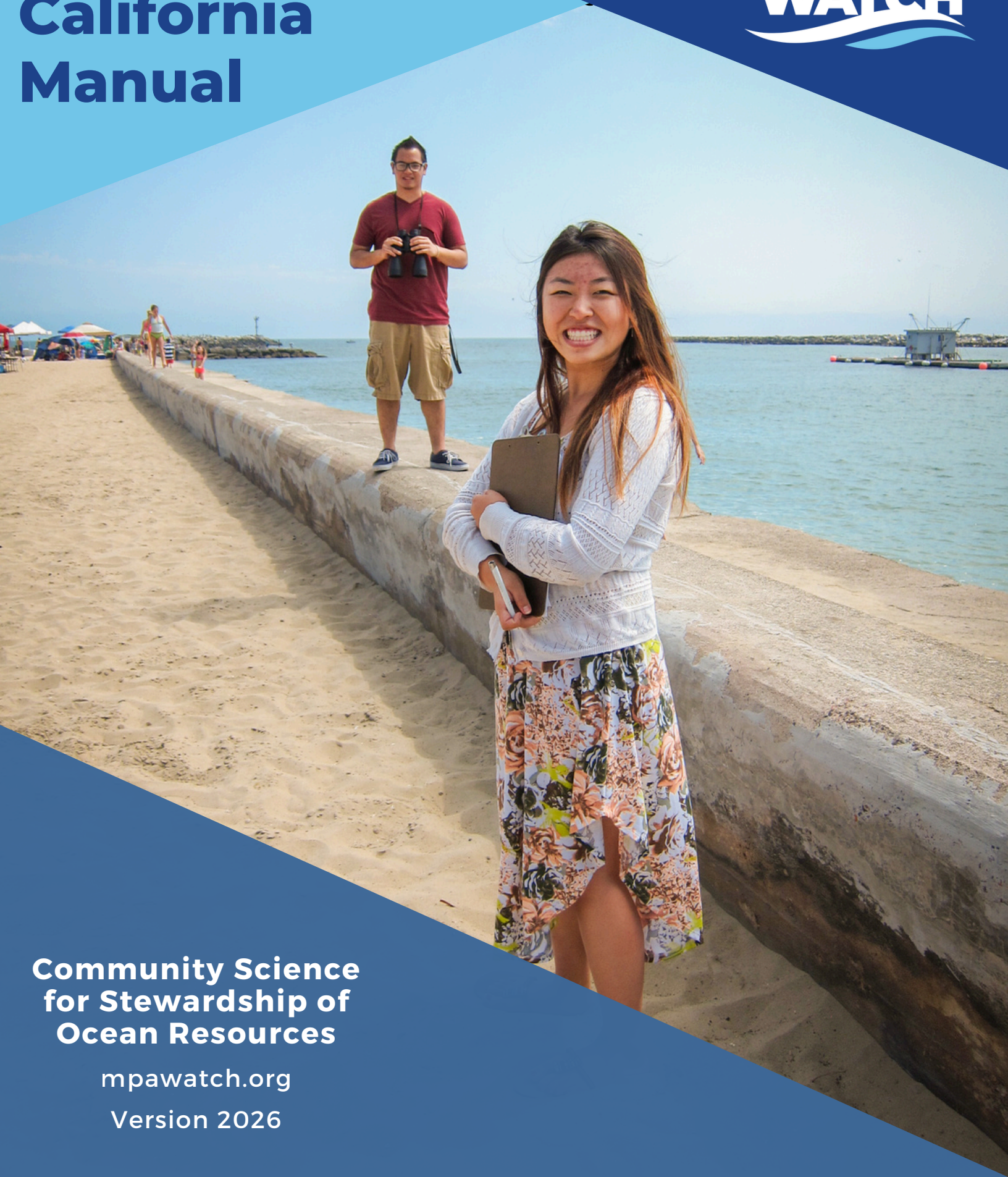
MPA Watch California Manual



Community Science for Stewardship of Ocean Resources

mpawatch.org

Version 2026

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Introduction

MPA Watch is a community science program that trains volunteers to observe and collect data on human uses of coastal and marine resources both inside and outside of marine protected areas (MPAs). Volunteers use standardized protocols to collect relevant, scientifically rigorous, and broadly accessible data. Data are meant to inform the management, enforcement, and science of California's marine protected areas, and allow our network of programs and organizations to track how the public uses coastal areas. By involving local communities in data collection, MPA Watch programs inspire and empower stewardship, and educate the public about California's ocean ecosystems.

Purpose of the Manual

MPA Watch programs have been rapidly replicating throughout California since 2010. In past years, new programs borrowed materials from existing programs and adapted them for their region and local program. Since statewide MPA Watch coordination started in 2013, individual MPA Watch programs have banded together to unify survey methodology and other programmatic aspects. As a result, this master MPA Watch California Manual has been created as a guide for groups interested in starting up a new MPA Watch program, for programs interested in refreshing their existing community science monitoring programs to align with statewide MPA Watch protocol, and for others interested to know what details are included in an MPA Watch monitoring program. The first MPA Watch manual was developed in 2015 by the original two MPA Watch programs, The Otter Project and Heal the Bay, with technical support from California Ocean Science Trust. This manual was updated by the MPA Watch network in 2020.

This document contains the information necessary to build a program that recruits, trains, and manages volunteers in the collection of data in and around marine protected areas, in order to contribute data that keep with the standards adopted by the broader MPA Watch network. We hope that this MPA Watch California Manual is helpful as you create your volunteer community science program to help monitor MPAs.

Overview of MPA Watch

With the implementation of the Marine Life Protection Act (MLPA) and the required new network of MPAs, also came the task of monitoring whether these areas are successfully meeting their goals. Organizations invested in the health of the California coastline began monitoring and collecting data in and around these areas. The MPA Watch program has been designed with the help of social and biological science experts throughout the state of California with the intention of collecting data on human activity and resource use. These data are meant to inform the management, enforcement, and science of California's marine protected areas and allow us to see how human uses are changing as a result of MPA implementation.

MPA Watch Statewide Program Goals

1. To help determine how effective MPAs are at meeting their goal of enhancing recreational activities by tracking changes and trends of human use over time.

2. To provide contextual information on human use for interpretation of biological monitoring data.

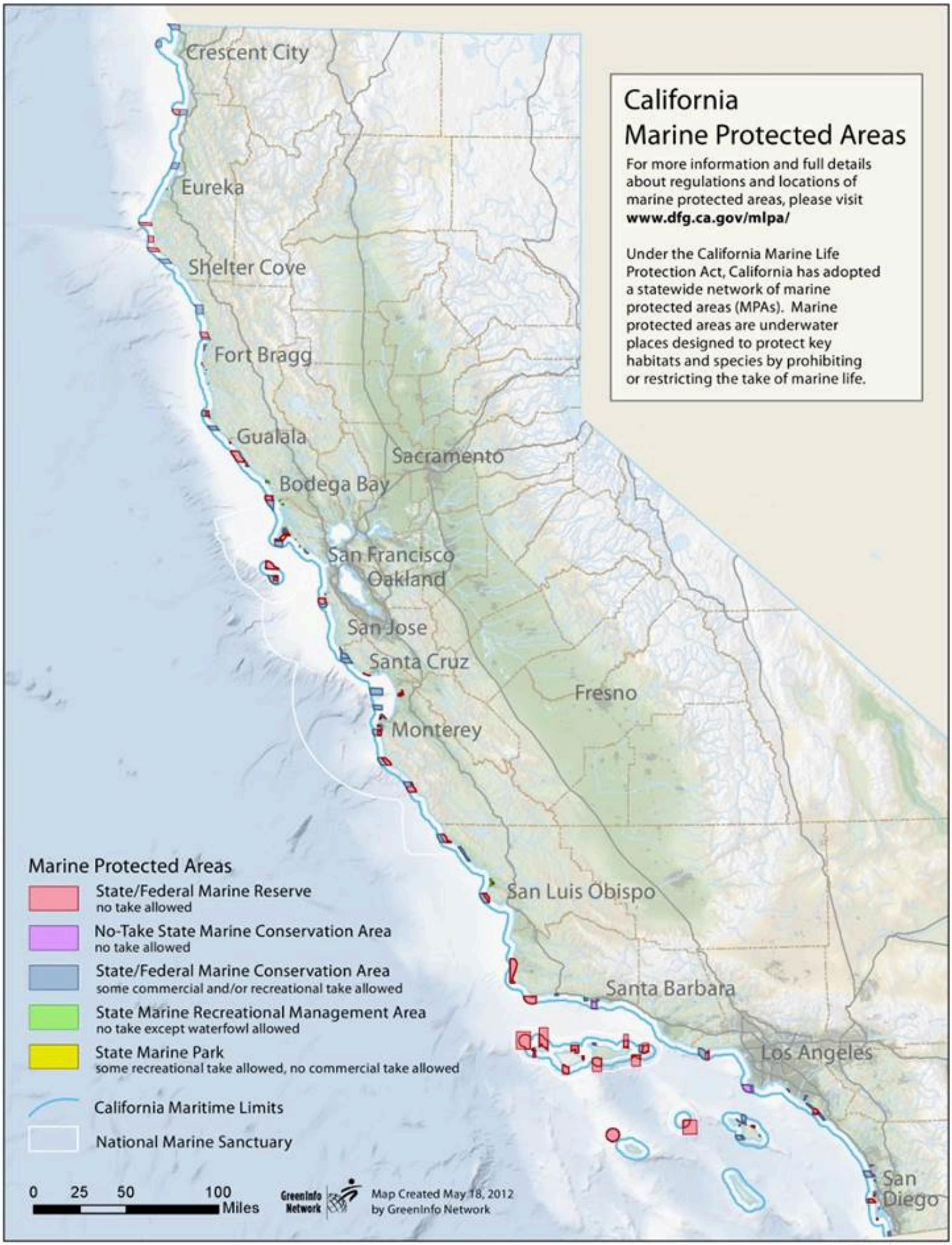
3. To inform MPA enforcement and management decisions regarding human activity inside MPAs.

4. To train MPA Watch volunteers as stewards and effective public educators regarding MPAs.

Potential users of MPA Watch data include academia, natural resource management agencies, and local communities including California Indian tribes who have relied upon the ocean's resources since time immemorial. A key focus for the program is to inform California's management of MPAs. In addition to data-oriented goals, MPA Watch programs aim to involve local communities in learning about marine and coastal resources, and to inspire and empower ocean stewardship. We always welcome new volunteers to experience California's beautiful coastline while collecting data that will help protect our precious resources.

