



EVALUATING THE EFFECTIVENESS OF MARINE PROTECTED AREA (MPA) EDUCATION & OUTREACH TOOLS

SEPT. 2021 // PREPARED BY THE CALIFORNIA MARINE SANCTUARY FOUNDATION





This project was funded by the Ocean Protection Council.

Since 1995, the California Marine Sanctuary Foundation (CMSF) has worked to protect California's coastal ecosystems while strengthening coastal resilience in the face of population growth, urban and industrial uses, climate change, and resource extraction. Working together with local communities, government agencies, tribal communities, harbors and marinas, and NGOs, we identify and then implement practical and effective solutions to lessen human impacts and increase stewardship of our state's coastal resources. CMSF serves a unique and important niche in California's conservation community by fostering strong public-private partnerships that result in greater impact than going it alone.

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ACKNOWLEDGEMENTS

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EXECUTIVE REPORT



PURPOSE

Over the past decade of implementation of the statewide network of 124 marine protected areas (MPAs), California has prioritized outreach and education, but little has been done to understand the impact of these investments. Despite ten years of funding directed at outreach, a formal evaluation of efficacy has not been conducted.

This study is the first commissioned evaluation to assess the efficacy of select outreach tools for increasing awareness of MPAs among primary coastal user groups. The evaluation results help provide a better understanding of the success of outreach efforts and can be used to inform future outreach endeavors.

This is the first commissioned evaluation to assess the efficacy of select outreach tools for increasing awareness of MPAs among primary coastal user groups.

OBJECTIVES

- Understand the extent to which select outreach tools increase awareness of MPAs among primary coastal user groups.
- Recommend modifications to existing MPA outreach tools.
- Provide guidance for future MPA outreach strategy and content development.
- Inform future funding allocations for MPA education and outreach.
- Develop evaluation metrics for future studies of MPA education and outreach tools.

OVERVIEW

This study utilized mixed-methods to assess the effectiveness of three MPA outreach tools in increasing awareness of California's MPAs among primary coastal user groups.

The outreach tools that were evaluated include: (1) MPA regulatory brochures, (2) MPA PowerPoint training presentations, and (3) a MPA social media campaign (Appendix A, B, C).

Results and recommendations to improve future MPA outreach tools are presented in this report.

OUTREACH TO INCREASE AWARENESS OF MPAS



Investing in education and outreach can improve compliance with conservation initiatives and help manage and change human behaviors and activities (Cornelisse & Duane 2013, Leisher et al. 2012, George & Crooks 2006). While efforts to evaluate impacts of conservation outreach programs through empirical research are lacking, evidence suggests education programs are more impactful and more cost effective than enforcement techniques when it comes to changing awareness, attitudes, and behaviors (Alder 1996, Kleiman et al. 2000).

As such, improving awareness, understanding, and perceptions are imperative to the success of conservation initiatives like California's MPA network.

Since MPA network implementation, partners across the state have conducted outreach, targeting consumptive and non-consumptive users to build awareness of and stewardship for the statewide network. Having an understanding of the benefits, costs, characteristics, and needs of different target audiences will aid decision makers in choosing appropriate communication strategies (Leisher et al. 2012).

With better understanding of the utility of MPA education and outreach tools, adjustments can be made to increase the efficacy of MPA education and outreach moving forward. For specific insight into the potential impact of the different outreach strategies evaluated in this report, please see Appendix D.



KEY FINDINGS & RECOMMENDATIONS

The following pages showcase high level findings and recommendations organized by outreach tool and audience type. For detailed methods and results, please see the following sections.

Impact of Regulatory Brochures on Awareness of MPAs

Recreational Anglers

Increasing Understanding of MPAs

44%



said the brochure is 'extremely' to 'very' useful



Most Useful Brochure Components

- QR code linking to further information
- Functionality as a quick reference guide
- Regulations readily available



Least Useful Brochure Components

- Too much text
- Complex regulatory terms
- Lack of specific information about different forms of fishing

To assess the urgency of updating brochures, anglers were asked about their existing knowledge of MPAs.

MPA Regulations



84%

'somewhat' to 'strongly' agree they know local MPA regulations

MPA Boundaries



96%

'somewhat' to 'strongly' agree they know how to find local MPA boundaries

Recommendations for Future Improvement

Include 'easier' mechanism for MPA boundary identification

Simplify regulatory language

Include icons on map indicating take restrictions

Add local science findings

Impact of Regulatory Brochures on Awareness of MPAs

Non-Consumptive Ocean Recreationists

Increasing Understanding of MPAs



said the brochure is
'extremely' to
'very' useful



Most Useful Brochure Components

- Color-coded map
- Clearly stated regulations in one location



Least Useful Brochure Components

- Too much information in one place

To assess the urgency of updating brochures, ocean recreationists were asked about their existing knowledge of MPAs.

MPA Regulations



75%

'somewhat' to 'strongly'
agree they know local
MPA regulations

MPA Boundaries



82%

'somewhat' to
'strongly' agree they
know how to find local
MPA boundaries

Recommendations for Future Improvement

Reduce overall
amount of text

Increase size
of text

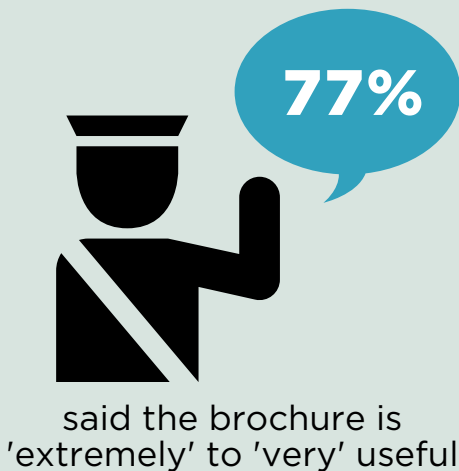
Replace
regulatory text
with interpretive
messaging

Use existing
interpretive
brochures as a
template

Impact of Regulatory Brochures on Awareness of MPAs

Enforcement Officials

Increasing Understanding of MPAs



Most Useful Brochure Components

- Detailed rules & regulations
- Map with GPS coordinates



Least Useful Brochure Components

- Repetitive text

To assess the urgency of updating brochures, anglers were asked about their existing knowledge of MPAs.

MPA Regulations



77%

'somewhat' to 'strongly' agree they know local MPA regulations

MPA Boundaries



78%

'somewhat' to 'strongly' agree they know how to find MPA boundaries

Those who expressed a lack of confidence in their knowledge of regulations and boundaries were queried about what impacts their knowledge. A majority credited it to being responsible for enforcing such a large array of regulations and emphasized that they know how to access the regulations when needed.

Recommendations for Future Improvement

Include 'easier' mechanism for MPA boundary identification

Include additional code violation information

Impact of Presentations on Awareness of MPAs

Recreational Anglers

Increasing Understanding of MPAs



75%

said the presentation is 'extremely' to 'very' useful for increasing understanding of MPAs

Finding Additional Information



93%

said the presentation was helpful for directing them to additional information



Most Useful Training Components

- MPA science information
- Locally specific MPA details

MPA Regulations



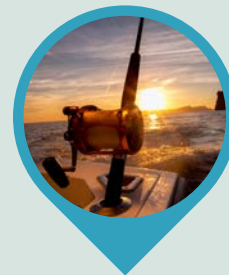
39%

are 'extremely confident' to 'very confident' in their knowledge of MPA regulations

55%

are 'moderately' to 'slightly confident'

MPA Boundaries



40%

are 'extremely confident' to 'very confident' that they know how to find local MPA boundaries

50%

are 'moderately' to 'slightly confident'

Recommendations for Future Improvement

Addition of scientific findings from local MPAs

Inclusion of information on potential climate change impacts to MPAs

Impact of Presentations on Awareness of MPAs

Non-Consumptive Ocean Recreationists

Increasing Understanding of MPAs



said the presentation is 'extremely' to 'very' useful for increasing understanding of MPAs



Most Useful Training Components

- Detailed MPA specific information
- Explanation of MPA network scale and size

Finding Additional Information



90%

said the presentation was helpful for directing them to additional information

MPA Regulations



23% are 'extremely confident' to 'very confident' in their knowledge of MPA regulations.

64% are 'moderately' to 'slightly confident'

MPA Boundaries



19% are 'extremely confident' to 'very confident' that they know how to find local MPA boundaries

64% are 'moderately' to 'slightly confident'

Recommendations for Future Improvement

Add details specific to local MPAs

Science results

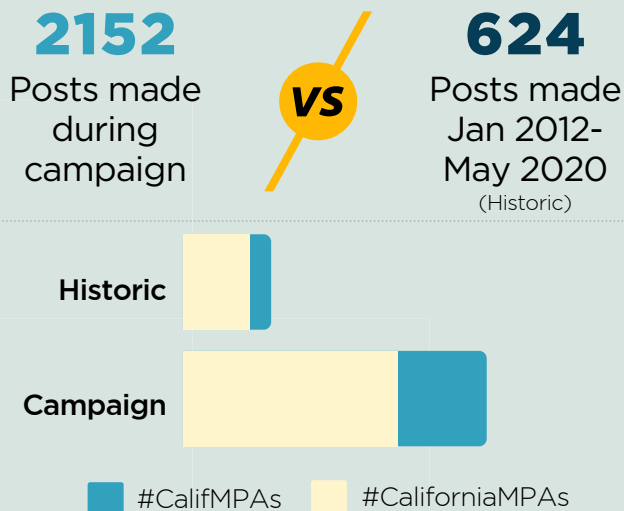
Historical uses

Detailed use maps

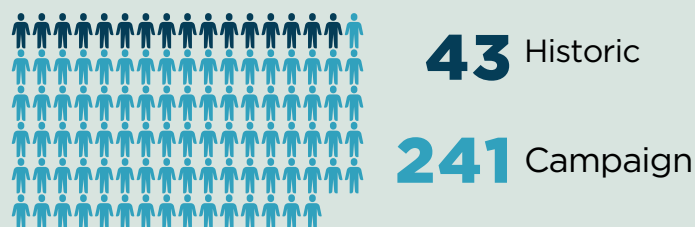
Impact of the MPA Social Media Campaign

June 2020- May 2021

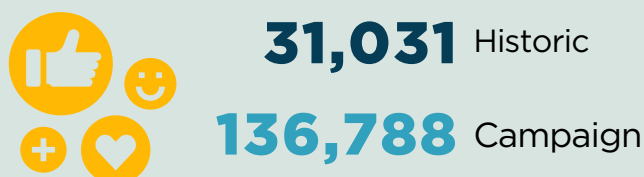
Campaign Hashtag Use



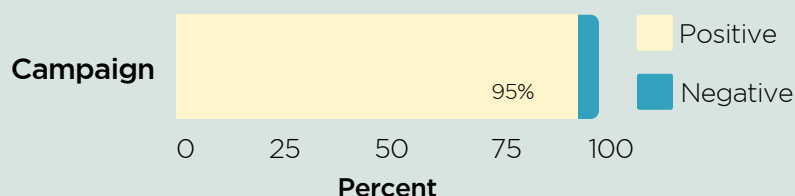
Number of Hashtag Users



Engagement (Likes, comments & shares)



Sentiment of Post Captions



Reach

639,219 unique viewers of content



Impressions



2,697,387 total content views

Recommendations for Future Improvement

Use one hashtag:

#CalifMPAs

Share eye-catching photos & videos

Continue public engagement campaign

Provide curated content for partners

RECOMMENDATIONS

Improving MPA Outreach Tools

Recommendations for improving the evaluated MPA education and outreach tools are presented below. These suggested recommendations are presented to inform modifications to existing materials, as well as the development of new materials, to improve communications with various coastal user groups.

