RIPPLES IN THE GRANDE RONDE

FALL EDITION 2018

RIVERS UNITING NEIGHBORS·QUARTERLY NEWS FROM THE GRANDE RONDE MODEL WATERSHED

EVALUATING THE EFFECTIVENESS OF PLANNED GRAZING IN A RIVER RESTORATION AREA

by Robert V. Taylor, Ph.D., *Ecologist*

The 6 Ranch, located just outside of Enterprise, Oregon, is a family-owned ranch that produces high-quality, grass-fed beef while maintaining and improving the land and water that make up the property. Fourth-generation rancher Liza Jane McAlister is the head of the outfit and has a reputation for doing things the way she thinks will work best, rather than simply relying on tradition. For example, instead of raising Black Angus or other northern European cattle breeds and sending them to feed lots for finishing, McAlister runs a herd of Spanish breed cattle known as *Corriente*, which are relatively small, agile, and well-adapted to the steep terrain and do well on the arid rangelands of Wallowa County, and prefers to fatten them up on the range rather than sending them off to a feed lot.

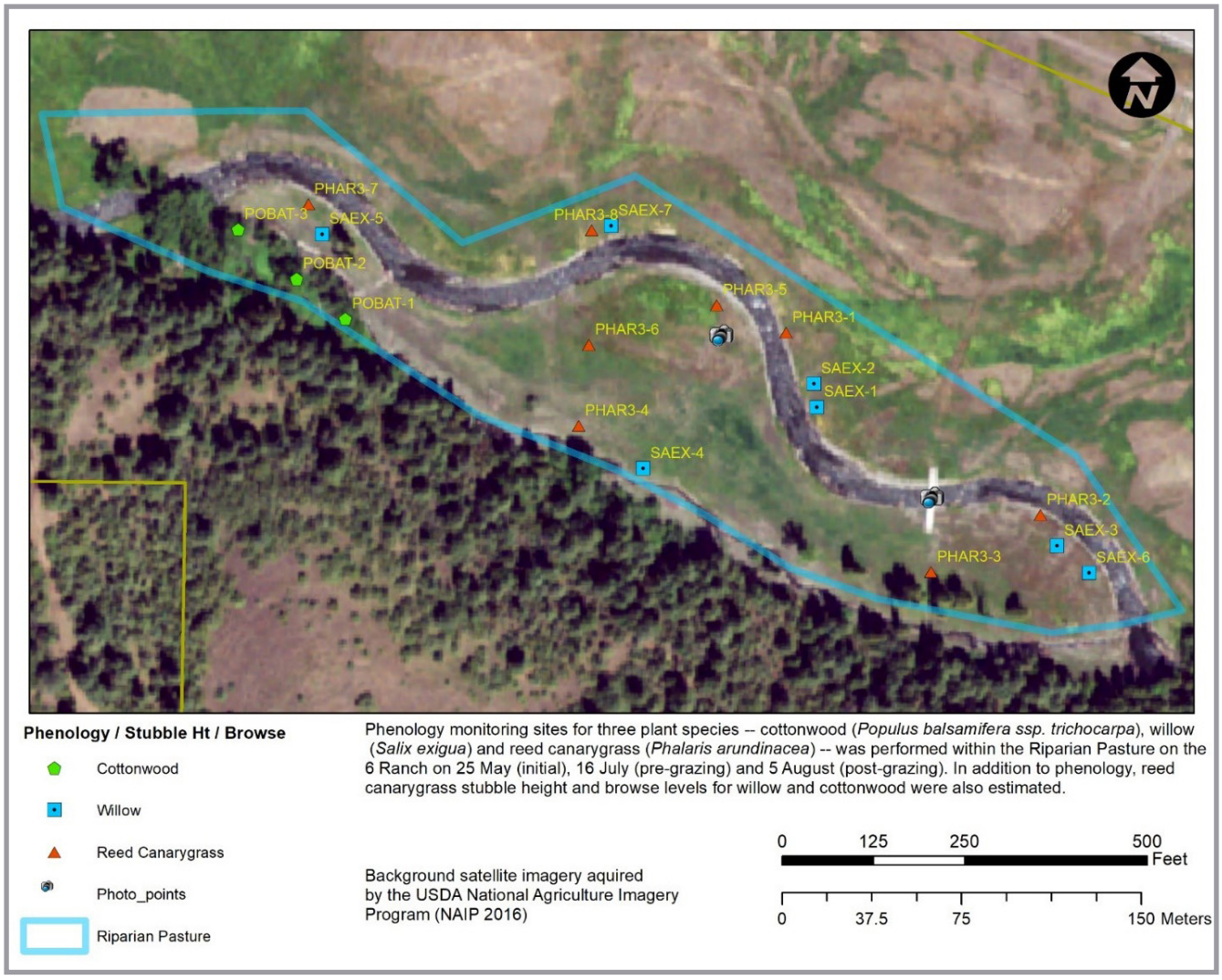

Figure 1. Map of the project area (courtesy of Rob Taylor).

For many years, the McAlister family had wanted to restore the reach of the Wallowa River that flows through their property, and in 2015, with the help of Grande Ronde Model Watershed (GRMW), Bonneville Power Administration, and the Oregon Watershed Enhancement Board, they were able to turn their dreams into reality. It was typical for restoration projects that livestock be excluded, or fenced off, from the restoration area indefinitely. But this practice didn't make a lot of sense to McAlister because she believed that the cattle could play a positive role in bringing native plants back to the riparian area. So, when the second phase of the project was being planned, she worked with the Natural Resources Conservation Service to come up with a plan to graze livestock in the riparian area after a two-year period during which the native willow plantings and native grass seeding would have a chance to become established. One component of this plan was to monitor the cattle in the pasture to ensure that grazing would have the desired effect of reducing

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non-native vegetation, especially the invasive reed canarygrass (*Phalaris arundinacea*), while avoiding damage to desirable native grasses, such as tufted hairgrass (*Deschampsia cespitosa*) and coyote willow (*Salix exigua*).