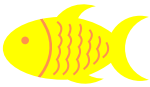
Background on Marine Protected Areas

Marine protected areas (MPAs) are marine or estuarine waters set aside primarily to protect marine life and associated habitat. The network of MPAs along the coastline of California was required by the Marine Life Protection Act of 1999. MPAs exist at all levels of government, from national to local. For the purposes of this manual "MPA" will refer to the state-level protected areas. MPAs have varying levels of protections and allowed uses, from "no-take" zones to those that allow some take of marine life. Just as parks on land are designed to protect special lands and wildlife from over-development and hunting, these underwater parks are designed to preserve complete marine ecosystems for future generations to observe and enjoy.


Crescent City
Eureka
Shelter Cove
Fort Bragg
Gualala
Sacramento
Bodega Bay
San Francisco
Oakland
San Jose
Santa Cruz
Fresno
Monterey
San Luis Obispo
Santa Barbara
Los Angeles
San Diego
California
Marine Protected Areas
For more information and full details about regulations and locations of marine protected areas, please visit
www.dfg.ca.gov/mlpa/
Under the California Marine Life Protection Act, California has adopted a statewide network of marine protected areas (MPAs). Marine protected areas are underwater places designed to protect key habitats and species by prohibiting or restricting the take of marine life.
Marine Protected Areas
State/Federal Marine Reserve
no take allowed
No-Take State Marine Conservation Area
no take allowed
State/Federal Marine Conservation Area
some commercial and/or recreational take allowed
State Marine Recreational Management Area
no take except waterfowl allowed
State Marine Park
some recreational take allowed, no commercial take allowed
California Maritime Limits
National Marine Sanctuary
0 25 50 100 Miles
GreenInfo Network
Map Created May 18, 2012
by GreenInfo Network

While each MPA has its own unique set of permitted and prohibited uses, most MPAs fit into six types:

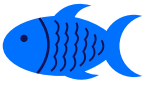
State Marine Reserve (SMR)
An MPA where no take, damage, injury or possession of any living, geologic, or cultural marine resource is allowed.



State Marine Park (SMP)
An MPA that allows some recreational take but does not allow commercial take.

No-Take State Marine Conservation Area (No-Take SMCA)
An MPA where no take of any living, geologic, or cultural resource is allowed, EXCEPT for take incidental to specified activities permitted by other agencies. There is no take permissible by the public in these areas.

State Marine Recreational Management Area (SMRMA)
A marine managed area where some take of marine resources may be allowed and legal waterfowl hunting is allowed (restrictions vary).



State Marine Conservation Area (SMCA)
An MPA where some recreational and/or commercial take of marine resources may be allowed (site-specific restrictions vary).

Special Closure
Prohibits or restricts access in waters adjacent to seabird rookeries of marine mammal haul-out sites.

California's coast and ocean are among our most treasured resources. The productivity, wildness, and beauty found here are central to California's identity, heritage, and economy. MPAs conserve biological and cultural diversity and protect a variety of marine habitats, communities, and ecosystems for their intrinsic value, while allowing for human use of marine resources. By protecting sensitive ocean and coastal habitats, marine life flourishes and, in turn, creates a healthier system overall.

Statewide MPA Watch Coordination

Technical Coordination

While MPA Watch programs all take a similar approach to measuring human use of ocean resources, there are also some differences across programs as a result of program size, total area covered, variation in regional characteristics, or specific questions that are of interest to individual programs. MPA Watch programs collaborated with the Ocean Science Trust to enhance and expand the relevance and utility of the data collected by exploring differences, and where possible, aligning methods and protocols.

Best practices, guidelines, and protocols for current and future locally-organized MPA Watch programs were developed to support MPA assessments and adaptive management, inform enforcement, compliance, and education efforts, and build social capital through engagement of local communities in statewide MPA Watch efforts. In addition, the resulting statewide database of human use activity can inform a variety of academic studies and other data needs unrelated to MPAs.

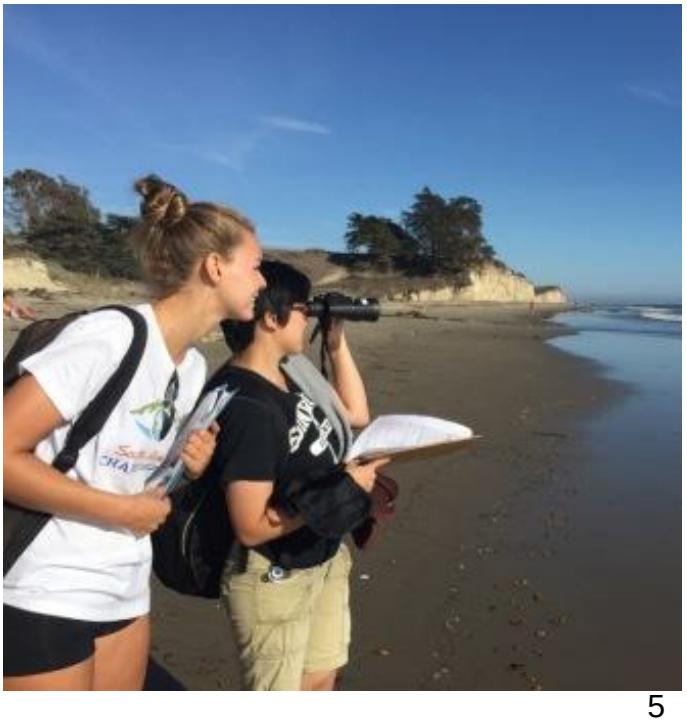
Statewide MPA Watch Coordination

Current MPA Watch Programs

Organizations currently training MPA Watch volunteers (2026):

Governance of the MPA Watch Network

Addressing issues such as communications, data analysis, QA/QC, branding, and exploring partnerships is a daunting task for a single community science organization. While many agreements have been made regarding methods, QA/QC practices, and data management, among many other issues, there will be a need for continual adjustment and improvement over time. MPA Watch programs recognize these challenges and are working to put in place processes that can guide decision making in the future. Thus, one of the most important functions of a local MPA Watch program is participation in the wider statewide network. Solidifying this collaborative work, and sustaining the statewide network will require proactive communication and participation on the part of all programs, as well as leadership to ensure that the programs remain in alignment, and that they all have a voice in determining future adjustments and improvements to the MPA Watch approach. To reach this end, a statewide coordinator position was created, which is currently housed at WILDCOAST.



Key Elements of an MPA Watch Program

While operating independently, California MPA Watch programs all collaborate on core elements and take a similar approach to measuring human use of ocean resources. All programs involve several key aspects such as carefully-designed survey sites and transect routes, volunteer classroom and field trainings, data collection and management, and standard quality assurance and quality control (QA/QC) practices. Inherent to any social science monitoring project is some level of error that affects the interpretation of the results. Researchers attempt to control for this error and enhance the confidence in findings by introducing standardized methods and protocols. Implementing technical strategies, such as QA/QC practices, can enhance the accuracy of monitoring outputs. Benefits gained must be weighed in the context other community science programmatic considerations such as the goals of the monitoring project and the availability of resources for implementation.

Key commitments of MPA Watch programs in California include:

- Participation in the statewide MPA Watch program.
- Honoring tribal traditional knowledge in data gathering processes.
- Data entry into the online database at mpawatch.org.
- Commitment to the goals outlined above.
- Commitment to follow the standards in this guide.

Respecting Tribal Rights

Indigenous peoples have stewarded California's ocean landscapes since time immemorial. The State of California guards tribal rights to traditional harvesting of ocean resources in certain designated MPAs, and respects the incorporation of Traditional Knowledge in data gathering and analysis.

Below: Seashore monitoring with the Tolowa Dee-ni' Nation. Photo from Protecting the Coast with the Tolowa Dee-ni' | Tending Nature | Season 2, Episode 1 | KCET https://youtu.be/su2k9hBJbvM

Methods

MPA Watch methods and protocols have been designed with analytical and practical challenges in mind. The following sections address key issues for consideration when designing a strategy for collecting, recording, and analyzing data. This knowledge comes from a range of sources, including literature in the social sciences, expert consultation including a scientific advisory committee, application of these practices, and the resulting lessons learned by MPA Watch programs.

Designing Your Monitoring Program

MPA Watch program management takes place at the local level, administered by the local MPA Watch program. The considerations below offer guidance to programs in selection of transect routes, volunteer training, and program management. One of the first things a program should do is define their total coverage of the coast, understand where MPAs are, and make sure coordination is not overlapping with other MPA Watch programs. Defining sites, and transects within those sites, is a careful balance between practical and scientific considerations. In addition, when scouting survey routes, program managers will need to map and define methods of conducting surveys such as from a bluff, or walking along the beach. Program managers will also need to define transects with a specific start and end point, and map them clearly in the local program's volunteer field guide so transect routes are easily findable, surveys can be completed accurately, and safety considerations such as tides are identified.

Where to Survey

A number of standard characteristics have been documented as important determinants in where people choose to go to the coast. These attributes can be used to understand the similarities and differences across potential survey sites. There are many characteristics that shape visitation patterns, such as those in the Table 1. It is important for every surveyed site be accurately described so that analysts and program managers can account for those different site characteristics. This knowledge can help MPA Watch programs capitalize on effort by minimizing the collection of data at similar sites, with the acknowledgment that the activities and site attributes of interest may vary by program. MPA Watch managers should always consult with local tribes to identify and respect areas of cultural significance and/or sensitivity.

Table 1. Key site attributes that influence coastal visitation patterns

Attribute	Definition
Length	Length of site according to predefined values.
Width	Average width of the beach (back beach to main tide line).
Water Quality	Newest Beach Report Card Grade on water quality.
Beach Type	Beach type (sandy/rocky).
Access	Type of access to beach.
Lot Parking	Presence or absence of lot parking.
Street Parking	Presence or absence of street parking.
Natural	Indicator of natural status. A natural beach is not groomed, and native vegetation is allowed to persist within the sandy area.
Development	Indicator of development near the beach site. Development is indicated by the presence of residential or commercial construction visible from the shore.
Harbors/Marinas	Presence or absence of harbors and/or marinas in the site.
Jetties	Presence or absence of jetties in the site.
Camping	Presence or absence of camping availability in the site.
Boardwalk/ Bikepath	Presence or absence of a beach boardwalk or bike path in the site.
Lifeguard Stations	Presence or absence of lifeguard towers during the months of June - August.
Restrooms	Presence or absence or permanent bathrooms.
Surfing	Presence or absence of a well-known surfing destination in the site. If a report for a site is listed on surfline.com it is well known.
Diving	Presence or absence of a well-known diving location in the site.
Tidepooling	Presence or absence of well-known tidepooling location in the site.
Latitude/Longitude	Latitude and Longitude of the start and end points of the site, in decimal degrees.

Selecting Survey Sites and Transects

Once sites are identified, the path, or transect, on which volunteers will follow and record occurrences must be mapped. MPA Watch programs employ two basic approaches to defining these transects inside and outside MPAs.

