

The Freshwater Trust

QUARTERLY

WATER

REPORT

Q2
2020





HELLO



DEAR FRIENDS,

Here at The Freshwater Trust (TFT), we are entering restoration season, a narrow window when months of effort and planning come to fruition. We can finally get outside and take dreams to dirt. This year, we're installing 33 large wood structures in the Sandy Basin to improve fish habitat, as well as kicking off two new streamside planting sites in the Willamette basin to create shade and reduce water temperatures. Late spring also marked the start of the irrigation season, when many of our streamflow restoration agreements kicked in across eight basins in Central and Eastern Oregon to protect crucial instream water for fish.

While the implementation of these projects might get all the attention and excitement, the true ecological value of them becomes most apparent as time passes. Trees grow and shade the stream. Large wood scours out and deepens pools, and migratory fish return to complete their life cycles in streams that once risked running dry. Showing the long-term value, and thus telling the whole story of these projects, is only possible with high quality, regular monitoring. That's why each summer, myself and a few others spend hours assessing the status and trajectory of project sites across all of the basins where we work. You'll read about more specific examples in the following pages.

However, none of this work happens in a vacuum, and we are not immune to the goings-on of the world around us. Since March, TFT staff have been working to find ways to fix rivers while maintaining safe social distance and following state guidelines.

While our offices remain closed for the foreseeable future, our field staff will still be out on rivers this summer, making sure that our restoration is connected to real, tangible results. It's only because of our partnerships with individuals and businesses that we are able to make that happen. Thank you for being a part of this work, and stay well.

Daniel Baldwin
Restoration Monitoring Coordinator



Olivia Duren, restoration ecologist with The Freshwater Trust

Monitoring Season Not Cancelled

Olivia Duren's job requires resilience.

"There are rattlesnakes," said Duren. "The blackberry bushes will shred your toughest work pants. There's smoke in the air. Oh, and the wasps, bees and hornets are usually angry."

Olivia is an ecologist and full-time employee in The Freshwater Trust's (TFT's) monitoring department. She just began her seventh season of field work.

When she started in 2013, there were five revegetation projects to monitor. Last year, there were 27.

Monitoring is a critical part of TFT's restoration cycle. The organization employs five full-time staff and five part-time, seasonal positions that contribute to monitoring.



One of The Freshwater Trust's large scale restoration projects in the Rogue basin

"The time and effort we spend monitoring are not common," said Duren. "Many restoration projects are funded by grants, and the single goal for those grants is getting the work done and getting it on the landscape. There's rarely funding or time allocated for making sure those projects are succeeding long-term, much less quantifying the impacts of them."

The revegetation projects Olivia monitors for TFT are implemented for compliance. Contracts are signed with entities that have mitigation obligations, such as a municipal wastewater treatment facility, to offset the impacts of their operations through restoration or conservation actions. For this reason, they are closely monitored to ensure intended outcomes.

"They need to stand up to a lot of scrutiny," said Duren. "We have set, defined benchmarks that translate to positive ecological impact, and we are going out there year after year and specifically assessing if the projects meet them."

TFT manages more than two dozen revegetation projects in Oregon, where native trees and shrubs have been planted along streamsid es that had once been overtaken by invasive species or been mowed over for farmland. The new plants will grow to shade the water, keeping it cool for native fish species, filtering runoff, and ensuring wastewater treatment facilities and other entities are in compliance with the Clean Water Act (CWA).

MONITORING

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Inside one of Plant Oregon's greenhouses, a local nursery that supplies The Freshwater Trust with many plants for its restoration projects in Southern Oregon

Between May and September, Olivia and other full-time and seasonal staff travel across the state to assess the health of the projects and collect critical data, quantifying and verifying impact.

"We are giving them more than a once over," said Duren. "We spend days monitoring a site and go above and beyond to make sure that the data we gather while we are out here is robust, transparent and defensible. Pretty much nothing we do at TFT is a waste of time. And we continually try to learn from the results, to always improve. In fact, we've been able to layer on field trials to some projects and collect research data at the same time as we monitor."

Tree canopy and height are measured, along with development of native shrubs and herbs in the understory, and species composition to make sure that young forests are diverse and resilient. Cover of invasive species, signs of animal disturbance, and function of irrigation and other infrastructure are recorded to guide planning for management. All of these factors are measured at each project for 20 years, providing an unparalleled look into forest development across the state.

