



Rick Starr, Dean Wendt

Central CA Collaborative Fisheries Research Program



Issue: We need better data to:

- Evaluate MPAs
- Improve Stock Assessments





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Why Use a Collaborative Fisheries Approach?



- PEW Oceans Commission, US Commission on Ocean Policy
- Utilize the extensive expertise of fishermen
- Makes fishermen part of the information solution
- Generate useful and needed data for DFG and NOAA
- Traditional fishing gear samples certain habitats and species better than other methodologies
- Tremendous outreach potential to diffuse historic tensions

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Where we have been...

*Dean Wendt and Morro Bay
Fishermen Started in early 2003
with funding (17K) from:*

- *World Wildlife Fund*
- *Steelhead Recovery Program*
- *Central Coast Fisheries Conservation Coalition*
- *Port San Luis Harbor Commission*
- *Volunteer Work*
 - *Patriot Sportfishing*
 - *Virg's Fishing*
 - *Cal Poly*





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What we did....

- Assessment of previous long-term “party boat” monitoring program (sponsored by CDF&G, 1988-1998)
- Continue monitoring program using same recreational fishing vessels and protocols
 - CPUE and Size
- Expanded CPFV work to include nearshore commercial trap industry (multi-year RLFF funding)
 - CPUE
 - Tagging
 - Size
 - Growth
 - Movement
 - Biomass
- Standard Monitoring Units For the Recruitment of Fishes (SMURFS) (multi-year RLFF funding)



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What we found...

STEPHENS ET AL.: ROCKFISH RESOURCES OF SOUTH CENTRAL CA
CalCOFI Rep., Vol. 47, 2006

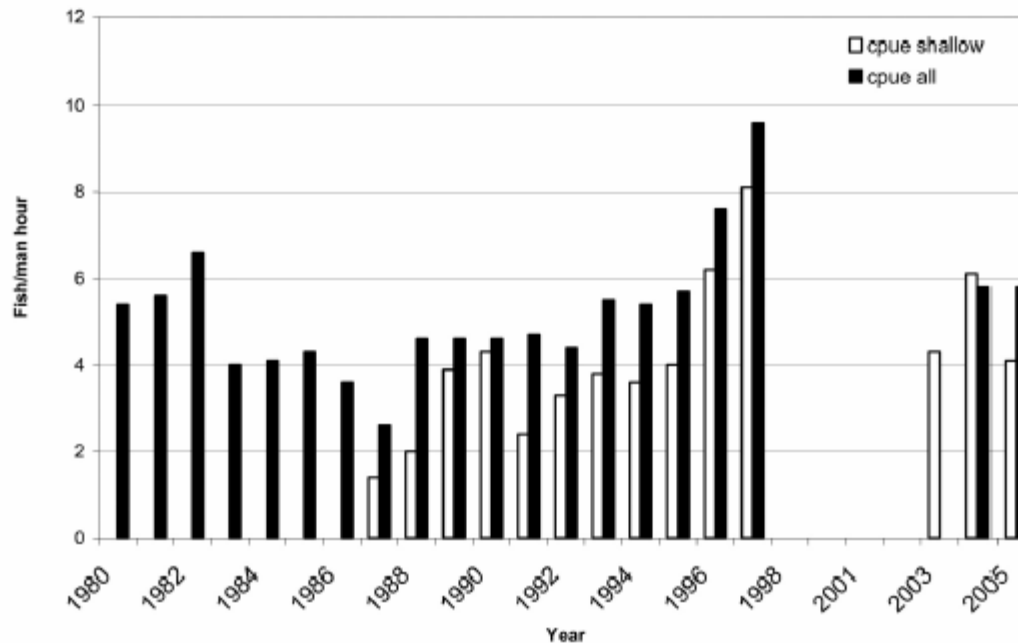


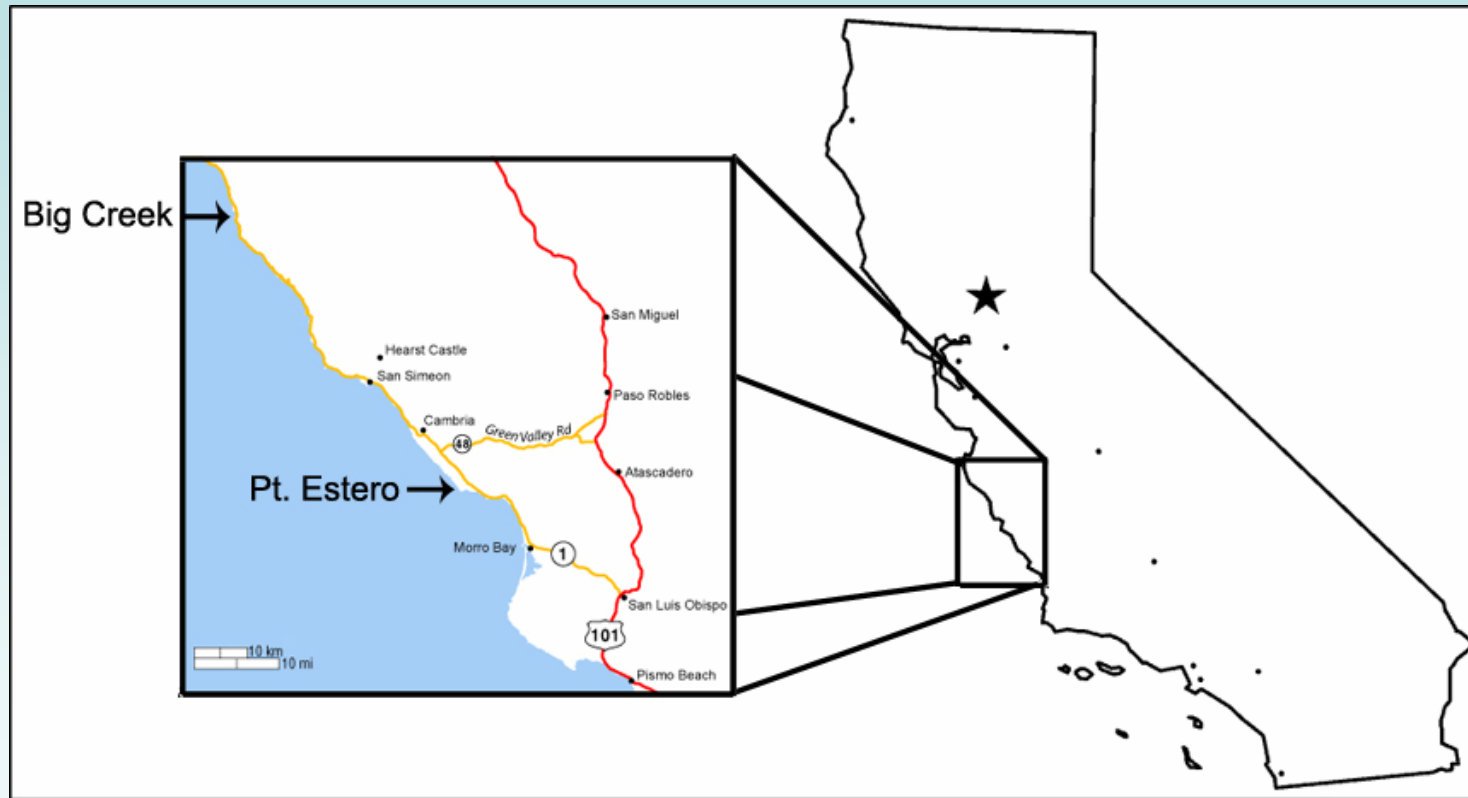
Figure 2. Partyboat CPUE for all species of interest in the South Central Coast, 1980-2005.



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Collaboration with Commercial Fishermen





