

Mattole Watershed NEWS

WINTER/SPRING

2014



ISSUE # 2

The Mattole Watershed News is a joint publication of the Mattole Salmon Group and the Mattole Restoration Council, community-based nonprofit partners working together in pursuit of their complimentary missions. For more information about the two organizations, please see pages 2 and 3.

Mattole Estuary Gets Heli-Wood

By Drew Barber, Mattole Salmon Group

This past fall the Mattole Salmon Group (MSG) led a project that used a helicopter to place a massive amount of whole trees and wood into the Mattole River estuary. This type of wood loading has been done in many other places but never in the Mattole. It has a distinct advantage: the ability to place whole trees, which can last longer in a river system than smaller pieces.

When faced with an estuary that lacks complexity and has a limited carrying capacity for native fishes, the scientific community is in consensus that introduction of large wood can make significant improvements in habitat. Over the last ten years the MSG has been leading projects to install large wood structures in the estuary to improve the quality of this key habitat for salmonids of the Mattole. While many of the structures the MSG has installed in the last ten years have moved downstream, and some have lost a piece of wood or two, all the structures are still present in the estuary. Many of the structures are associated with deep holes and complex fish habitat.

A significant aspect of large wood projects in the past has been anchoring. We have hauled in large boulders and anchored structures by securing the wood to a boulder base. The anchoring methods are effective: the anchored rocks reduce buoyancy of the wood, and slow the movement of the structures. However anchoring is expensive and time-consuming. We would rather allocate those resources to the installation of more wood. Anchoring is required for wood brought in by road; without branches and rootwads, that wood is short-lived in the river. Occasionally nature delivers whole trees (with branches and rootwads) to the estuary and we observe those rare trees moving through the system more slowly than our anchored structures. Logistically whole trees are challenging, as they require special equipment such as a helicopter for delivery to the sites.



Ground crew member from Columbia Helicopters watches as a Sikorsky-64 Skycrane transports whole trees for placement in the Mattole River estuary in October, 2013. 180 whole trees, plus hauls of additional poles, logs and slash, were moved into the estuary in two days - the largest installation of fish habitat-creating instream wood that the Mattole River has ever seen. Photograph by Drew Barber

The scale and expense of a helicopter project kept us from considering this type of project until a site tour with members of our Technical Action Committee (TAC) and Humboldt Redwood Company (HRC) two years ago. At that time, we were limited to wood that could be hauled on the road. Trees had to be bucked up and limbed before they were delivered to the river. HRC floated the suggestion that using a helicopter working on a local harvest of theirs might be a cost-effective way to get whole trees into the river.

Under BLM's lead, with the planning direction of Dave Fuller,

See "Heli-Wood" - continued on page 10

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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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and MRC Members and Friends of the Mattole.

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From the Executive Director of the MRC

By Cassie Pinnell

When I first arrived in the Mattole over fifteen years ago, I was struck by the exceptional beauty and wild nature of this place. Over time, I began to understand that under this impressive scenery lay a network of ecological challenges and degrading systems. Prairies and oak woodlands are being encroached by highly combustible, fuel-loaded scrub and forests. The river is lacking the mature riparian forest that creates instream habitat complexity needed to support healthy populations of salmon. Invasive species and Sudden Oak Death are constantly threatening to impact and reduce the habitat quality and functionality of our grasslands, woodlands, and forests.

Despite these challenges, I believe that the Mattole has been improving ecologically. The people of this place have much to do with that. In my last ten years of working as a wetlands ecologist throughout California, I have never found a community as committed and involved in maintaining and restoring the health of their watershed as we are here in the Mattole.

In the last year alone, the MRC, our partner groups, and community members have collaborated to collect over 250 pounds of native seed, which was grown at the MRC native plant nursery into 31,000 native plants. We used these plants to restore 20 acres of riparian habitat, stabilize 250 feet of stream bank, and plant 7 acres of grassland habitat. Additionally, we removed encroaching shrubs and trees from over 80 acres of prairie, and treated 61 acres (21 properties) to reduce heavy fuel loads, improving both forest health and fire safety. Also, we removed invasive species from 45 acres, and



"Despite these challenges, I believe the Mattole has been improving ecologically. The people of this place have much to do with that...I hope you'll join me in the work to come."

have continued to monitor the steady march of Sudden Oak Death into our watershed. We have continued to work with local students and youth to teach the importance of stewardship, and have developed a field institute that provides university students with hands-on restoration opportunities. Through our newsletter, annual meetings, workshops, hikes, and media outreach we will continue to tell our story to gain support for our watershed.

As the world faces increased environmental pressure from climate change, ocean acidification, reduction in available fresh water, and the disappearance of native species and habitat, I strongly believe that the Mattole community has wisely spent the last three decades developing the skills we need to maintain the level of environmental health that we desire. We still have a lot of work to do, and I'm inspired by the variety of tools, expertise, and support that our compelling watershed holds. I hope you'll join me in the work to come.

Cassie Pinnell

Cassie Pinnell

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AND MATTOLE RD. IN PETROLIA.

From the Executive Director of the MSG

By Sungnome Madrone

As we sit in our warm homes and reflect on this past summer's activities, we find that there is great reason to give thanks.

The two Americorps folks, Nick Tedesco and Michelle Dow, whom we shared with the MRC, have graduated and two new corps members, Christina Malatesta and Sophie Price, have joined us. We are very grateful for the work they do for our watershed and welcome our new Americorps members.

This has been a very busy field season, with staff working on projects from the headwaters to the sea. Cam Thompson, Gary "Fish" Peterson, Galen Doherty, Tasha Mckee from Sanctuary Forest, and several BLM staff were working all summer in Baker Creek, installing large wood to increase groundwater recharge and off-channel habitat. The timing of this project couldn't have been better, because the winter prior, adult coho had spawned in Baker Creek for the first time in several years. The project thus provided benefits for the many resultant juvenile coho in Baker Creek this past summer. More work of this nature is planned for next season. Thank you, BLM and National Fish and Wildlife Foundation, for your support of this innovative work.

The lack of rain last winter/spring made for low flows this summer and so efforts were made to prepare for and carry out a coho fish rescue and relocation effort in Baker Creek. Soon, because of the groundwater recharge work happening in Baker Creek, such rescue will not be necessary, but for now we are extremely grateful to the Department of Fish and Wildlife (DFW), especially Allan Renger, and BLM staff Aaron Donnel and Sam Flanagan and many others for their dedication to protecting these Mattole coho.

The summer steelhead dive was a great success thanks to coordination from Amy Haas, and we thank all the volunteers that come out every year to help us do this very important census. We are also grateful to the DFW for substantial funding for our most comprehensive juvenile distribution survey ever in the Mattole. This survey was coordinated by Amy and Nathan Queener.

Kate Cenci, Michelle, Nathan and crew have been wrapping up numerous tasks under our Bella Vista grant that have allowed us to research Mattole salmon genetics, aquatic invasives, and a possible monitoring program for impacts from agricultural runoff into the river.

Downriver at the estuary we implemented a major large wood loading project for fish habitat. We have been working with BLM, USFWS, NOAA Fisheries, DFW, landowners and the MRC to implement BLM's 5-year Estuary Restoration Plan. As described in the last newsletter, this plan was completed and fully permitted and we secured funding for the first phase of work this past summer. Thank you, Drew Barber and Dylan Mattole, for your hard work tipping trees and implementing the helicopter tree flights, and to Kate, Michelle, and Chad Paul for assistance in implementing the project. We are also grateful to Columbia Helicopters for discounting their work, to local Contractor Patrick Queen for his dedicated and awesome work tipping trees and all other heavy equipment work, and to Kit Chambers for providing a service landing for the helicopter.

We are extremely grateful to our funders for this work. They include the National Fish and Wildlife Foundation, the Department of Fish and Wildlife, the US Fish and Wildlife Service, The Nature Conservancy, the Department of Water Resources, BLM, and especially local Landowners Michael Evenson and Ellen Taylor for the donation of over 300 whole trees to make this effort work. Thank you Dave Fuller, Sam Flanagan, Dan Gale, Trevor Tollefson, Conor Shea, Zane Ruddy, Leah Mahan, Diane Ashton and many others for your support.

As you can imagine, all of this involves numerous funding sources and major administrative duties, much of which is handled by our bookkeeper extraordinaire, Linda Yonts.

We thank our volunteer board members and our partners the Mattole Restoration Council and Sanctuary Forest. Go team!



Sungnome Madrone



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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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New Oak Woodland Program Germinates at MRC

By Hugh McGee, *Mattole Restoration Council*

California oak woodlands are some of the most diverse ecosystems in California. Over 300 species of birds, mammals, and amphibians rely on California oak woodlands for food and habitat. This habitat supports hundreds of native plant species, including over 100 rare, threatened or endangered plant species, and a wide array of insects. Aside from their important role for wildlife, California oak woodlands provide other important ecosystem services including water conservation, air purification and soil stability. Additional ecological benefits include being adapted to low-intensity fires and drought. Oak woodlands are also an important economic and cultural resource for humans, providing aesthetic beauty, recreational and hunting opportunities, grazing land for livestock, and an essential food source for Native Americans for thousands of years.