The data, including measurements and photos from the projects, are input into TFT's Streambank Monitoring Application, a mobile-friendly platform that allows results to be easily analyzed and reported back.

"We used to do all of it by hand," said Duren. "Now the tracking and collecting of data we have to do to ensure our projects are having an impact is much less tedious, and we get the results right away."

Every year, new photos are taken in the same, key places throughout a restoration project. The result is a visual chronicle of how a project has changed over time.

"It's so satisfying," said Duren. "These images are just one more way we prove that we are sharply focused on results – and photos are an easy way to share that with everyone."

Olivia and her team will be back for images and measurements this summer, despite the rattlesnakes, smoke, bees and now a pandemic. Because of the outdoor, dispersed nature of our work, neither TFT nor its local restoration partners fall into a category of businesses shut down by Oregon's recent executive order. However, the organization and its subcontractors are closely tracking federal, state and local laws related to the outbreak.

"It's not just good news that we can continue monitoring, but that we can keep implementing projects as well," said Duren. "Fixing rivers employs people and supports many small, rural businesses that need it."

To ensure the best, most adapted plants are used, thousands of dollars in native trees and shrubs are purchased from local nurseries throughout Oregon to implement projects like these. These forests are meant to last, and investing in high-quality plant material is worth it to put a tree in the ground that will be around for hundreds of years.

"Our projects are designed to be resilient in the face of adversity," said Duren. "By continuing our work, local economies can be, too."



The photo on the left was taken before the restoration project began. The photo on the right was taken six years later in the same place

MILL RACE

Native streamside vegetation thrives on the Springfield Mill Race seven years after planting. The Mill Race project is one of three riparian reforestation projects that The Freshwater Trust (TFT) is working on alongside the Metropolitan Wastewater Management Commission (MWMC) of Eugene and Springfield, and the McKenzie Watershed Council. These projects were identified as high priority for protecting fish habitat and water quality, and together provide essential shade and block 15.5 million kilocalories of solar load to the Mill Race (tributary to the Willamette River) and Cedar Creek (tributary to the Willamette River).



SANDY

A year after TFT worked to reconnect a historic side channel of Lost Creek, water now flows to create safer overwintering and spawning habitat for winter steelhead, spring Chinook and coho salmon. Prior to restoration in the Sandy River Basin, many historic side channels were disconnected from the mainstem by lateral berms installed in the 1960s and 70s, removing critical habitat for native fish populations. Over the past decade, TFT has restored function to more than 23,000 functional linear feet of stream.



ROGUE

A year after planting, more than 7,600 native species, including a diverse mix of native trees and shrubs, flourish along the mainstem of the Rogue. Formerly a part of the historic Kendall mining complex, this bank was once dominated by a variety of invasive plants, including Himalayan blackberry, poison hemlock, common teasel, garlic mustard and reed canary grass. In addition to increasing instream shade, this emerging riparian forest will provide important ancillary benefits over time, such as reducing excessive nutrient and sediment inputs to the stream, and contributing valuable habitat for the largest wild fish population in any of Oregon's coastal rivers.





SPOTLIGHT

Partnership with American Farmland Trust Will Benefit San Joaquin Valley

The AFT and TFT partnership will engage up to 200 landowners on conservation plans to increase recharge potential and water conservation on lands encompassing at least 100,000 acres

American Farmland Trust (AFT), whose mission is protecting farmland, promoting regenerative agriculture and helping farmers thrive, has joined forces with The Freshwater Trust (TFT). The regional nonprofit river restoration and water conservation organization will employ a new tool to help AFT identify and prioritize on-farm projects and easements that will result in the greatest outcomes for surface and groundwater resources in the San Joaquin Valley.

The team will employ TFT's BasinScout® Platform, an interactive tool, co-developed by TFT and Upstream Tech (UPS), for prioritizing and tracking outcomes of site-specific agricultural management and conservation actions towards watershed goals.

AFT received a grant of \$10 million through the Natural Resources Conservation Service's (NRCS) Regional Conservation Partnership Program to work collaboratively with farmers and ranchers to address some of the region's pressing water quality and quantity challenges and to protect the farmland with the greatest potential for groundwater recharge. The BSP will help guide where best to take action in Madera County.

