

RIPPLES IN THE GRANDE RONDE



RIVERS UNITING NEIGHBORS · NEWS FROM THE GRANDE RONDE MODEL WATERSHED

A Decade of Renewal:

Southern Cross Habitat Restoration Turns 10

by Travis Dixon, the CTUIR Grande Ronde Fish Habitat Project

A decade of change has completely transformed a stretch of Catherine Creek near Union, Oregon, making it almost unrecognizable from its state ten years ago. The creek once flowed through a single simplified channel that had been cut off from its floodplain and stripped of the natural complexity on which fish depend. Today, that



Looking downstream at Southern Cross Ranch: 10 years of riparian expansion, growing vegetation, increased large wood, and a well-connected floodplain with emerging wetlands, all while maintaining upland pasture for continued ranching. (Courtesy of Interfluve)

same reach has become a dynamic and connected landscape filled with side channels, wetlands, and deep, shaded pools. This year marks the 10-year anniversary of the Confederated Tribes of the Umatilla Indian Reservation's (CTUIR) Southern Cross Conservation Property restoration project, and with that comes a moment to reflect on the creek's past, recognize the progress that has been made, and consider what lies ahead.

For generations, Catherine Creek supported abundant salmon runs and served as an essential cultural and subsistence resource for Indigenous communities. Historical accounts suggest that tens of thousands of spring Chinook salmon once returned to the basin each year. This productivity was driven by a highly connected river and floodplain system. The creek moved freely across the valley floor, creating a network of channels, wetlands and riparian forests. These features provided cool water, abundant food, and safe areas for young fish to grow. Floodplains were especially important. During periods of high water, the creek spread out across the valley, slowing down and soaking into the ground. This created calm shallow habitats where juvenile fish could rest, feed, and gain strength before continuing downstream.

Beginning in the mid-1800s, human activity began to reshape Catherine Creek. Agriculture, grazing, logging, beaver trapping and water diversion all contributed to changes in how the river functioned. Over time, the creek was straightened and confined to a single channel. Floodplains were disconnected and drained to create farmland. Large wood was removed from the stream, and riparian vegetation was cleared. Multiple irrigation diversions reduced stream flows and created barriers for fish.

These changes simplified the system. Instead of a slow-moving, multi-channel river, the creek became faster and warmer. It also

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became less suitable for fish, especially young salmon and steelhead. One of the most important losses was the connection between the river and its floodplain. Without access to these off-channel areas, juvenile fish lost important habitat where they could rest and grow. Many were pushed downstream too quickly, reducing their chances of survival.

By the early 2000s, reaches of Catherine Creek were identified as a high priority for restoration because of its strong potential to once again support fish populations. A major turning point came when the CTUIR acquired the Southern Cross Ranch property. This made it possible to take a broader approach and restore an entire section of connected river and floodplain. The goal was not to recreate a fixed version of the river, but to restore the natural processes that allow the system to function on its own.

The project included removing levees and barriers that had confined the creek and constructing new side channels and floodplain swales to reconnect the river to its valley. Large wood structures were added throughout the channel to increase habitat complexity and diversity of stream flow paths. More than 50 acres of floodplain were reconnected, and over 20,000 native trees and shrubs were planted. Irrigation systems were modernized and consolidated into a more efficient design that reduced impacts to the stream. A portion of water that had previously been diverted for irrigation was returned to the creek, improving flows during the late summer season. Together, these actions allowed the river to begin shaping itself again.



Aerial view looking downstream at Southern Cross during construction, showing a new meandering main channel, side channels, and graded floodplain for future wetlands.

(Courtesy of the CTUIR)



Aerial view looking downstream at Southern Cross Ranch pre-restoration, showing a simplified, straightened channel confined to the hillside and disconnected from its floodplain.

(Courtesy of the CTUIR)

Ten years after construction, the results are clear. The river is no longer confined to a single path. During higher flows, water spreads across the floodplain and moves through a network of side channels and wetlands. Monitoring efforts have documented large increases in floodplain connectivity, side channel length and the number of deep pools. These physical changes have improved the overall quality of fish habitat. Deep pools now provide resting areas for adult fish; side channels create calm areas where juvenile fish can avoid strong currents, large wood structures offer cover from predators, and floodplain wetlands support insects and other food sources on which fish rely.

Habitat assessments show that suitable habitat for juvenile Chinook salmon has increased significantly, in some cases by more than 250%. These improvements give young fish more opportunities to grow larger and stronger before migrating downstream. Restored floodplains also help regulate water temperature. Off-channel habitats often remain cooler during the summer due to cold groundwater influences, providing important refuge for fish during warm conditions.

