

2015



Cody region diversity and access - *Craig Amadio*

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Thanks For Reading!

Greetings and welcome to another issue of the Bighorn Basin Angler Newsletter. This annual newsletter is dedicated to the aquatic resources in the Wyoming Game and Fish Department's Cody Region. Within this issue, we'll highlight popular fisheries as well as interesting projects and conservation issues.

Our region spans from the boarder of Yellowstone National Park to the Bighorn Mountains and has some of the most diverse fishery resources in the state. Whether you're seeking Yellowstone cutthroat trout and brook trout in mountain streams or sauger

and shovelnose sturgeon in the Bighorn River, this region has a little something for everyone!

Of course we also have our fair share of problems to deal with like illegally introduced walleye in Buffalo Bill Reservoir and the threat of aquatic invasive species to name a few. You will read more about these problems later in the newsletter.

Another important issue we will be working hard to address in the near future is public access. Fortunately we have a lot of federal land and open access in the region, but we are always looking to make things better. One area for improvement is floating access. This spring we

will be installing a new boat ramp and improving the parking area for anglers to enjoy at the Livermore public fishing area on the North Fork Shoshone River. We have identified a number of other potential access development projects for the North and South Fork Shoshone, lower Shoshone, and Bighorn rivers. Obviously a limiting factor for developing these areas is funding. We want to make sure to spend money wisely and in places where anglers will benefit most, so give us your opinion. Where would you like to see improved access opportunities?

We manage aquatic resources for *you*, the people of Wyoming, so your input about where you might like to see improved public access or any other fishing related issues is very important and we appreciate your comments. Please feel free to contact us at 307-527-7125, or using the information provided on the last page of the newsletter. Happy fishing!



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A future of cutthroat trout in the North Fork Shoshone River Drainage - Jason Burckhardt

Yellowstone cutthroat trout, the only species of trout native to this part of Wyoming, have disappeared from much of their historic habitat. There are several human causes of cutthroat trout declines, but the greatest threat to their long-term persistence is the introduction of non-native trout. Across the range of cutthroat trout, brook trout, brown trout, and lake trout have been introduced that compete with and prey on the cutthroats. Rainbow trout not only compete with cutthroats, but also hybridize with the cutthroats, compromising their genetic integrity. In the North Fork Shoshone River drainage, Yellowstone cutthroat

trout historically occupied over 260 stream miles. Introduced rainbow trout have hybridized with Yellowstone cutthroats throughout the drainage.

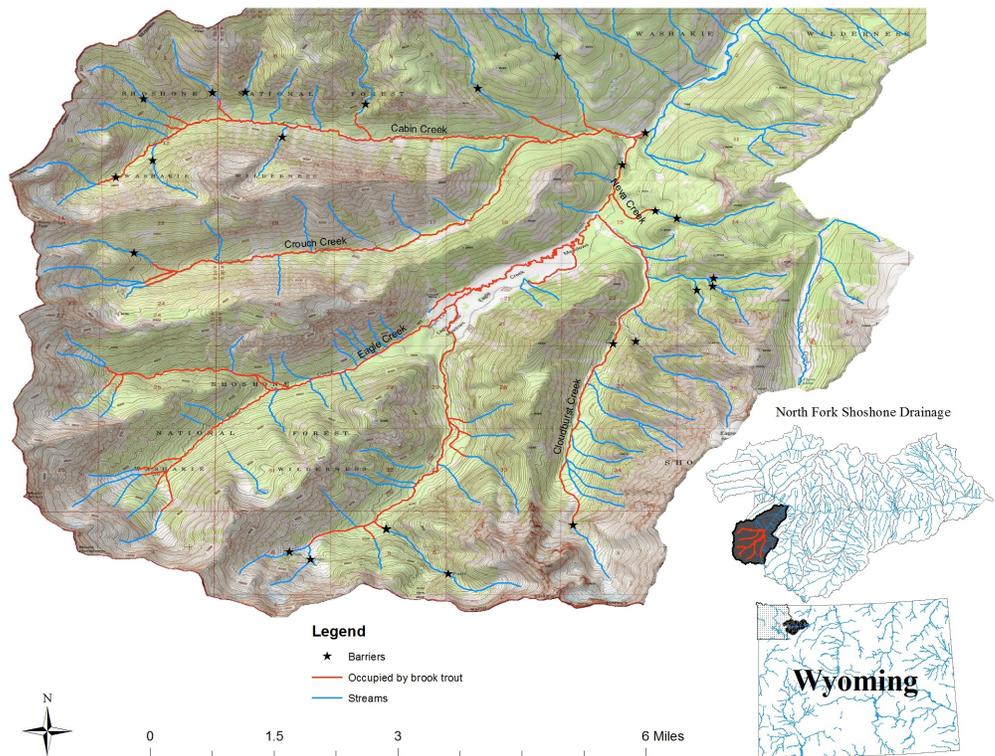
To ensure the long-term persistence of Yellowstone cutthroat trout we need to secure or establish populations free from the invasion of non-native trout. Isolating cutthroat trout populations in the headwaters of streams is the most common way to secure these populations. There are a number of locations where barriers have been constructed and

