

Seabird Protection Network, Bodega Head to Point Sur Chapter: Using Seabird Disturbance Monitoring to Inform Increasing Knowledge of and Compliance with Special Closures on the North Central Coast of California

Authors of Report and Affiliations

Greater Farallones National Marine Sanctuary

Maria Brown, Superintendent

Karen Reyna, Seabird Protection Network Director

Paul Hobi, Seabird Protection Network Bodega Head to Point Sur Chapter Program Manager

U.S. Fish and Wildlife Service

Gerry McChesney, Co-Manager, Seabird Protection Network Monitoring Team, Bodega Head to Point Sur Chapter

Humboldt State University

Rick Golightly, Co-Manager Seabird Protection Network Monitoring Team, Bodega Head to Point Sur Chapter

Introduction

This report tells the story of how the North Central Coast's special closures have protected sensitive seabird colonies from human disturbance, and efforts by our program to conduct outreach on and monitor the effectiveness of the special closures. The six special closures were enacted in 2010 as part of the North Central Coast marine protected area (MPA) network, and established no-access zones that prohibit watercraft and human entry.

The special closures have served as effective tools for protection of sensitive marine resources, with an easy message for boaters and fishermen: these areas are so sensitive they must be left alone. Beginning in 2010, when the closures went into effect, researchers documented a sharp decrease in human disturbances to seabirds at some of the special closures. The effectiveness of these special closures is an important early success story of California's MPA network.

Organizations, Mission and Project Area

Herein we review the efforts of the Seabird Protection Network (SPN), which has worked to help restore sensitive seabird colonies along California's North Central Coast, mainly through the reduction of human disturbance. SPN is a multi-organization collaborative led by the Greater Farallones National Marine Sanctuary that works to reduce human-caused disturbance to seabirds in California. SPN is modeled through a geographic chapter structure, of which there are currently five chapters.¹ Greater Farallones

¹ Other SPN Chapters, whose work is not covered here, are: North Coast (focused on northern Humboldt County); Gualala Point to Bodega Head; Point Sur to Point Mugu, and Montrose (focused on the Channel Islands).

National Marine Sanctuary (GNMS) and the U.S. Fish and Wildlife Service (USFWS; in partnership with Humboldt State University) lead the founding Chapter, Bodega Head to Point Sur (hereafter, Chapter). The Chapter's area of responsibility extends from Bodega Head to Point Sur and includes the Farallon Islands offshore and a portion of San Francisco Bay.

Primary funding for the Chapter has come from the Command² and Luckenbach³ Oil Spill Trustee Councils, which are composed of state and federal natural resource trustees who responsible for overseeing the implementation of two oil spill restoration plans. The trustees include the California Department of Fish & Wildlife (CDFW). GNMS, USFWS, the Ocean Protection Council, and the Golden Gate National Recreation Area have provided additional funding for the Chapter.

The Chapter was founded in 2006 to respond to acute, documented threats of human caused disturbances to seabirds. Greater Farallones National Marine Sanctuary has led the outreach, compliance, enforcement and coordinated management components of the Chapter. It provided critical information that led to establishing and raising awareness around the North Central Coast special closures. The Chapter provides communication and outreach to boaters and fishermen and forms partnerships with these stakeholders to promote knowledge of and compliance with special closures and MPA regulations. The Chapter has conducted numerous outreach efforts since the establishment of the North Central Coast MPAs, which are described here.

The U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex (USFWS), in partnership with Humboldt State University, has led all seabird monitoring activities affiliated with the Chapter, which has included special closures. In 1996, USFWS began efforts to restore an extirpated colony of nearly 3,000 Common Murres (*Uria aalge*) to Devil's Slide Rock, an effort that was ultimately successful. During this restoration work, project biologists documented persistent human disturbance that threatened the colony's ongoing recovery. This served as a powerful impetus for safeguarding the colony in a special closure. At both the Egg Rock (Devil's Slide Rock; hereafter referred to as Devil's Slide Rock) and Point Reyes Headlands special closures, trained project biologists spent over 100 days annually monitoring the seabird breeding colonies, including carefully documenting human disturbance and potential impacts of disturbance to these birds during the time they are most prone to impacts (during the breeding season when birds are attending eggs and chicks). This monitoring effort has been staffed every year since 1996. Other special closures in the region also protect hundreds of thousands of breeding seabirds, but this report will focus on the special closures at Devil's Slide Rock and Point Reyes Headlands.

