NOYO CENTER FOR MARINE SCIENCE

Sheila Semans
Executive Director

www.noyocenter.org

Mission:
To advance ocean conservation through education, exploration and experience

VALUES

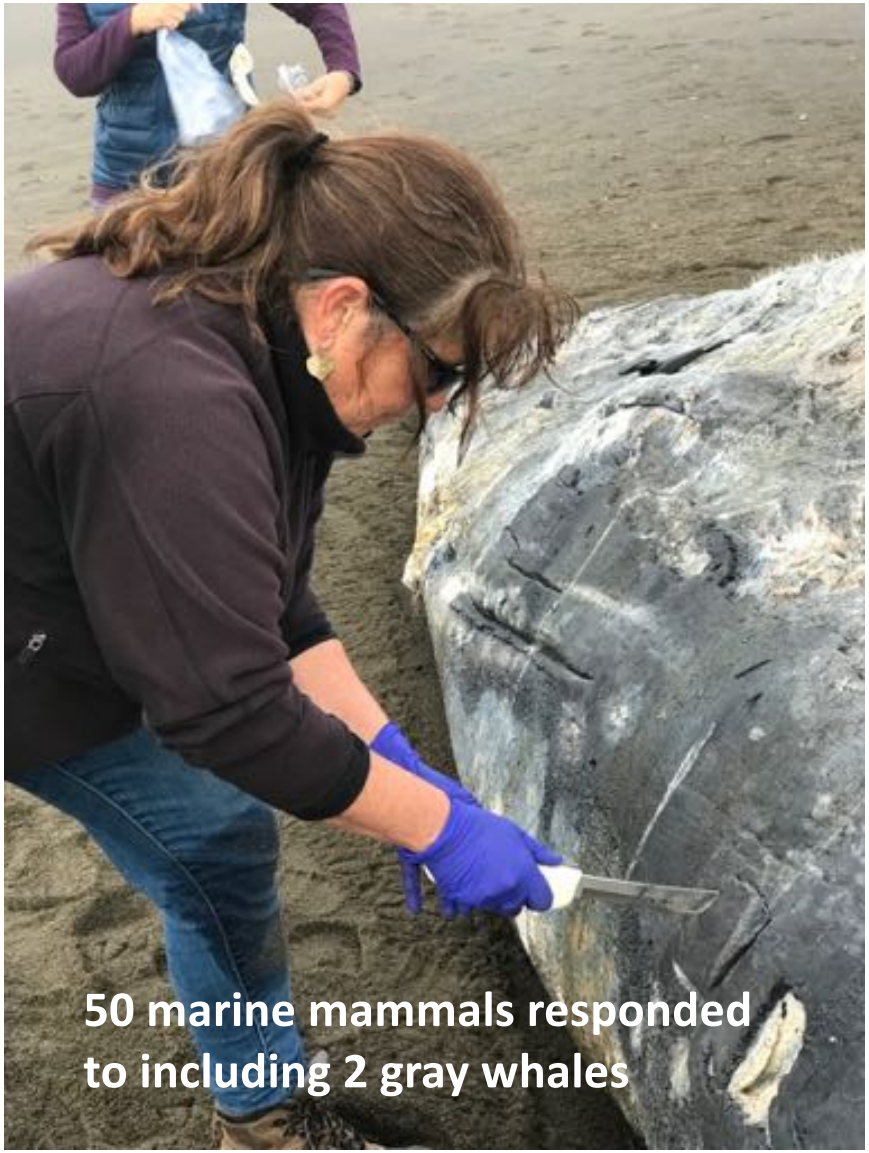
- Locally Relevant
- Sustainable (program and design)
- *Experience* Science
- Support local economic development and sustainable reuse of mill site
- Provide access to and science for our coast.
- Create opportunities for minorities, women, and disadvantaged communities

