RIPPLES IN THE GRANDE RONDE

WINTER SPRING EDITION 2023

RIVERS UNITING NEIGHBORS · NEWS FROM THE GRANDE RONDE MODEL WATERSHED

A TALE OF TWO USES: JUNIPER IN RIVER RESTORATION

Tale One by Ian Wilson, Grande Ronde Model Watershed Tale Two by Winston Morton, Oregon Department of Fish and Wildlife

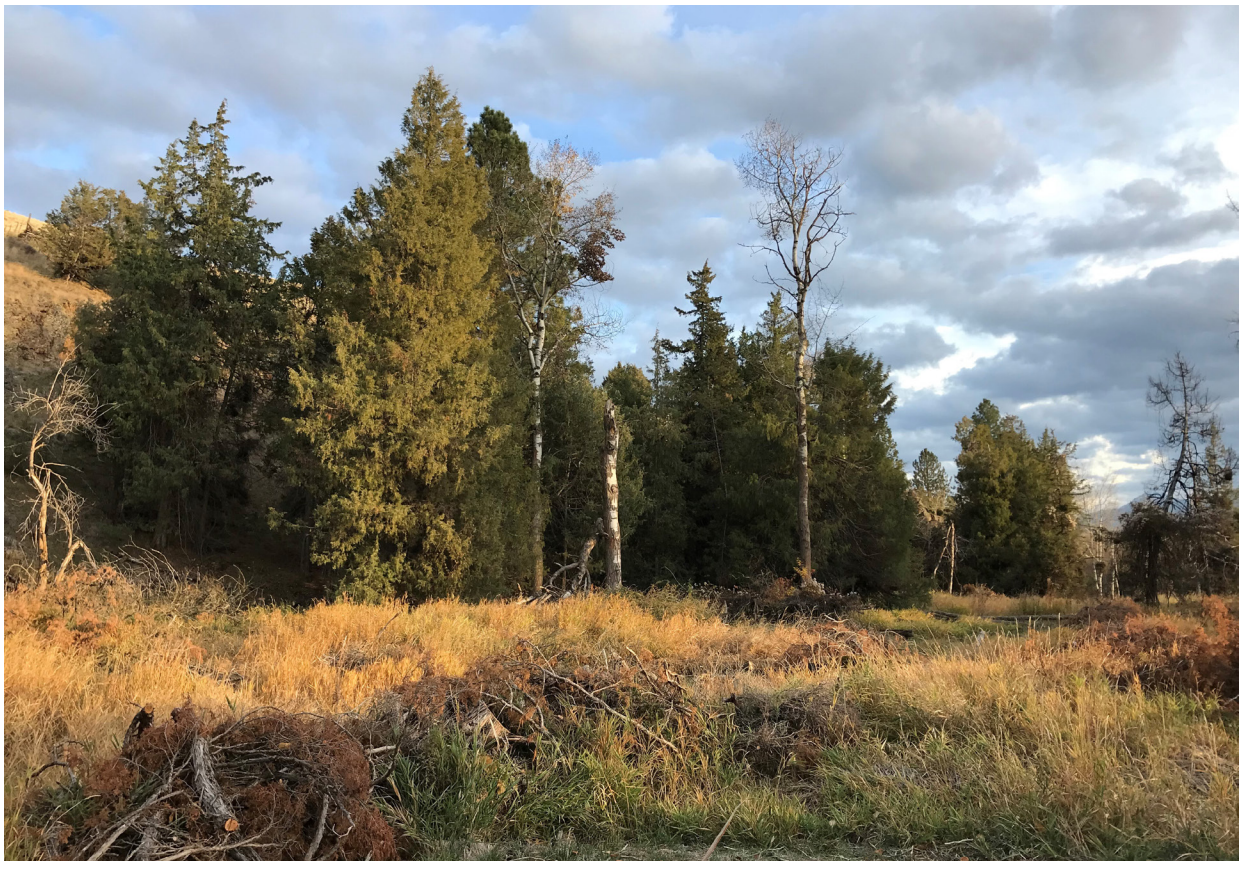
TALE ONE

When juniper is mentioned, it conjures up a range of emotions, from favorable to annoyed. At least, these are the reactions I have seen while living in different parts of Oregon where these native trees grow.

My earliest memory of juniper was the overwhelming smell as I drove into central Oregon for the first time to cast off on my own and go to school. The dominant aromatics of juniper in this region still kick off a cascade of good memories every time I visit. These short, shrubby, and gnarled trees that often grow in dense stands are commonly known as Western Juniper. When I first arrived in Wallowa County and spotted familiar-looking juniper trees, I did not think twice. However, my forestry training taught me to quickly notice that some of these trees were different, with scale-like foliage in a tall, straight tree form. I learned that we have Rocky Mountain Juniper in northeast Oregon, in addition to some other native juniper trees.

Even though there are different species of juniper in central and northeast Oregon, they all have changed from historic conditions due to the absence of natural fire cycles, altered grazing regimes, and/or disturbances to river floodplains. Junipers naturally occur on hillslopes adjacent to rivers or even in drier portions of floodplains. However, they do not excel when inundated with water, a common feature of a functioning, connected floodplain. As we altered our rivers from dynamic floodplains to single-thread channels, that energy transported material downstream, which caused river channels to become deeper and floodplains to become drier. So, you guessed it: juniper took advantage of these new conditions.

While these trees may make solid fence posts, burn hot as firewood, and provide good wildlife habitat, juniper also can present some challenges,



An example of juniper trees crowding out native aspen trees in a floodplain environment. Photo by Ian Wilson, GRMW.

