



Jonathon Coombes

# Analyzing a Proposed Expansion of Monterey Bay National Marine Sanctuary

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## **Client:**

Gulf of the Farallones National Marine Sanctuary



## Project Brief

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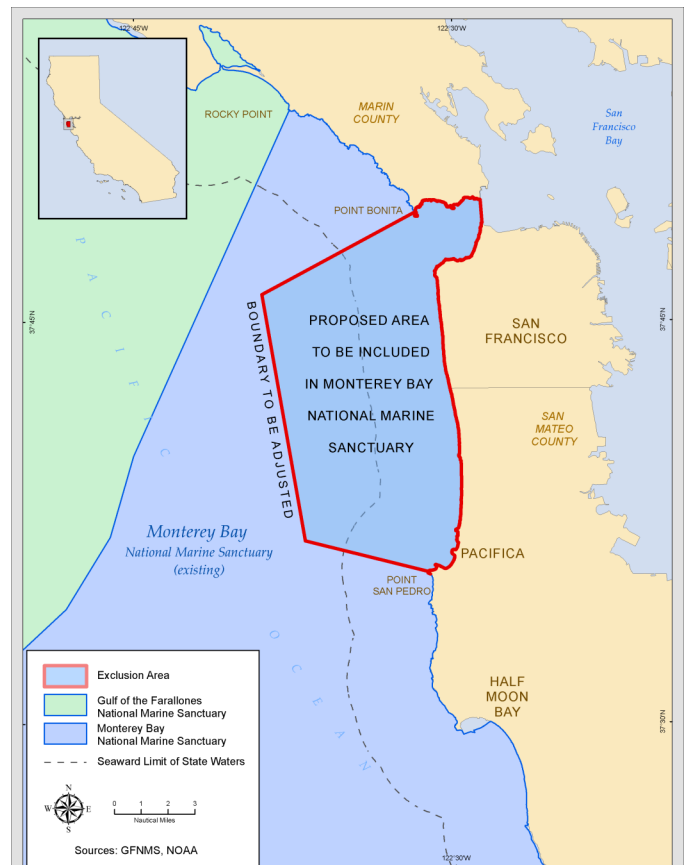
## Introduction

Monterey Bay National Marine Sanctuary (MBNMS) was designated in 1992. During the Sanctuary's designation process, a 101-square-mile area — referred to as the San Francisco-Pacifica Exclusion Area (or simply, the Exclusion Area) — was deliberately omitted from the Sanctuary. Recently, mounting public pressure prompted sanctuary management to consider incorporating the Exclusion Area into MBNMS.

On August 7, 2012, Gulf of the Farallones National Marine Sanctuary (GFNMS) published a Notice of Intent to prepare an Environmental Impact Statement (EIS) for the proposed expansion, as required by the National Environmental Policy Act. The primary objective of this study is to supplement, guide, and inform this EIS.

Three reasons were noted for the Exclusion Area's omission from the Sanctuary's boundaries:

- 1) In 1992, the Area encompassed the anticipated discharge plume of the combined sewer overflow component of the City & County of San Francisco's sewage treatment program.
- 2) The Area encompassed the Main Shipping Channel (MSC), which provided access for ocean-going vessel traffic to and from San Francisco Bay.
- 3) Dredged materials from the MSC were placed within the Area.



San Francisco-Pacifica Exclusion Area

## Objectives and Methods

- Determine whether the original reasons for exclusion currently present barriers to Sanctuary expansion
- Develop a unique, systematic framework for evaluating the suitability of sites for inclusion in the Sanctuary system
- Evaluate the Exclusion Area
- Provide information for the EIS

## Research Questions

- 1) Do the three factors that resulted in the San Francisco-Pacifica Exclusion Area's omission from Monterey Bay National Marine Sanctuary currently present barriers to the proposed Sanctuary expansion?
- 2) Does the San Francisco-Pacifica Exclusion Area fulfill the sanctuary designation criteria in the National Marine Sanctuaries Act?

## Methodology

We address our first research question by investigating the history and current state of dredging activities (including dredging and the placement of dredged materials), wastewater discharge, and vessel traffic in the Exclusion Area.

To address our second research question, we determine whether the Exclusion Area meets the sanctuary designation standards outlined in the National Marine Sanctuary Act (NMSA).

**According to the NMSA**, a candidate sanctuary site may only be designated if it has "special national significance due to its conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, **or** esthetic qualities; the communities of living marine resources it harbors; **or** its resource **or** human-use values" **and** if "existing State and Federal authorities are inadequate or should be supplemented to ensure coordinated and comprehensive conservation and management of the area" **and** if "the area is of a size and nature that will permit comprehensive and coordinated conservation and management."

However, the Act does not contain specific guidance on what particular qualities or characteristics have "special national significance." We address this challenge with a three-step approach. First, we describe the characteristics of the Exclusion Area that fall into each criteria listed in the NMSA. We focus on those subjects most commonly addressed in sanctuary designation documents as well as subjects that are specifically relevant to the Exclusion Area itself.

