



TRIBUTARY TRIBUNE

Stories and Art by Members of the California Conservation Corps Watershed Stewards Program in partnership with AmeriCorps

Year 25, District B

Is It Worth It?

Mackenzie Spencer, Placed at CCC Fortuna

As I sat in my flooded waders, with frost on the ground around me, my jacket hung on a branch to dry, and my knee already forming what would turn out to be a two-week bruise, I thought to myself... "Is this worth it?" I think all of us in the natural resources field have asked ourselves the same question many times, "Is it all worth it?" The California Conservation Corps' (CCC) motto is "Hard work, low pay, miserable conditions, and more!" I think that motto can be extended to many of us in the field that are climbing over logs, topping our waders, or sitting at a weir at midnight, waiting for passing fish.

However, I think that the CCC is on to something. That "and more" is what makes it all worth it. It can be a hundred different things for a hundred different people. For some, it may be getting to hold a massive adult chinook as it comes through the weir, for others it may be seeing a redd above a massive log jam in a key coho reach. Whatever it is, you get to decide what the "and more" is that makes it worth it to you.

Story continued on page 13 →



A cold and wet jacket, hung to dry
Photo credit: Mackenzie Spencer

I was so excited that I forgot about how wet and cold I was, or how bruised my knee was going to be. I watched this coho, who had endured who knows what, and decided that of course it was worth it!

-Mackenzie Spencer

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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.



Gary McFee and Weston Slaughter seem to find "what's worth it" to them even after finding their buckets seemingly glued together.

Salmonidae of Fishes Past

Gary McFee, Placed at Russian River Salmon and Steelhead Monitoring Program

Salmonids have had a history defined by hardship and intensity throughout their spatial and temporal journeys through geologic time and those hardships have persisted and have been exacerbated by the challenges they face today. It is the presence of those past hardships which have lain the foundations, brick by brick, for the lives of all extant salmonid species and the same foundation which provides the insight towards their continued existence in what is being declared as the 'Anthropocene Epoch'. In order to understand how conservationists and the rest of humanity can devise strategies to ensure the continued ecological presence of these ruggedly beautiful creatures, we must understand their history and the struggles which comprise the lifetimes of each salmon through their populations continued evolution. The Salmonidae family is estimated to have been swimming on this earth for around 59.1 million years.¹ For a reference, this is shortly following the demise of the dinosaurs. The further back into time that we delve, the more remnants we see of the destructive and awesome power that is geology. The frequent and intense geologic activities of the past isolated salmonid populations leading to diversification of the species. Rich diversification of salmonids began in earnest during the Miocene epoch (23.7-5.3 MYA). As the glaciers retreated, salmonids found vast expanses of exposed lands in which they could rebuild their populations. By 5,000 years ago, terrestrial salmon ecosystems were well established and developed characteristics visible today. In these past 5,000 years, there have been an estimated 1250-2500 generations of salmon that have diversified through many evolutionary mechanisms.²

Story continued on page 3 →

Nitrogen-15

Weston Slaughter, Placed at Russian River Salmon and Steelhead Monitoring Program

Somewhere off the coast of Northern California, a tiny voice:

Nitrogen's my family name
at the risk of being vain
a family of great importance,
And some fame

I am millions of times beyond your sight
and only time could know my life
Thousands of miles I've flown and swam-
To tell you how I am, where I am

I'll start sometime past
in a salmon swimming fast
She ran upstream to river head
laid her eggs and made her redd
And fell to final rest on river bed

But she was from the waters yanked
By a black bear watching from the bank

And me, N atom, in fishy vessel bound
Within great *Ursus* stomach now

She grumbled,
Ridge to valley, night to day
And passed me in the usual way,
By a streamside redwood, I was laid

Poem continued on page 3 →

A Flash of Us from Another Point of View

Eli Baginski, Placed at CDFW Fortuna—CWPAP

Note from the editor:

This submission is a photo story and will run throughout the entirety of the issue. Most pages will include a caption and photo boxed in green (to match this one). The caption will include a number in parenthesis as to aid with keeping the story in order. Enjoy!

Nitrogen-15, continued from page 2

And I slipped beneath into the ground
And was by redwood roots soon found...

For 365,000 times and one did I,
Woody, watch the wide arc of the sun
Until one night a storm did come

And the river surged
And lightning flashed,
From creaks to groan to mighty crash
To creek again and tumbling fast

I finally met some fellow logs,
Between bedrock-spined channel
caught

And the sun again slid to and fro
As I settled into my new home
For these winter fish I shield the flow
And in summer shade
Their children grow

Though I lived in-stream through
Summer limb and winters rain
Of course the time to pass on came
I broke away a tiny twig
But not long alone I lived

A little landlord I'd become
Home to a *Heteroplectron californicum*
So a caddis case sometime I was
Sheltered shredding water bug

Poem continued on page 5 →



Our perspective.

