

The salmon and steelhead of Mendocino County



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April 12, 2021

Presentation to the Mendocino County Board of Supervisors



A photograph of a person wading through a shallow stream in a forest. The person is wearing a blue cap, a backpack, and waders, and is using a long pole for stability. The stream is filled with large, moss-covered rocks, and the surrounding forest is lush with green ferns and trees.

Overview

- Our local salmon and steelhead
- Their status and recovery efforts
- Current threats
- Urgent call for careful planning



Key points

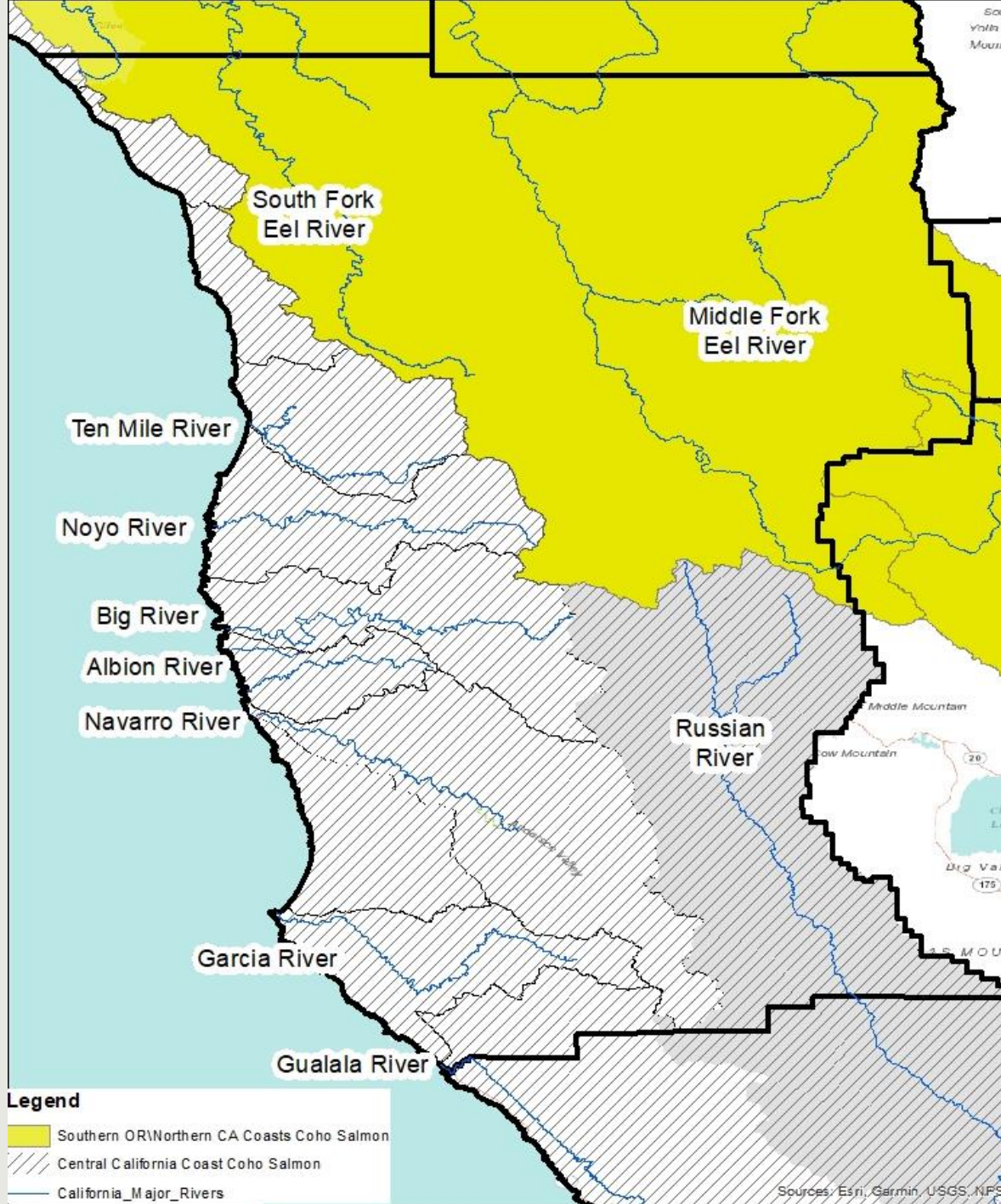
- Salmon and steelhead in California are at risk of extirpation.
- Investing significant resources to shift trajectory.
- Most basic requirement for salmonids is healthy, flowing freshwater.
- Record low rainfall totals and stream flows.
- Climate models predict increased drought frequency.
- Land use that diverts ground or surface water away from rivers will exacerbate the already stressful conditions for fish.
- Careful planning and long-term vision is crucial for sustainability.



