
Upper Salmon Basin Watershed

NEWS ABOUT RESTORING FISH HABITAT IN CENTRAL IDAHO

Winter 2017



Looking north at the icing and flooding on the main Salmon River just south of Wagonhammer (1/17/17).

WATERSHED PROGRAM UPDATE

Projects at the Watershed Program continue to keep our staff very busy. In 2016, we implemented six projects in the Pahsimeroi and Lemhi watersheds (project details inside) and began work on four projects on Pratt Creek, Hawley, and Canyon creeks, which will be completed early this year. When completed, these ten projects will have removed a total of six fish passage barriers, added four fish screens, provided an additional 12 miles of fish habitat, installed 800 feet of riparian fence, restored 250 feet of channel structure and form, kept approximately 14.5 cubic feet per second (cfs) of water in streams for fish, treated 129 acres for noxious weeds, and rehabilitated one acre of construction sites through hydroseeding while also providing irrigation efficiencies for landowners. *Thank you to all of the landowners who worked with us to accomplish these projects!*

Project planning is underway to implement seven projects this year, which will include projects in the Lemhi watershed on Wimpey Creek, Pratt Creek, Eighteenmile Creek, Little Springs, and Sandy Creek, and one project in the Pahsimeroi watershed. Project planners have 2018 in sight as well, with six more projects slated for implementation.

In addition to our valuable partnerships with private landowners, many other groups are crucial for moving a project from the planning stages through to completion. The list of our partners is extensive but worth noting because without them, these projects wouldn't happen. Please see page four for a list of organizations that continue to help us achieve our mission of improving habitat for salmon and resident fish while respecting and balancing the needs of irrigated agriculture and strengthening the local economy.

LOWER PRATT CREEK ACCESS IMPROVEMENT PROJECT

The Pratt Creek watershed is located about 11 miles east of Salmon, near Baker, Idaho. It is a smaller watershed compared to other Lemhi subbasin watersheds, only 9.95 square miles. Pratt Creek is a tributary to Sandy Creek, which in turn is a tributary to the Lemhi River. Pratt Creek supports populations of steelhead/Rainbow Trout, Westslope Cutthroat Trout, Brook Trout, and sculpin. Notably, juvenile Chinook Salmon have been captured in IDFG fish surveys downstream in Sandy Creek. Nearby streams like Bohannon, Wimpey, and Kenney creeks support steelhead rearing and spawning. In all likelihood, improvements to Pratt Creek will attract steelhead adults and juveniles, and possibly Chinook juveniles, searching for refuge from predators and warmer mainstem temperatures.

The riparian condition of Upper Pratt Creek is excellent, with the exception of about a quarter mile, thus keeping the high mountain stream shaded and cooler for salmonid species. Prior to the Lower Pratt Creek Access Improvement Project, installing fish screens on Pratt Creek diversions had been a lower priority due to dewatering near the mouth. Depending on annual precipitation, the lowermost diversion on Pratt Creek begins to completely divert any remaining flow by mid-July. However, projects currently being planned will address flow connectivity, barriers, decrease the number of diversions, and install fish screens on each diversion by 2019. Two irrigation projects, a bridge project, and stream channel enhancement will round out habitat improvements on Pratt Creek and keep it connected year round. A future conservation easement through The Nature Conservancy will ensure additional flows in Pratt Creek and keep a local ranch in agriculture.

The Lower Pratt Creek project will change the point-of-diversion from Pratt Creek to Sandy Creek. Since this water right is the senior water right on Pratt Creek, it is required to be delivered to the new point of diversion (POD). This will effectively reconnect Pratt Creek to Sandy Creek and the Lemhi River for migrating fish. The new POD will include a pumping station that will replace a flood system and deliver water to the existing place of use.

The benefits for the landowner will be an efficient delivery and distribution of irrigation water. The anticipated benefit for fish, and particularly steelhead, is a flow of 0.41 cubic feet per second (cfs) remaining in the channel to Sandy Creek during late summer low flows.



View of the Pratt Creek watershed.



Existing diversion on Pratt Creek, to be removed.

