Office of National Marine Sanctuaries
National Oceanic and Atmospheric Administration

Channel Islands National Marine Sanctuary

Draft Environmental Assessment

channelislands.noaa.gov | December 2021

U.S. Department of Commerce
Gina Raimondo, Secretary

National Oceanic and Atmospheric Administration
Richard W. Spinrad, Ph.D., Under Secretary of Commerce for Oceans and Atmosphere and NOAA Administrator

National Ocean Service
Nicole LeBoeuf, Assistant Administrator (Acting)

Office of National Marine Sanctuaries
John Armor, Director
Rebecca Holyoke, Deputy Director

Recommended Citation:
National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries. 2021. Channel Islands National Marine Sanctuary Draft Environmental Assessment. Silver Spring, MD.

Cover photos (left to right, top to bottom):
Sea lions, Gull Island, Channel Islands National Marine Sanctuary. Photo: Robert Schwemmer/NOAA

In accordance with the National Marine Sanctuaries Act (NMSA; 16 U.S.C. 1431 et seq.), NOAA is proposing a revised management plan for the Channel Islands National Marine Sanctuary (CINMS or sanctuary). The issue areas and programs evaluated in this environmental assessment were identified with guidance from the general public, sanctuary staff, agency representatives, experts in the field, and the Sanctuary Advisory Council.

For readers wanting to learn more about the management plan and this environmental assessment, we encourage you to visit the sanctuary's website. Readers who do not have internet access may call the sanctuary office at (805) 893-6437 to request relevant documents or further information.

The National Oceanic and Atmospheric Administration's (NOAA) Office of National Marine Sanctuaries (ONMS) serves as the trustee for a network of underwater parks encompassing more than 620,000 square miles of marine and Great Lakes waters from Washington state to the Florida Keys, and from Lake Huron to American Samoa. Today, the program manages fifteen national marine sanctuaries and two marine national monuments that contain treasured natural and cultural resources.

NOAA's National Ocean Service is the umbrella organization for ONMS and is dedicated to exploring, understanding, conserving and restoring the nation's coasts and oceans and works to balance environmental protection with economic prosperity in its mission, promoting safe navigation, supporting coastal communities, sustaining coastal habitats, and mitigating coastal hazards.

NOAA, an agency of the U.S. Department of Commerce, is dedicated to enhancing economic security and national safety through the prediction and research of weather and climate-related events and providing environmental stewardship of our nation's coastal and marine resources.

For more information:

Chris Mobley, Superintendent
NOAA Channel Islands National Marine Sanctuary
Ocean Science Education Building 514, MC 6155
University of California Santa Barbara
Santa Barbara, CA 93106-6155
(805) 893-6416

Acknowledgements

Staff at Channel Islands National Marine Sanctuary and the Office of National Marine Sanctuaries were instrumental in supporting the development of this environmental assessment. The following staff members are acknowledged for providing assistance in preparation of this document and the information upon which it is based: Shawn Choy, Ryan Freedman, Sophie Godfrey-McKee, Chris Mobley, Michael Murray, Rachel Plunkett, Claire Nasr, Robert Schwemmer, June Shrestha, and Sarah Stein.

Table of Contents

List of Figures and Tables

List of Figures

List of Tables

Chapter 1: Introduction

The National Oceanic and Atmospheric Administration's (NOAA's) Office of National Marine Sanctuaries (ONMS) proposes to issue a revised management plan for Channel Islands National Marine Sanctuary (CINMS). This environmental assessment (EA) presents to the decision makers and the public an analysis of the potential environmental consequences of the proposed action and alternatives.