Safeguarding sensitive seabird colonies from human disturbance also helps protect them from the multitude of other environmental stressors they face. For example, Common Murres and other seabirds have been killed by the tens of thousands in oil spills along the California coast. Another example is the extreme marine heat wave event of 2014-2016. This event resulted in the death of an estimated one

² Command Trustee Council. 2004. Command Oil Spill Final Restoration Plan and Environmental Assessment. U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration, California Department of Fish and Game, California Department of Parks and Recreation, and California State Lands Commission.

³ Luckenbach Trustee Council. 2006. S.S. *Jacob Luckenbach* and Associated Mystery Oil Spills Final Damage Assessment and Restoration Plan/Environmental Assessment. Prepared by California Department of Fish and Game, National Oceanic and Atmospheric Administration, United States Fish and Wildlife Service, and National Park Service.

million Common Murres along North America's west coast.⁴ Additional human-caused stressors, including disturbance, combine with climate related stressors to impact seabird population health. So, when special closures mitigate human disturbance, they also reduce additive and synergistic impacts to breeding seabird colonies. This helps build resilient seabird populations that are consequently more likely to better endure other threats.

The good news is that in the years following establishment of the Devil's Slide Rock special closure, monitoring data showed that watercraft disturbances to the Devil's Slide seabird colony declined. We believe this success is a direct result of the combination of the special closure regulations and effective outreach efforts about them that specifically speak to the needs of fishermen and boaters.

Challenges regarding special closures remain. In 2020 and 2021, preliminary monitoring data show increased watercraft entry and disturbance at the Devil's Slide Rock Special Closure; this likely reflects a greater number of boaters on the water during the COVID-19 pandemic, including greater numbers of boaters that are not familiar with special closures. To ensure the ongoing effectiveness of special closures, the Chapter will continue monitoring and outreach efforts in the coming years. It is expected that Seabird Protection Network's primary source of funding through the *Luckenbach* Trustee Council will continue through at least 2027. But, this is a finite source of funding – so additional sources will be necessary to continue monitoring and outreach efforts beyond 2027.

Highlights and Key Findings

Seabird Protection Network's Bodega Head to Point Sur Chapter has made significant efforts to build relationships within local boating and fishing communities. An understanding of these audiences, combined with monitoring data, led us to develop effective outreach strategies that raise awareness of special closures and MPAs. This section will highlight lessons learned from these efforts, present a quantitative picture of ten years of outreach, discuss monitoring data, and describe efforts to assist with enforcement.

Lessons Learned from building relationships within the boating and fishing community

1. Meet boaters where they are: docks, tackle shops, club meetings, and on the water

Our outreach to boaters has benefited greatly from meeting them at the diverse venues that cater to their specific interests. Walking the docks is key to building relationships with boat-based fishermen. These field visits are usually timed in the afternoon when sportfishing vessels have returned from early morning trips. We used field visits to build relationships with dozens of harbormasters, tackle shop owners, sportfishing fleet offices, and vessel captains throughout the Bodega Head to Point Sur region, including the San Francisco Bay. This has served as a springboard for distributing materials, and partnering on the Reel In and Recycle fishing line recycling program.⁵

Sailors and kayakers are distinct audiences. To reach sailors, we present and table at the annual Pacific Sail & Power Boat Show in Richmond, CA, present at yacht and sailing clubs, and distribute products at

⁴ Piatt J.F., Parrish J.K., Renner H.M., Schoen S.K., Jones T.T., Arimitsu M.L., et al. 2020. Extreme mortality and reproductive failure of Common Murres resulting from the northeast Pacific marine heatwave of 2014-2016. *PLoS ONE* 15(1): e0226087.

⁵ Partnership with California Division of Boating and Waterways that places fishing line recycling bins and builds partnerships with harbormasters, boat captains, land managers and tackle shops.

