

# Baseline Characterization of Nearshore Rocky Reef Associated Fish Communities in the Northern California MPA Study Region

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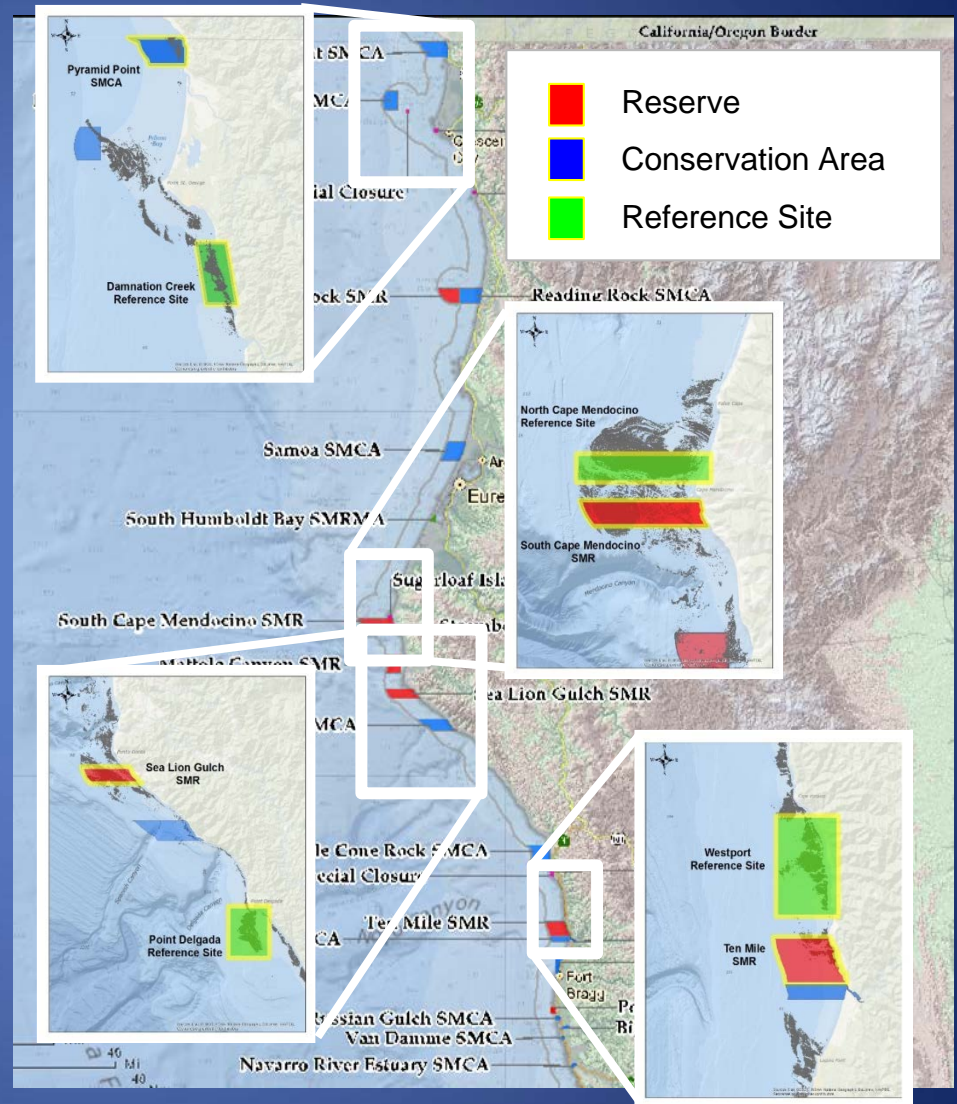
North Coast MPA Baseline Monitoring Symposium  
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Eureka, CA

# Study Goals

1. Characterize relative abundance, size composition, and species diversity of fishes associated with nearshore rocky reef habitats.
2. Engage local fishing communities in the MPA monitoring process.
3. Identify and recommend useful monitoring metrics for describing the state of nearshore fish communities.