1. Full coverage: Some groups divide entire MPAs into walkable transects that cover the entire MPA. Transects within the MPA may be defined by changes from rocky to sandy, or other features of the landscape that affect activity types.
2. Partial coverage: Other groups select one or more transects that cover only part of a given MPA.

When selecting survey sites for transects, it is important to take into account how existing MPA Watch programs have based their decisions, such as public access for volunteers, appeal to volunteers, length of survey route, terrain, likelihood of significant activity (or inactivity), and importance to local scientific researchers.

Because full MPA coverage is sometimes not achievable, MPA Watch programs may choose a subset of the MPA to sample. This choice is the first and most important choice you must make when designing a sampling program. Some programs have transects paired with ecological monitoring sites (such as those surveyed by PISCO and Reef Check) to support integration with biological data. Also important is the choice of control sites outside of the MPA, if your program hopes to make inferences about causal effects of the MPA designation and compare inside/outside results.

Non-MPA Sites

In addition to sites within MPAs, most MPA Watch programs also monitor non-MPA sites outside of MPAs, with the goal of observing activities and trends inside and outside of MPAs. The site attribute information in Table 1 can help to define control sites for broad recreational comparisons, but there are other variables that programs may wish to consider. By surveying outside MPAs, it is useful to understand trends and changes in human use over time inside versus outside MPAs. Considerations for non-MPA site selection include:

Matching coastal use features: features similar to local MPAs such as public access, parking lots, surfing spots, other infrastructure, or tidepools.

Candidate MPA sites not under protection: beaches and areas that were considered for placement of an MPA, but were not selected. Many of these sites have similar features and human use like nearby MPAs.

Matching other ecological research sites: Some programs have transects paired with PISCO and Reef Check monitoring sites to support integration with biological data.

Looking for edge effects: Some programs have transects abutting MPAs, which look for possible effects such as activities being “pushed out” of MPAs.

For now there is no standard protocol for defining MPA Watch non-MPA sites. MPA Watch groups will continue to discuss these and other non-MPA site options. The current goal is to agree on a few well-defined options for use of non-MPA sites. If groups using non-MPA sites have a very specific rationale, and a well-implemented approach, this will allow us to evaluate the efficacy of different approaches over time, and potentially move toward consistent, unified guidelines.

Additional Site Considerations

Regardless of whether a program decides to have full or partial survey coverage of an MPA, a number of practical considerations should guide the definition of transects. Volunteers in community science include participants of different ages, and a range of fitness levels and physical attributes. With this in mind it is important to consider the accessibility to a site, terrain, and the distance covered. As a general rule, most MPA Watch programs design transects that can be covered by a volunteer in approximately an hour or less. Although spatial design of survey routes varies by program and geography, to standardize survey techniques and control effort along a variety of routes, volunteers are trained to walk at a steady, somewhat slow pace while completing their observational MPA Watch surveys.

Standardizing the survey with temporal parameters (in addition to standardized training efforts and monitoring protocol) is intended to balance some of the variations between observers, making results comparable across MPAs and reference sites.

When to Survey

Just as it is important to consider what parts of the coast are sampled, it is also critical to consider the temporal coverage of sampling. The activities on a stretch of coast are likely to vary by season, day of the week, and time of day. They will also be influenced by weather, tides, and other shifting conditions.

Although volunteers are given flexibility in scheduling their surveys, they are encouraged to make an effort to cover a variety of times, weather conditions, and days of the week. It is likely that volunteer availability and preferences will provide initial results that are biased towards a certain time of day, day of the week, or weather conditions. Tide levels can influence activity, and seasons will also have to be considered, although this is relatively easy to incorporate into the data set after the fact. Open and closed fishing and harvesting seasons can also dramatically cause certain activities to increase or decrease.

Bias toward days with pleasant weather can diminish the credibility of statements about use over periods where there is variability in attributes contributing to selection. This bias can partially be addressed by collecting relevant metadata (such as weather and tide conditions during the time of the survey which can be considered at later stages of data analysis), but sampling across the full range of conditions is also necessary. The most efficient method for securing this outcome is known as simple random sampling, whereby volunteers survey on a subset of days and times that have been selected at random. Random sampling can be conducted year-round or for the time periods that are considered most important. For example, is the weekend/weekday distinction most important to a program, or is the proportion of use within a specific season, say summer, the most important window?

While it is not a complicated matter to select this random subset of sampling times, many programs prefer to avoid specifying the exact dates and times that volunteers conduct their surveys, as it can deter volunteers from volunteering their time and create more work for the program manager. As an alternative approach to assigned or random sampling, some programs are monitoring submitted surveys to identify what times are over-represented and/or underrepresented and where. Program managers are using this knowledge to identify where survey effort could be redirected or supplemented by more

targeted MPA Watch surveys. Programs may supplement gaps in locations, dates, and times through more intensive MPA Watch surveys completed by interns, with the interns identifying temporal and spatial needs and targeting completing surveys then and there. All programs are encouraged to explore what works and share with the statewide MPA Watch program for solutions and challenges on this front.

How Often to Survey

The goal of the MPA Watch counts is to allow for significant and robust statistical inference on human uses. An approach to sampling that fails to account for a stratified population, and that depends only on simple random selection will very likely be biased. In order to translate the MPA Watch snapshot counts into credible statements about human uses it is critical that a sufficient number of surveys are conducted across each stratified observational window.

Identifying the relevant observational windows, and determining survey targets (e.g., how often surveys should be conducted at a site across times, days, and seasons) requires information on the user population. This is clearly “a chicken or the egg” dilemma as MPA Watch programs will generally have limited information on the user population at their survey sites at the start of their sampling program. To mitigate this, MPA Watch programs should make educated assumptions about the user population by working with a qualified expert to analyze data across an initial calibration period (e.g., first six months of data collection).

In setting survey targets, MPA Watch programs must also consider the level of confidence they want an observer to have in a reported statistic. In general, the more surveys that are conducted across observational windows at a site, the more confidence one can place in the statistics generated from those data. Further, surveying at sites with large populations (total overall users or within a specific user group such as nonconsumptive) is more likely to produce information that a researcher would have confidence in compared to surveying at sites with small populations. At sites that may never yield information that is statistically significant it may be advisable to rededicate program resources away from these sites unless it is determined that anecdotal data is of value to end users like the California Department of Fish and Wildlife.

As an example, consider setting survey targets at site X for weekdays and weekends over a one-year period. Assume that site X has a large number of visitors on the weekends with a small variance in counts from week to week, and a small number of visitors during the weekdays, with a large variance in the count from week to week. This would require a relatively larger weekday sample than weekend sample at site X to ensure confidence in any generated statistics. The larger relative variance on weekdays makes the true weekday average harder to measure, and thus requires more visits to support statistical confidence. Collecting enough surveys to meet the standard 95% confidence level can be difficult for community programs, particularly at sites where certain days are a higher priority for

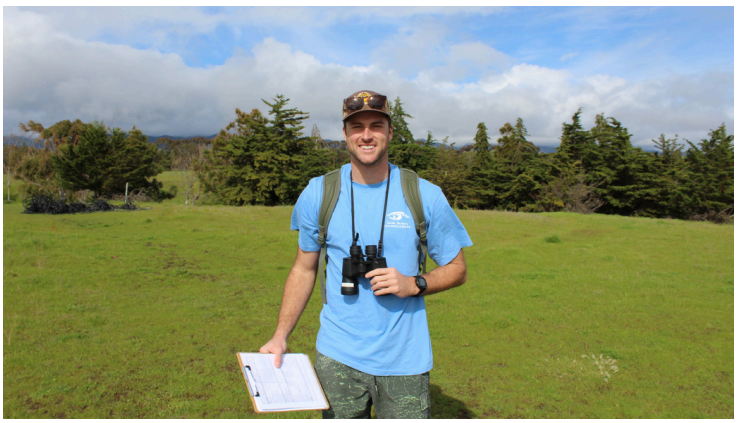
Designing Your Monitoring Program

policy like at site X. If this gold standard is unobtainable, you may scale back your requirements to a confidence level of at least 80% and a margin of error no higher than 20%. Maintaining these standards ensures the data remains a reliable, scientifically defensible tool for local decision-making while keeping the workload manageable for volunteers. If possible, it is recommended, at a minimum to sample a site four weekdays and two weekend days per month.

Volunteers also commit to completing surveys regularly, but specific time and survey commitments vary from program to program (commitments range from two to eight surveys a month, typically). MPA Watch managers will communicate with their volunteers the length of each transect in their region so that volunteers can plan their time accordingly.

Volunteer Training

All programs provide periodic volunteer trainings to train new volunteers and offer refreshers for vetern volunteers. The new volunteers bring in additional data, to compensate for volunteers who decide to not continue past their initial commitment, and to ensure each monitoring site is surveyed continuously throughout the year. MPA Watch programs are encouraged to require all volunteers to attend a classroom and field training session before beginning to survey any monitoring sites. Program managers and instructors provide resources, go over protocols and procedures, and make sure the volunteer understands MPA Watch, as well as how to conduct a survey and enter data. Volunteers then accompany managers on their first survey to ensure maximum volunteer confidence before data is collected. Many programs also recruit and train university-level interns to complete more surveys and create a more robust monitoring program.



Data Collection

MPA Watch collects data via land and boat-based surveys. Due to the additional resources required for boat-based surveys, the majority of surveys conducted are land-based. The following sections on data collection and methodology refer primarily to land-based survey techniques. More information on boat-based surveys may be found on page 25.

The predominant approach to gathering data is to have MPA Watch volunteers walk steadily along a predefined transect with clearly defined starting and ending points. When conducting a survey, MPA Watch volunteers count every person they see. Each person counted gets a tally in only one category (see the Data Definitions section on pages 20-21). The one exception is in the case of boats where each boat gets only one tally regardless of the number of people aboard. As volunteers walk along a transect, they record people or boats and their specific activities at the moment they pass them. In other words, people and activities occurring in front of or behind the surveyor are not counted. This helps to prevent double counting as people and boats are often not stationary. Volunteers walk at a relatively even speed, though this is not always possible as there may be some areas that have a high number of users making the recording of observations more time intensive. Maintaining as constant pace as possible allows for a more even distribution of observations across space and time.

