

Department of Fish and Wildlife 2014-2015 Drought Response



Stafford Lehr, Chief

Fisheries Branch

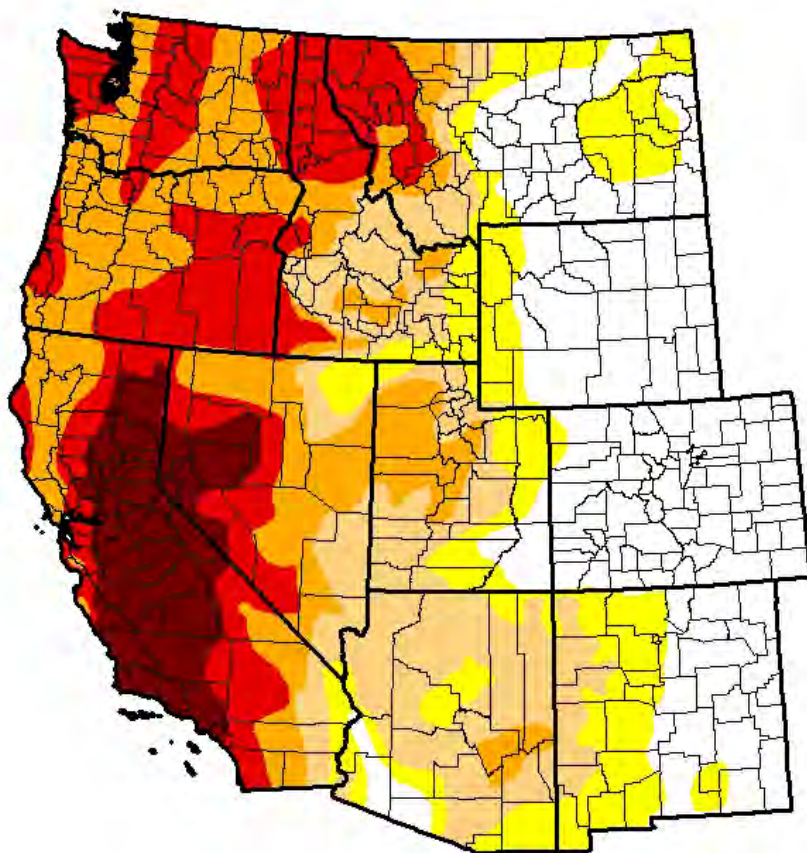
California Department of Fish and Wildlife

California Drought

- Declaration of Emergency - January 2014
- Drought Task Force
 - Activation of Emergency Operations Center
- Emergency Budget Act(s)
 - \$3.7B – statewide
 - \$53.8M – CDFW

Drought Across the West

U.S. Drought Monitor West



August 18, 2015

(Released Thursday, Aug. 20, 2015)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	26.53	73.47	58.91	42.01	23.69	7.62
Last Week 8/11/2015	26.53	73.47	59.95	42.43	23.22	7.62
3 Months Ago 5/19/2015	23.49	76.51	60.69	36.57	17.59	7.95
Start of Calendar Year 12/02/2014	34.76	65.24	54.48	33.50	18.68	5.40
Start of Water Year 9/30/2014	31.48	68.52	55.57	35.65	19.95	8.90
One Year Ago 8/19/2014	27.21	72.79	59.27	42.84	20.97	8.90