CTUIR and Oregon Department of Fish and Wildlife (ODFW) fish monitoring has documented encouraging trends. Spawning activity by Chinook salmon and steelhead has increased, and more juvenile fish are using the restored reach for rearing.

The benefits extend beyond fish. Native vegetation is gradually returning to the floodplain, although recovery can take time depending on past land use. Sediment carried by the river is helping rebuild healthy soils, and wildlife use has increased, including birds such as eagles and hawks. There are also signs that riparian recovery has encouraged the return of beaver to the area, which further enhances habitat conditions.

An important lesson that a project of this size has highlighted is the value of strong partnerships. This effort required coordination among tribal, federal, state and local organizations, along with cooperation from private landowners.

Another key lesson is the importance of flexibility. Rivers are constantly changing, and restoration designs must be able to adapt to real conditions on the ground. Past land use can also influence how quickly vegetation and soils recover, which requires patience and continued effort. Perhaps the most important takeaway is that restoration does not end when construction is complete.

During the past decade, the project has continued to evolve through adaptive management. Observations made during ongoing monitoring have guided adjustments to improve performance and address challenges. In areas where erosion occurred, additional wood structures have been installed to slow water and capture sediment. Some areas have been replanted where vegetation recovery was slower than expected. Adjustments have also been made to improve how water moves through the system during different flow conditions. New technologies have made it easier to track changes over time. Advancements in aerial imagery and LiDAR mapping provide a clearer picture of how the river and floodplain continue to evolve.

At the 10-year mark, the Southern Cross project is widely viewed as a success. The river is more connected, complex and better suited to support fish and wildlife. Future work will focus on improving connections to side channels and additional floodplain acres during low flow conditions, continuing vegetation recovery, managing invasive species and expanding restoration efforts to nearby areas. Monitoring data will continue to guide these efforts and improve future project designs. The long-term vision remains the same, which is a dynamic and connected river system that supports fish, wildlife and people. The Southern Cross project shows that large-scale restoration is possible within a working ranch setting, that ecological and agricultural goals can be

aligned through collaboration.

Standing along Catherine Creek today, the difference is easy to see. Water moves more freely across the floodplain, vegetation is returning and fish are using a wide range of diverse habitat types. Ten years after construction, the river is not just restored; it is alive, changing and improving. ■



Aerial view looking upstream from the lower project area, showing a main channel free to roam a wide riparian corridor, braided side channels and wetlands, and new willow and cottonwood growth taking hold, all while maintaining ranch pasture. (Courtesy of Interfluve)



Left: 2016, immediately post-construction with newly placed large wood. Right: 2019, showing persistent wood complexity, rapid vegetation recovery, and deep pool development. (Courtesy of the CTUIR)

Elmer Dam Fish Passage and Flow Improvement Project

A Major Milestone in Salmon Recovery Efforts for Catherine Creek

Union Soil and Water Conservation District and Hassinger Farms

A multi-year project to restore fish passage, improve irrigation efficiency, and modernize agricultural infrastructure at Elmer Dam is nearing completion. Located on Catherine Creek at approximately river mile 13, near Cove, Oregon, the fishway associated with Elmer Dam required constant manual adjustments by the landowner and hindered the migration of Endangered Species Act (ESA)-listed and State Sensitive fish species into and out of the basin.

As managers of the passage structure, the Hassingers grew frustrated by the limitations of the design and performance, despite their best efforts to keep everything optimally adjusted each season. The Hassingers collaborated with the Union Soil and Water Conservation District and Trout Unlimited to begin a design effort in 2020 to update the structure's fish passage and improve their irrigation efficiency.



The Elmer Dam and fish ladder prior to construction. (Courtesy of Jim Webster)

Water storage provided by Elmer Dam on Catherine Creek is the lifeblood of the Hassinger family farm. The dam allows the production of a diverse range of agricultural crops that wouldn't be possible without supplemented irrigation water. Built in the 1950s with the addition of a fish ladder sometime later, the structure no longer met current fish passage standards and became increasingly difficult to operate. The completed Project will bring the dam into compliance with fish passage standards, while improving the safety and efficiency of the Hassinger's day-to-day operations.

Catherine Creek contains critical spawning and rearing habitat for ESA-listed fish species. Because Elmer Dam is located in the lower reaches of Catherine Creek, it is the gateway for Snake River Spring Chinook salmon (*Oncorhynchus tshawytscha*), summer steelhead (*Oncorhynchus mykiss*), bull trout (*Salvelinus confluentus*) and State Sensitive redband trout (*O. mykiss*) and Pacific lamprey (*Entosphenus tridentatus*) to access approximately 40 miles of critical spawning and rearing habitat, as well as for smolts to emigrate back to the ocean.

