

# ABALONE AND URCHIN FISHERIES: IMPACTS OF KELP DEFORESTATION 2014-2016



DR. CYNTHIA CATTON &  
THE CDFW INVERTEBRATE MANAGEMENT TEAM



# The CDFW North Coast Invert Management Team



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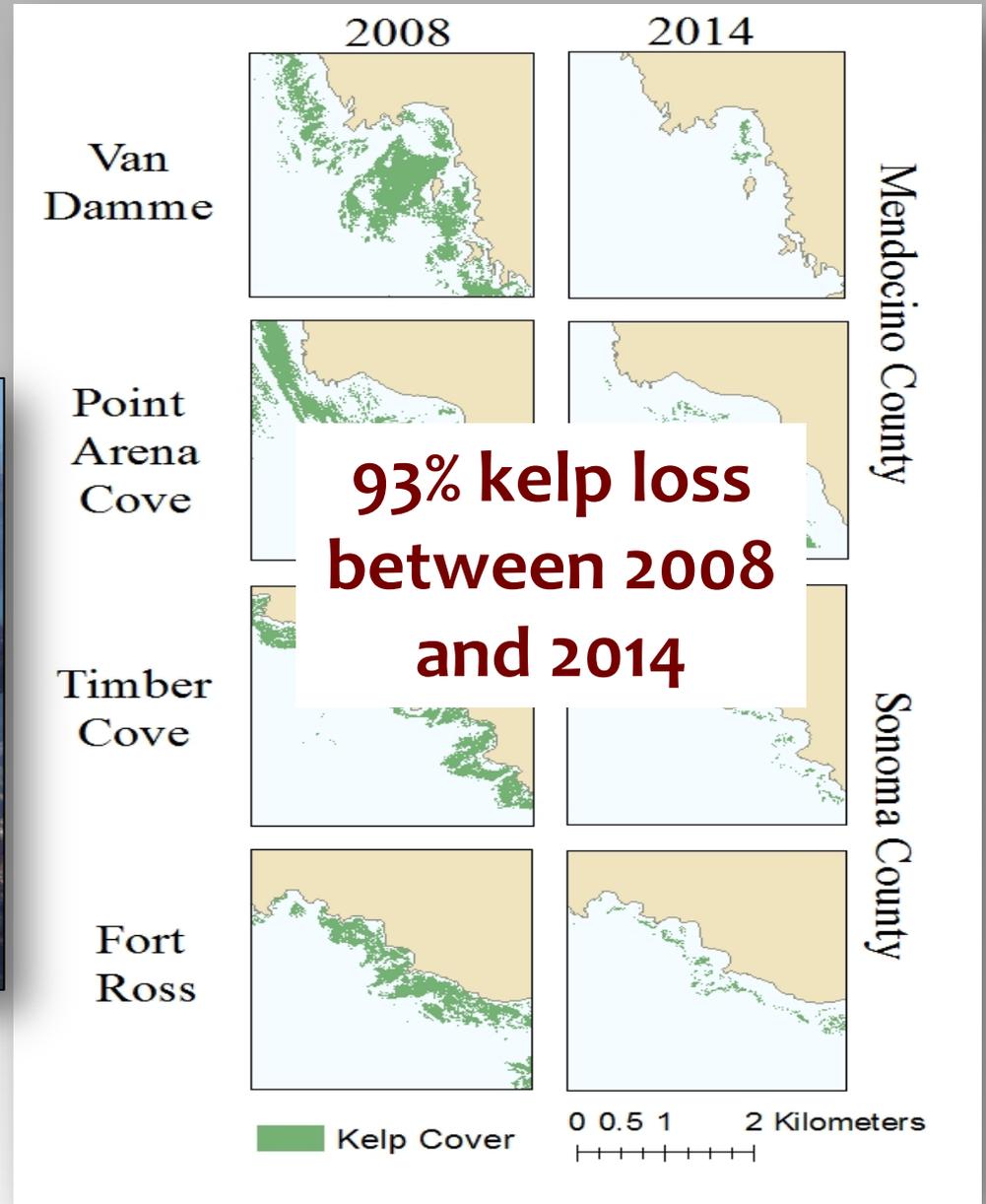


