



Klamath Fire Ecology Symposium Points Toward the Future of Fire Management

by Will Harling

The challenge for the fifth Klamath Fire Ecology Symposium (KFES) in Orleans in May, 2017, was to leverage changes in national and state fire policy to allow for more prescribed fire and managed wildfires at opportune times in an era that sees wildfires grow harder to control every season.

The 100-plus attendees, tribal leaders, scientists, and agency practitioners from across the country, came to share their work and to listen to one another. And by the three-day symposium's close, state and federal officials had sung the praises of controlled burns and indicated a willingness to move past the suppression-first approach to fire management.

During the symposium's keynote presentation, retired fire ecologist Carl Skinner stressed that fire is returning whether we like it or not, but that how this fire comes back, as the destroyer or the redeemer, really depends on us.

Skinner's presentation, summarizing work with University of California at Berkeley's Scott Stephens and others

incorporating dozens of fire studies from across the Sierra Nevada mountains, showed an unmistakable pattern in fire regimes dating as far back as tree rings could take them with any statistical confidence, about 400-plus years.

Four periods emerge from the data. One begins with their earliest samples and ends in the early 1700s. Another stretches from then up to the mid-1800s, and then a third goes until 1911 when the federal Weeks Act marked the onset of our current fire suppression policy. Here, the fire record flatlined for nearly a century, up until present day, when the West seems to be on the precipice of a new era of megafires.

After researchers looked at all the known climate patterns that might have influenced fire regimes in the Sierras and did not find any relationship to these periods, they began looking at other potential factors.

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KFES Field Trip—Red Cap Roots and Shoots

Learning As We Go! The Bridge Between Adaptive Management and the Practice of Píkyav

By Will Harling, Director, Mid Klamath Watershed Council

You don't have to look too far in this corner of the world to find examples of land and resource management actions from the past that haunt us today. From the past century of fire exclusion that spawned our recent spate of megafires, to road systems that were built with little concern for their effect on fish passage and habitat, we have a lot of work ahead of us to restore our ecosystems. Luckily, people that live along the Klamath River are connected to this land by way of fishing, farming, hunting, gathering, and working in the woods. Our world view is informed by experience with the natural world day to day, season to season, and year to year. Based on these observations, we understand how our actions shape and define the world around us.

Modifying how we manage our land and waterscapes based on how we see the plants, animals, and aquatic species responding to our actions is the key to adaptive management as described by Western science. It is also the foundation of the Karuk Tribe's practice of píkyav, or "to fix it" in English. Spawned from an ex-Bigfoot hunter and San Franciscan gypsy and raised in the wilds flanking the Salmon River, I am neither an expert on adaptive management, nor on practicing píkyav. My life's experience in the Klamath River Basin, however, has converted me to this way of thinking—this way of living. And as someone who grew up fishing and hunting here, I believe that what is at stake at this point is our ability to sustain ourselves in this place, the ability to feed ourselves from what this land provides. The warning signs are all around us: we have not fully understood the consequences of our management actions, and the time is short to get it right.

The lowest Fall Chinook run ever is predicted for the Klamath River. The Spring Chinook dives on the Salmon River confirmed the second lowest run of springers on record with a fish count of 166. Genetic studies newly published by UC Davis show that the biological adaptation strategy of Spring Chinook salmon, which has historically allowed them to store enough fat to reach the headwaters of the Klamath—and even the Columbia River—to spawn, was a unique event that likely occurred hundreds of thousands, if not more than a million years ago. Should the count drop further, the genetic diversity of the population may be irretrievably lost. Even now, their ability to adapt and survive in this place has been diminished, an ability imprinted on their DNA.



Will Harling diving in the Klamath River.
photo by David McLain

It is critical for non-tribal residents and managers to understand the fundamental principles of píkyav: sustainable land management must be rooted in knowledge, practice, and belief. Without appropriating traditional ecological knowledge, non-Tribal people must also understand and believe that there is no separation between humans and the natural world. Our survival here, like the salmon, is ultimately tied to this place. Western culture has been based on resource extraction: we take what we want and move on once resources have been exhausted. **Now is the time for us to get this right: to understand what it means to be stewards of this land and these waters, and to take responsibility for our actions.**

The Mid Klamath Watershed Council is working with the Karuk Tribe, other partner organizations, and our local communities to build a bridge anchored on one end by adaptive management and on the other by the practice of píkyav. We are seeing positive changes: shifts in national fire policy are beginning to support cultural and prescribed burning, and managing some, rather than suppressing all, wildfires for resource benefits. The federal government's monumental decision to remove the Klamath dams by 2020 would, if implemented, make it possible for our Spring Salmon to find their way to the Upper Klamath basin once again. In the face of megafires and species extinction, this bridge between managing adaptively and practicing píkyav symbolizes hope for future sustained resource abundance. We will only fix it by working together across these boundaries, both real and perceived. Now is the time!

