

Service Year 21  
District D, 2015  
Volume 21 Issue 1

# Tributary Tribune



Stories and art by members of the  
Watershed Stewards Program



*The Watershed Stewards Program's (WSP) mission is to conserve, restore, and enhance anadromous watersheds for future generations by linking education with high quality scientific practices.*

*A program of the California Conservation Corps, WSP is one of the most productive programs for future employment in natural resources. WSP is administered by California Volunteers and sponsored by the Corporation for National and Community Service.*



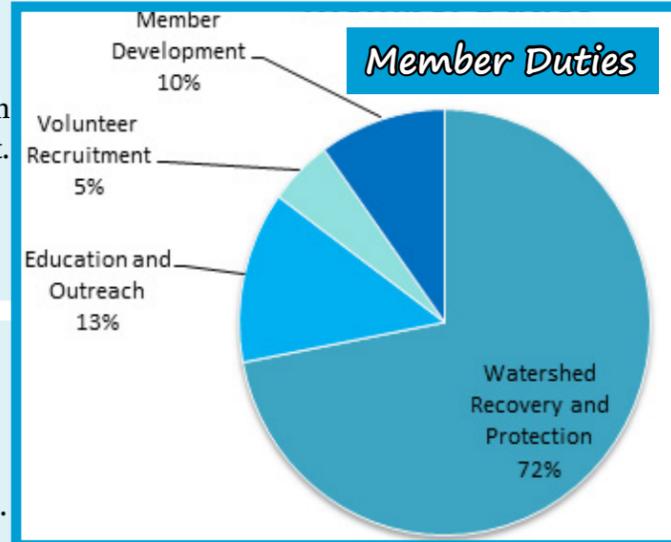
# Introduction

## Watershed Stewards Program

The Watershed Stewards Program (WSP) is a watershed restoration and education program that links community-based action with high-quality scientific practices to generate remarkable results. For twenty-one years WSP has been serving communities throughout California's coastal watersheds. Some notable outcomes of the program's work are: 35,000 miles of waterways inventoried, over 3,000 scientific reports and databases generated, over 1,700 watershed restoration projects developed, over 50,000 students instructed on salmonid lifecycles and watershed processes, and more than 17,000 community volunteers engaged in hands-on restoration projects.

Service year 21 for the WSP brings 43 members, 4 team leaders, 25 placement sites, and some important staff changes. Jennifer Catsos, Program Manager, brings valuable experience in educational non-profit management. Stephanie Birmingham stepped into the new dual-role of Member Coordinator and Office Manager and generates a smooth-running office operation. Zia Schatz, Region I Program Coordinator, supervises all of the Region I members and helps with program administration as well as member recruitment. Jody Weseman, the Program Coordinator for Region II, oversees all Region II members in addition to writing grants and recruiting new members.

Year 21 members contribute their time to four main areas: Watershed Recovery and Protection, Education and Outreach, Volunteer Recruitment, and Member Development. The chart to the right shows the break down of time spent working in these four areas.



Meet WSP Year 21 Members!

## What is the Trib Trib?

The Tributary Tribune (Trib Trib) is a quarterly newsletter published by one of the four districts within WSP. In service year 21, the Trib Trib will be starting with the southernmost district (District D) and finishing with District A. The members within the specified district submit original artwork, poetry, reflections, informative articles, photo collages, stories, and more! These submissions showcase the adventures, insights, and art of members of the Watershed Stewards Program.

This issue features members from Region II, District D (pictured below), which extends from Santa Cruz to Santa Monica, CA. See the map below for all Year 21 placement sites.

**Region I**

**District A (12 members)**

- DFW Yreka (2)
- Yurok Tribe Environmental Program (Klamath) (2)
- USFS Orleans (2)
- USFS Lower Trinity (Willow Creek) (2)
- DFW Arcata (2)
- USFS SO Eureka (2)

**District B (10 members)**

- WSP Main Office - Fortuna (2)
- CCC Fortuna (1)
- DFW - CWPAP Fortuna (2)
- DFW - NCWIC Fortuna (2)
- DFW - MESHR Fortuna (1)
- Mattole River Alliance (Petrolia) (2)

**Region II**

**District C (12 members)**

- North Coast Regional WQCB (Santa Rosa) (2)
- California Sea Grant (Santa Rosa) (2)
- Marin Municipal Water District (Fairfax) (2)
- Point Reyes National Seashore (Point Reyes) (2)
- San Francisco Bay Regional WQCB (Oakland) (2)
- Acterra: Action for a Healthy Planet (Palo Alto) (2)

