



MPA Watch is a statewide collaborative effort to collect critical human use data to enhance the management and conservation of marine protected areas (MPAs). MPA Watch data informs the management, enforcement, and science of California's MPAs and allows us insight on how human uses are changing as a result of MPA implementation. By involving local communities in this important work, MPA Watch programs inspire and empower stewardship, and educate California communities about ocean ecosystems. MPA Watch trains volunteers to observe and collect unbiased data on coastal and marine resources use. The Marin County Marine Protected Area Watch Program, organized by Environmental Action Committee of West Marin, engages community scientists in four MPAs in Marin County and one adjacent site.

4. EXECUTIVE SUMMARY

This report includes MPA Watch data from January 1 – December 31, 2022¹. In this period, 480 surveys were conducted by 42 volunteers who observed 5,289 activities over 742 survey miles.

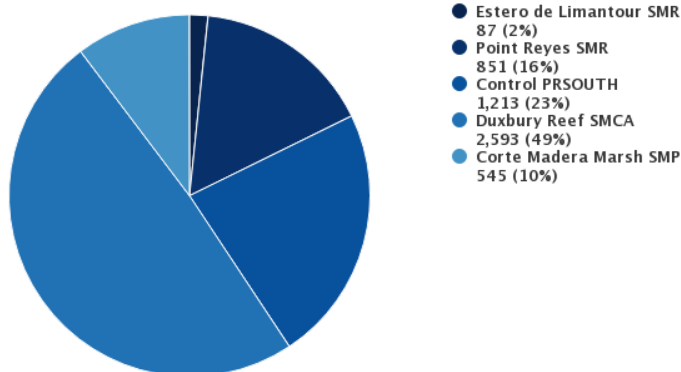
- Point Reyes State Marine Reserve (Point Reyes SMR), Estero de Limantour State Marine Reserve (Estero de Limantour SMR), and Limantour Beach Control (Control PRSouth) are accessed through the Point Reyes National Seashore.
- Duxbury Reef State Marine Conservation Area (Duxbury SMCA) is accessed through Marin County Open Space.
- Corte Madera Marsh State Marine Park (Corte Madera Marsh SMP) is accessed through the city of Corte Madera.

¹ Graphs and tables include comparisons of data in “all years” with 2022

2. HUMAN USE OF Human Use of MPAS {January 1 - December 31, 2022}

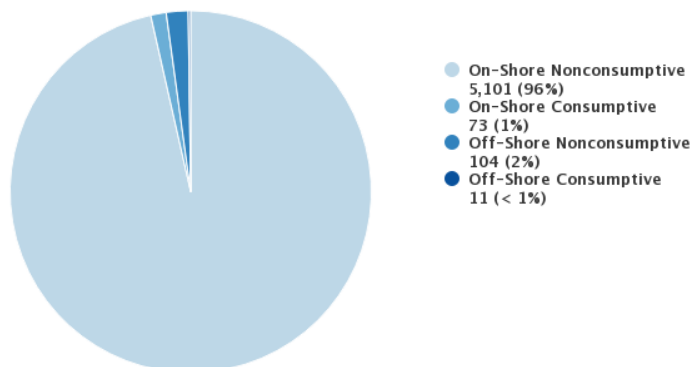
Top 5 MPAs by All Activity

January 1, 2022 – December 31, 2022
5,289 total activity events



All MPAs Combined

January 1, 2022 – December 31, 2022
5,289 activity events



Activity Classifications

On-Shore - Activities that take place on a sandy or rocky beach. Excludes bluffs, trails, sea walls, parking lots, or other man-made structures. Includes recreation, tidepooling, shore-based fishing, etc.

Off-Shore - Activities that take place offshore, typically in knee-deep water or deeper. Includes surfing, SCUBA diving, kayaking, boat fishing, etc.

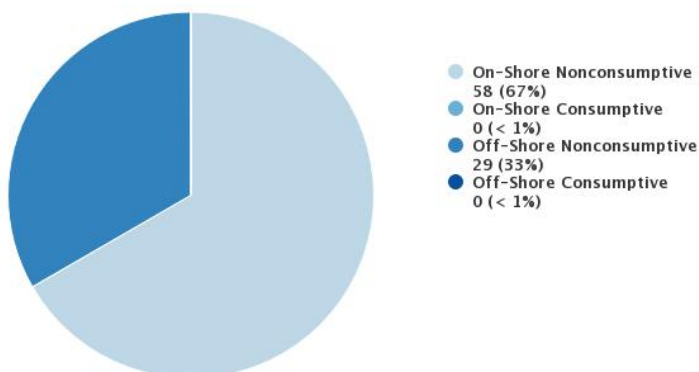
Consumptive - An activity in which a natural resource (i.e. fish, kelp, shells) is being collected.