NOAA prepared this EA in accordance with the National Environmental Policy Act (NEPA; 42 United States Code (U.S.C.) §§ 4321 *et seq.*), the Council on Environmental Quality's (CEQ's) Regulations for Implementing the Procedural Provisions of NEPA (40 Code of Federal Regulations (CFR) §§ 1500–1508 (1978)), and NOAA Administrative Order (NAO) 216-6A and its Companion Manual, "Policy and Procedures for Compliance with the National Environmental Policy Act and Related Authorities."[1]

1.1 National Marine Sanctuaries System

NOAA's Office of National Marine Sanctuaries (ONMS) serves as the trustee for a network of underwater parks encompassing more than 600,000 square miles of marine and Great Lakes waters from Washington state to the Florida Keys, and from Lake Huron to American Samoa. The network includes a system of 15 national marine sanctuaries and Papahānaumokuākea and Rose Atoll marine national monuments. NOAA manages the national marine sanctuaries pursuant to the National Marine Sanctuaries Act (16 U.S.C. §§ 1431 *et seq.*) and its implementing regulations (codified at 15 CFR Part 922). NOAA cooperatively manages two marine national monuments with the U.S. Fish and Wildlife Service (USFWS) and other federal and state authorities, as codified in regulations at 50 CFR Part 404.

National marine sanctuaries are special areas set aside for long-term protection, conservation, and management and are part of our nation's legacy to future generations. They contain habitats of resplendent marine life, kelp forests, coral reefs, whale migration corridors, deep-sea canyons, historically significant shipwrecks, and other important underwater archaeological and cultural sites. Each sanctuary is a unique place worthy of special protection and responsible use.

1.1.1 National Marine Sanctuaries Act of 1972

The National Marine Sanctuaries Act (NMSA) of 1972, as amended (16 U.S.C. §§ 1431 *et seq.*), is the legislation governing the National Marine Sanctuary System. The NMSA authorizes the Secretary of Commerce to designate areas of the marine environment with special national

[1] NOAA prepared this EA using the 1978 CEQ NEPA Regulations. NEPA reviews initiated prior to the effective date of the revised CEQ regulations may be conducted using the 1978 version of the regulations. The effective date of the 2020 CEQ NEPA Regulations was September 14, 2020. This review began on October 1, 2019, when NOAA published a notice of intent to conduct scoping and prepare an environmental analysis (84 FR 52053). Therefore, NOAA decided to proceed under the 1978 CEQ regulations.

significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or aesthetic qualities as national marine sanctuaries.

NOAA manages and protects resources within all national marine sanctuaries, including Channel Islands National Marine Sanctuary (CINMS), in accordance with the NMSA. Specifically, the NMSA states that NOAA will "improve the conservation, understanding, management, and wise and sustainable use of marine resources" (16 U.S.C. § 1431(a)(4)(A)). NOAA subscribes to broad and comprehensive management approaches in order to meet the primary objective of resource protection in the NMSA. Strong partnerships among resource management agencies and tribes, the scientific community, additional stakeholders, and the public at-large are needed to achieve the coordination and program integration called for in the NMSA.

1.1.2 Comprehensive Management of the National Marine Sanctuary System

In accordance with NOAA's comprehensive management approach, each national marine sanctuary has a sanctuary management plan that serves as a guide for prioritizing management objectives and implementing management activities. New challenges and opportunities emerge with time. To ensure sanctuary management keeps up with the pace of change, the NMSA requires national marine sanctuary administrators to engage in periodic review of management plans to reevaluate site-specific goals and objectives, management techniques, and strategies, and to revise the management plan and regulations as necessary to fulfill the purposes and policies of the NMSA (16 U.S.C. § 1434(e)). The purpose of the review process for management plans is to ensure the resources at each sanctuary are properly conserved and protected.

Resource protection for national marine sanctuaries is carried out pursuant to the NMSA's interagency coordination provisions (16 U.S.C. § 1434(d)) and the NMSA's implementing regulations (15 CFR Part 922). Resource protection activities include the issuance of permits, coordination with other local, state, federal, and tribal agencies, and the implementation of management plan strategies and activities related to outreach, education, research, monitoring, and enforcement. The NMSA regulations include definitions, descriptions of sanctuary boundaries, prohibitions on specific kinds of activities, and a permitting system to allow certain types of activities to be conducted within sanctuaries that would otherwise be prohibited (15 CFR Part 922). Each of the 15 national marine sanctuaries has site-specific regulations found at subparts F through R. The regulations for Channel Islands National Marine Sanctuary are found at subpart G (15 CFR §§ 922.70–922.74). As an outcome of the NMSA's management plan review process, NOAA may propose revisions to these regulations to ensure they meet the sanctuary goals and objectives and the purposes and policies of the NMSA.