California oak woodlands are plant communities found throughout California that are dominated by true oak tree species (trees of the genus *Quercus*) and that are often found adjacent to grassland prairies. Oak savannas are similar, but typically have individual trees that are more spread out throughout a grassland. Although there are a number of ways to classify California oak woodlands, they are typically divided into five major vegetation types: Valley Oak Woodland, Blue Oak Woodland, Blue Oak-Foothill Pine Woodland, Coastal Oak Woodland, and Montane Hardwood Forest. In the Mattole, we have Coastal Oak Woodlands and Montane Hardwood Forest Oak Woodlands that are dominated by three true oak species: California black oak (*Quercus kelloggii*), Oregon white oak (*Quercus garryana*) and canyon live oak (*Quercus chrysolepis*). Although tanoak (*Lithocarpus densiflorus*) is a common tree species in the Mattole, it is not a true oak and therefore not a major component in Mattole oak woodlands. Although the oaks are the dominant species of this plant community, oak woodlands may also include California buckeye, big leaf maple, California bay, Pacific madrone, Douglas-fir, native shrub species, and many native and non-native grasses and forbs. Many of the local California black oak and Oregon white oak woodlands are found on the ridges and slopes of the Lower North Fork and Upper North Fork of the Mattole, Squaw Creek, and on Elk Ridge. Canyon live oak woodlands are mainly found on the ridges and steep slopes of the King Range.

Threats to Oak Woodlands

In response to the rapid loss of oak woodlands to agricultural conversion, residential development, and low regeneration rates, the California state legislature passed the Oak Woodlands Conservation Act in 2001. The act is intended to protect and restore oak woodland ecosystems. Although agricultural and residential development may not be current threats to oak woodlands in the Mattole, they may be in the future. There are currently other potential threats to Mattole oak woodlands. These threats are summarized below.

Conifer Encroachment

Historically Native Americans maintained oak woodlands by burning open grasslands and understory for hunting deer and elk and to reduce the amount of insect damage to acorns. European settlers and ranchers also burned oak woodlands to reduce brush and trees to maintain open pasture land for livestock. Lack of broadcast burning in recent years and suppression of natural lightning-caused wildfires has allowed for the encroachment of shrubs and conifers. Once conifers have encroached on oak stands, they compete with oaks for moisture, nutrients, and light, potentially killing individual trees and dominating oak woodlands. Encroaching shrubs and conifers also increase the fuel load in oak woodlands, creating the potential for more catastrophic fire in those stands.

Decreased Natural Regeneration

Decreased natural regeneration of oak seedlings may impact the long-term existence and abundance of oak woodlands. Factors affecting natural regeneration may include herbivory by livestock, feral pigs, and native wildlife, insect damage to acorns, encroachment of brush, trees, and non-native grasses that out-compete oak seedlings, and drought. Changes in climate may cause changes to the distribution and abundance of oak



An Oregon white oak above Granny Creek in the Mattole watershed.
Photograph by Hugh McGee

woodlands, further impacting their regeneration rates. Variation in temperature, rainfall and season length may have varying impacts on the regeneration and growth of oaks.

Sudden Oak Death (SOD)

Sudden Oak Death (SOD) is a disease caused by a pathogen (*Phytophthora ramorum*) that kills some oak species and has had devastating effects on forests in California and Oregon. Of the three true oak trees we have in the Mattole, California black oak is most susceptible to SOD. Oregon white oak has not shown signs of SOD infection and although canyon live oak can be a host for SOD, it rarely dies from it. The spread of SOD in the Mattole may have substantial impacts on local forests in the future. At this point, very little is known about the threat that SOD may pose to local oak woodlands. Tanoak is highly susceptible to SOD and commonly dies once infected. Because tanoak acorns provide an abundant food source for wildlife, the loss of tanoak forest to SOD may have substantial impacts on wildlife in the Mattole. Oregon white oak is not susceptible to SOD and may become a major source of acorns to wildlife.

Forest Practices Rules

Removal of conifers from oak woodland stands for timber production can have both ecological and economic benefits. Landowners can earn revenue from sales of marketable timber encroaching on oak woodlands as well as increasing available pasture land for livestock. Under the current California Forest Practice Rules, landowners who want to remove conifers from oak woodlands for timber sales must obtain a timber harvest permit. Under the permit, landowners are mandated to replant those sites with conifer seedlings, even if the goal of the project was to enhance oak woodland stands. This not only increases the cost of timber production and overall project costs, it restarts the process of conifer encroachment on oak woodland stands that could be on their way back to historic conditions. The MRC and Mattole landowners recently sent a letter to the Board of Forestry asking them to change this rule.

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Juvenile Coho in the Mattole:

Not Abundant, But Out There...

By Nathan Queener, Mattole Salmon Group

Every summer for over 20 years, Mattole Salmon Group personnel have been slithering into wetsuits, strapping on snorkels, and sliding into streams throughout the watershed to look for juvenile coho salmon.

This past summer this procedure was repeated, but with changes to the survey protocol and the extent of the survey effort. The intent was to make MSG efforts congruent with guidance from the California Department of Fish and Wildlife (CDFW) and to enhance our ability to understand the distribution and abundance of coho salmon in the Mattole, as well as stream habitat conditions.

Nearly all coho spend the summer and fall in freshwater prior to smolting and emigrating to the ocean, so summer snorkel surveys can provide a good indication of where coho spawning occurred the previous winter, and the strength of the previous year's run.


Twenty-nine stream reaches were surveyed in total (see map). Within these reaches surveyors snorkeled only in pools that met specific depth, cover, and temperature requirements. Juvenile coho were detected in nine of these reaches: in Ancestor Creek, Baker Creek, two reaches in Thompson Creek, three reaches in the mainstem Mattole, Sholes Creek, and Squaw Creek.

Other notable sightings included abundant juvenile steelhead in every reach, a surprising incidence of juvenile Chinook salmon (seen in nearly half the surveyed reaches), and a confirmed sighting of a red-legged frog, a species that has only been documented once previously in the Mattole, and over thirty years ago.

There appears to have been successful coho spawning in at least five streams in the winter of 2012/13: Thompson Creek, Ancestor Creek, Baker Creek, the mainstem Mattole above Stanley Creek, and Squaw Creek. Only a few coho juveniles were seen in the other reaches where coho were detected, leading us to believe that these fish were likely non-natal migrants – often called “nomads” – that were spawned elsewhere but either through choice or happenstance moved tens of miles downstream in the spring and early summer.

How important might the survival of these “nomad” coho that are wandering far from their natal streams be to the persistence of the Mattole coho population? Based on this past summer's surveys, the juveniles pursuing this life history strategy appear to make up only 1-2% of the juvenile coho population. But we were surveying in mid-summer, after much of the mainstem Mattole and some larger tributaries become too hot for juvenile coho. Did the single coho salmon sighted in a 66° F shaded off-channel pool (kept cool by water flow through the gravel) in the Mattole mainstem just downstream of Ettersburg have dozens of colleagues that did not find this isolated backwater and perished in the 78° F water in the main channel of the river?

Perhaps next year's surveys - when the remaining portion of the suitable coho habitat in the Mattole will be investigated - will help us learn more about the coho that stay and the coho that go.

This survey effort would not have been possible without the graciousness of multiple landowners who allowed us to access streams on their property, and without funding and support from the California Department of Fish and Wildlife's Fisheries Restoration Grant Program and the Arcata Field Office of the Bureau of Land Management. 



In 2013, approximately half of the watershed's suitable potential coho habitat was surveyed; the remaining half will be surveyed in summer 2014. Broad-scale selection of locations to survey for juvenile coho began by looking at all areas meeting drainage area, stream gradient, and valley width criteria. Within those selected streams and reaches of the mainstem, locations with specific habitat criteria (pool depths, instream cover, and temperature) potentially suitable for juvenile coho were snorkeled. Though not shown on this map, approximately half of the length of the mainstem Mattole River downstream of Ettersburg was also surveyed, but because no pools were found that met the temperature and cover criteria, those locations were not snorkeled. Map by Nathan Queener, MSG GIS



This juvenile coho was sighted in Ancestor Creek during the 2013 juvenile survey effort. Distinguishing features of a juvenile coho (which help to differentiate them from juvenile Chinook and steelhead) include the prominent white-edged dorsal and anal fins, and the sickle-shaped anal fin with tip extending beyond the base of the fin. Photograph by Mattole Salmon Group staff

Mattole Coho Rescue and Relocation: A Strong Collaboration, Action Taken in Summer 2013

By Sungnome Madrone, Flora Brain, and Nathan Queener, Mattole Salmon Group

Since at least 2002, when record low flows in the Mattole River watershed caused concern for the survival of over-summering coho salmon, restorationists and fish-lovers have shared a common worry: how can we take action to rescue these threatened fish, when that action – handling a listed endangered species – is illegal? Watching flows in the headwaters dwindle evoked the strong desire to move juvenile coho from drying pools to places with better habitat. In 2008, when mainstem Mattole River flows dropped even lower than in 2002, these concerns surfaced again. In fact, every dry summer that rolls along seems to bring with it this concern. In 2013 however, due largely to the committed efforts of some key agency staff, a partnership to rescue coho salmon in the Mattole was implemented.