**District D (13 members)**

- NOAA SWFSC (Santa Cruz) (2)
- RCD Santa Cruz County (2)
- San Joaquin River Partnership (Fresno) (2)
- WSP Satellite Office - San Luis Obispo (2)
- San Luis Obispo Steelhead Initiative (2)
- DFW Santa Barbara (2)
- RCD Santa Monica Mountains (1)

**District D**

Back Row Left to Right: Deanna Eickhoff, Tim Ryan, Caitlin Jetter, Cameron Coronado, Mark Seelos  
 Middle Row: Andre Sanchez, Rachelle Tallman, Michelle Pepping, Leah Gonzales, Crystal Garcia  
 Horizontal Front Row: Jamie Burkhard

**Stay Tuned for More Year 21 Trib Trib Editions!**

**Release Dates**

April 3: Region II, District B  
May 29: Region I, District C  
July 31: Region I, District A

Year 21 Placement Sites

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These are their stories." Dick Wolf

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## Credits

Editor/Layout Designer: Jamie Burkhard, Region II, District D Team Leader

Front Cover Image: View from Black Hill, Morro Bay, CA (picture from Jamie Burkhard)

Back Cover Image: West Corral de Piedra, Pismo Beach, CA (picture from Michelle Pepping)

## WSP Staff

Program Manager: Jennifer Catsos

Region I Program Coordinator: Zia Schatz

Region II Program Coordinator: Jody Weseman

Member Coordinator/Office Manager: Stephanie Birmingham

# Trap and Haul

By Caitlin Jetter

Placed at San Joaquin River Partnership

1. Catching Chinook salmon in irrigation canals supplied from the San Joaquin River



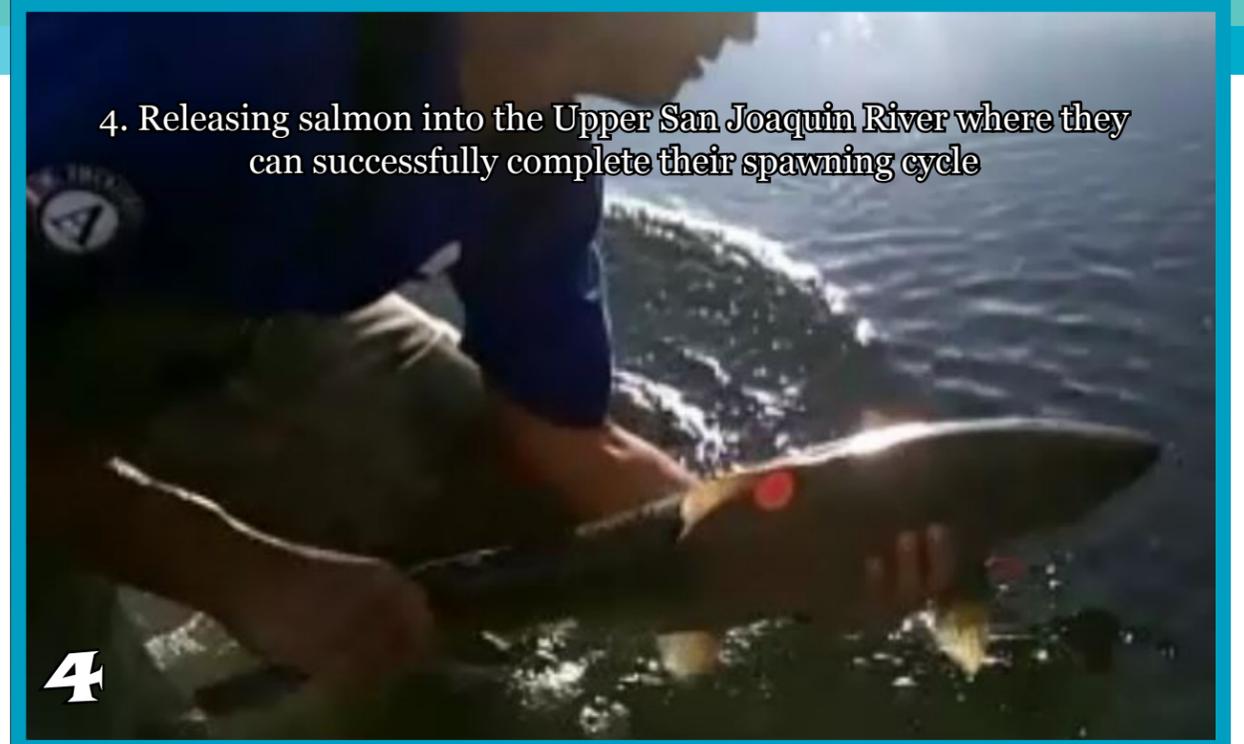
3. Tagging and inserting receivers into salmon which will be studied in the Upper San Joaquin River



