. The Department is already making plans to stock the reservoir this spring with 22,500 Rainbow Trout at six inches and 22,500 Brown Trout at four inches. These fish will be around 10-12 inches by spring 2023. Anglers should also be pleased to hear that ~1,500 Channel Catfish at an average size of 4 inches were already stocked this spring. Overall, the chemical treatment and additional water storage in the reservoir should make for improvements in water quality and angler opportunity. We are optimistic now that the Burbot and White Suckers are gone, the fish we stock will create a quality fishery that anglers will enjoy while taking in the scenery around Big Sandy Reservoir.

Spray crew applies rotenone to an oxbow pond above Big Sandy Rerservoir.

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"Conserving Wildlife - Serving People"

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."