Elmer Dam created significant negative impacts on water quality, hydrology, habitat conditions, and fish passage when creating the intended backwater pool to support irrigation needs. Timing is sensitive for adult salmon and steelhead to reach their spawning grounds and for juveniles to get out of Catherine Creek and back to the ocean. Unimpeded passage is essential to their continued existence. These species are critical to the cultural, ecological, and economic values of Oregon and the Pacific Northwest.



Jed, Phil, and Seth Hassinger of Hassinger Farms, as owners of the Elmer Dam were awarded the 2026 Good Steward Award. (Courtesy of Aaron Bliesner)

Reflecting a dual mission of fisheries recovery and agricultural support, the Project's goals focused on creating long term benefits for both the stream and the working landscape. Specifically, the Project aims to:

- **Restore reliable fish passage** for native species at all water levels ensuring that salmon, steelhead, and other native fish can safely migrate upstream and downstream throughout the year, regardless of seasonal flow conditions. This will provide access to adult salmonids and other aquatic species to the upper portions of the Catherine Creek watershed where high quality habitat exists.



The Elmer Dam fish ladder entrance showing inadequate flow for passage during summer conditions. (Courtesy of Jim Webster)

- **Improve agricultural water use efficiency** while reducing hydrologic disruption in the Catherine Creek channel. Local farm operations benefit from improved access to reliable irrigation water while impacts to Catherine Creek and the natural hydrological regime are minimized. The project supports more sustainable water management and efficient use of the available water. Due to the low gradient of the channel, lower intake depths for irrigation pumps reduces the longitudinal length of backwater created in the channel by the dam by approximately 1.5 to 2 miles, resulting in better flow conditions for juvenile salmonids exiting the system.

- **Enhance and protect aquatic habitat quality.** Stream conditions and overall fish health are improved through better instream flow management, reducing stress on the stream system. Access to off-channel reservoirs is blocked for salmonids and other fish species, where stranding and predation are a detrimental concern.

- **Improve the hydrologic regime and build climate resilience** within the watershed. The stream system capacity is increased during extreme weather events and long term resilience is improved for aquatic ecosystems as well as agricultural operations. Improvements made to the dam that include the installation of an overshot gate and a vertical slot fishway allow for the landowners to make quicker and safer adjustments for changes in flow.

Construction actions designed for the Project include a suite of improvements to benefit both fish and agriculture:

- **A new vertical slot fishway** is being constructed to meet current fish passage standards that ensure native fish can move upstream and



Forming construction for a new fishway at Elmer Dam.

(Courtesy of Aaron Bliesner)



Nearing completion of the new fishway with installation of an overshot gate and steel stanchions in Elmer Dam.

(Courtesy of Aaron Bliesner)

downstream in a wide range of water levels. With multiple entrance elevations, the fishway will function reliably throughout the irrigation season and during high flow and low flow conditions, reducing the need for constant manual adjustments.

- **Targeted dam improvements** will increase hydraulic control during spring run-off and high flow events. Upgrades such as the overshot gate are designed to improve safety, reduce operational challenges, and better regulate water levels while maintaining the reservoir needed for irrigation.

- **Pump and intake system upgrades** will modernize water delivery and improve fish protection. The two instream irrigation pumps will be relocated to wet wells outside the channel for more reliable operation. Two existing intakes to off-channel reservoirs will be removed and the remaining intake to reservoir #2 will be fitted with modern fish screens to prevent juvenile fish from entering the irrigation system.

- **On farm irrigation upgrades** will improve water use efficiency and long term resilience. These improvements include conversion to center pivot irrigation and connecting off channel reservoirs, allowing water to be managed more effectively while reducing impacts to streamflow and aquatic habitat in Catherine Creek.

Funding such a large and complex project proved to be a significant undertaking. With a diverse set of goals that included fish population recovery, ecological protection and improvement, and the support of long-term, sustainable agricultural operations, no single funding source

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QAPQÁPNIM WÉÉLE - GRANDE RONDE COMMUNITY SCIENCE



QAPQÁPNIM WÉÉLE IS THE COTTONWOOD STREAM IN CAYUSE NEZ PERCE

WE ARE A COMMUNITY OF SCIENTISTS INVESTIGATING HOW THE GRANDE RONDE WATERSHED IS CHANGING OVER TIME.

