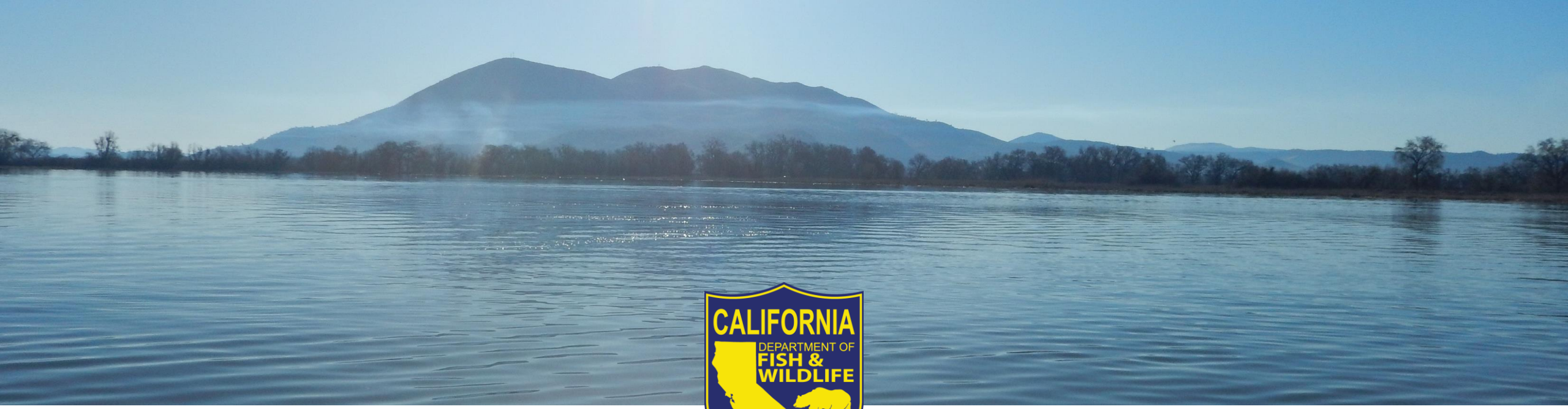


CLEAR LAKE HITCH UPDATE

Presentation to Lake County Board of Supervisors

March 5th, 2024

PRESENTED BY: FELIPE LA LUZ

California Department of Fish and Wildlife

Overview

- Task Force & Summit
- Draft Population Target
- Relative Population Index
- Hitch Habitat
- How you can help and stay informed

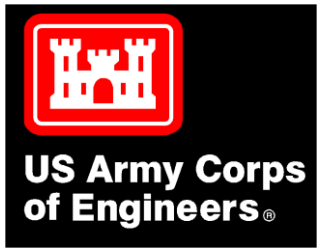
Map Data ©2022 Google

Task Force

- Originated from Gov – Gov consultation August 2022
- Summits held in 2022, 2023. Planning a third for 2024
- Coordinate projects, share data, improve communication

Task Force and Collaborators

Robinson Rancheria
Pomo Indians of California



2023 Summit Outcomes and Commitments

Commitments

- Staff and funding
- Co-Management
- Research
- Restoration
- Conservation Strategy

Areas to Improve

- Data
  - Surface/Groundwater interaction
  - Biological data
- Enforcement of existing regulations
- Resolve habitat and life cycle uncertainties
  - Surface/groundwater
  - Habitat connectivity

Kelsey Creek at Main Street Bridge

Relative Population Estimate

Relative Population Estimate Calculation

- Mark - Recapture Survey
  - Uses ratio of marked to unmarked fish to estimate population
- Estimate (Index)
  - Not absolute abundance
  - Used to observe trends over time
- Calculated two ways
- Based on four sampling events in 2020 due to Covid
- 8 – 10 sampling events in other years

Schnabel Method (SM)

$$N = \frac{(C_{t=1} * M_{t=1}) + (C_{t=2} * M_{t=2}) + (C_{t=3} * M_{t=3}) + (C_{t=4} * M_{t=4})}{R_{total}}$$

