

KELPRR Program: Protecting the Bull Kelp Spore Bank

An underwater photograph of a kelp forest. In the foreground, several purple sea urchins are clustered together. To the right, a large, textured rock is covered in red and orange coral-like growth. In the background, a fish is visible swimming near a kelp stalk. The water is clear and greenish.

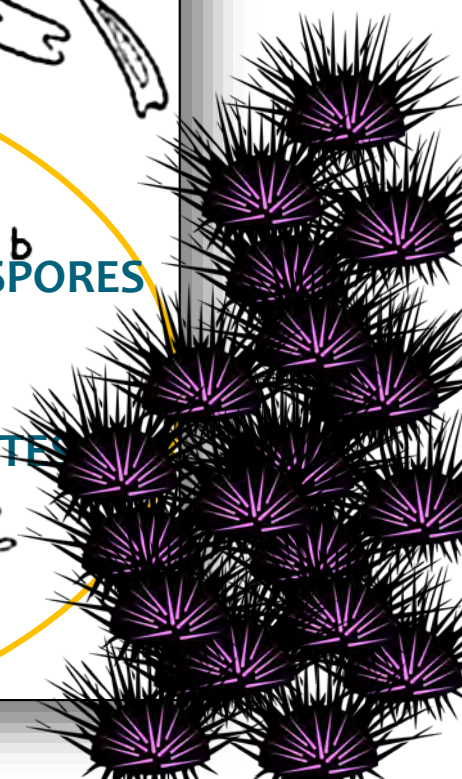
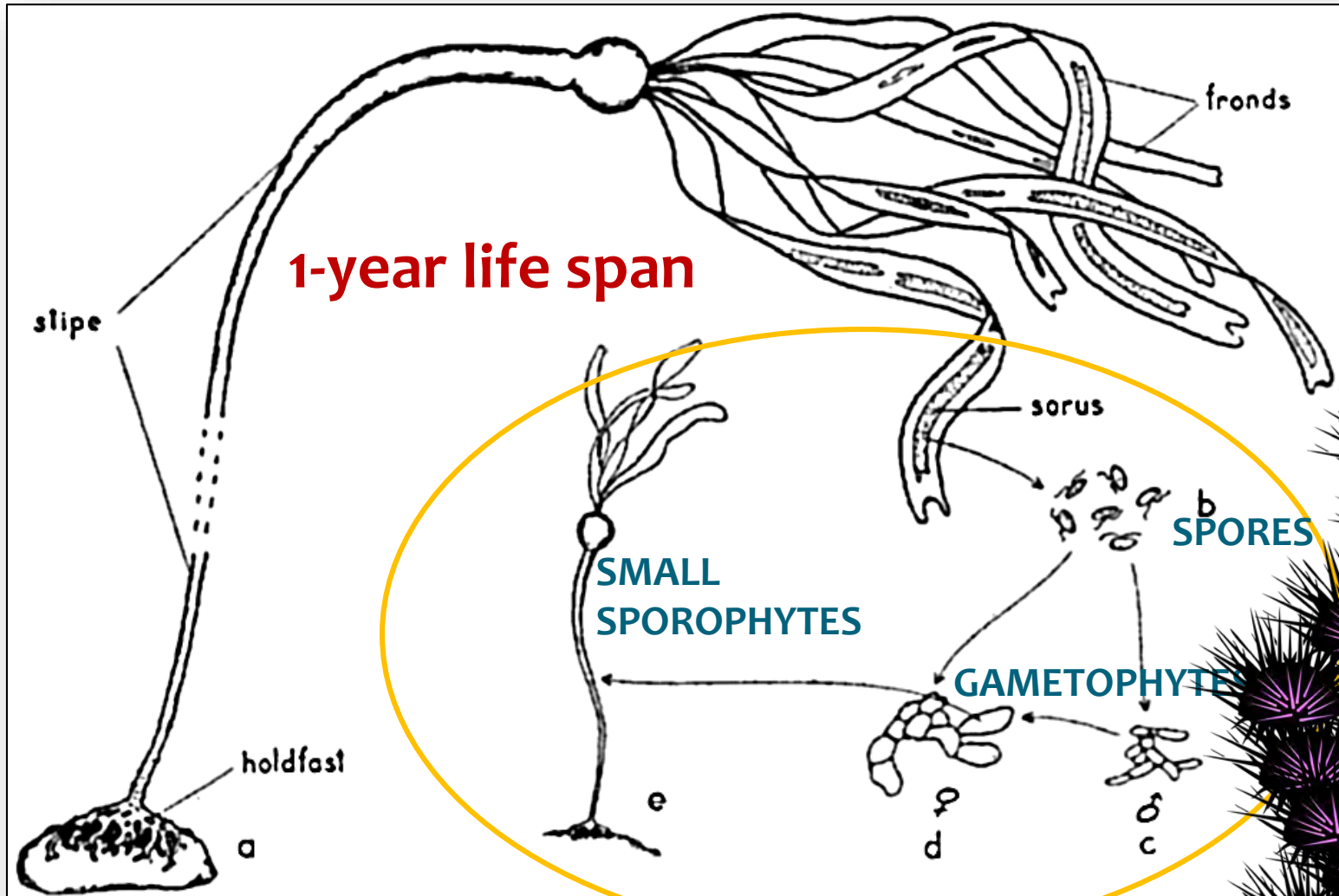
Dr. Cynthia Catton