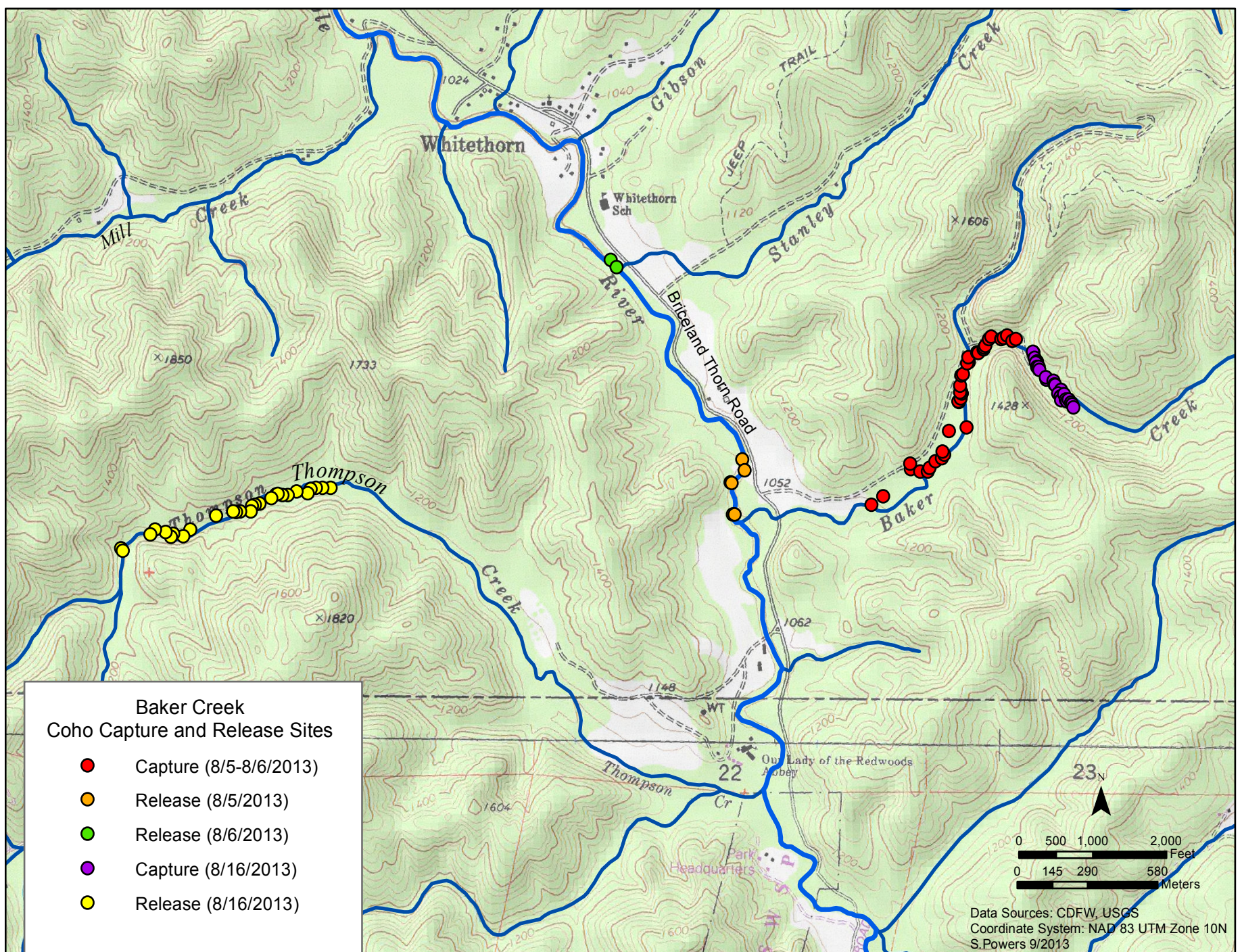
There are good reasons why moving an endangered species is generally illegal. Well-intentioned efforts, without proper forethought and adequate knowledge of a species and its habitat needs, can cause more harm than good. In this case, however, it appeared reasonably clear that if dry weather conditions persisted, no action would result in the demise of coho salmon. Thus, despite considerable bureaucratic hurdles and the need to answer many questions – demonstrating that rescue and relocation efforts were well thought out and would be effectively monitored – the will of the people prevailed. This is the story of the Baker Creek coho salmon, and the people who moved them. Legally.

Spawning ground surveys conducted by the MSG documented at least one pair of wild coho salmon successfully spawning in Baker Creek in the winter of 2012-2013. Baker Creek is an east side headwaters tributary that has been channelized due to large wood removal and resultant down cutting, which has caused the stream to become disconnected from its floodplain. Baker Creek

is also the site of an ongoing groundwater recharge project which seeks to reconnect the stream to its floodplain. As groundwater recharge project partners (Sanctuary Forest, CA Department of Fish and Wildlife, Bureau of Land Management) approached the ongoing work in the dry summer of 2013, they began to wonder: what about those juvenile coho spawned in this stream last winter? What will happen to them if their pools dry up? It is thanks largely to the committed efforts of Allan Renger of DFW and Sam Flanagan and AJ Donnell of BLM that the seemingly inevitable unfortunate scenario was averted. DFW staff Scott Downie, Neil Manji, and Kevin Shaffer also worked hard to secure official approvals for this effort.

Because coho salmon in the Mattole are so few, and each individual fish may contribute meaningfully to the survival of the species here, a considerable amount of careful thought must be given to exactly where and how to conduct rescue and relocation. The California Department of Fish and Wildlife approved a new set of rules guiding rescue and relocation (R&R) in April 2013, and the Mattole Salmon Group, along with our partners in this endeavor, poured over the questions in order to ensure that the R&R operation would meet the requirements. The primary criteria for the selection of stream reaches from which to rescue fish was a reasonable certainty that pools containing coho would dry up. The criteria for stream reaches in which to relocate fish included the presence of connected surface stream flows through the summer and early fall, cool water temperatures, pool depth and cover, and the availability of low-velocity winter rearing habitat to ensure that relocated fish didn't perish in high winter storm flows. Once we had the criteria identified on paper for both rescue and relocation reaches, the next step was to identify tributaries in the field that met those criteria: locating stream reaches where coho were present and past

- continued on next page



Map courtesy of CA Department of Fish and Wildlife

- continued from previous page

experience told us that some pools would dry up, and reaches where we would put them. Detailed pre-R&R surveying in both proposed rescue and relocation reaches shed light on what fish and habitat conditions existed before our rescue and relocation work took place.

In early August, surface stream flows in some reaches of Baker Creek were becoming disconnected. As riffles dried up, pools diminished in size, and no rain was forecast, concerns grew that some stream reaches containing coho would dry up completely. Furthermore, densities of juvenile coho were very high; for example, one roughly 5' by 7' sized pool held more than 70 juvenile coho.

With desired fish densities in mind – the requirement being that relocation efforts not result in more than one juvenile coho per two meters of stream – surveyors from the Mattole Salmon Group set out to locate suitable habitat. It was found in Thompson Creek and the upper mainstem Mattole between the mouth of Baker Creek and just upstream from Whitethorn School. In the proposed relocation reaches, divers counted fish present prior to relocation of the Baker Creek juvenile coho, in order to have a baseline understanding of what was there beforehand.

On August 5th, 6th, and 16th, staff from DFW, BLM, and the Mattole Salmon Group electrofished and moved a total of 575 juvenile coho from 59 pools in Baker Creek that exhibited the worst habitat conditions and the highest likelihood of drying up. In general, coho were not removed from the deepest, largest pools that were judged to be unlikely to diminish in size even if dry conditions continued, and that contained good cover such as undercut banks or fine branches. The rescued Baker Creek coho were placed in the mainstem Mattole and Thompson Creek.

On September 10, divers returned to the relocation pools to monitor the rescued coho. These follow-up surveys detected only roughly 50% of the relocated fish in the Thompson Creek and mainstem Mattole River pools where they were placed. Questions linger as to why this was the case. Electrofishing mortality is not believed to be among the prime culprits – mortality from e-fishing is generally fairly immediate and apparent, and only three fish met their demise due to e-fishing in this operation. Possible explanations include delayed mortality, imperfect detection by snorkelers, or fish movement out of the surveyed reaches. Some observations on fish distribution seem to support this latter factor being of primary importance. While flows were indeed low, the relocation reaches where coho were placed were not isolated, disconnected pools, so the fish may well have dispersed shortly after being relocated. We are exploring strengthening our monitoring approach in future years to better be able to track the survival or movement of relocated fish.