HANDS ON SCIENCE

School Education Program: over 2100 kids reached

EDUCATION

Exploration



Exploration

Photo: S. Semans

Photo: Sarah Grimes

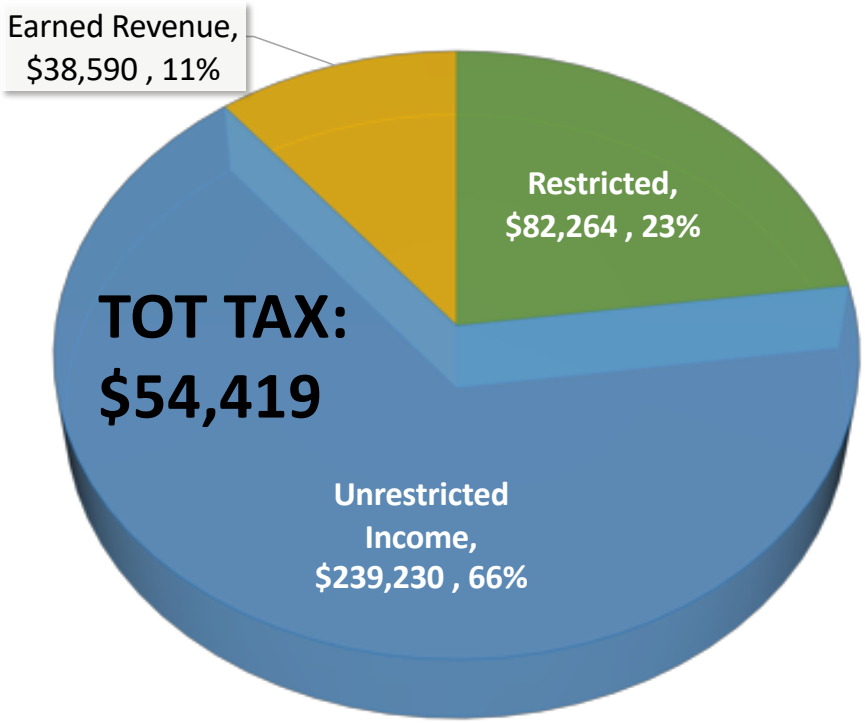
Experience:
Help the Kelp

Major Highlights: New Downtown Center

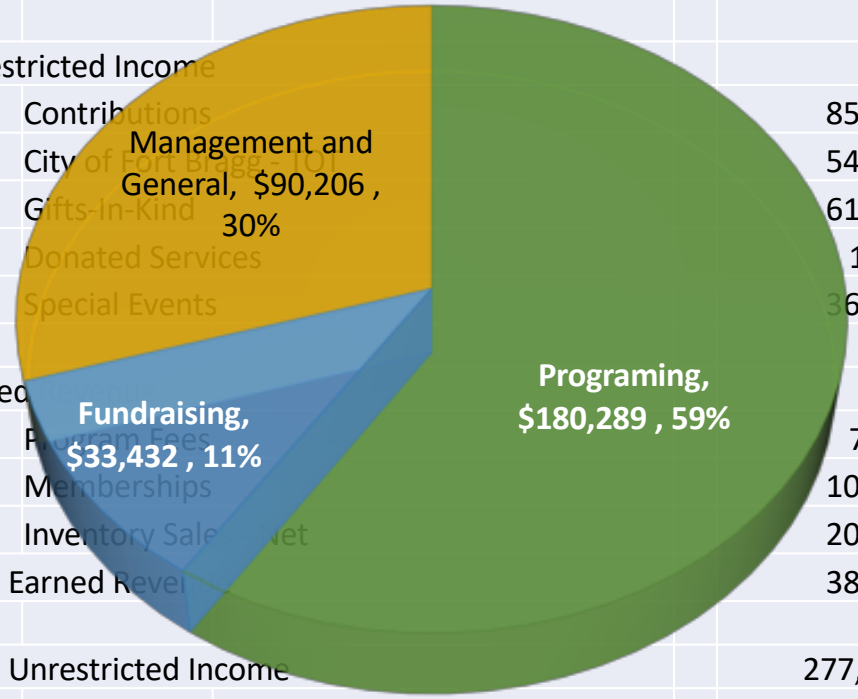
Major Highlights: Facility Redesign

Noyo Center Financials

Revenue: $360,083

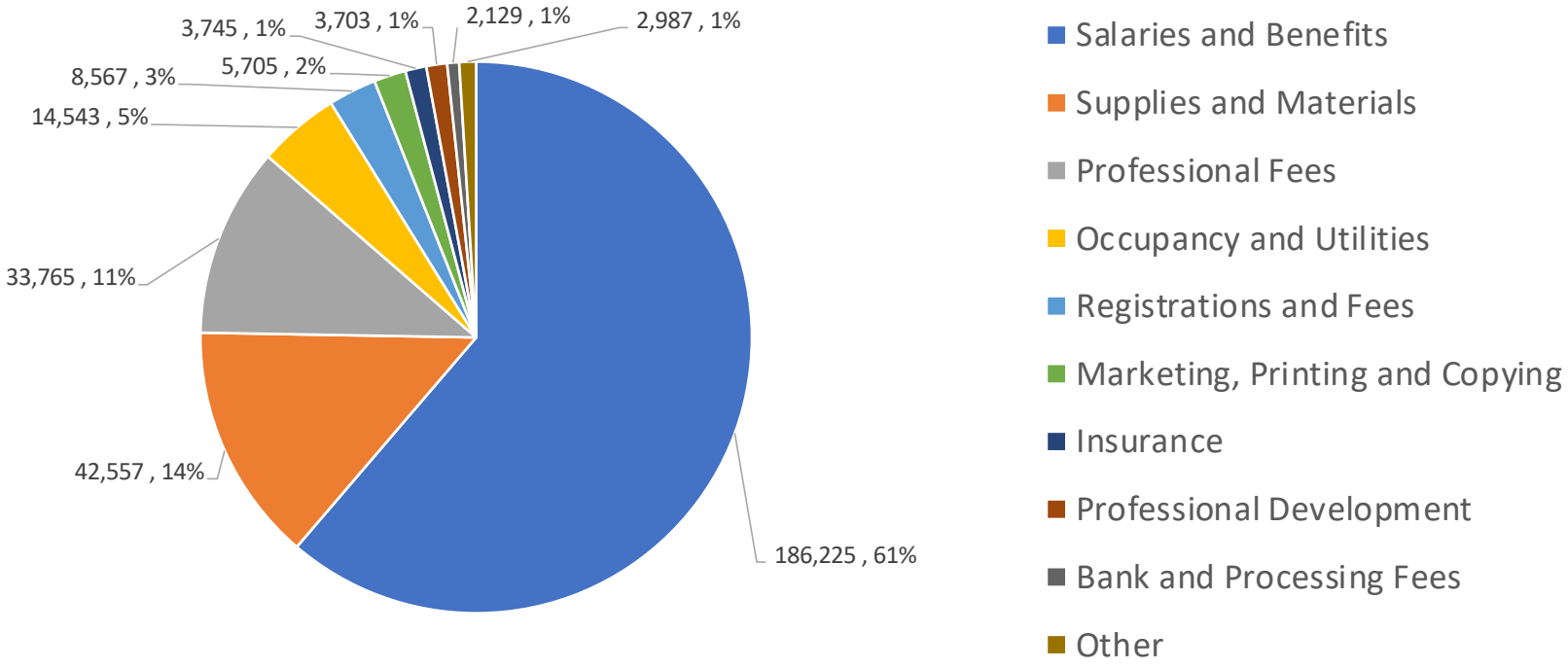


Expenses: $303,927



Restricted Income-		
Contributions	$	55,070
Grants		27,194
Total Restricted Income		82,264
Unrestricted Income		
Contributions		85,208
City of Fort Bragg - TOT		54,419
Gifts-In-Kind		61,336
Donated Services		1,900
Special Events		36,366
Earned Revenue		
Program Fees		7,187
Memberships		10,605
Inventory Sales - Net		20,753
Total Earned Revenue		38,590
Total Unrestricted Income		277,819
Total Revenue		**360,083**

EXPENSE BREAKDOWN



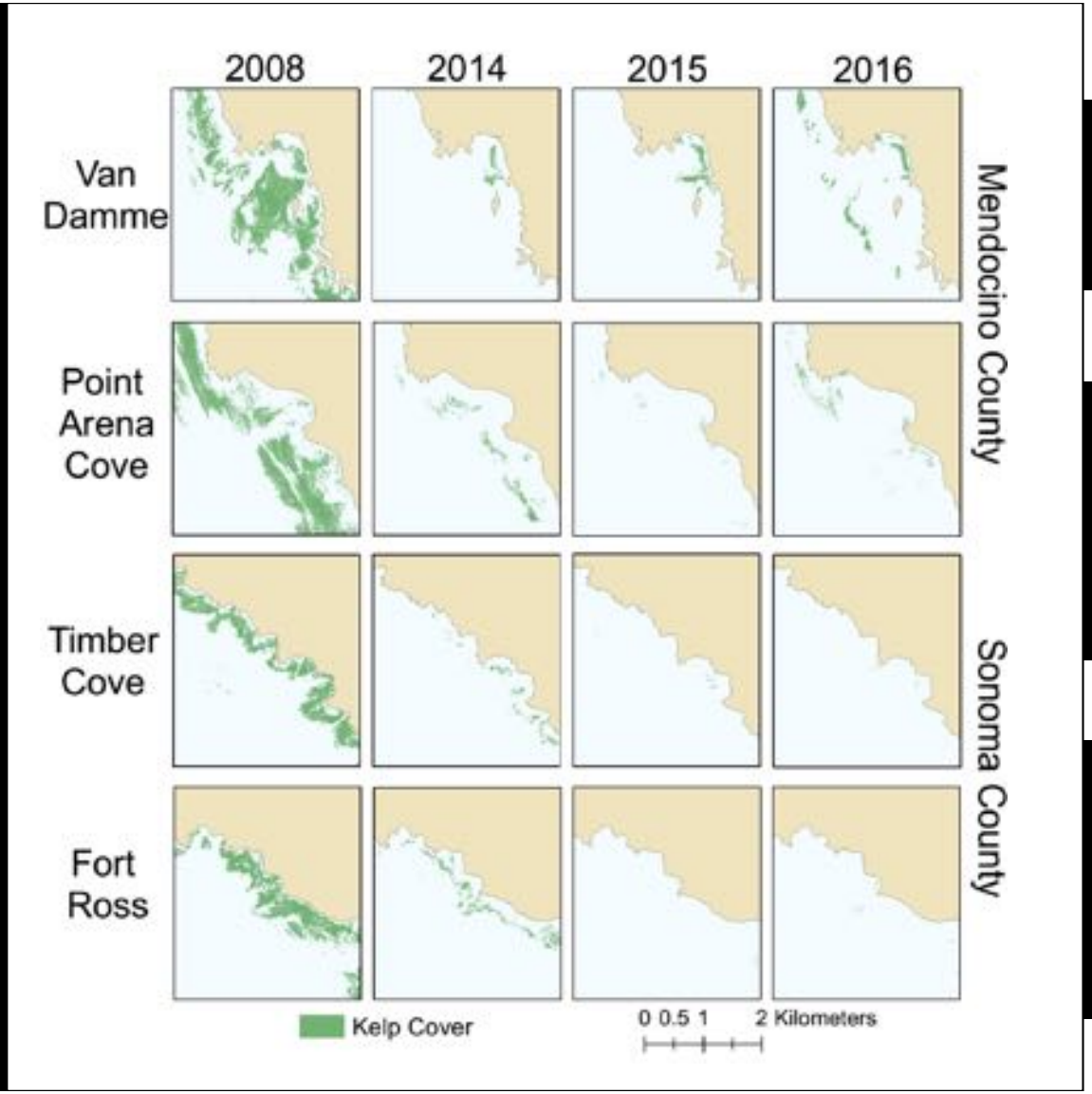
HELP THE KELP COLLABORATIVE PROJECT

Supporting the widespread recovery of bull kelp to benefit ecosystems and fisheries

