RIPPLES IN THE GRANDE RONDE

FALL EDITION 2015

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

Fish *Out of* Water

How fish remain safe and swimming during restoration construction

By Chip Andrus and Colleen Fagan, ODFW Grande Ronde Fish Habitat Program

More than 9,000 fish found themselves being abruptly shuttled upstream in Catherine Creek this past July and August. Before then, their home had been about four miles downstream of Catherine Creek State Park. Unbeknownst to them, the implementation of a major stream restoration project in this area meant that these rearing fish needed to be transported out of harm's way. As such, they ended up in an Oregon Department of Fish and Wildlife (ODFW) fish liberation tank truck destined for a new summer home six miles upstream. Two-thirds of the fish relocated upstream were juvenile summer steelhead and spring Chinook salmon. Also present on moving day were whitefish and resident redband trout (some as big as 12 inches in length) as well as the lesser-known sculpin, dace, and redside shiner.

This seemingly unexpected relocation actually was planned well ahead of time as part of the Catherine Creek CC-44 Stream and Habitat Restoration project. This project was spearheaded by the Union County Soil and Water Conservation District in cooperation with ODFW, the Confederated Tribes of the Umatilla Indian Reservation, the United States Bureau of Reclamation, and the Grande Ronde Model Watershed.

The CC-44 restoration project involves multiple landowners in a multi-year effort that includes major changes and improvements to Catherine Creek to mutually benefit native wildlife populations and private landowners. Habitat enhancement measures include installing wood to create fish habitat and stabilize streambanks; constructing side channels and alcoves to increase available habitat and habitat complexity; narrowing and deepening Catherine Creek to increase the number of pools and decrease stream temperature; and planting native vegetation to improve the quality of riparian areas and minimize erosion and land loss.

Above: A fish salvage crew consisting of staff members from several of our restoration partners works to extract all fish from an isolated site on Catherine Creek. (Photo: ODFW)

To implement the habitat enhancement measures, Catherine Creek was at times completely dewatered through diversion into either a temporary "bypass" channel or pipe. At other times, areas requiring in-stream construction simply were isolated from the main body of water. Diverting Catherine Creek allowed construction of fish habitat enhancement structures to occur in dry areas, improving construction efficiency while minimizing impacts to resident fish.

In addition to water being removed from construction areas, fish also needed to be extracted, a process that is known as "fish salvaging." The chosen method to collect and move the fish for this project was "electrofishing." Electrofishing uses an electric current to momentarily stun fish or force them to swim toward an electrical field for collection.

Collecting fish to translocate using electrofishing takes a bit of technological wizardry, a large number of people, and, quite importantly, permission from the National Oceanic and Atmospheric Adminstration Fisheries to handle the fish.

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News from our Partners

Nez Perce Tribe

By Mitch Daniel and Montana Pagano, Nez Perce Tribe

The Nez Perce Tribe Department of Fisheries Resources Management Watershed Division recently has renewed restoration efforts within northeast Oregon and southeast Washington. The northeast Oregon/ southeast Washington project is based out of the Tribe's field office in Joseph, Oregon. The Joseph field office is one of several field offices located outside of the reservation on the Tribe's ceded territory established in the treaty of 1855. The Tribe reserves their right in perpetuity to hunt, fish, and manage the natural resources on this "usual and accustomed" land, as outlined in the treaty agreement. The project area spans approximately 3.5 million acres, encompassing the Lower Grande Ronde, Wallowa, and Imnaha subbasins in Oregon as well as the Asotin, Alpowa, Pataha, Lower Grande Ronde, and Tucannon subbasins in Washington. The Watershed Division headquarters are in Sweetwater, Idaho, near Lapwai (see map at right).

Mitch Daniel was hired in August 2014 as the Project Leader for this effort, and Montana (Skovlin) Pagano joined the project in January 2015 as a Watershed Restoration Specialist. Mitch came to Joseph from McCall, Idaho. In addition to an educational background in fisheries science, he has nearly 15 years of fisheries experience working for the Nez Perce Tribe and other agencies in the South Fork Salmon River and Big Creek watersheds. Montana was born and raised in Union and Wallowa Counties with a deeply rooted family history in the area. Also with a strong educational background in fisheries science, Montana worked for five years for the Nez Perce Tribe Fisheries within the Clearwater River, Imnaha River, and Joseph Creek watersheds. Mitch and Montana are committed to implementing high-priority restoration work in the area through collaboration with a number of other agencies, stakeholders, and landowners.