(1)



WSP engages the community: Jessica Coming, Kate Southall, and Zane Ruddy and Sam Flanagan of BLM Arcata smile after a successful first WAP of Year 25

Salmonidae of Fishes Past, continued from page 2

This history of past salmonid generations illustrates a cruel and inspiring story as we know that these hardy fish have customized their evolutionary history in order to deal with a constantly changing environment. In order to understand how conservationists and the rest of humanity can devise strategies to ensure the continued presence of these ruggedly beautiful creatures, we must understand their evolutionary history.

It is the presence of these past hardships which provide key insights towards salmonids continued existence in the 'Anthropocene Epoch'. Currently, Salmon are more inhibited by culverts and manmade structures than they are by natural disturbances such as wildfires and landslides.² The ancestors of our salmon were not used to the high frequency and constant pressures which are the new reality. The question must be asked then: how quickly can salmon evolve? In regards to geologic timescales we know that salmon populations evolve fairly rapidly.³ Can we mitigate their plight and reestablish their historic abundance? As long as humanity does not lose sight of both the intrinsic and extrinsic value that all things nature can bestow upon us, then we can learn to make conservation plans which more closely emulate the natural history which salmonids have dealt with for the past millions of years. It is the responsibility of everyone to work together for what we have now before we lose such a crucial part of what makes these ecosystems so special.

References:

1. Crête-Lafrenière A, Weir LK, Bernatchez L (2012) Framing the Salmonidae Family Phylogenetic Portrait: A More Complete Picture from Increased Taxon Sampling. PLoS ONE 7(10): e46662. <https://doi.org/10.1371/journal.pone.0046662>
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About the Watershed Stewards Program

Since 1994, the Watershed Stewards Program (WSP) has been engaged in comprehensive, community-based, watershed restoration and education throughout coastal California.

WSP was created in 1994 by California Department of Fish and Wildlife (CDFW) biologists, educators, and the California Conservation Corps to fill critical gaps in scientific data collection, in-stream restoration, and watershed education. In collaboration with landowners, tribal communities, teachers, community members, nonprofit organizations, and government agencies, WSP works to revitalize watersheds that contain endangered and threatened salmonid species (Chinook Salmon, Coho Salmon, and Steelhead Trout) by using state-of-the-art data collection and watershed restoration techniques. WSP also engages members in education, outreach, and volunteer recruitment efforts to increase the capacity of partner organizations. WSP currently has Members working from the Oregon border to the Santa Monica Mountains.

“My Favorite Things” (WSP Style) from The Sound of Music

Kate Southall, Placed at BLM Arcata

Raindrops on noses
And females on redds
Bright spawning colors and warm comfy beds
American Dippers just flapping their wings
These are a few of my favorite things.

Freshly flipped rocks and crisp dug out redds
Bird calls and bear tracks
And boots with good treads
Wild Mergansers with the fog on their wings
These are a few of my favorite things.

Gals in grey waders without any holes
Crossing through creeks with the help of good poles
Small tributaries that flow into streams
These are a few of my favorite things.

When the waders rip!
When the GPS dies!
When I'm feeling sad....
I simply remember my favorite things
And then I don't feel.... so bad!



The American Dipper

Shayda Abidi, Placed at CDFW Fortuna—MESHR

"He is the mountain streams' own darling, the humming-bird of blooming waters, loving rocky ripple-slopes and sheets of foam as a bee loves flowers, as a lark loves sunshine and meadows".

- John Muir writing about the American dipper (1894)

Have you ever wandered along a California stream and stumbled across a little gray bird having its own private dance party? This bobbing bird is the American Dipper (*Cinclus mexicanus*) and here at WSP, we have come to know the Dipper well as we survey our local rivers. The dipper spends its entire life history along streams feeding on macroinvertebrates and salmonids, making it the only songbird that swims and hunts underwater.¹

These birds are equipped with physiological and morphological adaptations that allow them to thrive in harsh river habitats. Their eyes have strong sphincter muscles that assist with depth perception while hunting underwater.¹ To stay dry and prevent hypothermia, dippers coat their dense plumage in a waxy substance produced by the uropygial gland. Their streamlined bodies assist with diving, and their wings are equipped with large muscles that act as flippers for swimming.¹ These adaptations allow them to thrive in rivers, especially those that are salmon-bearing.

Salmonids play significant roles in dipper reproductive success, as dipper population dynamics are driven by adult salmon returns within a watershed.² However, this may be a result of salmon-derived resources in the ecosystem, not just eggs and juveniles as prey. For example, salmon carcasses can increase the number of aquatic macroinvertebrates, making salmon-bearing streams ideal winter habitat for dippers.²

