SUMMER/FALL 2017 ISSUE #9

Working Together to Save Van Arken

By April Newlander, Sanctuary Forest, Inc.

An aerial panorama of the Van Arken Creek watershed taken on January 31, 2017. ***Photograph by Thomas Dunklin.***

The temperate rainforests of the Mattole River watershed once supported abundant wild runs of coho, Chinook and steelhead—essential to a functioning ecosystem and human needs. For the past 30 years Sanctuary Forest has been working to conserve vital forestlands and restore the wild runs of salmon while balancing the needs of the ecosystem with those of our community. Our accomplishments have been a result of cooperation and collaboration among a variety of landowners, agencies, scientists, and other conservation and watershed restoration organizations. By bringing together diverse perspectives in a shared vision of responsible land and water management, collaborative partnerships accomplish conservation goals that could not be achieved if undertaken alone by a small nonprofit organization.

In 2016 Sanctuary Forest embarked on the biggest land acquisition project in our 30-year history, going public with a capital campaign to raise $9 million to conserve the entire Van Arken Creek watershed. To date, we have guided efforts to conserve nearly 15,000 acres of land in the Mattole watershed and beyond; however, Sanctuary Forest holds title to just over 500 acres of land within the headwaters of the Mattole watershed. Acquiring Van Arken (1,300 acres) and the neighboring headwaters of McKee Creek (300 acres) will more than quadruple the amount of land we steward. So how will these lands be managed to benefit the entire Mattole River watershed? Through our collaborative partnerships and help from our diverse community.

In 2008 Sanctuary Forest (SFI) joined forces with their downriver Mattole partners, Mattole Restoration Council (MRC) and Mattole Salmon Group (MSG), and formed a strategic alliance—the Mattole River and Range Partnership (MRRP). The formal partnership was created with the intention to coordinate restoration and conservation efforts and effectively implement the Mattole Watershed Plan which was completed in 2005. The Mattole Integrated Coastal Watershed Management Plan

See "Saving Van Arken" *- continued on page 10*

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community watershed restoration since 1983

Mattole Restoration Council Mission

The mission of the Mattole Restoration Council is the restoration of natural systems in the Mattole River watershed and their maintenance at sustainable levels of health and productivity, especially in regards to forests, fisheries, soil, and other plant and animal communities.

Mattole Restoration Council Vision

"We look forward to a Mattole that has healthy, self-sustaining, productive forests, meadows, and streams, with abundant native fish and wildlife populations. We envision a community that draws its sustenance from and lives in harmony with the environment. We seek to understand processes of natural healing and enhance them using best land practices in harmony with the local environment. We seek to enhance the exchange of knowledge among all community members toward that goal. We look forward to a time in the Mattole watershed when "restoration" will no longer be needed."

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Mattole Salmon Group Mission

The Mattole Salmon Group works to restore salmon populations to self-sustaining levels in the Mattole watershed.

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Mission Statement

Sanctuary Forest is a land trust whose mission is to conserve the Mattole River watershed and surrounding areas for wildlife habitat and aesthetic, spiritual and intrinsic values, in cooperation with our diverse community.

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Mattole Watershed News

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From the Executive Directors

By Cassie Pinnell, Sungnome Madrone and April Newlander

Dear readers and friends of the Mattole,

Are we out of the drought? That is what news sources would say about the northern third of the state. Even after a record rainfall year—with an average of 160 inches of rainfall in the Mattole watershed—the Mattole River is dropping fast. We are in a race with climate change: it is bringing longer, hotter summers, and more intense winter storms with flooding and landslides. The partners of the Mattole River and Range Partnership (MRRP) have been working for over 30 years on restoring salmon habitat, implementing forest practices to address upslope sedimentation, and adjusting human use. Our work is far from over.

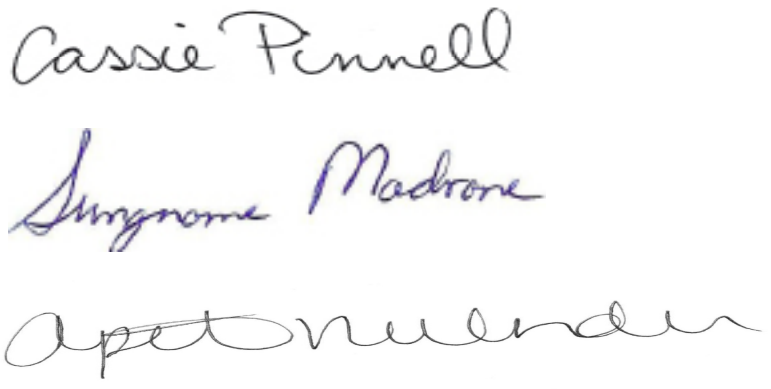
In this joint newsletter, the Mattole Salmon Group brings us back to the basics with a reminder of how road construction and maintenance can be done in responsible ways to reduce impacts on the river and fish habitat. Spawner survey data shows that this past winter's Chinook salmon run appeared to be one of the strongest in the last few decades. Good road and soil stewardship by landowners greatly increases the chance we'll see more abundant returns in the future.

The Mattole Restoration Council provides an update on two timber harvest plans in the watershed: Humboldt Redwood Company's plans in the Lower North Fork and the Boyd/Barnum Timber Harvest Plan in Van Arken Creek. We also direct landowners to two opportunities for funding assistance for hazardous fuels reduction work. And we share information about a new citizen science partnership, wherein local high school students worked with us to monitor seasonal changes in plant physiology on their campus, part of a larger effort to understand how climate change is playing out.

In the headwaters, Sanctuary Forest is dedicated to conserving the Van Arken watershed and neighboring headwaters of McKee Creek—a total of over 1,600 acres of recovering or pristine forestland. In this issue, we explain how acquiring Van Arken will help us achieve our collective goal of abundant native salmon runs and sustainably integrated human communities. The McKee Creek Restoration and Conservation Strategy describes our integrated approach of restoring resilience to the McKee Creek watershed by working with landowners to practice storage and forbearance, implementing groundwater recharge and salmon habitat enhancement projects, and our endeavor to protect the upper 300 acres of the watershed from potential subdivision and development and prevent the subsequent adverse environmental impacts associated with it. Our work with landowners continues as we encourage the formation of tributary collectives where neighbors can come together to find solutions on how to be good land stewards and live in balance with nature and the fish in their own sub-watershed.

The achievements of the MRRP partners over the years have required a tremendous amount of support from agencies, scientists, conservation organizations, and our community. As we combat the effects of climate change, we continue to learn how to adapt to these changing conditions. Now more than ever we need our community behind us so we can learn together and restore drought resilience for fish and people in the Mattole River watershed.

Sincerely,



Cassie Pinnell, Sungnome Madrone, and April Newlander

Mattole Forests Update

By Ali Freedlund, Matole Restoration Council

Humboldt Redwood Company Management in the Mattole

As fog wends through the canyons of the Lower North Fork of the Mattole River, the forests that drape like dark shawls off the bare shoulders of Long Ridge shelter many paws, wings, fins, and scales, as well as millions of plant, fungal, and mycorrhizal relationships. This remote haven has also long enchanted us humans: the trek to get there is far, the views are stunning, the ambience is near wild, and within the forest is fertile ground for awe via the physicality it takes one to roam. The drop from the grassline to the forks is steep, the geology crazy and the streams full of bounce. Much of the easier-to-get-to ridgeline forests have already been harvested, replanted and grown in thickly. But lower down there are sturdy plush fingers of elder trees with open forest floors. This is where human awe enters freely and forest raptors can wing about. So, it was with great concern that many people took issue with Humboldt Redwood Company's (HRC) plans to harvest, albeit selectively, in some of these inspiring stands that seem to provide a missing continuum despite past activities nearby. One could now describe the place as a forest tapestry, one in which the original older weft stands out in its beauty aside the newly woven contemporary threads.

HRC has state-approved plans to harvest 1000 Mattole acres, 800 of which are in the area just described. When equipment was mobilized in the spring of 2014, all their harvest plans became the subject of protest. Forest defenders created a blockade that was so dangerous HRC instituted a shutdown on all activities in the area. Field trips and meetings were organized that included HRC staff, MRC staff, forest defenders, EPIC, and concerned Mattole citizens. At issue were the unentered stands. Alternative designations were explored. When HRC's official release of documents proposed nothing new, it took a hardcore response of said documents to push HRC into further analysis that resulted in a final, very different, Mattole forest management document. HRC had agreed to forgo harvest in all the helicopter units which, they say, would remove 86% of what was identified as unentered or primary forest. We applaud this change in plans.