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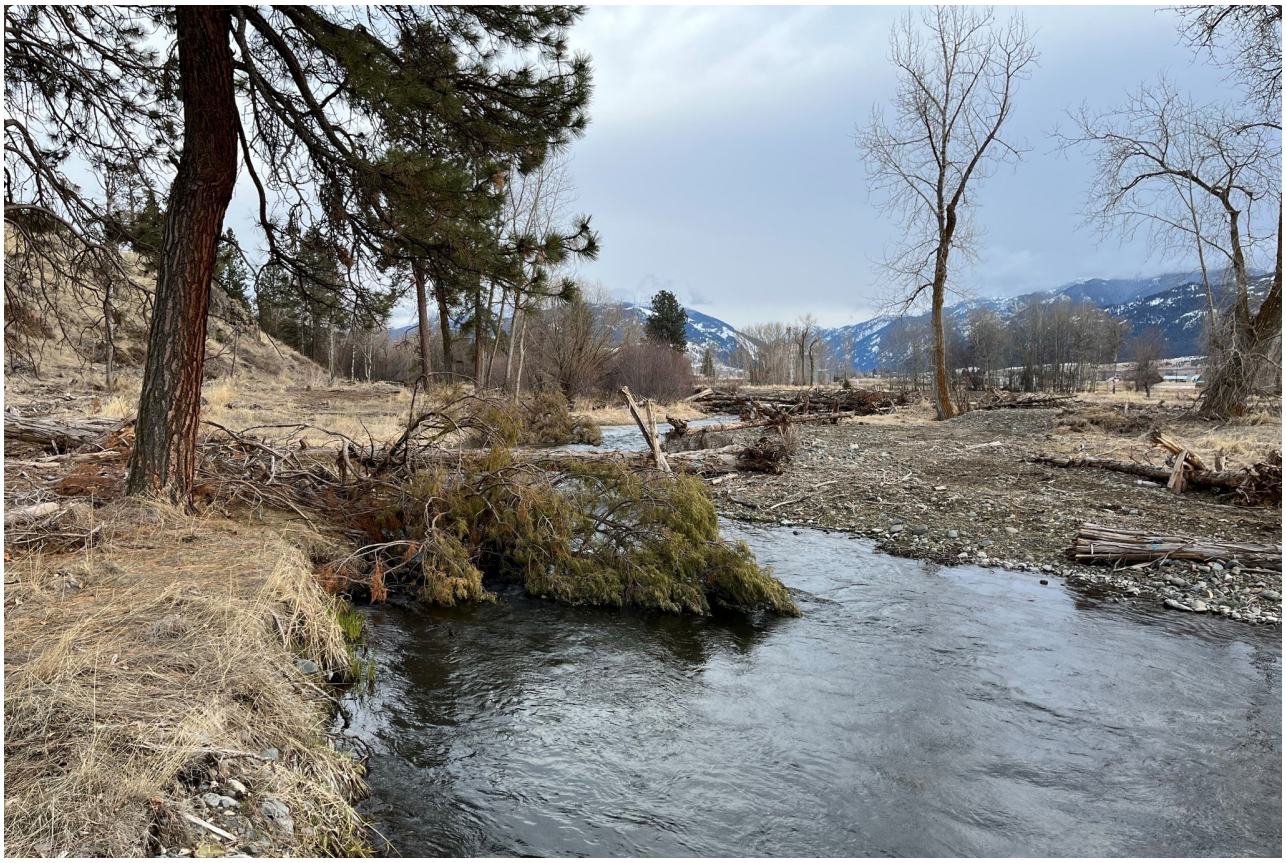
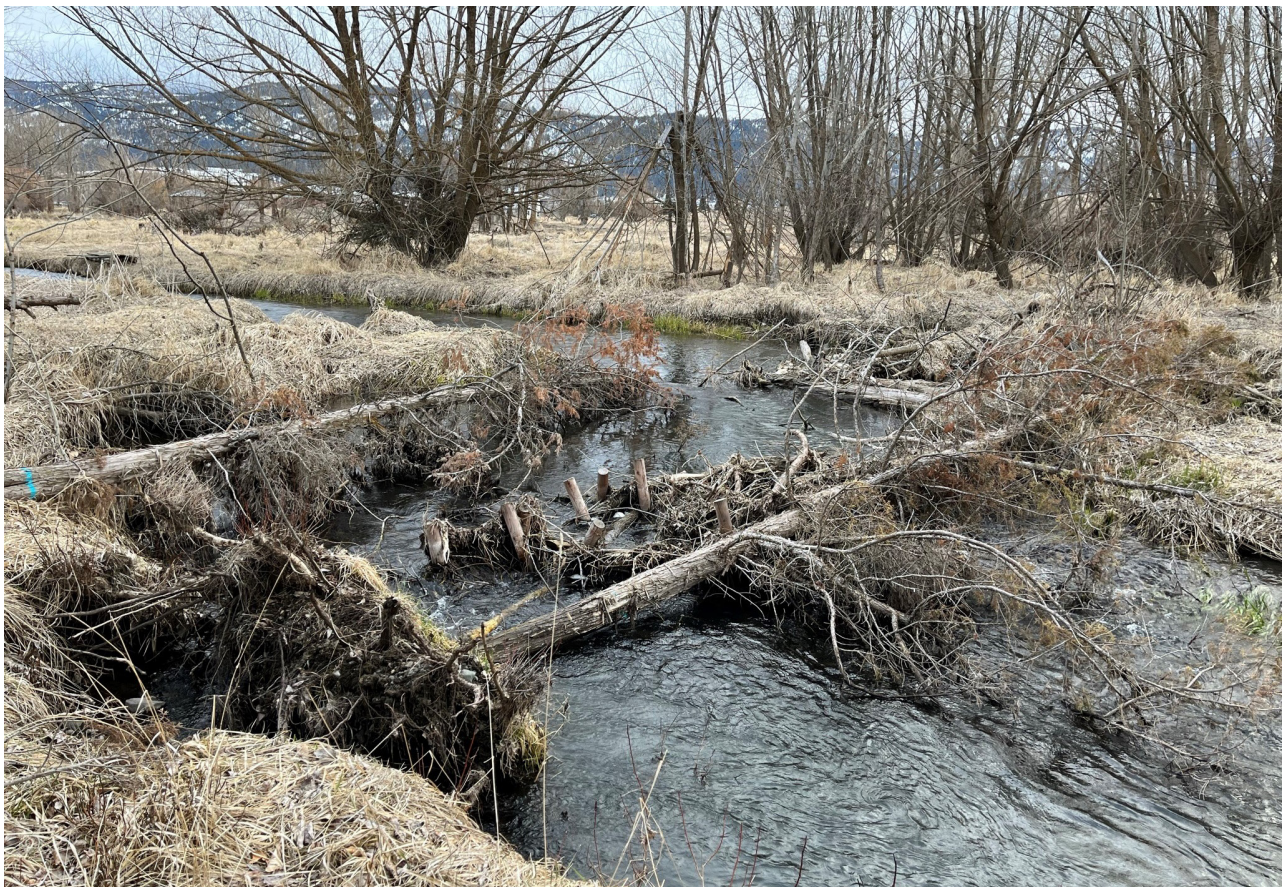


A whole juniper tree placed in the river, creating slow water for juvenile fish to rear and ideal spawning conditions from gravel that has dropped out in the slower water. Photo by Ian Wilson, GRMW.



