
CALIFORNIA COLLABORATIVE
FISHERIES RESEARCH

Outline

1) Zoom “Introductions”
2) Program Background and Updates
3) OPC/CDFW Presentation
4) Data Summaries

** any picture without a mask is prior to COVID19

Introductions - Change your Zoom Name!

1. Hover your mouse over your picture
2. Click on the three dots in the upper righthand corner
3. Select “Change Name”
4. Write in your Name, Affiliation (Captain, Deckhand, Volunteer, etc), and favorite place to fish

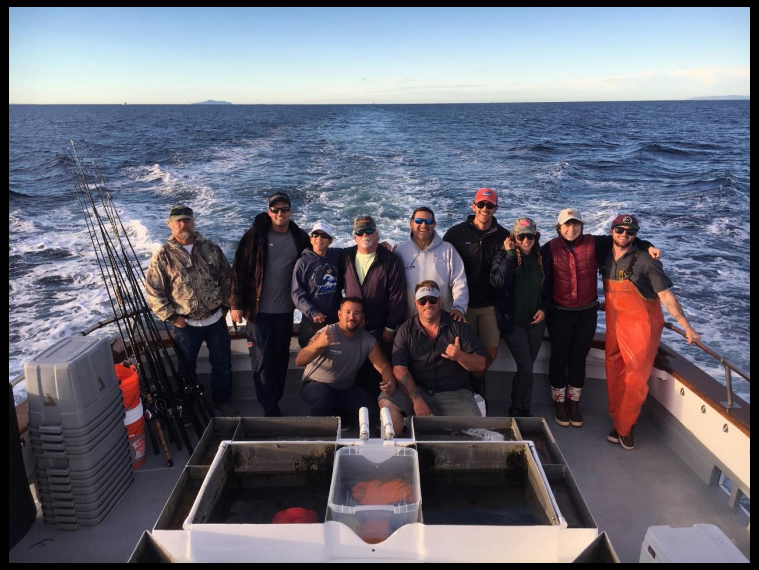
California Collaborative Fisheries Research Program (CCFRP)

- Fishery-independent (catch-and-release) study that combines the expertise and ideas of:
  - the fishing community
  - academic scientists
  - resource managers

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

Benefits of Collaboration

- Engage stakeholders in science and management
- Utilize different areas of expertise to develop protocols and collect data
- Create a shared understanding of resources and facilitate communication



CCFRP Angler Survey

PeerJ

Long-term participation in collaborative fisheries research improves angler opinions on marine protected areas

Erica T. Mason[1], Allison N. Kellum[1], Jennifer A. Chiu[2], Grant T. Waltz[3], Samantha Murray[1], Dean E. Wendt[3], Richard M. Starr[2] and Brice X. Semmens[1]

- Surveyed CCFRP Volunteers from MLML and Cal Poly
- After participation in CCFRP, volunteer's opinions towards MPAs were more positive
- A follow up study is planned, keep an eye out for more info

CCFRP in Action

- Each trip is a combined effort of CPFV captains, deckhands, volunteers, and scientists

- We fish inside and outside each MPA to track changes in species composition, length, and catch rates through time

Our Partners

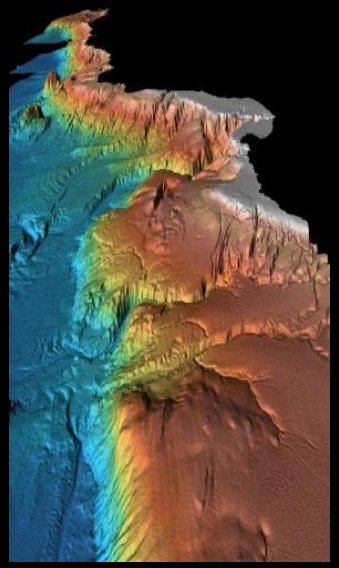
Aloha Spirit Sportfishing

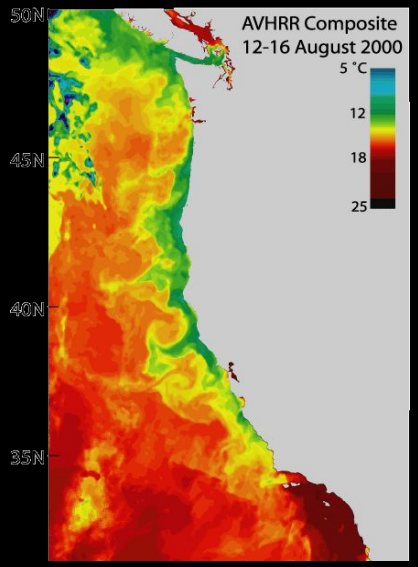
Stardust Sportfishing

- We'd like to extend a special thanks to our charter partners in this program
- Please support them in our off season in any way you can - this program would be impossible to do without them!

California MPAs
Marine Life Protection Act (MLPA)

- passed in 1999
- mandated the creation of a network of marine protected areas (MPAs) along the California coast to protect diversity and ecosystem function





Why Monitor MPAs?

1. It is a priority adopted by the state of California
2. It is required by MLPA
3. Critical to seeing the effects of the MPA network in action

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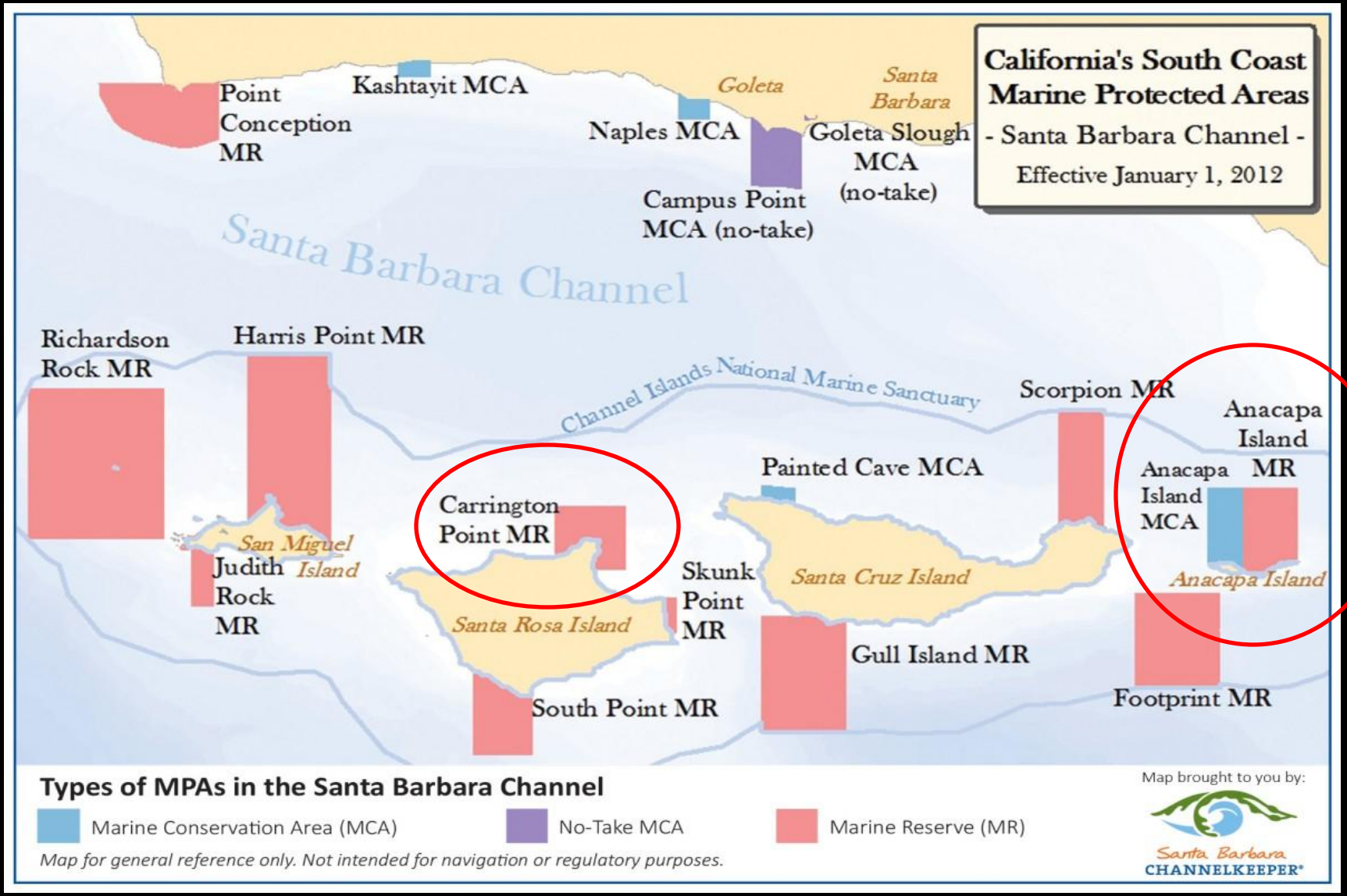
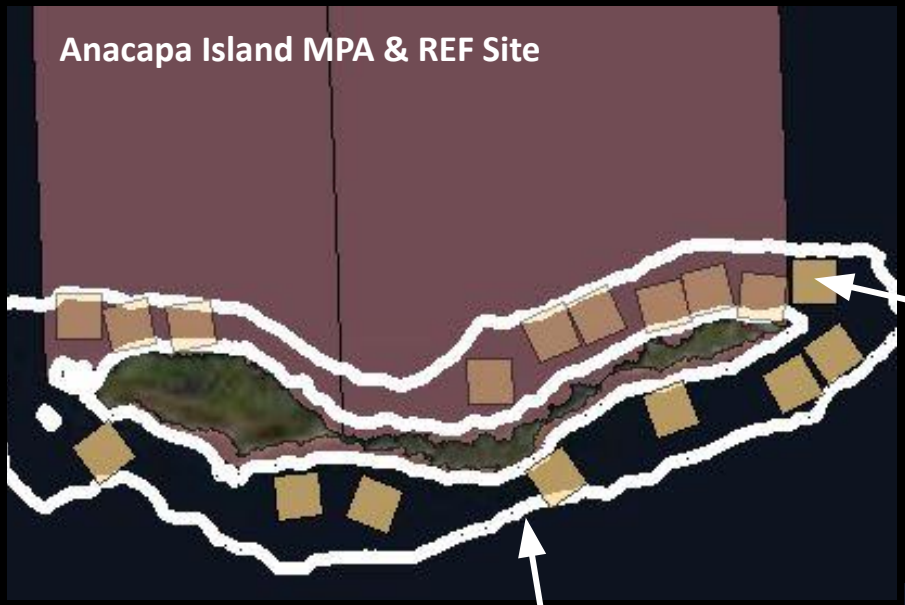
California MPA Network

Statewide Monitoring Network

Channel Islands MPAs

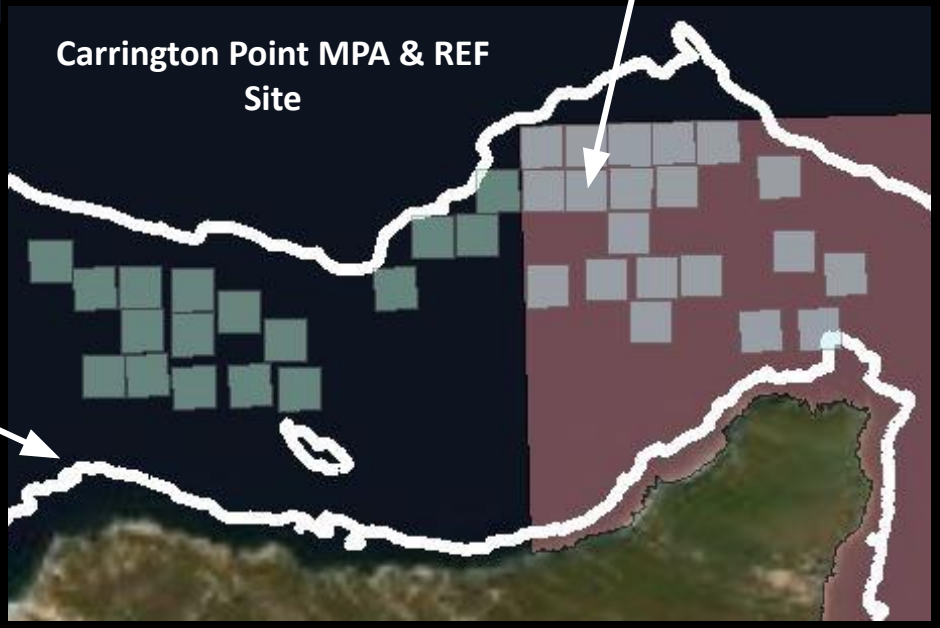


Where Do We Sample?



