The Confluence

Spring & Summer 2022

Rogue River Watershed Council

Credit: Justin Clifton

Notes From the Executive Director's Desk

I've reasoned that Bear Creek downstream of Phoenix was a fool's errand for an organization focusing on improving water quality and native fish and wildlife. The landscape is too urban; and what about all those encampments? I've had a change of heart. RRWC has been reacting to the Almeda and Table Rock Fires – acting strategically and thoughtfully but reacting all the same. The communities along Bear Creek must keep the Almeda and Table Rock Fire areas free of blackberry and quadruple efforts to re-establish native trees and shrubs.

Where blackberries did not burn, we need to remove them and let snowberry, chokecherry, bigleaf maple, and black cottonwood grow back. We're having success with this "Release & Recruit" strategy in other parts of the watershed. It will work along Bear Creek, too.

We need to restore complex stream channels and connect floodplains to the primary stream channel where risks to existing infrastructure are low. We can do this by adding large wood and carefully reconnecting side channels in places like Lynn Newbry and Bose Parks. Blackberries will not flourish in places where winter flows can soak the low-lying creek-side soils (but native plants will).

We have to find compassionate options for our unsheltered neighbors that allow them to safely prepare their meals and limit the amount of refuse and human waste that ends up in Bear Creek. We recently engaged a small, supervised team from Rogue Retreat's Clean Sweep program to maintain four pollinator gardens along the Greenway. We hope this is the start of a program providing a "leg up" for unsheltered individuals striving to leave their "encampment lives" behind while improving the environment.

Please chip in. Volunteer for a clean-up or a stewardship day with one of the many organizations that offers them. Together and over time, we'll create a cherished amenity that runs from Ashland through Central Point – a creek brimming with spawning salmon in the fall and a Greenway "trail" bustling with activity in all seasons.

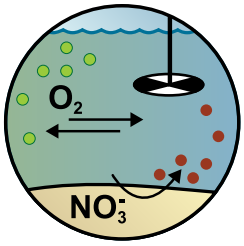
Southern Oregon University students hand-pulling blackberries along Bear Creek.

Water Quality in the Wake of Fire

Bear Creek

Bryan Held, Capstone Researcher, Southern Oregon University

Bear Creek is a significant tributary of the Rogue River that provides spawning habitat for salmon and trout. However, as the most urbanized stream in southern Oregon, the Bear Creek system faces threats to water quality and habitat degradation. Therefore, my capstone partner and I at Southern Oregon University continued capstone project research with a slightly different focus than our predecessors. Considering the immediate impacts of the Almeda Fire, we took a more complete look at the health of the Bear Creek watershed through the lens of water quality, vegetation, and land runoff that impact Bear Creek.



In 2021, we measured the water quality of Bear Creek and its tributaries by using data loggers and Exo-sonde sensors that collected data on water temperature, turbidity, dissolved oxygen, and pH. We measured temperature at over twenty-five different sites, and the other factors are being measured only at two different sites. Our goal was to identify sites that may or may not have seen similar changes in previous years.

We also conducted 10-meter riparian transect vegetation canopy coverage surveys to examine the potential effects of the lack of vegetation after the fire on water quality and temperature. The lack of riparian vegetation could lead to a decrease in shaded riparian areas and could increase the number of sediment deposits that flow into the watershed.

Credit: SOU capstone team.

Researcher Bryan Held reading monitoring data logger information.

Our water temperature data analysis identified a 3.77 °F increase in mean stream temperatures observed within the fire zone and a 3.55 °F increase out of the fire zone between 2020 (pre-fire) and 2021(post-fire). The difference between the zones for 2021 (1.53 °F) was larger than in previous years.

We found a difference between canopy coverage at the sites within the fire zone compared to outside the fire zone. This lack of canopy coverage within the fire zone could be a significant part of the increase in stream temperatures. Future studies, using remote sensing, or drone photography, could provide more conclusive results on the impact of a decrease in canopy cover.

The impact of the Almeda Fire and accelerated climate change will not be fully understood for years to come, but these findings will add to the body of data examining how Bear Creek changes as restoration actions progress and natural regeneration continues to occur.