MPA REGULATORY BROCHURES

Audience	Top Recommendations
Recreational Anglers	<ul style="list-style-type: none"> • Increase MPA boundary clarity through zoomed in maps and images that show easily identifiable landmarks to facilitate boundary identification without a GPS. • Simplify regulatory language so that it is easier to understand • Include “at-a-glance” icons that indicate differences in take allowances, especially for SMCAs. • Include locally relevant science including research findings from local MPAs, especially as they pertain to fishery stocks and habitat health.
Ocean Recreationists	<ul style="list-style-type: none"> • Replace regulatory text with interpretive messaging. • Reduce the amount of text and increase text size to make it easier to read.
Enforcement Officials	<ul style="list-style-type: none"> • Increase MPA boundary clarity through images or descriptions of easily identifiable landmarks to facilitate boundary identification. • Include additional code violation information specific to MPAs and fishery regulations.

MPA POWERPOINT PRESENTATION

Audience	Top Recommendations
Recreational Anglers	<ul style="list-style-type: none"> • Include relevant science and research findings from local MPAs • Include information about the anticipated impacts of climate change on California’s coastal habitats and species, and the implications this may have for the MPA network.
Recreational Anglers	<ul style="list-style-type: none"> • Include MPA specific details like history, science, coastal access points, and permitted and popular activities for each MPA referenced.

RECOMMENDATIONS

Improving MPA Outreach Tools Continued

MPA SOCIAL MEDIA CAMPAIGN

Top Recommendations

- Use the hashtag “#CalifMPAs” when posting MPA content.
- Content should include photos or videos.
- Continue an organized public engagement campaign to continue momentum and elevate the conversation about MPAs.
- Provide curated content for partners to use on their social media channels.



MPA REGULATORY BROCHURES



TOOL DESCRIPTION

The California Department of Fish & Wildlife (CDFW) and the Ocean Protection Council (OPC) routinely direct funding for printing and distribution of brochures containing MPA boundary coordinates and regulations, but there has been no evaluation of their efficacy for increasing understanding of the MPA network (Appendix A). Evaluation of this resource will improve the resource and inform the development of future materials.

EVALUATION METHODS

Sampling Methods

The effectiveness of MPA regulatory fishing brochures was evaluated among recreational anglers, non-consumptive ocean recreation users, and enforcement officials using surveys and interviews. Recreational anglers and non-consumptive ocean recreationists were selected since poorly designed outreach materials may contribute to non-compliance. Enforcement officials were selected since they are the primary communicators and sole enforcers of rules and regulations.

The questionnaires contained quantitative and qualitative questions. Specifically, online surveys were utilized to target anglers and ocean recreation users. Because of the difficulty associated with compiling a list of all non-consumptive ocean recreationists and recreational anglers, owners and staff from ocean recreation businesses, charter companies, and bait and tackle shops were used as a proxy; though they are likely to have better knowledge of the MPA network than their clientele (Table 1). CMSF used an existing comprehensive database of locations and owners. The sample was stratified into homogeneous groups based on business type and randomly sampled. Surveys were developed in Qualtrics and distributed via email to participants. Pilot interviews with key stakeholders from each audience were conducted in advance to refine the research instruments.

Enforcement officials were surveyed using structured interviews to discuss perceived effectiveness of brochures. This method was recommended by enforcement experts as the most appropriate for connecting with officials who often spend a majority of their workdays away from a computer. All interviews were held via telephone or Zoom. To acquire the sample pool, a list of enforcement officials with MPA enforcement jurisdiction was compiled. Agency affiliations (CDFW, CA State Parks officials, lifeguards, etc.) were separated into groups to sample adequately within each agency.

Data Analysis Methods

Quantitative results were analyzed using descriptive statistics, providing simple summaries about the data collected. Qualitative questions acquired information that quantitative questions did not capture. Qualitative data were analyzed using a thematic analysis, a method for identifying, analyzing, and interpreting patterns using coding categories (Creswell & Poth 2018). Common themes were identified from conversations with individuals from the three different target audiences.

Covid Implications

Due to Covid-19, in-person interactions were not feasible. Prior to restrictions, in-person data collection was planned, but was limited to a single county for logistical and cost purposes. The switch to remote surveys and interviews facilitated data collection in all coastal California counties.

Table 1. Breakdown of the audiences targeted for the brochure study.

Recreational Anglers

- Pier Anglers
- Shore Anglers
- Boat Anglers
- Kayak Anglers
- Spear Fishers
- Charter Fleets
- Bait & Tackle Shops

Non-Consumptive Ocean Recreationists

- Paddle Sports
- SCUBA
- Snorkeling
- Wildlife watching charters
- Tidepooling/Beachcombing
- Interpretive docents & volunteers
- Museums & aquaria

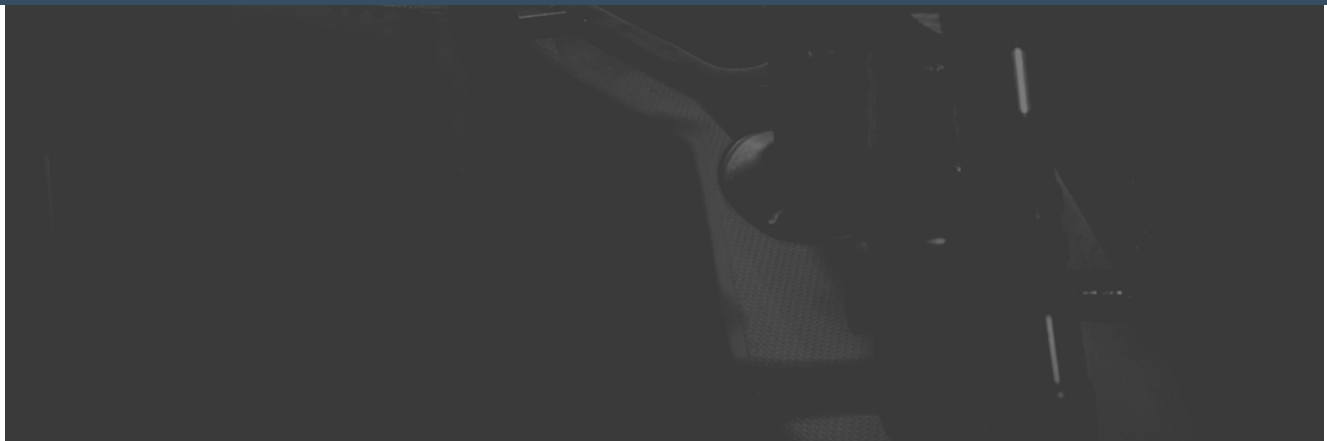
Enforcement Officials

- CDFW
- State Parks
- National Parks Service
- Lifeguards
- Coast Guard
- Local police
- Marinas & port commissions



RECREATIONAL ANGLERS

KEY FINDINGS & RECOMMENDATIONS



FINDINGS

Improving MPA Brochures for Recreational Anglers

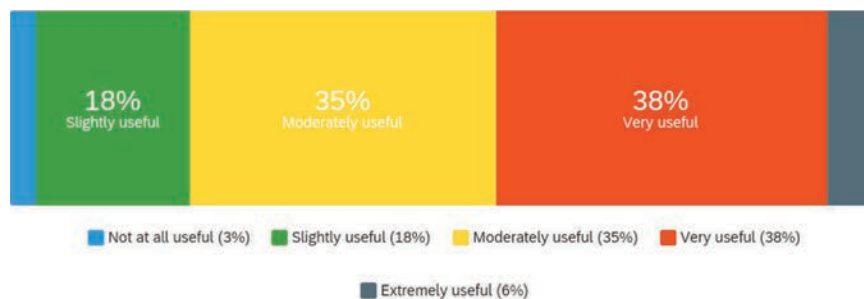
Response Rate

Of 115 recreational anglers randomly selected to participate, 46 completed the survey for a response rate of 40%.

Usefulness of the Regulatory Brochure

Anglers were asked to rate the brochure's usefulness for increasing their understanding of MPA rules and regulations.

44% indicated the brochure is "extremely useful" to "very useful". 53% indicated the brochure is "moderately useful" to "slightly useful", and 3% indicated the brochure is "not at all useful".



Most and Least Useful Brochure Components

Anglers were asked to describe which brochure components were most useful and least useful for increasing their understanding of MPA rules and regulations.

Most useful:

- QR code linking to further information
- Functionality as a quick reference guide
- Regulations readily accessible

Least useful:

- Overwhelming detail and overall amount of text
- Complex regulatory terms
- Lack of specific information that pertains to different forms of fishing

Knowledge of MPA Regulations and Boundaries

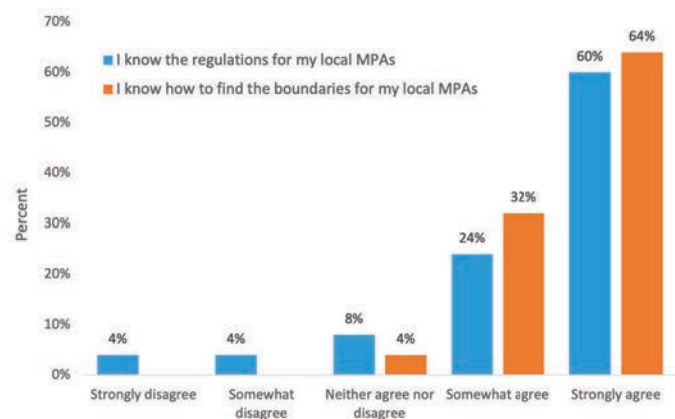
Anglers were asked about their knowledge of MPA regulations and boundaries.

Regulations:

84% indicated that they "somewhat" to "strongly agree" they know the regulations for their local MPAs, while 8% indicated that they "somewhat disagree" to "strongly disagree".

Boundaries:

96% indicated they "somewhat agree" to "strongly agree" they know how to find their local MPA boundaries.

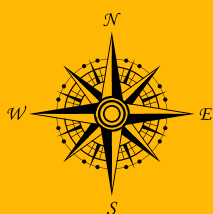


*Because we surveyed the owners and staff of fishing related businesses, it is likely they have a higher level of knowledge of the MPA network.

RECOMMENDATIONS

Improving MPA Brochures for Recreational Anglers

As consumptive users of the marine environment, it is crucial recreational anglers are aware of MPA regulations, and remain a high priority target for MPA outreach. Just under half of the anglers indicated the regulatory brochure was useful, indicating that improvements could be made to satisfy the needs of the angling community. Recommendations include making MPA boundaries more clear, explaining regulatory details in simple, less complex terms, and adding MPA science findings.



**An easier way
to locate MPA
boundaries**



**Simplified
regulatory
language**



**Locally
relevant
science**

Boundary Clarity:

Anglers requested an easier way to locate MPA boundaries. The available brochure only lists GPS coordinates for boundary lines. Without a handheld GPS, it is not possible to know exact MPA boundaries. Anglers suggested creating “zoomed in” MPA maps and images that show easily identifiable landmarks to facilitate boundary identification for those without GPS.

Simplified Regulatory Language:

Simplified Regulations: Remarking that regulatory information is often complicated, easy to understand regulations for compliance was recommended. Specifically, easy to see “at a glance” icons that indicate what type of take is allowed in State Marine Conservation Areas (SMCA) was requested as rules differ for each SMCA.

Locally Relevant Science:

Anglers requested inclusion of relevant science findings from local MPAs, especially as they pertain to fishery stocks and habitat health.



NON-CONSUMPTIVE OCEAN RECREATIONISTS

KEY FINDINGS & RECOMMENDATIONS

FINDINGS

Improving MPA Brochures for Ocean Recreationists

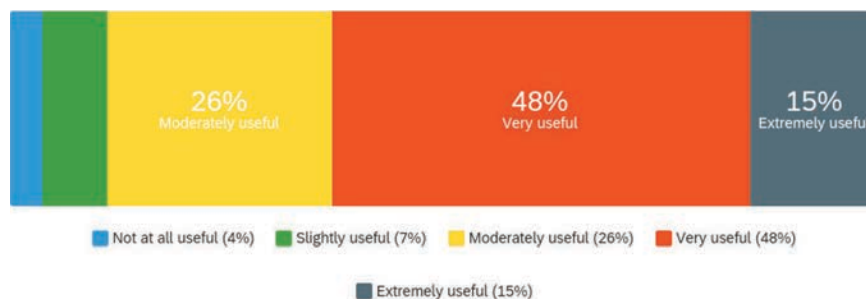
Response Rate

Of 124 ocean recreationists randomly selected to participate in the study, 53 respondents completed the survey for a response rate of 43%.