As part of implementing the sanctuary's management plan and regulations, NOAA conducts field activities in each sanctuary to support resource protection, research, and education objectives. These field activities can include vessel, aircraft, and scuba diving operations, as well as deployment of research and monitoring instrumentation.

1.2 Management Planning Cycle at Channel Islands National Marine Sanctuary

Designated in 1980, Channel Islands National Marine Sanctuary (CINMS, or the sanctuary) consists of an area of 1,470 square miles of coastal and ocean waters, and the submerged lands thereunder, surrounding the following islands and offshore rocks: San Miguel Island, Santa Cruz Island, Santa Rosa Island, Anacapa Island, Santa Barbara Island, Richardson Rock, and Castle Rock. Sanctuary boundaries extend from the Mean High Water Line of these islands to a distance of approximately 6.9 miles (6 nautical miles) offshore (Figure 1.1). The sanctuary supports a rich and diverse range of marine life and habitats, unique and productive oceanographic processes and ecosystems, and culturally significant resources such as submerged Chumash cultural artifacts and hundreds of shipwrecks. The physical, biological, and cultural characteristics of the sanctuary provide outstanding opportunities for scientific research, education, commercial and recreational fisheries, marine wildlife viewing, sailing, boating, kayaking, and other recreational activities.

The first sanctuary management plan was published in 1983,[2] just three years after the sanctuary was designated in 1980. The original management plan guided operations until, following an extensive review and public input process, a new plan, as well as updated sanctuary regulations, was published in 2009 (U.S. DOC 2009[3]). Implementation of the 2009 plan was tracked over time, and in 2017, NOAA conducted a management plan review pursuant to NMSA section 304(e). The review found that significant progress had been made toward implementing the planned activities in the 2009 plan, and called for the next revision of the management plan to occur following completion of the sanctuary's next condition report.[4]

In 2019, an updated Channel Islands National Marine Sanctuary Condition Report was published (ONMS 2019). A summary and full version of the condition report is available on the sanctuary's website.[5] The report was prepared based on data through 2016, with the input and review of more than 100 scientists, many of whom participated in workshops to identify ecosystem indicators and determine the status and trends for water quality, habitat, living resources, and maritime archaeological resources in the sanctuary. The report also assessed sanctuary ecosystem services provided to a variety of human uses and values, including a notable contribution from Chumash authors describing the value of sanctuary waters to their Indigenous community. The findings of the condition report contributed to the identification of

[2] https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/docs/1983-cinms-management-plan.pdf

[3] U.S. Department of Commerce. National Oceanic and Atmospheric Administration. National Marine Sanctuary Program. 2008. Channel Islands National Marine Sanctuary Management Plan/Final Environmental Impact Statement. Silver Spring, MD. Online: https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/management/manplan/cinms_fmp_2009.pdf

[4] Implementation progress for the 2009 CINMS management plan is summarized in this May 2018 public presentation to the Sanctuary Advisory Council: https://channelislands.noaa.gov/media/docs/20180515-cinms-management-plan-internal-review.pdf

[5] https://sanctuaries.noaa.gov/science/condition/cinms/welcome.html

priority management issues to be considered for incorporation into the next sanctuary management plan.

