



news from the

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Mid Klamath Watershed Council

2018, Twentieth Edition

Restoration on Fire

Where there's Wood, there's Fish

Cougar Creek Wood Loading

by Jimmy Peterson

In a fairly unknown drainage, miles from the mainstem Klamath River, lies Cougar Creek, an unassuming little tributary to Elk Creek. Though small in size and short in length, this diamond in the rough contains some of the most valuable spawning habitat to coho salmon swimming up Elk Creek. No other known portion of Elk Creek contains the density of spawning documented in Cougar Creek. Typically six to twelve redds—the gravel beds where salmon spawn—are recorded each year in the lower 600 feet that is accessible to salmon.

Then, in 2014, during the Happy Camp Complex fires, this creek was used as a fire line, with most of the wood residing in the creek cut or removed to stop the approaching fire, significantly reducing the quality of the habitat.

Instream wood is invaluable to the health of salmonid bearing streams in that it provides cover from predators, impounds gravel that salmon use to make redds, and is a scouring mechanism that creates pools and slack water for both adult and juvenile fish. With all the wood jams removed from Cougar Creek, spawning salmon had no shelter from



Crew anchoring a log between alder trees.
photos this article by Jimmy Peterson



The Cougar Creek team gathered for a group photo, from left to right —Michael Hentz, Toz Soto, Jeremy Alameda, Don Flickinger, Serena Doose, Sheri Hagwood, Jimmy Peterson, Devin Finegan, Elben Andrews, and George Vest.

the many creatures that are looking for a quick and fat meal in the lean winter months. Karuk Tribe fisheries technicians would rarely see live fish in the water and typically would only find leftover bits of salmon near the water's edge. To remedy this, MKWC procured a grant from U.S. Fish and Wildlife Services to conduct a small-scale, manual wood loading project on Cougar Creek to help restore the creek's natural hydrologic functions.

In early October, MKWC technicians and senior staff, with project partners including Karuk Tribe Biologist Toz Soto, U.S. Fish and Wildlife Services representatives Sheri Hagwood and Serena Doose, and NOAA Fisheries representative Don Flickinger, took downed logs and an old alder from the nearby flood plain of Elk Creek and constructed 11 wood structures by hand along a 500 foot length of lower Cougar Creek.

Together, we added 3,364 square feet of cover into the creek where there had previously been next to none. With the winter rains fast approaching, MKWC staff looks forward to monitoring these newly added *CoHotels* as flows rise and the splash of spawning fish returns to the landscape.

Letter from the Directors: Luna Latimer and Will Harling

There's a lot of mid-80's Volvos driving around Humboldt County with that sticker: "Nature Bats Last." As wildfires ravage communities in Northern California, as the salmon fishery here in their southern range hangs on by a genetic thread, and the signs of a pending economic crisis loom on the horizon, the end game this slogan refers to is seemingly in view. While it may be true, the adage implies that we are on opposing teams—Nature vs. Humans. This couldn't be further from our view. For better or worse, nature and humans are on the same team, till death do us part! As we consider raising dams or tearing them down, embracing that fire has a place on the landscape or doubling down on a century of fire suppression, we are making choices that will decide whether or not this is the top of the fifth or the bottom of the ninth inning.

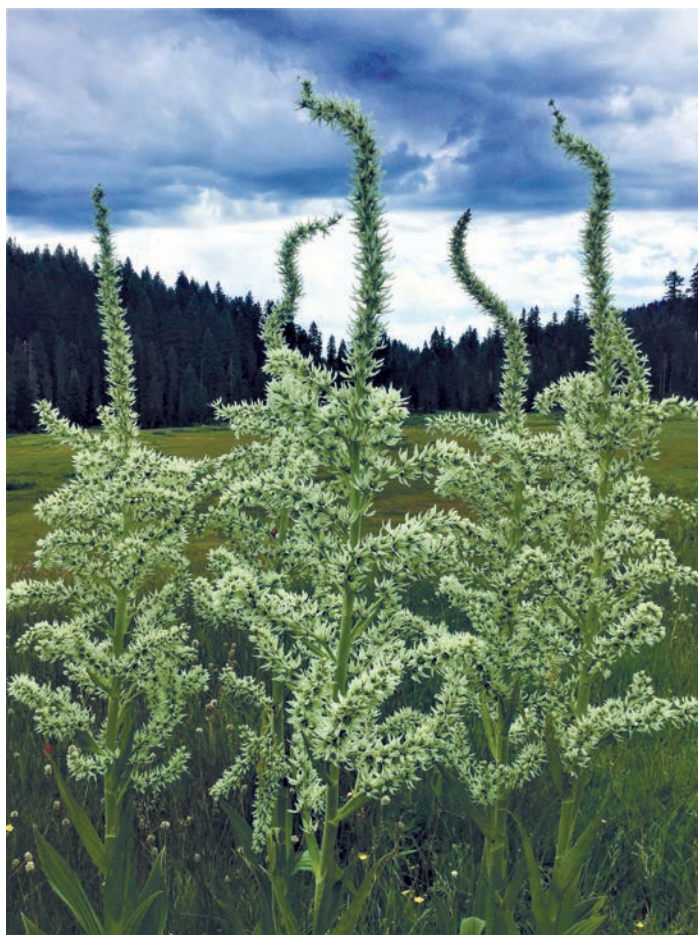
In the face of mounting negative human impacts, we are moving forward, with humility, to implement restoration projects guided by a combination of traditional knowledge and Western science; projects that are making a measurable difference. The MKWC plants program is busy collecting native seed to replant after dam removal (See story, page 3). This work finally makes dam removal an exciting reality in our day-to-day lives, and asks us to re-envision the Mid Klamath

without a dam to define its boundaries (See story, page 6). We're building essential habitat with our fisheries program (see story, page 1) to keep the salmon stocks alive until dam removal opens up new habitat. Through the Western Klamath Restoration Partnership (WKRPP), we are moving forward with our diverse partners to bring back fire on our terms and create forests that can withstand the next megafire.

Our first landscape-scale WKRPP pilot project, the Somes Bar Integrated Fire Management Project, will create dozens of manual and mechanical thinning (aka logging) jobs when we begin implementation next year (see story, page 8). Earlier this summer the Karuk Tribe and WKRPP also hosted dignitaries from state government, regulatory agencies, and private foundations at the Klamath Restoration Gathering to help them better understand both the fire problem and the way forward (see story, page 23). These connections from the local to the regional to the national levels are shaping fire policy in both state and federal government arenas, making a place for communities to decide their own fire futures. The Watershed Education Program is working to teach our kids this new paradigm of restoration and foster a different understanding of fire in our lives (see story, page 14).

In 2005, the Orleans/Somes Bar Fire Safe Council produced a video called "Lifestyles of the Rural and Fire Safe," a spoof off that old Robin Leach classic. The video featured local residents' efforts to live with fire here in the Mid Klamath. Our administrative director, Myanna Nielsen, is featured with her goats. The goats free range and eat up the fuels, and she excludes them from the areas where she doesn't want them to be instead of trying to keep them in a particular area. This approach works with goats at a small scale, and can work with fire at the landscape scale. We make space for "free range" fire where we treat enough to exclude it from the places we don't want it to be instead of trying to exclude it in general.