Article continued on page 6 →



Lunchtime with an American Dipper PC: Gregg Thompson

Nitrogen-15, continued from page 3

But time went on and waters wear
And off the twig a chunk did tear

Through riffles and pools I did fall
I rumbled 'tween the mountain tall

But suddenly in confusion caught
A web by macroinvert' wrought

A collector, hoarder of all sorts
Capture atoms borne of many ports

In a stomach again I found myself
feeling a bit perhaps as Jonah felt

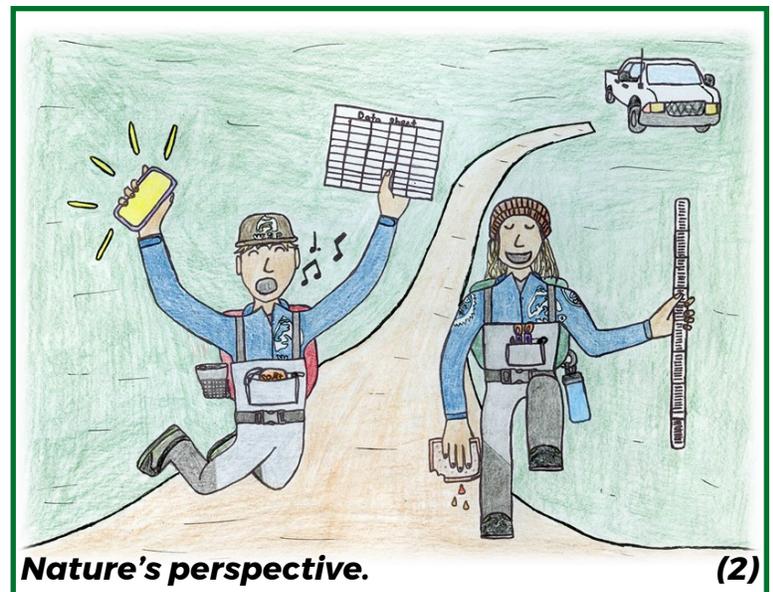
And so it was for quite some time
May to stone, the water flies
Passed gut to gut 'tween BMI's

But all the while in moving flow
Farther down the stream I'd go

And as I felt the salt of coast
I saw a silver flashing bolt
she gobbled up my winged host
A salmon ocean-bound- a smolt!

But some words to wrap
Meandered tale,
For my salmon's seen a killer whale

This journey told may all seem far
but it's been a flash, not close to parr
For after all, I came here from a star.



Nature's perspective.

(2)

A Glimpse of a Watershed

Andrew Schwitzgebel,
Placed at The Watershed Center

Blue-gray morning,
Draped in shadows,
Nothing moving;
Ghostly ocean;

Step outside, crunch boots on gravel,
Feel the chill, heavy silence.
Look up, pale sky and stark-edged land;
Look down, surreal stillness and pillowed hills
of white.

Clouds of silver,
Sit in silence,
Earthy breathing;
Transpiration;

Stand alone, cool wind whistles
Feel the mist, wet pinpricks on skin.
Stars in a finite universe,
Caged in, guarded by ancient titans

Poem continued on page 7 →



Weston Slaughter and Gary McFee join a team out of the Russian River Salmon and Steelhead Monitoring Program performing an electrofishing survey.

How does nature feel us?



Is it physical?

(3)

The American Dipper, continued from page 5

American Dippers and salmonids are connected within the watershed, but it still begs the question...what's up with the dipper's bobbing dance moves? This conspicuous behavior is debated among ornithologists. Most agree that this behavior assists in seeing prey while dealing with water's refractive properties.¹ Others attribute the behavior to predator evasion or communication between dippers during loud river flows.³ However, until more research is presented, we can only speculate and enjoy the adorable dance of the American Dipper.

References:

1. Casperson, L.W. 1999. Head movement and vision in underwater-feeding birds of stream, lake, and seashore. *Bird Behavior* 13-46.
2. Schindler, D. E., Scheuerell, M. D., Moore, J.W., Gende, S.W., Francis, T.B., and Palen, W. J. 2003. Pacific salmon and the ecology of coastal ecosystems. *The Ecological Society of America* 1:31-37.
3. Sundstrom, B. 2016. Why Dippers Dip. <https://www.birdnote.org/show/why-dippers-dip>. Accessed Jan. 2019.



Ali Singh of WSP District A joined up with Meagan Burger and Shayda Abidi of District B in attending Steelhead Days in Blue Lake, CA. WSP Members often volunteer at environmental education fairs like this one.

A Glimpse of a Watershed, continued from page 6

Snowy mountains,
Alabaster
Scarred behemoths
Feed unseen streams;

*Feel the immensity, invincible pride;
Green-furred flanks painted pale,
Stalwart against the coming light;
Respect the primeval losing fight.*

Bright white sun breaks
Sharp edged titans;
Silver threads emerge,
Converge on one;

*Trace the lines like cracks in glass;
Insignificant tangles from here,
See them teem, vivacious with life;
Tumultuous tumble towards tomorrow.*