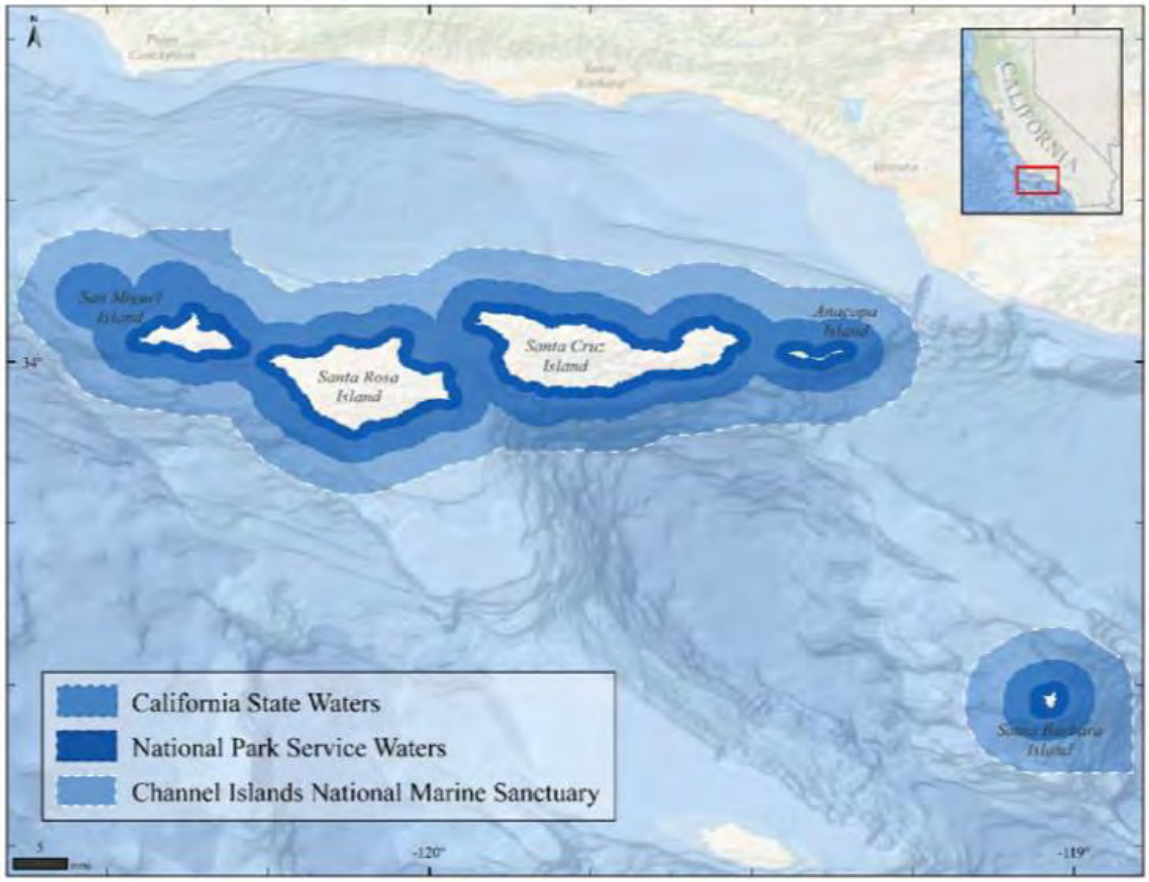

Figure 1.1. Boundary map of Channel Islands National Marine Sanctuary. Source: NOAA

1.3 Public Involvement in the Management Plan Review Process

This section describes the public involvement that occurred during the development of the proposed action and this environmental assessment and the activities that will occur when the environmental assessment is published.

1.3.1 Public Input During Scoping and Development of the EA

Following the publication of a revised CINMS condition report in 2019, public scoping, and issue identification in coordination with the CINMS Sanctuary Advisory Council, NOAA identified the environmental concerns and programmatic priorities it would address in the revised management plan.[6] On October 1, 2019, NOAA published a notice of public scoping in the Federal Register (FR) for the review of the CINMS management plan (84 FR 52053).[7] This notice informed the public of the proposed action, announced public scoping meetings, and

[6] Pursuant to the NMSA, Sanctuary Advisory Councils advise and make recommendations to NOAA regarding the designation and management of national marine sanctuaries (16 U.S.C. § 1445(a))
[7] https://nmssanctuaries.blob.core.windows.net/sanctuaries-prod/media/docs/84fr52053.pdf

solicited public comments. NOAA conducted two public scoping meetings on October 22–23, 2019, and received over 230 written and oral comments. Sanctuary staff prepared a summary scoping report in January 2019,[8] which is included in Appendix A.