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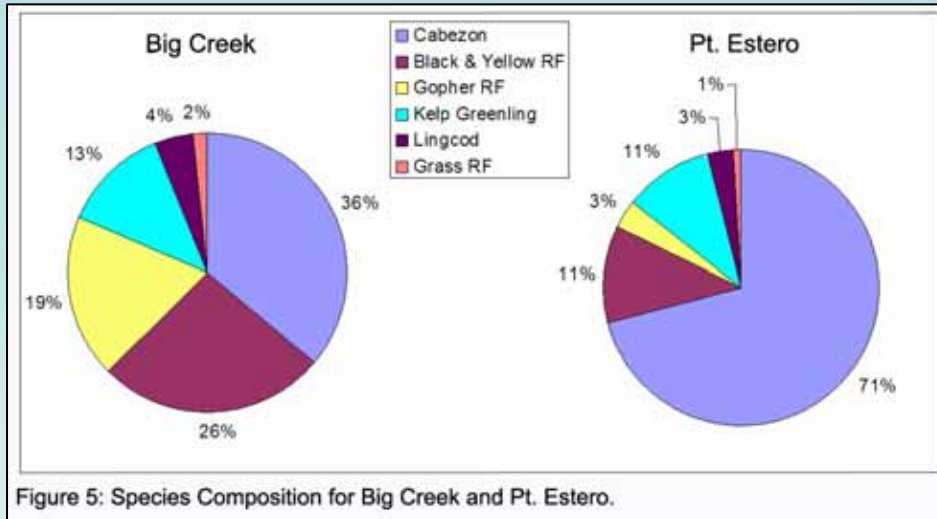
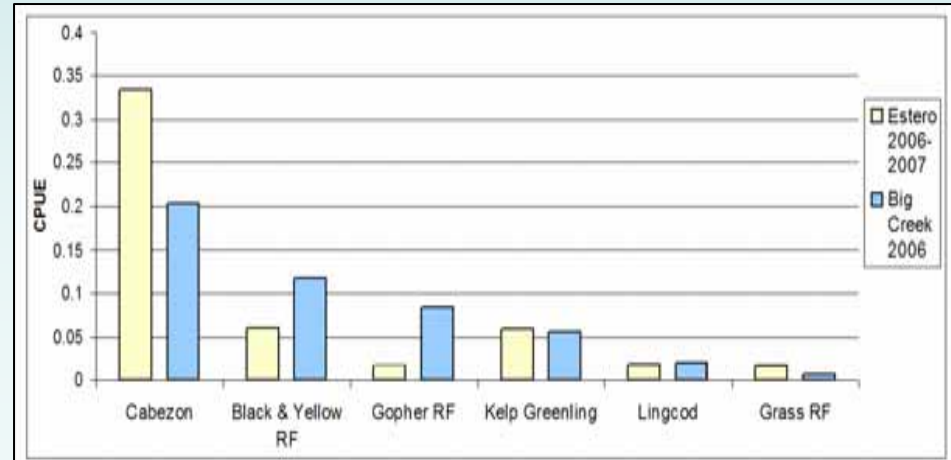
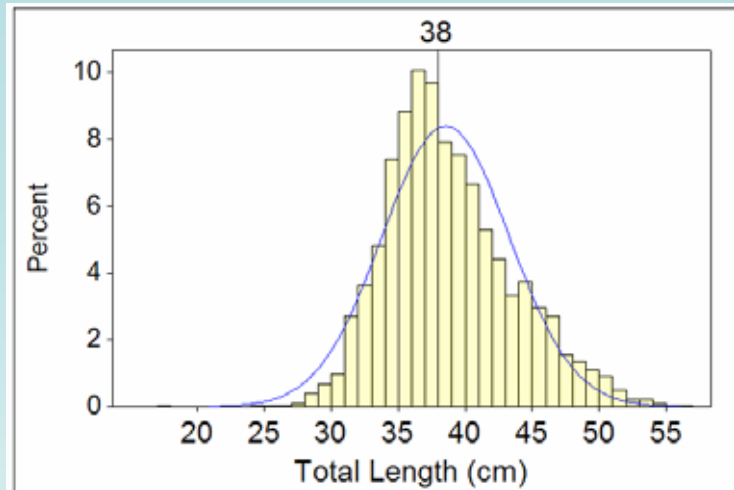


Figure 5: Species Composition for Big Creek and Pt. Estero.

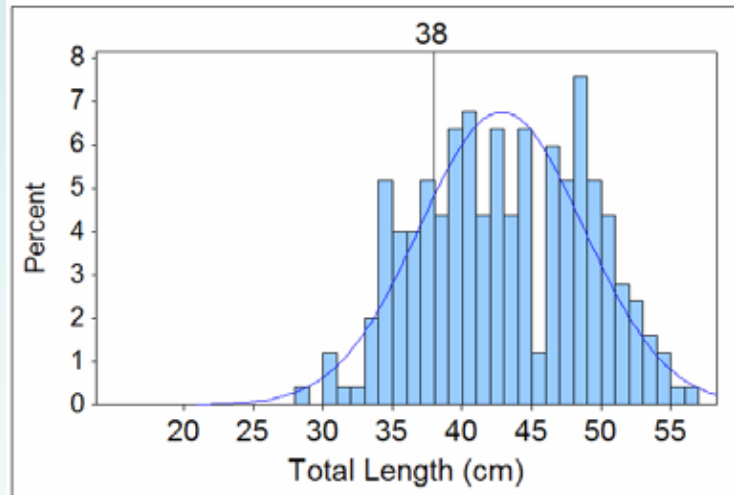




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Point Estero



Big Creek Reserve



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Rick Starr, 30 years of collaborative research



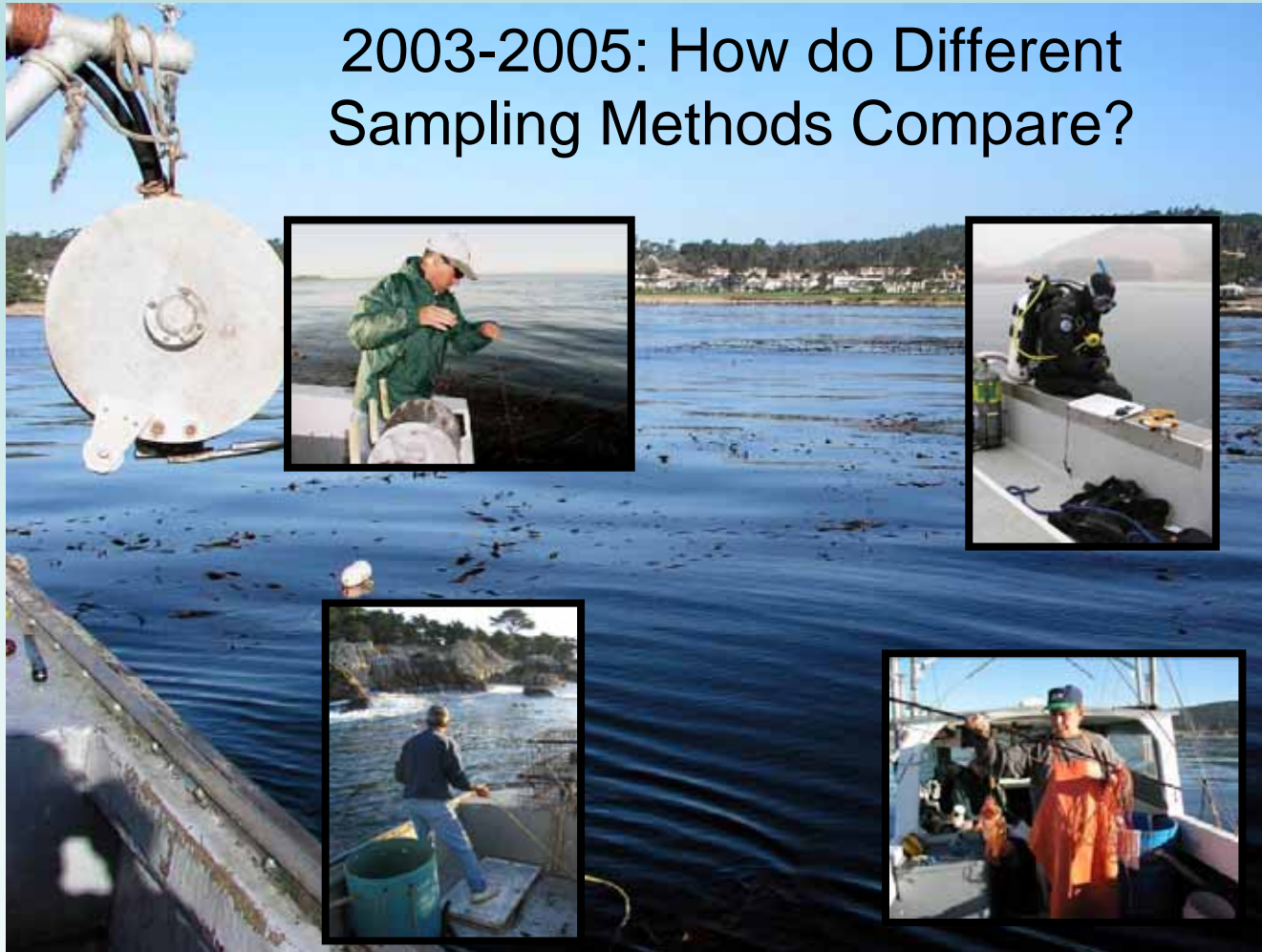
Rockfish (juv. w/Susan), crab, clam, herring, squid, shrimp, grouper



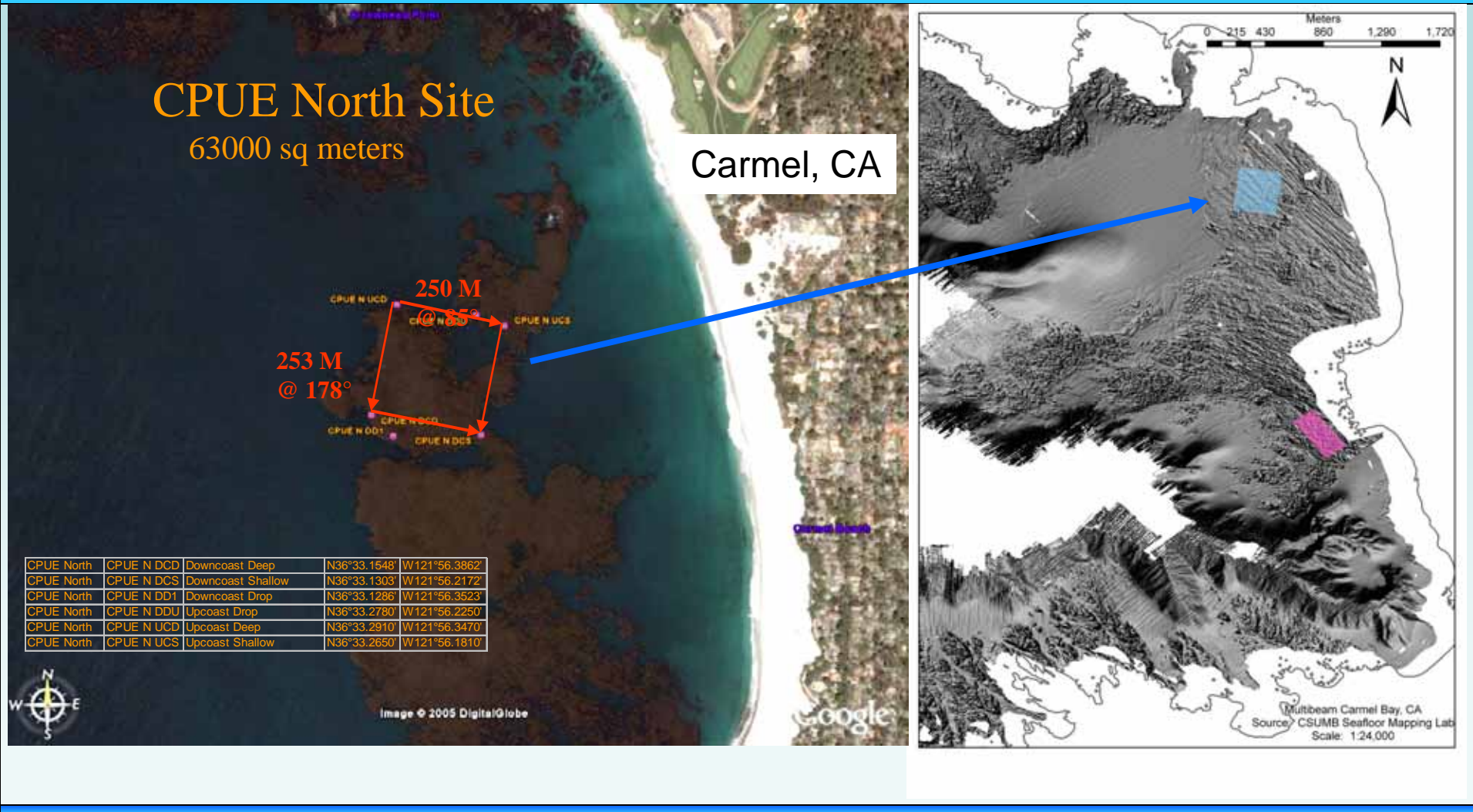
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2003-2005: How do Different Sampling Methods Compare?