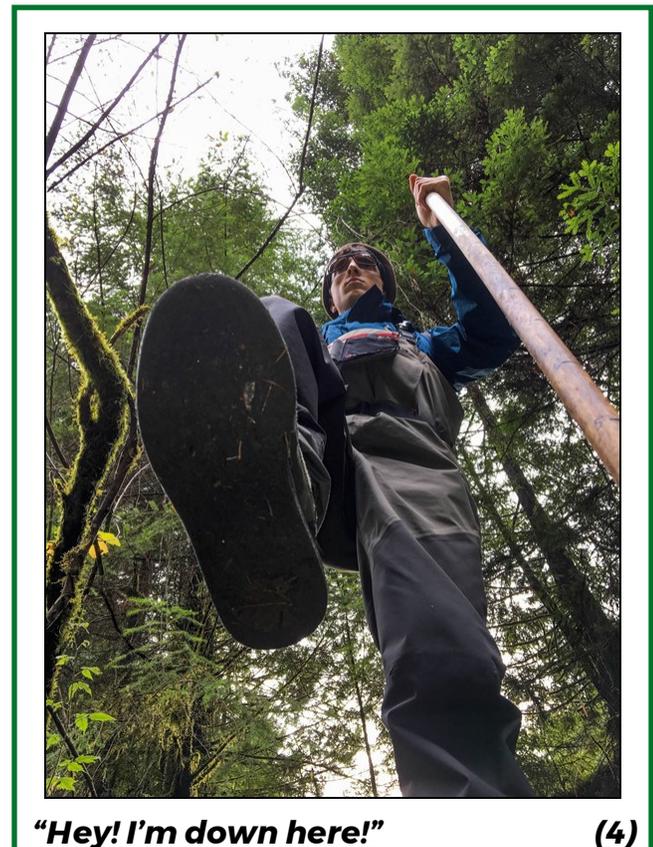
The Importance of Riparian Vegetation for Salmonid Habitats

Meagan Burger, Placed at CDFW Fortuna—CWPAP

Bordering rivers, streams, and bodies of surface water is an area known as a riparian buffer zone. These vegetated areas provide key environmental benefits to adjacent aquatic habitats, including salmonid habitats. Salmonid species undertake a long, arduous journey from the ocean to their native spawning grounds: the freshwater streams where they were hatched. These areas are ideal due to environmental conditions including water temperature, water velocity, and a rich nutrient cycle. The vegetation within the riparian zone can influence these factors both positively and negatively, depending on the vegetation health and quantity.

Abundant and healthy vegetative zones provide important benefits in spawning areas by improving habitat conditions both physically and chemically. The tree canopy in the riparian zone shades water from solar radiation, protecting it from increased temperatures. This is important because high water temperatures can have negative effects on developing embryos.³

Article continued on page 8 →



"Hey! I'm down here!"

(4)



Speaking of riparian vegetation... WSP Members often utilize WAPs to reestablish native species in riparian buffer zones.

The Importance of Riparian Vegetation for Salmonid Habitats, continued from page 7

Tree and plant roots improve water quality through stream bank and flood-plain stabilization by decreasing sedimentation rates and reducing water velocity; high sedimentation can be detrimental to salmon embryos, which require ample oxygen from flowing water.⁴ Plants also act as a filter for surface runoff by absorbing harmful chemicals and nutrients before they reach the waterways and cause eutrophication or bioaccumulation in organisms. The live vegetation and the absorbent mat of plant litter help to trap sediments before they reach waterways.² Litter-fall from trees and other riparian vegetation provides a food source for insects, which in turn becomes a food source for salmonids. As this vegetation decomposes it also releases nutrients back into the water column. Nutrients for plant growth in riparian ecosystems depend on sedimentation of nutrient-rich organic matter and dissolved nutrients in the water.¹ Riparian zones are often nutrient-rich ecosystems where vegetation and stream habitat coexist in a symbiotic relationship.

Disturbance or removal of riparian vegetation in salmonid habitats causes an increase in water temperature and sedimentation while decreasing nutrients needed to support biodiversity. The loss of riparian vegetation results in ecological changes to waterways and their organisms.² By taking steps to mitigate instances of disturbance, such as timber harvesting adjacent to waterways, urban and agricultural runoff, and livestock grazing in riparian zones, we can maintain these optimal stream habitats for future spawning salmonids.

References:

1. Nilsson, C., & Svedmark, M. (2002). Basic principles and ecological consequences of changing water regimes: riparian plant communities. *Environmental management*, 30(4), 468-480.
2. Kauffman, J. B., Beschta, R. L., Otting, N., & Lytjen, D. (1997). An ecological perspective of riparian and stream restoration in the western United States. *Fisheries*, 22(5), 12-24.
3. Quiñones, R. M., & Mulligan, T. J. (2005). Habitat use by juvenile salmonids in the Smith River estuary, California. *Transactions of the American Fisheries Society*, 134(5), 1147-1158.
4. Reiser, D. W., & White, R. G. (1988). Effects of two sediment size-classes on survival of steelhead and chinook salmon eggs. *North American Journal of Fisheries Management*, 8(4), 432-437.



Skyler Roe of The Watershed Center in Hayfork shows just how much we love vegetation at WSP

Putting the Community into Community Service

Skyler Roe, Placed at The Watershed Center

Many factors shape a town, but it is the people and the actions they take that make it whole. In a small community, such as Hayfork (<2,500 people), it is essential for each citizen to be involved in making the town what it is. While placed in Hayfork, it is my overall goal to abide with the AmeriCorps motto of strengthening the community at its core. Through an ongoing wetlands restoration project, my goal became a reality. In this piece, I'll talk about the project's origin, how I as a WSP member interwove myself into the town of Hayfork, and why that matters.

