

An aerial photograph of a rocky stream with a small waterfall. Several people wearing hats and gear are gathered around the stream, likely conducting field research or maintenance. Various pieces of equipment, including a white bucket and blue containers, are scattered on the ground. The surrounding area is covered with green vegetation and large rocks.

# PEOPLE. WATER. LAND.

**Trout Unlimited and the Bureau of Land Management:  
A Growing Partnership**



Partnerships and collaboration are core values at Trout Unlimited, driving a deep-seated philosophy of working together to care for and recover trout and salmon fisheries across America. Our work is rigorous, impactful, and lasting.

To that end, TU enjoys a strong relationship with the Bureau of Land Management (BLM), working closely with the agency on the millions of acres that it manages across this country. The BLM manages more land than any other public land management agency and is often dramatically under-funded.

Over the years, they have learned to leverage their impact by relying on partners such as Trout Unlimited for cutting-edge science and on-the-ground restoration. The BLM manages tremendous coldwater fisheries across the West and in Alaska. From Lahontan cutthroat strongholds in the tall sagebrush deserts of the Great Basin of Nevada-Oregon-Idaho, to the historic, sweeping landscapes and thriving wild trout of Wyoming, to more than 70 million acres and legendary salmon and trout populations in wild Alaska, BLM lands are a refuge for trout and salmon.

For many years, TU and the BLM have partnered to protect, reconnect, and restore trout and salmon fisheries, the tiny streams in desert mountains, the thrashing rivers in wild canyons. This report highlights the thriving collaboration between TU and the BLM to ensure the health of this nation's coldwater fisheries and explores the possibility of lasting partnerships in the future.

Working together gets good things done, provides high paying family wage jobs, and produces results for people, water, and the land.

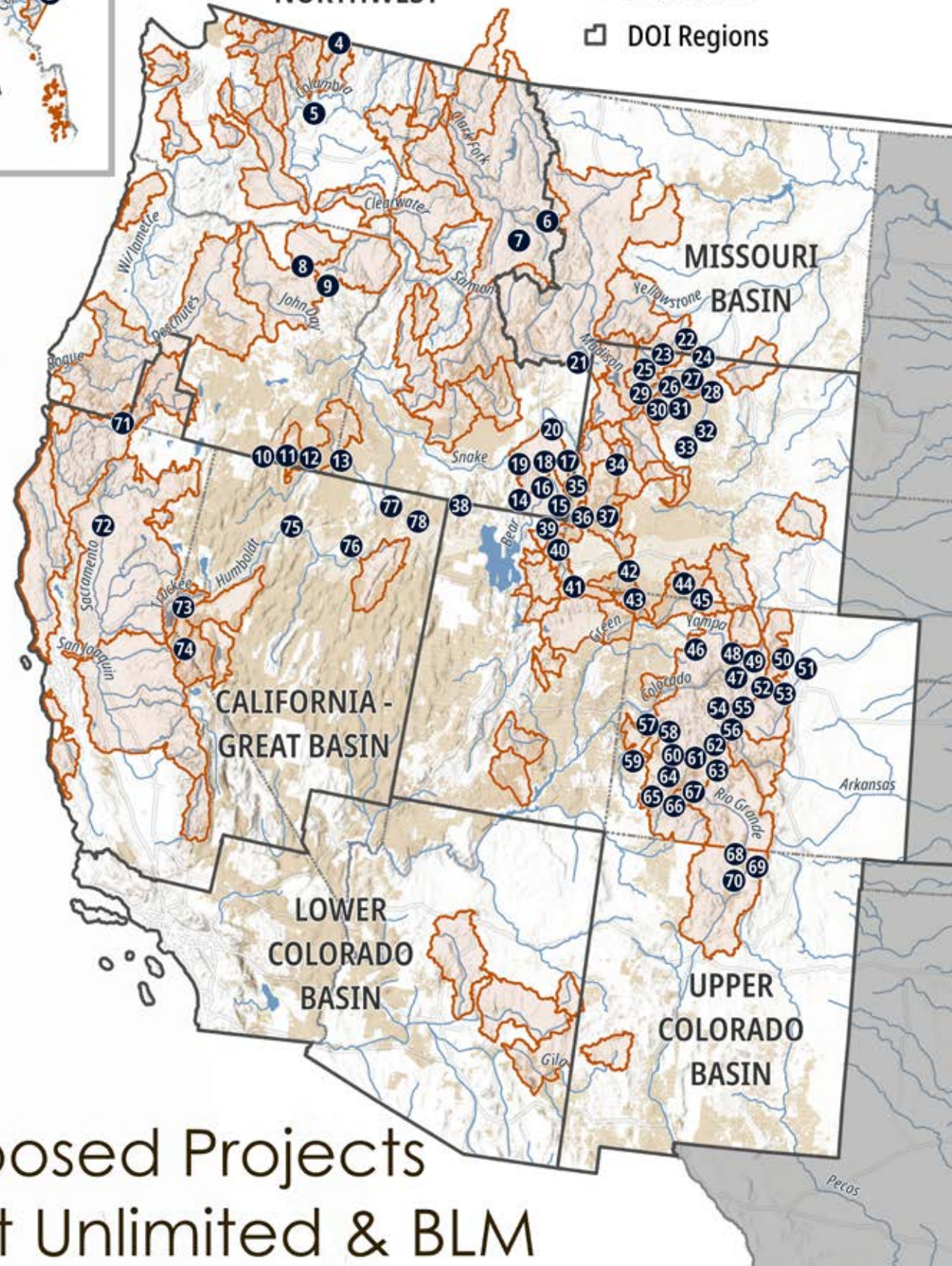


*Chris Wood  
President and CEO  
Trout Unlimited*



COLUMBIA-PACIFIC NORTHWEST

- ① TU Proposed Projects
- Priority Waters
- BLM Lands
- DOI Regions



Proposed Projects  
Trout Unlimited & BLM

Label	Project	Basin/Geography	Label	Project	Basin/Geography
1	Nome Creek restoration	Beaver Creek/Yukon River	40	Three Creeks riparian protection and stream restoration	Bear River
2	Yukon River restoration initiative	Yukon River	41	Brush Creek restoration	Green River
3	Wade Creek restoration	Fortymile River/Yukon River	42	Sage Creek (Little Mountain)	Green River
4	Enloe Dam removal	Similkameen River - Upper Columbia River	43	Willow Creek Watershed restoration	Green River Basin
5	Douglas County beaver-powered restoration	Douglas County	44	Muddy Creek restoration	Little Snake River
6	Belmont/Brazil Creek restoration	Blackfoot River	45	Savery Creek restoration	Little Snake River
7	Upper Willow/Rock Creek restoration	Rock Creek	46	Pagoda Creek fish entrainment project	South Fork Williams Fork
8	Cable Creek restoration	North Fork John Day	47	Colorado River at Kremmling habitat improvement	Colorado River
9	Sheep Creek restoration	Grande Ronde Basin	48	Muddy Creek fish passage and habitat improvement project	Muddy Creek
10	East Creek/ East Creek trib	Nestucca River	49	Fraser River at Granby Ranch channel improvement	Fraser River
11	McDermitt Creek, non-native fish	McDermitt Creek	50	Lick Skillet Gulch AML restoration	St.Vrain Creek
12	McDermitt Creek headwaters	McDermitt Creek	51	Emerson Gulch AML restoration	Fourmile Creek
13	Owyhee Basin restoration	Owyhee River	52	Chase Gulch restoration	Clear Creek
14	Stockton Creek diversion passage and screening	Bear River	53	Russell Gulch restoration	Clear Creek
15	Thomas Fork stream and riparian restoration	Bear River	54	Sugarloaf Mining District	Arkansas River
16	Cottonwood Creek Bridge replacement, stream restoration	Bear River	55	Upper Iowa Gulch wetland and stream restoration	Arkansas River
17	Horse Creek Streambank and riparian restoration	Salt River	56	Cache Creek	Arkansas River
18	Lower Blackfoot River streambank bioengineering and access improvements	Blackfoot River	57	Escalante Creek restoration	Gunnison River
19	Portneuf River tributaries stream restoration	Portneuf River	58	Stewart Ditch diversion modification project	Gunnison River
20	Willow Creek stream restoration	South Fork Snake River	59	San Miguel Watershed Stream health initiatives	Dolores River
21	Henrys Lake shore bioengineering and access improvements	Henrys Fork	60	Van Boxel Creek aquatic organism passage (AOP)	Gunnison River
22	Piney Creek YCT habitat enhancement and fuels reduction	Shoshone River	61	Indian Creek beaver restoration	Gunnison River
23	Paint Creek culvert replacement and reconnect	Clark Fork	62	Gunnison sage-grouse restoration, beaver restoration	Gunnison River
24	Sage Creek	Shoshone River	63	Road Beaver Creek AOP	Gunnison River
25	Trout Creek conifer removal and riparian enhancement	North Fork Shoshone River	64	Mineral Point Ditch water rights purchase	Animas River
26	Sulphur Creek	Shoshone River	65	Burrows Gulch restoration	Animas River
27	Shoshone River sediment assessment including McCullough Peaks	Shoshone River	66	Upper Animas River beaver restoration projects	Animas River
28	Beaver Creek BDA and YCT reintroduction	Big Horn River	67	Bonita Peak reclamation	Animas River
29	Lakeview Fish screen/siphon and access project	South Fork Shoshone River	68	Rio Grande habitat and access improvement	Rio Grande
30	Francs Fork passage	Greybull River	69	Wild Rivers Recreation Area angler access	Rio Grande
31	West Timber Creek	Greybull River	70	Rio Grande boat ramp	Rio Grande
32	Buffalo Creek	Big Horn River	71	Klamath Reservoir Reach anadromy restoration	Klamath River
33	Red Canyon Creek	Big Horn River	72	Paynes Creek Bend water users fish passage restoration project	Sacramento River
34	New Fork River restoration	Green River	73	Winter's Ranch	Truckee River
35	Salt River Narrows bank stabilization and recreational access	Salt River	74	Slinkard Creek diversion reconstruction	Walker River
36	Smiths Fork restoration and recreation access	Bear River	75	LCT/grazing related water gap changes	Humboldt/Little Humboldt River
37	Wyoming Green River Basin resilience project	Green River	76	Maggie Creek barrier retrofit	Maggie Creek
38	Junction Creek fisheries restoration	Raft River	77	Draw Creek restoration/road realignment	Mary's River
39	Laketown Canyon stream and road improvements	Bear River	78	Dry Creek culvert replacement	Salmon Falls Creek