There is an urgency to our work. In 2017, all three proposed WKRPP pilot project areas (in Happy Camp, Somes Bar, and Forks of Salmon) were touched by wildfires. The Somes Project took three years to plan and is just now being implemented. The best time to do this work, like the best time to plant a fruit tree, was twenty years ago. But the next best time is now. Our work is as clear as the sobering signs of system collapse we see all around us. The words of MKWC board member and tribal elder, Jeanerette Jacups-Johnny ring in our ears: "There is nowhere else I can go." Perhaps us settlers have a choice. But if we choose this life on the rivers, it is our obligation to right these past wrongs by being allies to those who are working hard to restore their homelands. For the future of our forests, for our salmon, for the generations to come, we have to reconsider how we manage fire on this landscape, how we protect and manage our water, and learn from our successes and failures how to do it right.



Native Corn Lily *photo by Tanya Chapple*

Crossing Boundaries, Seeding the Future

by Tanya Chapple

The Plants Program has the exciting opportunity to collect seeds for the restoration of the Klamath reservoirs following dam removal. We are working with Pacific Coast Seeds, a company out of the East Bay area specializing in the collection of wild native plant seeds, to collect for the Klamath River Renewal Corporation. The seeds we collect in 2018 will be grown out in fields to generate more seeds. Hundreds of thousands of pounds of seed are needed to revegetate the drained reservoirs.

The majority of seed collection has taken place in the vicinity of Klamath Falls, Oregon. We head upriver to open



Collecting sedge at Klamath Marsh.

All photos this article by MKWC



MKWC and Pacific Coast Seed Co. collect native plant seeds at Miller Island Wildlife Refuge.

skies, volcanoes and expansive wetlands, so different than the canyons of the Mid Klamath. It is always meaningful to travel upriver to the headwaters of the river that one is part of, especially if that river is the Klamath. Currently, MKWC defines the upper end of our watershed boundary at Irongate Dam. With the falling of the dams, where will the Mid Klamath Watershed boundary lie? This is the first time MKWC has had a project that crosses state boundaries, but perhaps not the last. We, of the seed collection crew, are all thankful for the opportunity to break boundaries, explore the upper watershed, and be part of the most important restoration project on the Klamath River.



Goldenrod is ready at Klamath Marsh

Klamath River Freshwater Mussels

by Mitzi Wickman

Did you know that the Klamath River is home to three kinds of native mussels? Did you know that these mussels spend a portion of their life cycle attached to fish gills? And more amazingly, only on specific fish species?!?! Did you know that some of these native mussels live to be over a 100 years old? (They have age rings like a tree!) It is possible there are mussels in the Klamath River that have been there since the year 1918. Read on to find out more about the Klamath River's native mussels.

What is a Mussel?

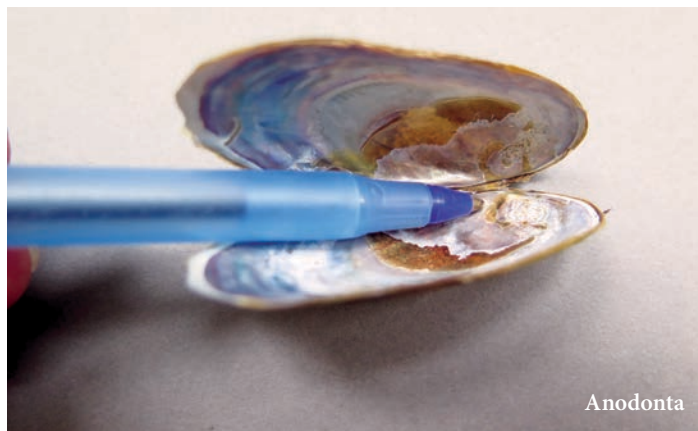
First of all, what is a mussel? A mussel is an animal with two shells connected at a hinge point. It has a fleshy interior. Mussels are a food source for many animals including otters, raccoons, herons, and egrets. Mussels can be found partly buried in the streambed. They secure themselves by protruding their foot in the soft sandy river bottom. They can be found throughout the length of the Klamath River from above Upper Klamath Lake nearly to the Pacific Ocean. There are mussel beds ranging in size from a couple mussels to thousands of mussels. One Klamath River mussel bed researched by Kari Norgaard was estimated to contain 27,000 mussels, and this count didn't include ones hidden below the substrate!

How to Distinguish Between the Native Mussel Species in The Klamath

The species of mussels native to the Klamath River are the **Western ridged mussel**, (*Gonidia angulata*), the **Western pearlshell mussel** (*Margaritifera falcata*), and floaters like the **Oregon floater** (*Anodonta oregonensis*) and **Western floater** (*Anodonta kennerlyi*), and the **Winged or California floater** (*Anodonta nuttalliana*). If you have an empty shell in hand (possibly courtesy of a hungry otter), you can tell these species apart by looking for some distinguishing characteristics, described below and shown in photos.



Klamath River mussel bed above Rock Creek on 7-5-18



The **Western ridged mussel** (*Gonidia angulata*) has a prominent ridge on its shell. They do have small pseudocardinal (or hinge) teeth. (The Klamath River is unique in that the **Western ridged mussel** is its most abundant mussel, unlike most large rivers in the Pacific Northwest. Most other Pacific Northwest rivers are dominated by the **Western pearlshell mussel**.)

The **Western pearlshell mussel** (*Margaritifera falcata*) does not have this ridge but does have very prominent hinge teeth.

The **floaters** (genus *Anodonta*) do not have ridges and do not have any hinge teeth. There is no way to tell the difference between species in the *Anodonta* genera without the help of DNA laboratory work.

Do Mussels Really Filter Water?

Mussels filter up to a liter of water per hour! They do this because they need oxygen, and they are eating small animals, plants, algae, and bacteria suspended in the water. They inhale water, filter the water through their gills and then expel the clean water. In addition to expelling clean water, the mussels get rid of things in the water that they don't want in the form of pseudofeces. It is theorized that fish are attracted to this clean water, as well as the pseudofeces food. So not only do mussels need fish so their young can develop into juveniles, but it seems fish benefit from mussels! Check out this vimeo video online to see mussel filtering in action: <https://vimeo.com/195323892>.

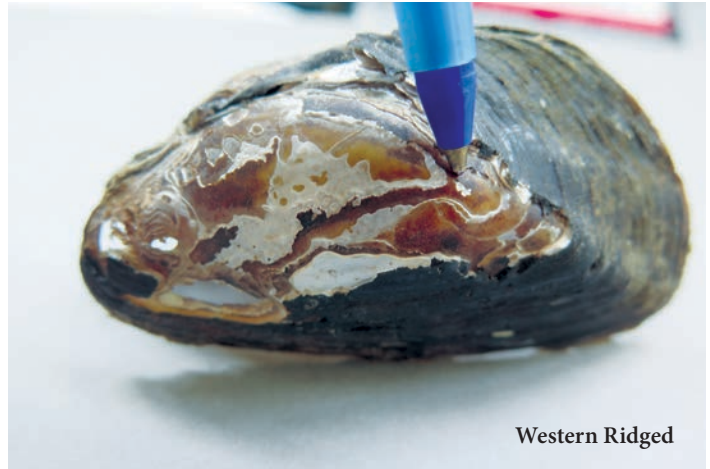
Life Cycle of Mussels

The diagram on the next page shows the freshwater mussel life cycle, courtesy of the Xerces Society. (The Xerces Society focuses on the conservation of invertebrates considered to be essential to biological diversity and ecosystem health.) What amazes me most about the mussel life cycle is that a vital portion of their life is spent attached to the gills of specific fish. The following table shows which fish hosts the immature mussels, known as glochidium, for each of the native mussel species found in the Klamath River.