Small juniper trees used in conjunction with a post-assisted log structure in a side channel create overhead cover for juvenile life stages of salmon and steelhead as well as adult holding cover. Photo by Ian Wilson, GRMW.

including competition with native riparian vegetation and poor grazing for domestic animals.

With the proper permits and planning, these same trees can be used in river restoration projects, such as the one I participated in with my family this last summer. We initially embarked on a juniper removal program in 2020 and 2021 with a goal of placing some of the juniper in the river, where it can help create conditions to restore the floodplain. When harvested and placed fresh, the foliage makes for excellent habitat trees in the river by backing up water to create slow pools for fish and offering plenty of overhead cover to give fish a place to hide.

In addition to the variety of ways they can be used, another benefit of junipers placed in-stream is their durability and longevity that provides habitat for years to come.

These same lessons can be applied to other native conifers that have encroached in floodplain habitats, such as lodge pole in headwater streams, turning a problem into a solution. Just remember to always contact your local natural resources representatives before removing wood from a floodplain or installing in-stream wood.

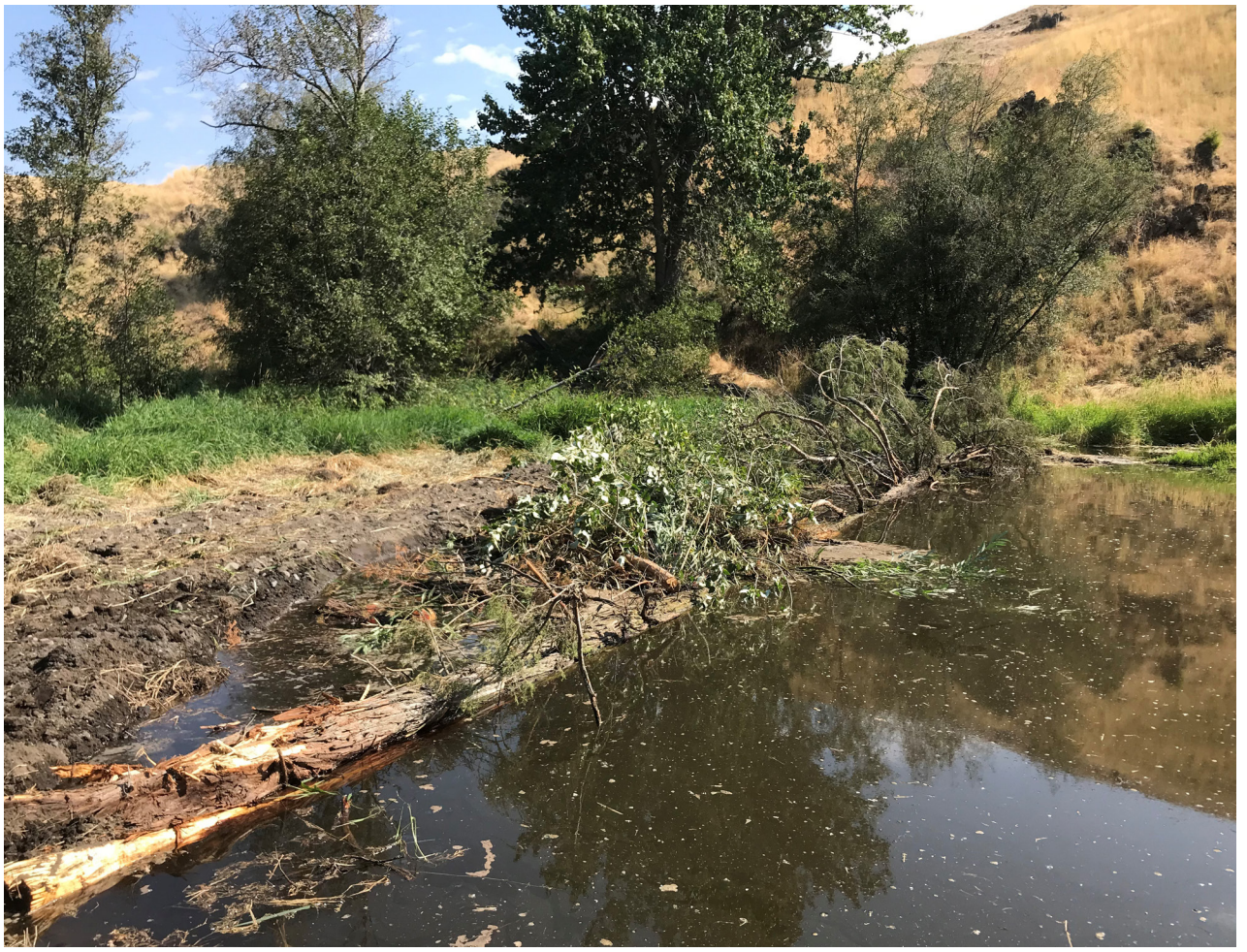
TALE TWO

Since 1984, the Oregon Department of Fish and Wildlife (ODFW) Grande Ronde and Umatilla Fish Habitat Program has looked for innovative ways to incorporate readily available vegetation into stream restoration projects. In the early 1990s, in association with some of the program's riparian fence projects implemented to reestablish vegetation that provides shade and deep binding root mass preventing erosion, junipers were used in an attempt to decrease bank erosion. Known as juniper revetments, whole trees that were harvested – rootwad and all – from a nearby location were laid against the bank with the rootwad on the bank and the tip swept at a downstream angle and then cabled to a post to keep them from floating away. Individual junipers were layered in a downstream fashion

until the whole bank was covered.

The results of these efforts showed some promise as a treatment strategy. When the banks collapsed, the soil and sod were often held in place, and vegetation was then able to establish itself. Before, it had been impossible for vegetation to take root in a vertical bank. While many of these structures decreased erosion, in other locations, the structures did not appear to have an effect, and the erosion continued or increased in adjacent areas.