In addition to re-surveying the relocation pools, surveyors also returned to the places from which coho were rescued. This was done in order to assess how well we predicted which pools would dry up, and assess the number and condition of coho that were not moved. There were still many juvenile coho in Baker Creek – at least 682 – and in much of the stream, coho densities were still among the highest in the watershed. Some locations where electrofishing took place were found to be completely dry, while in others pool volumes were little diminished. Contrary to what one might think intuitively, the downstream end of the reach was actually where the greatest length of dry stream occurred. In the middle third of the reach, there was a long section where flow remained connected



This juvenile coho - photographed on September 19, 2013 - was among those that remained in Baker Creek after relocation of some of its peers. Photograph by Nathan Queener


and riffles wetted. In the upstream-most portion of the reach, some pools had dried up, and most riffles were dry.

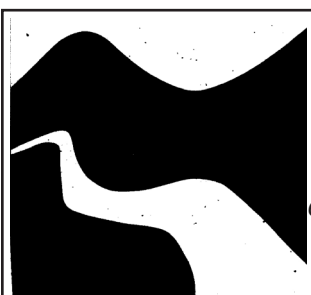
While some coho were moved from pools that did not in fact dry up, we feel that this operation resulted in a net benefit for juvenile coho survival in the Mattole. Despite the large number of coho moved from Baker, coho density in the wetted portions of the stream remained quite high. Reduced density typically leads to better survival and growth. Additionally, the benefit of experience and lessons learned – in this case, first-hand knowledge about predicting which pools will dry up and which ones will maintain adequate fish habitat in a dry fall – cannot be over-emphasized.

“With the work currently underway to improve both summer and winter habitat for coho throughout the watershed, hopefully there will be few summers in the future when coho rescue and relocation is a necessary action.”

Mercifully, over five inches of rain fell in the upper watershed in late September. Increased flows reconnected habitat, allowing for further dispersal of juvenile fish and effectively concluding the monitoring of our R&R efforts for the season.

Looking back, we are proud that in 2013 individuals and agencies came together to forge a solid, defensible course of action in order to rescue juvenile coho from drying pools in the Mattole. With the work currently underway to improve both summer and winter rearing habitat for coho throughout the watershed, hopefully there will be few summers in the future when coho rescue and relocation is a necessary action. Some have said that the expense of rescue is high relative to the number of fish saved, yet these are not just individual fish. They are representatives of an independent population of coho, the southernmost independent population within the Southern Oregon Northern California Coast

Environmentally Significant Unit, or SONCC ESU. As climate change continues, for all we know the unique genes of the Mattole River’s Mediterranean climate-adapted coho may be important to the survival of coho throughout the rest of the SONCC. To be sure, the cost of R&R is a drop in the bucket compared to the cost of trying to re-establish a coho population after extinction. 



We invite you to experience Mattole Camp!
Situated along the Mattole River, Mattole Camp has served Humboldt County for over 60 years as a year round gathering place for churches, schools, organizations and events in a serene location away from the distractions of life.
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Mattole Forests: Updates, Opportunities and

There is a lot that is happening in our forests here in the Mattole watershed! We do not have space to provide t more acres out from under development pressure and into permanent sustainable forest management. In term two more in the works. All over the watershed, landowners and residents are taking the threats of forest fires mo Restoration Council wants to keep land stewards informed of resources and opportunities that are helpful whe

Working Forestland Acquisition

In 2012-2013, Lost Coast Forestlands, a conservation-oriented investment group, purchased approximately 6,000 acres for long-term sustainable forestry. Lands were acquired in several transactions from willing sellers in key tributaries of the Mattole and South Fork Eel rivers. These acquisitions will help secure habitat connectivity between adjacent working forestlands and parks. The property as a whole will be managed to balance long-term forestry and habitat objectives, and to serve as a buffer around the Mattole River Ecological Reserve, reversing the fragmentation of forestlands in the Mattole headwaters and Indian Creek over the past decade. To the south, the property neighbors the Redwood Forest Foundation Inc.'s (RFFI) Usal Redwoods Forest. Ultimately, these neighboring properties will form one of the state's larger conserved working forestland tracts. Together with the RFFI property, the Lost Coast Forestlands acquisition nearly completes the protection of Indian Creek, an important South Fork Eel River tributary that hosts coho and steelhead populations. Lost Coast Forestlands will focus on restoration-oriented forestry, including a small harvest planned for 2014 under the Mattole PTEIR. The company is also working with Sanctuary Forest to identify streamflow restoration opportunities, and with Pacific Watershed Associates to inventory and address road stormproofing needs throughout the property.

Sudden Oak Death

Sudden Oak Death (SOD) has killed millions of trees in coastal forests in the fog belt (from Monterey to Humboldt). Diseases on forests include dramatic changes in forest structure and ecological threats such as increases in fire frequency, soil erosion, and habitat, erosion and subsequent declines in water quality.

SOD has already had severe impacts on the forest in Humboldt and counties and has continued its spread throughout the watershed. The MRC has been monitoring the spread of SOD through field surveys. This pathogen has been detected in several watersheds: Slide Creek, Fire Creek, Crooked Prairie Creek, Mattole River, and the mainstem Mattole River at Thorn Junction. A 2013 California aerial survey conducted by the Forest Service detected SOD patches in the upper reaches of Grizzly Creek.

Mattole Timber Harvests

Our largest forest landowner in the watershed is Humboldt Redwood Company (HRC) with over 18,000 acres. Since their takeover of Pacific Lumber Company, HRC has been willing to provide access to MRC's Forest Practices program staff in order to discuss concerns prior to Timber Harvest Plan (THP) submittal. When possible we invite other participants on these field trips. Once in the field, we discuss our concerns, some of which are later mitigated, some of which are noted. Currently, there are three industrial THPs that could be activated in the summer of 2014 on HRC land in the watershed; one is already approved and two are in process. Two of the THPs are on the south face of Long Ridge that drains into the East Branch of the Lower North Fork. Long Ridge Cable, THP 1-12-026 (already approved), will harvest 253 acres, almost 100 acres of which is under Dispersed Variable Retention silviculture and the rest under Group and Single Tree Selection. Long Reach THP (unsubmitted at the time of this writing) will involve approximately 500 acres, with operations similar to the above THP, along Allwardt and Rodgers Creeks. The combination of the two in one geographic area is the largest footprint in memory in one year since the 80's. However, because HRC uses uneven-aged management, a standing forest will remain post operations. One of the things we have stressed during the field days is the need to leave natural hardwood stands for their habitat value. HRC has amended their plans to include protections where conifers were not historically present. Meanwhile, though no old growth can be harvested under HRC policy, the Long Reach THP has proposed to fell a few old trees due to new road construction. The need to build more roads is a huge unfortunate tradeoff of doing uneven-aged management, in which selectively falling and hauling the timber is a lot more difficult compared to clearcutting. The third THP, 1-13-130, involves 388 acres in the Rattlesnake Creek and Upper North Fork drainages of the Mattole. Some of the more remote units will be logged via helicopter, so folks in the Upper North Fork area, in particular, may be impacted by chopper activity.

The Mattole Program Timberland Environmental Impact Report (PTEIR) is a timber harvest planning option for landowners in the watershed. The PTEIR process allows a faster review in exchange for agreeing to increased watershed protections beyond what is required under the California Forest Practice Rules. Currently, there are three approved Program THPs (PTHPs) that were submitted under the PTEIR process that will most likely be activated this summer depending on market conditions. In stark contrast to HRC's plans, the three PTHPs are very small projects. The Whitethorn Grove PTHP (1-11-123), owned by Sanctuary Forest, proposes 30 acres of selection harvest on very flat ground. Sanctuary Forest plans to do further outreach to the local community in order to use the harvest as an opportunity to demonstrate what sustainable restoration forestry looks like. Also in Whitethorn, PTHP 1-11-116, now a part of the Lost Coast Forestlands project (mentioned above), involves 61 acres in the Thompson and Bridge Creek drainages. Lastly, PTHP 1-11-100 is within the Sholes Creek drainage located off of Wilder Ridge with a total footprint of 67 acres. MRC was involved in the planning for all three PTHPs. They will be monitored for several years to ensure they are meeting the goals of the PTEIR. For more information on these PTHPs, you can either visit our website or download the actual PTHP from the THP library: ftp://thp.fire.ca.gov/THPLibrary/North_Coast_Region/. Click on the folder that says Mattole Forest PTEIR. (This is the same site where you can download any THP in the state.) For more info about the Mattole PTEIR or any of the harvest plans, visit our webpage or email ali@mattole.org.