The river restoration project was completed in 2016, and by spring 2018, McAlister was ready to follow through with the plan to graze cattle in the Phase II portion of the restoration area in a location that has become known as the Riparian Pasture. Ecologist Rob Taylor was contracted to conduct the associated monitoring, although, due to limited funding, only some portions of the original monitoring plan could be implemented. Working with the landowner and Coby Menton of the GRMW, Taylor selected a suite of key indicators that would be measured before and after grazing, including growth phase and height of reed canarygrass and tufted hairgrass as well as growth phase and extent of browse on willows. The objective was for grazing to begin when reed canarygrass had grown 6-8 inches in height and before grasses had gone to seed and become unpalatable and for grazing to stop when tufted hairgrass had been grazed down to a stubble height

Figure 2. Reed canary grass and willow before (July 16) and after (August 5) grazing. Note that lower branches of willow accessible to cattle were browsed (courtesy of Rob Taylor).

Drone imagery of Phase II on the 6 Ranch Restoration Project (2016). Also the location of the riparian pasture where grazing management monitoring took place (courtesy of GRMW).

of 5 inches. Furthermore, grazing was to be completed before willows broke bud and was to stop if the cattle browsed more than 25 percent of the previous year's willow stems. The monitoring methods chosen to evaluate these objectives were a combination of tried and true techniques such as "stubble height" for measuring grass heights, as well as those of the National Phenology Network (www.usanpn.org), which was used to track the growth phases of both grasses and willows and makes those data available to both the public and researchers. The method chosen to measure willow browse rates considered the fraction of the previous year's leaders that had been eaten by either cattle or wild ungulates. In addition to quantitative measures, repeat photo-monitoring from fixed locations also would be used to better understand conditions before and after grazing and the effects of cattle on the vegetation while in the riparian pasture.

Mother nature has a reputation for injecting a healthy dose of chaos into even the best-crafted plans, and spring 2018 was no exception. Heavy snowpack in the mountains and a wet, cool spring kept the Wallowa River running high and fast throughout April and May, and the riparian pasture was still mostly flooded when Taylor conducted his first round of monitoring surveys on May 25. By this time, willows already had broken bud and were nearly completely leafed out; reed canarygrass had grown to an average height of 25 inches and had gone to seed. It was clear by this time that grazing objectives could not be met.

