

Department of Fish and Wildlife 2014-2015 Drought Response



Stafford Lehr
Acting Deputy Director
California Department of Fish and Wildlife

U.S. Drought Monitor CONUS

September 8, 2015
(Released Thursday, Sep. 10, 2015)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|-------|-------|-------|-------|-------|------|
| Current | 49.63 | 50.37 | 31.67 | 19.62 | 10.92 | 3.00 |
| Last Week 8/1/2015 | 54.21 | 45.79 | 30.43 | 18.72 | 10.71 | 3.00 |
| 3 Months Ago 6/9/2015 | 59.93 | 40.07 | 23.29 | 13.71 | 6.91 | 3.07 |
| Start of Calendar Year 12/30/2014 | 53.20 | 46.80 | 28.68 | 16.93 | 8.96 | 2.54 |
| Start of Water Year 9/30/2014 | 52.22 | 47.78 | 30.57 | 18.66 | 9.41 | 3.85 |
| One Year Ago 9/8/2014 | 53.90 | 46.10 | 31.27 | 20.31 | 9.47 | 3.70 |

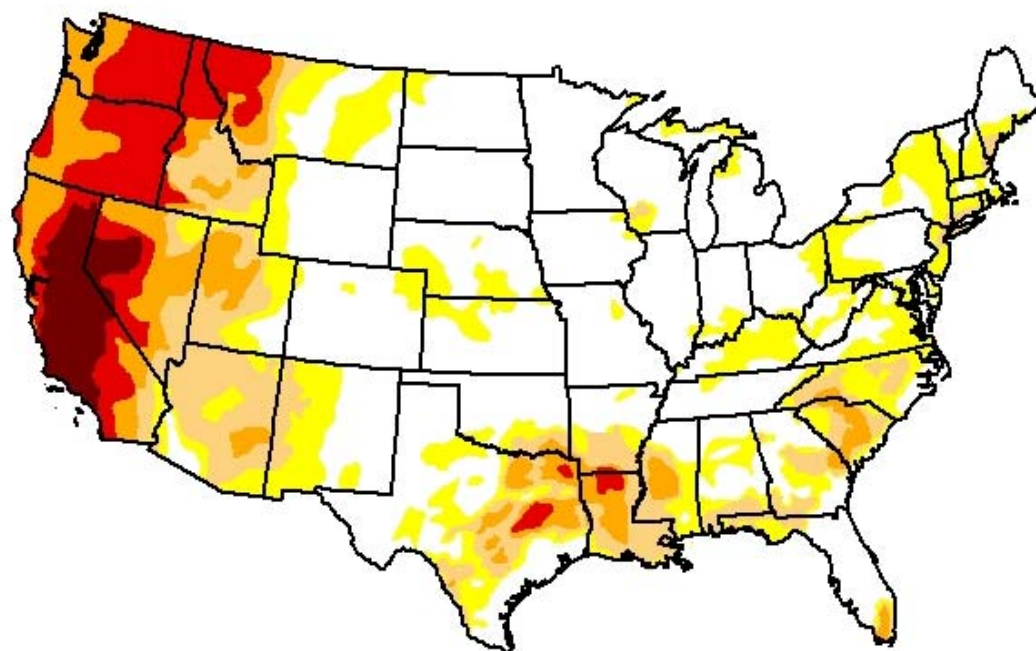
Intensity:

| | |
|--|---|
|  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(s):

Richard Tinker
CPC/NOAA/NWS/NCEP



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

U.S. Drought Monitor West

September 8, 2015
(Released Thursday, Sep. 10, 2015)
Valid 8 a.m. EDT

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|---|-------|-------|-------|-------|-------|------|
| Current | 24.68 | 75.32 | 59.67 | 42.69 | 26.73 | 7.62 |
| Last Week 8/1/2015 | 25.33 | 74.67 | 59.67 | 42.69 | 26.73 | 7.62 |
| 3 Months Ago 6/9/2015 | 26.12 | 73.88 | 55.26 | 34.69 | 17.52 | 7.78 |
| Start of Calendar Year 12/30/2014 | 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 9/8/2014 | 28.38 | 71.62 | 57.36 | 39.26 | 19.83 | 8.90 |

Intensity:

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

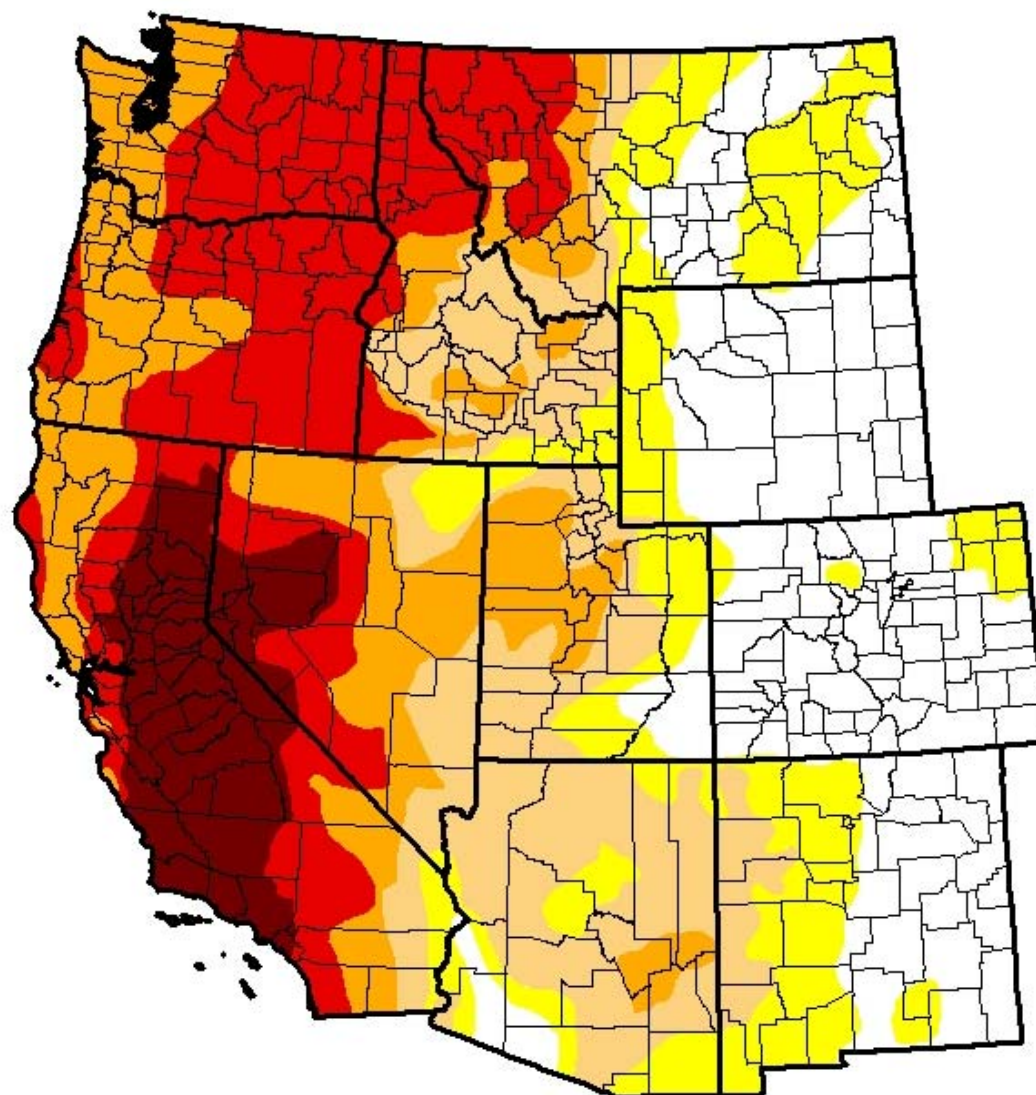
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Richard Tinker
CPC/NOAA/NWS/NCEP