In some cases limited public access can prevent MPA Watch volunteers from walking along the shoreline or bluff-top. In these cases, volunteers stop at predefined vista points and scan the coast to document activities occurring across the defined area of observation. For all vista point observations, volunteers take the smallest amount of time needed to count all activities. When a person is observed, the activity they are engaged in at that moment is recorded. No judgment is made about what the person may have been doing, or intends to do. This avoids biasing the data. However, some data categories are observed as they begin or end such as someone just entering the water to dive, snorkel, kite-surf, or gearing up for these activities. In those cases, the activity is counted if the person is actively getting ready to engage in the activity or coming out of the water. In other words, gearing up counts as part of the activity, but sitting on the beach next to the gear does not. Activities are only recorded if the person or boat is inside the study area, or “countable” area. The countable area is defined by a shoreward boundary and seaward boundary, as well as the start- and end-points of the transect. The shoreward boundary is defined as the first occurrence of infrastructure or bluff/vegetation. Defining the seaward boundary is less straightforward. The seaward boundary is not uniform in distance across all MPAs (e.g., in some cases the MPA boundary is one mile offshore and in other cases it is three miles offshore) and there are fewer distinguishable markers like restrooms or lifeguard towers that can help orient the observer. The only outlier is rod/reel fishing, where the angler is outside the countable area and their line is inside the countable area. Depending on the geography of your survey sites, this is an exception that needs to be taken into account for volunteer training and logging data. Development of clear and consistent guidelines for establishing a seaward boundary for the countable area is a work in progress for the statewide MPA Watch network. Programs are determining how to best train volunteers to visualize this boundary and tally data accordingly.

Furthermore, some environmental conditions (e.g., marine layer, ocean swell) make it challenging to accurately record observations at certain times. For now the seaward boundary is defined based on what works best for a given site and volunteer training, among other factors. Regardless of the approach taken, it is critical that each program documents its decisions so that the countable area for each site is known and used consistently. In consultation with experts, MPA Watch programs are evaluating options to ground truth offshore observations.

MPA Watch Data Portal

All MPA Watch groups share the use of an online MPA Watch data portal developed by GreenInfo Network, and accessible at www.mpawatch.org. The MPA Watch data portal reduces the costs associated with data management, enhances quality control, widens and improves access to MPA Watch data, and allows volunteers to see the results of their work in a broader context. MPA Watch programs collectively share responsibility for stewarding this technological resource. MPA Watch volunteers have the option to deliver their completed survey to the program manager for data entry, or log in to the online MPA Watch data portal and input their data themselves if they have been properly trained. When a volunteer submits data to the portal, a message is then sent to the program manager to review and approve the submission. Programs must secure the original hand-written survey from the volunteer to perform QA/QC. The original paper survey can be submitted to program managers through the data portal by uploading a photo of their survey and including it as part of the submission, or sending it to the program manager via email, fax, or postal mail.

Data Analysis & Reporting

Standardized reports for each coastal county in which MPA Watch operates are available online at mpawatch.org under the Data Reports tab. Reporting periods cover January 1 - June 30 and January 1 - December 31 of each year. Standardized reports are available without a log in. Customized reports may be requested by emailing the MPA Watch Coordinator or regional MPA Watch programs.

There are also opportunities for MPA Watch data to be integrated with existing human use and biological assessments (e.g., MPA Baseline consumptive and non-consumptive use, NOAA Coastal Use Atlas, PISCO and Reef Check) to simultaneously advance area-based monitoring and management and further establish MPA Watch as a rigorous scientific approach to monitoring within the fabric of existing human use data collection methods. Collaborative efforts are underway to develop additional capacity for MPA Watch integrated assessments to be conducted and shared with persons involved with MPA enforcement, management, and the social and biological sciences.

MPA Watch Statewide Methodology

Methodology for conducting a survey ensures that any well-trained volunteer will conduct observations and gather data in the same manner. Existing MPA Watch programs have agreed upon standardized protocols that promote consistency across the state. Always consult with local tribes to identify and respect areas of cultural significance and/or sensitivity.

MPA Watch Survey Protocol (Land-Based)

The following protocol is designed for MPA Watch community science volunteers as the audience. It details the steps required to complete a land-based survey including preparation and materials required, alignment on the coast, how to count activities and when, ending a survey route, and entering data into the online database.

How to Conduct a Survey

1. Have all required materials are on hand before conducting a survey. This includes:
   - MPA Watch field guide/maps (survey protocol and directions for conducting the survey)
   - Data Sheets (one for each survey)
   - Clipboard
   - Writing Utensil
   - Watch
   - Compass (can use on smart phone) or GPS
   - Digital camera (encouraged but optional)
   - Binoculars (encouraged but optional)
2. Fill out the top portion of the data sheet, writing in some of the metadata (Name, Date, Transect ID/Site).
3. Walk to the designated start point.
4. Write in the existing metadata (Start Time, Weather, Tide, etc.)

5. To begin the survey accurately, use a compass or GPS unit to orient yourself in the correct direction of the MPA boundary or transect boundary (see program field guide for site specific orientation directions).

6. Start walking the specified route your survey protocol describes where you can observe and record all activity on the beach to the shoreward boundary and in the water. You may choose to walk along the mean high tide line, but should adjust if you cannot see all activities. Do not count people on bluffs, trails, roads, or parking lots. The first occurrence of infrastructure or bluff onshore constitutes the shoreward boundary. The only activities you can count on trails or bluffs are active shore-based hook and line fishing, where the fishing line is touching the waters of the MPA or control site. In some cases limited access prevents volunteers from moving steadily along a transect route. Instead, they must visit predefined vista points and scan the coast to document activities occurring across a wide area. For all vista points, the time spent observing at each vista point should be the smallest amount of time needed to count all activities across the defined transect.

7. As you walk, record any activity in the appropriate categories when you pass the people doing that activity. For example, if you see someone surfing 50 feet ahead of you, do not count that activity until you pass the person who is surfing. People's activities may change from the time you first see them until the time you pass them, so to maintain scientific consistency, you should only record the activity you see them doing when you pass them. Count every single person you see, except in the case of boats (a boat gets one tally regardless of the number of people aboard). Each person or boat counted gets a tally in only one category. Also, domestic animals are tallied separately from their owner. For example, if a man is walking his leashed dog down the beach, this counts as one "Beach Recreation" and one "Domestic Animal".

8. Do not count any activity that is happening behind you. Only count activity that is happening between you and the stop point as you pass them. However, for example, if a person is running along the beach in the same direction you are walking and he passes you from behind, you should count that activity as running when he passes you (as long as you have not counted him earlier in the survey). Try not to double-count people if their activity changes.

9. All activities should be counted as you pass them and as they are happening. The only activities you can count if the person is not actively doing those activities in the water are surfing and SCUBA diving. If a person is in a wetsuit and is walking with his surfboard along the beach (and he has no other beach recreational items with him), it can be assumed that his only activity is or was surfing. The same can be assumed for a person walking along the beach in a wetsuit and SCUBA gear. However, if a person is next to a surfboard lying on the sand and he or she is in clothes or a bathing suit (NOT a wetsuit), you should count that activity as “beach recreation” because we cannot assume that his/her only activity is or was surfing.

10. Wildlife watching should only be counted if the activity is taking place on the beach or in the water- not on bluffs or trails. Wildlife watching is indicated by the use of binoculars or overt pointing and gesturing towards wildlife (such as whales, sea lions, etc.).

11. When recording consumptive boat fishing activities, make sure to properly mark if a person is inactive or active in the appropriate section of the data sheet. Active fishing is indicated by lines in the water, traps or nets set or pulled up from the water, and divers with fishing gear entering or exiting the water. Inactive fishing is when fishing gear is visible or present on board, but not baited, in the water, or being used. It is allowed for a person to transit through an MPA with fishing gear to areas where fishing is permitted as long as the gear is not baited or ready to be used to fish. Therefore, for example, we need to differentiate between a kayaker with a rod/reel on board who is legally transiting through an MPA, and a kayaker with a rod/reel that is actively fishing inside the MPA.

12. When you arrive at the end point, stand facing the ocean and use your compass or GPS to orient yourself in the accurate direction for the end of the survey. Imagine a line that extends out to the ocean as the border of the survey segment, and use this to accurately record only the activities within the survey area on your data sheet.

13. Write the end time at the top of the data sheet.

14 Total the tally marks in each individual box and circle the numbers when you finish your survey.

15 Begin your next survey on the next data sheet. Please only survey any one transect once per day. If you would like to conduct more than one survey in the same day, you may survey a different transect.

16 If you have been trained and approved for data entry, please log in to www.mpawatch.org to enter your data, and attach a photo or PDF of your data sheet to the survey online.

17 If you have not been trained and approved for online data entry, send your data sheet to the local MPA Watch program administrator via an email attachment, fax, mail, or in person.

Reminders:

1. SAFETY FIRST!
    a. Do not compromise your safety to collect the data!
    b. Be aware of people approaching you- be friendly, provide them with a general overview of what you are doing.
    c. Do not approach people engaged in an activity -especially anything potentially illegal- as you are taking observational surveys and do not want to influence behavior while conducting a survey, or put yourself in a potentially controversial or dangerous situation.
2. Each transect needs to be completed, and many transects throughout the state will take no longer than one hour (one direction).
3. Only mark the activity the person is actively engaging in.
4. Some surveys may have no activity – fill out data sheet with zeros and write “no activity”. These surveys are equally as important as ones that have plenty of activities recorded.
5. Fill out a separate data sheet for EACH transect surveyed.

MPA Watch Land-Based Data Sheet

Name(s):	**Transect ID:**	**Date:** ___/___/_____
Start Time: **End Time:**	**Clouds:** clear (0%) / partly cloudy (1-50%) / cloudy (>50%cover)	**Tide Level:** low / med / high
Wind: calm / breezy / windy	**Beach Status:** open / posted / closed	**Precipitation:** yes / no
Visibility: perfect / limited / shore only	**Temperature:** Cold (<50°F) / Cool (50-60°F) / Mild (61-70°F) / Warm (71-80°F) / Hot (>80°F)	

Onshore Activities	**Rocky**	**Sandy**
Recreation (walking, resting, playing, etc. - NOT tidepooling)		
Wildlife Watching		
Domestic animals on-leash		
Domestic animals off-leash		
Driving on the Beach		
Tidepooling		
Hand collection of biota		
Shore-based hook and line fishing		
Shore-based trap fishing		
Shore-based net fishing		
Shore-based spearfishing		

Offshore Activities (Non-Boating)	
Offshore Recreation (swimming, bodysurfing, etc.)	
Board Sports (boogie boarding, surfing)	
Stand-Up Paddle Boarding	
Non-consumptive SCUBA and snorkeling	
Spearfishing (free diving or SCUBA)	
Other Consumptive Diving (nets, poles, traps)	

Boating	**Recreational**		**Commerical**		**Unknown**	
Type	**Inactive**	**Active**	**Inactive**	**Active**	**Inactive**	**Active**
Boat Fishing - Traps						
Boat Fishing - Line						
Boat Fishing - Nets						
Boat Fishing - Dive						
Boat Fishing - Spear						
Boat Kelp Harvesting						