# Study Area

- 4 sets of paired protected/reference sites.
- Ports:
  - Crescent City
  - Eureka
  - Shelter Cove
  - Fort Bragg



# The Fish

- Assoc. w/ rocky reef 10-50m depth.
  - Rockfish (*Sebastes sp.*)
  - Hexagrammids
  - Sculpins
- Long lived, slow to reproduce
- Economic, cultural, recreational resource



# Challenges

- Remote sites & frequent poor weather.
- Lack of infrastructure to support R/Vs.
  - 3 protected ports & 3 semi-protected mooring basins over > 400km of coast.



Shelter Cove, CA

A photograph of a person fishing on a boat. The person is wearing a blue jacket and is holding a fishing rod. A large net is mounted on a pole next to them. The boat is on a body of water, and there are mountains in the background. The image is used as a background for the slide.

# Survey Methods

- Collaborative hook-and-line surveys w/ commercial charter captains.
- Standardized fishing gear, and sampling time to minimize variation.
- Sampling in MPAs and nearby, unprotected reference sites.

# Collaborative Fisheries Research

- ↑ knowledge and support for MPAs in (fishing) communities.
- Extremely flexible and cost effective vs. use of dedicated R/V
- Mimics sportfishing
- Comparable to other studies in CA



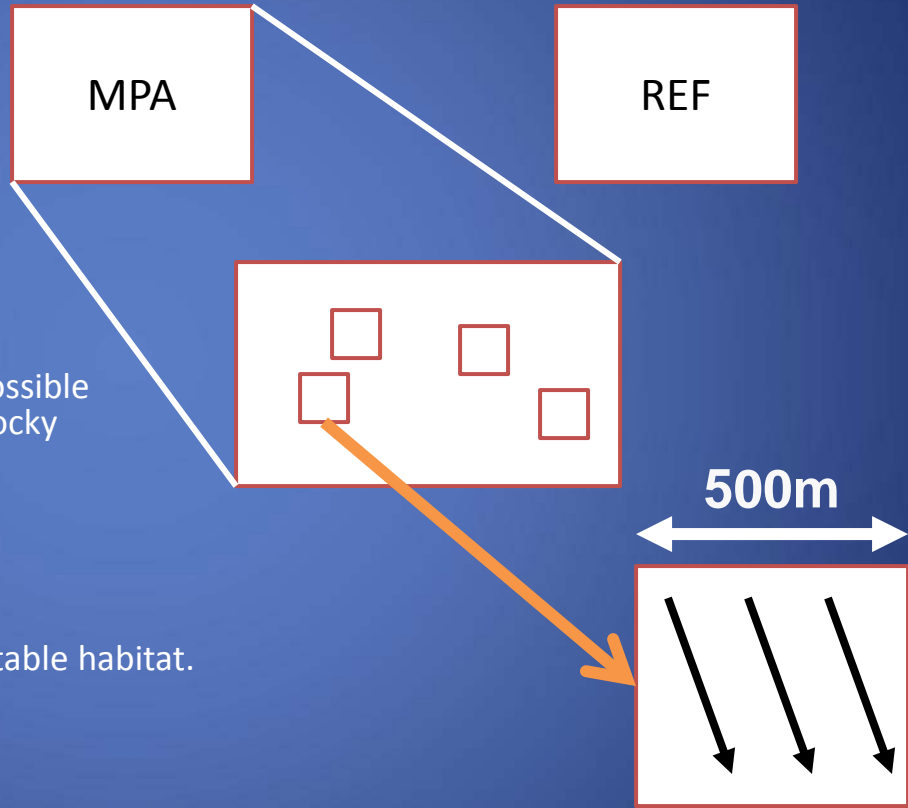
Captain  
Kevin Riley

Volunteer  
Kaitlyn O'Brien

Technician  
Chad Martel

# Sampling design

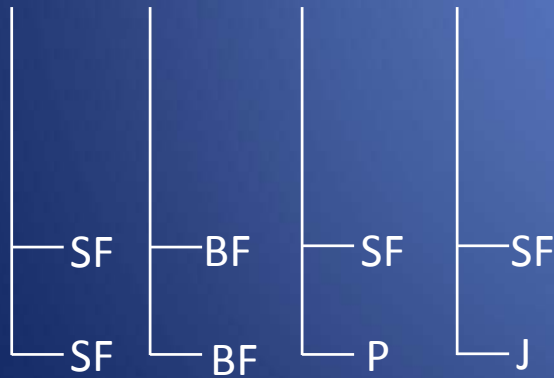
- At Each Port:
  - MPA/Reference site pair.
- At Each Site:
  - Four 500m x 500m Stations
  - Randomly select from grid out of possible stations where > 20% of bottom is rocky reef.
- At Each Station:
  - 45 minutes of fishing.
  - >3 drifts over difference areas of suitable habitat.