It was late July before McAlister turned cattle out into the Riparian Pasture. Pre-grazing monitoring conducted just a few days prior found that reed canarygrass had now grown to an average height of 41 inches and had gone to seed, suggesting that the palatability of these plants for cattle might be low. Examination of willows in the area revealed that all of the previous year's growth had been browsed

by either deer or elk, resulting in a browse rate of 100 percent. The height of the desirable native tufted hairgrass could not be measured because no plants could be located, despite prior seeding efforts.

Fifty Corriente steers grazed the riparian pasture for seven days, from July 26 to August 1, and post-grazing monitoring was conducted on August 5. Examination of reed canarygrass plants revealed that only a small fraction of plants had been grazed. Even for these plants, stubble height was 28 inches, suggesting that cattle had grazed the upper half of some plants but found the lower leaves unpalatable. Ungrazed plants, which were the vast majority, had an average height of 56 inches. It appeared that cattle had focused their grazing on other grass species, such as Kentucky bluegrass (*Poa pratensis*). Measures of browse were still at 100 percent after grazing, but importantly, it was observed that most of the current year's growth had been consumed by the cattle.

The first year of grazing in the riparian pasture at 6 Ranch did not produce the intended outcomes but did provide valuable lessons for both the landowner and the ecologist. First, it was clear from data collected on the annual growth patterns of willow that grazing in the riparian pasture would need to be completed by April or early May to ensure that cattle will not consume new, tender willow leaders. Furthermore, the methods used to monitor browse rates on willows were not sensitive to grazing of the current year's growth, suggesting that some modification of these methods might be necessary to better inform grazing management. Observations of growth and grazing patterns of reed canarygrass confirmed that this invasive grass species will be mostly avoided by cattle by mid-summer. Whether the cattle will graze reed canarygrass earlier in the season is not yet known and will require further study. Finally, the virtual absence of desirable native grasses in the riparian