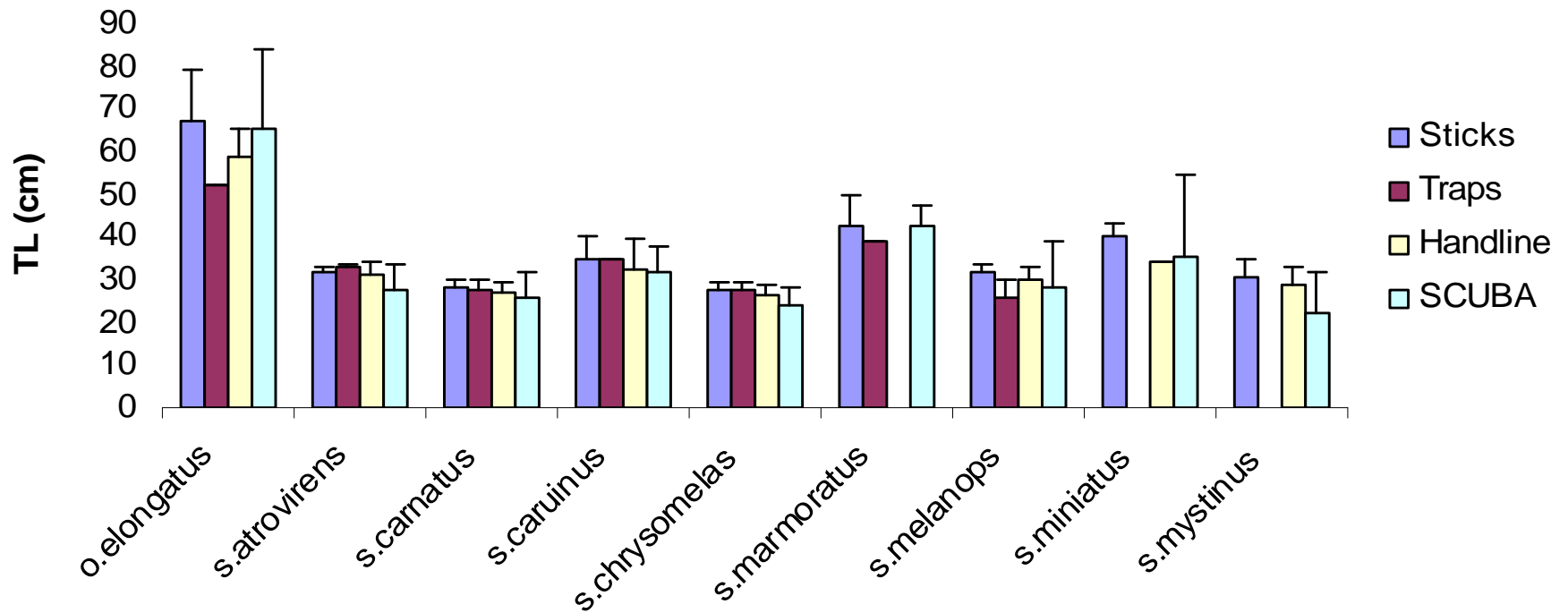


Comparison of SCUBA Surveys and Commercial Fishery Surveys

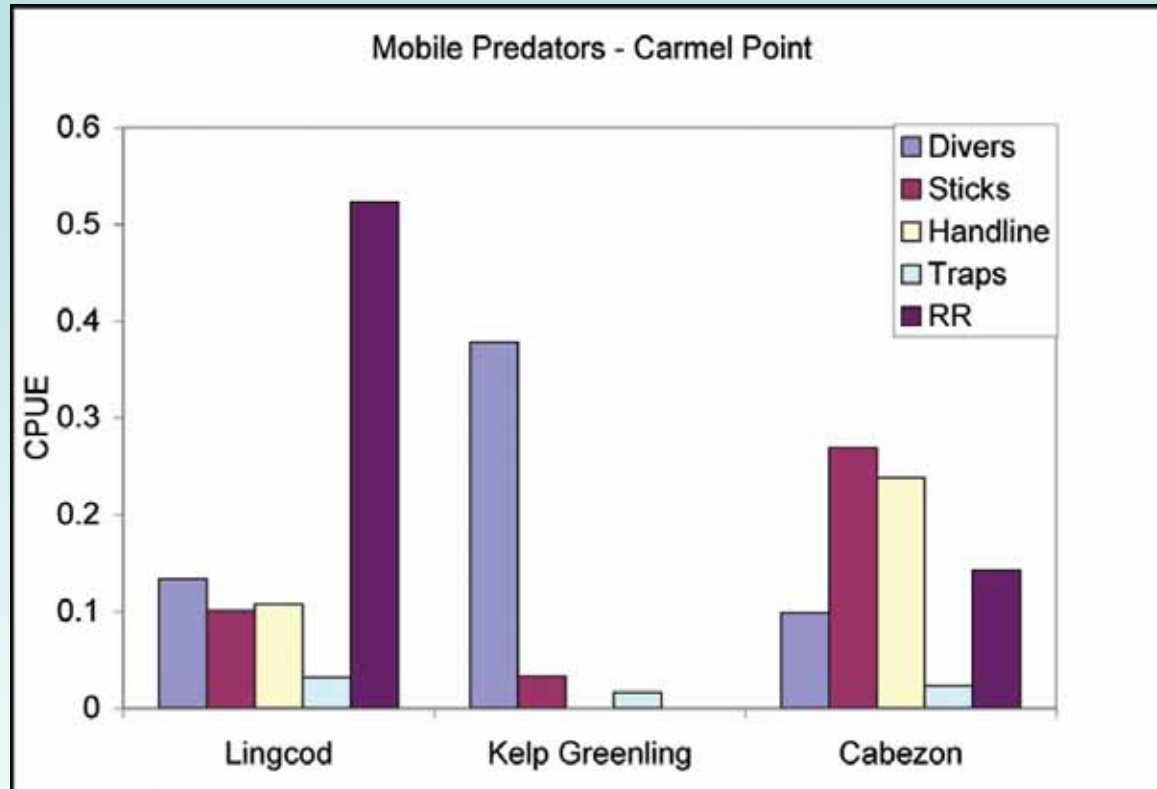


All Sampling Gear Provided Similar Estimates of Mean Sizes

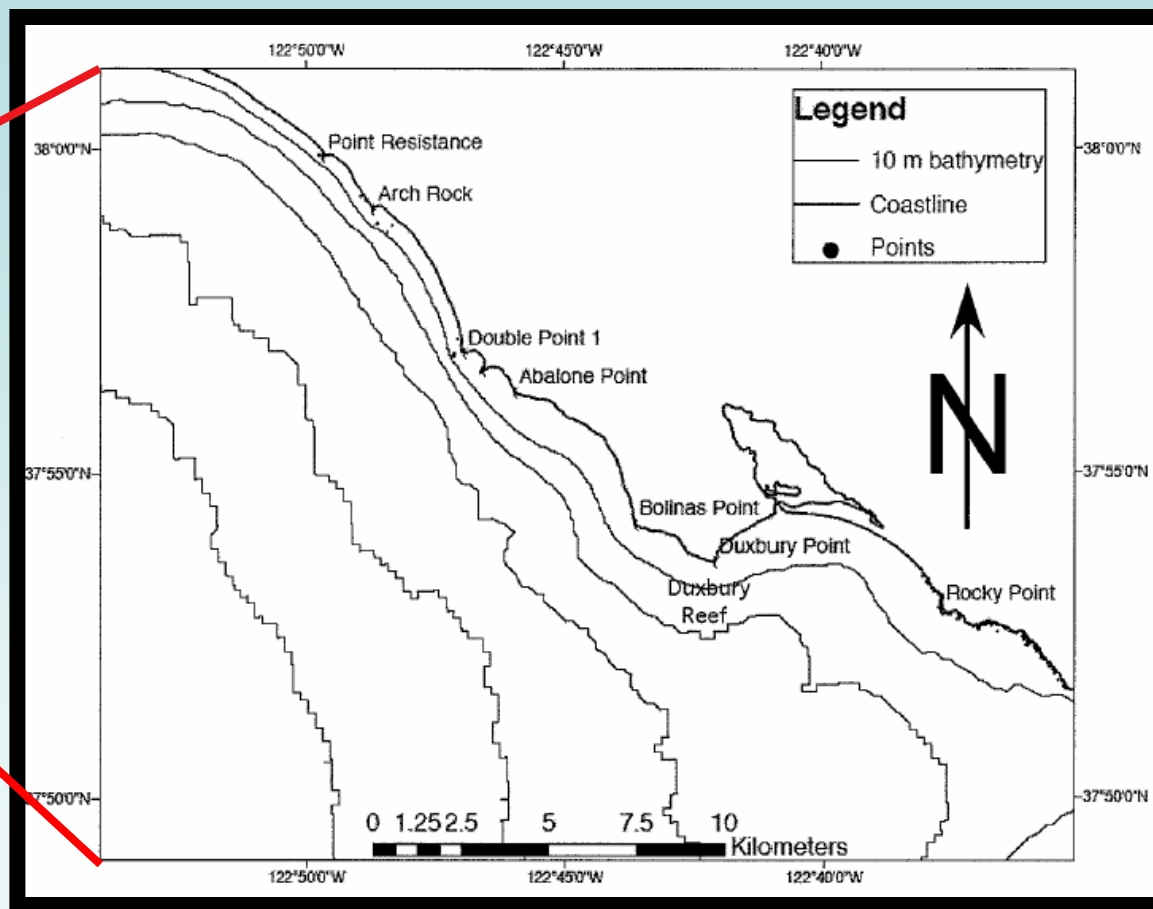
North Site (low relief)



