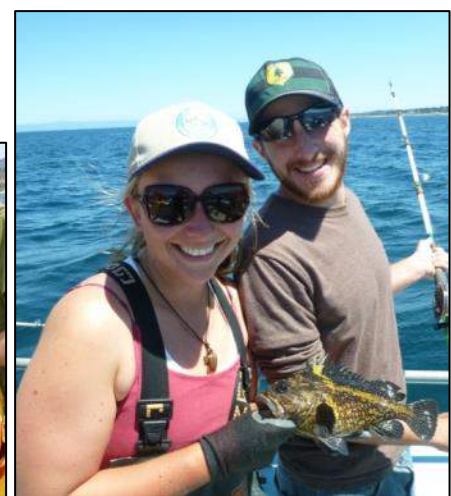




The California Collaborative Fisheries Research Program (CCFRP):
Monitoring nearshore fishes in CA's MPAs with the help of the community

Jen Chiu
CCFRP Statewide Coordinator



California Collaborative Fisheries Research Program (CCFRP)



Quillback Rockfish

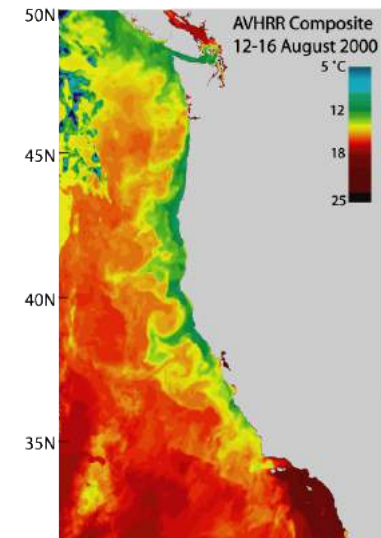
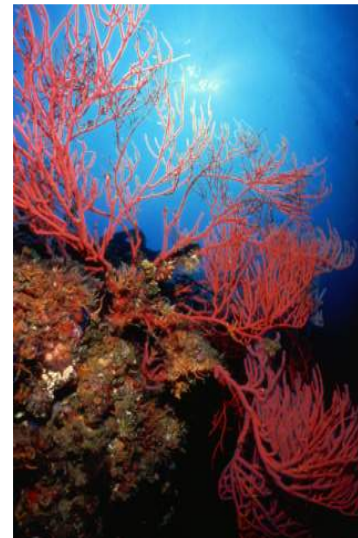
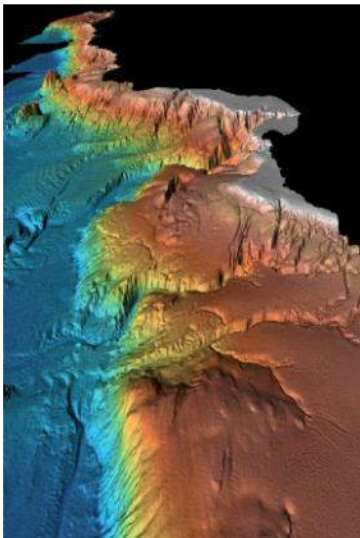


Male Kelp Greenling



Marine Life Protection Act (MLPA)

- Passed in 1999
- Mandated the creation of a network of marine protected areas (MPAs) to protect diversity and ecosystem function





Marine Protected Area (MPA) vs. Reference Site (REF)



State Marine Reserve (SMR) – fully protected; all commercial and recreational harvest prohibited



State Marine Conservation Area (SMCA) – limited recreational and/or commercial extraction permitted



State Marine Park (SMP) – recreational harvest permitted



Reference Site (REF) – areas open to both recreational and commercial fishing; subject to California Dept. of Fish and Wildlife (CDFW) rules and regulations (e.g., minimum/maximum sizes, seasonal closures, daily bag limits)

Why Evaluate MPAs?

1. It is a priority adopted by Central Coast regional stakeholders
2. It is required by MLPA (to ensure MLPA goals are met)
3. Critical to enabling adaptive management



The Benefits of Collaboration

- Engage stakeholders in both science and management
- Utilize different areas of expertise to develop protocols and collect data
- Create a shared understanding of resources and facilitate communication among user groups
- Reduce costs associated with data collection
 - more information gathered for MPA monitoring and fisheries management



California Collaborative Fisheries Research Program (CCFRP)

- fishery-independent (catch-and-release) study that combines the expertise and ideas of:

- the fishing community
- academic scientists
- resource managers



Rick Starr

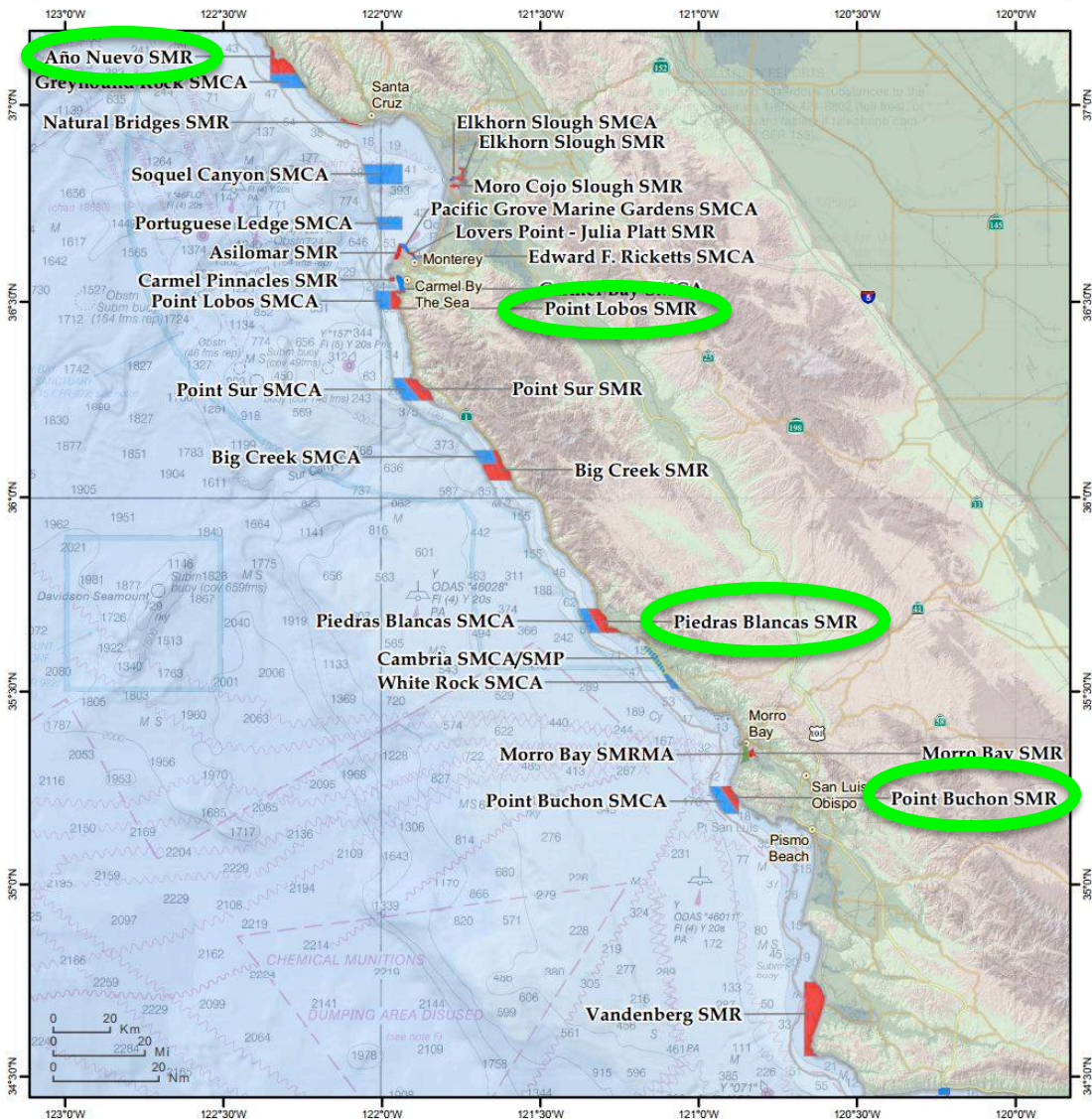


Dean Wendt

- conducts scientifically rigorous data collection and analyses for MPA monitoring and fisheries management



California Central Coast MPAs

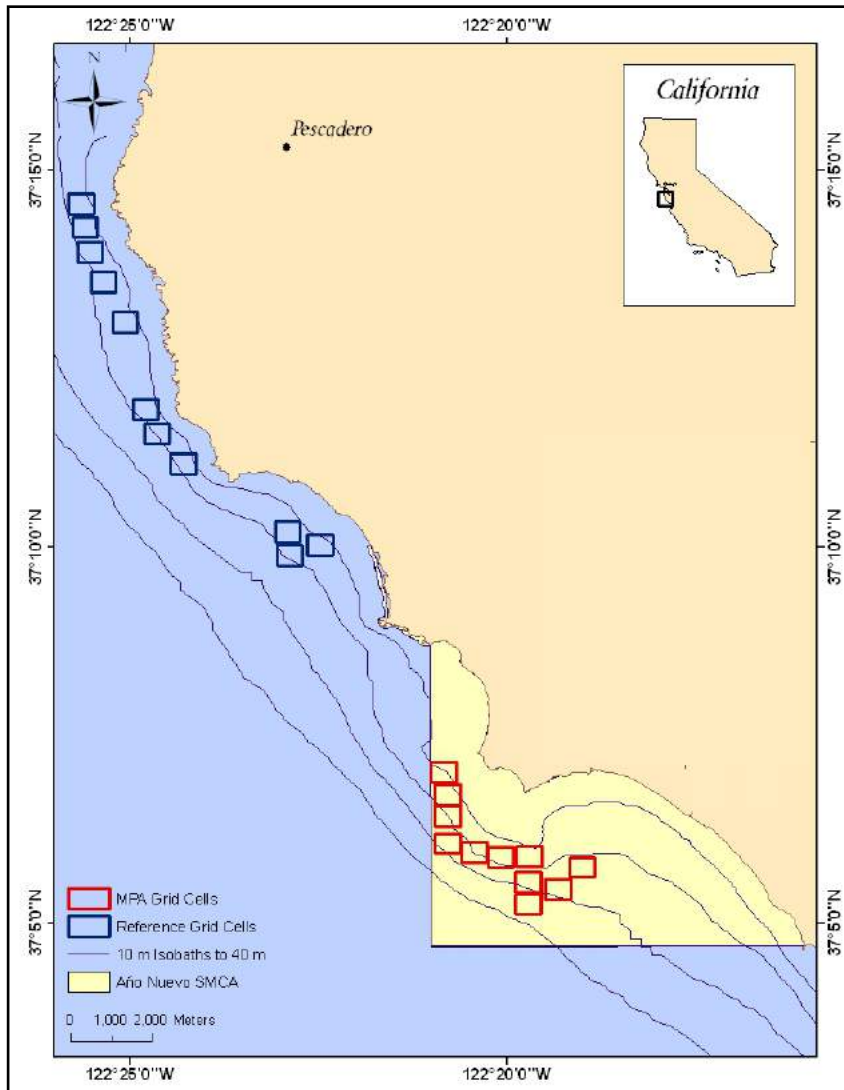


THIS CHART DOES NOT REPLACE THE LEGAL DESCRIPTION FOUND IN TITLE 14, CALIFORNIA CODE OF REGULATIONS

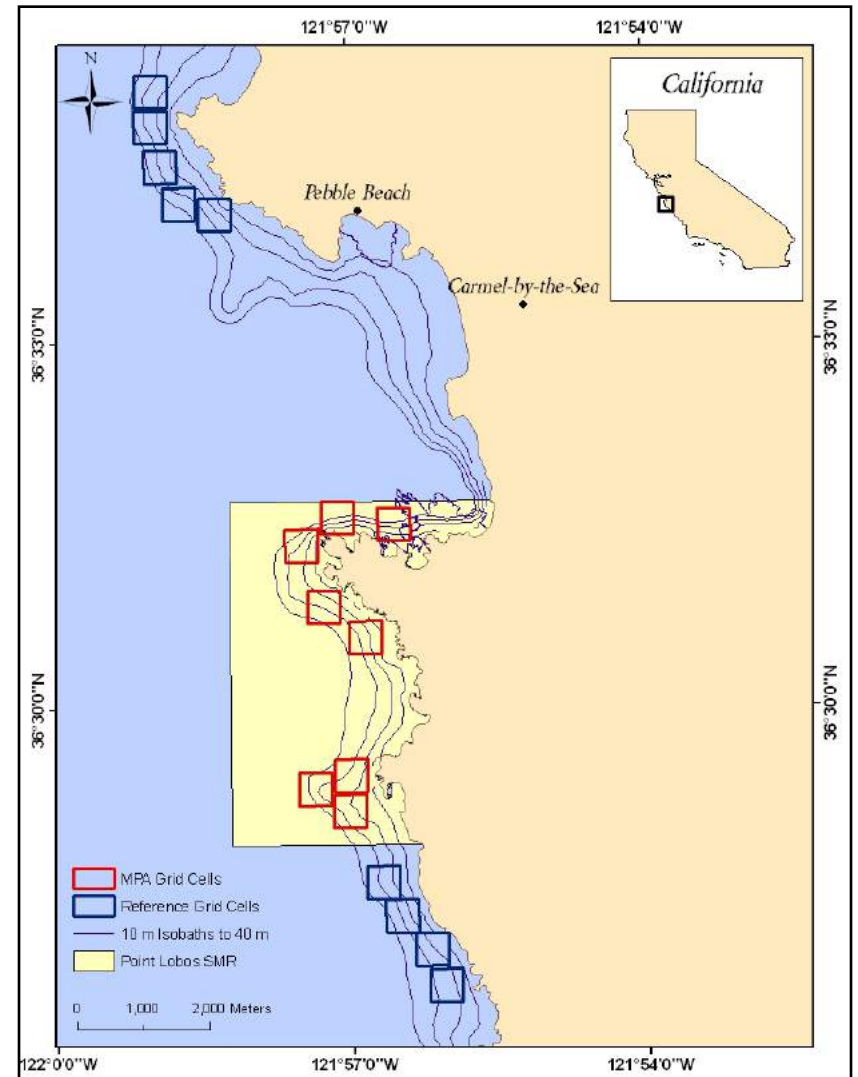
| | | |
|--|--|---|
| <ul style="list-style-type: none"> State Marine Reserve (SMR) State Marine Conservation Area (SMCA) | <ul style="list-style-type: none"> State Marine Recreational Management Area (SMRMA) | <ul style="list-style-type: none"> Three Nautical Mile Maritime Limit (State Water Jurisdiction) |
|--|--|---|