The Watershed Division's primary goal is to protect and restore fish habitat by improving access to spawning and rearing habitat while increasing the survival and recovery of salmon, steelhead, lamprey, bull trout, and other native fish species. These activities are accomplished using a holistic approach that encompasses entire watersheds from ridge-top to ridge-top. Additionally, they maintain consistent involvement in a variety of local issues and management decisions relating to fisheries. Specifically, the Tribe's Watershed Division mission is to:

- Be a leader in holistic aquatic ecosystem restoration;
- Ensure and facilitate the protection of currently healthy and properly functioning aquatic ecosystems;
- Aggressively restore degraded aquatic ecosystems by any and all means necessary;
- Ensure our efforts focus on restoring the functions that support healthy ecosystems, such as natural stream flows, appropriate sediment loads, floodplain connectivity, and appropriately vegetated riparian corridors;
- Develop clear and quantitatively defined goals and standards for healthy aquatic ecosystems as well as protocols to monitor the success and status of recovery efforts and facilitate adaptive management strategies;
- Coordinate and collaborate with appropriate individuals and/ or entities with land management authority to ensure plans and activities are protective and respectful of aquatic ecosystems;

A visual of the expansive administrative boundaries of the Nez Perce Tribe. The ICC Territory (in yellow) highlights the tribe's "usual and accustomed" land. The NPT headquarters are located in Sweetwater, Idaho, about 10 miles from Lewiston.

- Provide educational opportunities and outreach materials for all age groups, other agencies, and the public on environmental issues and ethics;
- Maintain a workforce that possesses the highest level of integrity and professionalism and is well organized, passionate, creative, and connected to the land and resources, and;
- Work within and implement the integrated management strategies of the Department of Fisheries Resource Management.

The northeast Oregon/southeast Washington project is funded by the Bonneville Power Administration as a cooperative project, which means that staff members are supported but no project implementation dollars are provided. Instead, implementation funding is secured by project staff from a variety of sources, including but not limited to the Grande Ronde Model Watershed, the Oregon Watershed Enhancement Board, the Snake River Salmon Recovery Board, and the Washington Department of Ecology. The Tribe then works with those agencies as well as landowners and stakeholders to cost-share expenses required to implement projects on the ground.

Recently, the Watershed Division completed a project in Washington in which two culverts that were impeding upstream fish passage were replaced on Pataha Creek, a tributary to the Tucannon River. By removing these barriers, nearly four miles of upstream habitat were opened to steelhead. Here are a few more projects that are in the works:

Restore Alpowa Creek Fish Passage

Designs for a fish passage barrier improvement have been developed for Alpowa Creek, a tributary to the Snake River. The existing barrier is blocking 15 miles of habitat upstream. Implementation is scheduled for the summer of 2016.

Buford Creek Barrier Fish Passage Design

Watershed staff applied for funding through the Snake River Salmon Recovery Board to design a project to create fish passage beyond a barrier culvert on Buford Creek located on Washington State Highway 129/Oregon State Highway 3, right at the state boundary. The barrier poses an imminent threat to steelhead and limits their access to nearly five miles of stream above the culvert. After designs are complete, they will be used to leverage funding for implementation.

Lostine River Fish Passage Improvement Projects

In partnership with the Grande Ronde Model Watershed, the Oregon Department of Fish and Wildlife (ODFW), the Sheep Ridge Ditch Company, and adjacent landowners, the Nez Perce Tribe is sponsoring a project to improve fish passage at the Sheep Ridge irrigation ditch. Construction is scheduled for July/August of 2016. Design work for a similar project at the Tulley Hill diversion is slated to begin this winter in cooperation with Wolfe Farm, Inc., and surrounding landowners and irrigators. The resulting project will restore fish passage to 29 miles of the Lostine River upstream of the diversion. Implementation is tentatively scheduled for the summer of 2017. Both the Sheep Ridge and Tulley Hill diversions have been identified as passage barriers to Chinook salmon, steelhead, and bull trout as well as several other aquatic species. Designs for both barriers will replace the existing structures with roughened channel-style diversions that will meet current ODFW and National Marine Fisheries Service fish passage standards.