In 2014, the Watershed Center and over 50 local volunteers implemented a wetlands enhancement project in the footprint of historic gold dredge mines. The goal was not to mitigate this land for the repayment of some other damaged land; instead, the wetlands show that a small community can embrace restoration simply to improve the environment and their community. These natural wetlands now filter clean water for neighboring Hayfork Creek and its inhabitants, while also providing habitat for many creatures within the wetlands themselves.

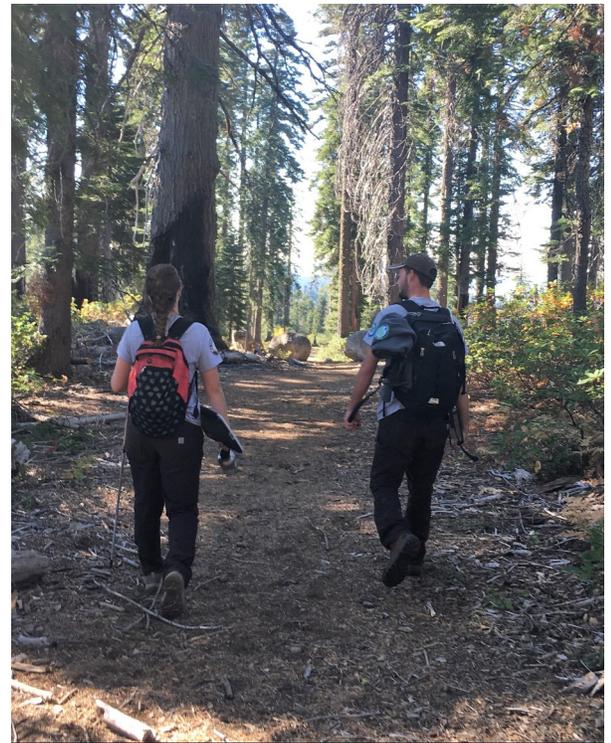
Throughout the years, the area has been steadily improving with the help of local community members, the children of the neighboring schools, and two very trusty goats. In February 2019, an additional round of improvement is planned to take place. This Watershed Awareness Project (WAP) will plant 200 upland trees which will provide shade to the new habitat, eradicate encroaching invasive vegetation, improve bank stabilization, and continue community involvement. The beautification and maintenance of this space results in an increased access to outdoor education and recreation, and a cherished space for the community to come together.

When placed as a WSP Member in a small town, the level of communal involvement becomes increasingly important. It is impossible to be fully immersed in the WSP mission without being fully absorbed in the town and its inhabitants. In the short months that I have been in Hayfork, I have come to this realization, which is why I chose to do my WAP at the Hayfork Community Wetlands, bringing salmonid restoration and the spirit of a small town together.



Does nature feel our spiritual presence?

(5)



Skyler Roe and Andrew Schwitzgebel strolling through the office.

Alumni Spotlight:

André Sanchez

WSP Member Year 21

Resource Conservation District of the Santa Monica Mountains

What was your WSP Member experience like?

I had a positive WSP experience. I grew professionally with respect to networking and career skill development. I was at a single member placement site which I truly believe allowed me to have a constant learning environment.

Was there one experience that was especially memorable? Why?

Attending the 1st Annual Steelhead Summit held by SRF was the most memorable experience for me. My mentor introduced me to several resource professionals. I was also able to gain significant insight on steelhead trout populations for the greater geographic region I worked in that I might have not acquired as easily if not for the event.

Interview continued on page 10 ➔

Alumni Spotlight: André Sanchez continued from page 9.

What are your title and responsibilities in your current job? What is involved in a typical day?

I am currently a 2nd year Masters of Science graduate student at Humboldt State University emphasizing Watershed Management. I am working on my thesis research project where I am evaluating water use in conifer encroached oak woodlands of Northwestern California. My field season was during late spring-late fall of 2018 and consisted of remote data logger downloads and solar light intensity measurements. Currently, my days consist of database management on my thesis dataset and writing my thesis draft.

What's your favorite part of your job now?

I would say my favorite part is getting to work on original datasets that will hopefully give better insight into what is happening within oak woodland habitats.

How did WSP help prepare you for the work you are currently doing?

