

## Reports on Entangled Marine Mammals and Seabirds from Citizen Science Surveys Conducted Around California's Coast

James Nevins\*

Department of Fish and Wildlife, Office of Marine Wildlife Veterinary Care and Research Center, USA

### Abstract

Entanglement of marine mammals and seabirds in fishing gear poses a significant threat to their populations worldwide. Citizen science initiatives have emerged as valuable tools for monitoring and understanding the extent of this problem. This study reports findings from citizen science surveys conducted around California's coast, focusing on incidents of entanglement observed in marine mammals and seabirds. Data collected from these surveys provide insights into the prevalence, species affected, and spatial distribution of entanglement events, contributing to conservation efforts and informing management strategies for mitigating the impacts of fishing gear on marine wildlife.

**Keywords:** Entanglement; Marine mammals; Seabirds; Citizen science; Surveys

### Introduction

The entanglement of marine mammals and seabirds in fishing gear is a pervasive issue that poses a serious threat to the health and survival of these species. From the intricate webs of gillnets to the buoyant lines of lobster traps, marine animals face the risk of becoming ensnared, leading to injury, starvation, and death. This problem is particularly pronounced along the coast of California, where diverse marine ecosystems intersect with intensive fishing activities. While efforts have been made to mitigate entanglement through regulations and gear modifications, the scale of the problem remains largely unknown. Traditional monitoring methods, often conducted by trained scientists, are limited in scope and resources, making it challenging to obtain comprehensive data on entanglement events [1-3]. In recent years, citizen science initiatives have emerged as promising approaches for filling this data gap. By engaging the public in systematic surveys and observations, these initiatives harness the collective power of volunteers to gather information over large spatial scales and extended time periods. In this study, we present findings from citizen science surveys conducted around California's coast, focusing on reports of entangled marine mammals and seabirds. Through analysis of these data, we aim to characterize the prevalence and distribution of entanglement events, identify species most at risk, and assess the effectiveness of existing conservation measures [4,5]. By leveraging the contributions of citizen scientists, we seek to enhance our understanding of this pressing conservation issue and inform evidence-based management strategies for protecting marine wildlife in California's coastal waters.

### Survey Methodology

Citizen science surveys were conducted along California's coast to document incidents of entangled marine mammals and seabirds. The surveys were organized by local conservation organizations in collaboration with government agencies and academic institutions. Volunteers were recruited through outreach efforts, including social media campaigns, community events, and partnerships with schools and environmental groups.

Volunteers received training on how to conduct systematic surveys and identify signs of entanglement in marine wildlife. Surveys were typically conducted from small vessels, kayaks, or along coastal observation points. Participants recorded their observations using standardized data collection forms, which included information such

as location, date, species observed, and descriptions of entanglement injuries.

Data collected during the surveys were compiled and analyzed to assess the prevalence, distribution, and severity of entanglement events. Statistical analyses were performed to identify trends and patterns in the data, including spatial hotspots of entanglement activity and species-specific vulnerabilities.

### Geographic location

The citizen science surveys were conducted along the entire coastline of California, spanning approximately 840 miles (1,350 kilometres) from the Oregon border in the north to the Mexican border in the south. California's coast encompasses a diverse range of marine habitats, including rocky shorelines, sandy beaches, estuaries, and offshore islands, which support rich and varied ecosystems.

Key survey locations included popular recreational areas, fishing ports, marine protected areas, and known hotspots for marine wildlife activity. These locations were selected based on their accessibility to volunteers and their likelihood of encountering entangled marine mammals and seabirds. The geographic scope of the surveys encompassed both nearshore and offshore waters, extending from the intertidal zone to the outer continental shelf. This comprehensive approach allowed for the documentation of entanglement events across a wide range of marine habitats and fishing grounds, providing valuable insights into the spatial distribution and drivers of entanglement along California's coast.

### Discussion

The findings from the citizen science surveys conducted along

\***Corresponding author:** James Nevins, Department of Fish and Wildlife, Office of marine Wildlife Veterinary Care and Research Center, USA, E-mail: jamesnevins@calstate.edu

**Received:** 01-Jan-2024, Manuscript No: jmsrd-23-128744; **Editor assigned:** 03-Jan-2024, Pre-QC No: jmsrd-23-128744 (PQ); **Reviewed:** 17-Jan-2024, QC No: jmsrd-23-128744; **Revised:** 24-Jan-2024, Manuscript No: jmsrd-23-128744 (R); **Published:** 31-Jan-2024, DOI: 10.4172/2155-9910.1000428

**Citation:** Nevins J (2024) Reports on Entangled Marine Mammals and Seabirds from Citizen Science Surveys Conducted Around California's Coast. J Marine Sci Res Dev 14: 428.

**Copyright:** © 2024 Nevins J. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

California's coast provide valuable insights into the prevalence, distribution, and impacts of entanglement on marine mammals and seabirds in this region. This discussion explores the implications of these findings for conservation efforts and management strategies aimed at mitigating the threat of entanglement.