Our watersheds

Coastal Mendocino

- ✓ Central California Coast Coho
- ✓ California Coastal Chinook
- ✓ Northern California Steelhead



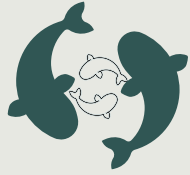
Eel River

- ✓ Southern Oregon Northern California Coho
- ✓ California Coastal Chinook
- ✓ Northern California Steelhead

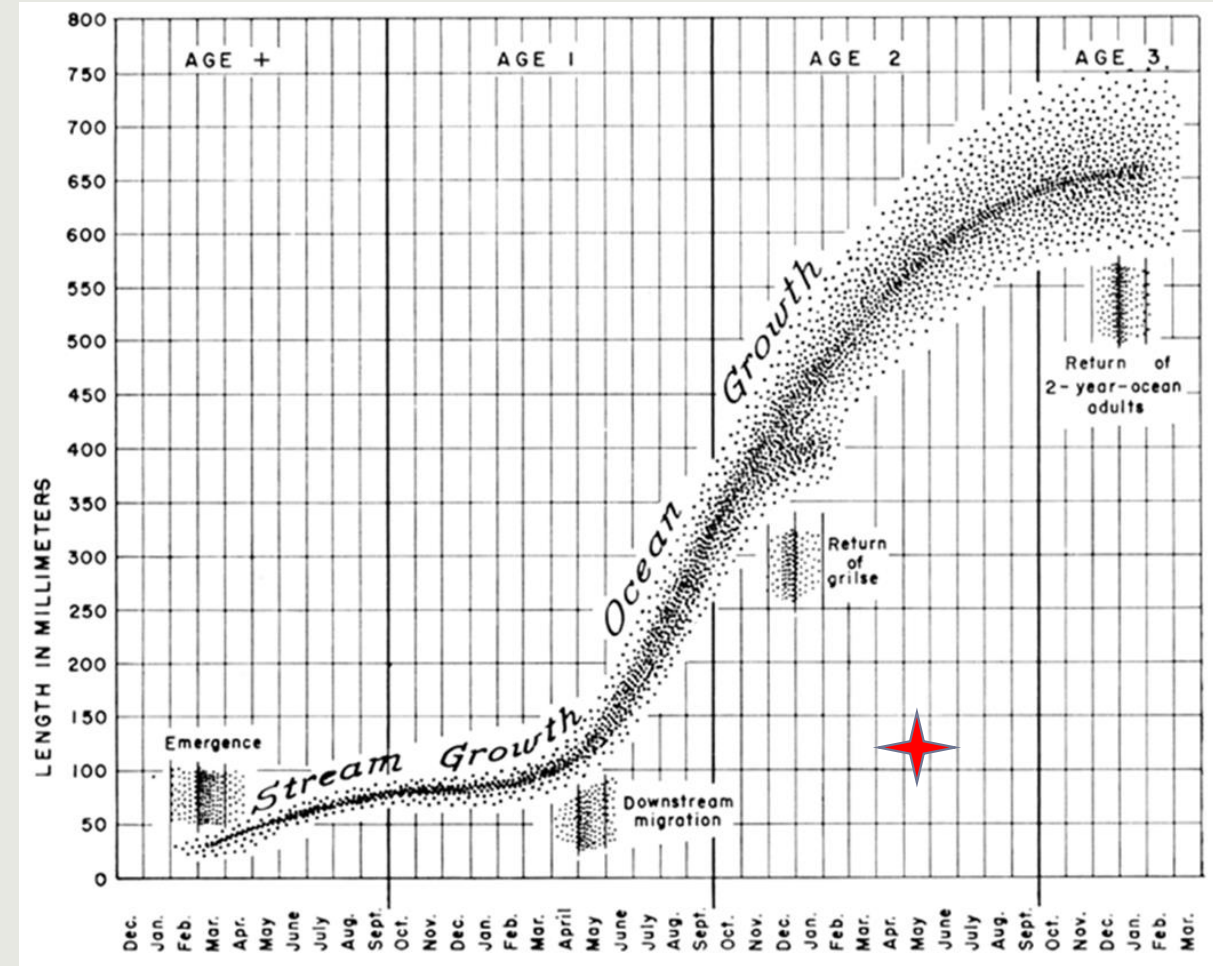
Russian River

- ✓ Central California Coast Coho
- ✓ California Coastal Chinook
- ✓ Central California Coast Steelhead

Coho Salmon lifecycle



- Highly migratory
- Spend equal time in ocean and freshwater
- Adults return to rivers during high winter flows to lay eggs in gravel
- Juveniles spend an extended time in freshwater before migration to the ocean

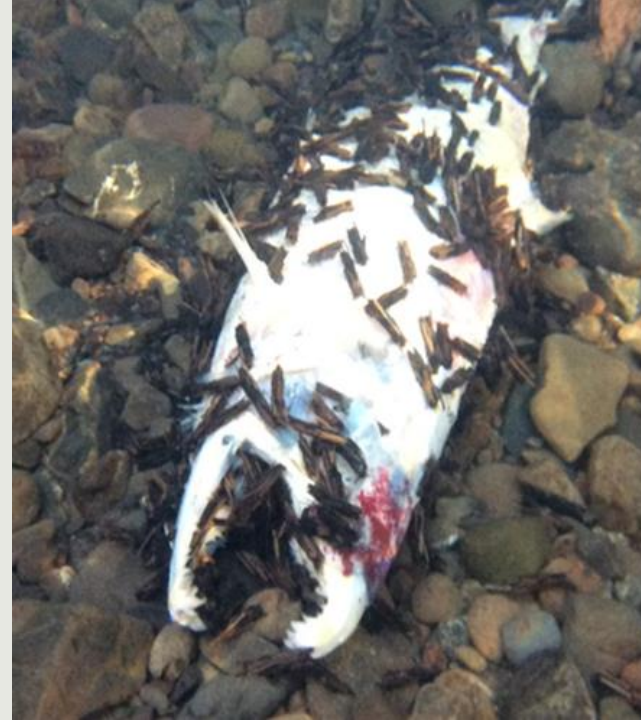


Coho Salmon life cycle illustration. Source: Shapovalov and Taft 1954



More recent studies have revealed some juveniles spend two years in freshwater before downstream migration.

Adult salmon import marine derived nutrients that nourish both the freshwater and terrestrial ecosystem.



Juvenile Coho and steelhead spend an extended period in freshwater, making them vulnerable to water quality and quantity issues year-round

Steelhead may return to the ocean and back to rivers to spawn several times



Key needs

- Unimpaired flows from headwaters to the ocean
- Water quality and quantity that provides adults access to spawning grounds and conditions for successful egg incubation, and that supports juvenile rearing year-round.
- Clean spawning gravel and complex rearing habitat



Historic land practices altered our watersheds
severely decreasing salmonid abundances and
excluded populations from their historical
ranges.



