RIPPLES IN THE GRANDE RONDE

WINTER SPRING 2020

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

GRIPHOISTS, HELICOPTERS, AND TONKA TOYS

Building Ecosystem Resilience on Sheep Creek

by Levi Old, *Trout Unlimited*

Forward: *Sheep Creek is a tributary to the Grande Ronde River and provides important spawning and rearing habitat for salmon and steelhead. But over the past few years, the Oregon Department of Fish and Wildlife has found no salmon redds (nests) and few steelhead redds in the reach of Sheep Creek on U.S. Forest Service (USFS) and U.S. Bureau of Land Management (BLM) land. Trout Unlimited, USFS, and other partners are engaged in an intensive, multi-year effort to restore, protect, and reconnect 4.5 miles of mainstem Sheep Creek floodplain and fish habitat in the headwaters known as the Sheep Creek Stream and Floodplain Restoration Project.* ***In 2019, this project treated more than 10 miles of stream in the Sheep Creek sub-watershed.***

A flash of reddish-pink shimmied across the gravel creek bottom and under the cut bank. I jumped across the stream, got onto my hands and knees, and peered through a rootwad into the pool below. Blue-green-silver. Black dots. Fading red. Chinooook!!!

Chinook salmon are perhaps the most iconic wildlife species of the Pacific Northwest. Whether it's the billion-dollar commercial fishing industry dependent on these creatures, or the nutrients from their carcasses that help floodplain trees grow three times faster, or the gathering of communities for seasonal salmon feasts, these fish are deep in the lifeblood of this region, and the rivers that carry them are the veins.

But across their native range on the West Coast, Chinook population numbers are critically low. In dozens of streams like Sheep Creek and in river systems across Oregon, Trout Unlimited (TU), the oldest and largest sportsmen's organization dedicated to conserving and restoring native trout and salmon and their watersheds in North America, is working with USFS, BLM, National Oceanic and Atmospheric Administration (NOAA) Fisheries, and other state and federal agencies, tribes, and non-governmental organization partners to reverse this trend.

USFS Fish Biologist Sarah Brandy and I were walking along Sheep Creek on that hot July 2018 day when I spotted the Chinook. This important tributary to the Grande Ronde River originates in forested headwaters high in the Elkhorn Mountains and flows through Blue Mountain Meadows on USFS and BLM land before meandering through Tony Vey Meadows, where it meets the Grande Ronde River. That day,

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A portion of Sheep Creek pre-project on the right and post-project on the left. (Photo: Levi Old)