Second, we determine whether the Exclusion Area's characteristics can be considered of special national significance under the NMSA. We review the characteristics of the thirteen existing National Marine Sanctuaries to identify specific qualitative and quantitative criteria that have emerged as standards for sanctuary status over time. The criteria identified through this approach operationalize the concept of special national significance set forth by the NMSA. We refer to these criteria as "emergent sanctuary designation criteria." Third, we compare our characterization of the Exclusion Area to these emergent criteria to determine whether the Area's qualities can be considered of special national significance, and thus whether the Area meets the requirements of the NMSA.



Vessel traffic through the Golden Gate

## "Emergent Criteria"

Our Emergent Criteria, developed by investigating the thirteen previous National Marine Sanctuary designation documents, operationalizes "special national significance," providing a structure to systematically judge the suitability of a site for Sanctuary status.

## Research Question 1 Results:

The original reasons for omission are NOT current barriers to expansion.

- Dredging and the placement of dredged materials should not be considered a barrier to the proposed sanctuary expansion because current operations are designed to minimize environmental impact, and similar operations occur in existing National Marine Sanctuaries.
- Discharges from the City & County of San Francisco's combined sewer system have not been found to cause significant impacts to the Exclusion Area. Additionally, the number of times that state water quality standards were not met has declined significantly since MBNMS designation, coinciding with infrastructure updates.
- Vessel traffic in the Exclusion Area is comparable to the level of traffic in existing sanctuaries.

## Research Question 2 Results:

YES, the Exclusion Area is of "special national significance."

Quality	Emergent Criteria
<b>Ecological Significance</b>	<ul style="list-style-type: none"> <li>✓ Seasonal upwelling and high productivity</li> <li>✓ Habitat and feeding grounds for a significant number of marine mammals and seabirds (some threatened or endangered)</li> <li>✓ High abundance of fish</li> <li>X Confluence of major biogeographic regions, or unique topographic feature</li> <li>X Unusually high habitat diversity</li> <li>X Exceptionally high diversity of benthic organisms</li> </ul>
<b>Educational Significance</b>	<ul style="list-style-type: none"> <li>✓ Educational facilities currently have programs in the area</li> </ul>
<b>Scientific Significance</b>	<ul style="list-style-type: none"> <li>✓ Current research projects conducted in the area</li> <li>✓ Major research facilities nearby</li> <li>✓ High research potential</li> <li>X No major research facilities in the area</li> </ul>
<b>Human Use Significance</b>	<ul style="list-style-type: none"> <li>X Fishing in the area contributes a small amount to regional catch</li> </ul>
<b>Recreational Significance</b>	<ul style="list-style-type: none"> <li>✓ More than nine recreational uses</li> <li>✓ More than two pre-existing recreation areas</li> <li>✓ Recreational fishing exists</li> <li>✓ Human activity intensity increasing</li> <li>✓ Accessible to an urban population</li> </ul>
<b>Historical, Cultural, and Archaeological Significance</b>	<ul style="list-style-type: none"> <li>✓ Contains historical resources</li> </ul>
<b>Adequacy of Existing Management</b>	<ul style="list-style-type: none"> <li>✓ Many agencies dedicated to individual characteristics, but overall comprehensive management is inadequate and requires coordination</li> <li>✓ Two existing government recognitions of the value of the area</li> </ul>
<b>Area's Size and Nature Requirement</b>	<ul style="list-style-type: none"> <li>✓ Smaller than other sanctuaries and other expansions</li> <li>✓ Adjacent to three existing sanctuaries</li> <li>✓ Would remove gap in management</li> </ul>



Sebastiaan Koreman

**Harbor Porpoise (*Phocoena phocoena*)**

**“We recommend that the San Francisco-Pacific Exclusion Area be incorporated into the National Marine Sanctuary System.”**

## Conclusions and Implications

Our analysis reveals that dredging activities, wastewater discharge, and vessel traffic do not currently present barriers to the proposed expansion of MBNMS.

We also find that a substantial majority of the Exclusion Area’s characteristics should be considered “nationally significant” because they fulfill our emergent sanctuary criteria.

We conclude that the three original reasons for omitting the Exclusion Area from MBNMS do not currently constitute barriers to the proposed expansion, and that the Exclusion Area fulfills the requirements outlined in the NMSA. Therefore, we recommend that the San Francisco-Pacific Exclusion Area be incorporated into the National Marine Sanctuary System.

While our analysis supports the proposed expansion, it also reveals several subjects that will require special attention from sanctuary managers. These activities include coastal erosion management, the impacts of regulations on vessel discharge in and around the Exclusion Area, and climate change adaptation measures related to sea level rise. To address these current and future management issues, GFNMS will need to alter existing sanctuary regulations or institute adaptive zonal management approaches in the Exclusion Area.



Derek Keats

**Sevengill shark (*Notorynchus cepedianus*)**

Our analysis has also revealed several subjects that could be further researched to improve sanctuary management. First, the emergent sanctuary designation criteria identified in this study could be employed as a framework to judge future sanctuary designations and expansions. Second, further study of the human uses of the Area, such as establishing whether there are additional beneficial reuse sites for the placement of dredged material, evaluating the effects of climate change on wastewater infrastructure, and determining precise locations of commercial fish catch within the Area, could refine current management.



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