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

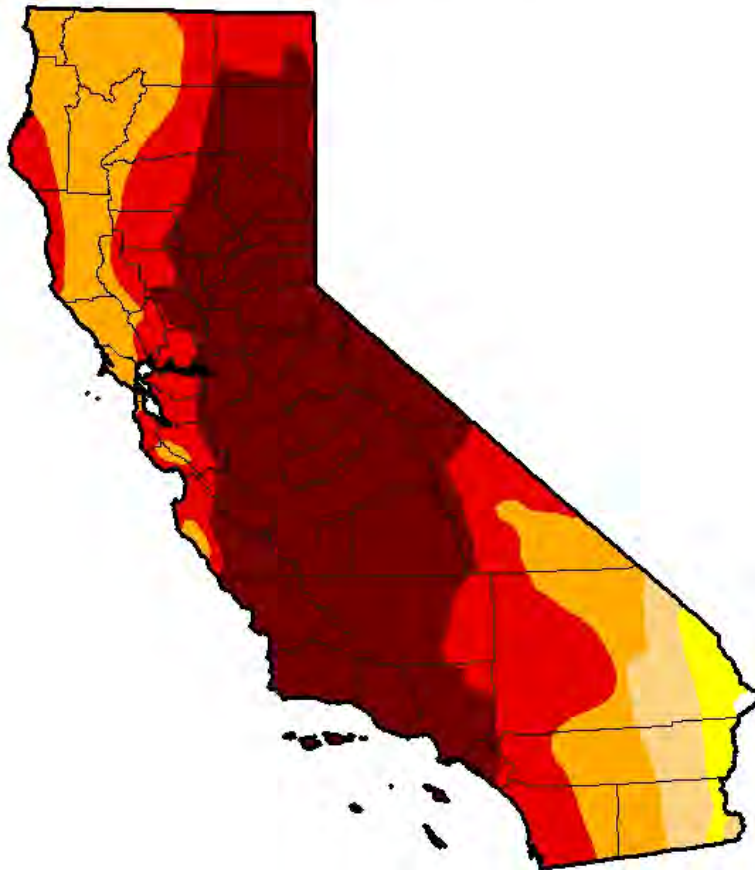
Chris Fenimore
NCEI/NESDIS/NOAA



<http://droughtmonitor.unl.edu/>

California

U.S. Drought Monitor California



August 18, 2015

(Released Thursday, Aug. 20, 2015)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.14	99.86	97.35	92.36	71.08	46.00
Last Week 8/11/2015	0.14	99.86	97.35	92.36	71.08	46.00
3 Months Ago 5/19/2015	0.14	99.86	98.28	93.91	66.60	46.77
Start of Calendar Year 12/30/2014	0.00	100.00	98.12	94.34	77.94	32.21
Start of Water Year 9/30/2014	0.00	100.00	100.00	95.04	81.92	58.41
One Year Ago 8/19/2014	0.00	100.00	100.00	97.59	81.92	58.41

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Chris Fenimore
NCEI/NESDIS/NOAA



<http://droughtmonitor.unl.edu/>

Drought Conditions

- **Sierra snow pack = 5% - April 1, 2015**
- **Sierra snow pack = 0% - June 1, 2015**
- **Major reservoirs storage ~ 25%**
 - **Shasta = 41%**
 - **Oroville = 31%**
 - **San Luis = 22%**
 - **New Melones = 13%**
 - **Folsom = 24%**
 - **Pine Flat = 13%**
 - **Don Pedro = 33%**

Fires - 2015

- Statewide: 5,650 incidents = 260,000 acres

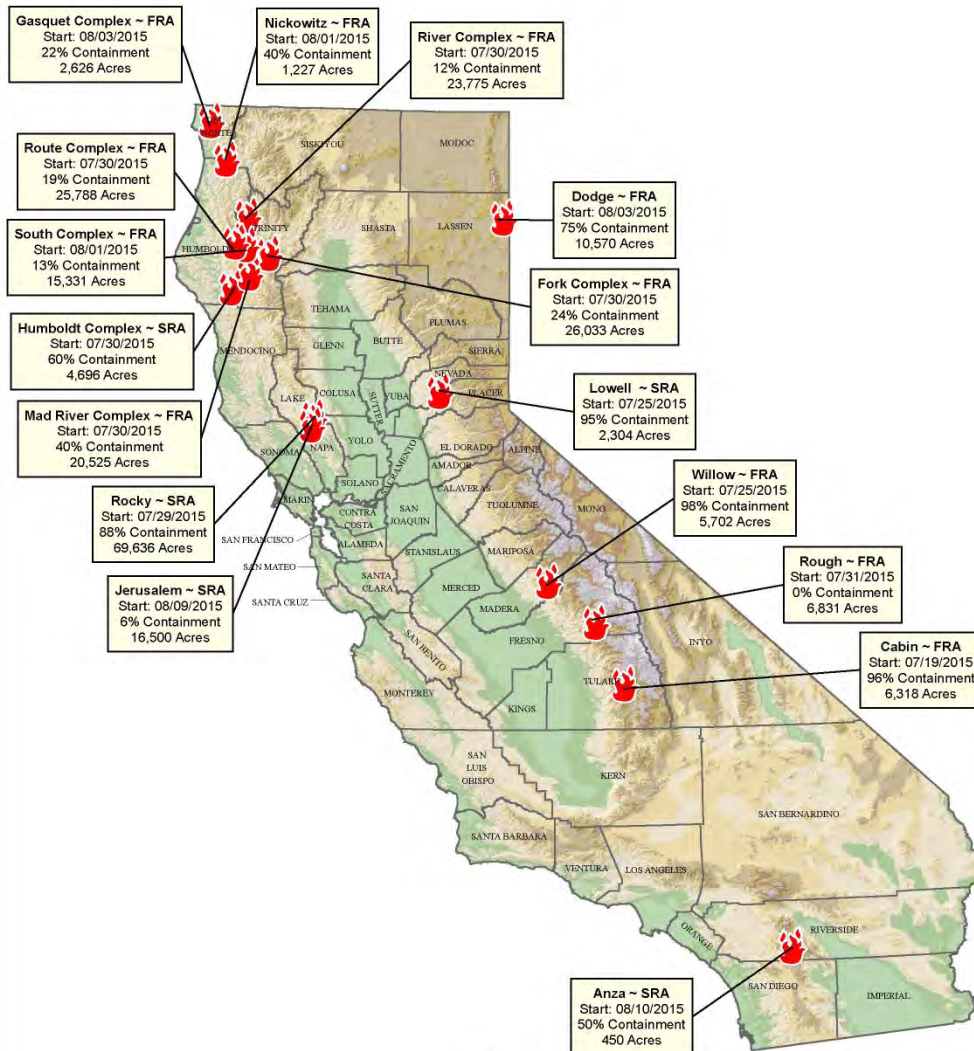
CalFire

- 4,549 Incidents
 - 43% increase from 2014
 - 50% increase from 5-year average
- 144,263 Acres
 - 63% increase from 2014
 - 135% increase from 5-year average



Current Wildland Fires

as of 08/12/2015 0800 Hours



Active Incidents (16)