On the verge of extinction

- Declines sustained and in the all three species were **listed under the Endangered Species Act.**
- The most imperiled is the **Central California Coast Coho**, listed as both State and Federally Endangered.
- A Coho captive broodstock program was initiated in the Russian River to rescue the population



Recovery planning

- Recovery plans were developed with strategies to increase species viability and to **avoid extinction**.
- Plans included **specific actions to reduce threats** and called for **scientific monitoring** programs to evaluate salmon health.
- Current monitoring shows very **low abundance for most populations** below targets set in recovery plans.



Watershed restoration

- Environmental protection laws and forest practice rules
- Land protection and stewardship
- Over 100 million \$ has been invested in fish habitat through restoration grants in Mendocino County
- Community effort. Partnership between agencies, NGOs, private landowners



Initiatives

- *Priority Action Coho Team (PACT)*
- *The North Coast Salmon Project*
- *California Water Action Plan (South Fork Eel River)*
- *Salmonid Habitat and Restoration Prioritization*
- *Russian River Coho Water Resources Partnership*
- *Wood for Salmon*



Focus watersheds Mendocino County

- **South Fork Eel River**
- **Russian River**
- **Mendocino Coast** (Ten Mile River, Pudding Creek, Noyo River, Big River, Navarro River, and Garcia River)





Recovery strategies underway

- Habitat enhancement
- Passage improvement
- Monitoring populations
- Captive rearing and fish rescue
- Instream flow and water conservation
- Regulations, permitting and enforcement
- Alternative water sources and storage



Current threats to salmonids

- Reduced summer baseflows and elevated water temperatures
- Lack of adequate winter flows
- Illegal diversions and discharges
- Streamflow depletion from groundwater pumping
- Diversion timing and pressure
- Loss of genetic and life history diversity
- Extremely depressed populations in some locations