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With the irrigation efficiencies provided by the project, the landowner will not need to take additional water at high flows. This benefits steelhead juvenile migration as they take advantage of high water to travel quickly towards the ocean during smoltification. With the completion of the upcoming projects, fish will have access to all of Pratt Creek's high quality habitat without the danger of being entrained in diversions. Additionally, flow agreements with upstream irrigators will guarantee flow in the lower end.

Conversion from flood to sprinkler irrigation has generated concerns by irrigators and agencies about groundwater recharge. The Idaho Department of Water Resources (IDWR) utilized this opportunity to install three groundwater monitoring wells in the vicinity of the project, and soil moisture probes above and below the fields that will be converted from flood to sprinkler. The wells are equipped with sensors to determine changes in the groundwater level throughout the year and the soil probes measure moisture infiltration into the ground. By collecting groundwater and soil moisture data, IDWR hopes to better understand the relationship of surface and groundwater when irrigation practices are changed.



Soil moisture monitoring in flood irrigated field.

The Lemhi Soil and Water Conservation District sponsored the Lower Pratt Creek project. The Watershed Program assisted in planning, permitting, and obtaining funding. The project was funded by the Bonneville Power Administration, Pacific Coastal Salmon Recovery Funds, Idaho Department of Environmental Quality 319 funds, and Natural Resources Conservation Services EQIP funds. Other partners contributing to the project included Trout Unlimited, Bureau of Reclamation, Idaho Department of Fish and Game, and the Idaho Water Resource Board.

PAHSIMEROI RIVER BANK RESTORATION PROJECT

In summer 2016, USBWP partnered with Trout Unlimited to complete bank restoration on the Pahsimeroi River. An eroding bank on an outside bend of the Pahsimeroi River had been a continual source of sediment that lost approximately 50 feet of bank between 1992 and 2014 (photos below), as well as significant sections in spring 2016 (see top photo on page 4). The location was just upstream from multiple Chinook redds surveyed by the Idaho Department of Fish and Game in 2015.



These GoogleEarth images from 1992 (left) and 2014 demonstrate the 50 feet of bank loss over time. The solid red line illustrates the bank line in 2014.

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The project area on May 9, 2016. New sections of bank sloughed off in spring 2016.

Bioengineering designed by the U.S. Bureau of Reclamation was used to rehabilitate the riverbank, reduce sediment load, and support development of riparian vegetation.

Streambank rehabilitation was accomplished through installation of large wood and engineered log jams (ELJ) on approximately 250 feet of eroding bank (photo below). The ELJs create habitat and refugia for juvenile Chinook and steelhead, and act to reduce the near bank velocity. The ELJs also create overhead cover and resting areas for spawning Chinook Salmon. Chinook redds

downstream will be exposed to less fine sediment, increasing inter-gravel flow and dissolved oxygen. Over 400 native potted plants and 700 willow stakes were planted in the project area to jump start a new riparian zone. The Natural Resources Conservation Service designed and helped install a stock water system. The project was funded by the Bonneville Power Administration.



Large wood provides pools and slow water for juvenile fish rearing habitat in an area which used to have a cut bank.

Thank you to our partners: Bonneville Power Administration, Bureau of Land Management, Custer Soil and Water Conservation District, Idaho Department of Environmental Quality, Idaho Department of Fish and Game, Idaho Department of Water Resources, Lemhi Regional Land Trust, Lemhi Soil and Water Conservation District, National Marine Fisheries Service, Natural Resources Conservation Service, Shoshone-Bannock Tribes, The Nature Conservancy, Trout Unlimited, U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, and the U.S. Forest Service.

NEW BRIDGE COMPLETED ACROSS AGENCY CREEK

The Lemhi Soil and Water Conservation District, Lemhi County Road and Bridge and the Upper Salmon Basin Watershed Program completed a project this summer to replace an undersized metal culvert with a prefabricated steel bridge on Agency Creek Road. The culvert was a fish passage barrier to certain life stages of fish at high flows. The new bridge provides an additional 1.1 miles of unimpaired fish passage in Agency Creek. Additionally, the culvert was subject to debris jams and icing, which increased the potential for structure failure and subsequent heavy sediment input into the system.

