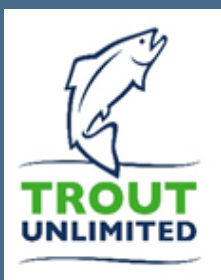




Coldwater Conservation Fund

5 YEARS OF IMPACT

2015 • 2016 • 2017 • 2018 • 2019



48 CONSERVATION PROJECTS

\$1.2 MILLION CORE FUNDING

\$24 MILLION LEVERAGED FUNDING

A HISTORY OF CORE SUPPORTERS

FUELING CONSERVATION SUCCESS

Dear Friends of Trout Unlimited,

Thank you for working in partnership with us to repair and renew the rivers, streams, and other waters on which we all depend.

In 2015, the Coldwater Conservation Fund, or “CCF,” reinvented itself and launched an improved funding model to support Trout Unlimited’s (TU) most pressing opportunities and needs. The results speak for themselves, and this report celebrates the accomplishments of those first five years.

The earliest history of the Coldwater Conservation Fund dates back to a critical moment in 1992 when a small group of ardent supporters saw both a need and an opportunity to fund new scientific research and other activities for which Trout Unlimited did not have resources. It was a great success, and in the years that followed the CCF played an invaluable role in Trout Unlimited’s development of a world-class staff capacity to match its grassroots underpinning.

Today, the CCF follows a deliberately simple model. Donors make an annual financial commitment of \$10,000 or more to the fund for at least five years, and they automatically become members of its board. The board meets once a year at the CCF

annual meeting, at which the leaders and regional staff of Trout Unlimited’s field programs—Eastern Conservation, Western Conservation, and Science—present funding proposals for their work across the country. Some of these are requests for venture capital to bring new ideas to fruition, others are reasons to sustain funding for ongoing priorities, and still others are appeals for support for critical needs. After hearing the staff and weighing their options, the board decides by vote how to allocate that year’s fund.

The CCF is a dedicated, dependable source of flexible funding for Trout Unlimited’s core programs. Because the fund is composed of private donations, it can be leveraged many times over to secure additional funds from state, federal, and foundation sources—and it is.

What we have accomplished together for trout and salmon through the CCF in five short years is nothing short of spectacular.

Please read on, and judge for yourself!

— *Stephen Trafton, Managing Director,
Coldwater Conservation Fund
March 2022*



COLDWATER CONSERVATION FUND ACCOMPLISHMENTS

THE FIRST 5 YEARS

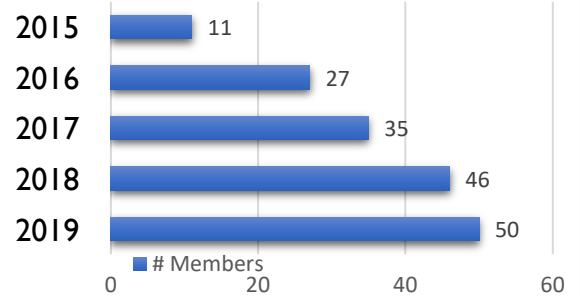
48 TOTAL PROJECTS

\$24M IN LEVERAGED FUNDING

2015-2019

PROTECTING
318,387
STREAM MILES

CCF Member Growth By Year



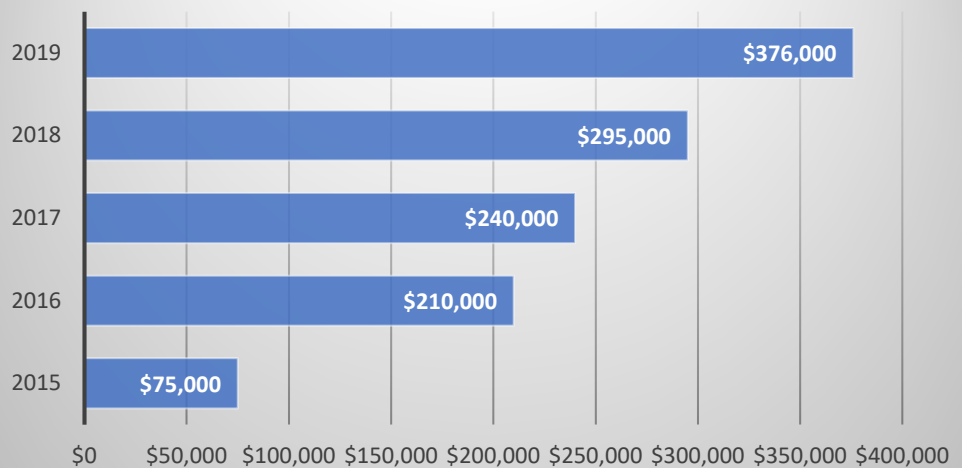
The mission of the CCF is to support scientific research, on-the ground projects, and other high-priority work of Trout Unlimited that might not otherwise be funded.

77,911

ACRES OF HABITAT RESTORED

1,353 eDNA SAMPLES COLLECTED

CCF GRANTS AWARDED \$1.2 MILLION





WESTERN CONSERVATION

19 Projects Funded 2015-2019

116

WESTERN
CONSERVATION
STAFF

PROJECTS IN

WASHINGTON
OREGON
IDAHO
ALASKA
CALIFORNIA
MONTANA
NEW MEXICO
COLORADO

PROTECTING, RESTORING,
RECONNECTING & SUSTAINING

316,360 stream miles
69,675 acres of habitat
68 miles of habitat*

*instream and riparian habitat

Click on project title to navigate to details

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Olympic Peninsula Habitat Restoration Staff Capacity

CCF 2015 Grant: \$10,000

Leveraged Funds: \$800,000

14 stream miles reconnected and
2.4 miles of habitat restored

CORE FUNDING LEVERAGED

In the first year, TU received: (1) \$50,000 from a private donor; (2) a \$15,000 grant from a private foundation; and (3) \$15,000 in project funding from state and federal agencies. Since this program launched, TU has secured well over \$800,000 in additional funding for on-the-ground habitat restoration and reconnection projects.

IMPACT & OUTCOMES

- TU hired an experienced habitat restoration specialist to take restoration projects from conception through implementation, launching a dedicated Olympic Peninsula Habitat Restoration Program.
- This program has grown into one of our most successful regional programs as a direct result of this investment by CCF members and focuses on restoring and reconnecting high-priority steelhead habitat in the Quillayute, Hoh, Queets, and Chehalis watersheds. Some highlights include:
 - ✓ Nearly 20 miles of forest service roads were stabilized or removed in the Quillayute basin.
 - ✓ Long-term relationships were built with landowners and stakeholders to restore habitat in the Queets-Clearwater watershed. We removed culvert barriers and collaborated with partners to plan the future installation of approximately 20 engineered logjams in Shale Creek.
 - ✓ A project manager for the Chehalis Basin was hired to complete priority fish passage projects. TU is leading the charge on the Chehalis Basin Strategy team to help develop a framework to implement a \$1.2B funded restoration plan for the next 20-30 years.



The above culvert removal and road decommissioning project reconnected Zeigler Creek in the Quinault River drainage. Note the person in a yellow jacket standing next to the culvert for scale.

Building Fundraising and Communications Capacity for Wild Steelhead Initiative

CCF 2016 Grant: \$35,000

Leveraged Funds: \$275,000

**100 major donors and
35,000 supporters**

CORE FUNDING LEVERAGED

An early infusion of CCF funding was instrumental in propelling TU's Wild Steelhead Initiative. With the CCF's 2016 investment, we were able to dedicate a substantial portion of an experienced fundraiser's time to recruiting passionate, philanthropic steelhead anglers to support the Initiative's advocacy, communications, and outreach work. Today, we have over 100 major donors across the country who support this work at nearly \$275,000 annually, and our community of conservation-minded steelhead anglers who support our efforts and take action when called to do so, stands at 35,000 supporters.

IMPACT & OUTCOMES

- The return on investment is evident today. The Initiative is supported by a generous donor corps that has provided funding consistently year after year. That is vital to the Initiative's success, because large foundation grants and government funding are not available for wild steelhead policy and outreach work. Funding sustains several staff members dedicated to the Initiative who have made remarkable progress on wild steelhead conservation. For example, John McMillan, TU lead scientist, was able to document and spread the news of the astounding recovery of summer steelhead in the Elwha River after two large dams were removed beginning in 2013.
- Here is an excellent video TU produced capturing this hopeful story of resilience: [Summer Steelhead in the Elwha River](#).
- Providing sustainable wild steelhead fishing opportunity is no easy feat, particularly close to large urban centers. Yet, that is precisely what we did, working in partnership with the Washington Department of Fish and Wildlife and a diverse group of recreational anglers—an effort that culminated in the [Quicksilver Portfolio](#) released in 2020. This management portfolio: (1) designates the Puget Sound's most productive steelhead rivers for wild steelhead management and catch-and-release angling opportunity; and (2) directs hatchery production to more degraded rivers unable to support fishable populations of wild steelhead. This approach was conceived by TU's Wild Steelhead Initiative staff, and took three years to bring to fruition. The time intensive work was made possible by the consistent financial support of the Initiative's generous donors that the CCF's investment enabled us to recruit.



Grasping a New Opportunity to Recover Snake River Steelhead and Salmon

CCF 2016 Grant: \$20,000

Leveraged Funds: \$100,000

Building and harnessing **stakeholder relationships** to remove the lower Snake River dams

CORE FUNDING LEVERAGED

The valuable work enabled by the CCF's early investment has convinced others to support TU's efforts, such as an individual donor who contributed \$100,000 to this work. The prospects for removing four federal dams on the lower Snake River in southeast Washington—a debate that has been raging in the Pacific Northwest for close to 30 years—are brighter than they have ever been. The investment in TU staff capacity advanced our campaign to remove the dams to unlock the enormous potential of wild salmon and steelhead recovery in the Snake River basin.

IMPACT & OUTCOMES

- The most impactful work we have done involves the countless meetings with public power sector leaders, irrigators, tribes, elected officials, and leaders in key federal agencies. This is how TU builds the strong relationships needed to bring about big change and it is what the CCF's investment has enabled.
- TU established important relationships with politically influential stakeholders who have traditionally opposed dam removal and worked closely with Congressman Mike Simpson (R-ID) to develop an ambitious plan to remove the dams and provide alternative means of providing their benefits.
- We obtained a commitment from Senator Patty Murray (D-WA) and Washington governor Jay Inslee to develop a plan by July 2022 to remove the dams and make investments needed to transition to a free-flowing lower Snake River.
- TU produced a comprehensive report called the [Scientific Case for the Lower Snake](#), which spotlights the science behind lower Snake River dam removal, and an article in [TROUT magazine](#), which focuses on our work to recover Snake River salmon and steelhead.
- In May of 2016, a federal court ordered the dam management agencies to conduct an analysis of the dam removal option, which offers the best prospect for recovering the river's wild salmon and steelhead. Thanks to TU's longstanding connections with the state and federal resource agencies involved in this process, our reputation in the region as a non-litigious collaborative partner, and our unmatched record of on-the-ground restoration of fish habitat, we are uniquely qualified to play a leading role in this next and highly promising phase of the Snake River dam removal campaign.



Desert Trout: Conserving Native Redbands in Owyhee Country

CCF 2016 Grant: \$15,000

Leveraged Funds: \$1.1 million

2 stream miles reconnected and
535 acres of wet meadow habitat restored

CORE FUNDING LEVERAGED

CCF funds helped leverage an additional \$190,000 in capacity funding from the Natural Resources Conservation Service (NRCS) by covering critical direct and indirect expenses that NRCS funding would not cover. This total of \$205,000 in staff capacity funding allowed us to secure over \$1.1 million from non-federal project partners.