# Sampling

- Standardized Hook and Line sampling/mimics sportfishing tackle.
- Crew
  - 4 anglers
  - 1 sampler
  - 1 data recorder



# Methods

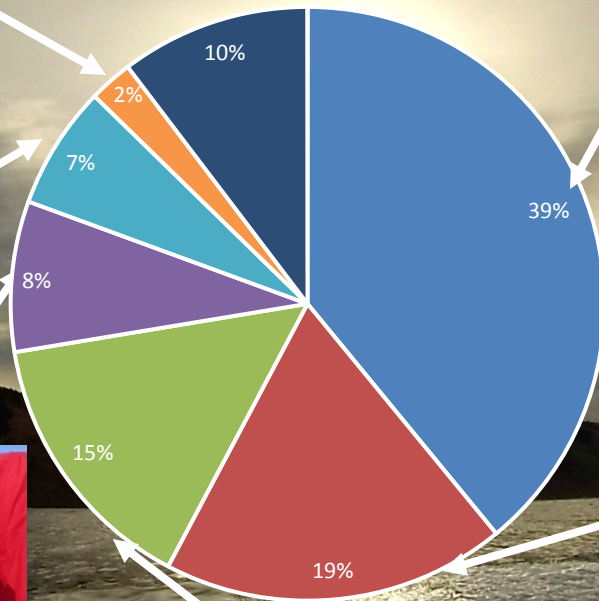
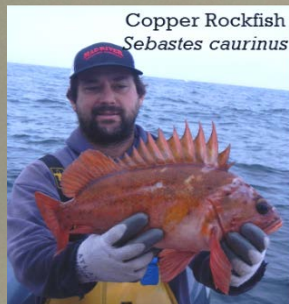


# By The Numbers

- 40 Trips
- 4248 Individuals
  - 22 Species, (14 *Sebastes*)
- 3491 Tags Deployed
- 12 Captains/Deckhands
- 40 Volunteers
  - 80 Volunteer-days of fishing
  - Most days volunteered: 8