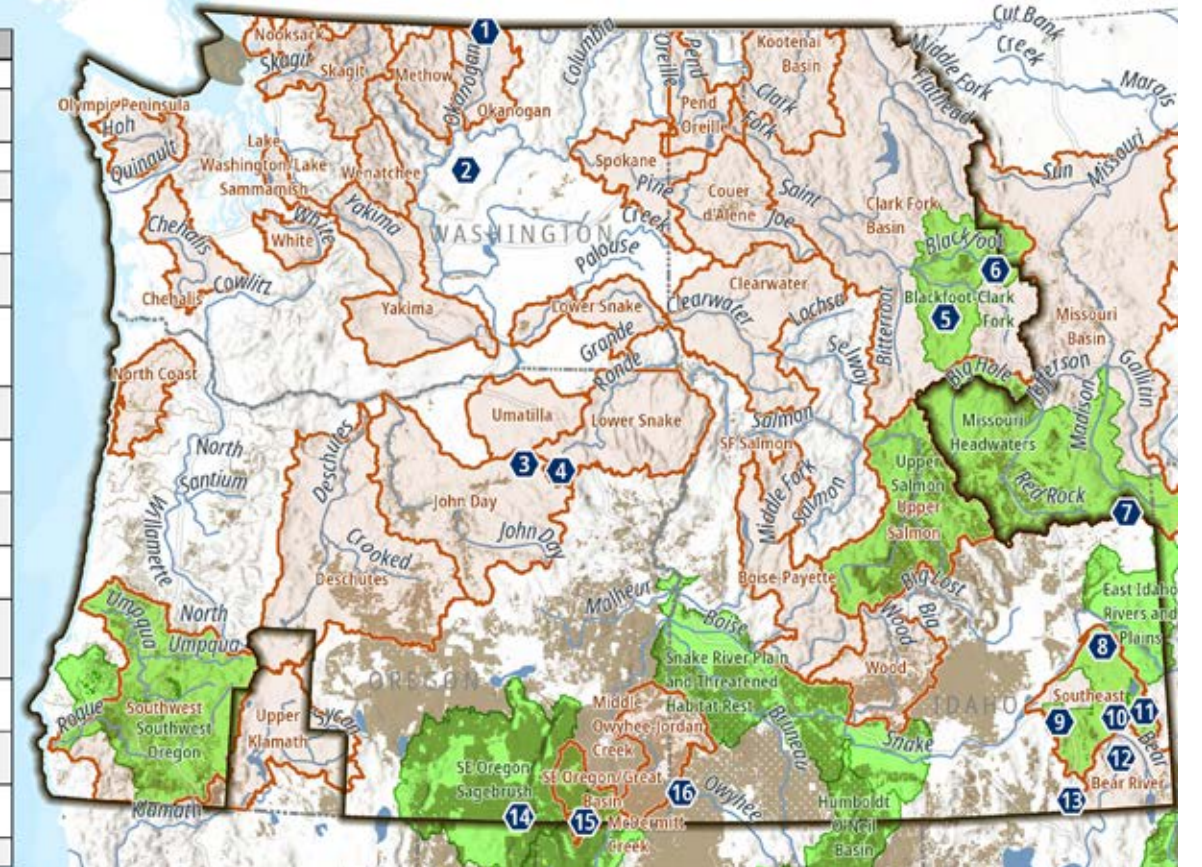
# COLUMBIA PACIFIC NORTHWEST



## REGION 9 - PACIFIC NORTHWEST

○ TU Priority Waters  
■ BLM Lands  
○ BLM Restoration Landscapes

Label	Project Name
1	Enloe Dam
2	Douglas County Beaver-Powered Restoration
3	Cable Creek Restoration
4	Sheep Creek Restoration
5	Upper Willow/Rock Creek Restoration
6	Belmont/Braziel Creek Restoration
7	Henrys Lake Shore Bioengineering and Access Improvements
8	Willow Creek Stream Restoration
9	Portneuf River Tributaries Stream Restoration
10	Lower Blackfoot River Streambank Bioengineering
11	Horse Creek Streambank and Riparian Restoration
12	Cottonwood Creek Bridge Replacement and Stream Restoration
13	Stockton Creek Diversion Passage and Screening
14	East Creek/ East Creek tributary priority fish passage
15	McDermitt Creek non-native fish barrier improvements
16	Owyhee Basin Restoration



## WASHINGTON AND OREGON

In Northeast Oregon, TU's Levi Old is partnering with the Vale District of the BLM on the ongoing Sheep Creek stewardship project. Sheep Creek is an important headwater of the Grande Ronde River, which in turn is a key tributary of the Snake River and the larger Columbia River Basin. It is home to critical spawning and rearing habitat for three fish populations protected by the Endangered Species Act, including Snake River Chinook, Snake River steelhead, and Mid-Columbia bull trout. Redband trout, Columbia Spotted frogs, Pacific lamprey, and extensive populations of freshwater mussels are also native to the watershed. Aside from the much-needed benefits flowing to these fish, amphibians, and mussel populations, the work being done here is fostering the return of beavers, reconnecting wildlife migration corridors via restored riparian habitat, and directly contributing to larger watershed climate and wildfire resilience.

From the beginning, the Sheep Creek stewardship project was intended to be an innovative and adaptive long-term restoration effort. The work has been underway for five years and is taking place on four and a half miles of mid-montane meadow habitat and more than four miles of tributary streams. During that time, crews of young adults have built beaver dam analogues to hold back water, restore beaver habitat, and reconnect the floodplain. Crews of volunteers and contractors have planted thousands of riparian shrubs to restore riparian areas. Heavy equipment operators have placed large pieces of wood in stream, enhancing historic side channel habitat and wetland networks.

Along with TU and the BLM, a strong coalition of partners is at work on Sheep Creek, including Confederated Tribes of the Umatilla Indian Reservation, Willowa-Whitman National Forest, Oregon Department of Fish and Wildlife, Xerces Society, Northwest Conservation Corps, Glacier Excavating, Plantworks, the Grande Ronde Model Watershed Council, and many others.



**PARTNER  
PROFILE:  
Capitan Forestry**

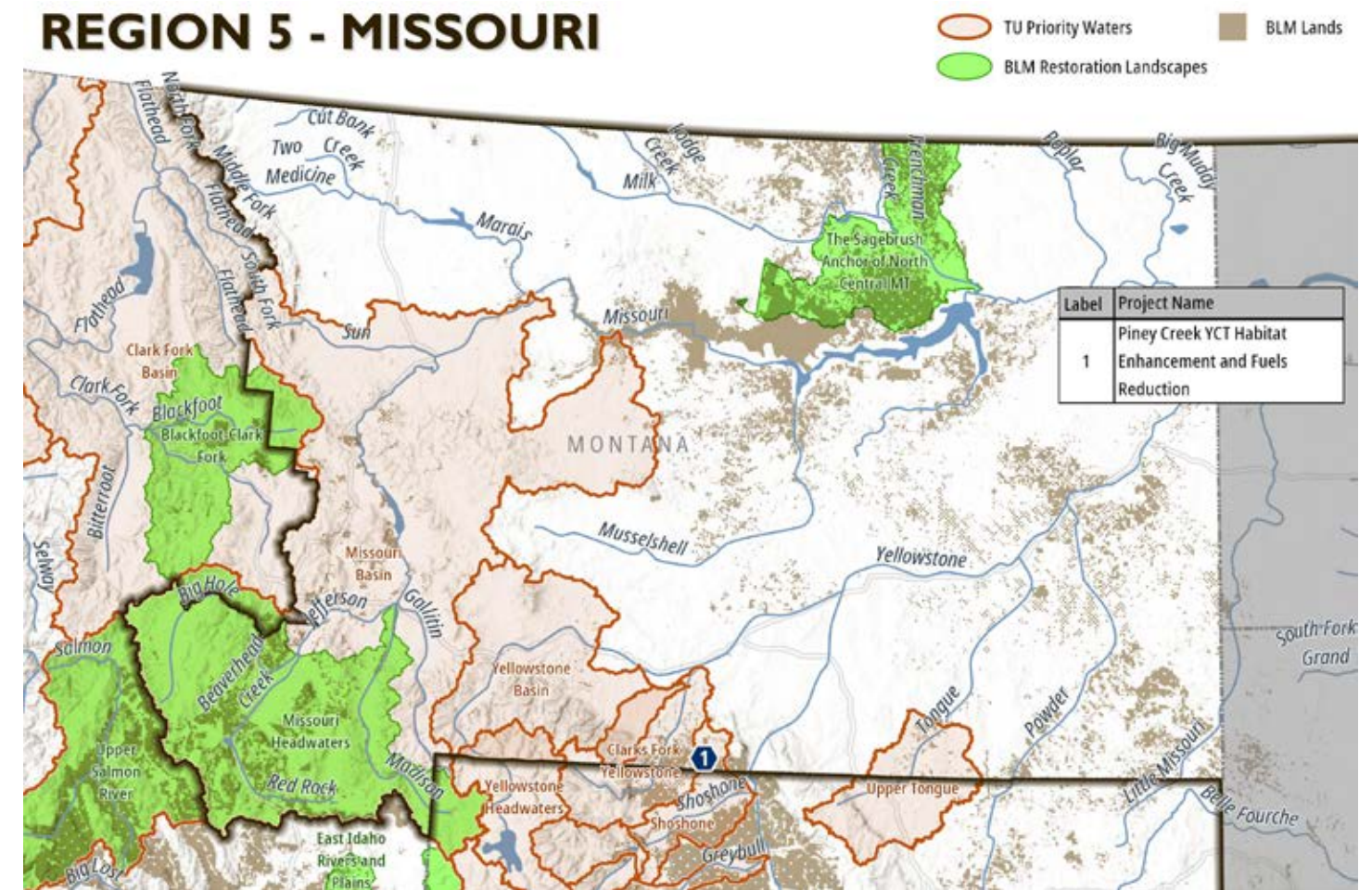
Restoration work in Oregon couldn't happen without Capitan Forestry, a local contractor that historically specializes in forestry services that has transitioned and retooled to become a leading stream restoration business. Capitan Forestry works closely with Trout Unlimited's project managers and scientists as well as agency representatives with the BLM to restore watersheds and repair coldwater fisheries. A couple of these places include the Grande Ronde and North Fork of the John Day headwaters that are critical habitat and special places to fish. The collaboration between partners is making it even better.