non-natives have been removed from above these barriers to secure habitats for cutthroats. An alternative to building barriers (which are expensive and prone to fail) is utilizing existing barriers (waterfalls) and completing restoration activities upstream from these natural geologic features.

The Eagle Creek headwaters, in the North Fork Shoshone River drainage, provides a substantial amount of contiguous habitat above a natural waterfall barrier that would prevent invasion of

non-native trout. This area is currently occupied by brook trout, so we are proposing to chemically remove the existing brook trout fishery and restock with native cutthroat trout. This entire area is within the Washakie Wilderness of the Shoshone National Forest. We will be working with the Forest to conduct an environmental assessment for this project, and conducting public outreach in conjunction with this effort. If you have questions or would like further information, please call the Cody Regional office .

“The Eagle Creek headwaters provides a substantial amount of contiguous habitat above a natural barrier that would prevent the invasion of non-native trout.”



Over thirty miles of habitat could be restored to native Yellowstone cutthroat trout above a natural waterfall barrier on Eagle Creek, in the North Fork Shoshone River drainage.



Shovelnose Sturgeon in the Bighorn River — To stock or not to stock? - Sam Hochhalter

Shovelnose sturgeon plied the muddy waters of the Bighorn River each spring for thousands of years on their annual migration from the lower Yellowstone River in Montana to spawning grounds in the Bighorn, Nowood, and Greybull Rivers in Wyoming. After spawning, these fish would reverse the several hundred mile migration.

When construction of Yellowtail Dam began in March 1963, the sturgeon in the Bighorn River system had returned to the lower Yellowstone months earlier and their annual migration route to spawning habitat in the Bighorn was blocked—sturgeon were extirpated from the Bighorn River system in Wyoming.

Beginning in 1996, Wyoming Game and Fish in cooperation with Montana Fish, Wildlife and Parks and Garrison National Fish Hatchery began collecting eggs from shovelnose sturgeon in the Powder River, Montana to begin reintroducing sturgeon to the Bighorn River. Nearly 20 years later, these efforts have resulted in over 600,000 fry and fingerling sturgeon stocked into the Bighorn River and adults are now relatively common throughout the system. In fact, the new state record shovelnose (10 lbs 4 oz.) was caught out of Big Horn Lake last summer.

It's apparent that our stocking efforts have been successful and we now have shovelnose available to anglers throughout the Bighorn River system. But do we need to continue stocking or are these fish able to sustain themselves through natural reproduction? As it turns out, this question is not so easy to answer.

Sturgeon are unique not just in physical appearance but also in their reproductive strategy. As mentioned above, adult sturgeon embark on lengthy spawning migrations that coincide with increasing river flows in the spring. After spawning, eggs hatch in just a couple of days and the embryos begin drifting downstream. How far embryos drift depends on water temperature and velocity and, in the case of rivers with downstream reservoirs, this distance can determine the fate of these tiny fish. If embryos drift into the reservoir prior to being able to maintain their position in the river (i.e., swim) they will perish. If they are able to swim before reaching the reservoir, they have a great chance of surviving.

