



watersheds
program

treeline

partnering for climate adapted
forests

June - July 2024

Photo Credit: J.P. Zagarola

Treeline is an information and storytelling hub for Pacific Northwest restoration practitioners, nursery partners and researchers who work for or represent Tribes, Indigenous groups, non-profits, agencies, landowners, businesses and more.

The Leveraging Individual Expertise Issue

This issue of Treeline explores the diverse ways individuals, groups, non-profits, agencies, businesses and more are using their unique positions and expertise to fight the climate crisis. We hope the stories illustrate that there is no one way to be a part of this movement.

Missed the March Treeline Newsletter? Click [here](#) to learn about how our partners are adapting to climate change.

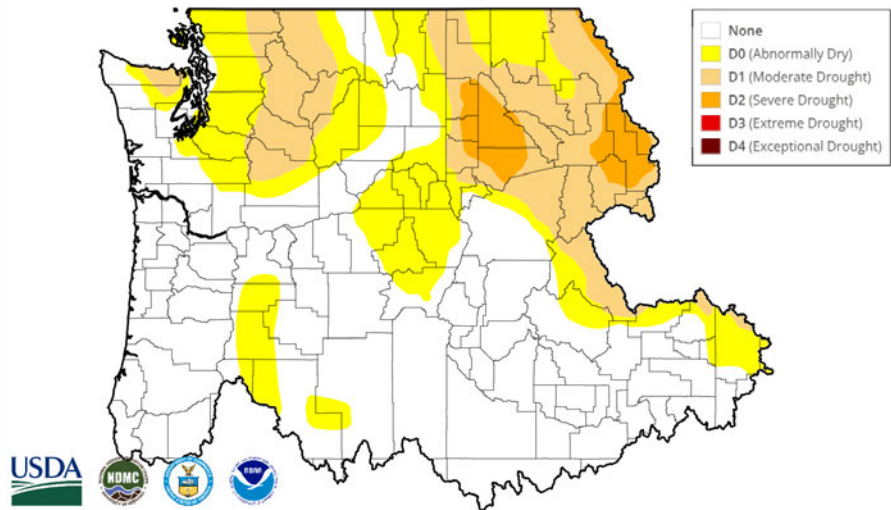
Interested in submitting an article? Reach out to treeline@b-e-f.org.

Drought Status Update for the Pacific Northwest

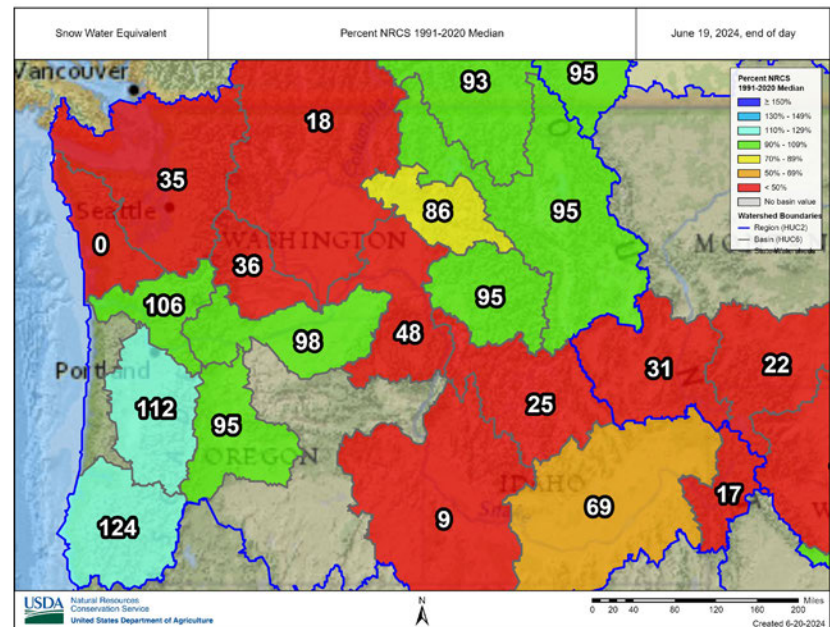
Stay up to date with the U.S. Drought Monitor

Drought conditions are likely to persist and develop in Washington and Northern Idaho through August, however the seasonal outlook for Oregon and Southern Idaho do not indicate that drought conditions are likely to develop in these parts of the region.

- Washington received a fraction of its normal snowpack this year, resulting in snow drought, as measured by snow water equivalent (SWE), across a majority of the state as of May 30. In contrast, most of Oregon and Idaho have received close to or above normal snow levels, and snow water equivalent remains near or above median SWE (see map below).
- Northwest Washington, Southeast Oregon, and Southern Idaho are predicted to have above normal significant wildland fire potential beginning in July (NIFC).
- A transition from El Niño to the more neutral El Niño Southern Oscillation is underway. According to a June 13 report, “ENSO-neutral conditions are present. La Niña is favored to develop during July-September (65% chance) and persist into the Northern Hemisphere winter 2024-25 (85% during November to January).” (CPC).
- Above normal temperatures and below normal precipitation are predicted for June, July and August across the region.



The U.S. Drought Monitor is jointly produced by the National Drought Mitigation Center at the University of Nebraska-Lincoln, the United States Department of Agriculture, and the National Oceanic and Atmospheric Administration. Map courtesy of NDMC. Map reflects current drought status on June 18, 2024.



Information provided by drought.gov



Reflections from Mexican-American Owned Restoration and Wildland Fire Business Leaders

BEF's Julia Jaquery and Jean-Paul Zagarola sat down with Oregon-based restoration and wildland fire contractors Rosario Franco and Leo Rocha to talk about how they see the workforce evolving, and how this field can better honor and support the contributions of the Mexican and Mexican-American community. This interview was conducted as a part of the Oregon Fire Resilience Network.

JULIA JAQUERY: Can you start by telling us what kind of work you do, and what drew you to it?

LEO ROCHA: I started in forestry right out of high school, planting and doing pre-commercial thinning. A lot of the work in the forestry world dwindled in the early 2000's because of changes in the industry. But, at that time, restoration work was starting to take off in the Portland area. The same set of skills

were needed, so it seemed like a very good opportunity to transition. I spent maybe six years doing restoration work with crews in the Portland area.

The company that I used to work with, which was owned by Rosario's dad, was involved in forestry, restoration, and wildland firefighting. I had a knack for wildland firefighting so I ended up going in that direction and eventually took over that side of the company starting in 2007.

ROSARIO FRANCO: I also started in the mid 90's doing reforestation with my dad, then I started running reforestation crews in early 2000, and after that I moved into restoration. I still do some fire fighting but now my work is mostly

focused on restoration. Leo and I still work together on all kinds of jobs.

JJ: Rosario, your father had a long career in reforestation. Can you talk about the history that brought your family to this field? And what do you think about multigenerational efforts to steward the landscape?

RF: My grandpa was a part of the Bracero program in the early 1960's, where he came to the U.S. and picked fruit, and I think he did a little bit of reforestation too. In the mid 70s, my dad came to Oregon to do reforestation, and he opened his business in 1986. I came here in 1990 and started to really get involved in the work in the late 90's. My brothers and I all got into this field, and



Crew gathers at the Mitting Site Planting in the Willamette Valley. Photo Credit: Rosario Franco

now our kids, the fourth generation, are getting involved too.

JJ: How do you see climate change impacting your work?

RF: Climate change has made some things more challenging. Recently we've been doing more fuel reduction and fire prevention. We've been moving toward planting some species that can handle drier conditions better. It's definitely impacting our work; the overall kind of work we do hasn't changed, but the ways we do it have.

LR: In wildland firefighting, climate change is having a huge effect. Climate change is taking place regardless of the reasons behind it, and wildland fires are one of the primary visual side effects of it. We have massive fires nowadays that we didn't see 20 years ago. The severity is caused by different weather patterns that occur not just year by year, but over decades of drought.

Our role in it is different from most industries; if you talk to automakers or other big companies, they're thinking about how to reduce their carbon footprint and for us, it's more about how we address the effects of climate change, in this case wildland fire. There has been a massive increase in the need for personnel to fight fires. There's been quite a bit of federal funding allocated to forest

fire prevention, and it's taken a while for that to translate to work on the ground. Agencies are utilizing wildland fire crews not only to fight fires but also to work on fuel reduction projects and wildfire preparedness. We're starting to tap into those other resources to do preventive work and hopefully minimize the severity and size of those fires when they do occur.