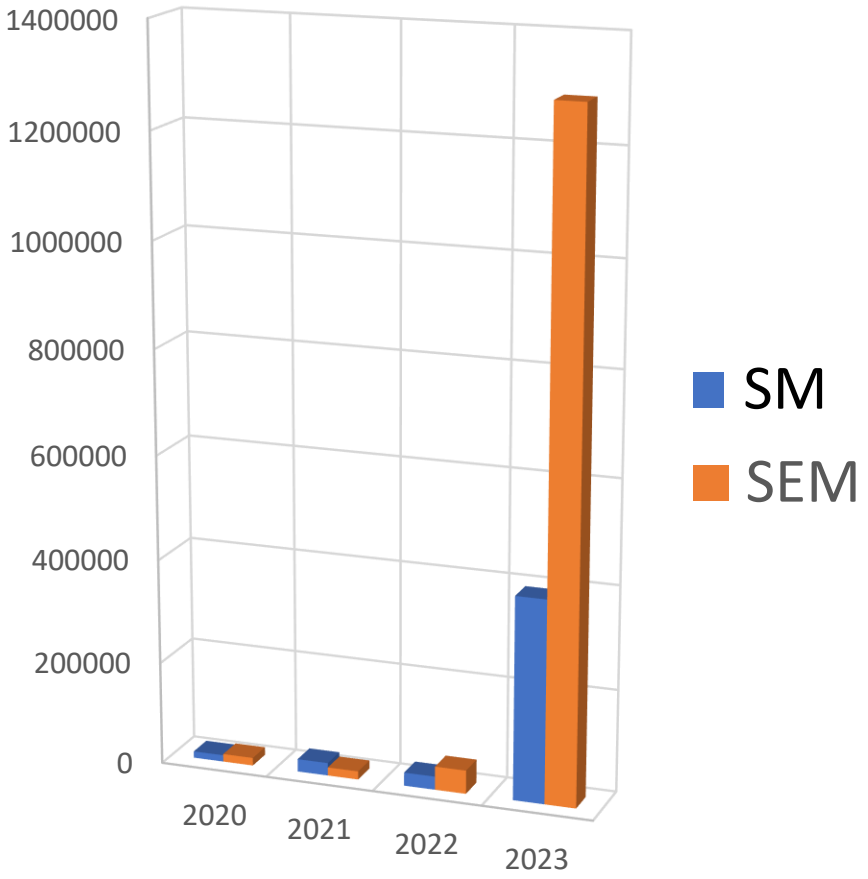
Schumacher-Eschmeyer Method (SEM)

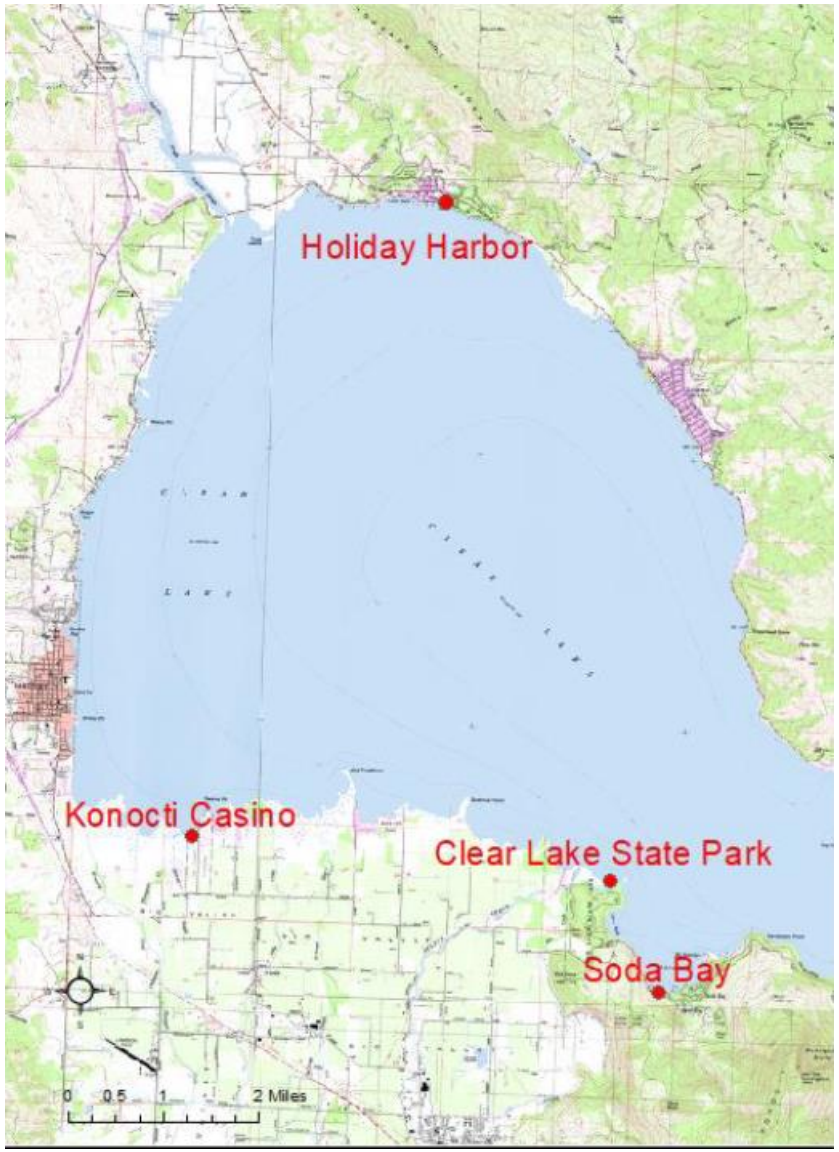
$$N = \frac{(C_{t=1} * M^2_{t=1}) + (C_{t=2} * M^2_{t=2}) + (C_{t=3} * M^2_{t=3}) + (C_{t=4} * M^2_{t=4})}{(R_{t=1} * M_{t=1}) + (R_{t=2} * M_{t=2}) + (R_{t=3} * M_{t=3}) + (R_{t=4} * M_{t=4})}$$