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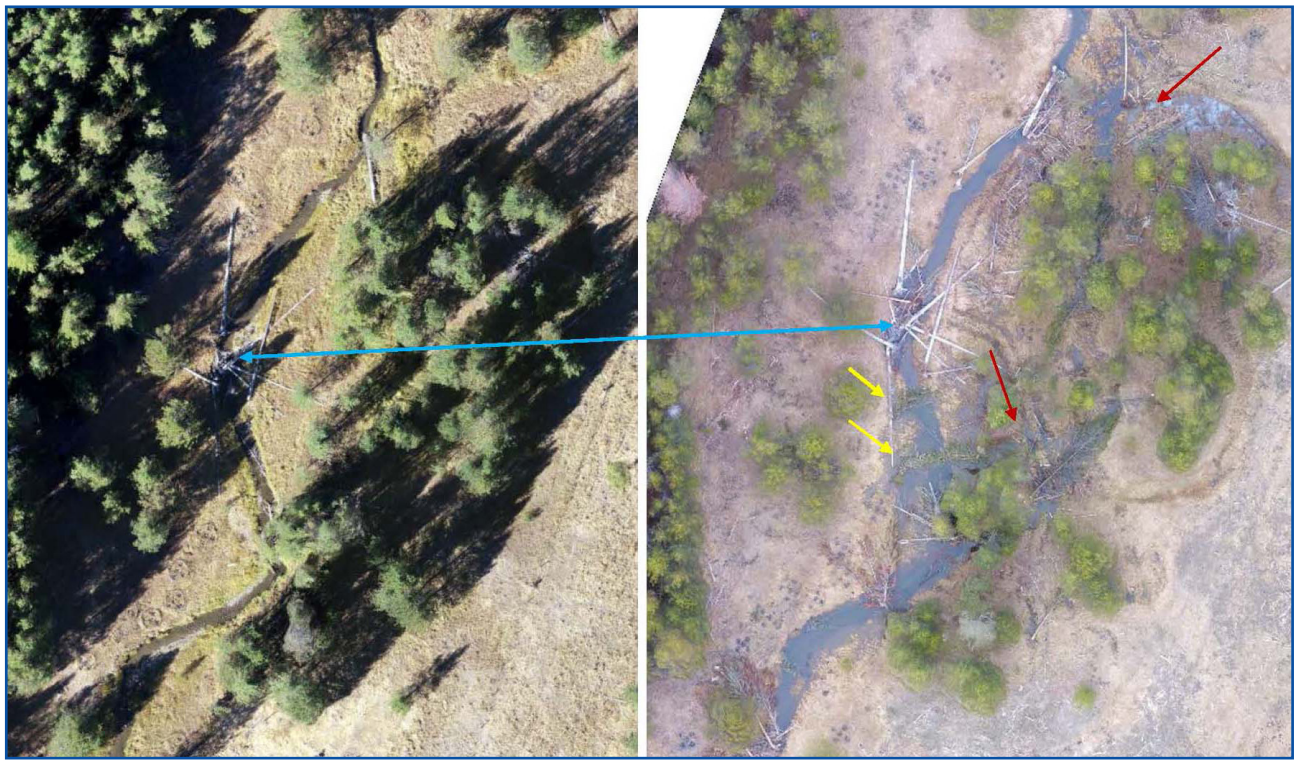
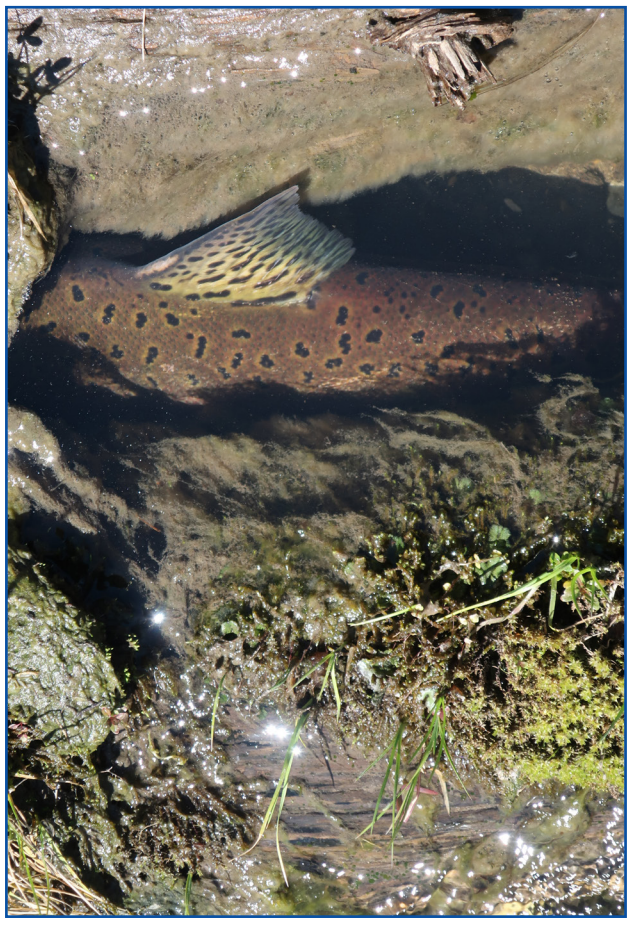


This photo demonstrates a key project objective: floodplain inundation. The blue arrow shows the same location in each photo (pre-project on the left, post-project on the right). The two mimicked beaver structures built by hand crews (and labeled above with small yellow arrows) heavily inundated and backed up water throughout the river's right and left banks. The red arrows point to areas with heavy inundation and historic side channel reconnection that were not present in the photo on the left. (Photo: Levi Old & Connar Stone)



A Chinook salmon hides amongst a root wad. (Photo: Levi Old)

we walked the whole 4.5-mile mainstem project reach to plan for our 2019-20 restoration project.

As excited as we were to see an adult Chinook, this was the only adult fish sighting of 2018. This sad fact strengthened our resolve to restore, protect, and reconnect this system.