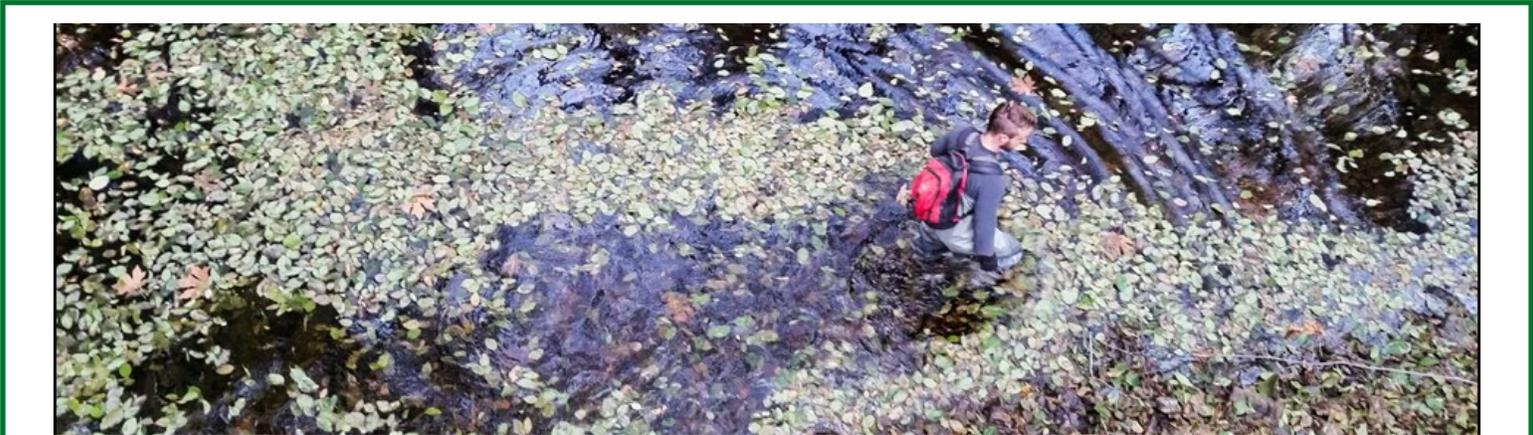
My WSP experience equipped me with the ability to work with remote data loggers but even more so, I gained the ability to understand what biological and physical factors influence a watershed and the different habitats present within any given watershed.

What advice would you give current WSP Members?

I would strongly urge current WSP members to seize all the opportunities they can while doing their year of service. Essentially, become a "yes person" because you never know where any given opportunity might lead you. I discovered a deeper appreciation and refined my skills in environmental education during my WSP days by saying yes, and I do not regret it.



André Sanchez sets up a remote camera trap over a refugia pond where western pond turtles were known to reside. The camera traps help scientists at RCD-SMM gain a better understanding of turtle behavior and their movement through the watershed.

