

RECONNECTING BIGHORN HABITAT



Through the BHRA Research Initiative’s Side Channel Restoration, Prioritization and Design study 29 historic side channels have been identified in the Wild Trout section of the fishery. Many of these channels currently only flow during high water because

they have lost connectivity with the main channel. Decreased access to side channels, especially during low flow years, affect trout by limiting their access to diverse habitats necessary for various stages of their life development. Unfortunately, on most dammed tailwater fisheries, side channels are lost over time as controlled releases from dams channelize the riverbed, decreasing complex habitat availability. The BHRA recognizes side channel connectivity as critical to the wild trout fishery. Over the past months, the Bighorn Alliance Research Initiative has worked with contractor Karin Boyd (Applied Geomorphology Inc.) to analyze and evaluate which Bighorn side channels would benefit the productivity of the wild trout population, while also being accessible, per-

mittable and feasible. For 2021, the heads of two side channels known as Rattlesnake and Juniper, are slated to be excavated which will hopefully facilitate year round flow into the channels while also increasing over half a mile of complex habitat availability to Bighorn trout.



BHRA staff, partner agencies and contractors assess Juniper Channel entrance in 2019. In 2021, the side channel opening will be excavated to facilitate year-round river flows.

DIRECTORS CORNER

Accentuate the Positive: three simple words of life advice offered by my late grandfather. This year has been hard for all of us, and sometimes “finding the positive” let alone “accentuating it” surfaces as more of a challenge than an opportunity. However, the angler mindset embraces challenge, and understands that great outcomes are possible when simply provided the opportunity to throw a hopeful cast.



Anne Marie Emery
Executive Director

The Bighorn River Alliance would like to thank you for helping us wade through the challenges of this year. Because of you we remain active, without pause, in protecting the fishery that is important to us all. From another successful year of Research Initiative studies, to keeping the office lights on, your support has gotten us through an unprecedented time.

Because Of You

- 72 miles of Bighorn Water Quality Monitored
- 29 Side Channels evaluated for Reconnection
- 2 Channels identified for reconnection in 2021
- 82 Miles of Channel Migration Zone Mapped
- Bighorn Aquatic insects studied for the first time since 2005

For summaries of these projects, please visit our Research Initiative 2020 Annual Report at:
www.bighornriveralliance.org/researchinitiative

OUR WORK



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TROUT POPULATIONS ON THE REBOUND

Science is integral to Bighorn River fisheries management. Without the ability to survey and monitor the trout population in the Bighorn, there is no way to establish management strategies that benefit both wild trout and anglers. Fisheries biologists rely on annual surveys to estimate the population and evaluate the health of the fishery. However, trout live in dynamic river systems and population

estimates only provide a brief “snapshot” in time. While these “snapshots” are important to assess trends and the condition of Bighorn trout, sometimes those data do not accurately reflect how the river is fishing. In this newsletter we share with you both the Montana Fish, Wildlife and Parks (MFWP) results from their 2020 sampling efforts, along with an update from the outfitters on the 2020 fishing season.

BIGHORN OUTFITTER OUTLOOK

After enduring several years of less than spectacular river conditions and angling experiences, 2020 pleasantly surprised us all. Even us “Old Timers” had never seen, in previous years, the number of large browns in the condition they were in. This season was a good year for water flows. We saw flows peak at just over 5,000 cfs in the spring, but these quickly came down to 3,500 and lower in late spring. Nymph fishing was steady throughout spring and summer. We might refer to the fishing season of 2020 as “the year of the big fish.” Our guide boats didn’t average large numbers of fish but many of our clients, even those who have fished with us for twenty years or more, claimed a “personal best” trout this season. While fish numbers are on the rebound, the overall population is still lower than average and older age-class fish in the river have all the food they can eat. These fish were extra big, fat, and strong. Guides had to deal with many lost fish due to broken tip-pet and straightened hooks. The big fish were even tougher to land when aquatic grass became a factor, but some clients got it done. We suspect that because of their

condition, a number of these trophy fish will make it through the winter and provide us with some incredible opportunities next year. Overall, 2020 showed strong indicators of a healthy Bighorn River. The density of macroinvertebrates (aquatic insects, leading indicators of river productivity) was high. I have been screening and sampling the river for many years and have never seen the concentration of aquatic insects per square yard as I observed this year. Additionally, the overall size (and more importantly) the condition of the fish was phenomenal, and the number of 8-12 inch fish and pods of 3-5 inch fish rising to Tricos in the fall was encouraging. I believe, if given favorable environmental conditions, we will see continue to see the Bighorn return to the “good old days.”



Steve Hilbers, Co-Owner
Bighorn Trout Shop



FISHERIES BIOLOGIST OUTLOOK



Shannon Blackburn
MFWP Fisheries Biologist

Last year, biologists and anglers were concerned over the low Bighorn fish population estimates for 2019 which were likely a result of back-to-back high-water years in 2017 and 2018. Trout survival, especially age-0 individuals, can be negatively affected when sustained high-water flows (> 6,000 cfs) occur during times

where young trout (i.e., fry) are emerging from their redds. In 2017 and 2018, river flows in the Bighorn remained at or above 6,000 cfs for extended periods when both species of fry are extremely vulnerable (Figure 1).