<i>Mussel species</i>	<i>Fish host</i>
Western ridged mussel (<i>Gonidia angulata</i>)	Sculpin and dace (not confirmed)
Western pearlshell mussel (<i>Margaritifera falcata</i>)	Salmonids
Oregon/western floater (<i>Anodonta oregonensis</i>)	multiple species like stickleback, dace, shiner, and sculpin
Winged/California floater (<i>Anodonta nuttalliana</i>)	multiple species like stickleback, dace, shiner, and sculpin



Western Pearlshell



Western Ridged

Check out the following web page to see a mussel tricking a fish to get close enough so that the mussel can expel its young onto the fish's gills: <https://ca.pbslearningmedia.org/resource/nat16.sci.lisci.mussel/selection-deception-and-reproduction-mimicry-in-freshwater-mussels>

How are Mussels Doing?

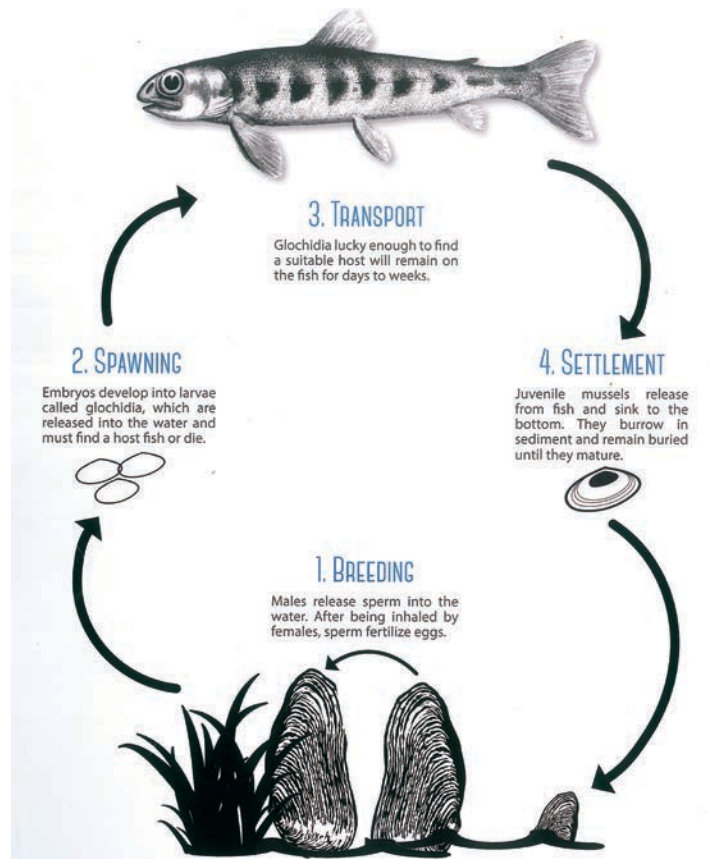
The Western ridged mussel has experienced a 43% decline in range since it was first discovered in the 1800s. That is disheartening and is one of the reasons why the International Union for Conservation of Nature listed both the Western ridged mussel (*Gonidea angulata*) and the Winged/California floater (*Anodonta nuttalliana*) as vulnerable species.

What Can We Do to Protect Klamath River Mussels?

While conducting fisheries restoration projects, we can not only try to minimize damage to mussels, we can incorporate improving mussel habitat into project designs. While attending a freshwater mussel workshop in Happy Camp in August of 2018, coordinated by the Salmon River Restoration Council and presented by Emilie Blevins from the Xerces Society, attendees learned hands on techniques on how to identify, avoid disturbing, and how to relocate Klamath River native mussels. It was interesting to hear that there is a plan in place for protecting mussels for the Klamath River Dam Removal Project and it involves relocating 20,000 mussels from below Iron Gate Dam to below Keno Dam. The Mid Klamath Watershed Council has multiple Klamath River mainstem fisheries projects in the works and plans to utilize the information found in the Xerces Society publication: *Conserving the Gems of Our Waters: Best Management Practices for Protecting Native Western Freshwater Mussels*

During Aquatic and Riparian Restoration, Construction, and Land Management Projects and Activities, 2017, which can be found at <https://xerces.org/conserving-the-gems-of-our-waters/>

If you would like to learn more about mussels, check out the Xerces Society web page.



Fisheries Program Moves Up the Klamath

by Charles Wickman

Currently the Mid Klamath Watershed Council defines its service boundary as the area of land and water between the Trinity River and Iron Gate Dam. This area, generally recognized as the Mid Klamath, is far from a homogenous landscape, and could arguably be divided into hundreds of overlapping subbasins.

The diversity of flora, fauna, hydrology, geology, meteorology, and human cultures could hardly be more different at the river's lower and upper extents. At its lower extent the Trinity River enters the Klamath, making a fitting place, if you need one, to divide the Lower Klamath from the Middle Klamath. It's the place where Trinity fish peel away from the crowd and start their own journey home.

At the current upper extent of the Middle Klamath, though, is Iron Gate Dam, an ill-fitting boundary by any definition. Standing in the river at Bluff Creek, you can catch a steelhead that is likely not a Trinity River fish (although only seven miles from the confluence with the Trinity.) On another day, you could be standing in the river above Interstate 5 and you just might catch that same fish. But you can't travel too much farther upriver from there before catching that fish a third time would be impossible, although soon this might change. With dam removal currently slated for 2021, four dams will be removed and hundreds of river and stream miles will be available to any salmonid takers for the first time in over half a century.

What does this mean for MKWC's service area? Good question. What I do know is that the MKWC fisheries



Seiad Creek Floodplain before restoration
photo by Charles Wickman



Seiad Creek Floodplain after restoration *photo by Charles Wickman*



MKWC Fisheries, Stillwater Sciences, and Karuk Tribe members pondering what to do with those massive mine tailings. What can be done here to reconnect the Klamath River to its floodplain?

photo by Mitzi Wickman

program has been developing and implementing restoration and monitoring projects farther and farther upriver, and we are currently working as far upriver as Cottonwood Creek, roughly eight miles below Iron Gate Dam. In addition, we are developing several mainstem Klamath River projects between Iron Gate Dam and Happy Camp, designed to reconnect floodplains where possible and create rearing and refugial habitat, all with an eye toward a damless future. Will we extend our service area to include waters above the dams? Probably. How far upriver? I don't know. I do know that a watershed like Cottonwood Creek has a lot more in common with watersheds above Iron Gate Dam than it does with Bluff Creek, and there's no reason to define our service area by anything as arbitrary as an old dam site.

Highlights from the 2018 Salmonid Restoration Federation Conference

by Mitzi Wickman

Brian Cluer from the National Oceanic and Atmospheric Administration (NOAA), gave a presentation on how he can QUICKLY determine how much floodplain is available to salmonids at different stream discharges. Using only ArcMap and HEC-RAS (a free hydraulic modeling program from the US Army Corps of Engineers), in ONE DAY, he creates this very informative model. Long story short, many of our streams have been so altered that the amount of floodplain available to salmonids in annual storm events is drastically reduced, and young salmon just can't survive in these high velocity restricted channels. The MKWC Fisheries Program is currently working on several major projects to create more floodplain habitat for salmonids (see story, page 6).