GFNMS-CDFW Kelp Recovery Working Group

April 25, 2018

A. Maguire

Concern for Bull Kelp Recovery

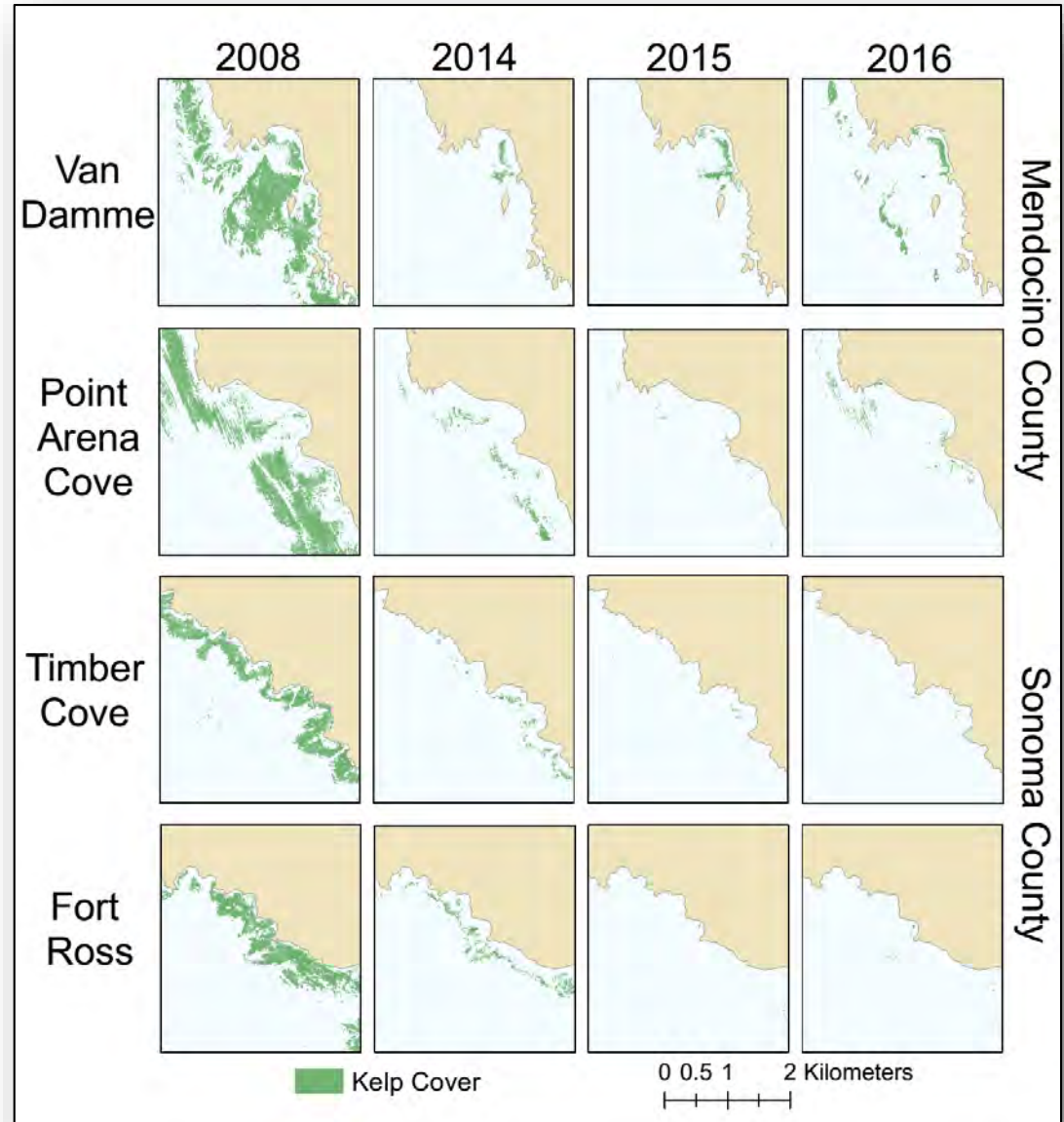


Unprecedented Scale of Impact

**Total Impacted Area:
>50km²
(>12,000 acres)**

**Greatest Concern for
Sonoma County**

**Possible Spore
Limitation**

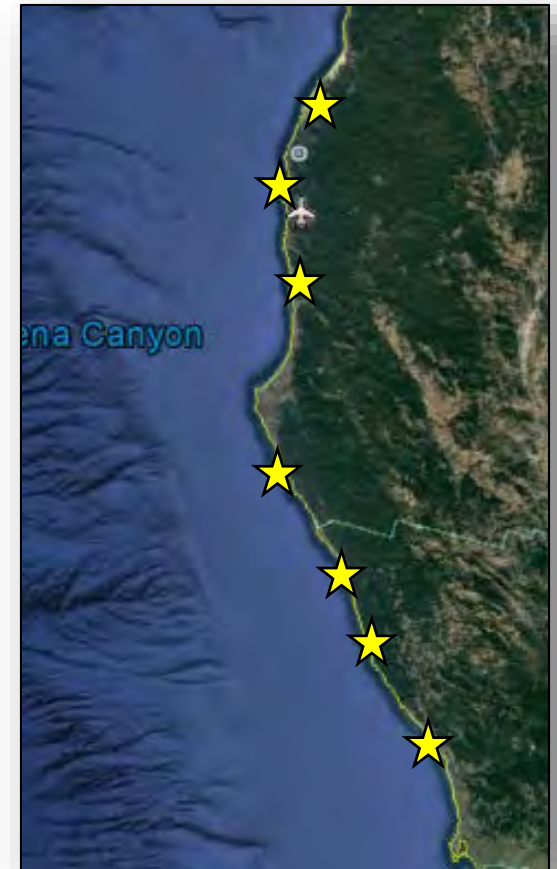


Mendocino County

Sonoma County

A Network of Kelp Oases

- Maintain connectivity between sites through spore dispersal
- Benefit fisheries by enhancing localized food and habitat availability
- Protect culturally significant areas for local tribal nations