2. Transporting salmon in a 450 gallon, oxygenated tank past a dry segment of the San Joaquin River



4. Releasing salmon into the Upper San Joaquin River where they can successfully complete their spawning cycle



# *O. mykiss*: Resilience at its best in Southern California

## A literature review

By André Sanchez

Placed at Santa Monica Mountains Resource Conservation District

Several populations of salmonids reside along the California coast and are divided into Distinct Population Segments (DPS) based on their genetic associations and regional distribution. Southern California *Oncorhynchus mykiss* (*O. mykiss*) is a DPS that is considered endangered. Though they share similar challenges with other California salmonids, *O. mykiss* in Southern California are more physiologically tolerant of high water temperatures, especially the populations found within Malibu and Topanga Creek watersheds. The temperatures they face will be compared to those of some other salmonids in the state.

The Southern California DPS ranges from the Santa Maria River in San Luis Obispo County to the US/Mexican Border (Fig.1)

(NOAA Fisheries 2012, NOAA Fisheries 2014). The DPS itself can be broken into Biogeographic Population Groups (BPG) of *O. mykiss* (Fig.2) (NOAA Fisheries 2012). The *O. mykiss* fish populations that occur within the Malibu Creek and Topanga Creek watersheds are part of the Santa Monica Mountains BPG (SMM BPG).

The SMM BPG episodically deals with temperature extremes that many other salmonids, including other steelhead populations, would not be able to tolerate. *O. mykiss* populations, outside of the SMM BPG, have been found to tolerate temperatures as high as 22 °C, survive best at temperatures between 15 °C and 17 °C, and spawn most successfully between 5 °C and 10 °C (Myrick and Cech 2004; Boughton 2007). Temperatures above 22 °C have occurred periodically within the Malibu and Topanga Creek watersheds (RCD SMM 2014; Spina 2007). Such was the case in 2005 and 2008; Malibu Creek temperatures exceeded 22 °C between June and September (Dagit et al. 2009). Similarly, from 2002 through 2014, temperatures in Topanga Creek infrequently exceeded temperatures of 22 °C, at times even exceeding 24 °C (RCDSMM unpublished data 2014). These temperatures demonstrate the thermal tolerance of *O. mykiss* within the SMM BPG when compared to salmonids of other regions.



Figure 1: *O. mykiss* distribution and DPS highlighted (NOAA Fisheries 2012)

Several salmonid relatives of southern *O. mykiss*, particularly those found from Central to Northern California, have been studied for their temperature tolerances. For instance, *Oncorhynchus tshawytscha* experienced significant mortality when exposed to 8 days of 24°C temperatures in laboratory conditions (Myrick and Cech 2004). Comparatively, the *O. mykiss* in the SMM BPG experienced several seven-day mean temperatures of 18.8°C to 24.6°C in Topanga Creek with no noted deaths (RCDSMM unpublished data 2014; Spina 2007). To further contrast this thermal tolerance, studies find that *Oncorhynchus kisutch* (*O. kisutch*) have difficulty migrating upstream in temperatures outside the range of 7.2°C to 15.6°C (Bjornn and Reiser 1991). Unlike *O. kisutch*, *O. mykiss* within the SMM BPG can survive such temperature ranges (Boughton 2007; RCD SMM 2014).