Cottonwood in Fire and the Flood

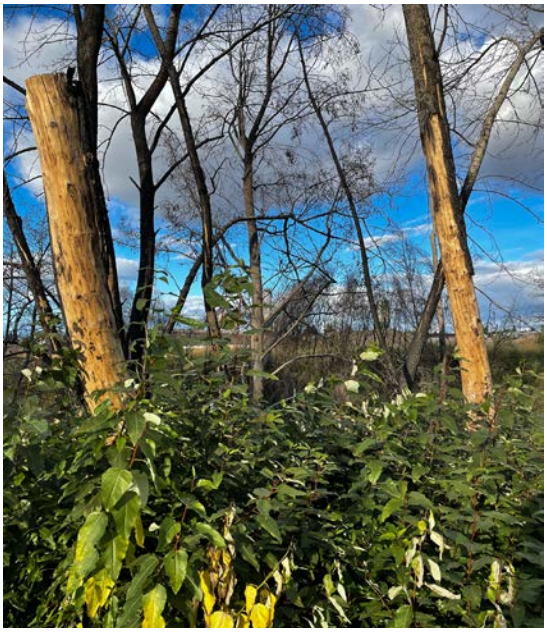
Bear Creek

Niki Del Pizzo, Riparian Restoration Manager, Lomakatsi Restoration Project

Few mature black cottonwood trees survived the historic Almeda fire, but their legacy still stands along the Bear Creek corridor. On Sept. 8, 2020, heavy winds whipped flames across invasive blackberry thickets that served as ladder fuels carrying fire and convection, resulting in a scorched canopy. Despite the shocking impact of the high-severity fire event, many cottonwood trees re-sprouted from stumps, root crowns and surface roots. Germinating cottonwood seeds once hidden under impenetrable blackberry thickets are finally having a moment in the sun.

While driving alongside the fire-effected area, we have witnessed bursts of new vegetation taking hold. This natural regeneration of black cottonwood – and other native species such as Oregon ash, chokecherry, willow, snowberry, gooseberry and rose – inspires a deep-rooted hope for post-fire ecological recovery efforts.

Black cottonwood (*Populus trichocarpa*), one of the largest hardwood trees in western North America, plays a vital role in stream and floodplain ecology. It is a prolific, fast-growing tree commonly found along rivers and creeks in Oregon. Extremely responsive to both fire and flood, black cottonwood readily colonizes disturbed sites. Resilient and adaptable, it is one of the most popular poplars for riparian restoration.



Cottonwood natural regrowth among standing dead trees along Bear Creek after the Almeda Fire.

With drought conditions expected to continue, retaining water across the landscape will be paramount. During high flow events, cottonwood stems and roots disperse and slow down water.

When flooding occurs, they filter sediment and promote floodplain development. As floodwaters are retained, ground water is recharged. Cottonwood and willow colonize barren floodplain soils, establishing new abundant habitat and water storage.

Cottonwood in Fire and the Flood Cont'd

Black cottonwood support trout and salmon by shading rivers and creeks, thereby cooling temperatures, and their roots stabilize streambanks and filter pollutants. Mature trees break down and fall into waterways, creating pools that native fish use to rear and spawn. The heavy cottonwood crown provides nesting habitat for large birds. Deer use it for browse and cover, and beaver use young poles for forage and dam construction. Following fire, the strong presence of cottonwood persists. Standing dead cottonwood "snags" provide exceptional habitat for birds and wildlife.

Though cottonwood's penchant for allergy-inducing pollen and property damage has earned it a poor reputation among some, it's astounding response to fire and flood disturbance is a top redeeming quality. From a restoration standpoint, cottonwood is abundant, fast growing and resilient. For those of us working to recover streamside forests, the mighty cottonwood is a champion tree species.

Black cottonwood leaf nestled in a mid-stream gravel bar.

Celebrate the Rogue! Recap

124 Attendees

$41,570 Funds raised

24 Event sponsors

524 Fish miles traveled

64 Donors

Salt Creek: past, present, and future

Roughly 10 miles of east of Eagle Point, you can find a small tributary called Salt Creek, where it enters Little Butte Creek. With a drainage area of 17 square miles, Salt Creek is not a large system, but it runs with relatively cool water through the summer, providing valuable refuge for over-summering juvenile trout and salmon.

In 2014, ODFW listed seven of the eight diversion dams on the downstream-most five miles of Salt Creek as among the highest priority fish passage barriers in the Rogue Basin. In response to that, our restoration focus on Salt Creek has been to improve fish passage – especially for juvenile salmonids in the most usable aquatic habitat in the system.

Large wood placement at Salt Creek river mile 3.5.

We have been accomplishing this by converting numerous irrigation water diversion sites from gravel push up dams (which prevent upstream movement from April through October) to pre-cast concrete irrigation water intakes. While dramatically improving fish passage, these pre-cast intake structures offer improved water management for the irrigator, too. RRWC replaced the first two dams with pre-cast intakes in 2018. By the end of 2020, we had addressed passage at the second two dams. We started work on the fifth and sixth dams last year and will complete those conversions in the coming months.

At this point, our work has begun to remove the two final barriers remain on Salt Creek. By mid-September of this year, we will have removed all eight fish passage barriers making 4.5 miles of Salt Creek easily accessible to Coho Salmon, Rainbow Trout, and Cutthroat Trout!