"AFT looks forward to using this cutting-edge technology on this important collaboration, which will prioritize the most effective conservation projects on the ground in this critical food producing area," said Kara Heckert, AFT California regional director.

Using satellite imagery and public and private data sets, BSP identifies the most cost-effective projects - and combinations of projects - that increase infiltration and minimize irrigation demand, flood risk, and sediment and nutrient runoff.

"Put simply, our tool will help AFT figure out how to get the biggest bang for their buck," said Nick Osman, conservation project manager for TFT. "It can quickly assess where improvements such as irrigation upgrades or cover cropping would make the biggest difference. They'll be able to use their grant dollars in the most cost-effective and outcome-focused way possible. Conservation and restoration projects should always have this type of data and knowledge behind them, but unfortunately it's rarely the case."

In addition to improving the strategic planning of projects, the platform will also help AFT track the benefits of projects as they are implemented throughout the five years of NRCS funding, to quantify the ground and surface water benefits achieved.

TFT's work in California centers upon the Sacramento-San Joaquin Valley, also known as the "nexus of California's statewide water system." While the largest agricultural producing region in the state, it faces significant groundwater and surface water challenges that are expected to increase in severity with climate change, such as the loss of Sierra snowpack and increased evapotranspiration, or the loss of water into the atmosphere.



Parched rivers, subsiding aquifers and a dry Mediterranean climate in the Sacramento-San Joaquin Valley have provided California and TFT the opportunity to consider new approaches for integrated water resource management

The Sustainable Groundwater Management Act, a California law passed in 2014, mandated the creation of Groundwater Sustainability Agencies (GSAs), local groups that are responsible for ensuring regional groundwater supplies are sustainably managed. The GSAs are charged with developing and implementing a plan to make their local groundwater usage sustainable by 2040.

With the BSP, AFT will have the ability to create customizable, optimized implementation plans for distributed on-farm projects that are explicitly designed to cost-effectively achieve multiple specific groundwater and surface water sustainability targets, such as those defined by or through the Irrigated Lands Regulatory Program, a program developed in 2003 to prevent agricultural runoff from impairing surface water quality.

“In California, there are many driving forces and options for improving water in the state,” said David Primozych, TFT’s Conservation Director. “There’s money to be spent and actions to take, but it needs to be strategic action and smart spending. Tools like the BasinScout Platform make both of these things once thought impossible, possible.”

Certain actions taken on farmland, including cover cropping and upgrading irrigation equipment to more

efficient systems, can improve groundwater quality and quantity. For example, cover cropping reduces erosion and nutrient runoff. It also helps soil retain moisture and allows groundwater to be recharged more quickly.

The BSP assesses the current conditions of a geography through satellite imagery. Then, upon defining a specific goal, such as reducing irrigation demand, and a total budget for a program, the platform automatically determines which combination of best management practices and location will be best to meet the identified target.

“One improvement practice on one farm is great if you plan it well,” said Osman. “But when you plan many on-farm improvements collectively, and look at things at a basin scale, there are much greater benefits.