PROJECT DESCRIPTION

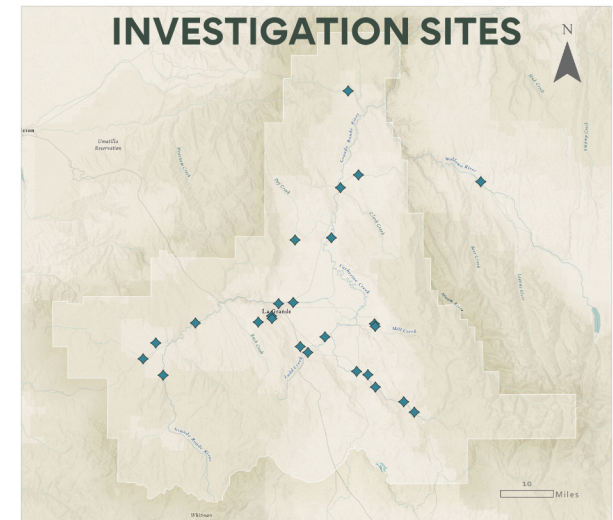
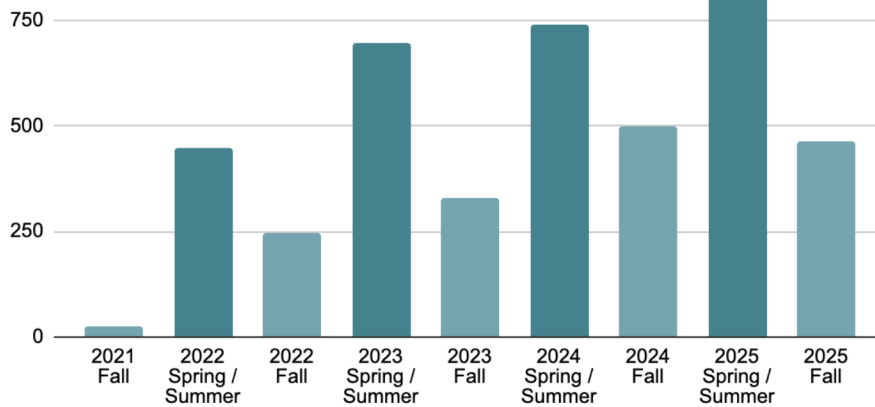
A participatory sciences program of the Grande Ronde Model Watershed that engages youth in monitoring our watershed and combines Indigenous ways of knowing with Western science. Together, we're asking how our watershed is changing over time.

YOUTH SCIENTISTS COME FROM THE FOLLOWING PLACES

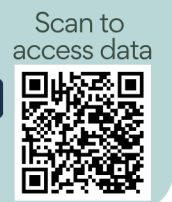
Cove	Mt Tabor
Confederated Tribes of the Umatilla Indian Reservation	Nez Perce Tribe
Elgin	Nixyaiwai
Harper	Oregon Youth Corps
Imbler	Pendleton
La Grande	Stanfield
	Union

YOUTH NUMBERS OVER TIME

4255 total since 2021



PARTICIPATORY SCIENCES PLATFORMS USED TO COLLECT AND SHARE DATA



THANK YOU TO OUR FUNDERS: AMAZON WEB SERVICES, GRAY FAMILY FOUNDATION, ROUNDHOUSE FOUNDATION, US FOREST SERVICE, CENTER FOR HUMAN DEVELOPMENT INC, FORD FAMILY FOUNDATION, & DIACK FOUNDATION

NE Oregon Steelhead Dissection Program

by Kayla Morinaga, U.S. Fish and Wildlife Service

“It’s a girl!” joyously exclaimed a 5th grade student from Island City Elementary School when I carefully opened the body cavity of a steelhead to reveal a bounty of bright orange eggs. It felt like a gender reveal party, a newer trend when expectant parents celebrate in learning the sex of their unborn child, but this is just a dead steelhead, albeit a beautiful specimen, on a table surrounded by a mix of wincing and grimacing or eager and excited students.

Every spring, people from various natural resource agencies in Union and Wallowa County (federal, tribal, state, county, and private), bring steelhead into elementary classrooms for hands-on dissections. These fish have completed an incredible journey. Snake River Basin summer steelhead leave the Pacific Ocean and begin their return to natal streams in eastern Oregon, arriving in lower river systems in fall and winter. By spring, many reach their spawning grounds, with a significant number arriving at the Wallowa Hatchery in March and April. At the hatchery, returning adults are used to support the next generation. Eggs and milt are collected to help supplement populations that have declined since the construction of dams along the Columbia and Snake rivers beginning in the 1930s. Afterward, the fish continue to serve a purpose; some are donated to food banks, others are returned to streams to provide ocean-derived nutrients, and many become teaching tools in local classrooms.

