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## Atlantic Creek Drainage Survey – Paul Gerrity

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Every year the WGFD samples different groups of alpine lakes in the Wind River Mountains with gill nets to evaluate fish populations. Alpine lakes within the Atlantic Creek drainage were one group of lakes sampled by the Lander Fisheries Management Crew in 2015. The survey occurred from July 20 – 23, 2015. Atlantic Creek is located within the Popo Agie Wilderness of the Shoshone National Forest, and is a tributary to the Little Popo Agie River. Lakes within the Atlantic Creek drainage can be accessed through the Christina Lake Trailhead at Fiddler’s Lake. Windy, Upper Saddlebags, and Lower Saddlebags lakes, which have historically been managed as stocked golden trout fisheries, were the focus of 2015 sampling.

Windy Lake was once one of the most popular golden trout fisheries in the Lander Region because of consistent stocking from the 1950s through 1993; however, stocking ceased after 1993 because a large wildfire decimated Wyoming’s golden trout brood source. The fishery at Windy Lake (and many other Wind River Mountain Lakes) must be maintained through stocking because of limited natural

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A couple trophy brook trout from Lower Saddlebag Lake

reproduction. The golden trout fishery in Windy Lake (and many other Wyoming lakes) soon disappeared in the absence of stocked fish. The WGF D eventually re-established a golden trout brood source, and stocking occurred again in Windy Lake in 2006, 2010, 2012, and 2014. Sampling in 2015 showed that the Windy Lake golden trout fishery is again flourishing. A gill net set in the lake had a high catch rate of golden trout. Additionally, fish were sampled across a broad size range (7 to 16 inches), indicating that stocked fish are surviving and growing.

Similar to Windy Lake, the golden trout fisheries at Upper Saddlebags and Lower Saddlebags lakes (hereafter referred to as the Saddlebags lakes) were temporarily lost after stocking ceased in 1993. Golden trout were stocked in 2006 along with the inadvertent stocking of brook trout. The brook trout soon out-competed, out-grew, and consumed the stocked golden trout until only a small number of golden trout survived after 2009. Meanwhile, many brook trout grew to approximately 3 pounds by 2009, 4 to 5 pounds by 2011, and over 6 pounds beginning in 2012. The growth of the brook trout resulted from abundant forage, which includes amphipods (scuds), midges, stoneflies, mayflies, and caddisflies. Over the years more and more anglers visited the Saddlebags lakes to try to catch large brook trout; however, the rigorous hike (the lakes are located at almost 11,300 feet) still kept angling pressure fairly low.



*Setting gill nets in the upper Atlantic Creek drainage*

Golden trout were again helicopter-stocked at the Saddlebags lakes in 2014. Gill net surveys in the Saddlebags lakes in 2009 and 2011 and angler reports indicated that the Saddlebags lakes brook trout were not naturally reproducing, and five different groups of anglers reported catching only two large brook trout throughout the summer of 2014. Fisheries biologists assumed that most or all of the fish originally stocked in 2006 would be deceased after the winter of 2014 - 2015, which would again make conditions favorable for golden trout. Unfortunately, a 2015 gill net survey did not find any surviving golden trout from the 2014 stocking event. However, three large brook trout were captured in the gill net, and two additional brook trout were observed cruising the shoreline. The fish captured in the gill net were estimated to be over 6 pounds. It is likely that these large, old (age-10) brook trout that have survived since the 2006 stocking event consumed the golden trout stocked in 2014.

So what's next for the Saddlebags lakes? Angler opinion surveys show that anglers are split on management preferences. Some anglers prefer the unique trophy brook trout fishery, and would like to see the golden trout management objective changed. Others prefer golden trout, and argue that the Saddlebags lakes can produce golden trout just as big as the brook trout that are currently present. Golden are currently scheduled to be helicopter-stocked in summer 2016; however, the low survival of golden trout stocked in 2014 is discouraging. Fisheries managers will meet this winter to discuss if the current golden trout management objective should be changed, or if one more attempt at golden trout stocking should be made. If you would like to have input in Saddlebags lakes management, please contact the Lander Fisheries Management Crew at 307-332-2688.