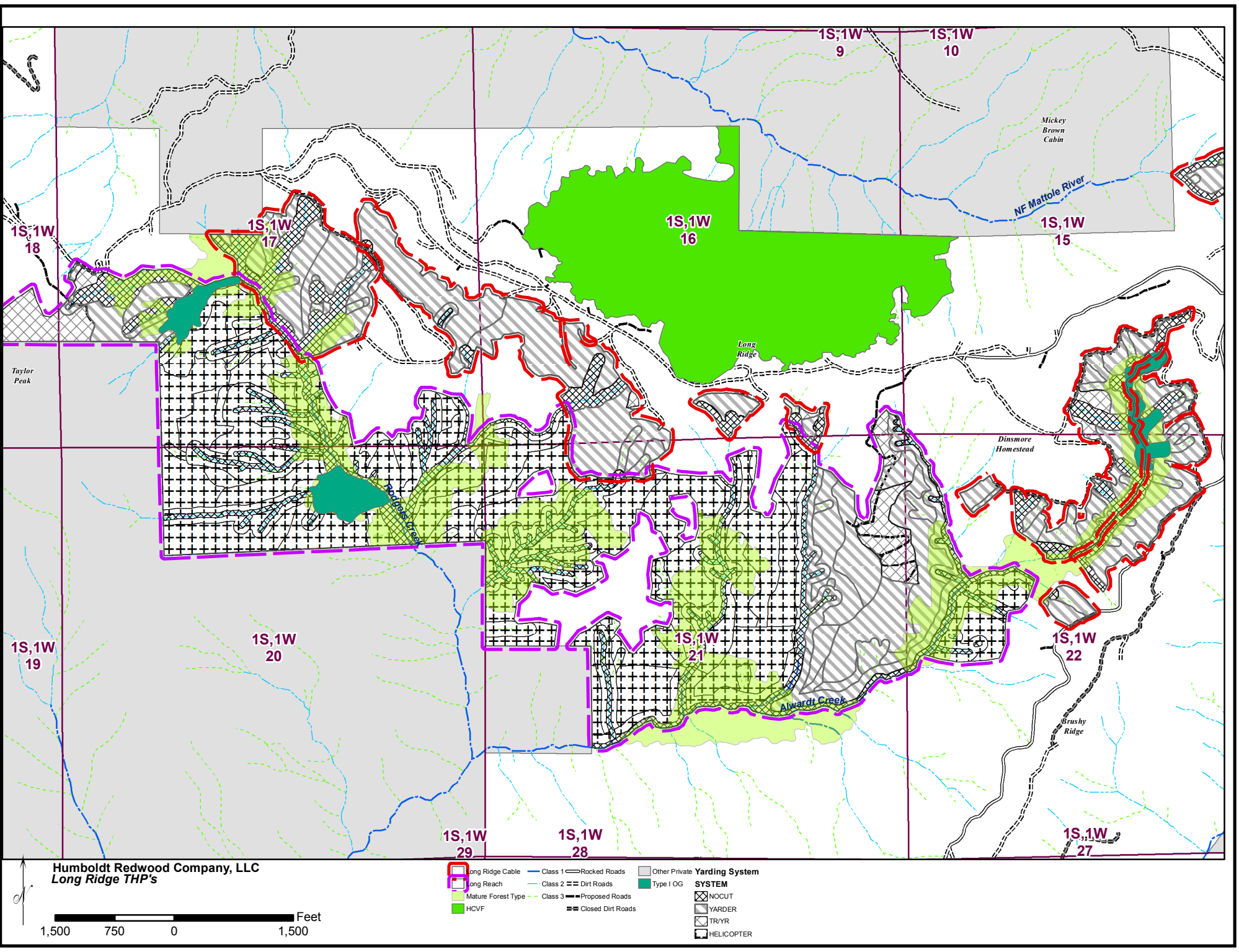
If you look at the map at right, you will see two THP footprints: Long Reach (in lilac outline) and Long Ridge Cable (in red outline). All the little crosses (++++) that fill the majority of the Long Reach THP are helicopter units removed from harvest for this cycle. The slanted lines are areas they intend to harvest by other methods. According to Ben Hawk, the Mattole area forester for HRC, the next time they would consider logging in these areas would not be for at least 10 years and more likely 15-20 years. We consider this a temporary win for the forests. The lime green is the High Conservation Value Forest already protected. The bright yellow/green denotes HRC's definition of very mature or unentered forests. According to the map, one can see a proposed selection harvest in some of these unentered forest stands outside of protected stream zones.

Further, HRC responded to requests to re-inventory all stands that might qualify for protection under their Old Growth policy. Not only did they analyze anew the timber harvest plan project area, but they loosened the criteria for meeting the Old Growth Type 1 forest. From the July document, "Modifying our old growth stand indicators resulted in an additional 25 acres in three stands being identified and protected." These newly protected old-growth stands are shown in dark green on the map and are off limits from harvest by HRC as long as they hold FSC certification, which they have stated they intend to keep.

HRC had plans to begin harvesting in non-helicopter units in June. Another forest defender blockade began to organize. At some point, HRC had sent out crews to herbicide treat the hardwoods prior to harvest. Though MRC has never condoned the use of herbicides for forest management, we were aware they routinely treated second-growth tanoak through Hack and Squirt application where a chunk is cut from the cambium and then herbicide is applied. Aside from asking for them to curtail this type of treatment, what we worked on them to institute was the protection of older hardwood stands across their property to ensure they would not be converted to conifer. In the primary forest stands there were some small but significant older hardwood stands.

In early June, MRC was notified via photos from the blockade, that the Hack and Squirt herbicide treatments included old hardwoods in what looks like hardwood dominated stands. This type of treatment goes against even HRC's policies and is ecologically disturbing. Their first guideline from their website states, "Only using herbicides to address ecological imbalances." There was no ecological imbalance in these naturalized hardwood stands that serve to provide important food and habitat associations for wildlife. When MRC approached HRC with this news they responded by saying they wanted to see for themselves what happened as they contract out for herbicide treatments. We want to see too. Currently, the blockade prevents any assessment of this potential violation of their practices. For the record, had it not been for the forest defenders, we would not now question their hardwood management nor would we have gained the temporary moratorium on harvesting in the helicopter units of the approved plans. We want HRC to succeed in setting a high bar of sustainable forestry. Their stated purpose is "to demonstrate it is possible to manage productive forestlands with a high standard of environmental stewardship…" HRC was our biggest hope in keeping these larger forestlands free from development while allowing sustainable management in the second-growth forests. They do not clearcut and they protect all trees older than 217 years. Now the question, moving forward, is: can HRC assure us that the Mattole's precious forests of all types will be stewarded to enhance fecundity, diversity and vitality? Given their stated intentions, it is not too much to ask.

Chinook salmon in Van Arken Creek, winter 2016. ***Photograph by Galen Doherty.***



Humboldt Redwood Company's map of the two approved Timber Harvest Plans off Long Ridge in the Lower North Fork watershed of the Mattole. All the spaces with a series of +++'s are the helicopter units that will NOT be harvested. *Map courtesy of Ben Hawk, HRC.*

Van Arken Timber Harvest Plan

The Boyd/Barnum Timber Harvest Plan (THP 1-16-081) tells a different story. This recently approved plan covers 500 acres in the headwaters area, the majority of which is in within the Van Arken Creek watershed. If operated, this plan would clear 300 acres to bare ground in a recovering watershed. In this day and age, to propose so much cleared ground is a slap in the face of what is considered sustainable forest management. Over 20 public comment letters were submitted urging CAL FIRE to deny this plan. These redwood and Douglas-fir forest stands are only 50-70 years old, with some older hardwoods in the mix. From a lumber perspective, this is far beneath an ideal time to harvest. Yet, this winter saw the most significant Chinook run in Van Arken that was ever documented since the Mattole Salmon Group began surveying in the mid 1980s! What will happen to these recovering runs if this plan, with its new roads and cleared ground, is implemented?

Adding to the insult, speculation based on recent past activities involving this landowner point to the real possibility for a cut-and-sell profit strategy. If sold as individual parcels (of which there are 28), the impacts overall could be tragic: forest fragmentation, road construction, multiple residences, water diversions, pets, miles of new roads, loss of habitat and definitely direct and ongoing impacts to the creeks. Ironically, this is in the same headwaters area that Sanctuary Forest and others have been tirelessly working to conserve water.

The good news is there is a viable alternative IF the landowner chooses to defer harvest until a conservation buyer is secured. Through their Fund-An-Acre campaign, Sanctuary Forest, Inc (SFI) aims to raise the seed money to attract a buyer – one who would later sell to SFI to keep the forestland as forestland and protect almost the entire Van Arken Creek watershed. Already they have raised over $200,000 through the generosity of the community who is in support of conserving the forests for the community, the fish, and the trees. The project also has the support of the following agencies: National Marine Fisheries Service, Bureau of Land Management, and the California Department of Fish and Wildlife. Sanctuary Forest has articulated a vision of stewardship of for these lands into the future which includes a community forest. For more information visit their website, http://www.sanctuaryforest.org/savevanarken/

2016-17 Salmon Spawning Season: The Chinook Showed Up, but Where Are the Coho?

By Nathan Queener, Mattole Salmon Group

Counting adult salmon is difficult for us land mammals. They are excellent swimmers in cold, turbid water. We can't do much more than look hard from the bank or a boat – and sometimes, like much of this past December and January, we can't do much more than stay home by the wood stove and hope that the rain will stop for at least a day so we can go out and look for some fish.