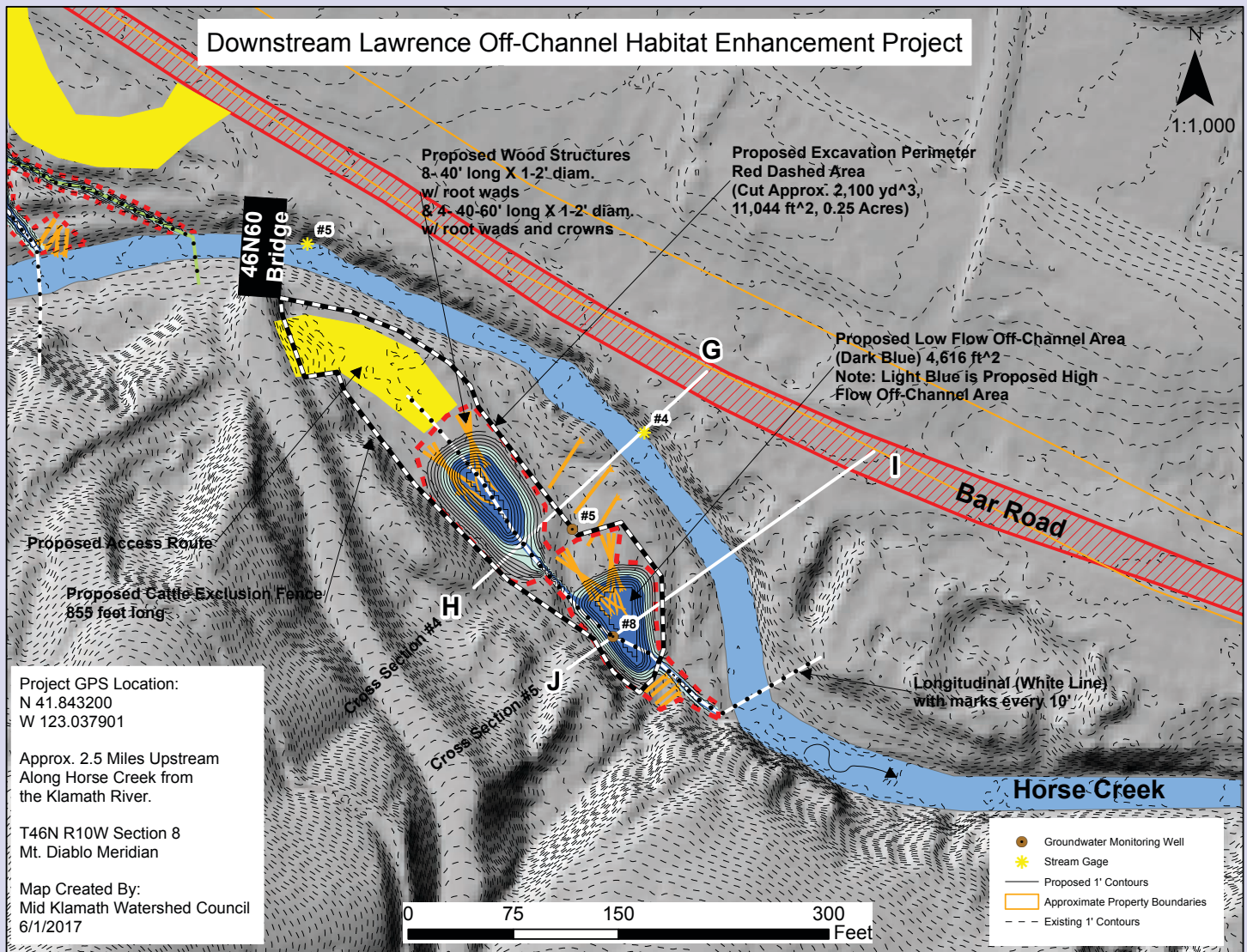
photo by Will Harling

Anatomy of an Off-Channel Coho Rearing Pond

by Charles Wickman

Every pond is unique and site specific, but all share a basic anatomy. The above project map shows some of these common features. These ponds are built in the floodplain, where any structure, either man made or natural, is a temporary structure. Longevity is desired, but permanence is not expected. This particular pond is being built just downstream of a bridge, which will afford it some protection from over-topping flows. The ponds are connected to their respective creeks by an inlet/outlet channel, usually placed at the downstream end of the pond. This design feature discourages stream capture at the top of the pond. The belly of the pond is usually six to ten feet deep with scalloped edges at varying depths to increase edge

habitat for foraging and plant growth. Large wood and brush is added to increase wetted complex cover to decrease predation. Each proposed project site is monitored for groundwater for at least a calendar year before construction. A good source of groundwater provides cooler pond temperatures in the summer, higher pond temperatures in the winter, and less temperature variation between summer and winter and night and day (all relative to the creek). This, combined with no through flow, provides an environment that is pretty easy for a fish to live in, allowing the fish to fatten up while not expending too much energy.



Big Plans for the Fisheries Program

by Charles Wickman

As I write this my burned retinas are casting a solar crescent on the page. That's just to say, I'm wringing out a Fisheries article in the eleventh hour, barely before this newsletter goes to print, and the solar eclipse is as close to totality as it will be through the smoky skies over Orleans. Much like the year in restoration, it's crunch time, and it seems like it's always crunch time. Though the last 12 months were not a big year for project implementation, it was a huge year of planning, designing, seeking, and securing funding, forging new relationships with partners and landowners, pursuing agency blessings for big plans, and learning. Always learning. Now comes the implementation.

This year kicked off with a shot of inspiration. In March, MKWC Fisheries staff made a trip north to Washington's Olympic Peninsula and Nooksack River to glean restoration knowledge from the best of the best, and their decades of experience. What we saw and what we learned was well outlined by our Director Will Harling in his August blog post, which can be found at www.mkwc.org/blog/. I encourage you to check it out.



Clear Creek on the east side of the Olympic Peninsula was an example of a fish habitat restoration project that also solved a transportation issue. Every year a major street just downstream would flood due to poor water storage and drainage. By reconnecting the floodplain and establishing multiple channels, NSD has kept the road from flooding for the past three years. MKWC is currently working on several floodplain projects. *photo by Will Harling*



Youth Conservation Corp volunteers adding brush bundles to O'Neil Pond. Eighteen members added 22 brush bundles to increase crucial cover habitat for juvenile salmonids. *photo by Jimmy Peterson*

This trip was a follow-up to a 2009 trip which spawned eight years of frantic off-channel pond construction here on the Mid Klamath. Thirteen ponds, and counting! What we learned in Washington, and what tribal biologists and others had shown through 30 years of solid science, was that these habitat features were vital to the recovery of coho salmon. Providing slow to no flow refuge from high winter flows in our high-energy stream systems allows juvenile coho and steelhead to overwinter in an



Mitzi George Wickman giving scale to the stump of an old riparian Western Red Cedar at the upper extent of the Elwha Dam (RIP) reservoir. Extensive tree planting and invasive weed removal is ongoing in this newly exposed river channel. *photo by Will Harling*

environment that promotes growth, strength, and a fighting chance to make it out of their natal streams and through the gauntlet of the Klamath River the following spring to enter the ocean. Unlike their cousins the Chinook salmon, coho spend one to two years in fresh water before the big show in the open sea, putting them at a disadvantage in a river system that has lost most of its off-channel rearing habitat to logging, road building, beaver extirpation, and residential and commercial development along the banks of their favored waters. We're



MKWC Senior Technicians brave high water conditions to take creek flow data in Horse Creek (February 2017). *photo by Mitzi Wickman*

all complicit in this loss, but more and more we're coming together to address it. MKWC has worked with ranchers, farmers, loggers, national forests, and many small private

landowners to reestablish this habitat where it is needed—and where it can coexist with the interests of these landowners.

MKWC plans to continue building off-channel ponds (at least 10 more between this year and next), and we will continue to pass on the knowledge that we've gleaned to other restorationists and the agencies who are still trying to make heads or tails of this “new” type of project, but we're beginning to realize that these projects, as necessary as they are, are only stopgap measures to stave off extinction. We need to start looking beyond this project type toward a more process based approach. That was the big message taken from our March field trip. Reconnecting floodplains where possible, allowing our streams and rivers to do the work of creating and maintaining their own backwater and off-channel habitats. This is our challenge. Unlike most of the projects we saw in Washington, ours will be constrained by the need to work within a physical landscape that is held largely by private ownership, and even then subdivided many times over. And this physical landscape is further divided culturally, necessitating relationships forged throughout the basin based on trust, hard work, good science, and projects that prove good for the fish, forests, and all the communities within the basin.



Spring Chinook Surveyors in Boulder Gulch, North Fork Salmon River.

One fit like a glove: periods of settlement that disrupted native communities throughout the region. First it was Spanish settlement in the 1730s, followed by the Gold Rush in the 1840s. Both disrupted the relationship between humans and fire in unique ways.

Finally, the death knell for native burning came when Gifford Pinchot, the founder of the U.S. Forest Service, used fire suppression in the wake of the Great Fires of 1910 to justify the existence and growth of his new agency.

Skinner and other presenters said that use of fire as a tool is the best hope to maintain and restore the legacy of old-growth forests, and the once vast expanses of oak woodlands and grass savannahs that the first Spanish settlers described more than three centuries ago. Skinner's keynote presentation finished with a clear message: After what may be the last wet winter for a long while, there is no better time for fire managers to consider using managed wildfires in these moderate conditions to begin restoring these historic fire regimes, before the next megafire comes.