## Middle Popo Agie Habitat Improvement Project – Tracy Wendt

This winter, the City Park section of the Middle Popo Agie River received a make-over. This nip-and-tuck involved excavators and backhoes, cottonwood trees and massive boulders, contractors and volunteers – all for the sake of improving Lander’s home river.

During summer the cool, refreshing water in the river dwindle as temperatures rise, leaving little habitat for fish and impairing water quality. In addition, spring floods in recent years have eaten away at river banks, increasing erosion and sediment loads, removing riparian vegetation, and altering the channel and flood-plain. After years of planning and raising funds, WGFD and project partners were able to take the first step towards improving the Middle Popo Agie – a rehabilitation of the half-mile stretch of the river that runs through City Park.

Heavy equipment dug deep channels, adding meanders to slow the river’s flow and reduce its impact on



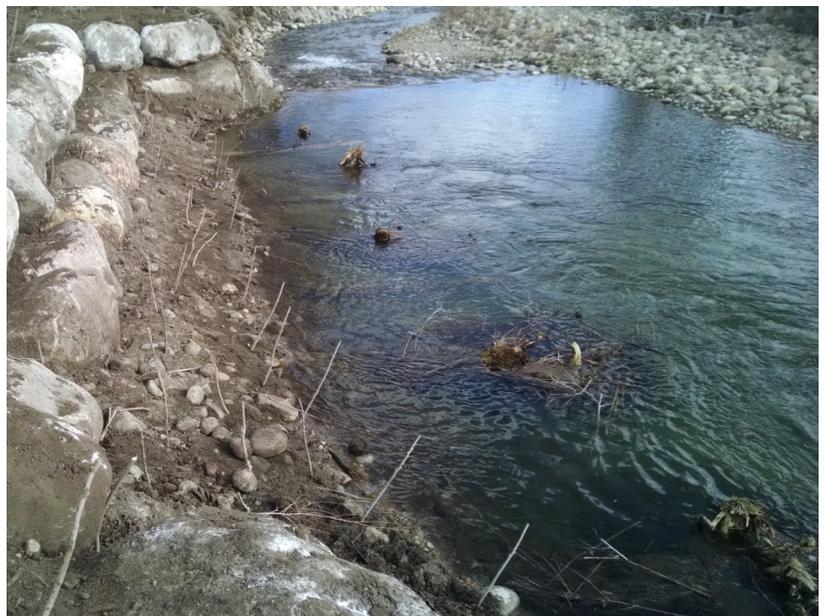
*Middle Popo Agie construction in progress*

stream banks. Large boulders and root-wads were placed in the channel to create deep pools that will hold cool water in the summertime. Cottonwood trees and more boulders were buried along the shore to buffer the energy that comes with high-flows, which will help stabilize the stream banks, reducing erosion and sediment. Three rock-step access points were built in to allow easier access to the river, and approximately 3,000 cottonwoods and willows were planted throughout the project area.

All of these activities are expected to help strengthen the Middle Popo Agie’s trout populations. Deeper channels and pools will hold more water – cooler water – late in the

summer, providing important refuge for trout. As vegetation fills in, it will provide shade to further cool the waters as well as provide cover for trout, protecting them from avian predators. Sediment can have a negative effect on trout eggs and young trout, so the erosion-reducing measures should benefit trout as well. In addition, these improvements should make the river more resilient to future flooding events, reducing the damage high flows might cause to property and infrastructure, as well as aquatic habitat.