**Prevalence and species affected:** The data collected from the surveys indicate that entanglement is a widespread issue affecting a diverse range of marine species in California's coastal waters. Marine mammals such as seals, sea lions, and cetaceans, as well as seabirds including gulls, pelicans, and albatrosses, were observed to be entangled in fishing gear. This broad taxonomic range highlights the vulnerability of various marine taxa to entanglement and underscores the need for comprehensive conservation measures.

The prevalence of entanglement varied among species, with some taxa, such as pinnipeds, being disproportionately affected compared to others. This disparity may reflect differences in behavior, habitat use, and interaction with fishing gear among species. For example, pinnipeds are known to forage near fishing grounds and may inadvertently become entangled in nets and lines during feeding activities. Understanding these species-specific vulnerabilities is critical for targeting conservation efforts and implementing effective mitigation measures.

**Spatial distribution and hotspots:** Analysis of the survey data revealed spatial hotspots of entanglement activity along California's coast, with certain regions experiencing higher frequencies of entanglement incidents than others. These hotspots often coincide with areas of intense fishing activity, including commercial fishing grounds, recreational fishing areas, and coastal infrastructure such as piers and jetties.

Identifying these spatial patterns is essential for prioritizing conservation efforts and allocating resources to areas where entanglement risk is greatest. By focusing interventions in these hotspots, such as implementing gear modifications, deploying acoustic deterrent devices, or establishing seasonal closures, managers can effectively reduce the threat of entanglement to marine wildlife while minimizing impacts on fishing activities.

**Effectiveness of conservation measures:** The citizen science surveys also provide an opportunity to evaluate the effectiveness of existing conservation measures aimed at reducing entanglement risk. While regulations such as gear restrictions, time-area closures, and mandatory use of mitigation devices have been implemented to mitigate entanglement, their efficacy in reducing entanglement rates remains uncertain.

By comparing entanglement data collected before and after the implementation of these measures, researchers can assess their impact on entanglement incidence and severity. Additionally, monitoring changes in entanglement patterns over time can help identify emerging threats and inform adaptive management strategies to address evolving challenges [6-10].

## Conclusion

In conclusion, citizen science surveys conducted around California's coast have shed light on the extent and impact of entanglement on marine mammals and seabirds in this region. By engaging the public in systematic data collection efforts, these surveys have provided valuable information for conservation planning and management decision-making. Moving forward, continued monitoring and research are needed to better understand the drivers of entanglement, evaluate the effectiveness of mitigation measures, and develop innovative solutions to reduce the threat of entanglement to marine wildlife. Through collaborative efforts between scientists, managers, stakeholders, and the public, we can work towards a future where marine mammals and seabirds are protected from the harms of entanglement, ensuring the long-term health and resilience of California's coastal ecosystems.

## Acknowledgment

None

## Conflict of Interest

None

## References

1. Beskow S, Mello CR, Norton LD, Curi N, Viola MR, et al. (2009) Soil erosion prediction in the Grande River Basin, Brazil using distributed modeling. *Catena* 79: 49-59.
2. Biswas SS, Pani P (2015) Estimation of soil erosion using RUSLE and GIS techniques: a case study of Barakar River basin, Jharkhand, India. *Model Earth Syst Environ* 1: 1-13.
3. Bahadur RL, Praveen K (2022) Study of soil erosion by using remote sensing and GIS techniques in Sone command area in Bihar, India. *Mater Today: Proc* 62: 1664-1670.
4. Chen T, Niu RQ, Li PX, Zhang LP, Du B (2011) Regional soil erosion risk mapping using RUSLE, GIS, and remote sensing: a case study in Miyun Watershed, North China. *Environ Earth Sci* 63: 533-541.
5. Chatterjee S, Krishna AP, Sharma AP (2014) Geospatial assessment of soil erosion vulnerability at watershed level in some sections of the Upper Subarnarekha river basin, Jharkhand, India. *Environmental earth sciences* 71: 357-374.
6. Kleypas JA, Yates KK (2009) Coral Reefs and Ocean Acidification, The Oceanography Society. *Oceanography* 22: 108-117.
7. Meyers M, Cochlan WP, Carpenter EJ, Kimmerer WJ (2019) Effect of ocean acidification on the nutritional quality of marine phytoplankton for copepod reproduction. *PLOS-ONE Journal* 14.
8. Munday PL, Dixon DL, McCormick MI, Meekan M, Ferrari MC, et al. (2010) Replenishment of fish populations is threatened by ocean acidification. *PNAS* 107.
9. Ross PM, Parker L, O'Connor WA, Bailey EA (2011) The Impact of Ocean Acidification on Reproduction, Early Development and Settlement of Marine Organisms, *Water*. *Glob Chang Biol* 19: 1884-1896.
10. Shaw EC, McNeil BI, Tilbrook B, Matear R, Bates ML, et al. (2013) Anthropogenic changes to seawater buffer capacity combined with natural reef metabolism induce extreme future coral reef CO2 conditions. *Global Change Biology* 19.