N = Estimate
t = Time (sample number)
C_t = Number of fish collected at time ‘t’
R_t = Number of marked fish collected at time ‘t’
U_t = Number of fish marked and captured at time ‘t’
M_t = Total number of marked fish at time ‘t’

Relative Population Estimate Results

- SM = 393,750
  - (95% CI = 73,971 – 7,720,588)
- SEM – 1,289,481
  - (95% CI = 282,618 – NA)
- 1000 fish marked
- 1 Recapture





Draft Population Target

Survey	Criteria	2023
Visual Survey	> 8,360	2,548 ✗
Relative Pop. Est.	> 75,000	SM = 393,750 SEM = 1,289,481 ✓
General Fish Survey	5th most abundant or greater	2nd ✓

- Described in Draft Conservation Strategy
- Based on Three CDFW Surveys
  - Visual Survey
  - Relative Population Estimate
  - General Fish Survey
- All three criteria to be met for 6 consecutive years

Habitat

Hitch use the entire watershed

- Potamodromous life history = migrate from lake to streams to spawn.
- Larvae & Juveniles in streams and near shore in tules
- Adults are pelagic in lake
- Potentially occupy isolated water bodies
- Hypothesis: Wet years improve connectivity

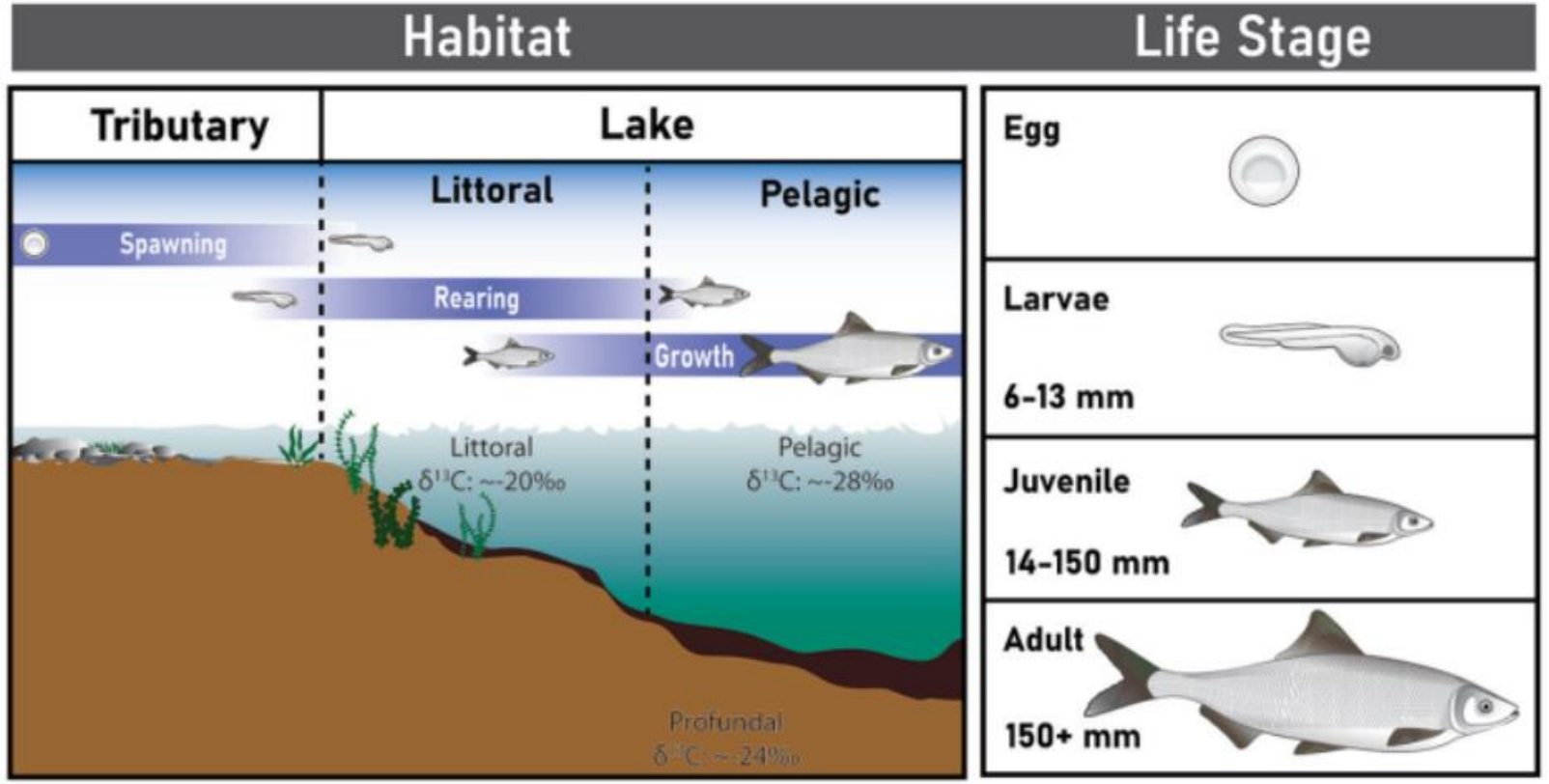


Figure 1 from Young, Et al., 2021. Eye lenses reveal ontogenetic trophic and habitat shifts in an imperiled fish, Clear Lake Hitch (*Lavinia exilicauda chi*).

Water Use and Hitch Habitat

- State Water Resources Control Board (SWRCB)
  - Emergency Regulation and Information Order
- CDFW Instream Flow Study