JJ: What is the background of the folks on your crews? Do you find there are many Latino people working in this field?

LR: We have a mix of people with different backgrounds who work with us but the vast majority of them are Mexican or Mexican-American. I feel fortunate in the sense that I'm able to see different sides of the stories out there nowadays. When it comes to the labor force for the work that we do, I think about what the kids in my life want to do when they grow up. They want to be astronauts, they want to be firefighters, they want to be policemen. As a parent, or as the adult in the room, you envision them doing something great, changing the world. When I encourage my kids to go to school, it's not so that they can join a reforestation crew. That kind of thinking creates a big void in our industry.

When you're an immigrant, the challenges are: how do you survive here? How do you put food on the table? In

that mindset, all you're looking for is an opportunity to earn a living for your family. There is a major unemployment issue south of our border. The job opportunities are very limited throughout Latin America; therefore, there is a workforce there that would love to have the opportunity to work on the projects that we do. The fact that there is a constant labor shortage locally to fill the labor intensive job openings that come up in our industry gives the opportunity for a perfect match — immigrants looking for work and work that we have that needs to be done. For us to be able to build on the needs of the labor force, taking those two realities into account, lead to what we have today. The reforestation and restoration crews are primarily made up of Mexican and Mexican-American employees. It is a good job to have. It provides for families.

RF: I'd like to add to what Leo was saying about us growing and our goals. When we started out, we were hungry to work. Our kids have more opportunities, they have more freedom to choose what they want to do. I'm bringing people from Mexico here on H2B visas and they see it as a big opportunity to make a better life for their families. This year, we were able to bring on a crew of women with the H2B visa program, and they've been doing really well. I'm focusing on bringing on single moms because in Mexico it is very difficult for them



The Franco Restoration Crew installs cuttings at a restoration site. Photo Credit: Rosario Franco

to make a living. It's a good chance to help families and also to teach them the importance of taking care of our nature, our forests.

LR: Regardless of where you're at, you want your kids to be a step ahead of you. I've always felt the road that I've taken has only been a footstep for them to start on. I remember as a child, my dad was a planter on a reforestation crew. When I struggled to get out of bed to go to school, he would say, "you need to go to school because you're not going to be a planter like me, you're going to be a foreman." We always want our kids to take the next step. I think Rosario is a good testament to that. He's trying to get his kids to take over his business and continue the legacy that started with his dad. I would love to see my daughters or my son involved in the work that I've done. But, I picture them in the role of a project manager, dreaming up and implementing the big ideas.

JJ: Do you find that there are a lot of opportunities for the Mexican and Mexican-American community to grow in this field?

LR: I think so, and we're examples of that. For us, having family members that have been engaged in this type of work for generations makes it a known path that is easy for us to follow. I also understand that if somebody doesn't

know about the work that we do, it's more difficult for them to get into it, or even know which doors to knock on. I believe that there are opportunities not only to engage in the work but also to grow within it. Rosario has achieved great things from where he started to where he's at now.

As Rosario mentioned, it's not only about the economic incentive these jobs provide for immigrant workers, but also the knowledge that is taken back with them. We grew up in a semi-arid area that doesn't get a lot of rain. Yet historically, the main industry there was agriculture, specifically growing corn, squash and beans. Despite having very limited rainfall, we didn't have irrigation or water sources other than the rain. Most, if not all of the parcels that were used to grow food were on steep ground. One of the things that I notice now when I go back is that there weren't efforts made to prevent erosion. And so nowadays, after about a century, the topsoil is probably an inch or two thick. When we see all the efforts here to avoid soil loss, it's amazing. It's a lot to digest for someone that has depended on agriculture, and yet, totally missed that very important side of it.

JJ: Do you think that there's a lot of opportunity to expand these programs back home?

LR: There is definitely a need. I think the biggest obstacle to it is the funding. When I go back to communities in central Mexico, to me, the financial needs seem grave in every direction that you look. And then even when funding does come around, there's a lot of corruption so very little of the money actually gets to the program. So I think that the need is there, but the financial aspect of it is a big challenge.

RF: I think one of the hardest parts has to do with how the money flows between the U.S. and Mexico. Because of bureaucratic processes, it can be really hard to apply money that comes from the U.S. to the work that needs to happen in Mexico. I was part of a project between the Rio Laja Basin in Mexico and the Willamette Valley in Oregon to facilitate information exchange about restoration between the two places. Because of these rules, regulations and practices between the U.S. and Mexico, very little money is actually getting to the community in Laja.

Growing up in my community, we didn't get any education about nature and things like that. I've been talking about it with people in my town about funding a program in our schools to teach the kids about the work we do here. I think it's important because I bet those kids are thinking about how they're going to come to the United States, so if we start



The crew works on underplanting a site in the Willamette Valley. Photo Credit: J.P. Zagarola

educating them, it could give them some ideas. In Mexico there's less attention paid to climate change, so if we start having these conversations, we can make a big difference. In the program we're doing with Laja we're involved with five schools in Mexico and five schools here in Oregon where we share information with the kids about our work. My goal is that in the future, I can get the schools from my town involved in this too.

JJ: It's important to introduce that early and get people thinking about connecting to their landscape and how it impacts all elements of their life. I'm curious if there's a region or a watershed that you both feel the most connected to?

RF: We've been working mostly in the Willamette, that's our big connection.

LR: I come from a very arid place. It comes alive in the rainy season, and then the rest of the year it's pretty much a desert. Because of that lack of green in our environment, water and green are symbols of life. It's a phrase that we use in Spanish: "aquí hay vida." I remember fighting fires early in my career in Montana where the scenery is amazing. When you're in the mountains it's green as far as the eye can see — endless forests, and the landscape is dotted with blue. There are lakes and ponds all over

the place. I remember being very young seeing this and feeling really fortunate to have those landscapes.

Another place that did that for me was New Mexico. I had driven through the southwest various times and all I ever saw was desert on both sides of the highway. But in 2001 I went to fight a fire in the mountains of New Mexico and saw an entire forest that I had no idea existed. An image that stuck with me was seeing trees popping out of the rocks. There's not a lot of topsoil, there's not a lot of water, yet this forest somehow thrives on top of rocks. At that moment I realized fighting fire is very important. If a fire raced through the forest I don't even know how long it would take for another seed to grow into a tree the size of the ones I was seeing. Different situations like that made me realize that containing wildland fires was very important.

Here in Oregon in 2020 the Riverside and Lions Head Fires exploded overnight. There's a park near me in Mill City, that was a beautiful place with old timber and a river going through it. I saw the pictures of it after the fire, and realized that we will never see that scenery again in our lifetime.

JJ: Do you ever find hope walking through burned forest in the spring?

LR: I always tell myself that it's a natural phenomenon. Fires have come through to clear out old forest and bring new life. That brings a little bit of relief to my mind. But it's still sad to see them go.

RF: Those fires destroyed the town of Detroit, Oregon, and initially, I didn't want to go back to look at it after it. But I've been doing a lot of replanting for fire recovery and it's amazing how much germination we've seen after the fire. Unfortunately, we are not prepared for those big events. I think one of the problems is that there are so many weeds to control. After the fire, the first thing that explodes are the weeds. In fire recovery we always think about replanting, but it's really easy to do weed control immediately after a fire, and it gets much more difficult after a couple of years if you don't stay on top of it. We plant so that these forests will be healthy for our future generations, our grandkids and great grandkids and so on.

JJ: What are your perspectives on how the Mexican community is impacted by wildfire?

LR: Because we're the firefighters, we always experience more of those effects than the rest of the community. But one of the concerns is the loss of time with family as a firefighter, whether you're Mexican-American, a Mexican immigrant or an American fighting fires, there's a lot of time given to the profession. Anyone that is a wildland firefighter gives up their summer, whether there are fires or not. Last year we ran crews nonstop from mid June until mid November. Firefighters miss a lot with their families, especially in the summertime.

RF: That's one of the things I like about doing restoration in the Willamette Valley. I can come home to my family every day and be with them on the weekend. I enjoy fighting fires but I don't like to be away from home for so much time. Especially now that I have a little one, it's really important to spend time with her.