Belize Lane from Utah State University is conducting state-wide work for California looking at how much flow each stream needs to maximize human and ecological water needs. Big task! She is looking at each of the aquatic species needs for flow and as you can imagine this gets super complex, since flow needs vary by species, as well as temporally. She also mentioned that Peter Moyle, lead Fisheries Biologist for UC Davis, has warned that if things don't change, California salmonids will be extinct in 50 years. For more info: <https://eflows.ucdavis.edu/>

Jonathan Halama, working under an ORISE Fellowship with Environmental Protection Agency colleagues, presented his latest stream temperature modeling efforts using programs called Velma and Penumbra. His work concentrates on watershed level land management and how different land management practices affect stream temperature. He is trying to address such difficult decisions as, should we be thinning in riparian areas?

Mark Capelli, with NOAA Fisheries, gave a talk about how many steelhead must return to the Southern Coast (between Santa Maria River and Tijuana) in order to be removed from the current threatened or endangered species list. There are 46 streams in this Southern California area, and NOAA Fisheries came up with a total of 21 viable populations needed to be restored in order for these fish to be removed from the endangered species list. He said that by far, fire and

2018 Nat Bingham Award



Mitzi and Charles Wickman accept the 2018 Nat Bingham Award honoring the entire MKWC Fisheries Program; the first time a Program and not an individual has won the award.

photo by Thomas B. Dunklin

drought are the biggest threats to these fish, along with the 22 million people that share their habitat, which has made NOAA's goals of preserving overall species diversity and protecting species from extinction a difficult task. Their fire modelling efforts show that there should be 68 kilometers between restored steelhead populations so that when large catastrophic fires hit, the fire won't destroy all of the steelhead in each biogeographic region.

Finally, Michael Love, Paul Powers, Jay Stallman, Seth Shank, Andrew Raaf, Ian Mostrenko, and Rick Hartson talked about the difficulties of doing fisheries restoration in alluvial fans (areas where creek/river emerges from canyon and splays out). Though these areas are extremely important to fish (they provide access to creeks and rivers and they are the low velocity / low gradient rearing habitat), in most cases they are occupied by humans, agriculture, or human infrastructure. The take home message is that it is difficult and expensive to do fisheries restoration in these areas because of human encroachment.



photo by Thomas B. Dunklin

Western Klamath Restoration Partnership Gains Momentum

by Jodie Pixley

The Western Klamath Restoration Partnership, a collaborative spearheaded by the Karuk Tribe and MKWC but made of many partners, has been working diligently since 2013 for this moment. Their dedication and persistent efforts have paid off. The group signed the environmental document in July of this year to move the Somes Bar Integrated Fire Management Project (SBIFMP) forward, and received CALFIRE funding for the Project just weeks later. A grand celebration was held for the signing to not only commemorate the very labor-intensive document, but the landmark accomplishment that's catapulted the group into the next phase, IMPLEMENTATION!

The signing of the NEPA (National Environmental Policy Act) document coupled with CALFIRE funding, gave the WKRP the greenlight to begin the implementation process, as soon as this coming year, for restoration work on the ground. They've solicited the help of the Lomakatsi Restoration Project (Lomakatsi), a restoration work contractor and non-governmental organization out of Ashland, OR. Lomakatsi has a great reputation built from over two decades of work, and is lending its experience to help WKRP leaders through the process of implementing collaboratively produced projects.

For the work to be truly collaborative, implementers are employing a different contractual process called a Master Stewardship Agreement or MSA. This process is not only new to the Six Rivers and Klamath National Forests, integral partners in the collaborative, but is also new to the Karuk Tribe and MKWC managers.

The innovative MSA contractual process is key for project outcomes to express the local-based values and concerns



Fire effects monitors at the Klamath TREX, 2018.
photo by Stormy Staats

that form the backbone of WKRP's mission. The group's mission states it's working to "maintain resilient Klamath ecosystems, communities, and economies guided by cultural and contemporary knowledge." And this mission applies to the long-term management of the 1.2-million-acre planning area that follows the Karuk aboriginal territory.

Since 2013, WKRP has been engaging in shared knowledge, learning, and decision-making—the framework of its process. Representation of all stakeholders interests in project work outcomes is a fundamental goal of WKRP, and paramount for all their efforts going forward. This moment for WKRP validates all the previous work the group has accomplished together. Everyone is thrilled for this moment and feeling like all the right pieces are in place. Support and progress are continuing, and the sense that things are moving towards the long-term objective of increasing the pace and scale of restoration is slowly but surely becoming a reality.



Elizabeth Berger, interim Supervisor at the Six Rivers National Forest and Leaf Hillman, Director of the Karuk Tribe Department of Natural Resources seal the deal at the MSA signing ceremony. *photo by Western Klamath Restoration Partnership*



Western Klamath Restoration Partnership gains momentum together!
by Jodie Pixley

CALFIRE Awards \$5 Million to Western Klamath Restoration Partnership to Fight Climate Change by Restoring Fire at the Landscape Scale

by Jodie Pixley

CALFIRE awarded \$5 million, as part of its Forest Health Initiative, to the Western Klamath Restoration Partnership (WKRK). The funding comes from California's Climate Investments (CCI), a statewide program that puts billions of state dollars to work reducing greenhouse gas emissions, strengthening the economy, and improving public health and the environment—particularly in disadvantaged communities.

WKRK players that collaborated together for this award include the Karuk Tribe, Mid Klamath Watershed Council (MKWC), Six Rivers National Forest (SRNF), Klamath National Forest (KNF), Pacific Southwest Research Station (PSW), U.S. Forest Service Remote Sensing Lab, Salmon River Restoration Council (SRRC), Orleans-Somes Bar and Happy Camp Fire Safe Councils, and the Lomakatsi Restoration Project.

The WKRK, formed in 2013, encompasses a 1.2 million-acre planning area. The overarching goals of the group are to restore healthy fire processes and resilient landscapes that can adapt to increasing challenges of climate change and wildland fire severity. The WKRK embodies an innovative effort combining traditional ecological knowledge with Western science for fire management. Traditional ecological knowledge (TEK) strategies were developed over thousands of years by indigenous communities to maximize diversity, resiliency, and resource production. Western science can enhance TEK and help inform its application given present day realities.

The Calfire grant will fund WKRK's Somes Bar Integrated Fire Management Project (SBIFMP), as well as one of the largest prescribed fire training exchanges (TRES) in the nation—a program led by The Nature Conservancy. The Karuk Tribe has nurtured collaborative relationships with federal partners and initiated development of local, non-profit organizations, to increase capacity for river and forest-based restoration. These broad partnerships spanning the local to national level have pushed the WKRK forward—a fact captured by the group's co-founder and Deputy Director of the Karuk Department of Natural Resources (Karuk DNR), Bill Tripp.

“This project is a great example of how federal, tribal, state, NGO and other collaborative programs can align. It will take all of us working together to address the hard truths of our age.” Tripp said. Corinne Black, a hydrologist with the SRNF, described her experience working with

the Tribe, “It has been very rewarding to have had such a productive and long-term working partnership” she said. “Our partnership began around 2001, and I believe having had this history of working together helped make the WKRK the strong collaborative that it is today.”