500 x 500 m grid cells placed on hard bottom inside and outside of MPAs

30 ft &150 ft Bathymetry lines



How do we Sample?

- Each time we visit a cell we aim to fish for 45 mins, broken into 3 15 minute drifts
- Drifts can be cut or extended depending on habitat, current, or other factors

Moving Forward!

- Our 2021 Sampling will take place in the fall - keep an eye out for sign ups!

- Our first 5 years of data will be included in CDFW's Decadal Management review in 2022

MPA Management Program

Outreach and Education

Photo: MPA Collaborative Network

Research and Monitoring

Photo: CDFW, A. Van Diggelen

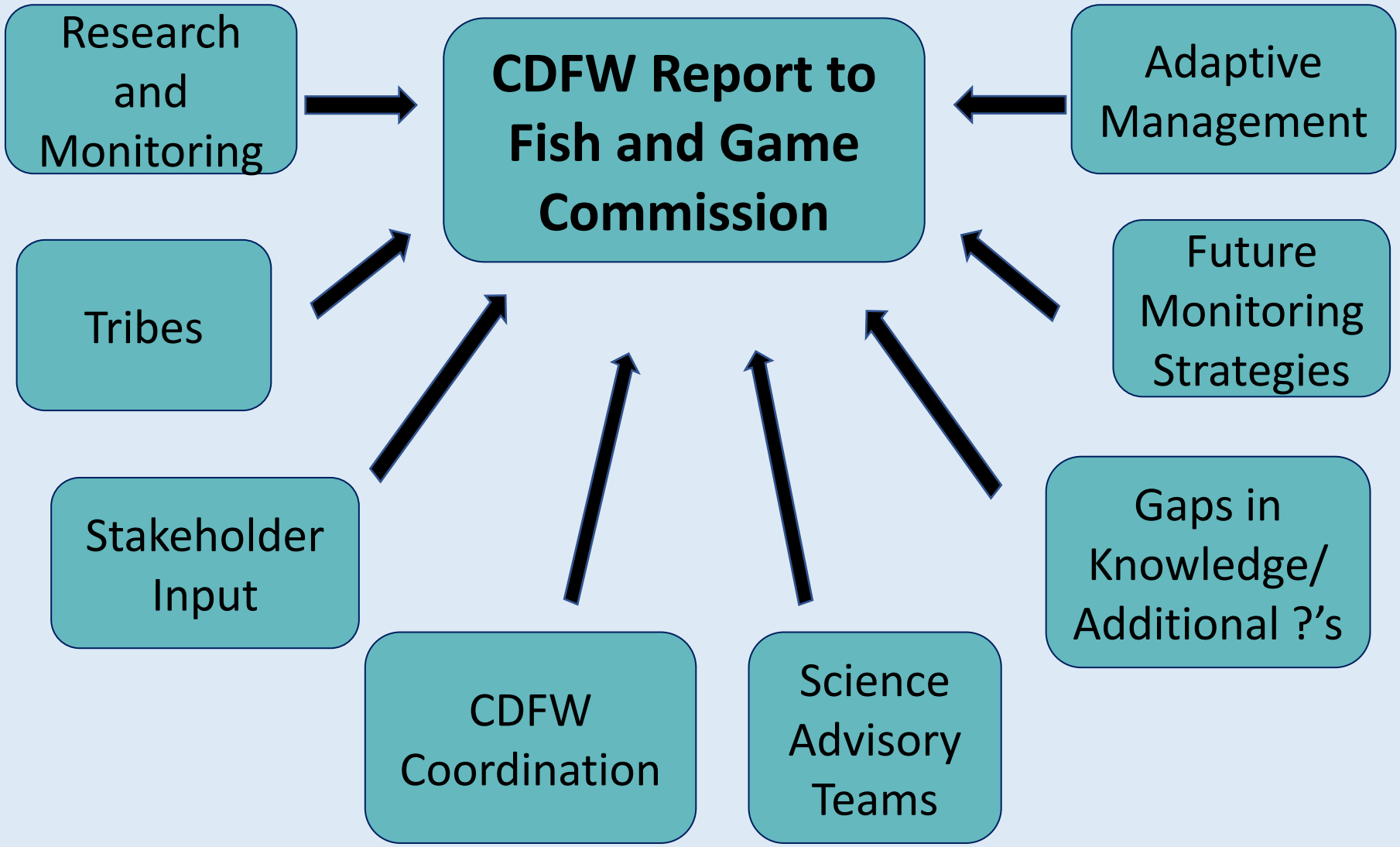
Enforcement and Compliance

Photo: CDFW, A. Van Diggelen

Policy and Permitting

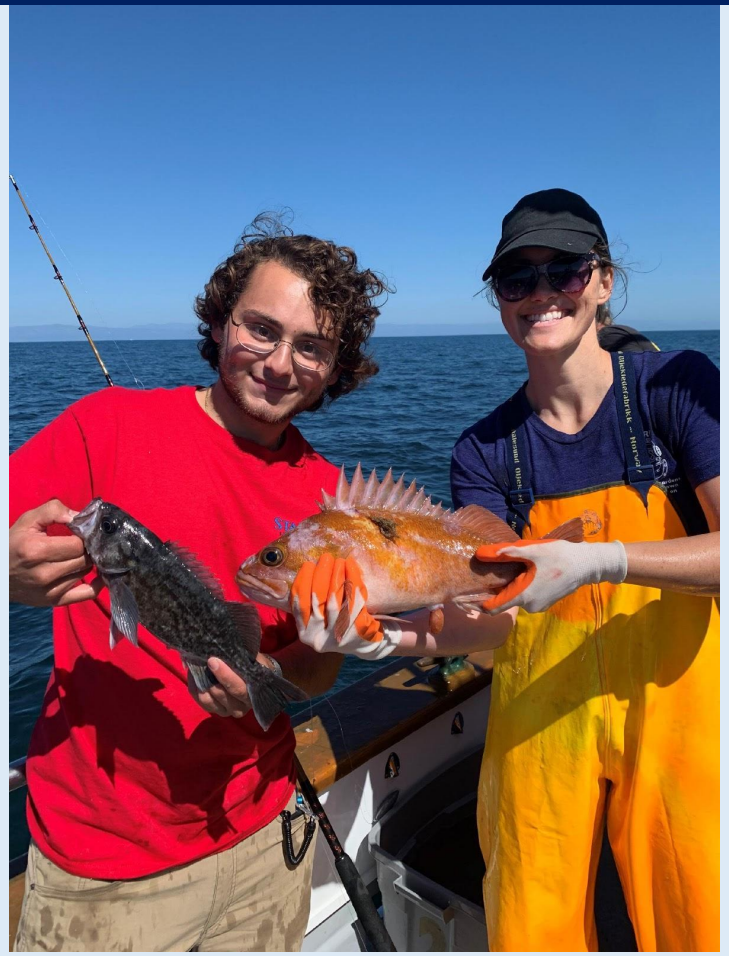
Photo: Jeff Landesman

Decadal Management Review: 2022



Resources to stay up to date

- Fish and Game Commission meetings: **fgc.ca.gov** for meeting schedules
- Communications Plans
- MPA Collaboratives: **mpacollaborative.org**
- CCFRP involvement
- Marine Management News: **cdfwmarine.wordpress.wordpress.com**



Questions?

Sara Worden, CDFW
Sara.worden@wildlife.ca.gov

Mike Esgro, OPC
Michael.esgro@resources.ca.gov

CALIFORNIA MARINE PROTECTED AREAS

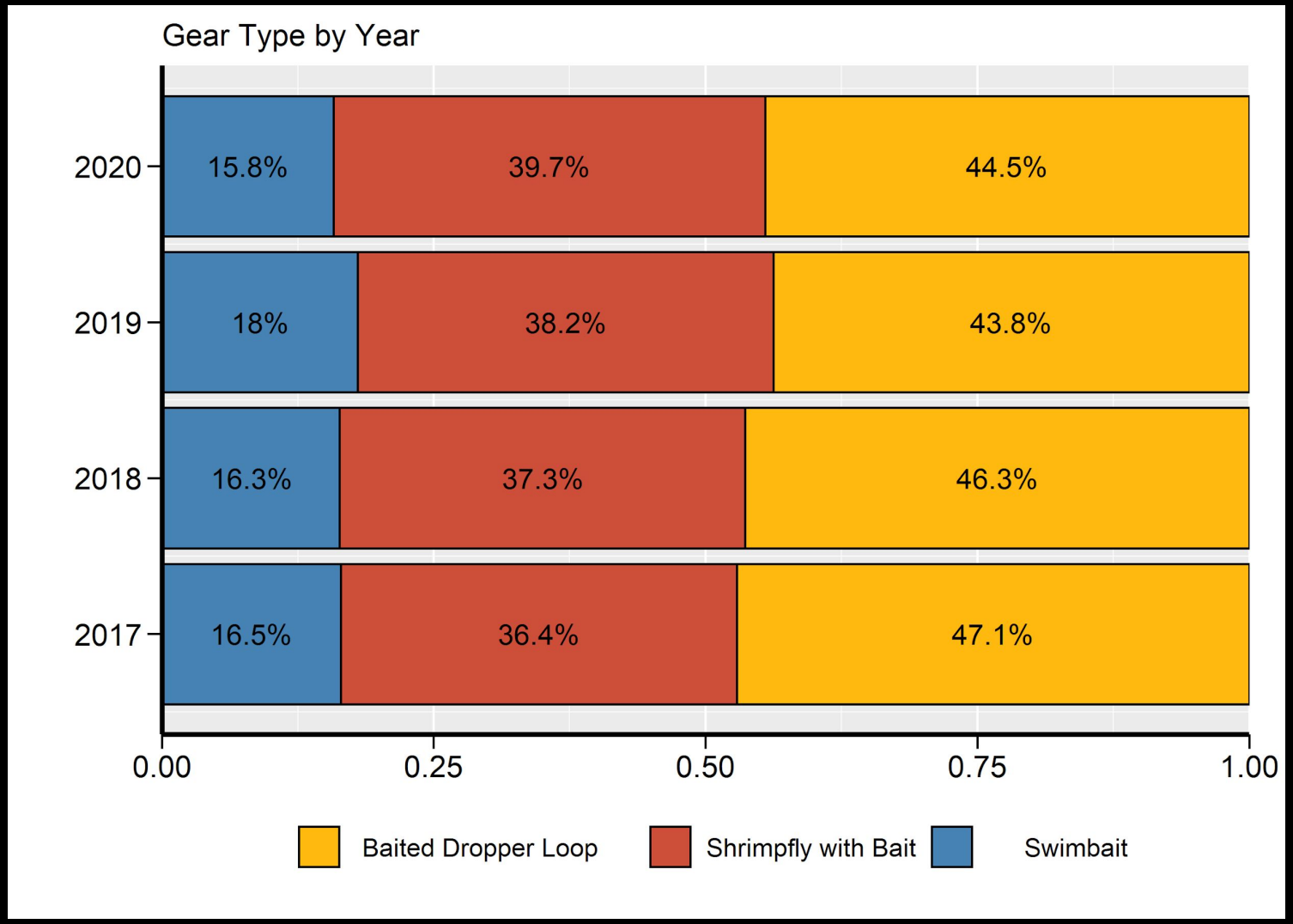
Here Comes the Data!

