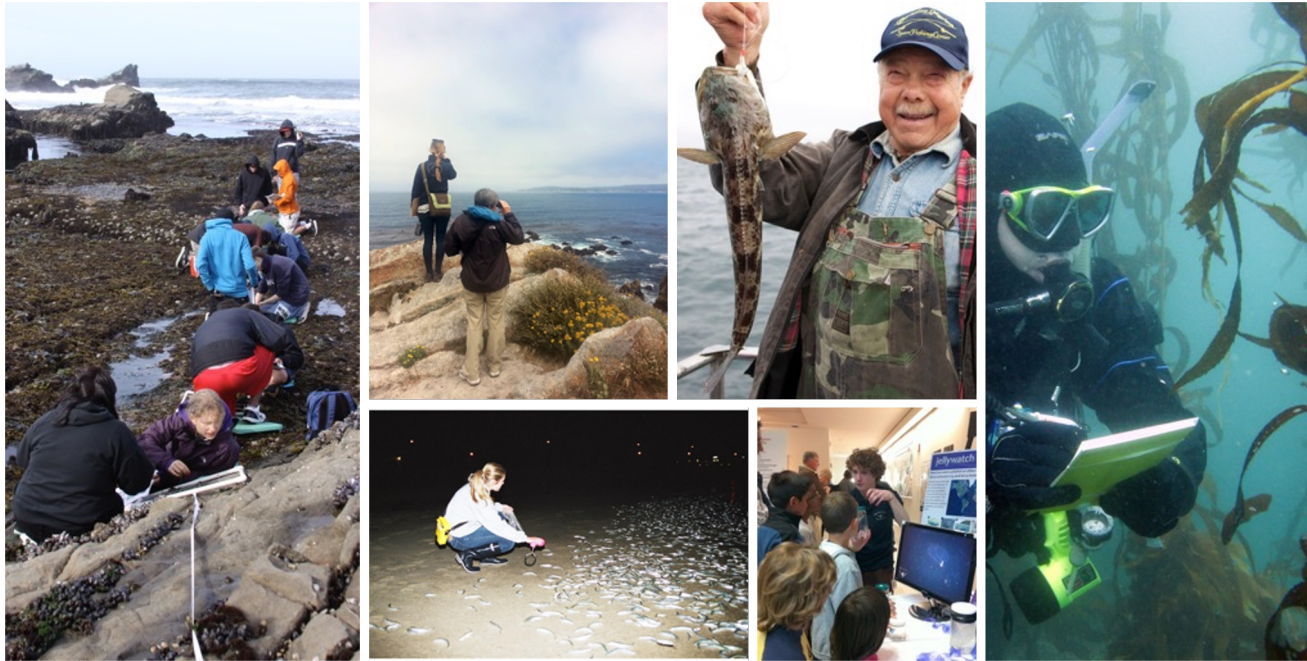


# Community and Citizen Science (CCS) in California's MPA Network



**Ryan Meyer**  
**Todd Harwell**  
**Angela Korabik**  
**Nicholas Petersen**  
**Heidi Ballard**

MARINE Annual  
Meeting

April 17, 2023

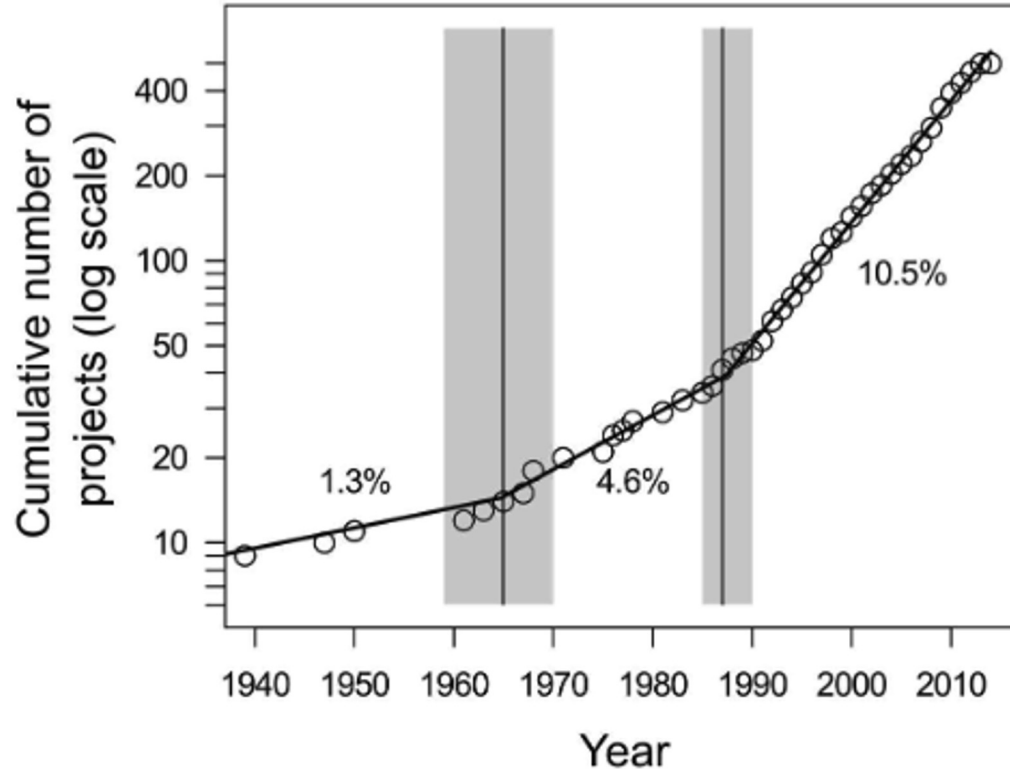
# COMMUNITY AND CITIZEN SCIENCE:

Activities or programs in which **members of the public collaborate with professional scientists** on scientific research and monitoring in either scientist-led or community-led endeavors.