Non-Consumptive - An activity in which a natural resource is not collected.

Activity by MPA ¹ January 1 - December 31, 2022

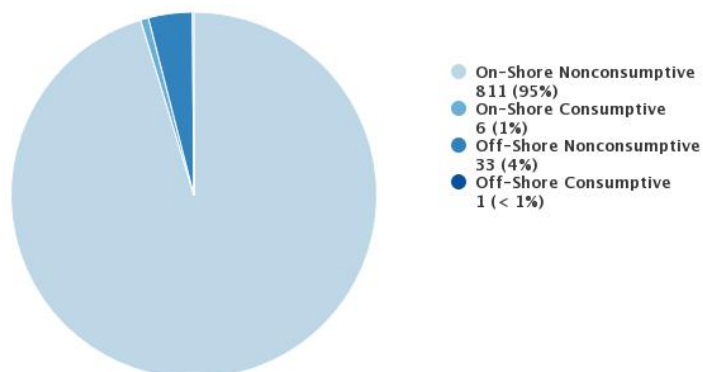
Estero de Limantour SMR

January 1, 2022 – December 31, 2022
87 activity events



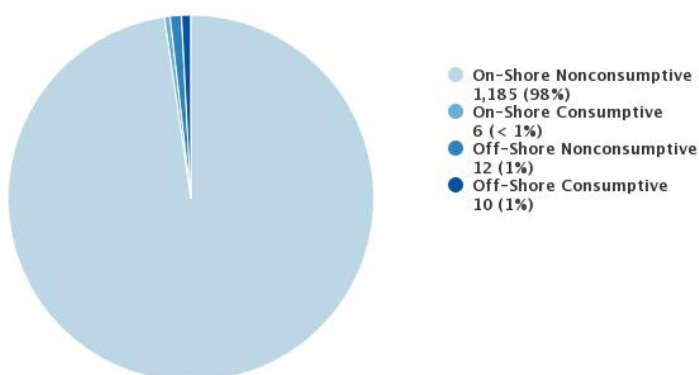
Point Reyes SMR

January 1, 2022 – December 31, 2022
851 activity events



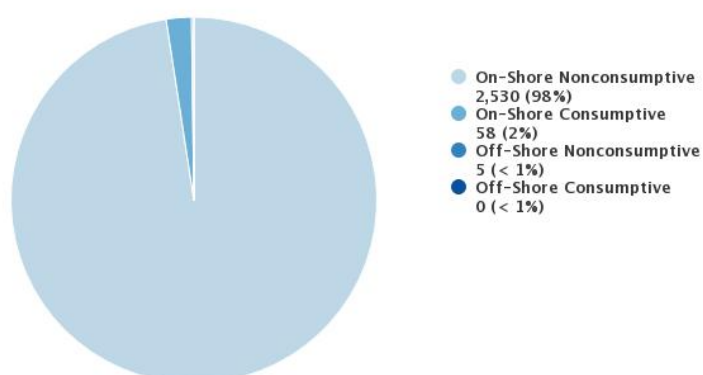
Control PRSOUTH

January 1, 2022 – December 31, 2022
1,213 activity events



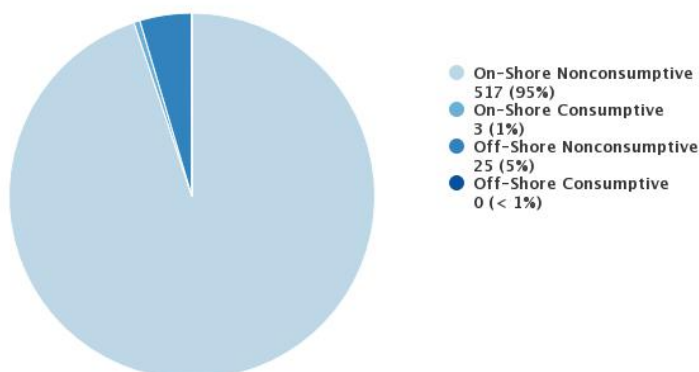
Duxbury Reef SMCA

January 1, 2022 – December 31, 2022
2,593 activity events