The rain and high flows in the winter of 2016-17 meant many fewer spawning ground surveys. But consistent storms also allow fish, especially Chinook salmon, access upstream into much smaller streams than they access in a drier year, where they are also more visible. So maybe it is all a wash

Setting aside the caveats about the fish we don't see, it appears that the Chinook run this past winter was the strongest since the winter of 2005-2006, and perhaps even on parr with the abundance seen in the early 1980s.

Our estimate this past year was 929 Chinook redds in the watershed. We count redds, not fish, but we can assume there were probably around 2000 adult Chinook in the watershed this past winter.

The apparent Chinook abundance is notable for several reasons. It appears to buck the trend in the state's big rivers, the Klamath and Sacramento, where last year's runs were abysmal and this year's may be worse, and it comes despite generally poor ocean conditions for salmon when many of these fish smolted and left freshwater in 2012, 2013, and 2014. Warm ocean temps and poor upwelling should lead to very poor marine survival.

One-third to half of the Mattole Chinook run is made up of 3-year-old fish – these fish were the progeny of the 2013-14 run. That was an exceptionally dry winter, when Chinook were unable to move upriver past Honeydew until February, and spawned en masse in the lower mainstem, especially around Petrolia. So much spawning so low in the watershed led to lots of redd superimposition, and limits the rearing possibilities for juveniles, not likely conditions that maximize decreasing juvenile survival. To see a strong run despite what seem like adverse freshwater and ocean conditions is quite encouraging, and is likely a result of the improvement in stream habitat that we have seen in the watershed: less sediment, and more trees around and in the creeks.

While Chinook returns were encouraging, we did not see a single adult coho this winter, for the first time in the 37 years surveys have been conducted. We know we don't see all the adult fish – but seeing no coho at all is not a good sign! As I write this, we've just begun our summer snorkel surveys, which are a much better metric of coho salmon distribution and abundance, but the results thus far have not been encouraging. We've seen a handful of juvenile coho, indicating at least one pair spawned this winter, but numbers do seem to be significantly decreased from the already very scarce conditions of the last few years.

To summarize, how many fish are there? Based on our recent spawner surveys and summer time snorkel surveys, we can state that Mattole adult salmon populations number 600-2,000 Chinook, zero to 50 adult coho, and greater than 1,000 steelhead.

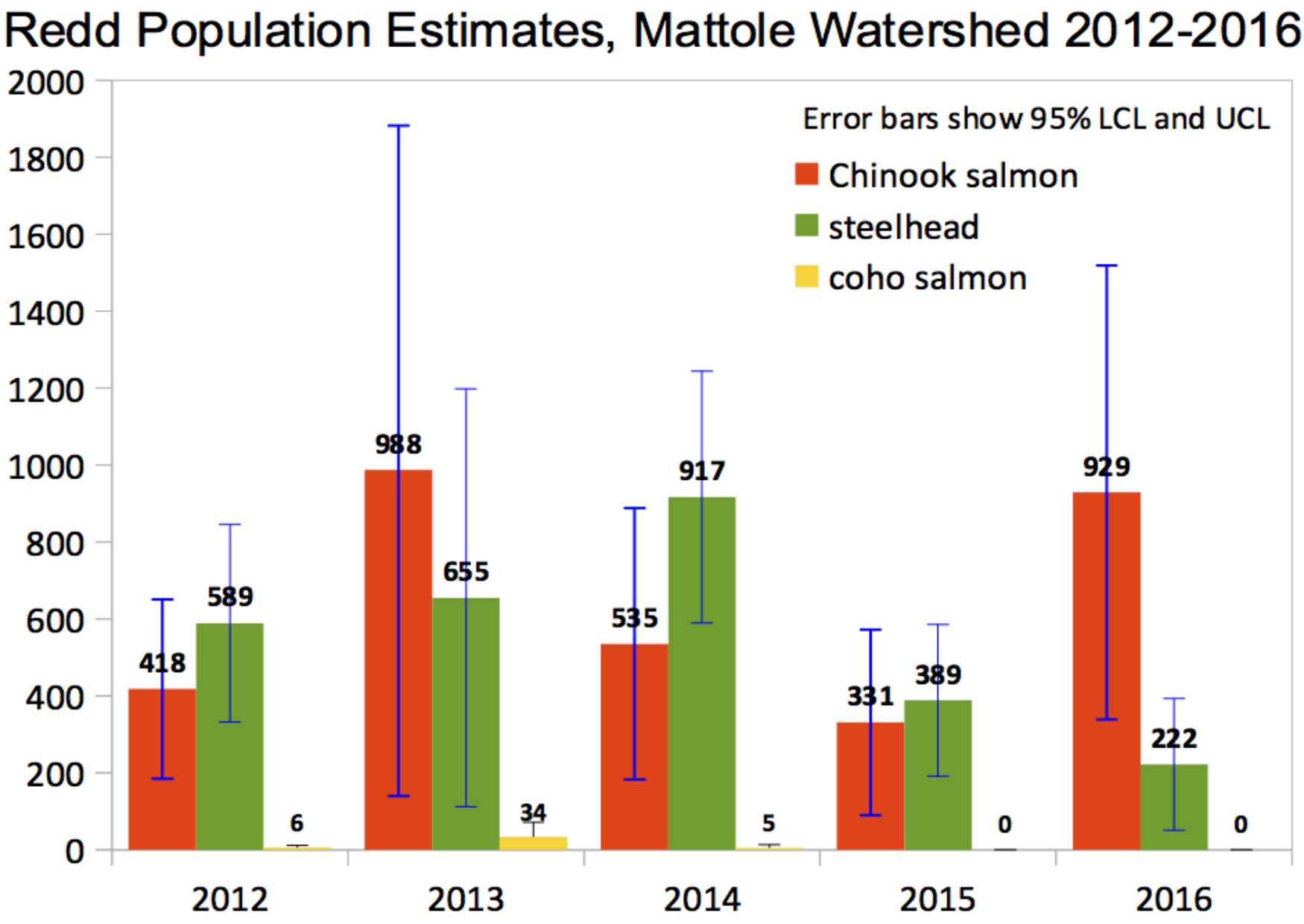


Figure 1. Redd population estimates for the Mattole watershed, 2012-2016. Numbers at top of columns are mean values for each species and year. Surveys are focused on salmon and intercept only a portion of the steelhead run in time and space, thus actual steelhead redd abundance is likely at least two times that shown. LCL stands for Lower Confidence Limit; UCL stands for Upper Confidence Limit.
Graph by Nathan Queener, Mattole Salmon Group.

The Times They Are a Changin'

By Kate Cenci, Mattole Salmon Group

I recently experienced a significant life event, and found myself swept up in a churning current of instability. I found myself clinging to mundane daily rituals – washing dishes, feeding chickens, doing laundry – to provide some foundation. I am not unique in this behavior. Political, social, and environmental storms can rage in the "outside" world, yet here in the Mattole, we focus on the routines we have come to view as constants: the daily and seasonal rhythms we have come to rely upon. Spring follows winter, gardens are planted, flowers blossom, fruit ripens…fall and (eventually) wet follow the last hot days of summer, and salmon return to our watershed.

It is when these routines are threatened that we find ourselves in a panic, where every piece of ground is unsteady. This is when we want to find some sort of blame for the disruption, or an easy remedy to restore what is familiar and comforting to us… to restore the things we view as constant. But what does constant really mean?

We've all heard the adage "the only constant is change." But even that isn't constant. Change can happen extremely slowly (think the decay of the sun) or quite rapidly (like a wildfire), especially with us humans as a significant variable in the equation. Once we accept change, and that everything changes, we can let go of the rigid framework that keeps us cemented in the past and closes us off to new possibilities. Instead, we can actively work toward a realistic future we want to be a part of.

We have come to rely on the return of the salmon every fall and winter. Is the presence of these salmon runs a constant we are about to lose, or just the illusion of something constant? If they are part of a larger change, what are we left with to cling to? This threat of losing this "constant" stirs a deep and profound panic within us, a reflection of our impact on changing our home into an environment were it will be more difficult to survive. We want to find something to blame – loggers, miners, canneries, dams, hatcheries, fishermen, marijuana farmers. We want to find remedies, and the quicker the better. Indeed many lives, tremendous efforts, and lots of money have been dedicated to the cause of salmon restoration, with funders often requiring documentation of marked improvement within just a couple of years.

I've struggled a long time with what restoration means and what it looks like. What are we restoring to? Are we trying to re-establish some idyllic and grand past moment in time? Or are we trying to blend little motivational nudges to spur nature into a self-healing process by minimizing and mitigating current and future human impacts on the environment? Are we stuck in the past, or are we adaptively managing a path into the future?

So what does restoration look like? That is the biggest question of all, and the answers that do exist are complicated. In NOAA Fisheries' Final Recovery Plan for Southern Oregon/Northern California Coast Evolutionary Significant Unit of Coho Salmon (*Oncorhynchus kisutch*) 2014, the target spawning population for the Mattole is 1,000 individuals.[1] This is a momentous goal that in reality we are unlikely to reach in any of our lifetimes.[2] NOAA Fisheries classify Mattole coho salmon with a "high risk of extinction." It's true… by all statistical accounts and analyses, it is very likely that coho salmon will become extirpated from the Mattole watershed in the coming years. So few adult individuals return each year (< 50), that the laws of population dynamics (e.g. lack of genetic diversity, difficulty finding a mate,) if nothing else, will force the species to become extinct in this watershed before too long.

