

### YEAR-END PUSH FOR THE BIGHORN



Drive In on the Bighorn River, MT. - Photo by Larry Reis

While the fishing season has slowed on the Bighorn, the pace quickens at BHRA office headquarters as reports are drafted, season data analyzed, permits applied for, and 2023 research and operational plans developed. It's also the time of year where we dig deep into inspirational reserves- reserves fueled by purpose, mission and membership- to secure year-end funding necessary to achieve 2022 fiscal goals and 2023 aspirations.

**It is the time of year where we depend strongly on the shared love of many.**

From now until December 31st, BHRA is looking to those committed to Bighorn conservation to help us accomplish our year-end fundraising goal of raising \$50K. If you are reading this, you are one of those people. You have a relationship with the Bighorn River, are invested in its health and protection, and you are dedicated to research and programs that facilitate its continuance as one of the nation's top wild trout fisheries. You are the Bighorn River Alliance.

The past year has been a great one, both for the river and the work done to protect it. From rebounding wild trout populations, vital habitats identified and monitored, and major grants received, we have much to celebrate and much to continue, together.

The momentum we have built is exciting, and our work

impactful. On behalf of the Bighorn River Alliance and the River, thank you for considering BHRA in your year-end philanthropic giving plans. We appreciate you choosing to help us as we work within a complex landscape to preserve a specific place – a place that is important to your experiences, memories and legacy. We also appreciate your patience as you receive increased communications from us over the next month as we work hard to end the year in strong fiscal shape. Our hope is that you view this as reflective of our commitment to, and passion for, protecting a place that is important to you. After all, a healthy river reflects the love and care of many. Let's do this!

Anne Marie Emery  
Executive Director



**HELP US ACHIEVE OUR YEAR-END GOAL OF RAISING \$50K FOR THE BIGHORN RIVER.**

#### BHRA RECIPIENT OF STATE & FEDERAL GRANTS

The Bighorn River Alliance (BHRA) is excited to announce that both grants submitted for the "Bighorn Side Channel Reactivation Project" have received full requested funding for 2023. BHRA submitted grant applications to the MFWP Future Fisheries Program (state) and the USFWS Great Plains Fish Habitat Partnership Fund (federal) in early spring of 2022.

Acceptance of these grant awards will fund 70% of total projected Bighorn Side Channel Reactivation project costs which will work to restore low functioning/inactive side channels back to the river main in 2023. The remaining funds will be provided by BHRA through membership year-end support!

**DONATE NOW, OR ON #GIVINGTUESDAY TO HELP GET US THERE!**





# BIGHORN RIVER ALLIANCE

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# OUR WORK

## 2022 YEAR IN REVIEW

A successful wild trout experience on the Bighorn River depends on the annual environmental factors that impact it and the expectations of anglers that fish it. In 2022, all variables aligned - both on the science side and recreation side - resulting in a great season for the river, wild trout, and anglers. Below are summaries of the season provided by our working partners from the Bureau of Reclamation, Montana Fish, Wildlife and Parks and local fishing guides.

### Water Year Review

Clayton Jordan, Supervisor, Bureau of Reclamation



While overall precipitation for the 2022 water year was near average, storage needs required by upstream dams, coupled with warmer than average climate conditions, led to inflows into Bighorn Reservoir being below average for the 2022 season. Total annual inflow for the year was 1,982,741-acre feet, which is 85% of average (Figure 1), but improved over 2021 total inflows by 28%.

The most challenging aspect of this water year was the delayed snowmelt timing which, because of colder than average spring temperatures, caused high elevation snowpack to persist later than normal before rapidly melting in late June (Figure 2). While this event caused historic flooding on the Yellowstone and many of the state's free-flowing rivers, the storage capacity of the Bighorn Reservoir prevented flooding on the Bighorn River. During the runoff period, Bighorn River flows only reached a peak of 7,000 cfs for a short ten-day period in late June and then returned to the summer release rate of 2,500 cfs, where flows remained until early November.

Fortunately, with all upstream reservoirs reaching full storage capacity in 2022, winter release rates (defined as the period between November and February) have been recently set at 2,410 cfs, which is higher than 2021 winter releases (when reservoirs did not fill) and 98% of the 30-year winter release average.