# Rapidly growing field...

## Ecological/ environmental citizen science projects, 1940- 2014

Pocock, Michael J. O. et al. 2017. "The Diversity and Evolution of Ecological and Environmental Citizen Science." *PloS One* 12 (4): e0172579.



# Rapidly growing field... publications

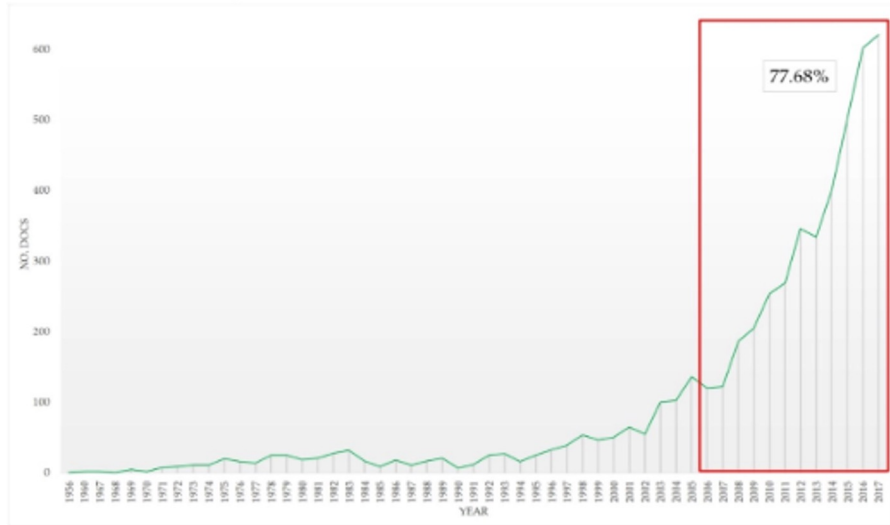


Figure 1. Yearly variation in the output on citizen science.

Bautista-Puig, N., De Filippo, D., Mauleón, E., & Sanz-Casado, E. (2019). Scientific Landscape of Citizen Science Publications: Dynamics, Content and Presence in Social Media. *Publications*, 7(1), 12.