This dynamic is what has prevented pallid sturgeon from successfully reproducing throughout the Missouri River and may prevent shovelnose from naturally reproducing in the Bighorn River.

So, to answer the question of whether or not shovelnose are successfully reproducing in the Bighorn, we need to know where they are spawning and how many miles of river are in between the spawning sites and the reservoir.

This summer we are initiating a multi-year telemetry project where we will tag fish and track them using a radio signal to document seasonal movement patterns and to identify spawning sites of adult shovelnose. We will also be sampling drifting embryonic sturgeon to estimate development rates and drift distances. Updates on project findings will be provided in future angler newsletters.



Eggs from shovelnose sturgeon in the Powder River, Montana are sent to Garrison National Fish Hatchery in North Dakota where they are raised to fingerling size and then stocked throughout the Bighorn River, Wyoming.



After 20 years of stocking, adult shovelnose sturgeon are now found throughout the Bighorn River system.



What is the future for trout in Buffalo Bill and the North Fork Shoshone? - Jason Burckhardt

“We are beginning a project to determine the feasibility of removing walleye in Buffalo Bill Reservoir.”

Buffalo Bill Reservoir is a unique Wyoming fishery in that it is a large reservoir that is not stocked with fish raised in a hatchery. The trout fishery is sustained by rainbow and cutthroat that spawn primarily in the North Fork Shoshone River drainage. Upon hatching the trout that are spawned in the North Fork tributaries migrate to Buffalo Bill Reservoir where they can grow and mature, feeding on the tiny crustaceans

known as zooplankton. Within Buffalo Bill Reservoir these trout grow quite rapidly.

In 2013 we began a project in conjunction with researchers at Colorado State University to determine the predation impacts that an expanding lake trout population and a recently (illegally) introduced walleye population might have on the trout fishery of Buffalo Bill Reservoir, and the North Fork Shoshone River drainage. What we’ve learned is that both lake trout and walleye are preying on trout in the reservoir, however Buffalo Bill Reservoir is much

warmer than is optimal for lake trout and during the summer months most lake trout seek refuge from those warm temperatures by descending into the depths of the reservoir. This phenomenon separates the lakers from the other trout and has probably been the reason that trout have persisted in this system with lake trout for the past 80 years.

Trout comprise a larger proportion of the diet of walleye in Buffalo Bill Reservoir. Temperatures never get warm enough for optimal growth of walleye, but unlike lake trout, they can occupy the same habitat as trout throughout the year. What this means is that walleye have a greater consumptive capacity than lake trout.

Unfortunately the walleye population in the reservoir continues to grow, so the full predation impacts from this introduction have yet to be realized.

As the walleye population grows so grows the threat to this trout fishery. Because of this we are beginning a study with researchers at Montana State University looking at the feasibility of suppressing walleye in Buffalo Bill Reservoir. We will be examining walleye the response of the walleye population to a variety of removal levels and evaluating the cost/benefit of various management-action scenarios.



Trout are a large component of trophy lake trout diet like the one in the lower photo, but there are very few large lake trout in Buffalo Bill, so their effect on the trout population is minimal. Trout are also a large component of walleye diet and as their population expands, so to will their affect on the trout population.

How can you help trout in Buffalo Bill? Keep some walleye... - Jason Burckhardt

One common question we get asked is where can we catch the walleye in Buffalo Bill Reservoir? There are a few places we have identified in the reservoir where walleye congregate to spawn. The most notable location is along the east shore of Buffalo Bill Reservoir, at the base of Cedar Mountain and along the North Fork dike. After spawning the walleye tend to congregate in warmer and shallower areas of the

reservoir especially in the South Fork arm and in the vicinity of the dust abatement dike in the North Fork arm of the reservoir.