KELP FORESTS

Mendocino and Sonoma

(source: CDFW aerial surveys)



>93% kelp loss in 2014

Additional 33% loss in 2015

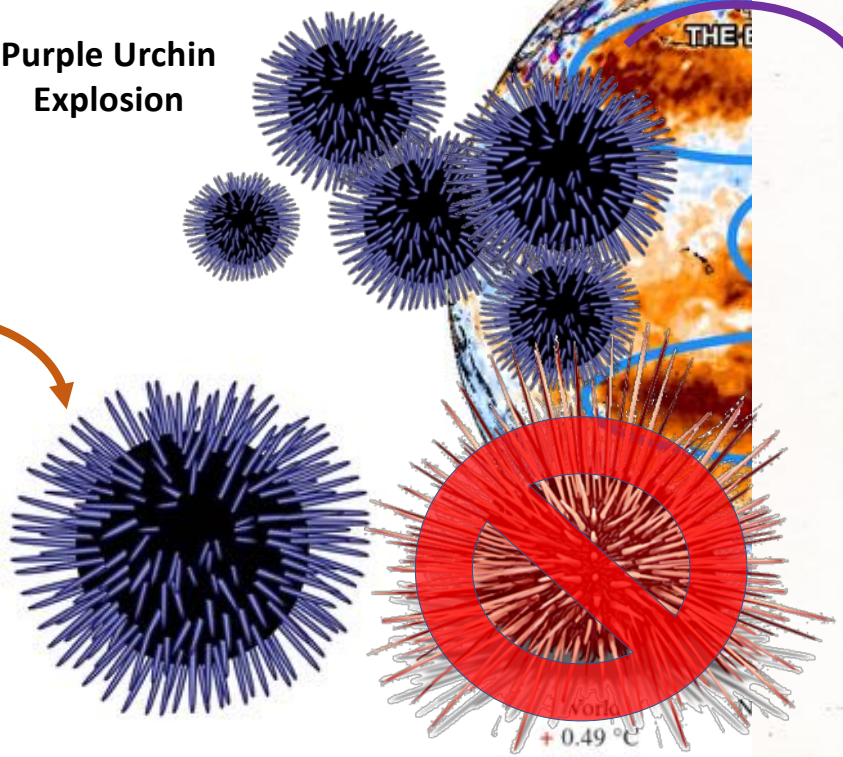
Very limited growth in 2016-18

How Did We Get Here?

Sea Star Wasting Syndrome (2013)

Keystone Species

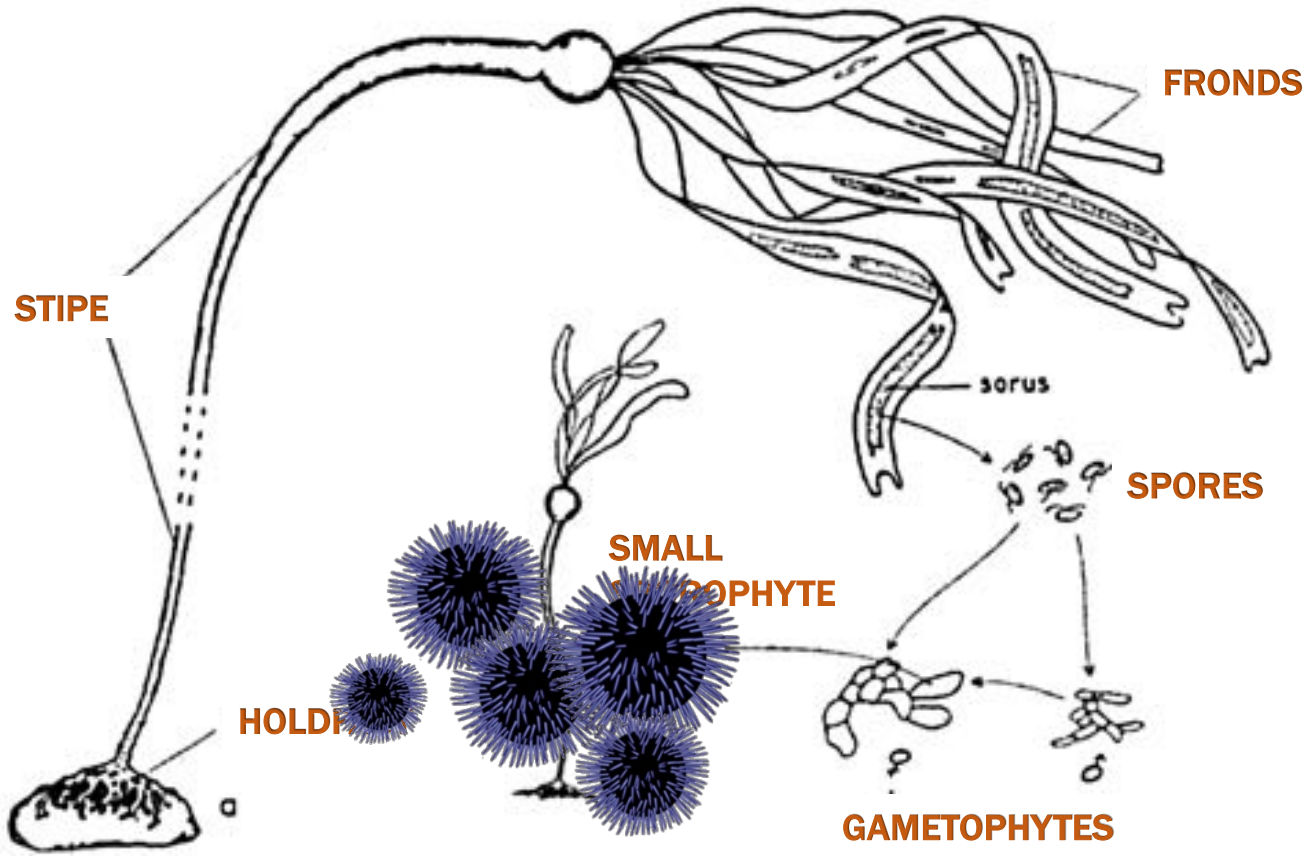
Purple Urchin Explosion



Bull Kelp (*Nereocystis luetkeana)* Life Cycle

As one of 2 giant kelp on our coast, bull kelp is very easy to recognize. They have long stipes that can grow over 30m long, one gas filled bulb at the top to keep it afloat, and long blades the spread out and eventually float on the surface.