With limited success using junipers for bank treatments, it wasn't until recently that ODFW returned to figuring out how they could use junipers in habitat restoration when they were available. In 2021, a project that included large wood structures as a component to improve in-stream habitat had a number of junipers on site, and the landowner was more than willing to allow them to be used. The junipers that were located on the project site were identified to be incorporated into the large wood restoration structures to provide more habitat complexity. It was a no brainer financially because the junipers were located in such close proximity to where they were installed for the project. Using junipers in this scenario had varying results. One downfall was that they deteriorated very quickly after harvesting as they waited to be put into the streams. Large, bushy trees became toothpicks as they were handled by equipment. Arguably, the extreme heat encountered that summer did not help slow their desiccation. While still a usable component, many of these junipers no longer had the characteristics ODFW had envisioned. In contrast, ODFW was able to harvest some trees that were immediately installed. These structures were exactly what was envisioned and added the habitat complexity ODFW was looking for.



A large whole juniper tree used in a pond to anchor a beaver lodge restoration structure. Photo by Ian Wilson, GRMW.

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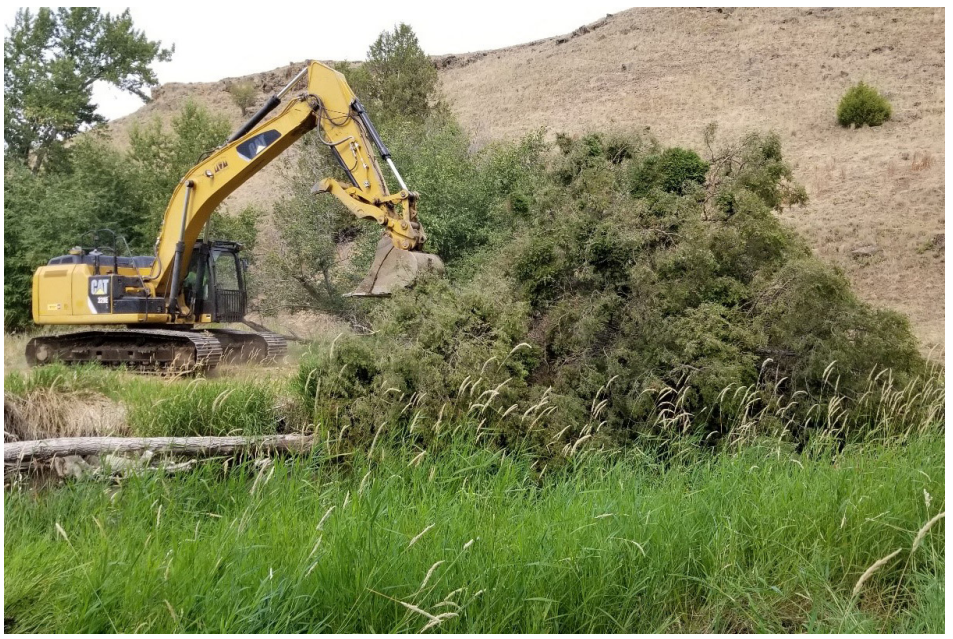
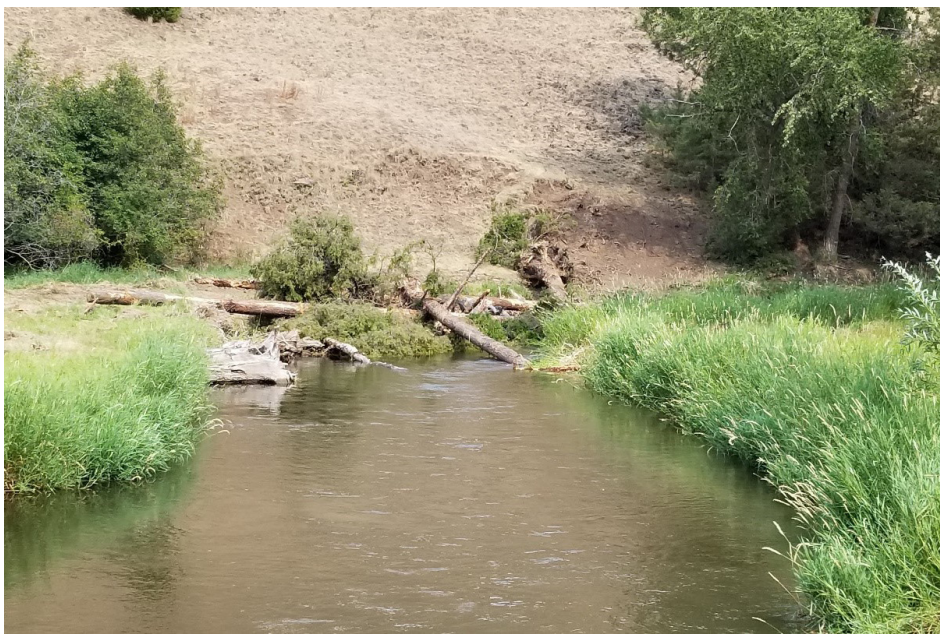


An excavator operator places a juniper tree that will become part of a large wood structure. Photo by Winston Morton, ODFW.



This wood structure is the result of construction on the site pictured at the left. Photo by Winston Morton, ODFW.

SNORKELING FOR SALMON IN THE WALLOWA RIVER BASIN

by Fred Drascic, Oregon Department of Fish and Wildlife

INTRODUCTION

Historically, the Grande Ronde River supported several anadromous salmonid runs, including spring, summer, and fall Chinook, sockeye salmon, Coho salmon, and summer steelhead. During the past century, a multitude of factors have led to a reduction in salmon stocks. The only remaining viable populations today are spring Chinook salmon and summer steelhead. Snake River spring Chinook and summer steelhead were listed as threatened under the Endangered Species Act (ESA) in 1992 and 1997, respectively.

Numerous habitat restoration projects have occurred throughout the Grande Ronde River basin, particularly in the upper Grande Ronde River and Wallowa River basins, with the goal of improving native salmonid populations. The effectiveness of these projects in increasing native salmonid production and/or use has not been evaluated in the Wallowa River basin.

This is the first year ODFW has conducted snorkel surveys on a broad scale to document juvenile salmonid densities. We sampled 30 sites spread across the Wallowa River basin and its main tributaries: Bear Creek, Lostine River, and Hurricane Creek. Within the 30 sites, nine include completed or planned restoration projects. The goals of the surveys are to 1) gain knowledge of the current juvenile salmonid distribution and density within the basin and 2) determine how fish use habitat restoration projects compared with unrestored and wilderness sections of river. Coupling data on habitat characteristics and salmonid presence and abundance will aid in our understanding of the current distribution of juvenile salmonids within the Wallowa River basin. Determining what habitat juvenile salmonids are using in unrestored and wilderness sections of rivers compared with what is being utilized in restoration project areas will improve future restoration projects throughout the valley.