For Yurok tribal member Margo Robbins, who had presented the day before on the nascent Cultural Fire Management Council, Skinner's findings were bittersweet. This is what tribal people in the Klamath Mountains have been saying all along: Fire is the most important tool for managing the myriad resources the Yurok, Karuk, and Hupa peoples depended on for survival. It is what keeps the world in balance. It is why, as Bill Tripp, with the Karuk Department of Natural Resources, explained in his presentation that the Karuk people lit off the top of Black Mountain outside of Orleans every August,

followed by Offield Mountain upriver at Somes Bar on the new moon in September.

Ignition in late summer would be an unthinkable act to most people today after a century of fire exclusion. But this ceremonial burning at the landscape scale not only protected the villages of Panámniik and Ka'tim'iin, (the Karuk place names for Orleans and Somes Bar) but also called the salmon up the river by creating a smoke inversion and lowering water temperatures enough to allow passage to their spawning grounds.

This co-learning between traditional knowledge and western science, grounded in practicality by presentations from fire managers, sociologists, and economists, has become the hallmark of the Klamath Fire Ecology Symposium since its inception in 1997.

The first symposium, organized by local conservation biologist Carlos Carroll, called attention to the short-sighted practices of salvage logging in the wake of high severity wildfires. In 2008, the Mid Klamath Watershed Council, the Karuk Tribe, and the U.S. Forest Service Pacific Southwest Research Station collaborated to bring the symposium back as a venue to get all the people holding a piece of the fire puzzle together under one roof in the Klamath Mountains.

The symposium has been held every three years since and has consistently attracted esteemed fire ecologists and the most knowledgeable traditional fire managers.

This year, Ken Pimlott, the director of CAL FIRE, flew in on a helicopter only minutes before his address to the packed room, a community center cobbled together out of the guts



Margo Robbins spoke at this year's Klamath Fire Ecology Symposium.



Carl Skinner was the Keynote Speaker at this years Klamath Fire Ecology Symposium.

of an old grocery store. In his address, Pimlott, a Humboldt State University graduate, reaffirmed his commitment to significantly increasing CAL FIRE prescribed burning acres and, perhaps more importantly, to increasing their burning with partners. Pimlott's staff is looking at agreements that could pave the way for sharing both resources and liability in returning good fire, prescribed fire, to the wildland urban interfaces, where communities blend into the forest.

U.S. Forest Service Deputy Regional Forester Bernie Gyant followed Pimlott, stressing the importance of fully analyzing the effects of no action, in contrast to knee-jerk suppression, in this era of megafires.

He acknowledged the importance of embracing managed wildfire as a tool to get ahead of the next wildfire. And it was no accident, he said, that his boss Randy Moore had selected Merv George and Nolan Colegrove, both tribal members and ceremonial leaders, to lead the Six Rivers National Forest.

Here in the Six Rivers, an historic agreement between USFS Region 5 and the Nature Conservancy is being used to pilot cross-boundary burning with mixed fire crews between public, private and tribal lands.

On the final day of the symposium, participants toured prescribed burns implemented through the Klamath River Prescribed Fire Training Exchange (TRES), and through a local agreement between the Six Rivers National Forest and the Karuk Tribe. It is one thing to talk about fire but another to walk through a recent burn and see all the life coming back.

At the West Simms unit just above Orleans on the edge of a 2013 wildfire that nearly destroyed the town, Forest Service research ecologist Frank Lake, of Karuk descent, led people through an area that, two years before, had seen its first fire in a

century. The area had been burned with only a narrow manual fuels treatment, not much more than firefighters building fire lines to suppress wildfires would do, to hold the fire on the perimeter. Fire was the only treatment on the 67-acre interior.

This strategy uses burn timing, when the conditions are such that the controlled burn targets the ground and ladder fuels and specific trees in the canopy, while leaving the legacy firs and oaks dating back to the pre-fire suppression era. This approach avoids costly thinning treatments and is essential in the rugged mountains of the Klamath region, where just putting a human on a hillside, much less with a chainsaw, can be dangerous. It is a demonstration of treatments the Western Klamath Restoration Partnership will begin modelling in the coming years at a much larger scale just upriver in the nearly 6,000-acre Somes Bar Integrated Fire Management Project.

The fire knowledge shared at this year's Klamath Fire Ecology Symposium, both in presentations and the hum of conversation, was deep and broad, tying together the social, cultural, ecological, and economic threads of fire into a clear vision for the future of fire management.

As the crowd walked along the edge of an old meadow reappearing out of the thicket as the symposium drew to a close, they noted signs of elk, scat, and nibbled foliage, which locals said had long been absent. The small stream meandering through the meadow, denuded immediately after the burn, was now covered with a mat of Indian tea (*Yerba Buena*), and chain fern, iris, huckleberry, azalea, and hazel. : "As a practitioner, as someone who gathers for ceremony and to feed my family, as a hunter, I walk through here and it just makes my heart happy", Lake said.

This article was originally published in the North Coast Journal, June 1st, 2017.

Orleans/Somes Bar Firewise Community Update

by Nancy Bailey

As a nationally recognized “Firewise Community”, Orleans/Somes Bar residents are committed to creating and maintaining a fire resilient community. Each year the Firewise Committee, with representation from MKWC, the Karuk Tribe, the Volunteer Fire Department, and the U.S. Forest Service, Orleans Ranger District, plans and carries out a variety of activities aimed at increasing our awareness and modeling proactive fire-safe behavior. Spring and summer of 2017 have seen a host of events toward this end.

Firewise Days at Orleans Elementary and Junction School

Targeting youth with fire-related education is a priority for local Firewise planners. We build resilience into the future if our kids grow up smart about fire. At the fun school events, children compete in a Firewise obstacle course developed by MKWC staff. The course features stations which require fire-smart actions and activities, including moving brush and raking leaves, as well as feeling a door to check if it’s hot before opening it, and calling 911



Firewise Day Junction Elementary fire extinguisher demonstration.

Demonstration Fuels Reduction

The Youth Conservation Corps joined the MKWC brushing crew, student interns, and neighbors to reduce dangerous fuels in the Lower Camp Creek neighborhood, a part of town that is particularly vulnerable, as seen in both Orleans fires of 2001 and 2013.



Youth Conservation Corps at work. *photo by Nancy Bailey*

Free Chipping Days in May and July

After a wild winter, residents enjoyed the help in cleaning up quantities of downed material right in town and in the Pearch Creek, Ishi Pishi, and Thunder Mountain neighborhoods.



Karuk Tribe and MKWC chippers at work in Thunder Mountain. *photo by Nancy Bailey*

Subsidized Mowing

This year we mowed over 15 acres in and around the community, at a subsidized rate made possible by a vegetation management grant from PG&E.



MKWC mower at the Crosby property. *photo by Nancy Bailey*

Welcome to the Future of Fire Management in the Klamath Mountains!

By Will Harling

When fire ecologist Carl Skinner presented his keynote address at the end of this year's Klamath Fire Ecology Symposium, his message was clear: "after one of the wettest winters on record, now is the year to embrace managing wildfires". This message was received, as Klamath National Forest Supervisor Patty Grantham invited him to give this same talk to her fire staff only weeks before the beginning of fire season.