In the wake of one of the worst fire seasons in history, CALFIRE and the state of California are investing in groups working to protect the state's forests from the increasing impacts of wildfire. They hope the funding can help reduce the risk these “campaign fires” pose to a forest's ability to absorb, store, and mitigate atmospheric carbon.

Forest health programs like California's Climate Investments (CCI) acknowledge climate change impacts are exacerbating things such as worsening drought conditions, accumulation of hazardous fuels, and bug infestations. These programs also call attention to the culture of fear around all forms of fire, which limit managers' abilities to use it as an effective and relatively inexpensive tool toward landscape resiliency.

Proposed treatments seek to reduce wildfire risk, restore fire processes and ecosystem function, protect existing carbon, and increase carbon storage at the landscape scale. The WKRK is working to protect communities and to allow fire managers more options to manage wildfires for resource objectives. The CALFIRE grant will accelerate WKRK's momentum. MKWC Director Will Harling described widespread implications of the award. “The work funded through this CALFIRE CCI grant is a road map for solving many of California's rural fire problems, while simultaneously promoting carbon sequestration at the landscape scale.”

The CCI award aids the WKRK in accomplishing its ambitious set of objectives by catalyzing a project that can demonstrate the benefits of prescribed fire through the SBIFMP. The annual

Orleans TRES event in October provides critical training to local crews to conduct controlled burning and helps to establish a capable local workforce to implement projects like the SBIFMP. Both of these components of the freshly funded project incorporate key involvement of private landowners too, so that projects get implemented across public and private property boundaries. “This is how we will learn to use prescribed fire as a meaningful tool in the wildland-urban interface again,” Harling said.



Fire and Fuels Community Liaison Program (CLP) Update

Getting Ready for Wildfire

by Nancy Bailey

Though many places throughout the West were not so lucky, this year the communities of Orleans and Somes Bar escaped threatening wildfire. But whether here or there, this year or next, we know that wildfire will come again. As we have seen, wildfires are occurring more frequently and with greater severity than ever in recorded history. The combination of fuels buildup due to fire suppression and climate change are ushering us into a new and dangerous era.

Preparing ourselves for this near-future eventuality is probably the single most imperative challenge for communities in the rural and suburban west. To that end, the MKWC Fire and Fuels program has been actively assisting landowners in doing fuels reduction on their properties for over a decade. More recently MKWC's collaboration within the Western Klamath Restoration Partnership (WKRK—see article on page 10) has increased the scale for important land management activities with the goal of fire resilience for our communities.

Prescribed fire activities such as TRES and WKRK demonstration projects, as well as educational campaigns and creation of defensible space around homes and communities through our Firewise program are all aimed at mitigating fire risk and destruction. But part of being ready for increased scope and scale of burning at the right time of year is asking:

How Do We, as a Community, Respond When Wildfire is Here? Enter the Community Liaison Program (CLP)!

A local CLP, modeled after the successful CLP in the Salmon River, is currently under development. This program will provide a framework for residents to interact with wildfire suppression resources and each other during wildfire events. By establishing roles and communications before the fire event, we will be able to act more quickly and share critical



Kathy McCovey displays basketry materials and discusses cultural benefits of burning with TRES participants and community members. *photo by Stormy Staats*

information with fire managers and they with the community when we need it most. Local community members who often know more about fire behavior, fire history, or cultural values at risk than the firefighters who come to town, will have a direct line of communication to fire managers. And conversely, liaisons will help authorities get information out smoothly and efficiently during an emergency. Currently, neighborhood representatives are obtaining emergency response information so that when the time comes, a network for communication is in place. If you are interested in being a liaison or helping in any way, please contact Will Harling or Nancy Bailey, nancy@mkwc.org, at MKWC.



A neighborhood kid looks on as a TRES participant brings fire down to the edge of a burn. *photo by Alex Watts Tobin*



Cultural practitioner Kathy McCovey displays dip net made by her grandfather while TRES Incident Commander Tom Fielden looks on.

photo by Michael Max Hentz

Prescribed Fire: Impediments and Opportunities

by Nancy Bailey

As early as the 1970s and 80s, forest ecologists recognized that fire exclusion wasn't good for our forests. Research clearly showed how fire is a necessary force in our forested lands, creating openings in the canopy, promoting new growth and diversity, and supplying needed nutrients to feed the forest floor. Native peoples had known this forever and had historically used fire as a management tool. By now, in 2018, it is common knowledge, not only amongst scientists, but also in the ranks of land managers and even the public at large, that fire is needed in the fire-adapted ecosystems of the West.

Unfortunately, the ability and will to actually get fire on the ground at an effective scale is lagging behind this understanding. There are a number of reasons, both political and cultural, for this lag. Key challenges include:

1. Lack of Capacity and Resources

Often the best time to introduce controlled fire overlaps with wildfire season. This means fire agencies' personnel and equipment are elsewhere fighting fire and managers are spread thin. When burn windows occur outside fire season, capacity is limited by the loss of seasonal staff. The good news is that communities and agency managers are starting to address this challenge, training prescribed fire practitioners through programs such as TREX (see article, page 12). CALFIRE chief Ken Pimlott recently was quoted as saying "Putting prescribed fire back out on the landscape at a pace and scale to get real work done and to actually make a difference is a high priority. It really is, and it's going to take a lot of effort." To that end, CALFIRE's Vegetation Management Program is using prescribed fire more and more as the preferred fire hazard reduction tool. In addition, they have awarded a \$5 Million grant to our local WKRP in part for prescribed fire (see article, page 10).

2. Inefficient Interagency Cooperation

Prescribed fire can be best implemented when federal and state agencies cooperate with NGOs to share planning and resources. This has been challenging due to varied protocols and budgetary regulations. Agreements across jurisdictions are a positive step toward working together, but are often built without enough flexibility. Programs such as TREX and WKRP are proving that a variety of entities can come together and get good fire on the ground.

3. Lack of Funding for Implementation

The funding deficit may also be turning around. States and the federal government are all recognizing the efficiency of



2018 TREX participants photo by Michael Max Hentz

paying for planned burns in comparison to the billions it takes for suppression.

4. Agency and Individual Risk Aversion

One of the largest challenges is that agencies, private land managers, and high-level decision makers all have an aversion to risk, when it comes to lighting fires. At the local level this amounts to concerns about personal liability in case of an escaped fire. At the higher level, amongst administrators and people in government roles the risk is felt as political. Laws vary from state to state and are sometimes vague when it comes to liability. Leaders in the movement toward prescribed fire conclude that liability must be shared across jurisdictions in order to move forward at the needed scale. Cooperative burning with shared resources and shared liability is the logical path forward.

5. The Embedded Cultural Fear of Fire

Finally, we have been gripped by a culture of fear when it comes to fire. Smokey Bear has contributed to this powerful negative attitude since the 1940s with slogans such as "Forest Fires Aid the Enemy" and "This Shameful Waste Weakens America". Fire suppression has been the dominant theme since then, meaning most Americans alive today have deeply rooted feelings that all fires are bad. This also means that most professionals with fire experience come from a suppression background and may not be comfortable with prescribed fire.