Heading off Long Ridge to discuss proposed timber management activities with Noah Levy of Sanctuary Forest and HRC foresters. Photograph by Ali Freedlund

Challenges

By Ali Freedlund, Mattole Restoration Council

the finer details, but wish to share brief summaries of the news from the forests. For example, we can celebrate news of forest practices, Humboldt Redwood Company has one timber harvest plan approved in the Mattole and more seriously than ever before. Economic and ecological challenges in managing forests persist, and the Mattole setting and implementing forest management goals.

ns of trees throughout California's (Humboldt County). The impacts of this forest composition which lead to other diversity and intensity, loss of food sources and water quality.

forests in our neighboring watersheds throughout our watershed. For seven years through stream sampling and ground truthing of Mattole streams, including Blue Canyon Creek, Grindstone Creek, and at Ettersburg. According to the Forest Service, substantial new mortality in Grindstone Creek, with an estimate of 105 dead tanoak trees. Grindstone Creek first tested positive for the SOD pathogen in 2012.

Landowner awareness is critical for early detection of Sudden Oak Death in the watershed. We are urging all local residents to learn the signs and symptoms of SOD. This year, the MRC will be conducting community meetings to educate and provide landowners and residents with resources to identify symptoms and take samples. This "blitz" style of surveying will allow us to better understand exactly where this disease exists in our watershed so that we as a community can take measures to decrease the spread.

Once the pathogen is detected in a stream, the MRC conducts ground surveys (where we have permission) to pinpoint terrestrial infestations and keep residents informed of how to lessen the spread of the disease. Ramorum spores may be reduced through the removal of infected trees and symptomatic hosts, such as the California Bay Laurel, along with the clean-up of host litter underneath the canopy before winter rains enhance spore dispersal.

For more information or if you suspect that you may have infected trees on your property, please contact the MRC's Unity Minton at 629-3609 or unity@mattole.org.

Forest Management Resources

MRC has purchased a chipper! Money for the chipper was donated by Robert and Sandra Balstar of Virginia and Marion Balstar of Minnesota. Soon it will be available (with an MRC operator) to help reduce woody material from fuel load reduction projects and timber harvest activities. Within the year we hope to hold a demonstration day highlighting the use of the chipper. In general, chippers extend the ability to reduce fuels while feeding your soil through decomposition, whereas burning slash in piles or broadcast burning requires burn permits and ideal weather conditions. In addition, burning causes the release of harmful particulate material into the air we breathe. Huge thanks again to the Balstars for this important fuels reduction tool!



Photograph by Laura Cochrane

Another resource for landowners is our local Natural Resources Conservation Service (NRCS). Did you know that NRCS has grant funding that individual landowners can apply for to help manage either their forestlands or rangelands? Forest landowners can contact Matt Cocking at 442-6058, ext. 110. For range management, Todd Golder is at extension 111. Or contact MRC and we can help connect you.

The mattole.org website has more information about the Mattole PTEIR, our new Oak Woodlands Restoration program, updates on Sudden Oak Death, reports on a carbon feasibility study in the Mattole, and a report on Mattole wood products marketing potential. If you need assistance finding this information, contact Ali Freedlund: ali@mattole.org.

Fuel Load Reduction Projects in the Mattole

All over the watershed landowners are reducing the fuels that have built up in our second-growth forests. In many areas the threat from a wildfire to personal property has reached a tipping point, particularly with the forecasted drier conditions from climate change. It is not a matter of if a fire will come, but when. Fortunately, aside from what landowners are already doing to reduce fuels, the Fire-adapted Landscapes and Safe Home (FLASH) program that is administered through the County on contract with the MRC offers up to \$3000 in reimbursement for fuel reduction work done on private homesteads. Because administering the grant monies involves a lot of travel time, MRC has had to support the program financially. With little to no cushion underneath us, this grant cycle we are limiting the range of projects to the Ettersburg area north to the mouth of the river, including outlying areas. For projects in these areas, please contact brook@mattole.org. Meanwhile, the Southern Humboldt Fire Safe Council has agreed to work with landowners in the Whitethorn and Whale Gulch areas. For more information about FLASH in these areas, contact Bill Eastwood at bille@asis.com. Indeed, reducing the time and gas used to administer projects at far ends of the watershed also makes sense in terms of the need to reduce our carbon footprint.

Another fuels reduction grant project through the State Fire Safe Council* with federal funding through USDA** has been approved through the Lower Mattole Fire Safe Council! The Mill Creek Roads and Ridge Fuel Break will reduce fuels along an historic ridgeline prairie between Mill and Stansberry Creeks in Petrolia. Due mainly to fire suppression efforts, the Mattole has lost over 50% of its grasslands since 1945. As well as providing prairie habitat, restoring ridgeline grasslands serves to create important fire containment breaks that help prevent wildfire spreading into adjacent drainages. Project treatments include reclaiming prairie areas by removing brush and Douglas-fir, limbing up the remaining edges to create an open understory to reduce the spread of fire into forest canopy, and chipping or burning the slash material. In addition, portions of ranch roads not previously treated will have horizontal and vertical (ladder) fuels reduced for safer ingress for firefighting equipment and egress for evacuation purposes. These yearly grants involve multiple ownerships and now last 24 months. They also require a 50/50 match that can be met through a combination of landowner support, Cal-FIRE crews, and local fire department or company support. If your neighborhood would like to be involved, please contact ali@mattole.org

*The views and conclusions in this document are those of the authors and should not be interpreted as representing the opinions or Policies of the California Fire Safe Council or the U.S. Government. Mention of trade names or commercial products does not constitute their endorsement by the California Fire Safe Council or the U.S. Government. For more information please contact the California Fire Safe Council at (626) 335-7426 or go to www.firesafecouncil.org
Cooperative Forestry Assistance funding provided by the California Fire Safe Council and the US Forest Service

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Mattole Estuary Gets Heli-Wood



This map of the East half of the project area shows the actual trees (to scale) as placed in their locations. Map by Keith Barnard and the Mattole Salmon Group

- continued from page 1

the BLM implemented a 5-year restoration plan in the estuary. With this plan they were able to permit five years' worth of restoration projects at once. With the permitting complete, use of a helicopter was within reach.

An idea that always seemed out of reach suddenly looked possible. MSG's new Executive Director at the time, Sungnome Madrone, relentlessly pursued the idea. Excitement grew and two years later in the summer of 2013, we had funding, permits, and access to trees lined up...but no affordable helicopter. Logging helicopter time is so expensive that, in order to afford it, we needed a helicopter to be working somewhere within 2 hours' fly time of our location. MSG assembled a crew to perform the ground work so that we could be ready to seize the moment if a helicopter was

"In two days and 11.5 hours of fly time, we moved more wood into the estuary than we had in the last ten years combined."

local. In the late summer of 2013, that looked as though it would be the following year. However that all changed when Columbia Helicopters picked up a job for PG&E in the Sierra in early October. In a two-week time period, a project that was likely to happen the next year was set to happen in four weeks.

The crew prepared over 180 trees for transport to the estuary. Patrick Queen Construction took on every heavy equipment task needed to make the helicopter time as efficient as possible. Trees were tipped, rootwads were cleaned, and trees were weighed to determine how many the helicopter could carry at once. In addition, poles were made and delivered as close as possible to the sites where they would serve as vertical supports in

island-building apex jams.

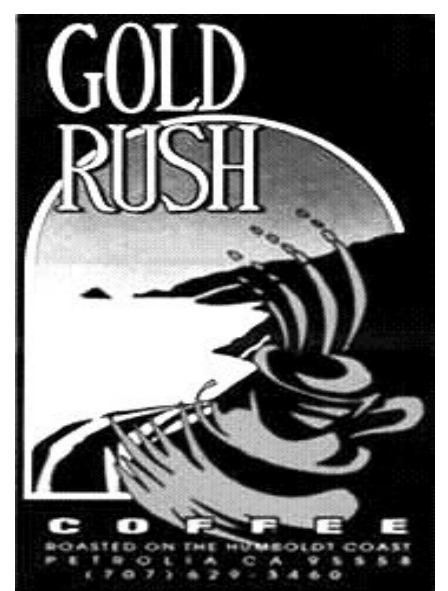
On Friday October 11th, an S-64 Skycrane helicopter arrived with its extensive crew of mechanics, fuel trucks, boom trucks and ground crew. In two days and 11.5 hours of fly time, we moved more wood into the estuary than we had previously in ten years combined. This year's effort included placement of 180 whole trees, 15 grapple-hauls of slash, 88 15' pine logs representing another 20 trees, and 44 30' poles.

The helicopter "built" on-bank and in-stream structures to mimic a system with large quantities of naturally introduced wood. In three areas, materials were piled for the excavator to create island-building apex jams. A fourth pile was created to use in 2014 for slough enhancement.

After the trees were flown off the slope, the excavator re-contoured areas where the trees were removed. The MRC managed the revegetation aspect. Their crew mulched and sowed a combination of native and naturalized grasses in an effort to encourage speedy revegetation of all disturbed upslope areas. The field construction work was completed on October 25th.

