

GUIDING KELP RESTORATION ACTIONS IN N. CALIFORNIA THROUGH MULTIDISCIPLINARY SCIENCE & COMMUNITY ENGAGEMENT

Cynthia Catton

Ocean Climate Summit
April 18, 2019

Kelp Forest Ecosystem Services

- Carbon Sequestration
- Nutrient Cycling & Subsidies
- Coastal Protection
- Nursery Habitat
- Fisheries
- Recreation
- Cultural Value

Northern California Kelp Forests Impacted by Climate Change

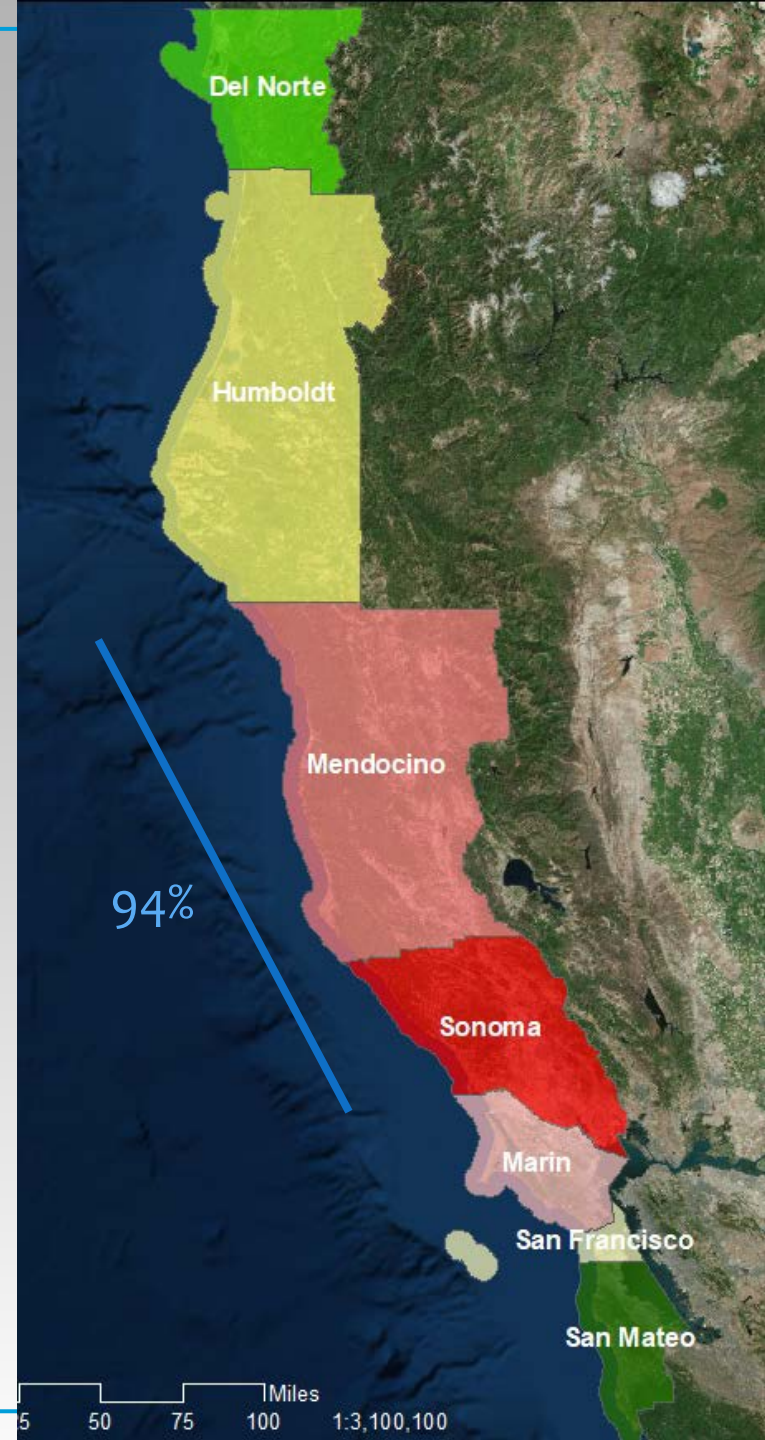
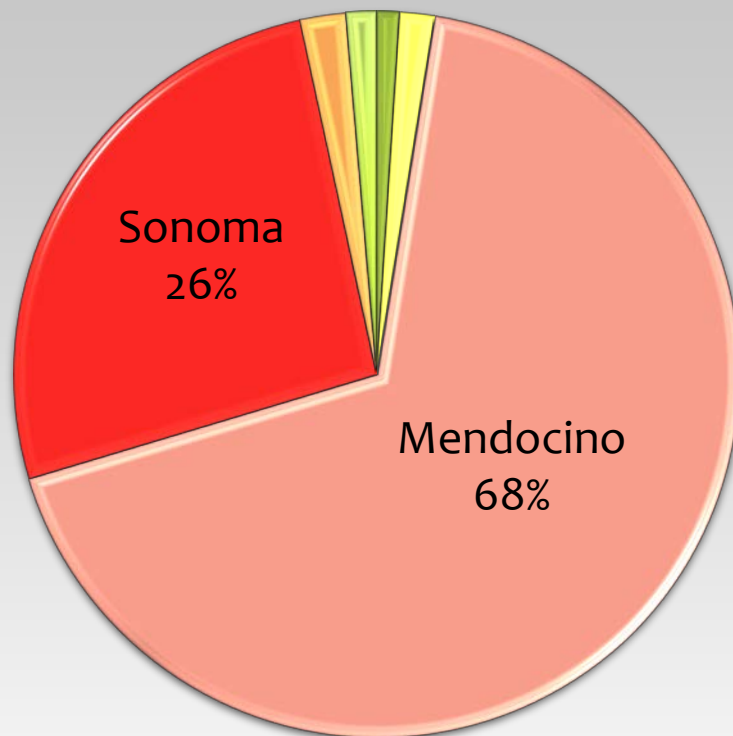
> 250 km of productive
bull kelp forest
impacted