Total of 16 incidents identified on map



August 12, 2015 0800 hrs
Source: CAL FIRE, RAIN/REB 200p
Active_Incidents/Reps/2015/Statewide/August/
Projects/Statewide_Fires_20150812_0800.mxd

Water Operations

- Real-Time Drought Operations Team
 - Temperature Issues
 - Water Quality Mandates
- Water Rights and FERC Licenses
- Agency/Stakeholder collaboration
- Innovation

Example Drought Impacts Associated with Fish and Wildlife

- Stream flow changes
- Temperature impacts
- Water quality
- Fish stranding/captures
- Disease outbreaks
- Wildlife encounters
- Mortality

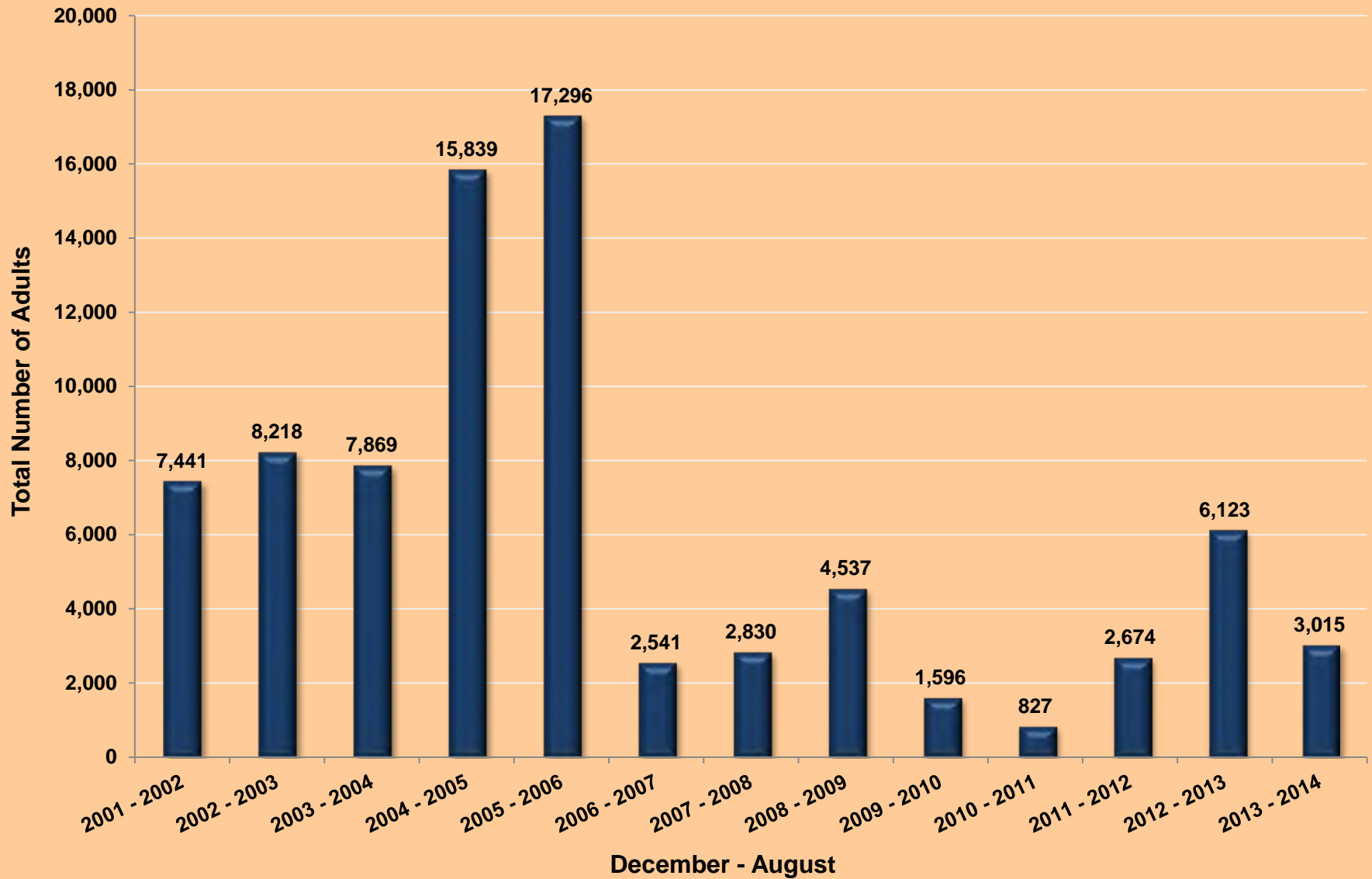
CDFW Led Drought Activities

- Fish and wildlife rescue and relocation
 - Fish rescues
 - Wildlife relocation
- Fishery closures
- Hatchery management
- Enforcement
 - Illegal diversions (marijuana)
 - Water quality impacts
 - Wildlife encounters
- Drought contingency planning for CDFW lands
 - Water supply impacts
 - Habitat acreage
- Voluntary Drought Initiative
 - CA Endangered Species Act/ Federal ESA
 - Small Domestic Diversions