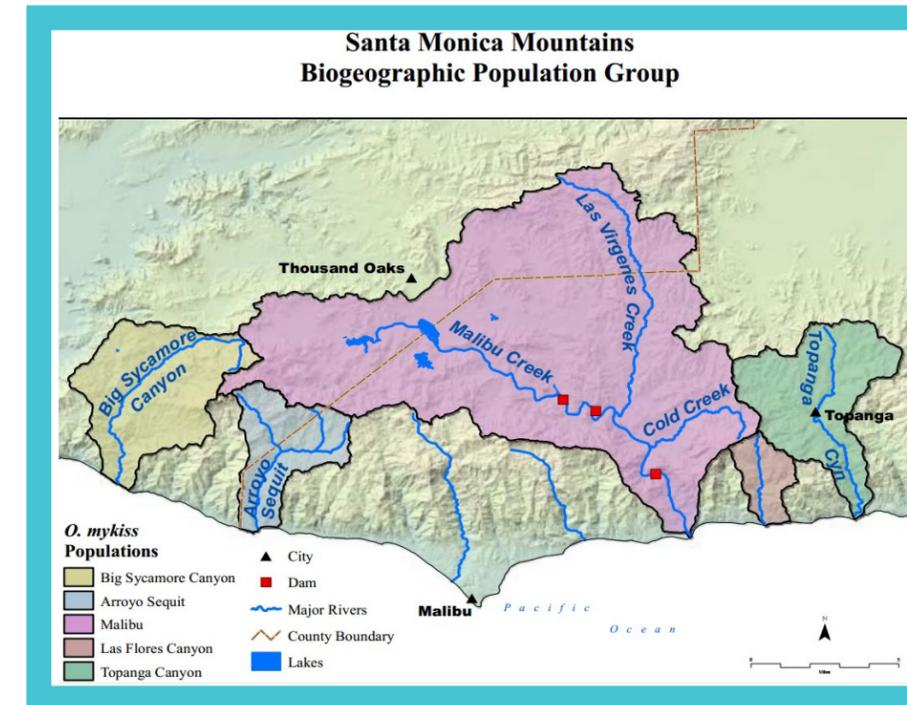


Figure 2: SMM BPG including Malibu and Topanga Creek Watersheds (NOAA Fisheries 2012)

Though all of the aforementioned salmonids can arguably be considered environmentally resilient in various ways, thermal tolerance appears to be a specialty of *O. mykiss* within the SMM BPG, particularly those within the Malibu Creek and Topanga Creek watersheds. Though information present at this time does not demonstrate a similar capacity from other salmonids, this beneficial ability will likely allow *O. mykiss* from the SMM BPG to expand their range, and demonstrates the importance of the fish within the population.

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# Journey Downstream

By Mark Seelos

Placed at Santa Cruz Resource Conservation District

Emerged from eggs amassed in Redds:  
from swiftly-scoured gravel beds.

The alevin remains discreet  
until its yolk sac does deplete.  
Then burst from gravel, by and by  
the alevin mature to Fry.

The ocean's call, it does exalt,  
but blood of fry may absorb salt.

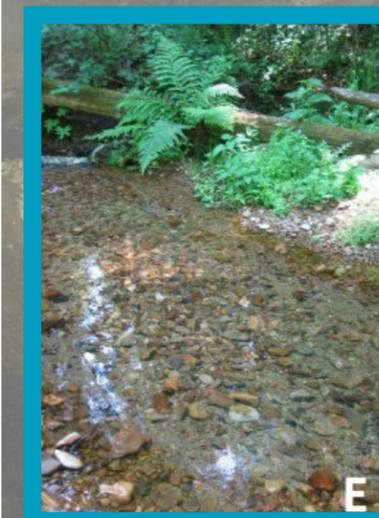
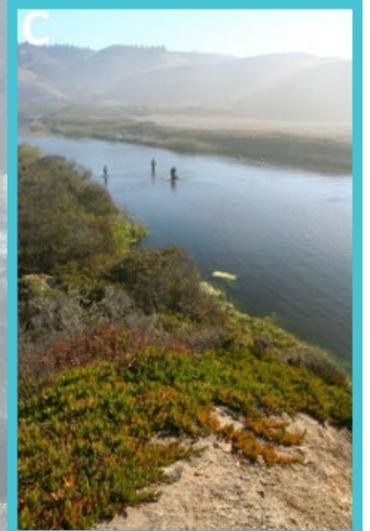
Alas, the time to smolt is here-  
to stand the test of duck and weir.  
They feed and migrate down the river,  
through icy waters without a shiver.

The estuary is finally reached,  
but unsurpassed until it's breached.  
The storms will come and flow will build.  
The dreams of smolts are soon fulfilled.

When teeming river touches sea,  
the day has come- the smolts are free  
to grow and migrate, blithe and spry  
before returning to spawn and die.

# Scott Creek Watershed Adventures

By Rachelle Tallman  
Placed at NOAA Santa Cruz



A. Wild male steelhead caught in trap box along main stem on 12/07/14  
 B. Upper Scott Creek waterfall  
 C. Scott Creek Lagoon Seining on 10/27/14  
 D. Waterfall at Big Creek, a tributary of Scott Creek  
 E. First redd of the season found in Upper Scott Creek  
 F. Overflow of the weir trap box along the main stem

# "Fish in the Water"

By "Weird Tim Yankovic" Ryan  
Placed at NOAA Santa Cruz

(Sing to the tune of "Smoke On The Water" by Deep Purple)

We all came down to Scott Creek  
On the Monterey Bay shoreline  
To try to find some spawning coho  
We didn't have much time  
The old growth riparian zone  
Was the best around  
But some carelessness with a campfire  
Burned the place to the ground  
Fish in the water, fire on the land