Capitan Forestry historically specialized in upland forest restoration work, but after partnering with TU's aquatic restoration efforts in the area, they've jumped in and fully embraced on-the-ground aquatic and meadow restoration. Over the years, this has included riparian plantings, hand-based, in-stream wood placement and hand-based beaver dam analogue creation.

These systems are home to steelhead, redband trout, bull trout, Chinook salmon and numerous other native, coldwater fish species. With TU's focus on restoring and enhancing wetlands and meadow systems in this geography, the work creates critical, healthy habitat for these fish as well as all the other flora and fauna who call these systems home.

"Capitan believes in creating healthy forest ecosystems — a place where plants, animals and people call home. It is a natural resource it strives to keep healthy, clean and beautiful," said Chrysten Rivard, Oregon director for Trout Unlimited. "Recognizing that headwater systems are integral to overall forest health, Capitan expanded its capacity to the benefit of TU, multiple fish species and anglers."

**REGION 5 - MISSOURI**



**OREGON, MONTANA AND IDAHO**

Elsewhere in Oregon, TU and BLM are working together on the restoration efforts tied to the historic removal of the Klamath dams. On J.C. Boyle Reservoir, a reservoir on the Klamath River in Klamath County, the Federal Energy Regulatory Commission issued a license surrender order for the Lower Klamath River Hydroelectric Project. Dam removal started with Copco 2 Dam in 2023 and Copco 1 Dam, Iron Gate Dam and J.C. Boyle Dam in 2024. Water levels on J.C. Boyle Reservoir will be drawn down in the spring of 2024 and expose the lake bottom for the first time since 1958, and the dam will be removed later in 2024.

The newly exposed sediment and river banks needs to be protected in order to successfully establish native vegetation. This project will install a riparian buffer fence on J.C. Boyle Reservoir at the high-water mark

to exclude range cattle, feral horse grazing, deleterious ATV use, and protect historical and cultural sites in the reservoir footprint.

Fencing will also protect the mouth of Spencer Creek, which will be restored as part of the reservoir drawdown process. The fence will have walk through areas to allow access for recreational activities. Native planting and seeding in the reservoir footprint will be completed by project partners as part of the dam removal restoration process.

Project partners include Klamath River Renewal Corporation (KRRRC), Resource Environmental Solutions (RES), Bureau of Land Management (BLM), Oregon Department of Fish and Wildlife (ODFW), Modoc Nation, and Green Diamond Resource Company.

**Rock Creek, Montana**

A famous tributary of the Clark Fork River in western Montana just east of Missoula, Rock Creek has not been without conservation challenges. The Silver King Mine, which was investigated as part of the 1993 Montana

**Hayden Creek, located near Tendoy, Idaho, is one of the most productive tributaries of the Lemhi River. It contains up to 40 percent of spawning Chinook salmon in the Lemhi River basin each year along with populations of steelhead and bull trout.**

DEQ/Mine Waste Cleanup Bureau of abandoned mines, is within the historic Rock Creek Mining District. The mine likely began as an iron prospecting site post World War II but quickly played out. In the 1960s, operators began developing what was then called the Ozark Mine for silver, renaming it the Silver King Mine.

The mine site occurs primarily on Bureau of Land Management lands, with some roads, workings and waste piles on adjacent private land. The abandoned mine was initially investigated in the early 1990s as part of a statewide inventory and later surveys revealed significant issues with concentrations of antimony, arsenic, cadmium, copper, iron, lead, mercury and silver in waste rock at the site.

Arsenic concentrations in soil at the site were more than 350 times higher than considered safe for human exposure. Waste rock was eroding into Sluice Gulch, causing water pollution. As a result, the state department of environmental quality short-listed the

site for clean-up and TU, working with the BLM and the Granite County Conservation District, helped remove more than 9,000 cubic yards of contaminated waste rock which was safely capped at a nearby repository. Additionally, the partners worked to reconstruct and realign more than 1,000 feet of Sluice Gulch Creek. This work was completed in 2020.

#### **Hayden Creek, Idaho**

Hayden Creek, located near Tendoy, Idaho, is one of the most productive tributaries of the Lemhi River. It contains up to 40 percent of spawning Chinook salmon in the Lemhi River basin each year along with populations of steelhead and bull trout. Despite the high percentage of Chinook that make the journey up Hayden Creek to spawn, historical grazing and other land use practices resulted in a straightened stream channel that lacked rearing habitat for juvenile fish.

Working with local partners and landowners, TU started construction work in the summer of 2021 to improve fish habitat by adding anchored wood structures and boulder fields. The wood structures give fish space to hide along their journey by redirecting the stream flow to create eddies and pools that help create slower moving water. In 2022, a second phase of the project was completed. TU added more embedded structures and boulder fields, along with unanchored wood in the stream and bank. During future high water, the unanchored wood will move downstream and rack up on the boulder fields and structures, giving Hayden Creek the material needed to naturally maintain and enhance fish habitat.

After construction was completed, volunteers from TU's River of No Return Chapter planted native willows, alders, dogwoods, and cottonwoods. As the trees and shrubs grow, they will provide important fish cover, shade, and help protect the stream bank from erosion. Once large enough, they will also catch woody debris as it moves downstream, creating even more habitat and stream diversity for years to come.