RESULTS

Our results show that Chinook and steelhead occurred throughout the watershed, whereas bull trout were found in upstream sections of the Wallowa River near Joseph, Oregon, and within the Lostine River.

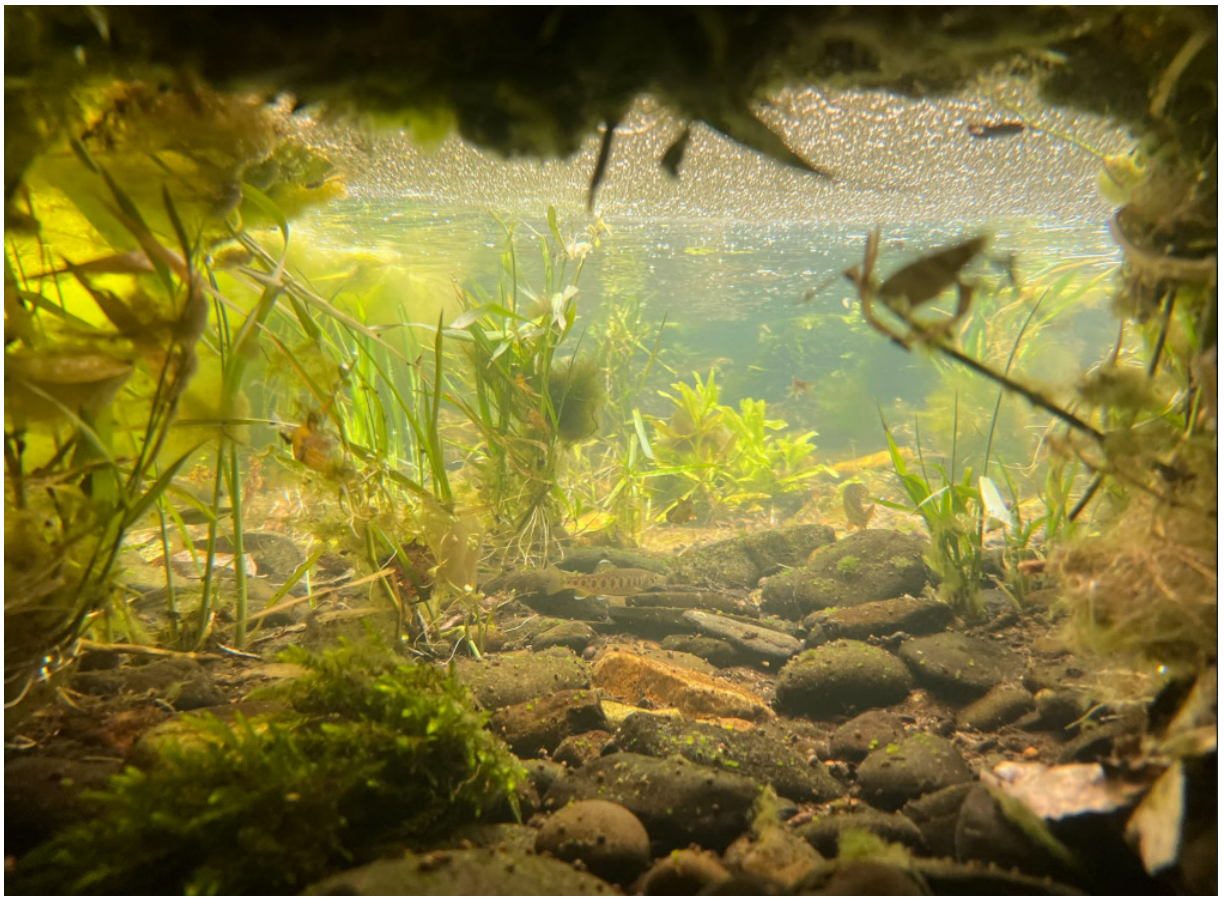
Bear Creek had four survey sites starting at river kilometer (rkm) 5 upstream from the confluence with the Wallowa River. Chinook and steelhead were found throughout the sites, with our highest concentration occurring at rkm 11. No bull trout were found during our Bear Creek surveys. Our third survey site is located on Little Bear Creek, starting at the confluence.

Hurricane Creek had six sites stretching from the confluence with the Wallowa River to a few river kilometers above the wilderness boundary. Interestingly, Chinook and steelhead occurred up until the U.S. Forest Service campground but were not present above. Bull trout were present above the U.S. Forest Service campground.

Seven of our survey sites were on the Lostine River, with sites located throughout the first 35 river kilometers. Two of the survey sites are located on restoration projects. Unlike our other sites, we did have small groups of bull trout located at two of our downstream sites. Chinook and steelhead were located across all sites except one.

The Wallowa River contained the remaining 13 survey sites, including eight located on restoration projects. We found high numbers of Chinook and steelhead using a side channel as refuge from higher flows in the lower mainstem

Snorkeler looking for hiding salmonids on Hurricane Creek. Photo by Fred Drascic, ODFW.



Juvenile steelhead and Chinook in a side channel of the Wallowa River. Photo by Fred Drascic, ODFW.

Wallowa River. Throughout the middle portions of the survey sites, we did not find many juvenile salmonids. Bull trout were found at only one site located outside of Joseph.