Unknown Fishing Boat	
Paddle Operated Boat (kayak, row)	
Dive Boat (stationary & flag up)	
Whale Watching Boat	
Work Boat (lifeguard, CDFW, research, coast guard)	
Commercial Passenger Fishing Vessel (5+ people)	
Other Boating (powerboat, sail boat, recreational jet ski)	

Comments

Did you observe: □ scientific research; □ education; □ beach closure; □ large gatherings (e.g., beach cleanup); □ enforcement activity
# of people involved: ____ | □ sandy □rocky | Other notes:
Did you report a violation: □ yes □ no If yes, how many violations did you report? _____
Who did you report the violation to (mark all that apply): □ DFW □ State Parks □ other entity (e.g., lifeguard, harbor patrol)
Which method did you use to report your violation (mark all that apply): □ phone call □ text □ mobile app □ website □ email □ in person

TO REPORT POTENTIAL VIOLATIONS CALL CalTIP: 888-334-2258

MPA WATCH mpawatch.org

TO REPORT POTENTIAL VIOLATIONS CALL CalTIP: 888-334-2258

MPA Watch Land-Based Data Sheet

Name(s):	**Transect ID:**	**Date:** ___/___/_____
Start Time: **End Time:**	**Clouds:** clear (0%) / partly cloudy (1-50%) / cloudy (>50%cover)	**Tide Level:** low / med / high
Wind: calm / breezy / windy	**Beach Status:** open / posted / closed	**Precipitation:** yes / no
Visibility: perfect / limited / shore only	**Temperature:** Cold (<50°F) / Cool (50-60°F) / Mild (61-70°F) / Warm (71-80°F) / Hot (>80°F)	

Onshore Activities	**Rocky**	**Sandy**
Recreation (walking, resting, playing, etc. NOT tidepooling)		
Wildlife Watching		
Domestic animals on-leash		
Domestic animals off-leash		
Driving on the Beach		
Tidepooling		
Hand collection of biota		
Shore-based hook and line fishing		
Shore-based trap fishing		
Shore-based net fishing		
Shore-based spearfishing		

Offshore Activities (Non-Boating)	
Offshore Recreation (swimming, bodysurfing, etc.)	
Board Sports (boogie boarding, surfing)	
Stand-Up Paddle Boarding	
Nonconsumptive SCUBA or snorkeling	
Spearfishing (free diving or SCUBA)	
Other Consumptive Diving (nets, poles, traps)	

Boating	**Recreational**		**Commerical**		**Unknown**	
Type	**Inactive**	**Active**	**Inactive**	**Active**	**Inactive**	**Active**
Boat Fishing - Traps						
Boat Fishing - Line						
Boat Fishing - Nets						
Boat Fishing - Dive						
Boat Fishing - Spear						
Boat Kelp Harvesting						

Unknown Fishing Boat	
Paddle Operated Boat (kayak, row)	
Dive Boat (stationary & flag up)	
Whale Watching Boat	
Work Boat (lifeguard, CDFW, research, coast guard)	
Commercial Passenger Fishing Vessel (5+ people)	
Other Boating (powerboat, sail boat, recreational jet ski)	

Comments

Did you observe: □ scientific research; □ education; □ beach closure; □ large gatherings (e.g., beach cleanup); □ enforcement activity
# of people involved: ____ | □ sandy □rocky | Other notes:
Did you report a violation: □ yes □ no If yes, how many violations did you report? _____
Who did you report the violation to (mark all that apply): □ DFW □ State Parks □ other entity (e.g., lifeguard, harbor patrol)
Which method did you use to report your violation (mark all that apply): □ phone call □ text □ mobile app □ website □ email □ in person

Statewide MPA Watch
Land-Based Data Sheet

Statewide MPA Watch Data Definitions

MPA Watch program management takes place at the local level, administered by the local MPA Watch program. The considerations below offer guidance to programs in selection of transect routes, volunteer training, and program management. One of the first things a program should do is define their total coverage of the coast, understand where MPAs are, and make sure coordination is not overlapping with other MPA Watch programs. Defining sites, and transects within those sites, is a careful balance between practical and scientific considerations. In addition, when scouting survey routes, program managers will need to map and define methods of conducting surveys- such as from a bluff, or walking along the beach. Program managers will also need to define transects with a specific start point and end point, and map them clearly in the local program's volunteer field guide so transect routes are easily findable, surveys can be completed accurately, and safety considerations such as tides are identified.

Table 2. Metadata definitions on datasheet

Metadata	Definition	Note
Name(s)	First and Last Name	
Date	Month / Day / Year	
Transect ID	Name of transect	
Start Time	Time data collection begins	This could be different from the time you make your first observation.
End Time	Time data collection ends	This could be different from the time you make your last observation.
Clouds	Clear (0%)/ partly cloudy (1-50%)/ cloudy (>50%cover)	
Precipitation	Yes/No	If there is the presence of precipitation anytime during the survey indicate "yes."
Air Temperature	Cold (<50°F) / Cool (50-60°F) / Mild (61-70°F) / Warm (71-80°F) / Hot (>80°F)	Air temperature ranges, in degrees Fahrenheit
Wind	Calm / breezy / windy	
Tide Level	Low/ Medium / High	
Visibility	Perfect / limited / shore only	
Beach Status	Open / posted / closed / unknown	

On-Shore Activities

Recreation
Walking, hiking, running, resting, playing, sitting, camping, art (NOT TIDEPOOLING).

Wildlife Watching
Use of binoculars or a spotting scope OR visible interaction with wildlife (e.g. pointing at).

Domestic Animal On-Leash
(also count the human as recreation)
Mostly dogs, but could apply to other domestic animals. Note non-dogs in the comments section.

Domestic Animal Off-Leash
(also count the human as recreation)
Mostly dogs, but could apply to other domestic animals. Note non-dogs in the comments section.

Driving on the Beach
(count vehicle, not people)
Motorized vehicles, actively driving, or parked on the sand. E.g. Lifeguards, Humane Society, CA State Parks vehicles.

Tidepooling
Actively observing tidepools without physical contact to the wildlife/tidepool itself.

Collecting
(things that are alive or were alive, e.g. shells)
Collecting marine life into a bucket or net and taking it away. Common examples include clams and shells.

Shore-Based Fishing
(describe gear in comments)
Fishing line in the water, casting a line, use of a net or hoop net, spear fishing.

Sandy- If an activity occurs on a sandy shoreline. Apply, where applicable, to ALL onshore activities.

Rocky - If an activity occurs on a rocky shoreline. Apply, where applicable, to ALL onshore activities.

Statewide MPA Watch Data Definitions

Off-Shore Activities

Surfing/Boogie Boarding
aka "Board Sports"
Surfing, boogie boarding, kite surfing, wind surfing.

Offshore Recreation
Swimming, wading (knees or deeper), bodysurfing, etc.

Stand-Up Paddle Boarding
Stand-up paddle boarding.

Non-Consumptive SCUBA and Snorkeling
In water, gearing up, entering or exiting the water - no collection or fishing gear.

Spear Fishing
(Free Diving or SCUBA)
In water, or gearing up, entering or exiting the water with observed spear gun.

Other Consumptive Diving
Possession of marine life (lobster, scallops, etc.) and/or presence of nets and/or bags.

Consumptive - An activity in which a natural resource (e.g. animal, plant, rock, sand) is removed from the environment.

Non-Consumptive - An activity in which natural resources are not removed.

Boating

Boat Fishing
(describe gear in comments)
Poles, nets, traps, tow lines, purse seines, spear guns, etc.

Kayak/Canoe/Dinghy
Each counts as 1 regardless of number of people on board.
On water, launching, or hauling out.

Dive Boat
(stationary - flag up)
Look for divers or dive gear.
No presence of fishing gear.

Whale Watching Boat
Passengers observing marine life (dolphins, whales) - can be two levels or one on boat, binos, cameras.

Work Boat
Including lifeguard boats, enforcement, research, military, coast guard, etc.

Commercial Passenger Fishing Vessel (CPFV)
aka "Party Boats"
5+ anglers visible on board.
Record name of boat if possible.

Other Boating
Any powerboat, jet ski, or sailboat, which is not obviously a work-boat.

Table 3. Definition of additional comments on datasheet

Comments	Definition	Note
Scientific Research	Presence or absence of scientific research.	Describe in comments nature of the activity and number of individuals involved where possible, and whether it took place on rocky or sandy.
Education	Presence of absence of educational groups.	Describe in comments nature of the activity and number of individuals involved where possible, and whether it took place on rocky or sandy.
Beach Closure	Presence or absence of beach closure due to water pollution or some other issue like sensitive habitat.	Describe in the comment field the nature of the activity, and whether it took place on rocky or sandy.
Large Gatherings	Presence or absence of large gatherings for a volleyball tournament, Junior Lifegaurds, etc.	Describe in comments nature of the activity and number of individuals involved where possible, and whether it took place on rocky or sandy.
Enforcement Activity	Presence or absence of enforcement activity.	Describe in comments nature of the activity and number of individuals involved where possible, and whether it took place on rocky or sandy.
Did you report a violation?	Yes, no	If yes, indicate number of violations reported
Who did you report the violation to?	DFW, State Parks, other entity (i.e., lifeguard, harbor patrol)	Mark all that apply.
Method for reporting violation	Phone call, text, mobile app, website, email, in-person	Mark all that apply.

Required and Recommended Practices

The reliability and credibility of MPA Watch data and analyses depend in part on the processes and protocols in place to ensure that all aspects of the program—especially those agreed upon by all members of the statewide network—are implemented correctly. Community science efforts stand to gain from adopting quality assurance and quality control (QA/QC) protocols that demonstrate to potential users the quality and reliability of the resulting data and analyses. However, these practices often need to be balanced with other considerations. For example, expert oversight of volunteers might improve the accuracy of observations, but would detract from the efficiency of the program and overall volunteer experience. MPA Watch required and recommended practices (see Table 4) extend across most elements of the program, from training volunteers to producing and sharing results. All programs are required to do at a minimum some strategies, while other measures are recommended as good practice, when feasible. In determining what protocols are required vs. recommended, specific thought was given to the operational and organizational consequences of implementation. For example, required prior expertise may limit the

pool of potential volunteers while in-person oversight may require significant investment of resources. MPA Watch programs have agreed on required and recommended practices. To arrive at these decisions programs engaged in a series of discussions comparing current practices and considering the feasibility and desirability of particular requirements, given the range of current program operation. An Advisory Committee reviewed the results of these discussions and provided additional recommendations. Results of this process are reflected in Table 4. Those practices and others are discussed further below. The table is a living document, to be updated as programs evolve and learn from experience. Note that a blank space in Table 4 indicates that there is not currently statewide guidance on that strategy, although most programs may use that strategy.