For more information on the challenges and strategies of prescribed fire, see a recent study put out by the Ecosystem WorkForce Program https://ewp.uoregon.edu/sites/ewp.uoregon.edu/files/WP_86.pdf, or email nancy@mkwc.org.

TREX: A Program Supporting WKRPs Mission

by Jodie Pixley

The Nature Conservancy's Prescribed Fire Training Exchange (TREX) happened in 2018 in the Klamath mountains for the fifth year in a row this year. The program began at the request of federal agencies that identified the lack of qualified, widespread prescribed burners. But TREX has morphed into something that provides much more than just that. The WKRPs embraces TREX for the opportunities it creates, such as building local capacity to create safer fire conditions, helping communities become more fire-adapted, and fostering learning among diverse crews which supports interagency cooperation. TREX participants gain national certifications for fire management which enlarges and improves skill levels of a new workforce.

TREX also promotes the integration of traditional burning. The Klamath TREX helps inform the national TREX program how traditional practices may be integrated. TREX brings people together and fire back to the landscape. It trains its participants to a common set of qualification standards in the interest of creating a Type III Incident Management Team (IMT). Bill Tripp, Deputy Director of the Karuk Tribe's Department of Natural Resources, explained that this will enhance local capacity to manage low complexity wildfires, as well as manage a high complexity prescribed burning program. Having local managers at the helm of these events, who have the most at stake, will help to change the paradigm of wildland fire management.



Artwork by local Karuk Tribal member Vikki Preston adorns this year's TREX t-shirts. *photo by Vikki Preston*



Burn Boss Trainee Emily Hohman earned her RXB2 certification during this TREX.

photo by Stormy Staats



Ishi Pishi Prescribed Burn
photo by Stormy Staats



TREX participants light a broadcast burn. *photo by Gabe Cahalen*



Karuk K-1 Fire Crew member Raymond Marquez-Griffin helps burn a riverbar unit at Camp Creek south of Orleans.
photo by Heather Rickard



TREX burn at Tishanik by Camp Creek
photo by Stormy Staats



Carmela LoCasio holds the line during this year's TREX training.
photo by Stormy Staats



Will Harling and Jose Luis Duce Aragues reaching the bottom of the Ishi Pishi Burn.
photo by Stormy Staats



Junction School Field Trip during TREX *photo by Stormy Staats*

Students Learn Science through Salmon Spawning Surveys

by Carol Earnest

For over 20 years, students at Orleans Elementary School (OES) have participated in the Klamath Basin Cooperative Salmon Spawning Ground Surveys (Salmon Surveys). An idea cooked up by an OES school teacher and a U.S. Forest Service fisheries biologist passionate about youth education, Orleans students began weekly walking surveys of Camp Creek to count live Chinook salmon, redds, and Chinook salmon carcasses. What started out as a way to get students outside learning about local fisheries has turned into a curriculum staple that OES 6th-8th graders participate in year after year.

These salmon surveys involve organizations from all over the Klamath Basin, including the Yurok Tribe, Karuk Tribe, Quartz Valley Indian Community, U.S. Fish and Wildlife Service, U.S. Forest Service, Salmon River Restoration Council,



Chinook Carcass photo by Eileen Kitayama



Happy Camp Elementary School students learn how to identify a Chinook salmon and begin sampling a Chinook carcass on their survey of Indian Creek.

photo by Eileen Kitayama

Mid Klamath Watershed Council, local schools, and more. The mission of the salmon survey is to gather information needed to make sound management decisions affecting salmonid species in the Klamath Basin. The data collected by field crews are analyzed and interpreted by fisheries professionals and are used by the responsible agencies to set fishing regulations. These regulations are designed to conserve the salmonid populations for future generations. The salmon surveys begin in October and continue through December, as Chinook salmon return from the ocean to their spawning grounds in the Klamath River basin.

Involving local students in the salmon survey provides memorable, environmental education opportunities, where students enjoy the beauty of the Klamath River tributaries during the fall, and witness the astonishing phenomena of salmon spawning, ending their arduous journey. Students are integral to the effort, as they count, measure, sample, and fill out data sheets just like any fisheries professional conducting a survey. They must learn how to identify a redd, accurately measure redds and fish lengths, read a stream map, use a GPS, collect tissue, scale, and otolith samples from carcasses, cross a stream safely, walk carefully as to not disturb spawning salmon, and clearly and correctly fill out a datasheet that will be used by agencies to set future fishing regulations. Student participants develop regionally relevant career skills, and give back to the land and their community by engaging in natural resource monitoring.



HCES students surveying a stream.
photo by Laura Jaffe-Stender

MKWC's Watershed Education program, in collaboration with the Karuk Tribe and Six Rivers National Forest, work with OES students to monitor Chinook on Camp Creek each fall. In 2010, a collaborative watershed education effort between MKWC and the Karuk Tribe expanded youth Salmon Surveys to Happy Camp Elementary School, who continue to monitor Indian Creek today. In 2016, MKWC expanded even further, involving students from Seiad Valley in Salmon Surveys at Grider, Thompson, and Fort Goff Creeks. Concurrently, the Salmon River Restoration Council involves Junction Elementary School (Somes Bar) and the Forks of the Salmon Elementary School in surveys on the Salmon River.



SVES students use a GPS to map a red location and document the coordinates on the survey datasheet.
photo by Eileen Kitayama



OES 8th graders pose on their last survey as OES students.
photo by Carol Earnest

In total, MKWC and partners involve approximately 80 students at five different schools each fall. Student participation in salmon surveys has been integrated into the upper grade curriculum, and students look forward to entering the 6th grade so they can participate in the effort. Some of the youth participants involved witness salmon spawning for the very first time. Others are knowledgeable about Klamath River fisheries, and have the opportunity to share their expertise with their classmates.

Last November, as I took a group of OES 8th graders on their last survey before graduating. We reminisced about all our survey experiences together over the last three years. We talked about the huge Chinook carcass we fished out of the depths of a pool, the time one surveyor topped his waders, and the times when we witnessed female Chinook salmon swim onto their sides, acrobatically wriggling their tails to dig in the cobble to lay their eggs.

The next week, we took a group of 6th graders on their first survey. One student memorably stated, "This is the most fun school day I have ever had."

MKWC Youth Stewardship Experience

by Ella Galindo

Sun cooks the rocks on the bottom of Seiad creek. Hardly recognizable as a creek. Each stone is dry and unable to hold water on the surface after years of intense dredging. Scorching heat, the lack of water, and wilted vegetation create a dismal glimpse at the alternate destiny many other creeks could have faced if they had been as exploited. To counteract the years of mining and degradation, the Mid Klamath Watershed Council (MKWC) has initiated a huge restoration project. Drip systems, strategically placed stumps, and hours of manual labor are what could make this creek habitable and healthy some day.

This was one of the first sights I visited in the beginning of the internship. Visiting this site helped me put into perspective how much has to be done to actually make a difference for the wildlife and flora that thrive in the Klamath area. I've lived here my whole life, but I was never able to contribute to the Klamath's restoration as much as I have done in these past six weeks. Restoration is something I always hear being done. Presenters, scientists, or documentaries would inform me of all that has to be done and what else we need to do; dams must be removed, salmon need help, water must be conserved, forest are burning to a crisp. Being able to

participate first-hand in the effort to restore this watershed has been incredibly rewarding.