Usefulness of the Regulatory Brochure

Ocean recreationists were asked to rate the brochure's usefulness for increasing understanding of MPA rules and regulations.

63% indicated the brochure was "extremely useful" to "very useful", 33% specified the brochure was "moderately useful" to "slightly useful", and 4% stated the brochure was "not at all useful".



Most and Least Useful Brochure Components

Ocean recreationists were asked to describe which brochure components are most and least useful for increasing understanding of MPA rules and regulations.

Most useful:

- Color-coded map
- Clearly stated regulations

Least useful:

- Too much information in one place

Knowledge of MPA Regulations and Boundaries

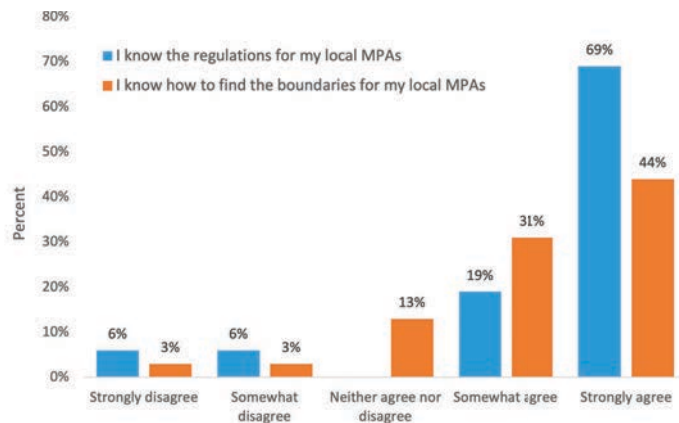
Ocean recreationists were asked about their knowledge of MPA regulations and boundaries.

Regulations:

75% indicated that they "somewhat agree" to "strongly agree" that they know rules and regulations for local MPAs, while 12% indicated that they "somewhat disagree" to "strongly disagree" they know rules and regulations.

Boundaries:

82% indicated they "somewhat agree" to "strongly agree" they know how to find local MPA boundaries.



*Because we surveyed the owners and staff of fishing related businesses, it is likely they have a higher level of knowledge of the MPA network.

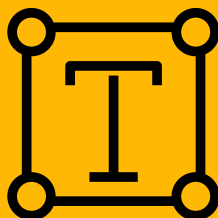
RECOMMENDATIONS

Improving MPA Brochures for Ocean Recreationists

A large majority of ocean recreationists were confident in their knowledge of MPA boundaries, but offered recommendations for improvements. Common suggestions for brochure improvements were oriented toward the design rather than content. The most common suggestions include:



**Reduce
amount of
text**



**Increase
Text Size**



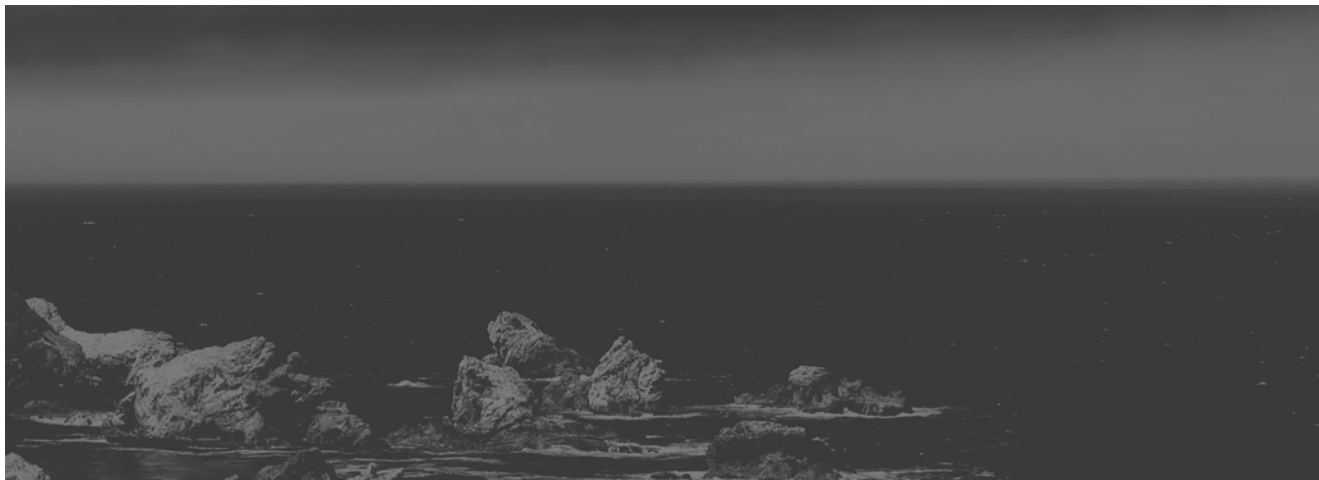
**Increase
interpretive
messaging**

Reduce the amount of text and increase text size to make it easier to read.

Current brochures are very text heavy. Non-consumptive ocean recreationists requested a reduction in the amount of text and subsequent increase in font size for ease of reading.

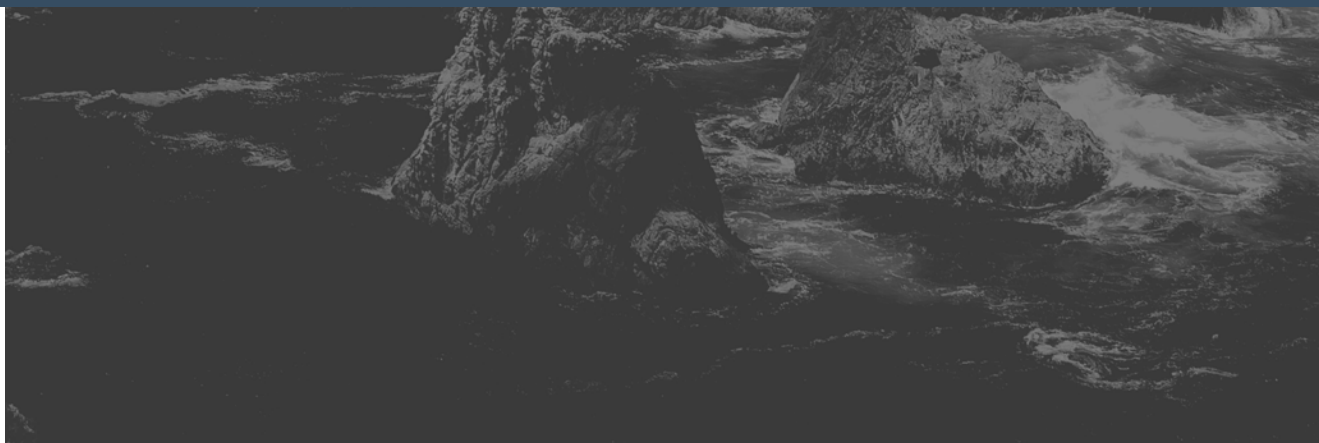
Replace regulatory text with interpretive messaging.

Respondents suggested elimination of regulatory text that is often not relevant to non-consumptive users. This would allow space for additional interpretive messaging to connect users to MPAs and instill a sense of place. It is very likely the interpretive brochure previously developed for MPAs along the central coast would be a better fit for this user group.



ENFORCEMENT OFFICIALS

KEY FINDINGS & RECOMMENDATIONS



FINDINGS

Improving MPA Brochures for Enforcement Officials

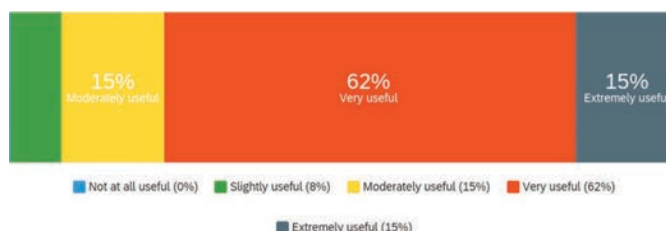
Response Rate

21 of 28 enforcement officials queried agreed to participate, with a response rate of 75%.

Usefulness of the Regulatory Brochure

Enforcement officials were asked to rate the brochure's usefulness for increasing their understanding of regulations.

77% of enforcement officials indicated the brochure was "extremely useful" to "very useful", and 23% indicated the brochure was "moderately useful" to "slightly useful". No one indicated the brochure was "not at all useful".



Most and Least Useful Brochure Components

Enforcement officials were asked to describe which brochure components were most useful and least useful for increasing their understanding of MPA rules and regulations.

Most useful:

- Detailed rules and regulations
- Map showing GPS coordinates

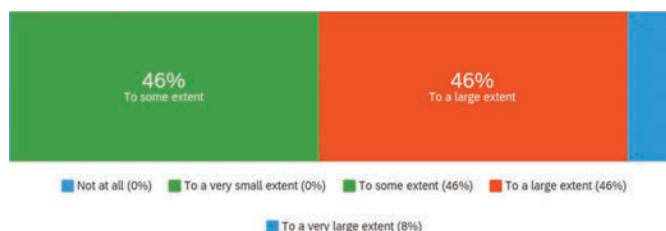
Least useful:

- Repetitive text

Meeting Enforcement Needs

Enforcement officials were asked about the brochure's utility for serving their enforcement needs.

8% indicated the brochure meets their needs "to a very large extent", and 46% indicated it meets their needs "to a large extent". 46% indicated the brochure meets their needs "to some extent".



Knowledge of MPA Regulations and Boundaries

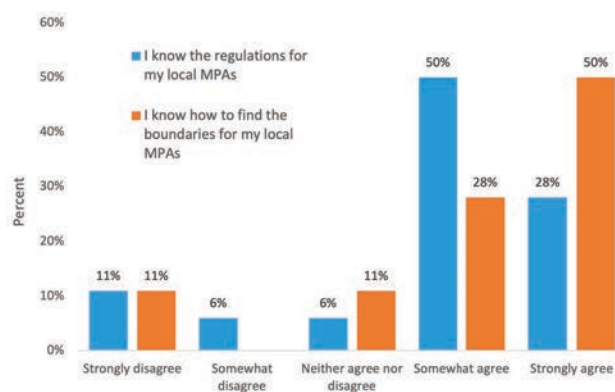
Enforcement officials were asked about their knowledge of MPA regulations and boundaries.

Regulations:

78% indicated they "strongly agree" to "somewhat agree" they know the regulation, while 17% indicated they "somewhat disagree" to "strongly disagree" that they know the regulations.

Boundaries:

78% indicated they "strongly agree" to "somewhat agree" they know how to find MPA boundaries, and 11% indicate they are unaware of how to find MPA boundaries.



*As a follow up, the 16% of enforcement officials who expressed a lack of confidence in their knowledge of MPA regulations were asked about what is impacting their knowledge of regulations. A majority credited it to being responsible for enforcing such a large array of regulations (whether split between land and sea or large geographic areas), and emphasized that they know how to access the regulations when needed.

RECOMMENDATIONS

Improving MPA Brochures for Enforcement Officials

As the enforcers of MPA rules and regulations, enforcement officials' responses differed considerably from anglers and non-consumptive ocean recreationists. Enforcement officials are more familiar with technical regulatory language and were less concerned with what the angling community viewed as complicated language. Specific recommendations for improving the brochure include a mechanism for increased boundary clarity and the inclusion of additional code violation information.



**Increased
Boundary
Clarity**



**Code Violation
Information
Inclusion**

Increased Boundary Clarity:

One suggestion for improvement includes the addition of images or descriptions of landmarks to help identify MPA boundary locations in the absence of GPS.