Lostine River In-stream Flow Restoration Project

Funding was procured from the Washington Department of Ecology to conduct a feasibility study on improving irrigation efficiencies. The study will entail planning, coordination, and design for potential consolidation of the Westside and Poley Allen irrigation ditches on the Lostine River. Interest in seeking solutions that both meet the Lostine instream flow target of 15 cfs for Chinook salmon as well as provide irrigators with the ability to more efficiently and effectively manage irrigation deliveries prompted the development of this study. In addition to identifying water conservation opportunities, a hydropower feasibility analysis will be conducted to realize additional cost savings. Anderson Perry and Associates, Inc., is performing the analysis, which began in June of this year. In conjunction with Wallowa Resources and the Farmers Conservation Alliance, the contractor will identify a range of alternatives, work with stakeholders to identify the preferred alternative, and then develop that alternative to 30 percent design. The Watershed Division and the Fresh Water Trust will use the remaining budget to obtain funding to take those designs to 100 percent completion and implementation.

The Watershed Division team looks forward to continuing their efforts to implement high-priority restoration work in Oregon and Washington in cooperation with important partners and stakeholders for years to come. The Watershed's staff members are devoted to restoring and protecting aquatic ecosystems and watersheds that are critically important to fisheries restoration, Nez Perce Tribal resources, and all people within the region. ■

Mitch Daniel is a Project Leader with the Tribe's watershed division.

Montana Pagano is a Watershed Restoration Specialist with the Tribe's watershed division.

FISH, *continued from front page*

Because the summer steelhead and spring Chinook salmon in Catherine Creek are federally listed under the Endangered Species Act, a permit is needed to collect and move the fish. The permit specifies certain safeguards, such as the number of fish that can be handled, the maximum amount of permissible mortality, and the maximum water temperature at which fish can be handled (which became a critical issue this summer with warm temperatures and low flows). In July and August, the temperature of Catherine Creek at the project site was typically 15°C at 6:00 a.m. and steadily rose to over 18°C by 11:00 a.m., the highest allowable temperature for fish salvage.

Above: Construction of a fish habitat structure in an isolated work area on Catherine Creek, 2014. (Photo: ODFW)

To beat the heat, at 12 different times in July and early August this year, the fish salvage crew with members representing all of the project's partner agencies gathered on the banks of Catherine Creek at dawn with waders and hefty cups of coffee. The crew placed nets at each end of the section to be de-fished in order to prevent entry of new residents. In small, isolated areas, snorkelers "herded" as many fish as possible out of the area prior to electrofishing. The fish salvage team usually consisted of four people carrying electrofishing units on their backs, ten people maneuvering dip nets, four people hauling aerated buckets, and three people standing prepared to count, measure, and identify species as they are transferred into an fish "liberation truck." The liberation truck houses hundreds of gallons of aerated water, keeping the fish comfortable until transport occurs.

Those on the crew unlucky enough to have their hands in the water near the electrofishing unit know that the shock is significant; in fact, it's downright unpleasant. What a fish experiences may be somewhat different. The electric potential between the snout and tail of a fish is what induces the temporary paralysis. So, the fish will align its body to reduce that potential, which keeps it from swimming away in spite of any shock it may feel.

Electrofishing relies on two electrodes that deliver current into the water to stun fish, a cathode and an anode. The anode is a ring located at the end of a six-foot-long pole, appearing somewhat like a small basketball hoop attached to a broom handle. The cathode is a three-meter-long braided steel cable that trails behind the operator. Electrofishers employ a transformer to pulse the current before it is delivered into the water. A high-voltage difference causes a current to flow from the anode to the cathode. Usually, pulsed direct current is applied, which causes galvanotaxis in the fish. Galvanotaxis is uncontrolled muscular convulsion that results in the fish swimming toward the anode, where they are caught alive by one of the aforementioned dip netters. The fish are carefully transferred by the bucketeers to the liberation truck. When performed correctly, electrofishing results in no permanent harm to fish, which return to their natural state in as little as two minutes after being stunned.