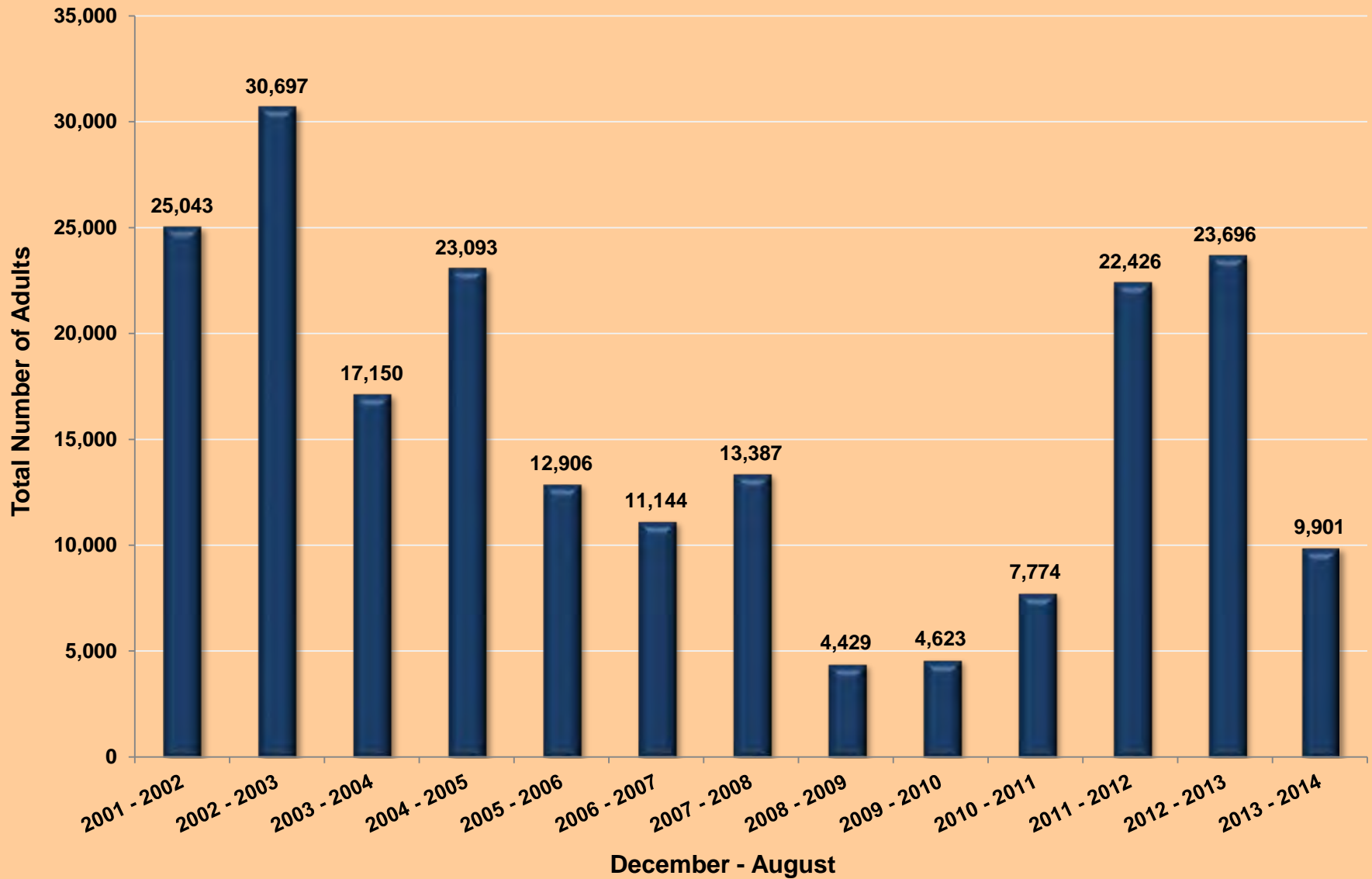
Temperature Effects on Salmon

- 95% loss of 2014 brood year – winter run Chinook
- >95% possible loss of 2014 brood rear – fall run Chinook
- Increase in pre-spawn mortality – spring run Chinook