Anglers are successful catching walleye in five to 15 feet of water with crankbaits and other lures that imitate small fish. Fish, especially trout, were the most common item in walleye stomachs.



Here are the locations we have found spring concentrations of walleye.

Growing pains on the Bighorn River - Sam Hochhalter

It's no secret that the trout fishery on the Wedding of the Waters section of the Bighorn River has been nothing shy of fantastic the last handful of years. And for better or worse, the word on this fishery has spread well outside the Big Horn Basin. In fact, I am amazed at the diversity of license plates in the parking lot on weekends. It is not uncommon to see vehicles from Colorado, Utah, Montana mixed among the Fremont, Teton, and Natrona county plates.

The increased use on this section of river has raised concerns among some anglers that excessive harvest and increased catch-and-release mortality have negatively impacted the trout population in recent years. Below is a look at the abundance and size structure of this trout population over the last decade or so. I'll let you make your own conclusions about how this population is weathering the increased use.

Abundance:

The number of trout per mile of river is a key metric used by biologists and fishermen alike to gauge the status and quality of a fish population. A glance at Figure 1 at the top-right shows six years of fairly stable trout abundance at around 3,000 trout/mile with the highest abundance ever recorded for this population occurring in 2014.

To put this number in perspective, this trout population is second only to the Grey Reef section of the North Platte River in terms of trout abundance in Wyoming, and is more than three times the number of trout per mile com-

pared to the North Fork of the Shoshone and the upper Green River.

Size Structure:

It's not just the abundance of trout in the Bighorn that makes the fishery impressive. Relatively fast growth rates promotes a fairly large size structure in both the rainbow and brown trout populations. The percent of rainbows that are 16 inches in length or longer has increased steadily over the last six years from 17 percent in 2009 to a high of 54 percent in 2014 (Figure 2).

Keys to Success:

Trout management in the Bighorn River has been a work in progress for nearly two decades. Perhaps the biggest hurdle to overcome in order to produce the abundance and size structure of trout realized today is management of fine sediment. Fine sediment suffocates incubating trout eggs and reduces invertebrate productivity. Annual spring flushing flows help transport accumulated sediment downstream which results in improved wild trout recruitment and increased invertebrate production. These flushing flows are the result of negotiations and cooperation between Game and Fish and the Bureau of Reclamation.

Several studies found that stocking rainbow trout at a size of six inches or longer before mid-July was necessary to ensure survival through the winter. Meeting this benchmark has helped improve the effectiveness of our stocking efforts. We will continue to stock 16,000 rainbows and 8,000 Snake River cutthroat trout annually in this section of river.

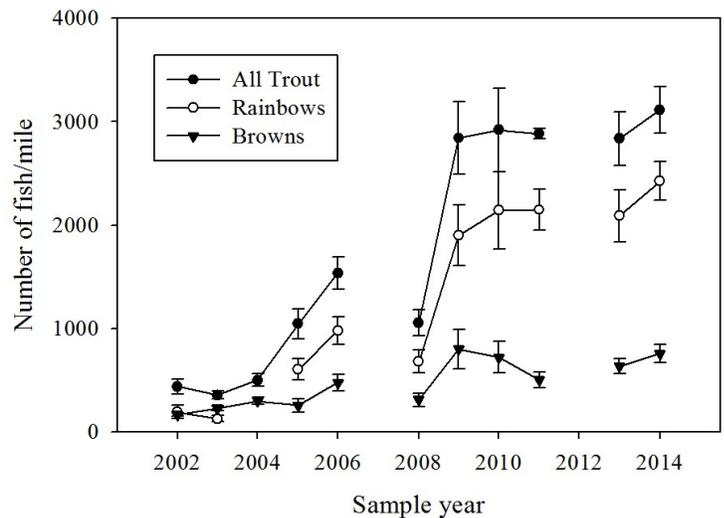


Figure 1. Trout abundance shown as the number of fish/mile for the Wedding of the Waters section of the Bighorn River since 2002.