The effectiveness of electrofishing is influenced by a variety of biological, technical, logistical, and environmental factors. The electrofishing unit has a number of settings that allow the operator to minimize harm to the fish while creating enough of an electrical field for the fish to be stunned and netted. These settings include voltage, frequency, and duty cycle. When using pulsed direct current for fishing, the pulse rate and the intensity of the electric field strongly influence the size and species of the fish caught. The conductivity of the water influences the shape and extent of the electric field, thus affecting the field's ability to induce capture-prone behavior in the fish.

Operator technique is important, too. Continuing to keep the power switch on when a fish is floating up against the metal loop (anode) is bad form. Keeping the current going just long enough for the netter to make the grab gets you good style points.

Mortality is a reality during fish salvaging; stunned fish accidently get stepped on, and some get shocked too hard, breaking the fish's back. About one percent died during the 2015 Catherine Creek fish salvage. This small percentage "take" is allowed by permit, but any good electrofishing crew constantly looks for ways to minimize mortality. This summer's crew with upwards of 20 people working together was one of the best. Every effort was taken to salvage as many fish in the safest way possible.

The restoration project is finished for the summer. But other projects lie ahead that also will require the careful capture and transfer of native fish species.

Because fish are constantly moving to optimize their feeding opportunities, the stretch of Catherine Creek that was missing 9,000 fish in July and August is likely filled with fish again. Soon, many of these fish will be feeling the pull of instinct and start their much-longer journey to the ocean. Meanwhile, adults have returned home and spawned in the project area, taking advantage of the hard work of multiple agencies to improve their spawning and rearing habitat. ■

***Ripples in the Grande Ronde* is jointly funded by Bonneville Power Administration and the Oregon Watershed Enhancement Board.**

Columbia River Inter-Tribal Fish Commission

Putting Fish Back into the Columbia Basin

By Sara Thompson, CRITFC Public Information Officer

Since time immemorial, the health, spirit, and cultures of the Columbia River tribes have been sustained by the water, salmon, game, roots, and berries of their homeland, their sacred "First Foods." When the Yakama, Umatilla, Warm Springs, and Nez Perce tribes entered into treaties with the United States in 1855, they specifically reserved their rights to fish, hunt, and gather at all usual and accustomed areas. These treaties not only have protected these rights but also have provided crucial legal leverage that helps drive current salmon recovery efforts.

The Columbia Basin has been dramatically altered since the signing of the treaties. Increased human population, dam construction, unregulated harvest, and substantial habitat modifications have drastically reduced salmon populations. This significant decline drove the four treaty tribes to form the Columbia River Inter-Tribal Fish Commission (CRITFC) in 1977.

Since then, the tribes have become leaders in putting fish back into Columbia Basin rivers and protecting the watersheds where fish live. The tribes actively participate in interstate agreements and international treaties controlling the salmon harvest and water management. They also have been working to successfully rebuild naturally spawning salmon populations, restore habitat, and protect the water flowing in the rivers.

CRITFC and the tribes released the groundbreaking salmon restoration plan *Wy-Kan-Ush-Mi Wa-Kish-Wit* in 1995. This plan addresses salmon restoration solutions throughout their entire lifecycle, from gravel to gravel. Since the implementation of the plan, there have been marked signs of salmon recovery. In recent years, record numbers of fall Chinook and sockeye are returning to the Upper Columbia and Snake Rivers. This success resulted from the wise guidance of tribal leadership and the dedication of the hundreds of tribal fisheries employees who have poured their hearts and souls into the effort of restoring salmon.

Despite many daunting challenges, the tribes never strayed from their original mission to protect salmon. Remarkably, the salmon decline has been reversed, due in large part to the legal leverage provided by the treaty-reserved fishing right and the value of partnership. The tribes' work has only begun, but the success of our efforts will benefit future generations, tribal and non-tribal alike. CRITFC, the Umatilla, and the Nez Perce tribes are actively working with our partners in the Grande Ronde watershed to restore habitat and return fish runs to the basin.