IMPACT & OUTCOMES

- CCF funding enabled TU to implement the High Desert Drought Resiliency Project bringing together 16 different project partners and securing more than \$1 million to restore streams and improve drought resiliency.
- TU implemented 12 different restoration and irrigation efficiency improvement projects across three states to improve hydrologic function, wet meadow abundance, water availability, water quality, and rangeland conditions, benefiting three species of concern—sage grouse, redband trout, and Columbia spotted frog.
- 162 Beaver Dam Analogs were installed. These are structures that imitate natural beaver dams by backing up water, recharging floodplain aquifers, and restoring off-channel habitats.
- 27 rock riffles were installed to raise stream channel elevations.
- 2,800 willows were planted to stabilize eroding banks and increase cover.
- TU invested hundreds of hours to perform landowner outreach and partner coordination, implement permitting and compliance in three different states (with different processes), and provide construction oversight across an extensive geographic area.
- We worked with local ranchers to reduce water demand and eliminate livestock impacts by installing over seven miles of irrigation piping and associated headgate infrastructure to convert over 600 acres of cropland from flood to sprinkler irrigation. Also, we installed over two miles of enclosure fencing and 13 off-channel watering facilities.



California North Coast Coho and Steelhead

CCF 2017 Grant: \$15,000

Leveraged Funds: \$5,431,320

14 stream miles reconnected and
17,200 acres of habitat restored

CORE FUNDING LEVERAGED

The [North Coast Coho Project \(NCCP\)](#) continues to expand and has secured new funding opportunities totaling \$5,431,320. This includes \$1,606,285 in state and federal grants received and \$3,825,035 received from other funding sources such as landowner or partner contributions.

IMPACT & OUTCOMES

- CCF funds were integral to the success of the North Coast Coho Project by enabling TU to hire a California staff accountant. Staff were able to focus their efforts on the execution of 22 concurrent planning, design, or implementation projects within seven North Coast watersheds.
- TU supported the development of several media and outreach pieces, most notably the 20-year anniversary article in the Spring TROUT magazine edition.
- 20 miles of abandoned timber roads were decommissioned, preventing 50,837 cubic yards of sediment from entering North Coast streams.
- Over 959 pieces of wood were placed at 452 locations throughout 14 miles of instream habitat.
- Two major fish passage barriers were removed, providing access to approximately three miles of upstream habitat.



Large wood structure installed in the Jack of Hearts Creek

Chinook Salmon Conservation Initiative

CCF 2017 Grant: \$10,000

Leveraged Funds: \$2,500

Stakeholder engagement to protect Alaska's iconic Chinook salmon

CORE FUNDING LEVERAGED

CCF funding helped us secure \$2,500 needed to fund additional staff time during a year when Alaska rivers had extremely low Chinook salmon runs. Commercial and sport fisheries were closed or limited across most of the state—impacting fishermen, food supply, businesses, and the economy.

IMPACT & OUTCOMES

- CCF funding enabled TU's launch of the Chinook Conservation Initiative in direct response to the major concerns about declining runs of Alaska's iconic Chinook salmon.
- Support from CCF was instrumental to the development of a timely video produced at a critical time when tensions were increasing among fishing communities. The video highlighted the king salmon plight, showcased an innovative idea from a local business, and inspired businesses to collectively address the king salmon crisis. TU is well-positioned to continue to bring together the angler community to conserve this vital salmon species for generations to come.
- TU staff provided the building blocks needed to establish the Alaska King Coalition which focuses on bringing together individual anglers, groups, agencies, and businesses from across the state to work collectively to address recent king salmon declines, so that sustainable, fishable populations of kings are available in the future.
- TU organized a Chinook Salmon Science Symposium in conjunction with the fall Alaska Board of Fisheries meetings. The symposium was attended by more than 120 people who strategically heard from experts from the University of Alaska and Alaska Department of Fish and Game.
- We developed and launched a website, education materials, and a "King Pledge" targeted at Alaska anglers and sportfishing businesses.



Montana Smith River Campaign

CCF 2017 Grant: \$10,000

Leveraged Funds: \$4,000

Protecting **85 miles** of Sheep Creek and the Smith River

CORE FUNDING LEVERAGED

CCF funding helped us secure an additional \$4,000 from private donors to support our efforts. In addition to protecting more than 85 miles of critical trout waters, the success of this campaign will protect businesses and conserve the river's recreational and tourism values.

IMPACT & OUTCOMES

- TU conducted outreach to encourage attendance at four public hearings on the Smith River mine proposal held statewide by the Montana Department of Environmental Quality (DEQ).
- Noteworthy is the meeting held in Helena, which was attended by more than 200 people, mainly people TU encouraged to be there.
- CCF funding enabled us to create a statewide “buzz” around the Smith River mine proposal by purchasing online banner ad space for the DEQ’s Smith River Mine public hearing dates in the Bozeman Chronicle and the Missoulian, two of Montana’s largest town newspapers, urging the public to attend and participate in the 45-day public scoping process. Our ads ran for 25 days of the 45-day scoping period.
- We were able to hire an outreach staff position to spend two months at Camp Baker—the only public float put-in to the Smith River—to speak to people one-to-one about opposing the proposed copper mine, and provided people with informational materials.
- Campaign pamphlets were mailed containing resources and key dates to 10,000 Smith River permit applicants.
- Additional paid ads were purchased in local and state newspapers and sporting publications.



Wading into New Waters: Lower Snake River and Mid-Columbia Program Development

CCF 2017 Grant: \$15,000

Leveraged Funds: \$11,500

6 miles of summer habitat reconnected and
11.5 miles of instream and meadow habitat restored

CORE FUNDING LEVERAGED

TU's Northeast Oregon Program secured \$7,000 in the John Day Basin to directly match the CCF contributions. TU has secured numerous other contributions in the Umatilla and Grande Ronde Basins. For the Columbia/Snake River, TU was able to leverage CCF funding to secure \$4,500 in Hewlett Foundation funds to work on Oregon hydropower policy issues, including Hells Canyon.

IMPACT & OUTCOMES

- CCF funding has been critical to secure TU's presence in northeast Oregon, which now includes three full-time project managers. TU staff serve on several committees for the John Day Partnership. Engaging with a technical, financial, and partnership-building perspective has been critical to progress in this region. TU successfully implemented over five miles of instream restoration across three headwater tributaries to the North Fork John Day. This includes working with U.S. veterans and Young Adult Corps for 4-6 weeks each season.
- A 4.5-mile meadow and floodplain habitat restoration project was implemented on Sheep Creek in the Grande Ronde. Over 230 large wood and beaver dam analogue were placed, more than 8,000 riparian shrubs were planted, and over six miles of elk fence was installed. TU also completed a two-mile project on Indian Creek, a Grande Ronde tributary, which included removing three fish passage barriers and placing 26 large wood jams.
- TU worked closely with partners and landowners to manage water leases in key tributaries in the upper John Day, like Beech, Roberts, and Reynolds creeks, protecting over 1,000 acre-feet for instream flow.
- TU is advocating for a path forward that preserves the state's water quality certifications authority and improves water quality conditions in the Snake River and affected tributaries.
- We are working to advance a comprehensive solution for the Columbia Basin, one that understands the inter-relationship of different stressors (including dam operations, hatchery impacts, harvest impacts, and habitat restoration), and appropriately identifies and prioritizes solutions, based on the pace and scale of progress, that can be achieved with their implementation. These are long-term processes which require sustained engagement by TU to influence them meaningfully, which is why the CCF funding was so critical.



Sapphire Divide Fish Passage Project

CCF 2017 Grant: \$5,000

Leveraged Funds: \$271,500

10 stream miles reconnected and
7 miles of riparian habitat protected

CORE FUNDING LEVERAGED

CCF support for the Sapphire Divide Fish Passage Project provided the seed funding to leverage \$271,500 for new programs in Rock Creek and the Bitterroot watersheds from a broad range of funding partners including: (1) the National Fish and Wildlife Foundation; (2) WestSlope Chapter Trout Unlimited; (3) Montana Fish Wildlife and Parks; (4) Montana Trout Unlimited; (5) Beaverhead-Deerlodge National Forest; (6) Bitterroot Conservation District; and (7) Bitterroot National Forest.

IMPACT & OUTCOMES

- Our biggest success involved the hiring of two new project managers to launch new programs dedicated to restoring and protecting Rock Creek and Bitterroot fisheries, which will pay restoration dividends well into the future.
- Early on-the-ground victories in the Rock Creek Program include completing the first of two 2018 fish passage improvement projects, which when combined, will reconnect ten miles of spawning and rearing habitat for bull trout and Westslope cutthroat trout.
- Tess Scanlon, our new Rock Creek Project Coordinator, partnered with the Beaverhead-Deerlodge National Forest to replace a perched culvert on Green Canyon Creek, which reconnected three miles of critical bull trout habitat in the upper watershed.
- Lower in the watershed on Brewster Creek, Tess replaced an undersized culvert with a bridge. The project, located just upstream of the confluence with Rock Creek, removes the only known fish passage barrier in the drainage and reconnects an additional seven miles of quality trout habitat.
- In the Bitterroot River, project manager Christine Brissette completed two fish screen installation projects that reconnected 86 miles of habitat for native and wild trout in the east and west forks of the Bitterroot River. Christine is now developing a project to reconnect one of the largest tributaries in the lower river by reconstructing a natural stream channel while working with irrigators to remove fish passage barriers.



*The top photo is the old culvert.
The bottom photo is of the new bridge on
Brewster Creek, Rock creek drainage, MT.*

Establishing the “Gold Standard” Escapement Methodology for Steelhead and Salmon

CCF 2017 Grant: \$25,000

Leveraged Funds: \$105,000

Data analyses and modeling to protect the most important remaining wild steelhead basins in the contiguous U.S.

CORE FUNDING LEVERAGED

CCF funds helped TU secure \$50,000 from Wild Salmon Center and \$15,000 from Wild Steelhead Coalition. Additionally, CCF funding leveraged the equivalent of \$30,000 from National Marine Fisheries Service (NMFS) in reduced cost for modeling analyses, and an equivalent of \$10,000 from Washington Department of Fish and Wildlife (WDFW) in labor for data analyses, totaling \$105,000.

IMPACT & OUTCOMES

- A credible baseline was established for historic production and run timing of wild winter steelhead in the most important remaining wild steelhead basins in the contiguous United States, including the Quillayute, Hoh, Queets, and Quinault rivers.
- TU established that the run timing of wild winter steelhead has changed since the 1940s and 1950s, which is prior to the advent of the modern hatchery system in Washington State. We drafted a manuscript for publication of the data analyses and modeling. The estimates provided the first credible benchmark of the potential capacity of each watershed and was used to help establish recovery targets.
- The data analyses and modeling for the “gold-standard” life-cycle model is in progress. The results are expected to have broad implications for how we think about estimating the habitat capacity for wild steelhead and will underscore the importance of spatial structure when creating life-cycle models. The analyses will be followed up by a manuscript describing the results and their relevance to steelhead management, and subsequently, the life-cycle model will be incorporated into general use among agencies and with other scientists tasked with studying and managing steelhead.



Upper Klamath Basin - Oregon Fish Passage Inventory and Prioritization

CCF 2017 Grant: \$10,000

Leveraged Funds: \$58,049

Data analyses and modeling to protect the Upper Klamath Basin

CORE FUNDING LEVERAGED

Funding allowed local TU staff to initiate a project to document and survey potential passage barriers in the Upper Klamath Basin (UKB), and then prioritize their repair or removal. Project staff were able to leverage \$28,049 from the Oregon Watershed Enhancement Board, and the U.S. Fish and Wildlife has allocated \$30,000 to assist with the project for a total of \$58,049.

IMPACT & OUTCOMES

- Five datasets were combined to develop a comprehensive database of potential barriers in the UKB. This task identified a total of 479 points, of which 31 block fish passage, 59 are partial barriers, 254 are of unknown passage status, and 135 are passable.
- Local TU staff led four meetings with partners, including U.S. Fish and Wildlife Service, Oregon Department Fish and Wildlife, U.S. Forest Service, and the Klamath Tribes.
- Local TU staff attended a fish passage workshop in California at the Salmonid Restoration Conference in April 2018.
- Two interns from the U.S. Fish and Wildlife Service for the 2019 field season surveyed identified barriers.
- Local TU staff worked with project partners to create a data sheet to be used while surveying potential barriers.
- TU completed a comprehensive inventory of the Upper Klamath Basin, including survey work, optimization model development, and the creation of an online decision support tool. Without funding from the CCF, this important project would not have been initiated, and information regarding potential barriers would continue to be lacking in the UKB.