The Sanctuary Advisory Council reviewed a detailed summary of public scoping comments and provided advice to the sanctuary superintendent in the form of issue prioritization ratings. Council member ratings, further supported by their written and oral comments, provided an overview of stakeholder preferences regarding inclusion or exclusion of a variety of issues within the sanctuary management plan. Sanctuary staff also rated the public scoping comment, and the results were compared and reviewed with the Sanctuary Advisory Council in March 2020, and are available online on the sanctuary's website.[9]

With due consideration of public scoping comments and input from the Sanctuary Advisory Council, sanctuary staff developed a more focused set of priority issues to be included in the management plan. An initial list of priority issues was presented to and discussed with the advisory council in May 2020, followed by a more developed list in September 2020 that reflected the structure of 10 proposed action plans to be developed within the draft management plan. Throughout the process, staff discussed select management plan issues with the advisory council, learning about select topics from expert presenters and receiving additional council input and advice on a range of issues, including: marine reserves review via state of California's marine protected area decadal review process (March 2021), climate change impacts (May 2020), marine debris (July and November 2020), and sanctuary signs and visitor center strategies (January 2021). In early 2021, input was also received from the Climate Change and Marine Debris subcommittees of the advisory council.

Staff considered public scoping comments and incorporated council input into the development of ten proposed action plans within the draft management plan. The action plans contain strategies and activities to address specific priority issues identified during the scoping and prioritization phases of the management plan review process.

1.3.2 Public Input After Publication of the Draft Management Plan and Environmental Assessment

To gather public comments, NOAA will post the draft management plan and environmental assessment on the sanctuary website, distribute copies of the documents to stakeholders and other interested parties, and publish a Notice of Availability in the Federal Register to invite comment. NOAA will accept comments through regulations.gov. During the public comment period, NOAA will solicit comments from federal, tribal, state, and local agencies and officials, from organizations, and from interested individuals. After the public comment period is over, NOAA will review all comments received. A summary of these comments and the corresponding responses will be included in the environmental assessment. As needed, NOAA will update the environmental assessment and draft management plan based on the public comments it

[8] https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/docs/20200124-cinms-mpr-scoping-comments-summary.pdf
[9] https://channelislands.noaa.gov/media/docs/20200319-cinms-mpr-scoping-comment-worksheet-scores.pdf

receives. If NOAA moves forward with a final agency action, NOAA will publish a final management plan, environmental assessment, and a finding of no significant impact (provided that the final environmental assessment suggests no significant impacts from the proposed action).

1.3.3 Additional Compliance Requirements and Consultations

In addition to NEPA, NOAA must comply with several related statutes and executive orders. Appendix B describes the requirements of the statutes and executive orders applicable to the proposed action and NOAA's consultation steps that are in progress or have already been conducted. This document contains information to support effect determinations under: the Endangered Species Act (ESA); Migratory Bird Treaty Act (MBTA); Marine Mammal Protection Act (MMPA); Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Act (MSA); National Historic Preservation Act; Coastal Zone Management Act; Executive Order 13175 on the consultation and coordination with Indian Tribal Governments; and Executive Order 12898 on addressing environmental justice in minority populations and low-income populations.

1.4 Scope of Environmental Review

Broadly, this environmental assessment evaluates the anticipated environmental effects of implementing the proposed action (Alternative 1) on physical and biological resources, cultural and historic resources, marine uses, and socioeconomic resources within the sanctuary. The goal of this assessment is to capture the broad range of anticipated management actions that would occur at the sanctuary within the next five to 10 years with sufficient detail to provide for a meaningful analysis of potential impacts on the human environment, as required by NEPA.