The recent successes certainly give cause for celebration, but the tribes and their partners still have plenty of work to do. Recent fish consumption advisories for the Columbia River are a reminder that the Columbia River is not the source of pure water that the ancestors enjoyed. The steelhead numbers are down, and not all the tributaries are experiencing increased returns. The other Chinook runs, steelhead, coho, and especially lamprey are still in need of all the resources we can give them.

Wy-Kan-Ush-Mi Wa-Kish-Wit set the goal of 4 million salmon returning to the Columbia River each year. The region still has work to do in order to reach that number, but the recent salmon return and habitat improvement successes give us all hope and encouragement to keep up our efforts.

For more information on CRITFC and its four member tribes, visit *www.critfc.org* or connect with us through social media. ■

Grande Ronde Model Watershed

Upcoming Board Meetings

The public is welcome to attend.

Tuesday, November 24th
5:00 pm | Wallowa Community Center
204 East 2nd Street
Wallowa, OR 97885

Annual Planning Session
Tuesday, December 8th
9:00 am | Kimsey Commons
1104 Church Street
Cove, OR 97824

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

Beyond the Banks

The Importance of Off-channel Habitat

GRMW's Habitat Complexity Series: Part 4

By Jesse Steele, GRMW Field Biologist

Recently, I was helping my son with his first-grade science lesson. As we discussed the definition of the word "habitat," he began listing the areas where his favorite animals live. He decided that tigers live in the rain forests and grasslands, bears live in the mountain forests, and fish live in the river. For a child in the first grade, this definition of "fish habitat" is great; I later thought more about how habitat for fish extends well beyond the banks of a river or stream they call home.

In reality, much of a juvenile salmon or steelhead's habitat is outside of the main river channel. In a study released in 2007, J. E. Hall estimated that as much as 84 percent of the historic potential habitat within the Interior Columbia River Basin was "off-channel," or outside of the main river corridor. Examples of off-channel habitat include alcoves, side channels, beaver complexes, wetlands, and isolated pools. These habitat types are outside the main channel of the river and provide critical habitat for juvenile salmonids.

When Chinook salmon fry emerge from the gravel each spring (locally, around February or March), they need a few things to be successful: safety from predators, food, and refuge from high spring flows. This off-channel habitat can provide all of these critical components. Oftentimes, this habitat only is connected to the main channel during periods of high flow. During these times of hydrologic connection, young fish (about the size of a vitamin capsule) will enter the important off-channel habitats. It's here that they find refuge from swift water. As flows subside, the fry may return to the main channel, or they may stay in the off-channel habitat for several more months and continue to grow.

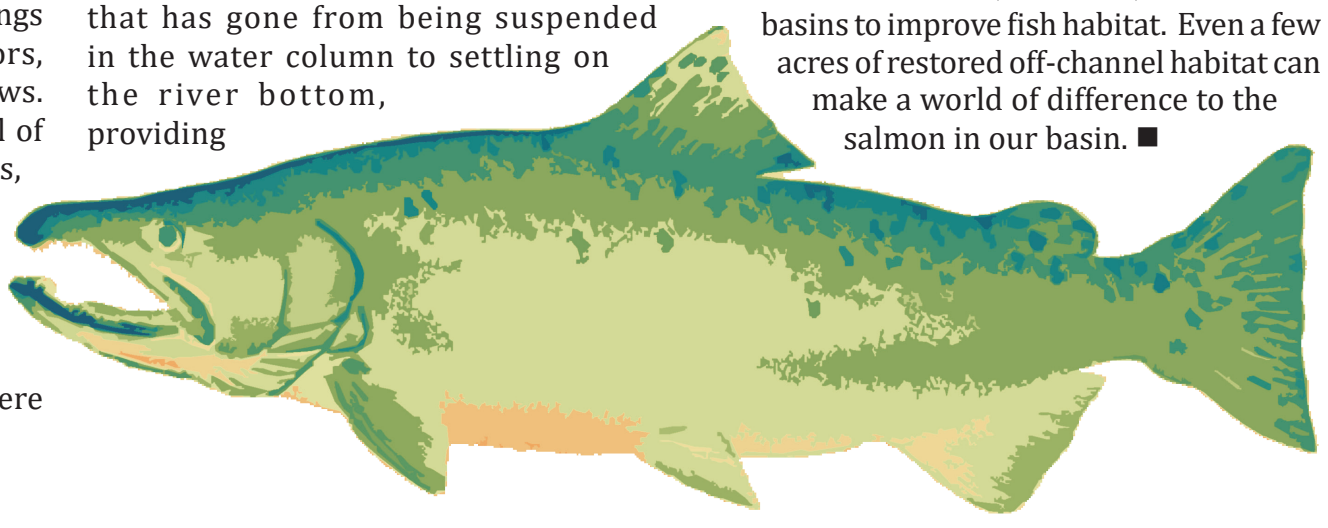
One of the biggest challenges fry face after emerging from the gravel where they hatched is predation. Large fish (longer than one foot) prey upon small, vulnerable fry; these predators include rainbow trout, bull trout, and many others. These larger predator fish will rarely leave the main river channel. In fact, some studies looking at side channels have found there is a complete absence of these larger predatory fish in the off-channel habitat. Off-channel habitat is often well vegetated and provides good cover for these small fish, hiding them from snakes, birds, minks, otters, and others.