2020 Season Summary

Area	Fishes Caught	Fishes Tagged	Species Caught	Tag Recaptures
Anacapa SMR/SMCA	1128	445	18	1
Anacapa REF	289	78	15	0
Anacapa Total	**1417**	**523**	**20**	**1**
Carrington Point SMR	1458	709	18	5
Carrington Point REF	1210	435	23	7
Carrington Point Total	**2668**	**1144**	**24**	**12**
Season Totals	**4085**	**1667**	**30**	**13**

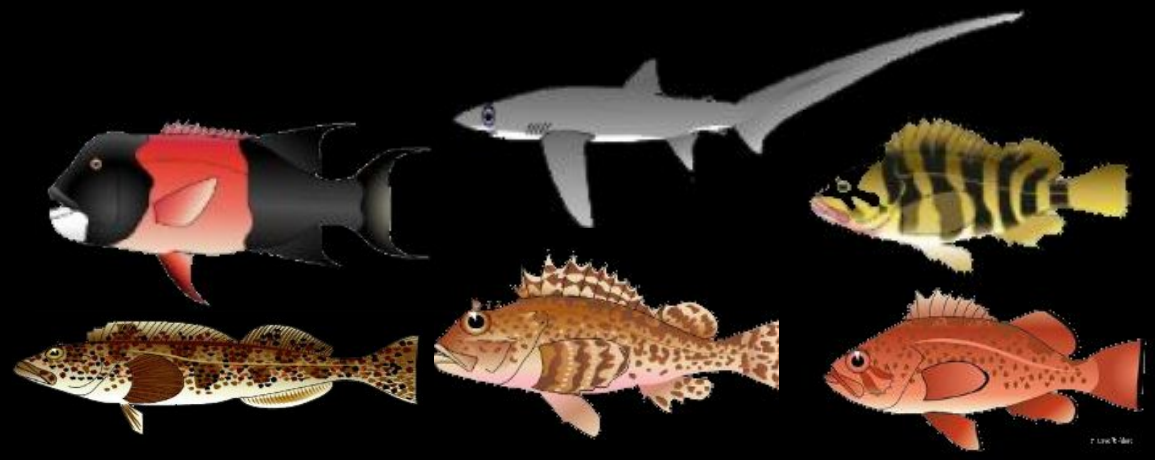



Catch by Gear Type 2017 - 2020



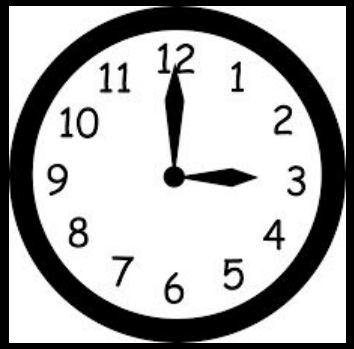
Catch Per Unit Effort (CPUE)

- One of the best ways to assess a fishery is to look at relative fish abundance
- How we calculate it:

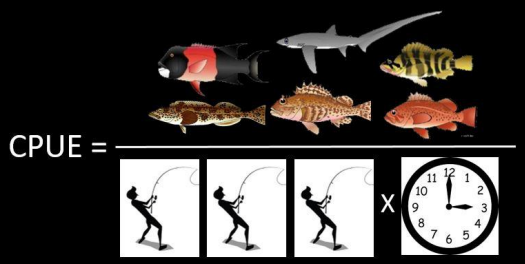


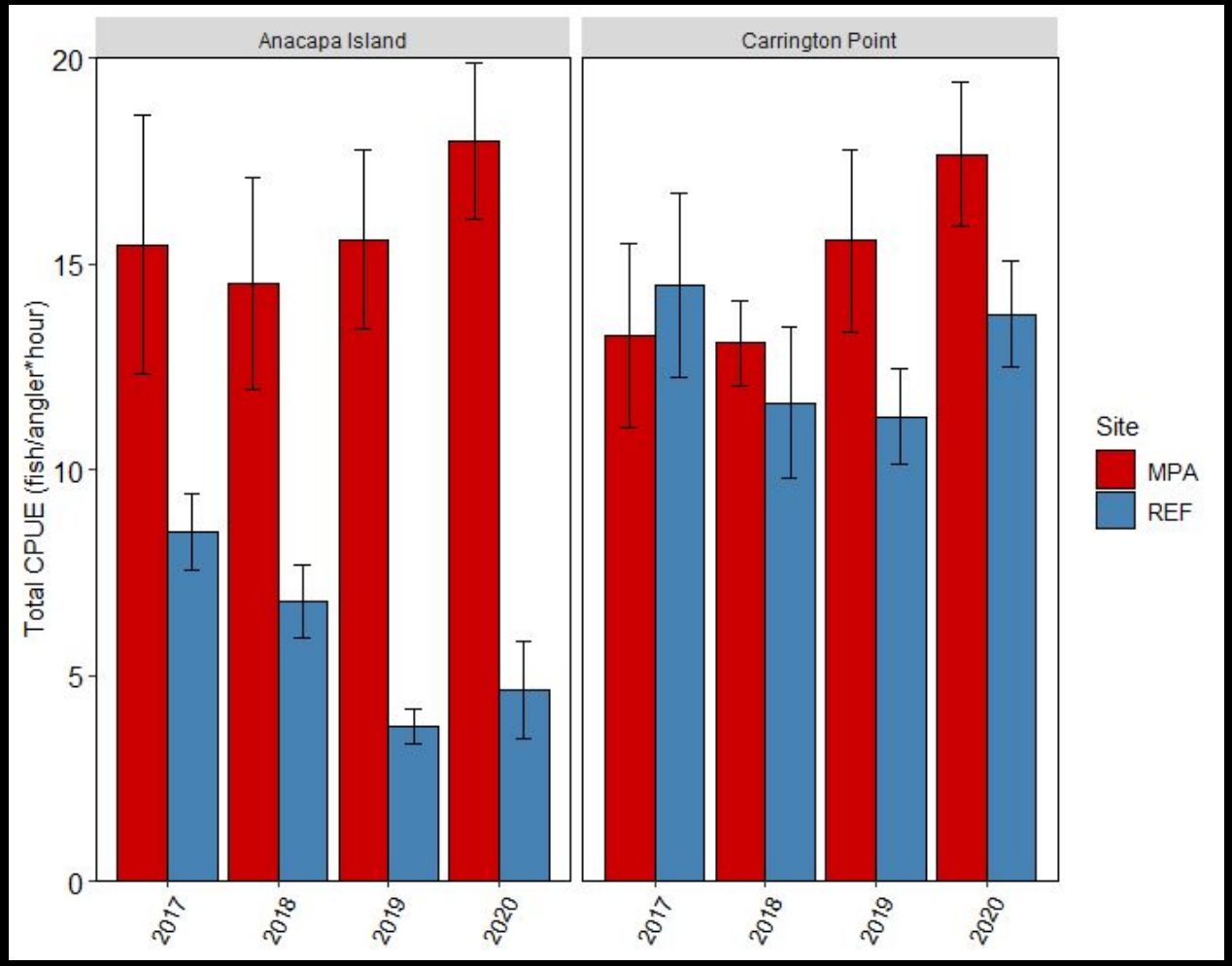
CPUE = $\frac{\quad}{\quad}$

X



Total CPUE by Site

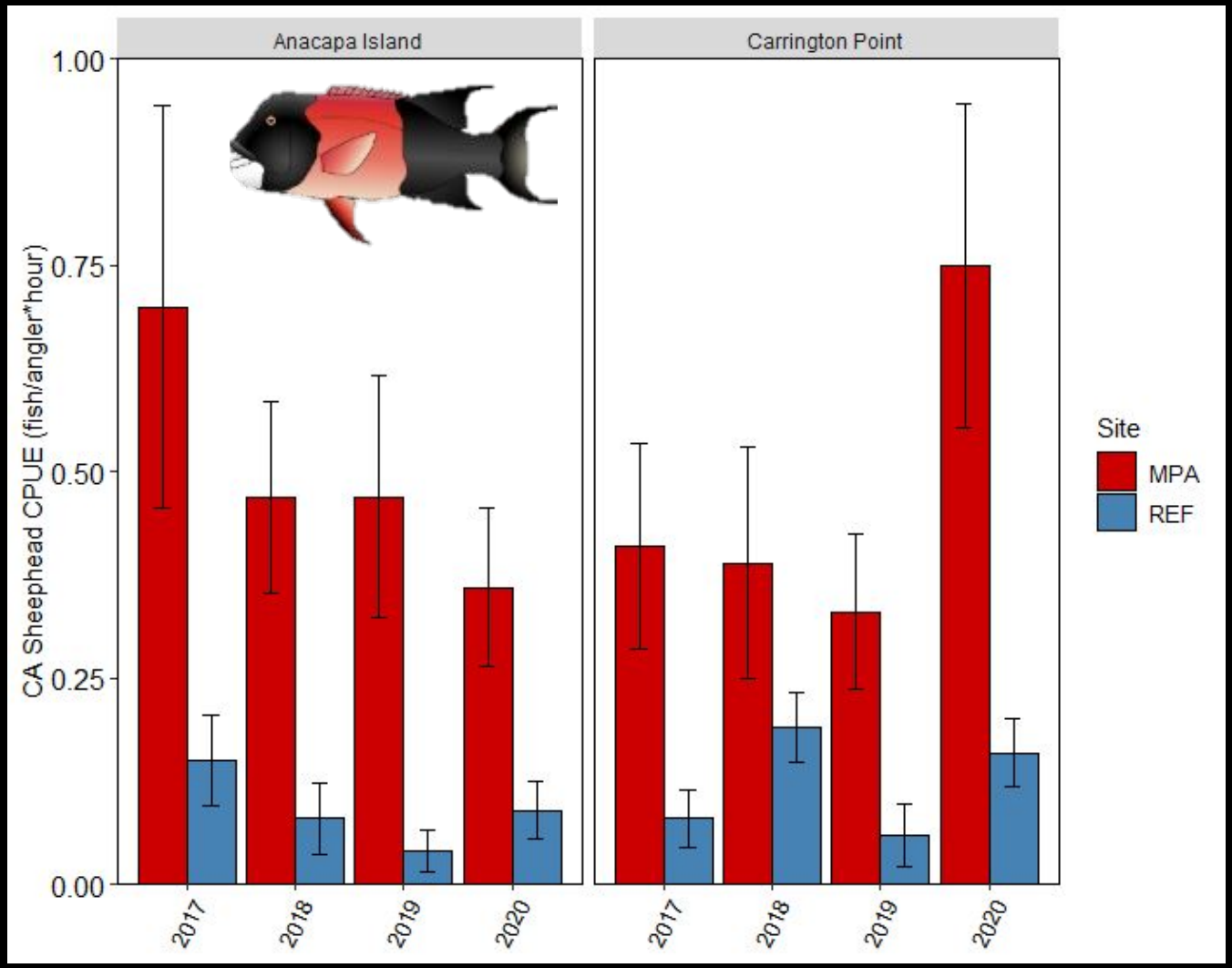




Units and scaling may change from plot to plot!