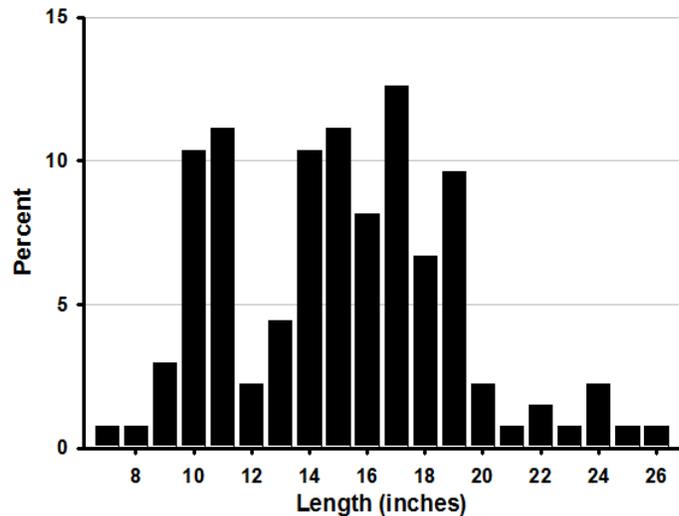
This project would not have been possible without collaboration and funds from the Popo Agie Anglers, Popo Agie Conservation District, City of Lander, One Shot – Water for Wildlife, Fremont County Recreation Board, Wyoming Wildlife and Natural Resources Trust and private donors.



*New root wads buried in the channel to create pools , protect stream banks and provide cover for fish. Photo: Jonathan Stauffer, Eco-Hydro*

## Boysen Reservoir Update – Craig Amadio

Walleye fishing at Boysen Reservoir has been slow in recent years, but anglers reported improvements in 2015 and our sampling data backed that up. Each year in September, the WGFD samples walleye in Boysen Reservoir with nets set in standard locations to assess population abundance and size structure. Data from the past two years has indicated the walleye population is slowly increasing thanks in part to very good reproduction in 2011. This 4 year old age class was abundant and mostly ranged from 15 to 17 inches. While these fish provided some good fishing last year, most will be 20+ inches and the fishing should be even better in 2016.



*Length distribution of walleye captured in Boysen, 2015*



*A jumbo 13.5 inch yellow perch from Boysen Reservoir*

Yellow perch abundance has also been low in recent years but increased in 2015 as well. The majority of these perch were two years old or younger which indicates a couple strong, young year classes. That's is not only good news for perch anglers, but it's great news for walleye fisherman because perch are the main food source for walleye in the reservoir, especially the medium and larger fish. Therefore walleye numbers are often closely related to perch abundance. Basically when the perch are doing well, the walleye do well.

Rainbow trout are also on the rebound and fishing reports this spring have been very good. Trout are sampled in May each year to evaluate stocking. The declining abundance of rainbows that began in 2008 has drastically improved in recent years with catch rates nearly tripling since 2013. Not only are there more rainbows, but they are getting bigger. Average length increased from 14.2 inches in 2014 to 18.2 inches in 2015. The increase in size is encouraging and reflects a shift in the dominance from newly stocked trout to older fish.

We stock around 50,000 rainbow trout per year in Boysen Reservoir and plan to increase that number to 75,000 in the future. These fish are stocked in the fall at an average size of about 9 inches. Trout of this size are more likely to avoid being eaten by all but the larger walleye, and during the fall walleye feed less than in spring or summer. This strategy, therefore, maximizes the survival of stocked trout. The trout fishery continues to provide excellent opportunities to bank anglers during spring and anglers fishing through the ice during winter. During summer, when water temperatures are warm, trout move off shore and become more difficult to catch.

## Spawning Native Sauger – Jim Barner

April showers may bring May flowers but April and May also are times that many fish species spawn in the Cowboy state. One of those fish is the sauger. The Lander Fish Management crew, the Wyoming Game and Fish Department's statewide fish spawning crew, Dan Speas Fish Hatchery, the United States Fish and Wildlife Service crew from Lander, and the Garrison National Fish Hatchery will again collaborate for spawning sauger on the Wind River Indian Reservation. This will be the final year of a 4 - 5 year effort to bolster that population of fish while maintaining the genetic integrity of the population for future generations.

The sauger is a freshwater fish of the Percidae family which resembles its close relative the walleye. Saugers are well adapted predatory fishes and are capable of swimming in fast currents with minimal drag on their bodies. They may be distinguished from walleyes by the distinctly spotted dorsal fin, by the lack of a white splotch on the caudal fin, by the rough skin over their gill, and by their generally more brassy color, or darker (almost black) color in some regions (see walleye vs. sauger ID photos in this newsletter).