Off-channel habitat also provides that third essential need for young salmonids: food. Off-channel habitats, especially side channels, are very productive. These areas typically have lots of vegetation hanging over and into the water, which supplies these young fish with lots of terrestrial insects. These areas are often rich in organic material that has gone from being suspended in the water column to settling on the river bottom, providing another rich source of food. An adult female Chinook salmon can deposit up to 5,000 eggs in her redd (gravel nest). Of those eggs that manage to be fertilized and hatch, the majority will die during the juvenile life stage from predation, disease, and starvation. Some estimates of mortality during this life stage are as high as 90 percent. Providing more off-channel habitat will reduce competition for both food and safety from predators.

The importance of off-channel habitat extends beyond the juvenile life stage. These areas function in other important ways; they encourage riparian vegetation growth, capture water that helps to recharge flows later in the summer, and provide great habitat to many birds, amphibians, and insects.

One of the largest concerns for Chinook salmon in our basin is limited habitat for rearing juveniles. Much of the off-channel habitat that is so critical for these young fish was removed years ago to provide more farmland, develop roads, and make room for cities that were often established near rivers. Now that we understand the vital importance of this type of habitat, restoration professionals are working with willing landowners to re-establish these areas.

The staff at the Grande Ronde Model Watershed recognize the importance of agricultural production and strive to work with landowners to make both farms and fisheries more productive. We believe the two are very compatible; we look forward to continuing to work with residents in the Grande Ronde, Wallowa, and Imnaha basins to improve fish habitat. Even a few acres of restored off-channel habitat can make a world of difference to the salmon in our basin. ■



THE WENAHA DEATH MARCH

By Ryan Rumelhart, Nez Perce Tribe

I'm a newbie to the Nez Perce Tribe, employed as a fisheries technician working for the Department of Fisheries Resources Management out of the Joseph, Oregon, field office. As with all newbies, I'm usually relegated to the least-desirable survey slots, kind of like being the last kid picked at recess for the kick-ball team. So, I didn't keep my hopes too high that I would be assigned to any of the "choice" surveys when the rough draft of the 2015 Chinook spawning ground survey first came across my desk in early July. Without a doubt, the Wenaha Death March that occurred in mid-September raised my curiosity. Most of the other survey days were filling up fast, all but the Wenaha Death March. I took it as an omen of sorts that seasoned employees were not jumping on this survey. Could it really be that bad? I had to find out more.

The Wenaha River is a designated Wild and Scenic River flowing east of the Blue Mountains through the Wenaha-Tucannon Wilderness before emptying into the Grande Ronde River at Troy, Oregon. You put "wild," "scenic," and "wilderness" in the same sentence, and you know it's a special place. So, sure, I wanted to go, but being a diehard archery hunter, I already requested that time off to hunt elk instead of spawning salmon. The fact that they kept asking for "volunteers" to fill the Death March survey slots also made me think that this survey was a good one to sit out, but the Wenaha cast a certain spell over me that I couldn't shake.