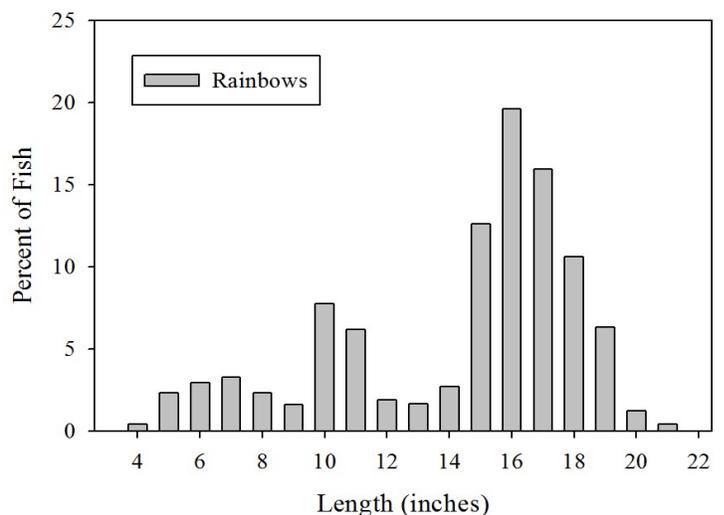


Figure 2. The size structure of the trout population for the Wedding of the Waters section of the Bighorn River in 2014.

Managing fine sediment in the upper Bighorn River, specifically flushing it downstream, is key to maintaining a robust trout population. The photo shows the confluence of Buffalo Creek and the Bighorn River.



Renner Reservoir – starting from scratch, kind of - Sam Hochhalter

The winter of 2014 delivered a stiff blow to the fish populations in Renner Reservoir. Prolonged ice and snow cover resulted in one of the most severe winterkills that this reservoir has experienced.

Sampling efforts in May of 2014 found only eight hybrid sunfish, in years past we would normally sample well over 1,000 sunfish and hundreds of largemouth bass. Another disappointing finding is that we lost most of the grass carp population as well.

The few remaining hybrid sunfish pulled off a huge spawn and sampling in August found hundreds of one inch sunfish in addition to a handful of “survivor” sunfish. We again did not capture any bass in August despite stocking over 17,000 fingerling bass in July. What happened to the stocked

bass remains a mystery.

After the August sampling we were faced with the question of what now? All we knew is that we were on the fast track to have nothing but stunted sunfish in Renner and not much of anything else. It was obvious that we needed a predator that could serve as sunfish control and as a target fish for anglers. Largemouth bass and catfish filled this role in years past but weren't all that effective at controlling the sunfish. We will continue to stock bass in the coming years but we also felt that a more aggressive approach to sunfish control was needed. With this in mind, we stocked 250 tiger musky in mid October last year. If these tiger musky can make it through the winter they should grow like gangbusters.

Another option being considered is draining the reservoir and starting over. The size structure of the bass population in Renner was at it's best in the mid 1990's, before the introduction of hybrid sunfish. During this time, high angler harvest rates combined with the annual removal of small bass by Game and Fish biologists kept the population from stunting. With this in mind, the best option for revitalizing the bass population

in Renner would be to start from scratch. Draining the reservoir to remove all fish, then restocking with bass and perhaps a few tiger musky is likely the best solution to the current problems at Renner. Expect to hear more about the potential draining of Renner this next winter. As always, we are very interested to hear your thoughts. Please let us know what you think should happen at Renner.



Tiger musky stocked in Renner Reservoir last fall.

Shoshone River – winter flows lead to great fishing - Jason Burckhardt

“One key to maintaining the Shoshone River fishery is maintaining suitable winter flows.”

The Shoshone River, below Buffalo Bill Dam is one of the most productive trout fisheries in the region, surpassed only by the Big-horn River near Thermopolis. This river generally maintains a trout population between 2,000 and 3,000 trout per mile.