After a multi-year drought that demonstrated the catastrophic potential of wildfires burning in the hottest, driest years, Grantham was ready to assume the risks associated with letting wildfires burn in the Marble Mountain Wilderness area, under certain criteria: they did not pose any imminent or mid-term threat to human life and property, and they were burning at predominantly low to moderate intensities. On that basis, the Island Fire, located in the southern edge of the Marble Mountains near Lake of the Island in the Upper North Fork Salmon River, was allowed to burn to achieve resource objectives.

Hemmed in by recent fire footprints to the south, west, and north, and by barren, rocky ridges to the east, the Island Fire has been a poster child for this managed wildfire strategy. Minimal resources are being used to manage the fire, and the effects are exactly what fire managers had hoped: ground fuels are being reduced, legacy stands of trees are surviving and are more resilient to future wildfires, and there is general support from the community despite moderate smoke impacts. As of August 20th, acreage is 1470, and still producing desired fire effects.

This shift in fire policy in Northwestern California to reflect the direction of both fire science and traditional fire knowledge has come within and outside of fire management agencies. Through the efforts of the Western Klamath Restoration Partnership (WKRPP) over the past four years, to create opportunities for dialogue and collaboration between diverse groups, a new vision for fire management in the Klamath Mountains has emerged. The Partnership has agreed to stop



Ukonom Fire burns at night.
photo by Leslie Laird

deferring fire risk to future generations—to instead get good fire on the ground.

The WGRP is planning three projects totaling over 50,000 acres in the communities of Happy Camp, Somes Bar, and Sawyers Bar. The furthest along, the Somes Bar Integrated Fire Management Project (Somes Project), which proposes to treat 5,500 acres around four high risk neighborhoods in the Somes Bar community, is designed to restore fire process after a century of exclusion, protect mid-slope inholdings from wildfires, allow for the use of managed wildfire in adjacent wilderness areas, protect and enhance cultural resources, and create restoration by-products from mechanical thinning treatments.

The Marble Fire, ignited on July 19th just above Highway 96 near Marble Mountain Ranch, threatened to make this prophesy reality. It escaped initial attack and spotted across Stanshaw Creek into the Patterson Ranch portion of the Somes Project, making an uphill run towards Patterson Ranch. Flagging hung only days before by local crews, comprised of Karuk Tribe and MKWC employees to delineate treatment units in the Somes Project, went up in smoke. Orleans Ranger District Prevention Officer Will Bojorques met MKWC director Will Harling at the bottom of Patterson Road and they teamed up to make contact with landowners. They delivered standard evacuation

notices, but also provided MKWC pumps and fol-da-tanks to Patterson landowners who chose to stay and protect their properties. This level of collaboration between fire managers and residents is improving relations drastically during wildfire events and creating an example for rural communities across the West.

An armada of helicopters and planes dumping water and retardant held the Marble Fire up mid-slope only a quarter mile away from contingency lines around Patterson Ranch. The latent moisture of a wet winter allowed fire crews to go direct into the bowels of Stanshaw Creek and line the fire by day four.

Even as mop up and rehab work on the Marble Fire was getting underway, a large thunder cell passed from east to west across the northern edge of the Marble Mountains and into the Siskiyou Wilderness area, starting fires in Elk Creek, Ukonom Creek, Clear Creek, and near the Forks of Blue Creek. These fires have been grouped into the Clear Fire and the Orleans Complex, which includes the Burney and Frank Fires in Elk Creek, and the Ukonom and Forks Fires in Ukonom and Blue Creek, respectively. Of these, the Burney, Frank, and Forks Fires are being contained in the footprints of the 2008 fires in which they started. While they could possibly be put out with direct attack, the combination of firefighter exposure working



The Oak Fire smoulders.
photo by Mario Gomez

amongst the snags from the '08 fires and the beneficial effects of these fires cleaning up the dead fuels from the 2008 burns has informed their decision to use indirect containment on these fires. This is a huge step in the right direction for getting more good fire on this landscape!

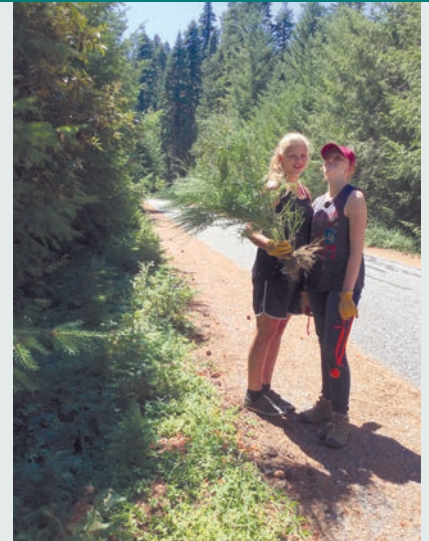
The Ukonom Fire is burning in the footprint of the 2008 Panther Fire. Both fires started in the deep gorge of Ukonom Creek, but in 2008, firefighters were sent in to size up possibilities for direct attack. Crew supervisor Daniel Packer, a father of four young girls from Washington state, lost his life that day when the fire roared out of the Ukonom Creek drainage and burned over him before he could escape. This time around, fire managers fell back to trusted lines from the 2008 fires, and waited for the fire to come to them.

When the smoke settles at the end of this summer, we will again look at what worked, and what didn't, and through this After Action Review process, build a better fire future for this country. Shortly thereafter, we will implement the Fall 2017 Klamath River Prescribed Fire Training Exchange (TRES) from October 1-15, utilizing a local Type III Incident Management Team, the same structure used to deal with the complexities of wildfires, to implement controlled burns on 400-800 acres between Weitchpec and Happy Camp. This team of 90 fire lighters will consist of locals at all levels of training, as well as fire professionals from around the country and around the world who have been coming back every fall to support this effort to restore fire process in the Klamath Mountains.