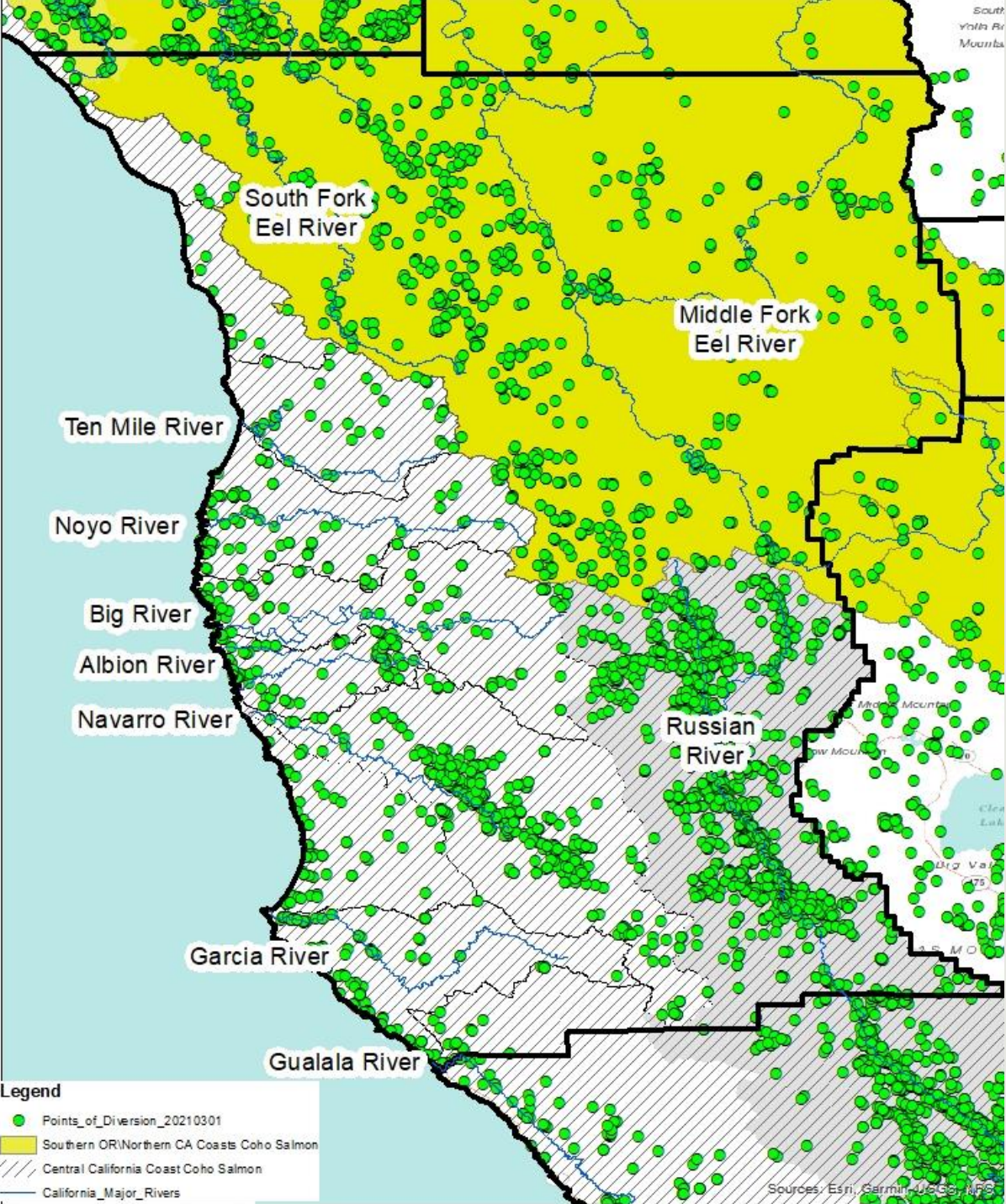


Climate change

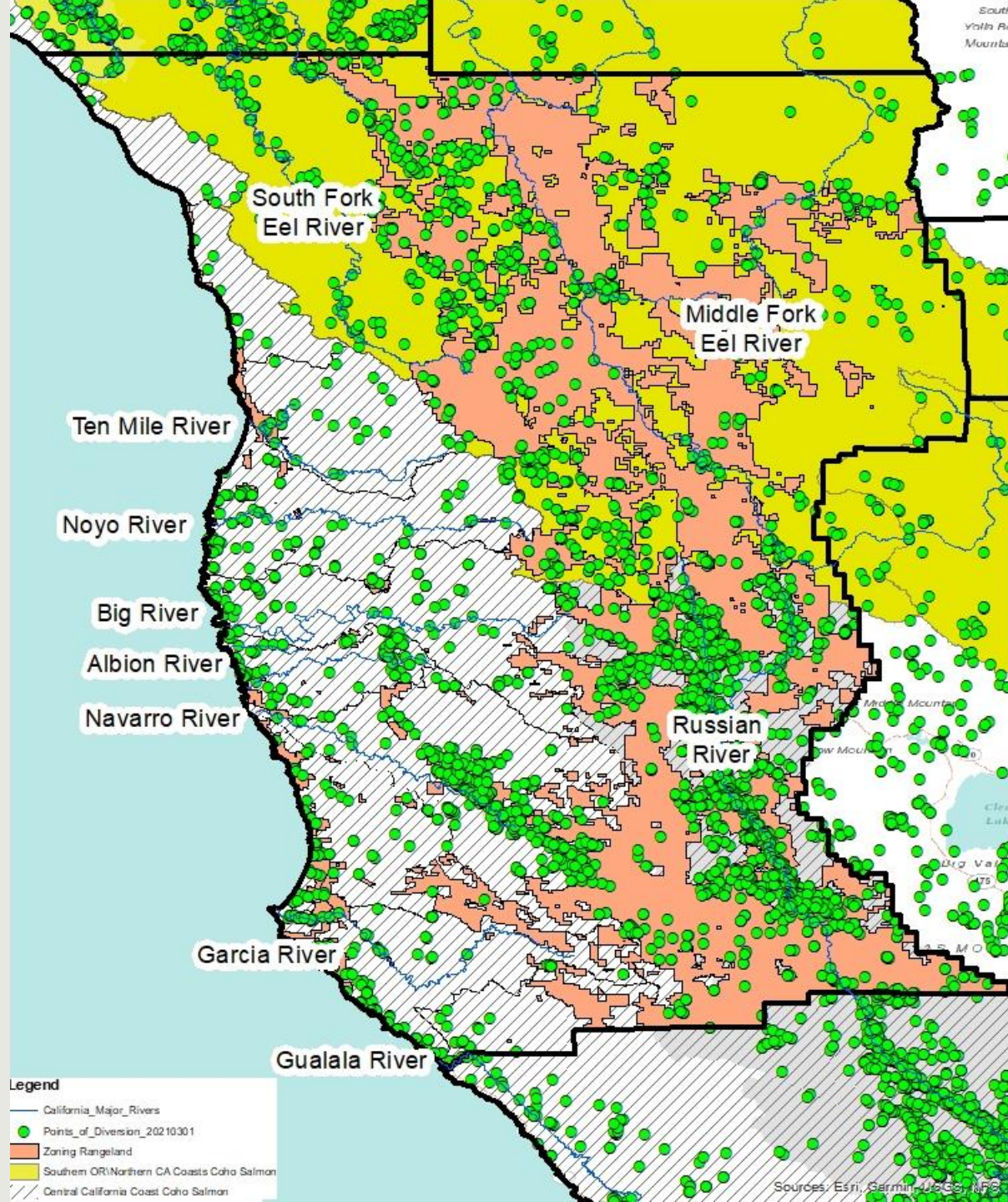
- Marine ecosystem shift
- Altered weather and fog patterns
- Severe drought
- Water temperatures are predicted to become warmer in many watersheds