**Formerly stable kelp forest
community dynamics**

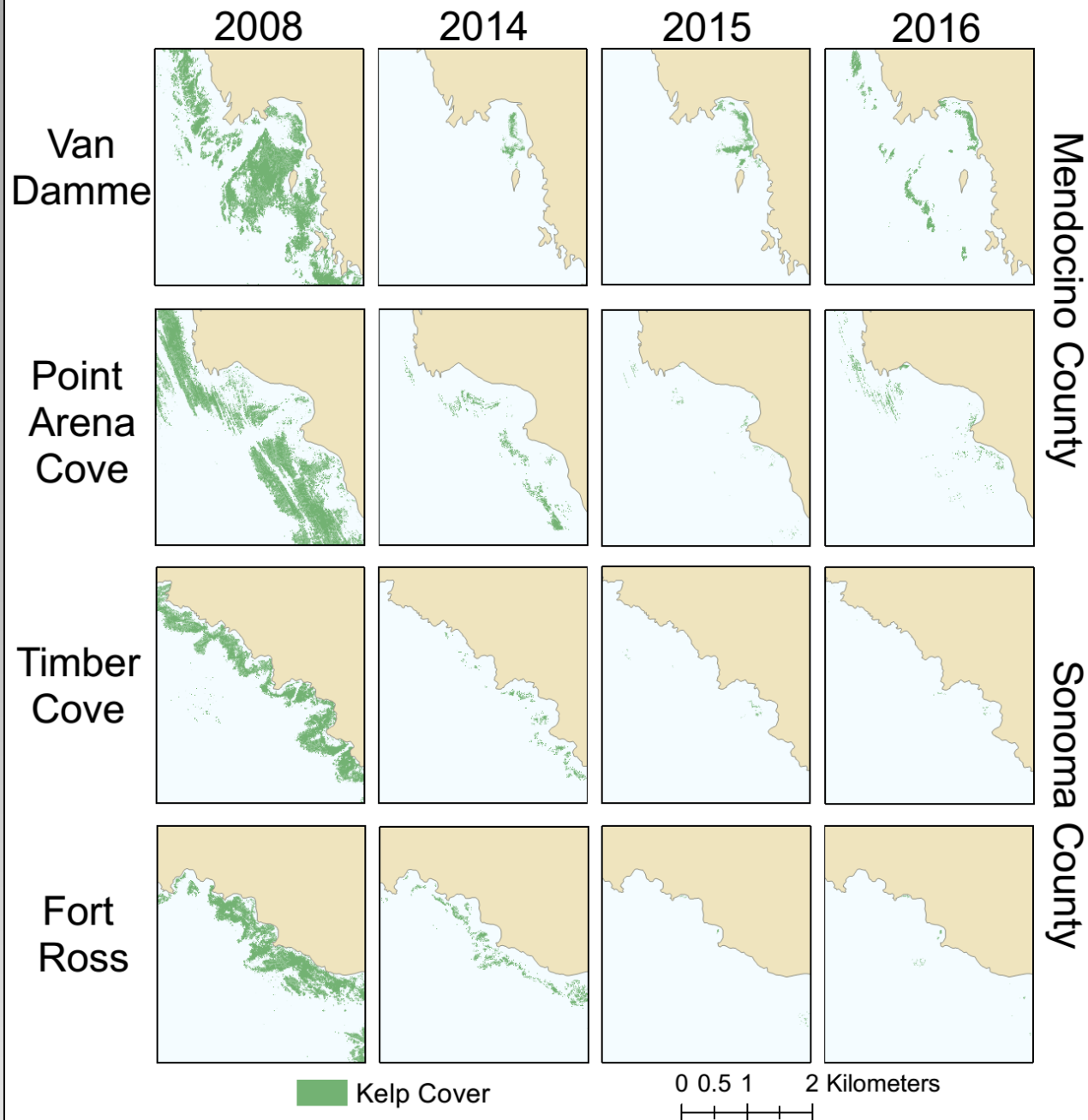
Historic Maximum Canopy Extent