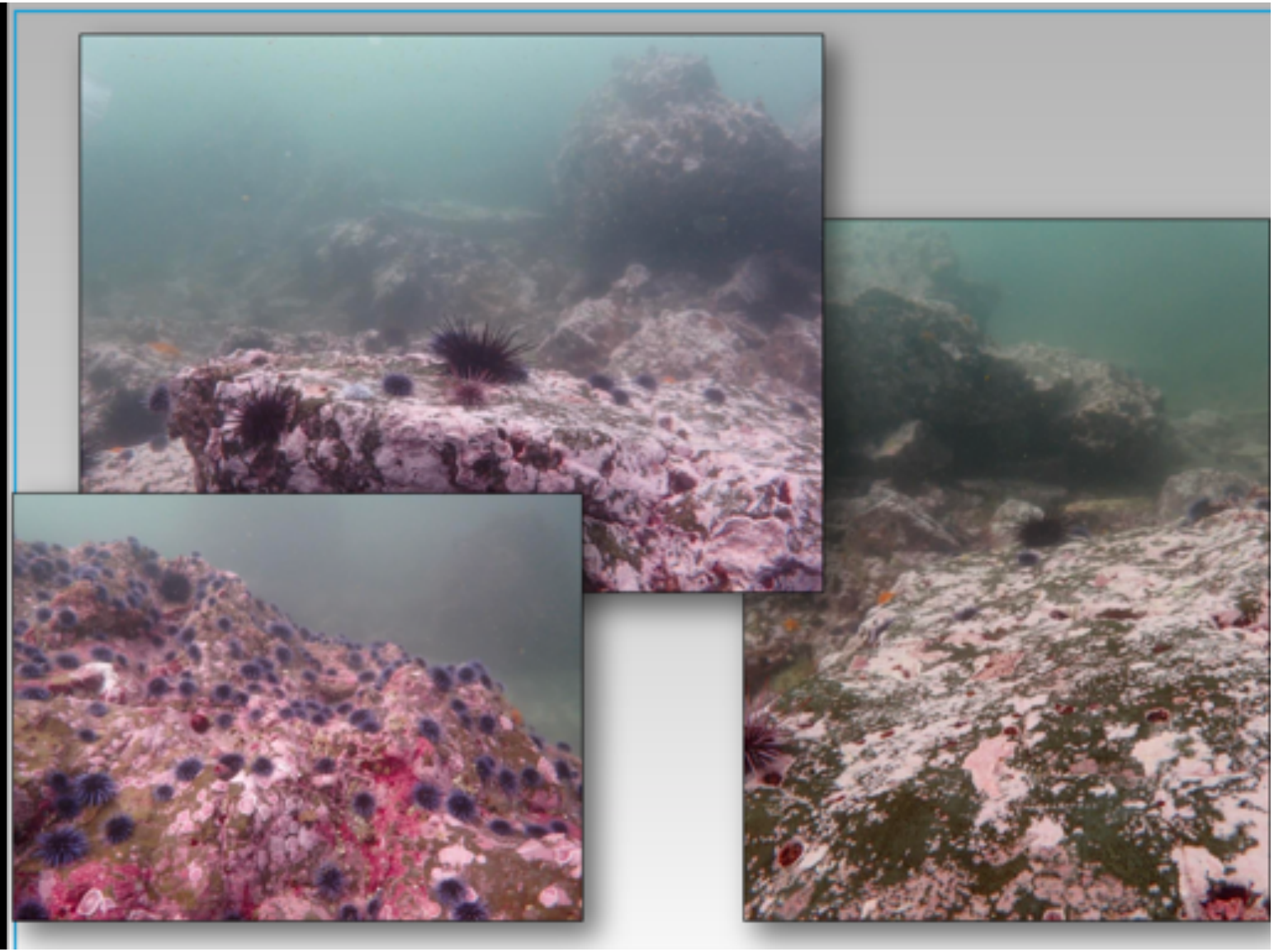
Bull kelp is an annual species, and the stipes can grow up to 5 in per day. After summer growth, the blades or fronds begin to release spores, which grow into tiny gametophytes. The gametophytes shed sperm and eggs in winter and early spring. When fertilized, the eggs develop into sporophytes.



URCHIN: Overgraze on holdfast until it breaks free

URCHIN BARRENS

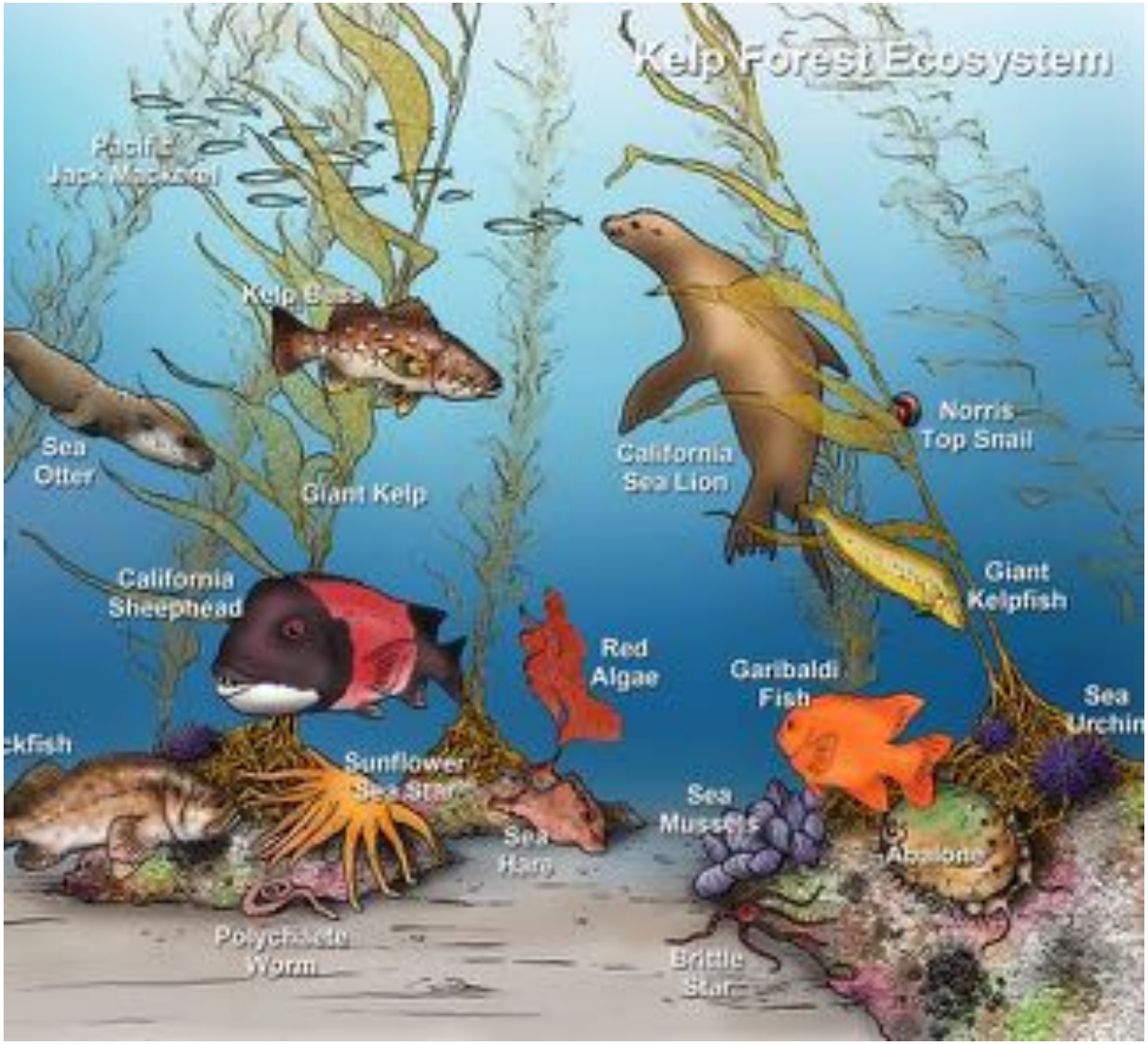
We now see up to 87% exposed bare rock where once there was a diversity of habitats