July turned to August, and I got more info on the Death March. From one source, I heard, "Yeah, expect 17 or so miles of billy-goating trails, dropping and climbing 2,000-3,000 feet and starting and ending in the dark with a BBQ at the trailhead." Another person said to expect "at least a 14-hour day ending with bloody socks and missing a sleeve." Okay, so that's why it's called the Death March, but you had me at BBQ, so maybe I'll participate next year.

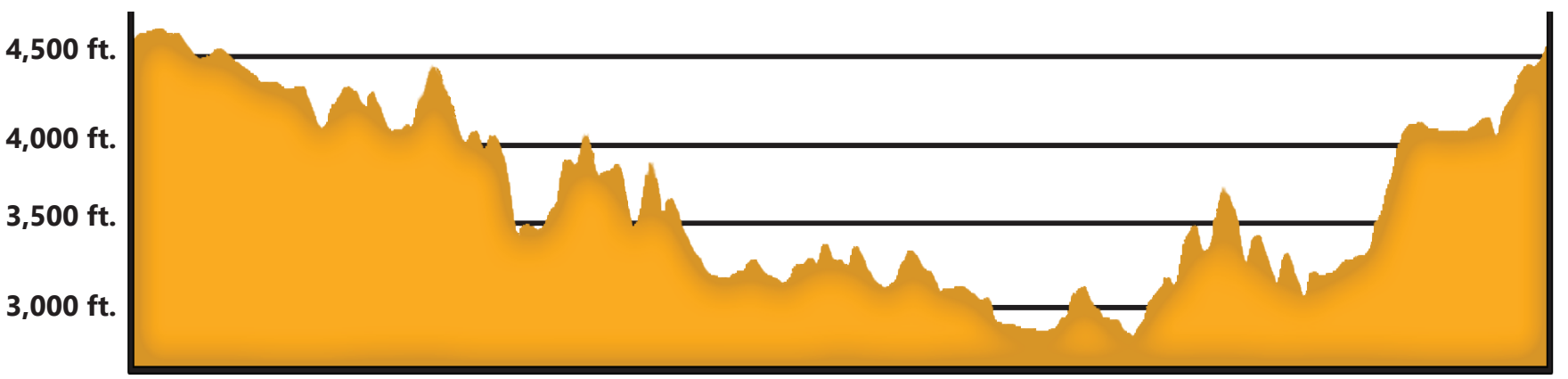
On August 13, the Grizzly Bear Fire Complex started, and within a week, it looked like the survey was going to be canceled. By early September, reports from the fire indicated that the Death March was a no-go. One week before the scheduled survey, we got word that a modified survey was probably in the cards. I had already harvested my elk, so I made myself available, but I didn't make the cut. A few days before the survey, another section was added; I was the last guy to make the list.

For all you non-fish folks, I had better explain what a spawning ground survey is and why we get paid to stumble, wade, swim, and bushwhack our way for months over miles of salmon streams. Sometimes this involves handling and collecting body parts of rotten, sometimes "hairy" salmon carcasses; let's just say you don't pack a tuna fish sandwich for lunch on survey days.

I think most readers understand the basics of the salmon lifecycle, so I won't bombard you with all the scientific nomenclature and exact timing of stages and such. Wild salmon are born and reared in freshwater streams/rivers, migrate out to the ocean, return to freshwater as adults to spawn, where they die, and then the cycle repeats. Hatchery salmon have a similar lifecycle, except they are born and reared in a hatchery facility and released back into freshwater streams and rivers as juveniles and follow the same cycle as wild salmon. I should add that individual salmon in northeastern Oregon are extremely lucky if they can complete the full life-cycle, as ballpark survival rates are 0.5-3 percent for juveniles to make it back as adults to spawn.