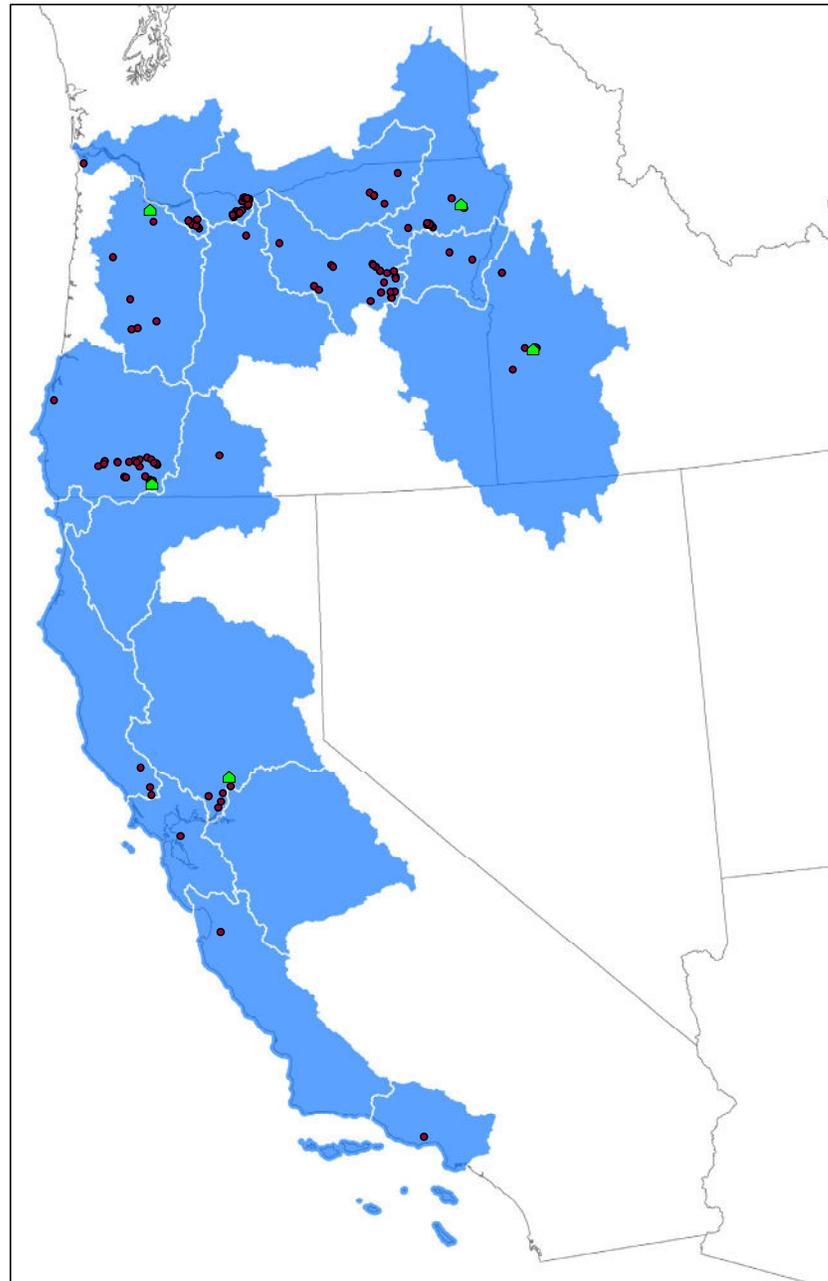
AFT has worked with farmers in the San Joaquin Valley for more than three decades. They expect that this partnership will help them deliver conservation plans for increasing recharge potential and water conservation on lands encompassing at least 100,000 acres with 150 to 200 producers.

“Farmers are at the heart of fixing freshwater issues,” said Primozych. “We are fortunate



Did you know we have numerous projects across multiple states?

Check out this map that shows each project and our offices.



Q & A

with new Science & Analytics Director Theresa Burcsu

In the midst of a quarter defined by tough transitions, The Freshwater Trust (TFT) celebrated one that will improve the robustness of its work. In May, we hired a long-awaited Science and Analytics Director. Theresa Burcsu will focus her efforts on ensuring the organization produces the highest quality products through alignment, coordination and collaboration.

What were you looking for in a job that brought you to The Freshwater Trust?

I come from a science background. I started off by doing work around planning and modeling of different scenarios to ensure the best knowledge about potential conservation and management outcomes. Those activities led to work on creating a few decision support systems, a long-standing topic of interest to me. Needless to say, I strongly value the pulling together of lots of different information to anticipate and achieve the best outcomes from conservation and sustainability practices.

How would you describe what you'll be doing for TFT?

I will work as a lubricating or organizing force. My role is internally focused on helping the organization achieve its mission and vision by ensuring that the internal processes of the science and analytics team deliver the highest quality products possible and lead to the greatest, most valuable outcomes.

Tell me about one of your greatest river memories.

During my master's, I did a rafting trip down the Grand Canyon. We did a talent show, and I wrote poetry about water and choreographed a modern dance piece. I was really inspired by the eddies and how they spin off in different ways and become different entities when you put your oar in the water. I loved the spiral and temporal nature of them and composed a piece around those patterns. piece around those patterns.



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