Kelp Ecosystem & Landscape Partnership for Research on Resilience



- Broad partnership of stakeholders, scientists, and government agencies
- Focus on bull kelp forest ecosystem
 - Fill critical knowledge gaps
 - Assess recovery potential
 - Support rapid widespread kelp recovery by maintaining spore production along the coast
- Support commercial markets for purple urchins

KELPRR Partnership



Non-Profits Supporting Urchin Removals

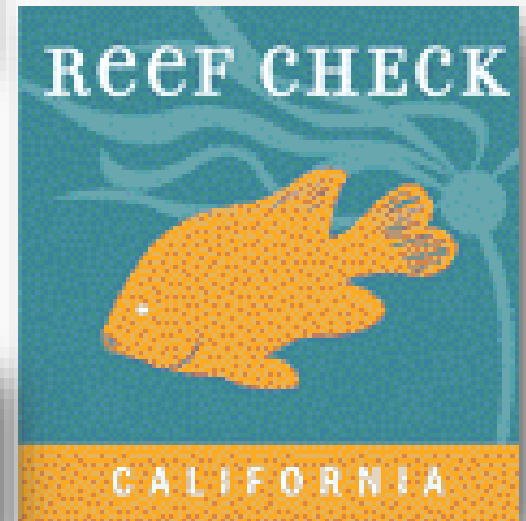
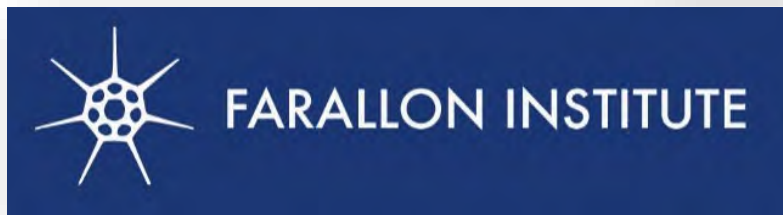
Watermen's Alliance – Josh Russo