So how to accept this change without giving up and forfeiting our efforts? What can we rely upon to help us move actively into a future we still want to be a part of? Perhaps we can take some comfort in the fact that modern Pacific salmon have been around for 4-6 million years, and no doubt, have persisted through some dramatic evolutionary events. They have recolonized rivers after volcanic and other geologic events have left watercourses devoid of life, dammed them completely for an amount of time, or otherwise left them inaccessible. [3]

A coho salmon parr in McGinnis Creek in the summer of 2014.
Photograph courtesy of Mattole Salmon Group.

Salmon are incredibly adaptable. They have diverse life-history strategies even within a single species. Some fish stay in freshwater longer than others, some stay in the ocean for different times, and thus, they return to spawn at different ages. This is both genetically and environmentally driven, an evolutionarily perfect balance of nature and nurture at both the individual and population levels. Perhaps this is why Mattole coho, despite their dismal numbers, have persisted long past the point of it making any statistical sense.

People in our watershed communities often ask me what is the biggest thing we could do to save the salmon. My answer is simple: we all move away. We completely eliminate our impact on the land and water, and nature will soon take over and do what it needs to do. But this is not realistic. As such, we must find a balance within the landscape among ourselves and the other creatures we share it with. The answer isn't so much restoring to what once was, but rather it is active stewardship and management: stewarding our lands so that nature can find an optimal balance with us as a key part of the picture, and managing our inevitable impacts on the landscape. Management and stewardship are not static actions. Like salmon, we must adapt. We must learn and evolve our Best Management Practices and our modes and mechanisms of stewardship to adequately respond to the impacts of our actions.

Here in the Mattole, and across many parts of California, our cultural and visual landscapes are changing, and many in our communities are struggling with this. Massive greenhouses that sometimes light up the night sky dot the landscape. Fences now shut off panoramic pastoral views. The threat of "corporate" cannabis looms like distant thunderheads, and many feel that we are losing a "way of life" that we have all come to know and love. What do we have to cling to in these tumultuous times? Rather than hold onto an idea of the past, perhaps we can rely upon our commitment to be stewards of our land and each other as fellow cohabitants in our little corner of the world. We can take this opportunity to listen, really listen to each other, and find a common foundation with which to go forward. We can help each other learn, grow, and adapt. In that broad conversation, it will be equally important to give a voice to those who cannot speak, such as our beloved salmon.

But what about environmental disturbances that are far grander in scale than a volcanic eruption or a row of greenhouses, such as climate change? Will wet still follow dry? Will salmon even return to streams along the west coast? Maybe not. How do we accept such a devastating change while not giving up? There are no easy answers. All we can do is go forward into an uncertain future, relying on our commitments to steward our lands and listen to each other, and clinging desperately to faith in our ability to adapt. Just like salmon.

[1] National Marine Fisheries Service. 2014. Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch*). National Marine Fisheries Service. Arcata, CA.

[2] The Mattole is not alone in the scale of this task. In their recovery plan, NOAA Fisheries estimates it will cost $4,949,689,924 and take a minimum of 102 years to reach viable population levels for the SONCC ESU, assuming every single recovery action in 40 watersheds is funded and implemented within 10 years.

[3] Montgomery, David. 2004. King of Fish: The Thousand-Year Run of Salmon. Cambridge, MA: Westview Press.

Working Together in McKee Creek: Water for

By Galen Doherty, Sanctuary Forest, Inc.

Driving west from Redway towards Shelter Cove on the Briceland-Thorn Road, the Mattole watershed is entered coming over Huckleberry Hill at the Ettersburg Junction. Dropping down into the Whitethorn Valley, the road parallels McKee Creek to its confluence with the Mattole River at Thorn Junction.

As with many other sub-basins in the watershed, McKee Creek was historically home to abundant runs of Chinook, coho, and steelhead. The last observations of coho salmon in McKee Creek were taken nearly 10 years ago, and since that time the plight of Mattole coho throughout the watershed has only worsened. Critical low to utterly lacking streamflows in McKee Creek and throughout the Mattole headwaters have been a roadblock to recovery efforts. This is further compounded by a history of past land-use impacts that have fundamentally altered the ecosystem. The McKee Creek watershed has been racked with numerous cycles of clear-cut logging, road building, and stand-replacing wildfires; much of the large woody debris that provided essential salmon habitat was long since removed under misguided "stream-cleaning restoration efforts" of the late 80s and early 90s. Since 2003, McKee Creek has suffered incredibly low flows, with pools consistently drying up during the summer months, resulting in the deaths of hundreds of juvenile salmonids, and landowners running out of water year after year.

In response to this crisis, landowners on the mainstem of McKee Creek have banded together and are working with Sanctuary Forest to restore resiliency and abundance to the McKee Creek watershed. These grassroots efforts have been based on the understanding that we must work together to find solutions that work for both the fish and the people who live in the McKee Creek watershed. Out of these efforts came the McKee Creek Restoration and Conservation Strategy: a three-part plan to work with landowners to address the limiting factors to salmonid recovery, increase streamflows for fish and people, and prevent future impacts of subdivision and development in the headwaters.

Storage and Forbearance

Over the past 6 years, Sanctuary Forest has worked with interested landowners, the CDFW Fisheries Restoration Grant Program (FRGP), and the CA Department of Water Resources to provide domestic water storage for landowners in exchange for their forbearance from diverting from McKee Creek during the dry season (the actual forbearance period is determined annually by Sanctuary Forest's streamflow monitoring program). Last year the first of these water systems was completed, and this year two more will be installed. As a result of these efforts, there will be no diversions from the mainstem of McKee Creek during the dry season, leaving water in the creek when the fish need it the most!

Salmon Habitat Restoration & Groundwater Recharge

To address some of the legacy impacts, restore salmon habitat, and increase summertime streamflows, Sanctuary Forest is working with two landowners to implement projects on key portions of McKee Creek. The first of these projects will begin implementation this year, and will build on the successes and lessons learned from the Baker Creek Pilot Project, which utilizes a mix of large wood debris (LWD) structures and log/boulder weirs to raise the stream channel, increase pool depth, and store more water in the floodplain. The second of these projects will take place further up in the watershed and will utilize a mix of boulder weirs, LWD habitat structures, and Beaver Dam Analogues (BDAs) consisting of pounded posts interwoven with willow and other riparian vegetation and sealed with locally sourced clay. These structures mimic the natural function of beaver dams and are designed to slow down winter run-off and inundate the toe of the adjoining hillslope; increasing groundwater storage and resulting in streamflows that stay higher for longer into the dry season.

Above: A Beaver Dam Analogue (BDA) consisting of pounded posts interwo vegetation and sealed with locally sourced clay. Similar structures will be cre
Photograph courtesy of Elijah Portugal, Redwood Community Action Agency.

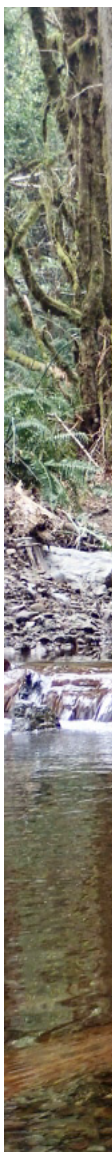
Below: Projects in McKee Creek will be based on the successes and lessons l Project, pictured, where a mix of large wood debris structures and log/boulde stream channel, increase pool depth, and store more water in the inset floodp
Photograph courtesy of Sanctuary Forest, Inc.

Land Conservation

By ending all summertime diversions from the mainstem of McKee Creek and restoring salmon habitat and other hydrologic functions to increase summertime streamflows, Sanctuary Forest and our partners are increasing the chances of recovery in this high-priority tributary (NMFS 2014). But these accomplishments could easily be negated or reversed if further subdivision and development were to occur. To address that threat, Sanctuary Forest has already purchased 7 acres of land, permanently protecting the confluence of McKee Creek and the Mattole River. Our goal for this property is to work with the Whitethorn Volunteer Fire Department to install an emergency water storage system for firefighting and to replace water storage for landowners in the event of a catastrophic loss.

Meanwhile, upstream in the headwaters of McKee Creek, approximately 300 acres of forestland and 2 miles of riparian corridor are under the imminent threat of fragmentation and development that would entail extensive road building, forest clearing, and additional water diversions. This conversion will exacerbate current conditions in McKee Creek, negatively impacting fish,wildlife, and downstream landowners.

Sanctuary Forest is working with the current landowner (Boyle Forests) to include the McKee property in the Van Arken Watershed Conservation Project. If successful, Sanctuary Forest would take ownership of the property for perpetuity, creating open public space and enabling forest thinning, additional restoration projects, and increased streamflows. For more information on the Van Arken Watershed Conservation Project visit: http://www.sanctuaryforest.org/savevanarken/.