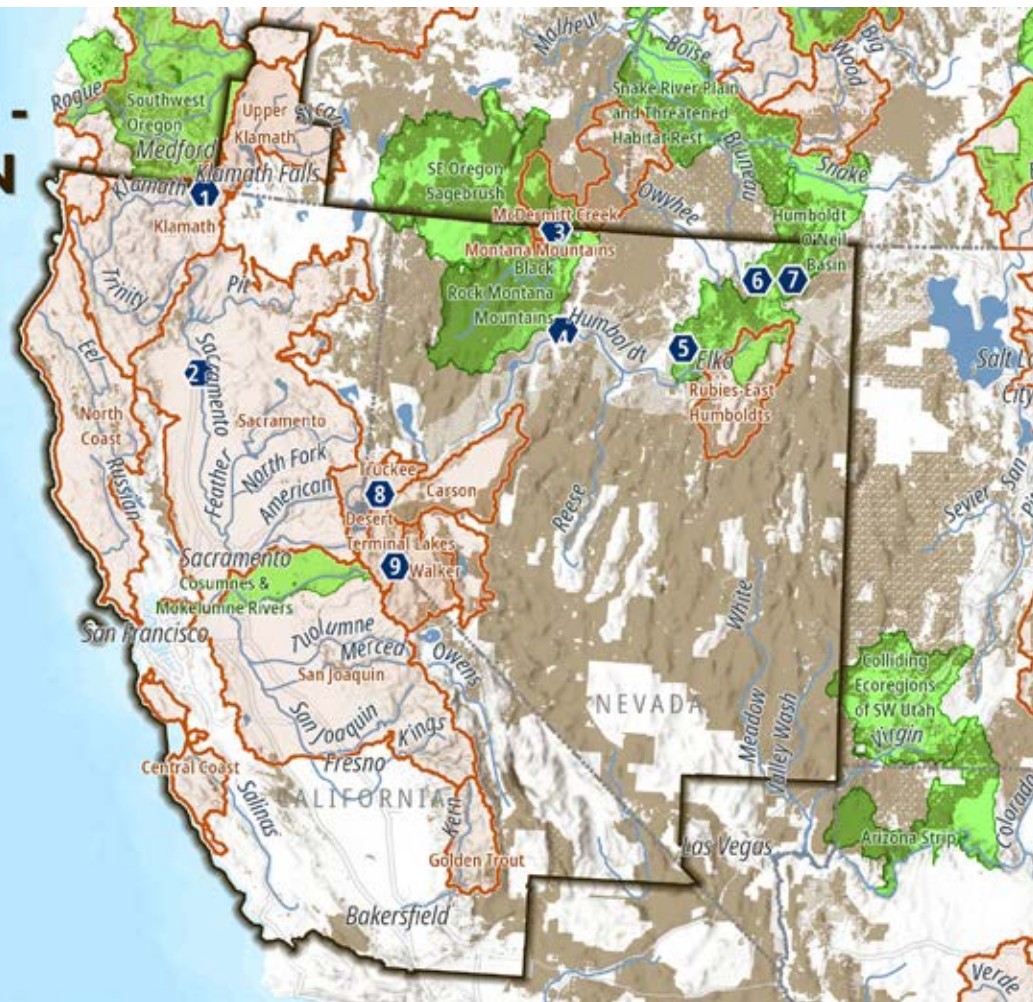
# CALIFORNIA GREAT BASIN



# REGION 10 CALIFORNIA - GREAT BASIN

-  TU Priority Waters
-  BLM Restoration Landscapes
-  BLM Lands

Label	Project Name
1	Klamath Reservoir Reach Anadromy Restoration
2	Paynes Creek Bend Water Users Fish Passage Restoration Project
3	McDermitt Creek headwaters beaver restoration
4	LCT/Grazing Related Water Gap Changes
5	Maggie Creek Barrier Retrofit
6	Draw Creek Restoration and Road Realignment
7	Dry Creek Culvert Replacement
8	Winter's Ranch
9	Slinkard Creek Diversion Reconstruction



## CALIFORNIA AND NEVADA

TU is working with the BLM in California to construct a barrier on Slinkard Creek in the Walker River Basin to protect a key Lahontan Cutthroat Trout Population. This project was slated for construction in summer 2023 and made possible through TU's successful fundraising of nearly \$600,000 to match BLM T&E funds of \$300,000.

In Nevada, TU and the BLM are working to restore Lahontan cutthroat trout habitat in the Montana Mountains. Upon completion of this project TU and the BLM will have effectively doubled the occupied length of stream and provided important summer and winter refuge habitat for trout in this arid region.

On McDermitt Creek BLM is working with TU to reintroduce one of Nevada's largest interconnected

populations of Lahontan cutthroat trout. This includes habitat restoration, nonnative trout removal, barrier retrofitting, and conservation planning with the newly acquired Disaster Peak Ranch.

On the Mary's River in eastern Nevada, the BLM and TU are working together to identify fencing improvements and barrier opportunities to manage nonnative trout in Nevada's largest interconnected Lahontan cutthroat population.



Scan to watch a short film on Lahontan cutthroat trout restoration



### TU PROFILE: Jessica Strickland

Public land. Two words, but two of the most important ones in Jessica Strickland's life. "I grew up in Texas and it has like 2 percent public land. California has 40 or 50 percent," said Strickland. "That's why I came West."

An outdoors kid who grew up spin fishing in her home state for redfish and bass, Strickland spent a lot of time on the Guadalupe River outside San Marcos, Texas, during college and later got introduced to fly fishing during grad school. When her brother relocated to California, Strickland was not far behind.

Today, she runs TU's California Inland Trout Program and works closely with many agencies including the BLM to run restoration projects in the state. This includes native fish work such as meadow restoration, culvert removal, beaver dam analogs, road decommissioning, and livestock grazing innovations.

Jessica's work brings her close to not only BLM staff, but also to the North Fork Mono Tribe, Tubatulabal Tribe, Tule River Tribe and the Susanville Indian Rancheria. Together they all partner to help Lahontan cutthroat trout, Eagle Lake rainbow trout, golden trout and Kern River rainbow trout.



that experience. In fact, Quintela's program still is in existence on the campus today.

After college, Quintela, armed with an environmental sciences degree, got on with the U.S. Forest Service in New Mexico, doing both wildlife and fisheries work. A native New Mexican who grew up in Carlsbad, the job was an excellent starting point for a career in resources. Later, he took that experience into a masters program at the University of Idaho where he received an MS in fishery resources. That degree led to work in Idaho, Montana, and Oregon. Today, Quintela leads fisheries work for the Bureau of Land Management's Vale District of the Baker, Oregon, field office.

In this corner of northeastern Oregon, Quintela

has teamed up with Trout Unlimited to do critical restoration work on an important tributary of the famed Grande Ronde River called Sheep Creek. This tributary provides spawning and rearing habitat for Chinook salmon, steelhead, bull trout and pacific lamprey.

Together with TU, BLM and the U.S. Forest Service, more than four miles of the stream have been restored by the partners. The stream, which had been degraded over the years by old time agricultural practices, is well on its way to once again being a key component for healthy fisheries in the Grande Ronde system. This work will be ongoing over many years (see story in this report).

**“I took pride in helping to create something that was meaningful and made a difference in how others looked at sustainable resources and the positive impact we can make on our environment.”**  
- John Quintela



Like most kids who grew up fishing, John Quintela, Vale District Fisheries Lead for the Bureau of Land Management in Oregon was instilled early on with a love of conservation, but this ethic really blossomed when as an undergraduate at Lubbock Christian University he was given the task of starting an on-campus recycling program.

“I took pride in helping to create something that was meaningful and made a difference in how others looked at sustainable resources and the positive impact we can make on our environment,” says Quintela of





## NATIVE TROUT IN THE GREAT BASIN

*National Fish and Wildlife Foundation Lahontan Cutthroat Trout Keystone Initiative. For more than a decade, the BLM has been a keystone partner with Trout Unlimited to restore and protect the Great Basin's native trout, the Lahontan. BLM has been critical in backing TU's role.*

Trout Unlimited's Jason Barnes, who implements the Lahontan cutthroat program for the organization, coordinates the trout's recovery efforts among all agency partners and drives public outreach and education efforts as well as landowner initiatives. Barnes is a member of the BLM-facilitated agency-landowner collaborative Results-Oriented Grazing for Ecological Resilience (ROGER), and the University of Nevada Extension's "Creeks and Communities" interagency program focused on riparian management education. He also manages TU's range-wide field crews, whose BLM-related field work has included biological baseline monitoring for landowner agreements, and habitat monitoring and eDNA

sampling. This informs management needs to enable Lahontan cutthroat trout reintroduction to BLM lands.

With support from the National Fish and Wildlife Foundation (NFWF), TU created the landowner's video 'Tipping the Hat,' including interviews and storylines from two high-profile Nevada ranchers who work cooperatively with TU and the BLM and other partners in Lahontan cutthroat trout restoration activities.