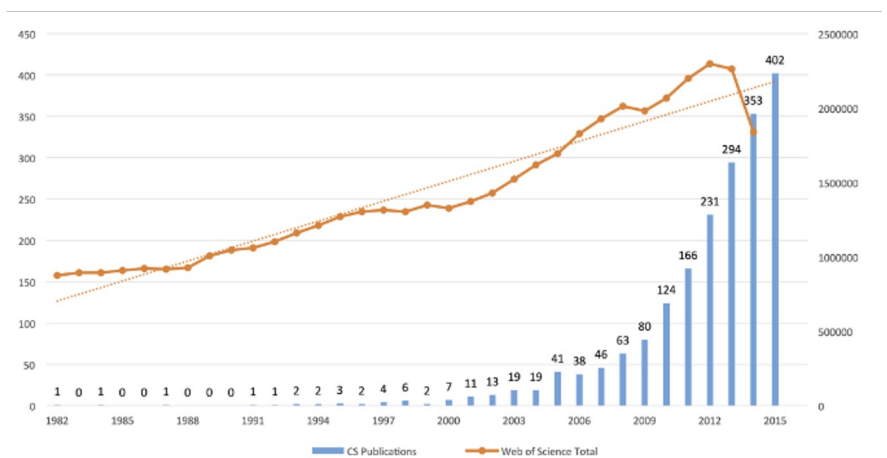


Fig 2. Growth of CS publications compared to WoS total. N = 1935. Search was conducted 2015-12-17 using the search string in S1 Appendix. doi:10.1371/journal.pone.0147152.g002

Kullenberg, C., & Kasperowski, D. (2016). What Is Citizen Science?--A Scientometric Meta-Analysis. *PLoS One*, 11(1), e0147152.

# The field is growing rapidly, and professionalizing

- Professional associations on most continents.
- Other professional science associations (SCB, ESA, AGU, etc.) organizing CCS working groups, initiatives.
- US Federal community of practice across agencies, legislation, and many agency-level initiatives.
- Many new tools, platforms, and resources supporting CCS.

# AGAINST THAT BACKDROP...

...in terms of **scale, breadth, and impacts**: CCS in California's MPAs is special.

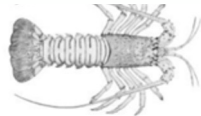
# 10 State-funded CCS programs

## BREADTH: topic, participants, and project structure

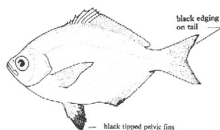
Rocky Reef Fish  
Monitoring



San Diego Spiny  
Lobster  
Monitoring



Surfperch  
Monitoring



### Participants include:

- SCUBA divers
- Fishermen
- High school students
- Tribal members

### Differences in:

- Monitoring focus
- Training requirements
- Long-term commitments
- Etc.