Table 4. Required and recommended practices

Strategy	Required	Recommended
Prior Expertise Particular knowledge or experience required for volunteers to participate.		
Training Required formal instruction before participation in the activity.	Required training session online, in classroom, or in field.	Recommended training sessions online or in the classroom AND in field.
Science Advising Recognized experts provide guidance on the project design and implementation.		
Ranking System Volunteers advance through a hierarchy of roles, as they demonstrate improvement in skills and knowledge.		
In-Person Oversight Professionals accompany volunteers in the field to keep an eye on data collection.		Periodic in-person check-ins in the field recommended.
Re-training Instruction or testing for volunteers to refresh or gain skills.	Required when major protocol changes are made at state level.	Recommend 2-year refresher courses to limit protocol drift.
Technological Aids Technology that standardizes practices and/ reduces error.	Required to upload data in information management system.	Recommend use of binoculars and compass to support data collection.
Data Entry A professional validates data once they have been collected.	Data logged into IMS is reviewed and approved.	Recommend working with science advisors/ professionals to establish IMS outliers.
Cross-Comparison Compare program data with data generated by professionals.		Recommend programs cross-compare data when determined feasible and credible.
Data Sharing and Publication Transparency and accessibility of data, and technical review of data or results	When reporting, it must be indicated whether it has been reviewed and in what form.	Recommend having analytical questions and framework reviewed by experts.

Boat-Based Surveys

Boat-based surveys have been conducted in the South Coast region by LA Waterkeeper since the South Coast MPA network of MPAs were established January 1, 2012. More recently, Santa Barbara Channelkeeper and WILDCOAST also conduct boat-based surveys. These surveys focus on capturing all boating activity and shore-based fishing in defined transects inside and outside of MPAs.

Survey Crew Positions and Equipment:

- Boat Operator
- Data Scribe – Data Sheet and Writing Instrument
- Distance Finder Operator – Distance Finder
- Spotter - Binoculars
- Photographer - Camera
- GPS Unit Operator – Handheld GPS
- iPad Data Scribe – iPad or Tablet

Methodology

Transects are run at a speed of approximately 10 knots and roughly a half-mile from shore, and observations are made at a safe, unobtrusive distance from an observed vessel, moving to position the observed vessel on a heading directly North, South, East, or West from your vessel. For each vessel or onshore fishers the following are documented in the data tally sheet:

- The time of sighting is noted
- Your vessel's GPS position is noted
- The compass heading direction of the observed vessel from your vessel is noted
- The distance of the observed vessel from your vessel is noted *MPA coverage area is to three miles off shore if visibility allows. It is suggested that if a violation is suspected, spending time and gas to get a closer look at vessel type, activity, and to possibly collect more accurate data be done on a case-by-case basis.
- The observed vessel type is noted, commercial or recreational, as are any onshore fishers
- The activity on the observed vessel is noted, as are activities of any onshore fishers
- The quantity of observed vessels or onshore fishers is noted
- Two photos are taken of the observed vessel or fishers and that is noted *These photos are taken for categorizing and clarifying activity and vessel type. Identifying characteristics should be obscured before any public posting.
- Any additional comments, including violations observed and reported, as well as other observations are noted

MPA WATCH

BOAT-BASED DATASHEET

Crew Names:

Name (data recorder):	Date	Transect ID
Start Time: End Time:	Clouds: clear (0%)/partly cloudy (1-50%)/cloudy (> 50%)	Precipitation yes/no
Air Temperature: cold/cool/mild/warm/hot	Wind: calm/breezy/windy	
Visibility: perfect (>1)/limited (>200yds<1mi)/poor (<200yds)	Sea state: Calm sea (0-2ft); 2-4ft swell; 4-6ft swell; Too rough to observe	

Vessel ID #	Time	Lat/Long	Heading	Distance (yds)	Vessel Type	Vessel	Qty	Activity	# of photos	Notes
1		N. W.								
2		N. W.								
3		N. W.								
4		N. W.								
5		N. W.								
6		N. W.								
7		N. W.								
8		N. W.								
9		N. W.								
10		N. W.								

Vessel Types

Commercial Fishing	Commercial Fishing: Net Boats	Comm. Non-Fishing	Recreational
CPFV Lobster Boat Trap Boat Urchin Boat Other	Trawler Purse Seiner Light Boat (Squid) Gillnet Other	Passenger Boat (Ferry, Cruise Ship, etc.) Oil Tanker Cargo Ship (Barge, Container) Support Vessel (Tug, tender) Res-Mil-Enf (Science or Gov or Enf) Charter (Whale, Diving, Ecotour) Other (Dredge, parasail, etc).	Sport Fishing Boat Power Boat Sailboat Dive Boat Shore Diving On Shore Kayak Jet Ski Other (Sup, canoe, etc.)

Activity

Fishing
Not Fishing
Underway
Moored
Diving
Spearfishing
Other

Comments

Did you observe: ☐ scientific research ☐ education ☐ beach closure ☐ large gatherings ☐ enforcement activities

Did you report a violation: ☐ yes ☐ no If yes, how many? ___

Who did you report the violation to (mark all that apply)?
☐DFW ☐ State Parks ☐Other entity (eg, lifeguard, harbor patrol).

Which method did you use to report your violation (mark all that apply)?
☐ phone call ☐ text ☐mobile app ☐ website ☐ email ☐ in person

mpawatch.org

TO REPORT POTENTIAL VIOLATIONS CALL CalTIP: 888-334-2258

Data Entry

Some MPA Watch programs allow volunteers to enter data into the database, and others only allow trained volunteers or interns, or program managers to enter this data. A professional validates data once it has been entered into the database and cross references the entry with the original data sheet. MPA Watch managers or identified volunteers will review and approve data logged into the IMS. It is recommended that MPA Watch programs work with identified qualified personnel to establish thresholds for IMS outliers (these are determined by individual programs because each site has unique characteristics). For instructions on entering survey data into the IMS, please see the Appendix.

Volunteer Training

Currently, there are few requirements as to how volunteers should be trained. Table 4 shows several aspects of volunteer training, what is currently required, what is recommended, and thoughts for the future of MPA Watch training. Make sure to include any information on areas of cultural signficance or sensitivity. Consult with local tribes for appropriate information.

Volunteer Supplies/ Equipment

MPA Watch programs are open to the community and general public, although many programs have age restrictions. Because most monitoring sites require moderate hiking, volunteers must be able to spend at least one hour outdoors in unpredictable weather. Volunteers need to have access to public transportation or provide their own reliable transportation to get to and from survey sites. Volunteers are asked to use basic technology (e.g.: binoculars, GPS or compass, and digital cameras) and web tools to share and access materials and information. Volunteers are instructed on proper use of field technology and web tools in the MPA Watch volunteer training to ensure they are able to complete surveys, much of which is detailed in the Volunteer Field Manual.

Volunteer Training on Illegal Activities

When a volunteer observes an illegal activity, they are discouraged from confronting the person due to both safety and influencing the data. Volunteers are giving their time to collect objective and accurate data; not to enforce regulations. A volunteer may decide to do nothing about an illegal activity. However, they can call the potential violation in to CalTIP, and individual MPA Watch programs can provide resources or local phone numbers in order to report violations.

To support programs in developing their own practices regarding violations, general guidelines, developed from discussions with enforcement officials at the CA Department of Fish and Wildlife are provided below.

When you witness possible poaching or illegal activities in an MPA:

1. Do NOT confront the person.
2. Position yourself in a safe place, or just continue with your survey (incognito-style).
3. Call 911 if a dangerous or emergency situation exists.
4. The California Department of Fish and Wildlife (CDFW) is the agency charged with management and enforcement of MPA regulations. If you see a potential violation, you are encouraged to call 1-888-DFG-CalTIP (1-888-334-2258). CalTIP (Californians Turn In Poachers and Polluters) is a confidential witness program that encourages the public to provide Fish and Wildlife with factual information leading to the arrest of poachers and polluters.
5. Be prepared to give the fullest possible account of the incident including the name, address, age and description of the suspect, vehicle description, direction of travel, license number, type of violation and when and where it occurred.
6. For more information, go to: http://www.dfg.ca.gov/enforcement/caltip.aspx

Volunteers are also encouraged to take notes on any consumptive behaviors observed (e.g., a survey would include what was being collected and where [and potentially have a photo] if they observed “hand collection of biota”).

Volunteer Field Manual

The Volunteer Field Manual is designed to be a resource for new MPA Watch programs to customize for volunteers being trained with MPA Watch. The volunteer manual contains materials such as activity identifications, volunteer responsibilities, equipment checklists, monitoring protocol, maps of the MPA Watch program’s specific transects, and more. Example volunteer field manuals are available. In creating their own manual, each organization will need to input their location-specific maps, personalized forms, and procedures into their manual by spotting the highlighted areas and changing them to their specific organization’s information.

Transect/Map Design

In addition to selecting survey sites within MPAs, programs are also encouraged to design, using tools provided in the IMS, transect routes with detailed instruction for each route. Instructions are intended to provide every volunteer with a clear and concise, step-by-step protocol for each transect. These protocols should be easily available for volunteers to refer to. Elements needed to incorporate into every transect protocol include:

1. Name, location (GPS markers), and map of survey site (Ideally, maps include start point & end point or vista points, and detail the route a volunteer will be walking/driving/using public transportation).
2. Description of the boundaries & background information of the MPA or site (this includes when to survey and when not to survey if specific conditions are necessary to survey or the area is potentially dangerous at certain times).
3. Parking or public transportation options, beach access, and bathroom locations.
4. Detail about the survey site (i.e., is it an MPA? What are the prohibited/permitted uses?).
5. The starting point of the survey.
6. Field notes (i.e. length of walk, safety advice, proper attire & equipment, etc.).
7. Detailed instructions of how to walk/drive-and-scan the survey.
8. Reminders of procedures throughout the survey (i.e. use of compass or GPS, survey techniques, or potential obstacles/hazards).
9. Any other important information the volunteer would need to properly conduct the survey The end point of the survey.

Volunteer Recruitment and Retention

The key to any successful MPA Watch program are volunteers. Recruitment strategies should be evaluated regularly, to identify potential improvements in recruitment and retention. Each organization will have a different strategy for recruitment, based upon regional considerations, types of volunteers, and values of your community. Knowing your audience and following up quickly with volunteers are keys to recruitment or retention strategies. Understanding why your volunteers are giving their time and providing incentives can dramatically increase your retention rates. If your program needs some new ideas, see the Volunteer Recruitment or Volunteer Retention sections in the Appendix.

Concluding Remarks

MPA Watch data are contributing to the understanding of human uses of MPAs and the adjacent coastlines of California. Since the inception of MPA Watch, thousands of surveys have been completed by volunteers throughout the state. These data are essential in the management and understanding of MPAs and the conservation and protection of our oceans. We hope this manual will aid you in creating an MPA Watch program of your own, fine-tuning a current program you have, or setting a standard for the data collected in surveys through this program.