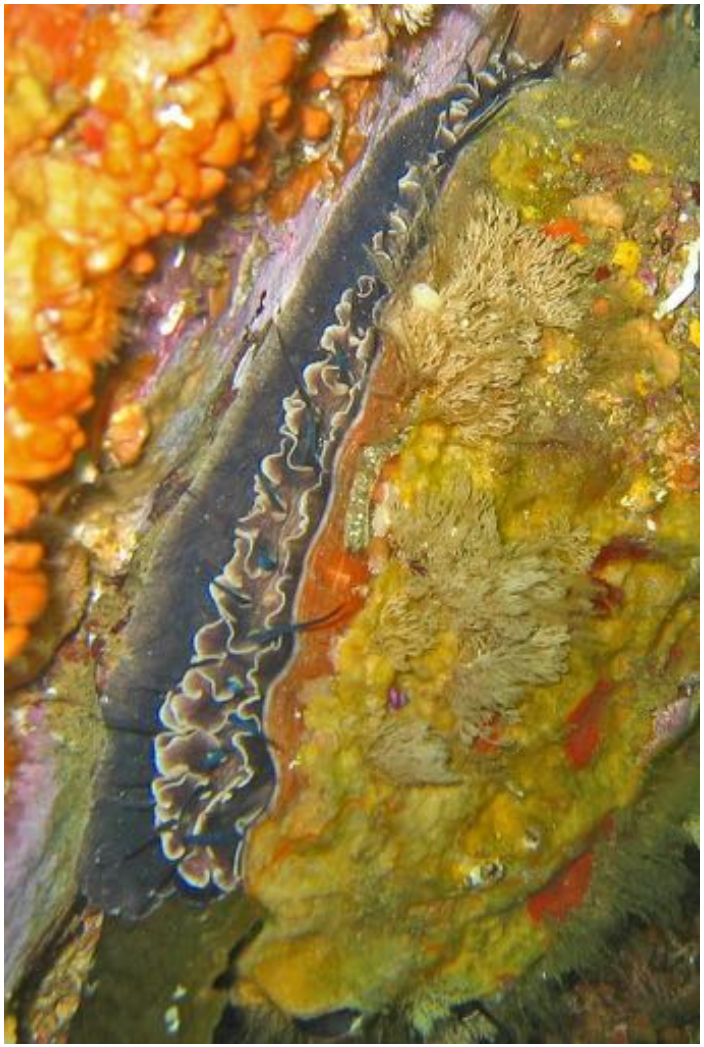


What's at stake here?

Giant kelp provide the architecture for a diverse ecosystem

- It is food
- It provides protection
- It creates a place to hunt for food





RED ABALONE

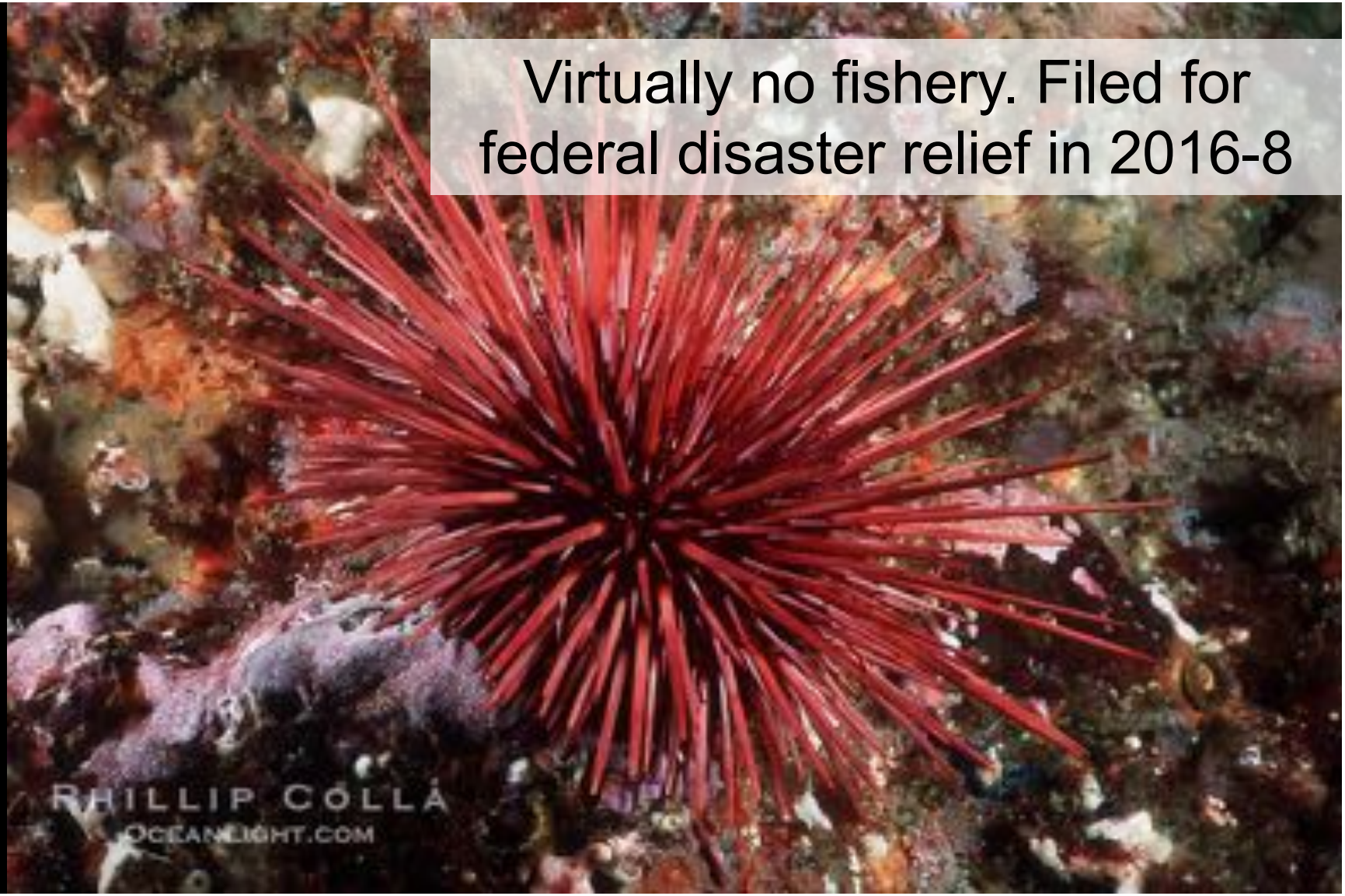
$44 M Fishery

Abalone are weak and starving

Fishery was closed in 2021

Red urchin

Strongylocentrotus franciscanus



Virtually no fishery. Filed for federal disaster relief in 2016-8

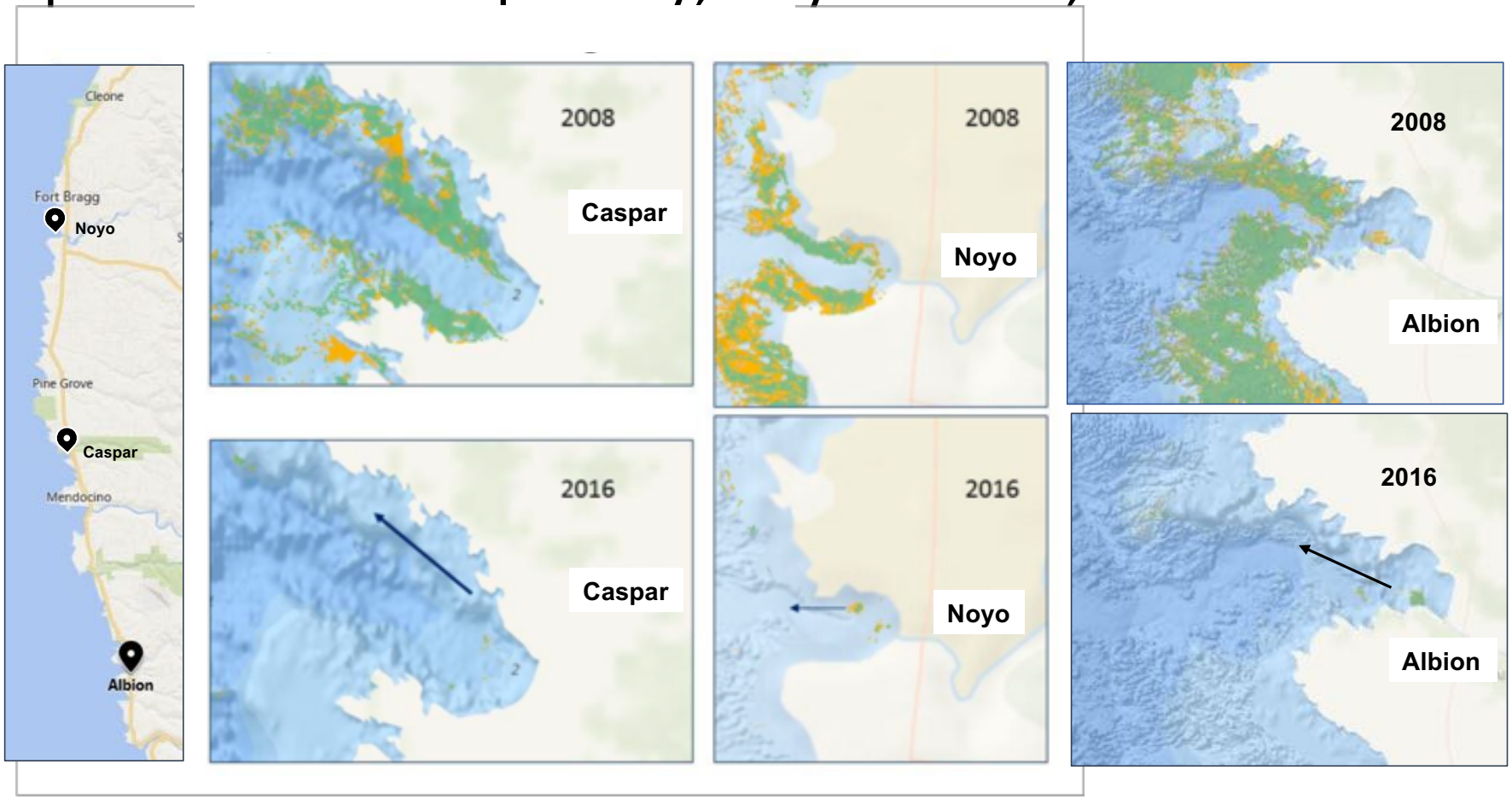
What Are We Doing to Support Recovery?