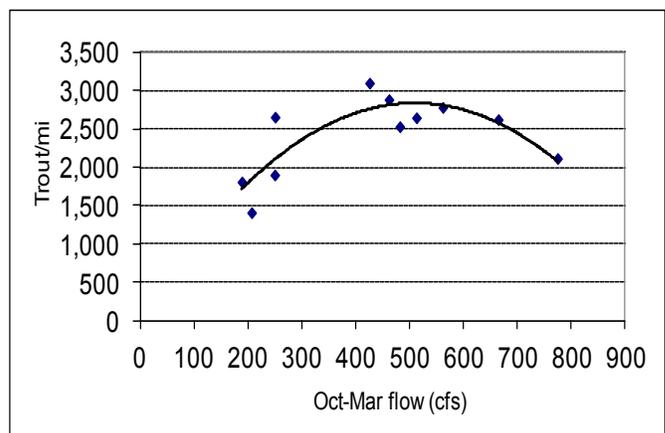
The river is particularly known for providing winter angling opportunities. The combination of water being released from Buffalo Bill Dam and the addition of warm water from DeMaris hot springs keeps water temperatures warm enough for fish to be active throughout the winter. Turbidity limits fishing through much of the summer.

The Shoshone River from Buffalo Bill Dam to Corbett Dam is managed for wild brown trout and stocked cutthroat. Rainbow trout in this section of river generally come from spill events out of Buffalo Bill dam. Spawning habitat limits natural reproduction of rain-

bows and cutthroats in this section of river.

One key to maintaining the fishery in the Shoshone River is maintaining suitable winter flows. Studies have shown that Buffalo Bill Dam releases of 350 cubic feet per second (cfs) resulting in approximately 420

cfs at the Shoshone River gauge after the addition of water from the hot springs, provides the most usable habitat for trout in the Shoshone River. Last years October-March releases were 480 cfs and we estimated 2,532 trout per mile.



The relationship between the population of trout in the Shoshone River and previous winter October through March flows.

FOREVER WILD

families

“Volunteers are critical to the success of Forever Wild Families and anyone who wants to pass along their knowledge and love of fishing can get involved.”

Passing along our outdoor heritage - Tara Hodges

Forever Wild Families, the Wyoming Game and Fish Department's newest hunter and angler recruitment program is in its second year in Cody and is working hard to pass along our outdoor heritage to a new generation.

Forever Wild Families provides a safe environment and patient mentors for families with little to no previous hunting or fishing experience. Over the course of a year, participants “learn by doing” by participating in a series of workshops designed to teach skills associated with hunting, fishing and other outdoor activities. Participants who desire to recreate outdoors learn skills to do so safely, ethically and (eventually) independently.

For each outing, Game and Fish staff and volunteers provide equipment, teachers and the expertise of “where to go” and “what to do”.

We kicked off the year with fishing for cutthroat trout at Hogan Reservoir north of Cody and plan to fly fish next. This year, families have been especially interested in fishing and as the year progresses, we plan to take advantage of the great fishing opportunities the Cody area has to offer.

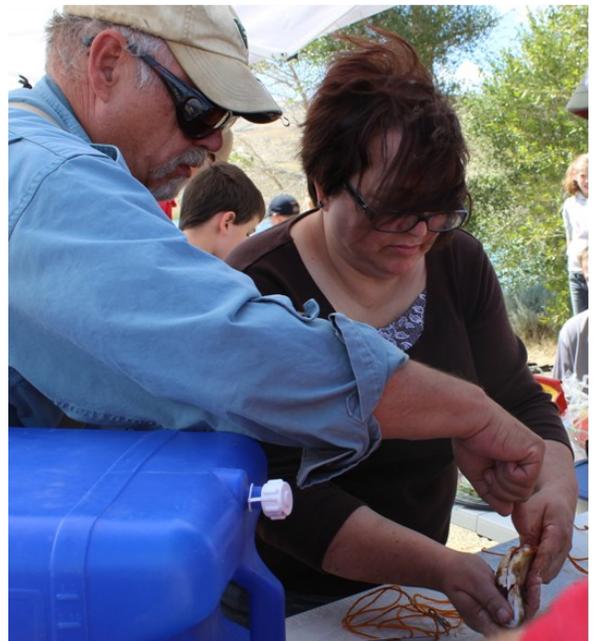
If you are new to fishing or hunting, it can be pretty daunting to learn. Many people simply do not know what to do or where to go, or maybe they do not want to make the investment in equipment before trying it out. Forever Wild Families