We hiked up the watershed  
Trees were falling with an awful sound  
Fish were spawning in and out  
Of the gravel all over the ground  
When it all was over  
There were carcasses all over the stream  
Dissecting fish for otoliths  
Smells so strong you feel you're in a dream  
Fish on the water, fire on the land



We ended up back at the lab  
All these new fish for us to take on  
But the salmon keep spawning each and every day  
So we will head back out tomorrow at dawn  
With our waders and our hiking sticks  
We're gonna work up a sweat  
But it's worth it just to see the fish  
Building yet another redd  
Fish on the water, fire on the land



# Goldfish-ing

By Leah Gonzales

Placed at Santa Barbara California Department of Fish and Wildlife

One Fish, Two Fish. Red Fish, Blue Fish. Who knew we would find so many huge goldfish?

The picture that comes to mind when talking about goldfish, are the silver dollar- sized fish that can be bought at the pet store for about \$0.10. However, the fish that were dumped into a local creek were anything but the average pet store mass-produced fish. Somehow, some way, 53 goldfish were dumped into two pools in a local creek. It was mission semi-possible. Technical difficulties

with the electrofisher created a late start, but because most fish were day-glow orange it was relatively easy to start by simply netting them. It seemed as though for every three that were caught, five more appeared. Initial counts were about 28, and after netting 49 of them, the task seemed complete. Then, after packing up the gear, we spotted more. We discussed that 49 seemed an odd number of fish to be dumped, so we tried to consider how many fish one might buy from the pet store. An even 50 made the most sense, but after netting 53, we were forced to reevaluate. It seemed as though whoever dumped the fish got a deck of card's worth and threw in one more for good measure. Needless to say, the illegally-dumped goldfish were removed from the creek.

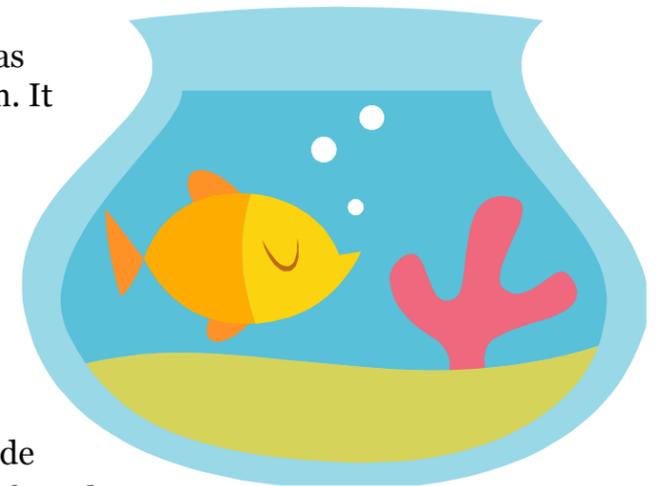


Figure 1: Disclaimer: Goldfish in this picture is not drawn to scale

### Special points of interest:

- Most were day-glow orange.
- 53 Goldfish found.
- All bigger in size than my foot.
- No one knows how they got there.
- There were too many to name them all.

# Eelgrass Assessment Morro Bay Estuary

By Deanna Eickhoff

Placed at San Luis Obispo Steelhead Initiative

*There's a quiet on the water as the sun sinks lower on the horizon, painting the sky brilliant hues of orange, pink, and purple. Large billowing clouds add to the complexity of the tapestry. The beauty silences our excited chatter and the only sound left is the tips of our paddles breaking the water and our kayaks gliding across the glass.*



We are headed out to one of seven eelgrass beds in the Morro Bay Estuary in Morro Bay, CA with Larissa Clarke (a Year 20 WSP member) of the Morro Bay National Estuary Program. The Morro Bay NEP is a local non-profit organization tasked with the protection and restoration of the estuary and its watershed. A key component of the program is the consistent collection of detailed information about the current status and health of this unique watershed. The goal is to track long-term trends and determine the effectiveness of specific conservation projects. A great deal of their data is collected by a dedicated and highly-trained volunteer force - eager to learn about and contribute to the health of their own watershed...which is exactly what we are up to.

As we arrive at the first eelgrass bed a spattering of birds take flight and make way for us. We line up side by side and delineate a square meter area to assess. We take pictures as we measure air and water temperature. Larissa then delves into more detail about what we will be looking at. We will be assessing leaf width, epiphyte loading, silt loading, macroalgal loading, indication of disease, heat stress, number of floral shoots, reproductive stage, and seedlings observed. Each of these metrics is used to better understand eelgrass health, spatially and temporally in the estuary.