Species Composition and Densities Varied Among Gear



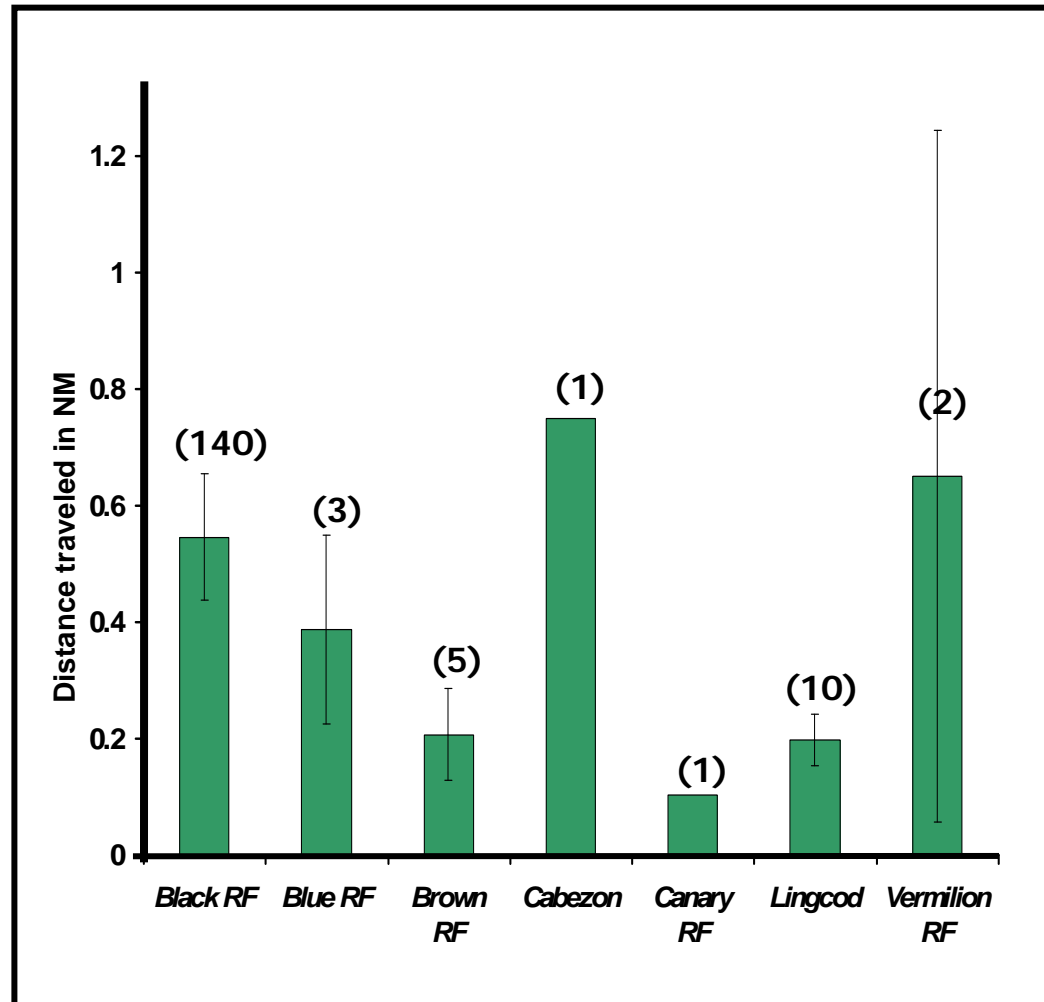
2005-2008 Collaborative Research with Fishing Clubs and CPFV Fleet



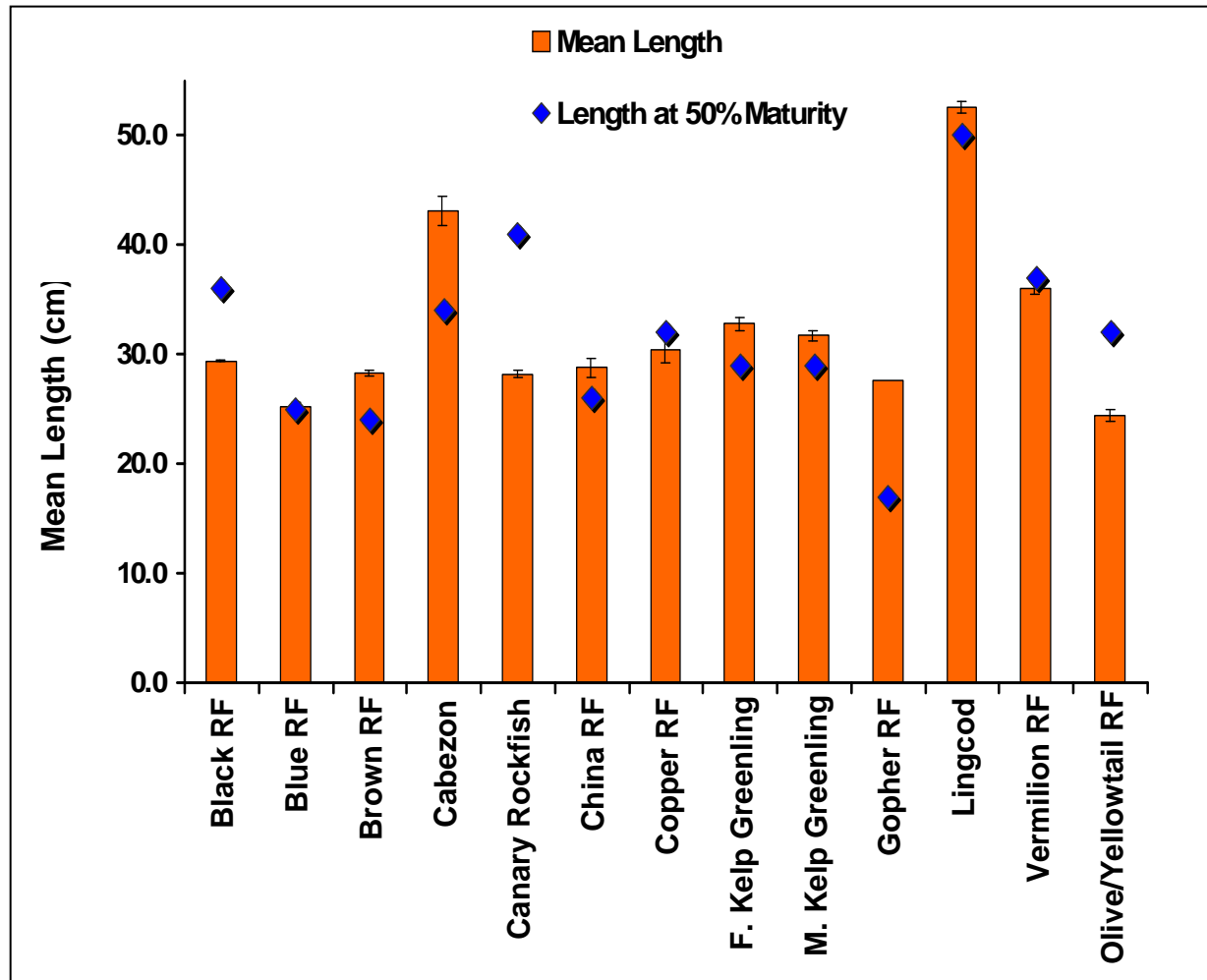
Tagged and Released Fishes off Duxbury Reef



Mean Distance Moved by Recaptured Fishes



Most Fish Caught Were Immature





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2006: Rick Starr and Dean Wendt combined efforts.

We are now working with recreational fishing clubs, charter boats, commercial nearshore fishermen, and DFG and NMFS scientists in a larger area in Central CA.