CA Department of Fish and Wildlife Winter-Run Chinook Salmon



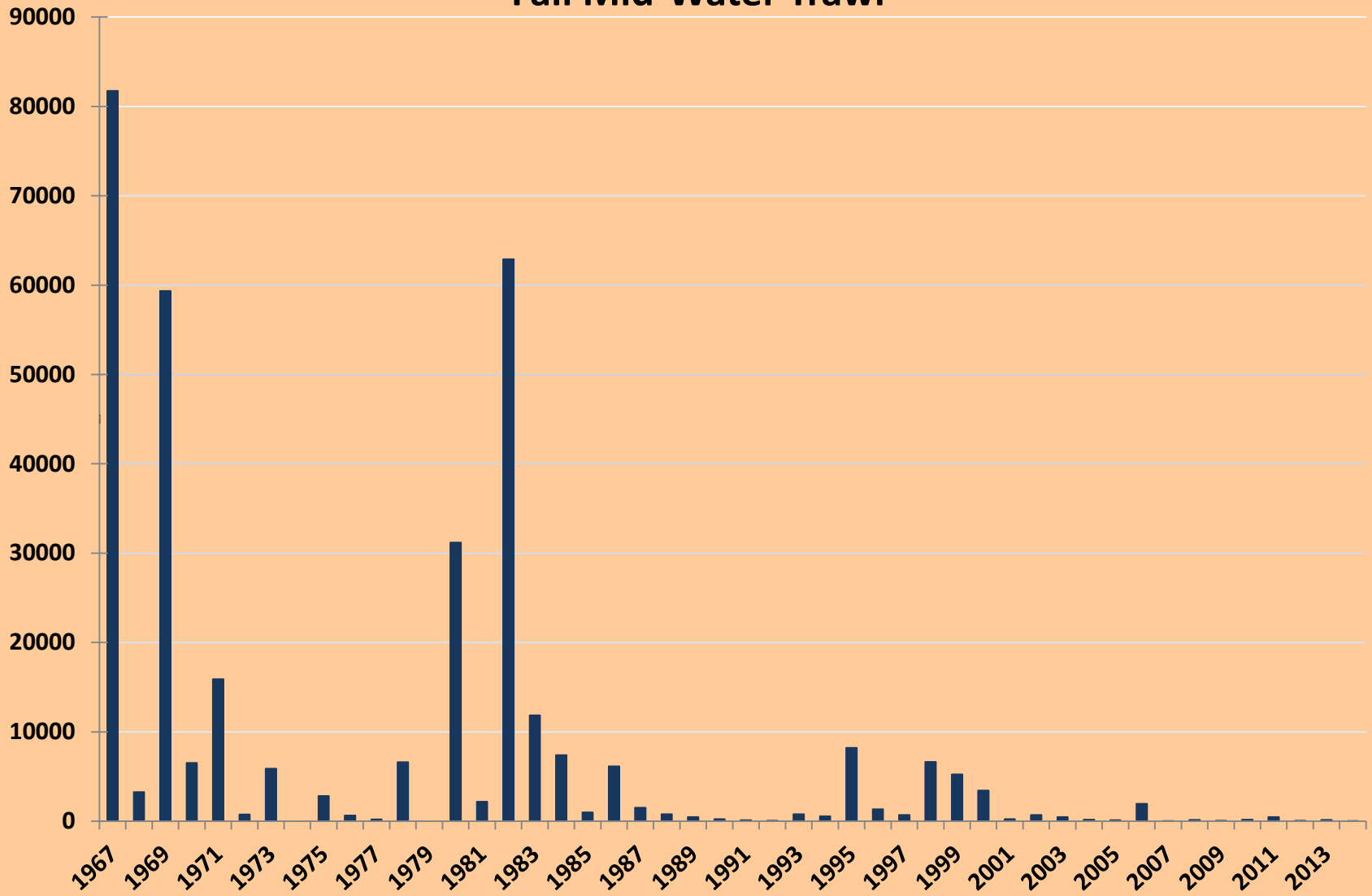
CA Department of Fish and Wildlife Spring-Run Chinook Salmon