Total Canopy Area: 42 km²

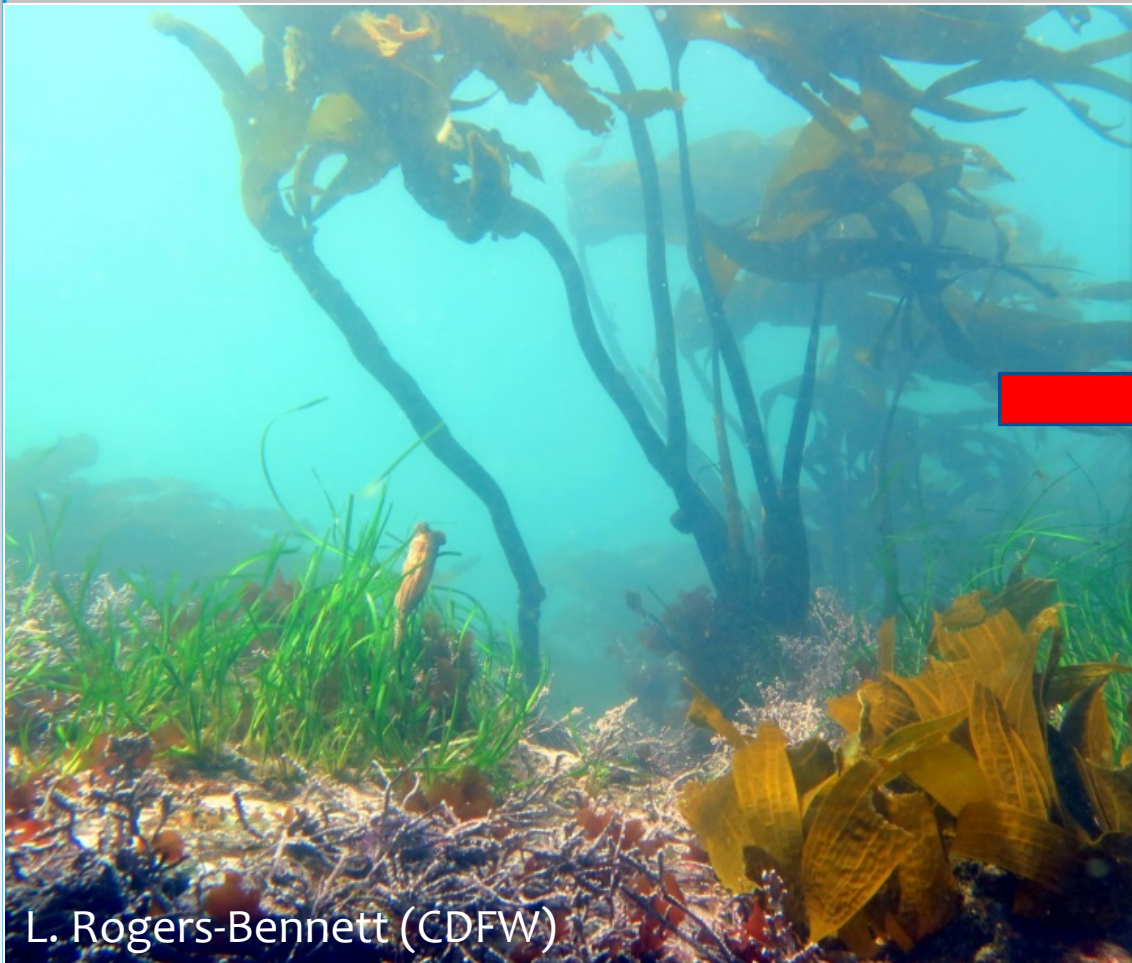


Aerial Kelp Surveys (CDFW)