Crews will be busy collecting fish in late May for egg taking operations. Fish are collected and the females are injected with a hormone to accelerate their spawning. The females are typically ready to spawn in a three to four day period after receiving the hormone. Once the fish are spawned, the eggs are sent to Speas Fish Hatchery near Casper for incubation. The hatched fry are then transferred to Garrison National Fish Hatchery, North Dakota to be reared to fingerling size. The fingerlings are then transferred back to Wyoming for stocking in Wind River drainage.

So the next time you catch a sauger in Boysen Reservoir it could very well be part of the efforts of these people.

For more information on the Fish and Wildlife Service, the Statewide Fish Spawning Crew and Dan Speas Fish Hatchery visit the following websites:

<https://wgfd.wyo.gov/Fishing-and-Boating/Fish-Hatchery-Information/Statewide-Spawning-Crew>

<https://wgfd.wyo.gov/Fishing-and-Boating/Fish-Hatchery-Information/Speas Fish Hatchery>

<https://www.fws.gov/mountain-prairie/fisheries/garrisonDam.php>



*Above: Stripping eggs from a female sauger*

*Left: Fish Biologist Paul Geritty with a large female sauger*

## Bull Lake Creek Alpine Surveys – Joe Deromedi

The Wyoming Game and Fish Department sampled fisheries in the upper Bull Lake Creek Drainage within the Fitzpatrick Wilderness in early August. Twelve lakes were surveyed and only, one, Shield Lake, had no fish. Golden trout were found in all other lakes that were visited. All but one of the lakes have self sustaining populations supported entirely by natural reproduction. Dennis Lake is the only lake stocked. It is rare to have a drainage with so many wild golden trout fisheries.

Golden trout up to 19.4 inches were found and good numbers were discovered in most lakes (See Table Below). Four Creek Lake and Sassafras Lake provide the best opportunity to catch a trophy golden trout. Marked Tree Lake, the lowest lake sampled in the drainage, also supported cutthroat trout. Natural barriers in the drainage keep cutthroat trout from migrating to lakes with golden trout populations.



*A beautiful upper Bull Lake drainage golden trout*

The upper Bull Lake drainage is a good area for anglers seeking golden trout. For those thinking about planning a trip, it is important to note that this is a rugged drainage with few trails and lots of fallen trees. The most popular route is over Hays Pass from the west side of the Wind River Mountain Range.

Lake	Trout Species	Number	Number / net hour	Mean Length (in.)	Length Range (in.)
Dennis	Golden	12	3.0	11.3	6.2 – 15.7
Four Creek	Golden	23	0.6	8.8	5.1 – 19.4
Golden	Golden	13	0.7	12.2	7.2 – 15.9
Knife Blade	Golden	27	1.1	10.0	7.1 – 14.4
Lake Louise	Golden	2	1.0	11.1	8.6 – 13.5
Marked Tree	Golden	2	0.6	11.1	9.2 - 13.0
	Cutthroat	10	2.1	11.6	7.5 – 14.4
Pitcher	Golden	24	1.4	7.6	5.1 – 13.3
Three Creek	Golden	21	18.0	8.3	3.5 – 11.0
Sassafras	Golden	24	1.3	7.4	2.8 - 19.3
Upper Golden	Golden	13	0.5	8.7	6.5 – 13.3
Warrior	Golden	24	1.0	8.2	6.4 – 10.3

*This table shows the species, numbers, and size of fish caught during 2015 upper Bull Lake drainage surveys*

## Popo Agie Trout Population Estimate – Paul Gerrity

The Popo Agie River between Lander and Hudson is one of the best wild trout fisheries in Fremont County. It is classified as a Red Ribbon Fishery, which is defined as a stream that supports between 300 and 600 pounds of trout per river mile. Only 9% of all rivers and streams within Wyoming are classified as Red or Blue Ribbon ( $\geq 600$  lb/mile), which shows just how many trout reside in the Popo Agie compared to other Wyoming streams. This reach of the Popo Agie River is part of the Wind River Reservation boundary and is co-managed by the WGFD and Shoshone and Arapaho tribes (with assistance from the U.S. Fish and Wildlife Service). It is important for anglers to know that a tribal fishing license is required on the northern half of the river.