JPZ: Do you see a set of conditions or something that could occur where a firefighter doesn't necessarily have to sacrifice their family time to be a career firefighter?



Rosario instructs a crew member at a planting site in the South Santiam. Photo Credit: Hannah Buehler

LR: Unfortunately, I have come to accept that it's part of the profession. One of the main reasons for that is the unknown location of wildland fires. Most of the time they're out there in the middle of nowhere. Commuting back and forth between a fire assignment and home is just not practical. Even from fire camp it's still a good one to two hour drive to the fire itself. Under those circumstances, part of the job is being away from home for extended periods of time, and I really don't see a way around that.

JJ: What do you think could be done to better recognize or support the role that you and the Mexican community are playing in fire and restoration work?

LR: I think people can start by recognizing the difficulty of the job. There have been points in our history when the sentiments towards immigrants were really negative. In the aftermath of the financial crisis, there was a lot of rhetoric about immigrants taking American jobs. At that time I was harvesting blueberries here in the valley, and they would announce on the radio that they would be at the fields at five in the morning and there would be a limited number of openings. We'd go out there at three, four in the morning to get in line to be one of the first ones because there were only 100 or 200 openings. This job and others like it are very difficult; they're physically demanding, the environment that they're done in is often harsh. Yet folks are doing them with pride, and are very happy to do them. I think we should be happy that there are people out there that are willing to do these hard jobs, whether they're Mexican or American.

In wildland firefighting, when training new firefighters, I let them know right off the bat that this is not easy work. You have to wake up at five every morning and hike up and down hills for 12-16 hours, don't even factor in what you're going to be doing for those hours. I would love it if more people recognized that it's hard work and people sacrifice a lot to do it. Like I said earlier, there's a void in the labor force for that type of work, but there's this entire sector of our community that needs and is willing to do it, and we have work for those folks to do. I think that's a win-win situation for both sides.



Leonel Rocha was born in a rural community in Western Mexico in the early 80's and migrated to the U.S. when he was 9 years old. During the summer school breaks he would join his father in the fields in the Willamette valley harvesting cherries, blueberries, strawberries, pears, and other fruits. When he left school, he started working in reforestation, wildland firefighting, and land restoration jobs. By mid 2000 he shifted his focus away from reforestation and restoration work to focus specifically in the management and coordination of wildland firefighting resources. with a mission to expand on its impact on wildland firefighting efforts, In 2022 he started his business (Alpine Services LLC) which focuses in consulting new wildland firefighting ventures, training wildland firefighting personnel, and managing national wildland land firefighting crews.



Rosario Franco is R. Franco Reforestation's president and founder. Born in a small rural village in Western Mexico, he migrated to the United States when he was 12 years old. In 2006 Rosario established R. Franco Restoration, Inc., with a primary focus on habitat restoration and green space preservation. He has been able to establish long standing relationships with multiple agencies, municipalities, non-profits, and watersheds throughout the Willamette Valley, and continuously advocates for and works toward healthy greenspaces, youth education, and providing opportunities for underserved communities.



The Franco Restoration Crew works to reforest a site. Photo Credit: Rosario Franco

A Grand Fir Tree Died in the Heat

By Lisa J. Watt

The climate crisis is real.

It's heartbreaking and expensive.

All living things and every landscape around the world are experiencing extreme weather events as a result of the climate crisis. Rising temperatures, severe storms, flooding, drought, and devastating wildfires are part of our daily lives now. Our household experienced a climate-related event and learned that the impacts of climate change can be subtle, heartbreaking, and expensive.

In June 2021, an unprecedented heat dome settled over Portland and the Pacific Northwest for five consecutive days. Temperatures soared to 116°F, a record for the coastal temperate rainforest and a new, frightful experience for residents of this region.

Around the same time, smoke from massive wildfires in Central Oregon and Canada blanketed Portland and surrounding areas. The smoke was so thick it seeped into our well-insulated home. Throughout the Willamette Valley the sun and color of the sky turned orange and in some places ash fell from the sky like a gentle snow. Local news stations encouraged everyone to stay indoors for nearly a week. I found myself wide awake at night, worried about the trees.



Standing dead grand fir prior to topping. Credit: Lisa Watt

Extreme weather events in the summer have become predictable occurrences in recent years. So much so that my memories of glorious Portland and Pacific Northwest summers — warm, sunny days and cool nights, without humidity or mosquitoes — have given way to [climate anxiety](#) and an intense fear of stifling heat.

The silent impacts of that heat dome in 2021 continued to be felt in 2023 as trees, especially [western red cedars](#), one of the symbols of the Pacific Northwest, became distressed, diseased, or died. If you looked closely around your neighborhood you probably saw dead or dying trees but didn't know what you were seeing. My husband and I couldn't help but notice one tree in particular.

On the northside of our property stood a 90-foot tall, 70-year-old grand fir tree. Grand firs can grow up to 250 feet tall and 250 years of age. Ours was quite short and young by comparison. Still, it was beautiful. It had a 120-inch circumference, a relatively smooth, grayish trunk, and graceful limbs that swept upward. It wasn't the tallest tree in the neighborhood but it was one of the only grand firs around. Arborists told us grand firs normally grow at higher elevations which made this one unique. We knew it was special.

In May 2023, we noticed the needles on its south side started to turn brown and fall. Soon, a slow wave of dead needles steadily replaced its signature evergreen. Three arborists confirmed what we instinctively knew and dreaded. It was dying. It had been fried — literally — during the heat dome two years earlier, as it stood totally exposed, without the shade from other trees to help protect it. Area arborists told us they had seen this type of heat-induced tree death everywhere between Portland and Seattle.

The arborists said there was nothing we could do to save it. We were heartbroken. As dramatic as that word is, no other word honestly expressed our disappointment, especially since we knew its death didn't have to happen.

Since the tree was located next to a street, it became a safety hazard. We wanted to be responsible neighbors and we didn't want it to fall on our or the

neighbors' homes. This once gorgeous tree had to come down.

It took a crew of five highly-skilled and brave men with long chainsaws and heavy-duty climbing ropes to dismantle it. What took 70 years to grow came down in less than eight hours. One man, wearing a harness and held on belay, sawed off each limb as he climbed to the top. Then he looped a rope around the narrowest part of the tree, cut the trunk with the chainsaw, and pushed it over. That same rhythm was repeated 7-foot section by 7-foot section at a time. The men below lowered each one gently to the ground.

The top was chipped and the chips were spread across our property. We kept each section intact because they were massive and architecturally impressive. Using a mini skid steer, the workers laid them horizontally near the tree. About 30 feet of the base trunk was left standing as a snag for birds and as a reminder of the tree's existence and the reason it died. This once-magnificent tree had become a tragic casualty of the climate crisis on a personal and intimate scale.

The cost to remove one tree?

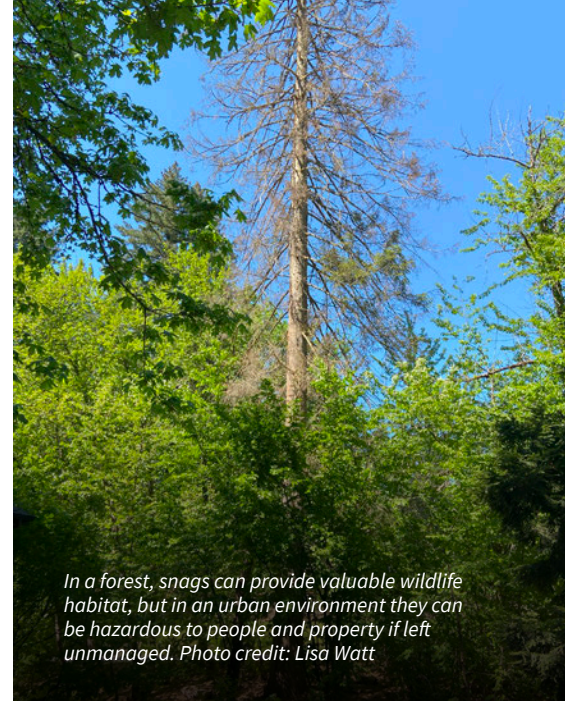
\$6,000.

We easily imagined one hundred better ways to spend \$6,000.