# SCALE: in 10 State-funded CCS project for MPAs monitoring



**84,000**  
Participants

**People involved in  
MPA monitoring**

**impact**



**476,000**  
Volunteer  
hours

**People who care,  
want to contribute**

**impact**



**528**  
Monitoring  
sites

**CCS opportunities  
everywhere**

**impact**



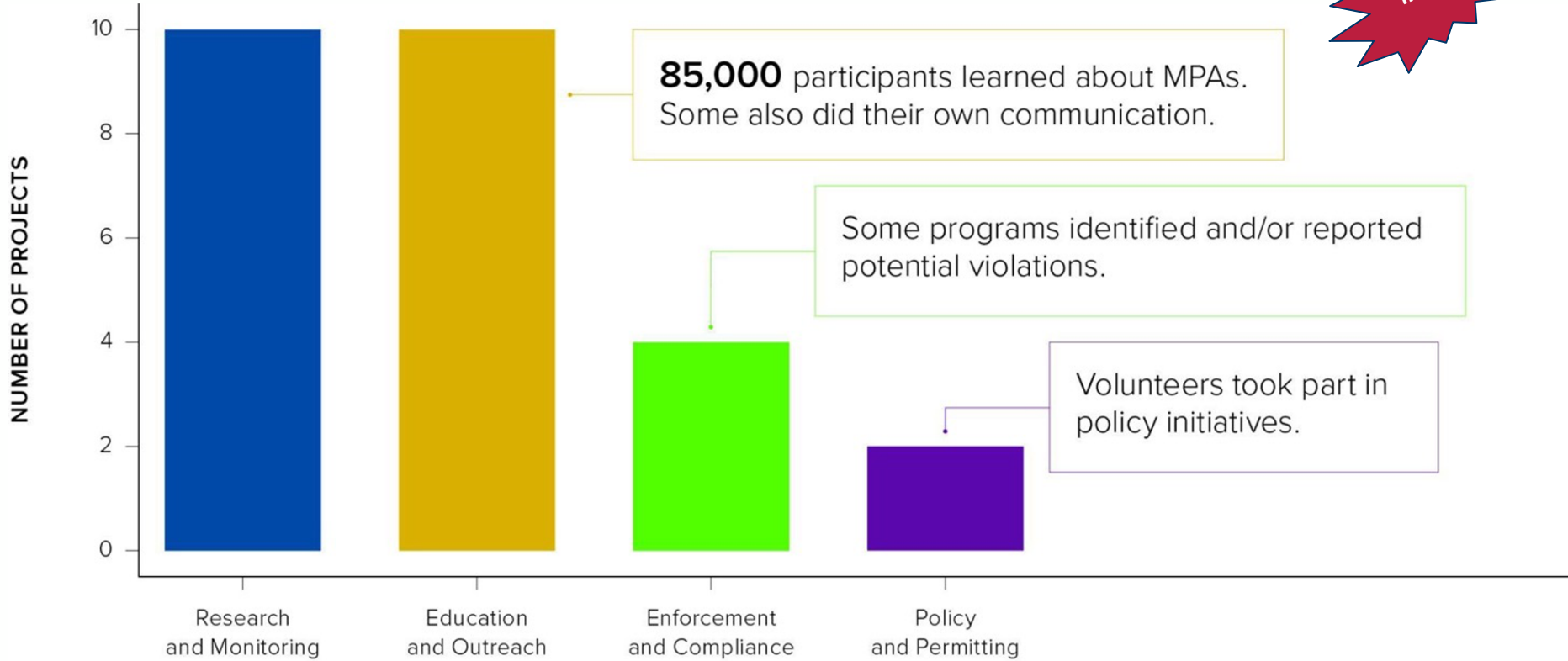
**100**  
Partner organizations,  
agencies, institutions  
and groups

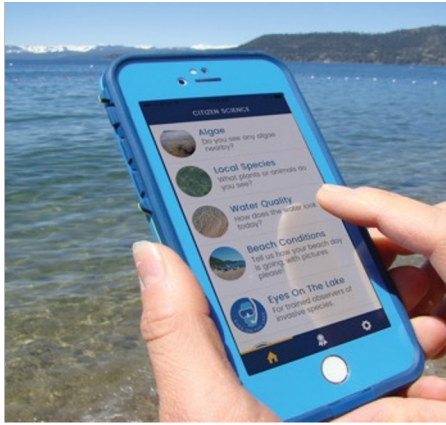
**Large organizational capacity,  
focused on MPAs.**

**impact**



# CCS contributes to all four management pillars





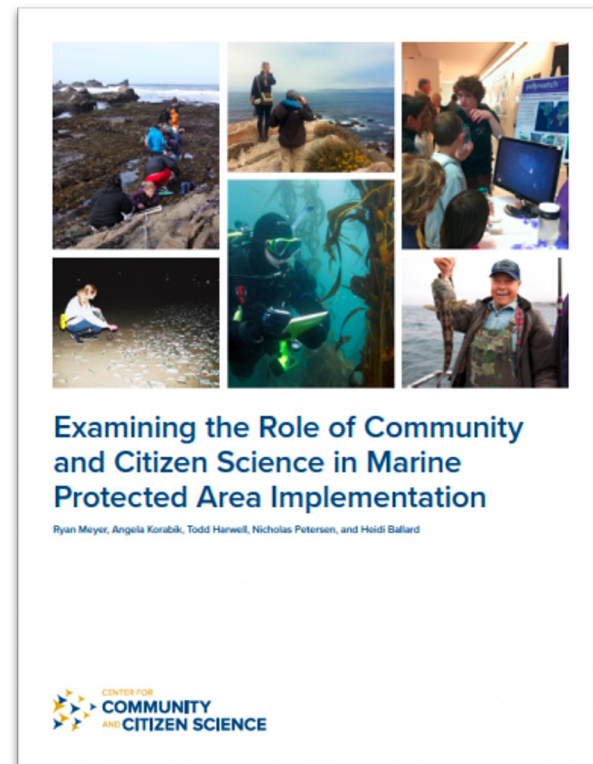
There are over **60**  
additional **CCS** programs  
involved in research and  
monitoring along the  
California coast.

What's the  
opportunity  
here?