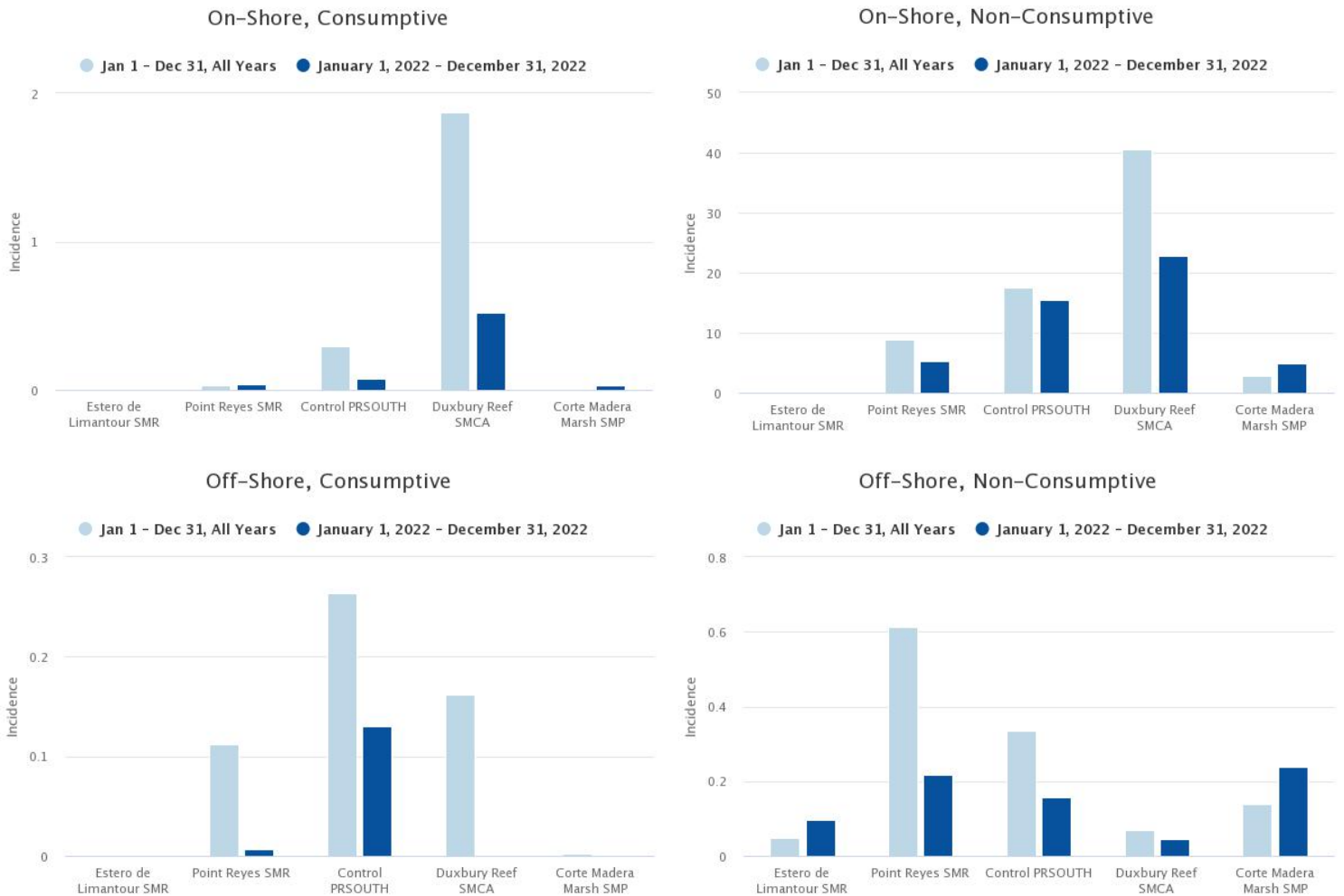
Corte Madera Marsh SMP

January 1, 2022 – December 31, 2022
545 activity events



¹ Observation count of activities (onshore / offshore) and type (consumptive / non-consumptive) in each survey area.

Activity Incidence by MPA: Comparing All Years² and 2022



2022

² The charts display incidence values for each MPA monitored by MPA Watch in Marin County. Incidence is calculated as the number of activities recorded divided by the total survey miles (accounts for differences in number of surveys conducted at each site).

³ Activity Incidence "All Years" data includes 2016 through 2022 survey data.