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(@ print size 8.5" x 11")

Study Areas - MLML



Año Nuevo SMR

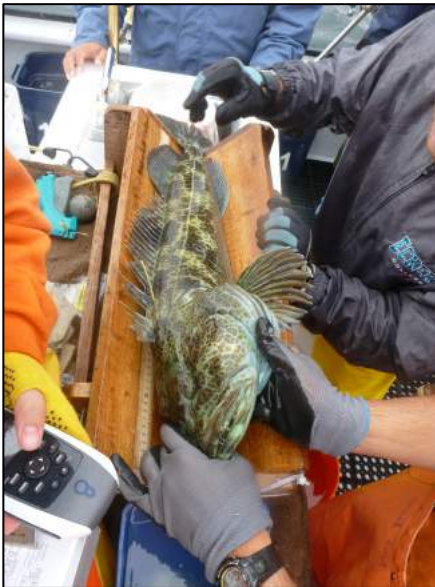


Point Lobos SMR

CCFRP Summary (2007 to 2016)

MLML and Cal Poly

- ☑ 12 CPFVs, 20 skippers, 4 harbors
- ☑ 325 sampling days at sea
- ☑ 901 volunteer anglers
- ☑ 11,700 hours of fishing
- ☑ 82,457 fishes (52 spp.)
- ☑ 40,368 fishes tagged and released



Statewide Expansion of CCFRP

| Region | Institution | MPAs |
|---------------|-------------------------------------|---|
| North | Hum | South Ca... ino SM |
| North Central | Bodega Mar | |
| Central | IV... Marin | |
| South | UC Santa Barbara | Carrin... Anacapa... SMR, R & SMC |
| | Scripps Institution of Oceanography | Lagun... Sw... South... Jolla SMR |

6 Academic institutions
12 Ports
14 MPAs
72 Sampling trips
25,125 Fishes caught and released
 in the 2017 season from
65 different species



In total, with all regions combined from 2007-2017, CCFRP has now caught and released **107,582** fishes from **84** different species with the assistance of **1,159** individual volunteer anglers.





CCFRP : Most Common Fishes



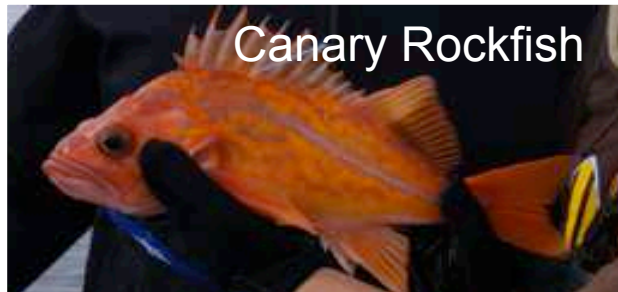
Black Rockfish



Blue Rockfish



Deacon Rockfish



Canary Rockfish



China Rockfish



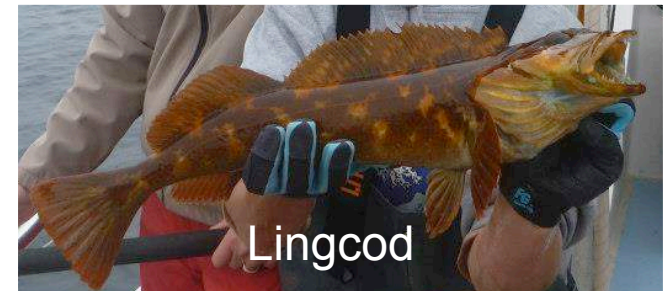
Copper Rockfish



Gopher Rockfish



Kelp Rockfish



Lingcod



Olive Rockfish



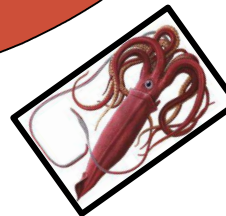
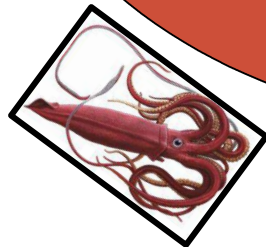
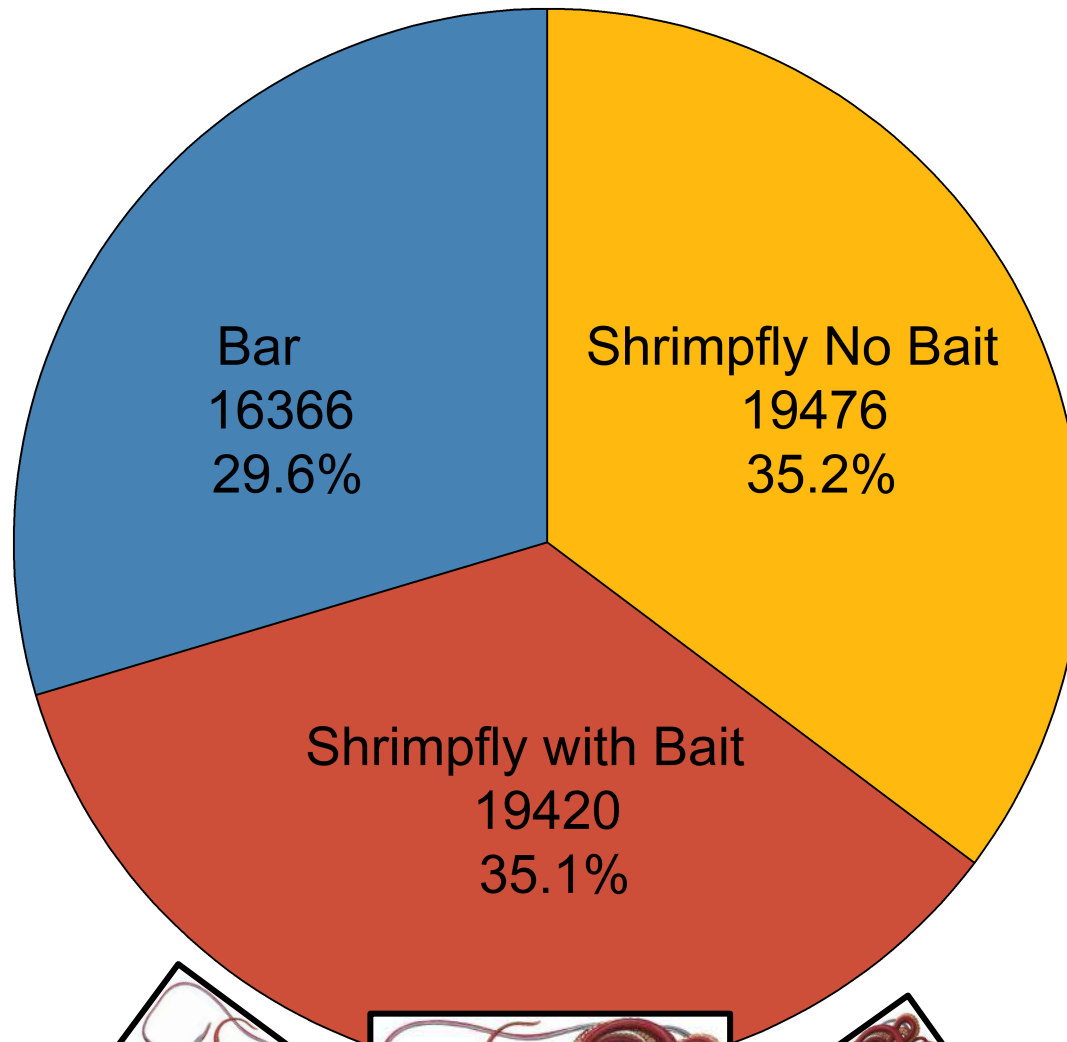
Vermilion Rockfish



