

# Trinity River Watershed Council

June 13<sup>th</sup>, 2023 at 10:00am – 12:00pm

TCRCD Conference Room, #30 Horseshoe Lane, Weaverville

## **Our Mission:**

To protect, enhance, restore and revitalize the watershed through collaborative efforts that leverage external resources, work toward common goals, educate and engage community stakeholders, address natural resource issues, and support healthy ecosystems for future generations.

## **Agenda**

**10:00-10:10** Welcome and Introductions

**10:10-10:45** Guest Speaker Josh Smith of The Watershed Research and Training Center presenting on the South Fork Heliwood Project

**10:45-11:55** Partner Updates

a. USFS – Shasta Trinity National Forest

b. USFS- Six Rivers National Forest

c. Bureau of Land Management (BLM)

d. California Department of Fish and Wildlife (CDFW)

e. Natural Resources Conservation Service (NRCS)

f. Trinity River Restoration Program (TRRP)/  
Bureau of Reclamation (BOR)

g. Trinity County

h. The Nature Conservancy

i. North Coast Regional Water Quality Control  
Board (NCRWQCB)

j. Hoopa Tribal Fisheries

k. Yurok Tribal Fisheries

l. Tsnungwe Tribe

m. Nor Rel Muk Wintu Nation

n. Trinity County Resource Conservation District

o. The Watershed Research and Training Center

p. 5 Counties Salmonid Conservation Program/  
Northwest California Resource Conservation &  
Development Council

q. Trinity County Fish and Game Commission

r. Trinity County Agricultural Alliance

s. Safe Alternatives for our Forest Environment  
(SAFE)

t. Sierra Pacific Industries

u. Flowra

v. New Attendees

**11:55-12:00** Close

**Next Meeting is September 12<sup>th</sup>, 2023 at 10am-12pm**

### **Virtual Meeting Information**

Zoom link: <https://us02web.zoom.us/j/89707228772?pwd=WUo1VW5hS2x0UC85ODE4dFViNEFYUT09>

Meeting ID: **897 0722 8772**

Passcode: **96093**

+16694449171,,89707228772#,,,,\*96093# US +16699009128,,89707228772#,,,,\*96093# US (San Jose)

### **Questions?**

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrd.net](mailto:ainterrante@tcrd.net)

# Trinity River Watershed Council – June 13<sup>th</sup>, 2023

## Meeting Notes

### Attendance

#### **In Person (8):**

Annyssa Interrante - Trinity County Resource Conservation District  
Charlie Curtin - Trinity County Resource Conservation District, Grizzly Corps Fellow  
Cindy Buxton – Watershed Research and Training Center  
Bridger Cohan - Watershed Research and Training Center  
Lisa Wright – Flowra  
Justyna Marszalek – Trinity County Department of Transportation  
Galen Anderson – United States Forest Service, Shasta Trinity National Forest  
Patrick Flynn – Trinity County

#### **Online (22):**

Josh Smith – Watershed Research and Training Center  
Kate Blanchard – California Department of Fish and Wildlife, Planning Department  
Malena Gibbens – Downriver Solutions, Consultant  
AJ Donnell – United States Forest Service, Six Rivers National Forest  
Monique Rea - United States Forest Service, Shasta Trinity National Forest  
Oliver Rogers – Bureau of Reclamation  
Heidi Carpenter Harris – Trinity County, Board of Supervisors  
Liam Gogan – Trinity County, District 3 Supervisor  
Tom March – Caltrans, Landscape Specialist  
Sandra Perez – Yurok Tribal Fisheries, Environmental Specialist  
Kelly Sheen – Trinity County Resource Conservation District  
Amelia Fleitz – Trinity County Resource Conservation District  
Karla Avila – Trinity County Agricultural Alliance  
Justin Garwood – California Department of Fish and Wildlife  
Roman Pittman – NOAA Fisheries  
Scott Harding – American Whitewater  
Christine Mai – Shasta Trinity National Forest, Watershed Program Manager, Redding  
Justin Alvarez - Deputy Director of the Hoopa Valley Tribe Fisheries Department  
Dave DeLange – Trinity Public Utilities District, Vegetation Program Manager  
Dave Gaueman – Yurok Tribe  
Mark Lancaster – 5 Counties Salmon Conservation and Northwest RC&D  
Gregory Pasternak

Total Attendance: 30 people

#### **Questions?**

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrwd.net](mailto:ainterrante@tcrwd.net)

# Trinity River Watershed Council – June 13<sup>th</sup>, 2023

## Guest Speaker Topic:

The South Fork Heliwood Project, by Josh Smith of The Watershed Research and Training Center

- A Klamath River Tributary
  - South Fork Trinity River
    - Often overlooked as small tributary to the Trinity River, but is actually larger than the Salmon River, Shasta River, and Scott River
  - South Fork Trinity River
    - California's largest remaining undammed river
    - Contains some of the last wild Spring Chinook Salmon populations
    - Almost 1,000 square miles in area, and 90+ miles long
    - Lots of land protections
      - Mostly USFS managed land
      - Wilderness
      - Road-Less
      - Wild & Scenic River designations
    - Populations of a few thousand people
    - Two project locations
- Population Trends
  - Crux of project is spring chinook populations
  - In the 1960s, first count estimates were 10k-12k fish, with 200 fish in individual holes
  - After the 1964 flood, and decimated the population for many years, there was a comeback for a while, but now we are counting only 20-30 fish in the last 5-6 years. Its pretty sad.
- Limiting Factors
  - Sediment
- Sediment = Factor of Geology
  - Klamath Mountain Geology is very complex.
  - South Fork of the Trinity River, specifically Hayfork Creek is very stable, relatively.
  - South Fork Mountain, to the west side of the South Fork Trinity River is really unstable
  -
- 1964 Flood
  - The 1964 flood that did most the damage to the Spring Chinook population was a perfect storm.
  - In the 1950s and 60s they were using dozers to harvest timber and build roads without very good practices, then we had a 1,000 year flood on this unstable geology.
  - Photo of Big Slide, this is a small example, there were numerous 200+ acre landslides that cut loose all at once in the 1964 flood.
  - Which lead to the loss of roads, bridges, and homes getting washed away. It was catastrophic sediment pollution in the South Fork.
- Affects of Mass Wasting (course sediment)
  - This photo [of the river] is an area that is sometimes a deep hole, but in this photo it is completely filled in with sediment.
  - There is massive aggradation with additional, related problems.
- Fine Sediment

## Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrd.net](mailto:ainterrante@tcrd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

- There are fine sediment plugs that come down, even in the summertime. Which is interesting.
- This turbidity can cause respiration problems [in fish] and smother eggs.
- Historical Context – Dams Planned 1948-1964
  - The Department of Water Resources was looking at damming the South Fork. Many of the initial studies were looking into adding an additional dam to go with the Trinity dam.
  - The 1964 flood they decided to take a closer look and decided not to because there was so much sediment coming down, and it was not a good investment.
- Sediment Recovery
  - Over time we have had pretty good recovery, pictured are cross sections from Phase 1 of the project.
    - Green lines are the 1998 surveys by Adam Dresser and Carolyn Cook
    - Orange lines being post project storm
    - Just a few spots in the reach we looked at, but you can see across the board that the upper watershed is in really good shape.
    - Middle watershed is doing better.
    - The sediment from the 1964 flood is still routing through the system in the lower watershed.
  - The USFS and Trinity County RCD doing roadwork in the upper South Fork for decades now has really benefited BMPs and Forest Practices. CalFIRE has really helped with this as well.
- Stream Temperature
  - Circa 2014-2016 we used some temperature information and worked with Eli Asarian and ran some models to look at climate change.
  - The results of these models made us think that we really needed to focus on the upper watershed if we wanted to see Spring Chinook survive.
  - That is part of the reason we focused up there for these projects.
- Helicopter Wood Restoration Projects
  - In, partnership with the Yurok Tribe, they spearheaded the use of the helicopter for the large wood augmentation work
  - They worked with us because we had the local knowledge of the river and landowners
- Phase 1 Restoration
  - First phase was upstream of Hyampom and started in 2017, completed it in 2019.
- Wood Loading Objectives
  - 1. Do no harm.
  - 2. Restore balance of wood, water, and sediment.
    - Mostly sediment dominated across the majority of the watershed.
    - Found anecdotal evidence that there was quite a bit of harvesting of wood along the floodplain.
      - There was a mill in the Phase 1 reach.
      - They used to use dozers to grab wood off the river bars
  - 3. Assist with the lack of wood
  - 4. Build habitat
- Complexity
  - It appears simple, to grab some wood and put it in the stream with a helicopter, but its actually very complicated.

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrwd.net](mailto:ainterrante@tcrwd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

- Implementation is challenging
  - The first project took 3 years of planning.
  - The implementation itself is very logistically challenging.
    - Very fast and very dangerous
- Cold Water Habitat
  - Tried to focus on cold water habitat
- Tree species experiments
  - We were experimenting with different tree types to determine what might work best.
    - Will discuss more later
- Habitat (cover)
  - Obviously we were trying to make more habitat
- Geomorphic
  - In some places we were trying to affect geomorphic change
- Large wood “seeding”
  - In general we were trying to add more wood to the system
- Weather and storms of 2019
  - After Phase 1 that we implemented exclusively with a helicopter, about 300 trees across 6 miles, we had an epic set of storms in 2019.
- Post Project: 8,000 cfs storm. January 2019
  - First storm was about 8,000 cfs
- 12,000 cfs storm. January 2019
  - Second was about 12,000 cfs
  - We were seeing these really cool changes happening
- February 2019, largest in 22 years
  - Then February 2019 the largest storm in 22 years
  - It looks like a lake but [the photo] is the river in Hyampom
- USGS 11528700 SF TRINITY R BL HYAMPOM CA
  - 54,000 cfs storm hit
  - In Hyampom it was the 22-year record
  - It was even bigger in other places
- Largest storm in ~40 years in Hayfork Creek
  - For example, in Hayfork Creek we’re estimating a 40-year storm
  - This is Riverview road on the left, and this is Drinkwater Gulch Bridge on mainstem Hayfork Creek on the right.
- 575 cfs/ Rainbows and pots of gold/ Some fascinating results of wild wood
  - Really quickly, going through the big storm...
  - Our first reaction was the be panicky, because a lot of the wood had moved from where we had put it.
- Some lessons learned:
  - We tagged a lot of the trees, and it turned out to be very useful.
  - Found almost 200 of the 300 trees
    - We didn’t search downstream of Hyampom yet
    - Justin and folks downstream, please keep your eyes out for tagged trees!
  - 84 in the project reach

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrwd.net](mailto:ainterrante@tcrwd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

- 99 in the Hyampom reach
- A lot of this stuff traveled 15+ miles and ended up in really good places
- Tree Species Diversity
  - We learned a lot about the tree species diversity
  - Few experiments didn't go as great, ex. Madrone
  - Fascinating thing: Oak (specifically this one) traveled 6+ miles and this is a photo of where it ended up.
  - We had really good results from most of the hardwoods we tried.
- These 14 logs...
  - Another thing to mention is that a lot of this stuff move, but ended up in really unique configurations and really great places
  - All of these trees in the orange moved to the one jam there in the blue. This is all that same jam
- Key finding:
  - Another thing we learned was that helicopter placed wood was fundamental in catching a lot of other wood
  - In this jam [pictured], a few of these logs are helicopter placed, but an awful lot of them are naturally recruited.
  - These key logs and rootwads are totally essential to catching on to things and starting to accumulate other trees around them.
- [Video]
  - This is that jam, with mostly rainbow trout but quite a few Dace. Most likely other fish as well but we didn't snorkel it. This is the jam in Hyampom Valley.
- Phase 2 Restoration
  - 2020-2022 went further upstream
- Phase 2 Objectives
  - We learned that it was quite a big stretch of river to tackle in the first phase. We went there primarily because of logistical reasons. This reach had very little access, mostly by trail, there is one private road on a private parcel access in the Silver Creek to Forest Glen area. So it is difficult.
  - Similar levels of planning.
  - We were more efficient and it was only 2 years of environmental compliance.
  - We wanted to take lessons learned from Phase 1 and use more hardwoods, and only use bigger trees.
    - In the first Phase we used trees that weren't as large as we would have wanted.
  - Wanted to enhance thermal refugia
  - Work in the smaller portion of the river
  - Utilize a yarder (assisted by AJ Donnell to locate operator)

Notes from the chat:

- AJ Donnell: Blue Ridge Timber: Mark Villers – Mobile Tree Puller/Yarder
- Harvest August Complex Burned Trees
  - We harvested August burned trees and lots of trees from private companies that were going to poison them anyways a part of their reforestation project. We got some really amazing trees on

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrwd.net](mailto:ainterrante@tcrwd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

this project.

- Many of them we had to lop the top or bottom to just pick them up because they were so heavy.
- Wood Placement
  - Columbia Helicopters placed about 200 years
  - The Yarder placed about 20
    - I'll talk more about the size differences later
- Columbia Helicopters
  - Columbia could place dead and dry up to 40 inches dbh (diameter at breast height). So pretty big trees.
- Blue Ridge 4 Fish
  - The Blue Ridge 4 Fish with the specialized yarder could haul ~ 70,000 lb log on this project.
  - They can do some really unique things, and its great that when the yarder tips it over it leaves the roots intact on the bank. It really makes a huge difference for longevity
  - In this photo: the smaller tree in the water is ~40 dbh tree, and the larger tree is a 6-7ft dbh Douglas fir that was pulled over the top of it.
- Winter 2023
  - It feels like every time we do a project we call in some nice rains
  - We had a pretty good storm this winter about 35,000 cfs
- [Photos]
  - These are really initial results
  - We just started collecting the data on this by finding the trees with tags and learning what moved where.
  - We're really excited about what we've been seeing
  - This one is cool because there's a tributary coming in behind Aaron there and the creek wraps around under this jam.

Notes from the chat:

- AJ Donnell: That's awesome!
- [In this photo] To the left is the pre-project and pre-storm photo and the right is the post-storm photo. This is already some pretty amazing habitat, there was already a key tree, we called it the "inspiration tree" there underneath that. It's a massive tree that has been there quite a long time. If there are Spring Chinook they're normally in that area and we now have a lot more habitat with it.
- We're excited to find out where trees moved, and tell everyone about the results in the near future.
- This one here [photo], near Charleston Creek is a huge accumulation of our wood and natural wood from the August Complex fires, probably.
- There's a tributary coming in on the left bank there, it's a nice cold trib so this will be actually pretty amazing.
- Teamwork
  - It was a great team effort, awful lot of work for a lot of years with the WRTC, USFS, and Yurok Tribe all planning it together.
  - Getting it permitted, working with private land owners, we couldn't have done it without some

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrwd.net](mailto:ainterrante@tcrwd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

really special people that helped us out

- The permittees have been pretty amazing on this.
- We obviously couldn't have done it without Funders, Columbia and Blue Ridge were really amazing to work with.
- Anecdotal conclusions:
  - Early anecdotal conclusions, were still learning, finding trees, and want to keep learning from Phase 1 and Phase 2 over time.
  - We have been seeing some really cool geomorphic changes.
  - The different tree species have different properties
    - Chinquapin have been pretty amazing so far from what we've seen
  - Lots of racking and riparian growth behind the jams that have formed, including scour and deposition.
  - We're anticipating positive benefits as the wood interacts with the river in the future.
  - We haven't seen everything yet, but are excited to check it out over time.
- Questions?
  - What kind of scour and deposition/geomorphic changes are you seeing with the wood placement?
    - We haven't been out to do post project surveys in the upper reach yet. I did mention it, but the Yurok Tribe was able to do a pre-project LiDAR flight, and were going to be able to hit it again and find out more there. Anecdotally, a few of those bars are very elevated (potentially legacy sediment from the 1964 flood), several of those jams pushed water up on those bars and scoured them down or made side channels on the other side of the bars. Those are several of the things we've seen in Phase 2. In Phase one, similarly, several of the larger jams were focused on areas with cold water tributaries that were draining into a bar that fish couldn't access. In a lot of these places, you do see a lot of movement. In the South Fork sediment is always moving around anyways.
  - Did you have any issues with recreational uses? Boaters talking about interfering with larger woody debris jams?
    - Not yet, but we are worried about the jam on Charleston Creek. Most of what has accumulated is fairly normal for the South Fork, it so wild it already has several large wood jams, so I feel that people are already looking out for them. After Phase 1 we had some boaters contact us that they were considering it, then they went and contacted it and said they didn't even notice it.
    - Scott White (American Whitewater) – The log jams do pose a hazard to river recreation, but it is a part of the natural environment. Some are human placed and some are hybrid like we see here. It's a part of boating around here, and we have to keep eyes out for wood. That said, more information is always better and I'd like to coordinate getting specifics and getting some photographs with GPS points out in the river information that boaters use just to help to build awareness and safety there would be great to facilitate.
      - Aaron Martin has attempted to get information out to the boating community, but we can always work harder with getting information out there. Thank you.