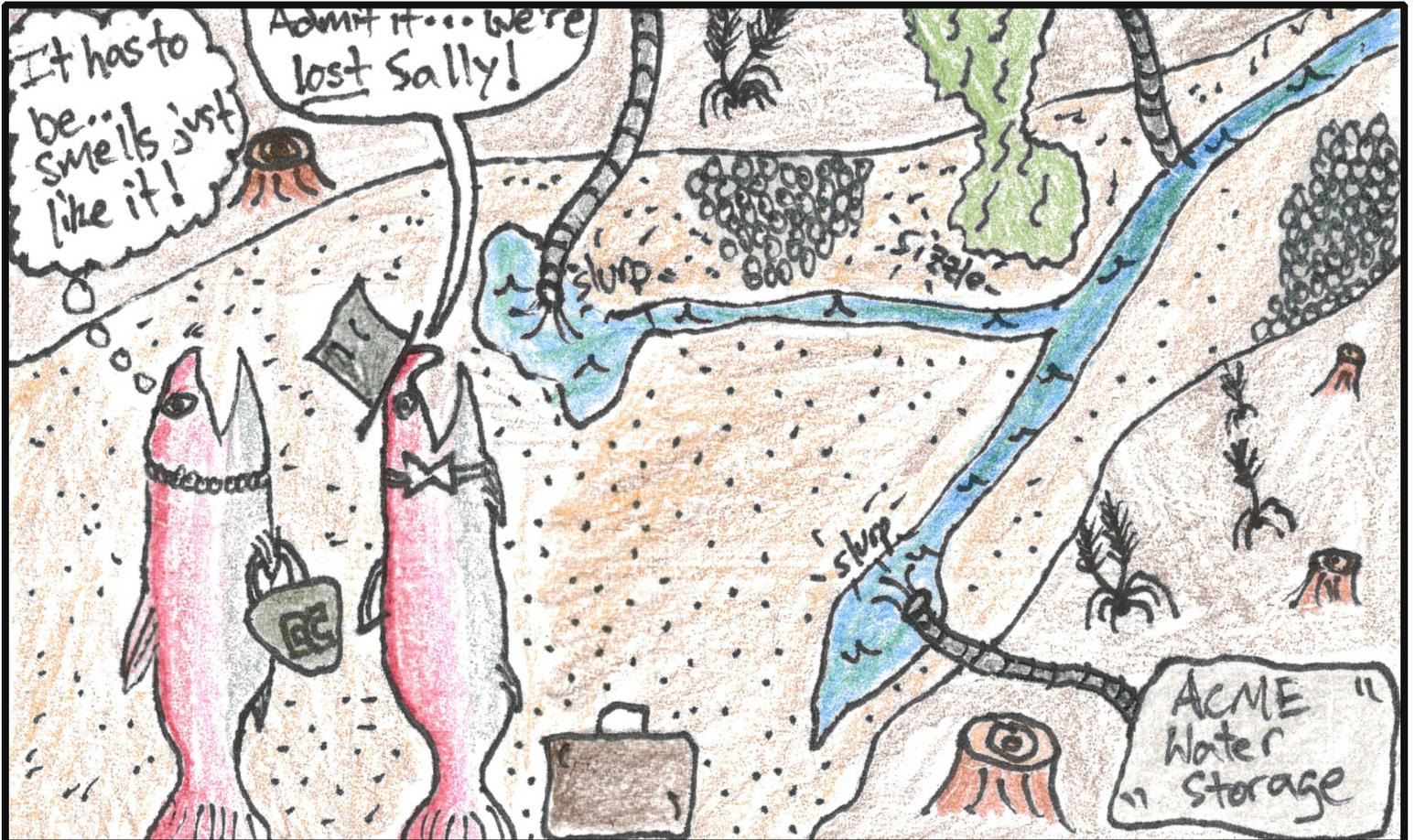


Are we helping? Disturbing? Both?

(6)

Smells just like it... A Natal Homecoming

Neal Hetzel, Placed at WSP Fortuna



It was at that moment that Sally realized she would be forever blamed for a wrong turn she never made.

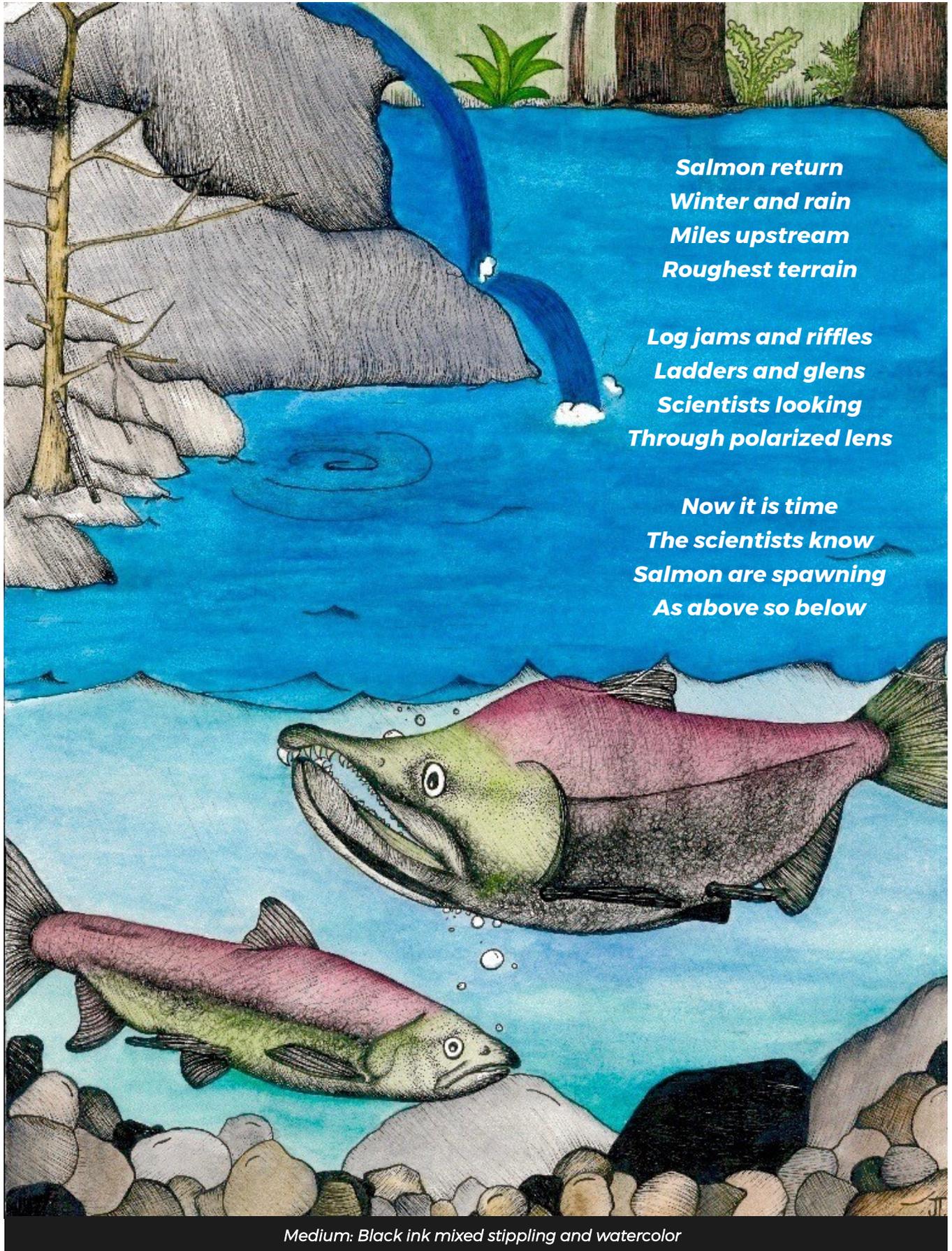


"It's biodegradable, right?"