Get Inspired – Nancy Caruso

Noyo Science Center – Sheila Semans



Science & Monitoring



Purple Urchin Product Development



Fortunate Farm

nutiva[®]
NURTURE VITALITY[™]



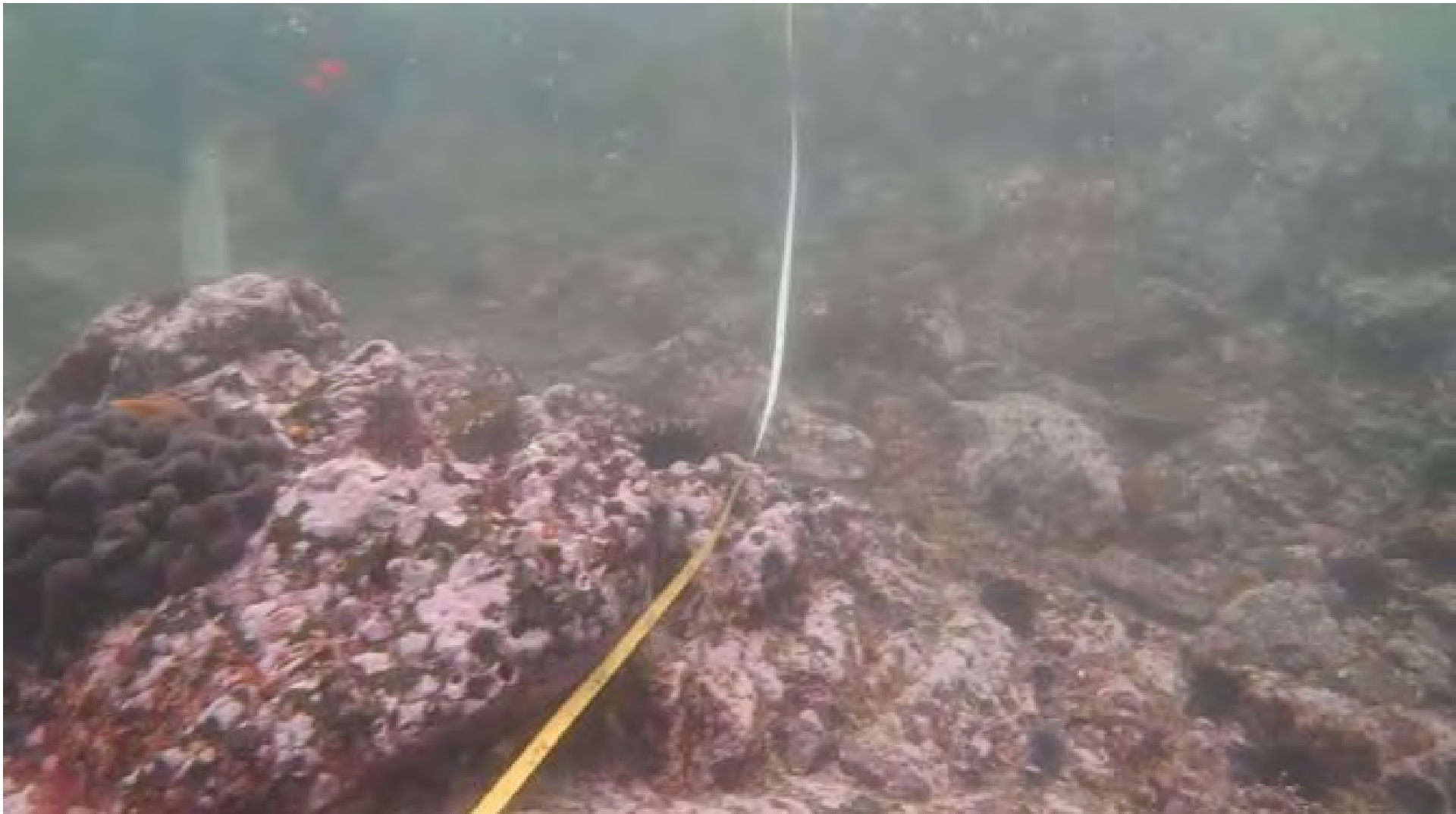
Education & Outreach



Mendocino
County Chapter



Activities To Date



Test methods for purple urchin control

- Collaboration with urchin industry
- Pilot studies completed
- Compared purple urchin culling methods
 - Efficiency
 - By-catch
 - Inundation rates
- Ready to scale up efforts