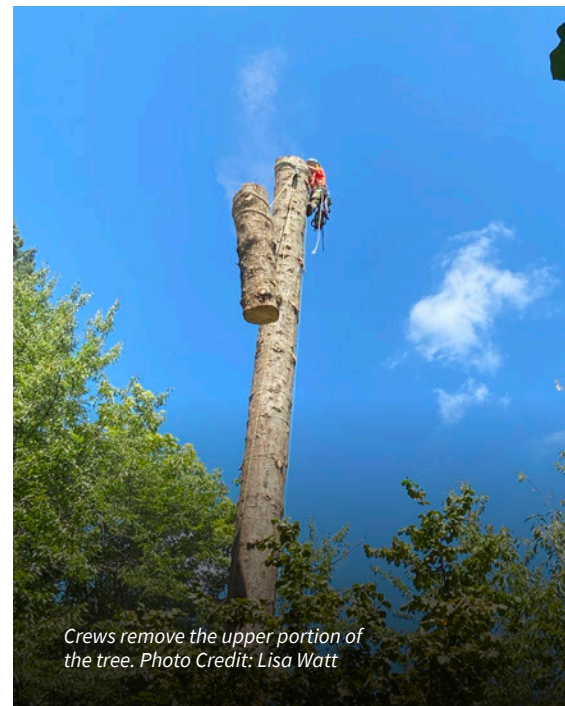
But climate impacts on trees are often not as subtle. Severe weather events can be terrifying for the speed and severity with which they occur. In January 2024, the city of Portland and western Oregon were hit by an arctic blast so strong, [trees fell everywhere across the city](#) and indiscriminately [damaged or destroyed homes](#) and property. Ice covered the streets. At least fifteen people died due to weather-related emergencies. Over 150,000 households were without power. Imagine [the loss](#).

I suspect many residents who are fortunate enough to live with big trees view them differently now.

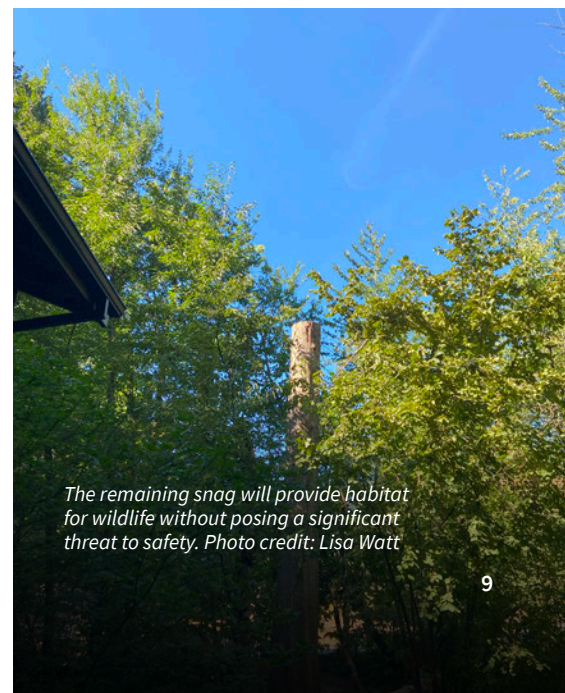
There is no way to prevent future storms and destruction. More will come. The irrational solution is to cut down all the trees that surround our buildings and



In a forest, snags can provide valuable wildlife habitat, but in an urban environment they can be hazardous to people and property if left unmanaged. Photo credit: Lisa Watt



Crews remove the upper portion of the tree. Photo Credit: Lisa Watt



The remaining snag will provide habitat for wildlife without posing a significant threat to safety. Photo credit: Lisa Watt

infrastructure. But that's neither wise nor plausible. One possible solution — or at least a good first step in the right direction — is to admit the existence of the climate crisis, understand the real and potential short- and long-term impacts, and imagine a future if or when insufficient action is taken to avert climate collapse. It could be a harrowing vision.

The scientific data around global warming is irrefutable, gathered and interpreted over decades by expert scientists from around the world. The United Nations first mentioned climate change as far back as 1972. In this country, we are guided by the **Fifth National Climate Assessment** which “provides the scientific foundation to support informed decision-making across the United States” concerning climate issues. First published in 2000, the national assessment provides authoritative information about climate change risks, impacts, and responses. Priorities include curbing greenhouse gas emissions and developing clean energy technologies and efficiencies, among other goals. It is the roadmap and timetable we need.

But are we paying enough attention to it? Have we sufficiently heeded its

warnings or seriously taken up the recommendations offered by scientists and experts in this field?

We must demand more leadership and action from politicians and business leaders. They need to start by prioritizing the environment and our collective well-being above profits and politics. We need to rebuild a strong sense of community, to recreate that once-held belief ‘we’re in this together’. We’re going to need each other. And we need to believe in the intelligence and expertise of our scientists rather than play political football with their words and data. Too much is at stake for all of us.

Finally, political and business leaders must be driven by an all-consuming sense of urgency to prioritize swift, unequivocal climate action both here and abroad. They can do it. We’ve watched them drive change when an issue is important. None is more important than protecting the earth and all that lives on it.

If thinking about the world and its potential demise is too much to bear, start small by thinking about your own backyard, neighborhood, city, region, and the impacts of human-induced climate emergencies. Considerations

around your pocketbook and your and your family’s well-being should quickly change the calculus.

Sure, my husband and I had one dead tree — a once beautiful 90-foot tall, 70 year old grand fir — but what happened in our yard is a subtle and frightening symbol of a future in the coastal temperate rainforest and beyond.



Lisa J. Watt is the former director of the Indigenous Leadership Program at Ecotrust and now works with Salmon Nation Trust based in Portland, Oregon.



Leaving logs on the ground is a great way to provide wildlife habitat, build soil, and retain soil moisture. Photo Credit: Lisa Watt

Local Organizations and Collaboratives and Assisted Migration: Perspectives From a Seed Collector

Assisted migration is a recurring topic in the treeline newsletter, and we have been fortunate to feature the wisdom of many individuals and orgs. If you'd like to peruse any of the previous resources (14 and counting) on assisted migration, visit our new [website](#) and select "Assisted Migration" from the topic bank.

Federal agencies like the Forest Service have the connections, resources, dedicated technical expertise and land access to procure seeds from populations and species at regional

scales and conduct assisted migration field trials like the [ENAMES Project](#). Many small and medium sized organizations and collaboratives are also grappling with questions around whether and how to experiment with assisted migration. These place-based entities can face unique challenges in:

1. Funding dedicated expert capacity to vet and advance projects.
2. Accessing plant materials to implement trials.
3. Securing long term funding to steward studies over many decades.

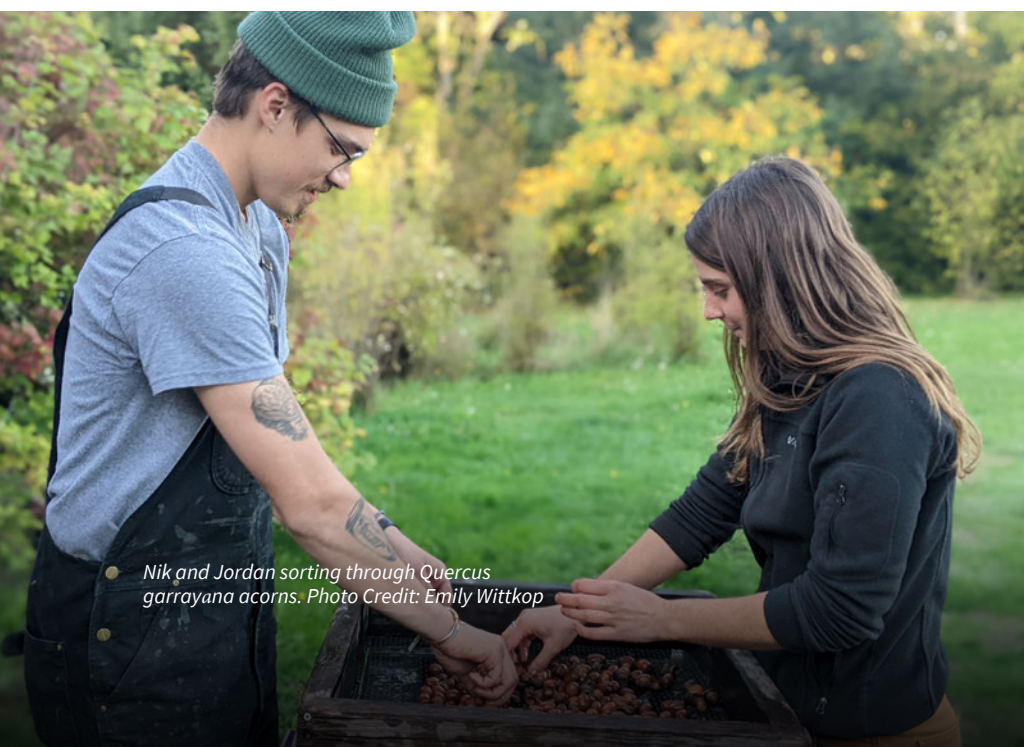
The small number of professional native seed collectors, the lack of standardization of seed zones for species outside of those used in industrial and private forestry, the broad technical focus of project managers, and limited

capacity to build networks to support seed acquisition compound challenges faced by smaller, more places based entities and collaboratives.