(7)

As Above So Below

Jessica Coming, Placed at BLM Arcata



*Salmon return
Winter and rain
Miles upstream
Roughest terrain*

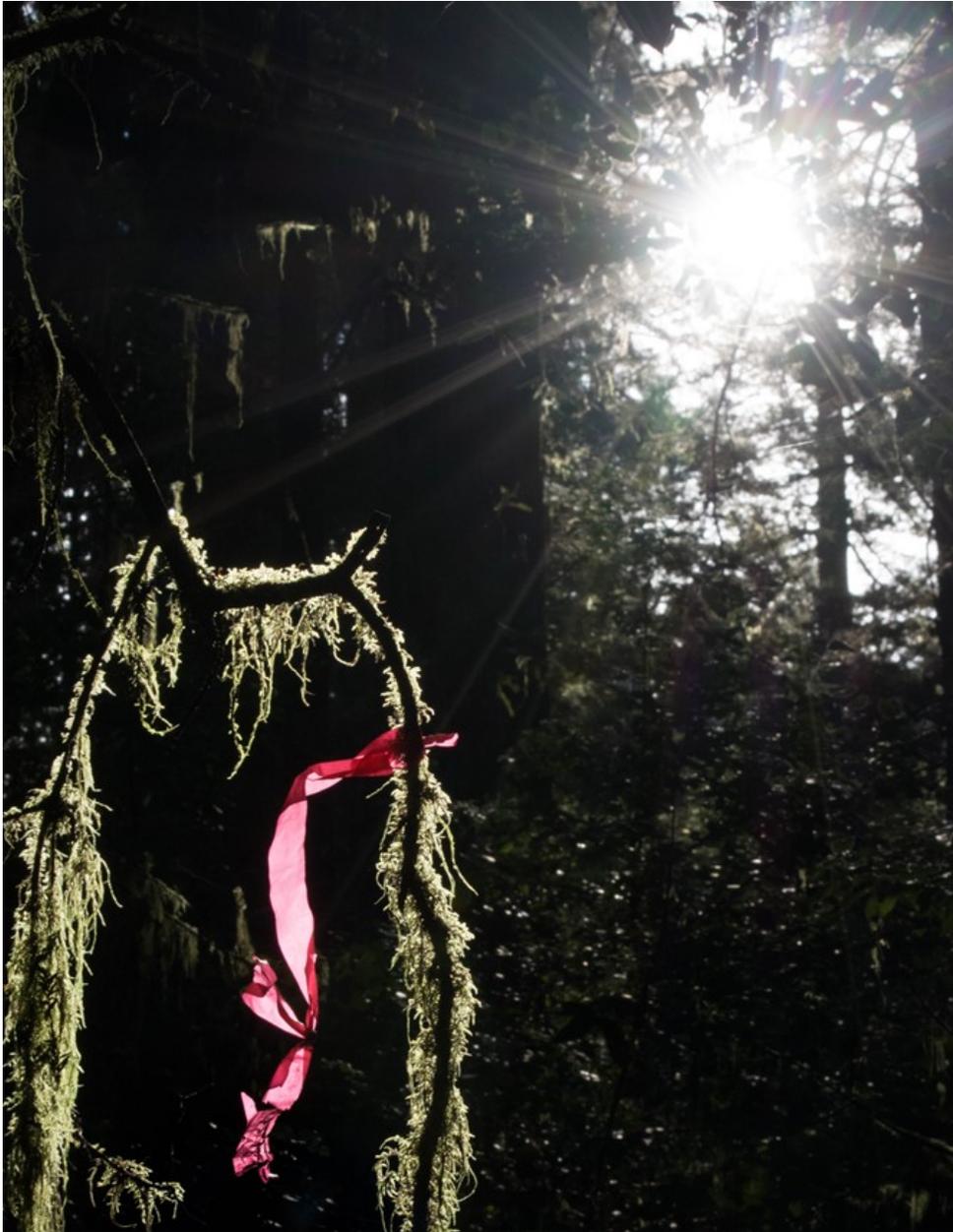
*Log jams and riffles
Ladders and glens
Scientists looking
Through polarized lens*

*Now it is time
The scientists know
Salmon are spawning
As above so below*

Medium: Black ink mixed stippling and watercolor

Is It Worth It?, continued from page 1.

As I sat there on Butler Creek, a tributary to a tributary of the South Fork Eel River, I saw a coho casually swim by and rest in a pool directly in front of me. He was a pristine example of why I was there in the first place. I was so excited that I forgot about how wet and cold I was, or how bruised my knee was going to be. I watched this coho, who had endured who knows what, and decided that of course it was worth it! If that coho can swim upstream for hundreds of miles, and have it be worth it, then I can get over a bruised knee and some shivers to make the journey easier for him. I think that we are all looking for events or things that make the hard work, low pay, and miserable conditions worth it. ***What is yours?***



It's for the greater good.

(8)

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Find out more about the program on our website:

ccc.ca.gov/watershed-stewards-program/

Our Mission

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.

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**Become a WSP Member! Learn more about the program and find our application at:
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