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrwd.net](mailto:ainterrante@tcrwd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

- Comments:
  - Its great to see a project in a watershed like that, where you aren't really cabling them down. Its great to see progressive work. I've had a lot of success in Southern Oregon doing very similar work, and if you have the property to do that in without the infrastructure, its awesome. Kudos to you guys.
    - Thank you, its one the few places that we feel you can do it in, there's not a lot of infrastructure out there.
  - Liam Gogan (Trinity County) – Just want to say great job. Its amazing to see the work you guys do, and its really amazing to see how dynamic South Fork is compared to the Mainstem as something that's just untamed and wild. Great job with what you do, keep up the good work, and keep doing programs that get weather after them, so take all the programs you got. (Make it rain!)

### Partner Updates

- United States Forest Service – Shasta Trinity National Forest
  - August Phase 2 planning is almost complete
  - Hyampom fuels treatment, 30k acres
  - Lots of road work with TCRCO & WRTC
    - Chasing storm damage to prevent sediment delivery to the Trinity River
  - Fire crew have been chasing lightning fires
  - Recreation is fixing trails
  - North Fork Coffee Creek Bridge repair/replacement
  - Cutting hazard trees on Boulder Lakes Trailhead in a couple weeks
    - Be cautious, it will be closed
  - Town Hall meetings starting at the end of June
- United States Forest Service – Six Rivers National Forest
  - Planning process for fuels reduction projects through the Wildfire Crisis Strategy
  - Signed decision on Fire and Fuels EA Programmatic
    - Implementing projects soon
    - Specifically non-commercial projects and fuels reduction, including prescribed burns
    - Starting maybe late fall, through 2024
  - Working on Trinity Summit project near Hoopa Square with the tribe
    - Finishing up NEPA this year
  - Projects with R5 Hazard Tree
    - Regional effort for roadside hazard tree removal
    - Consultations completed and decisions made
    - Going out to forest supervisors, each one will have different decisions.
- The Bureau of Land Management – not present
- California Department of Fish and Wildlife
  - Comment on work below Eagle Rock last summer, the project has a consultant and they are working on a restoration plan. The case was filed with the DA office, but due to limited staffing there is limited movement.
- Natural Resources Conservation Service – not present

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrcd.net](mailto:ainterrante@tcrcd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

- Trinity River Restoration Program and Bureau of Reclamation
  - Yurok Tribe Indian Creek Fish Passage Barrier Removal project
  - Northwest California RC & D East Weaver Creek Dam Removal project and Intake relocation
    - Second Phase
  - Northwest California RC & D Deadwood Carr Fire Sediment Reduction project
    - Second Phase
  - The Watershed Research & Training Center Douglas City Community Service District Feasibility Study
  - TRRP working on Trinity Watershed Programmatic EA
    - Held implementors meeting
      - Led by Ironwood Consulting, Emily Thorn
      - Looking to finalize by end of 2023
- Trinity County
  - Trinity County Planning Department
    - Updated Flood Mapping
      - Working on Weaver Creek project with the Yurok Tribe (Sandra Perez)
      - FEMA has sent new flood data
        - If you are planning projects on tributaries from the mainstem, contact me for new flood mapping
  - Board of Supervisors
    - Would like the WRTC to keep him updated on the Browns Creek Resiliency project
      - Quantity of applicants still needed
- The Natural Conservancy – not present
- North Coast Regional Water Quality Control Board – not present
- Hoopa Tribal Fisheries
  - Project with Six Rivers National Forest on Cedar Creek a tributary to Horse ---
    - 1980s bondage style restoration has aged poorly
    - Gravel enhancements have deterred spawning
    - Currently have restoration teams surveying to design a new restoration plan
  - Hoopa Reservation diversion from 1950s
  - Concrete pipe has headcut and caused a fish passage barrier
    - Starting construction in July to remediate
- Yurok Tribal Fisheries
  - Oregon Gulch Project
    - Still removing tailings
    - Estimated to be completed by the end of 2023
  - Weaver Creek Project
    - Roughly 65% design
    - Starting environmental compliance with several agencies
  - Pursing proposals
    - Aquatic habitat monitoring on tributaries to the Trinity River
  - Pursing other funding sources for Phase 2 of Indian Creek
- Tsnungwe Tribe – not present
- Nor Rel Muk Wintu Nation – not present

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrwd.net](mailto:ainterrante@tcrwd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

- Trinity County Resource Conservation District
  - Summer Snorkel Dives are taking place every week in July
    - Reach out to Annyssa for more information
  - Trinity River Clean-up in September
  - Upper Trinity Headwaters Assessment with the WRTC
  - Surveys for Beaver Dam Analogs in the Weaverville Community Forest
- The Watershed Research and Training Center
  - Spring rains and deep snow has stalled temperature monitoring deployment
    - But is back up to speed
  - Flow monitoring is up and running
  - South Fork Dives – contact Cindy
    - South Fork Trinity River
    - Hayfork Creek
    - Dives moved to July to get cooler temps and avoid wildfire
  - Barker Valley Roads Project
    - Majority of inventory done
    - Working towards designs
    - Need to coordinate with CDFW for environmental compliance
  - Restoration Projects for Implementation next summer
    - Both will enhance floodplain connectivity and ground water resources
    - Currently working through permitting and seeking state funding
    - Salt Creek Project
      - Heavily engineered due to proximity to infrastructure
    - Corral Gulch near Indian Valley
      - Stage Zero Project
  - Storage and Forbearance Project
    - 7 sets of tanks in
    - 1 in construction
    - 2 more lined up
    - Hoping to have them in before forbearance period
  - Upper Trinity Meadows Assessment
    - Working with Justin Garwood and meadow models
  - Trust for Public Lands Purchase
    - Purchase 6 or 7 parcels in Upper Trinity of SPI land
      - Going out to bid soon
    - Upwards of 300 stream crossing on project
      - Will decommission roads and stream crossings
      - Hoping for updates this summer

### Notes from the chat:

- Josh Smith (WRTC): I forgot to mention the CDFW CRGP cannabis cleanup efforts. We are cleaning up a number of sites in the Trinity Pines this summer. We are working with IERC on training other organizations to do "trespass" growsite cleanup on public lands. Lastly, we are looking for private land sites to clean up in the near future. Contact [emma@thewatershedcenter.com](mailto:emma@thewatershedcenter.com) for more details.

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrd.net](mailto:ainterrante@tcrd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

- 5 Counties Salmonid Conservation Program/Northwest California Resource Conservation & Development Council
  - Construction Implementation
    - July
      - Removing East Weaver Dam physical structure
        - Channel reconstruction
        - Reviewing for channel adjustments and habitat improvements next year
      - Road drainage adjustments
        - East Branch East Weaver
      - Other projects still in design review and permitting
        - Market Deadwood
        - Deerlick
- Trinity County Fish and Game Advisory Commission – not present
- Trinity County Agricultural Alliance
  - Working on Regenerative and conservation practices to farmers
  - Working with people who have mitigation measures that need to be implemented for CEQAs
  - Assisting on regulations needed for Water Board etc
    - Sediment runoff reduction
  - Always happy to collaborate
- Safe Alternatives for our Forest Environment – not present
- Sierra Pacific Industries – not present
- Flowra
  - Note that we are not an agency, but a company
  - Originally formed to assist cannabis farmers with permitting and environmental compliance since 2018
  - Working with Water Board and Fish & Wildlife Compliance
    - Sediment discharge
    - Diversions/forbearance
  - Flowra is looking to diversify
    - Feather River RCD
      - Road analysis
        - Sediment projection analysis for the Plumas Forest
    - Cannabis for Conservation
      - Subcontracted for Water Board Act funded roads assessment for the Trinity Pines in 2024
        - Implementation in 2025
      - Subcontractor on CDFW Qualified Cultivator Grant
        - Provide 70 Trinity County Farmers with the assistance on their compliance
          - Selected in priority watershed of Hayfork Creek and the South Fork
          - Adding more from the priority watershed if/when clients drop
        - CEQA Document preparation
        - Biological assessments

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrd.net](mailto:ainterrante@tcrd.net)

## Trinity River Watershed Council – June 13<sup>th</sup>, 2023

- Pre-construction bio surveys
  - Fish and Wildlife LSAs
  - Helping to transition farmers from provisional to annual licensing
- New Attendees – Roman, NOAA Fisheries
  - Looking to support restoration in the watershed
  - Funding available for restoration and monitoring
  - Application is pretty straightforward
  - Contact if interested

### Notes from the chat:

- Roman (NOAA Fisheries): roman.pittman@noaa.gov

### Comments:

- Recent storms have been causing sediment flushes
  - If you can see the source of turbidity, please contact the WRTC for South Fork side, TCRCd for mainstem Trinity and the USFS

### Questions:

- Has anyone looked at the East Fork of the North Fork recently? It was running “very brown” a few days ago.

### Announcements:

- New Voting Members of the TRWC per attendance
  - Trinity County Agricultural Alliance
  - Flowra
  - Six Rivers National Forest

**Close: Next Meeting is September 12<sup>th</sup>, 2023 at 10am-12pm**

End Meeting 11:04am

### Questions?

Contact Annyssa Interrante at 530 623 6004 X 209 or email at [ainterrante@tcrd.net](mailto:ainterrante@tcrd.net)



**WORKING TOWARDS HEALTHY WATERSHEDS  
AND HEALTHY COMMUNITIES**

**JOSHUA SMITH  
WATERSHED STEWARDSHIP  
PROGRAM DIRECTOR**



**YUROK TRIBAL FISHERIES  
PROGRAM**



# A KLAMATH RIVER TRIBUTARY

| <b>Watershed</b>                   | <b>Area<br/>(miles<sup>2</sup>)</b> |
|------------------------------------|-------------------------------------|
| North Fork Trinity River           | 152                                 |
| New River                          | 233                                 |
| Salmon River                       | 744                                 |
| Shasta River                       | 793                                 |
| Scott River                        | 813                                 |
| South Fork Trinity River           | 929                                 |
| Mainstem Trinity River (below dam) | 1,318                               |
| Mainstem Klamath River (below dam) | 1,543                               |

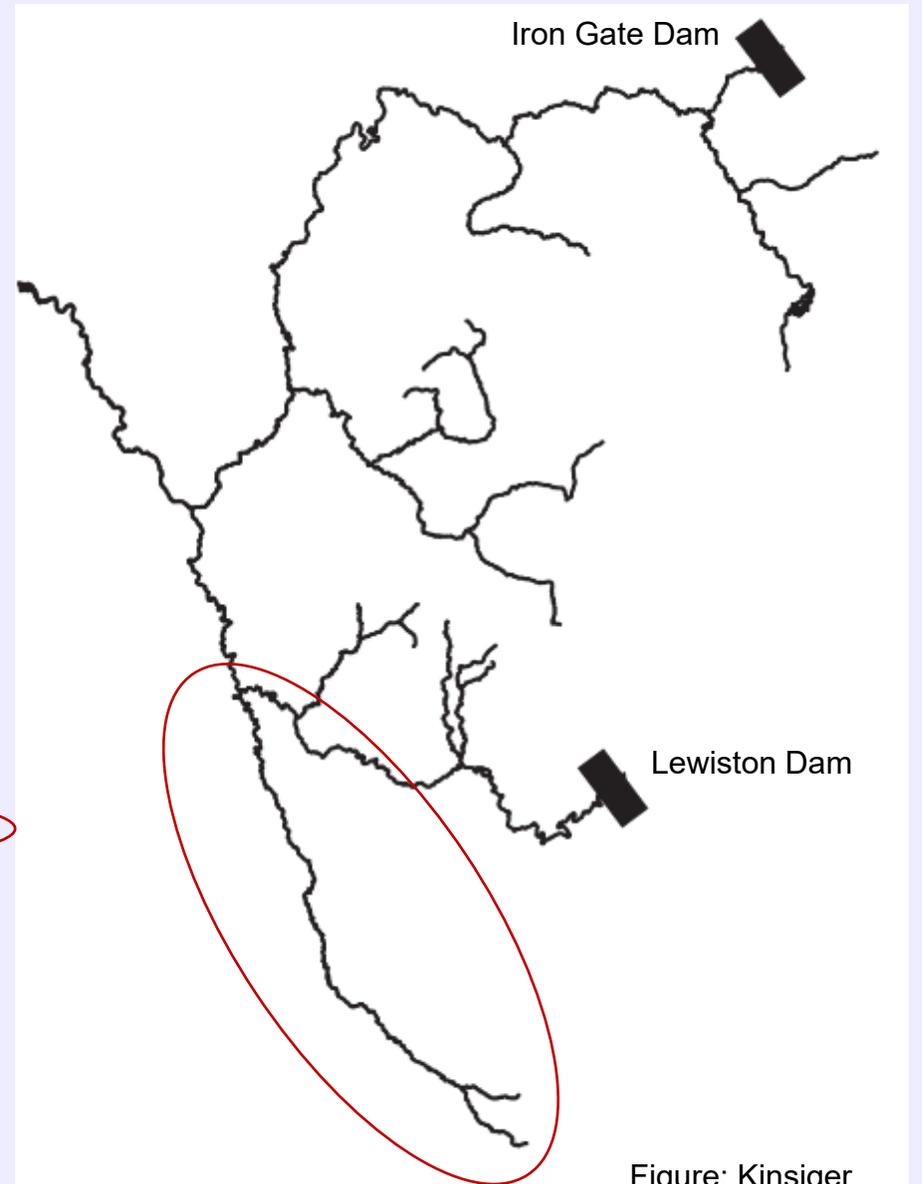
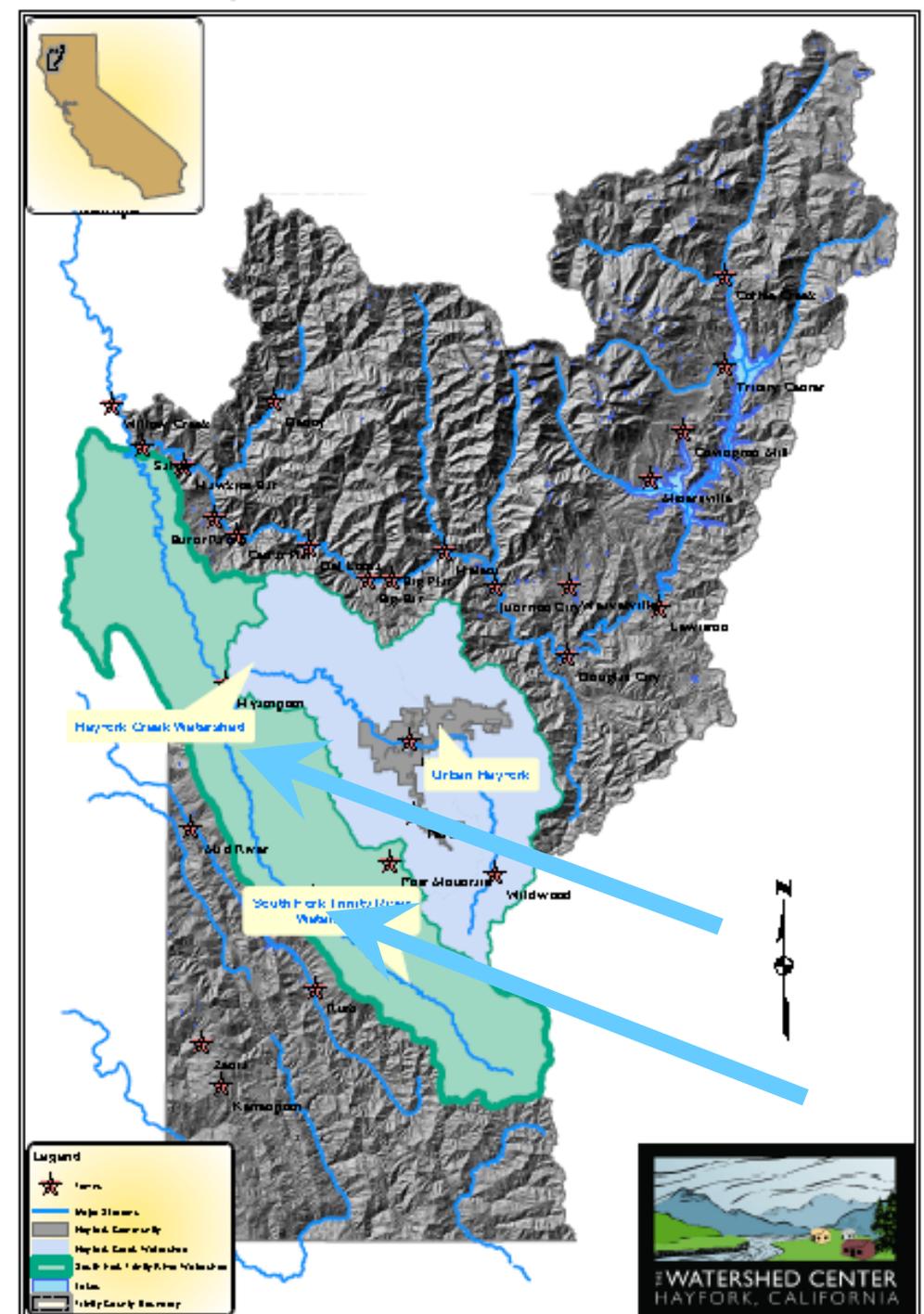