< 5% kelp canopy in Sonoma and Mendocino since 2014



Large-Scale Shift to Urchin Barrens



L. Rogers-Bennett (CDFW)



A. Weltz (CDFW)



Urchins overgrazing
Bull Kelp at the holdfast



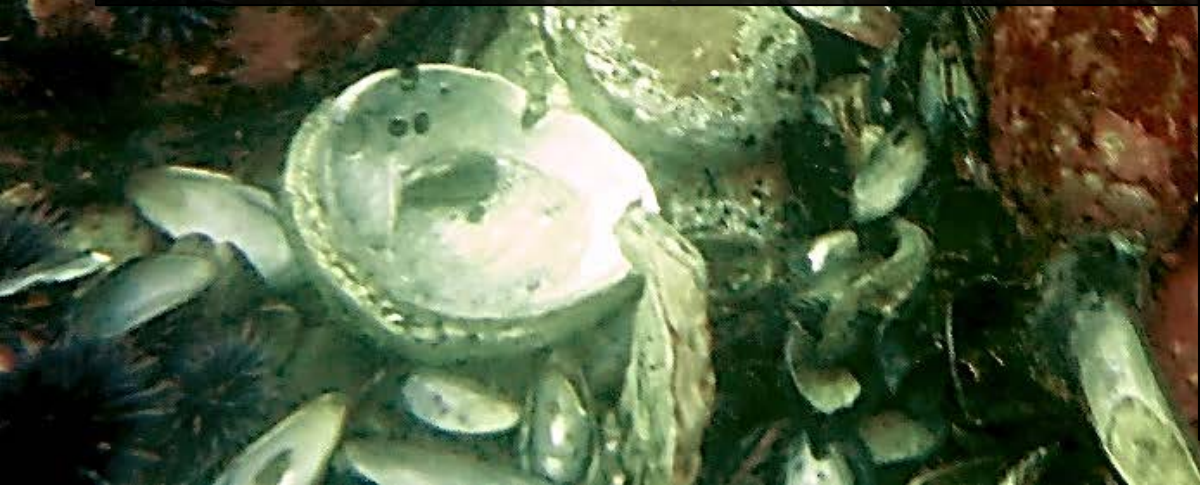
Starvation Conditions (2014-present)



Mass mortalities
of abalone
(2017-present)

Impacts to Fisheries

- \$44 Recreational red abalone fishery closure 2018
- Commercial red urchin fishery collapse
 - 80% decline in catch
 - Requested federal disaster relief



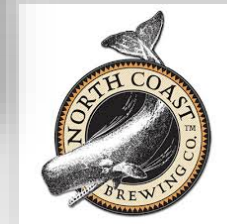
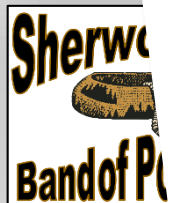
4/2019