# DMR Report: characterizing CCS in MPAs over the last decade

<https://education.ucdavis.edu/post/new-reports-community-and-citizen-science-californias-marine-protected-areas>



# WHERE TO FROM HERE?

How can we sustain/expand this effort, deepen its impact, and leverage past successes as the MPA program evolves?

# Promise and Potential

IN and THROUGH  
CCS...

## Diversity, Equity, Inclusion, Justice, Access

- Expanding who participates (individuals and organizations).
- Critically examining HOW they participate, and could participate.
- How does/could CCS create avenues for not just learning, but agency in MPAs?

# Promise and Potential

Strengthen connection to these CCS participants.

- Feedback loops: What happens to my data? Did I make a difference?
- MPA CCS community – identifying not just with the project, but with the broader MPA effort.
- More dialog between managers and projects to understand needs, opportunities.

# What's needed

## Bridging Function

Better integration with professional monitoring, and with MPA program

## Data about CCS

Who participates and why (or why not?).

Implications for communities, for scientists, for MPAs.

## Targeted CCS Funding

For specific needs of CCS projects and networks

For goals related to JEDI, education, data quality, etc.



# What's needed

See our comment for this week's FGC meeting!

(written jointly with California Academy of Sciences)

Includes:

- Fact sheet about CCS in MPAs
- Overview of DMR recommendations related to CCS







# Thanks!



And thanks to our Funders:



OCEAN  
PROTECTION  
COUNCIL

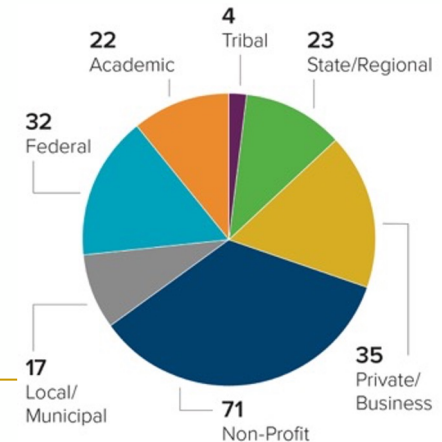
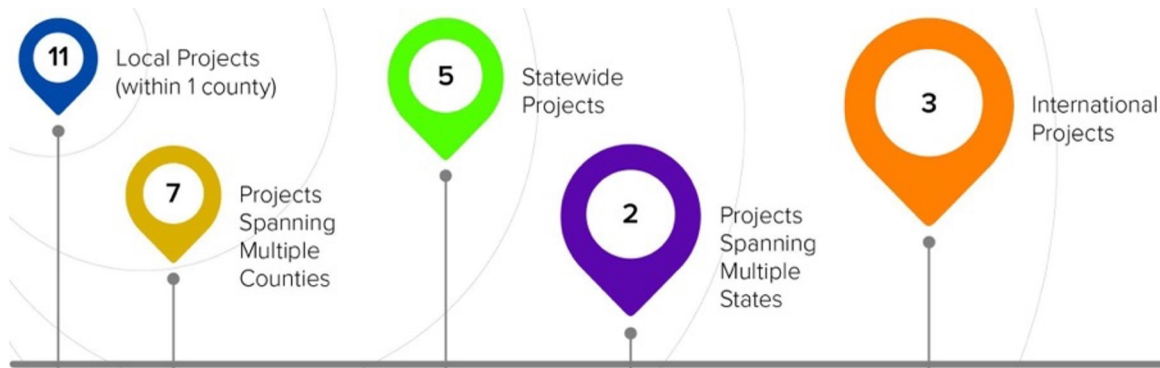


RESOURCES LEGACY FUND®  
CREATIVE SOLUTIONS. LASTING RESULTS.