APPENDICES

A FREQUENTLY ASKED QUESTIONS

B LAND-BASED SURVEYS
- Protocol

C BOAT-BASED SURVEYS
- Protocol
- Datasheet

D DATA PORTAL USER MANUAL
- IMS for Volunteers (Volunteer Functions)
- Entering Data in the IMS (Volunteer Functions)
- Creating New Survey Sites (Management Functions)
- Managing Users (Management Functions)
- Viewing and Approving Surveys (Management Functions)
- Managing Document Library (Management Functions)

E DATA REPORTS
- Information Sheet
- Standardized Report Template

F VOLUNTEER RECRUITMENT STRATEGY GUIDE

G MARINE LIFE PROTECTION ACT (MLPA)

Frequently Asked Questions

DEFINITIONS

Q. What is the difference between “sandy” and “rocky”?

A: Any activity that happens on the sandy beach will be counted under “sandy”. Any activities happening on any rocky outcropping/jetties/cliffs such as tidepooling and fishing will counted under “rocky”.

Q: What is the shoreline boundary?

A: The boundary is the cliff edge or the first man-made structure.

Q: What's the difference between a "posted" and a "closed" beach?

- Open: No signs or warnings.
- Posted: The beach has temporary warnings notifying the public of safety concerns (i.e. oil or sewage spill, rip tides, sharks, high swell, or epidemics like COVID).
- Closed: Signs indicating that the beach is legally closed with no trespassing (i.e. due to a landslide, construction, restoration, or major oil or sewage spill).

Q: What's the difference between onshore and offshore activities?

- Offshore is defined as being in water that is knee-deep or deeper, regardless of the person's height.
- Onshore activities are everything occurring on land from the beach boundary down to shallow water that is less than knee-deep.
- Knee-deep is defined by the height of the person doing the activity. For example, an adult may be in less than knee-deep water and their activity would be recorded as “onshore recreation”. At the same time, their toddler may be splashing around in the same water which reaches the toddlers chest, so the toddler would be recorded as “offshore recreation”.

Frequently Asked Questions

PROTOCOL

Q: How do I count someone who switches activities?

A: You only count someone ONCE. If you see someone switch activities, such as someone who was originally laying on the beach but then goes in the water, count them only under the activity that you first observed them.

Q: How do I count someone walking their dog?

A: A person and their pet count SEPARATELY. For someone walking their dog, count the person under “on-shore recreation” and the dog under “domestic animals on/off leash (dog on/off leash)”.

Q: Do I count people in uniforms?

A: Only count vehicles (like lifeguard trucks and ATVs) as these have impacts on the beaches. Boating activity of those in uniforms (ie. lifeguard boats) should be counted under “Work boat”. Do NOT count individual people in uniforms working in public safety and/or law enforcement (i.e. police, sheriffs, lifeguards, wardens). Check Enforcement Activity in the Comments section. However, other people working in a uniform on a beach (i.e. researchers, educators, tour guides, outfitters, etc. in uniforms) are counted based on their activity. For example, a surf instructor would be counted as an individual surfing if they are doing that activity.

Q: Should I include lifeguards in my survey?

A: If you see a lifeguard standing on the beach or on the lifeguard tower, DO NOT count them in your survey. It is assumed that there are lifeguards at the beach, and therefore their presence does not affect the number of people visiting the beach.

Q: How do I count a lifeguard vehicle driving on the sand?

A: If you see a lifeguard car driving down the beach, please count that under the category “Driving on the Beach,” because that activity does have an effect on the beach ecology. Be careful not to double-count the same vehicle if it passed you earlier.

PROTOCOL (Continued)

Q: How do I count a lifeguard vehicle parked on the sand next to a lifeguard tower?

A: Count a lifeguard vehicle parked in the sand next to a lifeguard tower as "Driving on the Beach."

Q: How do I count a lifeguard vehicle parked on the sand, but NOT next to a lifeguard tower?

A: A lifeguard vehicle parked on the sand but not next to a lifeguard tower should be counted as “Driving on the Beach.” Be careful not to double-count the same vehicle if it passed you earlier.

Q: How do I count a lifeguard vehicle in the parking lot?

A: DO NOT count any activity in the parking lot, including lifeguard vehicles.

Q: How do I count the lifeguard boat?

A: Count the lifeguard boat as "Work Boat.” Make a note on your data sheet that it was a lifeguard boat.

Q: Should I count border patrol vehicles while surveying the areas?

A: Yes, if you see a border patrol vehicle driving down the beach, please count that under the category "Driving on the Beach,” because that activity does have an effect on the beach ecology. Be careful not to double-count the same vehicle if it passed you earlier.

Q: Do I count surf instructors under the category "Surfing" or under the category "On-shore Recreation?”

A: Even though the surf instructors may not actually be surfing, you should count their activity under the category “Surfing” because their action is only related to surfing, not on-shore recreation. Therefore, if there were one student and one instructor, you would count two people under the category “Surfing.”

Q: What counts as "wildlife watching"?

A: This activity should only be recorded if it happens on the beach or in the water (not on bluffs or trails). Look for signs like the use of binoculars or overt pointing/gesturing toward wildlife. Remember to confirm that wildlife is present before recording this activity.

PROTOCOL (Continued)

Q: How do I determine if a boat is inside or outside the MPA boundary?

A: Do the best you can and be as consistent as possible! If the horizon line appears behind or above a boat, it is likely within roughly 3 nautical miles (where state waters jurisdiction ends), which is the furthest out any of California's state MPAs will extend to. This means it is likely within the MPA boundary. However, not all MPA boundaries go out that far! Ask your local manager for more information. If the horizon is in front of the boat or if it appears that the boat is perfectly atop the horizon line, it is most likely outside any MPA boundary. Please use landmarks and manmade structures, if possible.

Q: How should I categorize different board sports?

A: Board sports like surfing, boogie boarding, kite surfing, and wind surfing are counted in the same category. Stand up paddle boarding is counted either in its own category OR in "paddle operated boats" - make sure each stand up paddle boarder is only counted in one of the two categories, and be consistent based on how your program categorizes it.

Q: Where do I put dinghies and jet skis?

- Dinghies:
  - If it is a public safety, law enforcement, or research vessel (i.e. used by uniformed personnel), count it as a "work boat."
  - Otherwise, count it as a "paddle-operated boat" if it does not have an engine or "other boating" if it has an engine.
- Jet Skis:
  - Mark as "other boating."
  - If a lifeguard is using it for patrol or rescue, mark it as a "work boat."
    - In this case, the jet ski will be clearly marked and is clearly operated by a uniformed lifeguard.

Q: What is included in "other boating"?

A: Other boating includes boats that do not have a specific category on the datasheet. For example, a ferry would be recorded in the "other boating" category. Remember, work boats only include vessels that are used for public safety, law enforcement, and research purposes.

PROTOCOL (Continued)

Q: How should I count people on piers and jetties?
A: If a pier or jetty is part of the MPA boundary, count people on it as either "rocky recreation" or "onshore fishing," depending on their activity. Add comments to specify the activity, such as "fishing on pier" or "recreational activity on jetty."

Q: What if I can't tell what a fishing activity is?
A: If you're unsure of the specific type of offshore fishing, categorize it as "unknown fishing." Volunteers should not guess the activity.

Q: Should I count washed up lobster traps and other fishing gear washed up on shore?
A: No, you should not count washed up lobster traps and other fishing gear. If you would like to make a separate note of it and email it to us, that would be great!

Q: Why do I need to differentiate if someone is "actively fishing" or "not actively fishing”?
A: The fishing regulations in the MPAs that prohibit or limit certain types of fishing state that a person may transit through the MPAs with fishing gear for the regulated fisheries, as long as the gear is not baited or ready to be used to fish. Therefore, for example, we need to differentiate between a kayaker with a rod/reel legally transiting through the MPA and a kayaker with a rod/reel that is illegally fishing inside the MPAs.

Q: What should I do if I see illegal fishing activity going on in the MPA during my survey?
A: Please record the fishing activity on your data sheet, as you would any other survey activity. You are not required to do so, but if you feel comfortable you can approach the person to let them know it is a protected area and no fishing is allowed. If you would like to report illegal activity to Cal-tip call this number 888-334-2285. Please do either activity AFTER completing your survey.

Q: Is there a script for handling violations?
A: Yes, a script is available to help volunteers feel comfortable reporting data for CDFW. Please check in with your local MPA Watch manager for any suggested script for reporting a potential violation. Your local MPA Watch manager will also provide training on what is and is not considered a potential violation so that you can report these potential violations accurately for your area.

PROTOCOL (Continued)

Q: Are dogs off-leash violations recorded?

A: "Potential Violations Observed" should focus on MPA-specific violations of Fish and Game Commission Code. If dogs off-leash is a violation of that code, then yes, it should be marked as a potential violation. Otherwise, dogs off-leash are recorded in activities observed, and not marked as a potential violation. Please ask your local MPA manager for specific regulations of the MPA and examples of MPA potential violations in your area.

Q: What if I can't finish the whole transect?

A: It's crucial to walk the entire transect. If you are surveying at a site that has more than one transect, please only submit data sheets for completed transects. If a transect is incomplete, you must discard the survey.

Q: Where should I walk during the survey?

A: You can walk where you have good visibility of all the activity on the beach up to the shoreline boundary. Remember to walk at a consistent pace and avoid stopping for long periods of time. A good point of visibility could mean that you can walk along the mean high tide line, or the line of seaweed and shells along the beach. Be sure to still count all activities along the transect from the shoreline boundary out to the boundary of the MPA in the water.

Q: Does it matter which direction I walk while completing a transect?

A: Unless specified by your local MPA Watch manager for safety reasons, it does not matter which direction you walk along a transect as long as MPA Watch survey protocol is followed. Once you choose a direction to walk, make sure to complete the entire transect in that direction.

Q: Do I count people on bluffs?

A: No, people on bluffs are not counted, with one exception: you should count them if they are fishing with a line in the water. Activities like wildlife watching on bluffs or rock climbing on bluffs are not included in the standardized data sheet, but you can add notes about them in the comments.

Q: How do I count contractors working on a beachfront home?

A: Do not count any contractors working on a beachfront home, even if they are standing on the beach. The purpose of them being there is not to enjoy the beach but to work on private property.

PROTOCOL (Continued)

Q: How important are comments?

A: Comments are crucial for providing context for the activities you observe and record. Make sure all important and/or unusual observations are added to the database.

Q: What should I do if I see NO activity during the entire survey?