Inclusion of Code Violation Information:

The addition of specific MPA code violation information was recommended. Additionally, code violation information specific to topics such as fisheries was requested since officials enforce a wide range of regulations beyond the MPA network.

MPA POWERPOINT PRESENTATIONS



TOOL DESCRIPTION

In 2019, OPC funded the development of scripted MPA PowerPoint presentations for each coastal county, with one version targeting anglers and the other targeting non-consumptive ocean recreation users (Appendix B). Content includes a background of the MPA network, MPA science, local species facts, and information about local MPAs including regulatory information. In many cases, these presentations are delivered annually to ocean recreation and fishing businesses to account for high staff turnover, yet there has been no evaluation of the efficiency of these presentations for increasing awareness of the MPA network. Evaluating the efficacy of the presentations offers a chance to expose gaps in material showcased and identify content that contributes to increased understanding of MPAs to improve future outreach efforts.

EVALUATION METHODS

Sampling Methods

To evaluate the efficacy of MPA PowerPoint presentations in increasing awareness of MPAs, surveys hosted in Qualtrics were utilized. Eight training sessions were hosted (5 targeting recreational anglers in San Diego, Orange, Los Angeles, Santa Barbara, and Humboldt counties and 3 targeting non-consumptive ocean recreation users in Monterey, San Luis Obispo, and Santa Barbara counties). Due to Covid-19, presentations were hosted virtually using Zoom Webinar, and advertised through social media platforms and CMSF's comprehensive listserv of ocean recreation businesses owners, charter company owners, bait and tackle shop owners, waterfront outlets, and rental companies among many others (Table 2). The survey contained quantitative and qualitative questions and was distributed to all attendees subsequent to the presentation.

Data Analysis Methods

Quantitative results were analyzed using descriptive statistics, which provide simple summaries about the data collected. Qualitative questions acquire information that quantitative questions do not capture. Qualitative results were analyzed using a thematic analysis, a method for identifying, analyzing, and interpreting patterns from qualitative data sets through the use of coding categories (Creswell & Poth 2018).

Covid Implications

PowerPoint presentations were originally planned to be hosted as in-person events, using pre-and post- questionnaires as a mechanism for assessing the training efficacy. Instead, the presentations were given using Zoom Webinar and only post-survey questionnaires were utilized. Overall, this tactic resulted in a noteworthy increase in the number of training attendees, thereby greatly increasing the response rate as well.

Table 2. Breakdown of Preferred Angling Types and Ocean Recreation Activities

Recreational Angler Preferred Fishing Types

- Pier
- Shore
- Surf
- Sport boat
- Private boat
- Spearfish
- Kayak

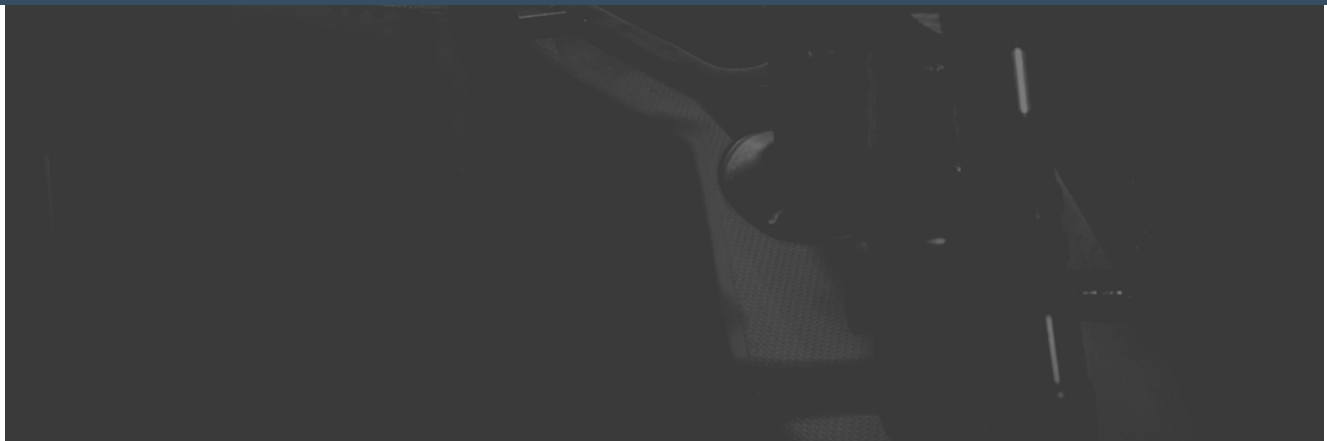
Ocean Recreationist Preferred Activities

- Paddle sports
- SCUBA diving
- Snorkeling
- Wildlife watching
- Tidepooling
- Beachcombing
- Relaxing
- Exercising
- Kayaking
- Boating/Sailing



RECREATIONAL ANGLERS

KEY FINDINGS & RECOMMENDATIONS



FINDINGS

Improving MPA PowerPoints for Recreational Anglers

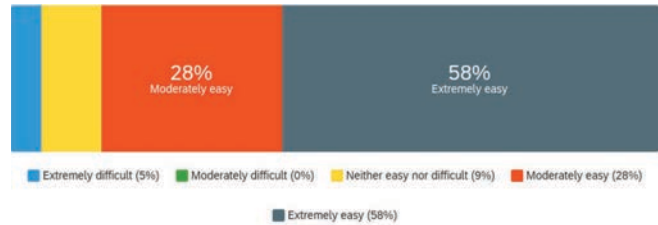
Response Rate

77 recreational anglers attended trainings, with 53 completing the survey for a response rate of 69%.

Presentation's Ease of Understanding

Anglers were asked to rate the ease of understanding the presentation.

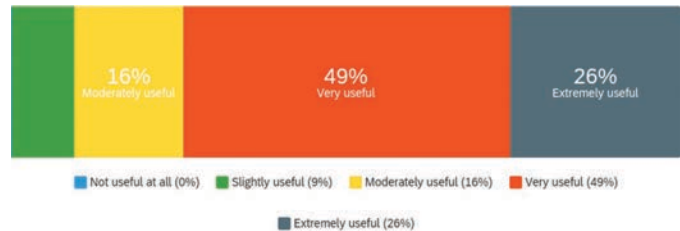
86% noted the presentation was “moderately” to “extremely easy” to understand, and 5% indicated the presentation was “extremely difficult” to understand.



Usefulness of the Presentation- Increasing Understanding of MPAs

Anglers were asked to rate the presentation's usefulness for increasing their understanding of MPA regulations.

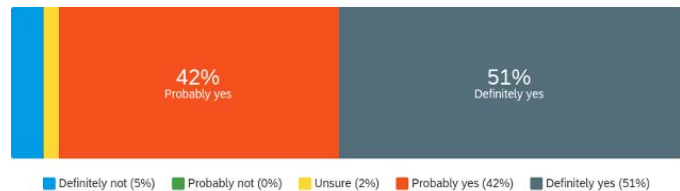
75% noted the presentation was “very useful” to “extremely useful”, and 25% felt it was “moderately” to “slightly” useful.



Usefulness of the Presentation- Finding Additional Information

Anglers were asked to rate the presentation's usefulness for increasing understanding of where to find more information about California's MPAs.

93% specified the presentation was “definitely” or “probably” helpful for directing them to additional information.



Knowledge of MPA Regulations and Boundaries

Recreational anglers were asked about their knowledge of MPA regulations and boundaries.

Regulations:

39% indicated they are “extremely confident” to “very confident” in their understanding of local MPA regulations, 55% are “moderately” to “slightly confident” and 5% are “not at all confident”.

Boundaries:

40% are “extremely confident” to “very confident” that they know how to find their local MPA boundaries, over 50% are “moderately” to “slightly confident”, and 7% are “not at all confident”.

Most Useful PowerPoint Components

Anglers were asked to describe what presentation components were most useful for increasing their understanding of MPA regulations.

Most Useful:

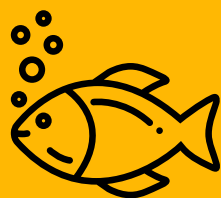
- MPA science information
- Locally specific MPA details

RECOMMENDATIONS

Improving MPA PowerPoints for Recreational Anglers

Few anglers are extremely confident in their knowledge of local MPA regulations and boundaries. These findings suggest angler-specific targeted outreach and education is critical to increase MPA awareness. CMSF recommends considerable effort be allocated to continue delivery of trainings to this critical audience. Specific recommendations for improving the presentation include the addition of science findings from local MPAs and additional information about the potential impacts of climate change on MPAs.

Few anglers are extremely confident in their knowledge of local MPA regulations and boundaries.



**Locally
relevant
science**



**Climate Change
Impacts & MPAs
Information**

Local MPA Science:

The most common request was for the addition of scientific findings from local MPAs. While presentations delivered included network-wide scientific findings, incorporating scientific findings from local MPAs may help increase support and stewardship among recreational anglers. Presentations including summaries of results from scientific research conducted in local MPAs may increase support and stewardship among recreational anglers.

Climate Change Impacts & MPAs:

Anglers requested inclusion of information on potential climate change impacts to MPAs locally and network-wide. Anglers are invested in the long term sustainability of marine resources, and have expressed interest in understanding how MPAs may be impacted by climate change and how, in-turn, MPAs may improve conditions caused by a changing climate.



NON-CONSUMPTIVE OCEAN RECREATIONISTS

KEY FINDINGS & RECOMMENDATIONS

FINDINGS

Improving MPA PowerPoints for Ocean Recreationists

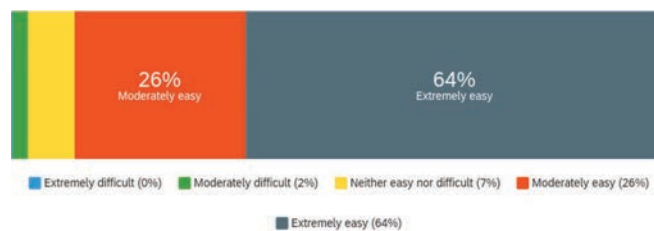
Response Rate

Of 134 ocean recreationists randomly selected, 67 completed the survey for a response rate of 50%.

Presentation's Ease of Understanding

Ocean recreationists were asked to rate the ease of understanding the presentation.

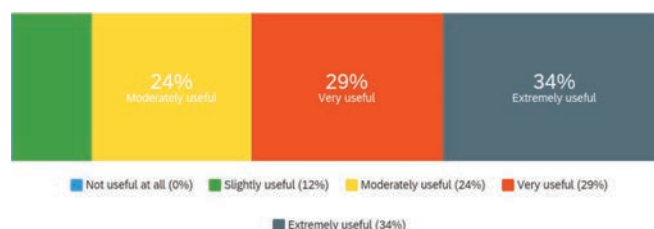
90% felt the presentation is “moderately easy” to “extremely easy” to understand and 2% felt “moderately difficult” to understand.



Usefulness of the Presentation- Increasing Understanding of MPAs

Ocean recreationists were asked to rate the presentation's usefulness for increasing their understanding of MPA regulations.

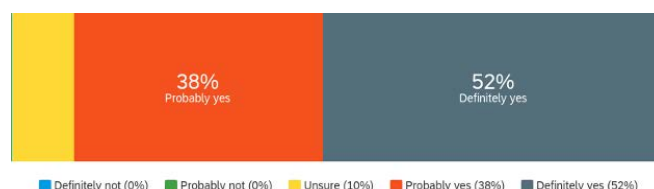
63% indicate the presentation is “very useful” to “extremely useful”, while 36% note it is “moderately” to “slightly useful” for increasing understanding of MPAs.



Usefulness of the Presentation- Finding Additional Information

Ocean recreationists were asked to rate the presentation's usefulness for increasing understanding of where to find more information about California's MPAs.

90% note the presentation was “definitely” or “probably” helpful for directing them to additional information.



Knowledge of MPA Regulations and Boundaries

Ocean recreationists were asked about their knowledge of MPA regulations and boundaries.