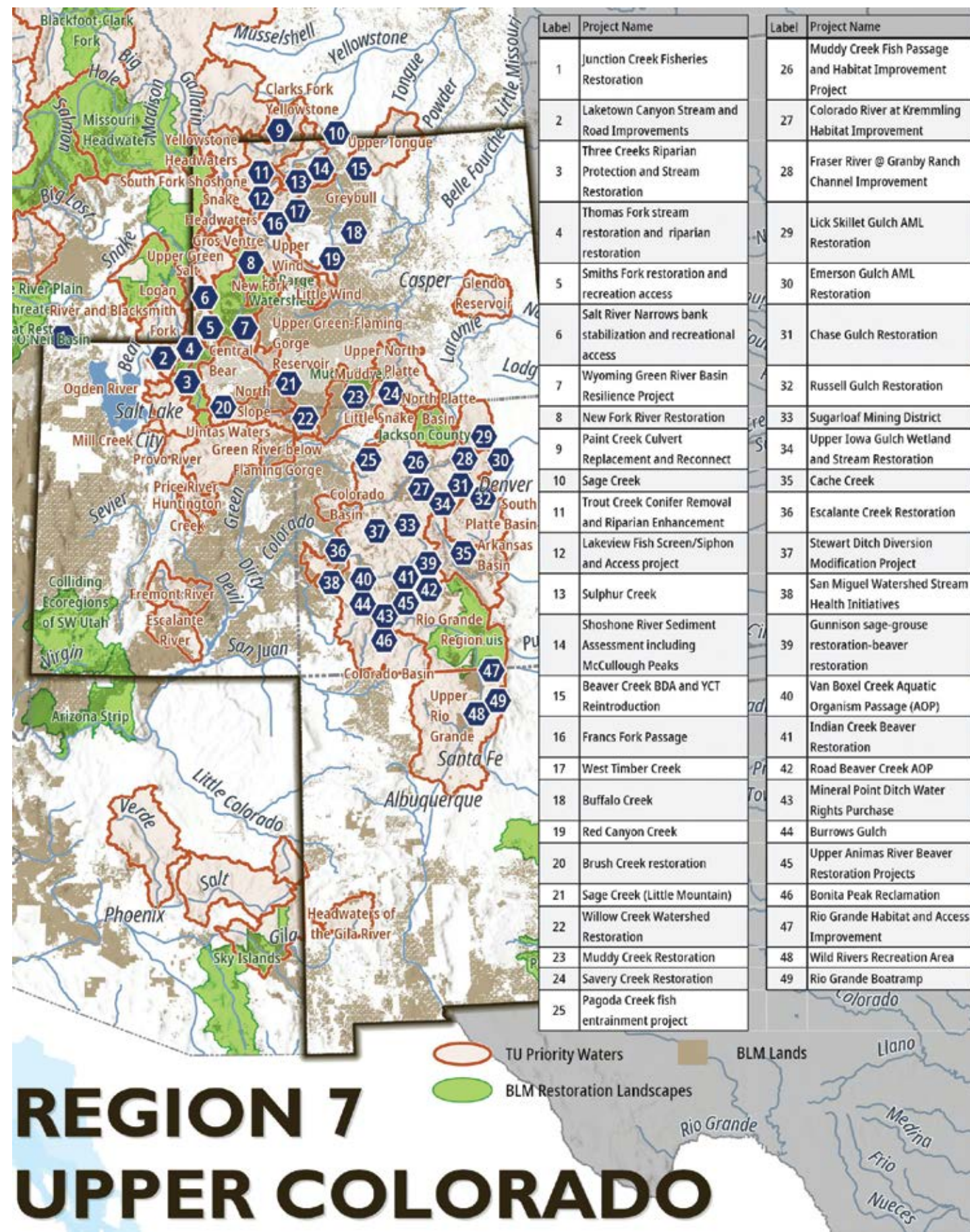
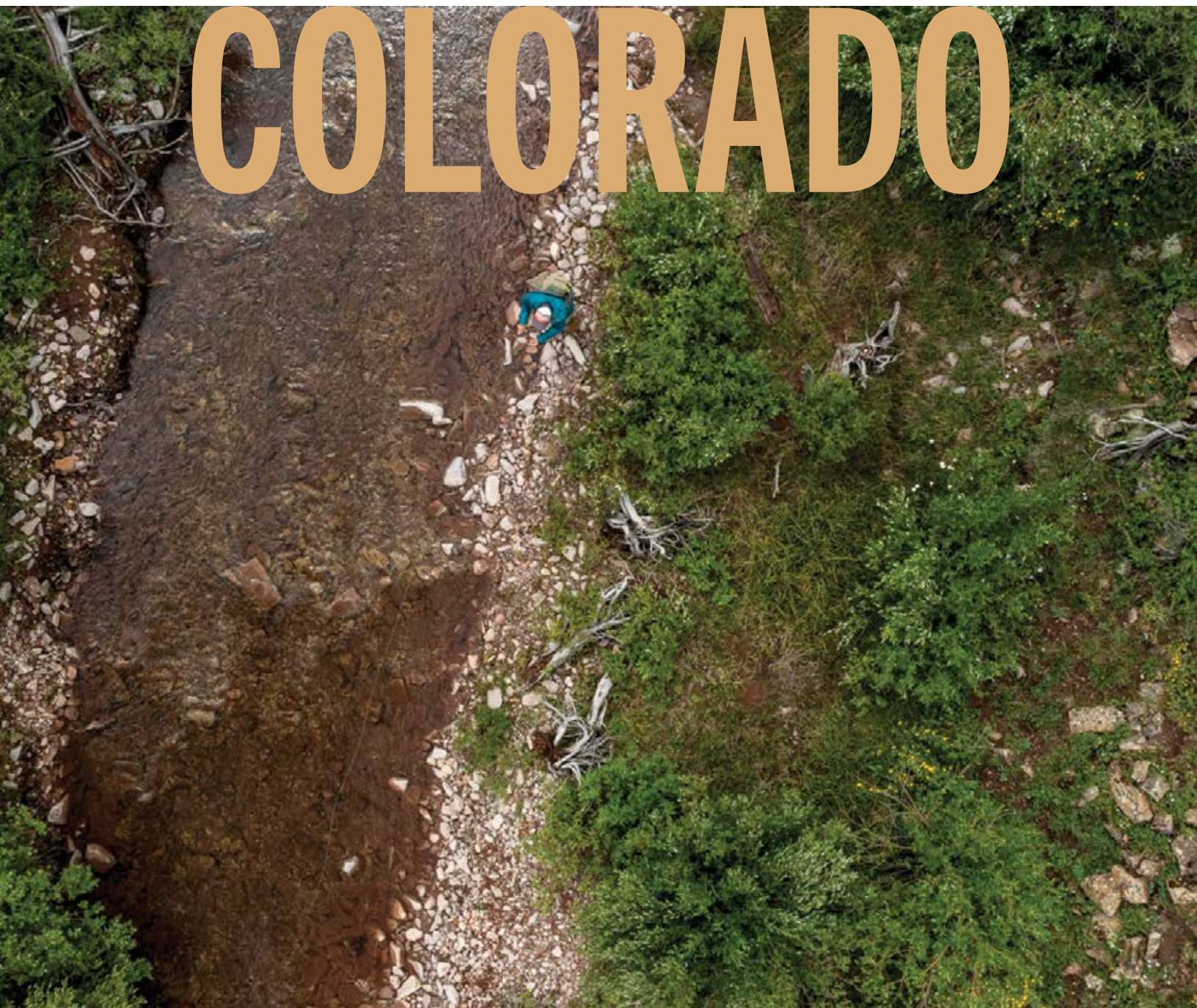
In addition to the science presented under its own sub-heading below, the BLM's support for the Keystone Initiative allowed TU to establish a long-term monitoring program and publish a peer-reviewed paper demonstrating the benefits of fish passage restoration on BLM and private lands. This work suggested the 2005 reconnection of Maggie Creek headwaters to the mainstem river led to a three-fold increase in trout density in the focal stream and the rebuilding of larger,

migratory-sized individuals. These results have inspired and guided subsequent efforts to plan and implement reconnection and metapopulation re-establishment across the Lahontan cutthroat trout range.

BLM-funded NFWF support also enabled publication of the most up-to-date and advanced evaluation of Lahontan cutthroat trout populations across the range in decades. Results pointed to acute or unanticipated concerns, including signals of extremely low genetic diversity across many populations and the discovery of hybridization in a handful of populations. Though unfortunate, this information was critical in informing the recent five-year status review and initiating a deeper evaluation of hybridization across the range.



# UPPER COLORADO



## REGION 7 UPPER COLORADO

# COLORADO

## Rio Grande Winter Flows, Colorado

In Colorado, TU's winter flow program restores stream flows in the upper Rio Grande Basin during the non-irrigation season, when storage water rights allow on-channel reservoirs to capture the entire flow of the Rio Grande and several of its tributaries. Through creative water trades and leases, TU delivers water from these reservoirs, providing multiple benefits to our agricultural and agency water partners, in addition to the benefits water provides to aquatic ecosystems. TU delivers approximately 182 acre-feet of water each year on behalf of the BLM, providing augmentation water that enables the BLM to utilize groundwater wells that provide migratory bird habitat at the BLM's Blanca Wetlands. During the winter of 2021-2022, alone, TU enrolled 13 water leases which rewatered 114 miles of trout-bearing tributary streams and delivered up to 10% of the total flows in the Rio Grande River. The winter flow program partnership with the BLM is win-win, providing water that restores stream health while ensuring the BLM complies with Colorado water law.

## Road Beaver Creek Cutthroat Project, Gunnison River drainage, Colorado

In 2020, TU worked with the BLM, Colorado Parks and Wildlife, and a private ranch to construct a barrier on Road Beaver Creek in the Gunnison River basin and reintroduce Colorado River cutthroat trout to six miles of habitat up-stream of the barrier. The constructed barrier was built on adjacent private land and also serves as an irrigation diversion.

## Amalla Spring, Gunnison River drainage, Colorado

In 2023, TU is working with the BLM and a grazing permittee to install a solar pump and an off-channel stock water tank to reduce livestock impacts at Amalla Spring and surrounding wet meadows in the headwaters to Cochetopa Creek in the Gunnison River basin.

## Cochetopa Creek Pit Tag Migration Study, Colorado

In 2018-2021, TU coordinated with the BLM and Colorado Parks and Wildlife to tag and monitor migration of wild trout on Tomichi and Cochetopa Creeks in the Gunnison River basin. Data collected highlighted barriers and opportunities to improve connectivity on the watershed.

## Trout Creek, Northwestern Colorado

In 2022, TU, the BLM, and others collaborated to restore a 2.5-mile segment of Trout Creek in northwest Colorado. Using low-tech, process-based principles, this project will maintain or increase functional floodplain extent, maintain or increase extent and improve condition of riparian vegetation, and protect fish populations and promote self-reproducing fisheries.

**During the winter of 2021-2022, alone; TU enrolled 13 water leases which rewatered 114 miles of trout-bearing tributary streams and delivered up to 10 percent of the total flows in the Rio Grande River.**



The famed Yellowstone River was almost literally in Brad Tribby's back yard where he grew up in Miles City, Montana. There the river is a prairie river with abundant warm water species like catfish and even paddlefish. The river called to him. "I remember riding my bike to the river and fishing nearly every day in the summer," said Tribby.

Brad's parents transmitted their passion for public land, hunting and fishing to him. Tribby's father was a wildlife biologist, so when it came time to choose a profession, Brad pursued a fisheries biology degree at Montana State University in Bozeman and his deep passion in fishing and fisheries led to a professional life there. After almost a decade with Montana Fish, Wildlife and Parks, he joined the Bureau of Land Management.

"I knew I'd found my passion," said Tribby. "The habitat work and projects I have been able to do benefit a multitude of species and that's been very rewarding."

In the fall of 2013, Tribby met Nick Walrath with



Trout Unlimited and quickly realized they had a shared vision. "Our work ethics, professional goals and values lined up immediately," remembered Tribby. "We quickly became friends."

Tribby and Walrath collaborated on Muddy Creek, near Baggs, Wyoming, working on habitat for native species like Colorado River cutthroat trout, bluehead sucker, flannelmouth sucker and roundtail chub. The two collaborated on grant opportunities, financial assistance agreements, projects prioritization, project implementation and youth programs, to name a few. The BLM/TU partnership was already strong "I'd like to think we strengthened what was already established and took our partnership to another level," he said.