In the Blue Mountains, these meadow systems are the heart of the landscape. In good condition, they enhance groundwater exchange in their spongy valley bottoms, creating a hotbed for biological diversity and resilient habitat for fish and wildlife. But the combined effects of past land use practices have oversimplified these once-complex systems, degrading their natural water storage capacity that is critical in ensuring late-summer stream flow and water temperatures cool enough to support salmon and steelhead.

The Sheep Creek meadow system once functioned as a vast network of channels and pools manipulated by beavers, and historical aerial imagery and modeling reveal a network of multi-threaded channels and a floodplain still capable of acting like a giant sponge.

When our project began, Sheep Creek was a single-thread incised channel, lacking the riparian shrubs needed to support beaver use. Rather than diverse water-dependent floodplain communities spanning the meadow, we found a lack of in-stream woody debris and plant species that require dry conditions dominating much of the valley bottom during our project planning and pre-treatment monitoring process. Long, straight riffles were common where there should have been a variety of pools, riffles, glides, and beaver ponds.

In order to slow the flow of water through the system and reconnect the floodplain, we employed a variety of tools and tactics. We contracted a helicopter to transport more than 2,000 trees from nearby roads to the stream side to improve transportation efficiency and decrease our impact on the meadow floor. This task included placing more than 80 trees longitudinally in the stream bottom to increase habitat complexity. We used two "Tonka Toys" (excavators) to place more than 200 large wood structures, 150 loose pieces of floodplain wood, and 50 whole trees in the channel for habitat complexity, channel aggradation, sediment sorting, activation of historic side channels, and backing up water to increase the channel's wetted width.

Finally, we piloted a new initiative to work with U.S. service veterans, who placed wood in-stream using hand-based logging equipment, set up in primitive camps for four-day hitches, and learned about careers in natural resources. This crew placed more than 40 structures in the mainstem project and then moved to the headwaters to restore an additional 5+ miles of stream and meadow habitats (see article insert "Fish Condos").

Long term, our restoration treatments in the main channel should aggrade gravel and sediment to the point where the stream bottom rises to the height of the meadow and begins to create a multi-threaded channel network. When we walk through the system now, we see long, deep backwater pools where wood structures and beaver dam analogs are backing up water. The wetted

width of the channel in many places at low flows has expanded by more than 10 feet. The cover and shade for fish habitat has increased exponentially. The stream velocity has decreased significantly, leading to more groundwater interaction with the main channel. Several weeks after the mainstem project work, groundwater was found bubbling up in several places far from the channel's edge. This desirable phenomenon is known as hyporheic exchange, the mixing of surface and shallow subsurface water through porous sediment surrounding a river.

The project team is using an adaptive management plan to guide treatment techniques on this stretch of stream. Future treatments will be driven by monitoring results. The team is experimenting with the use of more than 30 years of satellite data to measure trends in the meadow vegetation, combined with ground-based vegetation transect monitoring from

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BUILDING FISH CONDOS

Engaging the Next Generation of Stewards

"That's right, fish, you had better thank us!" joked U.S. Veteran Robert Woodruff after seeing native fish swarm to his hand-built wood structure.

Robert was a participant in an innovative program launched in 2019 called the Hand Crew Initiative, a restoration and professional development program that helps veterans recently retired from military service learn new skills and contribute to resource conservation. This program draws its inspiration from the need to apply cheaper restoration practices across more miles of stream each year to increase ecological uplift and from Aldo Leopold, who perhaps is the godfather of American conservation. Leopold said, "All the sciences and arts are taught as if they were separate. They are separate only in the classroom. Step out on the campus and they are immediately fused." The importance of fusing fields is even more crucial today to solve problems, sustain our economies, and fulfill our roles as citizens of the land.
The Sheep Creek project partners piloted this new initiative. The vision for the crew is to rove each summer through remote headwater streams, apply stream restoration practices, and camp on the land. This transition program aims to foster leadership development and natural resource management skills through experiential practice.

The project team adopted this vision and a project goal of treating not only the mainstem reach of Sheep Creek but also degraded small tributaries and meadow systems across a large swath of the sub-watershed. The Hand Crew Initiative participants directly treated more than five miles of small headwaters and meadow systems throughout the Sheep Creek sub-watershed, while on the mainstem, the vets focused on places where a lighter impact on the meadow and forested bottomlands made the most sense. In total, the vets built more than six woody debris structures per mile, racked up woody debris on numerous existing structures, racked up miles of small incised meadow channels, and placed 100 pieces of wood in floodplain habitats in the program's first season.