Of course, I haven't done anything as glamorous as dam removal. It's been a lot of moving rocks and pulling star thistle. Hard work that needs to be done, and if MKWC didn't have people as passionate about invasive weeds as Tanya Chapple, the organization's Plants Program Co-Director, it may never be done. It takes real dedication to get teenagers so enthusiastic about pulling weeds they want to stop the truck every time they see bull thistle growing on the side of the road. "Saving the world one plant at a time," as she would put it.

This internship has given me a chance to give back to the beautiful place that I've loved my whole life. It has also given me the opportunity to explore careers options, discover my own interests, and gain an understanding of nearly every branch in MKWC. Real-world work experience with a paycheck during high school is very hard to find, yet invaluable. Giving up six weeks of summer is challenging, but when you're able to feel good about what you're doing and proud of what you've accomplished instead of being bored and five seasons into a Netflix special, it's worth it.



Interns, from left to right: William Reynolds, Anne Rants, Mariah Brewington, Rudolph Galindo, Ella Galindo *photo by Tanya Chapple*

Whatever's In-Season Pie Recipe

by Ella Galindo

One of my favorite things to bake are pies. They're sweet, self-contained, and the ingredients needed can be found in any pantry. Even the fruit to make pies can be found anywhere as well. Around here you can find something yummy to put in the crust all the way from late spring to early fall. Whether it's blueberries, apples, elderberries, blackberries, or plums. There's always something. Now it's getting towards the end of summer so all the blackberries have already been eaten by the birds which means it's the peach's time to shine. And that is what I used today, but this recipe is applicable to any fruit you want to try.

Crust

- 2 1/2 cup flour
- 3 teaspoons sugar
- 1 teaspoon salt
- 2 sticks chilled butter
- 8 to 12 Tablespoons ice water

Mix the dry ingredients. Either cube or use a cheese grater to cut up the butter and add it to the dry mixture. Slowly add the water and roll it until you get a ball. Roll out the crust and put them in the fridge to chill while you make the filling.



Filling

- 1 egg beaten
- 4-5 cups fruit
- 1 Tablespoon lemon juice
- 1/4 cup all-purpose flour
- 1/4 cup cornstarch
- 3/4 cup white sugar
- 1/4 cup brown sugar
- 1/2 teaspoon cinnamon
- 1/4 teaspoon salt
- 2 Tablespoons cold butter

Preheat oven to 450 degrees.

1. In a large bowl combine the fruit and lemon juice, gently toss together. If your fruit has a lot of juice, remember to drain it.
2. Place one pie crust in the bottom of a 9-inch pie pan. Brush the pie crust (bottom and sides) with a little of the beaten egg. This keeps the crust from getting soggy. Keep the rest of the beaten egg to brush on the top crust.
3. In a medium size bowl combine the flour, cornstarch, sugars, cinnamon, and salt. Stir to combine. Pour the flour mixture over the fruit and gently fold them together.
4. Pour filling into the bottom pie crust and dot with butter or almond paste if you have it around. Place the top crust over it and flute the edges or do whatever design you want. Brush with the rest of the beaten egg and make sure your crust can vent steam. I also like to sprinkle a little sugar on top as well. Place pie on a baking sheet. I always do this to catch any spills in the oven.
5. Bake the pie at 450 degrees for 10 minutes, then reduce heat to 350 degrees. Bake an additional 30-35 minutes until crust is brown and juices bubble up. If your pie edges brown too quickly, cover the edges with strips of aluminum foil and continue baking.

Bonus: You can put the extra scraps of crust on the baking sheet that goes under the pie to catch the drippings. Sprinkle some sugar on them before they go in the oven and you have pie and cookies at the end. They will cook quicker than the pie so watch out.

Ella was a stewardship intern during the summers of 2017 and 2018. She is a river advocate, who loves rafting and spending time on the Klamath along with exploring its wilderness.

Alaska Yellow Cedar (*Callitropsis nootkatensis*)

by Dean Davis

On September 11th of 2001, I got up, started my coffee, and turned on the news on the radio. We all remember that day... a plane had crashed into the World Trade Center in New York. That's all I knew as I filled my Thermos and went to work, to meet with Deems Burton and head out for Elk Valley at the end of the GO road.

Our plan was to collect foliage from Alaska yellow cedar, which we knew as *Chamaecyparis nootkatensis*, and foliage from Port Orford cedar, *Chamaecyparis lawsoniana*, at the southernmost stand at Elk Hole where they were growing side-by-side. This sympatric (occurring within the same geographical area; overlapping in distribution) stand, along with trees of both species from Bear Lake in the Siskiyou, Buck Lake in upper Clear Creek, and Bell Echo camp behind El Capitan were collected for genetic analysis. Our investigation was designed to see if the two species were sharing genes in these stands, potentially influencing natural resistance to *Phytophthora lateralis*, the root disease that has been decimating Port Orford cedar stands throughout the natural range. Short story... Alaska yellow cedar, which is very resistant, was not sharing genes with Port Orford cedar, which is almost universally susceptible. This hint that they were more different than expected added



Chamaecyparis lawsoniana, Port Orford cedar photo by Will Harling

supporting evidence to place them in different genera, which is generally accepted today. A new plant discovery in northern Vietnam has been identified as Alaska yellow cedar's closest relative, and a new genus of just those two trees has been proposed, *Xanthocyparis*.

Our day in this Elk Hole stand was strange and beautiful. No planes flew that day, so the sky was refreshingly silent. The trees in this stand, and the others in our study, grow in north-facing bogs in a northern Canadian habitat type. They are slow growing, and often exhibit a krummholz form, low to the ground and multi-stemmed. In its northern range in



Callitropsis nootkatensis, Alaska yellow cedar photo from wikipedia.com

Alaska and British Columbia, Alaska yellow cedar has been found to be as old

as 1,800 years and can attain massive stature. Deems found an impressive specimen in the north-facing cirque tucked up against Copper Mountain, in the shadow of Preston Peak. In California and Oregon, the stands are small and often isolated, and show localized genetic adaptation which has been documented by Canadian researchers. Common garden studies reveal large differences in morphology (how they look) and phenology (how they grow) between these stands.

First Nation peoples in British Columbia shredded and separated the long, soft bark fibers and wove clothing which shed water. The light but durable wood was extensively used for carving and structures.

Alaska yellow cedar is one of the rarest trees in our Siskiyou enriched conifer association, and may struggle with climate change if our alpine stands become warmer. It grows at some of our highest elevations, and has nowhere to move uphill. The Copper Mountain stand that Deems visited is threatened by fire as I write this, from the uncontrolled Natchez Incident in the upper South Fork of Indian Creek. I hope the bog is wet enough, and rains come soon enough, to save our ancient and precious neighbors.

American Mink (*Mustelid Neovision*)

by Blythe Reis

Mink is a small, semi-aquatic carnivore with a long slender body and relatively short legs. Related to Marten, Otter, Fisher, Skunk, Wolverine, and Weasel, among others, Mink ranges from Alaska to Florida on this continent. Mink's glossy fur is usually dark brown to black, often with white patches on the chin and throat, though years of breeding has expanded their range of colors to include white, silver, and yellow. Their toes are webbed, though not as much as their cousins, the otters. They are often found along streams, rivers, lakes, marshes, swamps, and coastlines, but can be found in drier areas where food is plentiful. They prefer habitats with dense vegetation, which provides them with plenty of cover.