Figure: Kinsiger

# SOUTH FORK TRINITY RIVER

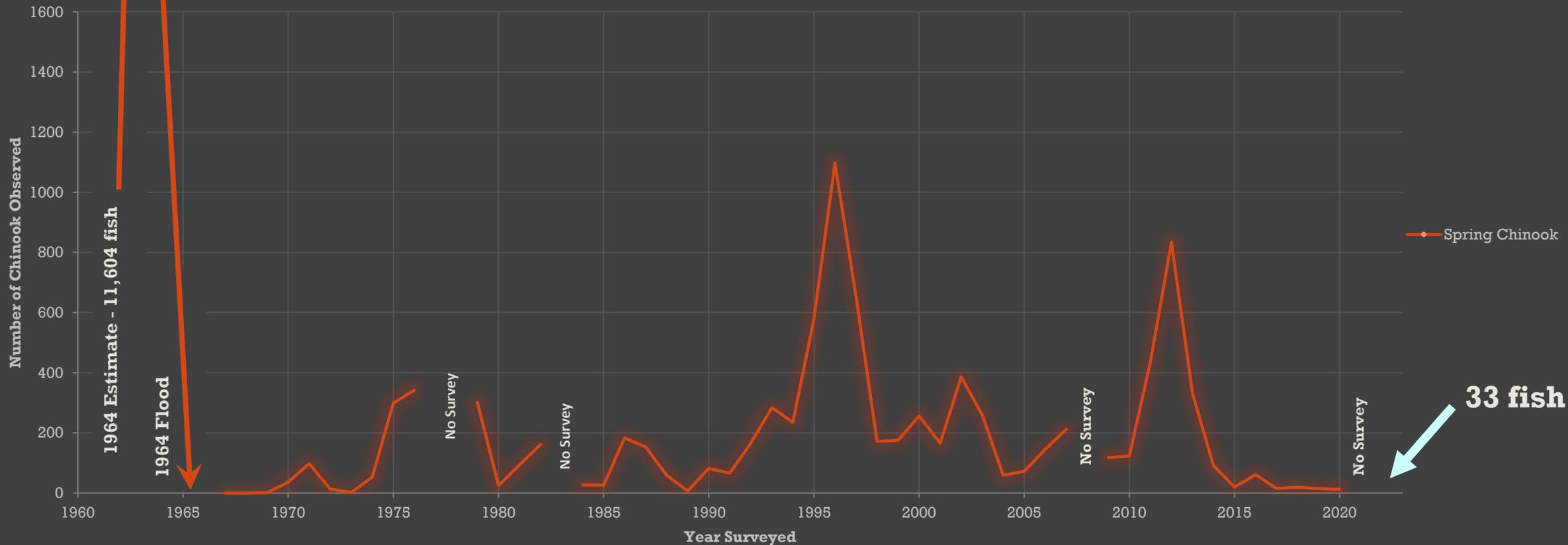
- California's largest remaining undammed river
- One of the last remaining wild spring-run Chinook Salmon (*Oncorhynchus tshawytscha*) populations in California.
- Nearly 1,000<sup>2</sup> miles and >90 miles long
- Land protections: 75% USFS, Wild and Scenic River, Roadless areas (18%), Wilderness areas (2%), and limited river access.
- Approximately 2-3 thousand people in the entire watershed



# POPULATION TRENDS

10,000-12,000 fish

## South Fork Trinity River Spring Chinook Snorkel Survey



# LIMITING FACTORS

## Sediment

- Geology
- Human impacts

## Water Quantity and Quality

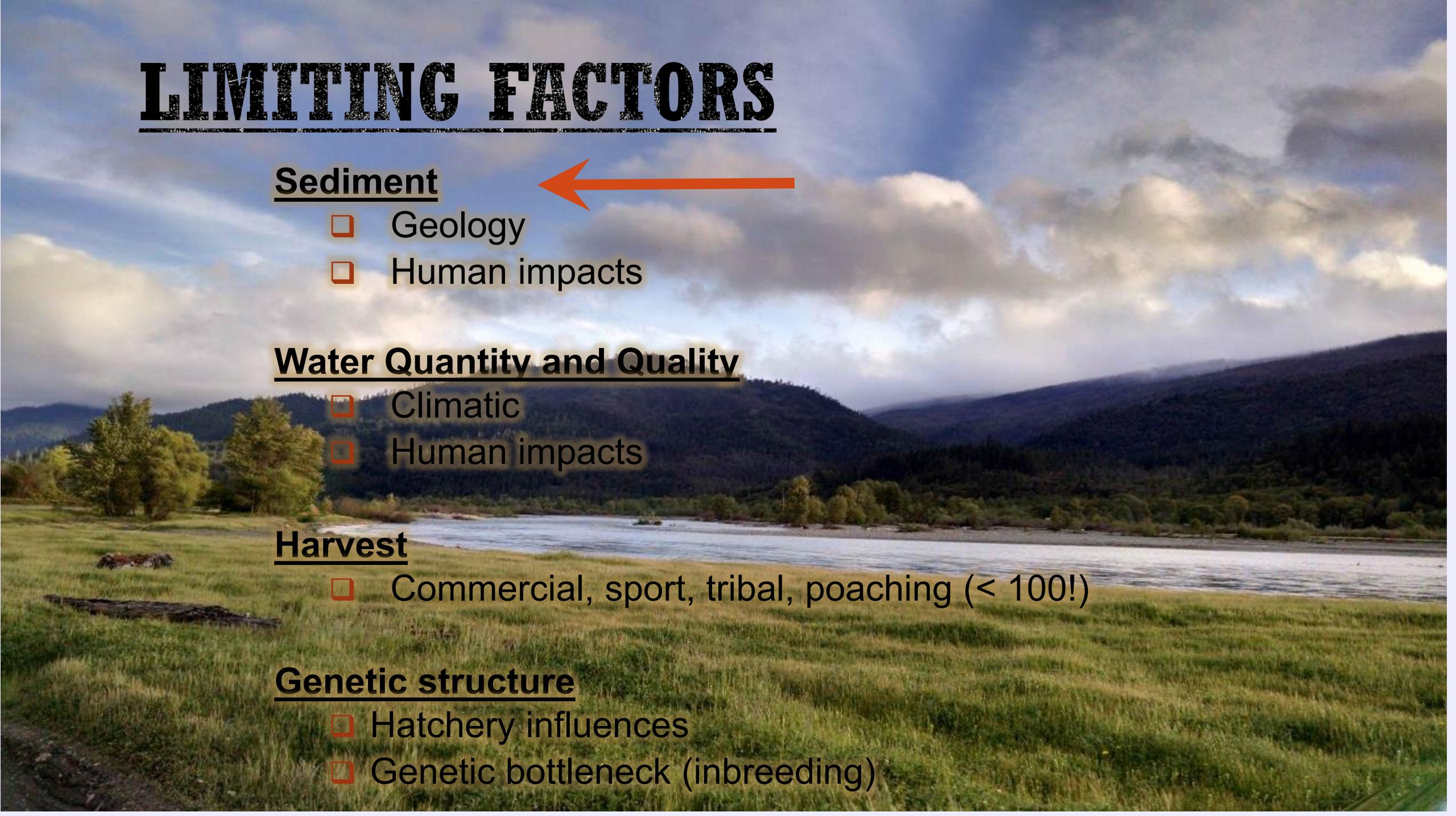
- Climatic
- Human impacts

## Harvest

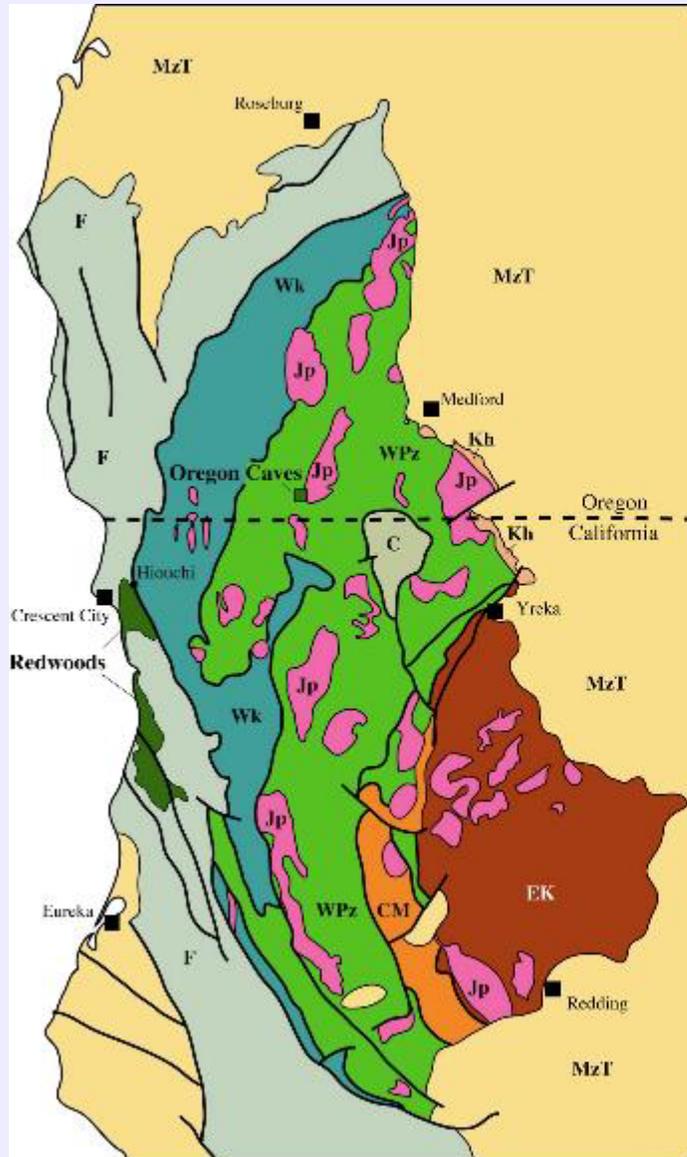
- Commercial, sport, tribal, poaching (< 100!)

## Genetic structure

- Hatchery influences
- Genetic bottleneck (inbreeding)



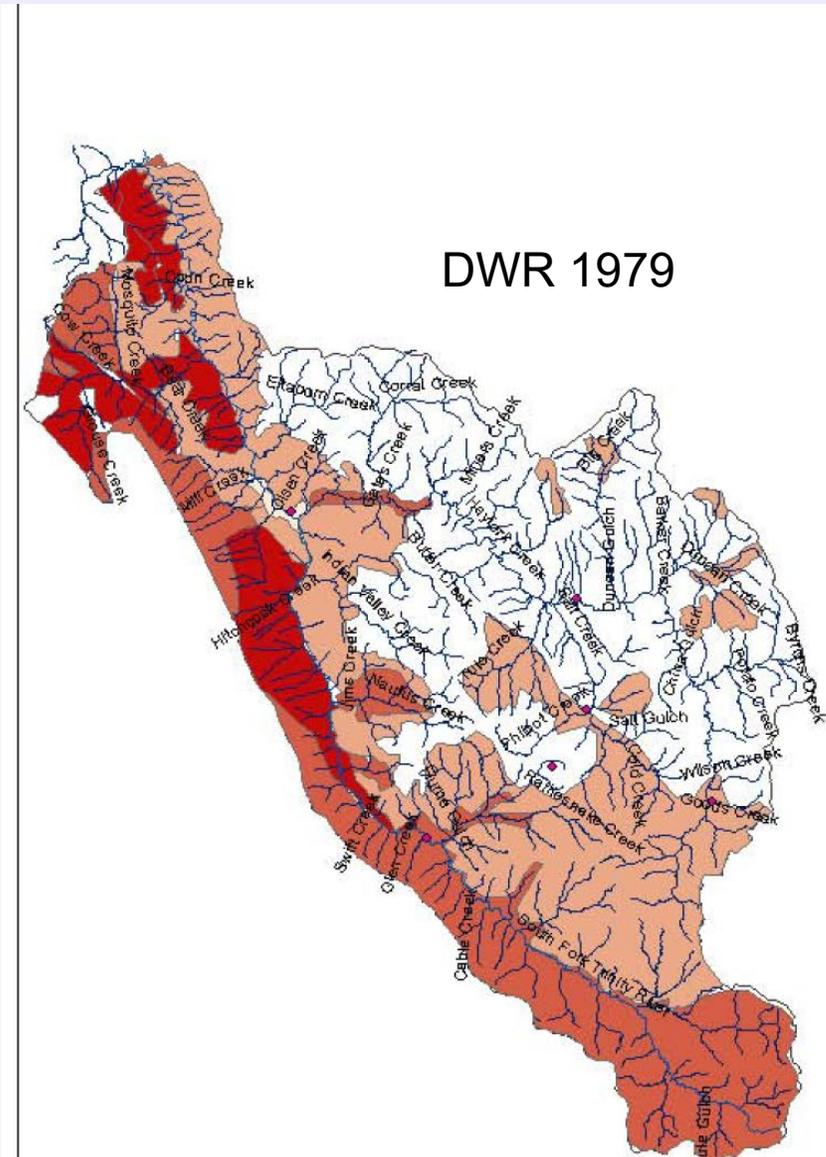
# SEDIMENT ≈ FACTOR OF GEOLOGY



## Terrane map of the Klamath Mountains, Oregon and California.

compiled by Mark Bryant Miller, University of Oregon

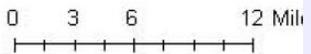
- MzT** Mesozoic and Tertiary sedimentary rock, postdates accretion of Klamath terranes.
- Kh** Cretaceous Hornbrook Formation.
- F** Mesozoic rock of Coast Ranges; mostly Franciscan Fm.
- C** Condrey Mountain Schist, Mesozoic.
- Wk** Western Klamath Terrane, mostly Jurassic.
- WPz** Western Paleozoic and Triassic Terrane.
- CM** Central Metamorphic Terrane (Devonian).
- EK** Eastern Klamath Terrane (Early Paleozoic to Jurassic).
- Jp** Jurassic Plutons.