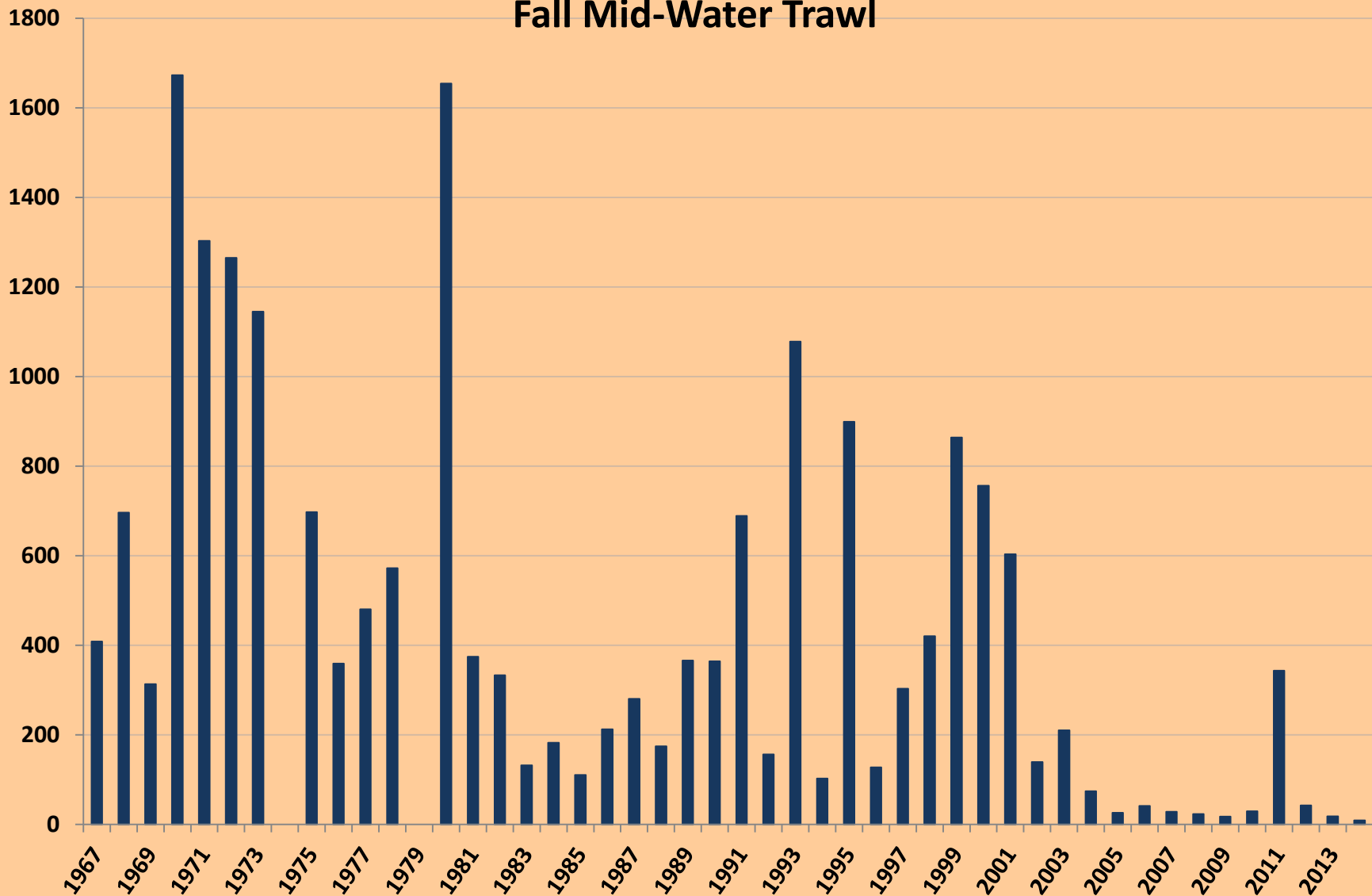
CA Department of Fish and Wildlife

Longfin Smelt Index

Fall Mid-Water Trawl

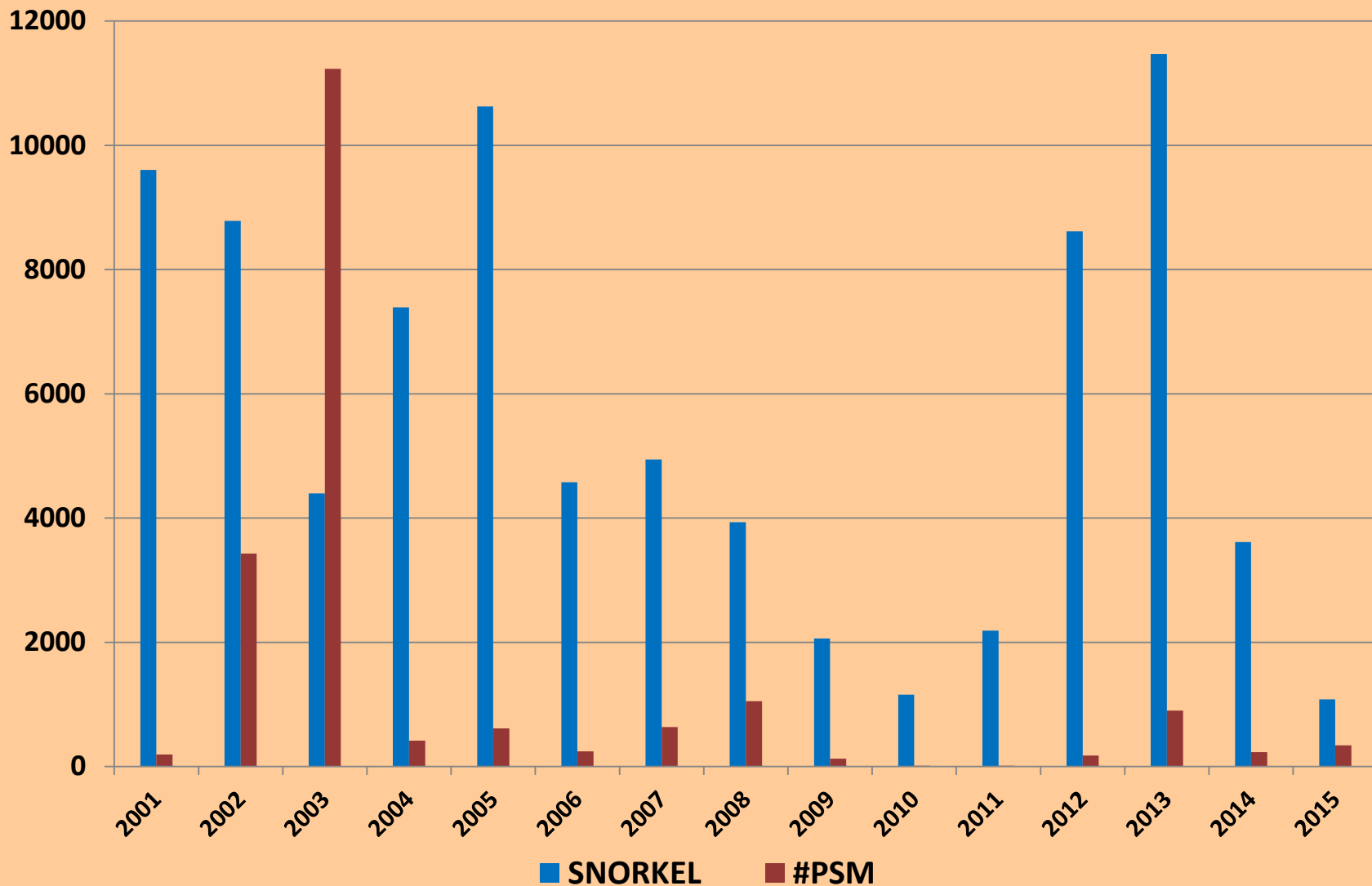


CA Department of Fish and Wildlife
Delta Smelt Index
Fall Mid-Water Trawl



Butte Creek Survey

Spring run Chinook



Winter and Spring Run Chinook Actions

- Increased smolt production
- Increased temperature monitoring
- Introduction plan development – Battle Creek
- Barrier remediation – Deer and Battle Creeks