Activity Incidence Tables by MPA

MPA	On-Shore				
	Non-Consumptive			Consumptive	
	^	Jan 1	Jan 1, 2022	Jan 1	Jan 1, 2022
		Dec 31	through	Dec 31	through
		All Years	Dec 31, 2022	All Years	Dec 31, 2022
Estero de Limantour SMR		0.3	0.2	0.0	0.0
Point Reyes SMR		8.8	5.4	0.0	0.0
Control PRSOUTH		17.6	15.4	0.3	0.1
Duxbury Reef SMCA		40.5	22.9	1.9	0.5
Corte Madera Marsh SMP		2.9	4.9	0.0	0.0
All MPAs Combined		9.1	6.9	0.3	0.1

MPA	Off-Shore				
	Non-Consumptive			Consumptive	
	^	Jan 1	Jan 1, 2022	Jan 1	Jan 1, 2022
		Dec 31	through	Dec 31	through
		All Years	Dec 31, 2022	All Years	Dec 31, 2022
Estero de Limantour SMR		0.0	0.1	0.0	0.0
Point Reyes SMR		0.6	0.2	0.1	0.0
Control PRSOUTH		0.3	0.2	0.3	0.1
Duxbury Reef SMCA		0.1	0.0	0.2	0.0
Corte Madera Marsh SMP		0.1	0.2	0.0	0.0
All MPAs Combined		0.2	0.1	0.1	0.0

MPA	Total		
	Combined		
	^	Jan 1	Jan 1, 2022
		Dec 31	through
		All Years	Dec 31, 2022
Estero de Limantour SMR		0.3	0.3
Point Reyes SMR		9.6	5.6
Control PRSOUTH		18.4	15.8
Duxbury Reef SMCA		42.6	23.4
Corte Madera Marsh SMP		3.0	5.2
All MPAs Combined		9.7	7.1

total miles surveyed within that MPA.

⁵ The tables display incidence values for each MPA monitored by MPA Watch in Marin County. Incidence is calculated as the number of activities recorded divided by the total survey miles.

Breakdown by MPA

This report includes MPA Watch data from January 1 – December, 2022⁶. The data is collected by trained on-shore observers and is organized into categories and tables that highlight on-shore and off-shore consumptive and non-consumptive uses at MPAs located in Marin County.

- Point Reyes State Marine Reserve (Point Reyes SMR), Estero de Limantour State Marine Reserve (Estero de Limantour SMR), and Limantour Beach Control (Control PRSouth) are accessed through the Point Reyes National Seashore at Limantour Beach and Drakes Beach.
- Duxbury Reef State Marine Conservation Area (Duxbury SMCA) is accessed through Marin County Open Space at Agate Beach Park.
- Corte Madera Marsh State Marine Park (Corte Madera Marsh SMP) is accessed through the city of Corte Madera at Corte Madera Ecological Reserve.

Data collection in the first half of 2022 was slightly limited due beach closure and access restrictions at Drakes Beach, where we surveyed Point Reyes SMR and Estero de Limantour. The table below summarizes the access closures and limitations by MPA and dates of impact during 2022.

MPA Name	2022 Closures
Point Reyes SMR	Drakes Beach closed March 11 – April 1 due to elephant seal pupping. Drakes Beach (West side) closed April 29 - June 22 for elephant seal molting.

⁶ Graphs and tables include full year comparisons of data in “all years”.

Estero de Limantour SMR	
Control PRSouth	No closure
Duxbury Reef SMCA	No closure
Corte Madera Marsh SMP	No closure

Estero de Limantour State Marine Reserve (Estero de Limantour SMR): This MPA is observed from two survey transects within Point Reyes National Seashore and accessed from either 1) Limantour Beach and walking north-west, or 2) Drakes Beach and walking east. This MPA does not allow any on-shore or offshore consumptive uses.

Volunteers conducted 76 surveys in this MPA and recorded a use rate of less than 1 activity per mile surveyed: 0.3 total use count per mile. This represents a slight increase from 0.2 activities per mile in 2021.

Similar to 2021, 100% of the 2022 observations in the MPA were non-consumptive. 67% of observations in 2022 were on-shore, and 33% were offshore, which differs significantly from 2021 (86% of observations were on-shore and 14% were off-shore). Non-consumptive observations in this MPA included non-consumptive on-shore beach recreation and wildlife viewing, and offshore surfing and kayaking.