DWR 1979

## Legend

- ◆ SF Towns
  - South Fork Trinity
  - trinity hydro 100K S
- level**
- Moderate
  - High
  - Very High
  - Extreme
  - South Fork huc



Map digitized by Amanda Brool  
Source: South Fork Trinity River  
Watershed Erosion Investigation  
November 1979

Produced: 31 Jan 2012

## 1964 flood

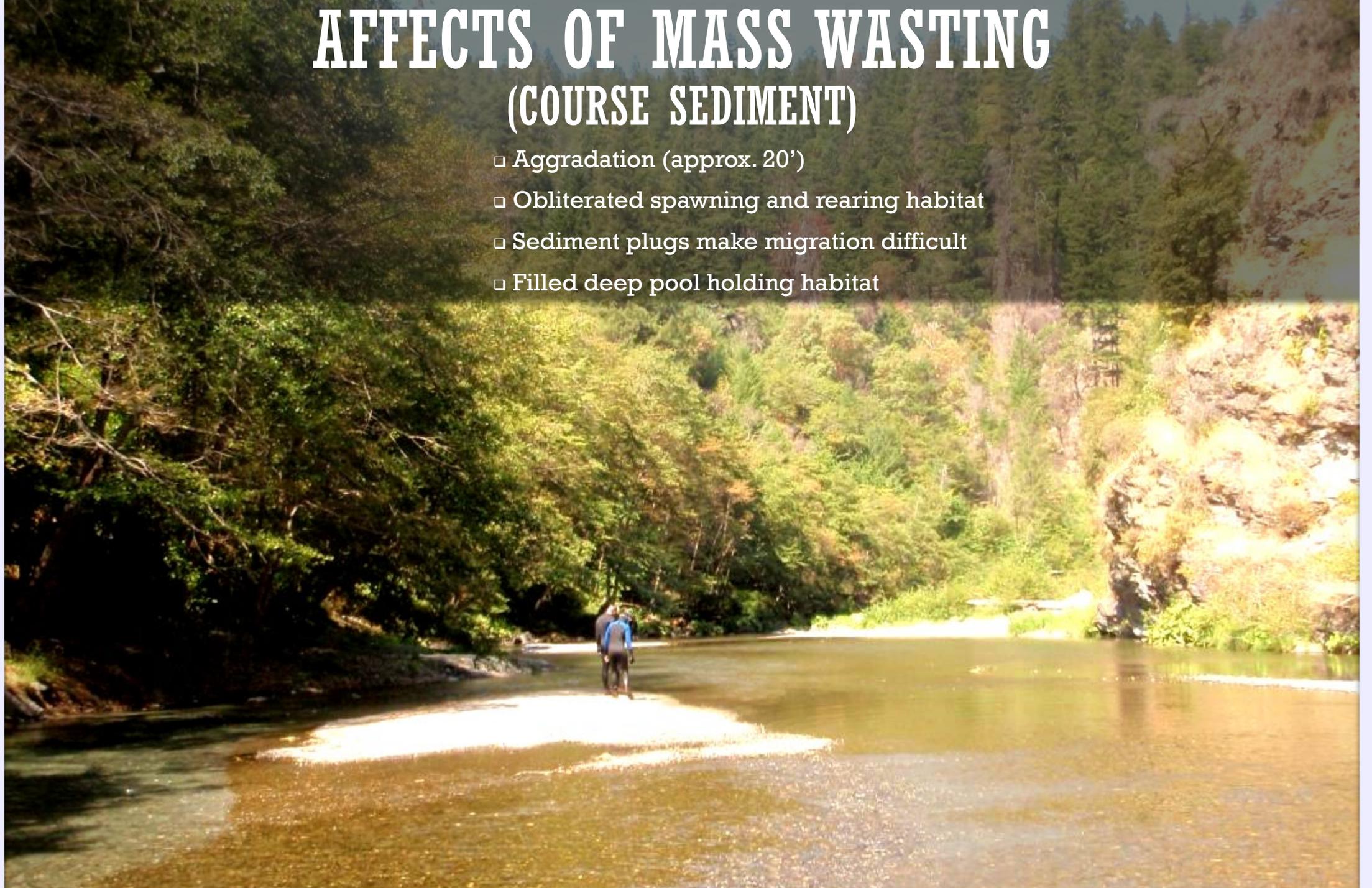
- ❑ 1950-60's - Poorly built roads and poor forest harvest practices
- ❑ "1,000 year flood" on unstable geology
- ❑ All this lead to...

## Mass wasting

- ❑ Landslides < 100 ac
- ❑ Roads, bridges & homes lost
- ❑ Catastrophic sediment pollution

# AFFECTS OF MASS WASTING (COURSE SEDIMENT)

- Aggradation (approx. 20')
- Obliterated spawning and rearing habitat
- Sediment plugs make migration difficult
- Filled deep pool holding habitat



# FINE SEDIMENT

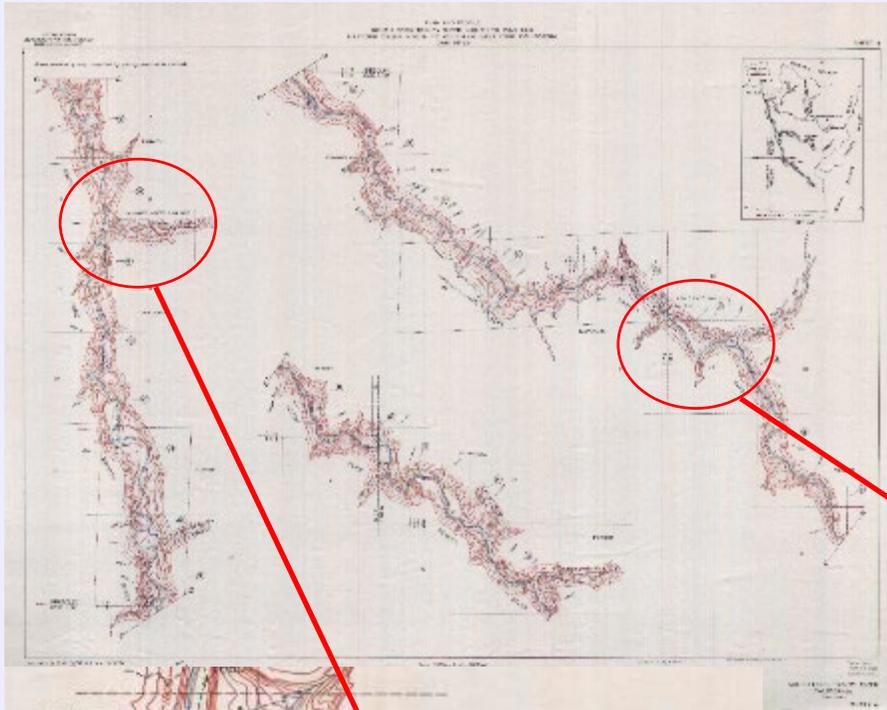
An aerial photograph of a river system. A large, dark, rectangular structure, likely a dam or spillway, is visible on the left side of the frame. A thick, dark plume of fine sediment flows from the spillway into the river, creating a sharp contrast with the clearer water downstream. The riverbanks are rocky and covered with sparse vegetation. The overall scene illustrates the impact of fine sediment on a river environment.

- ❑ Turbidity can cause respiration & migration problems
- ❑ Fines smother eggs and alevin

\*

One bonus of all that sediment...

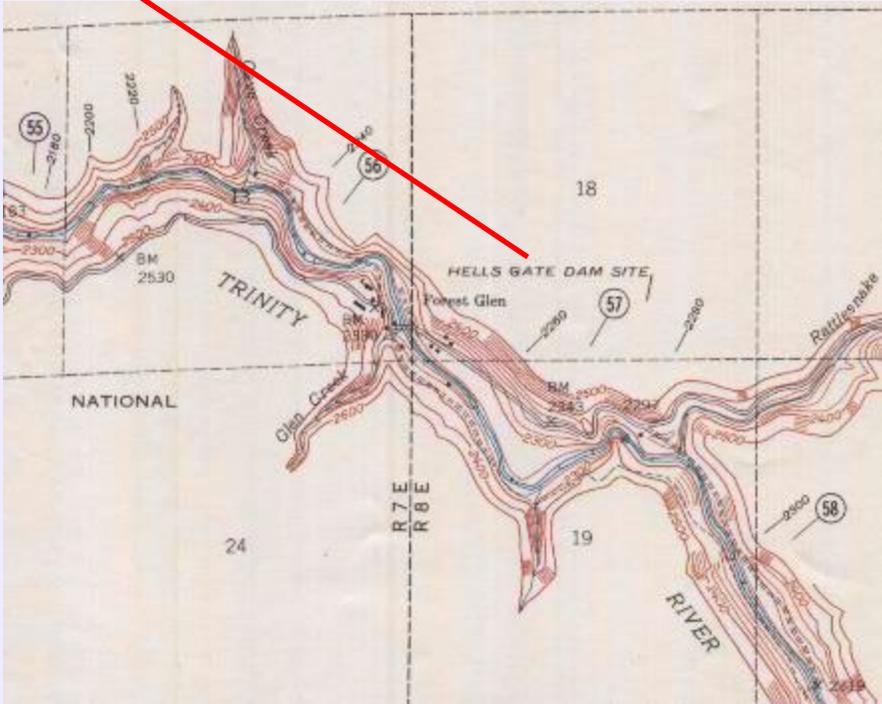
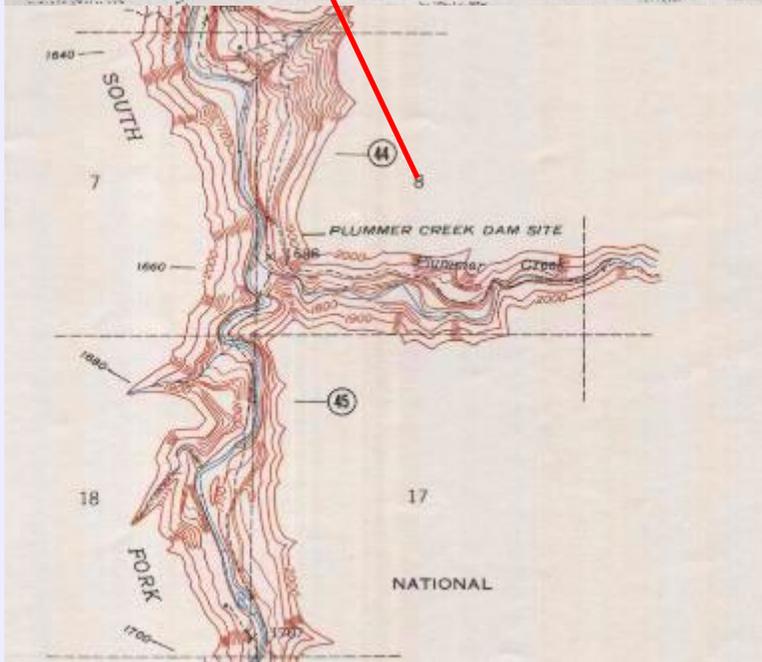
# HISTORICAL CONTEXT – DAMS PLANED 1948-1964



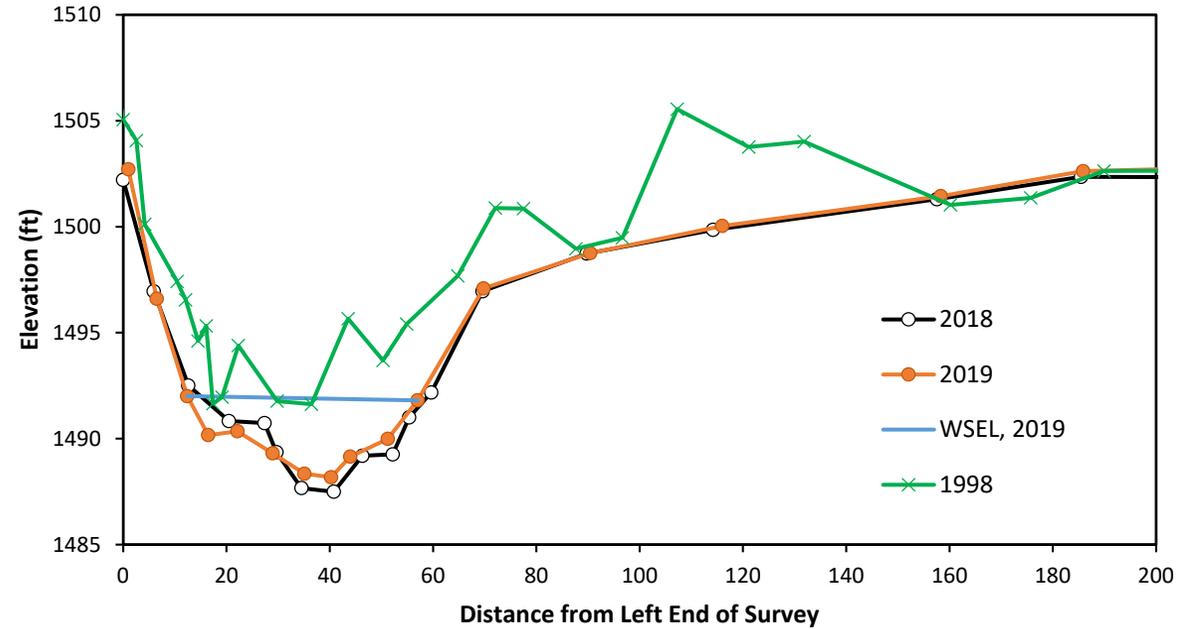
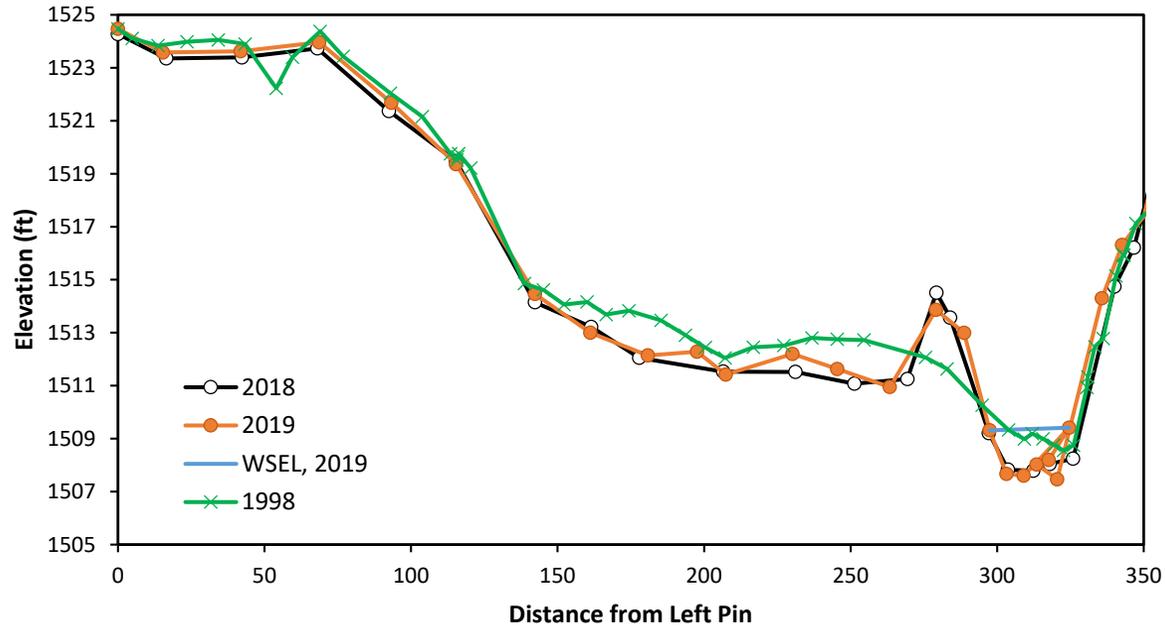
PLAN AND PROFILE  
SOUTH FORK TRINITY RIVER, MOUTH TO MILE 65.8  
HAYFORK CREEK, MOUTH TO MOUTH OF EAST FORK, CALIFORNIA  
DAM SITES

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY

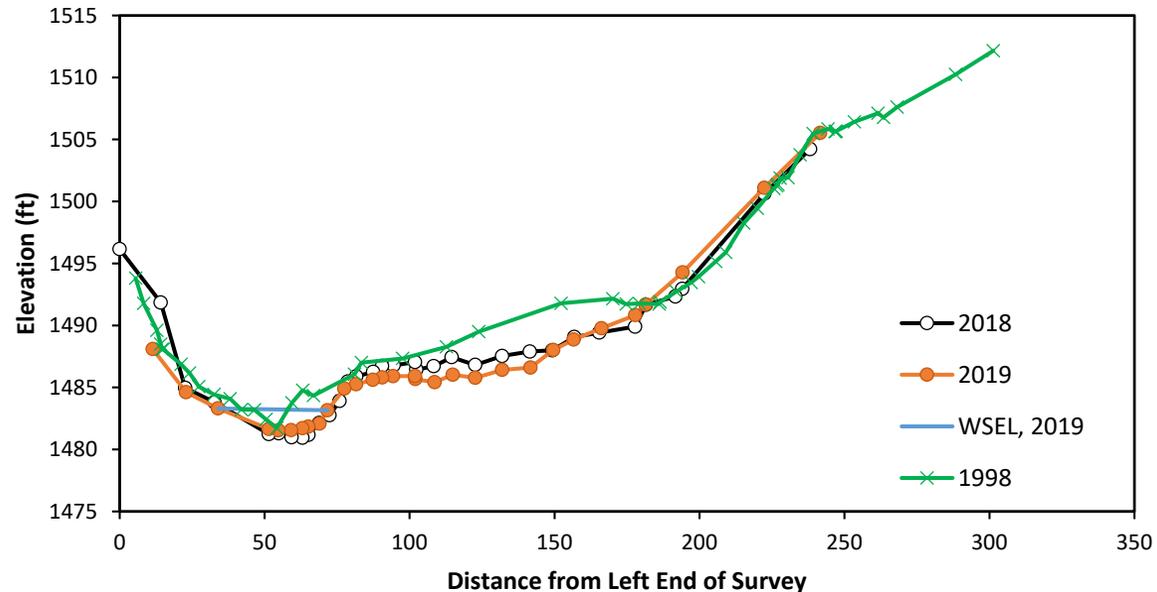
Topography by R. W. Rumph and H. L. Pumphrey  
Surveyed in 1948 and 1949