Sucking Life Out of Our Rivers – Reforming Suction Dredge Mining in Washington

CCF 2017 Grant: \$20,000

Leveraged Funds: \$57,000

Protecting **316,022 river miles** including
9,823 miles designated as critical habitat

CORE FUNDING LEVERAGED

CCF funding helped TU secure a \$7,000 renewal grant from Patagonia (FY2018 and FY2019) to advocate for legislation that improves protection for Washington's wild fish and safeguards clean water by reforming Washington's suction dredge regulations. The successful rule-making reform will protect a variety of endangered species including wild steelhead, coho salmon, and bull trout. Suction dredge mining is a form of mineral prospecting that uses gas-powered dredges to vacuum up rocks, gravel, and sediment from the bottom of creeks and rivers to search for gold. Proven impacts of suction dredge mining include erosion and sedimentation, mobilization of mercury and other heavy metals, increase in water temperatures, water contamination, habitat destruction, as well as physical impacts to fish eggs, juvenile fish, invertebrates, and other aquatic organisms.

IMPACT & OUTCOMES

- TU staff, coalition members, and volunteers successfully petitioned and testified before the Washington Department of Fish and Wildlife (WDFW) Game Commission in February 2018, requesting the initiation of rulemaking, currently governed by the state's "Gold & Fish" pamphlet. Based on this testimony, in April 2018, the Game Commission directed the WDFW to begin the rulemaking process.
- TU staff and volunteers remained engaged in the rulemaking process during the summer of 2018 and provided testimony at all four of the public meetings scheduled by the agency.
- Suction dredge reform legislation in WA (ESHB 1261) was successfully passed in the 2020 legislative session. That legislation banned recreational suction dredge mining in all designated critical habitat for ESA-listed species, including salmon, steelhead and bull trout, effectively protecting thousands of river miles and millions of dollars of investment in fish passage and habitat restoration.



Suction dredge mining in action

Going Directly to the People: Securing Long-Term Protection for Coldwater Fish Habitat in Montana & Alaska

CCF 2018 Grant: \$130,000

Key lessons learned to deploy strategic tactics for future legislative campaigns

CORE FUNDING LEVERAGED

The CCF Board allocated \$130,000 to ballot initiatives in Alaska and Montana during the 2018 election cycle. While neither initiative ultimately passed, what we learned was vital, and will inform our approach to these types of legislative opportunities in the future.

IMPACT & OUTCOMES

- The results in Alaska were: 38% for, 62% against. In this case, a vote for the initiative meant that the voter felt that mining development projects in salmon habitat needed to be held by the state to a higher standard. This would have made the proposed Pebble Mine harder to develop.
- The results in Montana (I-186) were: 44% for, 56% against. Votes for I-186 were from voters who felt that there needed to be proof that, for future mines in the state of Montana, no perpetual or permanent treatments of mining by products would be needed after active mining was complete.



Colin Cooney with Trout Unlimited addresses supporters of I-186 at the Capitol.

LESSONS LEARNED

- When we began these efforts, we did not fully recognize the fundraising abilities and resources of our opponents. Opponents were able to influence the campaign heavily by spending exponentially more than we did. In Montana we were outspent 3:1, while in Alaska the ratio was closer to 11:1.
- When we face opponents with deep pockets, we need to raise funds even earlier, so that we can employ them at critical points throughout the campaign. While earned media (newspaper articles, television interviews, etc.) is important, paid media (television, radio, and social media advertisements) can have a significant impact on voters, and is expensive.
- Though we came up short with both initiatives, there were several silver linings. Both of these efforts were aimed at giving states better tools with which to regulate mining, and in both cases, we educated the public about the threats to trout and salmon posed by inadequate planning, design, and oversight. We also increased TU's public profile and established our bona fides as a political force to be reckoned with.

Restoring River Function to Ensure Idaho's Trout and Salmon Legacy

CCF 2017 Grant: \$50,000

Leveraged Funds: \$300,000

6 habitat miles restored
with **100 acres** of wet meadow restoration underway

CORE FUNDING LEVERAGED

Funding enabled TU to secure an immediate match of \$150,000 from the National Fish and Wildlife Foundation and launched TU's Clearwater Basin Initiative, which has since secured over \$300,000. This project worked to restore two important Idaho river basins: the Big Wood River valley near Sun Valley and the Lochsa River in the upper Clearwater River basin.



Newly installed log jam on East Fork Potlatch River

CHALLENGES AND LESSONS LEARNED WITH BIG WOOD RIVER

TU's project manager completed conceptual designs and initiated the permitting process for a flagship project to restore stream function and aquatic habitat, but the primary funding entity—Blaine County—backed away from their \$179,000 commitment. TU worked with our contracted engineering firm to adjust the designs to address concerns, but infrastructure constraints (e.g., existing highway bridge) and the lack of support from a key landowner prevented us from securing the county's support. Thus this project is on hold.

IMPACT & OUTCOMES

Capitalizing on early project successes working with the Nez Perce Tribe, TU's project manager quickly initiated new projects on several other priority streams in the Clearwater Basin:

- Lewiston Orchards Project—we are working to reconnect Sweetwater Creek, historically one of the largest producers of steelhead in the basin, which will also provide more reliable and efficient irrigation water for the district.
- Packer Meadow Restoration—we are studying groundwater and wet meadow hydrology to determine if a Forest Service road that bisects the meadow is contributing to the degradation of Pack Creek and to the decline of Camas Creek, a historically important food resource for the Nez Perce Tribe.
- Lolo Creek Restoration—we worked with the Nez Perce Tribe and the Natural Resources Conservation Service to complete a restoration project to improve stream function and habitat quality at the mouth of Lolo Creek, another important Clearwater tributary.
- East Fork Potlatch River—we worked with the Clearwater Soil and Water Conservation District to install large wood structures in the East Fork Potlatch River to improve hydrologic function, floodplain connectivity, and habitat quality for steelhead and salmon.

Restoring the Fire-Ravaged Upper Eel River in Northern California

CCF 2019 Grant: \$20,000

Leveraged Funds: Valuable, unquantified USFS support

Restoring 51,840 acres in watershed planning area

CORE FUNDING LEVERAGED

TU and the USFS-Mendocino National Forest established a Supplemental Project Agreement (SPA). The SPA was drafted to enable TU staff to apply for additional funds to support project planning. This project catalyzed restoration at a significant scale within the Upper Eel Watershed in the Mendocino National Forest (MNF) to provide maximum benefit to steelhead, coho, and Chinook populations, and the stream networks that support them.

IMPACT & OUTCOMES

- TU and MNF Service staff (District Fisheries Biologist and Hydrologist) have worked to determine the process necessary for collaborating on a Watershed Restoration Action Plan. Together, TU and MNF have identified roles and responsibilities, acknowledged existing data sets and data gaps that can support planning efforts, and drafted an outline for the Action Plan. The draft SPA was submitted to the USFS for approval in Spring 2021.
- Mendocino National Forest identified the need to continue a stream temperature monitoring program that had been previously undertaken by the Native Fish Society but no longer had funding. TU staff worked with the Redwood Empire TU Chapter to continue the stream temperature monitoring program in 2020 and 2021.
- Our Watershed Restoration Action Plan will identify key management issues and provide a science-based framework for identifying restoration priorities to improve habitat for anadromous and resident fish within the context of a changing climate, altered fire regime, and future dam removal. The Action Plan will result in a list of priority actions and project descriptions for specific geographies within the Partnership Area.



Restoring Water and Habitat in the Land of Enchantment

CCF 2019 Grant: \$50,000

Leveraged Funds: \$1.1 million

Restoring **10 river miles** in the upper Rio Grande and discovered a new population of cutthroat trout

CORE FUNDING LEVERAGED

CCF funding helped TU secure \$80,000 from the National Fish and Wildlife Foundation, \$230,000 from the New Mexico Environment Department, \$500,000 from the New Mexico Department of Game and Fish, and \$200,000 from the Carroll Petrie Foundation. Funding enabled TU to hire a full-time staff person for two years. The full-time capacity has been instrumental to TU, building a long-term public and private land program in this geography that includes impactful high elevation meadow restoration, fish barrier removal, and streamflow, riparian, and channel restoration projects.

IMPACT & OUTCOMES

- CCF funding enabled TU to complete a watershed characterization study in northern New Mexico and to employ the first Jeremy Brooks Memorial Intern to help with the watershed characterization studies.
- Through the watershed characterization work, TU identified a previously unknown population of Rio Grande cutthroat trout (RGCT). To protect that population for future generations, TU has received funding, and begun planning for, six miles of river restoration on the Rio San Antonio.
- Other initial efforts include 4 miles of RGCT stream restoration efforts on Chihuahueños Creek, another stream studied in the watershed characterization.
- TU coordinated an effort to protect two tributaries to the Rio Hondo from non-native trout by installing barriers on both streams. TU capacity ensured project coordination, and that existing partners would work together to complete a project that was years in the making. The project is now scheduled for completion in 2022.
- TU helped with local access issues on El Rito Creek with a campground revitalization effort. There will be future native trout recovery efforts for El Rito, and the project is a source of goodwill in a diverse local community—it provides revitalized access and nicely sets the table for restoration discussions and efforts in the future. TU's influence has been integral to changing the recovery trajectory for native fish in this important watershed.



The first Jeremy Brooks Memorial Intern releases a Rio Grande cutthroat from Chihuahueños Creek.

San Juan Cutthroat Trout Recovery Project

CCF 2019 Grant: \$50,000

Leveraged Funds: \$188,000

Recovering **8 populations** of San Juan cutthroat trout

CORE FUNDING LEVERAGED

CCF funding helped secure \$88,000 from the National Fish and Wildlife Foundation, \$50,000 (in-kind) from the Banded Peak Ranch, and \$50,000 from Pew Charitable Trust for a total of \$188,000. San Juan cutthroat trout (SJCT) are currently limited to eight populations totaling fewer than 1,000 individuals, and the species occupies fewer than seven miles of stream. By increasing the capacity dedicated to SJCT recovery issues, TU increased partnership efforts with federal and state resource agencies to design, fund, and implement restoration projects that will ensure the recovery of sustainable SJCT populations.

IMPACT & OUTCOMES

- CCF funds enabled TU to undertake watershed characterization studies aimed at providing data to speed up and inform new sites for SJCT recovery. Additional efforts are ongoing to further identify climate change resilient streams for reintroduction and facilitate those types of recovery efforts with agency partners.
- Since the initial rediscovery of the eight populations of SJCT, TU has been a key partner in reestablishing two more fluvial populations on private land (such as a barrier built on Headache Creek). Two more populations will be reestablished in Wolf Creek, and another in a large broodstock pond on private land.
- Additional efforts are geared toward protecting and expanding the Fall Creek population by building new barriers with new structures slated for construction in 2022.



TU chapter volunteer helps with ORW monitoring



Constructing the Headache Creek barrier

- TU is leading the effort to get Wolf Creek and Fall Creek designated as Outstanding Resource Waters (ORW) under the federal Clean Water Act. The ORW designation would provide additional protections for the San Juan lineage fish.

Deciding the Fate of the Potter Valley Project on California's Eel River

CCF 2019 Grant: \$20,000

Leveraged Funds: \$50,000

Reconnecting **288 miles** in the Eel River watershed for salmon and steelhead

CORE FUNDING LEVERAGED

CCF funding helped TU secure \$25,000 from the California Department of Fish and Wildlife, \$15,000 from Hewlett Foundation Hydropower Reform Coalition, and \$10,000 from a private donor to support our work to secure the removal of Scott and Cape Horn dams owned by Pacific Gas & Electric (PG&E), whose hydropower license from the Federal Energy Regulatory Commission (FERC) expires in April 2022. This is a time-limited opportunity to open up hundreds of miles of blocked habitat in the headwaters of the upper Eel River, one of California's premier steelhead and salmon rivers.