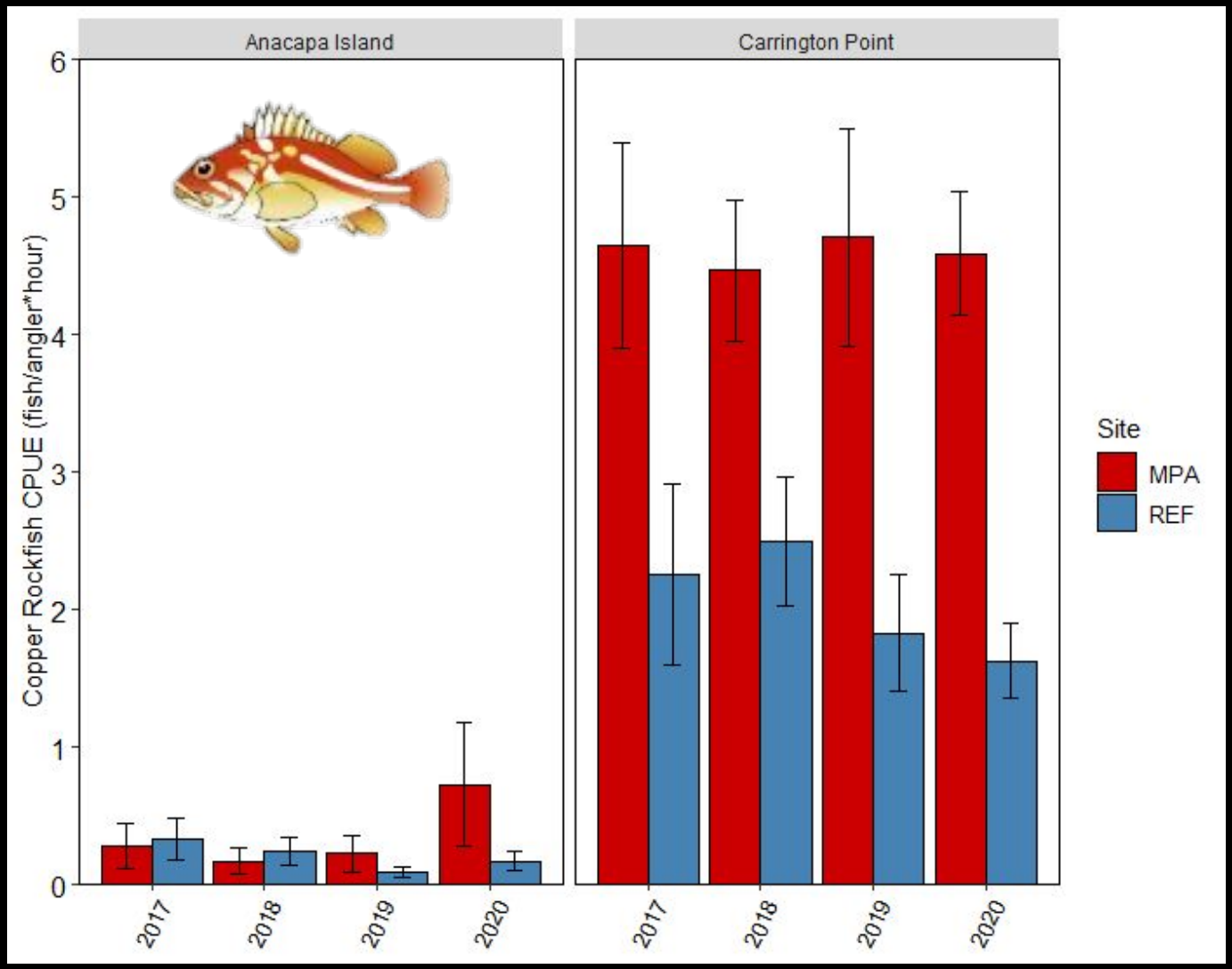
"Warmer" → "Colder"

CA Sheephead CPUE



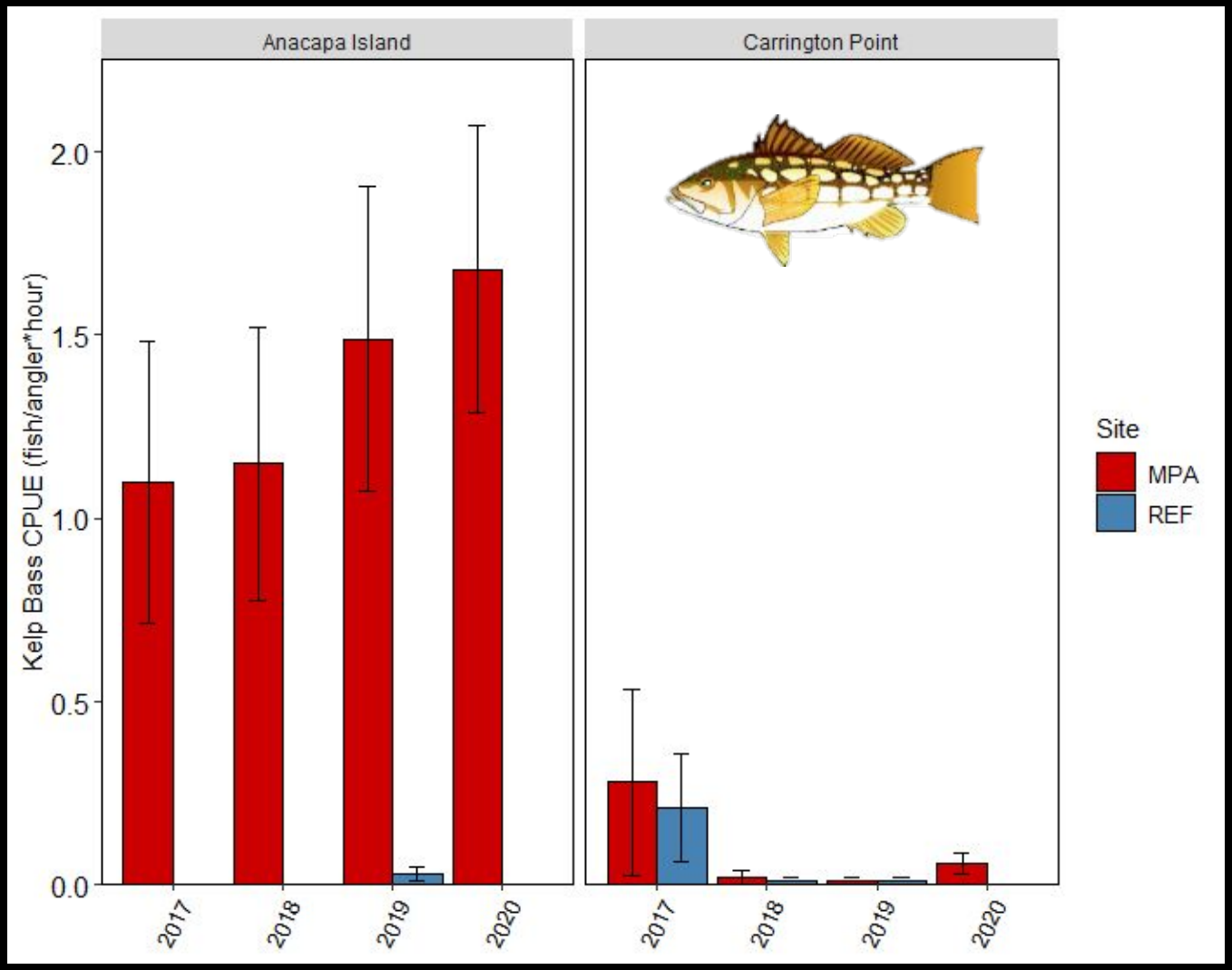
- Strong, consistent differences in CPUE provide evidence of an MPA effect

Copper Rockfish CPUE



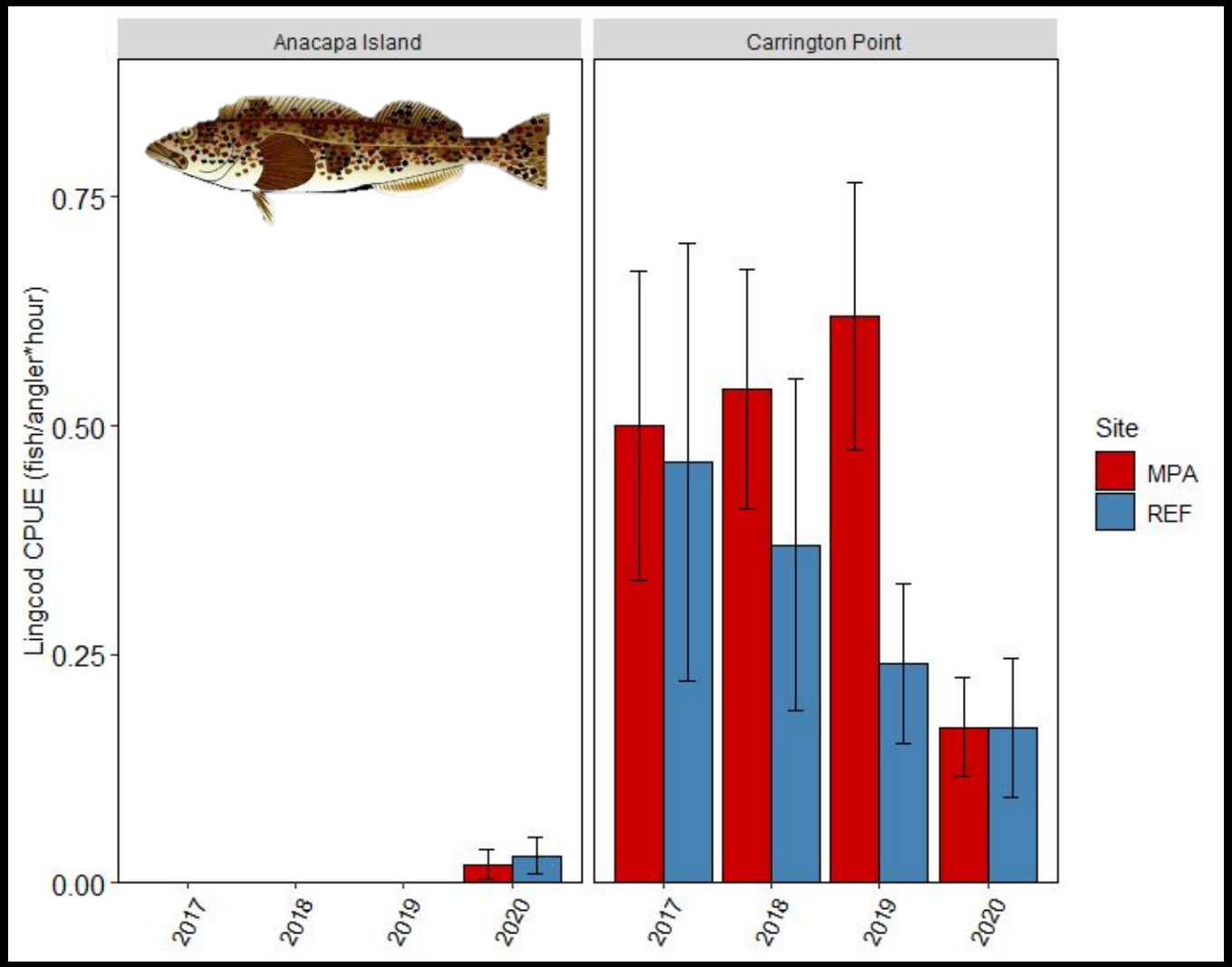
- Rockfish respond well to protection where we catch them