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Goal:

Develop state-wide protocols for
Stock assessment and MPA monitoring
Utilizing fishermen's knowledge and expertise



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- Types of Useful Collaborative Fisheries Research
- Challenges
- Successes, Lessons Learned, Recommendations



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For the last 3 years, we have been conducting workshops with fishermen and scientists to identify what is needed for Collaborative Research to be useful

Issues Discussed at Workshops:

- ID Data Needed to Evaluate MPAs
- ID Data Needed to Improve Stock Assessments
- Need to Design a Statistically Valid Survey
- Need to Use Fishermen Experience to Sample at Sea
- Need to ID Interested Fishermen and Scientists
- Need to Arrange Fair Compensation



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What types of collaborative fisheries research are feasible?

- Response to immediate management question
(e.g., by-catch, fleet perspectives on management options)
- Short and Long-term data collection programs
(e.g., Biological data, MPA monitoring, stock assessment).
- Improve fishing operations
(e.g., exploratory fishery development, fish handling methods to improve product marketability).
- New fishery approaches
(e.g., development of fishing cooperatives, gear modifications for management).



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What types of collaborative research are most important?

- Short and Long-term data collection programs
(e.g., Biological data, MPA monitoring, stock assessment).
- New fishery approaches
(e.g., development of fishing cooperatives, gear modifications for management).



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Example Collaborative Research Goals

To Improve Understanding of:

- Fisheries Operations (Gear, markets, regulations)
- Basic Biology (Behavior, size, age, fecundity)
- Population Characteristics (Distribution, demographics, movements)
- Community Characteristics (Spp Complexes, Spp – Hab Assoc, Human Comm)
- Fisheries Management (Logbooks, time/area/spp interactions; bycatch)



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Project Objectives 2007 and 2008

- Engage the fishing community in the collaborative monitoring of MPA
- Develop monitoring protocols to evaluate MPAs - DFG, NMFS, Fishers
- Generate baseline data inside and outside Central California MPA
- Create sampling protocols to collect data for state and federal stock assessments - DFG, NMFS, Fishers, University Scientists

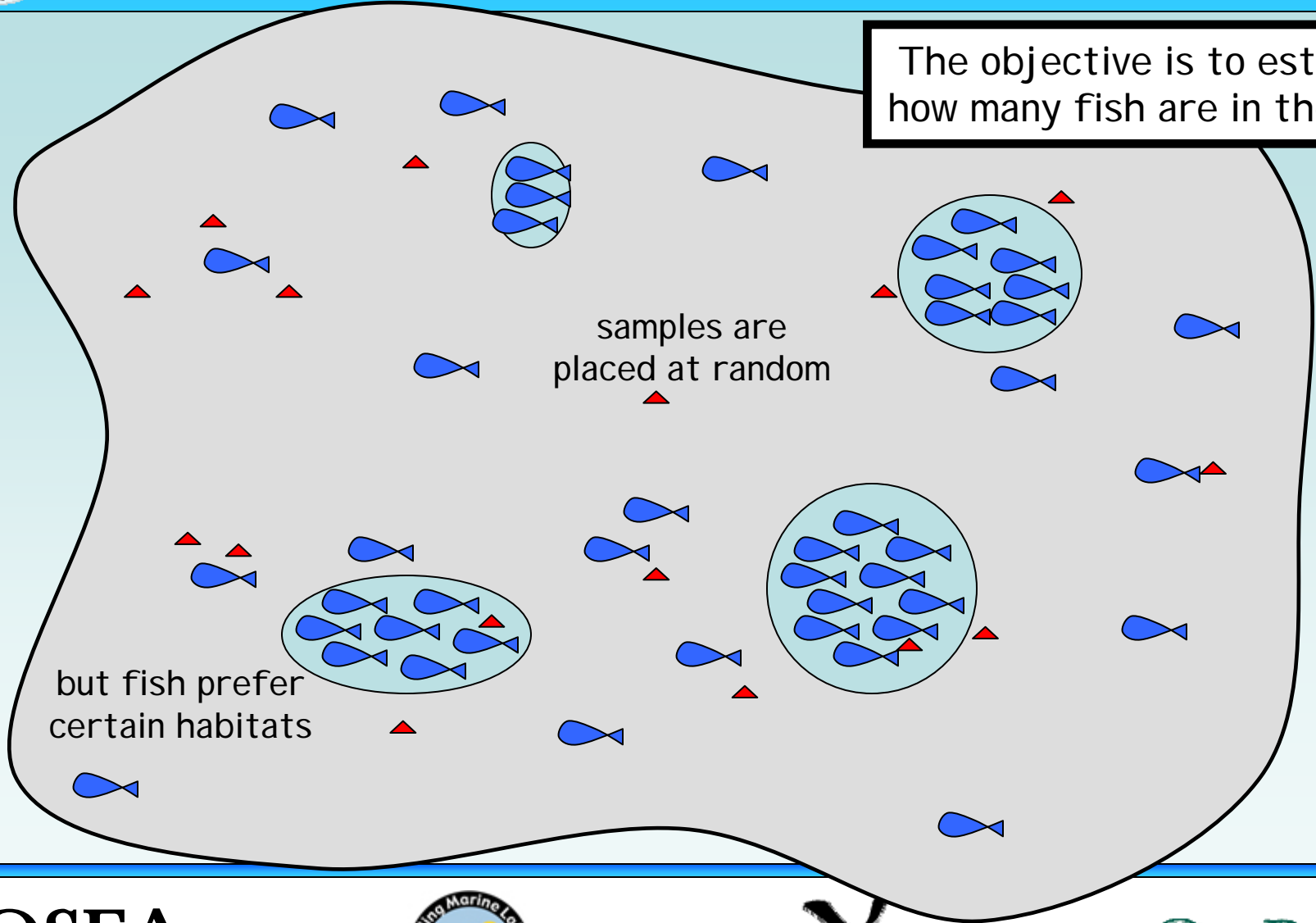




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The objective is to estimate how many fish are in the area