# SEDIMENT RECOVERY



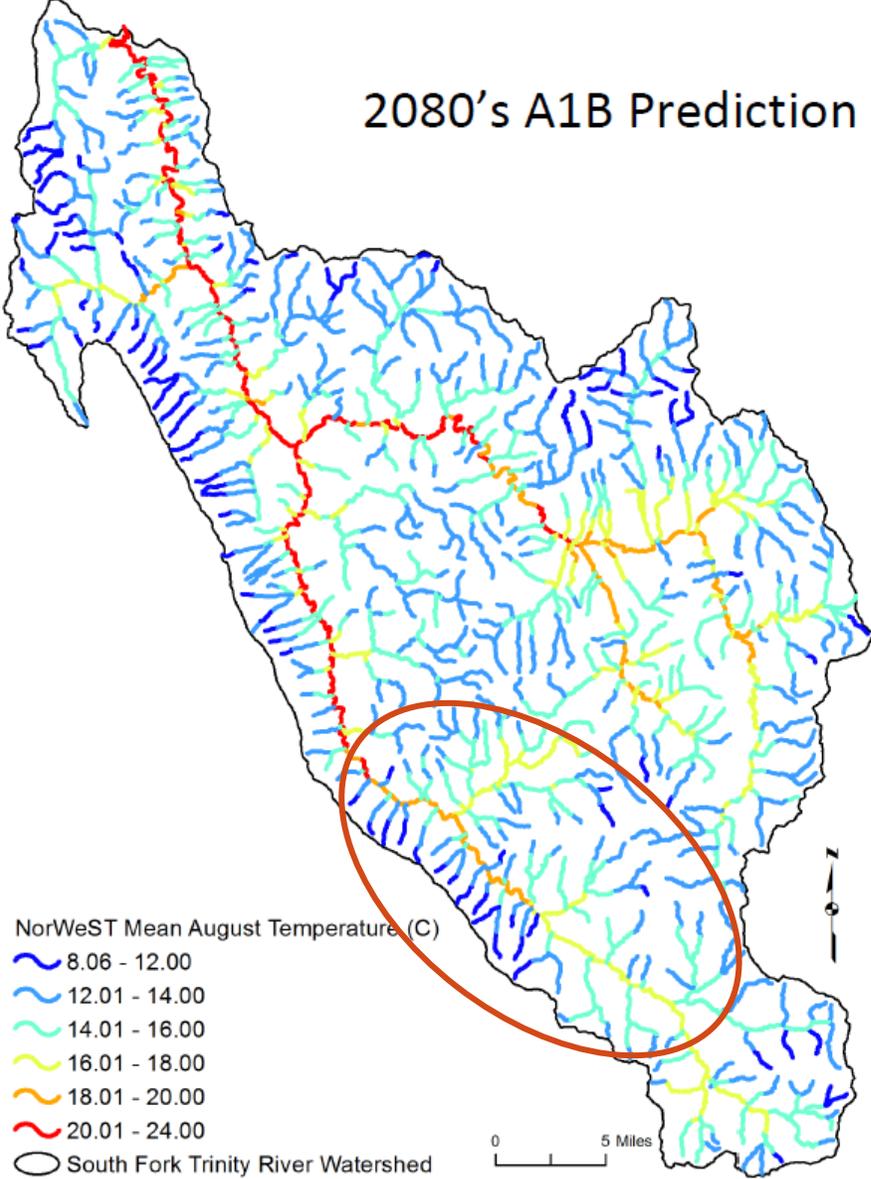
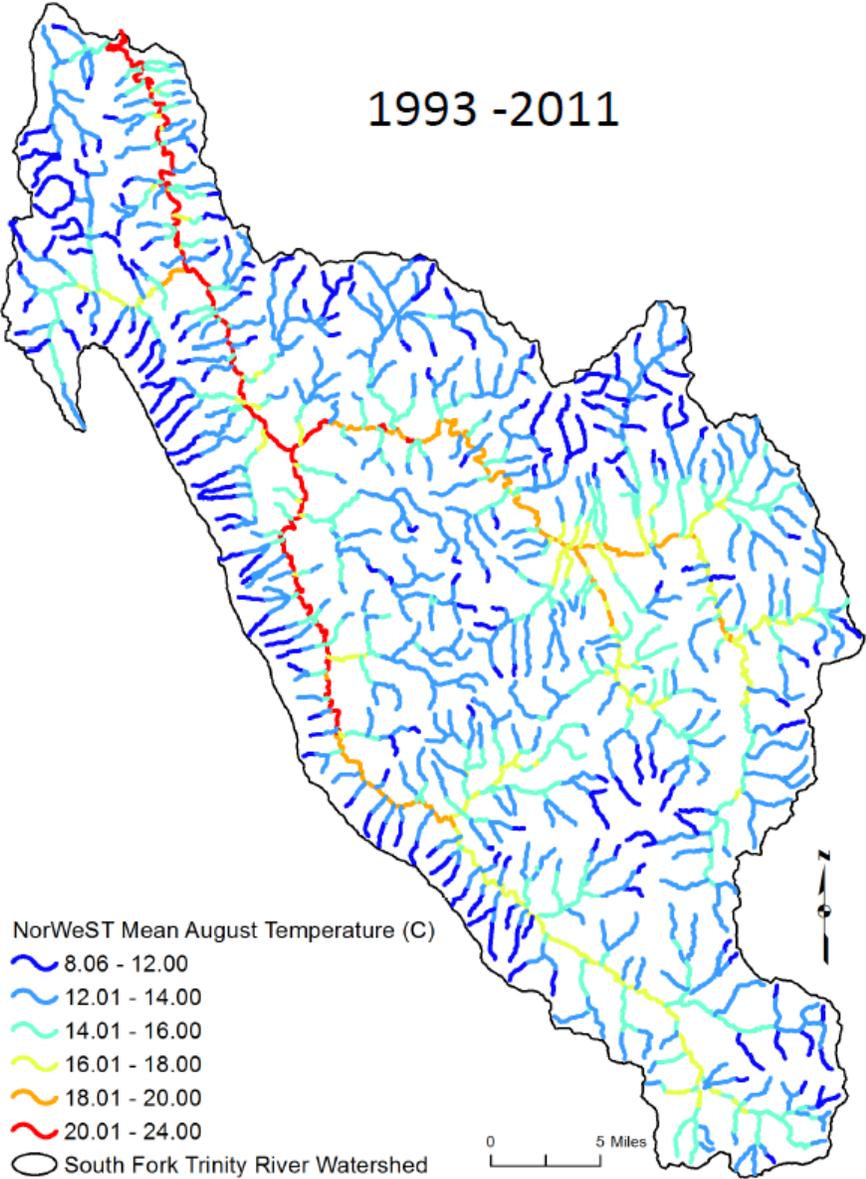
**USES &  
TCRCD  
ROADS**



**IMPROVED  
BMP'S AND  
CA FPA**

# STREAM TEMPERATURE

RMRL  
NORWEST  
TEMPERATURE  
MODEL



# HELICOPTER WOOD RESTORATION PROJECTS



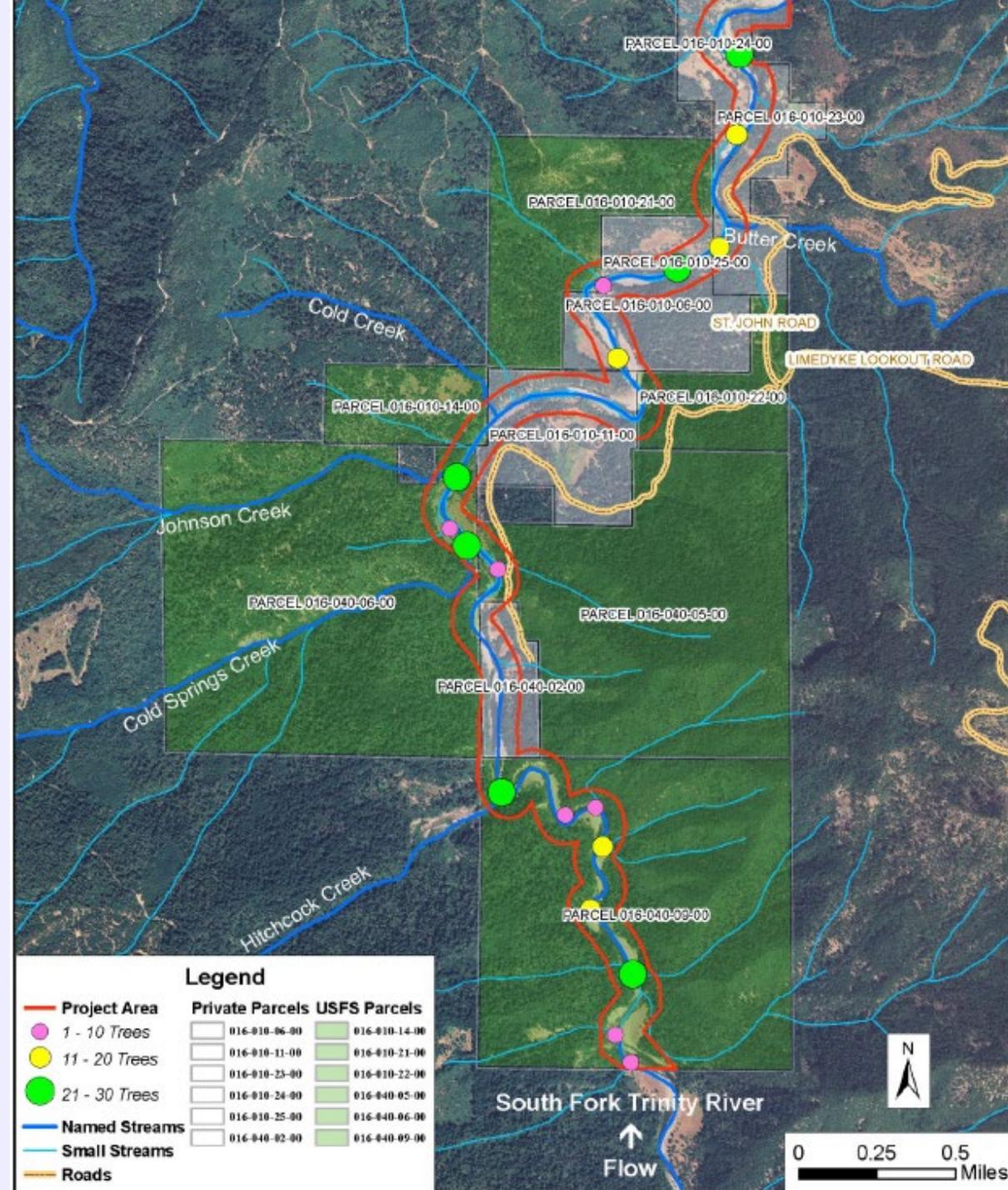
**YUROK TRIBAL  
FISHERIES PROGRAM**



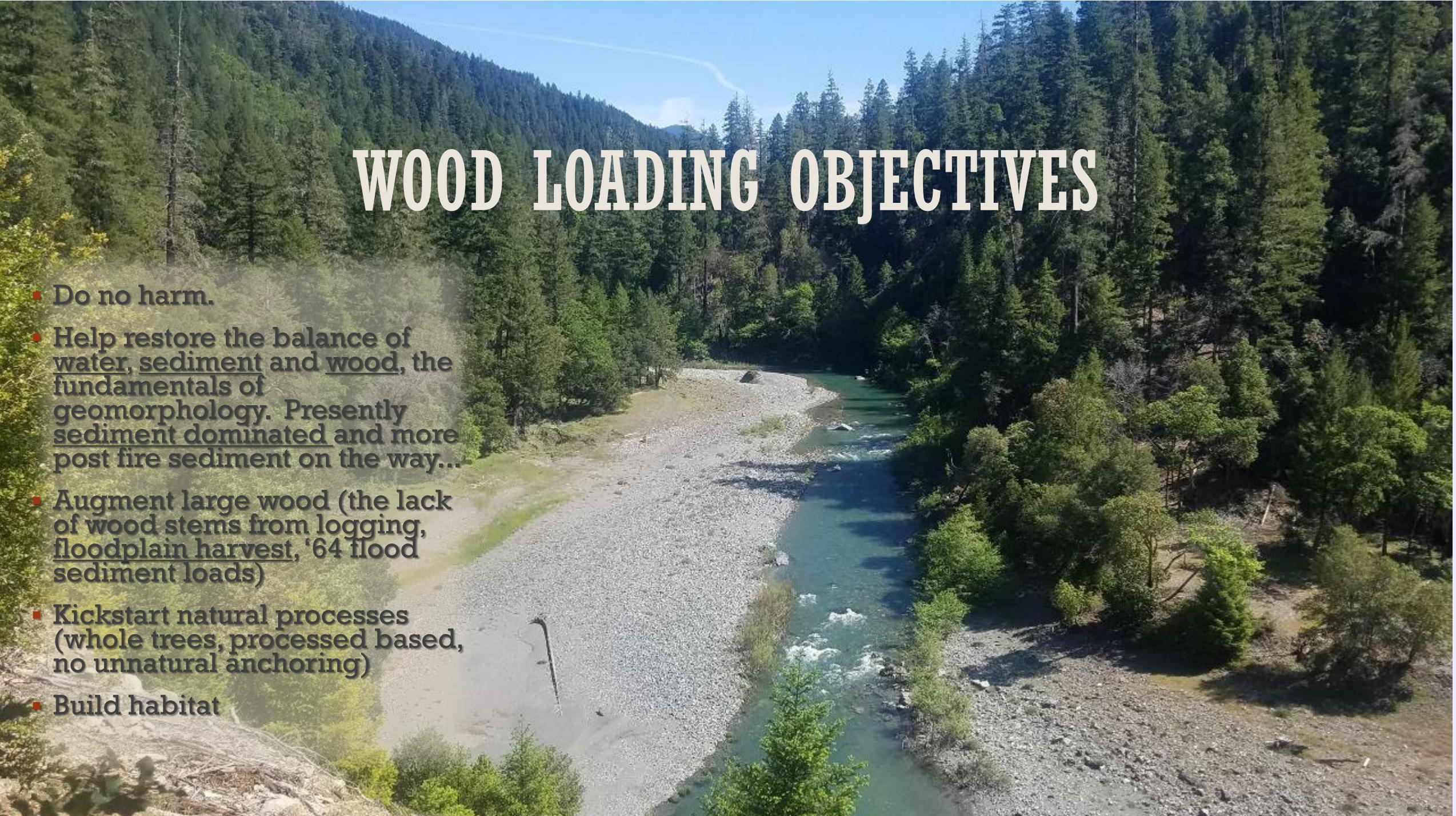
Photo: McMahon

# PHASE 1 RESTORATION

- 2017-2019
- Focus on Hyampom's St John's reach



# WOOD LOADING OBJECTIVES



- Do no harm.
- Help restore the balance of water, sediment and wood, the fundamentals of geomorphology. Presently sediment dominated and more post fire sediment on the way...
- Augment large wood (the lack of wood stems from logging, floodplain harvest, '64 flood sediment loads)
- Kickstart natural processes (whole trees, processed based, no unnatural anchoring)
- Build habitat



Photo: Mais

# COMPLEXITY

- **Assessment and Monitoring**
  - Drone flights
  - Photogrammetry DEMs
  - RTK surveys (long-pro and xs)
  - Hydraulic modeling
  - Large wood risk assessment
  - Habitat mapping
  - Adult snorkel surveys, Juvenile/CHAMP
  - Benthic macroinvertebrate sampling
  - LWD counts/mapping/tracking
  - Thermograph/pool stratification
- **Grant management - Humboldt County and DWR**
  - Labor compliance plan
  - Reporting
  - Invoicing
  - Matching funds
  - Communications
  - Subcontracts
  - Deliverables
  - Final report
- **Partnerships - Yurok Tribe**
  - Sub-award
  - Budget coordination
  - Match
  - Contracting
  - Harvest: LTO, RPF, Operators, Safety and fire,
- **Collaboration - Landowners**
  - Private residences
  - Landowner agreements
  - Public outreach
  - Public safety
  - Continual communications
  - Noxious weeds
- **Tree harvest**
  - New Island Capital timber landowner
  - CALFIRE collaboration
  - BBWA RPF forester
  - WRTC LTO
  - Units 1 and 2 compliant
  - Slash plan
  - Sustainable tree mark
  - Detailed tree inventory and map
  - Wood properties research
  - Harvest
  - Post project inspection
- **Contractors - Columbia Helicopters**
  - Skycrane scale
  - Contract
  - Budget vetting
  - Safety plan
  - Grapple
  - Choker logistics
  - Safe zones
  - Communications
- **Permitting**
  - USFS NEPA: Biologic Opinion, Decision Memo, Wild and Scenic Section 7
  - NCRWQCB – Warmerdam, NOE, HRE 401
  - Army Corps – NP 27 for 404
  - NOAA Biologic Opinion
  - CDFW HREA for 1653
  - CALFIRE EN for THP
  - Other: frogs, owls, turtles, etc.