U.S. Veterans work a griphoist and other hand tools to place a piece of large woody debris into the stream. (Photo: Levi Old)

In Robert's words, "These lucky fish, I hope they like their fish condos we're building for them." We look forward to growing this initiative and its benefits for fish, the land, and people, with more work in the Grande Ronde River and miles of tributaries in the North Fork John Day River slated for the 2020-21 work season.

Project Partners: U.S. Forest Service, U.S. Bureau of Land Management, Grande Ronde Model Watershed, and NF John Day Watershed Council. Project Funders: U.S. Bureau of Reclamation, PGE/TNC Salmon Habitat Fund, National Forest Foundation, and National Fish and Wildlife Foundation.

Fish Monitoring in the Bleak (but Beautiful) Northeast Oregon Midwinter at Midnight

by Shannon Powers,
Oregon Dept. of Fish and Wildlife

When December arrives, most of our river research projects have wrapped up for the year. Seasonal field technicians have hung up their waders, put away their worn-out wading boots, and given back the key to the door. The work trucks have been emptied of old flagging, stray socks, and random food wrappers. Staff members finally have quiet time to work on annual reports and start preparing for next year's field season. At this time of year, it feels right to tuck things in and wait out the winter. Unless, that is, you work for the Oregon Department of Fish and Wildlife (ODFW) on the Life Cycle Monitoring (LCM) project.

An icy stream waits to be surveyed. (Photo: Shannon Powers)

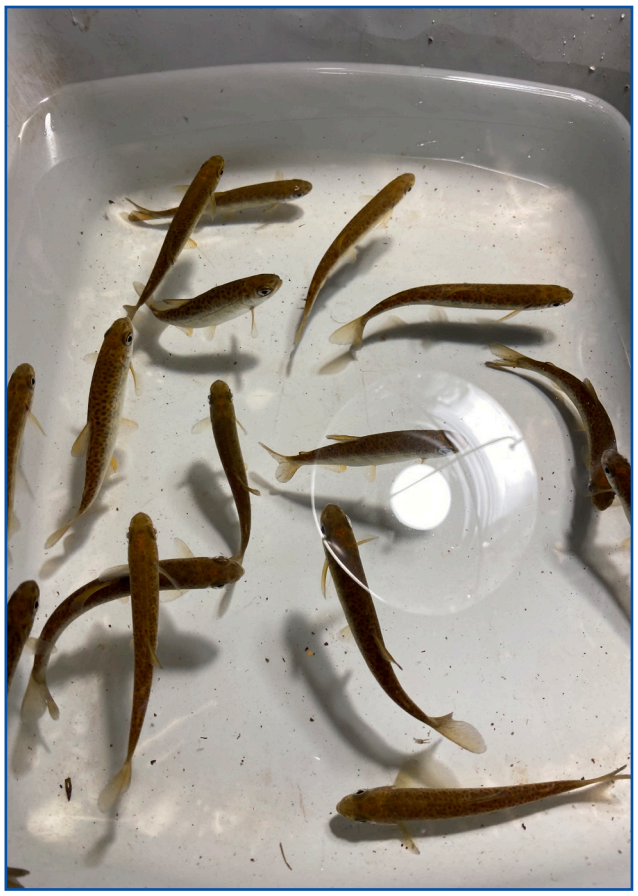
Back in December, the LCM crew had a job to do. We spent three weeks snorkeling the Grande Ronde River, Lostine River, and Catherine Creek. Oh, and we snorkel at night. Why did you do this, a sensible person might ask? Well, our job is to monitor juvenile Chinook salmon winter survival and growth. Fish are nocturnal during the winter, moving at night so birds and other fish predators do not see their flashy silver bodies moving through the water.