In this interview, BEF's Kayla Seaforth talks with Emily Wittkop, owner of [Jonny Native Seed](#), about her experience collecting plant materials for an assisted migration trial. Her story offers a glimpse into seed collection, an essential part of the restoration economy, and into the growing complexity of seed procurement and ordering under new and predicted future climate scenarios.

KAYLA: Hi Emily. You're working on collecting seed for assisted migration projects, right? How does that differ from your everyday operations?

EMILY: Yes, I categorize Jonny Native Seed into two parts. One is wholesale



Nik and Jordan sorting through *Quercus garryana* acorns. Photo Credit: Emily Wittkop



Oemleria cerasiformis harvest. Photo Credit: Emily Wittkop

distribution, and the other one is contracted services. Anything that requires a little more attention to detail or collecting more data than usual, falls into that contracted services realm. With wholesale seed, we're trying to bring in as much quantity as we can; there are some parameters like specific regions or elevations that seed should come from, but those are not above and beyond the data we typically record.

With assisted migration, there's more criteria to keep track of because the projects are usually very specific to where the study is happening, and what kind of growing conditions exist there. These projects typically require less seed, either small amounts from various populations to create a large lot size, or for other projects, individual sub samples are required to track how individuals from specific populations fare. The assisted migration projects are more research based, so it's necessary to thoroughly document where the seeds come from. This also requires us to collect from very specific areas, habitat types, and elevation bands. For one of these projects, our range of collection is a 500 foot elevation band. This narrow criteria can drastically change availability of seed resources, and limit site availability especially for tree and shrub species.

With wholesale collection, our criteria is much broader. We can easily identify new sites by the roadside and can quickly assess population size, abundance, and vigor. With assisted migration projects, you really have to make sure that not only is the project criteria being checked, but it's within that very specific collection range. Often the tools used to predict what might fare better in an area under a future climate scenario, doesn't directly reflect the species currently in the collection area. Or sometimes the species are there, but they're on private property. It takes a lot more work to make those collections happen. We're still able to accomplish many of our goals, but it's not without its challenges.

KAYLA: Have you been able to make any adjustments if you are not able to locate and/or collect seed that meet project criteria?

EMILY: It depends on the project. One of the projects has a little more flexibility. Based on some of our observations in the field, some species weren't checking the boxes given the criteria that they had listed. In that case the agency was open to recommendations. In contrast, another project that we're working on is very specific. They have one region that's being used as a control and the seed we collect is being grown out in a common garden study. This project has been years in the making and we're only one step in a much larger plan which doesn't leave room for flexibility.

Another difference between wholesale and assisted migration collections is project duration. With assisted migration projects there are deadlines for getting plant materials and completing the project. We also tend to play a much smaller part in the overall design of the project. With the wholesale side, since I'm working with these people on an annual basis, there is more flexibility from year to year. For example, last year's *Acer macrophyllum* crop was absolutely horrible. Jon, the previous owner of JNS said it was the worst *Acer macrophyllum* year he'd ever seen. It's also commonly used in assisted migration trials, but when the project is limited to a 1-2 year timeline, and there's a bad crop year, it can really limit how much seed is available to make the project successful.

I think it's a nuance that can be hard to convey to people who are funding these projects, because we really don't have control over Mother Nature. As much as I can sit here and pour over my spreadsheets, there's only so much information I can gain from historical data. Some years are bad for certain species, or are bad in certain areas but it can be pretty impossible to predict, especially as the climate continues to shift. As a business owner, I want to build confidence with my clients, but I also want them to understand that things will not always go as planned for reasons that are out of our control.

KAYLA: Tell me about your network and how you're collaborating with other collectors to cover the geography that is required for these projects.

EMILY: I have a Willamette Valley crew that I work very closely with on day to day activities during the collection season. I also have remote crew members that work more independently, which allows us to cover more ground in a season.

We manage most of these projects internally, but for one of the assisted migration projects, we are collaborating with other agencies on collection. It's been broken up into very specific regions, so I'm doing the collecting in the South Willamette Valley region and other people are in charge of other areas.

KAYLA: I think we're probably seeing an increasing demand for plant materials for assisted migration at various scales. Do you think there are any networks or infrastructure that would be helpful for making that more accessible to people?

EMILY: I'm always in favor of more networks or agencies that allow collaboration between private landowners and state or federally funded agencies. One of the biggest limiting factors for seed collection is land access. With greater specificity of collection areas required for these projects, the bigger the access challenges become. Sometimes the collection area is exclusively on private land. Some landowners are enthusiastic about allowing collections, but others don't want to have anything to do with it. Sometimes landowners assume that this will allow continuous access,



Iris chrysophylla.
Photo Credit: Emily Wittkop

resulting in a lack of autonomy over how they manage the land, or that they might be liable if someone gets hurt while collecting. Most of these concerns can be addressed by explaining exactly what it means to grant access to seed collectors, but those conversations take time and I often don't have the capacity to have them with the number of landowners that is necessary, in addition to coordinating all of the collections in a season.

I think if there was a network that was able to provide that information, and have those conversations with landowners, that could be helpful. These conversations look quite different depending on who I am talking to, or where I'm collecting. I think it's important to meet people where they're at and figure out ways to relate to their personal interest with the landscape. For example in some areas people love wildcrafting and making medicine, but in other areas that would end the conversation. Most people care about our forests but we don't always know how to talk about our scientific interests in a way that's relatable to landowners especially in remote areas. This type of outreach could be really helpful in building a bridge between collectors and landowners, which hopefully could facilitate more assisted migration projects or wholesale seed collection.

KAYLA: That makes sense, having somebody to do some of the vetting,



Physocarpus capitatus live stake cuttings. Photo Credit: Emily Wittkop

the communications, the permission seeking. Has this process gotten any more difficult due to climate related events like wildfires or floods?

EMILY: It has. One of the agencies we collaborate with couldn't access a collection site because the access road had been shut down due to a wildfire, which lasted over a month. The wildfire season can limit site access for a full collection window, and depending on the severity, for years afterward. Then, on the opposite end of the spectrum, flooding can also limit site access. There was more flooding this year than I would have anticipated in some areas. It wasn't record breaking, but it was enough to complicate when we needed to collect certain species. I followed weather forecasts and river gauges very closely to determine what sites would be accessible, and where it would be safe to go. In an extreme case, we had to wade into a river, in the middle of winter, to collect a few live stake cuttings. It was a little questionable but we got it done. We want these projects to be successful, but sometimes mother nature just says "sorry, this isn't the year."

KAYLA: There are so many ways that wildfire and increased flooding is impacting the work that people are doing in natural areas. That's one that I hadn't personally thought about; for species that set seed in late summer, so many are being collected during wildfire season, and enormous swaths of land can be inaccessible for the whole window.

EMILY: Sometimes those areas are completely decimated and the species composition is forever changed. That piece of it is really challenging, especially as the demand for native seed increases.

KAYLA: That has to be hard, especially as you are trying to have some consistency in sales, and also bringing on new seed collectors. As discussed in a [webinar](#) that you participated in, the seed collection workforce has always been small, and many seed collectors are considering retirement. How have you been experiencing this shift in the workforce since taking over Jonny Native Seed from Jon Anderson?