Yellowtail Rockfish

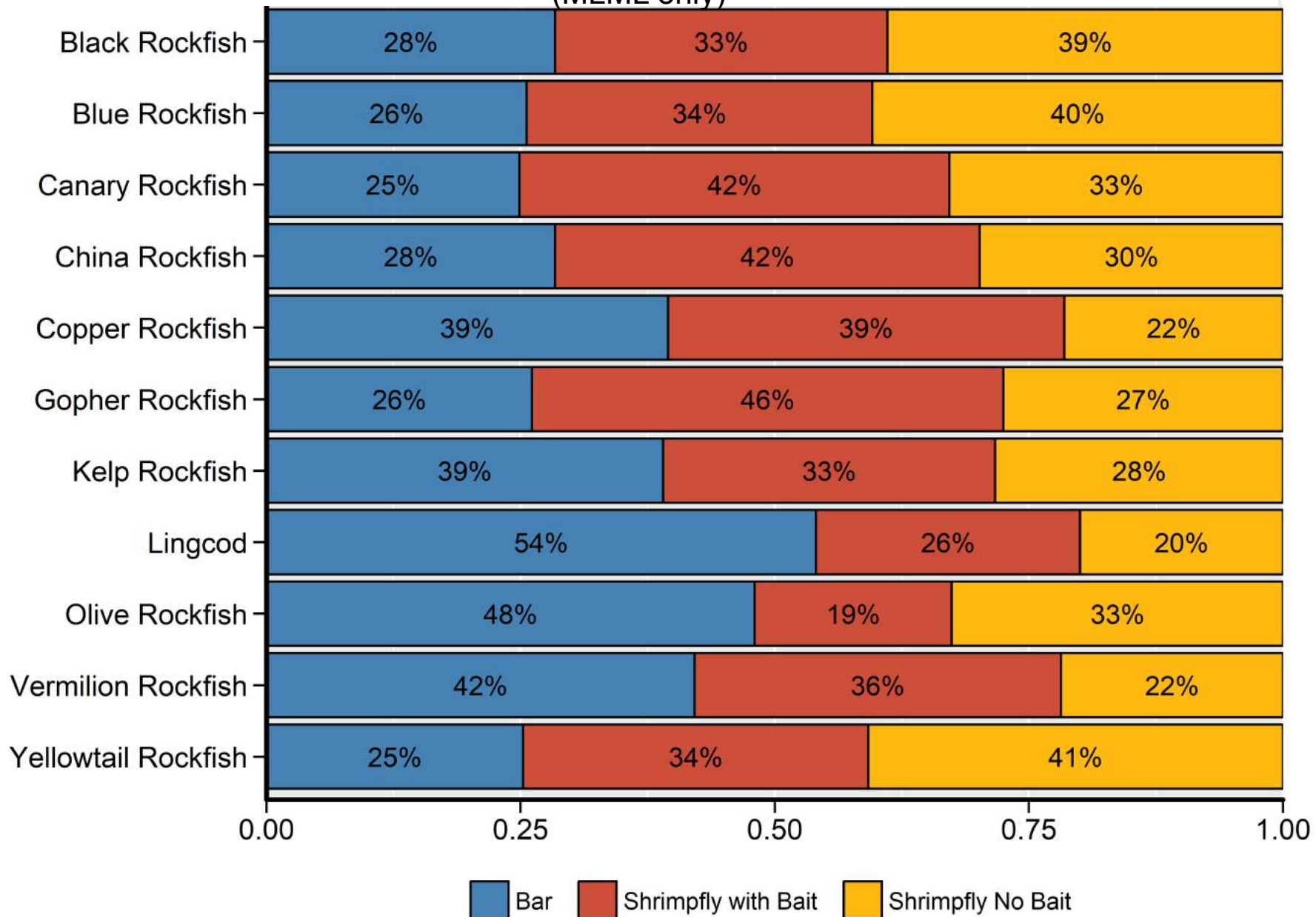
How many fish caught by gear type?

(All species combined: MLML only)