Kelp Bass CPUE



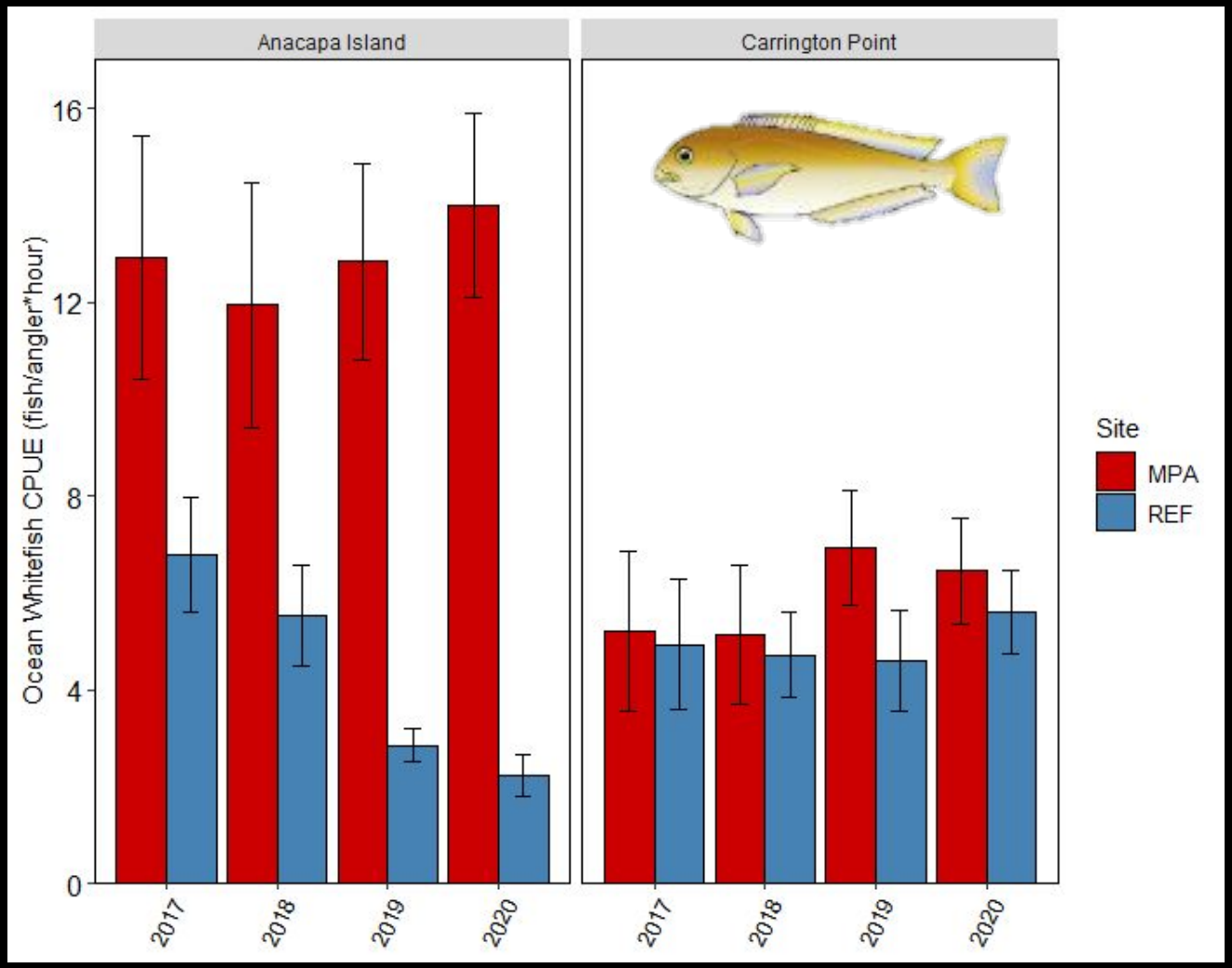
- In general, we expect highly targeted species to respond well to protection

Lingcod CPUE



- Annual monitoring allows us to investigate trends that may not be obvious in a single year

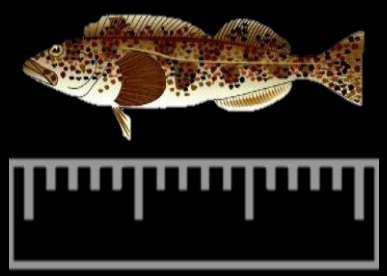
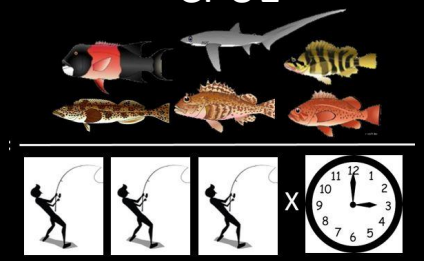
Ocean Whitefish CPUE



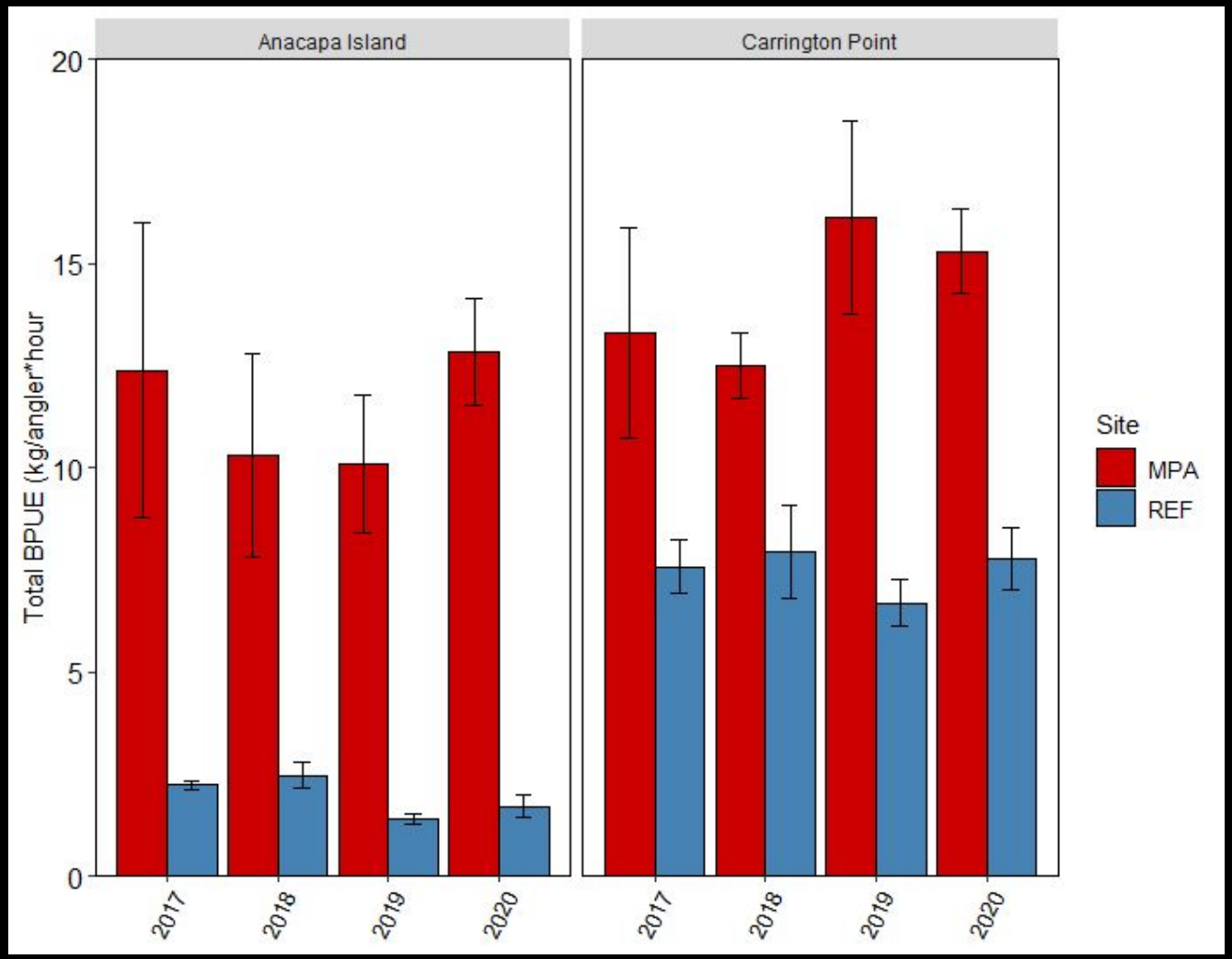
- Differences in CPUE may be the result of differences in fishing pressure, habitat quality, or other factors

Biomass Per Unit Effort (BPUE)

- Another important metric we use to assess fishery health is biomass (kg)
- For our purposes, we consider it as a rate, much like CPUE
- Here's how BPUE is calculated:

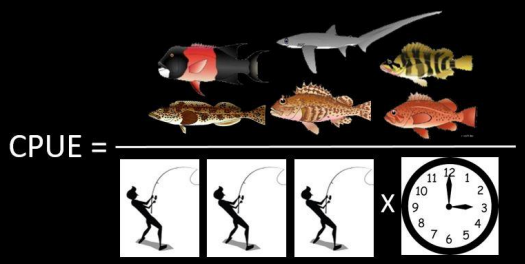
BPUE = Length (cm)  x Published Length (cm) : Weight (kg) relationships x CPUE 