Photo: Strazzante

# Implementation is challenging



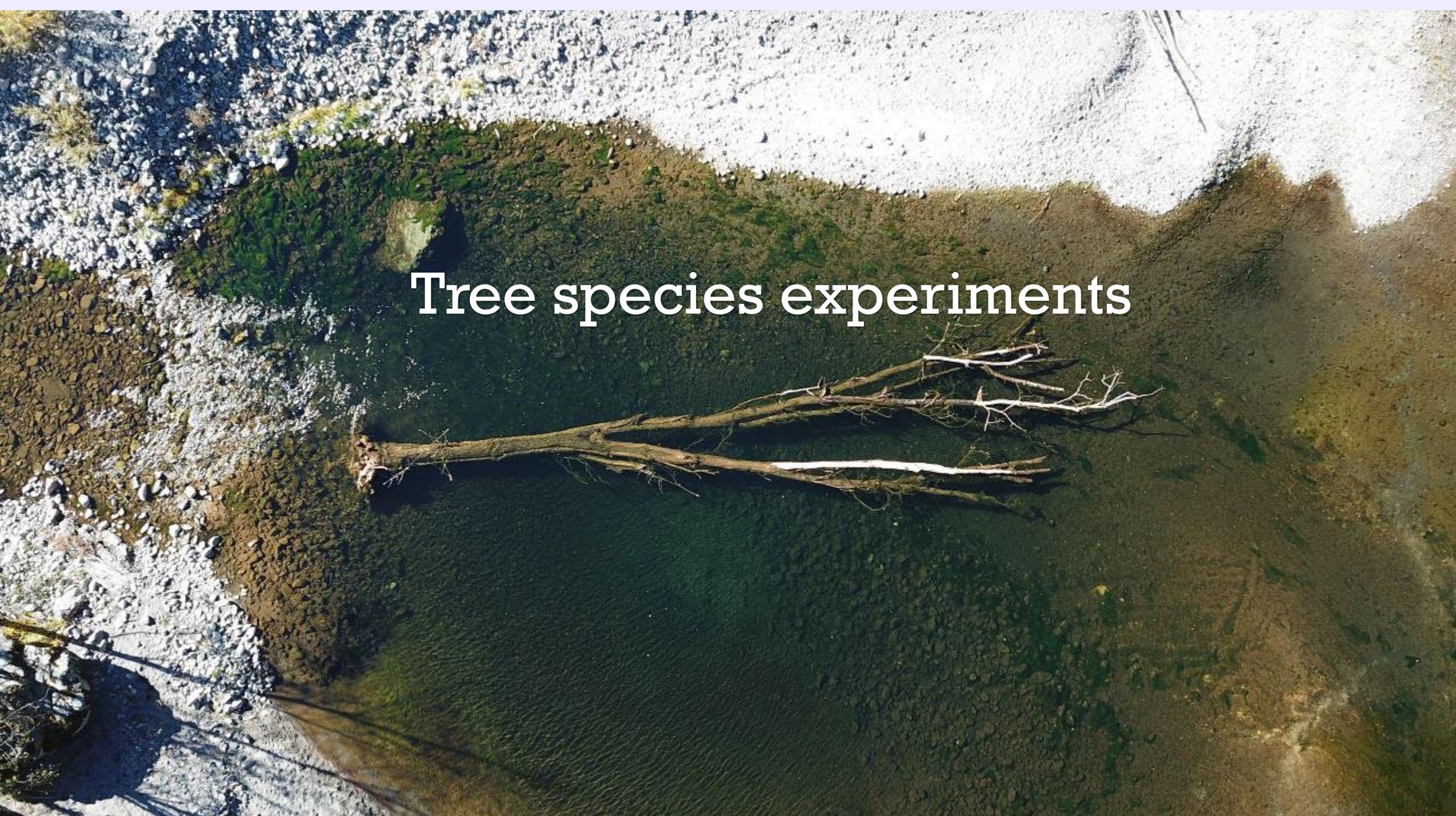
- Plan, plan, plan... go!
- Heli limitations (wind, topography, weather...)
- 7-1 minute turnarounds
- Rock/snag fall dangers
- Needs flexibility, comms. and teamwork



Photos: Strazzante

An aerial photograph of a river flowing through a forested area. The river is surrounded by dense green and yellowish vegetation. Several large, fallen logs are scattered across the riverbed and banks, creating a complex structure. The water is clear and greenish, reflecting the surrounding environment. The banks are rocky and covered with small shrubs and trees. The overall scene depicts a natural, undisturbed habitat.

Cold water habitat

An aerial photograph of a stream. The water is dark and clear, showing the rocky and sandy bed. A large, fallen tree trunk lies horizontally across the middle of the stream. The banks are composed of light-colored gravel and darker soil. The text "Tree species experiments" is overlaid in white on the water.

# Tree species experiments

An aerial photograph of a river flowing through a rocky, vegetated landscape. A large, light-colored rock is prominent in the center of the river. A structure made of several long, thin logs is built across the river, partially covering the rock. The surrounding area is covered with green and yellowish vegetation, and the riverbanks are rocky. The text "Habitat (cover)" is overlaid on the image in white font.

Habitat (cover)

# Geomorphic



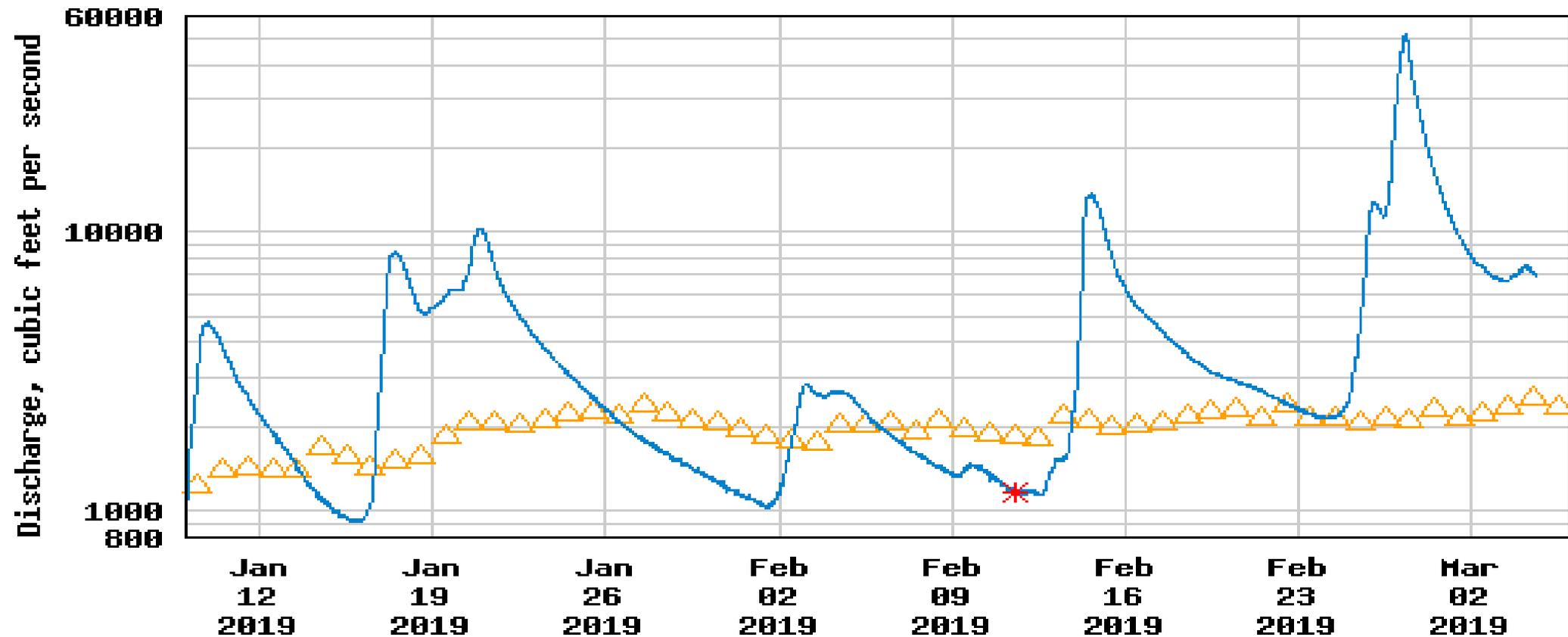
# Large wood “seeding”



# Weather and storms of 2019



USGS 11528700 SF TRINITY R BL HYAMPOM CA



----- Provisional Data Subject to Revision -----

- △ Median daily statistic (53 years)
- \* Measured discharge
- Discharge

**Post project:**  
**8,000 cfs storm. January 2019**



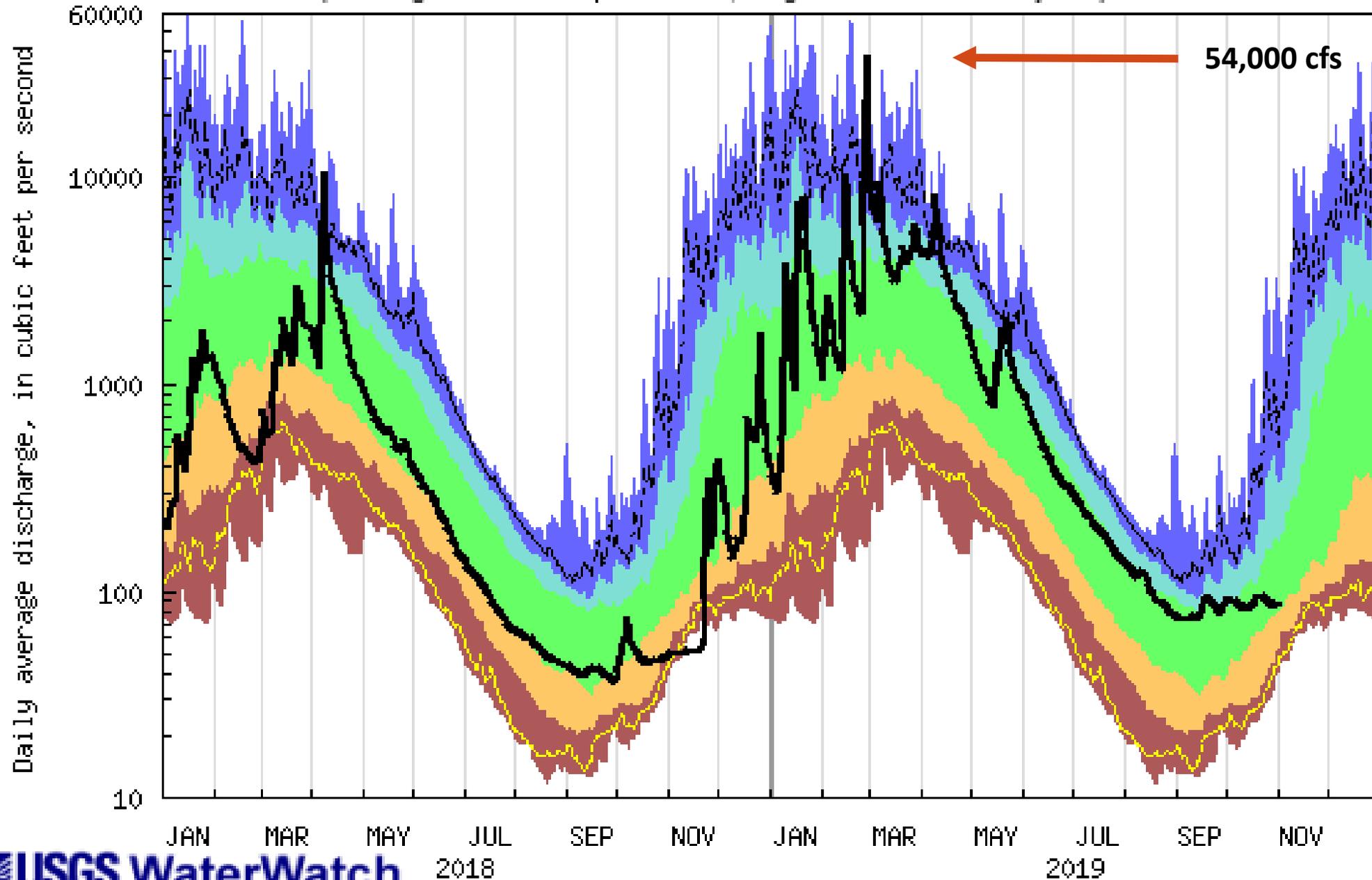
12,000 cfs storm. January 2019



**February 2019, largest in 22 years**



USGS 11528700 SF TRINITY R BL HYAMPOM CA  
(Drainage area: 764 square miles, length of record: 53 - 54 years)

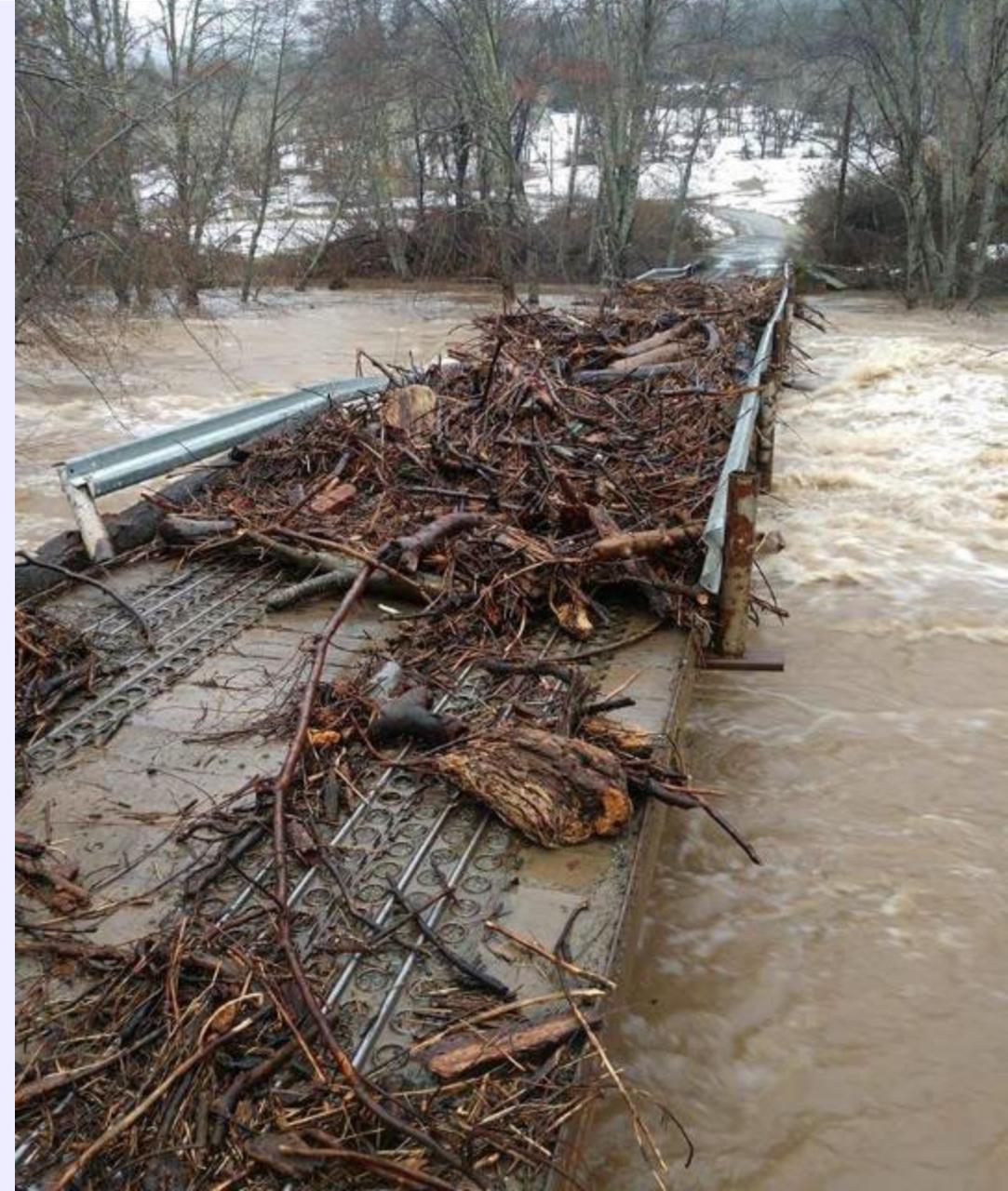


2019 = 54,000 cfs

Biggest storm in the last 22 years of USGS records.