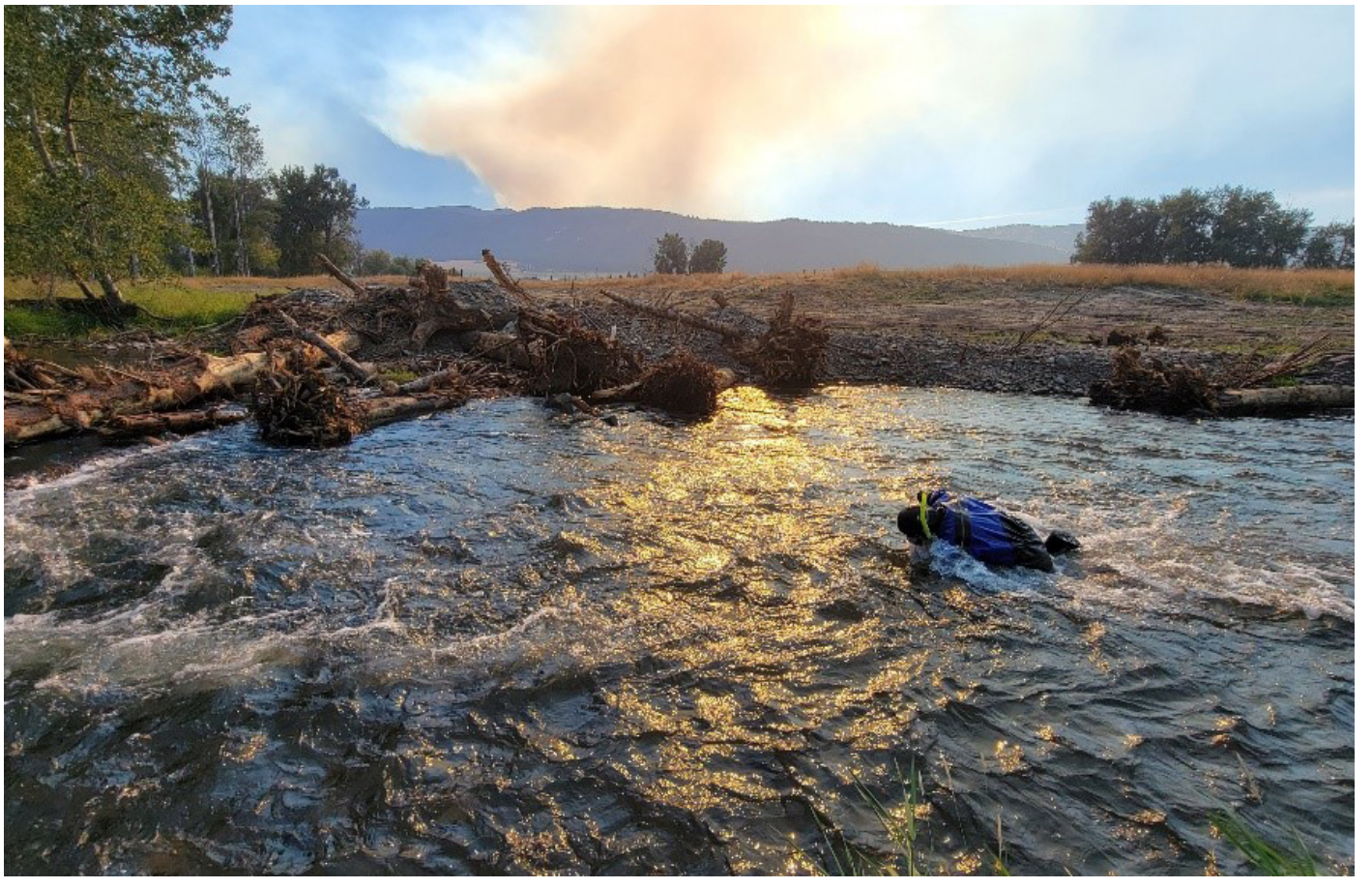
DISCUSSION

The surveys have provided an initial distribution map of juvenile salmonid species and the types of channel-unit habitat they prefer throughout the basin. When pools, side channels, or fast non-turbulent habitat were available, we saw higher concentrations of juvenile salmonids, which is especially important when you move down the valley and the river contains higher flows. Side channels offer protection from high flows and cover from predators that may be in the mainstem river. Pools give refuge for salmonids of all size classes and usually had higher counts of fish than surrounding channel-unit types.

Survey results on the use of restoration sites were a bit inconclusive; at WALLR032, the side channel complex that was built had large numbers of Chinook and steelhead, with both species being well-represented throughout the side channel. This restoration project is the oldest, having been completed more than five years ago. Beavers have now moved into the side channel complex and constructed dams. Some recently completed restoration projects had minimal use as the aquatic insect and fish communities were still recolonizing those areas. One restoration area that is located at the confluence between two rivers is teeming with fish after having just been completed earlier this year. That project is pocketed with multiple deep pools and large woody debris that provide complex habitat in which juvenile salmonids can seek refuge.

CONCLUSIONS

This is the first large-scale juvenile salmonid distribution survey to occur in the Wallowa River basin. Distribution of Chinook and steelhead juveniles is near what we were expecting. Bull trout were found in a few surprising areas (below the town of Joseph, Hurricane Creek), but due to hybridization occurring heavily in those areas, it has been called into question if they were truly bull trout. We look forward to conducting another round of surveys in 2023. ■



Snorkeler looking for juvenile salmonids in a restoration project on the Wallowa River. Photo by Fred Drascic, ODFW.

AN INTERCONNECTED WEB OF COMMUNITY SCIENTISTS

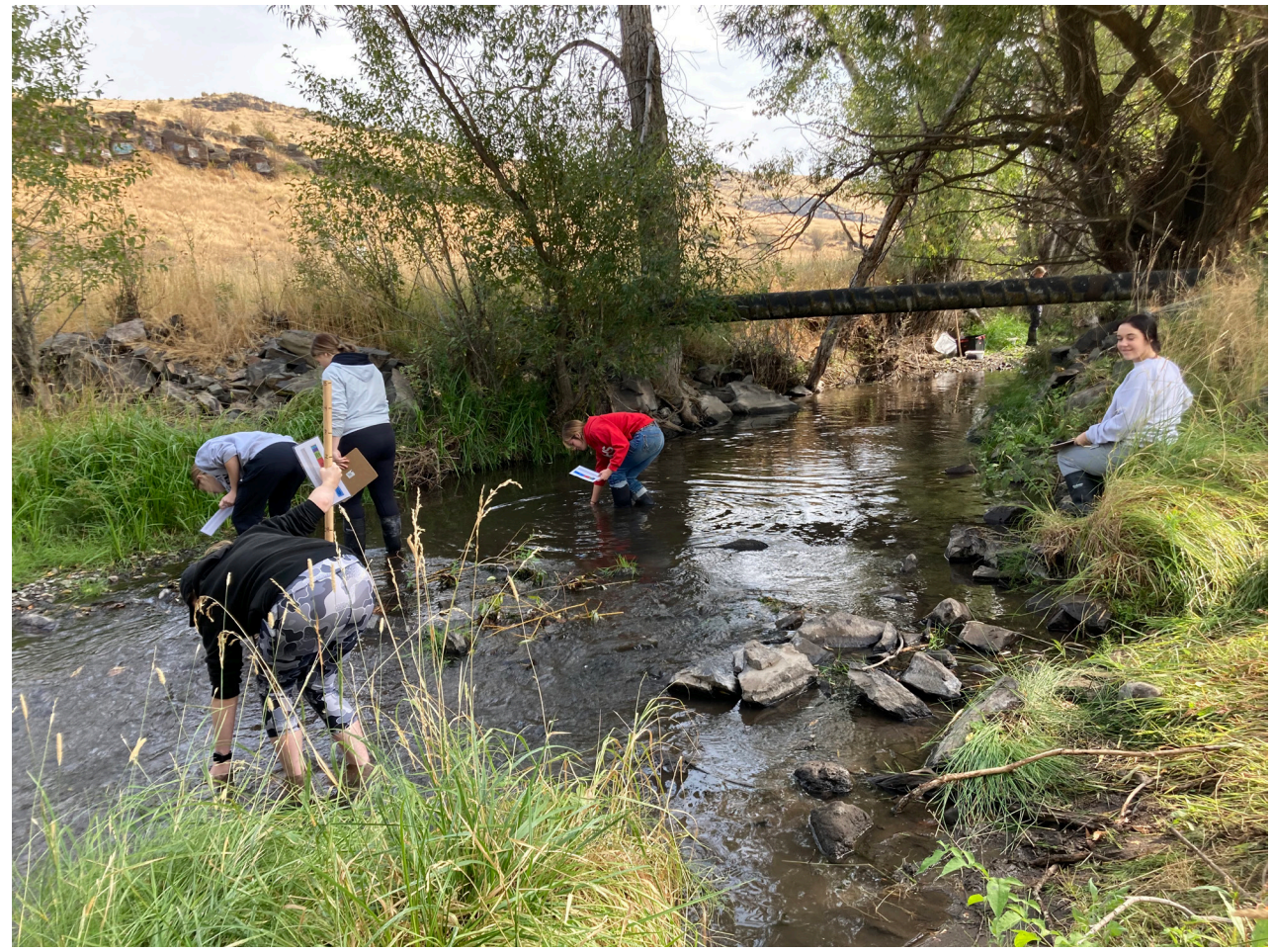
by Carrie Caselton-Lowe, RedTwig Education

