

# Sonoma-Mendocino Bull Kelp Recovery Plan

For Greater Farallones National Marine Sanctuary and the  
California Department of Fish and Wildlife

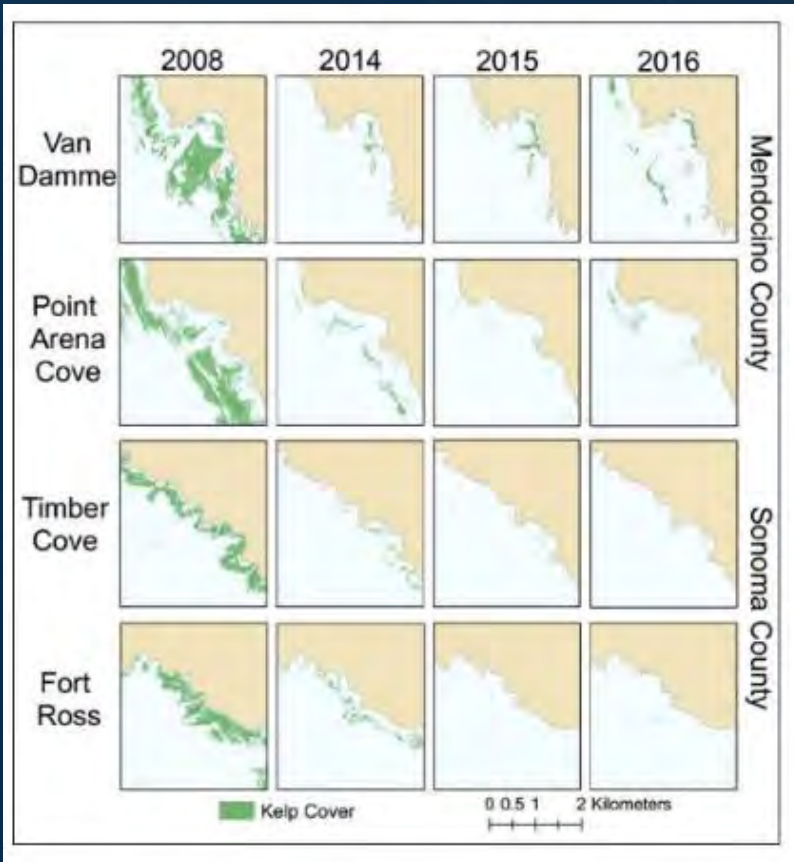
Rietta Hohman  
Greater Farallones Association  
Sanctuary Advisory Council Meeting  
May 22, 2019