The WGFD and the U.S. Fish and Wildlife Service conducted a three-pass mark/recapture population estimate near Wypo Bridge from October 19-22, 2015. In a three-pass mark/recapture estimate, all captured fish receive a small fin clip corresponding to the day in which it is captured. All captured fish are also measured and weighed. Biologists can then estimate the number and pounds of fish per mile by looking at the number of recaptured fish versus the number of fish captured only once. Raft electrofishing was used to conduct the estimate in the 3 river miles immediately downstream from Wypo Bridge. The purpose of the 2015 estimate was to evaluate the health of this regionally important trout fishery. The last evaluation occurred in 2008.

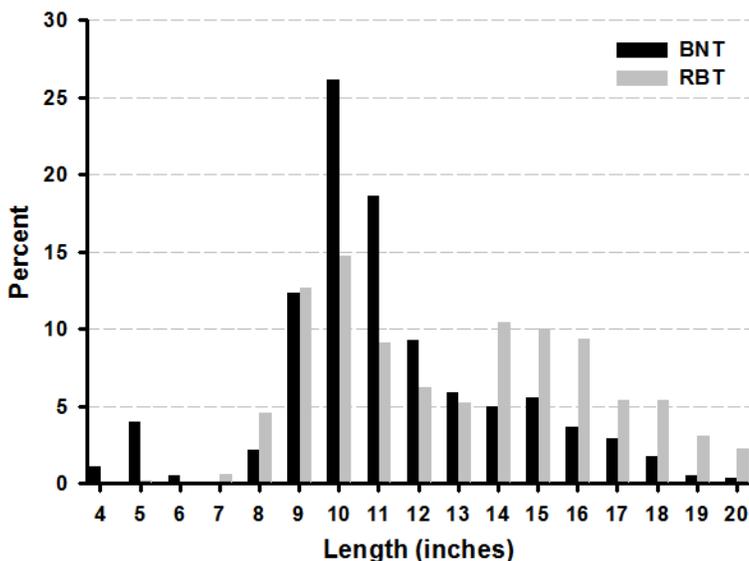


*A healthy rainbow trout from the Wypo population estimate site*

Number and pounds of trout  $\geq 6$  inches per mile were slightly lower than 2008 estimates but still good at 593 trout/mile and 474 lb/mile. Brown trout numbers decreased from 2008; however, rainbow trout numbers were almost four times higher. The fluctuation in rainbow trout numbers since 1991 was likely influenced by whirling disease, which was first documented in the Popo Agie River in 1999. The increase in rainbow trout numbers

is a positive development and indicates that the population is recovering. It is unknown if whirling disease is still present in the drainage or if the rainbow trout population has developed a resistance.

Sizes of brown trout and rainbow trout were good and also indicative of a quality sport fishery. Most trout were in the 10- to 11-inch range, but many fish over 14 inches were captured. The largest brown trout was 22 inches and 3.3 lb, and the largest rainbow trout was 22 inches and 4.1 lb.



*Length distribution of rainbow and brown trout caught in 2015*

## Yellowstone Cutthroat Trout in the North Fork Popo Agie Drainage – Paul Gerrity

The introduction of nonnative trout species (e.g., brook trout, rainbow trout, golden trout) has drastically reduced or eliminated native Yellowstone cutthroat trout in most lakes and streams throughout the Popo Agie River watershed, which includes the North Fork, Middle Fork, and Little Popo Agie river drainages. However, a small number of waters within the North Fork Popo Agie drainage appear to contain good Yellowstone cutthroat trout fisheries. These fisheries exist within the mainstem North Fork Popo Agie River and the High Meadow Creek drainage, both of which are located in the Popo Agie Wilderness within the Shoshone National Forest. The original source of the cutthroat trout in these waters is in question because these fisheries occur in waters upstream from natural migration barriers such as waterfalls. Undocumented stocking occurred in the early 20<sup>th</sup> century, so it is possible that the cutthroat trout currently in these waters are not indigenous and instead are the descendents of stocked fish from other Wyoming cutthroat populations. It is also possible that Native Americans transplanted indigenous Yellowstone cutthroat trout upstream from natural barriers centuries ago.