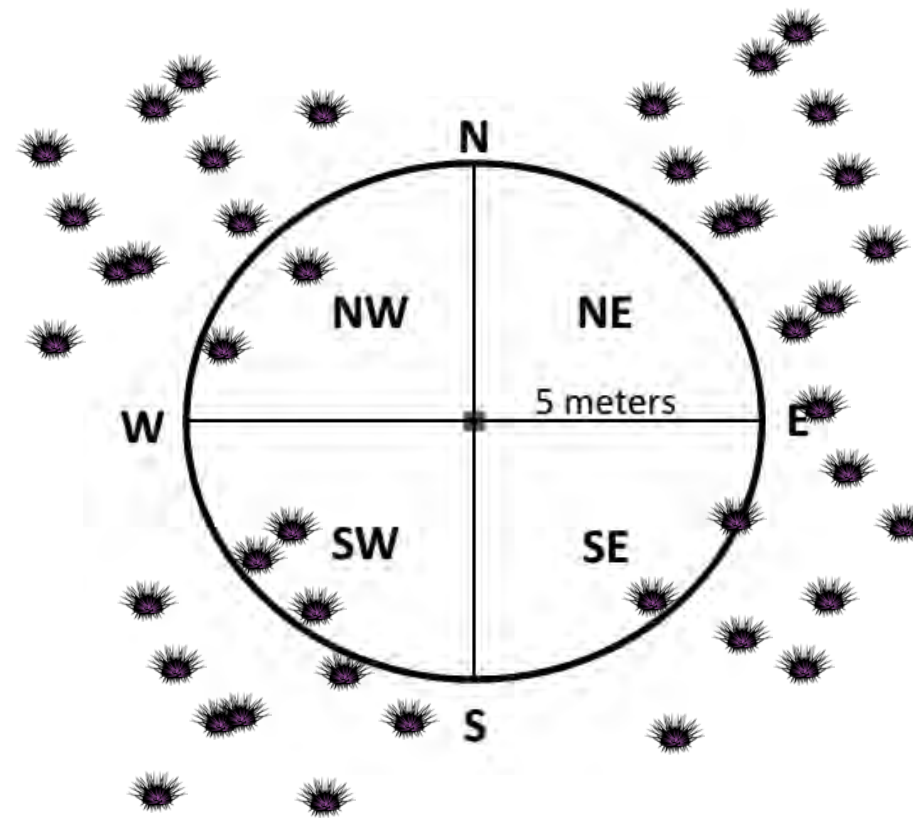


E. Wirschafter (KQED)

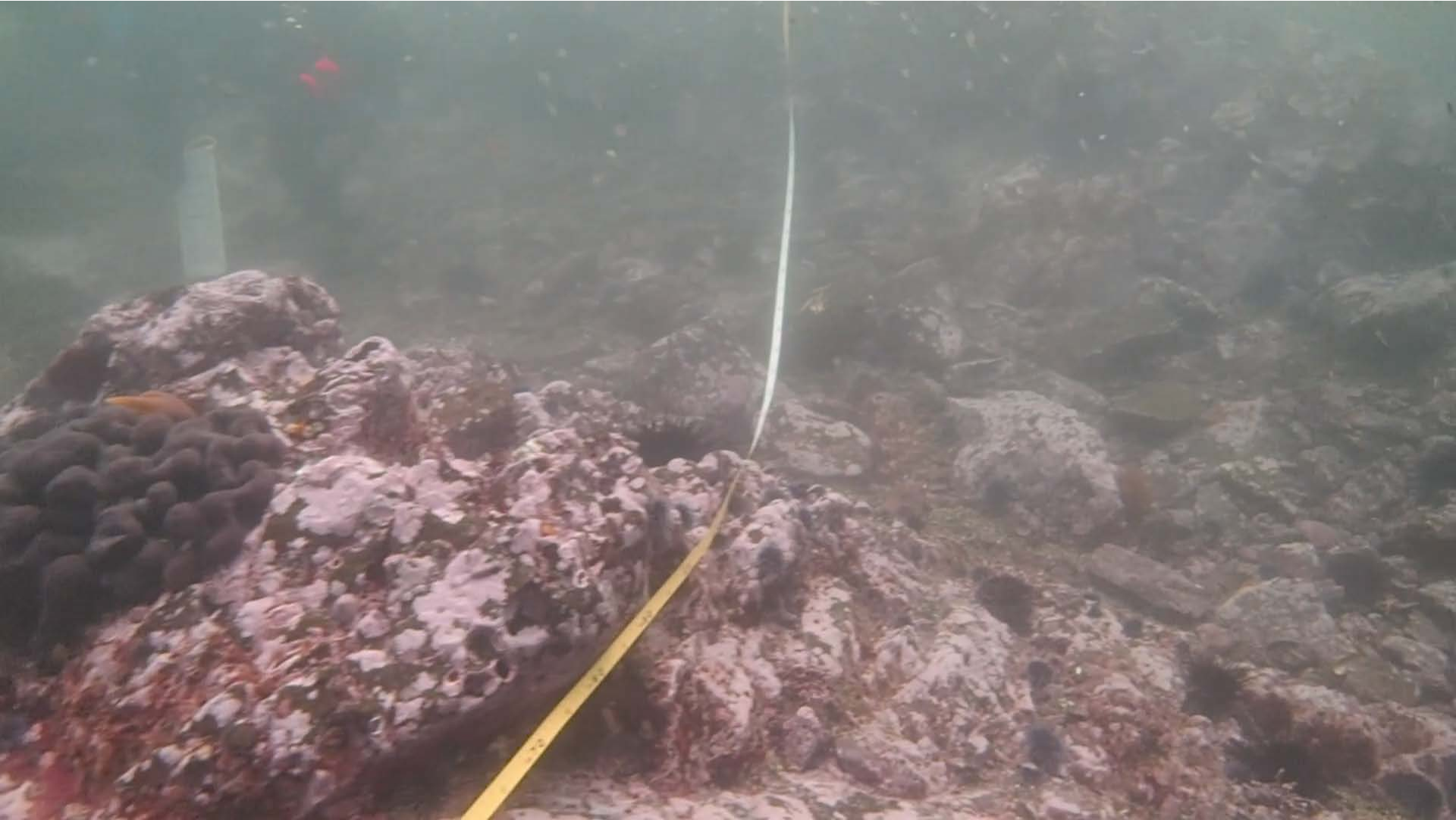
Removals vs “Smashing”

- Test efficacy of hand-picking vs smashing urchins in place
- How quickly do the urchins return?
- Cleared two sets of plots in August 2017
- Re-surveyed areas within 1 week and 1 month

Experimental Clearing Plots



One Month After Urchin Clearing (September 2017)