IMPACT & OUTCOMES

- TU supported the collaborative effort to explore taking over the hydropower license and build the case for removing these aging dams, while also allowing some continued water diversion from the Eel River to the Russian River for people in that basin who have come to depend on it.
- With our close partner California Trout, we secured over \$1 million in state funding for technical studies that help establish that dam removal is feasible, and continued to build support for dam removal among the public, elected leaders, and agency decision makers.
- The FERC process will now revert to the “license surrender” stage, and TU is now in a strong position to ensure that the decommissioning plan submitted by PG&E will call for removing the dams. The basic economics driving the fate of the project have not changed—keeping the dams would be very expensive, the project provides no revenue to cover these costs, and we now know that no other party has the financial ability to take over the project. These facts lead inexorably toward dam removal.
- While it is possible that PG&E will seek to decommission the project by disconnecting the power and leaving the dams in place, we believe a strong coalition of conservation groups and Tribal Nations backed by state and federal regulatory agencies will be able to force removal. No one has more experience than TU at complicated dam removal projects or complex hydropower negotiations, and we are gearing up for a large campaign.



Reconnecting a Stream Wilderness Corridor for Rattlesnake Creek in Montana

CCF 2019 Grant: \$38,000

Leveraged Funds: \$300,000

35 miles stream habitat reconnected
to the Clark Fork River

CORE FUNDING LEVERAGED

CCF funding enabled TU to secure \$300,000 from the National Fish and Wildlife Foundation and contributed towards covering the overall \$1.5 million project cost to remove Rattlesnake Creek Dam to restore the stream channel and floodplain and reconnect 35 miles of habitat for native bull trout and Westslope cutthroat trout. The project also enhances recreational and cultural resources by reestablishing a fully functional river corridor connection between the Rattlesnake Wilderness Area in the headwaters and the Clark Fork River in downtown Missoula.

IMPACT & OUTCOMES

- In 2020, TU completed the deconstruction of Rattlesnake Creek Dam, following three years of project development that included public scoping, permitting, engineering and design, fundraising, and implementation planning.
- As the concrete dam was being broken up and removed, construction crews rebuilt a stream channel through the site using large boulders and cobble. That work included installing four logjams to provide overhead cover and facilitate pool development and rebuilding streambanks with a mix of gravel, logs, and brush to provide short-term stability while native riparian vegetation becomes reestablished.
- The dam demolition and stream channel reconstruction were completed by October 15, 2020 according to design and specifications. In total, more than 1,000 linear feet of stream were reconstructed, incorporating 10,000 willow cuttings and 6,000 containerized plants. We also constructed four wetland cells, restored five acres of floodplain, and installed temporary fencing units to protect sensitive areas and planting areas. Weed treatment, plant watering, and other maintenance activities were begun in 2020 and continued by TU and the City of Missoula in 2021.
- TU's project manager, Rob Roberts, led a group of students from the University of Montana. These lucky students got to see newly-restored habitat and wild trout where a concrete dam had previously stood for over 100 years.



Photos taken before (left) and after dam removal (right)

13 Projects Funded 2015-2019

EASTERN CONSERVATION

52 CONSERVATION STAFF

PROJECTS IN

MAINE

NEW HAMPHIRE

CONNECTICUT

VERMONT

PENNSYLVANIA

NEW YORK

NEW JERSEY

VIRGINIA

WEST VIRGINIA

NORTH CAROLINA

SOUTH CAROLINA

MINNESOTA

Protecting, Restoring,
Reconnecting & Sustaining

2,027 stream miles
8,236 acres of habitat
33 miles of habitat*

*instream and riparian habitat

2015 PROJECTS

<u>Securing Protections for Pennsylvania’s Native and Wild Trout Streams</u>	27
<u>Cold Stream Forest Maine</u>	28

2016 PROJECTS

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<u>Using “Angler Science” to Inform Conservation Strategies</u>	30

2017 PROJECTS

<u>Salter Brook Trout Streams Recovery</u>	31
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2018 PROJECTS

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2019 PROJECTS

<u>Stewardship Contracting: A New Revenue Stream for Restoration</u>	35
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<u>Batten Kill Home Rivers Initiative</u>	37
<u>Driftless Area Program Expansion in Minnesota</u>	38
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Securing Protections for Pennsylvania's Native and Wild Trout Streams

CCF 2015 & 2016 Grant: \$10,000 & \$20,000

Leveraged Funds: \$800,000

Protecting over **2000 miles** in
Pennsylvania's streams

CORE FUNDING LEVERAGED

With support from the CCF, TU secured more than \$800,000 from the Pennsylvania Fish and Boat Commission (PFBC), Delaware Watershed Conservation Fund, William Penn Foundation, Richard King Mellon Foundation, Foundation for Pennsylvania Watersheds, and an anonymous foundation grant. Funding allowed TU to lay the groundwork for significant increases in the protections for Pennsylvania's native and wild trout streams by increasing our work in the areas of stream assessments, volunteer engagement, and advocacy.

IMPACT & OUTCOMES

- Over half of Pennsylvania's waters have not been assessed to determine if they support native and wild trout populations. For over 10 years, TU has addressed this issue: our assessments have provided the basis for higher levels of protection for over 2,000 miles of streams, at an average rate of 40% of all sites assessed being found to support wild populations.
- TU expanded our scientific work by using our chapter membership to advocate for stronger protections based on these assessments and other scientific data. TU has grown our advocate network with the goal of having at least one advocacy contact in each of Pennsylvania's 49 chapters, with many chapters having multiple advocates who influence decision-makers in the legislature and at regulatory agencies around these policies.
- TU has engaged over 1,700 volunteers in our chapters and stakeholder groups who have generated over 3,000 comments since 2018 in support of increased protections through PFBC, as well as interactions with the Pennsylvania Department of Environmental Protection.
- The successful model developed in these projects is being replicated in other states such as New York to provide additional protections.



Cold Stream Forest Maine

CCF 2015 Grant: \$10,000

Leveraged Funds: \$7,500,000

Protecting **8,200 acres**,
16 miles of streams and **8 “Heritage” brook trout ponds**

CORE FUNDING LEVERAGED

With CCF funding, TU was able to mount a campaign that prevented the loss of state and federal funding, thereby resulting in a leveraged amount of \$7.5 million. After four years of work with the Maine Department of Inland Fisheries and Wildlife and the Trust for Public Land to negotiate purchase 8,200 acres, including 16 miles of brook trout streams, eight “Heritage” brook ponds, and over 2,000 acres of deer winter habitat, Maine’s governor refused to issue voter-approved bonds for the Land for Maine’s Future Program (LMF). The Cold Stream project and almost three dozen other projects promised funding by the LMF were put in limbo. TU’s investment of time, the engagement of fantastic partners, broad public support, and most importantly, the value of the coldwater resource for anglers and conservation, demanded that we see this project through. CCF funding enabled us to do that by making conservation of native brook trout habitat a primary goal of Maine’s land conservation efforts and a focus of management plans on state-owned lands.

IMPACT & OUTCOMES

- TU engaged with a coalition of other conservation groups and land trusts to mobilize bipartisan support in Maine’s legislature for LMF. The Cold Stream Forest Project, with its benefits for brook trout and whitetail deer, became the poster child for the program.
- After a series of legislative battles, Governor LePage allowed his Bureau of Public Lands to complete the purchase in 2016, avoiding the loss of \$1.5 million in state funding from LMF and \$6 million from the U.S. Forest Service’s Forest Legacy Program (FLP).
- TU’s Maine Brook Trout Project Director served on the advisory committee that helped write the management plan for the property that made protection of brook trout habitat the primary focus of management, and ensured the inclusion of intact riparian buffers and appropriate stream crossings.
- The project became a model for northern forest conservation in Maine, with several projects since then funded by LMF and FLP that focused on brook trout and Atlantic salmon protection with conservation easement terms or management plans to protect buffers and mandate passable crossings.



Angler Advocates for the Great Lakes

CCF 2016 Grant: \$18,500

Leveraged Funds: \$200,000

Powerful advocacy influencing vital legislative funding & protections

CORE FUNDING LEVERAGED

CCF funding matched an additional \$200,000 grant from the Erb Family Foundation to make a significant, expanding investment in staff and project resources in the Great Lakes region, complementing a strong regional grassroots presence. This project used a variety of communications tools and strategies to mobilize the vast potential of our grassroots volunteers, as well as the broader angling public.

IMPACT & OUTCOMES

- TU worked with grassroots advocates through the Great Lakes National Leadership Council workgroup to provide a nexus for coordination on policy issues throughout the region.
- TU's work with the media and legislators in Michigan helped to soundly defeat a net pen rainbow trout aquaculture proposal. The legislation has not resurfaced, which is evidence of how unpopular it became among legislators and the public.



A salmon passes through a newly reopened crossing on Bigelow Creek in Michigan, a project funded by the Great Lakes Restoration Initiative.

- Facing the threat of a 90% reduction in budget proposals, TU brought legislators out into the field to show them projects we completed with funding from the Great Lakes Restoration Initiative (GLRI). We also brought volunteers to Washington D.C. to speak with Congress about the importance of funding the program. GLRI funding was kept steady at \$300 million despite the proposals to reduce or eliminate the program.
- Currently, the GLRI is funded at \$330 million, with requested amounts varying between \$340 million and \$375 million. In addition, the recently-passed infrastructure bill has allocated \$1 billion for Great Lakes restoration through GLRI over the next five years.

Using “Angler Science” to Inform Conservation Strategies

CCF 2016 Grant: \$20,000

Leveraged Funds: \$88,300

500+ volunteers trained and
temperature loggers deployed at **91 sites**

CORE FUNDING LEVERAGED

With support from the CCF, TU was able to raise \$88,300 from additional funders to expand our Shale Gas Monitoring Program—effectively increasing the earlier identification of pollution events and mitigation issues. We have trained over 500 volunteers to collect water quality data and conduct visual reconnaissance in areas at risk from shale gas and natural gas pipeline development.

IMPACT & OUTCOMES

- TU-trained volunteers submitted data and photographs documenting hundreds of environmental issues and violations associated with natural gas development resulting in the issuance of violations and warnings to developers.
- 48 volunteers were trained in stream temperature monitoring protocols and deployed temperature loggers at 91 sites in five focal areas in Virginia’s upper Shenandoah River watershed. TU staff used this data analysis to prioritize where to focus our efforts and to justify investment in protecting and enhancing these watersheds to funders.
- CCF support helped to lay a foundation for a robust community science program that has engaged thousands of volunteers to collect data and information. We now have community scientists completing road-stream crossing assessments in North Carolina, conducting temperature monitoring in Michigan, collecting eDNA samples in West Virginia, and deploying and maintaining real-time monitoring stations in New York.



Salter Brook Trout Streams Recovery

CCF 2017 & 2018 Grant: \$35,000 & \$25,000

Leveraged Funds: \$307,000

Reconnecting **1.75 miles of habitat** and
removing **3 dams**

CORE FUNDING LEVERAGED

The CCF funded grants to Maine brook trout restoration in both 2017 and 2018, and funds were leveraged to raise \$307,000 from the National Fish and Wildlife Foundation, Sarah K. Decoizart Perpetual Charitable Trust, and the Maine Natural Resources Conservation Program. The Casco Bay Salter Brook Trout Project is continuing to identify streams with brook trout to reconnect them to saltwater—all in Maine's most densely populated county.

IMPACT & OUTCOMES

- TU identified and documented populations of sea-run brook trout in urban streams in Brunswick, Freeport, and Falmouth, Maine, all feeding into Casco Bay.
- The documentation of these populations was critical to: (1) implementing a local campaign against a rezoning proposal that would have allowed a million square feet of new development adjacent to a brook trout stream in Falmouth; (2) long-term planning by the town of Brunswick to upgrade road crossings for fish passage, and the designation of Mere Brook as a priority stream for native brook trout conservation; and (3) securing landowner permission and funding to remove three dams on Frost Gully Brook in Falmouth.
- TU reached agreements with property owners to remove three dams on Frost Gully Brook. The effort will reconnect a robust population of brook trout to the ocean—a population that we first identified in 2016—and for which CCF funding helped us to plan, and now to implement, projects designed to protect them.
- We are preparing for removal of all three dams in the summer of 2022. Dam removal will eliminate three of four barriers to passage between Casco Bay and the headwater of Frost Gully Brook, reconnecting 1.75 miles of habitat above the dams. Approximately ¼ mile of currently impounded stream habitat will be restored to free-flowing river, and a spring-fed tributary stream will be reconnected.