West Marine (a chain of boater supply stores). We also present regularly to large Bay Area kayak clubs, and distribute materials at kayak-focused events such as Paddle Golden Gate. Partnering with kayakers is especially important, as they often paddle close to coastal cliffs and rocks in the open ocean. Outreach focuses on teaching them to identify special closures and other seabird colonies, and to maintain at least 1000' of distance from them when possible.

We effectively use incentives to attract boaters and fishermen to participate in focus groups to give valuable feedback on products and messages. One event, hosted through the Golden Gate MPA Collaborative, gained feedback on the design of an MPA brochure intended for distribution on the water. The team met with party boat captains and fishermen at Sailor's Landing in Sausalito – a popular restaurant amongst boat captains. At least a dozen attended, and provided input on various aspects of the design. One key piece of feedback they offered: the brochures should be made of waterproof, tear resistant Tyvek. Brochures ultimately were printed with Tyvek, and many of these same fishermen have distributed them on the water to boats found to be actively fishing in MPAs.

2. Certain outreach products are more effective than others

Boaters – and especially fishermen – are partial to paper tide books. These have become much scarcer due to rising printing costs; tackle shop owners and harbor offices will happily accept as many tide books as we can provide, and give them away to boaters quickly. We have consistently worked with two companies who make these: Wilson Action Graphics and Tidelog. Both companies offer customized full color graphic covers, which we designed to include maps and regulations for special closures. Both editions contain a map of Central Coast and North Central Coast marine protected areas. While both companies' products are valuable outreach tools, boaters and fishermen have told us they prefer the Tidelog books, which are more comprehensive, but also more expensive.

Other products that boaters and fishermen have identified as being particularly useful include the CDFW Ocean Sport Fishing Regulations booklet, and CDFW's regional MPA guides. One fisherman told us he "likes to have all of the regs in one place," which CDFW's publications address. Boaters have also praised easy-to-understand regulatory signage on MPAs and special closures at harbors and launch areas.

3. Boaters and fishermen like understanding the 'why' behind regulations

During a focus group, one fisherman said that "helping people connect the reason why you don't want to disturb birds off their nests is important. If people understand the 'why', instead of just 'Don't do that' – if they're informed – then they're making those connections, and hopefully they care." He added that fishermen enjoy learning about birds, and other wildlife. It is helpful for fishermen to learn the connection between healthy seabird colonies and regulations, such as special closures and MPAs.

In presentations and direct outreach, we endeavor to explain the 'why' behind special closures. Successful approaches for kayakers, sailors and fishermen have all told the story of the Common Murre's collapse and subsequent restoration, and how they return to the same locations each year to breed. This helps make the case for why reducing disturbance at sensitive breeding colonies and abiding by special closures are so important.

Summary of Outreach Initiatives

Between fiscal years 2010 – 2020, Seabird Protection Network’s Bodega Head to Point Sur Chapter did the following:

- Gave **49** presentations to over **1,356** kayakers, sailors, and other boaters.
- Sent **47** distinct e-newsletters resulting in a total of **54,124** points of communication.
- Commissioned and distributed the following physical products:
 - **37,062** tide books with maps of MPAs, and messaging encouraging boaters to avoid special closures;
 - **19,331** seabird aware brochures that describe impacts of human disturbance to seabirds and how to prevent disturbance; and
 - **3,437** boater packets, which include maps of MPAs and special closures.
- Participated in Golden Gate and San Mateo MPA Collaboratives. Highlighted contributions to the Collaboratives’ MPA outreach efforts included co-hosting a community workshop for boaters and fishermen, and designing an outreach brochure for the Golden Gate MPA Collaborative (both of which are discussed above).

Overview of Monitoring Data

The monitoring component of SPN’s Bodega Head to Point Sur Chapter is conducted by the USFWS and HSU. Project staff collect robust data on disturbance, populations, and reproductive success to seabirds at specific Common Murre colonies impacted from past oil spills: Point Reyes Headlands, Devil’s Slide Rock & Mainland, and the Castle-Hurricane Colony Complex (northern Big Sur Coast). Annual reports are produced which analyze trends in human disturbance and other parameters at the colonies. As stated previously, this report focuses only on the colonies at Point Reyes Headlands and Devil’s Slide Rock.