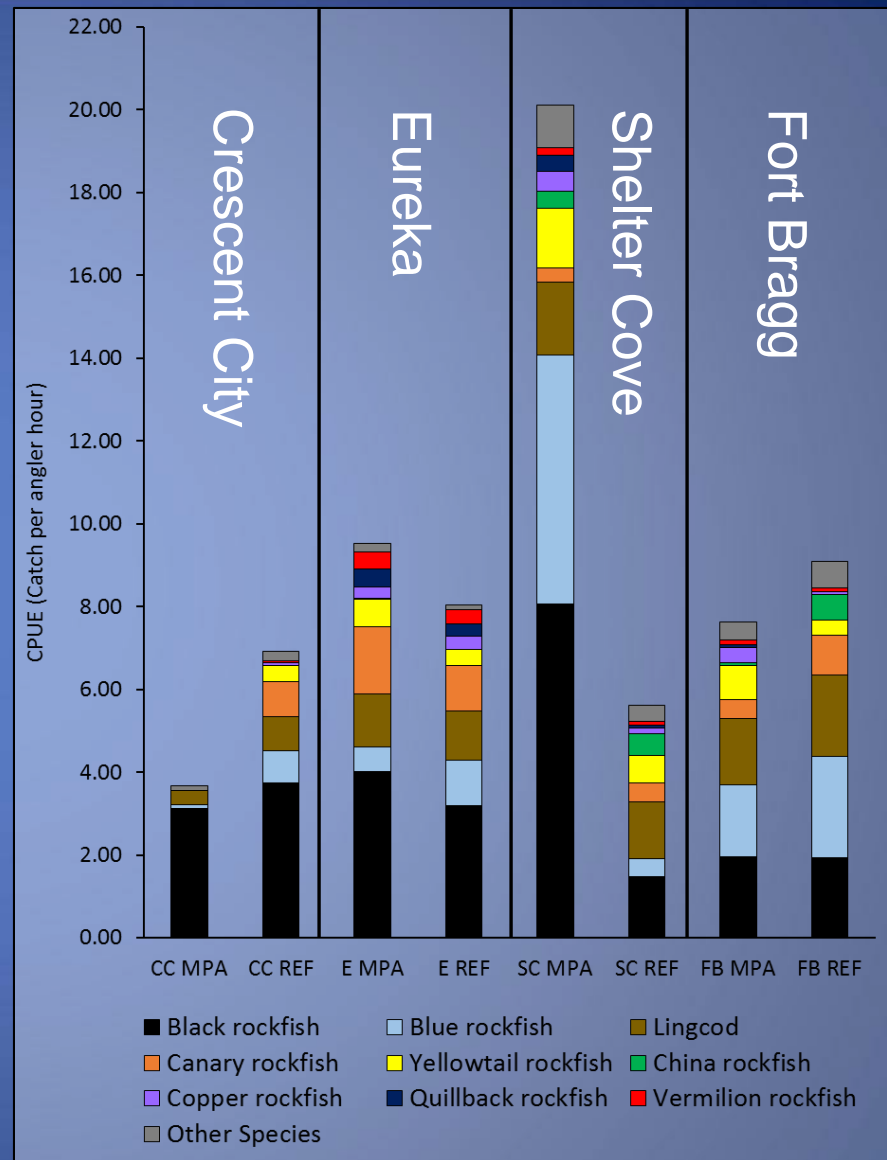


# Composition by Abundance

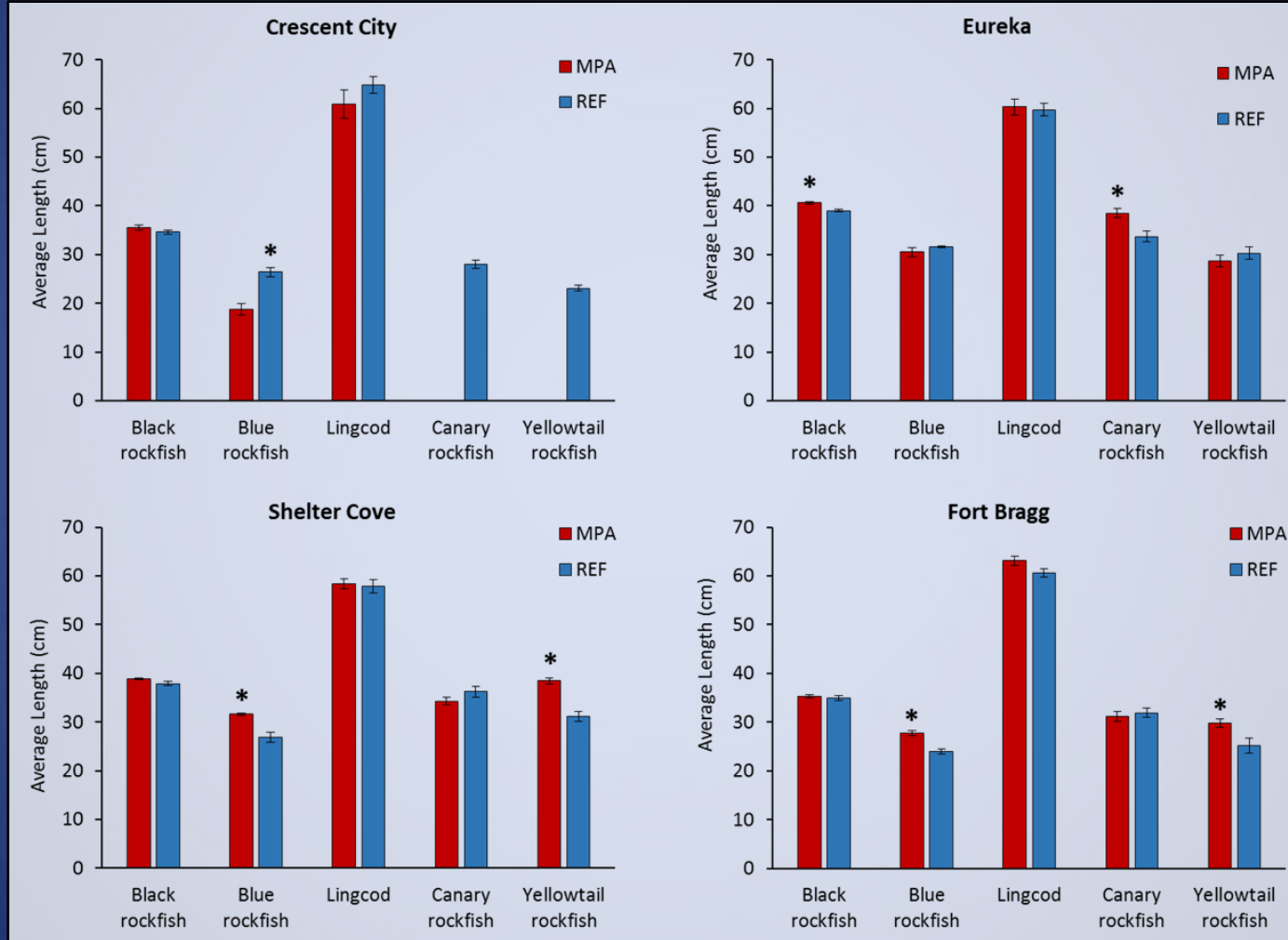


# Abundance By Site

- What drives differences in abundance?
  - Evidence of MPA effects?
  - Something else?