KELPRR Partnership

Your Logo HERE



**> 20 partner organizations,
and growing!**



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Mendocino
County Chapter

Fortunate Farm



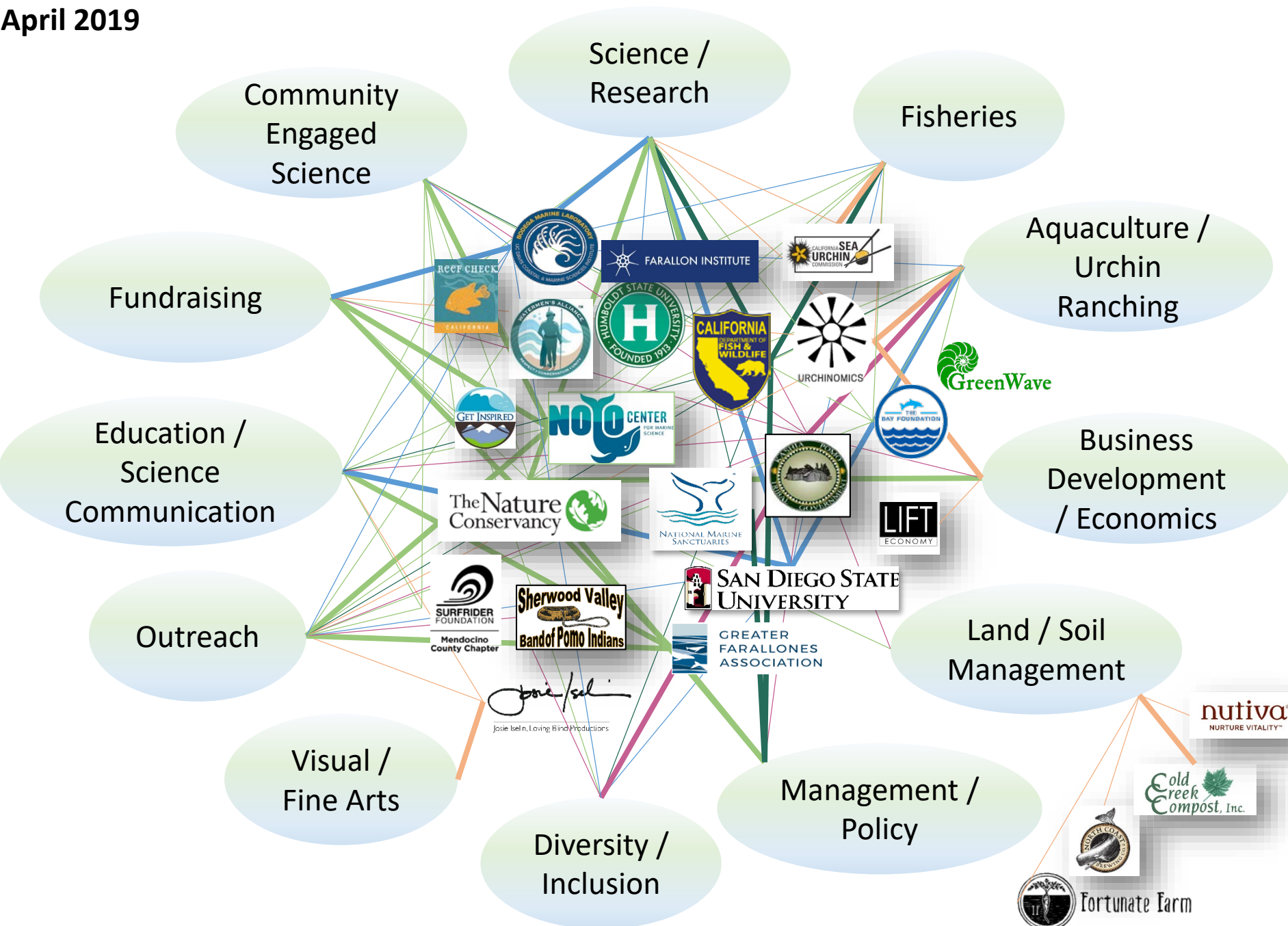
KELPRR Program Goals

1. Conduct ecological research that will guide future restoration strategies and research
2. Identify opportunities and incentives for coastal communities to engage with recovery actions and enhance economic growth
3. Build trust and cooperation across diverse communities



KELPRR Organizational Activity Chart

April 2019



Collaborative Kelp Restoration Research



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SAN DIEGO STATE
UNIVERSITY



NATIONAL MARINE
SANCTUARIES

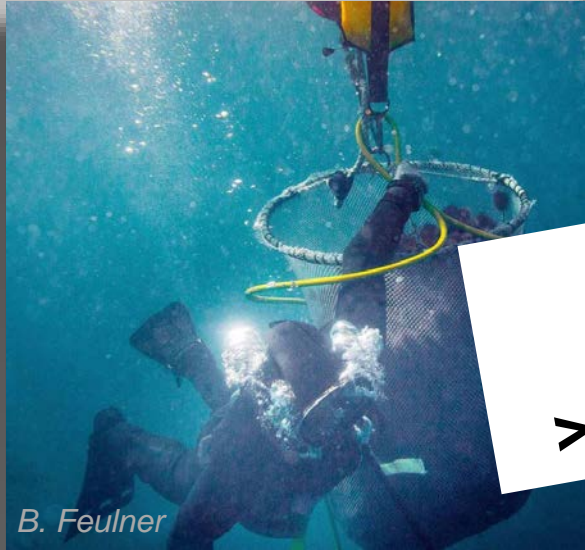


REEF CHECK



CALIFORNIA

Emerging Purple Urchin Fishery



**3 sites
> 41 metric tons
> 1.2M purple urchins**



Community Engagement in Science



Charting the Path Forward

- Kelp Recovery Working Group (2018)
- Adaptive Kelp Recovery Action Plan (2019)

See Francesca Koe @ 3:50

See Rietta Hohman NEXT!



Enhancing Kelp Forest Climate Resilience Requires:

- Innovative thinking
- Improved scientific understanding
- Strong collaborative partnerships



Kelp Ecosystem and Landscape Partnership for
Research on Resilience

Look Forward, Think Big, and Work Together



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Research on Resilience