Housatonic River Coldwater Tributary Restoration

CCF 2017 Grant: \$20,000

Leveraged Funds: \$664,132

2 miles reconnected and
15 restoration sites completed

CORE FUNDING LEVERAGED

With support from the CCF, TU raised \$664,132 in public funding to plan and implement restoration projects on critical coldwater tributaries to the Housatonic River in Connecticut. In addition to securing funding to complete our restoration work, we have also received funding to complete a five-year monitoring effort to evaluate our work on Salmon Creek. Funds were secured for an initial riparian planting with Kent School students, and in 2021 funds were received to support the restoration work on Macedonia Brook.

IMPACT & OUTCOMES

- TU continued to work on Salmon Creek to address the stream degradation on this important Housatonic tributary. The restoration work included the installation of large wood to help stabilize eroding banks, reconnect the floodplain, and provide exceptional trout habitat throughout the mainstem.
- Since 2017 TU has successfully completed eight large wood installations for a total of fifteen sites.
- TU completed the initial survey and designs for the Mill Brook Thermal Refuge site on the Housatonic and worked with staff from the Connecticut Department of Environment and Energy Protection to notch the Macedonia Brook dam to allow fish to pass from the Housatonic upstream two miles into Macedonia Brook.
- A full culvert assessment in the Macedonia Brook watershed was completed by our partners, allowing us to better understand the implications of our work at the lower dam and prioritize future restoration efforts.



Reintroduction of Native New Jersey Brook Trout in the Delaware River Watershed

CCF 2017 Grant: \$20,000

Leveraged Funds: \$166,814

1.3 miles stream habitat and
36 acres of riparian habitat restored

CORE FUNDING LEVERAGED

CCF support resulted in \$166,814 of leveraged funding and helped restore 1.3 miles and 36 floodplain acres of a climate-resilient reach of Lopatcong Creek via instream habitat enhancement, floodplain reconnection, and riparian plantings. The lower Lopatcong provides a unique, easily-accessible wild trout fishing experience for urban and suburban residents and visitors alike. The high visibility of this project has led to adjacent landowner interest in additional instream and floodplain work, as well as potential small dam removal to fully reconnect the middle Lopatcong wild trout population to its downstream, climate-resilient core.

IMPACT & OUTCOMES

- State agency partners fully supported the development of New Jersey's first fine-scale brook trout portfolio and conservation plan in New Jersey's only brook trout stronghold—the Flat Brook. Highlights of this plan include the: (1) prioritization of 25 parcel-level riparian projects on 14 acres and two tributary stream miles; (2) identification of 25 unregulated mill dams using new remote sensing methods; (3) selection of 14 road-stream crossing projects (out of 189 total crossings) to reconnect coldwater habitat; and (4) the documentation of at least two new tributary populations of native brook trout previously unknown to our state partners.
- Based on these successful planning efforts, the New Jersey Division of Fish and Wildlife staff would now like to use TU's fine-scale portfolio to help guide the development of a Flat Brook conservation genetics study to assess the connectivity and health of, and management goals for, this watershed's significant brook trout population. In fact, this project has set off a trajectory of success as we are well on our way to developing conservation plans for the rest of New Jersey's Upper Delaware wild trout waters, supported by a recent \$75,563 grant we received from the Delaware Watershed Conservation Fund.



Protecting the Great Lakes from Asian Carp

CCF 2018 Grant: \$50,000

Leveraged Funds: \$100,000

Brandon Road project advanced
to keep invasive carp out of the Great Lakes


CORE FUNDING LEVERAGED

With CCF support, TU raised \$100,000 in leveraged funding from the C.S. Mott Foundation. Invasive carp have been found as close as eight miles from Lake Michigan, and a recent study by the American Fisheries Society predicted significant impacts on Great Lakes food webs, especially bays, river mouths, and nearshore areas. It is essential that we establish an effective barrier to keep invasive carp out of the Great Lakes, and thanks to the progress made under this project we are now much closer to making that a reality.

CHALLENGES FACED & LESSONS LEARNED

In 2018, progress was stalled due in large part to opposition from legislators in Illinois. Even something as simple as the Army Corps of Engineers study of options for blocking carp had become a political football, resulting in years of delay. TU initially concentrated its efforts on connecting advocates with Illinois legislators and conducting media outreach, including an impactful Op-Ed we placed in the Chicago Sun Times calling for action to block invasive carp.

IMPACT & OUTCOMES

- TU submitted a letter, along with our partners, to the Army Corps of Engineers in support of barrier improvements at the Brandon Road Lock and Dam. More than 200 conservation groups signed that letter, including 75 TU councils and chapters from around the region. Those same 75 councils and chapters also submitted a TU-specific letter that was accompanied by 150 individual comments, all voicing anglers' support for keeping Asian carp out of the Great Lakes.
- 
- TU staff and volunteers met with congressional delegations from Illinois, Wisconsin, and Michigan, and the Michigan Governor's Office, to discuss the Brandon Road plan and its funding needs in the upcoming budget. Additionally, TU's Great Lakes Organizer made a presentation to TU chapters and councils in the region to engage and educate members about the project details, and to inform them of upcoming opportunities to become involved in advocacy on the issue.
 - Fast forward three years and: (1) the opposition from Illinois has receded; (2) Congress has passed legislation to authorize barrier construction; and (3) Michigan has allocated funding to help Illinois pay its share of the project costs.

Stewardship Contracting: A New Revenue Stream for Restoration

CCF 2019 Grant: \$35,000

Stewardship contract training completed

CORE FUNDING LEVERAGED

With funding from the CCF, we focused on two project areas—the Green Mountain National Forest (GMNF) in Vermont and the Sumter National Forest in South Carolina. TU staff in Vermont engaged with the U.S. Forest Service (USFS) on a large integrated timber and restoration project that was being planned in an area with significant brook trout habitat.

CHALLENGES FACED & LESSONS LEARNED

This project has not yet borne fruit. The project was taking shape as planned when litigation was filed to stop the timber operation. The project remains stalled as the USFS works through the legal process. The work we have completed to date under this CCF grant has increased our understanding of stewardship contracting and advanced conversations with the USFS that will position us well to participate in future stewardship projects.

IMPACT & OUTCOMES

- Funding from the CCF enabled our staff to attend a week-long training to learn how to successfully develop and implement a stewardship contract. We have progressed by participating in meetings with the USFS and timber operators to discuss potential projects.
- Through our work with the Sumter National Forest, the USFS has invited us to participate in other stewardship project discussions in trout habitat in the Southeast. In 2019, USFS funding was greatly diminished, and we needed to find alternate routes to funding. That has changed with the recently passed infrastructure bill containing \$300 million for large-scale stewardship projects. In 2022, stewardship agreement discussion has resumed between TU and GMNF/USFS. It has also led to furthering potential partnerships with the National Wild Turkey Federation and Roughed Grouse Society as the three organizations coordinate a range of habitat work from the uplands to the valley bottom.



Improving Habitat for Maine Brook Trout

CCF 2019 Grant: \$20,000

Leveraged Funds: \$1,530,000

2 miles restored and
8 restoration sites completed

CORE FUNDING LEVERAGED

With funding from the CCF, TU raised an additional \$30,000 and engaged for the first time in large wood additions in Maine, forming a long-term partnership with the Appalachian Mountain Club (AMC) to collaborate stream restoration on more than 90,000 acres managed by AMC in Maine. With AMC as a partner, TU subsequently successfully applied to U.S. Department of Agriculture (USDA)/Natural Resources Conservation Science (NRCS) for \$1.5 million in funding for stream restoration in Maine, New Hampshire, and Vermont over the next four years.

IMPACT & OUTCOMES

- TU planned and implemented two rounds of wood addition projects in the Middle Branch Pleasant River watershed in 2020 and 2021, restoring two miles of stream for brook trout and endangered salmon.
- An additional two miles of work are planned for the summer of 2022. With funding from the USDA/NRCS, we anticipate additional work to take place in 2023-2025, for a total of 10 stream miles in the Middle Branch Pleasant River.
- We approached this as a “start-up” and requested the full cost of the project from the CCF in 2020. Restoration work was funded in 2021 by the AMC, who also provided substantial planning assistance and lodging and meals for our field crew and have committed to do so through the end of the project.
- With the USDA/NRCS funding, we also anticipate restoration of an additional 15 miles of stream in 2022-2025 in other watersheds.



Battenkill Home Rivers Initiative

CCF 2019 Grant: \$40,000

Leveraged Funds: \$347,300

1 mile restored, **1.8 miles** reconnected and
235 volunteers engaged

CORE FUNDING LEVERAGED

In 2019, the CCF awarded \$40,000 to enable the launch of a new TU Home Rivers Initiative (HRI) for the Battenkill Watershed leveraging an additional \$347,300 in funding. This allocation was in support of great local support from multiple TU chapters (Adirondack, Clearwater, Southwestern Vermont, and Lake Champlain), the New York State Council, and other watershed partners. The contribution was part of an initial \$160,000+ in funding to initiate the HRI, following a field season of initial watershed research (and past data compilation) to identify impairments and priorities for restoration.

IMPACT & OUTCOMES

- In the two years since the HRI's launch (late 2019 /early 2020), immediate grant writing, fundraising efforts, and strong partnerships have allowed us to complete five restoration projects and one reconnection project, totaling one mile restored and 1.8 miles reconnected. Through the HRI, we have also planted 1,150 trees and engaged over 200 volunteers in our mission.
- TU connected with local communities to establish two Mayfly Sensor Stations along the Battenkill that are maintained and operated in conjunction with local schools. We completed a second season of redd surveys—identifying trout spawning beds throughout the watershed. These community science opportunities provide valuable data for future project prioritization.
- TU plans to take this excellent start even farther. Projects over the next two years should see another two miles restored, 5.5 miles reconnected, and at least 1,000 more trees and shrubs planted.



Driftless Area Program Expansion in Minnesota

CCF 2019 Grant: \$20,000

Leveraged Funds: \$600,000

2 miles restored with largest NRCS contract in Minnesota

CORE FUNDING LEVERAGED

With CCF funding, TU secured \$455,000 for a two-mile project—the largest Natural Resources Conservation Service (NRCS) “EQIP” contract for stream restoration that we have seen in Minnesota. This was only possible with CCF funding that enabled TU to hire a staff person who is putting in the work to coordinate with landowners and county field offices, provide technical assistance, and set the table for restoration projects. This is one of three NRCS contracts currently in the works in Minnesota totaling more than \$600,000.

IMPACT & OUTCOMES

- With over a year’s experience, TU’s Dusty Hoffman helped to secure more than \$2 million in state and federal funding for stream restoration. The Driftless, like other parts of the nation, is feeling the effects of climate change. On an almost yearly basis, one of our projects is hit with a 500-year flood (0.2% chance of occurring in any given year).
- Dusty is developing a maintenance program for southeastern Minnesota for the more than 50 miles of stream reach that have been restored since the start of the Driftless Area Restoration Effort. Dusty will play a key role in implementing TU’s 5-year strategic plan by engaging TU chapters and the public in Minnesota.



*Before and after—Rush Creek high bank removal to enhance floodplain.
Photo by Trout Unlimited Minnesota.*

New England Technical Assistance Program

CCF 2019 Grant: \$25,000

Leveraged Funds: \$350,000

30 miles habitat protected and
20 partner organizations engaged

CORE FUNDING LEVERAGED

TU staff in New Hampshire have used CCF funds to leverage over \$350,000 in grant funding to identify, prioritize, design, install, and protect close to 30 miles of coldwater habitat in five critical watershed basins: headwater tributaries to the Ammonoosuc, Androscoggin, Baker, Saco, and Pemigewasset rivers. We anticipate leveraged funds to complete initiated projects will total \$2,500,000.