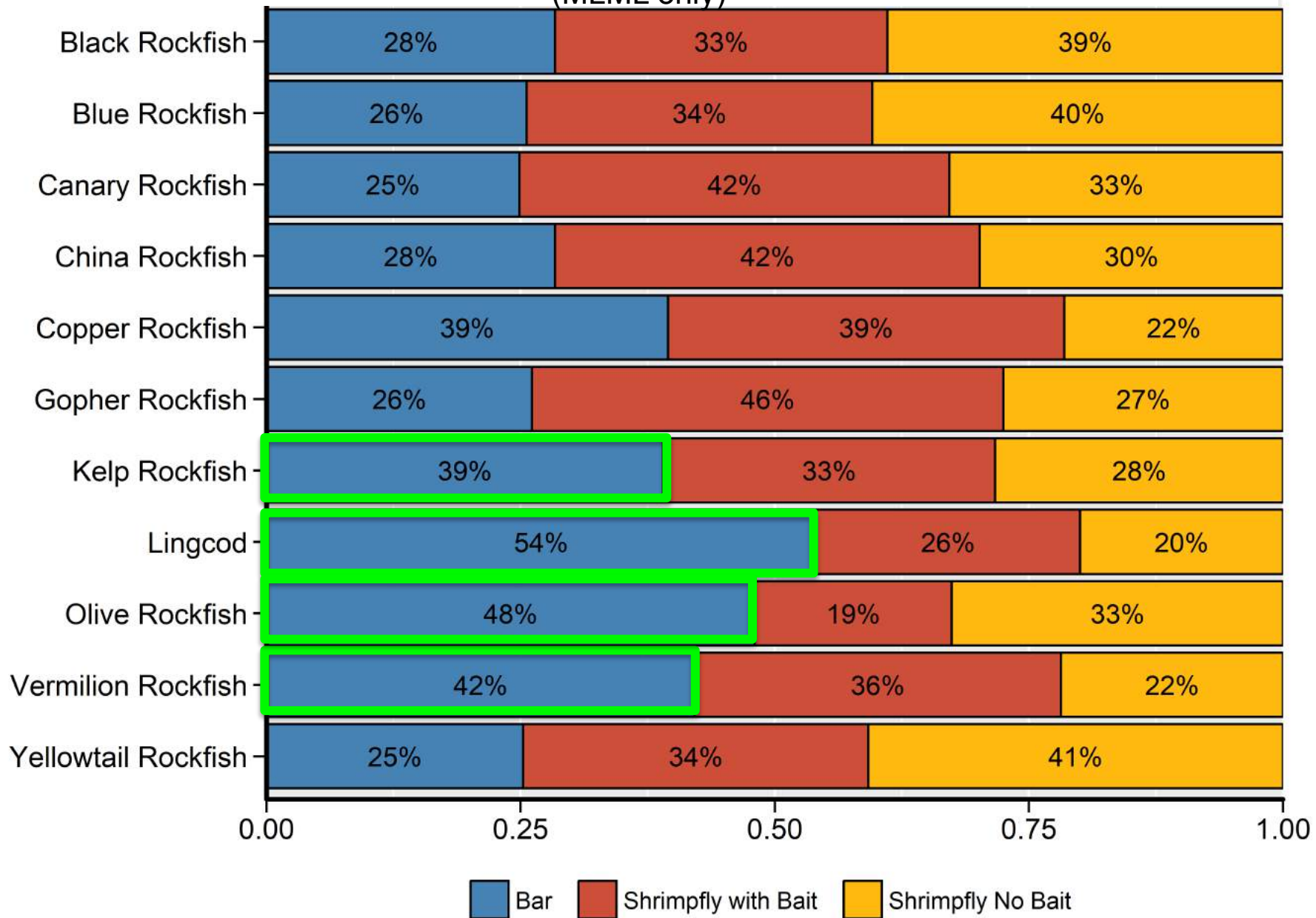
Species Catch by Gear Type: 2007-2017

(MLML only)



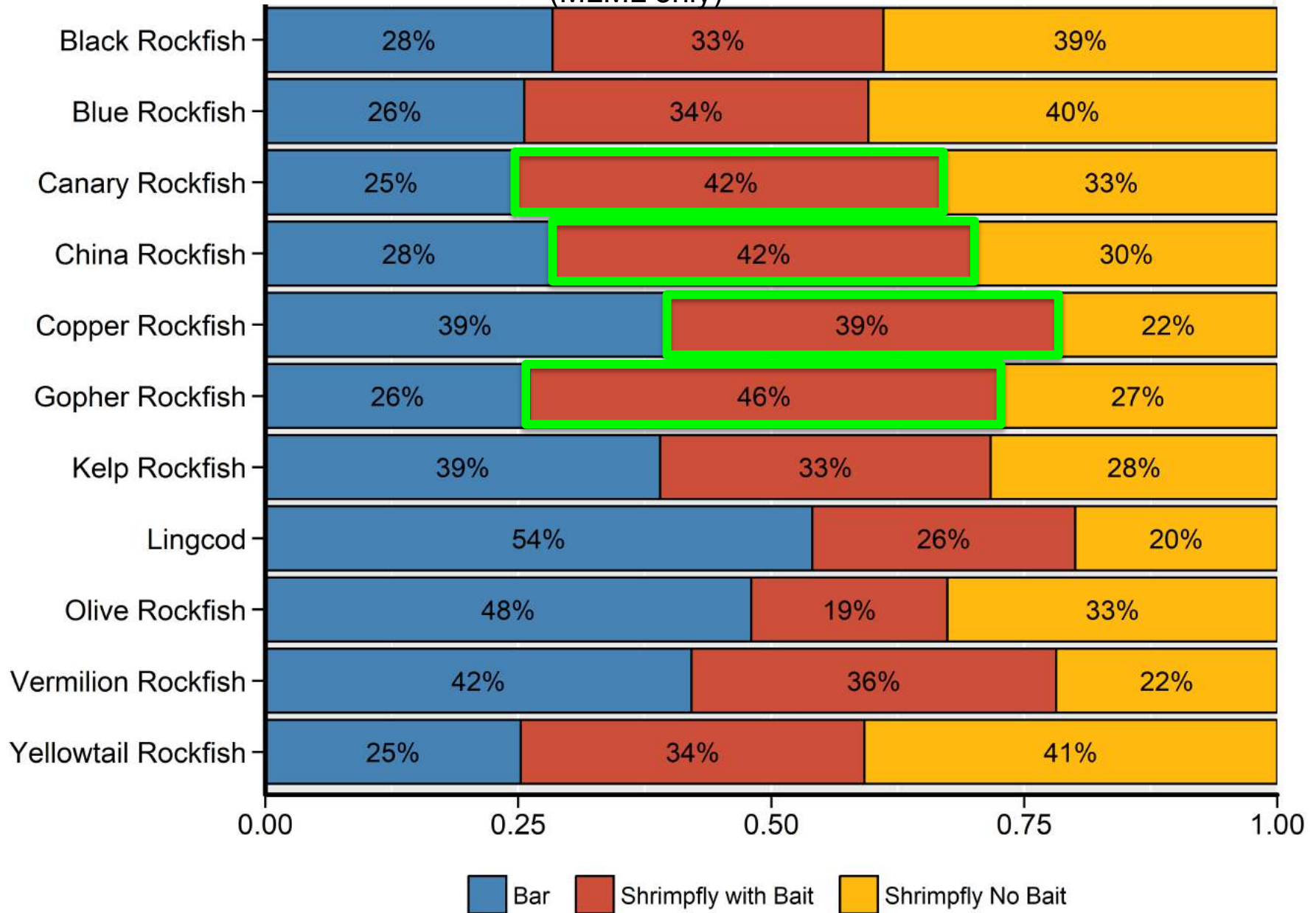
Species Catch by Gear Type: 2007-2017

(MLML only)