When salmon return to freshwater, the female initiates spawning by digging a shallow nest (called a redd) for her eggs in the gravel. Then, the winning male joins the female, and they release eggs and sperm side-by-side above the redd. These now-fertilized eggs settle into the redd, and the pair moves upstream and begins to dig again to cover the eggs. A trained eye can identify redds and develop population trends by counting redds on the same sections of rivers year after year. During a spawning ground survey, we collect redd numbers, GPS locations, and the numbers of live fish observed. From carcasses, we collect biological and genetic samples, spawning success, sex ratios, and marks and tagging

Continued on page 8, **MARCH**



The elevation profile of Ryan's survey path, which covered more than 14 miles of grueling terrain.

MARCH, *continued from page 7*

information. All of these data help us develop trends estimating populations, age, juvenile to adult survival, and habitat selection and comparing wild and hatchery populations.

Enough with the science! Now back to the Death March. On September 16, the day of the famed March, five of us were packed into a truck just before sunrise, headed to the rendezvous site where we met with the sixth member of our survey party. We settled into our 1.5-hour drive, and there's talk of the fire, fishing, elk, moose, bear, and, of course, Chinook salmon and the Wenaha River. We really don't know what to expect, as this is not a normal year, with low water and high temperatures potentially affecting the returning fish. We planned to survey the South Fork Wenaha and a small section of the main stem Wenaha that was spared from the fire. We checked into a Forest Service fire camp to finalize survey logistics with fire personnel.

Standing in the chilly, early morning September air at the trailhead as the shuttle vehicle drove away, I felt giddy with excitement and hoped I remembered to pack toilet paper. My survey partner filled me in on what to expect on this survey. We covered the upper South Fork, a section that he's surveyed numerous times. He said, "It's totally awesome! If I could just do one survey a year, then this would be it." We split into teams of two people for our survey sections and eventually reconvened at a selected location on the river.

The hike down to the South Fork was not what I expected. With Pacific yew, ferns, and moss-covered rocks lining the trail, it felt more like the coast range then northeastern Oregon. The trail is actually in good shape, too; so much for billy-goating! After a few hours of hiking, we dove off the trail to the South Fork, geared up, and located our first redd within a 50-yard walk. It's a bull trout redd, and less than a minute later, we found a Chinook redd, and so it goes. Just about everywhere there was suitable spawning gravels, we found redds, either Chinook or bull trout. The Chinook have completed their spawning and were mostly gone, but the bull trout seemed to be lurking in every pool. I'm sure I had a smile from ear to ear as the magic of this place took hold of me, a scene featuring 100-foot-tall, moss-covered weeping rock walls, bull trout dancing in and out of the shadows, and a few adult Chinook still alive protecting their redds.

We stumbled upon a bull trout carcass that was really fresh. We assumed that a bear snatched it before realizing that the rocks were still wet from said bear; the Death March may live up to its name yet! This bear also may explain why we hadn't yet found any Chinook carcasses. Three hours later, we found our first deceased Chinook; it's covered in yellow jackets but still salvageable for biological samples. I started to grab my gear to take some scales off the carcass when my survey partner said, "FYI, there's an EpiPen in my pack." Deciding this sample was not worth rolling the dice on an anaphylactic shock episode, I dodged another Death March bullet.

We seemed to finish our section way too soon, got back on the trail, and hiked down to our meeting site. We met the rest of our group, and they're all smiles; from spawning fish to rutting elk, it was just one of those days that you don't want to end. We traded wading boots for hiking boots and started the hike out to the vehicles. Ignorance is bliss when you don't know what the trail has to throw at you on the way out. We start up the 2,000 vertical feet and four sweaty miles, the last of which we christened the "Devil's Grade," and just like that, the Death March was over. No bloody socks, and I still had both sleeves, so I counted the survey as a win.

BBQ and cold drinks were waiting. We all thought about next year and hoped that we will be able to make it back again for the Death March. The effects of the fire will play out for years. This year, the Chinook did well, but who knows what next year will bring. Our bodies were tired. We compared our march to the journey the Chinook endure to make it back to their spawning grounds. Our 14- to 17-mile hikes that day were laughable compared with the distance and the obstacles the Chinook experience to make it back to the Wenaha; theirs truly is The Death March. ■

Grande Ronde Model Watershed

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