Dogs are restricted from this MPA as it is critical habitat for the Western Snowy Plover and the seasonal presence of marine mammals. Similar to 2021, of the 76 surveys that volunteers conducted zero (0) animals on- or off-leash were recorded. In total, there were no violations recorded in 2022.

Point Reyes State Marine Reserve (Point Reyes SMR)

This MPA is observed from two survey transects within the Point Reyes National Seashore and accessed from either 1) Limantour Beach and walking north west, or 2) Drakes Beach. Beach access at Drakes Beach was closed from March 11 to April 1, 2022, due to elephant seal pupping. West of the Ken Patrick Visitor Center the beach was closed from April 29 to June 22, 2022, for elephant seal molting season. This MPA does not allow any on-shore or offshore consumptive uses.



In 2022, volunteers conducted 120 surveys of this MPA (compared to 51 surveys in 2021). Surveys at this MPA recorded a use rate of 5.6 activities per mile surveyed. This



was a decrease of 15% compared to the 2021 rate of 6.6 activities per mile. During 2022, 95% of the observations in the MPA were on-shore, non-consumptive (sandy beach recreation [72%], wildlife viewing [23%], and tidepooling on the rocky outcrops [1%]). Offshore recreation and board sports each consisted of 1% of observations. Three people were observed net fishing for permitted research, and 3 people were hand-collecting biota. There was 1 observation of offshore consumptive use.



Dogs are restricted from beach access at Drakes Beach (sandy beach access to this MPA) and at the north-west portion of Limantour Beach as it is critical habitat for the Western Snowy Plover and the seasonal presence of marine mammals. There was 1 observation of an off-leashed dog. In total, there were 6 observations of potential violations observed in 2022.

Volunteers accessing this MPA from Drakes Beach typically find significant quantities of plastic marine debris that is a mix of small plastic particles, nurdles, fishing gear, single-use foodware and plastic packaging, ropes, tires, shotgun shells, and occasionally, hazardous medical waste (i.e. needles).

Limantour Beach (Control PRSOUTH)

This MPA is observed within the Point Reyes National Seashore and accessed at Limantour Beach. This area borders an MPA, therefore consumptive uses, like fishing from shore or offshore is allowable within the appropriate season and with licenses.



Volunteers conducted 35 surveys in this MPA control site, and recorded a use rate of 15.8 activities per mile surveyed. This is a 7.5% increase compared to 2021's rate of 14.7. Despite this increase, use remains significantly less than 2020's activity rate of 27.8 activities per mile. In 2022, 98% of the observations in Control PRSouth were on-shore, non-consumptive uses (90% sandy beach recreation), and the remaining top non-consumptive activities include animals on (4%) and off leash (3%). Consumptive observations consisting of offshore unknown fishing was 1% of the total.

Leashed dogs are allowed to access the southern portion of Limantour Beach. Dogs are restricted from the north-west portion of the beach due as it is critical habitat for the Western Snowy Plover and the seasonal presence of marine mammals. Volunteers recorded 83 animal observations – 49 on-leash (3 of these were NPS horses) and 34 off-leash. In 2021, on average almost 2 dogs were observed per survey. In 2022, an average of 2.3 dogs were observed per survey.

Duxbury Reef State Marine Conservation Area (Duxbury SMCA)

This MPA is observed from within Marin County Parks and Open Space and Point Reyes National Seashore and accessed at Agate Beach, managed by Marin County



Parks and Open Space. This MPA allows hook and line fishing from shore and abalone harvest with appropriate open season and licenses.

In 2022, 138 surveys were conducted. This is greater than the number of surveys in 2021 (69 surveys), due to the creation of a Duxbury Docent program in January 2022 where docents conduct MPA Watch surveys during their shifts. Volunteers recorded observing 2,593 activities with a use rate of 23.4 activities per mile surveyed, which is significantly less than 2021's use rate of 49.7. and 2020's use rate of 52.8. Prior to 2020, the use rate was similar or lower than 2022: 2019 [29.4], 2018 [15.5]. However, Duxbury Reef and Agate Beach experience the highest use rate of all the MPAs monitored by Marin MPA Watch.

98% of observations were onshore, non-consumptive uses. Non-consumptive tidepooling represented 48% (1,241) of observations (up from 44% in 2021), and sandy beach recreation (650) represented 25% of observations and rocky beach recreation was 13% (350).

Onshore consumptive activities during 2022 were 2% compared with 7% in 2021, and 11% in 2020. Onshore consumptive activities included 32 observations of hook and line fishing (compare to 48 observations in 2021, and 16 recorded observations of hand collection of biota (significantly less than the 64 incidents observed in 2021). There were no offshore consumptive uses documented.