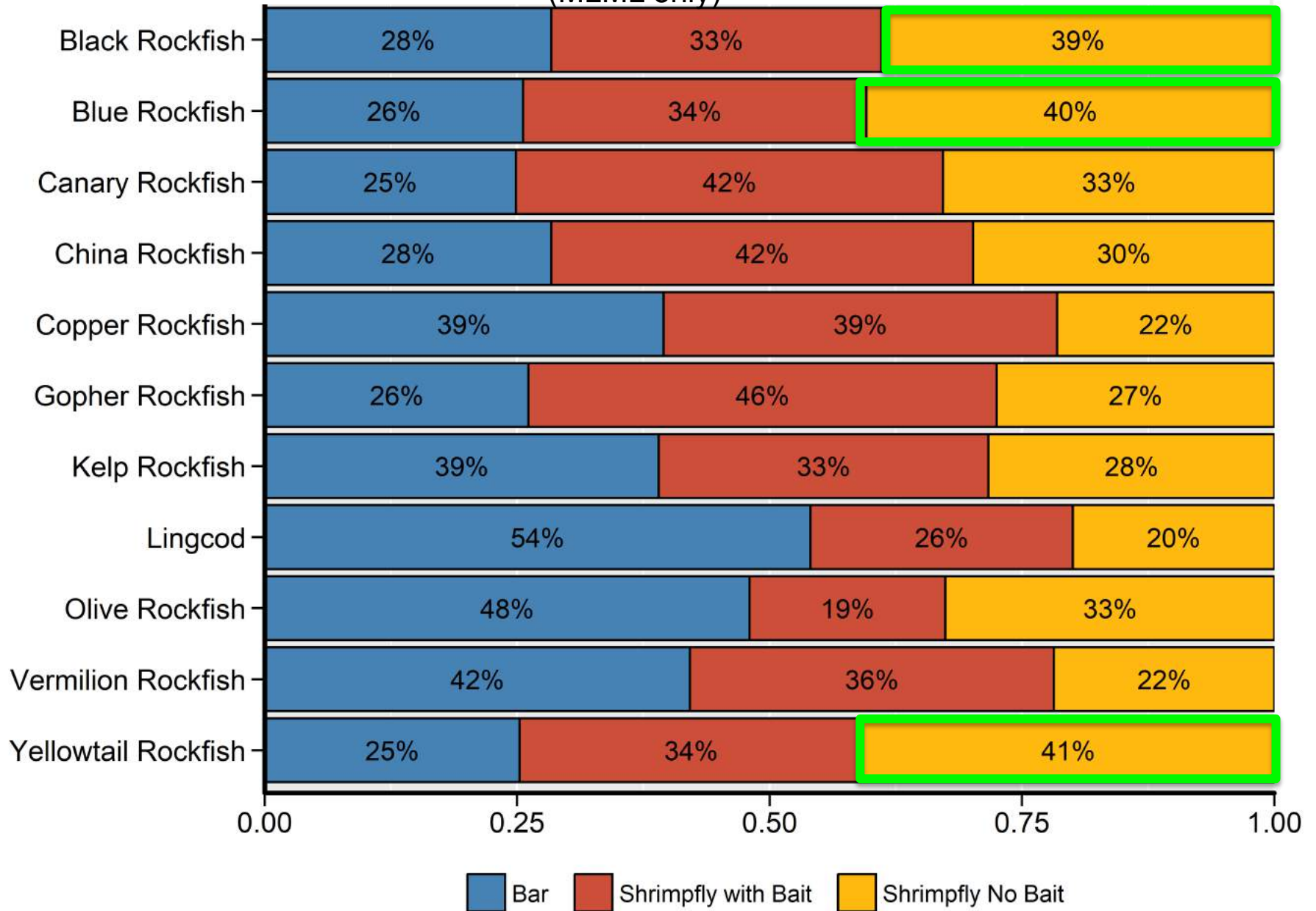
Species Catch by Gear Type: 2007-2017

(MLML only)



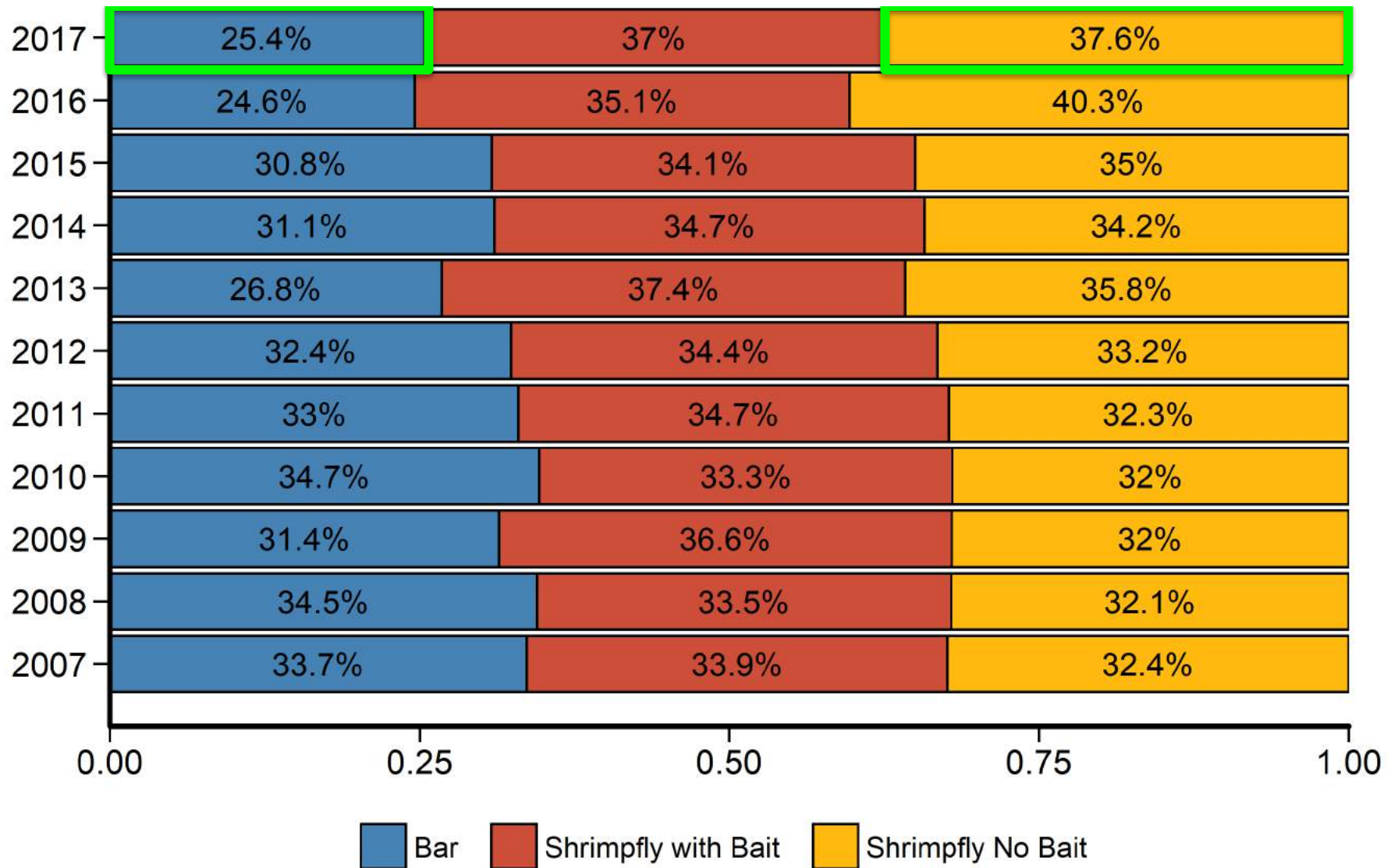
Species Catch by Gear Type: 2007-2017

(MLML only)



Species Catch by Gear Type by Year

(MLML only)



Data collection during fishing

California Collaborative Fisheries Research Program (Hook-and-Line) Year: 2012 Page: 8 of 14

Location: Monterey Vessel: Caroline Date: 8/9/12 Area: Pt. Lobos Site (circle one) (MP) / REF Grid #: 9 Drift #: 1

Start Time: 10:27:58 End Time: 10:42:58 Start/End Depth: 79 / 115 ft Start Lat/Long: 36° 20.884' / 121° 57.371'

No. of Anglers: 9 Recorder: AL Tag Crew: CB, AT Sur. Water Temp (°F): 52.2 End Lat/Long: 36° 20.758' / 121° 57.219'