Regulations:

23% state they are “extremely confident” to “very confident” in their knowledge of local MPA regulations, 64% are “moderately” to “slightly confident”, and 11% indicated they are “not at all confident”.

Boundaries:

19% are “extremely confident” to “very confident” that they know how to find the boundaries for local MPAs, 64% are “moderately” to “slightly confident”, and 16% are “not at all confident”.

Most Useful PowerPoint Components

Ocean recreationists were asked to describe what presentation components were most useful for increasing understanding of MPA regulations.

Most Useful:

- Detailed, local MPA specific information
- Explanation of MPA network scale and size

RECOMMENDATIONS

Improving MPA PowerPoints for Ocean Recreationists

Non-consumptive ocean recreationists expressed low confidence in their knowledge of local MPA regulations and boundary locations. This presents an opportunity for continued and expanded outreach. While extractive activities are less common among these users, they still have the potential to affect the ecosystem if they are unaware of MPA rules. With increased confidence in MPA knowledge, this user group has the potential to act as stewards of the network, educating others on regulations. Presentation attendees also came away with knowledge of additional MPA resources, enabling them to find supplemental information on MPAs of interest. The most common suggestion for improvement was for the inclusion of additional information specific to individual local MPAs.



**Add details
Specific to
Local MPAs**

**Science
Results**

**Detailed
Use Maps**

**Historical
uses**

Additional Details Specific to Local MPAs:

Ocean recreationists are interested in additional details about local MPAs such as historical uses, results from scientific studies conducted within local MPA boundaries, and more detailed MPA maps showing access points and popular ocean recreation destinations.

MPA SOCIAL MEDIA CAMPAIGN



TOOL DESCRIPTION

Social media is a low cost and impactful communication tool capable of reaching a broad variety of audiences. CMSF designed and implemented a social media campaign from June 2020 through May 2021 to raise awareness about the statewide MPA network ahead of the decadal review in 2022 (Appendix C). The year-long campaign elevated conversations about MPAs through the use of two hashtags- #CalifMPAs and #CaliforniaMPAs. Curated social media content including photos and suggested captions was distributed to partners to bolster campaign impact. Weekly posts on the CMSF social media channels were boosted to reach visitors and residents of California with coastal and marine interests. While social media presents a low cost opportunity to reach diverse audiences, the impact of MPA messaging on social media was unknown, so CMSF tracked social media analytics to assess overall efficacy of the campaign.

EVALUATION METHODS

Sampling Methods

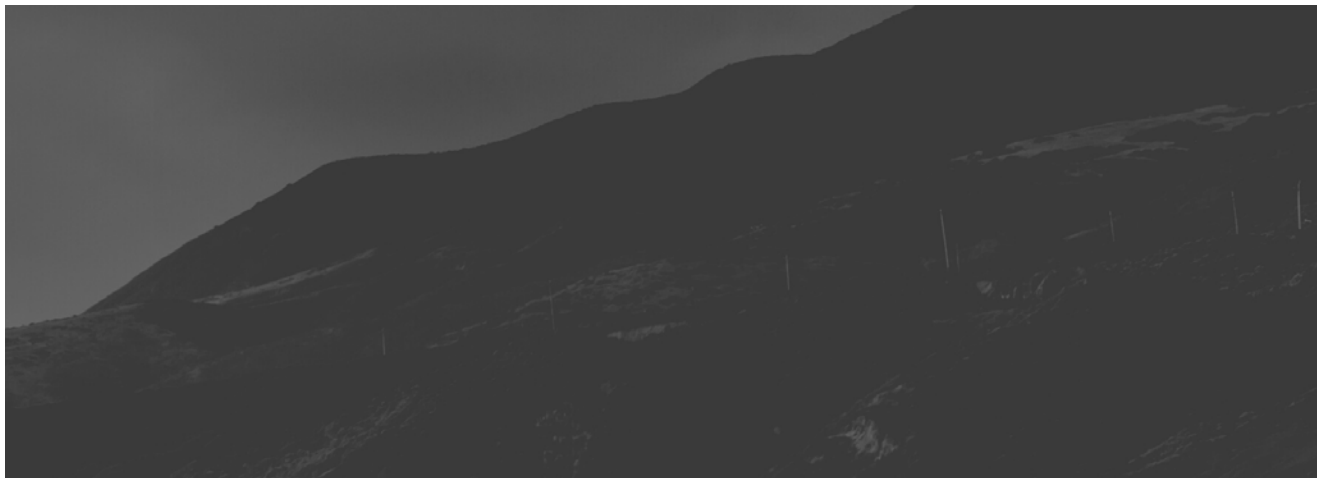
To evaluate the effectiveness of the MPA social media campaign, historical data and social media analytics from Keyhole, an analytic program, were utilized. Instagram and Facebook were the focal platforms for analysis, and two hashtags (#CalifMPAs and #CaliforniaMPAs) were tracked to assess the number of posts and associated reach and interactions. Historical data, compiled to compare past trends with current campaign success, was collected from MPA network completion in 2012 until May 2020, before the start of the social media campaign. Since privacy laws prohibit data access through analytics programs such as Keyhole, historical data was compiled by hand. This required searching the campaign hashtags on each platform, and collecting information on the number of likes, comments, shares and sentiment for each post before May 2020.

Data Analysis Methods

Results were analyzed using descriptive statistics and sentiment analysis, which measures the sentiment of post captions as positive or negative. Analytical data were compared with historical data. Specific metrics compared include number of posts, engagement (likes, comments, shares), and sentiment. Additionally, Keyhole provides insight into the reach (number of unique users who have seen content) and impressions (the number of times users have seen the content) associated with each of the hashtags.

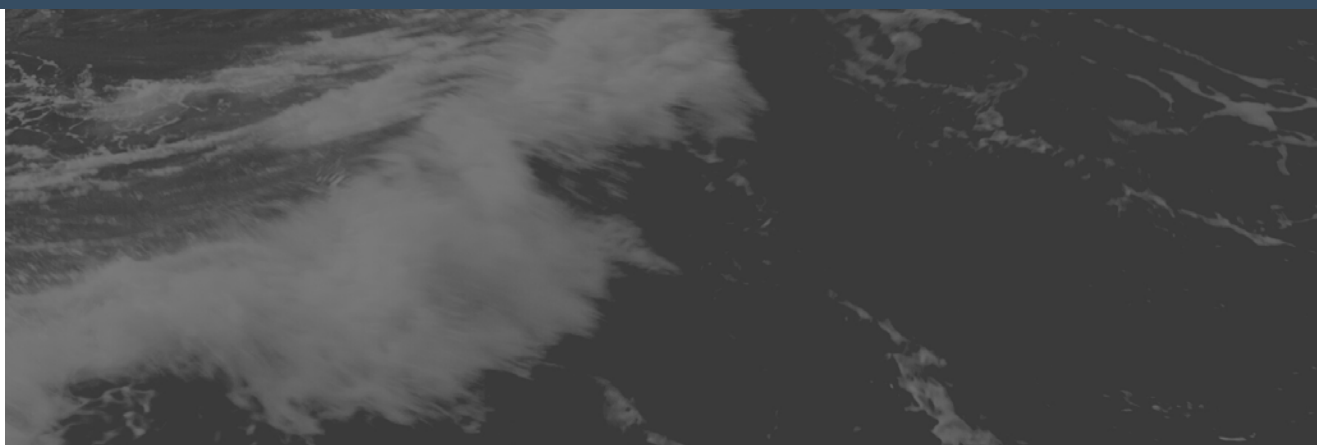
Covid Implications

While the social media campaign analysis plan was unaffected by Covid, stay-at-home orders potentially resulted in an increase in social media users. This may have positively impacted campaign results.



MPA SOCIAL MEDIA CAMPAIGN

KEY FINDINGS & RECOMMENDATIONS



FINDINGS

Impact of the MPA Social Media Campaign

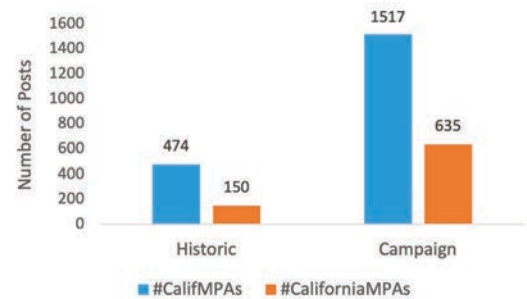
Number of Posts Using Campaign Hashtags

The MPA social media campaign resulted in substantially more posts during a single year than in the 9 years prior to the campaign since network implementation.

Specifically, 2152 posts using the campaign hashtags were made by 241 social media accounts within the year, while only 624 posts were made by 74 accounts in the 9 years preceding the campaign.

This increase in posts was likely amplified by concentrated partner efforts to share MPA content curated by CMSF.

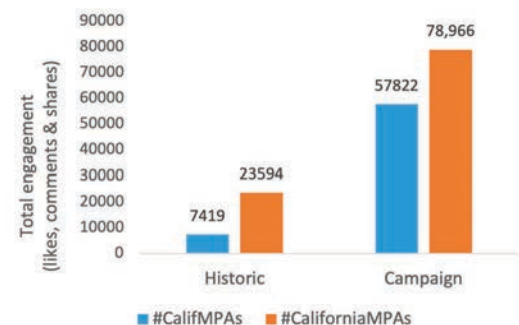
More posts were made during the campaign than in the 9 years prior.



Engagement (likes, comments, shares)

Overall engagement with MPA content was also substantially greater during the year-long campaign, with 136,788 social media users engaging with posts associated with both hashtags, and 31,013 engaging with posts in the 9 years preceding the campaign.

The increase in engagement is likely due to partner use of the campaign content and hashtags and boosted posts targeting diverse audiences on Facebook and Instagram.



Sentiment

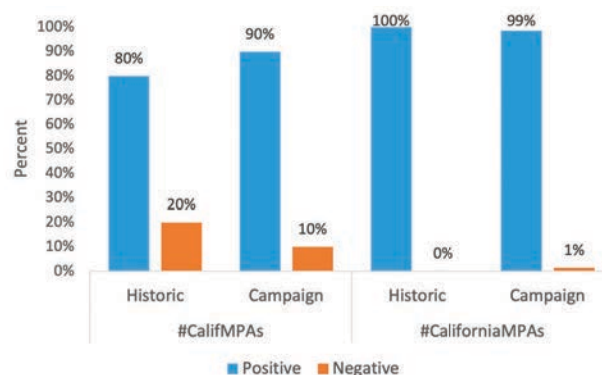
Sentiment (positive/negative emotions associated with each post) was also measured. Keyhole provides sentiment analysis of the words and terminology for each post using a campaign hashtag.

#CaliforniaMPAs

Sentiment was 100% positive before the campaign, and 99% positive during the campaign.

#CalifMPAs

Sentiment was 80% positive before the campaign, rising to 90% positive during the campaign.



Only 3 accounts were responsible for contributing posts with negative sentiment, while 238 contributed to positive sentiment.

The improvement in sentiment may indicate that viewers have become more accepting of the MPA network over time. Negative posts were analyzed separately, and only 3 accounts were responsible for contributing posts with negative sentiment, while 238 contributed to positive sentiment. The majority of posts that contributed to negative sentiment scores occurred at the time of the MPA network implementation in 2012 and 2013, when the network was receiving considerable negative attention and was highly scrutinized by the angling community. Recent posts with negative sentiment scores were using campaign hashtags with content not relevant to MPAs.

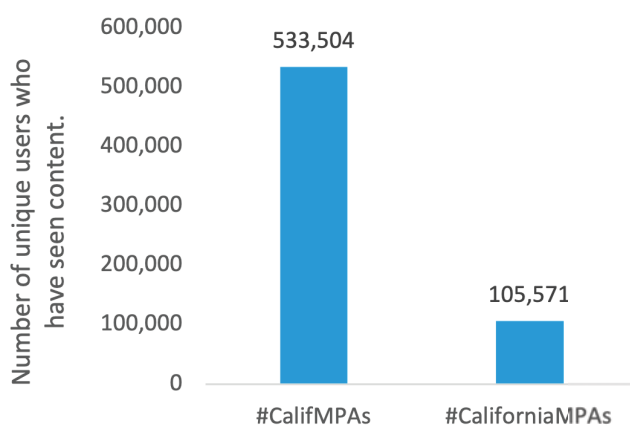
FINDINGS

Impact of the MPA Social Media Campaign

Campaign Reach

Reach is a term used to describe the number of unique social media users who have viewed content using the campaign hashtags.