The number of potential violations counted by volunteers was 151 in 2022 and 2 potential violations were reported to Marin County Parks. This is a much greater number of violations than any other MPA survey site.



Leashed dogs are allowed on Agate Beach and Duxbury Reef. From the 138 surveys conducted, volunteers recorded 252 dog observations (125 on leash and 127 off-leash). This ratio of on- to off-leash is roughly the same as the previous year.



Duxbury Reef SMCA continues to have a high use compared to other MPAs surveyed by Marin MPA Watch, accounting for 49% of all activities in Marin MPA Watch locations in one of the smallest survey areas. Duxbury Reef is a sensitive intertidal habitat where human impacts (trampling and collecting) may have long-term negative impacts to habitat and species. The Duxbury Docent program was launched in January 2021 in response to the MPA Watch data showing high use and potential violations. Eleven volunteers were trained over 5 days by local



experts to educate visitors on rocky intertidal marine ecology, MPAs and tidepool stewardship practices. A new cohort of docents will begin training this week.



Volunteer docents note that when they engaged with individuals who were collecting biota, they observed that most collecting was not for consumption and most people appreciated learning about the impact and replaced the organisms.



Corte Madera Marsh State Marine Park (Corte Madera Marsh SMP)

This MPA is observed within the city limits of Corte Madera and accessed by the network of public trails at Corte Madera Ecological Reserve. This area is a State Marine Park and consumptive uses, like recreational hook and line fishing is allowable within the appropriate season and licenses.



Volunteers conducted 111 surveys and recorded a use rate of 5.2 activities per mile surveyed. This is a 6% increase compared to 2021 which recorded 4.9 activities per mile. 95% of the activities were on-shore, non-consumptive, mostly including recreation (72%), animals on-leash (14% or 75) and off-leash (4% or 21), and biking (3% or 15). Offshore, Other Boating accounted for 4% of activities (Golden Gate Commuter Ferry Boat).



Leashed dogs are allowed on the walking paths, but not in the wetland or marsh. Of the 111 surveys conducted, volunteers recorded 96 dog observations, 78% of the dog observations were on-leash and 22% were off-leash. No observations of dogs in the wetland were reported.

Potential Violations ~~POTENTIAL VIOLATIONS~~

The rate of consumptive activities observed in all Marin MPA Watch sites remains relatively low (84 observations, less than 2% of total). In 2021, the rate of consumptive activities was 6%; in 2020 it was 7%; 2019 it was 2%; and 2018 it was 4%. The vast majority of consumptive observations come from Duxbury Reef (on-shore hook and line fishing, and especially, hand collection of biota).

Recurring issues with the illegal take and disturbance of tidepool organisms in Duxbury Reef SMCA is an ongoing problem during low tides. Evidence suggests consumptive activities rates may be higher than reflected in the MPA Watch data, including from docent shift reports. Several observations, including of drones being used over Duxbury



Reef were reported to our volunteers, but not observed and recorded during MPA Watch surveys. Our docents on the reef report numerous consumptive activities (though mostly not for harvest) at other times outside of MPA Watch surveys. Their engagement with those visitors for the most part is successful; with knowledge of the regulations and sensitivity of marine life, visitors cease collecting and return the marine life to the tidepool.

With growing outreach to educate the community through social media posts and other online platforms and direct engagement including tabling at the trailhead, we are working to inform visitors tidepool stewardship practices before and during their visit. The reduced number of biota hand collection observed this year may be in part a result of the outreach and docent program work, but whether it is a trend will be determined over the coming years. We continue to communicate with Marin County Parks and Open Space, Point Reyes National Seashore, California Department of Fish and Wildlife, and the California Fish and Game Commission to inform these agencies about poaching activities and the need for increased enforcement presence.

Next Steps ~~NEXT-STEPS~~

Marin MPA Watch continues to collect data in MPAs that are accessed from Marin County with a goal of two surveys per month, per MPA. In 2022, Marin MPA Watch trained more volunteers than prior years that resulted in collection of additional surveys. In part, this was due to the new team of Duxbury Docents conducting MPA Watch surveys during their shifts and the participation of a high school class at Corte Madera. With targeted outreach, we are seeking to train school groups annually to conduct MPA Watch surveys, and train another cohort of 15 docents at Duxbury Reef to collect MPA Watch surveys.