Monitoring documented abrupt declines in watercraft disturbances following the implementation of the special closures in 2010, particularly at Devil’s Slide Rock (Figures 1, 2). These declines indicate that boaters quickly became aware of special closures and this awareness largely was sustained through 2019. The combination of strong regulations and persistent outreach to the boating community has worked to reduce disturbance to seabirds.

However, things changed during the COVID-19 pandemic. In 2020 and 2021, preliminary data analyses show that increasing numbers of boaters closely approached Devil’s Slide Rock and Point Reyes Headlands, with increased disturbance to seabirds. This likely reflected greater numbers of boaters on the water as a result of the COVID-19 pandemic - possibly with a greater percentage not knowledgeable of boating restrictions. Lower levels of outreach (also a result of COVID) may have also contributed to increased numbers of boats entering special closures, and associated disturbance.

Devil's Slide Rocks and Mainland Watercraft Disturbance

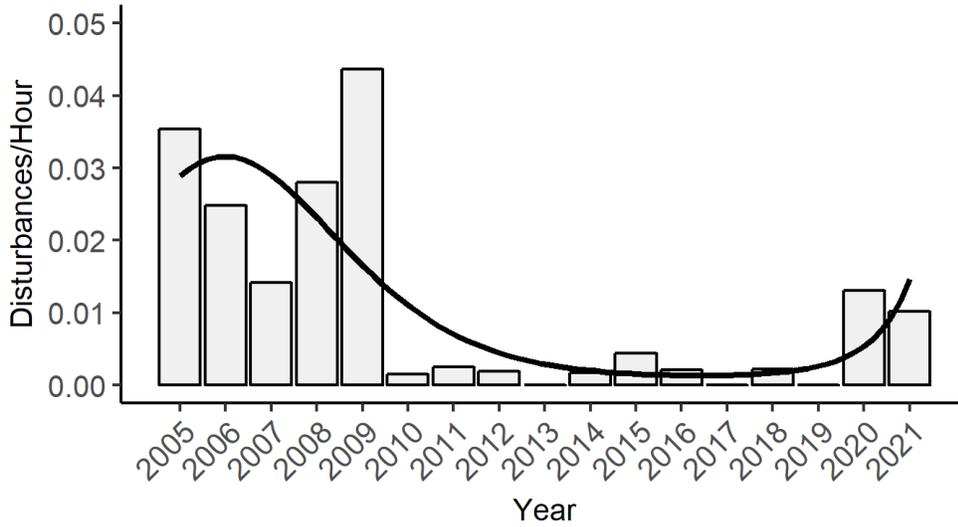


Figure 1. Trends in watercraft disturbances to seabirds at Devil's Slide Rock, California, 2005-2021. Disturbances are reported as number per observer hour. A Generalized Additive Model (GAM) trend line is shown. Note that the graph includes disturbances from watercraft both inside and outside the Special Closure.