- Trends in diversity

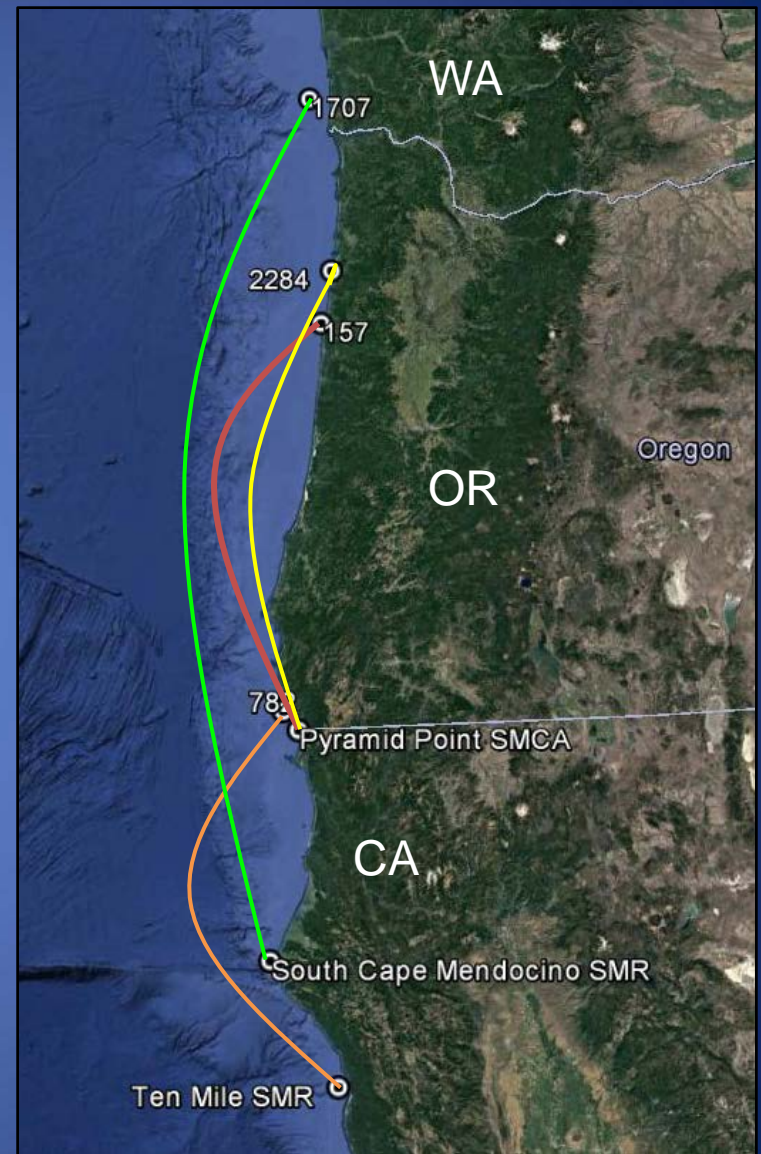


# Species Mean Lengths



# Tag Returns

- 18/3491
- 9 Black Rockfish
  - 4 moved >300 km
  - Similar ratio to CCCFRP
- 7 Lingcod
  - 1 each: Pacific Halibut, Yelloweye Rockfish