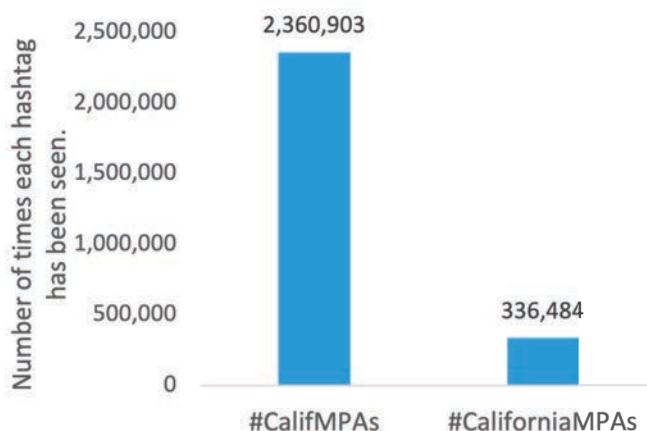
Throughout the campaign's duration #CalifMPAs reached over 533 thousand unique users and #CaliforniaMPAs reached over 105 thousand unique users.



Impressions

Impressions is a term used to describe the total number of times social media users have seen content using campaign hashtags.

Throughout the campaign's duration #CalifMPAs had over 2.3 million impressions and #CaliforniaMPAs had over 330 thousand impressions.



*Comparison of campaign reach and impressions with historical data is not possible due to privacy laws,

RECOMMENDATIONS

MPAS AND SOCIAL MEDIA

Throughout the campaign, the CalifMPAs hashtag reached over 533 thousand unique users, with over 2 million views. The CaliforniaMPAs hashtag was not as effective, reaching substantially fewer social media users. This is likely attributed to the fact that #CalifMPAs was utilized at the time of network implementation by state agencies and non-profit partners to raise awareness of the MPA network. The most popular posts contained photos or short videos. Particularly popular topics included event highlights, seasonal fishing updates, and individual species and unique habitats within MPAs. The social media campaign was highly effective in reaching diverse audiences at a low-cost relative to other outreach methods, resulting in a high return on investment.

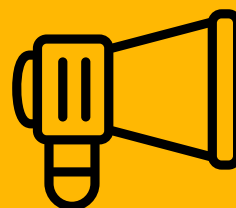
***POSTS USING
CAMPAIGN
HASHTAGS
RECEIVED OVER
2.6 MILLION VIEWS***



Use
#CalifMPAs



Use engaging
photos &
videos



Continue
campaign

Use #CalifMPAs

Based on the findings, we recommend using #CalifMPAs to concentrate outreach efforts around a single hashtag.

Eye Catching Photo & Video

Posts should contain eye-catching video or photo content focused on individual species, unique habitats, seasonal fishing updates, event highlights or interesting observations.

Continue MPA Campaign

The MPA campaign should be continued to capitalize on the audience engaged by this extensive effort. Additionally, curated content should continue to be provided for partner use.

CONCLUSION



CONCLUSION

California's MPA Network has been in place for nearly a decade, with extensive investment in MPA education and outreach by public and private entities. Despite years of outreach, prior to this study there has been no formal evaluation to assess the efficacy of MPA outreach tools. This study highlights the importance of continually assessing the effectiveness of different MPA tools among unique target audiences to allocate limited state resources efficiently and successfully.

Because different audiences have vastly different needs, MPA education and outreach cannot be undertaken with a one size fits all approach. Awareness, understanding, and perceptions are imperative to the success of conservation initiatives; therefore, it is crucial to understand audience specific needs before updating existing education and outreach materials or developing new materials. In the following pages we offer key insights based on our research.



IMPORTANCE OF UNDERSTANDING AUDIENCE-SPECIFIC NEEDS AND PREFERENCES

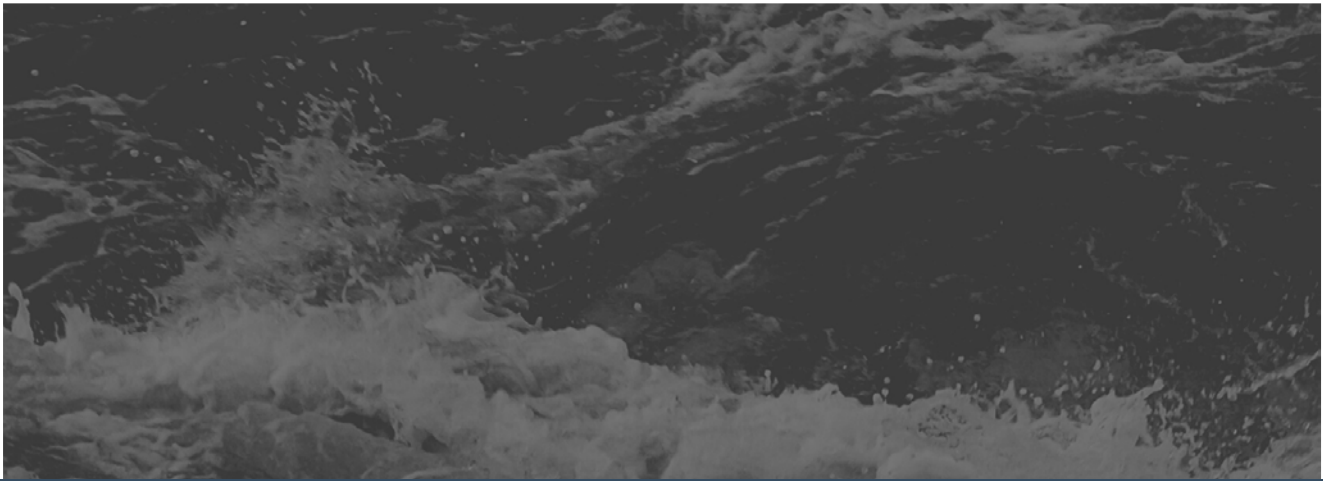
Understanding the diverse needs of and engaging different target audiences contributes to more effective outreach and communications in the long term (Leisher et al. 2012). An increase in knowledge of conservation topics can lead to compliance with conservation regulations, therefore it is imperative that the education and outreach materials provided to distinct user groups are appropriate and contain appropriate information in a style, format and language they respond to (Cornelisse & Duane 2013, Leisher et al. 2012, George & Crooks 2006).

Previous research into compliance and behavior change highlight the critical importance of understanding audience-specific needs and our findings confirm this. These results reveal that different user groups respond to different outreach tools in very different ways. We also found that many of the existing tools are not meeting the needs of coastal users and could use modifications to become more effective at increasing understanding of MPAs.

Engaging representatives from target audiences in studies meant to understand the utility of outreach materials for increasing awareness can help ensure communications products are appropriate for each target audience. It is possible this study was the first opportunity members from these coastal user groups were offered to provide their feedback. They eagerly offered opinions on MPA outreach tools and shared what is most useful for their audience needs. While stakeholder engagement in material development will not only result in a more useful end product, it could also have positive implications for engaging stakeholders in future ocean conservation initiatives, such as California's Protecting Biodiversity Initiative (30x30).

COVID-19 IMPLICATIONS

Conducting this research during the Covid-19 pandemic required flexibility. This project was funded by the OPC with firm timelines. Therefore, the research needed to proceed regardless of circumstances. While the evaluation plan was finalized in March 2020, Covid restrictions required modification to data collection methods. By August 2020, nearly the entire evaluation plan was changed to account for social distancing and travel restrictions. Without Covid-19 restrictions, much of the data would have been collected differently, however final analysis suggests that the approach taken resulted in many positive benefits. While Covid-related restrictions required additional planning, the changes resulted in substantial cost savings associated with travel and hosting events.



NEXT STEPS

When developing and revising MPA outreach materials it is crucial to consider the target audience. Here are suggestions for next steps for each tool evaluated and modifications to make existing outreach tools more effective at increasing understanding of MPAs.



MPA Regulatory Brochures

Recreational Anglers

- Modify brochure content to to effectively reach the recreational angler community, a high priority for targeted outreach.
- Invest in printing and dissemination of brochures to strategic outlets.

Non-Consumptive Ocean Recreationists

- Develop a modified brochure (or revise [this template](#)) with an emphasis on interpretive content.
- Print and disseminate to strategic ocean recreation outlets.

Enforcement Officials

- Use suggestions from the enforcement community to modify the existing brochure.
- Explore the cost effectiveness of printing the MPA Collaborative Network developed Compliance guide, or use portions of the guide that would best address the needs of this community, such as the images of the MPA boundary lines with landmarks.

MPA PowerPoint Presentations

Recreational Anglers

- Modify PowerPoint trainings based on suggestions from recreational anglers.
- Invest in additional virtual, targeted trainings for this lucrative target user group.
- Record trainings for on-demand use, extending reach beyond the virtual event.

Non-Consumptive Ocean Recreationists

- Modify PowerPoint trainings based on suggestions from non-consumptive ocean recreationists.
- Invest in additional virtual, targeted trainings for this user group
- Record trainings for on-demand use, extending reach beyond the virtual event.

MPA Social Media Campaign

- Continue to promote the use of #CalifMPAs to raise awareness of the MPA network, concentrating outreach efforts around a single hashtag
- Build upon the momentum of MPA content on social media by continuing the MPA campaign, including the development of curated content for partner use.

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QUESTIONS?

E-MAIL US AT
CMSF@CALIFORNIAMSF.ORG



CALIFORNIA
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APPENDICES

- A. MPA Regulatory Brochure
- B. MPA PowerPoint Trainings
- C. MPA Social Media Campaign
- D. Outreach Tool Impact on Awareness
- E. Participant Demographics- MPA Regulatory Brochures
- F. Participant Demographics- MPA PowerPointTrainings

MPA REGULATORY BROCHURE



To protect, maintain, enhance and restore California's marine ecosystems for their ecological values and their use and enjoyment by the public through good science and effective communication.

California Department of Fish and Wildlife, Marine Region

Image above: Morro Rock (Mike Baird, flickr/bairdphotos.com)
below: white pelicans (Mike Baird, flickr/bairdphotos.com)

Morro Bay Harbor
(805) 772-6254
www.morro-bay.ca.us

Port San Luis Harbor
(805) 595-5400
www.portsanluis.com

California Department of Fish and Wildlife

For more information:
www.wildlife.ca.gov

For boundaries and regulations, go to:
www.dfg.ca.gov/marine/MPA

Help stop poaching & polluting, call:
1-888-334-CALTIP (1-888-334-2258)

Report lost fishing gear:
1-888-491-GEAR (4237)
or
www.lostfishinggear.org

This publication is available in alternate formats by contacting Monterey Bay Sanctuary Foundation:
831-647-4209
or info@mbnmsf.org



Cover: left and center right (Bart Selby);
top right (Steve Lonhart); bottom right (Chad King)

A Guide to Fishing and Marine Protected Areas Morro Bay & Port San Luis Harbors



Pedras Blancas State Marine Reserve
Pedras Blancas State Marine Conservation Area
Cambria State Marine Conservation Area and State Marine Park
White Rock (Cambria) State Marine Conservation Area
Morro Bay State Marine Recreational Management Area
Morro Bay State Marine Reserve
Point Buchon State Marine Reserve
Point Buchon State Marine Conservation Area
Vandenberg State Marine Reserve



Fishing and California's Marine Protected Areas

What are Marine Protected Areas?

Marine protected areas (MPAs) are special designated underwater areas, similar to the nation's parks, forests and wilderness areas on land, that prohibit or limit the take of marine life.