Snorkeling the rivers of the upper Grande Ronde River Watershed on a warm summer day is exciting work; add freezing winter temperatures, ice, and the darkness of long nights, and it becomes exhausting. I have a love/hate relationship with winter snorkeling. I love the uniqueness of it but really hate getting out of the warm truck and sliding into the icy water. I am fascinated by the fish's behavior at night; however, I am extremely claustrophobic, so it can be unnerving to put on multiple constricting layers of thick clothing and a dry suit. The moment I walk out of the creek and river water, everything starts to freeze: my zipper to freedom (and essential to urinate), my gloves, my hair, the fish net, the buckets, and sometimes our desire to work until late into the night.

The first step in monitoring juvenile Chinook salmon is to break the ice in order to get to them. ODFW employees work sometimes for hours to provide this needed access. (Photo: Scott Favrot)

The nights can be long, but they are rarely boring. A typical day consists of driving to the pre-selected site, sometimes on snowy roads that see very little traffic. We arrive in the mid-afternoon to assess the ice. Any ice present will need to be broken up and removed to provide the crew with a safe place to snorkel. Breaking ice sucks. It just does. Depending on the thickness of the ice, this task can require several hours of picking with heavy ice picks. The layers of ice are all so unique that I can almost read a weather forecast by them. An increasingly common challenge is working around and through newly constructed log jams. The ice puts its grips on the logs, making it very difficult to chop, swim, or catch fish around them.

After removing literally tons of ice with heavy ice picks, we retreat to our work pickups, with arms and backs tired, and wait until dark for the fish to return to their favorite hiding spots. When it comes time to "suit and boot," there is a strategy to preparing for the night's work. We want to be warm and dry under our suits but need to be able to move and net fish in the river current. It's a battle. Sometimes this battle leaves us all sweating, but sweating is the last thing we want to do when we are about to get into zero-degree water. After the "suit and boot" process is over, we grab a bucket, bubbler, hand net, and dive light, and we ungracefully and uncomfortably walk to the snorkel site.



Juvenile Chinook collected to be tagged with a Passive Integrated Transponder. This tag allows the fish to be tracked throughout their lifecycle.
(Photo: Shannon Powers)

As I slowly (or quickly, something like ripping off a Band-Aid) get into the frigid water, it steals my breath. My face and lips are jealous of my co-worker/husband's beard insulating his face as I look over at him entering the water nearby. Even with the discomforts of the snorkel suit and the insanely cold water, the beauty and uniqueness take over, and soon all the pain floats away. I immediately start searching the water column for juvenile Chinook salmon as floating ice chunks bump into my face. Occasionally, it is so cold (e.g., -20°F) that I sometimes push newly forming sheet ice with my face as I swim around searching. Upon seeing a parr-marked, silvery fish with big eyes and a deeply forked tail, we know we have located an inquisitive juvenile Chinook salmon. On the other hand, if we observe a quickly swimming, parr-marked, silvery fish with smaller eyes and suspicious behavior, then we know it is a rainbow trout that hopefully will someday return as a steelhead.

On clear nights, as my eyes look up, it is difficult to ignore the endless twinkles in the sky. I look down at the river, watching the moon's reflection float across the ripples on the water. On stormy nights, the snow falling silently into the river while the wind howls through the trees can be hypnotic. It feels so remote and special. I imagine what we must look like from a bird's-eye view: a river with snorkelers and their dive lights strewn up and down the river. The Chinook salmon seem to be more agreeable at night, almost willing to participate, while the rainbow trout are still suspicious of us. We hand-net one Chinook salmon at a time until we reach our tagging goal or until we find ourselves painfully cold. We then emerge from the water, wiggle, tug, pull, and curse to achieve "unsuited and unbooted" status.

After we have warmed ourselves in the trucks, we cram into a small heated tagging trailer. We prepare the trailer and the electronics for tagging the fish. Typically, we divide our tasks among the team members. The tasks include tagging fish and taking measurements, maintaining tag equipment, entering data on the laptop, and taking care of fish health and management. The tag we implant in each fish is called a Passive Integrated Transponder (PIT) tag and is about the size of a grain of rice. PIT tags allow the ODFW and our co-managers to track tagged fish throughout their lifecycles. Our objective is to tag approximately 150 fish every night, so this process can be lengthy, sometimes requiring several hours.