Point Reyes Headlands Watercraft Disturbance

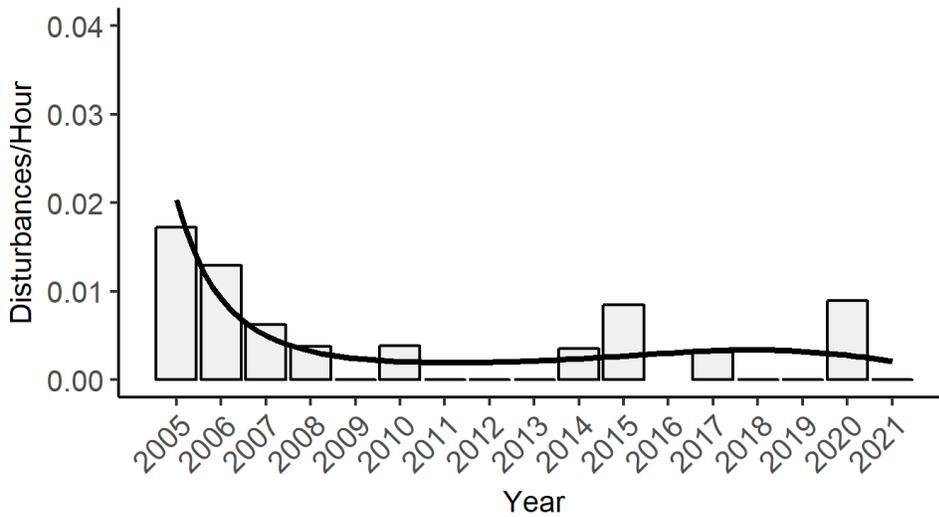


Figure 2. Trends in watercraft disturbances to seabirds at Point Reyes Headlands, California, 2005-2021. Disturbances are reported as number per observer hour. A Generalized Additive Model (GAM) trend line is shown. Note that the graph includes disturbances from watercraft both inside and outside the Special Closure. No data were available for 2016.

Assistance with Special Closure and MPA Enforcement:

The SPN monitoring team, as well as Point Blue Conservation Science staff stationed on Southeast Farallon Island (Farallon Islands National Wildlife Refuge), consistently report alleged violations of MPA and special closure regulations to the CalTIP hotline. Over the years, we have also developed personal contacts with CDFW wardens. In many cases, we directly contact wardens by phone and/or email and include photographs of events, when available. These direct communications have allowed wardens to become more aware of enforcement needs associated with the MPA network. When possible, wardens have responded in real time to document violations themselves.

Challenges

The Seabird Protection Network's Bodega Head to Point Sur Chapter identifies the following ongoing challenges related to North Central Coast special closures.

1. Monitoring remote special closures off Point Reyes

The Double Point/Stormy Stack and Point Resistance Special Closures are both difficult to access for conducting regular monitoring. Seabird Protection Network conducted lower intensity monitoring at these special closures during the seabird breeding season between 2005 and 2016. Data suggested that boat disturbance to the colonies declined following the implementation of the special closures, although disturbances still occurred. Most disturbances were at Stormy Stack, which is somewhat closer to ports to the south (e.g., Bolinas Lagoon, San Francisco Bay) than Point Resistance. Monitoring has been discontinued because of funding constraints.

Since 2016, the West Marin Environmental Action Committee has attempted to address the need for monitoring by working with the Point Reyes National Seashore to place a camera overlooking the Point Resistance Special Closure, but retrieving the photographic evidence must be collected by a hike of several hours. Photographs are used for research purposes only, and they suggest that boaters may be violating the special closure. We do not know of any other efforts to monitor disturbances to the Double Point/Stormy Stack special closure.

2. Increased numbers of boaters and fishermen on the water during COVID-19

Many new boaters have taken to the water during the pandemic. This has led to increasing pressure on MPAs and special closures, including an increase in seabird disturbances at the Point Reyes Headlands and Devil's Slide Rock Special Closures. Reaching new boaters is a significant challenge, and one that we seek to address indirectly by distributing materials where new boaters may encounter them, such as West Marine, tackle shops, harbors, and sportfishing operators. However, we also conducted less outreach in 2020 and 2021 due to the pandemic, which may also contribute to the problem because many of the new boaters may not be familiar with special closure and MPA regulations, contributing to the increase in disturbance.

3. COVID-19 pandemic delayed 2020 monitoring season

The Seabird Protection Network's seabird monitoring season typically lasts from mid-April to early August. Due to the COVID-19 pandemic, monitoring did not begin until between late May (Devil's Slide Rock) and mid-June (Point Reyes Headlands). Thus, data from 2020 are not completely consistent with other years, and it was unclear what special closure compliance was like in the mid-April to late May period in 2020.