It was a “Q – 15” peak runoff which means that there is approximately a 6.6% chance of this peak flow being equaled or exceeded in a given year.

# Largest storm in ~40 years in Hayfork Creek





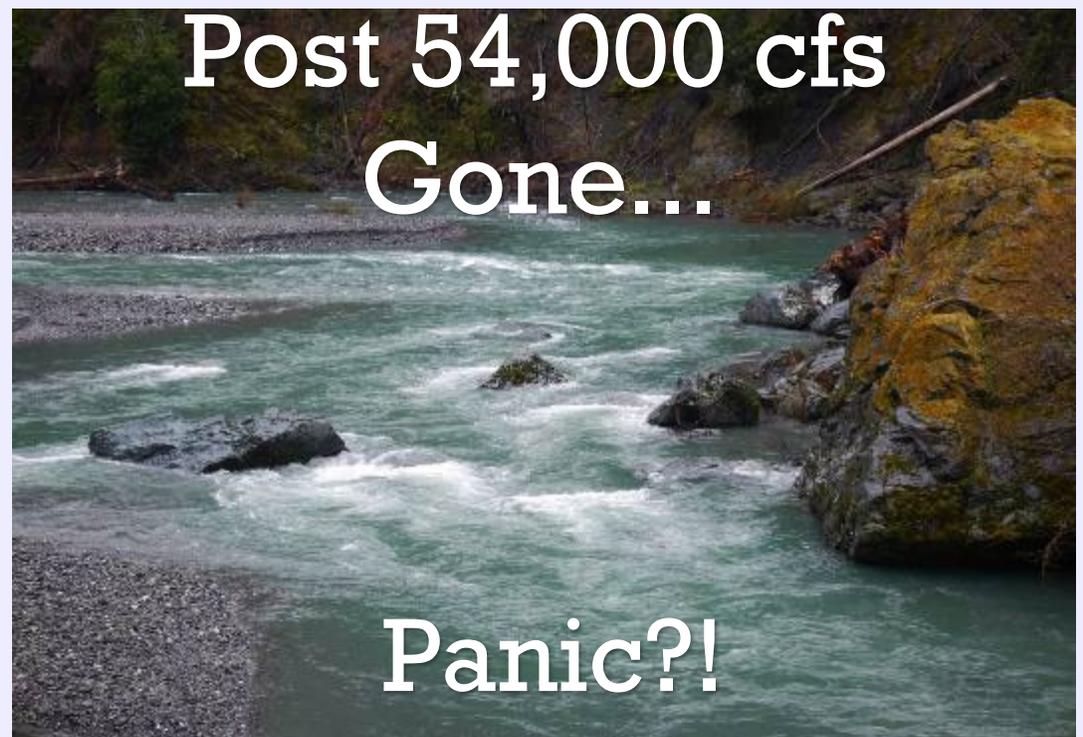
575 cfs



8,100 cfs



12,000 cfs



Post 54,000 cfs  
Gone...

Panic?!

# Rainbows and pots of gold

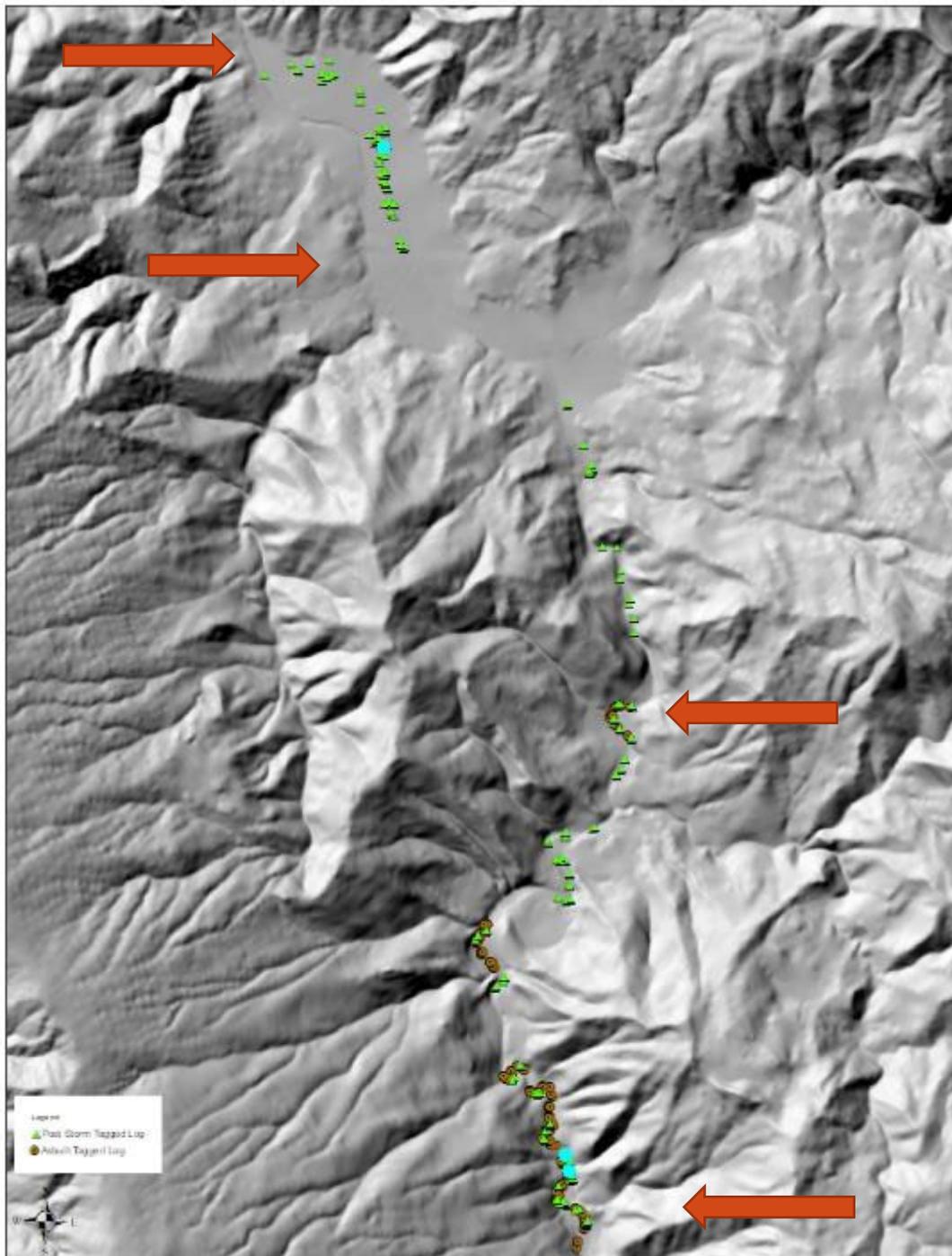


# Some fascinating results of wild wood



## Some lessons learned:

- Tagging trees was useful... ;-)
- Found 195 of 300 trees (65%)
  - did not search downstream of Hyampom
- 84 in project reach
- 99 in Hyampom reach
- Wood travelled – many up to 15 miles and still is beneficial

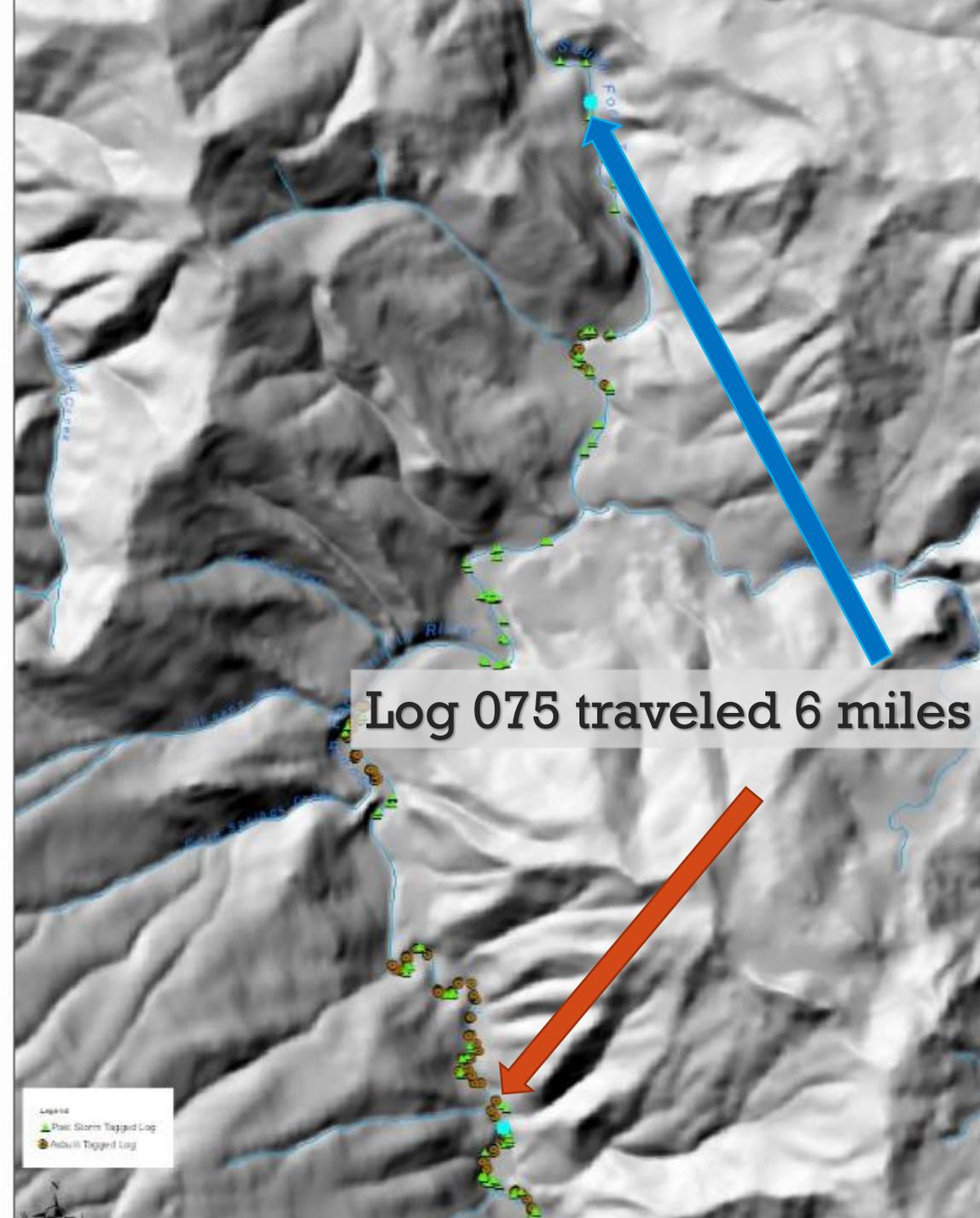


# Tree Species Diversity:

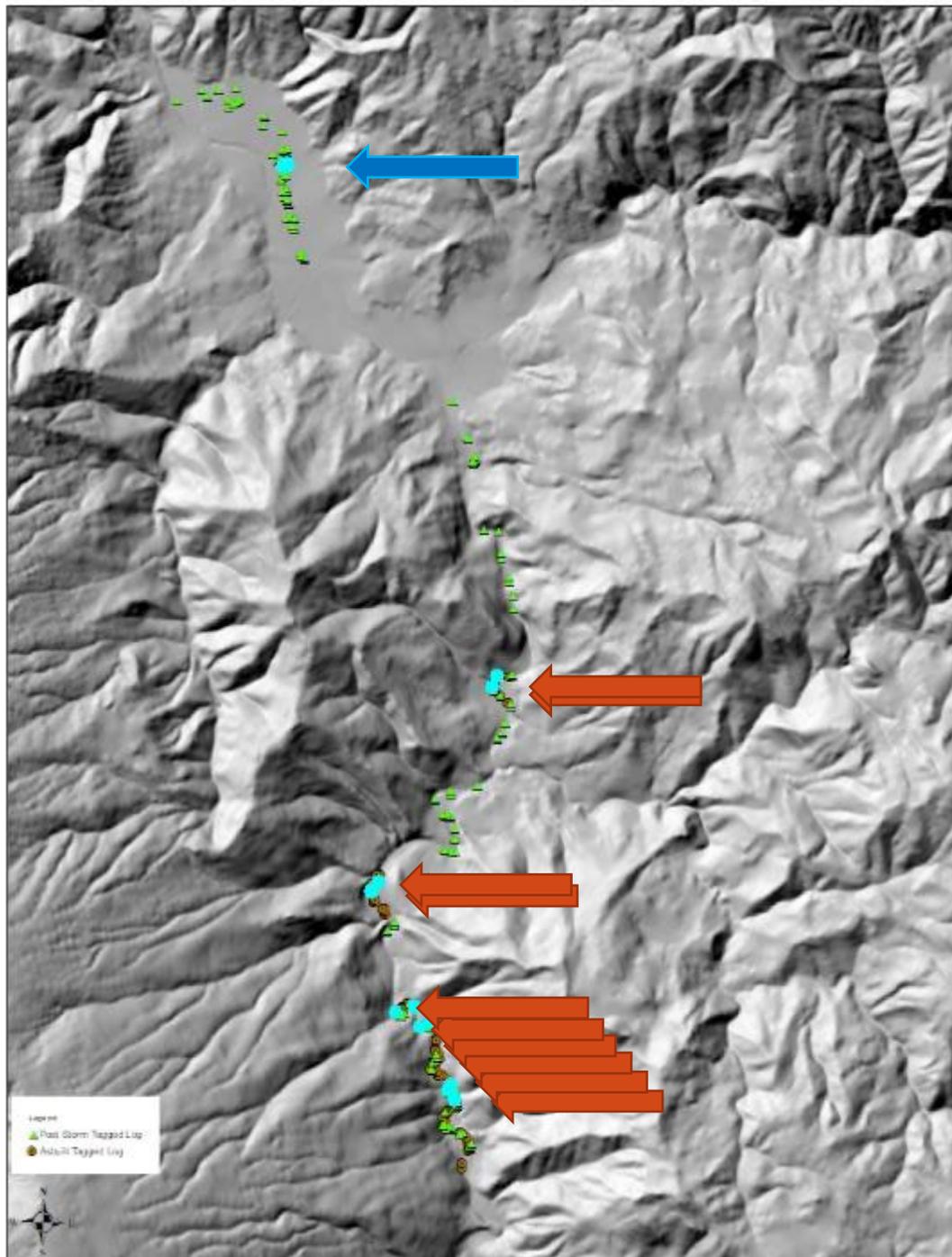
- Fir floated
- Madrone splintered
- Oaks stayed in the water



Photo: Calahan



**These 14 logs moved 10+ miles and racked in this jam: 71, 77, 86, 88, 161, 176, 182, 188, 214, 157, 258, 270, 290, 300 and maybe more...**



Key finding: A large percentage of the wood in Hyampom was NOT tagged ~ it was naturally recruited wood.



Key logs:  
This key log racked 25 trees.