After the fish have recovered from tagging, we return the fish to their original locations. While half of the crew releases fish, the other half packs up our equipment with an end-of-shift eagerness. Driving back to the office, I cannot help but remember that most of northeastern Oregon's citizens are sleeping warmly in their beds, and I am jealous. However, I am lucky to share a work truck with my husband, and he does not mind driving while I stare out the windows looking for any signs of nocturnal wildlife, such as elk or possibly cougars, or maybe even a wolf. Once back at the office, well after midnight but before dawn, we unload our piles of wet and frozen waders, snorkel suits, boots, hoods, nets, gloves, and anything else that may have frozen. Finally, we discuss plans for tomorrow's snorkeling objectives, although we mostly all know because it has been the same plan for nearly 25 years. The routine engraved in our minds this time of year is to drive, break ice, warm in the trucks, struggle into the dry suit and boots, catch all the juvenile Chinook salmon possible, tag them, release them, and drive back.

Since the mid-1900s, Chinook salmon adult returns have been steadily declining. Typically, we are able to achieve our winter goals of tagging 600 fish on Catherine Creek, Lostine River, and the Grande Ronde River; however, this winter, we only were able to find and tag 97 Chinook salmon parr from the upper Grande Ronde River. The upper Grande Ronde River parr we were able to locate and tag were the progeny of a little more than 100 adults that returned to the upper Grande Ronde River during the summer of 2018. During the mid-1900s, the upper Grande Ronde River hosted 500 to nearly 1,000 adult spawners annually. The few parr we were able to tag this winter will embark on an approximately 600-mile journey downstream this spring through eight Snake and Columbia River hydrosystem dams to the vast Pacific Ocean to mature into adults. Each ODFW employee and our co-managers

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Two LCM crew members suited up and armed with nets, buckets, and bubblers prepare for their underwater adventure.
(Photo: Shannon Powers)

CONNECTING YOUTH TO STEWARDSHIP CAREERS

by Lindsay E. Miller, *Wallowa Resources*

Youth engagement in real-world career exploration has powerful, proven benefits that last a lifetime. It builds job skills and increases workforce readiness to give our kids a leg up as they graduate and move into the next phase of life. Wallowa Resources' Stewardship Education Program creates work experience opportunities specifically around natural resource management that aim to educate and provide real-world context for our county's youth.

Each summer, Wallowa Resources recruits local high school students to participate in our Natural Resources Summer Internship Program. The program pairs natural resource management education with related local fieldwork experiences. Interns work on local land and connect with professionals who do the real work in our county. Through this mentored work experience, students gain first-hand experience with the professional world and come out better prepared and better educated to enter the workforce.

In our county, landscape-level stewardship, or natural resource land management work, requires mindful and meaningful collaboration among many public and private organizations. Likewise, Wallowa Resources' high school internship relies on the collaboration and expertise of organizations and professionals in Wallowa County to help inform and guide the projects in which students participate. Now in its sixth year, the program works with numerous organizations and individuals in the county to give youth a broad range of exposure to natural resource topics and careers. Each year, we "adopt" a river or watershed where we can do meaningful restoration and conservation work. This work can include riparian cage management, invasive weed removal, and monitoring efforts along local watersheds and provides a rich educational and work experience to students.

Last summer, interns were able to take part in a new stewardship collaboration with the Nez Perce Tribe Fisheries Division. Students went out to The Nature Conservancy gulch area on the Wallowa-Whitman National Forest adjacent to the Zumwalt Prairie with Montana Pagano, the Northeast Oregon and Southeast Washington Watershed Restoration Specialist with the Nez Perce Tribe Fisheries Division. Pagano educated students about a riparian planting project designed

Wallowa County youth work to remove a hog panel cage that was put in place to provide protection for establishing vegetation. (Photo: Lindsay Miller)

to restore riparian habitat and encourage beaver to move back into the area. Interns assessed planting success and helped remove cages around plantings that were no longer necessary so that these resources could be reused elsewhere.

This collaboration with the Nez Perce Tribe is just one example of how the Natural Resources Summer Internship Program offers opportunities for students to learn about the multi-faceted nature of

Continued on page 8, **YOUTH**

Summer interns remove vegetation cages that are no longer needed in this area. The materials now can be repurposed for another project. (Photo: Lindsay Miller)

Cooperative Efforts between the State and Private Landowners Improve Water Delivery and Fish Survival

By Ian Wilson, *GRMW Staff*

You don't have to live in northeastern Oregon for long to figure out that people here like working together and helping each other out. The altruistic acts come in many forms, such as receiving local food from your neighbors (whether you want it or not) or getting pulled out of a ditch by a random stranger who won't accept a dime. This kind of cooperation and bonhomie is not always what people think of when the words "water" and "fish" are mentioned, especially in the same sentence. But it's exactly what happened when the combination of good nature and hard-working professionals and private landowners in Wallowa County came together.