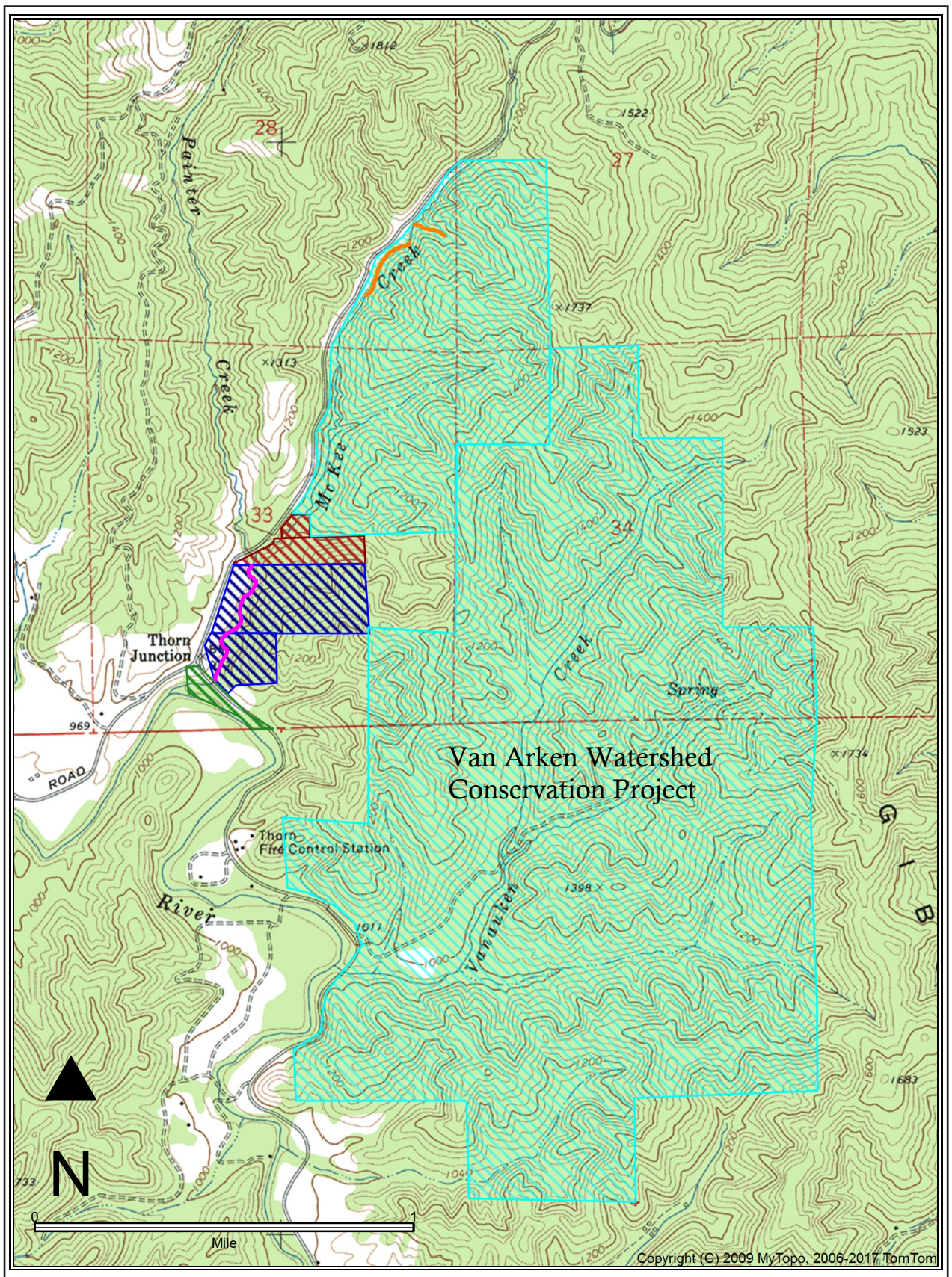


National Marine Fisheries Service. 2014. Final Recovery Plan for the Southern Oregon/Northern California Coast Evolutionarily Significant Unit of Coho Salmon (*Oncorhynchus kisutch*). National Marine Fisheries Service. Arcata, CA.

Fish and People, Open Lands for You and Me.

...ven with willow and other riparian ...eated in McKee Creek.

...earned in the Baker Creek Pilot ...er weirs were used to raise the ...plain.



Coho Habitat Restoration and Streamflow Enhancement (2017)
Coho Habitat Restoration and Streamflow Enhancement (dependent on aquisistion)
SFI Storage & Forebearance in Progress (2017/18)
Practicing Storage & Forebearance
Sanctuary Forest Property

Saving Van Arken

- continued from page 1

(MICWMP), an updated version of the original plan, is a 10-year plan spanning from 2010-2020 and is a roadmap for achieving our ultimate goal of abundant, native salmon runs along with healthy, productive upslope ecosystems and sustainably integrated human communities. (The MICWMP is available at www.mattole.org/about/watershed-plan/)

Guided from a number of previous planning documents and input from the Mattole community, the current goals and objectives of the MICWMP were developed. The plan identifies eight specific watershed goals and eight key management areas that address these goals (Table 1). Conservation of the Van Arken watershed provides a myriad of benefits for the larger watershed and opportunities to work with our MRRP partners and community to achieve the above goals of the MICWMP.

Despite the degradation from 75+ years of industrial timber harvesting, Van Arken has incredible potential to be restored. Already much work has been done in this watershed by the MRC. In 2005, the MRC implemented a sediment reduction project in Van Arken that treated the entire road network; many roads were decommissioned , and stream crossings on those that remained were upgraded (Goal 8). Upstream mitigation efforts such as this improve estuary habitat by reducing sediment loads and improving water and habitat quality (Goal 1).

Addressing forests that are dominated with overly dense second-growth Douglas-fir and mixed hardwood forests that lack resiliency to stand-replacing wildfires or other ecological disturbances is a priority issue identified in the MICWMP. Approximately 1/3 of the land area of Van Arken contains recovering forestland of this type. Upon successful acquisition, our immediate goal is to develop a holistic forest management plan that reduces fuel loads and the risk of wildfire. A specific task in the MICWMP that has not yet been accomplished is to "develop a Mattole oriented land care prescription based on local, indigenous knowledge to improve forest and grassland health and reduce fuel loads." We are hopeful that we can include native people and other diverse community members to form an advisory committee that will guide our efforts in developing a land management plan that includes fire and forest thinning, and a sustainable harvest regime that provides a source of revenue to be reinvested in the stewardship of the property (Goals 6, 7, 8.) Through active engagement with our local community and our partner MRC, who leads in forest and fire management, our vision for a community forest with healthy and fire resilient stands may be achieved (Goal 7).

Both Van Arken and McKee Creek have been identified as Priority 1 tributaries for coho recovery (Mattole Coho Recovery Strategy, MRRP, 2011) and have been given a high intrinsic potential (IP) value: the capacity to support rearing juvenile coho salmon, based on the intrinsic ability of the habitat to support this life stage (NOAA Southern Oregon/Northern California Coast (SONCC) Coho Salmon Recovery Plan, 2014). These tributaries have enormous potential for fisheries restoration and could be key to the recovery of wild Mattole salmon populations (Goals 2, 3). The SONCC Recovery Plan specifically says that "recovery can only be achieved through coordinated efforts to build strong conservation partnerships." Through an integrated watershed management approach, MRRP partners can use multiple strategies to increase the overall restorative effect and promote habitat recovery.

Van Arken Creek in December 2016. ***Photograph by Thomas Dunklin.***

Ultimately, ownership of Van Arken will result in the restoration and protection of six miles of critical salmon spawning and rearing habitat, implemented with MSG (the lead in fisheries restoration and monitoring); and cold, clean water that persists all summer long due to SFI's innovative groundwater recharge projects (Goal 1). The eventual return of old-growth forests will increase carbon retention and sequestration, acting as a buffer against the effects of climate change. Conservation of these lands will promote connectivity between high-quality habitat areas (Goal 4) and add key habitat to the 5,500-acre reserve in the heart of the Mattole headwaters (the Upper Mattole River and Forest Cooperative, UMRFC—created in 1999 by SFI and other agencies, non-profit organizations and private landowners). These lands will further connect to the Sinkyone Wilderness State Park, Lost Coast Forestlands and the Usal Redwood Forest, creating in total 140,000 acres of conserved lands in the Lost Coast region of southern Humboldt and northern Mendocino Counties (see map).

Van Arken is an entire watershed completely free from human development. This is a rare opportunity to create a living laboratory where scientists, educators, residents and visitors explore, experiment and evaluate our innovative approaches to achieving forest and watershed health. Ecosystems function from ridge to river, and the ability to conduct restoration activities in a watershed unaffected by human activity presents great potential to create processes and monitoring protocols in which restoration efforts can be adapted to new data and changing ecological conditions (Goal 5.)