- Epiphytic loading, such as bryozoans, egg masses, or snails can decrease photosynthetic abilities but can also be an indication of habitat health and use.
- Silt loading can smother the leaves and decrease photosynthesis.
- Macro algae (most commonly Gracilariaria or Ulva) can become competition for eelgrass beds.

- Wasting disease can be extremely destructive and is often triggered by a reduction in light and high water temperatures.
- Floral shoot counts and reproductive stages can illustrate expansion trends as well as inform the timing of restoration actions. Additionally, phenology of flowering and seeding will aid with seed bag transplant methodology.

### Why is this work important for WSP?

An estuary is a body of water where salty ocean water and fresh river or creek water combine to create a rich habitat that acts as a nursery for juvenile salmonids. Eelgrass beds provide protection and rich food sources for young fry to grow before journeying to the ocean. Morro Bay is the termination of Chorro and Los Osos Creek which both play host to steelhead trout. After taking detailed notes and photos



at two different eelgrass beds, the sun slips away and we regretfully head back towards land. We're excited to have done something worthwhile for the watershed that is our new home.

Until next time....

\*\*Thanks to the Morro Bay National Estuary Program for information and photos\*\*

# Lion Creek Dam

By Jean Tsai

Placed at Santa Barbara California Department of Fish and Wildlife

Located on a tributary of the Sespe Creek in the Santa Clara watershed, Lion Creek Dam was an abandoned diversion dam built in the 1930's that stretched 26.5 feet from bank to bank and stood 3.1 feet tall. Although the concrete and rebar structure no longer served its original purpose, its legacy was as a passage barrier to the federally endangered southern California steelhead trout. Thus, the removal of such a passage barrier was important to steelhead recovery efforts.



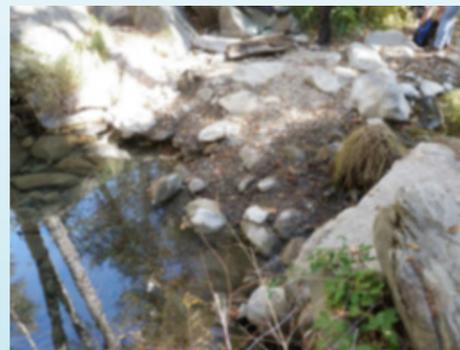
WSP members at the Lion Creek Dam removal site.



Lion Creek Dam before

they relocated rainbow trout, used jackhammers, hauled concrete, and pulled rebar. Their efforts, combined with those of collaborating federal, federal, state, and private agencies, resulted in the demolition of a long-standing dam, and has created 12.3 miles of unimpeded access to excellent steelhead spawning and nursery habitat.

Through the leadership of Jill Taylor (Fish Habitat Specialist with the CCC Camarillo Center) and the collaborative efforts of the US Forest Service, CA Department of Fish and Wildlife, the US Fish and Wildlife Service, Stoecker Ecological, NOAA Fisheries, and the CCC Camarillo Center, Lion Creek Dam was demolished in October 2014. WSP members Leah Gonzales and Jean Tsai participated in its removal during their first week with the DFW Santa Barbara. During this time,



Lion Creek Dam after

# A Glimpse of California-Specific Salmonid Publications

By Michelle Pepping

Placed at San Luis Obispo Steelhead Initiative

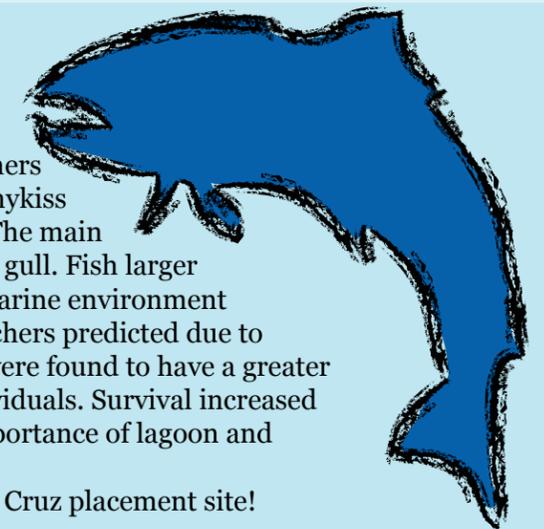
## *Wildfire and the effects of shifting stream temperature on salmonids*

1. The short-term effects of the Lockheed wildfire on Steelhead/Rainbow Trout (*Oncorhynchus mykiss*) were examined via bioenergetics and distribution in the Scott Creek Watershed. The water temperature in burned pools was up to 0.6°C higher than unburned pools due to the removal of riparian vegetation. Elevated stream temperatures cause stress in cold-loving *O. mykiss*, in turn increasing metabolic costs. Burned pools had a lower salmonid biomass than unburned pools- most likely due to starvation, emigration, and mortality. Wildfires are a common occurrence in California, especially the southern reaches. This article provides solid observations and analysis on the understudied effects of wildfires on *O. mykiss*. In addition, the article delves into the abiotic effects of wildfires and the ties between salmonid physiology and water temperature.