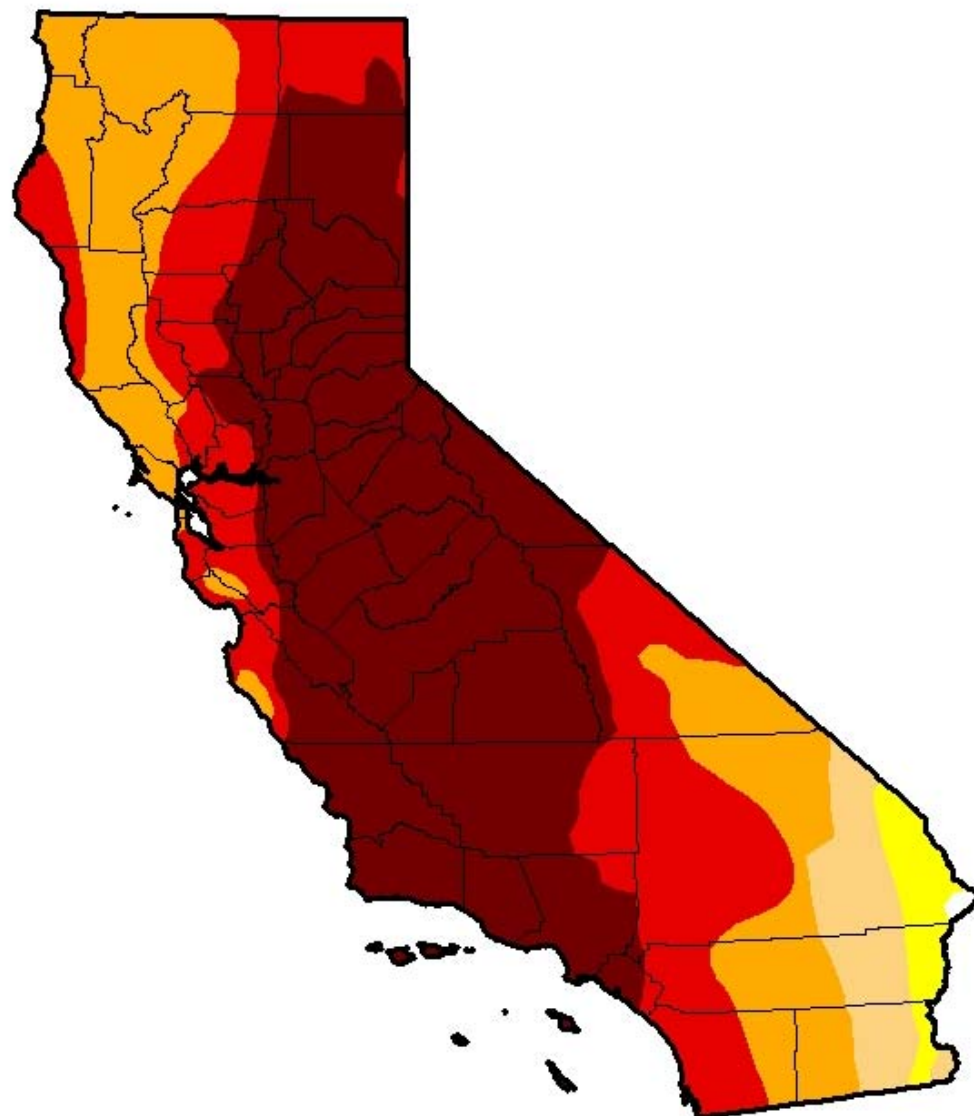


<http://droughtmonitor.unl.edu/>



U.S. Drought Monitor California

September 8, 2015
(Released Thursday, Sep. 10, 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 8/1/2015 | 0.14 | 99.86 | 97.35 | 92.36 | 71.08 | 46.00 |
| 3 Months Ago 6/9/2015 | 0.14 | 99.86 | 98.71 | 93.91 | 71.08 | 46.73 |
| Start of Calendar Year 12/31/2014 | 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 9/8/2014 | 0.00 | 100.00 | 100.00 | 95.42 | 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:

Richard Tinker
CPC/NOAA/NWS/NCEP



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

U.S. Drought Monitor California

March 1, 2016

(Released Thursday, Mar. 3, 2016)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

| | None | D0-D4 | D1-D4 | D2-D4 | D3-D4 | D4 |
|--|------|--------|-------|-------|-------|-------|
| Current | 0.43 | 99.57 | 95.13 | 82.66 | 60.86 | 38.48 |
| Last Week <i>2/23/2016</i> | 0.43 | 99.57 | 94.38 | 81.82 | 60.86 | 38.48 |
| 3 Months Ago <i>12/1/2015</i> | 0.14 | 99.86 | 97.33 | 92.26 | 70.55 | 44.84 |
| Start of Calendar Year <i>12/29/2015</i> | 0.00 | 100.00 | 97.33 | 87.55 | 69.07 | 44.84 |
| Start of Water Year <i>9/29/2015</i> | 0.14 | 99.86 | 97.33 | 92.36 | 71.08 | 46.00 |
| One Year Ago <i>3/3/2015</i> | 0.16 | 99.84 | 98.10 | 93.44 | 67.46 | 39.92 |