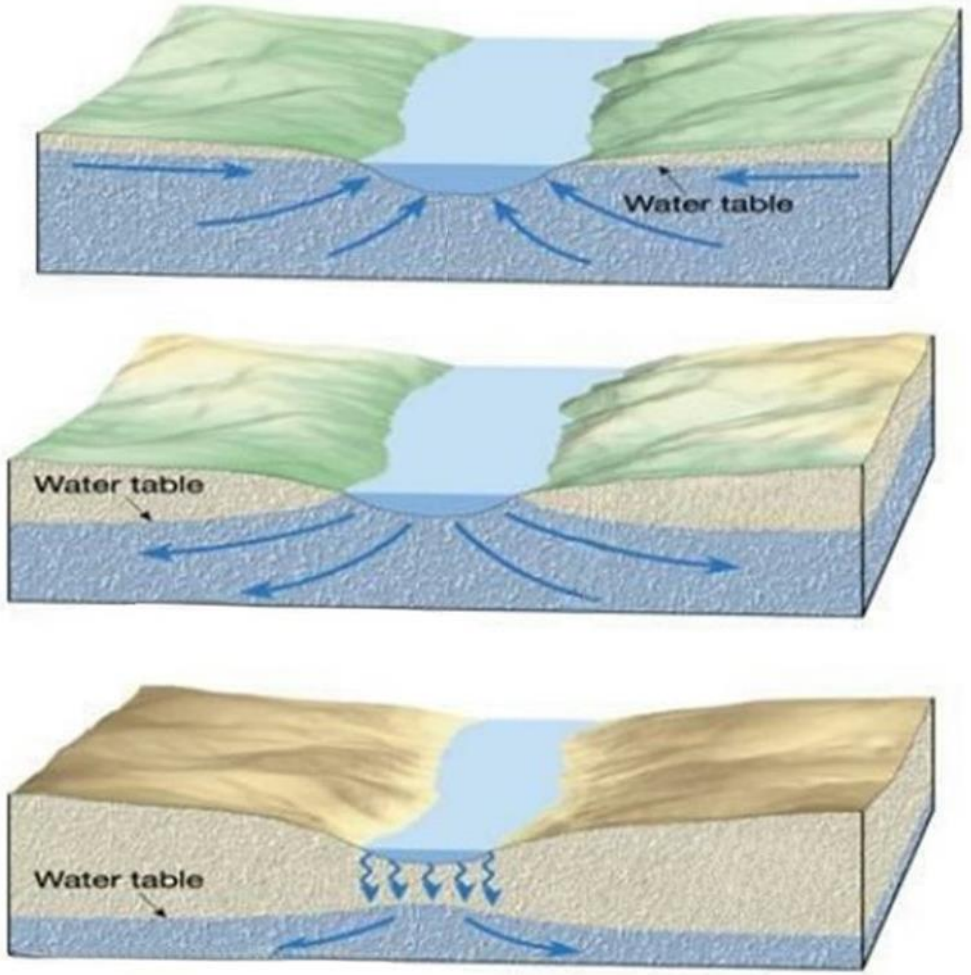


Figure adapted from Winter Et al., 1998. Ground Water and Surface Water A Single Resource. https://pubs.usgs.gov/circ/circ1139/

Groundwater and Hitch Habitat

- Early drying of streams
  - Direct mortality - stranding and desiccation of all life stages
  - Prevents fish passage

Adobe Creek March 2014

Other Habitat Considerations

Tule, willow, and other native plant restoration provide habitat for juveniles and other species

Non-native species affect habitat and survival

Barriers and Fish Passage

Estimated 92% of spawning habitat is blocked by barriers (CDFW 2014 Status Review)

Manning Creek Fish Ladder installed on private property at no cost to owner

How can the public help?

- Share your data and participate in a water use monitoring program
  - SWRCB or Big Valley EPA
- Report stranded Hitch to CDFW or a Tribal Environmental Protection Agency
- Report Barriers
- Report Pollution locally or to CalEPA https://oag.ca.gov/environment/contact
- Do not disturb Hitch in streams

How to stay informed and be heard

- SWRCB Webpage: https://waterboards.ca.gov/clearlakehitch/
  - Subscribe to the Clear Lake Hitch Email List
- Fish and Game Commission: https://fgc.ca.gov/
  - Subscribe to Public Notifications Email List
  - Watch meetings and provide comments online
- Blue Ribbon Committee for the Rehabilitation of Clear Lake
  - Subscribe to Email List and attend meetings
  - https://resources.ca.gov/Initiatives/Blue-Ribbon-Committee-for-the-Rehabilitation-of-Clear-Lake

Contact Information

- Permitting Questions – R2Info@wildlife.ca.gov
  - Lake and Streambed Alteration, streambed maintenance
- SWRCB - ClearLakeHitch@waterboards.ca.gov
- CDFW Instream Flow Study – instreamflow@wildlife.ca.gov
- Cannabis Questions - AskCannabis@wildlife.ca.gov
- CDFW District Biologist Ben Ewing - ben.ewing@wildlife.ca.gov
- General Fish Questions – Native.Fishes@wildlife.ca.gov
- Unsure who to contact? Ask me Felipe La Luz - felipe.laluz@wildlife.ca.gov

Questions?