Chuck Simpson is the manager of the screens shop for the Oregon Department of Fish and Wildlife in Enterprise, Oregon. Most days, Chuck is busy overseeing the construction and maintenance of fish screens on irrigation ditches as mandated by the Mitchell Act of 1938 (Northwest Power and Conservation Council, 2020). Chuck is passionate about his job and cares for the resources he is charged with protecting, and he is more than willing to go above and beyond to conserve natural resources. David Bates is the local Water Master for Wallowa County, and his job is to ensure that irrigation water is delivered according to water decrees issued by the State of Oregon as well as to protect conserved water rights that are left in-stream for the benefit of fishery resources.

Chuck (right) with another ODFW employee, Chad (left) at the newly installed headgate. (Photo: David Bates)

On one of David's field visits, he came across a ditch that did not have a head gate. A head gate is a structure that allows for the controlled released of water from a point of diversion, usually a stream. The ditch was overtopping the fish screen and using more water than was allowed by decree. The landowners were unsure about proceeding with a head gate installation. On his own time, Chuck met with the landowner and explained the situation, and the landowner then agreed to put in the head gate, fixing the problem for both water and fish. The installation only took 2.5 hours to complete. These combined efforts by local professionals and private landowners are just another example of how hard work and cooperation can benefit everyone. ■

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the USFS Ecology Team.

Seeing that lone fish return to Sheep Creek on that July day is a reminder that our Grande Ronde River salmon and steelhead runs are critically diminished. Oregon's 13th Governor, Republican Tom McCall, once said, "If the salmon and steelhead are running, then as far as I am concerned, God knows that all is well in His world…The health of the environment is good if the salmon and steelhead are around. It is that simple."

Projects like Sheep Creek are an important step in the process of bringing salmon and their habitats back to health. However, we need all hands on deck in our human communities to make abundant salmon in our home rivers an unforgettable sign of the seasons once again.

Additional media featuring the Sheep Creek Project:

Video: Resilient Waters - https://vimeo.com/382476264

Blog: Passion on Sheep Creek - https://www.tu.org/blog/passion-on-sheep-creek/

Project Partners: U.S. Forest Service, U.S. Bureau of Land Management, Grande Ronde Model Watershed, and NF John Day Watershed Council. Project Funders: Bonneville Power Administration, Oregon Watershed Enhancement Board, and U.S. Bureau of Reclamation. ■

... *continued from page 5,* **MIDWINTER**

hope that our tagged juvenile Chinook salmon make it back home to the upper Grande Ronde River Watershed to provide us with priceless data to inform the recovery of northeastern Oregon's Chinook salmon populations for current and future generations. This hope is our fuel on cold December nights. ■

... *continued from page 6,* **YOUTH**

land management. It also provided an excellent opportunity to help fill a need in our community. While students gained knowledge and work experience, they in turn filled a need of the Nez Perce Tribe to remove unnecessary cages from the backcountry. Through these activities, students create meaningful relationships and learn to collaborate within the community. This teamwork leads to improved outcomes and a deeper sense of community and place for everyone. Projects and relationships like these are what make the internship program truly meaningful for our young people!

The Wallowa Resources Natural Resources Summer Internship Program runs for six weeks in June and July for local high school students over 15 years of age. This is a paid internship, and we are looking for a new four-person crew to take outside this summer! The program is funded, in part, through the Youth Development Council for the State of Oregon and the Oregon Youth Corps. For more information and to apply, please visit our website at www.wallowaresources.org.■

Grande Ronde Model Watershed
Upcoming Board Meetings

Tuesday, April 28th, 2020
5:00 p.m.
Elgin Community Center
260 N 10th St.
Elgin, OR 97827

Tuesday, June 23rd, 2020
5:00 p.m.
Wallowa Senior Center
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!

Grande Ronde Model Watershed
1114 J Avenue | La Grande OR 97850
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