Since the construction aspect of the project has been complete, MSG has led a monitoring effort with the goal of understanding how the introduced trees get sorted by the river over time. MSG staff inserted identifying tags into all whole trees and mapped the topography of work areas and the location and orientation of all trees (see map, above).

The success of this project is the result of many people's hard work; the MSG is very grateful for the massive amount of support from staff and the community. Funding and support for this project was provided by Bureau of Land Management, US Fish and Wildlife Service, National Oceanic and Atmospheric Administration, The Nature Conservancy, National Fish and Wildlife Foundation, California Department of Water Resources, California Department of Fish and Wildlife, and landowners Michael Evenson and Ellen Taylor. 🐟



Oak Woodland Program Germinates at MRC

- continued from page 4

Mattole Oak Woodland Enhancement Program

Over the past 10 years, the Council's Native Ecosystem Restoration (NER) Program has focused much of its attention on restoring riparian, grassland, and forest ecosystems. Very little attention has been focused on the ecological importance of the restoration and conservation of oak woodland ecosystems. In early 2012, MRC staff began to discuss the importance of oak woodlands in the Mattole and have been working to launch a program that focuses on oak woodlands. With NER volunteer interns and funding from the California Department of Water Resources, development of this new program is underway. Over the next six months we will be developing an oak woodland planning document that details the history, distribution, and current status of oak woodlands in the Mattole watershed. We will also be conducting on-the-ground assessments to ground-truth geospatial data and to develop site-specific prescriptions for Oak Woodland Enhancement (OWE) projects. Through the creation of this document and on-the-ground assessments, we hope to answer some of the following questions: What was the historic distribution of oak woodlands in the Mattole and what is the current distribution? Have we lost oak woodlands and why? What can we learn from landowners who have lived with oak woodlands for generations? Are landowners interested in enhancing oak woodland stands on their property? What are the threats to Mattole oak woodlands and is there a need for oak woodland restoration and conservation? How can we best serve the watershed and its residents in regards to oak woodlands?

The goal of the MRC's Oak Woodland Enhancement Program is to gain a better understanding of the current distribution and ecological status of oak woodland/savanna ecosystems within the Mattole watershed, preserve existing stands, and implement oak woodland enhancement projects to restore historic structure and function.

We will pursue this goal through the implementation of the following objectives:

Mapping and Planning

- Map the historic and current distribution of oak woodlands in the Mattole to assess changes in distribution and regeneration and determine the need for restoration or conservation projects
- Conduct oak woodland assessments to develop and prioritize site-specific prescriptions
- Create the Mattole Oak Woodland Conservation and Restoration Plan

OWE Implementation

- Remove encroaching conifers from oak woodland stands through thinning and/or timber harvest projects and broadcast burning
- Implement OWE projects that protect stands from the spread of Sudden Oak Death
- Collect seed, propagate, and plant Oregon white oak, California black oak, canyon live oak and other native tree, grass, forb, and shrub species on oak woodland restoration sites
- Protect existing seedlings and oak woodland stands from domestic livestock, feral pigs, and native mammals by installing browse protection and/or cattle exclusion fencing
- Maintain existing oak woodland sites by implementing prescribed fire projects
- Monitor for project effectiveness



Acorns. Photograph by Flora Brain

Sudden Oak Death Monitoring

- Install stream bait traps annually to monitor the spread of SOD
- Conduct on-the-ground assessments of infected sites to map and monitor movement of SOD

Outreach and Education

- Educate landowners about SOD and the importance of oak woodlands through pamphlets, newsletter articles, the website, and workshops
- Conduct outreach to oak woodland landowners to determine how OWE projects can assist in ranchland management
- Promote the use of fire as an oak woodland management tool
- Host SOD outreach and education meetings annually
- Work with local Fire Safe Councils, Cal-fire, and local fire departments to integrate OWE projects with fuels reduction projects
- Work with NRCS, UC Davis Cooperative Extension, HSU and other oak woodland practitioners to ensure we are using best management practices

If you have oak woodlands on your property and are interested in how you can protect and enhance those stands, please contact hugh@mattole.org. 



Divers Count Summer Steelhead, Juvenile Chinook and Coho in the Mattole

By Amy Haas, Mattole Salmon Group

Once again, snorkelers from the Mattole and friends from beyond the watershed teamed up to survey the entire length of the Mattole River and two major tributaries, Honeydew Creek and Bear Creek, in search of the elusive Summer Steelhead. It's a game of aquatic hide-and-go-seek we look forward to each year.

2013 marks the eighteenth year of the Mattole Summer Steelhead Dive. The Summer Steelhead Dive is the only time the Mattole Salmon Group surveys nearly the entire river in the span of less than a week, and, for some of the more remote locations, the only time we survey all year. This opportunity brings together young and old alike to be the eyes and ears of the river, providing valuable information on both fish numbers and location, as well as habitat conditions in the summer, when temperature, one of the known limiting factors to salmonid abundance in our watershed, is near it's peak.

Whether they represent a genetically different population of steelhead in the Mattole or a life history variant, Summer Steelhead contribute greatly to the diversity of steelhead in the Mattole, and are therefore important to monitor and preserve.

This year, we are happy to report that we saw 53 adult summer steelhead (>16"), the greatest number observed in 18 years. The adults per mile of survey effort was the highest ever recorded during the Summer Steelhead Dive: 0.88/mile. Lower river flow may have contributed to the higher observation, as it is easier to find adult fish in lower flows, but it is good news nonetheless.

We also observed 47 "half-pounders" (12-16" steelhead), which was the highest number observed since 2009 (when we saw 49), although the number of half-pounders observed per mile (0.78) was below the 18 year average (1.08 per mile).

Divers also counted juvenile coho and Chinook. We found 399 coho and 160 Chinook, in addition to many juvenile steelhead. Of the coho observed, 249 coho were observed in the mainstem, mainly in the uppermost two reaches surveyed. 150 coho were observed in Baker Creek, which was surveyed in addition to the usual Summer Steelhead Dive reaches to inform rescue and relocation work later in the summer (see article on page 6). In 2012, 255 coho were observed; however, comparing similar

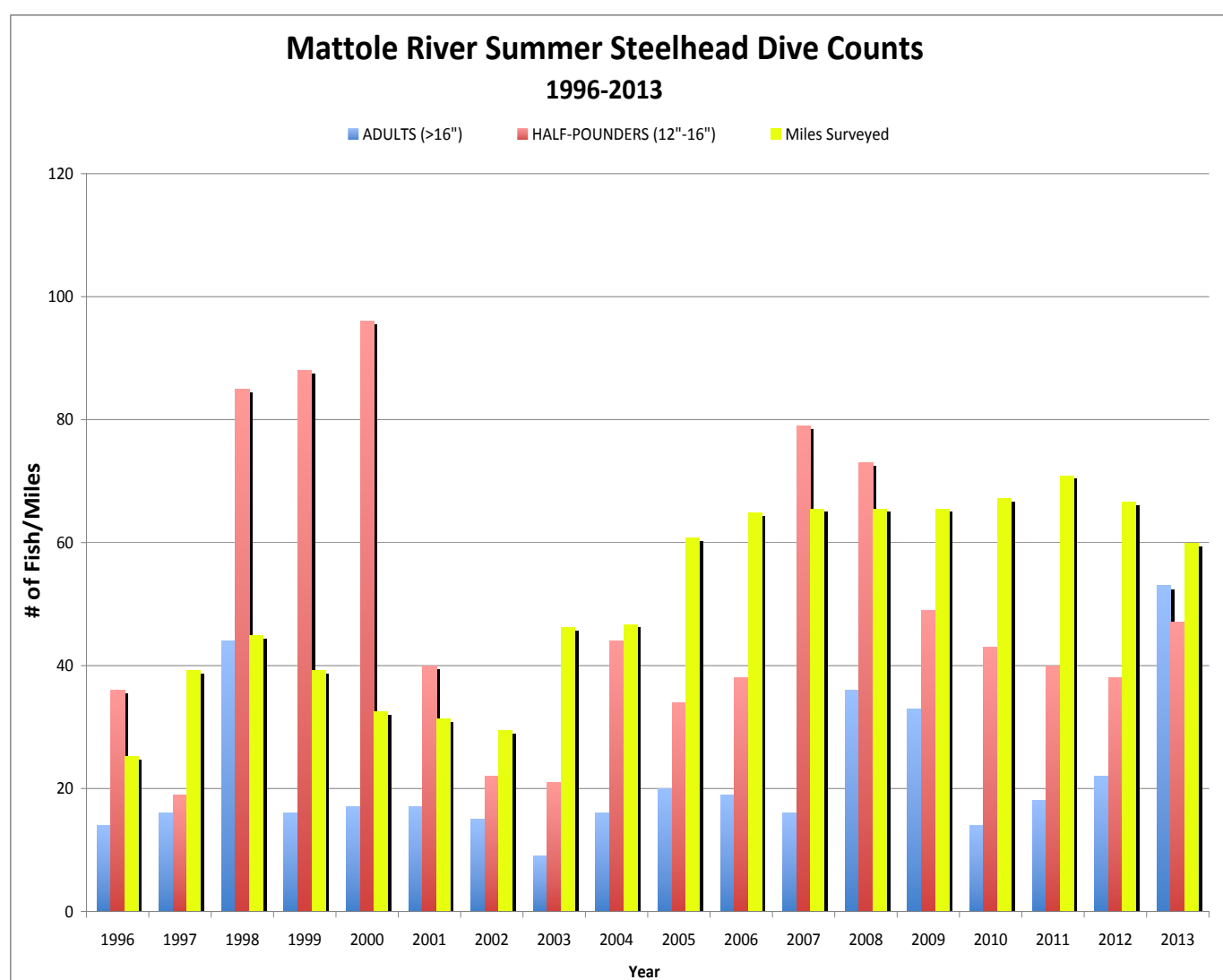
survey effort (minus Baker Creek observations), this year's coho count was similar to last year's. Most Chinook were observed upstream of Big Finley Creek, but they were also found between Big Finley and the Honeydew Slide, and in the estuary.