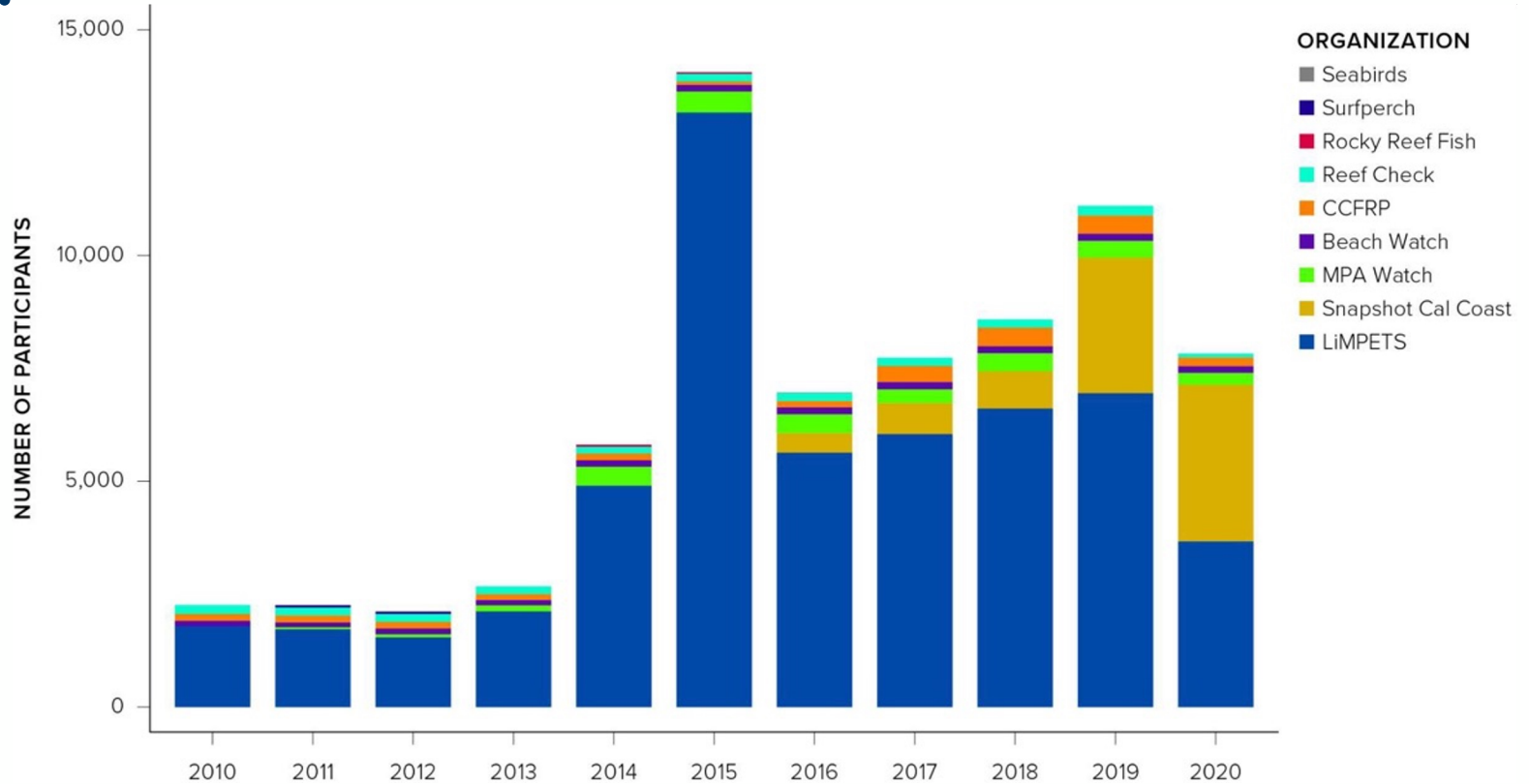
the David &  
Lucile Packard  
FOUNDATION