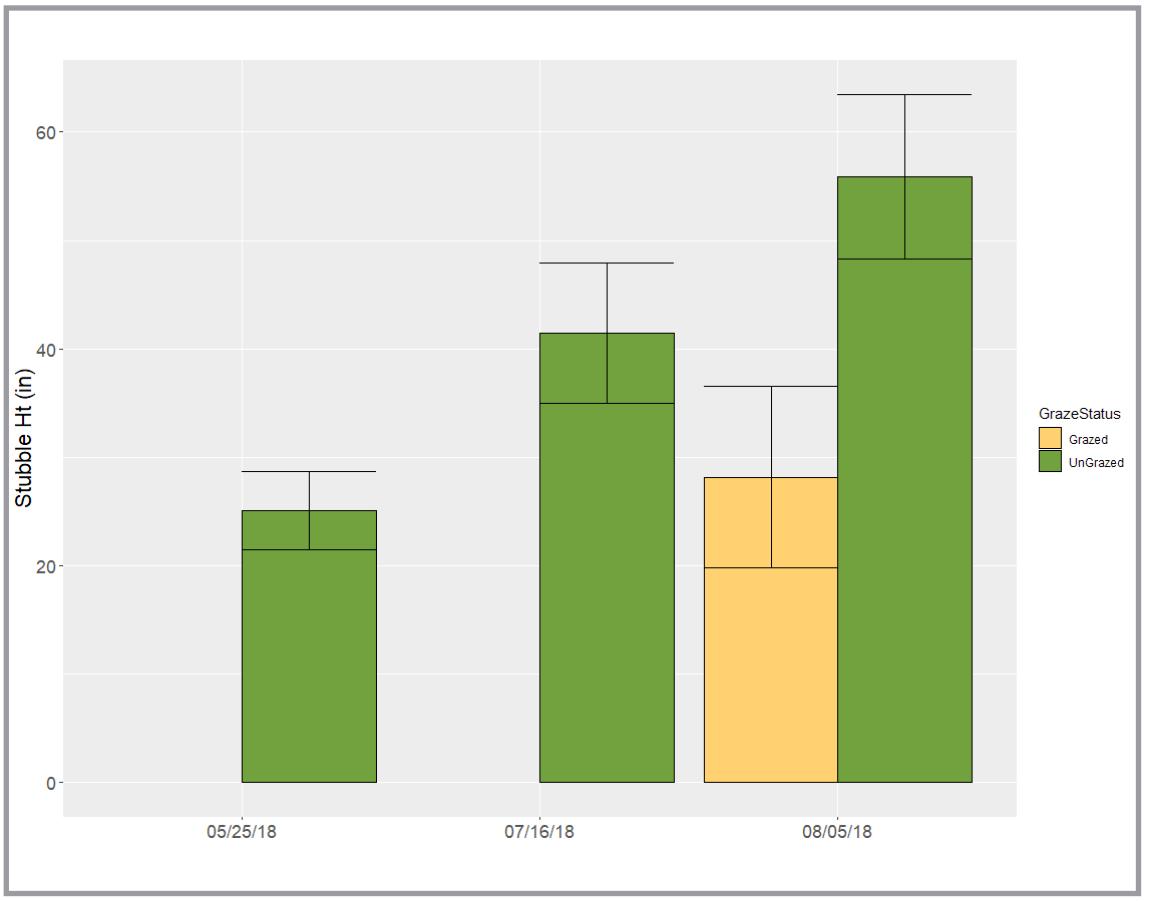

Figure 3. Stubble height of reed canary grass pre-and post-grazing. Error bars indicate 90% confidence intervals (the statistical margin of error). (courtesy of Rob Taylor).

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Figure 4. Photos taken before (July 16) and after (August 5) grazing in the riparian pasture in 2018 (courtesy of Rob Taylor).

NEZ PERCE TRIBE
JOSEPH FIELD OFFICE

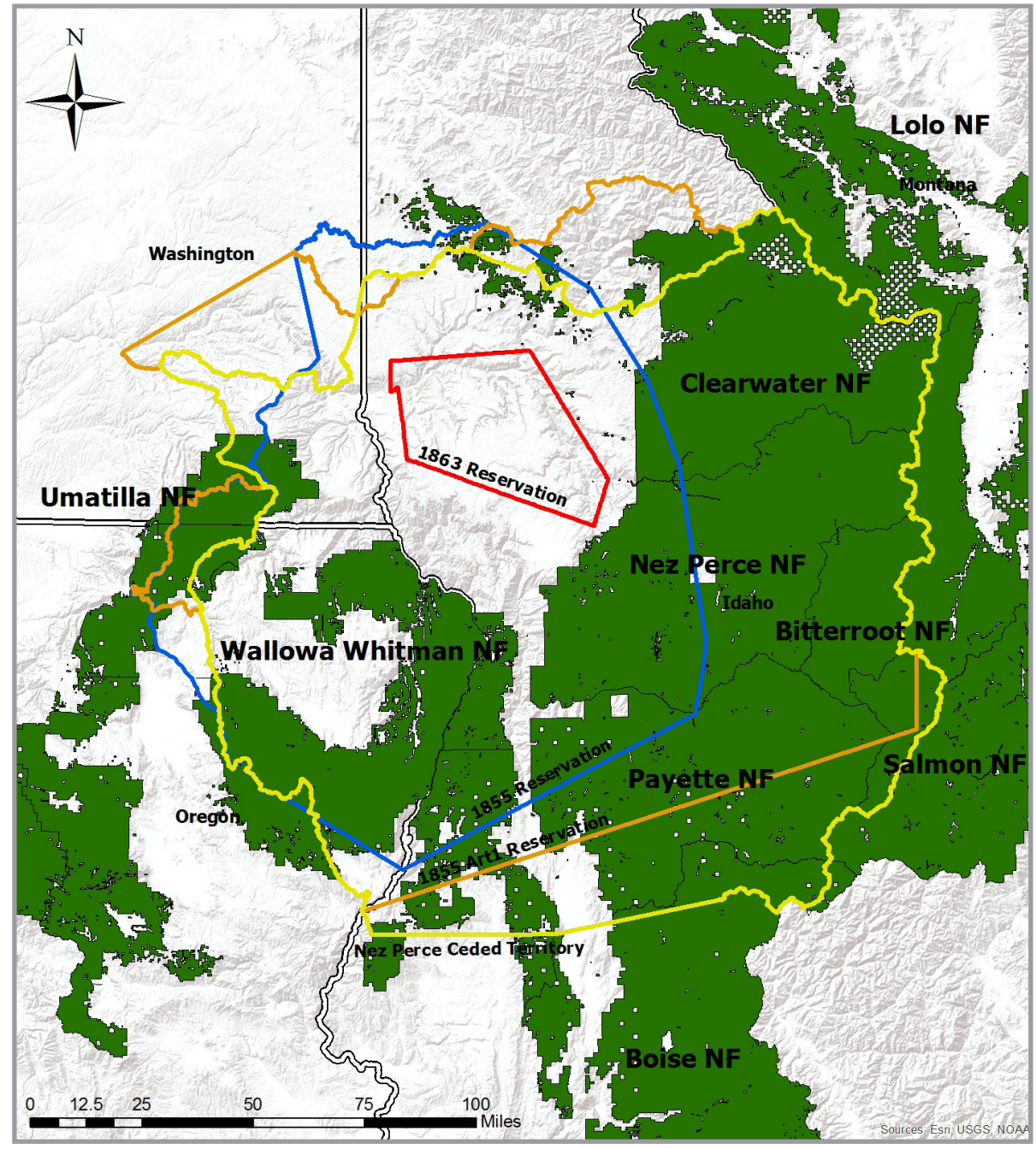
by Katie Frenyea, *Dept. of Fisheries Resources Management*
Watershed Project Leader