**“The best part: It’s the land, the animals and the users of these lands that get the most benefit.”**  
- Brad Tribby

“The best part: it’s the land, the animals and the users of these lands that get the most benefit,” said Tribby. “We implemented native fish restoration, we built barriers, we removed barriers, we restored streams, we installed enclosure fences and removed existing enclosure fences, we studied cutthroat and rainbow trout movements, we conducted habitat surveys, and we conducted population estimates to name a few.”

Today, Tribby manages range, recreation, fisheries, wildlife and horse programs for the Cody, Wyoming, field office. Brad brings a wealth a knowledge and experience with collaborating with partners such as TU to his new position. He has and is planning to continue to mentor his staff on collaborations and the power of partnerships.



## WYOMING

***Wood River diversion makes a big impact on Yellowstone cutthroat habitat***

The Wood River diversion dam is located 14 miles upstream of the confluence of the Greybull and Wood rivers, just west of Meeteetse, Wyoming. The dam was built in 1972 and is operated by Greybull Valley Irrigation District to fill Lower Sunshine Reservoir and provide irrigation water to nearby agricultural lands. Eight feet tall, the concrete structure was a complete barrier for Yellowstone cutthroat trout and other native fish and had disconnected upper and lower habitat on the Wood River since its construction in the early 1970s.

Local contractors, including Bairco Construction and

WWC Engineering, were critical players in building a state-of-the-art fish ladder. The vertical slot ladder uses concrete piers to slow water through a long raceway, acting as grade control and providing slower flows for upstream navigation. The diversion is the last barrier for Yellowstone cutthroat trout on the Wood, the Greybull and its major tributaries, and this project restored upstream passage to more than 100 miles of habitat.

The Wood River diversion project went forward despite the pandemic and supply chain issues. Projects like this and others in Wyoming are made possible by financial support from a variety of federal partners, including the BLM. The \$1.2 billion federal infrastructure package passed last year will ensure that collaborative conservation projects like this can move forward across the country.



**TU PROFILE:**  
**Nick and Hillary**  
**Walrath**

For more than a decade, Nick and Hillary Walrath have been a power couple of Wyoming water restoration, working with landowners, universities, state and federal agencies, and local contractors to restore and enhance the Green River watershed where they call home. Both raised in Wyoming, they met as fisheries students and have continued their partnership with TU improving water quality and habitat access for native cutthroat trout.

Nick Walrath is the Green River project manager. One of his major focuses for the past decade-plus has been the restoration of Muddy Creek, a high steppe coldwater tributary of the Green River on BLM land. He's worked on it since coming to TU in 2010 and even assisted with graduate work on it before that as a student at the University of Wyoming. After that, he

worked with the Wyoming Game and Fish Department (WGFD). He brought that experience to TU, which has served him and the trout well through collaboration with the University of Wyoming, the WGFD, and the Bureau of Land Management. The federal BLM investment can often leverage even greater match and investments from other partners to get even more accomplished on the ground.

"There's some really good things happening on Muddy Creek, but it's going to get even better in the next 10 years," Nick said.

Hillary Walrath is the salinity control coordinator for the Henry's Fork of the Green River, a joint position with the Natural Resources Conservation Service that she has held for the past 10 years. The Henry's Fork was identified as a major contributor to salinity in the Colorado River in 2013. She works with landowners, ranchers, and farmers, employing strategies to reduce both water usage and salt runoff. She also helps identify

habitat replacement opportunities when artificial wetlands are impacted, like diversion improvement projects that open seasonal passage barriers for native cutthroat trout. One project she worked on, with the Wyoming Landscape Conservation Initiative, installed a barrier on BLM land to prevent the passage of nonnative species into cutthroat trout habitat.

The work is rewarding for them, both as Wyoming parents and anglers.

"It's very rewarding to know that you're not just doing a job and that it's really having an impact for other people, for future generations, for the landowners and everyone that relies on that water," Hillary said.

**"It's very rewarding to know that you're not just doing a job and that it's really having an impact for other people, for future generations, for the landowners and everyone that relies on that water."  
- Hillary Walrath**

## UTAH

Forty-three miles of two streams were restored with cutthroat trout in the Bear River Basin through a partnership that included the BLM, TU, and the Utah Division of Wildlife Resources. The headwaters of Otter and Big creeks are on BLM ground located in Rich County, Utah. Non-native trout had displaced the native cutthroat trout throughout all or most of both creeks. TU worked with ranchers on Otter Creek to improve upstream fish passage at thirteen diversion and ten road crossings to reconnect twenty miles of creek. TU also coordinated the design and construction of a conservation fish barrier at the downstream end to prevent the reinvasion of non-native trout after a piscicide treatment in 2015 and 2016 upstream of the barrier to remove non-native trout. Cutthroat trout and Northern Leatherside Chubs were reintroduced to Otter Creek in 2016 and 2017.

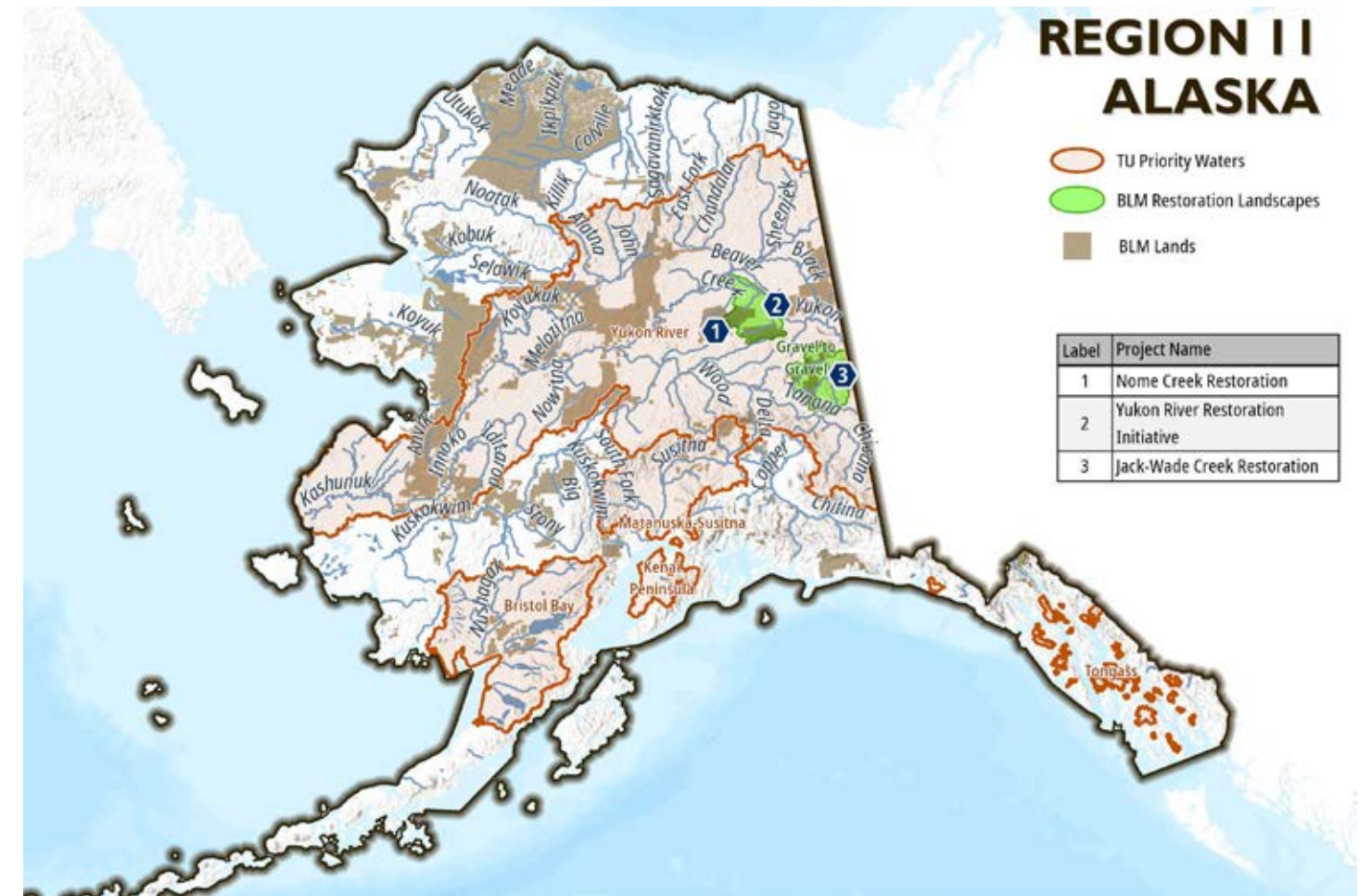
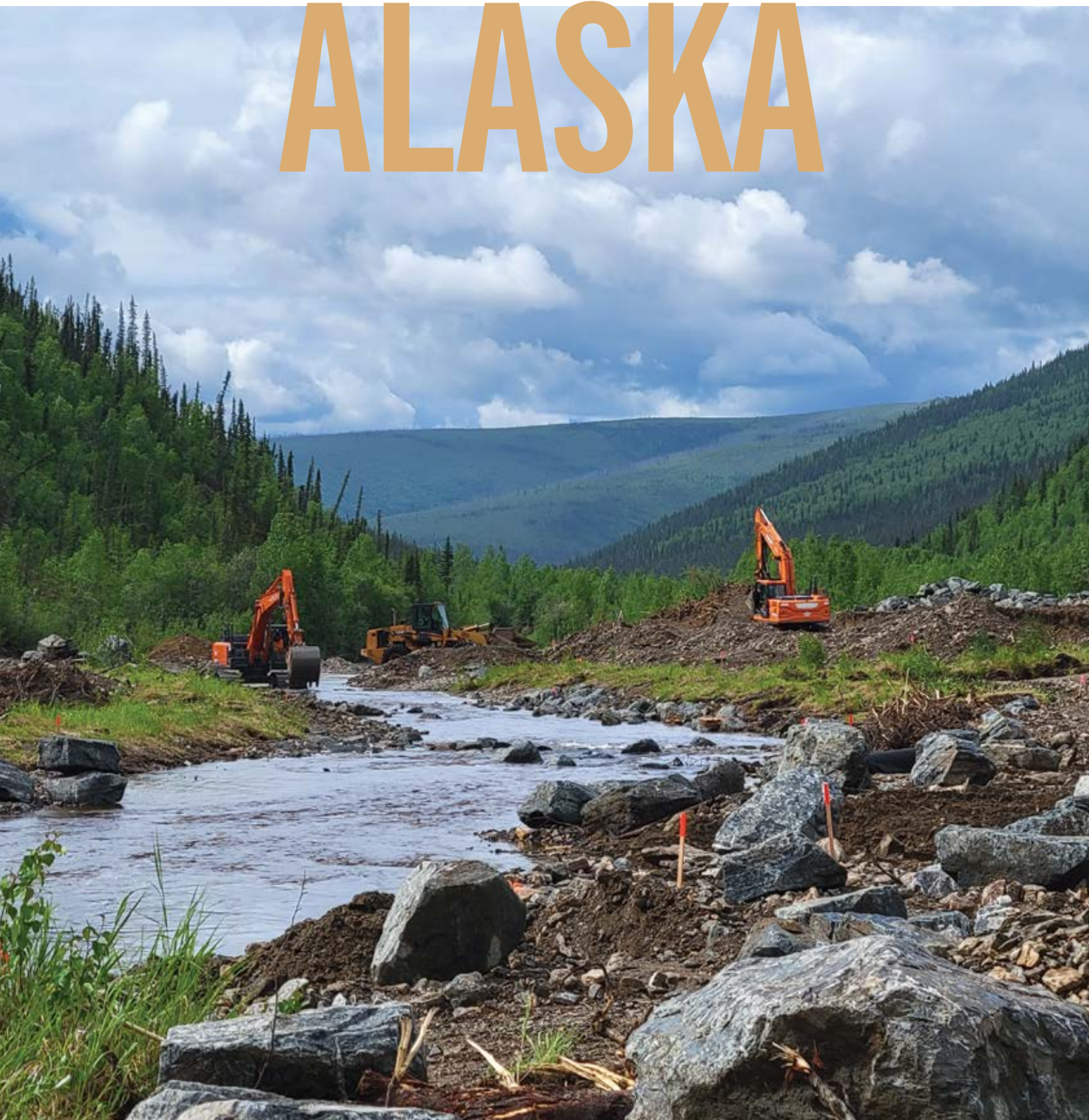
For Big Creek, a conservation fish barrier was built in 2018. Rotenone treatments were completed on twenty-three miles of the creek above the barrier in 2018 and 2019. Some cutthroat trout and non-game fishes (Mountain Sucker and sculpin) were salvaged from the creek before both treatments. Additional cutthroat trout were stocked into the creek from 2020 to 2022.