On top of the fish passage improvements, RRWC has installed 13 large wood structures along the upper reaches of salmon and steelhead migration in Salt Creek. We plan to add another 19 large logs (aggregated into 30 wood structures), start rehabilitating 15.1 acres of streamside forest, and build 13,200 feet of livestock exclusion fencing to protect this restored area this summer.

The “big picture”

We expect this combination of ecological restoration actions (large wood installation, restored forest, and improved fish passage) to promote unimpeded pass through the drainage for native fish of all species and life stages. Additionally, these actions will yield long term benefits to the quality of the water and habitat, and contribute to increasing health of the Little Butte Creek watershed.

Restoration Biologist, Lance Wyss placing hay over recently seeded areas at Salt Creek.

Species spotlight: Belted Kingfisher

Elva Manquera-DeShields, Science Communication, Outreach & DEI Manager, Klamath Bird Observatory

Belted Kingfishers (*Megaceryle alcyon*), are piscivorous, meaning they feed mostly on fish. They have also been seen feeding on crayfish, frogs, insects, and berries. Much of their life history depends on aquatic ecosystems making them good indicators of aquatic habitat quality and can be found in streams, rivers, lakes, ponds, and estuaries. The Belted Kingfisher requires overhanging perches and clear water with riffles for feeding. They can be seen diving straight down from the perch or hovering over the water looking for prey. Like owls, they cannot digest the bones of their prey causing them to regurgitate pellets.

These short stocky birds feed on fish <10 cm in length, and use their thick, straight, and pointed bills to help catch their prey. They are easy to identify with large heads that have a blue crest, white bellies with a blue belt across the chest, and females will have an additional brown band across their chest. They have a loud rattling call that can be heard when they fly up and down the bank defending their territory.

They can be found throughout North and Central America, with some migrating to the tip of South America. Not all Belted Kingfishers migrate from the United States, most live here year-round. The Belted Kingfisher digs burrows in steep earthen banks on the water's edge. The breeding pair take turns excavating the tunnel upward creating a nest at the end. The female will lay 5-8 eggs and both members of the pair incubate the eggs and feed the chicks.

These fun charismatic birds can be found throughout the Rogue Valley.

Credit: Frank Lospalluto

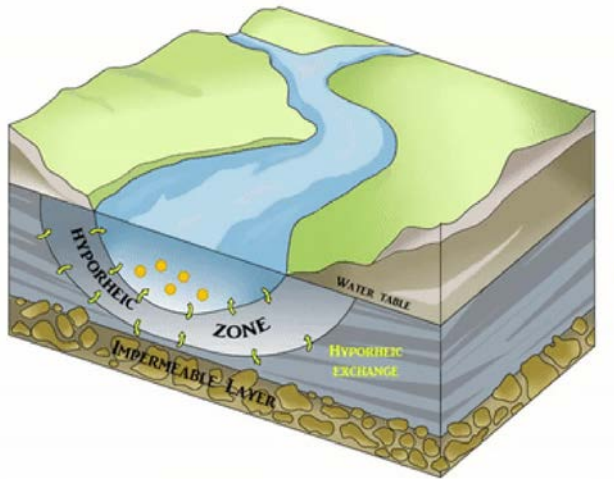
Belted Kingfisher perched on a branch overhanging a stream.

What is a Hyporheic Zone?

The hyporheic zone is a dynamic and fundamental region in a stream ecosystem. The hyporheic zone is defined as the saturated sediment-filled space under the streambed and adjacent riverbanks where there is an exchange between the main stream channel water and groundwater (White,1993).

The hyporheic zone has a very important influence on reducing water temperature and cycling nutrients. Water is cooled as it flows through the substrate within the streambed, which is underground and out of reach of most sunlight. Nutrients like nitrogen and phosphorus are transported downstream from other areas of the watershed and also enter from the soil of the riparian forest into the stream via groundwater inputs. These nutrients interact with the stream and the hyporheic zone. Along the way, nutrients are processed by stream organisms (like bacteria and insects) and ultimately enter the water cycle. This exchange and process can reduce stream pollution and promote beneficial nutrient cycling, among other things.

The hyporheic zone provides a variety of ecological benefits, like habitat for insects and other organisms. We will continue to highlight these other benefits in future newsletters, Friends' Updates, and social media posts.



Credit: Elibaio91 (Wikipedia).

Conceptual diagram depicting the process of hyporheic zone in a stream system.

Rogue River

Works Cited

White DS. 1993. Perspectives on defining and delineating hyporheic zones. Journal of North American Benthological Society 12: 61-69.

Acknowledgments

Thank you to our guest authors for sharing their valuable insights and perspectives.

Fish school, water quality, and Yellow Warbler symbol courtesy of the Integration Application Network symbol library.

All graphics are by RRWC staff unless noted otherwise.

ROGUE RIVER WATERSHED COUNCIL

Pacific Ocean