Wallowa County represents an integral part of the Nez Perce Tribe's expansive homeland and is within the boundaries of the original 13.4-million-acre reservation established by the Treaty of 1855. Today, the Tribe's Department of Fisheries Resources Management program is responsible for maintaining a healthy 13+-million-acre watershed and improving survival of salmon and steelhead under the auspices of the 1855 Treaty. It is the Tribe's vision to recover and restore all species and populations of anadromous and resident fish within the traditional lands of the Nez Perce Tribe, including Wallowa County.

For more than twenty years, the Nez Perce Tribe through its Joseph Field Office has helped steward natural resources covering thousands of acres and hundreds of miles of river throughout Wallowa County. We employ 21 full-time and 6-8 seasonal employees. These employees coordinate and interact with state, federal, and other tribal agencies, non-profit organizations, and private property owners in assessing and implementing fish recovery and restoration plans. We monitor fish populations and provide guidance and recommendations regarding Endangered Species Act (ESA) issues. We also provide recommendations for restoration and protection of critical habitat for fish populations and protect fish and wildlife resources through conservation actions.

The employees of the Joseph Field Office are organized within specific divisions of the Fisheries Department. Our Research Division conducts applied research and monitoring projects. The Production Division provides aquaculture expertise, and our Watershed Division implements habitat restoration projects. More specifically, the strategic goal of the Watershed Division is to "protect and restore watersheds and fisheries habitat to the rivers and streams that support the historical, cultural, and economic practices of the Tribe and resources needed for exercising rights guaranteed under the Nez Perce Treaty of 1855 with the US Government. Native fish within the Nez Perce usual and accustomed area depend on healthy watersheds and streams which have been degraded by many anthropogenic land management practices, such as development, grazing, agriculture, roads, timber harvest, and mining. The overall habitat condition objective is to attain a properly functioning, self-sustaining ecosystem that supports abundant and diverse communities of native flora and fauna."