# Phase 2 Restoration

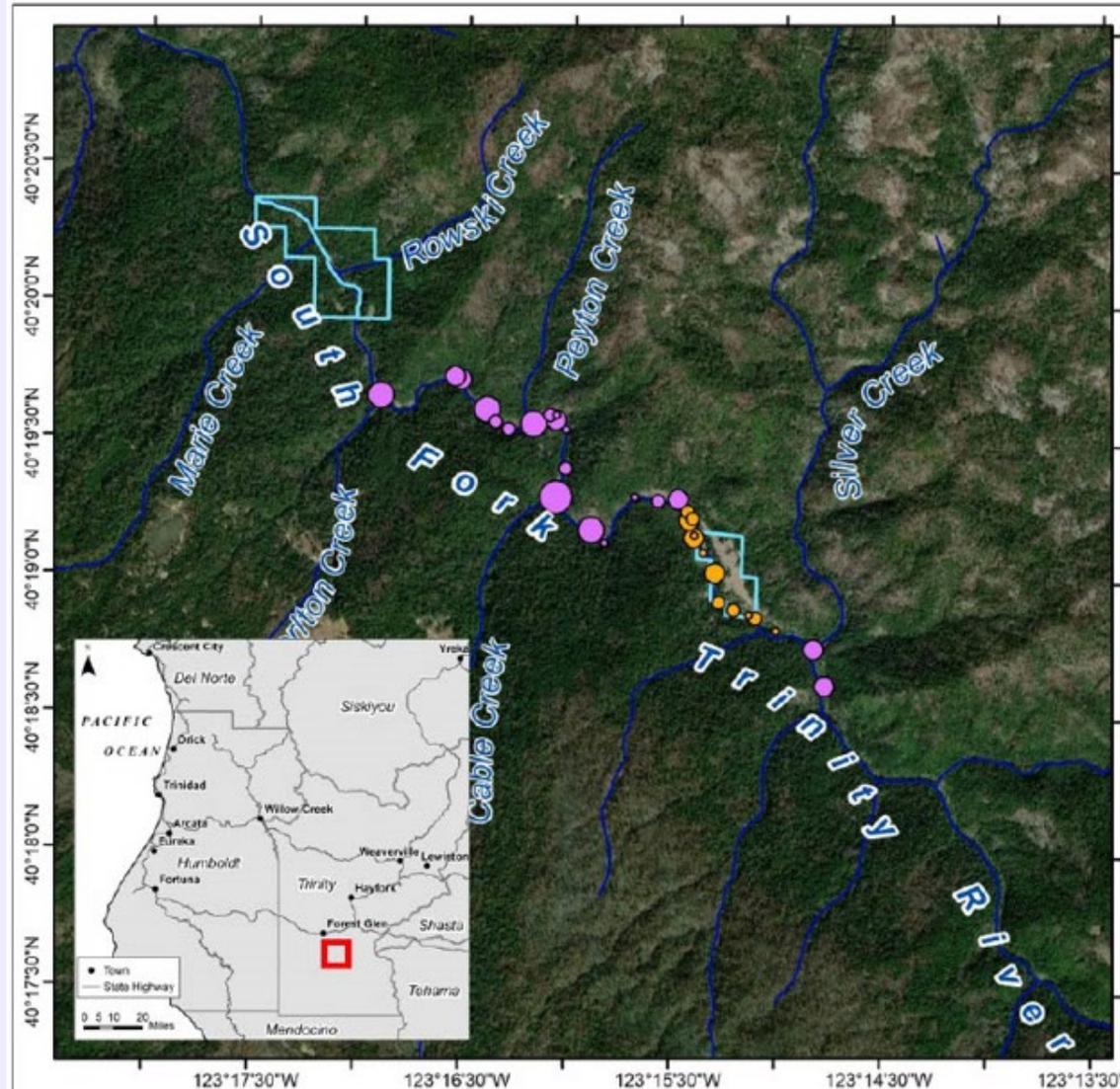
Similar levels of planning but “only” 2 years instead of 3... ;-)

- 2020-2022
- Silver Creek to Forest Glen reach



# Phase 2 Objectives

- Take lessons learned from phase 1
  - Use hardwoods and bigger trees only
- Protect and enhance key reach with thermal refugia
- Work in a smaller section of the river for better longevity
- Utilize a yarder for even larger tree placement, better natural anchoring, and final ballast to hold down jams



South Fork Trinity River Spring Run Chinook Restoration Project

| Helicopter | Yarding   | Ownership Type |
|------------|-----------|----------------|
| • 2 - 3    | • 2 - 3   | □ Private      |
| • 4 - 5    | • 4 - 5   |                |
| • 6 - 11   | • 6 - 11  |                |
| • 12 - 20  | • 12 - 20 |                |
| • 21 - 35  | • 12 - 20 |                |





Harvested August  
Complex burned  
trees  
+  
private co  
hardwoods

Photo: Stafford



# Wood Placement

- Columbia placed ~200 trees
  - 120 hardwoods
  - 80 conifers
- Yarder placed ~20 trees
  - 3 cut
  - 7 downed → moved
  - 10 yarded





Columbia  
Helicopters



Photo: Mais



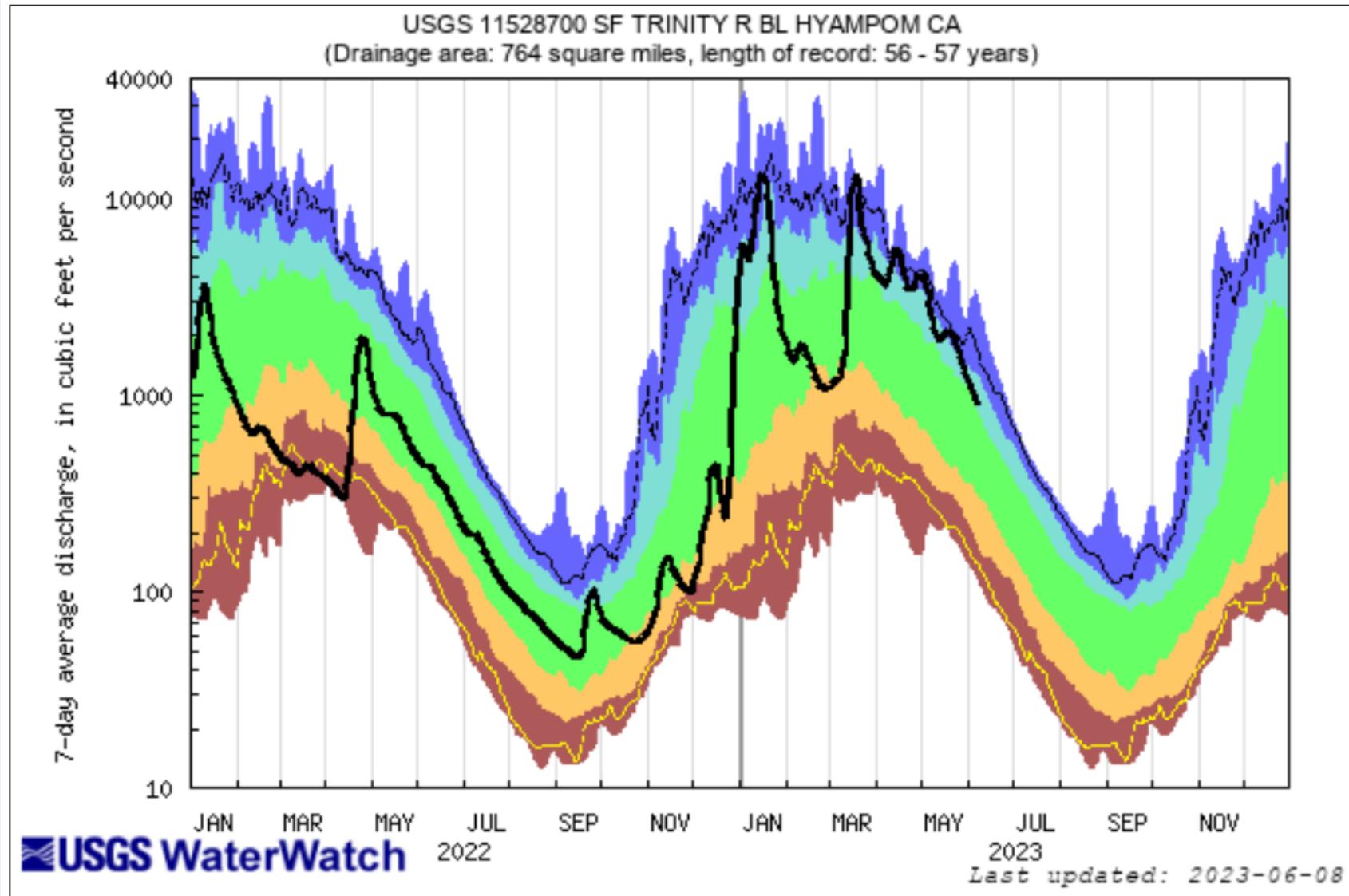
**Blue Ridge 4 Fish**  
**Specialized restoration yarder**





Winter 2023

35,000 cfs



| Explanation - Percentile classes |              |        |              |                   |    |                          |      |
|----------------------------------|--------------|--------|--------------|-------------------|----|--------------------------|------|
| lowest-10th percentile           | 5            | 10-24  | 25-75        | 76-90             | 95 | 90th percentile -highest | Flow |
| Much below Normal                | Below normal | Normal | Above normal | Much above normal |    |                          |      |





















# TEAMWORK

Great partnerships:  
WRTC, Yurok, USFS, Landowners, Permitters, Funders  
(NCRP/DWR), Columbia, Blue Ridge, and many more!



Photo: Mais

Photo: Strazzante

# Anecdotal conclusions:

- We are still learning (check-in again in 10 years... ;-)
- Geomorphic changes are in the works
- Chinquapin is Velcro, Oak stays wet, madrone splinters, fir is great but floats, pine is fine, the more complex (branchy, split stem, etc.) and the bigger the better
- Racking, riparian growth, scour and deposition
- Even more good work will occur with “naturally placed” wood as it interacts with the river in future

Wood is good, rivers know what to do with it.

You can help



Maintain your roads.

Use less water.

Avoid  
over-fertilizing  
or using toxic  
chemicals that  
poison our rivers.

Don't fish for  
Spring Chinook.

**THANK YOU**



**QUESTIONS?**

| 2023                                |                | CDFW  | WCB  | USFWS   |
|-------------------------------------|----------------|---|--|---|
| <b>Opportunity</b>                  |                | Restoration Grant Opportunities (multiple funding sources and initiatives)  | Multiple Props (1, 68, 84, etc), Habitat Conservation Fund, GGRF, etc)   | Klamath Basin Bill  |
| <b>Deadline:</b>                    |                |   |  |   |
|                                     | Pre Proposal   | Open Continuously (opened 11/2022)  | Open Continuously (opened xx)  | 4/14/2023   |
|                                     | Full Proposal* | invitation only   | Invitation only, if selected, will be reviewed by Board, next meeting is in Feb, May, Aug or Nov   | invitation only, due 7/14/2023  |
| <b>Consultation Pre application</b> |                | <a href="#">Consultation Request Form</a>   | Yes  |   |
| <b>How to apply</b>                 |                | <a href="#">CDFW's WebGrants(opens in new tab)</a>  | <a href="mailto:send_pre_application_to_WCBpreapps@wildlife.ca.gov">send pre application to WCBpreapps@wildlife.ca.gov</a>   | User  |
| <b>Allowable Project Types:</b>     |                |   |  |   |
|                                     | Planning       | Yes (leading to implementation)   | Yes (leading to implementation)  | Yes   |
|                                     | Implementation | Yes   | Yes  | Yes   |
|                                     | Both           | Yes (Impl can have design at 65%)   | Yes (Impl can have design at 65%)  | Yes   |
|                                     | Other          | Monitoring, Scientific Studies, Capacity Building, Tech Assistance  | Block grants, capacity building technical assistance, scientific studies   | Last year monitoring, capacity building and construction of facilities were also funded   |
| <b>Disadvantaged Communities:</b>   |                | Yes   |  |   |
| <b>Min \$</b>                       |                | varies  |  | \$100,000.00  |
| <b>Max \$</b>                       |                | varies  | \$250,000 in general   | \$3,000,000.00  |
| <b>Total Available</b>              |                | varies  | varies   | \$15 M  |
| <b># awards</b>                     |                | varies  | varies   | 5 to 30   |
| <b>Eligible Apps</b>                |                | varies  | varies   | State, Local, Tribes, NGOs  |
| <b>Geog Included</b>                |                | CA  | CA   | Klamath Basin   |
| <b>Award date</b>                   |                | Staff will review concepts as often as monthly.   | Staff will draft agreements 2-3 months before board approval, start of project 45 days after board approval  | 10/31/2023  |
| <b>Term</b>                         |                |   |  | Not sure  |
|                                     | Start          | varies based on funding source  |  | 10/31/2023  |
|                                     | End            | Pro 1/68- 3/15/2027, others 2026-2028   |  | ?   |
| <b>Admin Rate</b>                   |                | 20% (unless NICRA is higher. Indirect on up to \$25,000 of Subcontracts, not allowed on equipment costs   | 15%  | Full NICRA (FY 23 23.18%, FY24 20.59%)  |
| <b>Match</b>                        |                | Cash or Inkind, secured, Higher cost share = higher score   | Cash or Inkind, secured, Higher cost share = higher score  | Not Required, but should be described in budget and budget narrative  |
| <b>LOS</b>                          |                | Yes with full application, to demonstrate strong community support  | Yes- with full application   | Yes: to demonstrate wide community support  |
| <b>Partners</b>                     |                | Yes, demonstrate engagement with tribes   | Yes, demonstrate engagement with tribes  | Yes, particularly Tribes  |
| <b>Subcontracts</b>                 |                |   |  | Call out Subcontractors and subawardees in concept proposal   |
| <b>Board Resolution</b>             |                |   |  | No  |
| <b>Priorities</b>                   |                | protecting enhance biodiversity   | protecting enhance biodiversity  | restore habitat   |
|                                     |                | climate change resiliency and connectivity  | climate change resiliency and connectivity   | conserve at-risk and listed ssp   |
|                                     |                |   | species connectivity   | improve habitat connectivity for aquatic ssp  |
|                                     |                |   | Support State Wildlife Action Plan priority habitats   | Has to link to one or more plans listed in the FOA  |
|                                     |                | conserve or enhance working landscapes  | conserve or enhance working landscapes   |   |
|                                     |                | conserve or enhance water-related projects  | conserve or enhance water-related projects   |   |
|                                     |                | enhance public access   | enhance public access  |   |
|                                     |                | Pathways to 30x30   | Pathways to 30x30  |   |
|                                     |                | State Wildlife Action Plan  | State Wildlife Action Plan   |   |
|                                     |                |   | Areas of Conservation Emphasis   |   |
|                                     |                |   | Other state priorities   |   |
| website                             |                | <a href="https://wildlife.ca.gov/Grants">https://wildlife.ca.gov/Grants</a>   | <a href="https://wcb.ca.gov/Grants">https://wcb.ca.gov/Grants</a>  | <a href="https://www.fws.gov/program/klamath-basin-project-awards">https://www.fws.gov/program/klamath-basin-project-awards</a> |
| <b>Labor Requirements</b>           |                | Prevailing wage has to be considered  | Prevailing wage has to be considered   |   |
| * Full Proposal                     |                | Includes Application, Budget, SF204, LOS, Maps, Photos, Design Plans/Engineering, GIS files, WRTC Board Resolution, Land Tenure/Site Control/Landowner Access Agreements, Workplan, Management Plan, Monitoring Plan, Project Timeline, SOQ of Licensed Professionals | Includes Application, Budget, SF204, LOS, Maps, Photos, Design Plans, GIS files, WRTC Board Resolution, Land Tenure/Site Control/Landowner Access Agreements, Workplan, Management Plan, Monitoring Plan, Project Timeline |   |
| <b>Site Control Requirements</b>    |                | Implementation projects conducting on-the-groundwork must submit documentation showing that they have adequate tenure to, and site control of, the properties to be improved or restored for at least 25 years or a term negotiated with CDFW and the Grantee.        | Land Tenure/Site Control/Landowner Access Agreements,  |   |

## CA Grants Links: CALIFORNIA GRANTS PORTAL

CDFW FY23-24 Natural Community Conservation Planning Local Assistance Grants And 30x30 Grants (deadline Drought, Climate and Nature-Based Solutions Initiatives (Protecting Salmon , Wetlands and Meadows Restoration NCCP Grants [web page](#)).

The CA Wildlife Conservation Board (WCB) Restoration Grant Opportunities: Nature Based Solutions (Part A): Wetlands and Mountain Meadows Restoration Program (rolling) supports projects that will restore or enhance wetlands and watershed ecosystems, as well as pilot projects for the agency's Beaver Program.

The California Department of Fish and Wildlife (CDFW) Drought, Climate, and Nature Based Solutions Initiative (rolling) funds multi-benefit ecosystem restoration and protection projects for critical habitat and watersheds, including mountain-meadow ecosystems and wildlife corridors.

### CA State Water Resources Control Board

Nonpoint Source Grant Program- Clean Water Act section 319(h) Fall 2023?

[https://www.waterboards.ca.gov/water\\_issues/programs/nps/319grants.html](https://www.waterboards.ca.gov/water_issues/programs/nps/319grants.html)

California Financing Coordinating Committee's (CFCC) funding fair Was held on May 25, 2023 view recordings of those events and copies of the presentations, California Financing Coordinating Committee's w <https://www.cfcc.ca.gov/>.

## Federal Grants Portal Link [www.grants.gov](http://www.grants.gov)

technical and financial assistance to remove instream barriers and restore aquatic organism passage and aquatic connectivity to maintain or increase fish populations in order to improve ecosystem resiliency and provide quality fishing experiences for the American people

The US Fish and Wildlife Service (FWS) Tribal Wildlife Grant Program (due June 23) <https://www.fws.gov/service/tribal-wildlife-grants>

BOR

WaterSMART Aquatic Ecosystem Restoration Projects for Fiscal Year 2023 (Closes 1/24/2024) [www.grants.gov](http://www.grants.gov)