Collaborative Coordinated Purple Urchin Removals

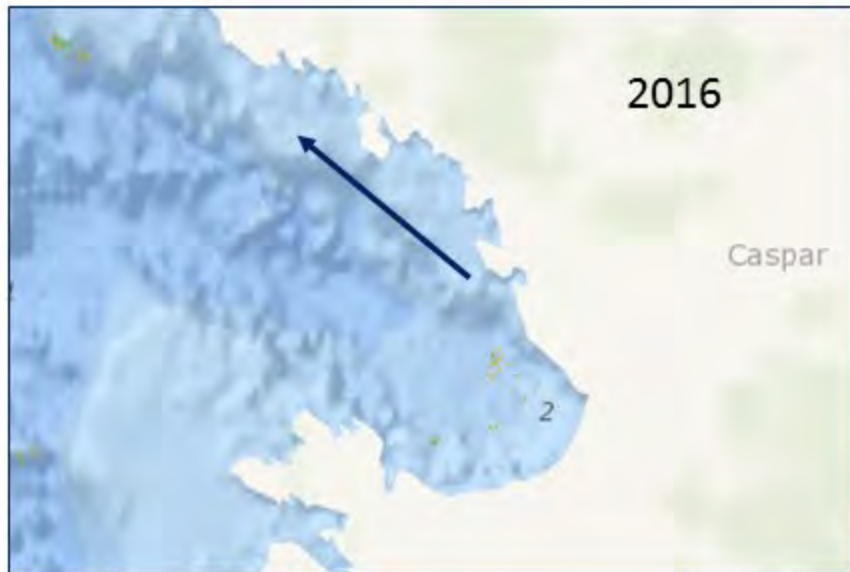
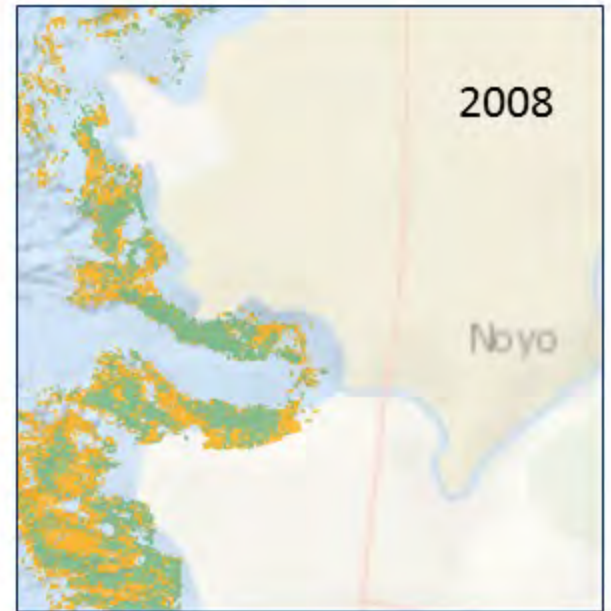
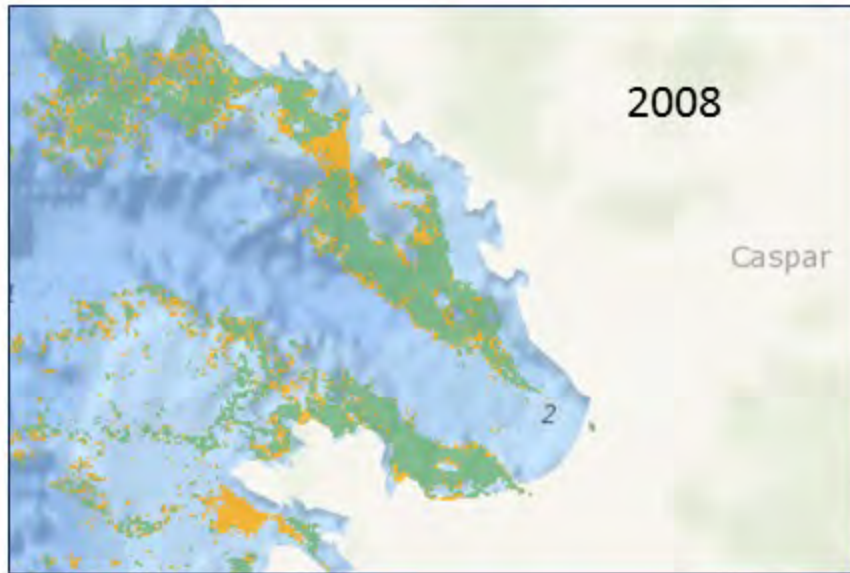
- Commercial urchin diver efforts now
- Citizen Science opportunities
- Future citizen diver opportunities



E. Wirschafter (KQED)



Proposed Urchin Clearing Sites 2018



Additional sites may be targeted in Mendocino and Sonoma counties this year

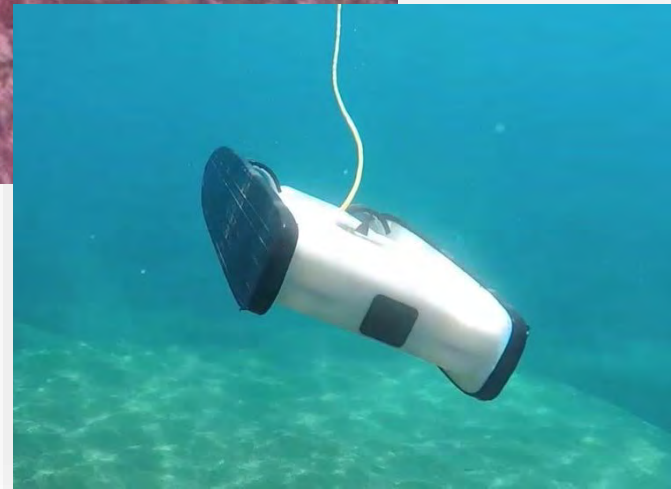
Involving Recreational Divers

- Developing application for scientific collection permit
- Protocol will include education on species ID and responsible harvest methods
- Focused work in the shallows to complement commercial diver efforts