We are grateful to the Cereus Fund of the Trees Foundation for providing much-needed support for continuation of the Summer Steelhead Dive. The MSG is also thankful to all of our dedicated volunteer divers, who make the survey possible each year. This year, we welcomed participants from the Mattole Restoration Council, Sanctuary Forest, the Bureau of Land Management, US Fish and Wildlife Service, Americorps Watershed Stewards Project, and Nick's Interns.

I would like to thank volunteers and staff who went above and beyond the call of duty in their support of this year's Summer Steelhead Dive. Nathan Scheinman, who at age 6, was our youngest diver in 2005, surveyed with his crew of Nick's Interns this year in addition to his usual stretch. Michael Evenson and Lindsay Merryman, both of the MSG Board, not only dove but also have helped with the BBQ for many years running. Kate Cenci, Michelle Dow, and Nick Tedesco provided invaluable help with logistics and also took on some of the more challenging "adventurous" reaches. Sungnome Madrone, our ED, worked tirelessly on dive preparations and during the dives to help everything come together. Finally, our resident mermaid Maureen Roche has been the heart and soul of Mattole divers, and been an essential part of logistics and inspiration, since the inception of the Summer Steelhead Dive.

Following the dives, we once again gathered like a school of fish at the Mattole Valley Community Center to share stories of the fish we saw, the adventures we shared, and celebrate our enthusiasm for Mattole salmonids.

The Summer Steelhead Dive brings together those who have created the rich history of salmon restoration in the Mattole and disseminates our energy within our watershed and beyond, offering a glimpse of fish to those who join the challenge. In the face of declining coho salmon runs, challenges in restoration funding, low flows, and climate change, it also offers a glimpse of hope. I hope to see you next year. 🐟



Thanks to all the businesses that donated to the 2013 Summer Steelhead Dive:

- Casa Lindra
- Nonna Lena's
- Tofu Shop
- Bien Padre
- Mad River Brewery
- Ferndale Meats
- Ferndale Fruit
- Brio Bread
- Pacific Outfitters
- Los Bagels
- Gold Rush Coffee

Nick's Interns Speak of the Value of their Experiences

Future Studies and Careers in Natural Resources Launched by Intern Program

By Theresa Vallotton, Mattole Restoration Council

Avery Love started out as an intern with the Nick's Interns Program, not knowing where the summer work experience might take him. Inspired by his experience interning with BLM, he went on to pursue Environmental Studies at College of the Redwoods. For the last two summer internship seasons, Avery has come back as the Nick's Interns college lead supervisor. "Nick's Interns has been life-changing for me, starting since I was an intern. I was intimidated to be the crew leader but now that it has been accomplished, my self confidence increased dramatically. I intend to pursue similar work for my career and possibly even try to work for BLM permanently. The work my job has allowed me to do has given me a purpose and a goal in my life."

Avery is one of many interns who have had similarly inspiring experiences. Over the span of the last ten years, Nick's Interns – a program providing paid internships to local high school students – has offered 170 internships with various agencies and groups in natural resources management. Students have gained real work experience with BLM, CA State Parks, the Mattole Restoration Council, Mattole Salmon Group, Sanctuary Forest, and the Redwood Forest Foundation. Interns build self-confidence, and for some this unique work program has opened doors to a career.

Conan Johnson earned the respect of his fellow interns with his hard work as a first-time intern. Seeing his potential, Conan was hired by BLM for two more seasons to work with Avery in a supportive roll. They have been a dynamic and effective team, together building their leadership skills. Conan has now found his calling and joined the California Conservation Corps. "Hard work in the woods and the best experience possible: [Nick's Interns] helped me build experience, work ethics and meet awesome people. I would recommend it for anybody."

After her first internship, Megan Albee was hired by BLM to create education material for BLM's school program. Back as a returning intern this past summer, she worked with the Mattole Restoration Council in Petrolia. Megan reflects, "So I am off to college and this session of Nick's Interns is pushing me in the right direction. It made me realize how much I want to go into Environmental Sciences to make a change in the world."

First-time intern Nathan Scheinman says, "Nick's Interns made me more aware of my surroundings and made me want to join the MRC!" Nathan was hired back by MRC for an additional two weeks when it was evident that he loved the work and could contribute meaningfully.



Above: Nick's Interns building a new interpretive trail at Hidden Valley.

Left: Interns tear out old steps at Mal Coomb's Park and build new ones.

Photographs courtesy of BLM

Bottom Left: Nick's Interns collecting California brome seed on Spanish Ridge in June 2013. Photo by MRC staff

More intern quotes from our tenth season (!) express the impact of this special program:

"Coming into this I had no idea what I wanted to study and I didn't think the environment would be included. Now the environment interests me more. It's pretty cool." - Damian Alatorre

"Very gratifying to see the outcome of your work" - Jerod Sherman

"I found joy every hard day at work. No matter how tough it got, I found joy in it." - Izzy Lopez

"I like how it doesn't just help BLM land, it helps the community as a whole. You make bonds with people that are different from you."

- Sydney Fishman

"Freaking Awesome! If I go to college, I will be more prepared and more open to talk with people, ready to work in life." - Jessie Spain.

"The outcome of your experience is higher than your expectation." - Damian Alatorre and Izzy Lopez

"I hope that this program will be here for decades to come." - Norberto Olavarria

"I knew this would be a fun job at the beginning. I just didn't know how fun. I'm definitely considering restoration work for a career." - Kate Fatseas.

Visit our Nick's Interns Face Book Page to see more photos and hear more from interns past and present. If you would like to make a donation and help employ more students, we welcome your contribution. Send check or money order to:

MRC/Nick's Interns

PO Box 223

Whitethorn Ca, 95589



Retail Lumber and Building Supplies
Whitethorn Construction
 P.O. Box 400 • 545 Shelter Cove Road • Whitethorn, CA 95589 • (707)986-7412 • Fax (707)986-7413

Welcoming our newest Watershed Stewards Project and Native Ecosystem Restoration Interns

We welcome Christina Malatesta as a Watershed Stewards Project intern. Christina came to the Mattole from Portland, OR after a Native Ecosystem Restoration Internship with The Nature Conservancy. She has a BS in Environmental Science from Portland State University, and is particularly interested in the relationship between humans and their natural environment. While her studies focused primarily on terrestrial ecosystems, she has found herself hypnotized by salmon and steelhead after her first dive with the Salmon Group. She hopes to spend her year in the Mattole learning everything she can about anadromous fish and watershed restoration from the MRC and MSG, and enjoying being part of a small community.



*Note: Our Watershed Stewards Project interns currently split their time equally between the Mattole Restoration Council and the Mattole Salmon Group.



Tobin Weatherson joins the MRC as a Native Ecosystem Restoration intern. Tobin came to the Mattole after interning for the summer in Corvallis, OR with the Institute for Applied Ecology's Conservation Research department. He has a B.S. in Environmental Science: Ecological Restoration from Humboldt State University. Tobin is looking forward to working on grassland enhancement and riparian restoration projects and learning as much as possible about restoration during his time in the Mattole.



Sophie Price also joins us as a Watershed Stewards Project intern. Sophie grew up in England and has been living in Humboldt for the last few years. She graduated from McGill University in Montreal with a BS in Zoology. She is a second-year WSP member, and spent the last year working with the Forest Service fisheries department in the lower Trinity watershed. Sophie loves swimming with salmon, and looks forward to learning more about watershed restoration.