IMPACT & OUTCOMES

- TU developed excellent working relationships with TU New Hampshire chapter members, White Mountain National Forest (WMNF) staff, a variety of state and federal partners, statewide non-governmental organizations, and surrounding communities/landowners.
- TU staff continue to raise partner funding from both federal, state and NGO sources. Recently we were successful in raising \$750,000, out of a multi-partner \$6.7 million-dollar NRCS grant, for our work targeting aquatic restoration and land conservation across NH. Our engagement in the WMNF region also leveraged another \$65,000 from the state for a dam removal (2022) as well as a \$20,000 community outreach grant from the NH Charitable Foundation to continue providing technical assistance to Coos County communities across the WMNF region. This continued success has built momentum, as well as additional funding, allowing TU to leverage a wide variety of state and federal funds through the recently passed infrastructure bill.
- Our team continues to focus mainly on reconnecting first order headwater streams for aquatic organism passage allowing brook trout access to prime spawning reaches. Additionally, our efforts also focus on reintroducing instream habitat using strategic wood additions. Our New Hampshire team currently has identified 15 targeted project sites, completed, or working on six full engineering designs, and implemented a major culvert to bridge replacement project. We anticipate installing four additional bridge projects in 2022 once final engineering designs and permits are completed over the winter.



A new bridge was installed over Ryan Brook under Perch Pond Road in Campton, New Hampshire

OUTREACH & EDUCATION

TROUT UNLIMITED VOLUNTEERS
RAISE OVER \$10 MILLION
ANNUALLY TO IMPLEMENT
PROJECTS THAT SERVE OUR
COMMUNITIES

3 Projects Funded 2015-2019

In a single year, TU volunteers report a total average of 737,194 volunteer hours to implement:

617 EVENTS & ACTIVITIES

500 FISHING TRIPS

420 CASTING LESSONS

SERVING **VETERANS**

1,668 EDUCATION
PROJECTS

1,000 YOUNG
ANGLERS
REACHED

LEADING **YOUTH**

1,078 CONSERVATION
PROJECTS

400 TU CHAPTERS
& COUNCILS

ENGAGING **VOLUNTEERS**

Click on project title for details

2015 PROJECT

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Summer on the Fly Program

CCF 2015 Grant: \$20,000

Leveraged Funds: \$6,000

Helped reach **1,000 young novice anglers**

CORE FUNDING LEVERAGED

TU's Headwaters Advisory Board donated an additional \$6,000 to support Summer on the Fly with a goal to expand fly fishing as an activity at summer camps across the country (to match the overwhelming success of archery). Based upon an agreement with the American Camp Association, and a corporate partnership with Texas-based fly rod manufacturer Temple Fork Outfitters, Summer on the Fly provides an introductory 5- or 10-rod kit so that summer camps situated on fishable lakes, streams, and rivers can offer a fly-fishing program to campers.



80% of overnight summer camps have archery programs, while less than 1% have fly fishing. Yet, over 80% of camp locations are on a fishable body of water.

IMPACT & OUTCOMES

- North Carolina continued to be the focus region in 2015 and beyond. Seed funding led to four additional camps adopting Summer on the Fly in 2018 and 2019, reaching over 1,000 young novice anglers. 2019 marked the third year that staff conducted a “train-the-trainer” course for camp staff, and TU’s 5 Rivers college program provided summer counselors.
- The production of a professional, promotional video enabled staff and chapters to market the program. The video was also used for online and social media platforms.
- TU overhauled the educational and marketing components of Summer on the Fly and created a new curriculum and logo. TU signed an agreement with the American Camp Association (ACA) in 2016, making Summer on the Fly an official partner with the ACA and its over 2,400 accredited member camps.
- Staff attended national and regional ACA conferences, where they conducted trainings and presented Summer on the Fly to camp administrators. Staff also traveled to Maine to work with a small group of camps and TU chapter leaders to start Summer on the Fly programs.
- TU worked with videographers and graphic designers, and led fly fishing training sessions for counselors, TU volunteers, and other camp staff. Trainings were done in partnership with the North Carolina Wildlife Resources Commission.

“Summer on the Fly provides a great opportunity for young people to experience the joy of fly fishing in a safe and fun camp environment... and the campers never forget the first time they land that once elusive fish.”

*–Catherine Schenck,
Fly Fishing Activity Coordinator
in North Carolina*

Veterans Service Partnership

CCF 2016 Grant: \$10,000

Helped support **25,000 hours** volunteer time for **1,100** fly tying sessions, **420** casting lessons, **500** fishing trips

CORE FUNDING LEVERAGED

CCF funding supported improvements to the efficiency and long-term effectiveness of TU's Veterans Service Project (VSP), which mobilizes the organization's huge grassroots potential in the service of military veterans through fly fishing and tying instruction, time on the stream, and conservation. TU's volunteer-run chapters and councils raise and spend over \$350,000 on veteran's services activities and events at the local level each year.

IMPACT & OUTCOMES

- Before the infusion of funding from the CCF, many chapters were operating independent of any centralized guidance, professional support, or operational plan. This funding resulted in a revised program guide and participation at four regional rendezvous, where over 100 volunteers were trained and supported in providing best-in-class program services for veterans and their families.
- In a typical (pre-COVID) year TU chapter and council volunteers spend over 25,000 hours hosting 1,100 fly tying sessions, 420 casting lessons, 500 fishing trips, and countless other forms of outreach to an estimated 6,000 veterans and their families who are brought into the TU family annually.
- Many veterans learn the joy and healing power of fly fishing, and share it with others through local chapters. Each chapter is a place where a passion and commitment to conservation is born and fostered.
- TU gives back to as many veterans as we can by sharing the healing aspects of standing in a cold, clear trout stream and extending the arm of our community support network. The CCF's investment in the Veterans Service Partnership directly impacts veterans' lives, aiding in their physical rehabilitation and recovery process for years to come.



Volunteer Operations Training

CCF 2018 Grant: \$10,000

Helped support **1,078** conservation projects, **1,668** education projects and **617** events and activities

CORE FUNDING LEVERAGED

During this fiscal year, TU volunteers raised \$10,715,125 in revenue and spent over \$9,646,017 on conservation, education, and other local projects to advance TU's mission. They also reported 737,194 volunteer hours, which are valued at \$18,201,320 using the Independent Sector's estimated value of volunteer time. The CCF volunteer training grant helped to catalyze these accomplishments.

IMPACT & OUTCOMES

- CCF funding helped develop a series of online trainings to equip volunteer leaders with the skills and tools needed to efficiently ensure that TU's extensive grassroots network—thousands of individual volunteers, hundreds of local chapters, state councils, and the national leadership council—remains vital, effective, and well-led.
- We held three strong regional meetings in the spring of 2018. Over 200 volunteers participated in the western meeting in Colorado, over 100 volunteers participated in the first ever southeast meeting in West Virginia, and 125 volunteers participated in the northeast meeting in New York.
- One of the most important outcomes was the use of online, webinar-based trainings to reach hundreds of volunteers each quarter who cannot attend in-person conferences, and to deliver more tactical sessions with focused topics. 359 volunteers attended one of 11 online trainings, and thousands of volunteers participated in online recordings.



CONSERVATION SCIENCE

13 Projects Funded 2015-2019

1,353 sample collections
for eDNA monitoring

Thermal measurements
collected on **45 river miles**

200 algae kits used
by citizen scientists

Mayfly Datalogger
monitoring
800 stream miles

WiseH2O mApp

Interactive maps &
data visualization
tools

RIVERS App

Eastern Brook Trout Atlas

Remote sensing tools
using satellite imagery
& drone flights

Lahontan Cutthroat Trout
Population Simulator

Click on project title for details

2015 PROJECTS

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2019 PROJECTS

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Angler-Based Monitoring of Didymo and Associated Algal Blooms

CCF 2019 Grant: \$5,000

Distributed **200 kits** to anglers and collected geolocated photographs and data

CORE FUNDING LEVERAGED

To address this highly invasive species, TU staff worked with scientists from universities and agencies in the U.S. and Canada to refine scientific questions and develop a set of data items that community scientist volunteers could collect in their local streams. Didymo is a microscopic algae that creates dense mats of algal blooms commonly known as “rock snot,” and smothers underwater surfaces and beneficial aquatic insect communities. Scientists working on this nuisance species asked for help from anglers to collect and photograph algal samples to determine the natural and introduced distribution.

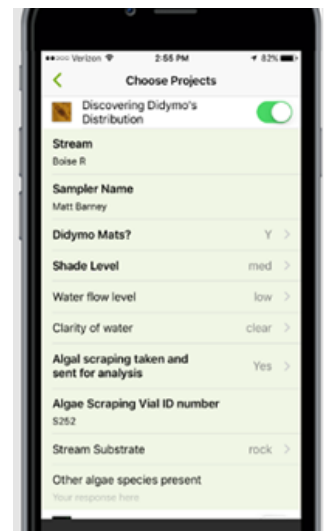


CHALLENGES FACED & LESSONS LEARNED

This pilot project generated substantial interest among TU membership in the southeast. However, we had limited success in getting other project partners focused on a scientific question which made it difficult to design a goal-oriented strategy. It was also challenging to identify a lab that could process our samples consistently. Still, with the foundational work completed and the addition of TU engagement positions, this work could be restarted if a suitable lab is identified that is able to commit to timely sample processing.

IMPACT & OUTCOMES

- TU assembled and distributed 200 kits to enable anglers to collect samples from their local streams by scrubbing algae from streambed rocks, placing the collected material into a preservative tube and mailing it to a university lab for testing.
- TU staff developed a mobile app and user manual using the platform iNaturalist to enable participants to collect geolocated photographs and supporting data about the conditions in the area sampled.
- TU invited a scientist who studies Didymo to speak at the 2017 southeast regional TU meeting, and we distributed sampling kits to volunteer leaders who attended, generating strong interest and support.



A New Tool for Chapter-Based Fish Population Monitoring & eDNA Monitoring for Native Trout Restoration Phase II

CCF 2015 & 2016 Grants: \$10,000 & \$17,000

Leveraged Funds: \$84,565

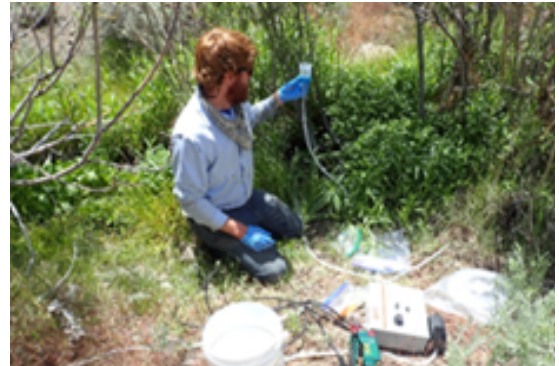
1,353 sample collections for eDNA detection of Lahontan cutthroat trout

CORE FUNDING LEVERAGED

TU leveraged \$84,565 in funding from the National Fish and Wildlife Foundation (NFWF). Our work led to the purchase of two additional sampling kits by the Nevada Department of Wildlife (NDOW). CCF funding also enabled unaccounted, collaborative work by agency staff. CCF funding enabled TU to collect Environmental DNA samples—“eDNA” is a new tool for documenting the occurrence of various species by detecting genetic material sloughed off within a sampled habitat. eDNA detection is highly sensitive, and is used to refine our basic understanding of trout distributions, especially for rare species which can be particularly difficult to detect with other methods.

IMPACT & OUTCOMES

- Three sampling pumps and necessary equipment were purchased for the National Science office and for our Lahontan cutthroat trout (LCT) work in Nevada, Oregon, and California.
- TU worked with the U.S. Forest Service’s (USFS) National Genomics Center to develop and publish a new eDNA marker for Lahontan cutthroat, now available to the scientific community, managers, and the public for general use.
- We hosted TU Native Trout Odyssey students on a field trip to collect eDNA samples for bull trout in Payette River ID. These samples were integrated into the USFS bull trout eDNAAtlas.
- Oregon chapters were provided with equipment to collect eDNA in roughly 15 locations in North Creek, querying for steelhead, coho salmon, Chinook salmon, coastal cutthroat, and pacific lamprey. We also helped chapters in Maine develop proposals for eDNA sampling of heritage brook trout ponds.
- TU funded and assisted with a massive effort to sample for non-native rainbow trout and brook trout in the remote and difficult-to-access Marys River in Nevada. 653 samples were collected over 102 miles. We resolved the location of the unfortunate “positive hits,” which was tremendously helpful for LCT conservation planning.
- TU used eDNA for several non-native trout eradication and LCT reintroduction efforts, and for ongoing LCT sampling in several streams in McDermitt Creek. The eDNA confirmation that Cottonwood Creek, a tributary to Walker Lake, was fishless enabled NDOW to reintroduce LCT in this stream, establishing the newest LCT population in the Walker Basin in Nevada.