minimizes these barriers. Once folks have positive and successful experiences fishing, they are usually hooked! The program not only introduces people to angling and hunting, it creates lifelong anglers and hunters who understand and support wildlife agencies and conservation organizations for the benefit of wildlife conservation.”

Volunteers are critical to the success of the program and we encourage anyone who wants to pass along their knowledge and love of fishing to get involved. Right now, we are in need of volunteers that come along on outings to help participants learn how to fish.



Jonny Williams with one of the cutthroat trout he caught during a September 2014 Forever Wild Families outing at Hogan Reservoir.



Trout Unlimited volunteer Bill Tabinski assists Forever Wild Families participant Jamie Schmizer with cleaning a fish she caught at Hogan Reservoir last fall.

The battle continues: Cody region aquatic invasive species update - Greg Mayton

If you transport a boat into Wyoming from March 1 through November 30, you are required to get your boat inspected for AIS before you launch in Wyoming.



Zebra mussel



Quagga mussel

In 2014, larval quagga mussels (veligers) were found at two new waters close to the Wyoming border, highlighting the importance of inspections of all boats entering Wyoming. Angostura Reservoir is in western South Dakota, a mere 46 miles from the Wyoming border and Deer Creek Reservoir in northeast Utah, just 82 miles from Wyoming. Many boaters use these two waters before boating in Wyoming, making it critical that these and all boats entering the state are inspected.

During all times of the year, if your boat has been on a water positive for zebra or quagga mussels within the last 30 days you are required to have your boat inspected prior to launching in Wyoming. Also, if you are transporting a boat into Wyoming from out-of-state March 1 through November 30, you are required to have your boat inspected prior to launching in Wyoming. This includes out of state boaters entering Wyoming and any Wyoming boaters who have left the state and are returning. According to Wyoming law, if you encounter an open check station on your route of travel, **you must stop** and will be required to undergo an inspection, or show proof of a previous inspection.

Boaters can find information on inspection locations including Game and Fish offices and private locations at: wgfd.wyo.gov Those wishing to become an AIS inspector may complete a free six-hour training course. Private certified inspectors may conduct inspections on their own boat and equipment, as well as provide these services to others. Training course information can be found at:

https://wgfd.wyo.gov/web2011/Departments/Fishing/pdfs/AIS_WIDPUBLIC_150006618.pdf

In 2014, over 43,000 watercraft inspections were conducted throughout the state. Of those, 2,087 were high risk inspections of watercraft last used on a water with zebra/quagga mussels or had high risk water on board that could have been transporting AIS.

A total of 880 watercraft required decontamination to remove water or suspect AIS. During the season, ten watercraft were found to have invasive mussels attached and were thoroughly decontaminated.

In 2015, check stations at key entrances into the state will be open as frequently as possible from April 25 through September 20. We encourage all boaters to plan ahead to have their watercraft inspected at one of these locations. In the Cody Region, watercraft check stations will be operated part time at Buffalo Bill Reservoir, Big Horn Lake, Big Horn River at Wedding of the Waters and other waters on a rotating basis. The Frannie Port of Entry AIS check station will be operated seven days a week, Monday through Wednesday from 7:30am to 4:30pm and Thursday through Sunday from 7:30 am to 6:30pm. The Wapiti AIS check station will be open Thursday through Sunday from 9:00am to 6:00pm.