HIGHLY COLLABORATIVE PARTNERSHIP

2018 – Pilot Year

- Site Selection:
  - Caspar Bay
  - Noyo Bay
  - Albion Cove
- Built partnerships
- Set up working protocols for divers and monitors
- Determined research objectives for 2019-2020
- Fundraising!
- Support the development of market options for purple urchin fishery

Kelp Oasis Sites: Caspar Bay, Noyo Harbor, Albion Cove



Commercial Urchin Divers

Red urchin are the target of the commercial urchin fishery, and the purple urchin are outcompeting them as well. Commercial divers are eager to see a better balance for their fishery to continue.

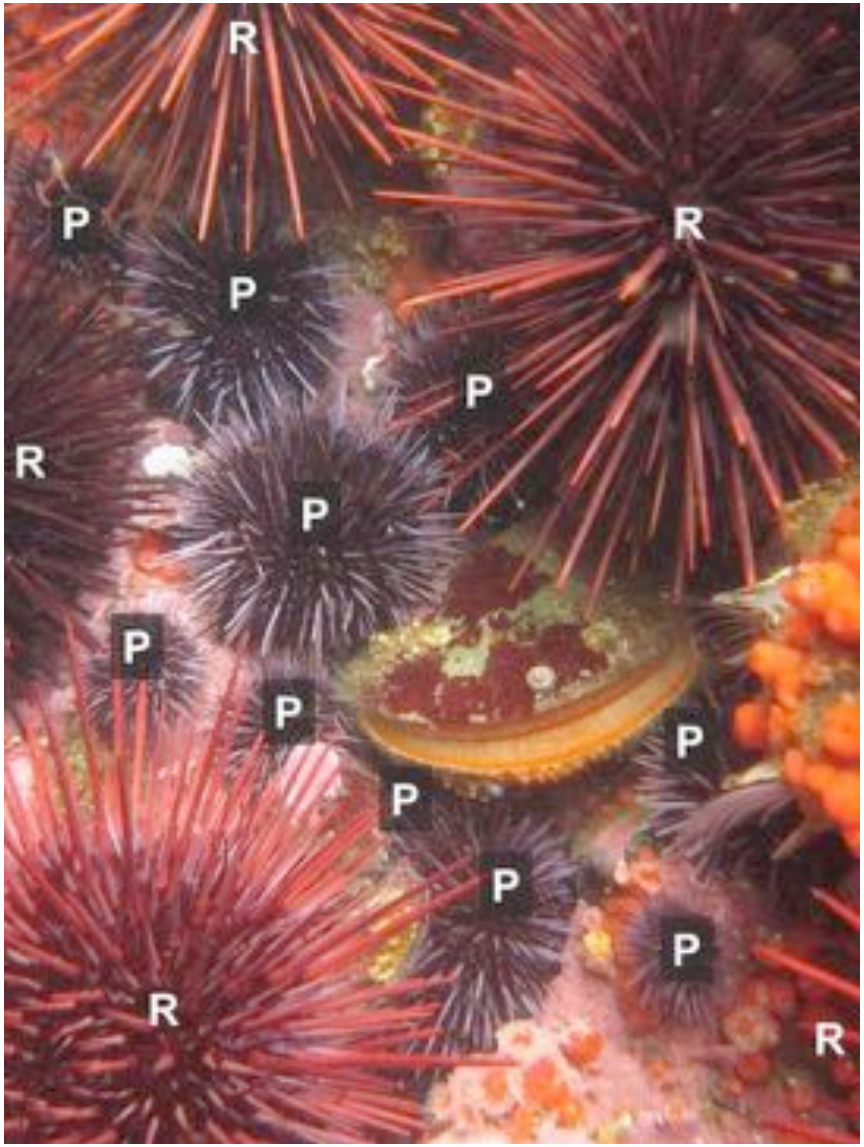
$500 per day for 4 hours of dive time to clear ~1,500 sq ft

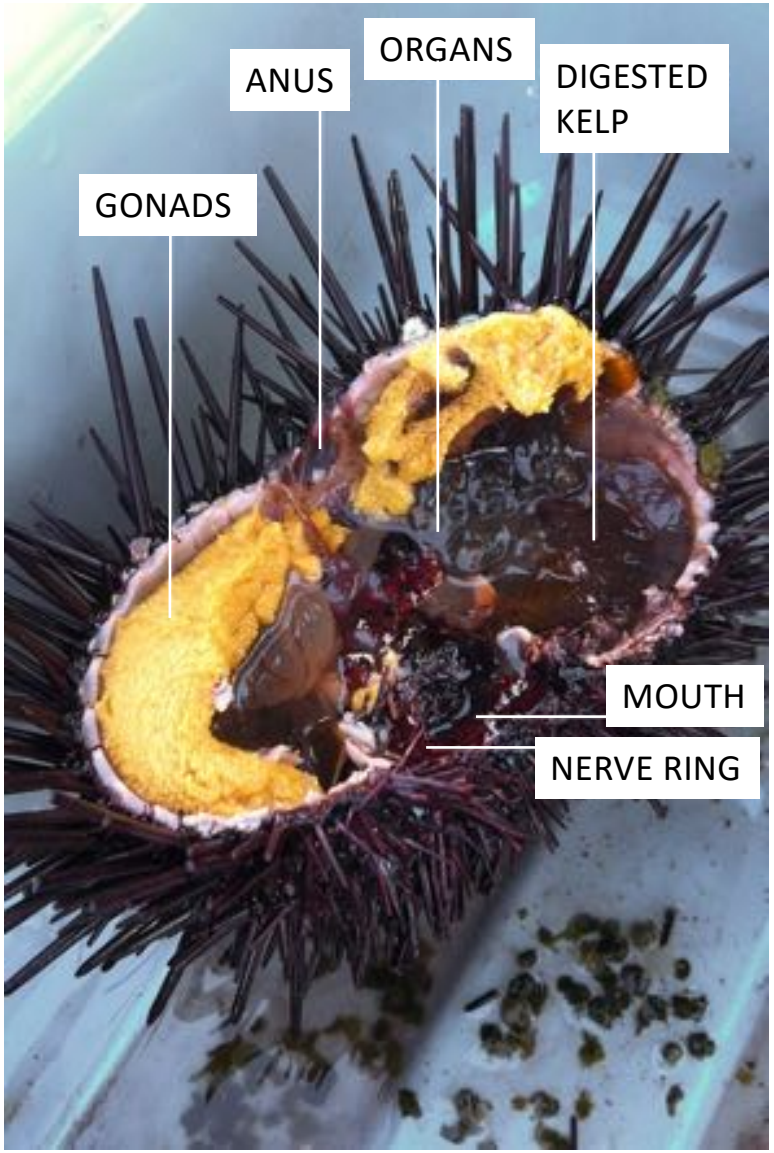
RECREATIONAL DIVERS:

Working in concert with commercial divers

Noyo Center Trainings:

Reds vs Purples





SMASHING VS. REMOVAL

If we smash urchin when they are reproductively viable, we run the risk of artificially spawning them. The presence and size of the gonads—or reproductive organs—is a key indicator we use.