Shelby & Athena  
Kawana Maguire

# Kelp Fly-Over Data CDFW



Photo by: G. Lee (Abalone Diver)  
Mendocino Headlands 2016



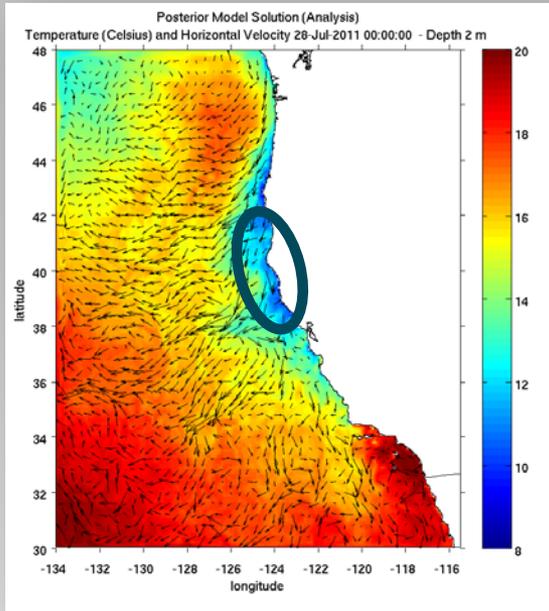
# Unprecedented Large-Scale Purple Sea Urchin Explosion in 2015



- **60x historic densities in N. California**

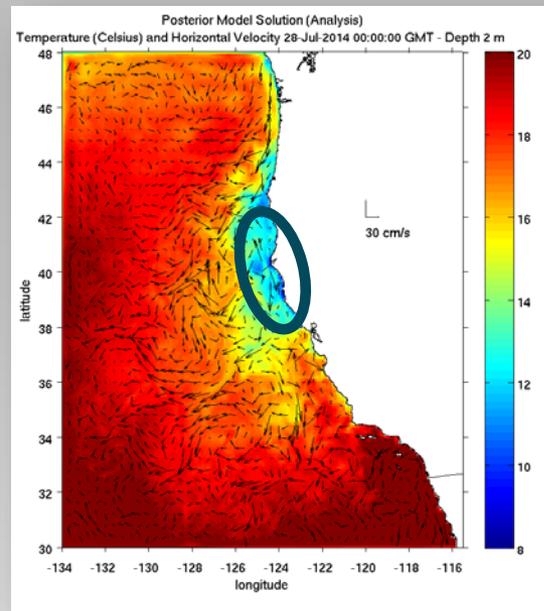
Reports of high urchin numbers from Central California to Washington State