To determine genetic purity and source of these cutthroat trout, the Lander Fisheries Management Crew collected genetic samples from five selected waters in the High Meadow Creek and mainstem North Fork Popo Agie River drainages in 2014. Small fin clips the size of a pinky fingernail were all that needed to be collected for genetic testing. In High Meadow drainage waters (High Meadow Lake, Cliff Lake, and High Meadow Creek), all cutthroat trout appeared to have Yellowstone cutthroat trout spotting characteristics, whereas cutthroat trout in North Fork Popo Agie River drainage waters (Lonesome Lake and North Fork Popo Agie River) appeared to have a combination of Snake River cutthroat trout and Yellowstone cutthroat trout spotting characteristics (see pictures). Samples of each were submitted to determine genetic purity and origin source. The Popo Agie Anglers, Lander Chapter of Trout Unlimited, generously paid for the majority of the genetic analyses.



*A large cutthroat trout from the North Fork Popo Agie River. We may not know if it's a pure Yellowstone but what a fish!*

The genetic test results were very interesting! High Meadow drainage cutthroat were 99% genetically pure Yellowstone cutthroat trout, and were closely related to Yellowstone National Park fish. Yellowstone National Park is the source of most stocked Yellowstone cutthroat trout in Wyoming, so it is highly likely that cutthroat trout within the High Meadow drainage are the descendents of fish stocked in the early 20<sup>th</sup> century.

The results of the North Fork Popo Agie River genetic tests were more complicated, but also interesting. North Fork Popo Agie fish were 100% genetically pure cutthroat trout, but were not closely related to any other Yellowstone cutthroat trout population in the analysis. It is possible that an indigenous strain of Yellowstone cutthroat trout inhabits the North Fork Popo Agie River that is genetically unique from other strains. The bottom line is that more genetic testing is needed to determine exactly what these fish are. We are currently in the process of determining the next steps to solving this puzzle will keep you updated in future angler newsletters.

## Lake Cameahwait – Joe Deromedi

Lake Cameahwait, located near Boysen Reservoir, is managed for largemouth bass. Bluegill and emerald shiners were introduced in 2012 to improve the fishery by boosting forage and providing additional angling opportunity (Bluegill). After three years of growth bluegill are near 8 inches and ½ pound.

Biologists collect trend data every three years by capturing fish using an electrofishing boat. Largemouth bass were fitted with jaw tags in 2015 so that biologist could estimate population size from the ratio of tagged to untagged fish during subsequent sampling. A total of 564 LMB were tagged in late May and early June.

The population of largemouth bass was then estimated in June and in September. Sub adult largemouth bass tagged in May grew 0.3 inches by June and 2.0 inches by September. The population of stock-size (≥8 inches) largemouth bass was estimated at 2,843 during June and 2,793 in September. The slight difference between estimates indicates a low harvest rate by anglers.

Between 1992 and 2015, juvenile bass (< 8 inches) made up less than 10 percent of the sampling catch. In 2015, the proportion of juvenile largemouth bass increased considerably. The introduction of forage in 2012 appears to have positively influenced recruitment by buffering predation on juvenile largemouth bass (i.e. large bass fed on introduced forage rather than feeding on juvenile bass). Largemouth bass live up to 16 years in Lake Cameahwait. Increasing survival of juvenile largemouth bass will boost the number available to anglers for many years.

### Wyoming Game & Fish Department Conserving Wildlife—Serving People

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- ✓ **CLEAN** Remove all plants, mud and debris from equipment and boat.
- ✓ **DRY** Dry your boat or equipment 5 days in the summer, 18 days spring/fall or 3 days of freezing.

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## Lander Region Fisheries Crew



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