How much is too much??

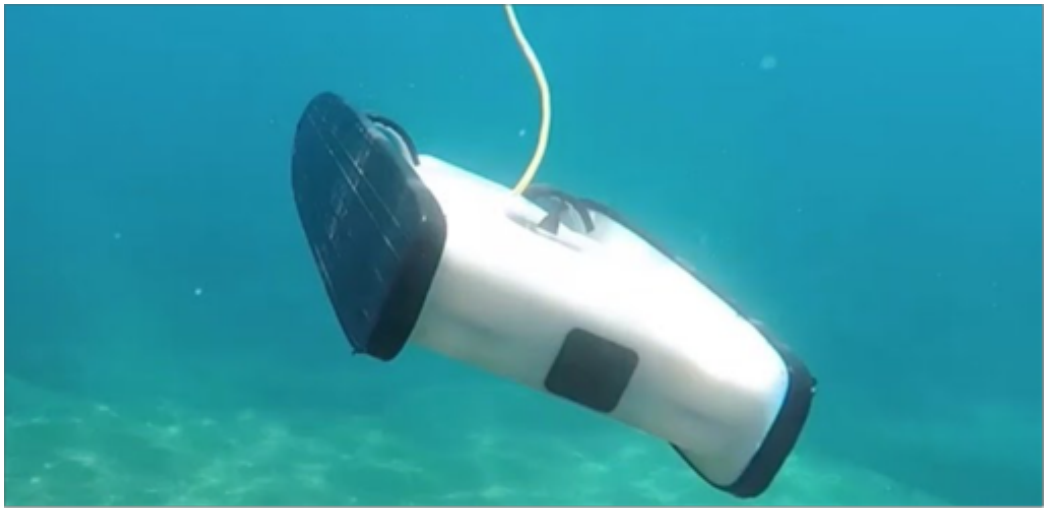
96 Recreational Divers– 4,190 lbs
57,505 purple urchins

7 Commercial Divers– 4,132 lbs
77,676 purple urchin

WEEKEND TOTAL:
8,322 lbs removed
135,181 purple urchin

Citizen Science: Dockside Sampling

- 1.3 Million Urchin Removed
  41.5 Metric Tons
- 166 Commercial Diver Days
- 691 Hour Underwater
- Average 1500-2000 urchin per hour



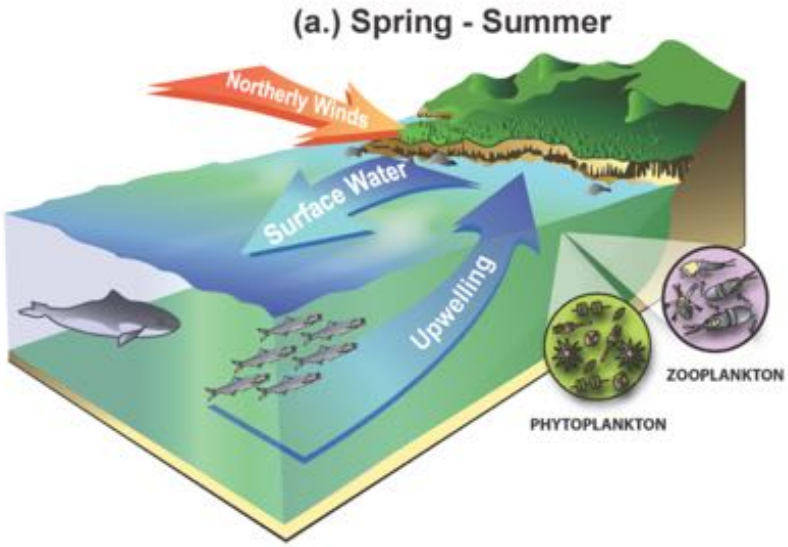
MONITORING

Working with college and high school interns on technology and data analysis

ECOSYSTEM SURVEYS

- Qualitative & quantitative monitoring of oasis zones
- Understand the complexity of the problem
- Show the research as it happen
- Document the transition back to help forest

What’s the key to long-term recovery?



Coastal Upwelling

Sunflower sea stars

usually have 16 to 24 limbs and their color varies widely. They are a voracious predator of urchin, but their population was decimated by the sea star wasting disease.