Cloud Cover: 3 Relief: 3 No. Seals/Sea Lions: 0 / 1 Wind Speed/Direction: 5-10 NW Swell Height/Direction: 3-5 Weights/Bars: 8 / 8 oz

| Species | Stn # | Tag ID | TL (cm) | Sex | Cond. | Depth (ft) | Lat: 36° | Long: 121° | WP # | Comments |
|----------|-------|--------|---------|-----|-------|------------|----------|------------|------|-------------------|
| gopher | 2 | --- | 25 | | 1,5 | | | | | |
| N. BIVE. | 11 | --- | 22 | | 4,5 | | | | | HD → eye |
| KEIP RF | 7 | --- | 30 | | 0 | | | | | dropped on deck |
| KEIP RF | 2 | 29212 | 35 | | 0 | | 30.856 | 57.338 | 123 | Fin clip |
| KEIP RF | 2 | 29211 | 34 | | 1 | | 30.797 | 57.257 | 124 | Fin clip |
| Ling | 3 | 29226 | 74 | F | 0 | | | | | |
| gopher | 12 | 29227 | 31 | | 5 | | | | | |
| gopher | 13 | 29394 | 30 | | 5 | | | | | |
| gopher | 13 | 29228 | 29 | | 5 | | | | | |
| VERM | 11 | 29229 | 36 | | 5 | | | | | damage to the eye |
| Ling | 8 | 29230 | 56 | M | 0 | | 30.747 | 57.207 | 125 | |

Notes: kelp, perch, lots of cut tags / Angler #6 = RYD

DO NOT TAG if: < 24 cm; crystallized eye

Catch Data

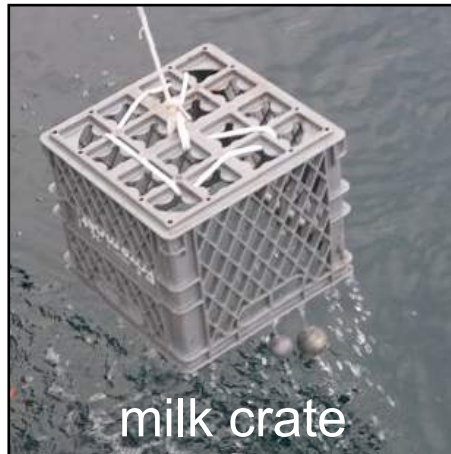
- angler number
- species
- total length (cm)
- fish condition
- tag number
- start/stop times
- GPS coordinates

Rockfish are diverse & long-lived!

- ~70 northeast Pacific species
 - 100+ world-wide
- max depth: 2,830 m (9,285 ft)
- Yelloweye Rockfish can live to 120 years;
Shortraker Rockfish at least 157 years



Maximizing Survivorship

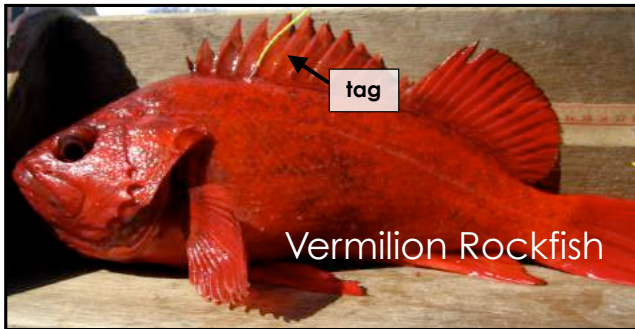


- sample \leq 120 feet
- fish without barbed hooks
- use careful handling techniques
- keep surface time \leq 5 min
- descend fishes, when necessary
- regularly replace seawater
- only tag fishes in good condition



REWARD

for tag return information



Since 2007, Rick Starr (California Sea Grant Extension Program / Moss Landing Marine Laboratories) and Dean Wendt (California Polytechnic State University, San Luis Obispo) have been working with commercial fishermen, charter boat captains and recreational anglers to tag and release nearshore fishes out of Pillar Point, Monterey, Morro Bay and Port San Luis. The objective of this study is to obtain growth, movement and mortality rates of fishes found near Año Nuevo, Point Lobos, Piedras Blancas and Point Buchon MPAs in order to gain a better understanding of these economically important species.

If you catch a tagged fish (whether you keep it or throw it back), **please record and report:**

- date caught
- species and condition
- total length (snout to end of tail)
- tag number and whether or not it was bio-fouled
- GPS coordinates
- capture depth

Moss Landing Marine Laboratories
8272 Moss Landing Road
Moss Landing, CA 95039

e: seagrant@mlml.calstate.edu
p: (831) 771-4479

San Luis Obispo Science & Ecosystem Alliance
California Polytechnic State University
San Luis Obispo, CA 93407

e: ccms-fisheries@calpoly.edu
p: (805) 756-1419

To learn more about the California Collaborative Fisheries Research Program, visit:
<http://seagrant.mlml.calstate.edu/research/ccfrp/> or
<http://www.slosea.org/collaborative/>



CA Collaborative Fisheries Research Program

Thank you for reporting your tagged fish!



Information about your fish:

| Tag No. 13387 | Tag | Recapture |
|---------------|-----------------|-------------------|
| Date | 21 Jul 2008 | 14 Nov 2010 |
| Latitude | 36.557 | 36.560 |
| Longitude | -121.941 | -121.941 |
| Depth | 47 ft | 65 ft |
| Length | 31 cm / 12.2 in | 44.5 cm / 17.5 in |

On 14 November 2010, you caught Copper Rockfish #13387. This fish was tagged as part of the CA Collaborative Fisheries Research Program conducted by Rick Starr (Moss Landing Marine Laboratories) and Dean Wendt (CalPoly, San Luis Obispo). The purpose of this project is to monitor central California's marine protected areas (MPAs) and collect information for fisheries management.

To learn more about this program, visit:
<http://seagrant.mlml.calstate.edu/research/ccfrp/>

Copper Rockfish (*Sebastes caurinus*)

Maximum Length: 67 cm (26.4 in); females get larger than males

Lifespan: 50 years

Range: Gulf of Alaska (USA) to Islas San Benito, Baja California (MX)