Mapping the Way Home for Steelhead: Helping an Iconic Fish in Times of Hot Water

CCF 2015 Grant: \$10,000

Thermal measurements collected on
45 river miles of the Umpqua River

CORE FUNDING LEVERAGED

CCF funding enabled us to help identify where restoration efforts could produce the greatest benefit, by setting out to apply in-river thermal measurements to produce a detailed map of mainstem Umpqua River temperatures. This map would determine which areas lack cool water refuges. We could then create additional cool-water sites by restoring riparian habitats and natural channel designs to degraded tributary streams by adding structure to scour out deep pools or by restoring channel complexity.



IMPACT & OUTCOMES

- Dean Finnerty, TU staffer and registered guide who lives along the lower Umpqua River, was enlisted to do the field work required for this project. His knowledge of the river (and his boat) was an invaluable resource. TU provided the temperature sensors, GIS equipment, and gear necessary to create a multi-layer boom capable of being towed behind a small boat to collect a vertical profile of water temperatures.
- Dean enlisted his wife and youngest son to help collect data, and got much of the lower Umpqua River mapped from the Big K Guest Ranch down to tidewater at Scottsburg, Oregon (approximately 45+ river miles). The initial effort proved that the technique worked, and that gathering the data from the boat and recording essential GPS coordinates was relatively easy.

CHALLENGES FACED & LESSONS LEARNED

Dean was unable to complete the full scope of this work due to personal circumstances and a changed role at TU, however, the equipment is still available and was proven to be successful, thus we could reestablish this project in the Umpqua River (or elsewhere) if an appropriate staff person and funding can be identified.



Eastern Brook Trout Atlas: A New Resource for Discovering Conservation Projects and Fishing Opportunities in the East

CCF 2016 Grants: \$16,500

Cutting-edge, mapped information assembled across **13 eastern states**

CORE FUNDING LEVERAGED

Funding made it possible to assemble mapped information related to brook trout populations, the status of their habitats, threats, and opportunities for conservation across the species' eastern range. The tool created—The Eastern Brook Trout Atlas—presents several themes of data within a cutting-edge interactive web application which allows users to select layers to show on the map, pan, and zoom to an area of interest, click on layers for more information, and change reference base maps.

IMPACT & OUTCOMES

The Eastern Brook Trout Atlas enables users to:

- Explore the location of recent TU projects within the species' range.
- Explore the results of TU's Conservation Portfolio, a framework to evaluate each brook trout population for its resiliency to disturbances, likelihood of demographic persistence, and representation of elements of diversity.
- Investigate riparian vegetation or the location of culvert and fish passage barriers to identify potential conservation opportunities, or learn about advocacy priorities.
- Plan fishing trips through the visible identification of public lands locations and trout stream designations.
- Gather information on the location of protected federal, state, and other conservation lands that protect several brook trout populations.
- Explore the pattern of modeled stream temperatures and ongoing stream temperature monitoring efforts within the eastern range of brook trout.
- Gain information on existing oil and gas wells and proposed natural gas pipelines, as well as headwater streams in the eastern range of brook trout.
- View the pattern of potential fish passage barriers in the form of road-stream intersections to assess road culverts that can impede fish passage and fragment habitats.



Promoting Chapter-Based Stream Temperature Monitoring

CCF 2016 Grants: \$15,000

Leveraged Funds: \$30,000

Developed **data visualization resources** and western webmap

CORE FUNDING LEVERAGED

CCF funding helped TU secure \$10,000 from the Idaho Bureau of Land Management and \$20,000 from the Nevada Bureau of Land Management to promote the collection of stream temperatures by chapters to monitor stream health in the face of climate change.

IMPACT & OUTCOMES

- A comprehensive Stream Temperature Monitoring Handbook was developed, which includes goal setting based on temperature monitoring, and how to select, deploy, and retrieve a temperature logger. The handbook was printed and distributed to volunteers at TU's regional meetings.
- Additional resources were developed, such as a webmap to help TU chapters decide where to monitor. The webmap contains background information on native trout streams and other spatial data to inform chapter-based monitoring efforts.
- Data visualizations resources were developed for certain portions of the country to visualize temperature data collected. These tools allow a user to visualize temperature data from a site over the period of record for given temperature metrics (e.g., seven-day weekly maximum) with respect to thermal tolerances of native trout in the region.



FIGURE 7. TIDBIT FASTENED INTO PVC CAP USING A TIE STRAP (ZIP TIE).



FIGURE 8. PVC HOUSING FIXED TO REBAR USING A NYLON STRAP (ZIP TIE).

Links to resources developed:

[Stream Temperatures Monitoring Handbook](#)

[Western Webmap for Monitoring](#)

[Redband Trout Stream Temperature Visualization Tool](#)

[Lahontan Cutthroat Trout Stream Temperature Viewer](#)



Developing Decision-Support Tools to Improve At-Risk Trout Population Management

CCF 2016 Grants: \$18,000

Leveraged Funds: \$1,200,000

Developed the **Lahontan Cutthroat Trout Population Simulator**

CORE FUNDING LEVERAGED

CCF funds leveraged over \$1.2 million in research grants from the National Aeronautics and Space Administration (NASA), Bureau of Land Management, and U.S. Fish and Wildlife Service (USFWS). With four years of NASA funding and a host of collaborators, TU developed a new, data-driven modeling approach used for estimating extinction risk in trout populations. CCF funds supported the incorporation of the results of these complex models into newly-created, approachable end-user tools that allow partners to evaluate the effects of management actions in ways meaningful to them. The benefit of developing this tool cannot be overstated in terms of linking our models to actual decision-making for Lahontan cutthroat trout (LCT) recovery needs on the ground.

IMPACT & OUTCOMES

- The LCT Population Simulator was developed, a web-based tool now being used to inform recovery needs for this threatened species. This tool is also being used by the Fish and Wildlife Service to evaluate LCT risk related to needs, such as drafting biological opinions for grazing permits and developing the updated goals and objectives for range-wide LCT management.
- TU staff met with agency partners to gain their consistent input on meaningful metrics and engagement needs for evaluating model results. The decision support tool allows the relevant management agencies to evaluate risk information in ways that are meaningful for them, and this is what has connected our science to actual recovery planning for LCT.
- TU provided quantitative estimates of extinction risk across 84 LCT populations based on all available field sampling data from 1985 to 2016. Six conservation populations currently prioritized for recovery planning have a 70 percent or greater probability of extinction by 2045, and 11 more are at or above 20 percent risk of extinction.
- Our science and model outcomes were published in a series of 3 peer-reviewed papers.



TU hosted a series of meetings with LCT management partners to field input and provide training on our end-user tool.

Water Quality Monitoring Using the Mayfly Datalogger

CCF 2017 & 2019 Grant: \$25,000 & \$30,000

Leveraged Funds: \$49,034

Water quality sensors
monitoring **800 stream miles**

CORE FUNDING LEVERAGED

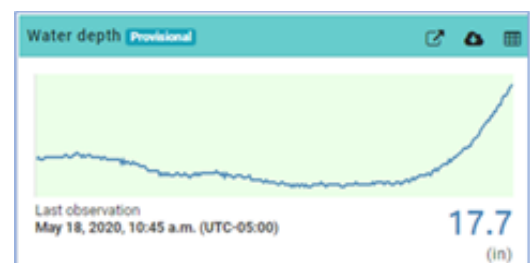
CCF funding helped TU secure leveraged funds of \$12,250 from the Stroud Water Research Center and \$36,784 from the Brookby Foundation to use the Mayfly datalogger as a low-cost, DIY-friendly water quality monitoring station designed by Stroud Water Research Center. CCF funds were also used to leverage additional funding sources to train staff and deploy Mayfly stations in the Rogue and Pere Marquette Rivers in Michigan.



Mayfly station on a Delaware River tributary.

IMPACT & OUTCOMES

- TU staff (Matt Barney, Science; Jake Lemon, Eastern Conservation) attended a training session in Pennsylvania, hosted by Stroud Water Resource Center, to learn the assembly, programming, and implementation of Mayfly stations. The installation of Mayfly water quality monitoring stations engages community scientists and builds a broader community science capacity within TU. Data is uploaded in real time to the internet. Anglers, resource agencies, and community members can view parameters such as temperature, depth, turbidity, and conductivity updated in 5- to 15-minute intervals.
- Two Mayfly stations were installed in the Delaware River Basin in Pennsylvania and paired with existing water quality monitoring stations along the proposed route of the PennEast Pipeline.
- Two additional stations were installed on Monocacy Creek in Northampton County, Pennsylvania, to document future pipeline-related impacts and other threats to water quality.
- TU staff are employing Mayfly stations in Oregon's Klamath Basin to monitor conditions before and after restoration projects, both upstream and downstream from restoration treatments.
- TU developed our own in-house expertise to train our volunteers and partners to deploy and care for Mayfly stations in new geographies, working with new collaborators.
- With CCF's support, the current number of TU's monitoring stations has increased to 30, and we expect the number of stations to continue to grow significantly in future years.



Real-time Water Depth Plot

Brook Trout Portfolio Southern Appalachian Focal Area Assessment & Visualization Tools

CCF 2017 Grant: \$15,000

Leveraged Funds: \$150,000

Assessed nearly **10,000** habitat patches covering **2.3 million** acres

CORE FUNDING LEVERAGED

The National Fish and Wildlife Foundation awarded \$150,000 to TU to develop data and methods for brook trout assessment. TU created a new tool to identify potential projects and facilitate the development of common priority criteria with the U.S. Forest Service (USFS) for evaluating fish passage projects in the Southern Appalachian Mountains of North Carolina, Tennessee, South Carolina, and Georgia.



IMPACT & OUTCOMES

- An interactive decision support tool was developed to assist TU staff and USFS in identifying new and priority opportunities for fish passage improvements in the Southern Appalachian region to benefit native brook trout. The tool uses data from the Southern Appalachian region to update TU's range-wide brook trout conservation portfolio assessment.
- TU determined with range-wide data that the Southern Appalachian region contained just over 1,200 distinct brook trout population patches. Overlaying regional fish passage datasets clarified that those populations are much more fragmented, and that closer to 10,000 brook trout population patches exist on the landscape.
- TU determined that this means we need to reconnect streams that are fragmented by fish passage barriers to create larger, more interconnected systems that enable brook trout to respond better to environmental disturbances, such as the drought and fires that affected the region in 2016.
- This tool enables users to interact with an online map to apply filters related to characteristics of each brook trout population patch. TU staff are using the information in the tool to evaluate and prioritize culvert replacement projects, showing where adjacent brook trout habitats may offer the chance to remove barriers and combine smaller patches into larger, more resilient blocks of habitat.
- Importantly, the tool has helped identify important data gaps, and our eastern staff have been working with a cadre of angler scientists to conduct fish passage surveys to update this needed information.



Link: [Eastern Brook Trout Conservation Portfolio](#)

Innovative Monitoring Technologies

CCF 2017 Grant: \$25,000

20+ stream miles monitored with innovative photography

CORE FUNDING LEVERAGED

With CCF funding, TU was able to explore two new monitoring tools to evaluate restoration projects: drone-based aerial photography and ground-based 360-degree photography.

