Bringing Back the Bitterroot

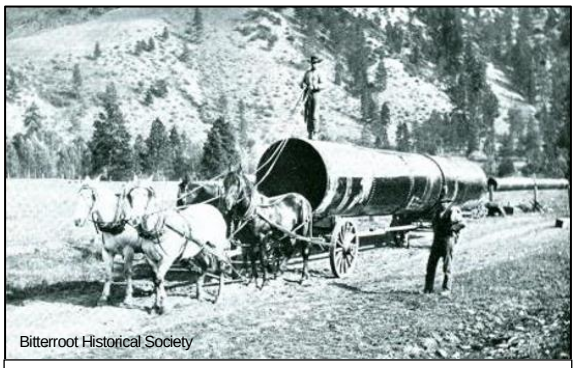
Strategic Restoration of an Iconic Montana Trout Fishery

Summary

Known for its rugged beauty and sparkling waters, the Bitterroot River sustains diverse fisheries, supplies food, shelter, and critical movement corridors to a wealth of wildlife species, and provides innumerable cultural, economic, and recreation resources to western Montana. The valley it cuts through is an iconic place: a trading, travel, and community hub for the region's earliest people; source of both refuge and peril for the Lewis and Clark Voyage of Discovery in the early 1800s; and a deeply cherished home and destination for valley residents and visitors alike.

Because of its relatively mild climate, dense forests, and cold, clean waters, the Bitterroot Valley played an integral role in developing Montana's mining, timber, and agricultural industries. Extensive logging and road building began in the Bitterroot in the late 1800s to provide timber and other resources that fueled Butte's booming mining enterprises. Construction of an extensive network of irrigation ditches soon followed to sustain the abundant agricultural and farming operations that sprang up to feed the state's quickly growing outposts, camps, and towns.

More than a century later, the scars of this legacy of heavy industrial use run deep. Hundreds of miles of pipes and ditches have altered the natural function of the river and many tributaries; intensive logging has denuded hillsides and accelerated erosion; and a complex web of forest roads has choked tributaries with sediment and blocked fish movement. In addition, the more recent threats of rapid urbanization and climate change have further stressed the basin's natural resources.



Century-old irrigation systems continue to impact ecological function, water quality, and water quantity in many Bitterroot tributaries.

Although the Bitterroot faces extensive ecological challenges that are pushing this river system to the brink, the problems are solvable. The basin's resiliency *can* be restored, and the Clark Fork Coalition's ***Bringing Back the Bitterroot*** campaign sets a course for getting there.

As described below, the campaign comprises a suite of integrated activities designed to address all major water quality and habitat issues in the Bitterroot. Because the Bitterroot's feeder creeks and streams are its lifelines, the campaign concentrates restoration energies and resources on key tributaries where strategic investment can bolster imperiled strongholds, revive degraded ones, and re-establish the connections that are so critical to a healthy, stable, aquatic system. While it does not address every need in the basin, the campaign is an ambitious five-year bite that will pay immediate dividends for the fishery, generate substantial conservation momentum, and help ensure the best possible future for the Bitterroot, and the people, fish, and wildlife it supports.

Bitterroot Fisheries: Threats and Needs

The Bitterroot River system sustains a robust trout fishery featuring rainbow, brown, and westslope cutthroat, as well as remnant populations of threatened bull trout in the headwaters of several major tributaries. Other native fish species include mountain whitefish, largescale and longnose suckers, and northern pikeminnow. Some large predators of trout, including non-native northern pike and largemouth bass, also exist in the mainstem.

As healthy as these fisheries may appear, they face serious challenges that threaten their short- and long-term viability. The 2005 *Montana Comprehensive Fish and Wildlife Conservation Strategy* ranks the Bitterroot Subbasin as a Tier 1 (highest priority) Aquatic Conservation Focus Area. And a comprehensive assessment of the basin completed in 2009 found that many key aquatic habitats have been significantly altered and degraded by agricultural operations and associated irrigation systems, logging and road-building, residential development, and other activities.

While these studies highlight numerous ecological concerns in the Bitterroot, three factors stand out as the most harmful to the basin's fisheries, and are ones that that Clark Fork Coalition is addressing:


Lower Lolo Creek

1. Dewatering: More than 80 miles of creeks in the Bitterroot are chronically or periodically dewatered – a trend that has worsened over the last few decades as precipitation and snowpack levels, timing of runoff, and intensity and duration of summer temperatures have fluctuated from historic norms. The Bitterroot also has more irrigation diversions than any other watershed in Montana. The result is lost connections between tributaries and mainstems, high water temperatures, lower water quality, and increased fish kills.


Granite Creek

2. Excessive sediment and habitat degradation: A vast web of timber cuts and old logging roads on the Bitterroot's naturally-erosive granitic soils have become a significant source of sediment to many tributaries, including sensitive bull trout spawning streams. This problem persists even though many roads are no longer used. Impacts from riparian grazing only add to the problem. The result: sediment-clogged spawning grounds, poor insect production, and lower spawning success for both native and wild fish populations.