Fisheries monitoring in both creeks has documented

multiple age-classes of cutthroat trout and that reproduction is occurring. Monitoring will continue in 2023. Reintroduction of additional non-game fishes such as northern leatherside chubs for Big Creek and speckled dace in Otter Creek will also occur. Total cost of engineering and construction for a fish passage work on Otter Creek and the fish barriers on both creeks was \$513,000 with the BLM providing funding for a significant portion of those costs.

**43 miles of two Utah streams have been restored, investing \$513,000 into conservation of cutthroat trout in the Bear River Basin.**

# ALASKA



## ALASKA

### *Cleaning up abandoned mines with Kinross*

Alaska is a landscape with ample and healthy fish and wildlife habitat but there are many places that have been severely impacted by past industrial mining and road building. An inventory done by state and federal agencies in 1983 estimated that more than 340 abandoned mines exist in Alaska.

More than 100 years of mining across the Yukon River Basin have left permanent impacts on many streams. Trout Unlimited has partnered with the Bureau of Land Management to assess and prioritize restoration and reclamation needs on BLM lands in the Anchorage, Glennallen, Central Yukon and Eastern Interior Field Offices.

TU began working in 2021 with Kinross to advance the restoration of fish and wildlife habitat at historical mine sites in the state. Kinross owns and operates the Fort Knox mine outside of Fairbanks and the Manh

Choh mine near Tok. This initiative is the first of its kind in Alaska, where a major mining company and a conservation organization have teamed up to address legacy impacts of mining on Alaska streams, rivers, and wetlands.

Resurrection Creek on the Chugach National Forest is the first project Kinross and TU cooperated on. Trout Unlimited successfully ignited a partnership between a federal agency, two mining companies, and two conservation organizations to kick-start restoration that had idled for 14 years. The initiative was able to leverage significant non-federal funding for the project to restore over 2 miles of salmon habitat and streamside forest that had been extensively mined. The project constructed important habitat features like meanders, pools, and riffles, as well as re-contoured numerous historic tailings piles to create a more productive stream for spawning and rearing salmon. We aspire to grow the initiative to take on future projects, including on BLM lands in Alaska.

TU and the BLM Alaska Aquatic Resources Program have just begun to work together to identify, prioritize and restore streams across Alaska affected by mining,

climate change, and other developments.

Specifically, TU and the BLM are: Developing and supporting new ways of restoring streams in historically mined areas using new materials and designs to withstand higher flows and changing climates. TU is also assisting the BLM with media outreach and advocacy for projects in remote places like Wade Creek in the historic Fortymile Mining District and Nome Creek near Fairbanks, among others. These streams were the site of a gold rush and massive placer mines more than 100 years ago and continue to support smaller placer mining operations today, but also contain populations of Arctic grayling and Chinook, chum, and coho salmon, as well as trout and other important cold water species. BLM and TU also work together to assist with restoration of waters after modern day mining has occurred, often working directly with miners who are required to restore streams after operations have ceased.

Compiling data and other information specific to mines across the Arctic-Yukon-Kuskokwim area and creating innovative ways of prioritizing and visually

displaying them so TU, the BLM, and local communities can work together to develop restoration projects. At the same time, TU and the BLM are working with local communities to have a leadership role in developing restoration projects to ensure that locals have a strong voice in the management of their traditional and natural resources.

Initiating discussions with regional tribal fisheries organizations and rural communities in western Alaska to explore ways we can work together to better understand how recent declines in important fisheries are affecting cultural and traditional ways of life, and how TU and the BLM can help support restoration. Important fisheries, such as Chinook and chum salmon, have been in steep decline in Alaska the last several years, affecting subsistence, commercial, and sport fisheries across some of the largest river systems in the country. TU and the BLM are collaborating on new initiatives to support the priorities of those communities and work together to restore those fisheries to their historic abundance.

Orange water turned Matt Varner into a fisheries biologist. A descendant from a family of West Virginia coal miners, Matt, the fisheries and riparian resources lead for the BLM in Alaska, grew up in the Appalachians with a fishing rod in his hand and his eyes wide open to the long-term pollution challenges wrought by poor mining practices.

"I saw what had happened with runoff from the coal mines where my family earned a living and I was a fisherman and made all the connections between fishing and water quality," said Varner.

In 2008, Varner took his education in fisheries biology, experience in working for the Bureau of Land Management, and his can-do West Virginia attitude to Alaska, where he has worked hand-in-glove with Trout Unlimited and other partners to repair and restore streams experiencing the long-standing impacts of mining, particularly placer mining.

"Mining is vital to the history and cultural fabric of Alaska," said Varner. "Though miners are required to rehabilitate fish habitat after mining, some just don't know where to start. It's an enormous challenge for them."

That's where the BLM, TU, and other partners come in, equipping miners with the knowledge and tools needed to rehabilitate aquatic habitat, while some mining companies provide critical resources for habitat restoration.

"TU helps us raise awareness about the challenges facing riparian resources in Alaska and the opportunities that can come from working alongside miners to address stream impacts," Varner noted. "The average Joe has no idea what is going on with mining and riparian resources because a lot of it is done out of sight (deep in the Alaskan bush). But working together to help these systems benefits everyone who enjoys healthy streams and fish populations."

Today, BLM's work stretches from the headwaters of many of Alaskan rivers deep in the interior, all the way to the coast, leading the charge to stabilize streams post-mining and rehab them so that they are productive and healthy again. BLM is tackling both historic mining impacts and present-day mining, working alongside miners.