EMILY: I'm happy to report that Jon still works with me. I am so grateful for his mentorship and that he still wants to collect seed. I'm always bringing new people on, and they bring so much enthusiasm and excitement to this work. It seems like they see this as more than just another job, and really see the role that native seed plays in ecological restoration and adapting to climate change.

I did recently hear about another seed collector shifting their focus away from wild seed collection due to sites being compromised by climate change and/or drought. This not only makes collection logistics more challenging, but also leads to challenges around the economic viability of this work. They've had to keep their prices low, because long-time customers aren't interested in paying higher prices. But in the end, between diminishing access to sites, plus a serious rise in cost of living, that price point did not make an effective hourly wage for the people who were doing the work on the ground.

Because of climate change, we're also noticing the yield of some populations slowly dwindling. Or in some cases there is no crop for multiple years and then a bumper crop, which isn't normal for certain species. But everybody does things differently. I'm dealing with some of the climate related challenges by employing remote collectors that I can rely on, which expands the spread of land that I can collect from. But I know other people have to stay very localized, which helps keep their costs low.

Seed crops are also becoming less predictable. A couple years ago, we had a bizarre weather pattern that brought a bunch of snow and ice at the end of April. It ended the pollination window for one species, and just like that our opportunity to collect was gone. This combination of the effects of extreme weather, more gradual shifts due to climate change, and the very human side of expectations around being able to access cheap seed, is leading to some people making the hard decision to leave this work altogether.

KAYLA: I think it's important to shed light on that side of this work. It can be easy to romanticize it, especially the

roles that are primarily field based. But it's a legitimate career, and more than that, seeds are really the foundation of the native plant economy.

EMILY: I couldn't agree more. I think a lot of times, seed collection is viewed as a low skill, and therefore low paying position. My people are very dedicated and work very long days sometimes when a certain crop is ready. We are also exposed to many safety risks; I've been evacuated from sites due to wildfire, flooding, thunderstorms, extreme heat, hornets, poison oak, bears, sometimes we're collecting on the sides of busy roads, the list goes on. All while understanding phenology trends, pathology, when to collect ripe seed, over an extensive range of habitat types. I think that there needs to be more grace and understanding for the work that goes into collecting seed and it definitely needs to be valued more. It does seem like we're moving in that direction but for some individuals, it might be a little too late.

KAYLA: Is there anything coming up this season that you're excited about or would like to share?

EMILY: One thing that I'm really excited about is bringing on new collectors and seeing the successes that happen throughout the season. I am very lucky to have a lot of highly competent people that work for me. I'm also super excited to be participating in these assisted migration projects. The information that's going to be gathered from these studies will hopefully lead to more options for adapting to climate change at the plant materials level. I am very excited to play a part in that.

I'm also excited about looking at the way we use plant materials to adapt to a changing climate in a more expansive way. What role do live stake cuttings play? Might using cuttings in an assisted migration planting be a way to facilitate the persistence of some of our dioecious species on the landscape? Could that address some of the pollination timing issues that have started occurring? I don't know the answer to that, but I'm excited that we are looking at creative ways to answer questions like this.



Emily Wittkop is a trained botanist from the Pacific Northwest. She has spent the last six years working as a native seed collector specializing in threatened and endangered species augmentation and prairie oak restoration. She has a Bachelor's of Science in Natural Resource Management from Oregon State University and a minor in Forest Management. Her work focus is to provide access to a wide variety of plant materials through education, conservation, and land stewardship. In her spare time, she enjoys photography, dinner with friends, and her favorite winter activity: willow basketry.



Rubus parviflorus. Photo Credit: Emily Wittkop

Readiness and Response: Trauma Informed Discussion Cohort for Environmental Professionals in Crisis Management

By Hannah Buehler

In the face of a rapidly changing climate, professionals in floodplain management, fire resilience and ecological restoration are increasingly finding themselves on the front lines of both conservation and community assistance before, during and after environmental emergencies. While natural resource personnel are trained to have an ecological grounding in place, the social and emotional impacts that disasters and emergencies can have on staff, organizations and the human communities are often overlooked. Assisting in rescues, witnessing wildlife losses like fish die-offs, and engaging with community members who have lost their homes or loved ones in an emergency event are emotionally demanding tasks, which, when unrecognized can compound emergency response and recovery workloads leading to burnout, **compassion fatigue** and high turnover rates in an increasingly essential sector.

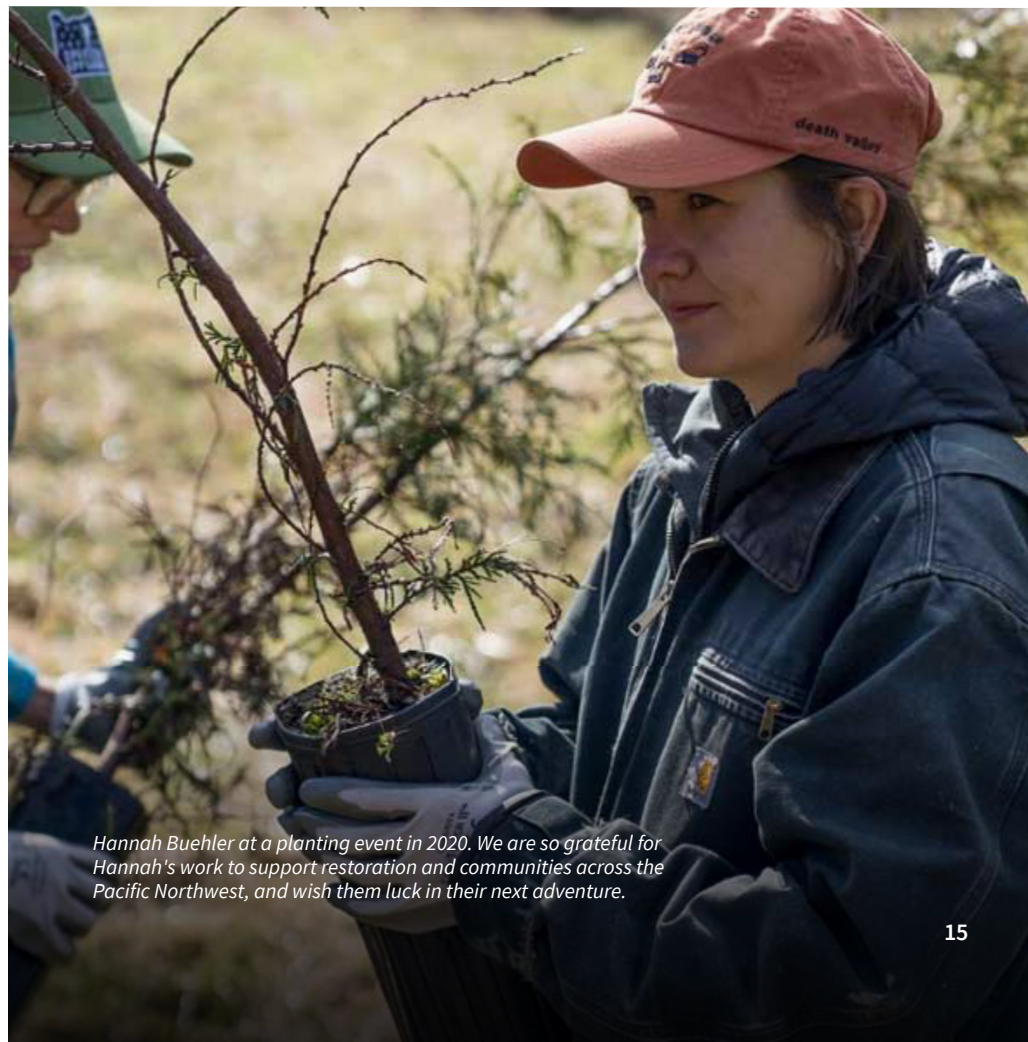
Compassion fatigue is a measurable decline in empathy and sympathy that results from prolonged exposure to the trauma or pain of others.

Building Resilience Through Trauma Informed Care Training

In order to build skills and resilience to support one's self, team, organization and community in the wake of an emergency event, in 2022 the BEF team developed an online **training module** on trauma informed emergency readiness and response. The training

module is specifically tailored to the experiences of floodplain and natural resource professions and their unique relationships to climate-impacted emergency events. This training module is a part of a larger BEF project to create a trauma informed care training curriculum for those who work within the environmental sector through an **online module platform**.