Most dissections occur with 5th grade students because the activity aligns with Oregon’s 5th grade science standards, engaging students in authentic scientific practices. Students ask their own questions, carry out investigations, and construct explanations based on evidence gathered firsthand. As they examine both external and internal anatomy, they begin to build hypotheses grounded in observation and obtain information through direct experience rather than passive learning.

At the heart of the lesson is a guiding question: *What can we learn from steelhead, and what do they offer to humans and the interconnected web of life?* Through observation and discussion, students begin to connect scientific concepts to real-world systems.

Throughout the lesson, students are invited to slow down and observe closely, as they encounter eggs, organs, and intricate anatomical structures. They run their fingers over the fish’s skin, pass eggs between their hands, and compare the textures to familiar sensory objects. These moments spark a sense of awe that is central to the program’s

goals. Students notice patterns in anatomy, explore structure and function by connecting physical features to survival, and consider energy and matter as they trace how nutrients move through ecosystems. Discussions around population decline introduce topics of stability and change, helping students understand how environmental pressures impact species over time and they ponder what the future will be like for steelhead.

At first, when we propose bringing fish carcasses into a school principals wince, and teachers often have reservations. But, the natural resource professionals make it as seamless as possible by helping to prepare the classrooms with table coverings, bringing all of the dissection supplies, learning materials, and most importantly, totes of fish provided by the Wallowa Hatchery. Then when the day is over, they help clean up the room and take the dirty supplies and fish with them. We are not allowed to throw fish carcasses into the local streams due to the chance of introducing disease or pathogens, so in the past we have reluctantly thrown them away. This year the Grande Ronde Community Science Project was able to partner with The Compost Chick to take the carcasses to add to her compost so that we no longer have to waste their nutrient-rich bodies.

After the last students leave with stinky hands and sometimes dirty clothes, and the classroom goes quiet, the teachers and various staff members from the school pop in to thank us or ask how things went. It’s then that we begin to debrief on the activities of the day and personally an overwhelming sense of joy and gratitude for the opportunity overtakes me. A fish dissection may seem like just a few hours with students doing hands-on science, but the wonder, questions, connections, and comments students share through the experience are truly special, and you know the activity will impact them in some way throughout their day, school year, or possibly their life. Most kids don’t say they want to become scientists when they grow up, but on these days they’re all scientists and they’re exceptional at it.



Kayla’s daughter working up a steelhead last year at La Grande Middle School.
(Courtesy of Kayla Morinaga)

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could address the full scope of the work. As a result, multiple state, federal, and partner funding programs were pursued and strategically combined to move the project forward. Funding to support fish and ecological improvements has been provided by Bonneville Power Administration (BPA), Oregon Watershed Enhancement Board (OWEB), NOAA National Marine Fisheries Service (NMFS), and U.S. Fish and Wildlife Service (USFWS). Additional funding for water conservation and irrigation efficiency were provided through a grant from Oregon Water Resources Department (OWRD) and a Natural Resources Conservation Service (NRCS) agreement. This collaborative funding approach was essential to advancing a solution that balances environmental restoration with the continued viability of local agriculture.

Construction began in October 2024 and progressed under an in-water work extension through February 2025 before preparing for spring high flows. Construction resumed in September 2025 and proceeded through February 2026 under another in-water work extension. Final construction tasks will be completed during late summer and fall of 2026. A strong and effective partnership between the Union Soil and Water Conservation District

and the Hassinger family was supported by several skilled construction firms, local conservation groups, regulatory agencies, and funding organizations to get the project on the ground. These strong partnerships laid the foundation for a successful project that will have meaningful, lasting benefits for Catherine Creek, local fish populations, and the surrounding farming community. ■

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I would like to give a huge shout-out to Carrie Caselton Lowe of the Grande Ronde Community Science Project for organizing the program in Union County, Jan Boyer of the U.S. Forest Service for taking the lead in Wallowa County, and Austin Lindros of the Oregon Department of Fish and Wildlife Wallowa Hatchery for coordinating fish availability and pickup.

This programming is funded by various grants and does not have a continual flow of funding so if you'd like to financially support the steelhead dissection program in NE Oregon so we can maintain and expand the opportunities to more schools please email communityscience@grmw.org. ■

Grande Ronde Model Watershed

UPCOMING BOARD MEETINGS

Tuesday, June 23, 2026

5:00 p.m.

Wallowa Community Center

204 E 2nd St

Wallowa OR 97885

Tuesday, August 25, 2026

5:00 p.m.

Board BBQ & Project Tour

Location TBD

Union County

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

Ph. 541-663-0570

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