As we continue to discover the full potential of Van Arken, the benefits for our watershed and community become more realized. Continued collaboration with MRRP partners, other agencies/ organizations and our community will be vital to carry out our vision. The quest to save Van Arken provides an opportunity to accomplish the goals of the MICWMP with our partners, and achieve the long-term goals for the entire Mattole River watershed—a functioning, intact watershed where salmonids return home by the thousands.

Key Management Areas	Water Quality Restoration	Fisheries Restoration	Sediment Management	Forest Improvement and Management	Riparian Ecosystem Restoration	Grasslands Restoration	Fire Management	Landscape Conservation
Goal 1: Maintain and Enhance Water Quality and Quantity	x	x	x	x	x			x
Goal 2: Improve Instream Salmonid Habitat and Populations	x	x	x		x			
Goal 3: Enhance the Function of Critical Ecosystem Processes	x	x		x	x	x		
Goal 4: Preserve and Maintain Open Spaces to Promote Habitat Connectivity between High Prioirity Habitat Areas				x		x		x
Goal 5: Adapt MRRP Actions to New Data and Conditions	x	x	x	x	x	x	x	x
Goal 6: Support the Use of Fire as a Functional Ecosystem Component						x	x	
Goal 7: Increase the Community Role and Involvment in Restoration	x	x	x	x	x	x	x	
Goal 8: Promote Economic Localization & Infrastructure Improvements	x			x				x

Above Table: Key Management Areas of the MICWMP address the eight goals of the MICWMP.

Collective Change

By Anna Rogers, Sanctuary Forest, Inc.

Mattole Canyon Creek's new streamflow sign. ***Photograph couretsy of Sanctuary Forest, Inc.***

In today's world, a shift is happening in our thinking as citizens: we are taking power into our own hands. Grassroots groups are everywhere, addressing issues like climate change, civil rights, and gender equality. And as we absorb the impacts of an ever-shrinking globe, we are also becoming hyper-aware of issues on a local level: counties, regions, neighborhoods … and watersheds.

In 2016 Sanctuary Forest completed the Mattole River Water Conservation Technical Assistance Program in collaboration with the Mattole Restoration Council and the Mattole Salmon Group. This stewardship education program, funded by California Department of Fish & Wildlife (CDFW) and the Grace US Foundation, enabled us to hold two rounds of meetings with residents on Mattole tributaries with a high potential for coho recovery: Bridge, East Mill, Mattole Canyon, McKee, Ravashoni, and Thompson Creeks. Sanctuary Forest presented streamflow data (from past and current years monitoring), an assessment of fish habitat and human population, as well as forbearance scenarios for each tributary. In a survey distributed to landowners, participants were asked what they most valued their watershed for. Landowners strongly agreed that their number one priority was habitat for salmon (86%), followed closely by aesthetic beauty (83.9%), fresh drinking water (81%), and water for irrigation (54.2%). Results from landowner surveys provided necessary input to facilitate the discussion of forming tributary collectives, as identifying values is an important first step in establishing what goals a collective might set for themselves. Tributary collectives, also known as watershed associations, are one of the latest forms of grassroots movements around the world. These voluntary, non-regulatory groups are focused on improving the conditions of a given watershed and are formed by local residents.

Some examples of stewardship practices that a tributary collective could help encourage are:

- Water conservation to reduce water use, diversion impacts, and amount of storage needed, including leak-proofing, overflow piping back to the water source, water-efficient gardening and household practices
- Reduced pumping rates and coordinated pumping schedules with neighbors
- Storage of enough water from the wetter months to use during the dry months, and when flows are low, forbearance from pumping altogether
- Developing and maintaining a community emergency water supply for fire and drought
- Maintaining a roadside community sign with streamflow information and flow alerts
- Electing a streamkeeper to be responsible for monitoring stream conditions and communications regarding streamflow alerts, etc. (position can rotate annually among community members)
- Developing pond storage, groundwater recharge and instream habitat projects
- Installing and maintaining fish screens on pumps
- Forest thinning and fuels reduction
- Prevention of sediment and fertilizer runoff from roads, agriculture and livestock

The level of interest in forming these collectives varied between tributaries. Since the meetings, at least four tributaries have taken positive steps for their watershed. Mattole Canyon Creek has created a roadside community sign with streamflow information and flow alerts and Thompson Creek plans to establish a sign this year. One tributary collective has met as a group and planned a brush removal project, and is interested in exploring salmon habitat structures, finding ways to work together to reduce cumulative impacts on fish and farms, purchasing water tanks in bulk, and establishing alternate pumping days. At another tributary meeting, several landowners saw the benefit of participating in a collective as a way to improve their farming techniques. Permaculture was another topic we explored with many of the residents of these tributaries. Landowners were motivated to learn the many ways they can use permaculture to benefit their homesteads while protecting their waterways from runoff impacts, and several tributary collectives were interested in permaculture projects and touring each others' homesteads to share ideas and provide encouragement.

As part of a tributary collective, you can identify and address watershed concerns, build community and improve communication of residents, impress new residents with a unified commitment to respect the watershed, and educate and encourage better stewardship among neighbors and within communities. Additionally, a collective can develop partnerships between local, state and federal agencies, which can lead to funding for conservation and restoration efforts, such as fuels reduction, instream habitat projects, or infiltration ponds. Some grants may require partnership with your local non-profit, but depending on the project and the agency, some grant funders are willing to work directly with landowners. By joining together with your tributary collective, your project has the potential for a larger impact, and becomes more attractive to funders.

Sanctuary Forest has applied for the CDFW Technical Assistance grant again in 2018, so that we continue to educate and empower residents to create a unifying vision for our watershed and community. Our goal of protecting, restoring, and enhancing our watershed grows from a simple truth: we can all benefit from better land and water stewardship. The more we can reach out to our friends and neighbors with our watershed in mind, the more this movement can grow.

Keep Your Soil on the Slope and Away From the Salmon

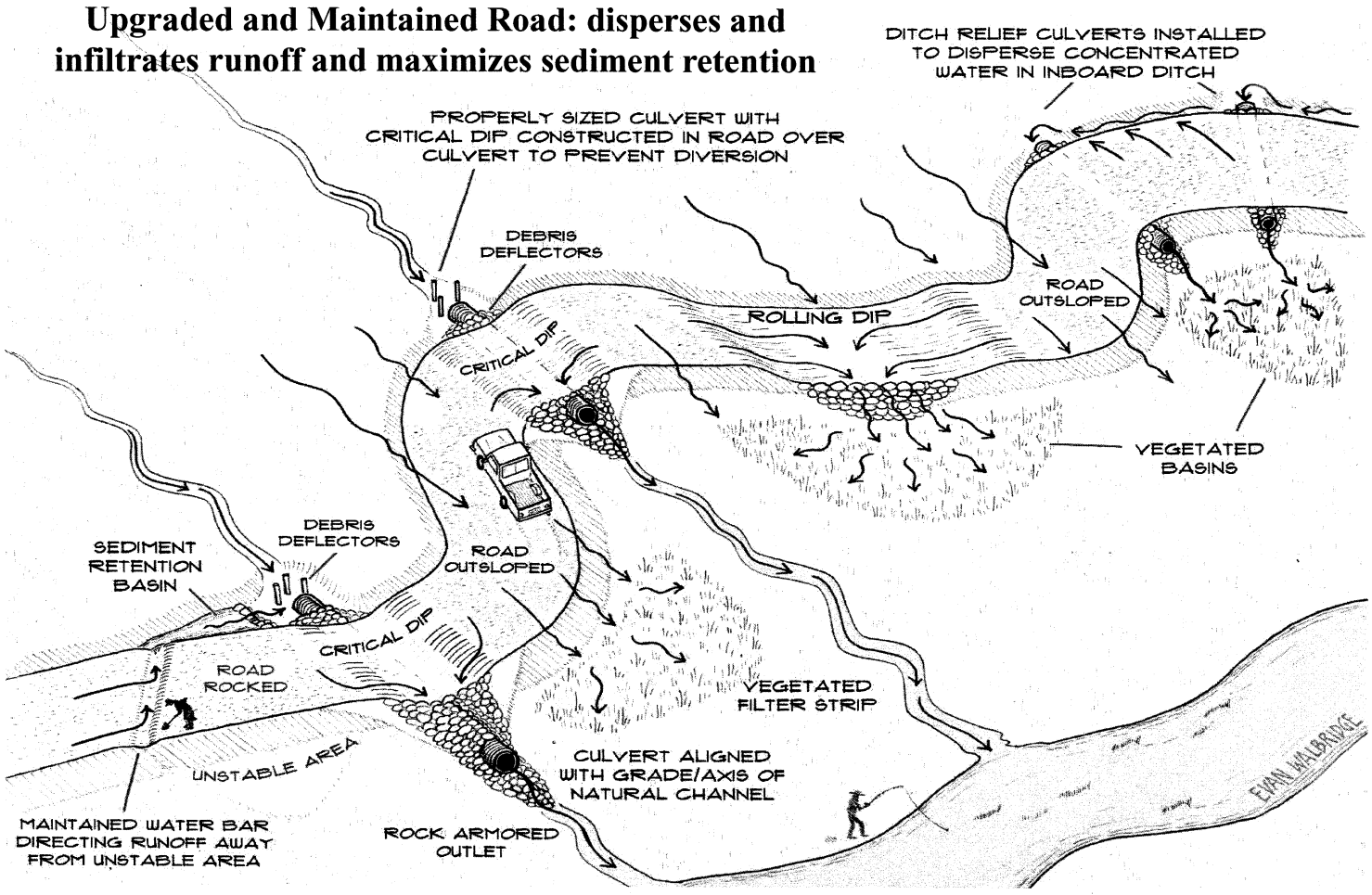
By Nathan Queener, Mattole Salmon Group

These long, hot summer days make it easy to forget the winter's deluge of just a few months ago, but now is the time to make sure roads are ready for the winter storms that we know will come again. Maintaining our roads to reduce erosion is one of the most important things we can all do to improve habitat for salmon and steelhead in our streams and rivers.