Why does California need MPAs?

MPAs are proven tools for protecting, enhancing and restoring marine life. MPAs foster healthy habitats and natural diversity, safeguarding the ocean's bounty for the economic and recreational opportunities of future generations.

How many MPAs are in California?

California was the first state in the nation to establish a statewide network of MPAs. There are now 124 MPAs from the border of Oregon down to Mexico. These MPAs protect a variety of key habitats and link protected areas along the coast.

Photo credit: top left (Thessa Brannen); top right (NOAA/NOIS); middle center (Bart Selby)



kelp forest (Steve Lonhart)



black rockfish (Chad King)



kayaking (Claire Racker)



copper rockfish (Chad King)



crab pots (Bart Selby)



dungeness crab (Bart Selby)

Is Fishing Allowed in MPAs?

Fishing and the take of marine life such as shellfish or seaweed is not allowed in about half of California's marine protected areas. An inset map of local MPAs with their regulations is provided in this brochure.

Is Anchoring Allowed in MPAs?

Boats are allowed to anchor in an MPA with catch onboard unless otherwise specified in the MPA regulations. However, fishing gear may not be deployed when anchored in a no-take state marine reserve. For additional information, scan the barcode on the right to visit the California Department of Fish and Wildlife's website.

MPAs & Fishing Regulations



Scan the QR code to the left with your smartphone or other internet enabled device to visit the California Dept. of Fish and Wildlife's MPA mobile website.

The website allows you to search for information about MPA boundaries and regulations. You can also use your GPS location to locate the closest MPA(s) and determine whether or not you are currently in an MPA.

Go Fishing

Recreational & Commercial Fishing information:
phone: 831-649-2870
website: www.dfg.ca.gov/marine/fishing

Recreational Groundfish "hotline"
831-649-2801
Recreational Salmon "hotline"
707-576-3429



Morro Bay and Port San Luis Harbor MPAs

MPA	Allowed Uses
Pedras Blancas, Morro Bay, Point Buchon & Vandenberg SMRs	Take of all living marine resources is prohibited EXCEPT: Recreational and commercial take of salmon and abalone.
Cambria SMCRA	Recreational take of salmon and abalone.
White Rock (Cambria) SMCRA	Recreational take of salmon and abalone.
Morro Bay SMCRA	No recreational or commercial take of living resources except north of 35° 19' 70"N.
Point Buchon SMCRA	Recreational take of finfish and shellfish is allowed. Waterfowl hunting is allowed unless otherwise restricted by hunting regulations.
Point Buchon SMCRA	Recreational and commercial take of salmon and abalone.

* The California Fish and Game Commission designated Cambria SMCRA, which has subsequently been adopted as Cambria SMCRA by the State Parks and Recreation Commission (August 2010). Therefore, the Cambria SMCRA is also designated as SMCRA and SMCRA with the same boundaries and regulations.

Regulations

This document does not replace the official regulatory language found in the California Code of Regulations Title 14, Section 652.

- A fishing license is required for any fishing.
- All existing take regulations still apply in addition to the ones listed above.
- Unless otherwise stated, all non-consumptive recreational activities are allowed.
- "Take" means to hunt, pursue, catch, capture or kill fish, invertebrates, marine mammals, or attempting to do so.

Morro Bay & Port San Luis Harbor Marine Protected Areas (MPAs)

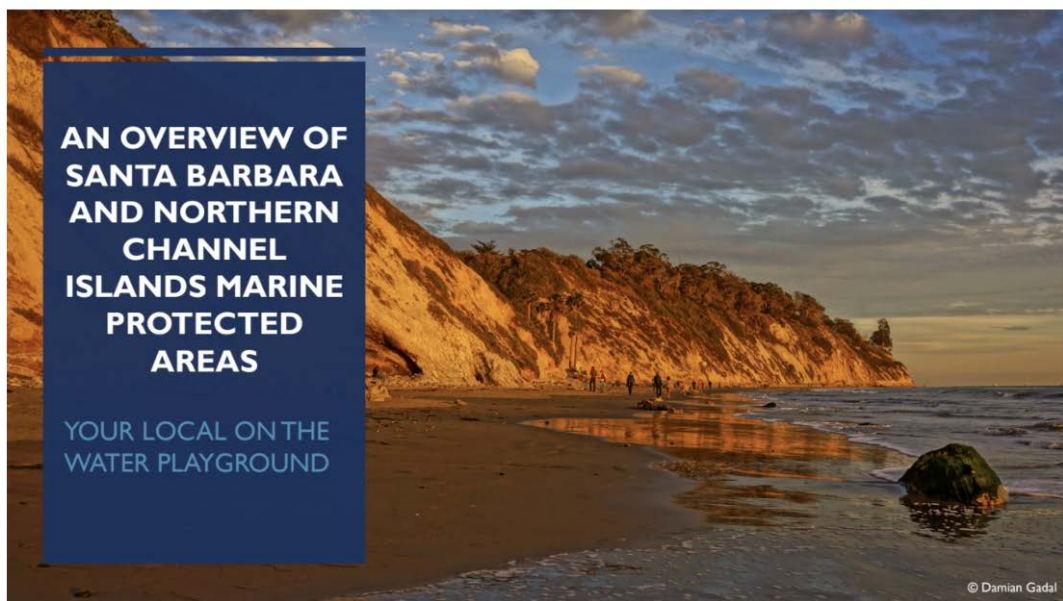
California Marine Protected Areas

The California statewide MPA network includes four different types of MPAs that vary in their purposes and level of protection, ranging from limited to no-take. The MPA designations are:

- State Marine Reserves (SMR):**
No damage or take of living, geologic, or cultural marine resources is allowed.
- State Marine Parks (SMP):**
No commercial take of resources is allowed, but some recreational take may be allowed (restrictions vary).
- State Marine Conservation Areas (SMCA):**
Some recreational and/or commercial take of marine resources may be allowed (restrictions vary).
- State Marine Recreational Management Areas (SMRMA):**
Restricts the take of living marine resources while allowing for waterfowl hunting to occur (restrictions vary).

The MPA Regulatory Brochures exist for every major harbor area along coastal California. You can find the brochures at californiampas.org/outreach-toolkit/printed-materials/brochures

MPA POWERPOINT TRAININGS



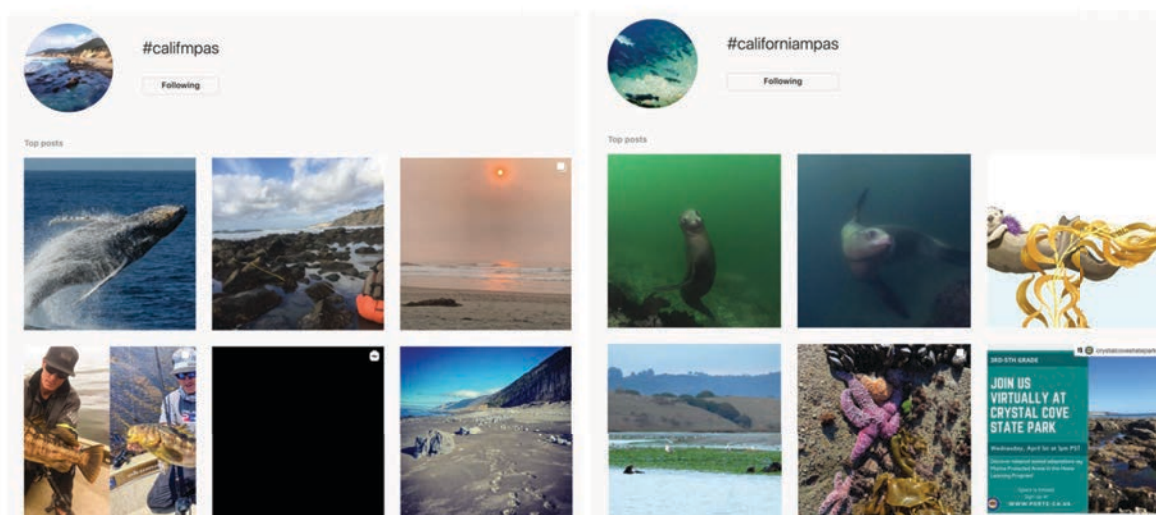
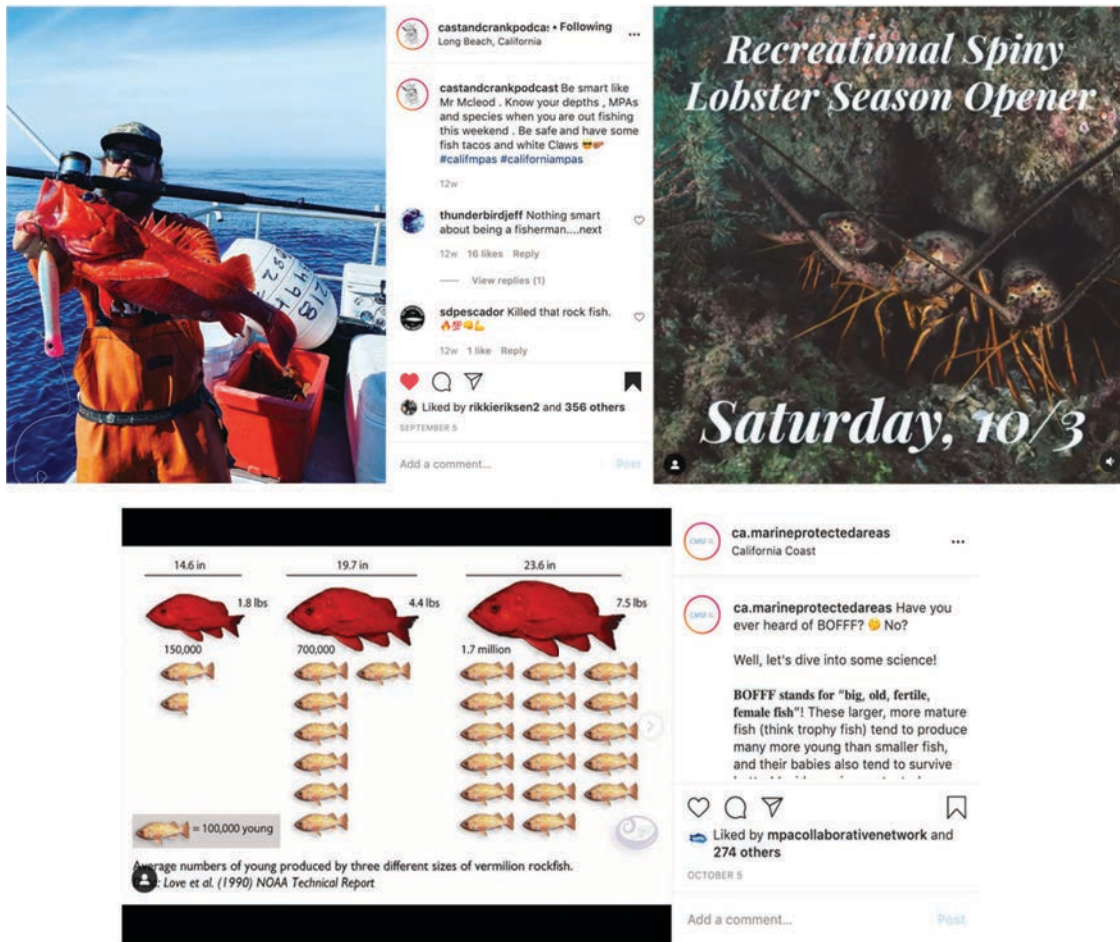
Scripted MPA PowerPoint trainings exist for each coastal county, with one version targeting anglers and the other targeting non-consumptive ocean recreation users. Content includes a background of the MPA network, MPA science, local species facts, and information about local MPAs including regulatory information.

To access the scripted trainings , please email CMSF@californiamsf.org.

Appendix C.