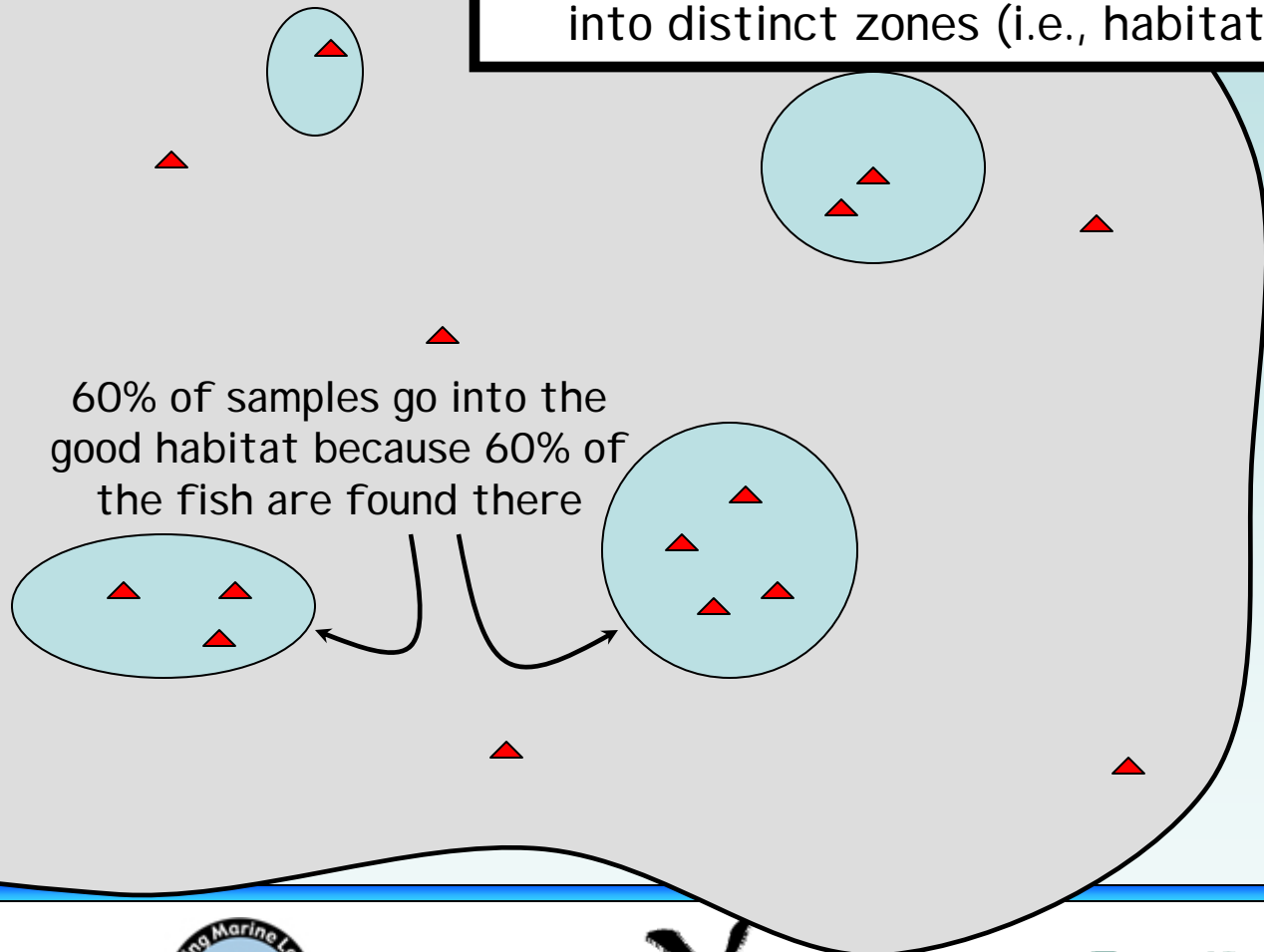


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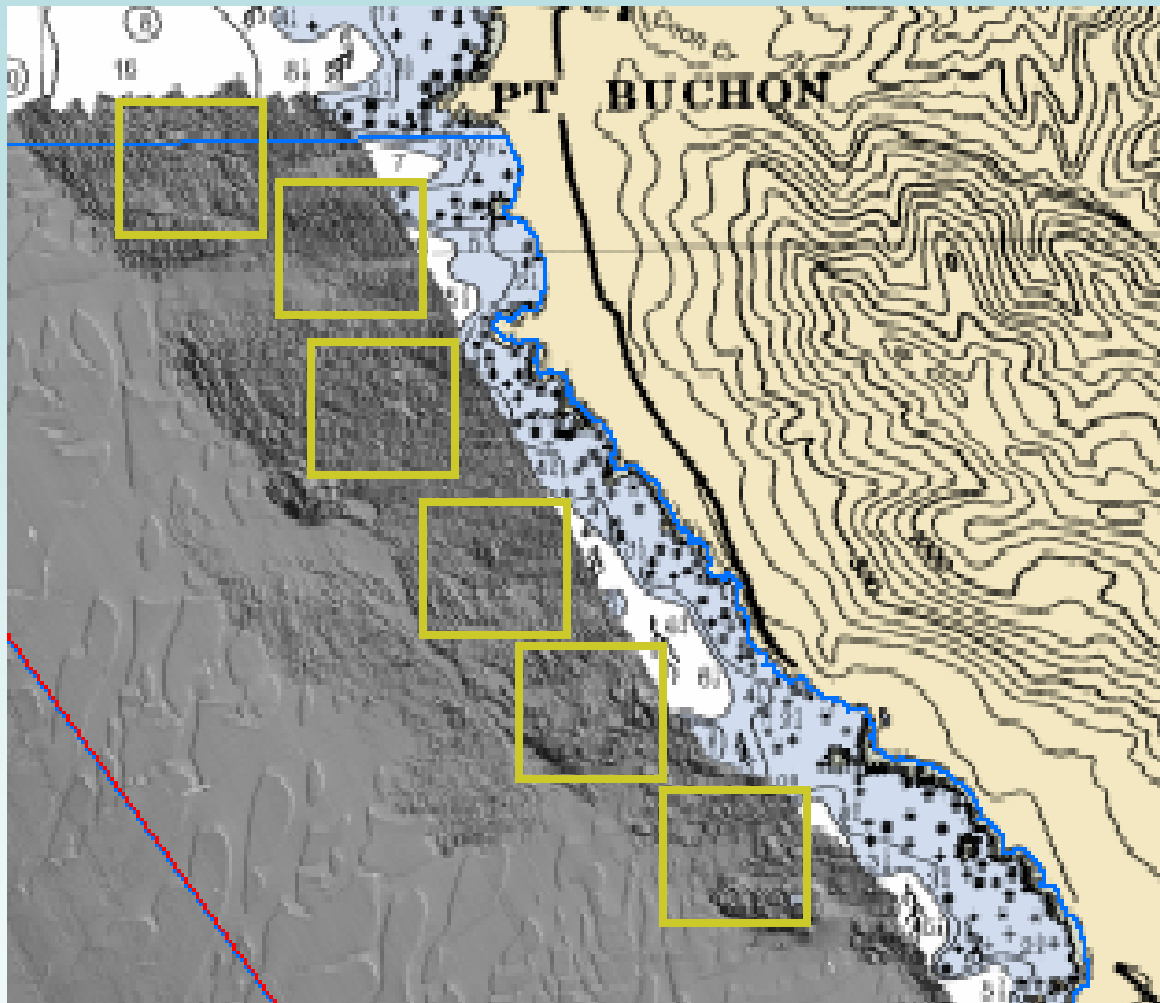
A better strategy is to sample where the fish are by stratifying the area into distinct zones (i.e., habitats)

60% of samples go into the good habitat because 60% of the fish are found there



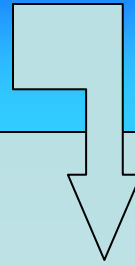


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Map Habitat
and Select
Grid Cells

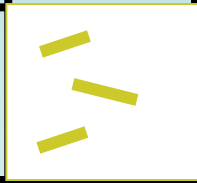
Randomly Select Grid Cells



X

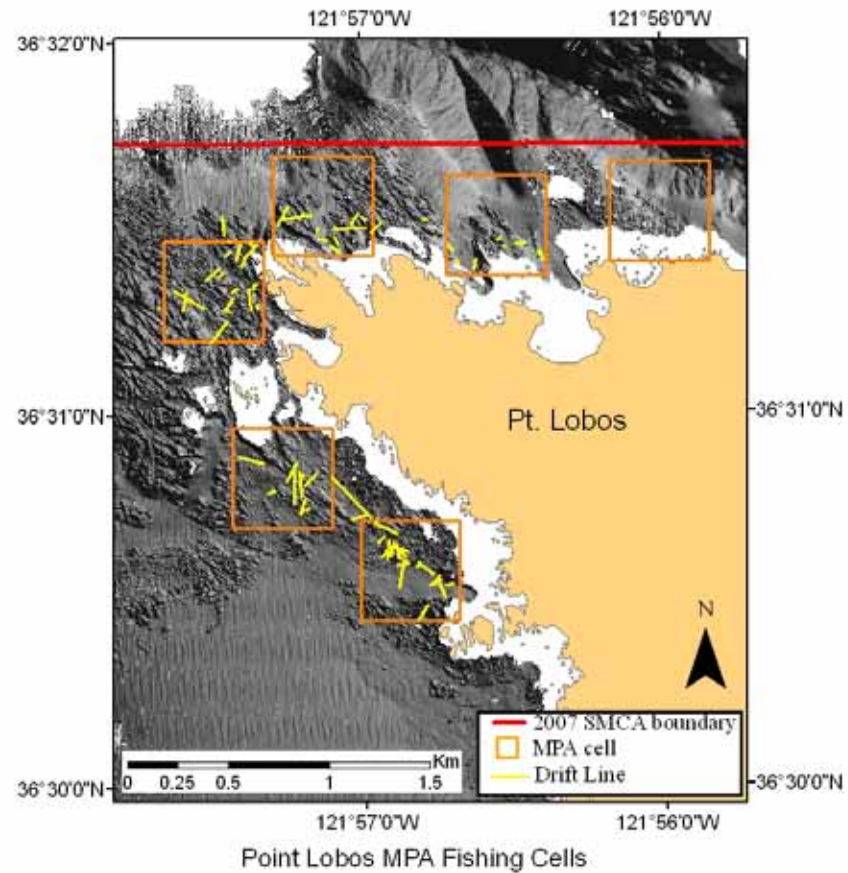
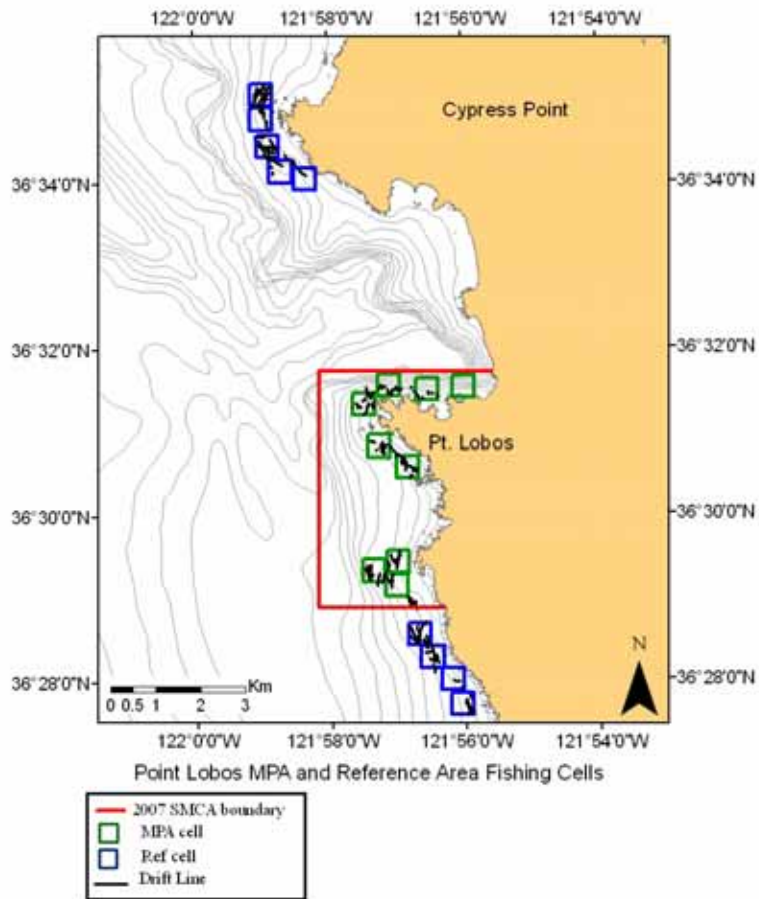
X