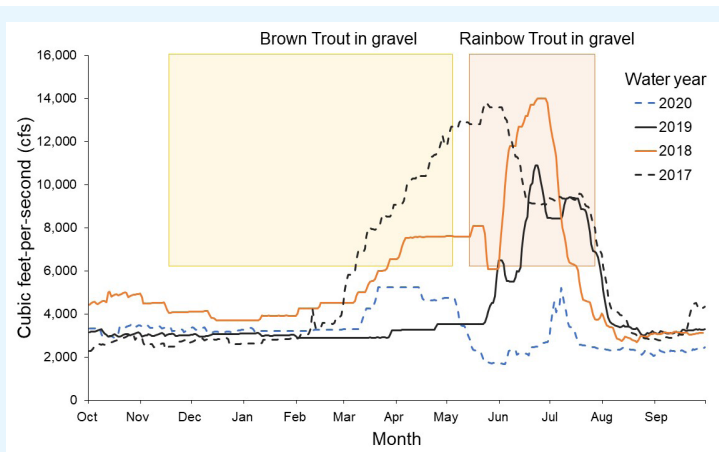


Figure 1. Flows for the Bighorn River during water years 2017–2020. The yellow box represents the time frame when Brown Trout eggs are in the gravel and flows could be potentially harmful (above 6,000 cfs). The orange box represents the time period when Rainbow Trout eggs are in the gravel and flows could be potentially harmful (above 6,000 cfs).

Population estimates conducted in 2020 by MFWP showed an increase in total trout numbers on both the upper and lower Bighorn sections from 2019. Although population estimates for 2020 are still lower than average, the increase in the number of Bighorn wild trout from 2019 indicate that the Bighorn River fishery is recovering well. (Figure 2).

Biologists also assess the size structure of the fishery which showed signs of recovery. For instance, most of the fish sampled in the spring were smaller Brown Trout (< 6”) indicat-

ing a successful hatch from 2019. Additionally, there was a seven-fold increase in the number of Brown Trout longer than 18” from 2019! Fall sampling on the lower section of the Bighorn River suggested the presence of many young Brown Trout that are quickly growing into catchable fish. Even though fewer small Rainbow Trout were collected in 2020 (probably a result of the high flows in the summer of 2019), recruitment is still occurring and the average length of Rainbow Trout increased over an inch from the previous year. In addition to these positive signs, the 2020 sampling season showed impressive increases in weight. For example, in 2016 average weight for Bighorn trout in the 15” length class was 1.17 pounds. In 2020, the average weight of this length class increased to 1.53 pounds. One advantage of having a smaller population is less competition among fish which generally produces bigger and healthier fish!

Moving forward into 2021, MFWP anticipates the number of wild trout in the Bighorn River will continue to increase given good environmental conditions this winter and next spring. The 2020 water year was slightly below average which is conducive to young trout survival. Additionally, we anticipate strong recruitment for both Brown and Rainbow trout as the number of available spawners from this year (i.e., big healthy fish) is high. For the 2021 fishing season, anglers may experience less trout in the 20+” range as many of these fish are likely reaching their maximum life span. However, there are many trout in the 8-11” range which could increase overall catch rates and by the summer, these fish might grow an additional three inches in length!

In conclusion, the large fish observed this year, coupled with the many small fish, strongly suggests that Bighorn wild trout numbers are on the rebound.

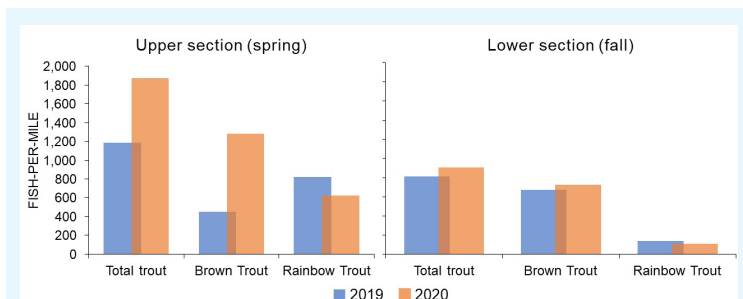


Figure 2. Population estimates for total number of trout; Brown and Rainbow trout in 2019 (blue) and 2020 (orange) on both MFWP sampling sections of the Bighorn River, MT.

OUR PEOPLE

BIGHORN VOLUNTEER OF THE YEAR

The Bighorn River Alliance would like to acknowledge Montana resident Dennis Fischer as our outstanding volunteer of the year. Dennis, who lives in Fort Smith with his wife Ann and their two Labrador Retrievers, has been a fishing guide and outfitter on the Bighorn River for over two decades. Within this time he has served on the Bighorn River Alliance board of directors where he was responsible for the reconnection of the Cline's side channel project, a project which successfully reclaimed one mile of fish habitat around the largest island on the upper Bighorn River - a feat that has shaped our current work in reconnecting more side channels.

In 2020 Dennis played an instrumental advisory and technical support role in the Bighorn River Alliance Research Initiative program where he donated well over 70 volunteer hours to program planning, on the ground monitoring and service to the program. From scouting side channels with contractors, building a downrigger line for our water quality probe, assisting in all reservoir water quality monitoring field days, and participating in countless phone conferences, Dennis' selfless sense of service, generous spirit, and encouraging smile kept things moving strong. BHRA is proud to identify Dennis

as our volunteer of the year and is thankful for his service to the Bighorn and its health.



Dennis Fischer (pictured left) helping BHRA technician Emery Three Irons collect water samples on Bighorn Reservoir.

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