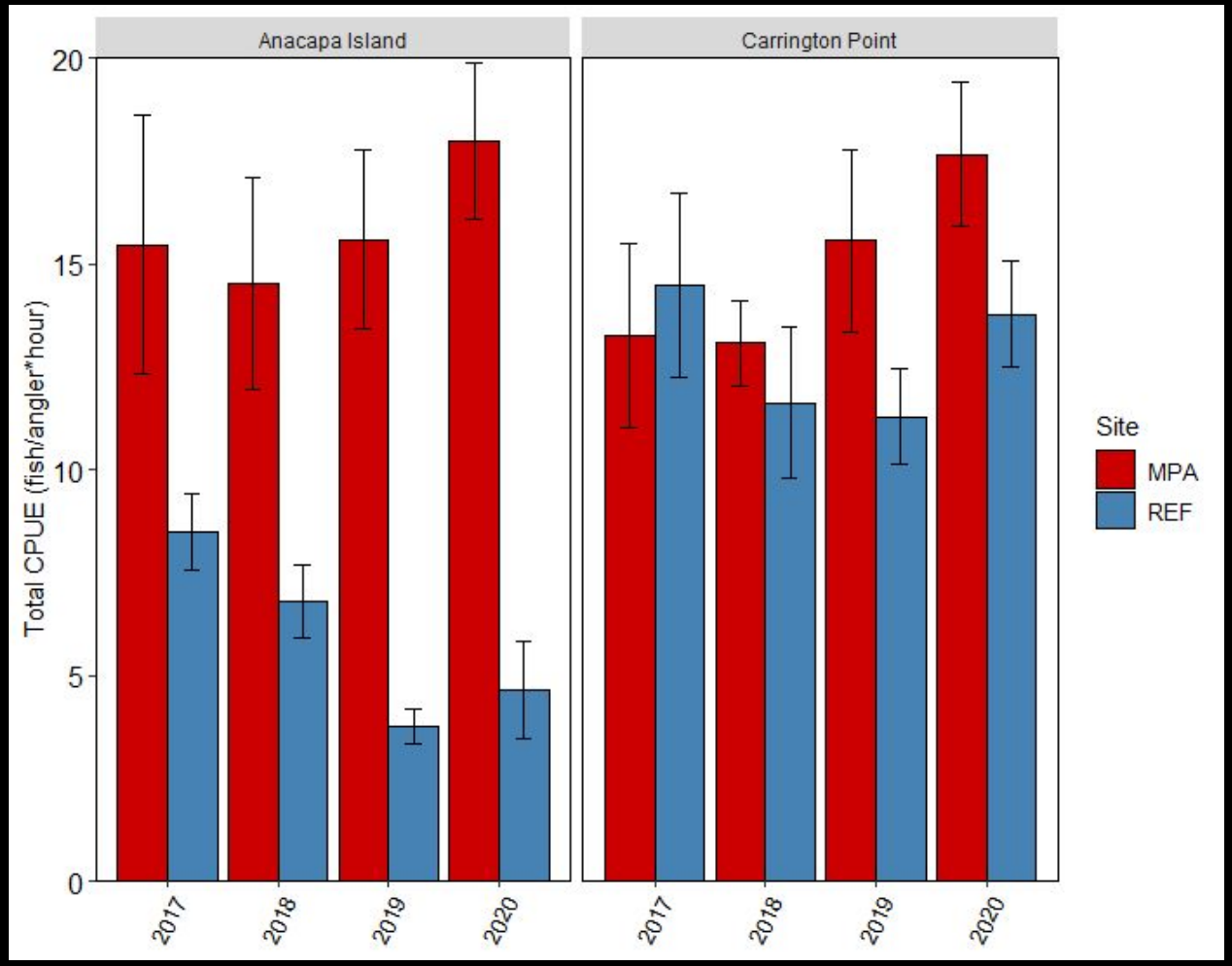
Total BPUE by Site



- BPUE may mirror CPUE, or tell a different story

Total CPUE by Site





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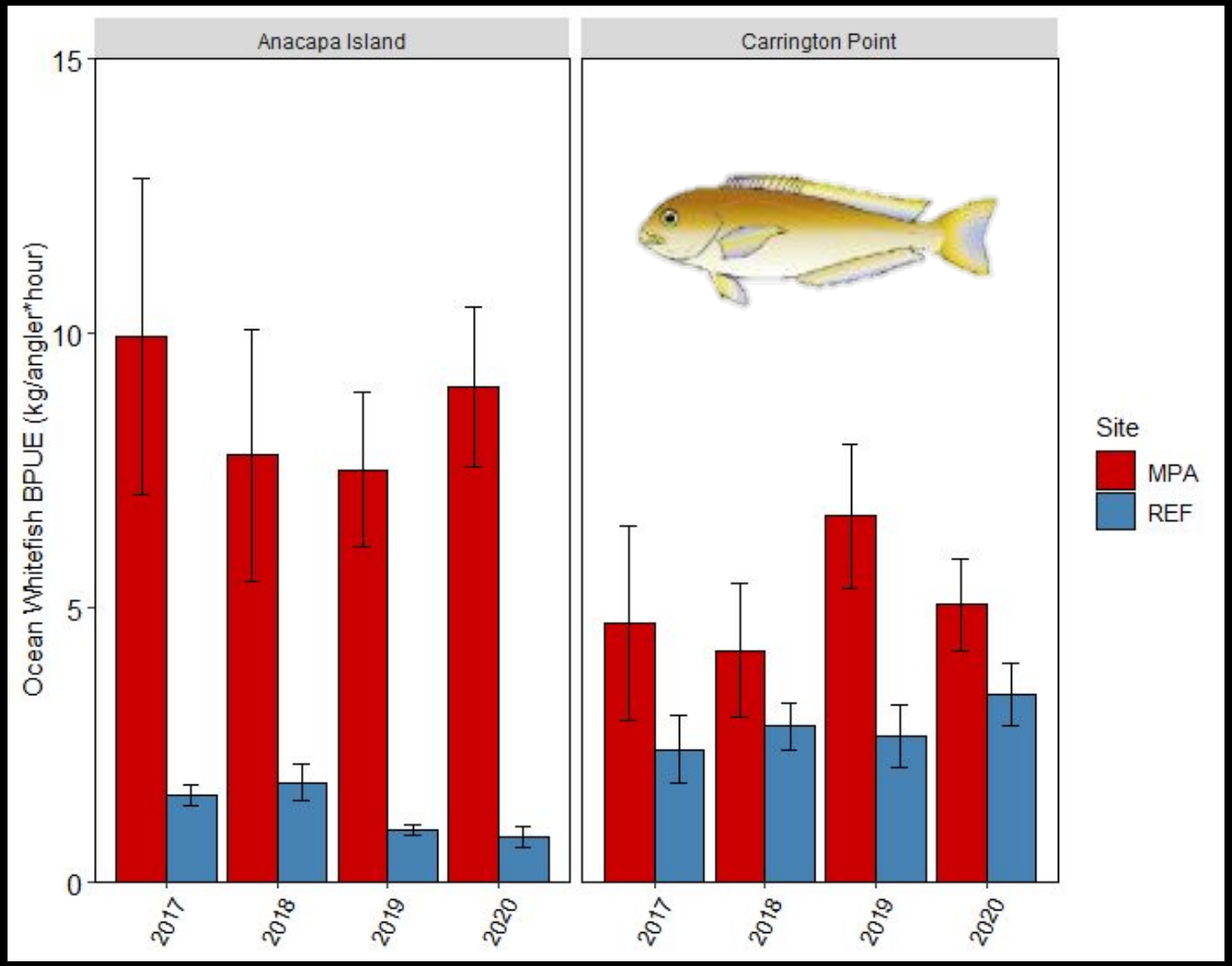
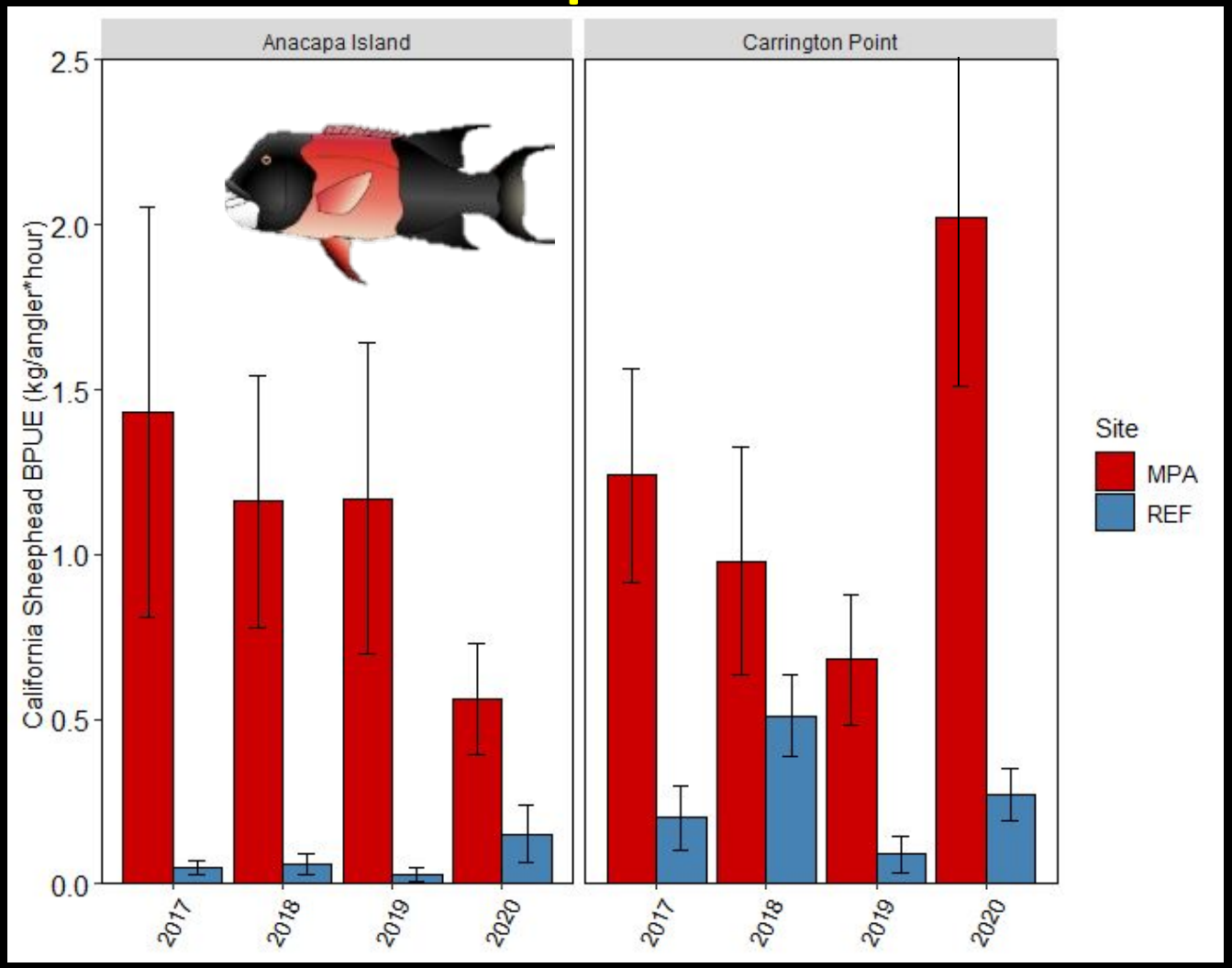
Ocean Whitefish BPUE