Purple Urchin

Create a Commercial Market

Uchinomics: Urchin Ranching

How Do We Relate to Climate Crisis

FOREST TO FOREST

Grassroots fundraising as outreach

BEAUTIFUL
VISUALS
Reproductive
Bull Kelp
Fronds
J. Iselin

Testing out VR technology

CAPTURE → EDIT → DISPLAY

CAPTURE

VUZE 3D 360° CAMERA

TRIDENT ROV

DIVER

FIXED

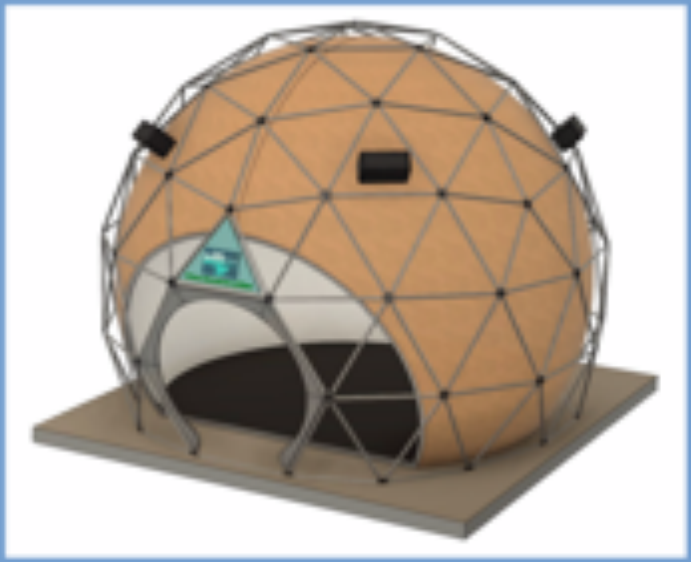
3rd Party Content

EDIT

VIDEO & AUDIO EDITING WORKSTATION

DISPLAY

IMMERSIVE DISPLAY

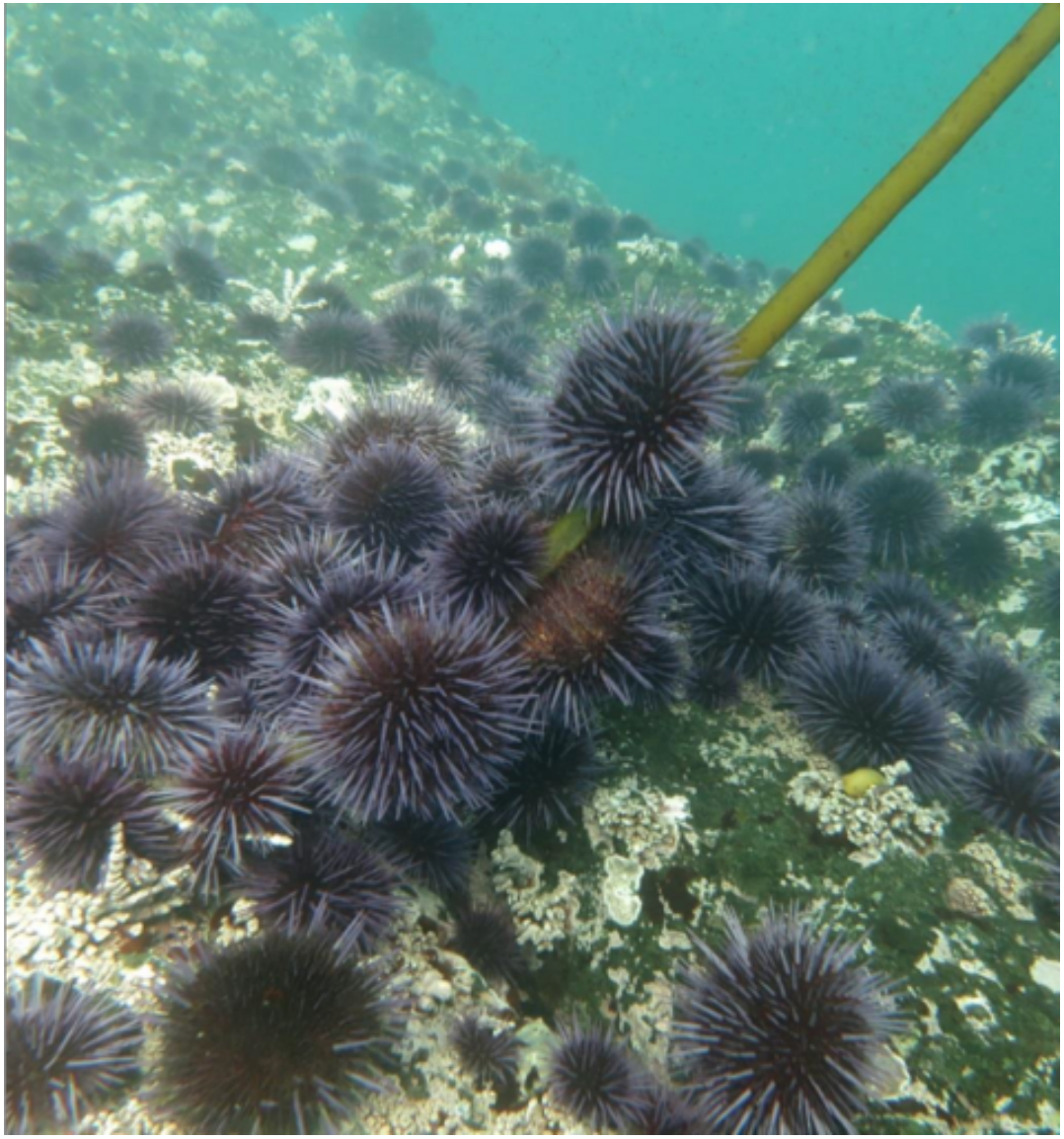


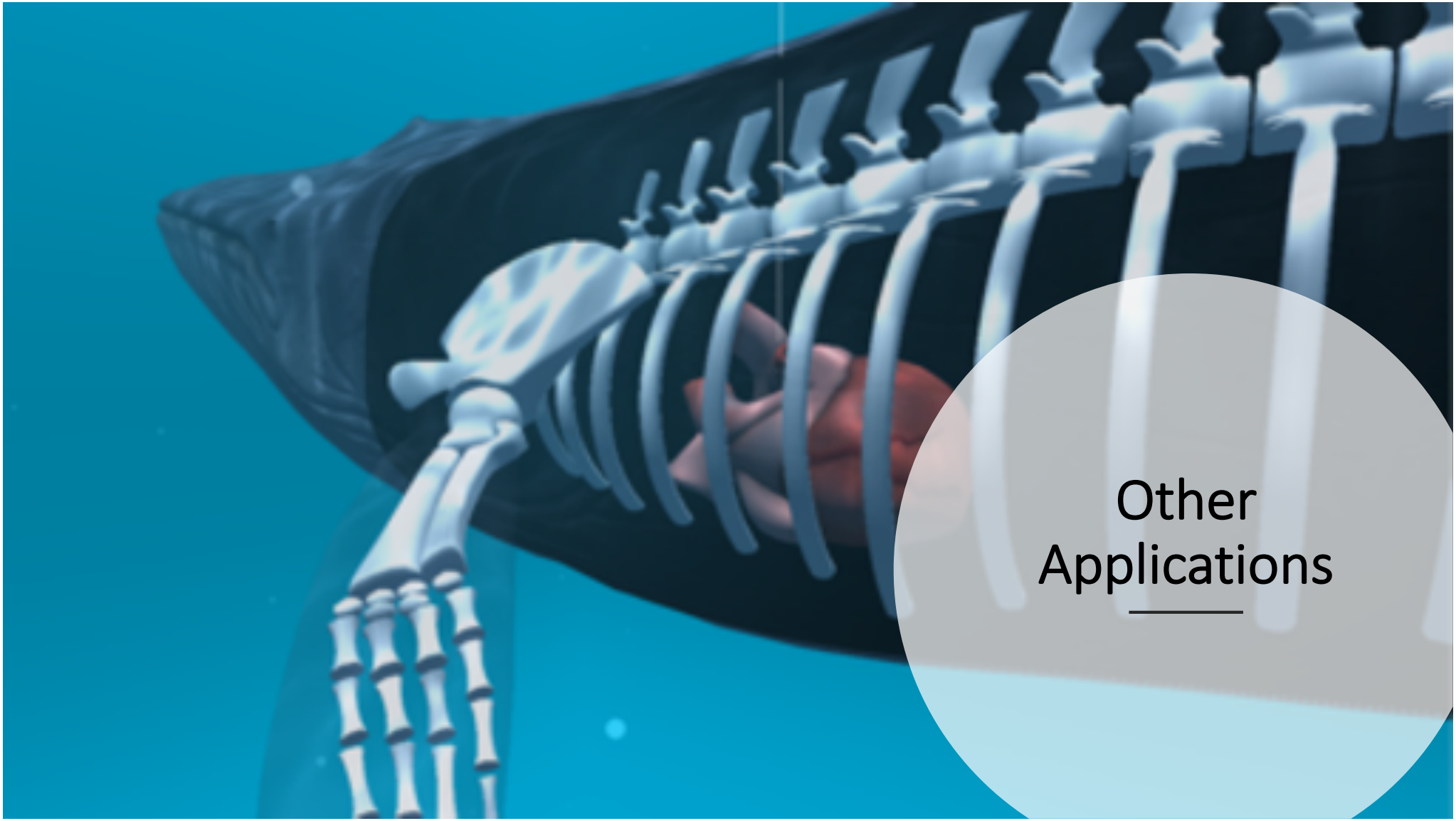
- 3D/360° Video
- DOLBY Surround Sound
- High Resolution Video
- High Quality Active 3D glasses

Volunteer Team: DIY

Going Under Water Without Getting Wet

- Provide a compelling, realistic and personal experience of our local marine environment.
- Bring generally unseen marine life and habitats to anyone
- Show science as it happens by filming commercial divers, ecosystem surveys, and live events.
- Train Noyo Center interns in the use of cutting edge technologies





Other Applications

GOALS 2019

- Build out exciting interactive exhibits in downtown center
- Continue to grow our Help the Kelp Campaign; explore potential with Urchinomics
- Complete conceptual design for science center campus and outline a fundraising plan
- Begin restoration on 11.5 acres on the Fort Bragg Headlands

Thank You!

www.noyocenter.org

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