Skippers
Select
Fishing
Sites





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R. Robinson



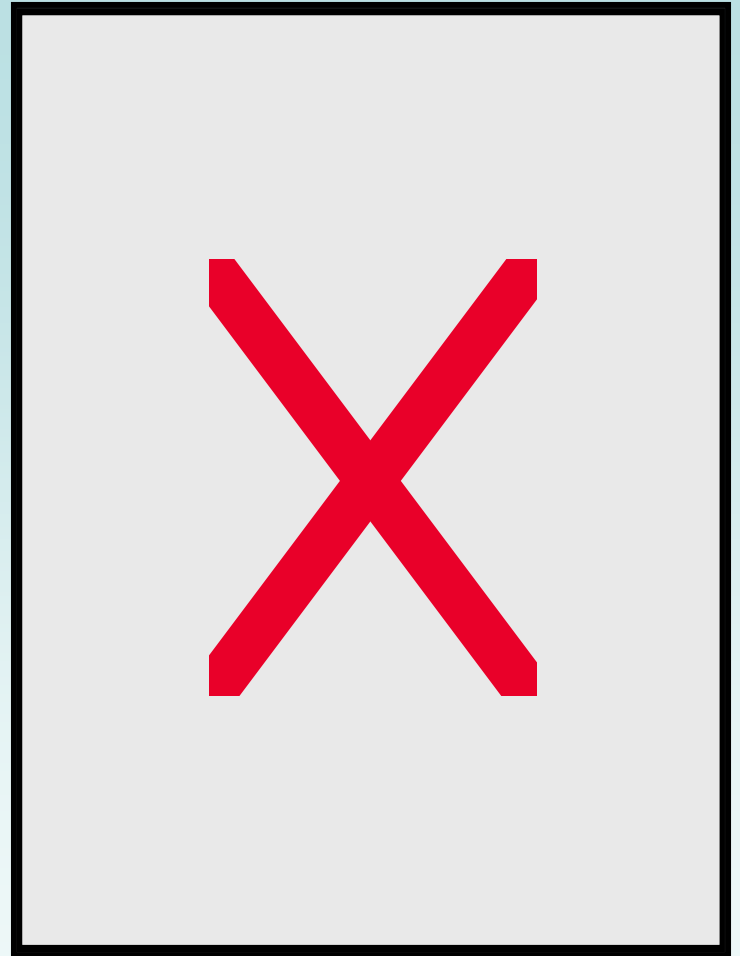


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	Average No. Anglers	Total Fishing Hours	Total Angler Hours	Total Fishes Caught
AN MPA	7.5	10.5	84.9	356
AN REF	7.9	16.4	130.3	919
PL MPA	9.3	17.1	153.8	2923
PL REF	9.1	15.6	137.3	1254
PB MPA	9.5	18.3	172.4	1546
PB REF	9.0	17.6	158.0	930
Total		95.6	836.7	7,928



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Commercial Partners



- Northern Central Coast (2003-present)
 - Partners:
 - Giovanni Nevoloso, Sal Pitruzello, MLML, UC Sea Grant, UCSC, UCD, DFG, Monterey Harbor
 - Study:
 - How do different commercial gear sampling methods compare with SCUBA surveys?
- Southern Central Coast (2004-present)
 - Partners:
 - Marine Interests Group
 - Cal Poly
 - Tom Hafer and Roger Cullen (Morro Bay)
 - Study:
 - Mark Recapture Study of Cabezon
 - Size, CPUE, movement, population size, MPA comp.



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Recreational Partners

- Northern Central Coast (2005-present)



- Partners:
 - Golden Gate Fishermen's Association, Coastside Fishing Club, MLML, UC Sea Grant
- Study:
 - Species and size composition of nearshore recreational fishery at Duxbury Reef

- Southern Central Coast (2003-present)



- Partners:
 - Virg's Landing, Patriot Sportfishing
- Study:
 - Assessment and update of previous DFG long-term recreational fishing monitoring program

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Work Accomplished Summers 2007 and 2008

Stratified Random Surveys Through Time:

- Used Fishermen's Knowledge to Determine Where to Fish
- Used Volunteer Fishermen's Skills to Catch Fish
- Used Scientist's Skills to Design Statistically Sound Study
- Using Scientist and Fishermen's Skills to Interpret Data



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Sampling Summary of 2007

- Captured, identified, measured, tagged and released over 8,000 fish in CA MPAs or reference sites
- Utilized the fishing expertise of 190 separate volunteer anglers for 342 angler-days of fishing
- Four commercial passenger fishing vessel companies
- Five different skippers and their crews
- Four different harbors (Half Moon Bay, Monterey Bay, Morro Bay, Port San Luis)

Collaborative Research Project: October 2007 Update

THANK YOU TO OUR VOLUNTEER ANGLERS!!

October marks the end of the 2007 field season for the collaborative research study being conducted by the UC Cooperative Extension Sea Grant Program at Moss Landing Marine Laboratories and California Polytechnic State University, San Luis Obispo. During the months of August, September and October we have been working with Commercial Passenger Fishing Vessels and recreational anglers to catch and tag fishes out of Monterey, Morro Bay, Pillar Point and San Luis Harbors. The aim of this project is to collect baseline information about the Point Buchon, Point Lobos, and Año Nuevo Marine Protected Areas (MPAs). Our volunteers caught a total of 3,668 fishes in August, 2,574 fishes in September and 1,760 fishes in October (all three areas combined).

Over the past three months we have met and exceeded the sampling objectives thanks to the commitment and expertise of our volunteer anglers and the captains and deckhands of the F/V Caroline, Fleeta, Hull Cat, Pacific Horizon and Patriot. Of our volunteers, we had several who came out multiple times: Jeremy Harkins, Ido Mienhuis, and Jim and Bonnie Robinson: 5 times; Nancy and Gary Aubuchon, Jim Dull, and Jim Webb: 6 times; Mike Blackstone: 7 times; Darrell Buisse: 8 times; David Reins: 12 times; David Kammerer: 15 times. Thank you for your continued support of this project!

Please check our websites for more information and to follow the progress of this study:

www.slosea.org/collaborative and <http://seagrant.miml.calstate.edu/crpmamonitor.php>

Below is a summary of our fishing trips (Note that the number of volunteers does not equate to the number of people fishing. Also, the duration of fishing varied per day.)

Date No. Volunteers No. Fishes Caught

Año Nuevo (AN)

10/08	6	566
10/09	5	64
10/11	8	51
10/12	16	7

Total Fishes Caught in October: 228
in September: 256
in August: 866

Point Lobos (PL)

10/22	19	277
10/23	12	96
10/24	14	358
10/25	12	111

Total Fishes Caught in October: 840
in September: 1531
in August: 1794

Point Buchon (PB)

10/15	10	181
10/16	12	138
10/23	10	134
10/24	10	239

Total Fishes Caught in October: 692
in September: 787
in August: 1008

Fishes caught in October: Black, Black-and-Yellow, Blue, Canary, China, Copper, Flag, Gopher, Grass, Kelp, Olive, Ropy, Starry, Treadfish, Vermillion, and Yellowtail rockfishes, Cabezon, Kelp and Rock Greenling, Lingcod, Ocean Whitefish, Rock Sole, Sanddab and Sandbars.

Biggest fish of month:

In August:	86 cm (34 in)	David Reins (PL)
	87 cm (34 in)	Nick Koopman (AN)
In September:	81 cm (32 in)	Matt Michie (PL)
In October:	81 cm (32 in)	Wayne Mason (PL)



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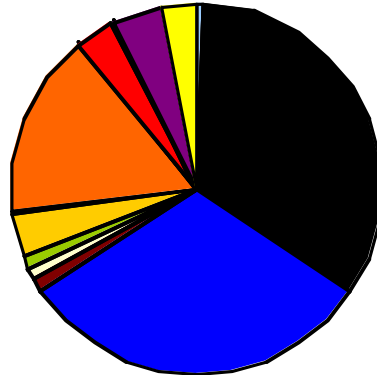
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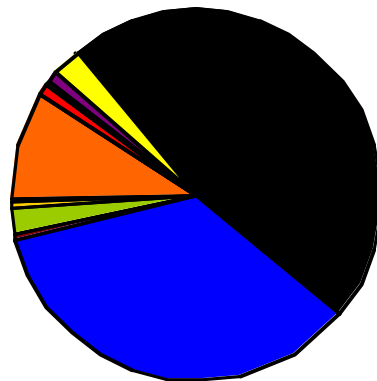


AN MPA



- Black-and-Yellow Rockfish
- Black Rockfish
- Blue Rockfish
- Brown Rockfish
- Cabezon
- China Rockfish
- Canary Rockfish
- Copper Rockfish
- Gopher Rockfish
- Grass Rockfish
- Kelp Rockfish
- Lingcod
- Olive Rockfish
- Rosy Rockfish
- Starry Rockfish
- Vermilion Rockfish
- Yellow tail Rockfish