- Like CPUE, BPUE can be assessed for individual species

CA Sheephead BPUE



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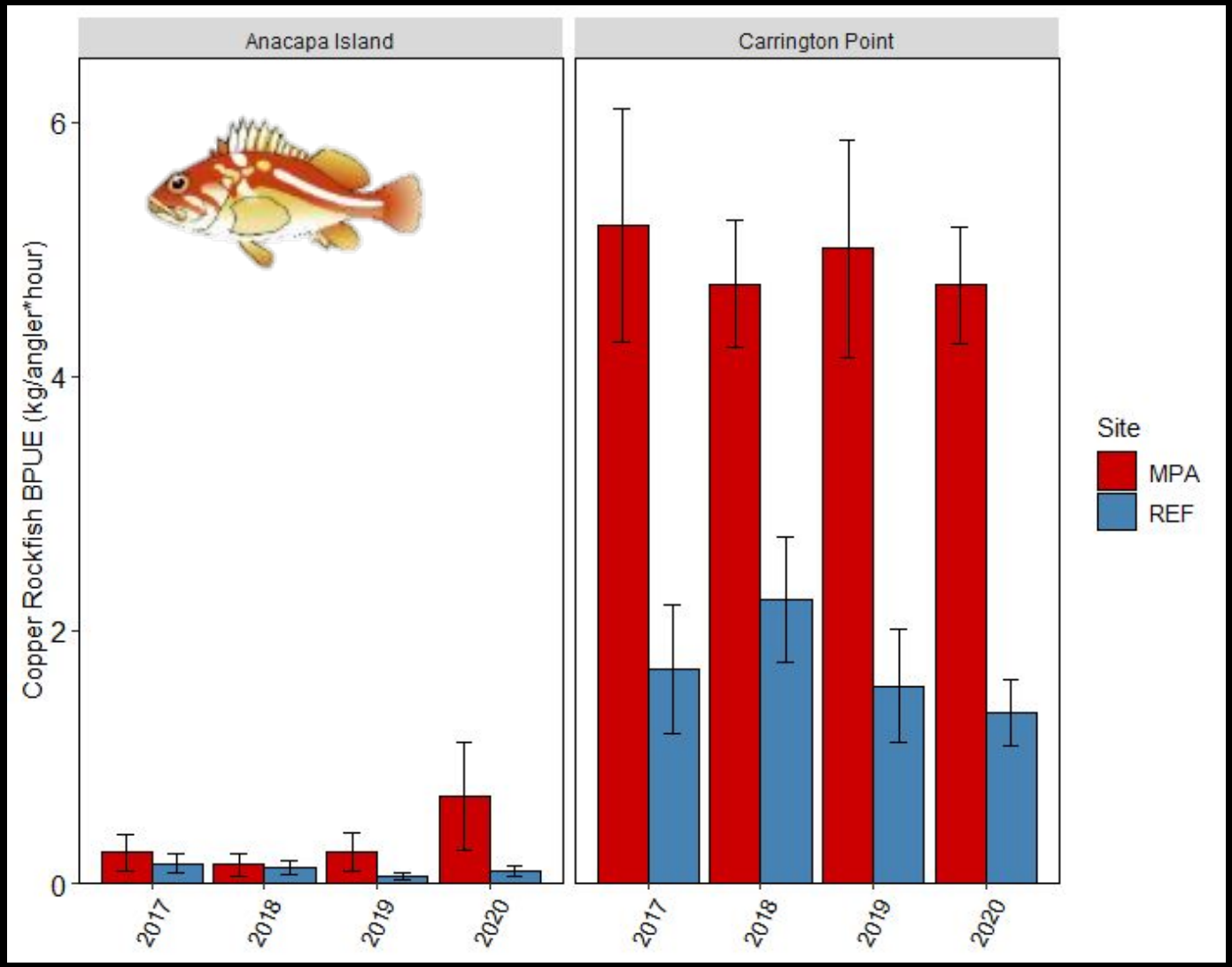
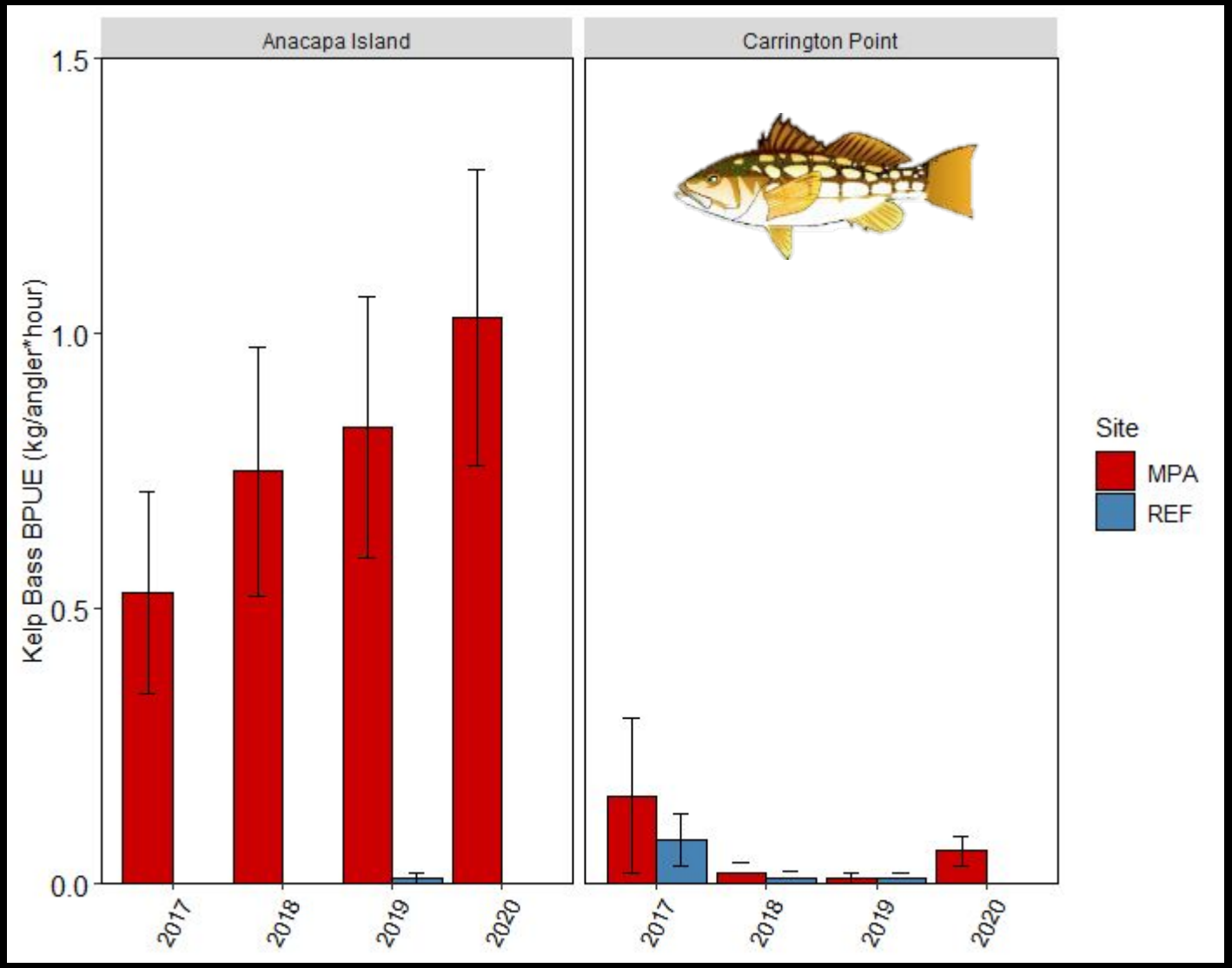
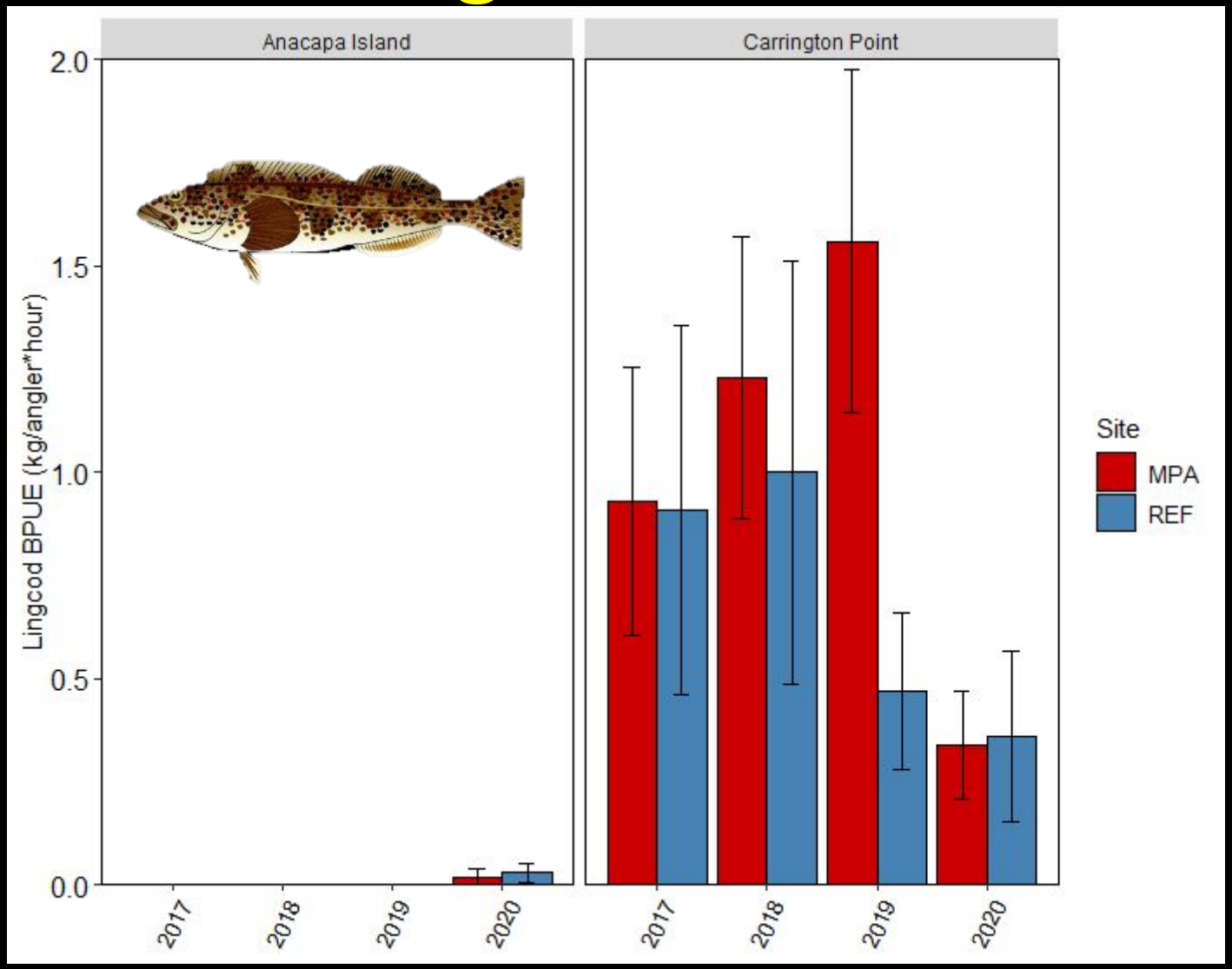
Copper Rockfish BPUE



Kelp Bass BPUE



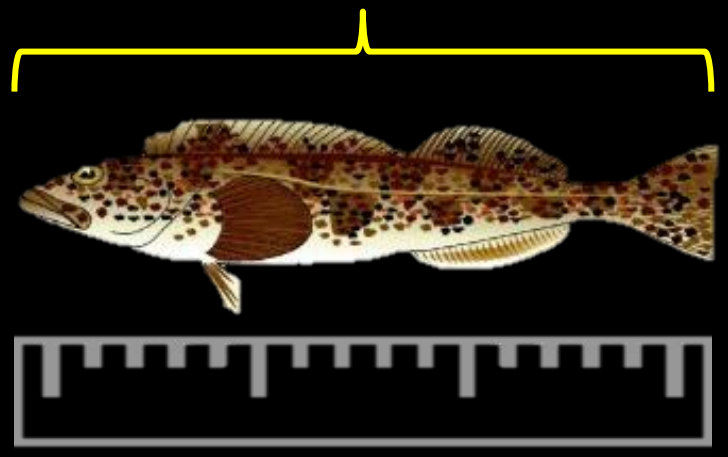
Lingcod BPUE



Fish Length

- Size is often one of the first metrics to respond to protection
- We measure fish by their Total Length (TL) to the nearest centimeter

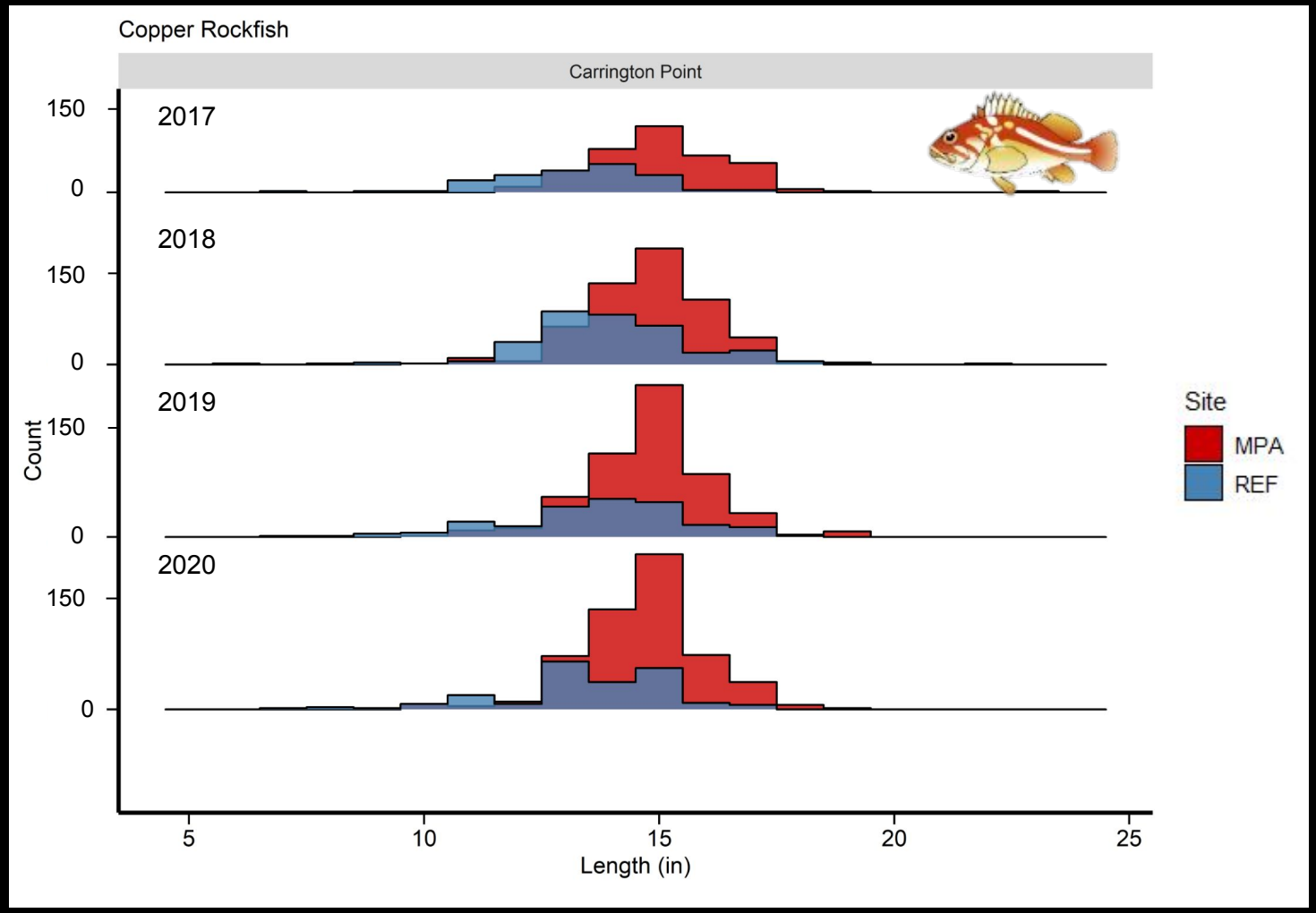
TL (cm) = Tip of the snout to the end of the caudal fin