Intensity:

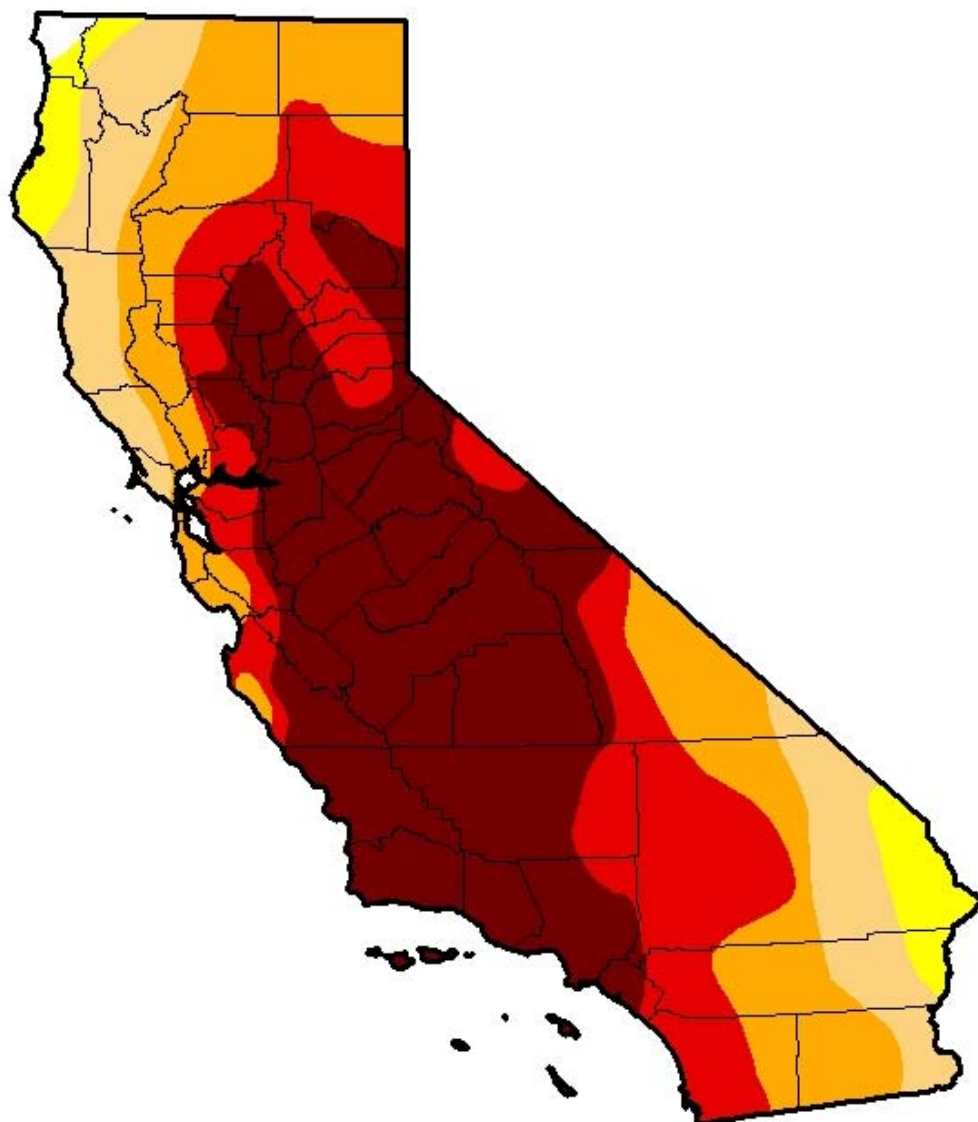
| | |
|--|---|
|  D0 Abnormally Dry |  D3 Extreme Drought |
|  D1 Moderate Drought |  D4 Exceptional Drought |
|  D2 Severe Drought | |

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

Author:

David Miskus

NOAA/NWS/NCEP/CPC



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

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
 - \$17.7 – 2016/2017 Budget

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

Steelhead Actions

- Rangewide stressor monitoring
- Enhanced Central Valley monitoring
- Flow improvements in key watershed
- Barrier remediation – Deer and Battle Creeks

Fish Rescues

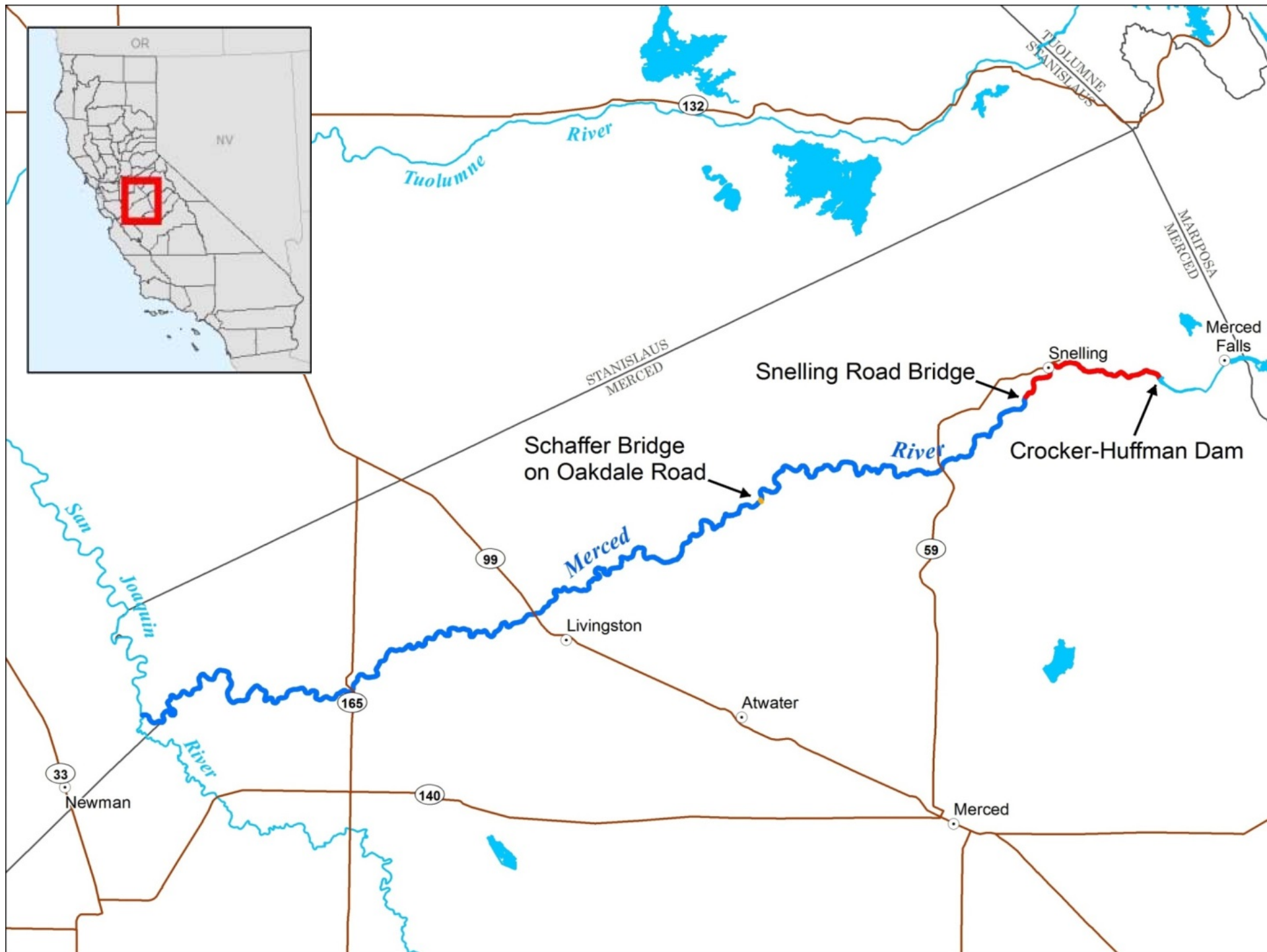
- 932 rescues in 67 different watersheds
- 38 species
- >270,000 fish