Solitary and generally nocturnal, Mink is an excellent swimmer, as well as tree climber and a master predator on land or in water, who mark their territory with their pungent scent glands. Their prey ranges from rabbits, squirrels, reptiles, bats, snails, fish, and crayfish to birds, insects, worms, and waterfowl and their eggs. Often they will store excess food for later on. They live in burrows either naturally created or abandoned by other animals, such as muskrat or beaver houses, though they can dig their own.

Highly prized for their soft, luxurious water-resistant fur, they are bred on fur farms that have been the subject of much controversy over the years. Escaped American mink on the



Mink in the South Fork Eel River photos by Talia Rose

European continent now threaten to overwhelm the smaller European Mink and other native wildlife.

Here in the Pacific Northwest, Mink plays the Trickster role similar to coyote in stories ranging from Alaska to Oregon, where in some stories he is the hero to humans and in others he is a lecher and trickster who is constantly creating trouble. In Klamath mythology, Mink and his loyal younger brother Weasel feature in many stories with Mink as the clever, resourceful warrior/shaman, married to Wood Tick, who can transform into any being, animate or inanimate, and who brings the light from the east, to the People.



American Mink with crawfish

a'ikreenpíkva Peregrine Falcon Story

As told by Phoebe Maddox,
Excerpted from Tobacco Among the Karuk
by JP Harrington, p. 66.

pikváhahira káru vúra vookúphaanik axra'as,
And in the story times Gopher did this way—
vaa kári káru vúra vookúphaanik,
And he had also done this way already anciently—
kári kár ikxaréeyavhanik,
When he was still an *ikxaréeyav*—
upva'amáyav,
'yampah' roots¹—
múchchaas upíkyeehanik.
He brought them back for his little brother

a'ikrêen uum tishráam ussâansipreenik pa'upva'amáyav,
a'ikrêen (Peregrine Falcom) anciently carried the soaproots up
from Scott Valley,
múchchaas upíkyeehanik.
He brought them back for his younger brother.

uppêentihanik pamúchcha'as:
He said to his younger brother:
"xáyfaat ík umma
"Don't let her see it,
pee'áamti
that you are eating them,
pananihrôoha,
my wife [see it]—
pa'upva'amáyav,
[you eating] the 'yampah' roots**
xáyfaat ík umma
"Do not let her see it
pee'áamti."
that you eating them!"

víri vaa kumá'i'i pamáruk xás u'áamtihanik,
And so that is why upslope then he was eating it,
máruk xás,
[eating it] upslope then,
axra'as.
Gopher [was].



photo from goodfreephotos.com



vaa vúr u'ifshîprinatihanic,
Thus it just grew up that way anciently,
pakôokaninay uvúrayvutihanic,
everywhere he wandered around anciently,
vaa vúra káan kích pa'upva'amáyavhiti',
just the places where there is yampah root,
pákkaan uvúrayvutihanic.
there he wandered around anciently.

káru pátta'as,
And the soaproot,
ishipishrihammâam kích uttaas-híti'.
only upslope of *ishipishrihak* is there soaproot.

vaa vúra káan kích u'íppanhiti',
That is as far as it goes,
yuumvánnihich uum vúra purafátta'ak.
there is none just a little downstream.

ka'tim'iinkyam uum vúra púffaát
On the *ka'tim'iin* side there is none—
ithyárukrukam.
on the other side of the river.

kúna vúra uum apapástiip kích poottaas-híti,
But only on one side of the river there is soaproot,
kookanínay vúra kuma'araarammâakam.
along every place upslope of the villages.

karukkúkam uum chavúra yiiv,
Upriverward it just runs far,
chavúra hôoy váriva vúra,
finally I do not know to where,
ishshipishrihákkam kúukam kích.
only on the *ishshipishrihak* side.

1 [JPH has "soaproots" here and below, as well as elsewhere—all most certainly based on Phoebe's "Gairdner's yampah". WB 237.]

** Yampah or yampa (*Perideridia* spp) indian potato, indian carrot, wild carrot, false caraway, wild caraway, or squaw root, is a native North American root crop that is comprised of twelve similar species (some very poisonous).

PANAMNIK BUILDING

Panamnik Building Gets a New Roof

by Michael Stearns

The Panamnik Building has just gotten a face lift. Our new roof and porch project is almost complete. No longer will we be putting out pots and pans to catch the many leaks. All the positive feedback from locals and visitors has added to our own excitement with the changes. Reluctantly we will need to remove the two large locust trees near the post office this fall, that have provided much needed shade. They are at the end of their lives and pose a significant hazard to the building. We will be sad to see them go.



restaurants. Supporting local cooks to prepare and serve meals is a great way to provide an economic opportunity, and give us all a place to gather and eat together.

Opening up the rear of the Panamnik Building to the river has been a long term goal for MKWC. Seeing the beautiful Klamath River is inspiring, and an important reminder of the river's role in our lives. As an organization we want our building to represent our work for the river and our watershed. Along the Klamath River, we are creating a space for outdoor events. We are honored to work with Brian Tripp, a local Karuk artist, to create an outdoor art installation of figurative sculptures to watch over this area. We hope next summer to construct an outdoor stage near the river. Stand by for more to come!

MKWC is moving forward with our plans for a final phase of improvements to the Panamnik Building. Our new set of plans separates the MKWC offices from the community space so that they can operate independently. This will allow us to host community events without disturbing the work in our offices, greatly expanding the hours the community space can be used. We plan to install a commercial kitchen for our regular fundraising dinners, and make the kitchen available for pop-up



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Tribes, Policy Makers, Funders, Resource Managers Converge on Klamath Watershed for Field Tour and Restoration Conversations

By Erica Terence

Dozens of dignitaries converged on the Wild and Scenic Salmon River in far Northwest California July 11-13 to witness how restoration practitioners are rethinking land management practices and moving towards those grounded in the traditional ecological knowledge of the Karuk People.

Participants of the Klamath Restoration Gathering represented federal, tribal, and state agencies, as well as diverse non-governmental organizations from both sides of the California-Oregon border that bisects the Klamath River basin.

The event aimed to not only highlight local projects, such as fish habitat enhancement, forest thinning, and prescribed burning, but also to hear indigenous voices, spur network thinking, and build a greater understanding of what “upper watershed” meant to each participant.



Klamath Restoration Gathering attendees included representatives of CALFIRE, the California Governor’s Office, the State Water Resources Control Board, the California Department of Pesticide Regulation, the Sierra Fund, the U.S. Forest Service, and the Associated California Loggers.

photos by Beth Hotchkiss, California Governor’s Office of Planning and Research



Klamath Restoration Gathering participants share ideas about how to make state policies work better for people doing good work on the ground.

Support from the Karuk Tribe, the U.S. Forest Service, the Mid Klamath Watershed Council via the Yellow Chair Foundation, the Nature Conservancy, and the California Governor’s Office of Planning and Research made the event possible—from funding, in-kind contributions of staff time and volunteers, to the use of an entire campground for a week. Organizers and participants agreed all the effort put into making the Gathering happen was well worth it for the information exchanged and relationships forged.

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Mid Klamath Watershed Council

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