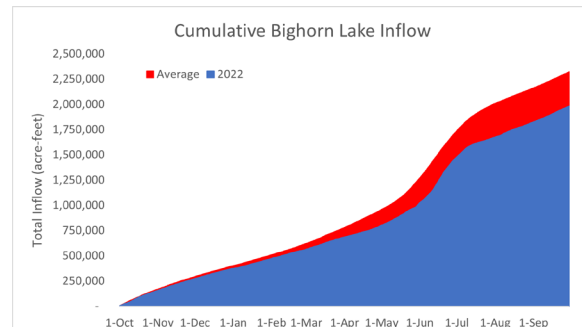


Figure 1: Total 2022 inflow into Bighorn Reservoir (blue) compared to average inflow (red).

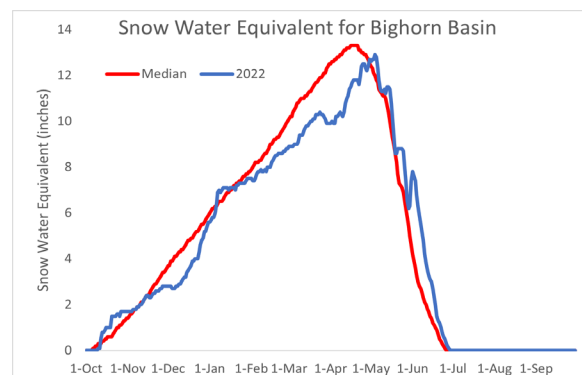


Figure 2: Total Snow Water equivalent (SWE) 2022 (Blue) compared to 30-year average (red).

### Fisheries Review

Shannon Blackburn, MFWP Fisheries Manager



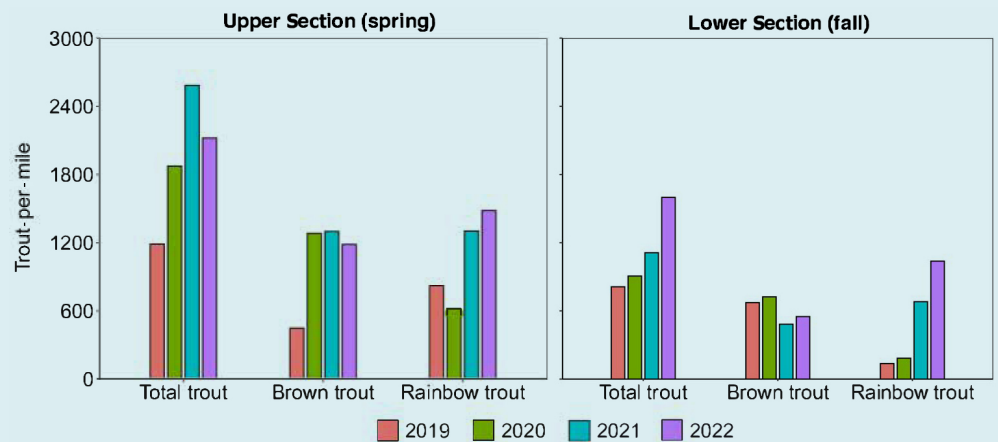
Montana Fish, Wildlife and Parks (MFWP) objectives for the trout section of the Bighorn River are to maintain high numbers and multiple year-classes of wild trout. Trout in the Bighorn are incredibly resilient but, like all wild trout species, fluctuate in population and size structure in response to changing river conditions. Sustained, scouring flows during the spring and summer of 2017-2019 created challenging conditions for fish and anglers

which resulted in trout populations declining to record lows in 2019.

Overall, flows were favorable for trout survival and recruitment in 2022. Short-lived high flow events (< 8,000 cfs), like the one in June, can be beneficial to the fishery by removing fine sediment buildup that smothers spawning and food-producing gravels. As a result, the number of trout in the Bighorn River continues to improve. In our sampling locations just below the Three Mile Access Site and around the Mallard's Landing Fishing Access Site, the combined abundances of Brown and Rainbow trout of all size classes are estimated to be 2,121 trout-per-mile and 1,599 trout-per-mile, respectively, which are nearly double the 2019 estimates at both sites. We also observed evidence of good recruitment with many trout under 6" and a high number of available spawners, especially in the 8-11" range. Additionally, the body condition of trout continues to be extremely high which makes for beautiful, healthy fish. One noteworthy difference was the greater number of Rainbow Trout observed than

in recent years, which is reflective of the species' ability to adapt well to below average flows in the Bighorn.