Lolo Ditch

3. Fish passage barriers: The Bitterroot has more irrigation infrastructure than any other basin in the state, with over 3,000 diversions and 300 miles of canals and ditches pulling water out of streams. This network not only reduces instream flows, it creates barriers to migrating fish and traps those that follow the water into ditches and canals. The loss of trout each year is staggering: 10 to 20 thousand fish per year in some ditches. Poorly designed culverts on thousands of miles of forest roads also prevent fish from reaching spawning areas and the cool, upstream waters they need during increasingly hot summers.

The tributaries of the Bitterroot are the river's lifelines, and every negative impact – whether it's low flows, habitat degradation, or barriers to fish passage – puts stress on the river system and translates into lower fish numbers in the mainstem. The overlay of climate change, urbanization, and over-allocation of water supplies only intensifies the impact of these problems. If left unaddressed, these stressors could ultimately lead to extirpation of bull trout from all Bitterroot streams; significant and rapid decline in native westslope cutthroat trout populations; higher ratios of non-native fish species leading to further decline in native populations; loss of biodiversity in Bitterroot ecosystems; and irreversible deterioration of one of Montana's most prized trout fisheries.

It's impossible to know the exact trajectory of things to come. But we have a window for action in the Bitterroot. And by focusing resources and effort on an integrated strategy that re-waters, reconnects, and restores key stream habitats, we can create a healthy Bitterroot River system that is resilient to external shocks and rich in the natural capital that underpins sustainable fisheries and local economies.

Bringing Back the Bitterroot Campaign

Science-based conservation: To address these needs, the Clark Fork Coalition (CFC) has, for more than a decade, actively engaged with local stakeholders and conservation partners in planning and implementing stream restoration projects in the Bitterroot basin. In 2008-09 the Montana Water Trust (acquired by CFC in 2010) spearheaded an intensive, two-year collaborative assessment resulting in the *Bitterroot Subbasin Plan for Fish and Wildlife Conservation.* (CFC's current stream restoration director was a principal author.) This exhaustive assessment was the first to provide a science-driven framework for fish and wildlife conservation efforts in the basin.

Informed by this plan and subsequent analysis, and guided by several years of stream, habitat, and flow restoration projects, CFC created its first *Bitterroot Strategy* plan in 2012 (latest update: 2018), and committed designated staff and resources to the basin. Thanks to these investments, CFC has returned billions of gallons to thirsty tributaries, improved aquatic habitat and native fisheries, and restored dozens of miles of streams.

We've made significant progress. But a heightened sense of urgency about deteriorating ecological conditions in the Bitterroot – coupled with unique funding, partnership, and project opportunities – led CFC in 2019 to begin drafting a focused campaign to accelerate this work. We formally launched the *Bringing Back the Bitterroot* campaign in 2020.

Campaign Goal: The goal of the *Bringing Back the Bitterroot* campaign is to restore and increase the resilience of the Bitterroot basin and its fisheries.

Key Strategies: We will achieve this goal by addressing the essential elements of stream health – clean, cold water, and connected and complex habitats – via three key strategies:

1. **Restoring flow to dewatered creeks** through irrigation efficiency improvements and water rights leasing and acquisition
2. **Reducing sedimentation and restoring aquatic habitat and stream function** by returning natural ecological function to stream channels and decommissioning/re-naturalizing abandoned forest roads
3. **Removing fish passage barriers** by installing fish screens, removing and/or upgrading problematic culverts, and upgrading irrigation diversions

Priority Streams: The campaign will initially concentrate on tributaries where CFC has a significant history of involvement, strong partnerships, and opportunities to build on past successes. These include the west and north drainages of the basin, with special focus on Lolo, Lost Horse, Miller, O'Brien, and Tin Cup creeks.

In these drainages CFC and its partners have restored more than 30 cfs of instream flow (~1.7 billion gallons/year), decommissioned dozens of miles of sediment-bleeding roads and associated under-sized culverts, and carried out major construction and habitat improvement projects. We continue to pursue project opportunities that complement these gains.