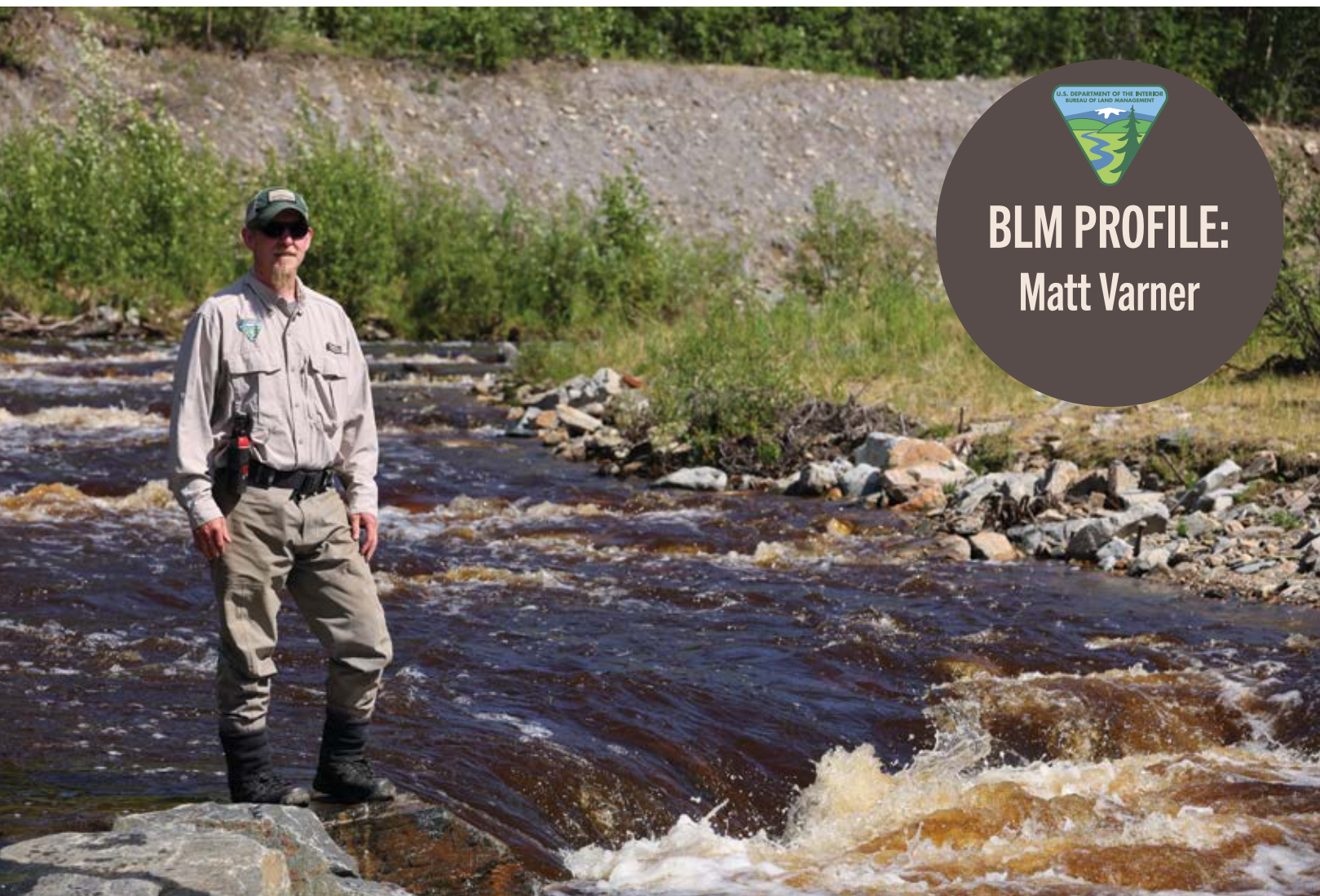
This includes the Fortymile River in east-central Alaska, one of the largest river networks in the nation's Wild and Scenic River system at nearly 400 miles, to smaller systems like Beaver and Birch creeks, also in the interior.

To rehabilitate these sites in Alaska is a complex job. Most efforts to date have focused in accessible areas near road networks, where techniques can be refined to inform future, more remote projects and supplies can be more easily shipped in. Often, these projects require woody debris and large rocks to be shipped in because the placer mining process can eliminate or bury them. Wood and large boulders are vital for fisheries habitat, whether providing resting cover for spawning fish, or feeding areas. As future projects move beyond the road network, requiring barges and aircraft for access, the logistics become much more costly. Restoring legacy mine sites in high value watersheds in remote areas will depend heavily on partnerships with conservation groups and mining industry officials to reduce costs.

Opportunities for restoration partnerships between BLM and TU abound in Alaska, said Varner, citing as an example just one river feeding into Goodnews Bay (located on the coast west and south of Anchorage) where over 40 million cubic yards of mine tailings from historic mining are waiting to be cleaned up. The river is habitat for all five of Alaska's salmon species (sockeye, coho, chum, chinook and pink).

"We use a data driven adaptive management approach," said Varner, who noted that the agency's science is deeply documented and charted throughout years of recovery of fisheries.

**"TU helps us raise awareness about the challenges facing riparian resources in Alaska and the opportunities that can come from working alongside miners to address stream impacts."  
- Matt Varner**





# ADVANCING AQUATIC CONSERVATION THROUGH SCIENCE

For decades, the BLM has supported TU Science allowing us to engage in a broad range of collaborative BLM-relevant efforts to improve aquatic conservation at scale, with the below publications and profiles characterizing the most recent success of this support.

Understanding extinction risk at scale: Via both NFWF funding and directly, the BLM supported TU science staff involvement in this 5-year NASA-supported effort to build multiple population viability analysis models for Lahontan cutthroat trout. The models incorporated satellite-sensed assessment of habitat, among other landscape-scale variables, and generated data-driven estimates of extinction risk for all populations across the range, including for habitats that were unsampled, or even unoccupied but where Lahontan cutthroat trout might be reintroduced. In addition, the team developed a Lahontan cutthroat

trout population simulator decision support tool which has been used by agencies to estimate risk, prioritize management actions (including several reintroductions), and inform regulatory guidance for the sub-species. Five peer-reviewed publications resulted from this work:

1. Dauwalter, D. C., K.A. Fesenmyer, R. Bjork, D. R. Leasure, and S. J. Wenger. 2017. *Satellite and airborne remote sensing applications to freshwater fisheries*. *Fisheries* 42:526-537.
2. Dauwalter, D. C., K. Fesenmyer, and R. Bjork. 2015. *Using aerial imagery to characterize Redband Trout habitat in a remote, desert landscape*. *Transactions of the American Fisheries Society*.
3. Leasure, D. R., S. J. Wenger, N. D. Chelgren, H. M. Neville, D. C. Dauwalter, R. Bjork, K.A. Fesenmyer, J. B. Dunham, M. M. Peacock, C. H. Luce, A. C. Lute, and D. J. Isaak. 2019. *Hierarchical multi-population viability analysis*. *Ecology* 2018.
4. Neville, H. M., D. R. Leasure, D. C. Dauwalter, J. B. Dunham, R. Bjork, K.A. Fesenmyer, N. D. Chelgren, M. M. Peacock, C. H. Luce, D. J. Isaak, L.A. Carranza, J. Sjoberg, and S. J. Wenger. 2019. *Application of multiple population viability analysis to evaluate species recovery alternatives*. *Conservation biology* 34:482–493.
5. Wenger, S. J., D. R. Leasure, D. C. Dauwalter, M. M. Peacock, J. B. Dunham, N. D. Chelgren, and H. M. Neville. 2017. *Viability analysis for multiple populations*. *Biological Conservation* 216:69-77.

Linking management to habitat to fish responses: BLM funding has allowed TU to develop a deep focus on characterizing riparian habitat using remotely-sensed and in-field habitat assessment techniques. “*Livestock management, beaver, and climate influences on riparian vegetation in a semi-arid landscape*”, published with two BLM coauthors in the journal *PlosOne* in 2018, used remote sensing to evaluate habitat responses to improved conservation-oriented grazing and beaver activity at scale across four watersheds including the Susie in Nevada and Willow-Whitehorse Creeks in Oregon. Results suggested the observed improvement in riparian vegetation equated to what would be achievable otherwise by adding almost 10 inches of precipitation (more than the annual average) or increasing over 10 feet in elevation.

TU has also worked in the Goose Creek basin in Idaho with the Bureau of Land Management and other partners to evaluate linkages between habitat diversity, coldwater fisheries, and a rare minnow and implement

restoration activities to improve habitat conditions. The basin contains the western-most Yellowstone cutthroat populations in the Snake River drainage.

1. Dauwalter, D. C., K.A. Fesenmyer, S.W. Miller, and T. Porter. 2018. *Response of Riparian Vegetation, Instream Habitat, and Aquatic Biota to Riparian Grazing Exlosures*. *North American Journal of Fisheries Management* 38:1187-1200.
2. Dauwalter, D. C., M.A. Baker, S. M. Baker, R. Lee, and J. D. Walrath. 2023. *Physical habitat complexity partially offsets the negative effect of Brook Trout on Yellowstone Cutthroat Trout in the peripheral Goose Creek subbasin*. *Western North American Naturalist* 82:660-676.
3. Dauwalter, D. C., and J. D. Walrath. 2017. *Beaver dams, streamflow complexity and the distribution of a rare minnow, *Lepidomeda copei**. *Ecology of Freshwater Fish*.

Decision support to assist BLM restoration: With direct BLM funding, in 2023 TU developed a decision support tool to inform process-based restoration decisions across portions of the OR/WA BLM administrative domain. The tool includes several geospatial projects that were developed as part of this project: 1) a spatial conservation assessment for native fishes in the Pacific Northwest, 2) Beaver restoration assessment tool analysis for the eastern Oregon landscape, and 3) Sentinel satellite-based normalized difference vegetation index along stream corridors to assess status and trend of woody riparian vegetation. These data products were built into a decision support tool to inform decisions on where process-based restoration could be used to improve landscape health and benefit regional native fish diversity on BLM and neighboring lands.