## Responses to a brief survey completed by 29 projects leaders revealed:

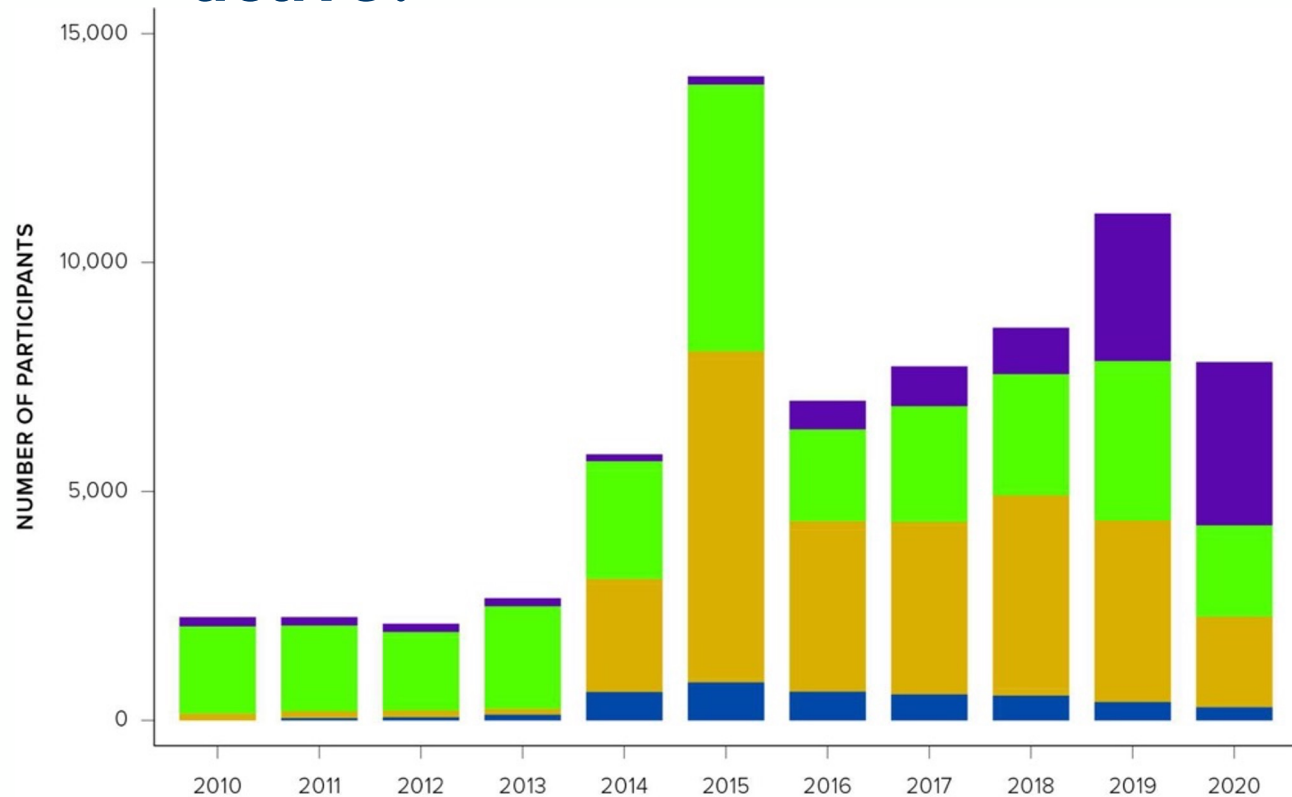
- CCS projects are distributed across all three MPA bioregions.
- These 29 CCS projects engaged over 70,000 individual participants.
- 21 projects planned data collection activities within MPA boundaries.
- Participants from 24 projects engage in MPA education and outreach.
- All 29 projects were active in 2021, and some have been operating for decades.
- These 29 projects involved more than 200 organizational partners and operate across a variety of geographic scopes.