So is Wyoming currently AIS free? No. While no zebra or quagga mussels have been found in Wyoming waters, there are populations of other invasive species in Wyoming such as Asian clam, New Zealand mudsnail, rusty crayfish, and curly pondweed. In 2014, a new population of curly pondweed was found in the Lower Shoshone River near Cody. New Zealand mudsnails were also found in the first new water in Wyoming in over a decade, Lake Cameahwait near Shoshoni. It is very critical as an angler or boater that you do your part in stopping the spread of these species by always remembering to Drain, Clean, and Dry

your boat and all fishing equipment. If you ever see any suspicious plant or animal while out recreating, it could be an invasive species. Please report sightings to:

ReportAIS@wyo.gov.

While no invasive mussels have been detected in Wyoming, new findings in neighboring states should be a call to action for outdoor enthusiasts to stay vigilant in protecting the waters that we so proudly enjoy and call home from these invaders.

If you require an inspection, please contact the Cody Regional WGFD Office at 307-527-5430 or Regional AIS Specialist, Greg Mayton, at 307-254-3554.

Just a reminder, a three-year AIS decal for Wyoming registered watercraft is now available. Decals can be purchased at any Game and Fish office, online, and at most license selling vendors.



This photo shows the prop of an outboard motor covered with invasive quagga mussels.

The Wyoming Game and Fish Department's Fish Passage program works with landowners and others to help make water diversion structures more fish friendly.

Fish passage program — a statewide inventory - Erin Sobel

Water is the life blood of Wyoming. It supports the wonderful diversity of fish and wildlife that we all enjoy, and is a critical resource for municipalities, farmers, ranchers, power plants, and other industries. Much of our water comes from snow melt which courses through our streams and rivers each spring. To make use of this water, dams, diversion structures, and canals have been constructed to convey water to various locations. Unfortunately, many dams block upstream fish passage and diversion canals entrain or draw fish into them. When this happens, most fish are permanently lost from the stream.

There are many ways in which diversion structures can be modified to ensure upstream

fish passage and to reduce fish entrainment. The Game and Fish Department's Fish Passage program works with private landowners, irrigation districts, non-profit organizations, and other agencies to help alleviate passage issues throughout the state. Partnerships are formed and whether it is the Department or one of our partners leading the project, improvement projects are completed as funding allows. Matching grant funds are available from the department and other valued partners to help fund fish passage projects. Our biologists can also provide suggestions to landowners for improving upstream passage, using fish screens on diversions, and developing designs appropriate for individual sites.

Since it's inception in 2010, the fish passage program has focused most of its efforts on a statewide inventory of known points of diversions. The goal of this inventory is to help with the prioritization of future fish passage projects throughout the state. Thus far, a total of 624 of the nearly 1,200 known points of diversions have been inventoried. Recently, efforts have focused on the Upper Green River Watershed where a total of 296 known points of diversion have been inventoried.

The fish passage program has partnered with Trout Unlimited and the Natural Resource Conservation Service to help modify diversion structures such as the one in the photo below to be more fish friendly.



Photo of a common instream diversion structure that prevents fish from moving upstream.

Conserving Wildlife – Serving People

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Bits and Pieces

The Cody Kids Fishing Day will be held June 6, 2015 at Beck Lake.

The Wyoming Free Fishing Day (no license required) is also June 6.

Newsletter Contributors

Contributors to this years newsletter include the Cody Fisheries Management Crew, Aquatic Invasive Species Regional Supervisor Greg Mayton, Regional Information and Education Specialist Tara Hodges, and Fish Passage Biologist Erin Sobel. Thanks to all.

Fisheries Management in the Cody Region

We manage your fisheries resources for you and we encourage you to call or stop by if you have questions or concerns. Call 307-527-7125 or reach us by email:

craig.amadio@wyo.gov, sam.hochhalter@wyo.gov, jason.burckhardt@wyo.gov

greg.mayton@wyo.gov, erin.sobel@wyo.gov

Check out our website at wgfd.wyo.gov and our Cody regional web page under the "News" tab and go to "Game and Fish Regional News".

This and past newsletters for the Big Horn Basin and across the state are available at:
<http://wgfd.wyo.gov/web2011/fishing-1000439.aspx>



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