Since the establishment of its Watershed Division in Wallowa County, the Tribe has partnered with the U.S. Forest Service (USFS), the Grande Ronde Model Watershed (GRMW), the Oregon Department of Fish and Wildlife (ODFW), Wallowa Resources, and others in culvert, riparian fencing, and stream restoration projects. We seek to further increase our partnerships with landowners and other natural resources agencies targeting flow, passage, fisheries habitat, and overarching watershed health projects. Because approximately 50 percent of Wallowa County is privately owned, it is not only imperative but



The above map shows how the Nez Perce reservation has changed over time (courtesy of Katie Frenyea).

The Sheep Ridge diversion structure on the Lostine River before restoration was completed by the Nez Perce Tribe and GRMW (courtesy of Katie Frenyea).

also often mutually beneficial for both the Tribe and landowners to collaborate in managing our natural resources.

The Tribe's Watershed Division consists of eight separate geographic areas that implement watershed restoration projects. The project in Wallowa County is one of these eight areas. The Wallowa County project area also includes part of southeast Washington, with the total project area covering approximately 4.2 million acres across northeastern Oregon and southeastern Washington. It is the purpose of the Watershed Division to protect and restore watersheds and fisheries resources throughout Nez Perce Territory, which are critical for future generations. This work has its roots in protecting tribal sovereignty and treaty rights reserved under the Treaty of 1855. These activities are accomplished using a holistic approach, which encompasses entire watersheds from ridge-top to ridge-top that emphasizes all cultural aspects of the areas.

An early example of county-wide collaboration is what became locally known as the Wallowa County Nez Perce Tribe Salmon Plan. In the early 1990s, the Nez Perce Tribe together with County commissioners, landowners, the USFS, the ODFW, and the Bureau of Land Management (BLM) gathered to write the "Wallowa County – Nez Perce Tribe Salmon Habitat Recovery Plan with Multi-Species Habitat Strategy" (Salmon Plan). Pat Wortman, former County Commissioner, and Silas Whitman, former Fisheries Department Manager and Tribal Chairman, led the subcommittee. The subcommittee also included key partners like Bruce Dunn and John Williams. This document highlighted factors that limited fish and stream health throughout Wallowa County, which are still very relevant today.

In another current example, the GRMW in cooperation with the Bonneville Power Administration (BPA) has successfully led multiple ATLAS Framework processes within Eastern Oregon. ATLAS is a dynamic tool for identifying and prioritizing habitat restoration projects based on biological

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After the Sheep Ridge diversion structure was removed and restoration was completed in 2016. This project restored passage for anadromous fish to prime spawning habitat (courtesy of Katie Frenyea).

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Above: The Tulley Hill diversion structure on the Lostine River before restoration. The diversion is composed of rock and log weirs which have created a velocity barrier for juvenile fish at high flow (courtesy of Katie Frenyea).

After the Tulley Hillrestoration was completed in 2017. Passage for juvenile fish was restored while still maintaining access for irrigators (courtesy of Katie Frenyea).

benefit and strategic, rather than opportunistic, implementation. Local biologists used historic and existing research and monitoring data to consider which rivers may have the greatest benefit for Chinook salmon and steelhead if they were enhanced or restored. A Wallowa County ATLAS project was initiated in 2016 and is ongoing. The Tribe, USFS, ODFW, and others are cooperatively involved in this effort and currently evaluating the feasibility of work on private land, which is essential to achieving these overarching goals and objectives. This process seeks project opportunities throughout Wallowa County to address high-priority factors that limit the recovery of ESA-listed species and broader water quality issues.

The prioritization of habitat restoration projects will lead to sound fisheries and habitat management actions to improve survival, production, recovery, and restoration of native anadromous and resident fish populations and their habitats. This implementation effort can be accomplished through partnership among agencies, tribes, and local landowners. During the next five years, the Tribe plans to sponsor or assist in the implementation of several projects in both southeast Washington and Wallowa County. Local project staff are available to landowners seeking to learn more about the fisheries resources on their properties, watershed health, and restoration resources. We are happy to answer questions from residents seeking consultation on stream or stream-adjacent management of their lands. The Nez Perce Tribe looks forward to a continued relationship with the citizens of Wallowa County that started more than 150 years ago and continues to this day. ■