A: Even if you did not see any activity during a survey, that is still valuable scientific data. Please walk the entire survey segment and turn in your data sheet with the top portion filled out, and make a note that there was no activity seen.

Q: When should I use "X" vs. "0" on the datasheet?

A: "0" is for when you are confident that the activity was not present. The datasheet language will reflect this. "X" is for when you are unable to survey an activity (i.e. due to fog). This is used when you complete a survey, but cannot observe specific activities (like surfing) due to weather (like fog) that makes it impossible to see past the shoreline as you walk the transect. If you are able to input your data into the mpawatch.org database (ask your manager if you are), check the “Blank” box when you are unable to survey (something is marked with an X).

Q: What is the shoreline boundary when houses are on stilts?

A: The boundary is the cliff edge or the first man-made structure. People under houses on stilts should be counted.

METADATA AND MORE INFORMATION

Q: What should I do if the weather changes during the survey?

A: Record the weather at the start of the survey and do not change it. If there's a significant change in weather as you are completing your survey, add a note in the comments. *If unsafe weather conditions such as lightning or high winds develop during the survey, abort your survey and seek shelter. Do not submit your incomplete survey.*

Q: Where can I find more information on California’s MPAs?

A: Go to https://www.wildlife.ca.gov/Conservation/Marine/MPAs

Q: Where can I find a tide calendar?

A: We suggest this website:
https://tidesandcurrents.noaa.gov/tide_predictions.html
or you can download an application on your smart phone called: Tides Near Me

How to Conduct a Survey

Land-Based

MPA Watch Statewide Methodology

Methodology for conducting a survey ensures that any well-trained volunteer will conduct observations and gather data in the same manner. Existing MPA Watch programs have agreed upon standardized protocols that promote consistency across the state. Always consult with local tribes to identify and respect areas of cultural significance and/or sensitivity.

MPA Watch Survey Protocol

The following protocol is designed for MPA Watch community science volunteers as the audience. It details the steps required to complete a survey including preparation and materials required, alignment on the coast, how to count activities and when, ending a survey route, and entering data into the statewide website.

How to Conduct a Survey: Land-Based

1. Have all required materials are on hand before conducting a survey. This includes:
   - MPA Watch field guide/maps (survey protocol and directions for conducting the survey)
   - Data Sheets (one for each survey)
   - Clipboard
   - Writing Utensil
   - Watch
   - Compass (can use on smart phone) or GPS
   - Digital camera (encouraged but optional)
   - Binoculars (encouraged but optional)
2. Fill out the top portion of the data sheet, writing in name, date, transect ID/Site).
3. Walk to the designated start point.
4. Write in the existing metadata (Start Time, Weather, Tide, etc.)
5. To begin the survey accurately, use a compass or GPS unit to orient yourself in the correct direction of the MPA boundary or transect boundary (see program field guide for site specific orientation directions).
6. Start walking the specified route your survey protocol describes where you can observe and record all activity on the beach to the shoreward boundary and in the water. You may choose to walk along the mean high tide line, but should adjust if you cannot see all activities. Do not count people on bluffs, trails, roads, or parking lots. The first occurrence of infrastructure or bluff onshore constitutes the shoreward boundary. The only activities you can count on trails or bluffs are active shore-based hook and line fishing, where the fishing line is touching the waters of the MPA or control site. In some cases limited access prevents volunteers from moving steadily along a transect route. Instead, they must visit predefined vista points and scan the coast to document activities occurring across a wide area. For all vista points, the time spent observing at each vista point should be the smallest amount of time needed to count all activities across the defined transect.

7. As you walk, record any activity in the appropriate categories when you pass the people doing that activity. For example, if you see someone surfing 50 feet ahead of you, do not count that activity until you pass the person who is surfing. People's activities may change from the time you first see them until the time you pass them, so to maintain scientific consistency, you should only record the activity you see them doing when you pass them. Count every single person you see, except in the case of boats (a boat gets one tally regardless of the number of people aboard). Each person or boat counted gets a tally in only one category. Also, domestic animals are tallied separately from their owner. For example, if a man is walking his leashed dog down the beach, this counts as one "Beach Recreation" and one "Domestic Animal".

8. Do not count any activity that is happening behind you. Only count activity that is happening between you and the stop point as you pass them. However, for example, if a person is running along the beach in the same direction you are walking and he passes you from behind, you should count that activity as running when he passes you (as long as you have not counted him earlier in the survey). Try not to double-count people if their activity changes.

9. All activities should be counted as you pass them and as they are happening. The only activities you can count if the person is not actively doing those activities in the water are surfing and SCUBA diving. If a person is in a wetsuit and is walking with his surfboard along the beach (and he has no other beach recreational items with him), it can be assumed that his only activity is or was surfing. The same can be assumed for a person walking along the beach in a wetsuit and SCUBA gear. However, if a person is next to a surfboard lying on the sand and he or she is in clothes or a bathing suit (NOT a wetsuit), you should count that activity as "beach recreation" because we cannot assume that his/her only activity is or was surfing.

10. Wildlife watching should only be counted if the activity is taking place on the beach or in the water- not on bluffs or trails. Wildlife watching is indicated by the use of binoculars or overt pointing and gesturing towards wildlife (such as whales, sea lions, etc.)

11. When recording consumptive boat fishing activities, make sure to properly mark if a person is inactive or active in the appropriate section of the data sheet. Active fishing is indicated by lines in the water, traps or nets set or pulled up from the water, and divers with fishing gear entering or exiting the water. Inactive fishing is when fishing gear is visible or present on board, but not baited, in the water, or being used. It is allowed for a person to transit through an MPA with fishing gear to areas where fishing is permitted as long as the gear is not baited or ready to be used to fish. Therefore, for example, we need to differentiate between a kayaker with a rod/reel on board who is legally transiting through an MPA, and a kayaker with a rod/reel that is actively fishing inside the MPA.

12. When you arrive at the end point, stand facing the ocean and use your compass or GPS to orient yourself in the accurate direction for the end of the survey. Imagine a line that extends out to the ocean as the border of the survey segment, and use this to accurately record only the activities within the survey area on your data sheet.

13. Write the end time at the top of the data sheet.

14. Total the tally marks in each individual box and circle the numbers when you finish your survey.

15. Begin your next survey on the next data sheet. Please only survey any one transect once per day. If you would like to conduct more than one survey in the same day, you may survey a different transect.

16. If you have been trained and approved for data entry, please log in to www.mpawatch.org to enter your data, and attach a photo or PDF of your data sheet to the survey online.

17. If you have not been trained and approved for online data entry, send your data sheet to the local MPA Watch program administrator via an email attachment, fax, mail, or in person.

Reminders:

1. SAFETY FIRST!
    a. Do not compromise your safety to collect the data!
    b. Be aware of people approaching you- be friendly, provide them with a general overview of what you are doing.
    c. Do not approach people engaged in an activity -especially anything potentially illegal- as you are taking observational surveys and do not want to influence behavior while conducting a survey, or put yourself in a potentially controversial or dangerous situation.
2. Each transect needs to be completed, and many transects throughout the state will take no longer than one hour (one direction).
3. Only mark the activity the person is actively engaging in.
4. Some surveys may have no activity – fill out data sheet with zeros and write “no activity”. These surveys are equally as important as ones that have plenty of activities recorded.
5. Fill out a separate data sheet for EACH transect surveyed.

How to Conduct a Survey

Boat-Based

Survey Crew Positions and Equipment:

- Boat Operator.
- Data Scribe – with data sheet and writing instrument.
- Distance Finder Operator – with range finder.
- Spotter – with binoculars.
- Photographer – with camera.
- GPS Unit Operator – with handheld or integrated GPS.
- iPad Data Scribe – with iPad or tablet.

Methodology

Transects should be run at a speed of approximately 10 knots and roughly a half-mile from shore. Observations should be made from a safe and unobtrusive distance from an observed vessel, with the observed vessel positioned on a heading directly North, South, East, or West from the surveying vessel.

If vessels are observed close to the seaward boundary of the MPA, it is up to the discretion of the boat captain whether or not to deviate from the half-mile from shore transect route to determine the vessel's activity and accurate location.

For each vessel or onshore fishers observed, the following are documented on the data tally sheet:

- The time of sighting.
- Your vessel's GPS position.
- The compass heading of the observed vessel from your vessel.
- The distance of the observed vessel from your vessel.
- The observed vessel type (commercial or recreational).
- The activity of the observed vessel.
- The quantity of observed vessels.
- Any onshore fishers.
- Two photos of each vessel or onshore fishers observed.
- Any additional comments, including violations observed and reported, as well as other observations as noted.

MPA WATCH

BOAT-BASED DATASHEET

Crew Names:

Name (data recorder):	Date	Transect ID
Start Time: End Time:	Clouds: clear (0%)/partly cloudy (1-50%)/cloudy (> 50%)	Precipitation yes/no
Air Temperature: cold/cool/mild/warm/hot	Wind: calm/breezy/windy	
Visibility: perfect (>1)/limited (>200yds<1mi)/poor (<200yds)	Sea state: Calm sea (0-2ft); 2-4ft swell; 4-6ft swell; Too rough to observe	

Vessel ID #	Time	Lat/Long	Heading	Distance (yds)	Vessel Type	Vessel	Qty	Activity	# of photos	Notes
1		N. W.								
2		N. W.								
3		N. W.								
4		N. W.								
5		N. W.								
6		N. W.								
7		N. W.								
8		N. W.								
9		N. W.								
10		N. W.								

Vessel Types

Commercial Fishing	Commercial Fishing: Net Boats	Comm. Non-Fishing	Recreational
CPFV Lobster Boat Trap Boat Urchin Boat Other	Trawler Purse Seiner Light Boat (Squid) Gillnet Other	Passenger Boat (Ferry, Cruise Ship, etc.) Oil Tanker Cargo Ship (Barge, Container) Support Vessel (Tug, tender) Res-Mil-Enf (Science or Gov or Enf) Charter (Whale, Diving, Ecotour) Other (Dredge, parasail, etc).	Sport Fishing Boat Power Boat Sailboat Dive Boat Shore Diving On Shore Kayak Jet Ski Other (Sup, canoe, etc.)

Activity

Fishing
Not Fishing
Underway
Moored
Diving
Spearfishing
Other

Comments

Did you observe: ☐ scientific research ☐ education ☐ beach closure ☐ large gatherings ☐ enforcement activities

Did you report a violation: ☐ yes ☐ no If yes, how many? ___

Who did you report the violation to (mark all that apply)?
☐DFW ☐ State Parks ☐Other entity (eg, lifeguard, harbor patrol).

Which method did you use to report your violation (mark all that apply)?
☐ phone call ☐ text ☐mobile app ☐ website ☐ email ☐ in person

TO REPORT POTENTIAL VIOLATIONS CALL CalTIP: 888-334-2258