# Persistent Warm Water Conditions



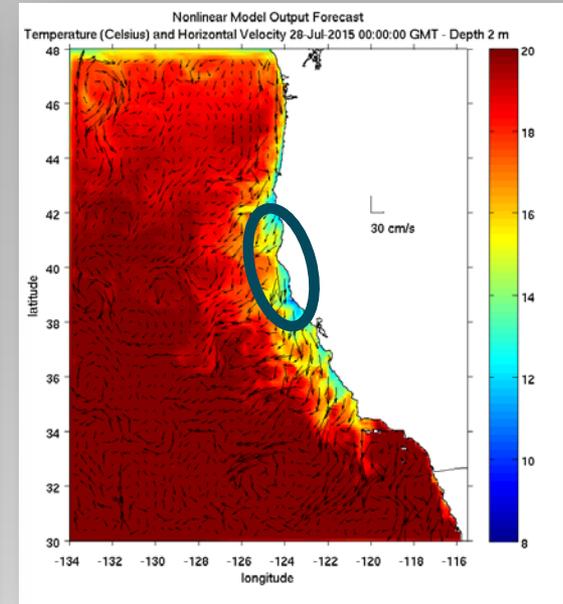
\* July 28, 2011

**Normal**



• July 28, 2014

**“Warm Blob”**



• July 28, 2015

**“Warm Blob” +  
Strong El Niño**

# Kelp loss threatens fisheries and the ecosystem

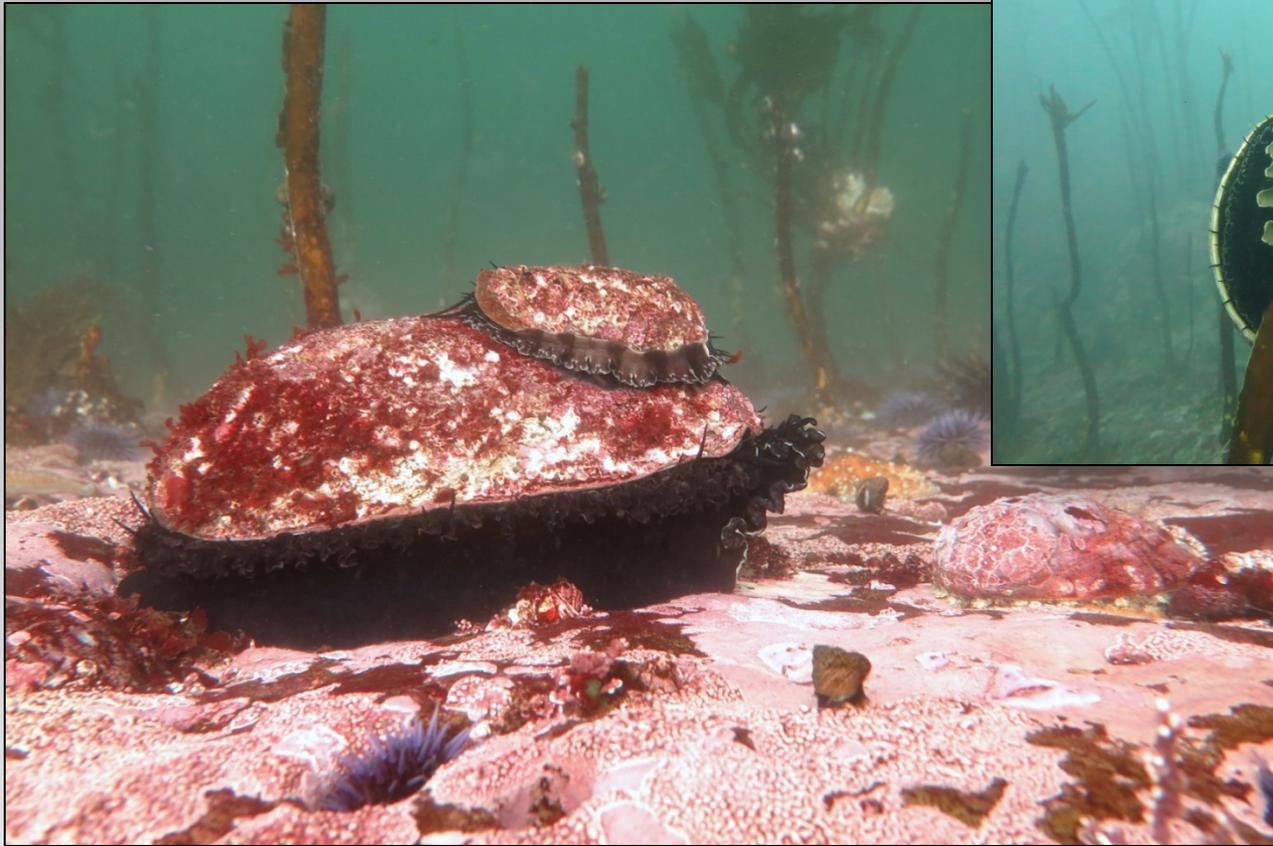


L. Rogers-Bennett (CDFW)



A. Weltz (CDFW)

# Starvation Conditions in Northern California (2014-2016)



A. Maguire (CDFW)



K. Joe (CDFW)

# Economically Important Fisheries

- **Recreational Red Abalone**  
~\$44 million dollars (non-market value)
- **Commercial Red Sea Urchin**  
~\$3 million dollars (ex-vessel value)