NEZ PERCE FISHERIES

On the Job

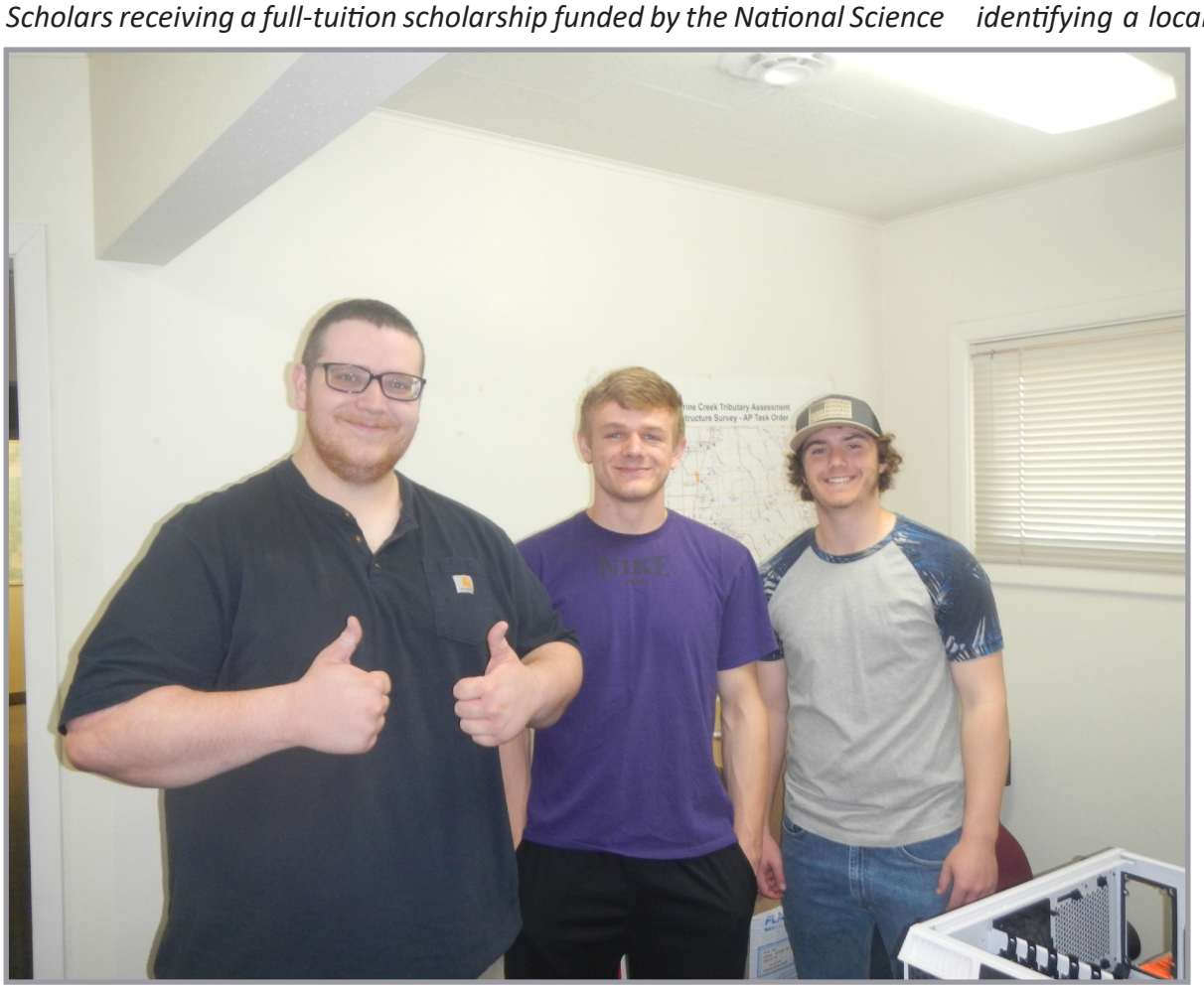
Eastern Oregon University students gain IT experience at the GRMW

by Zachary Johnson and Ryan Bailey, *EOU students*

This past spring, the Grande Ronde Model Watershed (GRMW) hosted two Eastern Oregon University students as part of a "mini-internship" through the computer science program. The two students spent a couple hours each week throughout the semester assisting the GRMW IT and database manager, Connar Stone. Below, the students reflect on their experiences with the internship:

Connar guides interns Zachary Johnson and Ryan Bailey through building a new file server (courtesy of GRMW).