The heavy lifting to create this module was done by Hannah Buehler, who will be departing our team in June 2024. Hannah's efforts drew upon conversations with numerous professionals impacted by flood and fire events in Washington and Oregon. We will miss Hannah and are grateful for their work and for the contributions of many partners.



Hannah Buehler at a planting event in 2020. We are so grateful for Hannah's work to support restoration and communities across the Pacific Northwest, and wish them luck in their next adventure.

Key Components of the Training Module

- The emotional timeline of the recovery process
- Caring for oneself and community during emergency events
- Building adaptive teams and organizations to respond to crises
- Practices to bring your brain back online when undergoing stressful or emotionally challenging circumstances
- Equity and accessibility considerations in planning and response
- Cultivating compassion satisfaction, conviviality, and meaning throughout the recovery timeline

Alongside this online training module, over the past year, BEF staff also hosted three discussion cohorts to foster dialogue between participants as they went through the online course material.

The initial two cohorts consisted of floodplain managers based in Washington who were part of the state-wide Floodplains by Design Network. The third cohort was formed after a presentation to the Oregon Fire Resilience Learning Network and was comprised of fire resilience and recovery workers based in Oregon. These cohorts aimed to build relationships, develop shared language and engender deeper awareness around the impact of trauma following environmental emergencies and its effect on the health of our region's environmental sector.

“I really appreciate hearing others stories as they relate to content. It grounds the discussions for me and helps me draw new insight from others’ lived experiences around the content.”

-Testimonial from Spring cohort participant

Discussion Cohort Highlights Intrapersonal Impact of Trauma

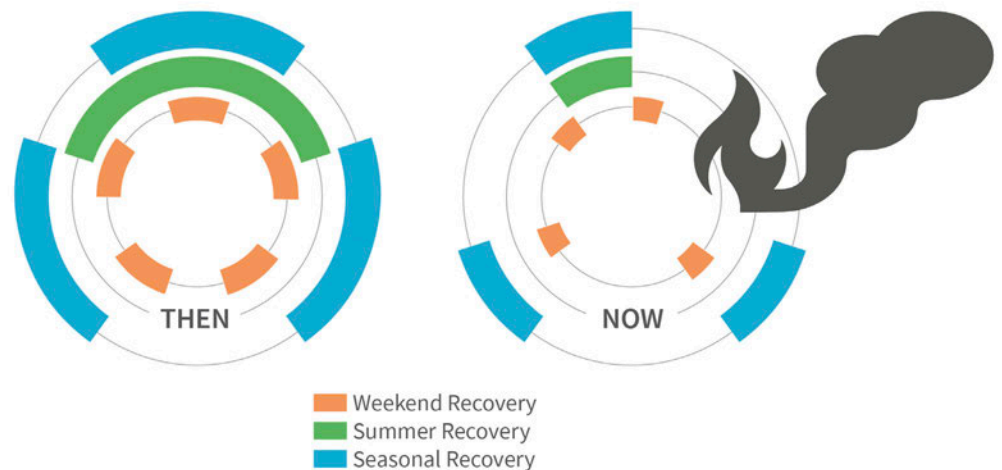
Intrapersonal: occurring within an individual

Following a brief orientation session, our first session looked at the **intrapersonal** level of the impact of trauma. This included discussion of how traditional cycles of rest and recovery have been interrupted and altered by both social and environmental stressors. Over time, work culture in the U.S. has established norms for cycles of rest and recovery, typically observed during weekends, summer holidays, and winter breaks. These periods traditionally offer vacation time or lighter workloads, allowing for mental and physical rest. While this model has its limitations and does not meet the needs of everyone

in our communities, these breaks have provided predictability and transparency on times for prioritizing work and times for prioritizing rest. Now, social and environmental stressors frequently disrupt these rest cycles. For example, the increasingly prolonged wildfire season in the Pacific Northwest now begins earlier in the summer season when many take vacations or enjoy family time while kids are out of school, and extends into the fall. When wildfire and smoke impacts cut into this time off, deep rest is less accessible, leading to persistent toxic stress in the workplace and disrupting our ability to take time off and come back to work refreshed.

In the first session we also looked at how both changing cycles of rest and recovery impact our nervous systems and workplace stress impacts cognitive functioning. We identified symptoms that correspond with various levels of stress so that we can better identify when we or colleagues are moving from a tolerable level of stress into a toxic level. Groups also identified activities we can prioritize at each level of stress ranging from making to-do lists to deep breathing exercises to bring down stress levels and regulate our nervous systems in the workplace. Meetings concluded with action planning to integrate self-care activities into daily routines, emphasizing strategies like time blocking, micro breaks, and accountability partnerships to promote overall well-being and longevity in the workforce.

Recovery Cycles



Interpersonal Relationships

Interpersonal: *involving relationships among people.*

The second of the sessions looked at the **interpersonal**. Pre-emergency supportive interpersonal relationships can play an essential role in preventing stress levels from reaching a level of toxic stress and trauma during and after an emergency event. Developing trauma-informed approaches to communication and relationship building within our teams before emergencies occur can help us and others to keep our frontal lobes online when emergencies do occur. Through parallel process, the culture we develop through day to day interactions within our teams and organizations will ripple out and affect the communities and environments we hope to serve. During emergencies, increased stress can strain these important interpersonal relationships, so the cohorts discussed how caring for ourselves and finding joy and satisfaction in our work are critical to our long term ability to stay engaged in our work. Integrated floodplain management groups and fire collaboratives are often great examples of spaces where participants can develop nurturing relationships that serve them during emergency events.

Cohort participant responses to the question: "What bring you joy in your work?":

- Working towards a vision, not just against things
- Seeing multi year projects completed
- Helping others stay in the good fight
- Striving to build something for future generations
- Moving through barriers you don't think will be solvable
- Giving rivers space and helping farms, salmon and people thrive

Organizational Practices

In the last of the sessions, we turned to the organizational level to examine how trauma informed policy, practice and procedure can help support staff and the community around emergency events. Just like preparing ourselves and our teams can help keep our brains and the brains of our coworkers, partners and community members online and out of states of toxic stress during emergency scenarios, organizations

that are prepared for emergencies provide a sense of support, security and predictability for staff, community and the ecosystems we serve. In this section we also explored the significance of building regional networks and partnerships before emergencies occur, promoting equity in emergency response, and avoiding decision-making pitfalls during crises.

“This group opened my eyes to how all manner of agencies need to be trauma-informed, both for the communities they serve and for the wellbeing of their own staff. I no longer feel like my focus on self-care, trauma-informed practice, and emotional support are out of place in the Emergency Management world.”

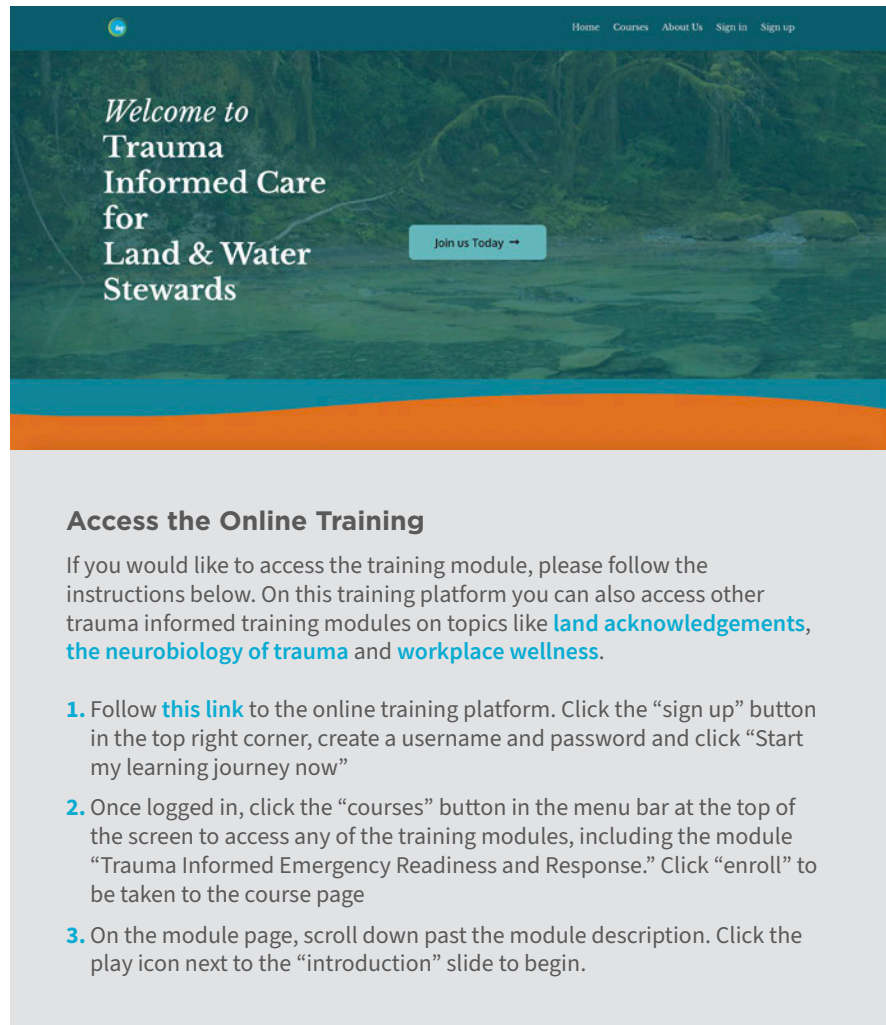
– Testimonial from summer cohort participant