# Poor Fishery Conditions for Urchins and Abalone

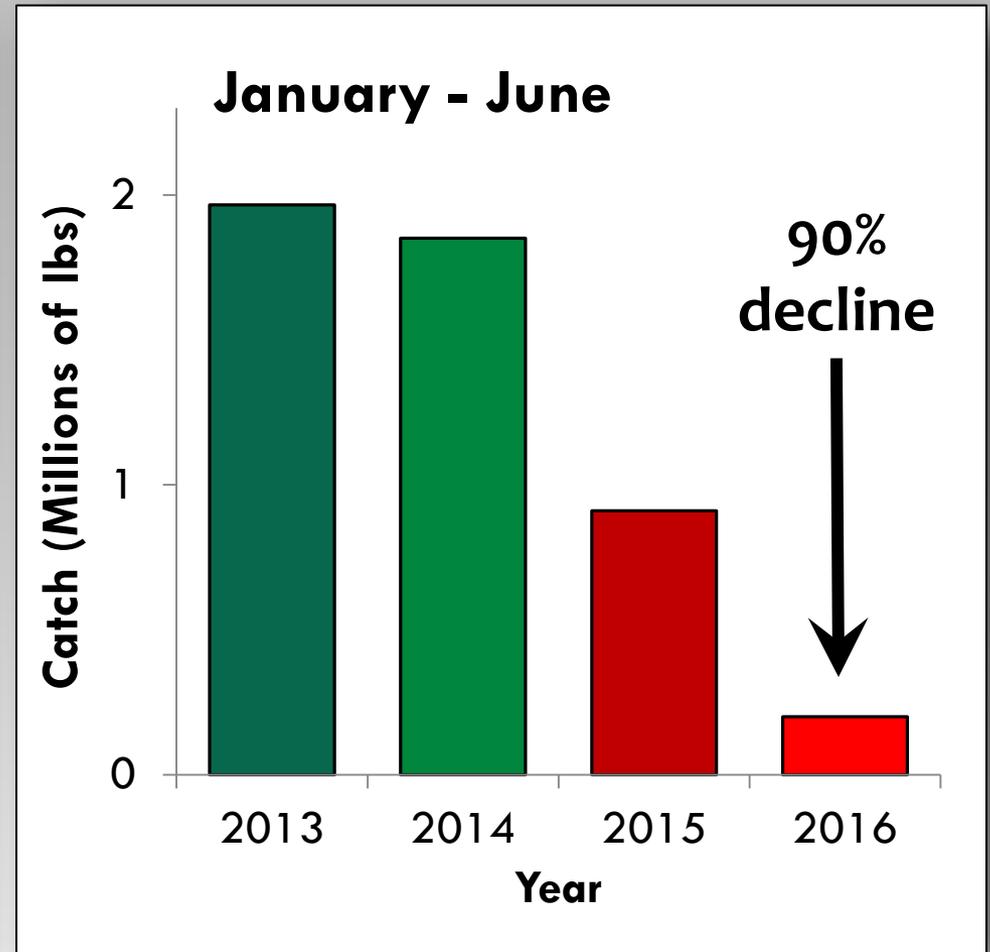


**66% drop**  
**in north coast urchin**  
**catch and fishery value**  
**in 2015**



Photo by: S. Holmes  
(Abalone Diver)

# Impacts to Early-Season Catch of North Coast Red Urchin



# Red Abalone Health Assessment

Creel surveys

Sonoma, Mendocino, and Humboldt

Spring 2016

~6,000 abalone inspected



**> 25% of abalone shrunken at key fishery locations**

Body Shrinkage  
Score 0

Body Shrinkage  
Score 1

Body Shrinkage  
Score 2

Body Shrinkage  
Score 3

# Impacts to Body Condition and Reproduction



**Body mass:**  
20% reduced

**Reproduction:**  
>90% reduced

# Kelp Recovery in 2016?

So far, very patchy



K. Joe (CDFW)

# Van Damme State Park

## April 2016



# What Are We Doing?



K. Joe (CDFW)

- Continued monitoring and targeted research
- Alert policymakers, industry, science community, and the public
- Form partnerships to develop solutions

# CDFW Kelp Recovery Goals:

- Assess kelp recovery potential in 2016
- Establish small areas of recovery along the coast to aid future larger-scale recovery



# Outreach and Media:

- CDFW blog and Facebook page (March 2016)
  - Top-read article on CDFW blog
  - >8,800 views
- Presentations to local and state government, fishing groups, and universities
- TV, newspaper, and radio interviews

*CDFW Abalone webpage*

<https://www.wildlife.ca.gov/conservation/marine/invertebrates/abalone>

# Developing Partnerships

- Urchin industry
- Pomo Nation
- The Nature Conservancy
- Universities
- Citizen Volunteers



A. Maguire (CDFW)

# Questions & Comments



K. Joe (CDFW)

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