MPA SOCIAL MEDIA CAMPAIGN

The MPA social media campaign was live from June 2020- May 2021. These are examples of social media content that used the campaign hashtags (#CalifMPAs & #CaliforniaMPAs).



OUTREACH TOOL IMPACT ON AWARENESS OF CONSERVATION INITIATIVES

Brochures

Research demonstrates the success of printed brochures for increasing knowledge of conservation initiatives, especially among those who have little pre-existing knowledge (Leisher et al. 2012, George & Crooks 2006, Moscardo 1999, Fuhrman et al. 2005). Effectively crafted brochures can inspire positive attitudes toward conservation of habitats and species biodiversity (George & Crooks 2006, Caro 1994).

PowerPoint Trainings

Nature-based tourism is a powerful sector with potential to drive environmental stewardship. Well-educated staff at ocean recreation and tourism businesses have a unique opportunity to inspire conservation behavior among customers (Mellish et al. 2019). Trained, knowledgeable, and inspired staff in a role that requires communications with others can increase awareness and understanding of environmental concepts and issues (Mellish et al. 2019, Morgan & Gramann 1989). By training staff at bait and tackle shops, kayak rentals, boat charters, interpretive centers and more, they can incorporate conservation messaging into their daily interactions.

Social Media

With 2.95 billion users in 2020, social media provides low-cost, unprecedented access to the general public, allowing for rapid dissemination and information transmission (Auxier & Anderson 2021, Thaler et al. 2012, Markantonatou 2016). Public awareness of conservation initiatives is directly correlated to successful policy implementation, and social media presents a unique opportunity to reach untapped audiences to garner support (Cornelisse & Duane 2013, Little 2016, Papworth et al. 2015). This versatile tool communicates to broad audiences about conservation initiatives, and can lead to “knowledge spillovers”, or the exchange of information among individuals, which helps to raise awareness and understanding of conservation topics (Cvitanovic 2014, Markantonatou 2016, Ogden 2013).

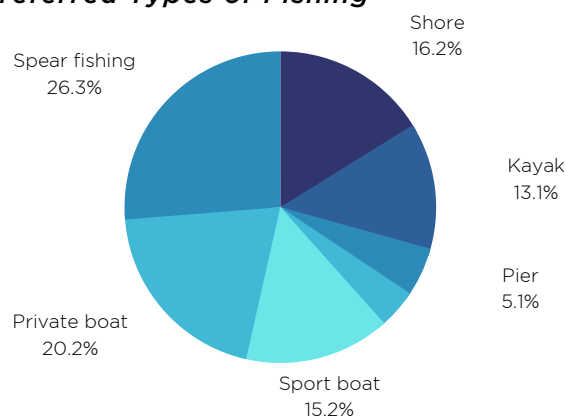
RESPONDENT DEMOGRAPHICS

MPA Regulatory Brochures

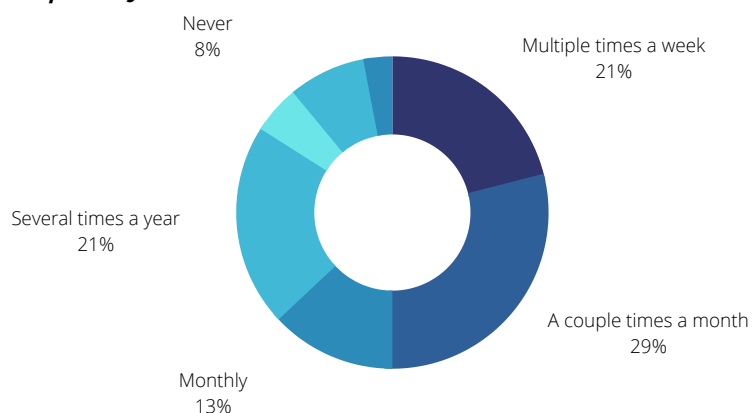
Select demographic information for study participants is presented below. Interested in additional demographic information? Email katelyn@californiamsf.org.

Recreational Anglers

Preferred Types of Fishing

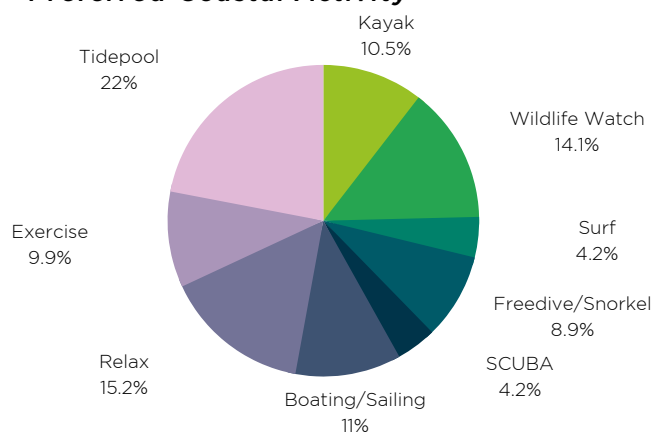


Frequency of Visits to MPAs

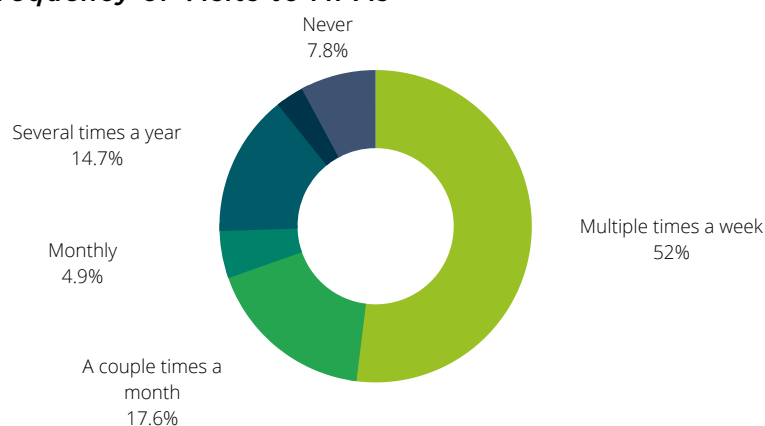


Non-Consumptive Ocean Recreationists

Preferred Coastal Activity

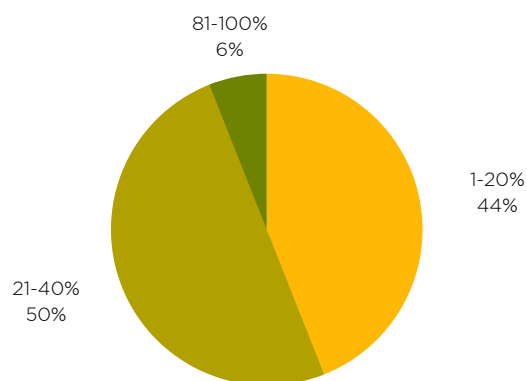


Frequency of Visits to MPAs

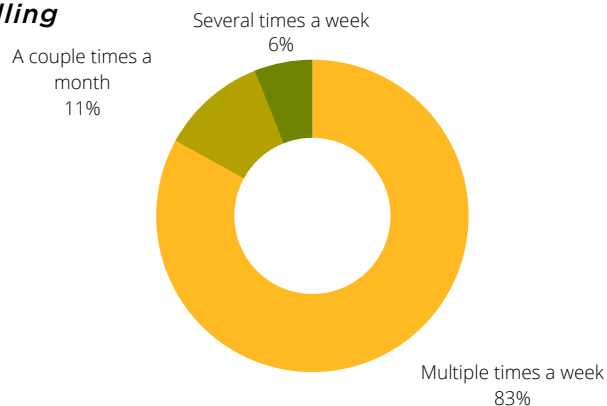


Enforcement Officials

Percent of Average Shift Spent Patrolling



Frequency of Visits to MPAs while Patrolling



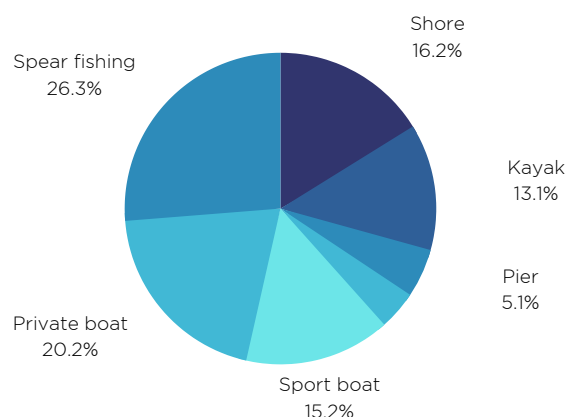
RESPONDENT DEMOGRAPHICS

MPA PowerPoint Trainings

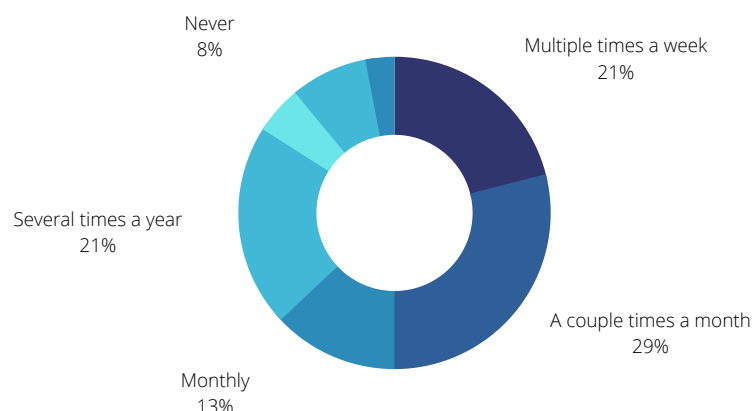
Select demographic information for study participants is presented below. Interested in additional demographic information? Email katelyn@californiamsf.org.

Recreational Anglers

Preferred Types of Fishing

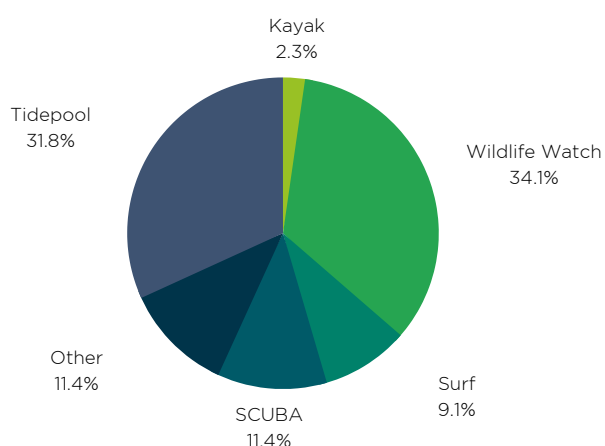


Frequency of Visits to MPAs

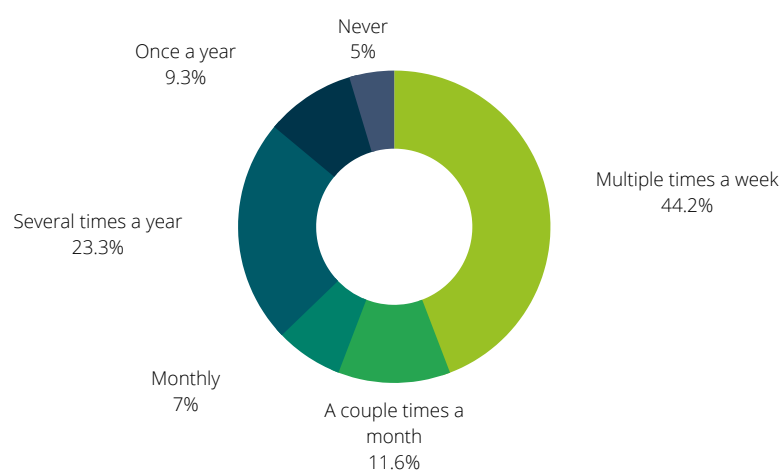


Non-Consumptive Ocean Recreationists

Preferred Coastal Activity



Frequency of Visits to MPAs





CALIFORNIA
MARINE
SANCTUARY
FOUNDATION