Public access to Drakes Beach was limited for a short time during the spring of this year and will likely occur each year as elephant seals continue to use Drakes Beach for pupping. We continue to have the fewest active volunteers at Drakes Beach, but we continue recruitment outreach into the fall each year.

Two summers ago, Marin MPA Watch developed and piloted a Spanish language MPA Watch training. Unfortunately, COVID illness caused the cancelation of the Spanish MPA Watch training this summer. We expect to contract Spanish speaking staff to continue outreach and training this coming summer.

Marin MPA Watch intends to collaborate with the California Department of Fish and Wildlife to distribute MPA Watch reports to regional managers in order to improve the

management and enforcement of MPAs. MPA Watch is also looking to expand its network of partner organizations to enhance the scale and scope of MPA monitoring across California.

Each year, MPA Watch makes our human use data available on their website to make it accessible to partners, resource agencies, municipalities, and other interested parties. One of the hopes of MPA Watch is that volunteers and community members help spread knowledge and awareness of MPAs to the communities that surround them, inspiring marine stewardship in our communities.

Additional Information~~ADDITIONAL INFORMATION~~

For additional information on MPA Watch, including survey sites, participating organizations, protocols and datasheets, media kit, and how to get involved, please visit mpawatch.org. Connect with MPA Watch on social media @MPAWatchOrg.

For additional information regarding MPAs and regulations specific to the various classifications of MPAs please visit wildlife.ca.gov/MPAs. If you see an activity that violates MPA regulations, please call CalTip to report the violation at (888)-334-2258.

The Marin MPA Watch program is a partnership of the Environmental Action Committee of West Marin (EAC), California Academy of Science and Point Reyes National Seashore. The program is managed by EAC. For more information to become involved with the program, please visit eacmarin.org/mpa-watch.

~~NOTES ON CALCULATING INCIDENCE~~Notes on Calculating Incidences

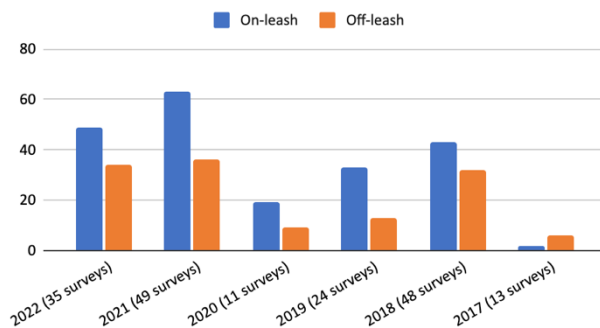
The baseline rate for the reporting period was calculated by summing the total use count for each category during the same period from each previous year and dividing this value by the transect miles surveyed at each site. The miles surveyed were calculated by first identifying the length of each transect for all the MPA's in question and multiplying the length of the transect by the number of surveys that had been taken along that transect during the same time period. For MPA's with multiple transects, the total distance traveled for each transect within the MPA were summed together to get the total miles surveyed within that MPA.



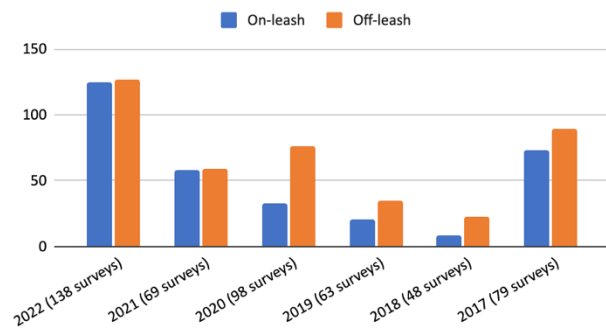


GRAPHS of dog use trends at Limantour Beach, Corte Madera Marsh, and Agate Beach/Duxbury Reef

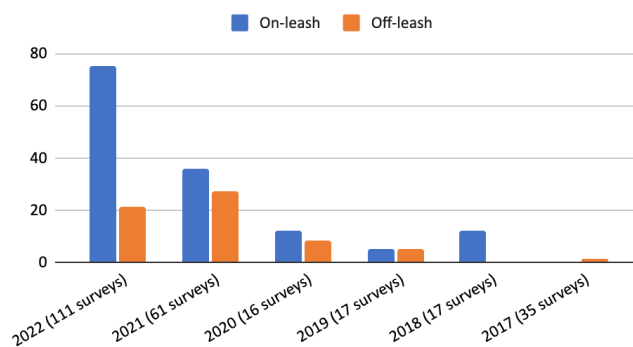
Limantour Beach Control SOUTH: On-leash & Off-leash