Science and Monitoring

- Diver Effort Tracking
- Dockside Sampling
- Seasonal Subtidal Surveys
- Aerial Kelp Surveys
- Kelp Spore Experiments



Diver Effort Tracking

	A	B	C	D	E	F	G	H	I	
			# hours	Depth	lbs	# of	size		ft2	
1	Date	Diver's names	underwater	range (ft)	urchins	urchins	range of	avg size	cleared	
2	12/31/2017	Jon, Harry	3	12'-35'	150	~~5,000	1/2"-2.5"	1.5"	~~700	
3	1/1/2018	Jon, Harry	4	20'-30'	350	~~12,000	1"-2"	1.5"	~1,200	Rec
4	2/2/2018	Jon, Harry	3.25	15-20'	284	~~10,000	1/2-2.5"	1.5"	~1,000	
5	2/3/2018	Jon, Harry	4.5	15-30'	538	~~16,000	1/2-2.5"	1.5"	~1,500	
6	2/7/2018	Jon, Harry	4.5	10-30'	354	~~11,000	1/2-3"	1.5"	~1,100	
7	2/8/2018	Jon, Harry	5	15-35'	592	~~18,000	1/2-2.5"	1.5"	~2,000	
8	2/9/2018	Jon, Harry	4.5	9-23'	481	~~15,000	1/2-2.5"	1.5"	~1,500	
9										

Technology can help to track diver profiles and GPS



Developing New Purple Urchin Markets (Long-Term Solution)

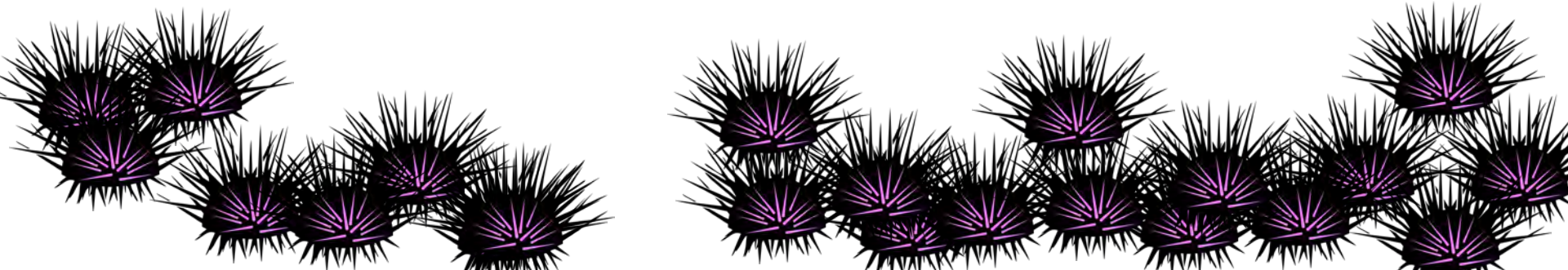
- Expanding non-traditional sushi markets
- Aquaculture-based conditioning
- Exploring preparation of tests for crafts
- Compost / Fertilizer



Management:

Emergency Regulation Adopted

- Previous regulations: 35 purple urchins / day
- *SOON – temporarily increasing to 20 gallons/day (no possession limit)*
 - Significant individual effort per day
 - Manageable amount for recreational consumptive use
 - Minimize opportunity for abalone poaching



Targeted Recreational Harvest

- Sonoma and Mendocino counties
- Subtidal harvest only



Opportunity to Coordinate Efforts



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Forum

Observations

Map

Locations



Legend

Project Headquarters

Single Observation

Many Observations

Search by Location Name:

Example: Site 1

Search

Reset Map

Coordinated Recreational Harvest Events

- Watermen's Alliance and others are organizing a series of events in Sonoma County (Memorial Day Weekend)
- KELPRR partners are developing ecosystem monitoring programs, educational materials, and options for use of harvested urchin materials

Multi-Pronged Approach to Kelp Recovery

- Kelp recovery requires strong collaborative efforts on multiple fronts
- Parallel efforts to develop both short-term (triage) and long-term (resilience) strategies
- Site selection for localized kelp growth based on science and stakeholder input
- Develop educational and experiential opportunities to enhance cross-sector collaboration



Thank you!

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