A La Grande fifth grader lifted her head out of an underwater-view bucket looking for fish and crayfish in the Grande Ronde River and announced that this day was the best school day ever. Last summer, Union County Juvenile Department youth, with an underwater camera in hand, were the first to discover and document a bed of freshwater mussels at a local ranch along Little Creek. Undeterred by wind and rain, Cove seventh graders have been walking down to monitor water quality and assess aquatic insect populations in Mill Creek. These scenes have become more common as a result of the Grande Ronde / Qapqápnim Wéele Community Science Project, where youth alongside educators and professional scientists are investigating how our watershed is changing over time.

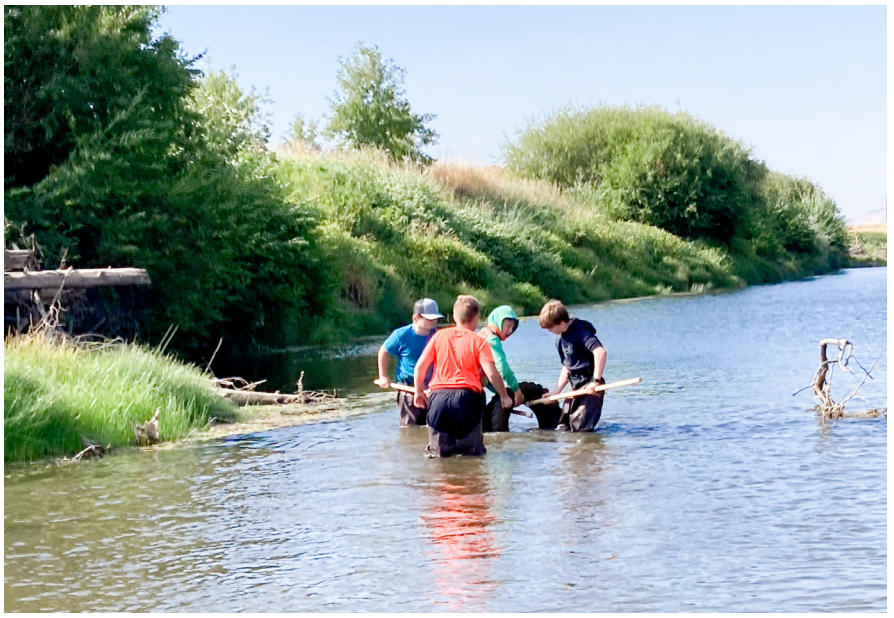
Kayla Morinaga, the Grande Ronde Model Watershed (GRMW) network monitoring coordinator, was the spark that ignited these community science efforts. As a watershed scientist and mother of three girls, she sees the need for youth to learn in our local outdoor laboratories and the incredible career opportunities available both locally and globally in watershed science. Kayla has been setting the stage for community watershed engagement for years. Shortly after I moved to the Grande Ronde River valley, Kayla and I discovered our shared interests in watershed community engagement and began seeking grant funds. While Kayla brought a deep knowledge of stream ecology and well-respected connections with watershed scientists and landowners, I contributed education and ecology experience to our collaboration. Together with so many other partners over the past three years, we have developed the Grande Ronde / Qapqápnim Wéele Community Science Project.

As we sought community input during the project's development phase, opportunities presented themselves and proved ripe for the taking. First and foremost, people in our communities center our livelihoods around natural resources. Whether it is for work or play, our communities spend a lot of time outside. Yet, no local entity oversees natural resources education, and our youth deserve more opportunities to learn in and appreciate the outdoors. When youth learn outside, they become informed and engaged champions for our natural resources. Second, GRMW has coordinated more than $35 million in habitat restoration projects since 2016, and there are simply not enough professionals to monitor the numerous projects. By engaging youth in watershed monitoring, our region has more "hands on deck" to monitor the efficacy of these restoration projects, and youth gain authentic "on-the-job" training. Third, it is an immeasurable gift to live on the ancestral homelands of the Cayuse, Walla Walla, Umatilla, and Nez Perce peoples. Indigenous people have inhabited and lived in reciprocity with our watershed for somewhere between 16,000 and 18,000 years, which turns out to be around 575 to 650 generations.* This is a very long time to observe seasonal patterns and understand the gifts of the land and water. To truly appreciate how our watershed is changing over time, it is essential that we be guided by the people who have been stewarding this land since time immemorial. So, from the project's beginning, we have prioritized building relationships with our Indigenous colleagues and following the lead of their perspectives. In so doing, we have learned that the Grande Ronde River is the Qapqápnim Wéele, or "the Cottonwood Stream," in the Cayuse Nez Perce language. This and other Indigenous place names are effective resources that inform how our watershed is changing over time.