## *Linking individual size and wild and hatchery ancestry to survival and predation risk of threatened steelhead*

2. Researchers determined the predation risk and survival rate of juvenile steelhead trout in the Scott Creek watershed and Año Nuevo Island over the outmigration years of 2005-2010. Researchers inserted passive integrated transponder (PIT) tags in juvenile *O. mykiss* individuals of various sizes from both hatchery and wild origins. The main predator to juvenile steelhead was *Larus Occidentalis*, the western gull. Fish larger than 170mm fork length are 60 times more likely to survive in a marine environment than smaller individuals. This was the opposite of what the researchers predicted due to the western gulls' preference for large prey. Wild steelhead trout were found to have a greater predation risk and higher survival rates than hatchery-raised individuals. Survival increased dramatically with an increase in fork length, thus stressing the importance of lagoon and estuary habitats where juveniles increase biomass.

\*The lead author, Ann Marie Osterback, works at the NOAA Santa Cruz placement site!



## *Gravel augmentation increases spawning utilization by anadromous salmonids*

3. This article looks into specific environmental conditions that improve salmonid spawning habitat. The research for this article was conducted on the Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead trout (*Oncorhynchus mykiss*) on the Lower American River. Gravel augmentation as a habitat restoration technique was tested for effectiveness. Redd surveys of restoration sites where gravel augmentation occurred were compared for pre-and post-enhancement conditions. Spawning increased after gravel augmentation in all sites, though the degree of proliferation was dependent on both species and year. It was also observed that redd architecture changed based on the gravel available at the spawning grounds. Ultimately, the data collected verifies gravel augmentation as an effective form of habitat restoration for anadromous salmonids.

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# Jumping Rainbow

By Crystal Garcia  
Placed at Santa Cruz RCD



This picture was painted using watercolors on an 18X24 sheet of watercolor paper. It shows a rainbow trout jumping above the water with a steelhead trout below.

# "The King Joaquin"

By Cameron Coronado  
Placed at San Joaquin River Partnership

This song is from the perspective of a Chinook salmon returning to the San Joaquin River to complete its life cycle. Due to heavy use of the river along with dams and diversions the river does not flow all the way from its headwaters in the high Sierra to the ocean. The San Joaquin River Restoration Program traps and hauls salmon downstream of a dried-up area of river and hauls them upstream to release them back into the river. These fish are then studied to better understand how the physical features of the river affect their overall biological fitness.

Click here to hear Cameron sing his song! (You do need Adobe Flash Player for content to work!)

Use this link if you don't have Adobe Flash Player!  
<https://soundcloud.com/burkhard-1/coronado-king-joaquin>



## Lyrics

Anadromous. Anadromy.  
Born in a river,  
I spend most my life at sea.  
Now I have grown big and strong. Take a look at me.  
Time to go back. To my home stream. It's the San Joaquin.  
Swimming in an itty-bitty, dirty canal.  
Don't know what I am going to do now.  
Luckily I see WSP.  
They're here to save me.  
You trapped me and you tagged me and hauled me off to the San Joaquin.  
You trapped me and you tagged me and hauled me off to my home stream.  
You trapped me and you tagged me and hauled me off to the San Joaquin.  
You trapped me and you tagged me and hauled me off to my home stream.

# WSP Comes Full Circle

An Interview with with Karissa Willits

## Alumni Spotlight

Years 18 and 19 Member at San Luis Obispo Steelhead Initiative

As a child in Arcata, Karissa went through the Real Science education program with WSP. Now she's all grown up and helping to impact another generation...

### What was your WSP experience like?

I did WSP in years 18 and 19, and spent both years at the San Luis Obispo Steelhead Initiative. The SLO Steelhead Initiative is a placement site that at the time was comprised of four different organizations-the California Conservation Corps, Central Coast Salmon Enhancement, the Morro Bay National Estuary Program, and the Land Conservancy of San Luis Obispo (the structure of the organization is a little different now). I spent the majority of my time split between Central Coast Salmon Enhancement (three days a week) and the California Conservation Corps (two days a week), which made for a good mix of field and office work. I worked with the other two sites more on an as-needed basis. Because there are so many different organizations involved with this placement site, I got to do a really wide variety of work.