Klamath River Response

- Klamath Fish Health Assessment Team (KFHAT)
- Tribal and State Incident Command Structure
- Joint monitoring with Tribes (Yurok and Hoopa)
- Flow augmentation
 - 3 events (2 in Trinity, 1 from Iron Gate)

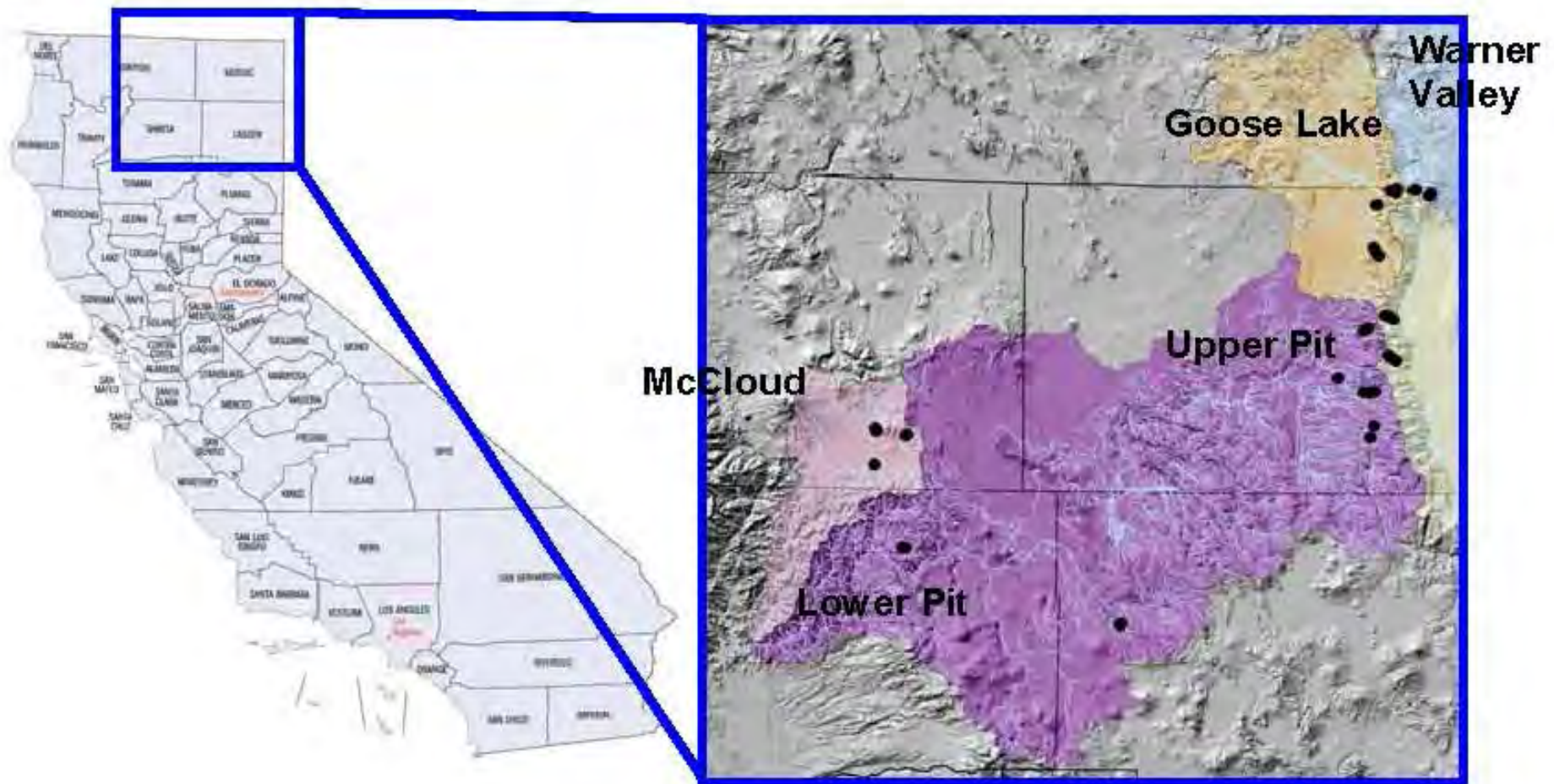
Fish Rescues

- 783 rescues in 52 different watersheds
- 51 species
- >264,000 fish

Fish Species Rescued

- Winter, spring, and fall runs Chinook
- Coho
- Steelhead
- Redband trout
- Lahontan cutthroat trout
- Unarmored three-spine stickleback
- Clear Lake Hitch
- Sacramento perch

Figure 1. Map of Redband Sampling locations.