Excessive silt in the water impacts fish from cradle to grave. From the time eggs are laid in the stream gravels to when the fry emerge, the embryos and babies need to breathe, and rely on water flowing through the spaces between gravel and cobble to deliver oxygen. Less sand and silt plugging up the spaces means more fry emerging from the gravel. Once they are free-swimming creatures, little fish need shelter from high flows and predators. Spaces between cobbles and gravel provide vital shelter for fish when they're fingerling sized. Salmon and steelhead are primarily sight-feeders, and have a hard time finding food when streams run brown for months at a time.

Well-maintained roads are also easier on vehicles, and greatly reduce the chance of a catastrophic slip-out requiring very expensive repair or re-routing. For help and advice with road design and maintenance, call the Mattole Restoration Council: 629-3514.

Upgraded and Maintained Road: disperses and infiltrates runoff and maximizes sediment retention



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Poorly-Designed Road: concentrates and accelerates runoff and delivers sediment to watercourses

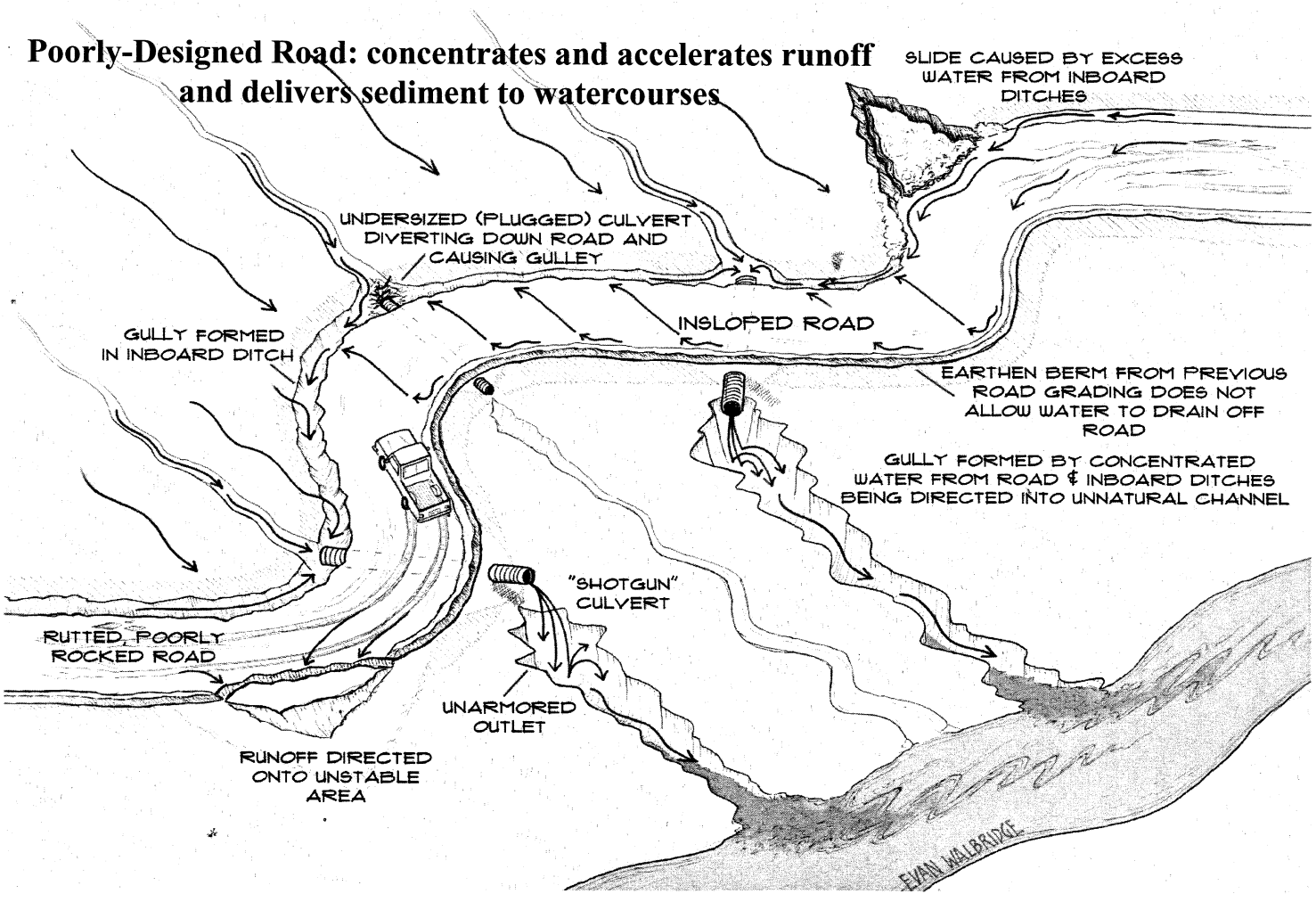

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Diagram courtesy of Sanctuary Forest, Inc. Conceptual design by Kyle Keegan. Artwork by Evan Walbridge.

20th Annual Coho Confab in the Mattole August 24-26, 2017

By Salmonid Restoration Federation and Sungnome Madrone, Mattole Salmon Group

Participants in the Coho Confab will get a chance to tour the Mattole estuary slough restoration site, above, with local restoration practitioners. ***Photograph courtesy of Mattole Salmon Group.***

Salmonid Restoration Federation (SRF), Sanctuary Forest, Mattole Restoration Council, and the Mattole Salmon Group are coordinating the 20th Annual Coho Confab that will take place August 24-26 in the beautiful Mattole River Valley in Humboldt County. The Coho Confab is a field symposium to learn about watershed restoration and techniques to restore and recover coho salmon populations. The Confab provides an ideal opportunity to network with other fish-centric people and to participate in field tours that highlight innovative salmon restoration practices. This event is partially funded by California Department of Fish and Wildlife's Fisheries Restoration Grant Program and scholarships are available.

The Coho Confab will open Thursday evening, August 24 with a community dinner and inspiring keynote presentations from Geneticist Carlos Garza of NOAA Fisheries who will address prospects for recovery and restoration of coho salmon in California. Sungnome Madrone, Executive Director of the Mattole Salmon Group, will present on landowner stewardship incentives. Tasha McKee, Program Director of Sanctuary Forest, and Elijah Portugal of Redwood Community Action Agency will give a joint presentation on what we can learn from beaver structures and apply towards salmon restoration planning.

Friday will include concurrent morning field tours including a Mattole estuary tour to see heliwood placement, terrace margin treatments, off-channel slough restoration, and bioengineering techniques. There will also be a Prosper Ridge prairie tour to showcase grassland reclamation and fuels reduction in King Range coastal prairie systems. After the morning tours, we will all corral up at the historic Mattole Grange for afternoon concurrent workshops including Coho Recovery Planning from state, ESU (Evolutionarily Significant Unit), and watershed level with coho recovery coordinator from the Southern Oregon Northern California Coast ESU, Julie Weeder, Carlos Garza, and Sungnome Madrone.

Additionally, there will be a stewardship workshop for landowners including tools and resources for road improvements and water conservation. This workshop will feature several resource professionals including Matt Clifford, JD, of Trout Unlimited who will address water rights and water conservation planning, Tom Leroy of Pacific Watershed Associates to address Best Management Practices, and Cassie Pinnell, Executive Director of the Mattole Restoration Council. This is a great opportunity for landowners to participate in a constructive dialogue about stewardship opportunities.

On Friday night in Confab tradition, we will share a farm-to-table feast, have a lively campfire, and an impromptu talent show or cabaret in the Mattole tradition! The last day of the Confab will include two concurrent field tours including Beaver Dam Analogues and Groundwater Recharge Planning in the Mattole Headwaters with Tasha McKee, Water Project Director, and Elijah Portugal of RCAA's Natural Resources Division, and a Lower Salt River Restoration tour in the Eel River estuary that will be co-led by fisheries biologist Ross Taylor, and Allen Renger of California Department of Fish and Wildlife.

The Coho Confab was the brainchild of Richard Gienger from the upper Mattole, and there will be an opportunity to meet with Richard in the field on Saturday after the Mattole headwaters tour. Richard will talk of early restoration efforts in the Mattole and some of those early sites will be visited. More details will be in the program guides on the SRF website.