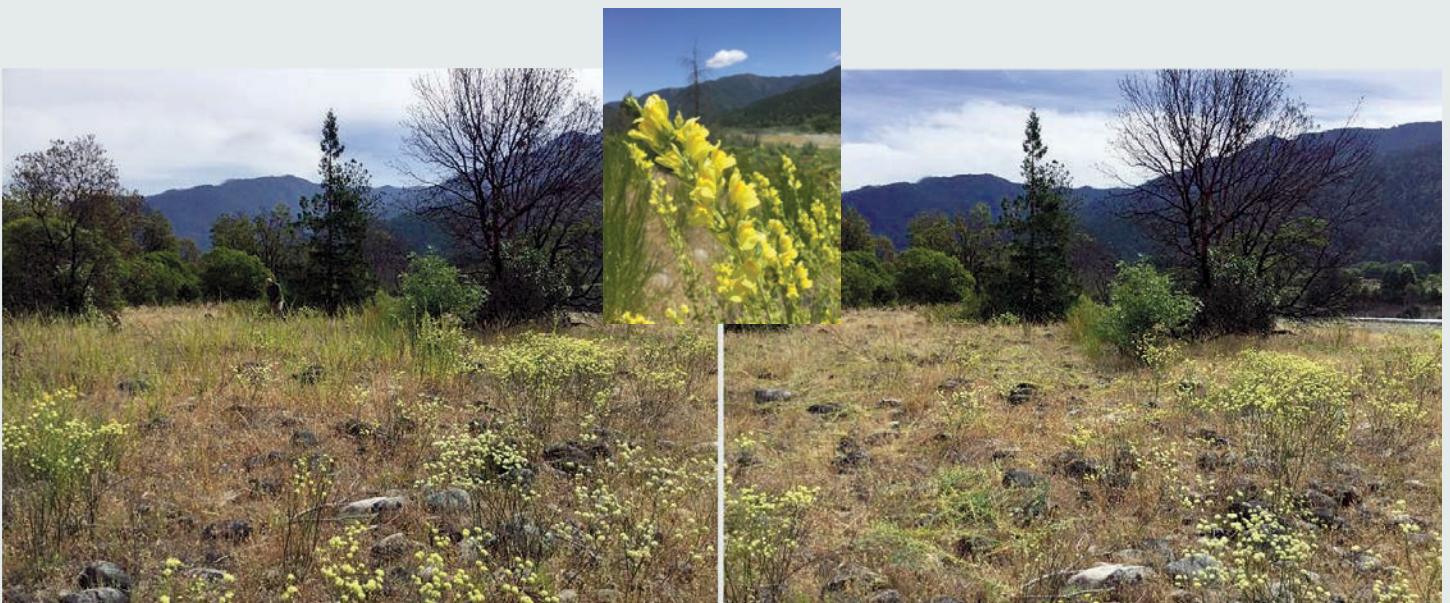
Plants Program 2017 Highlights



Taking a break on the Benjamin Creek Trail plant hike.



Veteran youth stewardship crew members, Autumn Allgier and Anna McLane, pull Scotch broom from the GO Road.



Before and after photos of clipping back the A-rated Dalmatian toadflax at Tishanik.

Watershed Education Snapshots

The Mid Klamath Watershed Council's Watershed Education Program coordinates hands-on watershed restoration and monitoring activities with local youth including, fall salmon surveys, fish passage improvement, invasive plant pulls, Downstream Migrant Fish Trap visits, and tree planting projects. Students are also involved in citizen science programs, like precipitation

monitoring and spring and fall plant observations, as well as hands-on climate curriculum. During the summer months, the week-long overnight Klamath-Siskiyou Outdoor School takes place, as well as youth restoration raft trips. High school-aged Stewardship Interns also work during the summer, assisting with a variety of projects in each of MKWC's programs.



Restoration raft trip participants brave Rattlesnake Rapid in Happy Camp, CA. *photo by Toz Soto*



Yreka High Schoolers making willow walls for improved fish habitat.



Participants of the Klamath-Siskiyou Outdoor School (KSOS) at East Boulder Lake in the Trinity Alps Wilderness. *photo by Carol Earnest*



Rios to Rivers kids from Chile and the Klamath improved fish passage at the mouth of Ukonom Creek before visiting the falls.

photo by Jimmy Peterson



The winning submission of the Klamath River youth poster contest, which prompted youth to express the importance of water conservation. This submission shows two scenarios, one with a green Earth and one with environmental degradation.

Artist: Myriah
6th Grade, Orleans Elementary School
Grand Prize Winner
Conserve Water, Conserve Life
2017 Poster Contest



Students from Orleans Elementary with Karuk Tribe Fisheries professionals learn how to measure juvenile fish at the Salmon River. *photo by Carol Earnest*



Students from Seiad Valley Elementary School removed 1,481 invasive plants from a local river access, along with a truck bed full of garbage and debris. *photo by Laura Jaffe Stender*



Orleans Elementary School student takes a closer look at the flora during a plant observation session. *photo by Ramona Taylor*



Youth stewardship interns improving juvenile fish passage at the mouth of Camp Creek. *photo by Jimmy Peterson*

Community Education and Monitoring of Sudden Oak Death

by Brendan Twieg

Sudden Oak Death could be infecting Mid Klamath oak trees by 2027 due to natural spread across the landscape, and it could arrive even sooner by human introduction. The Mid Klamath Watershed Council has been working with the Karuk Tribe to prevent local introduction of sudden oak death (SOD) and to monitor for its presence. SOD is caused by a microorganism—*Phytophthora ramorum*—that is not native to the United States, introduced by the ornamental plant trade, likely in the 1990s. When it gets established in our native tree species, this pathogen can then spread up to a few miles per year through our forests without human aid. The closest known infestation of SOD to the mid Klamath region is near the confluence of Redwood Creek and Lacks Creek in Humboldt County—about 22 air miles from Orleans. It is likely that the disease could arrive to the Orleans area by unaided spread through natural forests within a decade; human introductions could happen anytime. Forest managers advise that early detection of new infections can lead to more successful disease suppression, and disease epidemiology suggests that forest health treatments prior to disease establishment may make conditions less favorable for rapid spread and widespread infection by the SOD pathogen.

The disease can infect well over a hundred plant species and is of particular concern to tanoak, which suffers high rates of mortality from the disease. Tanoak is very significant culturally and as a food source supplying acorns to the indigenous people of the mid Klamath region. The tree species is also important ecologically. Acorns are a major food source for birds, rodents, and large mammals of our region. California bay laurel—also known as pepperwood and the source of peppernuts and medicinal leaves—is another common host to the disease, but is not significantly harmed by it. Unfortunately, the disease uses this host species to reproduce and spread.

Recent efforts by MKWC and the Karuk Tribe have focused on community education and monitoring for disease symptoms. Through funding from University of CA Western Integrated Pest Management Center, MKWC and the Karuk Tribe have hosted several educational workshops over the past six months to bolster public awareness and educate people on how they can avoid introducing the disease accidentally, such as bringing ornamental or infected plant materials from elsewhere. These workshops, along with two SOD “Blitz” events—one in Happy Camp and one in Orleans—have trained local community members on how to identify symptoms and collect symptomatic tissues for diagnostic tests. The Garbelotto Lab at UC Berkeley provided educational materials and lab testing for the Blitz events. MKWC and Karuk Tribe summer youth intern crews also learned about SOD, and have searched for,



A bleeding canker on a tanoak, left. The SOD pathogen, below.

photo by
Brendan Twieg

and collected, suspicious vegetation in the local area.

MKWC and the Karuk Tribe were also funded to “bait” five local streams for the SOD pathogen throughout the Spring of 2017. Stream baiting is a technique

that facilitates early detection of potential SOD infestations in watersheds. UC Cooperative Extension, Humboldt County, has provided testing of vegetation and stream bait samples. Fortunately, none of the vegetation samples or stream baits collected thus far have tested positive for the SOD pathogen. The USDA Forest Service State and Private Forestry has also provided some funding for the Karuk Tribe’s SOD awareness and prevention program and has provided resources for testing of samples. For more information, contact MKWC Plants Program Director Tanya Chapple (tanya@mkwc.org) or Brendan Twieg (brendan@mkwc.org).



The Values That Guide our Organization

MKWC values its employees as people.

Employees aren't cogs in a machine. People have lives outside of work and MKWC strives to be supportive and flexible around individual employees' needs. Whether your interests outside of work are caring for your family or kayaking on the Salmon River, having interests outside of work is essential to health, well-being, and sustainability when working for a mission-driven non-profit like MKWC. We also support personal growth by creating a workplace where employees can get the training they need as professionals, help create their own job descriptions, have flexible work schedules, and where employees are recognized for their accomplishments and encouraged to be leaders.