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# Background

Greater than 90% of kelp canopy lost

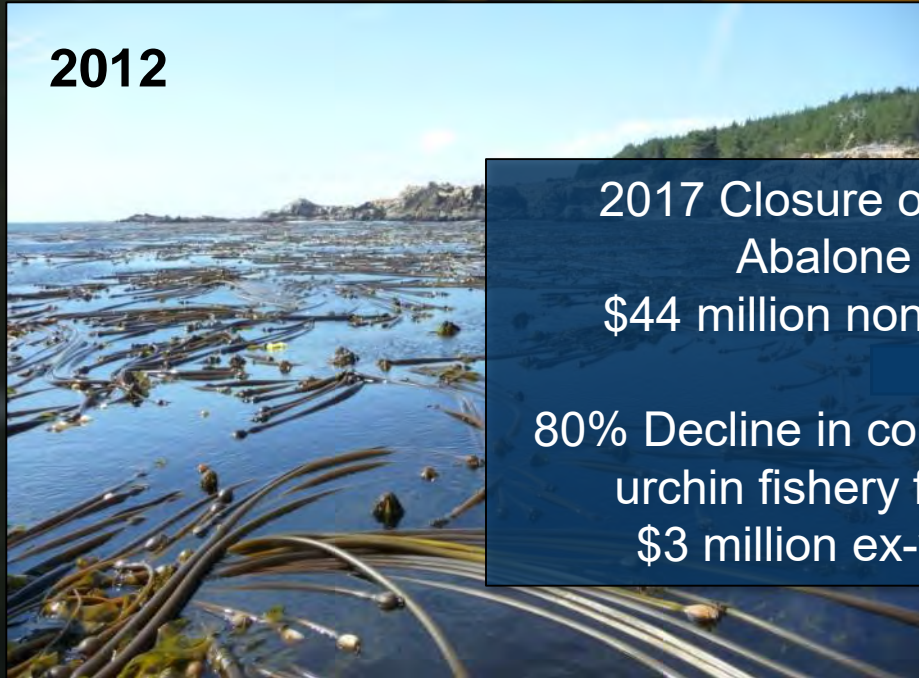




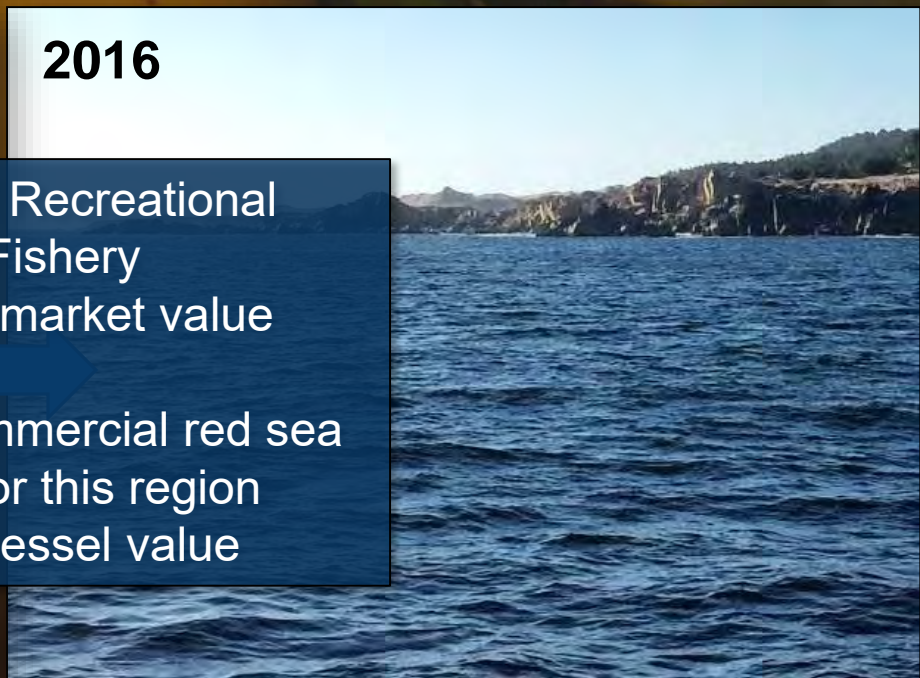
# Climate & Regional Stressors

Harmful Algal Bloom (2011)  
Sea Star Wasting Syndrome (2013 - )  
Purple Urchin Population & Density Increase (2014 - )  
Marine Heatwaves (2014 - )

**2012**



**2016**



2017 Closure of Recreational  
Abalone Fishery  
\$44 million non-market value

80% Decline in commercial red sea  
urchin fishery for this region  
\$3 million ex-vessel value

# Kelp Recovery Working Group

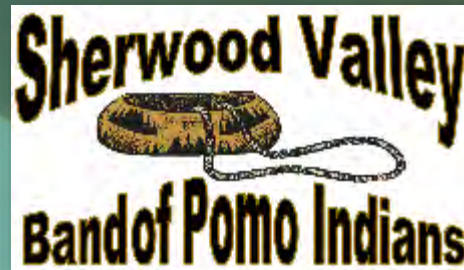
Convened in April 2018

Working group members:

- Reviewed the state of the science regarding kelp loss in the region and identified data and knowledge gaps
- Learned what restoration and recovery methods are used in other regions along the West Coast.
- Learned about various efforts used to survey kelp canopy including aerial mapping, remote sensing and satellite imagery.
- Evaluated criteria to be used in restoration site selection process.