Agate Beach/Duxbury Reef: On-leash and Off-leash



Corte Madera Marsh: On-leash and Off-leash



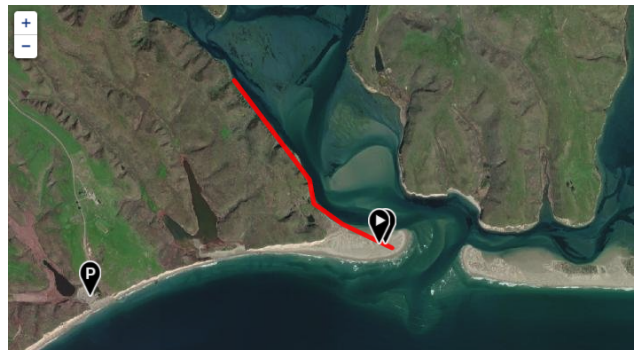
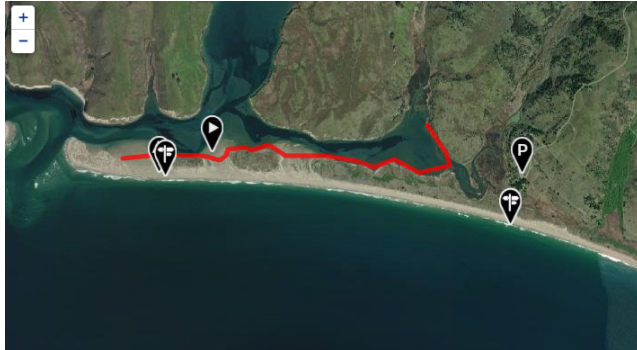
MAPS

*Note: Red lines imply the observation edges (Estero de Limantour, Point Reyes SMR and Corte Madera Marsh) and for others, walking pathways for the transects (Point Reyes SMR, Limantour Beach,

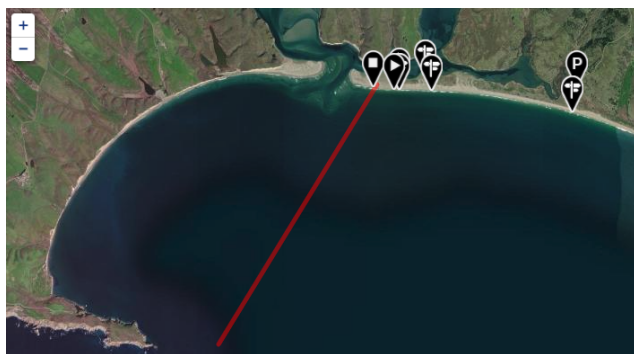
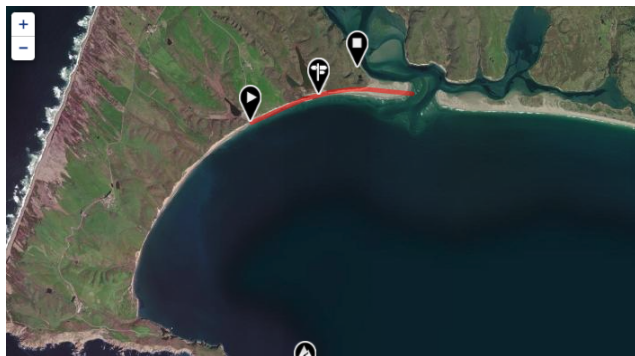


Duxbury Reef) and Corte Madera Marsh.

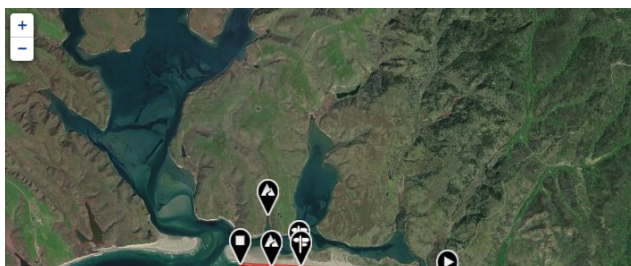
Estero de Limantour State Marine Reserve (Estero de Limantour SMR):



Point Reyes State Marine Reserve (Point Reyes SMR)



Limantour Beach (Control PRSOUTH)



Duxbury Reef State Marine Conservation Area (Duxbury SMCA)



Corte Madera Marsh State Marine Park (Corte Madera Marsh SMP)