MKWC Values Integrity

We strive to meet the highest ethical standards. While our mission might suggest that we value ecological integrity and place-based stewardship, we also value social and economic integrity. We honor diversity, civic responsibility, and honesty. We treat all people with dignity and respect. We strive to make sound decisions that do not transfer ecological or social burden to other people or places. This can be as small as composting, choosing recycled copy paper, or choosing renewable energy options whenever possible. We base our work on the best available science—both Traditional Ecological Knowledge, Western Science, or both. We build trust by being competent and following through with commitments. We produce high-quality work.

MKWC Values a good working environment:

We strive to create a positive work environment. We are a team working towards a common vision. We are positive and solution-oriented. We look out for each other, make decisions together, and provide a safe working environment. We value the opportunity to learn from our mistakes and rise to meet our challenges. Even more, we seek to share what is working so that it can be replicated in other landscapes. MKWC rejects the notion of proprietary work. We want to share what is working so that it can be replicated in other landscapes. We challenge each other to strive for excellence and to continually learn.

MKWC honors Tribal Sovereignty

MKWC's service area is almost entirely within the ancestral territories of the Karuk, Yurok, and Hupa Nations. These nations pre-exist the United States and their sovereignty endures. Tribal sovereignty and success are essential to vibrant communities and families in the Mid Klamath. MKWC values filling a niche role in the river communities and restoration economy. This means being collaborative with Tribal governments for grant funds. This also necessitates consistent recognition of tribal sovereignty and regular consultation with tribal members and entities as we work.



Mid Klamath Tanoak tree stands tall. photo by Brendan Twieg

Great Blue Heron (*Ardea herodias*)

by Blythe Reis

Found along most waterways in this country—marshes, swamps, shores, tideflats—the Great Blue Heron is the largest of all North American herons. The bird species stands 3.5 to 4.5 feet high with a length of up to 4.5 feet head to tail. They have large wingspans up to 7 feet, yet weigh only 5 to 8 pounds. They can stride up to 9 inches. They get their name from the slate gray coloration on their wings.

Their specialized white chest feathers continually grow and fray. They comb this powdery down with a fringed claw on their middle toe, using the down to remove slime and oils as they preen. Their face is white with a pair of black stripes running above the eyes to the back of their head. Extremely cautious birds, they take wing quickly and can cruise at speeds up to 30 miles per hour!

Great Blue Herons often escape detection despite their size, standing quietly in the shallows hunting fish, though they will also eat amphibians, reptiles, invertebrates, small mammals, and even other birds. They spend 90% of their time stalking food. They hunt both day and night with specially adapted eyes that help them see in the dark. Their call is a hoarse croak. They live to around 15 years although the oldest recorded Great Blue Heron was 24 years old. Herons fly with their necks pulled back in an “S” shape, which distinguishes them



A male heron in breeding plumage displaying in front of a female.
photo from www.hbw.com

from cranes, who fly with their necks extended. Monogamous during a breeding season, they will choose new partners the next year. They nest in communal rookeries, often in trees, though some will build ground nests out of grasses. The Great Blue Heron will take up residency year round in places where food is plentiful, even in northern climes, and have benefitted from the return of beaver who create wetlands and expand their hunting grounds.



photo by Longleaf Alliance

áxvaay kár itká'ar Heron and Merganser

As Told by Phoebe Maddox to Sara Emilio Olden, Pub. 1923

uknîii.

Heron (Axvaay) had a wife once anciently, Merganser (Itka'ar).

So Heron did THIS anciently, he harpoons lots of salmon.

One day Coyote (**pihnêfich**) arrives. He thinks: "What a nice-looking wife is Heron's!"

"I wish she was my wife." The next morning Heron goes to harpoon. One of his legs is his harpoon-point. You see, one side of his legs is a little longer. Then Coyote swims over to underneath him. He imitates a salmon and breaks off Heron's leg, his harpoon-point, the side that he spears with. Heron can hardly get back to his house. He tells his wife: "One side is bitten off my leg, the side that I spear salmon with. I have lost my spear. Alas my leg."

The next day again Coyote arrives. He says: "Truly bad what you have done. "You are my relation" he tells Heron. "Truly bad that you have lost your leg," and Coyote goes back. The following day, Coyote passes by. He says: "I am going downriver. I am going downriver to eat some milkweed gum."

"All right," Heron says. Heron just feels bad about his leg. He worries about his leg. Suddenly Coyote arrives again. He says: "I have found your harpoonpoint, downriver on the river-bank." Heron says: "Oh, let me buy it back from you." He takes all his money out but Coyote is not talking at all. Then Heron says: "So how much will I give you? I have offered you about enough." Coyote says, "I'll agree with the exchange if you give me your wife." "All right," and Heron tells his wife: "You'd better go; you'd better go along with Coyote. You'd better marry Coyote." So Merganser goes back with Coyote. Coyote is just so proud. He has a nice-looking wife. When they get back to Coyote's house, Coyote says: "You must cook all of the salmon.



A female Merganser floats gracefully in water.
photo from Wikimedia Commons

Tomorrow you will have all kinds of meat from uphill places." Early in the morning, Coyote goes hunting. When he comes back, Merganser is home. She sees that he packs a big load. He tells her: "You'd better cook the meat." And she thinks, "It is deer meat, maybe, that he is packing". When Coyote unpacks it, Merganser sees that there are all kinds of meat, frog-meat, snake-meat, and lizard-meat. She cooks it and Coyote eats it. Merganser does not like to eat it much. After they finish eating, what was left over, in the ground she digs a hole and buries the meat. The next day Coyote goes hunting. Merganser just sits down on the river-bank all the time. She's weaving a storage basket. He goes hunting and Merganser thinks: "Let me go back home." Then she throws her storage basket into the river and Heron hooks it out, what used to be his wife's storage basket. Then Heron goes into the storage basket and thinks: "Let me go down to the ocean, in the storage basket." And Merganser thinks: "I am going to fly down to the ocean." After she has gone, Coyote returns and thinks "Down-slope on the river-bank I am going to look for her at her old weaving place."

kupánnakanakana.

(Here ends the story.)

Hurry Spring Salmon—you must shine upriverward.

My back is straight.

Hurry Young Brodiaea—you must sprout up.

That's why one of Heron's legs is longer today.

By Coyote it was sort of broken off anciently.

Comments

These Heron stories belong to Orleans, though other Indians claim he belongs to other places. But Heron does not belong to Somes. But he is fishing everywhere yet.



A Great Blue Heron with fish.
photo by USFWS

Foxtail Pine (*Pinus balfouriana*)

by Dean Davis

Foxtail pine is one of the rarest forest trees in the Klamath bioregion, confined to some of the highest locations in relatively small and often isolated stands. Its native range is entirely within California, and it exhibits a very unusual distribution. The largest, most contiguous stands are in the southern Sierra Mountains, often growing on rocky granitic soils. It disappears in the central and northern Sierras, showing up again in the Trinity, Salmon, Russian, and Marble Mountains nearly 300 miles away, often on serpentine and ultramafic (iron and magnesium rich) soils. None occur in the Cascade Mountains to the north, or in the Western Klamath Mountains.