I participated in field surveys with all organizations:

- o Habitat and channel typing
- o Snorkel surveys
- o Water quality monitoring
- o Native plant propagation planting
- o California Rapid Assessment Method (CRAM) surveys
- o Benthic Macroinvertebrate (BMI) surveys
- o Invasive species mapping
- o Electrofishing
- o Seining



Doing eelgrass surveys in Morro Bay

I helped the Central Coast Salmon Enhancement develop the Watershed Management Plan for the Big Sur River. Part of that involved managing the field efforts for the BMI sampling. I learned more about what is needed for these surveys by helping to determine locations of survey points, recruiting volunteers, organizing gear, permitting, and then the fun part, actually going up to Big Sur and conducting the survey.

Central Coast Salmon Enhancement runs Trout in the Classroom for the county, so I helped the Education Director teach lessons and conduct field trips for trout releases. We incorporated our Real Science lessons into classes that were already participating in Trout in the Classroom program. It was a really fun combination.

### What was your favorite experience with WSP?

There were a lot of memorable experiences and events over the two years, but seeing adult steelhead come home to these little tiny creeks still sticks out in my head. Seeing a lamprey while doing SWAMP in Big Sur River when it was 90 degrees and people in innertubes floated past also stands out pretty well.

The Real Science component also stands out for me. I grew up in Arcata, and actually had WSP members come into my classroom when I was in second or third grade and teach us Real Science. I also remember going on the release field trip. I hope that some of the kids I taught will remember some of that when they are adults entering the workforce.

### What is your current job and what is involved in a typical day?

In September I was hired as the Monitoring Coordinator with the Morro Bay National Estuary Program, which was one of the organizations I worked with while serving in WSP. A fun tidbit, my site partner from Year 18 had the position prior to me! He decided to go to grad school and now works there part-time. One of the WSP members from last year also works there part-time in the restoration program.

As Monitoring Coordinator, I help implement monitoring projects, train volunteers, manage data, and communicate findings to the public and partner organizations. My position has a good mix of fieldwork, such as water quality monitoring; and office work, such as equipment calibration, data management, and volunteer coordination.



Finding some prints: Mama bear, baby bear

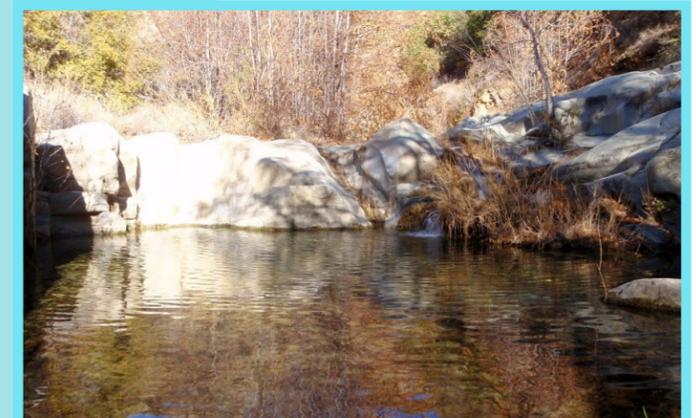
### What's your favorite part of your job now?

I love the area I get to live and work in. I get to do a variety of field and office work, so each day is different and there is always something to work on. Right now taking flow measurements is particularly exciting because of all the recent rain.

### How did WSP help you with this job?

I can't even begin to describe the countless ways WSP prepared me for this job, as well as for my other post-WSP job as a Pacific States Marine Fisheries Commission (PSMFC) technician on the Southern California Steelhead Monitoring Project based out of Santa Barbara. WSP was a great introduction to the natural resources community in the San Luis Obispo, Santa Barbara, and Ventura regions.

WSP gave me lots of great field experience. I think almost every survey I have done in my two post-WSP jobs I did to some degree in WSP. I attended a number of field trainings in WSP as well which really helped me in post-WSP jobs.



Habitat typing survey on Upper North Fork Matilija Creek (Upper portion of the Ventura watershed) while working with PSMFC

### Do you have any words of wisdom to pass on to current WSP members?

Tell your mentors what you are interested in or areas you want to get more experience. Talk to your mentors about coming up with downtime projects. Pay attention to different meetings or workshops that might be happening in your area related to monitoring and restoration work.

**Interested in learning more about the Watershed Stewards Program?  
Get in touch!**

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