Registered water diversions



Rangeland Zoning



Fisheries concerns associated with cannabis cultivation

- surface water diversion pressure
streamflow depletion from
groundwater pumping
- diversion timing
- sediment contribution of new or
increased use of roads and crossings

WATERSHEDS THAT ARE
ALREADY FLOW IMPAIRED

South Fork Eel
Russian
Navarro
Garcia

Impacts of low flow

- Disconnected habitat
- Lethal water temperatures
- Disease
- Poor survival

Water is the most important fish habitat



Summary



High priority to recover imperiled populations of salmon and steelhead.



Degraded watersheds decrease salmonid survival.



Human and wildlife needs compete for annual water resources and demand is highest when water is least available.



Agencies and partners have made significant investment to repair stream habitat and build healthy ecosystems resilient to future threats for salmon and steelhead.



Community planning efforts should carefully consider water management strategies that support freshwater ecosystems, provide community water security, and consider current and future impacts of climate change.



Thank you.



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Resources

- Final recovery plan for the Southern Oregon/Northern California Coast Coho salmon 2014 <https://repository.library.noaa.gov/view/noaa/15985>
- Recovery plan for the Central California Coast Coho salmon. 2012 <https://repository.library.noaa.gov/view/noaa/15987>
- Final Coastal Multispecies Recovery Plan for California Coastal Chinook Salmon, Northern California Steelhead and Central California Coast Steelhead 2016 <https://www.fisheries.noaa.gov/resource/document/final-coastal-multispecies-recovery-plan-california-coastal-chinook-salmon>
- California Department of Fish and Game. 2004. Recovery strategy for California coho salmon. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=99401&inline>
- Recovery Strategy for California Coho Salmon Progress Report 2004 - 2012. <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=165447&inline>
- Priority Action Coho Team (PACT) initiative <https://wildlife.ca.gov/Conservation/Fishes/Coho-Salmon/PACT>
- Russian River Salmon and Steelhead Monitoring Program <https://caseagrants.ucsd.edu/project/russian-river-salmon-and-steelhead-monitoring-program>