# Key findings

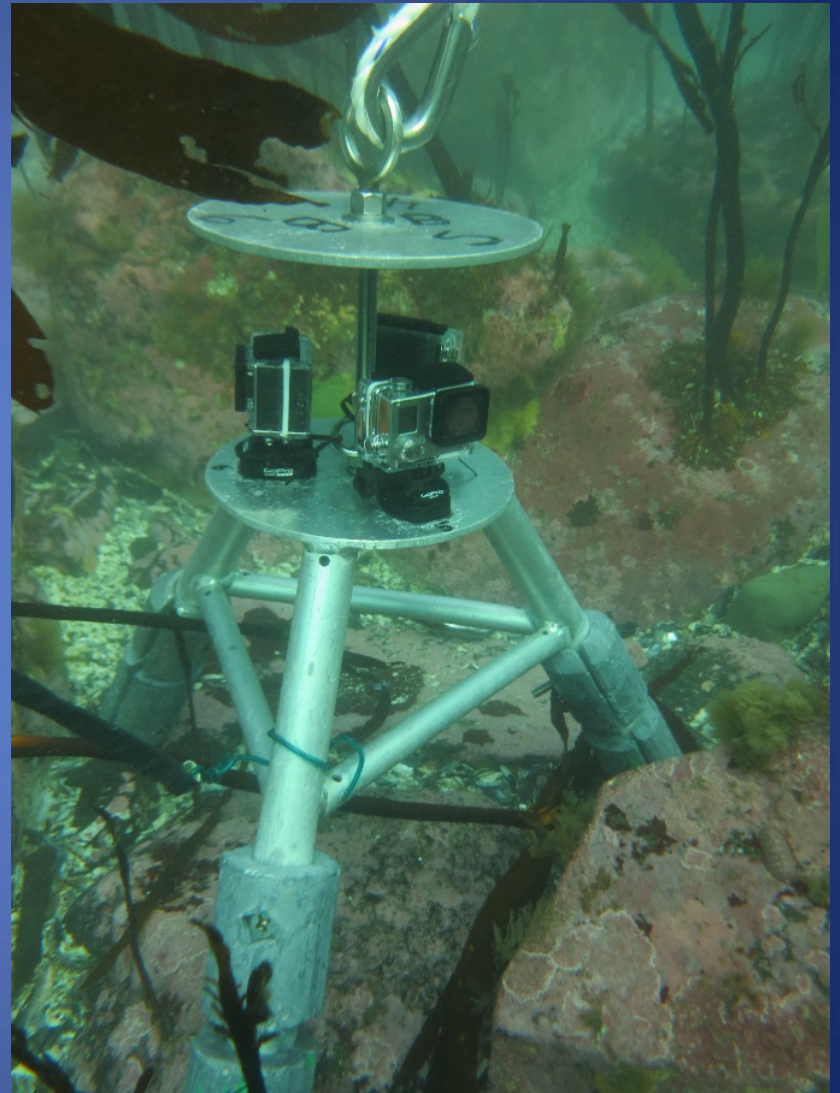
- Distance to port has large strong effect on abundance
  - Consider when selecting ref. sites
- Little evidence of MPA effects
  - But, not expected
- Volunteers like free fishing trips!





# Future Work

- Surveying 2 MPA/Ref site pairs summer 2017
- Age/Length data to NMFS
- Video Landers
- Long term, annual monitoring to come?



# Acknowledgments

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- Many more volunteers!
- California Ocean Science Trust
- Mulligan Lab Members, HSU Fisheries Grad Students.





# Thanks!

Want to fish with us?

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