By the time construction began in early August, Agency Creek was no longer flowing. At first glance, the pool of water inside the culvert and a pool downstream of the culvert didn't look like they could possibly have fish in them. Yet upon closer examination, the pools were abundant with fish, the largest up to eight inches long. A total of 89 fish (62 steelhead/Rainbow, 24 sculpin and 3 suckers) were removed by Idaho Department of Idaho Fish and Game from the two pools and released into the Lemhi River prior to construction. Since Agency Creek is dewatered annually, we can only assume that the loss of fish will continue without further habitat actions.

The Watershed Program and its partners will continue to identify projects to improve conditions on Agency Creek, including keeping more water instream to avoid stranding fish in the future. The U.S. Bureau of Reclamation provided assistance and the Bonneville Power Administration provided funding.



Fish salvage from the Agency Creek culvert.

PATTERSON-BIG SPRINGS CREEK BRIDGE

Patterson-Big Springs Creek streamflow now fills a previously



Before (above) and after bridge installation.



disconnected section in the Pahsimeroi River watershed. A perched and undersized culvert restricted flows, sending the entire creek down an irrigation ditch for most of the year. A bridge replacement allowed the stream to flow back into its historic channel and also opened a mile of fish passage. Trout Unlimited partnered with the Watershed Program to implement the project, with funding from the Bonneville Power Administration and assistance from the U.S. Bureau of Reclamation and Idaho Department of Fish and Game.

Upper Salmon Basin Watershed Program

Homegrown, Common-sense Conservation

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To:

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WATERSHED CALENDAR

- **USBWP Advisory Committee:** May 4 (Leadore)
- **USBWP Office Closed:** May 29

Coordinator's Comments *By Daniel Bertram*

This winter has been a winter to remember. Having grown up in Salmon, I remember snowmobiling from the bar hill on Thanksgiving up the old power line road or along the Black Rock road to Stormy Peak. I remember when we were excited that it was 30 degrees below zero because the heaters in the now abandoned Jr. High couldn't keep up and school was cancelled.

What I don't remember is having the Main Salmon River ice jam extend past the city of Salmon. That's probably because the last time it happened I was six years old and I certainly wasn't paying attention to ice, rivers or how it affects everything in its path. I also don't remember thinking about what fish do in the winter, where they go, what they eat, or how they even survive. This winter I spent a great deal of time pondering just how do fish survive these winters when the rivers and creeks are frozen solid and floodplains are activated. Do they move onto the floodplain, and if so, what happens when the newly created channel closes because of changing conditions and the water is someplace else? Is their death inevitable?

As I drove around the basin taking pictures of icing events and thinking of how hard this winter must be for not only ungulates, but also those less obvious aquatic species, I began to notice something. At first it was just a flashback to a presentation about overwintering survival rates of juvenile Chinook salmon and those that emigrated to a zone that experience less ice, showed higher survival rates than those

that didn't. I started to notice how the lower Lemhi was nothing but ice, threatening to overtop its banks in many places, and it was no wonder juvenile Chinook had a hard time surviving such conditions. However, as I made my way up the valley the river started to open up and there was less ice, but why? We haven't experienced that much of a difference in temperature between the headwaters of the Lemhi and its mouth this year. Then it dawned on me, not only was the upper mainstem openly flowing, there were many springs that were also open and feeding into it. These groundwater sources were acting to warm the water just enough to prevent freezing, and at least in my mind, helping to contribute to juvenile Chinook's overwintering success. Up until this point I had only thought of the cooling benefits those springs brought to the warmer mainstem Lemhi in summer.

I then began to picture how the Lemhi looked pre-settlement with multiple channels and spring complexes from the headwaters of the Lemhi throughout the tributaries all the way to the mouth. Obviously, the prospect of returning the Lemhi to those conditions is undesirable, but there is room to improve upon the conditions we now have, while still allowing for agriculture and human development in the valley. By reconnecting spring channels to the mainstem and providing overwintering habitat, how much could we improve the winter survival rates? What would happen in the lower Lemhi during these colder years; would we see less ice, would there be less potential for flooding, would we all benefit? This is a question that partners within the Upper Salmon Basin are working to resolve.