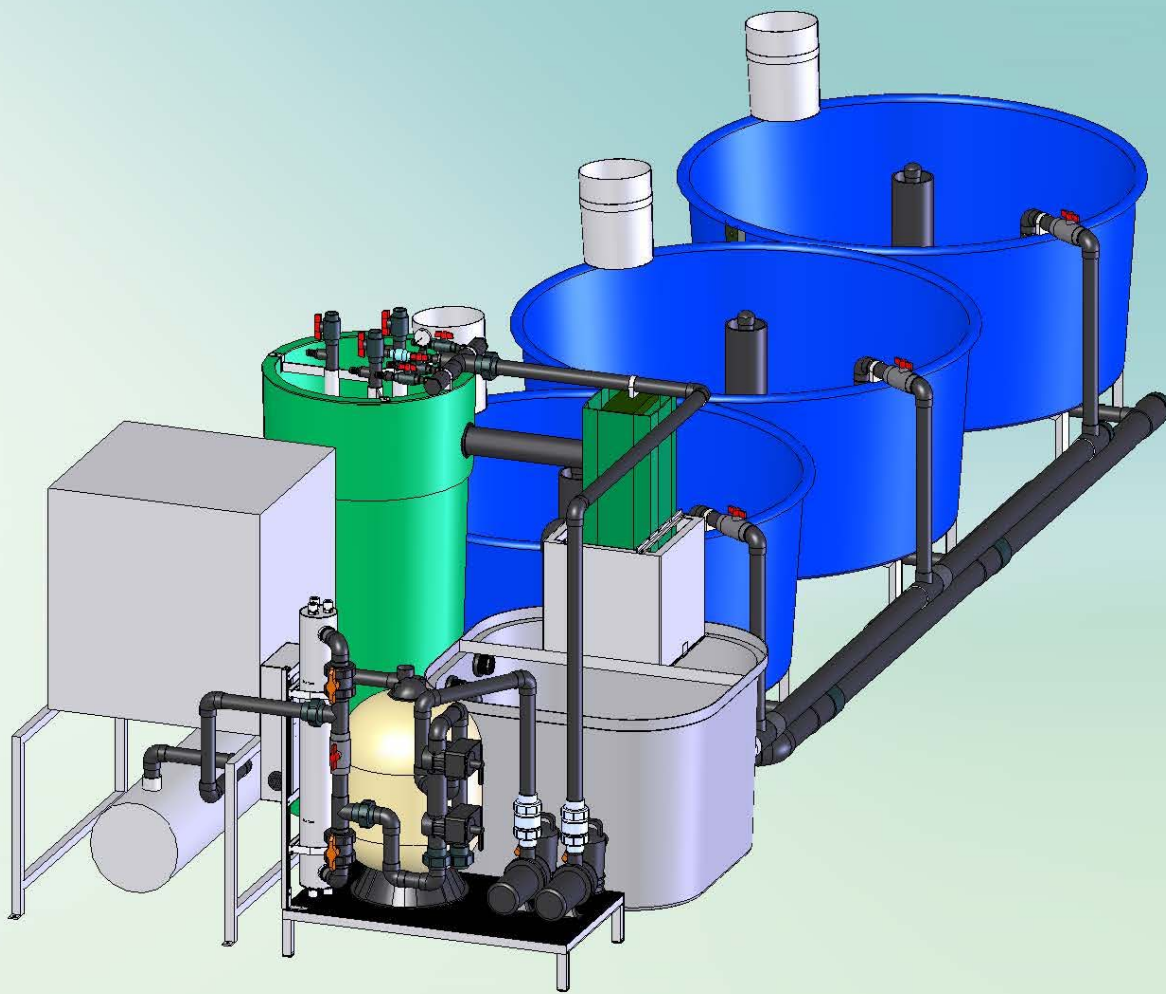
Steelhead Rescues

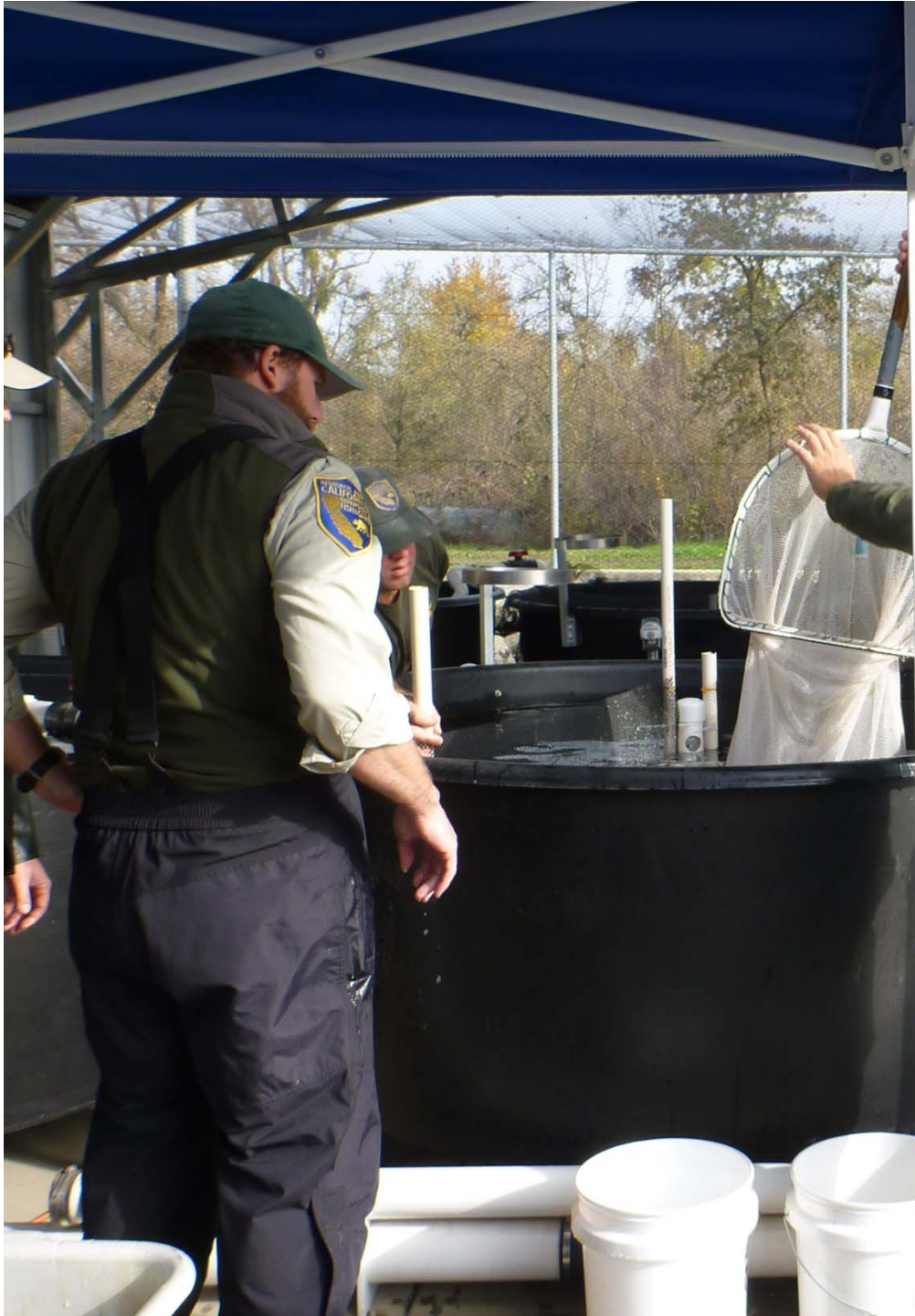
- ~ 75,000 Steelhead rescued
- 37 watersheds
- 16 Counties
- Majority relocated within same watershed

Extreme Measures

- Merced River
- 60+ fish rescued
- Captive holding - 18 months
- Sexually mature adults spawned
- 750+ juveniles
- Released 600+ juveniles – January 2016













Fishery Closures or Restrictions

2014

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

2015

- Sacramento River (Redding) – **2016**
- PFMCC - Winter run Chinook constraints
- Merced River

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)





American River







Law Enforcement

- Illegal water diversions
 - Marijuana Enforcement
- Fishing in closure areas





Successful Tools

- Partnerships with private landowners and NGO's
- Expanding network of real-time sensors
- Improved modeling
- Building resiliency into hatcheries and state lands
- Law Enforcement response
- Conservation facility