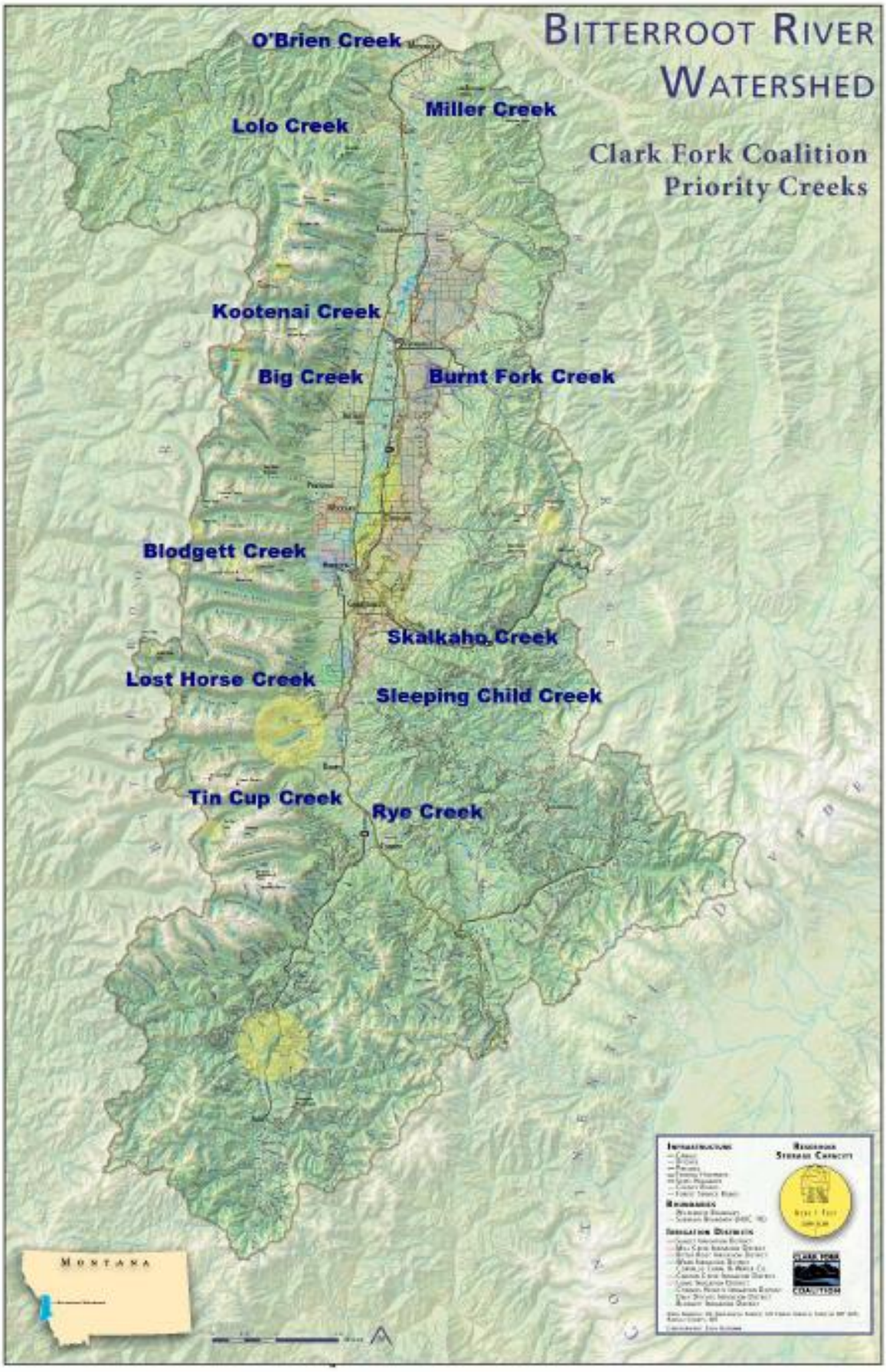
Our sub-basin strategy also identifies conservation needs and opportunities on several other major tributaries on both the west and east sides of the basin, including: Big, Blodgett, Burnt Fork, Kootenai, Rye, Skalkaho, and Sleeping Child creeks. Table 1 provides a summary of all CFC priority creeks in the Bitterroot.

Table 1: CFC PRIORITY BITTERROOT CREEKS
Conservation Values and Primary Impairments

Creek (Blue = active projects)	Key Features	Primary Impairments		
		Dewatering	Sediment; habitat impairment	Entrainment; fish passage barriers
Big	Key WSCT* & rainbow spawning stream	x	?	x
Blodgett	Bull & WSCT stronghold	x	?	x
Burnt Fork	Bull & WSCT stronghold in headwaters	x	x	x
Kootenai	WSCT & rainbow spawning stream	x	?	x
Lolo	Bull & WSCT stronghold	x	x	x
Lost Horse	Bull & WSCT stronghold	x		x
Miller	Pure-strain WSCT in upper reaches	x	x	x
O'Brien	Key WSCT spawning stream	x	x	
Rye	Bull & WSCT stronghold	x	x	?
Skalkaho	Bull & WSCT stronghold	x	?	x
Sleeping Child	Bull & WSCT stronghold	x	?	?
Tin Cup	Vital bull trout & WSCT tributary	x		

* Westslope cutthroat trout ? Needs further investigation

See next page for a map showing the locations of these priority streams.


BITTERROOT RIVER WATERSHED
Clark Fork Coalition Priority Creeks
O'Brien Creek
Miller Creek
Lolo Creek
Kootenai Creek
Big Creek
Burnt Fork Creek
Blodgett Creek
Skalkaho Creek
Lost Horse Creek
Sleeping Child Creek
Tin Cup Creek
Rye Creek
MONTANA