For 2023, MFWP anticipates the number of wild trout in the Bighorn River will continue to increase given favorable environmental conditions over winter and next spring. Moving forward, MFWP will continue monitoring trout populations and working with the Bureau of Reclamation on water flows, implement a roving creel survey, and partner with BHRA on several projects aimed at improving river and wild trout resiliency.



Population estimates for total number of trout; Brown and Rainbow trout on Upper and Lower sections of the Bighorn River from 2019-2022.

## Fishing Review

John Sindland, BHRA Vice Chair & WTS Chair



While some might say that the fishing in 2022 on the Bighorn River was outstanding, others might say that's an understatement. Anglers couldn't be happier with the size and quality of fish caught. I personally started fishing and guiding on the Bighorn in 1990 and have never seen the fish and river healthier than this past season.

The spring season got off to a slow start (due to the coldest April in Montana's history) resulting in fine nymph fishing, but slow starting hatches. The spring Baetis ended up being quite good during May and early June which made for some pretty good dry fly-fishing. The nymphing was very good through the beginning of June.

The summer season (July and August) was very, very good. The month of July provided anglers excellent site nymph fishing opportunities with large, beautiful trout caught up in the riffles. We had PMD's, Black and Tan caddis, grasshoppers, and ants which made for good dry fly-fishing from late July through early September. We had hoped for a better PMD Hatch,

but it never did come to fruition in 2022.

September was about the aquatic worm bite. We had hoped that Tricos would appear, but that didn't happen except for at a few locations in the upper river where fish rose to the fly. The fishing on the lower river from Bighorn to Mallards, and even from Mallards to Two Leggings became excellent. It was great to see the lower sections of the river fishing so well. The streamer fishing at various times from late August through September was spotty and sometimes quite good, but overall inconsistent. In summary, we can all agree, it was a very good year for the river, its anglers, and wild trout.



Don Jackson with a 2022 Bighorn Brown Trout.



Christine Nelson with a 2022 Bighorn Rainbow Trout.

## AERIAL RAINBOW TROUT REDD MAPPING

This season, BHRA used drone technology to monitor and map 11 major spawning complexes in the upper 13 miles of the Bighorn River. These complexes, defined as areas where redds are built in high densities, are unique habitats that serve as important spawning grounds for Bighorn wild rainbow trout. Understanding that spawning habitat is limited on the Bighorn River, and that no redd counts or surveys are currently occurring, BHRA developed drone-based survey methodology to map and monitor these critical zones – information that will allow us to establish baseline data on rainbow trout spawning habitats and thus track shifts in these habitats following future changes in river environment. Using a camera equipped drone, BHRA drone pilot Dennis Fischer accrued imagery and video of all 11 complexes in 2022, with each complex visited between 5-9 times throughout the spawning period of May-July. Computer-based georeferencing analysis was performed

on imagery to determine the total area of gravel cleaned by trout during redd construction (identifying the size of each spawning complex) and aerial videos were watched to count fish present in each complex throughout the spawning period. At Redd Complex 1 (located between Afterbay & Split Island), aerial imagery quantified that rainbow trout cleaned over 10,000 sq/ft of gravel during the spawn. The number of trout observed within the complex fluctuated dramatically with 90 trout counted in early June, to 225 in early July, and then down to 33 five days later! For 2023, BHRA will repeat the strategies used in 2022 but will adjust drone camera angles and trajectory to improve imagery that was affected in 2022 by glare or cloud cover. The hope is these improvements to methodology, coupled with clear water and agreeable weather, will finalize our baseline data accrual of these important trout habitats which will allow us to protect and preserve the most vulnerable habitats required by Bighorn wild trout.



Complex 1 on 5/10/2022



Complex 1 on 6/11/2022



Complex 1 on 7/02/2022

VISIT BHRA ON YOUTUBE TO VIEW VIDEO OF REDD MONITORING



### GIVE A YEAR-END GIFT & BE ENTERED IN THE RAFFLE

All gifts \$50 or more receive a BHRA Mini License Plate Christmas ornament which commemorates our sponsored state license plate program. Artwork for this plate has been provided by the talented artist Derek DeYoung.

# YEAR-END RAFFLE

#### FIRST PLACE

- R.L. Winston Air 2 9' 5 weight fly rod
- Bauer RVR fly reel 4/5, black w/gold trim
- R.L. Winston Energy 5 weight fly line



#### SECOND PLACE

- Patagonia Swift Current Waders Mens or Womens
- Patagonia Stealth Hip Pack sage khaki



#### THIRD PLACE

- YETI Trailhead Camp Chairs includes 2 chairs