This is a tree of ancient lineage, most closely related to the high desert bristlecone pines of the American Southwest, some of which may be the oldest living individuals on earth. Foxtails can grow for over a thousand years, but up north show less longevity—possibly due to disease and insect pressure, as well as their occurrence on less than optimal sites.

Foxtail in our area was once much more widespread during cooler periods. In the mud at Grass Lake, out HWY 97 on the Gooseneck, there is a layer that limnologists have identified that contains large quantities of foxtail pollen from a time when stands were common at lower elevations. Past climate change has pushed them to the tops of peaks, and created isolation that inhibits gene flow between stands. The northernmost stand is on Lake Mountain and has around 350 breeding individuals scattered around the lookout. The next closest stand is at King's Castle in the Marble Mountains, where about 150 trees are growing nearly 10 miles away. The older trees look like giant bonsai, with tremendous character. Few seedlings are present, and head-high trees can be 50 or more years old. All the Klamath and Trinity stands have a rocky fire refuge where a few old individuals persist.

Dr. David Oline, from Southern Oregon University in Ashland, has examined the genetics of foxtail pine on the molecular level, and discovered that our isolated stands up north are more different from each other than they are as a whole from the completely disjunct Sierra stands. I was involved in efforts to collect and preserve foxtail pine seeds to protect and adequately represent the unique genetic situation of this remarkable tree. Some of this material is stored at our national seed bank in Fort Collins, Colorado, and some is archived in the world seed bank on Spitzbergen Island in Norway's Svalbard Archipelago.

Foxtail pine, like sugar pine and the other 5-needle pines, is being challenged right now by an exotic disease originally from Asia called blister rust (*Cronartium ribicola*). This invasive fungus has a complicated life cycle, but forms perennial cankers

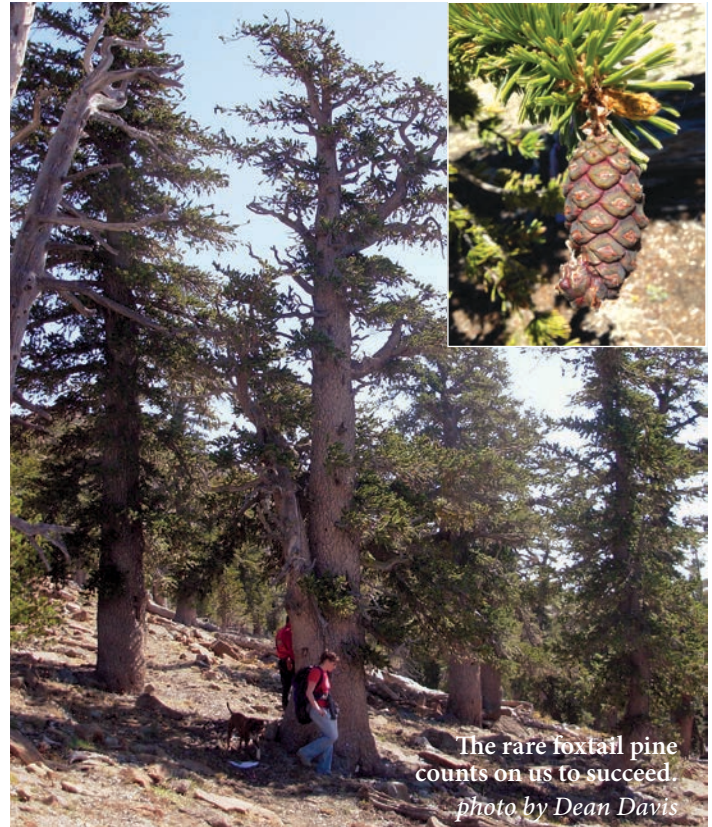


photo from www.iNaturalist

that eventually kill enough cambial tissue to predispose the pines to death from reduced growth, fire, and insect attack. Young trees can be rapidly killed this way, reducing seedling recruitment. It appears that foxtail is somewhat tolerant of the fungus, but in a test of seedlings from six Lake Mountain trees, about half were killed from rust over a 20 year span. Our Trinity and Russian stands are less infected, and are growing with alternate *Ribes* host species that sustain less rust. All stands lie within U.S. Forest Service jurisdiction, but the agency has never undertaken a responsible, organized management plan.

Future success of foxtail pine may depend on human intervention to maintain adequate population numbers to survive against blister rust, climate change, and increasing fire severity. Their position on the highest peaks will inhibit any migration into more favorable, cooler habitats, requiring a hand to relocate northward. Canadians are already typing potential northern locations to allow whitebark pine, another threatened high elevation 5-needle pine, to migrate with assistance as their landscape warms. We can all do our small part by becoming passionate advocates for this magical living dinosaur, doing our best to protect old growth cone producers as well as seedlings and saplings wherever they make their home.

The Western Klamath Restoration Partnership (WKRK)

Growing Up in the Year of Managed Wildfire

by Arielle Halpern

It has been a gigantic year for WKRK

Relationships between partners continue to deepen as we move forward into the implementation phase of the Somes Bar Integrated Fire Management Project (Somes Project). The Somes Project began the formal NEPA process this spring with the project scoping letter following an open comment period and public meeting in March. MKWC/WKRK forestry crews have been out flagging units within the Project focal areas, even in the 100+ degree heat and smoke, in preparation for marking and treatment. Aerial imaging and pre-treatment monitoring continue through a series of research plots and stand exams to help the Partnership track changes before and after treatments and determine whether we were successful in achieving our goals.

The Partnership is poised to begin work in the Happy Camp Project area with a series of strategic fuel breaks and cross boundary treatments to the west of town in an area that has not seen fire in over a century. The footprints from the 2014 Whites Fire to the south and west, and the 2014 Happy Camp Complex to the north, have created the social license for Klamath National Forest to choose a natural and cultural resource objective focus rather than a full suppression effort to manage the Island Fire that has been burning in the Marble Mountain Wilderness since June 25th.

The WKRK has continued its tradition of holding workshops three times a year but has shifted these to include more presentations from guest experts in areas into which the WKRK is expanding. We had visits from the Schatz Energy Resource Center on biomass technology suitable for rural

communities to generate not only electricity but heat and, potentially, economic benefit. The added perk of this type of technology is that it uses brush and slash from fuels reduction projects for power. Trinity River Lumber met with us in the field to look at areas where thinning and removal could be used to help achieve WKRK restoration goals. Renowned fire ecologist Carl Skinner joined us to discuss the possibilities for using managed wildfires in the Marble Mountain Wilderness area, and the unique role humans have played in creating fire regimes. In the coming year we will have guest speakers on risk assessment and socio-economic monitoring.

As we move forward into the second half of the year we are gearing up for the 2017 Klamath TREX, the implementation arm of the WKRK. This promises to be another excellent year with 400-1,000 acres of controlled burns scheduled between Pecwan and Happy Camp, and a wealth of training opportunities for local fire practitioners.

The WKRK is Growing Up

The grants that we apply for are getting bigger. The number of acres we are treating and proposing to treat are getting bigger. The number of people working on WKRK projects is getting bigger. Attitudes are shifting in the fire suppression world to include more local and collaborative input. We need to maintain our momentum, but it is also important to take a moment to appreciate how much we've done and how much positive change we have achieved in the last four years. WKRK is an open group and welcomes folks to join us any time for our field trips and workshops. Come and let your voice be heard!