2014.01.14

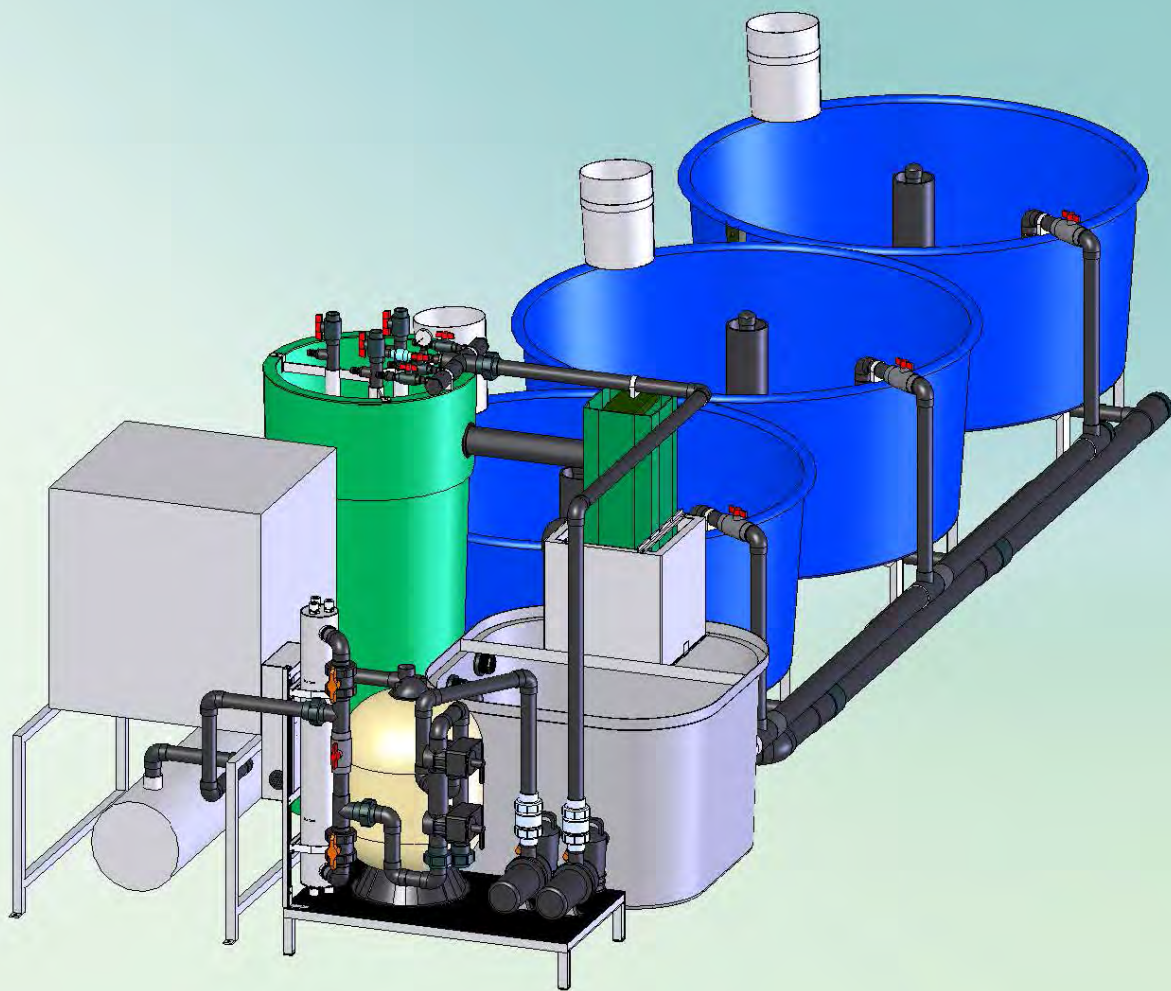


11.14.2013





01.31.2014











Fishery Closures or Restrictions

2014

- American River
- Russian River
- Selected central coast streams
- Merced River

2015

- Sacramento River (Redding)
- PFMC - Winter run Chinook constraints
- Merced River

Emergency Authority

- Delegated to CDFW from Fish and Game Commission
- 5 metrics (must meet at least 1)
 - Water Temp = $>70^{\circ}\text{F}$ (8 hrs./day for 3 days)
 - D.O. = $<5\text{mg/L}$ (3 consecutive days)
 - Fish passage impeded (migratory fish)
 - Ponds and Lakes ($<10\%$ capacity)
 - Breeding population (<500 individuals)

Salmon and Trout Hatcheries

- Trucked ~ 50+ million smolts to acclimation pens – 2014 and 2015
- Evacuated 4 hatcheries (3 in 2014, 4 in 2015)
- Installed chillers and filtration – 1 facility
- Plans for 3 anadromous facilities – chillers and filtration
- Whirling disease in 3 facilities (~6 million trout)

Trucking Salmon









American River









Law Enforcement

- Illegal water diversions
 - Marijuana Enforcement
- Fishing in closure areas
- Human wildlife/conflicts











Wildlife Drought Response

- Captive breeding programs
- Increase human wildlife encounters
- Building resilience and durability for refuges
 - 37 water infrastructure projects
 - Coordinated water operations

Armagosa Vole

- Wetland dependent mammal
- Isolated to marshes in Mojave Desert
- Habitat shrinking rapidly
- Captive breeding
- Improvements in marsh hydrology









Human – Wildlife Conflict

- Geographic prioritization
- Pre-positioning of resources
- 24-hour response network
- Improve support facilities