Trevor Willits also joins the MRC as Native Ecosystem Restoration intern. Trevor moved to Petrolia from Eureka, CA after a summer of salmon fishing in Kodiak, AK. He has a B.S. in Earth Science from the University of California at Santa Cruz. Trevor says, "the nostalgia of working with the California Conservation Corps and the American Conservation Experience over-powered my desire to start a career in physical science, so I joined the Mattole's primitive-anarchical society to become an intern with the MRC." Mull on that.

The Restoration Council wishes to thank the businesses and individuals who donated to our 30th Anniversary Celebration last year:

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They're Not All Strays: Genetic Analysis Reveals Mattole Coho Likely a Persistent Population

By Lindsay Merryman, Mattole Salmon Group

To save salmon, you must know them. Not just what they like to do on hot days, or what kind of gravel they spawn in, or where they live in the winter rains or where they go when they hit the great Pacific, but who their families are and where their relatives may be found. The fact is that it is getting harder and harder to know Mattole coho salmon, because so few of them exist that they are already considered a functionally extinct population. For a number of years now, annual returns of adult Mattole coho have probably been under 100 individuals.

This means that to start a family, the ladies probably for some time have had to settle for a brother or a cousin. Inbreeding is bad for any species' survival because it exposes deleterious genes. It is generally agreed that only some kind of population supplementation can end what MSG Executive Director Sungnome Madrone calls the 'downward spiral of inbreeding and extinction.' But because of any population supplementation's potential dangers (of possible inbreeding, suppression of natural selection, outbreeding depression, loss of adaptation and more,) restorationists must first know the fish we have at hand to ensure their population's sustainable recovery.

Are today's Mattole coho a fragment of a once-great population which evolved in this river with a rich variety of survival strategies for changing times? Or are they just strays from other rivers, colonizing new territory?

At the Mattole Grange at the August 2013 Coho Confab, Dr. Carlos Garza of NOAA's Southwest Fisheries Science Center presented the results of his recent genetic studies on Mattole coho, as well as a possible method for their recovery, in his presentation titled *Release of Maturing Adult Coho Salmon as an Innovative Method for Reintroduction and Population Supplementation*.

Supplied with 60 tissue samples from juvenile Mattole coho (collected in the Whitethorn area: Thompson Creek and the upper Mattole mainstem, in summer 2012 by staff from the CA Department of Fish and Wildlife and the Mattole Salmon Group), Garza and co-author Libby Gilbert-Horvath analyzed family structure and ancestry/origin of spawners.

The exciting news from Garza's genetic analysis of these fish is that almost all of them were descendants of the same local population that was sampled in the Mattole in 2003. Another way of saying this is that the juvenile fish sampled from the Mattole in 2012 were the great-grandchildren of Mattole coho studied in 2003. This suggests that, at least since 2003, Mattole River coho have persisted. It should be noted, however, that this study only analyzed coho from one of the three cohorts in the Mattole River. Coho salmon return at age 3 to spawn, meaning that there are three discrete cohorts, or year classes, of coho in the Mattole River: the one containing juveniles in the years 2003, 2006, 2009, and 2012, from which these samples were analyzed, is but one of them. Nonetheless, this is great news: that the juveniles sampled in 2012 were for the most part direct descendants of the 2003 Mattole River coho suggests that the Mattole coho population is persisting. Further great news is that, while Mattole coho continue to exist, Garza's genetic analysis assigned the ancestry of three of the juveniles sampled in 2012 to outside coho populations. This would seem to mean that, while Mattole coho are persisting, there is also some gene flow via straying adults from neighboring populations: a good thing, considering the extremely low numbers of coho in

this watershed and concerns about inbreeding.

Additional sampling from all three cohorts of Mattole River coho, in addition to sampling fish that are more geographically distributed throughout the watershed, may give a more comprehensive picture of the population. What more might we learn, for example, if tissue samples had been collected and analyzed from the juvenile coho observed in Squaw Creek in summer of 2013?

We can learn more with additional samples, but some samples are better than none. Garza's analysis of the ancestry of the 2012 juveniles suggests that Mattole River coho are likely a persistent population. While strays occasionally augment the population – as we would hope, given the limited population size – coho in the Mattole River are not just visitors from another area, but are descendants of fish uniquely adapted to this river.

So on the road to recover them, where do we go from here? Getting to the heart of his presentation, Garza described a fortuitous release in 2008 at spawning time of some captively reared, mature adult coho salmon from Marin County's Lagunitas and Olema creeks, into Sonoma's nearby Salmon Creek and Marin's Walker Creek, where coho had gone missing years ago. The next year, juveniles were found. When those juveniles were analyzed for parentage, hybrids (crosses between parents from different creeks) were significantly more numerous than incrossed fish (for example, both parents from Lagunitas). In fact, the hybrid coho survived better at all stages of life. The interesting idea here is that the released coho immediately sought mates to whom they are least related.

This work suggests that a successful way to increase the viability and chances for recovery of very small but persistent coho populations for whom inbreeding is a problem may not be elaborate hatchery-based strategies, but instead, increasing the dating pool – by the simple release at spawning time of a few good-looking mature coho from nearby populations. For the Mattole, such might be found in the South Fork Eel or Freshwater Creek. Unlike us, coho apparently don't need a computer dating service. 🐟



A male Mattole River coho, above right, holding in a pool with Chinook and steelhead in the lower Mattole on January 4, 2014. Photograph by Thomas Dunklin

This page is dedicated to stuff for, about, and by kids only!

The Small Fry That Wouldn't Let the River Die

by Gabriel Salbego, winner of the MRC's 30th Anniversary Celebration Story Contest

Once upon a time there was a thriving watershed in the Mattole Valley. One day there was a small fry swimming up the river to go catch flies. As he was catching flies, he noticed a sign on the riverside that said, "Construction: Dam Coming Soon."

Small Fry thought to himself, "This can't happen because it will destroy all that's good about the river." Small Fry knew that he must swim to the headwaters to consult Wise Salmon. Wise Salmon possessed great knowledge about the health of the watershed and would know how to stop the construction of the dam to save the Mattole River. As Small Fry swam to meet Wise Salmon, he started to warn all the other river-dwelling fish about the construction of the dam.

When Small Fry finally arrived at the headwaters, Wise Salmon swam out of his big, dark, blue cave. Small Fry told Wise Salmon what he had seen that day on the riverside. Wise Salmon said that he already knew of the great troubles that had befallen on the Mattole Watershed and proceeded to enlighten Small Fry with his great wisdom. Just before returning to his big, dark, blue cave, Wise Salmon said, "Follow your instincts, Small Fry, and you shall know what to do." Mystified by his words, Small Fry replied, "Wait, don't leave. I don't know what to do. We need your help?" But Wise Salmon had already been swallowed up by the darkness of his big, dark, blue cave.

*"We might not be big individually,
but if we unite together as one,
we can make a giant wave..."*

That night when Small Fry went to sleep, he had a lucid dream about a giant wave and thousands of Mattole River fish. When he woke up the next morning, he noticed that the river had changed. It was getting deeper! He knew right there and then that the dam had been built! Thinking upon his lucid dream and the wise words he received from Wise Salmon, it all made perfect sense to him. Small Fry quickly followed his instincts, which told him to swim downriver and tell all the fish to meet at the new destructive dam at noon.



*Chinook salmon fry in the lower Mattole River on July 7, 2013.
Photograph by Flora Brain*

At twelve o'clock, when the sun was set high above in the sky, thousands of Mattole River fish had gathered at the dam to meet Small Fry. Recalling his lucid dream, Small Fry spoke, "We might not be big individually, but if we unite together as one, we can make a giant wave to break down the destructive dam." All the other fish cheered at this idea! Then all the fish started to swim in unison until they had the power of creating a giant wave. "Whoosh" was the sound of the giant wave as it smashed into the dam and broke through to the other side. The water from the giant wave broke the dam and flowed freely and naturally down the river. It's all thanks to the small fry that wouldn't let the river die. 🐟

BECOME A MEMBER OF THE MATTOLE RESTORATION COUNCIL!

Please consider becoming a member of the MRC. Becoming a member is one of the easiest ways to become a part of the Mattole restoration movement. Your membership dues are extremely important to us, allowing us to pursue important work that may otherwise fall through the cracks between our grants and contracts.

Additional Benefits of Membership:

- * Subscription to our twice-yearly newsletter.
- * 20% discount on custom mapping services (applies to labor costs only).
- * Members who are also residents or landowners in the Mattole watershed are eligible to vote in our board elections.

If you'd like to become a member, please visit our website: www.mattole.org/content/join-us

DONATE TO THE MATTOLE SALMON GROUP!

The Mattole Salmon Group is a non-profit organization dedicated to long-term restoration of salmon populations in the Mattole watershed. Your donation to the Mattole Salmon Group is tax deductible, goes directly to our organization alone, and is used to fund restoration or monitoring projects benefiting salmon in the Mattole River.

Supporters may donate any amount at any time, and may choose one of the following ways to donate. All donors can receive our newsletter by mail and may elect to receive email updates about our activities.

* Donate online! www.mattolesalmon.org

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