Burners bring fire to a switch-back area along the Gasquet-Orleans Road in a strategy to bring cooler intentional burns frequently to an area that has already had high severity wildfire. *photo by Stormy Staats/Klamath Salmon Media Collaborative*

Things We've Learned Along the Way

by Ramona Taylor

In the first year of our community food security effort in 2011, we held one workshop in Orleans with 19 participants and two part-time staff people. The Community Foodshed Program, funded first by a grant from *UC Berkeley USDA Beginning Farmers and Ranchers Grant*, has since grown steadily into something much bigger, adding funding, staff, towns, and volunteers.

In 2012, in partnership with UC Berkeley, the Karuk, Yurok, and Klamath Tribes, UC Extension, and other community partners, the Foodshed Program was awarded funding from the *USDA's National Institute of Food and Agriculture-Agriculture and Food Research Initiative* as part of a project called "Enhancing Tribal Health and Food Security In The Klamath Basin Of Oregon and California By Building A Sustainable Regional Food System." We've learned a lot, including how to track our results!

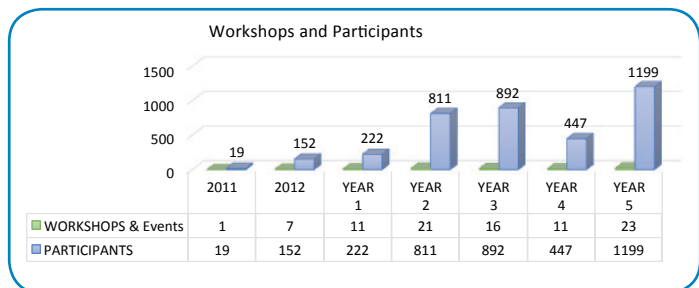
From August 2016 to August 2017, the Foodshed program organized or provided significant support for over 89 workshops, events, on site demonstrations, farmers markets, summer day camps, youth-based food activities, and Orchard Revitalization assessments with over 2,800 participants! These events occurred in Orleans, Happy Camp, Seiad, Del Norte County, Hoopa, Weitchpec, and even Arcata.

This August, the Community Foodshed Program is wrapping up the end of our five-year grant. We've picked up many skills in the course of this work. Did you know it takes nine solar ovens, two barrel smokers, three days, and a lot of people to feed 150 people for dinner in one night? Our workshops have covered topics from small animal production (raising, slaughter, butchering, and how to build a mobile chicken coop), fruit tree pruning and grafting, fermented foods, baking (bread, bagels, sourdough, solar oven), raising and



Learning how to graft peaches at Orleans Elementary School.

care of honey bees, drought response (water conservation, water catchment and drip irrigation), seed saving, mushroom cultivation, canning, and composting. To check out all the goodies we have squirrelled away on the website please visit www.mkwc.org/programs/foodsheds



In addition to workshops and community events (Mother's Day Plant Sale, Seed Exchanges, Community Dinners), we help maintain school gardens and do activities with local kids. Officially, though the Foodsheds Program is no longer funded we are still at work in the community and are happy to announce the Watershed Education Program will be taking over our role in the school gardens. To volunteer please email carol@mkwc.org.

Thank you!



The Orleans School Garden in 2017.



Foodshed program provided an apple press to the local community for use.



Students helped to plant heirloom fruit trees.



The 2017 Mothers Day Plant Sale brought many smiles.
photo by Blythe Reis



2017 Food Security Project Partners at the Headwaters of the Klamath River: MKWC, the Karuk Tribe, and the Hoopa Tribe. *photo by Stormy Staats*

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Shauna Mayfield, *Plants Field Technician*
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Andrea McLane	Ella Galindo	Tashawna Brink
Cher-ere Cooper	Euriah Hendrickson	

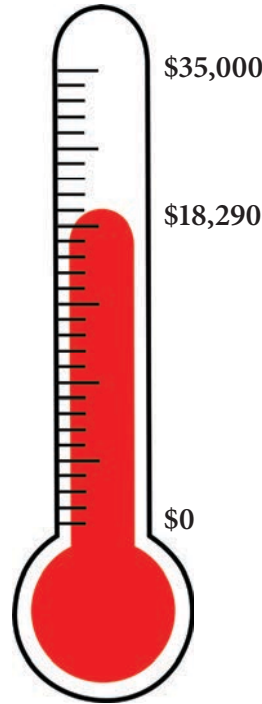
PANAMNIK BUILDING

Help Raise the Roof on the Panamnik Building

Panamnik Building Project Update 2017

The Panamnik Building is 60 years old and years of a leaking roof and poorly constructed drainage have taken its toll. Keeping the building dry and secure is the first step towards improving the entire structure. To that end, MKWC is in the final stages of planning for a new roof and covered entry that will be constructed in the summer of 2018. It's a big, exciting, and expensive project. The roof is about 7800 square feet including the covered porch. We've been able to secure a loan from Redwood Capitol Bank for \$150,000 and have begun fundraising for the rest of the \$35,000 needed to complete the project (see thermometer).

We have grandiose dreams and visions for the future of the Panamnik Building and hope that the new roof is just the beginning.

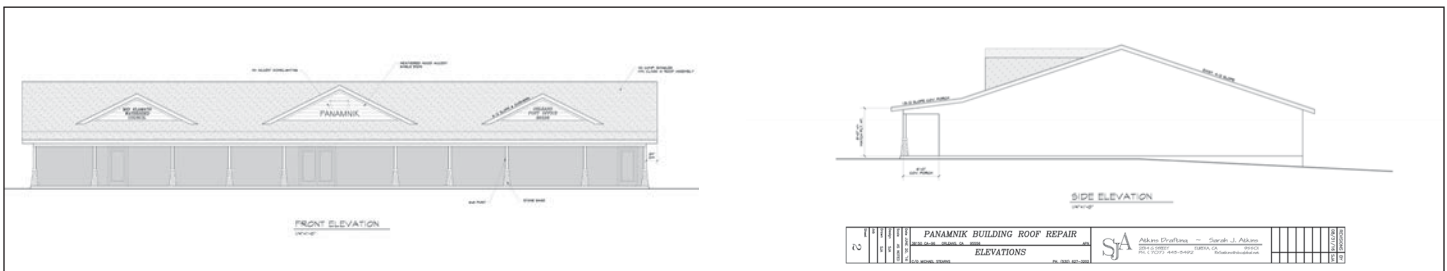


We need \$16,700 more to replace the roof, build overhanging porches, and a new facade.

You can help us get there!
Every dollar gets us closer to our goal.

The roof project costs \$185,000 total. MKWC is getting a \$150,000 loan, and we've already raised \$18,300.

Thanks for all you've done to help create this community space!



I Want To Support MKWC!

Support Level:

- \$25 - Spring
- \$50 - Creek
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- \$250 - Confluence
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Mid Klamath Watershed Council

www.mkwc.org





Mid Klamath Watershed Council

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Thanks to our Supporters! 100% of What We Do is Powered by You!

Newsletter edited by Blythe Reis & Erica Terence, with design & layout by Trees Foundation



photo from wikipedia