How Do We Respond?



Moving Forward

The work of environmental professionals in floodplain management, fire resilience, and ecological restoration is critical not only for ecological preservation but also for cohesive community support during and after environmental crises. BEF's trauma-informed emergency readiness and response training, along with the module discussion cohorts, aimed to highlight the emotional and social impacts of environmental emergencies on environmental professionals and build shared language and community around those experiences. Through these discussions and networks, we are working to build a regional network of voices advocating for trauma informed practices, self care, relationship building and intentional organizational policies that can equip environmental workers with the tools to better navigate the challenges posed by a changing climate. This holistic approach ensures that both the ecological and human aspects of environmental crises are managed with compassion and foresight, ultimately leading to more resilient communities and greater longevity of our region's integrated floodplain and natural resource management workforce.



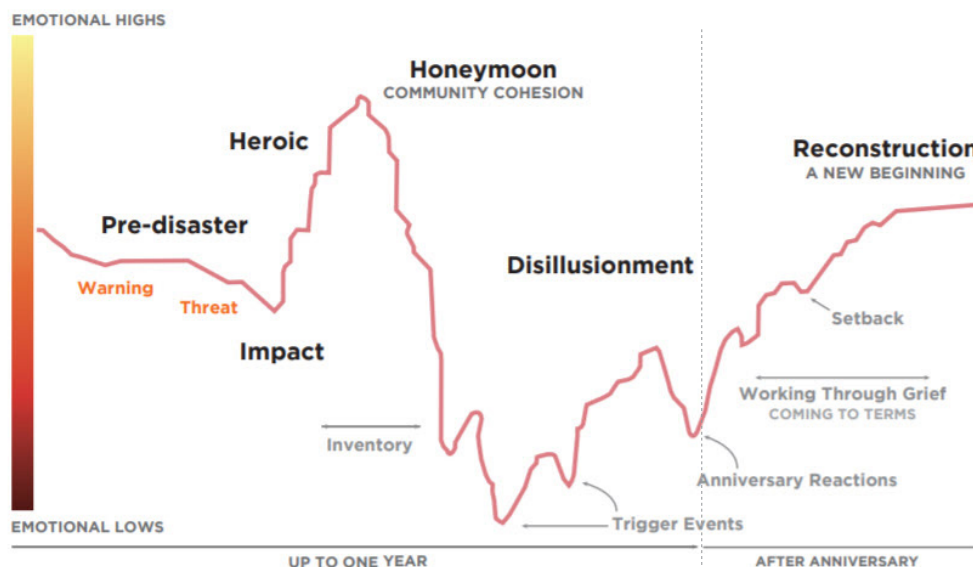
The screenshot shows a website header with a navigation menu (Home, Courses, About Us, Sign in, Sign up) and a main heading: "Welcome to Trauma Informed Care for Land & Water Stewards". A "Join us Today" button is visible. Below the header, there is a section titled "Access the Online Training" with instructions and a numbered list of steps.

Access the Online Training

If you would like to access the training module, please follow the instructions below. On this training platform you can also access other trauma informed training modules on topics like [land acknowledgements](#), [the neurobiology of trauma](#) and [workplace wellness](#).

1. Follow [this link](#) to the online training platform. Click the "sign up" button in the top right corner, create a username and password and click "Start my learning journey now"
2. Once logged in, click the "courses" button in the menu bar at the top of the screen to access any of the training modules, including the module "Trauma Informed Emergency Readiness and Response." Click "enroll" to be taken to the course page
3. On the module page, scroll down past the module description. Click the play icon next to the "introduction" slide to begin.

Phases of Disaster



Source: Zunin/Meyers, as cited in Training Manual for Mental Health and Human Service Workers in Major Disasters, U.S. Department of Health and Human Services (2000).

We Have a New Website!

www.treeline-pnw.org

We're excited to share the new home of all things treeline with you. We have redesigned our website to make finding past articles, as well as webinars, newsletters, and reports easier and more user friendly.

Join us on a quick tour of the new website, or check it out for yourself here: <http://treeline-pnw.org/>.

You'll first see the new landing page, where you can navigate from the buttons at the top, or scroll to see what we've cooked up. One important note, the subscribe button is now at the top of the page, so if you want to get fresh, quarterly newsletters sent to your inbox, click that link.

When you scroll down, you will come to the library, which holds all of the content that we've generated since treeline started in 2021. Here you can **filter** by subject or content type, or **search** if you're looking for something specific. Not sure what you're looking for? Several **featured articles** will auto-populate; maybe one of these is on something you've been dying to learn about.


Below the library are full newsletters, like the one you're reading now! After that, you'll find a little bit about what we do here at treeline, with an all important link to get in touch. Please use this link — which opens an email to treeline@b-e-f.org — if you want to reach out with a story idea, questions, feedback, kudos, and more.

We just launched this new resource site, and we want to make sure that it works well for our audience. If you run into any issues or have accessibility concerns, please [shoot us a message](#) and let us know what's not working so we can fix it.

Thanks and happy summer to our wonderful community!

With Gratitude,

Your treeline Team: Kas Guillozet (Editor), Kayla Seaforth (Coordinator and Contributing writer), and Contributing writers: Jean-Paul Zagarola, Hannah Buehler, and Julia Jaquery

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A hub for knowledge sharing about climate resilience, restoration, and plants in the Pacific Northwest

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News

Seattle Times Developed an Illustrated Guide to Salmon Migration Barriers

View the guide [here](#).

Puget Sound Institute and the Habitat Strategic Initiative Lead Recently Released an Article Highlighting Examples of Local Social Marketing Strategies for Puget Sound Recovery.

[Click here for the article.](#)

The Salish Sea Current Shared an Article About the Potential Delisting of Hood Canal Summer Chum.

Read the article [here](#).

See Hakai Magazine's Recent Article: Not Too Wet To Burn.

Amid an uptick in wildfires, scientists search for lessons on how to save old-growth rainforests from a fiery future. by Madeline Ostrander, [here](#).

The Floodplains by Design Program Was Recently Featured in the "Nature Is" Podcast.

Find the episode [here](#).

Events & Opportunities

A Call For Tree Funding Needs Through BEF's Promise The Pod Program Will Go Out in the Late Summer and Be Featured in Our September Issue. Stay tuned!

USDA Forest Service Tribal Forest Management Fellowship

Apply through July 19, 2024 [here](#).



watersheds
program

Do you have an idea for a future newsletter article or interview, or a suggestion for how we might improve? Please reach out to Kas Guillozet at treeline@b-e-f.org.

This work is supported by Meyer Memorial Trust, an EPA Climate Resilient Riparian Systems Lead Grant (EPA-I-R10-PS-2023-001), supported by a subaward from the Washington Department of Ecology, the Building Nursery and Recovery Infrastructure for Climate and Fire Resilient Oregon Forests Project supported by a subaward from the USDA Forest Service and Sustainable Northwest.