My name is Zachary Johnson, and I am from Garden Valley, Idaho. I am a freshman at Eastern Oregon University majoring in computer science and mathematics. I also am one of the Advancing Science and Technology in Eastern Oregon (ASTEO) Scholars receiving a full-tuition scholarship funded by the National Science Foundation. As part of the scholarship program, I have been participating in a Science, Technology, Engineering, and Mathematics (STEM) seminar course all year. This spring, one of the course assignments involved identifying a local internship opportunity with a professor, organization, or business.



GRMW staff member Connar Stone gives a thumbs-up for our interns Zachary Johnson and Ryan Bailey (courtesy of GRMW).

I chose to do my internship at the GRMW under the supervision of Connar Stone. Within the first few days, I was tasked with fixing an Interactive Smartboard and building two separate file servers. We were successful on every count, but that is not to say every project went without challenges. The GRMW is now using the smartboard during meetings and switched over to the new servers to store maps. This work was unlike anything I have ever done in my computer science classes, but it was still extremely useful. This internship was incredibly insightful and helped me get a feel for real-world computer science applications.

I absolutely recommend internships to future ASTEO students. I got a small taste of the life of a computer scientist, and now I understand what my future might be like. For this reason alone, every college student should pursue some sort of internship or job shadowing experience. I am thankful to the National Science Foundation for providing the funding for my scholarship, Dr. Anna Cavinato (my STEM seminar teacher who connected me to the GRMW), and the GRMW staff for making this internship possible. I wouldn't hesitate to do it again!

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pasture suggests that the strategy of grazing reed canarygrass intensively as a way of increasing the abundance of tufted hairgrass may not be appropriate, at least without additional seeding or planting efforts.

With these lessons learned, both the landowner and the ecologist look forward to better outcomes in the coming years. Stay tuned! ■

About the author

Rob Taylor is an ecologist based in Enterprise, Oregon, with more than 15 years of experience in the Intermountain West. Rob specializes in assisting land managers who are seeking to improve their stewardship through sound science and adaptive management. He can be contacted at robert.v.taylor@outlook.com.

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My name is Ryan Bailey, and I am in my first year at Eastern Oregon University pursuing a bachelor's degree in computer science. I am originally from Stanfield, Oregon. Thanks to the National Science Foundation, I have received a scholarship that covers my tuition. The scholarship program requires that recipients take a one-credit seminar class to ensure that we are prepared to the fullest extent for our careers after college. As part of the spring semester requirement for this class, each student was asked to spend time working with a person in their field of study. Luckily, I was given the opportunity to intern with Connar Stone.

During my time with the GRMW, I accomplished two primary tasks. The first project was a common IT job that involved fixing a piece of technology that was not working properly. My fellow intern, Zach Johnson, and I scoured the internet for instructions about how to get a smartboard functioning properly. Our second task was to build file servers from the ground up, which is what took up most of our time.

In completing these tasks and spending time with Connar, I learned an incredible amount about computer science. This experience was very enriching, and the amazing people at the GRMW only made it better. I cannot thank them enough, and I also am grateful to Professor Anna Cavinato for connecting us with this internship. I cannot recommend internships enough to those who are seriously invested in their futures, as you meet wonderful people while learning a great deal about your perspective career. ■

Grande Ronde Model Watershed
Upcoming Board Meetings

Tuesday, October 9th, 2018
9:00 a.m. - 3:00 p.m.
Annual Meeting
Ascension School
1104 Church St.
Cove, OR 97824

Tuesday, November 27th, 2018
5:00 p.m.
Community Connection
204 E 2nd St.
Wallowa, OR 97885

The public is welcome to attend.

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