# Kelp Recovery Working Group



# Mission Statement

*Our mission is to promote healthy bull kelp ecosystems along the northern California coast, foster collaborative kelp recovery and conservation efforts, and bring the best information and data to bear on adaptive management of this vitally important resource.*





# Strategies for Bull Kelp Recovery

Active Kelp Recovery  
*2 strategies*

Restoration Site Selection  
*5 strategies*

Monitoring and Research  
*7 strategies*

Community Engagement  
*9 strategies*

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April 2019

# Active Kelp Recovery

## Priority Strategies

Restoration efforts to be taken in the field. The primary goal for recovery efforts is to preserve the local nearshore spore bank to facilitate natural recovery of bull kelp forests once ocean conditions improve.



A. Maguire CDFW



S. Lonhart NOAA



# Active Kelp Recovery

## Reduce Grazing Pressure

- Commercial Urchin Harvest
- Recreational Urchin Harvest
- Support Sea Star Wasting Disease Strategic Action Plan
- In-situ* sacrifice (culling) of urchins



A. Maguire CDFW



S. Lonhart NOAA



# Active Kelp Recovery

## Enhance Kelp

- Spore settlement and seeding

*To be considered at a future date*

- Sea otter reintroduction

- Harvesting with ROVs

- Outplanting and transplanting



A. Maguire CDFW



S. Lonhart NOAA



# Restoration Site Selection

Strategies to prioritize candidate regions for restoration and recovery actions

## Priority Strategy

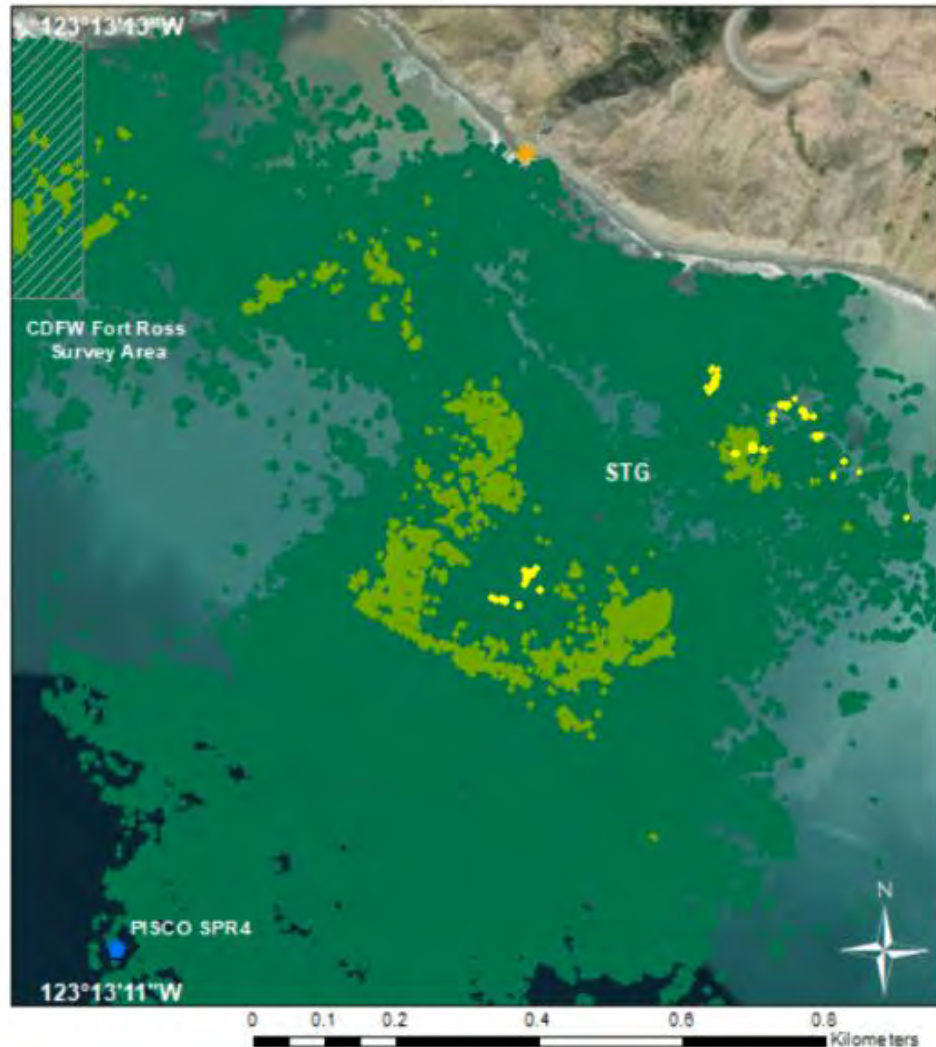
Compile all criterion datasets in spatially explicit way for application to site-selection decision tree