Registration fees cover field tours, workshops, meals, and camping. To register for the Confab or to view the full agenda please visit our website: http://www.calsalmon.org.

Phenology Monitoring at Mattole Triple Junction High School

By Veronica Yates, Mattole Restoration Council

I don't know about you, but each spring, I revel to see the first western tiger swallowtail (*Papilio rutulus*) on a yarrow (*Achillea millefolium*) flower, the magnificent smell of blueblossom (*Ceanothus thyrsiflorus*) wafting through the breeze, the first sign of budding big leaf maple (*Acer macrophyllum*) leaves still shrouded in the final tendrils of winter. As I've come to learn, there is a scientific term for these natural wonders. It's phenology: the study of observable seasonal changes in plant and animal physiology. Humans have been tracking these phenomena as far back as hunting and gathering - since natives tracked the movements of caribou migrations, the fruiting time of huckleberries, the annual runs of coho salmon.

Modernly, the study of phenology has become more of interest in relation to climate change. For instance, scientists can track the regional flowering times of milkweed, and use this information to understand more about the migration patterns of monarch butterflies. When tracked over a period of years, and used in collaboration with annual weather patterns, studies can correlate the relationships between these phenomena (for some examples of phenology-related climate studies, check out https://www.usanpn.org/nn/connect/highlighted_pubs). In other words, science can explain what many Mattolians have known all along: later rains will delay flowering of some species, which will undoubtedly affect the habits of migrating species.

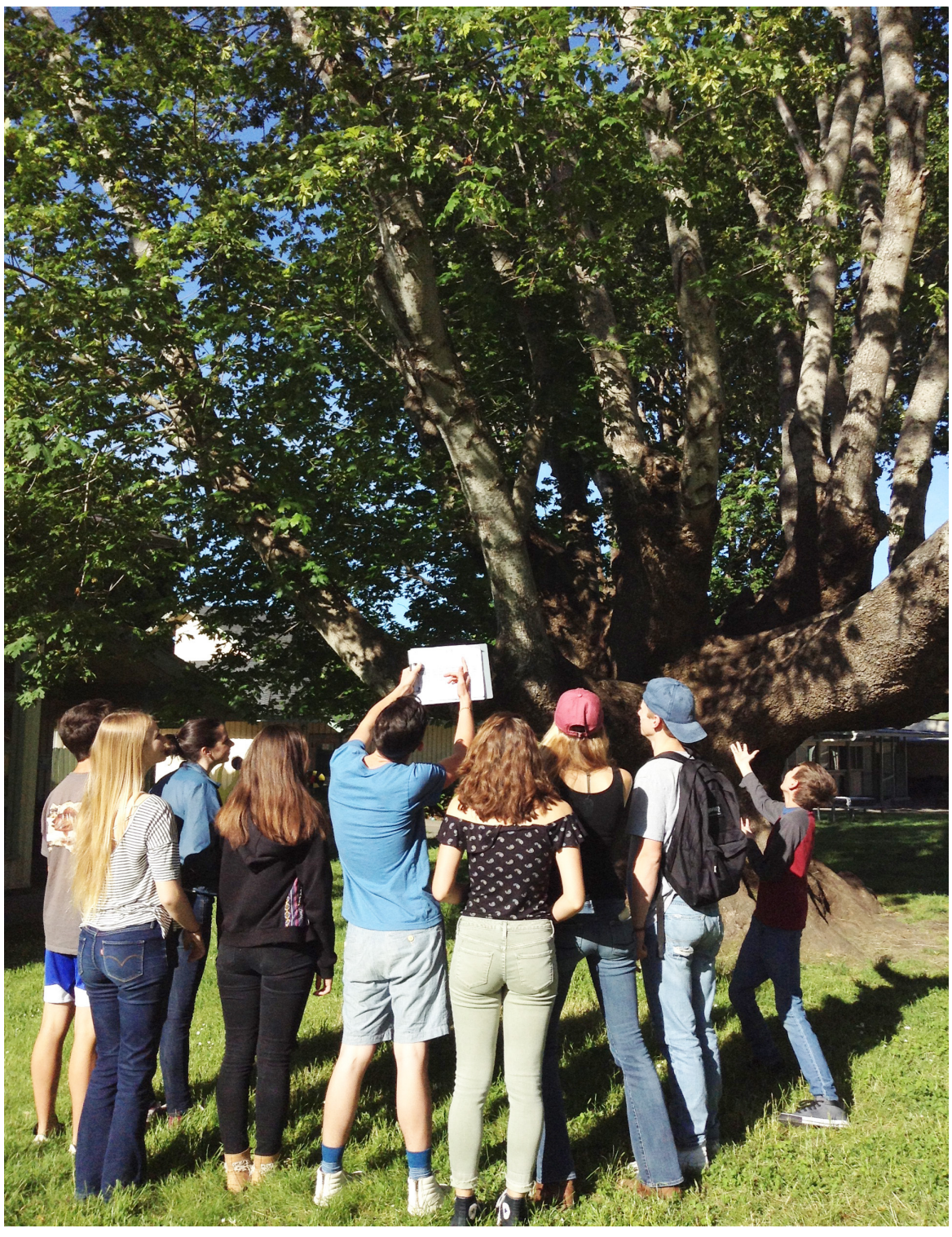
Admittedly, it's hard to imagine the currently crippled scientific community taking on this daunting task alone; it would take an unfathomable amount of essentially nonexistent funding for a team of scientists to observe phenological changes in the many microclimates of our country. To alleviate this growing need for regional information, the National Phenology Network has spearheaded a nationwide citizen science (the collection of data by the general public) effort, called Nature's Notebook.

Western tiger swallowtail on a hybridized yarrow flower. ***Photograph by Otter Anderson.***

This year, the Mattole Restoration Council partnered with BLM to observe local phenology with the Mattole Triple Junction High School students on campus. Students observed big-leaf maples, coyote brush, Himalayan blackberry, Oregon white oak, and poison oak plants, and gathered data on several plant characteristics (i.e., is the plant flowering? How many buds are there? Are the leaves falling off?) After 3 months of weekly observation, 632 data points were entered for the aforementioned plants. This data set will be accessible not only to other citizens worldwide, but also to scientists looking to conduct phenology-related studies. We look forward to continuing the monitoring of these 10 individual plants when school resumes in the fall, and hopefully for years to come.

If you would like more information about how you can get involved with phenology monitoring for the benefit of citizen science, please email me at veronica@mattole.org, or leave me a message at the MRC office (629-3514). Come on, I know you pay attention to what time of year the plants (native or not) are flowering in your yard!

This program was made possible with generous support from the National Environmental Education Foundation's Hands on the Land network, as well as Conservation Lands Foundation, and BLM.



MTJHS students observing a big leaf maple on campus in late spring, 2017. ***Photograph by Veronica Yates.***

Reduce Your Hazardous Fuels!

By Ali Freedlund, Mattole Restoration Council

Likely this past winter has increased your fuel loads around your home, either because branches or trees have blown down, or because tall grasses and springtime vegetation have plumply burst forth. Therefore, it is time to reduce fuels close to your home that could be a hazard in the event of wildfire.

As we promoted in our last issue there are two funding streams where you could qualify for help treating those fuels through the Mattole Restoration Council's Fire and Fuels Program.

The first is called Mattole Chipper Days though you may or may not need the actual chipper. Funds are available to assess your home of dangerous fuels and provide a crew to reduce them. This could mean a sawyer/swamper crew or the chipper crew or both. If you are low-income or a senior resident in the greater Honeydew or Petrolia area, you could get some crew hours for free to get you started or clean it all up depending on the type and amount of fuels you need to treat. Funding comes through the State via the State Responsibility Area (SRA) fees we pay each year and is only available for 6 more months. The grant is administered through CAL FIRE. We have treated 8 residences thus far and due to some residences needing more time, we applied to and received an award from Pacific Gas and Electric (PG&E) for supplemental funding to finish and expand the treatment time available.

Cedar McCulloch is our Chipper Operator and Maintenance person. Here he is preparing the chipper for some work. ***Photograph by Ali Freedlund.***

Our ever-popular FLASH program still has room for projects! FLASH (Fire-Adapted Landscapes and Safe Homes) is more of a cost share for folks with larger fuels projects (minimum .5 acre). Federal funds through the California Fire Safe Council are allocated back to residents upon completion of a 'project' based on a per-acre treatment of low, medium or high fuel load. The project has to be pre-approved by a FLASH technician. Some people elect to do project treatments themselves; others hire fuels reduction crews.

Residents in the mid to lower watershed (Ettersburg to Petrolia) can contact our FLASH technician, John Summers, at the MRC office (707-629-3514 or john@mattole.org) to better understand what it takes to enroll a project.

Residents in the Southern Humboldt or Whitethorn area should contact Bill Eastwood of the Southern Humboldt Fire Safe Council at 707-923-9109 or via email at bille@asis.com.

Funding provided by the Cooperative Fire Program of the U.S. Forest Service, Department of Agriculture, Pacific Southwest Region, through the California Fire Safe Council. In accordance with federal law and USDA policy, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age or disability.