Mouth closed

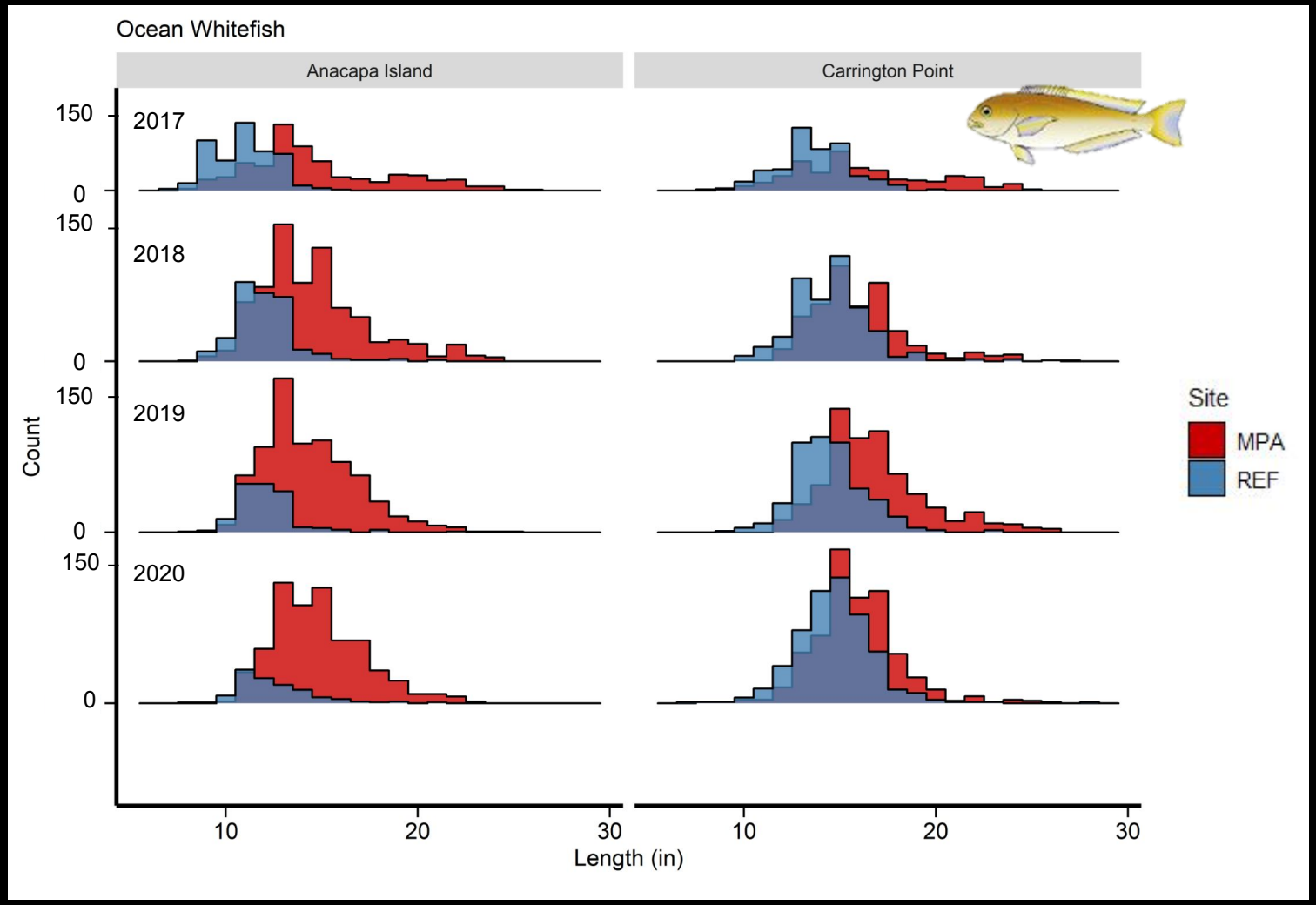
Tail splayed flat

Copper Rockfish Length



- The height of each bin represents the number of fish caught for a given size

Ocean Whitefish Length



- Different peaks in the histogram may represent different size classes in the population

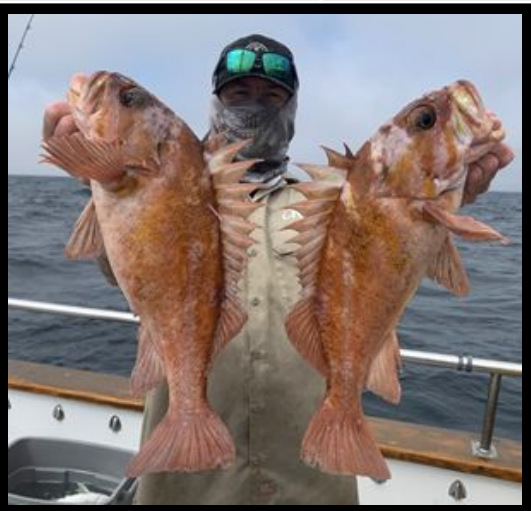



But one metric is clearly the most important…..




Who Caught the Most Fish?

Angler	Winning Catch by Species
Rich B.	67 Fishes/Trip
Daniel R.	66 Fishes/Trip
Justin P.	65 Fishes/Trip
Lisa R.	60 Fishes/Trip
Sean M.	60 Fishes/Trip
April B.	58 Fishes/Trip
Chris A.	58 Fishes/Trip
Lester Y.	57 Fishes/Trip



Who Caught the Biggest Fish?

Angler	Winning Catch by Species
Alex K.	Lingcod (79 cm/31 in)
Casey C.	Lingcod (77 cm/30 in)
Hannah K.	CA Sheephead (77 cm/30 in)
Wendy A.	CA Sheephead (76 cm/29.5 in)
Conner J.	Halibut (76 cm/29.5 in)
Whitney U.	Pacific Barracuda (73 cm/28 in)
John S.	Ocean Whitefish (70 cm/26.5 in)
Price C.	Kelp Bass (57cm/22 in)




Who Caught the Smallest Fish?

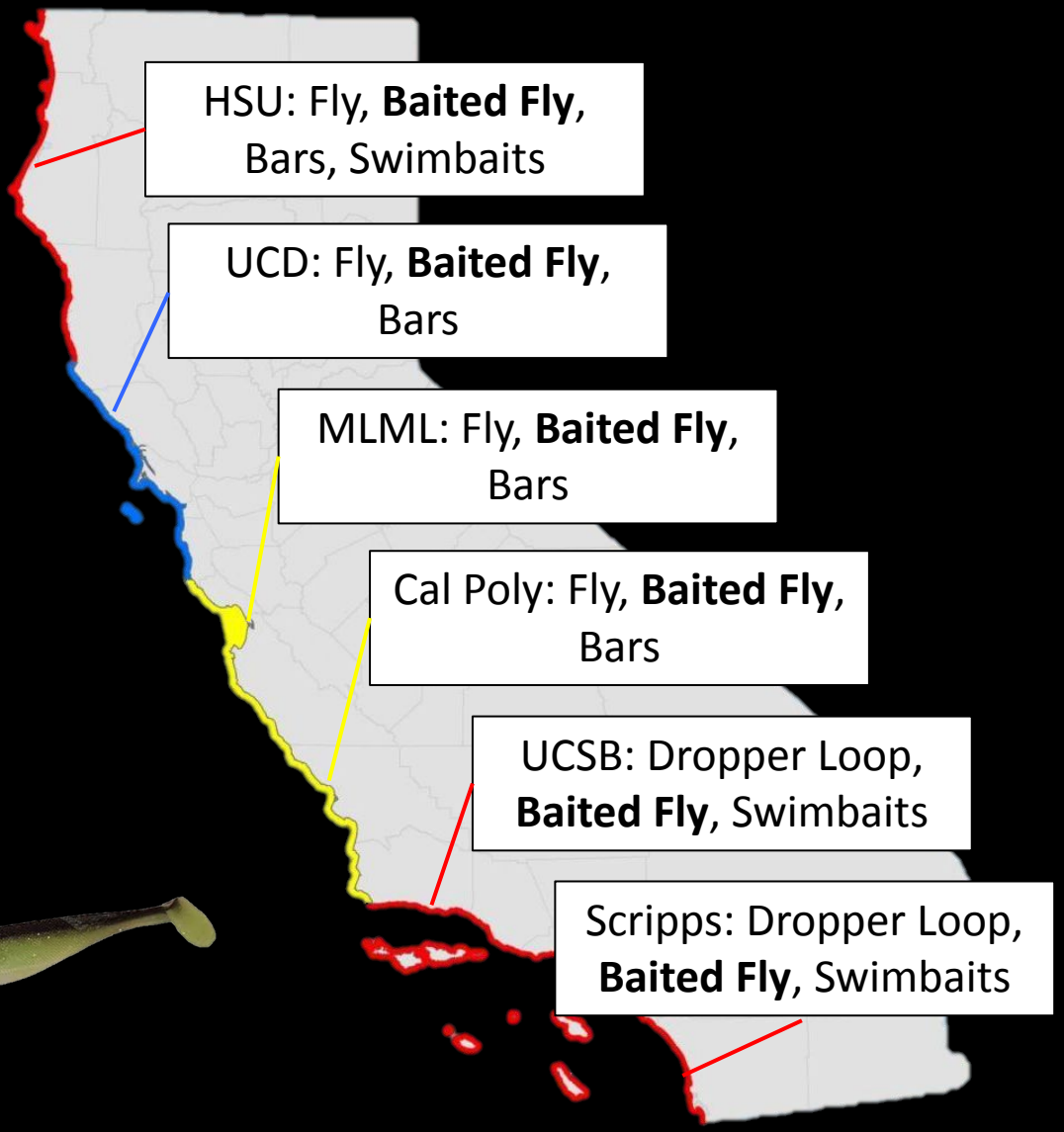
Angler	Trophy Catch by Species
Alex K.	Vermillion Rockfish (5.5 in)
Angel V.	Kelp Bass (5.9 in)
Angel V.	Sanddab (5.9 in)
Alex K.	Blue Rockfish (5.9 in)
April B.	Vermillion Rockfish (6 in)
John C.	Rosy Rockfish (6.3 im)
John G.	Blue Rockfish (6.7 cm)

Follow Us!
@Casellelab
and
@CCFRP

Thanks for joining us!

Why Can't I Fish My Own Tackle?

- Standardization, reproducibility, and historical precedent
- Allows us to compare data on multiple scales



Why Don't We Tag All the Fish?

- Maximize survivorship and minimize stress
- Not tagged if:
  - Less than 25 cm
  - Experiencing injury or barotrauma
  - Species not of interest (i.e. Mackerel, Sanddabs, etc.)