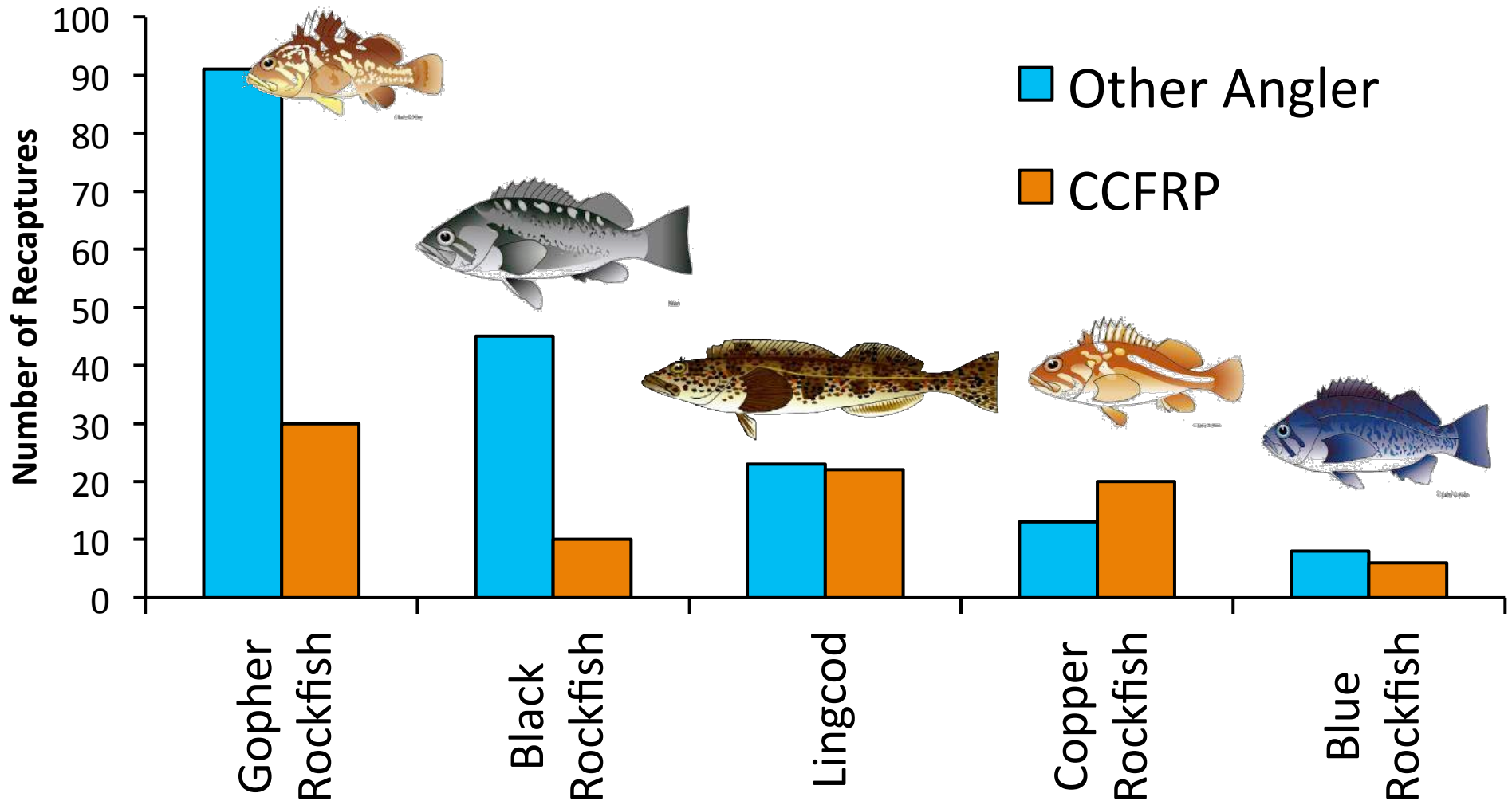
Life History: A.K.A. "whitebelly" and "chucklehead"; young fish settle around algae and move to the bottom as they grow. Subadults and adults can be found on boulder fields or other rocky habitats, in aggregations or as solitary individuals. Copper Rockfish are relatively sedentary, remaining at a particular rocky outcrop for extended periods of time.

Your fish was tagged and released near Point Lobos State Marine Reserve, spent 846 days at liberty, and moved approximately 0.18 miles (net distance traveled).

Reference: Love, M.S., M. Yoklavich, and L. Thorsteinson. 2002. The Rockfishes of the Northeast Pacific. University of California Press, Berkeley and Los Angeles, CA. pp. 204-206.

Uses of CCFRP Data

More tag returns from anglers outside CCFRP than within the project!



Tag Returns Highlights From 2017!



55 days later



Two Brown Rockfish were tagged on 7/19/17 at Año Nuevo. The first, caught by Nick I., was 43cm (17in). The second, caught by Ed M. was 39cm (15in). Both were caught again on the same day, 9/12/17, the first by Mike J., and the second by Harry L..

Tag Returns Highlights From 2017!



Amazing recapture from **Bodega Bay**! They recaptured a Copper Rockfish at Stewart's Point that was originally tagged by **Cal Poly** in the Piedras Blancas MPA on 8/20/13! In its 1,500 days (4+ years) at liberty, it swam ~220 miles and grew 13 cm!

Tag Returns Highlights From 2017!



Lester Y. caught the same 38 cm (15in) Brown Rockfish on 9/28/16 and 7/19/17 at Año Nuevo!



One unlucky male Lingcod was caught **twice on the same day**, 9/19/17, at Point Lobos! Ben R. caught it the first time and Nick I. the second. It was 58 cm (23in).

Volunteer Angler Newsletter

- Make important announcements
- Results primarily from the recent season
- Some highlights of the recent season



MLML Volunteer Newsletter A Summary of the 2017 Sampling Season

California Collaborative Fisheries Research Program

Greetings MLML CCFRP Volunteers,

With your help, MLML has successfully completed ELEVEN years of data collection inside and outside MPAs of the central California coast! In this time, we've conducted a total of 186 hook-and-line surveys in an effort to gather information regarding species compositions, lengths, and catch rates of rockfishes and other species commonly found in the nearshore environment. From these surveys, 556 volunteer anglers have spent 5,465 hours catching 58,043 (and tagging 20,074 fishes) from a total of 51 different species! In addition to the Point Lobos and Año Nuevo MPAs, MLML added the SE Farallon Islands MPA to our sampling locations this season. This year we were also able to expand the program statewide to sample include 14 MPAs along the California coast with the cooperation of 5 other academic institutions! Thank you to everyone involved in this effort!



At this time, we would like to invite you to our annual volunteer angler appreciation event and data workshop. This is an excellent opportunity to hear about the data we have collected over the past eleven seasons. We would appreciate your attendance and involvement. The event will be held on Sunday, March 4, 2018, from 12-3PM at Moss Landing Marine Laboratories.

If you are able to attend, feel free to bring others who might be interested and please RSVP through email (CCFRP@mml.calstate.edu) so we may plan accordingly. Lunch will be provided at the meeting. An additional message will be sent out soon with more workshop details. Please stay tuned for updates through email, our website, Facebook, Instagram and YouTube! To review some of the data analyses conducted so far, visit our webpage at:

<https://www.mlml.calstate.edu/fisheries/ccfrp-datareports/>



A big thanks to our program partners and research affiliates this season: The Ocean Protection Council, NOAA, FishWise, Santa Monica Seafood, California Department of Fish and Wildlife, F/V Chubasco, F/V Huli Cat, F/V Kahuna, F/V Tigerfish, Humboldt State University, Bodega Marine Laboratories, Cal Poly San Luis Obispo, UC Santa Barbara, and Scripps Institution of Oceanography

Volunteer Angler Workshop



This is a fun and educational meeting for all involved in CCFRP, which includes:

- Buffet style spread of food
- Highlights from the season
- CCFRP totals and records
- Lots of photos!

Follow Us!
@CCFRP



CA Collaborative Fisheries Research Program

8272 Moss Landing Road | Moss Landing, CA 95039

p: (831) 771-4479 e: CCFRP@mlml.calstate.edu f: (831) 632-4403



The California Collaborative Fisheries Research Program is a collaborative effort among researchers from Moss Landing Marine Laboratories, Cal Poly San Luis Obispo, Humboldt State University, Bodega Marine Laboratory, UC Santa Barbara, and Scripps Institution of Oceanography. MLML would like to thank the volunteer anglers, science crews, and captains and crews of F/Vs *Caroline*, *Chubasco*, *Huli Cat*, *Kahuna*, *New Captain Pete*, *Queen of Hearts*, and *Tigerfish* for their continued support.

For more information, like us on Facebook and Instagram, or visit us at <https://www.mlml.calstate.edu/ccfrp/>