## Analysis

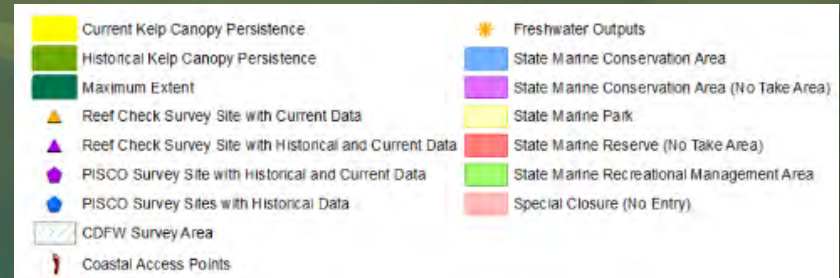
Ecological Significance  
Further Assessment Needed  
Additional Positive Aspects

Criteria
Historical persistence of kelp canopy
Current persistence of kelp canopy
Ecosystem surveys
Freshwater output
Areas of cultural significance
Historically isolated beds
Sites of value to red abalone fishery
Sites of value to red urchin fishery
State-Designated MPAs
Protection from wave exposure
Accessibility

# Restoration Site Selection



Sonoma Timber Gulch (STG)	
<b>Kelp Patch Area ID</b>	STG
<b>Historical Persistence (m<sup>2</sup>)</b>	15636
<b>Current Persistence (m<sup>2</sup>)</b>	372
<b>Proximity to Ecosystem Surveys/Areas</b>	Near CDFW Fort Ross Survey Area, near PISCO SPR4
<b>Historical Data from ecosystem surveys</b>	Yes
<b>Current Data from ecosystem surveys</b>	Yes
<b>Near Freshwater Output</b>	Yes
<b>Inside state-designated MPA?</b>	No
<b>Near state-designated MPA?</b>	No



37 sites identified in Sonoma and Mendocino



# Monitoring and Research

Strategies to develop systematic, long-term underwater and aerial monitoring of kelp canopy cover and research to inform next steps in recovery and maintenance efforts



# Monitoring and Research

Priority Strategy - Development of a long-term kelp canopy monitoring program to characterize broad-scale and fine-scale kelp forest dynamics and restoration efficacy, making use of new technologies such as satellites and Unmanned Aerial Vehicles (UAVs)





# Community Engagement

Strategies to bridge the gap between research and restoration, and motivated community members who are eager to help with active recovery efforts

Priority Strategy - Develop consistent messaging and a comprehensive outreach plan to increase participation and awareness



# Next Steps

- (1) GFNMS and CDFW adopt the recommendations and strategies in the Recovery Plan and facilitate implementation in partnership with each other
- (2) Establish a consistent funding stream to facilitate the formation of the Kelp Recovery Project and Kelp Recovery Network and support active recovery efforts in partnership with GFA
- (3) Determine specific restoration sites within the priority candidate regions and evaluate active recovery efforts to be taken for each site
- (4) Investigate opportunities to collaborate on restoration and monitoring efforts within the recommended sites



# Next Steps

- (5) Build upon connections and efforts taken by partners in 2018 to inform, grow and implement recovery actions in 2019 and 2020
- (6) Develop a comprehensive outreach plan with effective and consistent messaging and materials that can be used by all partners to increase participation and awareness
- (7) Develop pathways to establish a kelp canopy monitoring program for the Sonoma and Mendocino counties

# Steps Taken in 2019

Funding already applied for – NMFS/NOAA, Landscape Catalyst Fund,  
Patagonia

~Notified Fall 2019

Ocean Resiliency Act of 2019 – Kelp Recovery included in budget

~Fall 2019

Collaboration with TNC on canopy surveys in 2019

~August/September 2019

Collaboration with SSWS, Kelp Recovery Workshop at WSN

October/November 2019



Thank you!

# Questions?

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Please visit [www.farallones.org/kelp](http://www.farallones.org/kelp) !



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