# How many people have participated in State-funded CCS?

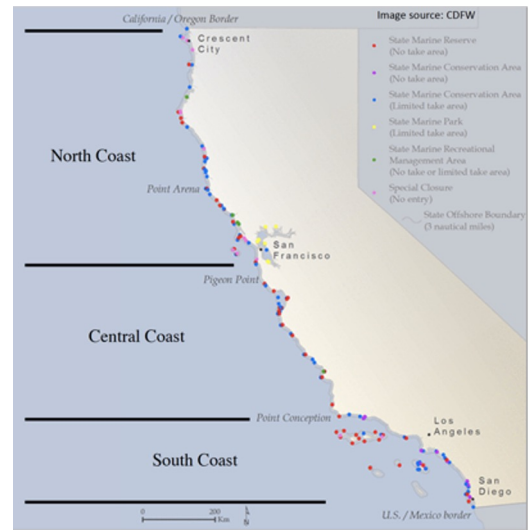


# Where are these State-funded CCS programs active?

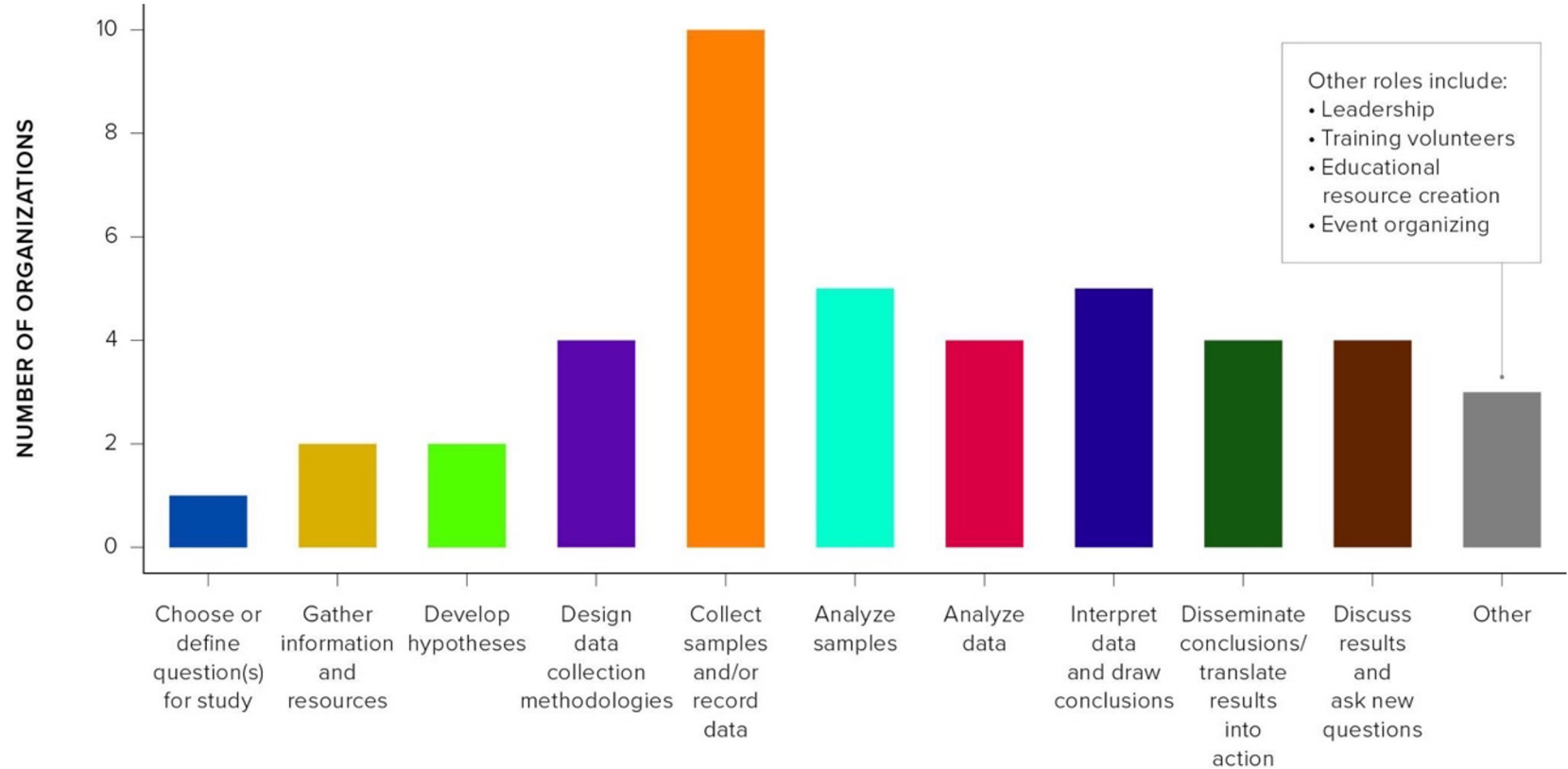


**BIOREGION**

- Statewide
- North Coast
- Central Coast
- South Coast



# How are participants involved in these CCS monitoring efforts?



# Phase 2 Research Questions

1. Impacts of MPA implementation on marine/coastal CCS programs.



1. Closing feedback loops
  - a. MPA Management ↔ CCS Programs
  - b. CCS Programs ↔ Participants



# Additional marine CCS work underway

**California MPAs, Phase 2:** in-depth social science research on feedback loops and policy impacts.

Characterizing CCS in **Oregon** marine reserves.



**MPA Watch data analysis**, and methods support: trends in human activities on the California coast.

**Additional DMR  
Report available**