Knowledge Gaps and Recommendations

We acknowledge the monumental efforts that CDFW has put forward in MPA management, enforcement, monitoring and outreach. Moving forward, CDFW may want to consider the following:

- Continuing to print regional MPA guides, as well as the CDFW Ocean Sport Fishing Regulations booklet. Boaters and fishermen have repeatedly commented on the value of these printed products, and partners are happy to distribute them.
- Fund programs that implement new technologies for enforcement of remote MPAs, including special closures. For example, Channel Islands National Marine Sanctuary has successfully utilized low-cost radar technology provided by Marine Monitor to monitor vessel activity and detect illegal fishing. There are several remote locations GFNMS identified where this technology can be safely deployed and used to monitor vessel activity.
- To improve agencies' understanding of MPA and special closure enforcement and compliance, GFNMS requests that CDFW Law Enforcement Division (LED) commit to expanded and consistent use of the eFINS app statewide. Additionally, we request LED merge and share historical eFINS, RMS and electronic Daily Activity Reports (eDAR) to better understand enforcement activity and violation trends in California's MPAs. Finally, we request that LED provide timely and useful data on enforcement and compliance per marine region to better understand regional needs. If GFNMS better understood enforcement and compliance issues in the North Central Coast region, the national marine sanctuary program may be able to assist with targeted enforcement/compliance initiatives. eFINS can provide data in real time which we can use to support the state with enforcement needs.
- Fund seabird monitoring projects as part of long-term MPA monitoring. Seabirds are listed as indicator species in the MPA Management Plan, and many ongoing programs exist that would be well-equipped to conduct monitoring efforts.
- Continue the support of MPA Collaboratives. CDFW's commitment to staffing Collaboratives has been immensely helpful, especially in the development and review of outreach products, as well as the coordination of enforcement efforts. Collaboratives are able to develop effective outreach products and strategies based on their local knowledge, and can identify challenges for MPA enforcement.
- Continue outreach regarding special closures, including the creation and dissemination of special closure content on the "Exploring California's Marine Protected Areas" series. Understanding the history and biology that makes these areas so important is vital to building understanding amongst boaters and fishermen.
- Regarding knowledge gaps, monitoring remote special closures, such as Double Point/Stormy Stack and Point Resistance, has proved challenging. However, sporadic data has shown that boat disturbance continues at these important seabird colonies.

Conclusion

Special closures have effectively resulted in reduced disturbance to seabirds at the Devil's Slide Rock Special Closure, the site of a highly-recognized, federal and state-sponsored seabird restoration project. The combination of strong regulatory protection and targeted outreach to boaters and fishermen has, during its first ten years, worked remarkably well to protect sensitive seabird colonies from disturbance. More boaters and fishermen have taken to the sea during the COVID-19 pandemic, and this has led to an apparent decrease in special closure compliance with an associated increase in seabird disturbance in 2020 and 2021. Nevertheless, the special closures must be recognized as an early success of California's marine protected area network.

The Bodega Head to Point Sur Chapter of the Seabird Protection Network's mission to monitor and respond to seabird disturbance will continue beyond the MPA Decadal Review, as funding is likely to be sustained through 2027. The Chapter's outreach component, led by Greater Farallones National Marine Sanctuary, is releasing a ten-year action plan in 2022 that will guide its future work. Outreach to the boating and fishing community will continue to focus on raising awareness of MPAs, special closures, and strategies for avoiding disturbing sensitive seabird colonies. The U.S. Fish and Wildlife Service will lead monitoring efforts at Devil's Slide Rock and Point Reyes Headlands that carefully document disturbances in these special closures, which will be used to inform outreach efforts and can be used to assist CDFW enforcement efforts.

Acknowledgements

Primary funding for the Seabird Protection Network was provided to the Greater Farallones National Marine Sanctuary and U.S. Fish and Wildlife Service, San Francisco Bay National Wildlife Refuge Complex, primarily by 1) the Luckenbach Oil Spill Trustee Council, comprised of California Department of Fish and Wildlife (CDFW), National Oceanic and Atmospheric Administration (NOAA), and Department of the Interior through U.S. Fish and Wildlife Service (USFWS) and National Park Service; and 2) Command Trustee Council (consisting of the USFWS, NOAA, CDFW, California State Parks, and California State Lands Commission). Additional, in-kind funding has been provided by GFNMS and USFWS. The Ocean Protection Council provided funding to USFWS for MPA baseline monitoring. Golden Gate National Recreation Area provided funds for producing boater outreach materials that focused on reducing disturbance to seabird colonies at Alcatraz.