With these opportunities in mind, we aim for the community science project to: 1) empower communities in our region, especially underserved youth, to see themselves as scientists



Union students measure stream substrate on Little Creek. Photo by Carrie Caselton-Lowe, RedTwig Education.



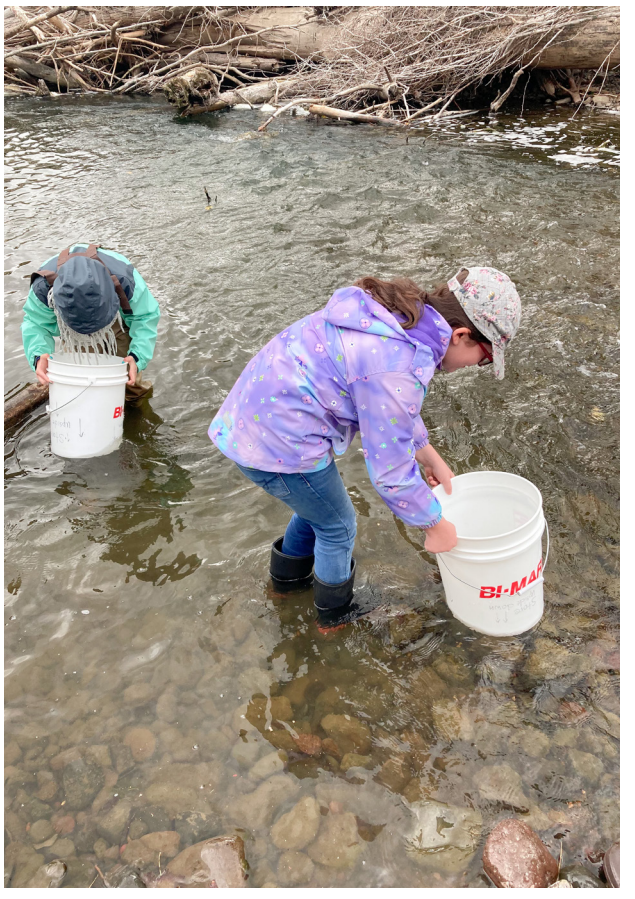
Imbler Middle School students remove tire from the Grande Ronde River. Photo by Carrie Caselton-Lowe, RedTwig Education.

and lifelong stewards of our environment; 2) be guided by and amplify our Indigenous neighbors' voices by integrating traditional ecological knowledge into monitoring and educational activities; and 3) increase our community's natural resource knowledge and ecological literacy through watershed monitoring. So far, our project's community of scientists consists of 737 youth, 10 classroom teachers, 6 nonformal educators, and 11 natural resources professionals who represent 11 Eastern Oregon schools, 4 outdoor schools, 3 Tribes, and 11 other agencies and organizations. Collectively, this community has monitored 16 sites across our watershed.

These numbers are exciting, but the stories behind the numbers are even more inspiring. When we ask how our watershed is changing over time, we are at the same time inquiring about the watershed's stories. These stories come from the past, are illuminated through present-day monitoring efforts, and are built by envisioning a resilient future. By sharing these stories, from Indigenous oral history to new youth stewardship efforts, our community science project is creating a space for people to deepen their own watershed stories through connection, appreciation, and relationship with the gifts of the land, water, and each other. For example, Union High School students learned to independently measure electrical conductivity and dissolved oxygen on Catherine Creek using state-of-the-art wireless technology. Additionally, while measuring water depth, Imbler middle schoolers found a couple of tires in the Grande Ronde River and, with no adult asking them, made quick work of prying the tires from the river. These and all youth need more time outdoors to learn from its amazing inhabitants and build lifelong skills in our readily available, local nature-made laboratories.

La Grande High School students monitor stream flow. Photo by Carrie Caselton-Lowe, RedTwig Education.

It is through our interconnected web of partners and funders that we are able to do this work. We partner with the Caretakers of the



Central Elementary students use their view buckets to find fish, crayfish, and freshwater mussels. Photo by Carrie Caselton-Lowe, RedTwig Education.

Land / Naknuwiłama Tiiča mna, Confederated Tribes of the Umatilla Indian Reservation (CTUIR) Education Department, CTUIR Department of Natural Resources, Greater Oregon STEM Hub, Wallowa Whitman National Forest, Oregon Department of Fish and Wildlife, Union County Soil and Water Conservation District, U.S. Fish and Wildlife Service, Oregon State University (OSU), OSU Extension, Oregon

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Overall, using junipers can have many advantages, especially if they are near the project location. They can help keep costs down, as many landowners also are interested in removing them for various reasons. With ODFW's trial and error using juniper, they have found ways to successfully integrate these trees into restoration projects in order to benefit fish by increasing preferred habitat conditions.■

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Natural Resources Education Program, Eastern Oregon University, IDAH20 from University of Idaho Extension, The River Mile Crayfish Study, Nez Perce Wallowa Homeland Project, Cove Ascension School, Camp Elkanah, Cove School District, Elgin School District, Imbler School District, La Grande School District, Union School District, Union County Juvenile Department, Art Center East, Blue Mountains Conservancy, and Growing Community Roots.

Our generous past and present funders include the U.S. Forest Service, Gray Family Foundation, The River Mile Crayfish Study, Wildhorse Foundation, Amazon Web Services, and Oregon American Fisheries Society.

We welcome you to join our community of scientists. No matter what your skillset or interests might be, we feel there is a place for you with us in connection through water and community. Find more information at www.granderondecommunityscience.org or email: communityscience@grmw.org.

Carrie Caselton Lowe coordinates the Grande Ronde Community Science project and is an outdoor educator and ecologist. She has a middle and high school science teaching license and a Master of Science in insect and plant ecology. She contracts with organizations like the GRMW through her contracting business, RedTwig Education. Find her at: www.redtwig.org and carrie@redtwig.org. ■

* References

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Grande Ronde Model Watershed
Upcoming Board Meetings

Tuesday, June 27th, 2023
5:00 p.m.
Elgin Community Center
260 N 10th St.
Elgin OR 97827

Tuesday, August 22nd, 2023
5:00 p.m.
Annual BBQ
Location TBD

The public is welcome to attend.

Meeting dates are subject to change.
Please call (541) 663 - 0570 to confirm.
Thank you!

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