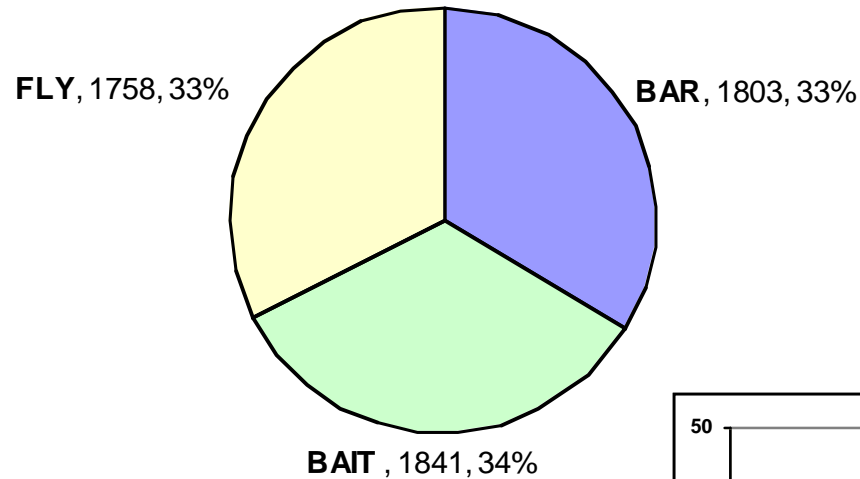
AN REF



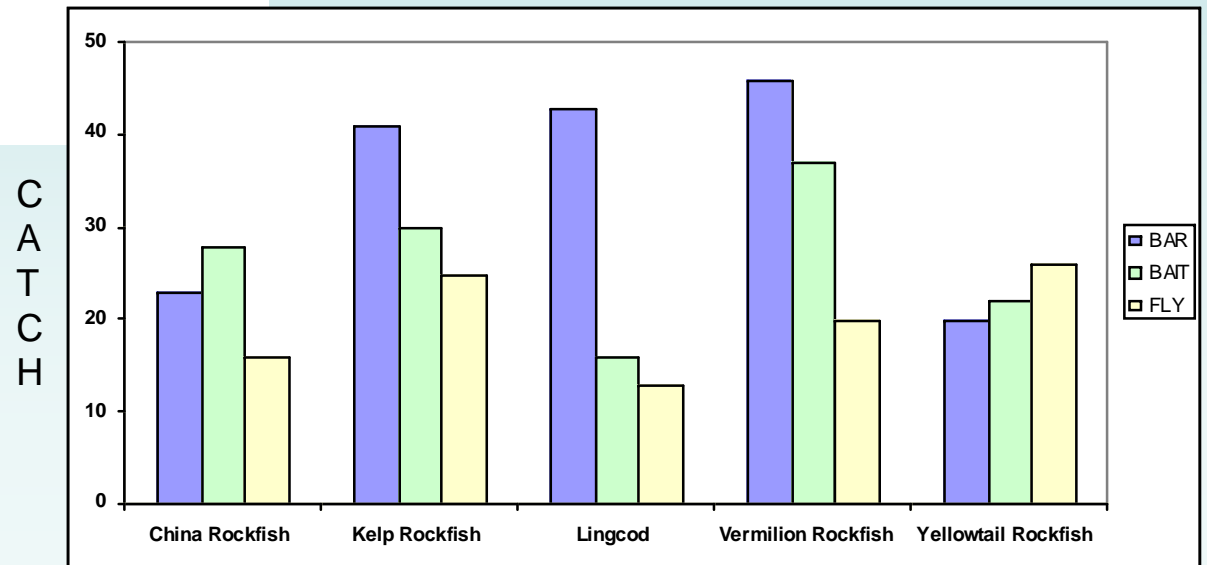
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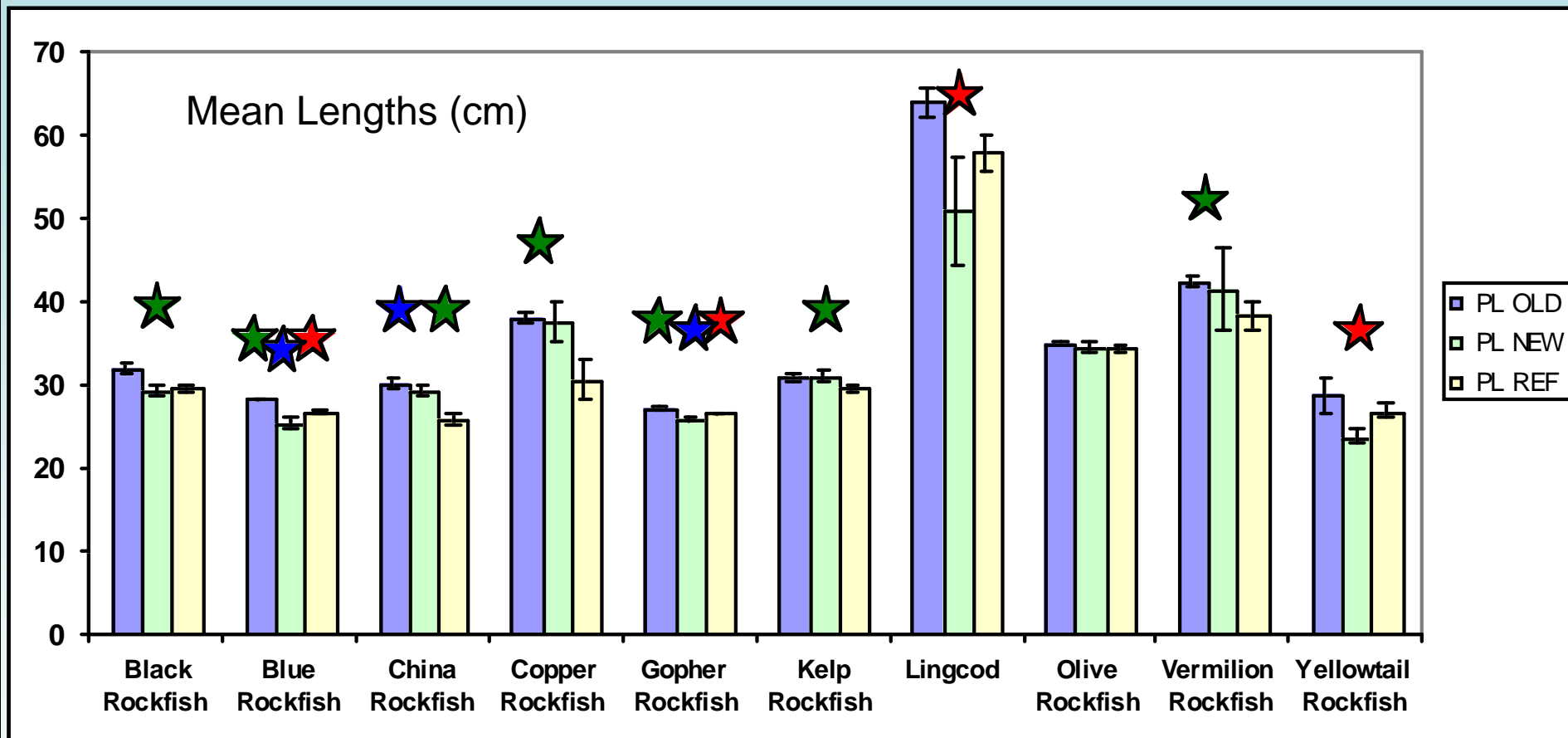


Catch by Gear Type





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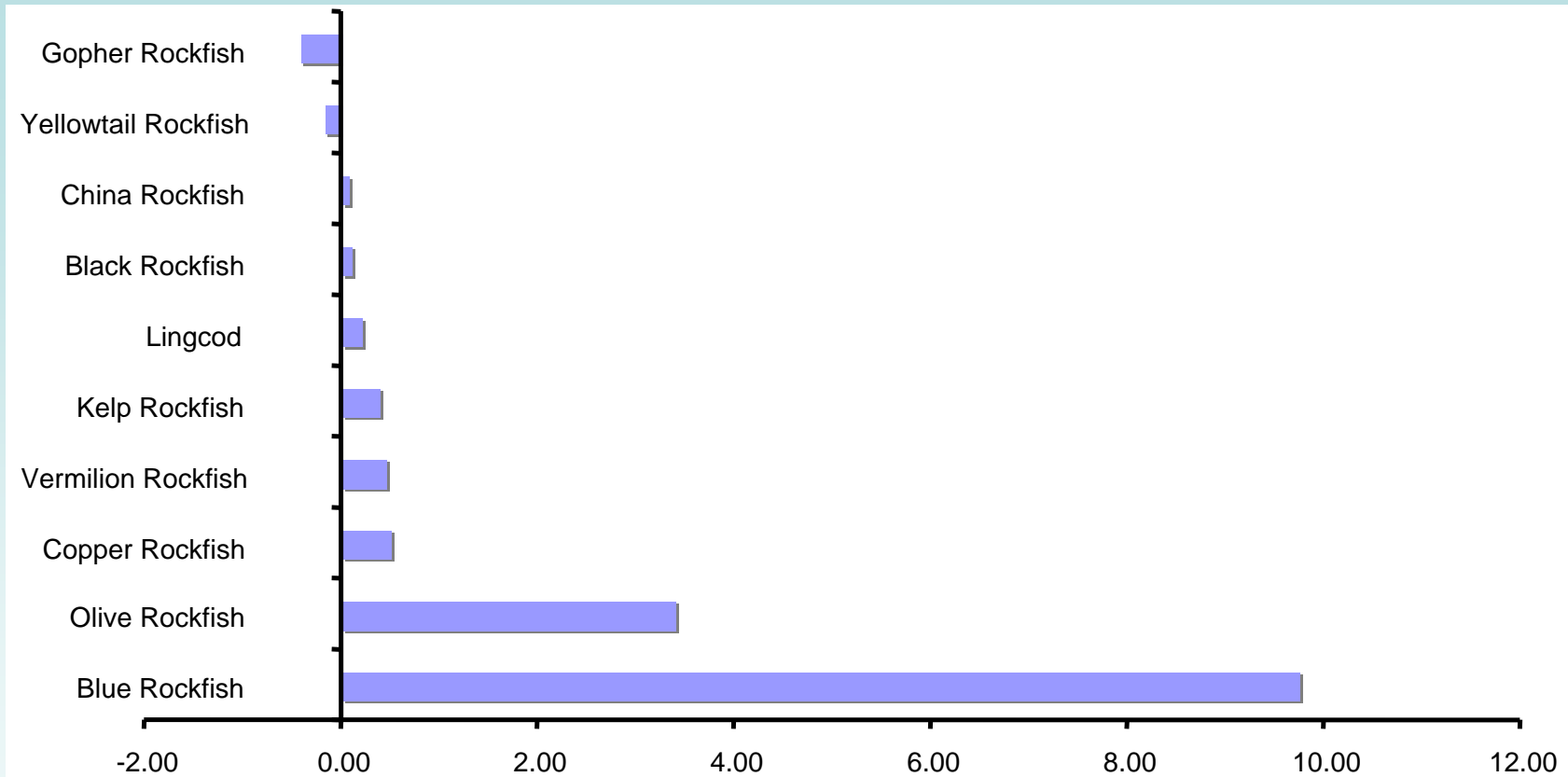


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Difference in Catch per Angler Hour Pt Lobos Old vs New Reserve