IMPACT & OUTCOMES

- CCF funding enabled us to acquire a drone and 360-degree camera to test these new technologies on restoration sites in Idaho, Wyoming, and Oregon. Our preliminary evaluation has identified numerous applications for these technologies, and highlighted key areas of guidance and expertise we can provide to ensure that TU staff can effectively use these new tools.
- We identified existing drone users to understand the existing and potential applications of drone-based monitoring. This allowed us to evaluate specifications for the drone (e.g., camera type, flight time, etc.) and post-flight image processing software.
- We acquired a DJI Phantom 4 Pro quadcopter drone and selected DroneDeploy as the preferred image processing software. Simultaneously, Matt Barney, senior programmer with the science program, acquired his Federal Aviation Administration drone license, a necessary requirement for professional drone use.
- Matt Barney traveled to TU restoration sites in the Grande Ronde Basin of northeast Oregon, Hoback, Salt, and Greys River Basins of western Wyoming, and Blackfoot Basin of eastern Idaho to acquire pre-treatment imagery and generate 3-D surface models using the drone. Based on the quality of these products, additional TU staff have requested drone flights as their projects progress.
- TU science staff have used the experience gained evaluating drone-based monitoring to create an internal TU drones forum, where relevant staff exchange lessons learned and best practices from using drones in their respective projects. In collaboration with a local TU chapter, we have also conducted drone demonstrations for Trout Camp, providing conservation-centric STEM exposure for teens and pre-teens.
- Additionally, TU science staff acquired a Samsung Gear 360 camera and collected pre-restoration images of the Cottonwood Creek daylighting project in downtown Boise, Idaho. The imagery is publicly available in the Google Street View application. We've also collected 360-degree imagery of the Sheep Creek restoration project in northeastern Oregon.



Example of a TU drone imagery of an inundated side channel in Yankee Fork, Idaho

RIVERS App Development and Training for Volunteers for Efficient Restoration Strategies

CCF 2018 & 2019 Grant: \$37,000

Leveraged Funds: \$16,967

2,378 observations of disturbances
on trout streams

CORE FUNDING LEVERAGED

With CCF funding, TU to leverage \$16,967 of volunteer time to complete 2,378 observations of disturbances made on trout streams across the U.S. CCF funding supported the development of a mobile application for use by TU grassroots volunteers and staff—called the RIVERS app (River Inventory by Volunteers for Efficient Restoration Strategies mobile Application)—that facilitates data collection and photographic documentation of stream and river disturbances. The app connects to a database that can then be used to by TU chapters and staff to prioritize restoration projects in their home waters.

IMPACT & OUTCOMES

- The RIVERS app allows anyone, not just TU volunteers, to download the app and collect information on disturbances, whether it is while they are out fishing or during a targeted watershed assessment. They can document various types of disturbances ranging from fish passage barriers, streambank erosion, chemical or thermal pollution, fish kills, and more. Trainings on the use of the RIVERS app were conducted at three of the four TU regional meetings in 2019 (all except the Western Regional meeting).
- TU located fish-stranding pools on the Snake River near Jackson, Wyoming, due to a rapid drawdown of the river by U.S. Bureau of Reclamation. The stranding pool locations were marked with the RIVERS app along with photo documentation. A multi-agency project team that included TU staff reviewed stranding pools and conducted fish salvages at some of them. The information will be compiled in a report to leverage Reclamation to manage river flows in a more fish-friendly way in the future.



Resources Developed:

[RIVERS Webpage](#)

[RIVERS Webmap of Disturbances](#)

Blog posts links:

[RIVERS app Helps Anglers Gather Stream Info](#)

[TU Family Field Trip: Become a RIVERS Ranger](#)

[TU RIVERS app Inspires Kids to Clean-up their Local Creek](#)

Decision Support Tool Development

CCF 2018 Grant: \$25,000

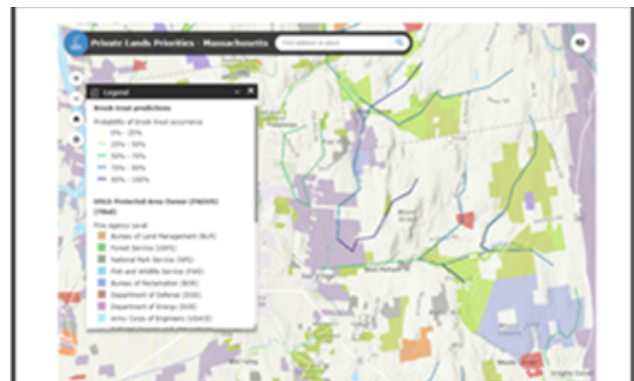
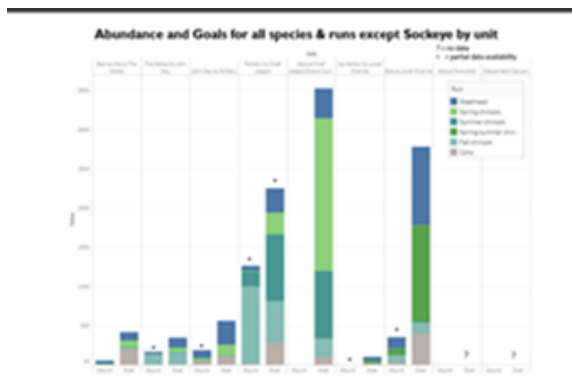
Thermal data collected on **45 river miles**

CORE FUNDING LEVERAGED

The CCF Board allocated \$25,000 in 2018 for the development of decision support tools to support TU programs across the country. Mapping and data visualization are core skills of TU's science program. Our decision makers and partners—whether TU staff, grassroots, agency managers, NGOs, industry, politicians, or funders—are best served when we can use these skills to help them make informed decisions. Our scientists package the best available science and data to empower staff and partners to apply resources toward our mission efficiently and effectively.

IMPACT & OUTCOMES

- TU worked with TU's Massachusetts volunteers to create an interactive mapping tool for evaluating brook trout habitat and conservation lands to identify potential partnerships with land trusts.
- A data visualization tool was created for the Columbia Basin Partnership which contrasts current salmon and steelhead abundance with recovery goals to highlight those places in the basin with the greatest potential for recovery.
- An interactive map and data visualization tool was produced to assist a new TU staffer in identifying opportunities for fish passage assessment and barrier removal in the Chequamegon-Nicolet National Forest in Wisconsin.
- TU scientists have continued to build on these skills, developing several more decision support tools since acquiring the CCF grant. These have become one of the flagship products that TU Science uses to support our programs and partners. Examples include the Colorado Abandoned Mines tool, Critical Minerals mapper, and the Upper Columbia Beaver-Powered Restoration Decision Support Tool.



Remote Sensing Effectiveness Monitoring

CCF 2018 Grant: \$30,000

Leveraged Funding: \$30,000

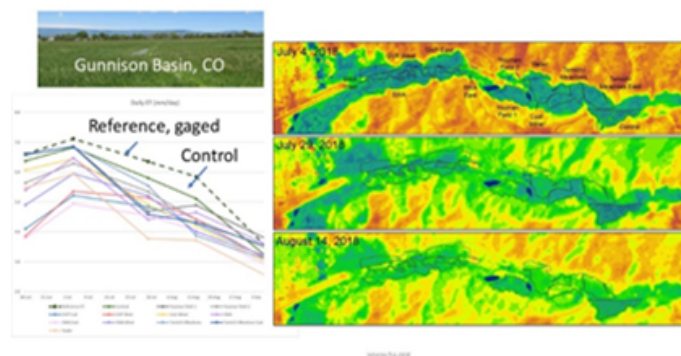
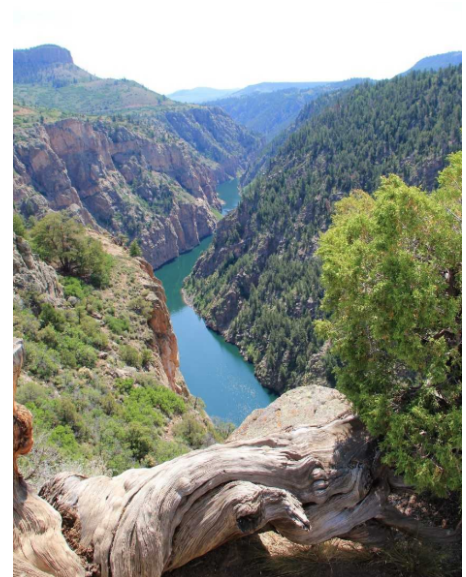
Application of **remote sensing**
in the Gunnison River

CORE FUNDING LEVERAGED

CCF funding helped TU leverage an estimated \$10,000 to co-develop the on-the-ground application and \$20,000 from the Bureau of Land Management to internally develop skills to analyze satellite imagery. This funding supported the continued development and application of TU's remote sensing skills and tools ranging from cloud-based satellite imagery analysis to on-demand drone flights. These tools enable TU to be more efficient and effective in the way that we monitor our work and communicate our successes.

IMPACT & OUTCOMES

- CCF funding enabled TU to refine and develop our skills in one of the most pressing and exciting applications of remote sensing, particularly in the west—the potential ability to quantify vegetative water use related to agricultural practices and/or habitat restoration work.
- TU worked with TU's Gunnison Basin staff in Colorado to learn how to produce satellite-based evapotranspiration (plant water use) maps. These were applied for monitoring project implementation and success following a water purchase agreement that ended late season irrigation. With this approach, we can evaluate retroactively the amount of evapotranspiration—and thus water used—across a broad landscape, taking different snapshots of status over time to quantify gains realized from fallowing crop fields.
- Learning to apply this new aspect of remote sensing to this type of TU program work has positioned us well for what is already a fast-expanding need at TU. As we bring in a new Director of Geographic Information Systems Science, we will turn this foundational knowledge into a working understanding of OpenET, a just-released Google Earth Engine-based platform for analyzing satellite-derived data to quantify evapotranspiration. We anticipate that this will be a primary area of focus for us in collaboration with TU program staff in the future.



Driftless Water Quality Monitoring Using the WiseH2O mApp

CCF 2019 Grant: \$27,000

Leveraged Funding: \$37,000

Protecting **600+** designated trout streams and
6,000 miles in the Driftless Area

CORE FUNDING LEVERAGED

CCF funding helped TU secure additional funds of \$30,000 from the National Fish Habitat Partnership and volunteer hours of \$7,000 to engage TU volunteers and partners to crowdsource water quality information in the Driftless Area using the WiseH2O mobile application. TU expanded the program to the entire Driftless Area in 2020, where it will continue into 2022 and beyond. The data collected will ultimately inform TU: (1) where water quality is a problem; (2) where more detailed confirmatory studies are needed (nutrient hot spot identification); and (3) where stream protection and restoration may be needed in the Driftless Area.

IMPACT & OUTCOMES

- Water quality information was crowdsourced throughout the Driftless Area in Minnesota, Wisconsin, and Iowa. Over 500 observations have been collected. This data shows where, for example, high nutrient levels have been observed.
- Since WiseH2O mApp has an educational component, users also learn about water quality in the stream where they completed an observation.
- Enhancements to the WiseH2O mApp developed by MobileH2O, LLC have been leveraged. Videos and instruction manuals have been developed to engage and train users. We worked with TU chapters (e.g., Kiap-TU-Wish, Hiawatha, Twin Cities TU Chapters) and individuals to provide on-site training and develop specific monitoring plans using the mApp (Kiap-TU-Wish monitoring plan). With CCF funding, over 100 free basic and premium test kits were distributed to 12 TU chapters, as well as the Iowa, Minnesota, and Wisconsin Departments of Natural Resources, and the U.S. Fish and Wildlife Service.
- TU chapters and agency partners were engaged at workshops during the annual Driftless Symposium, one-on-one meetings, online webinars, and professional conferences.

Resources Developed:

[WiseH2O Project Webpage](#)

[Webmap of WiseH2O Observations](#)

[WiseH2O Training Resources](#)

[Shop for Test Kits](#)

[2019 Driftless Report](#)

[2020 Driftless Report](#)



THANK YOU

Together, we are working to protect, conserve, and restore wild and native trout and salmon. Your generous support helps to ensure that future generations will know the joy of fishing for trout and salmon, and be the beneficiaries of the healthy watersheds in which they live. Coldwater conservation is a legacy that matters to all of us living downstream.

The Coldwater Conservation Fund is a collaboration between a group of committed and generous supporters and Trout Unlimited's conservation leaders, that simultaneously provides annual support for critical needs and a forum for learning, discussion, and decision-making.

All donors who make a commitment of at least \$10,000/year for five years become members of the CCF Board which meets once a year to distribute that year's fund by vote.

If you are interested in learning more about the CCF Board, please contact:

Stephen
Trafton
Managing
Director,
Coldwater
Conservation Fund



54 Portsmouth Street
Concord, NH 03301
Stephen.trafton@tu.org
703-408-9401