The timeframe for this environmental analysis is approximately the next five to 10 years, the expected time horizon for implementation of the revised sanctuary management plan.[10] The geographic scope of the affected environment in Chapter 4 and analysis of environmental consequences in Chapter 5, and the "action area" for the purposes of ESA compliance, is:

- the boundaries and along the island shorelines of the sanctuary,
- waters immediately adjacent to the sanctuary, including transit routes to and from the sanctuary,
- airspace up to 2,000 feet above the sanctuary, and adjacent to the sanctuary, within which uncrewed or aircraft operations may occur in support of sanctuary projects,
- marine areas off the mainland coast within the Santa Barbara Channel where scuba dive training or vessel safety drills/testing could occasionally occur.

This analysis could be used to support future issuance of a general permit for management of the sanctuary to the CINMS superintendent to implement any management activities that would involve an otherwise prohibited activity under CINMS regulations.

[10] Under section 304(e) of the NMSA, NOAA is required to conduct a review of sanctuary management plans every five years. This review includes evaluating the substantive progress toward implementing the management plan and goals for the sanctuary, especially the effectiveness of site-specific management techniques and strategies, and making any revisions to the sanctuary management plan and regulations as necessary to fulfill the purposes and policies of the NMSA.

1.4.1 Activities Outside the Scope of this Environmental Assessment

In some cases, limited available information and uncertainty regarding the timing, location, or scope of future possible sanctuary management actions prevent a full analysis within this environmental assessment. Thus, some activities may need an analysis of environmental consequences in the future pending a specific project proposal. When more details become available about the potential activities listed in this section or when new activities arise, NOAA will assess whether their effects are adequately addressed in this environmental assessment. If they are not, NOAA may conduct additional environmental reviews, and develop independent environmental compliance and consultation documentation, as needed. CEQ's NEPA regulations, and NOAA's NEPA guidance describe various strategies that allow NOAA to build upon the analysis in this EA when preparing future environmental compliance documentation (see NOAA's NEPA Companion Manual[11]). These strategies include: "tiering" (40 CFR § 1502.20) and "incorporation by reference" (40 CFR § 1502.21).

For example, potential hypothetical activities may include:

- Activities that require individual permits or authorizations;
- Surveys requiring the use of high energy active acoustics;[12]
- Future construction of a sanctuary vessel;
- Implementation of memorandums of agreement or cooperative agreements with outside groups to conduct activities in the sanctuary;
- Removal of large submerged marine debris;
- Implementation of restoration or mitigation plans and activities as part of emergency response activities or natural resources damage assessments.

Activities that require individual permits

NOAA evaluates all NMSA permit applications on a case-by-case basis. For each permit application received, NOAA evaluates all environmental compliance requirements, including compliance with NEPA and other environmental statutes. Some future activities that require a permit may be similar to the activities described in this EA, such as a private organization conducting research within the sanctuary. The environmental documentation for an individual permit decision may incorporate by reference relevant portions of this environmental assessment, as appropriate. For more information about sanctuary permitting, including required findings for issuance, see the Introduction section of the draft management plan, or ONMS permit guidance.[13]

[11] NOAA's NEPA Companion Manual: https://www.nepa.noaa.gov/
[12] ONMS use of multibeam and other active acoustic equipment are being assessed programmatically pursuant to NEPA with those of other National Ocean Service programs, including the Office of Coast Survey who conducts the majority of multibeam surveys for the National Ocean Service (86 FR 33663 (June 25, 2021)). The National Ocean Service intends to initiate consultation under the ESA Section 7 and seek an authorization for incidental take of marine mammals under the Marine Mammal Protection Act.
[13] https://sanctuaries.noaa.gov/management/permits/

Chapter 2:
Proposed Action and Purpose and Need

The proposed action is to update NOAA's management activities conducted within Channel Islands National Marine Sanctuary that relate to research, monitoring, education, outreach, community engagement, and resource protection. The proposed management activities include implementing routine field activities and existing sanctuary regulations, and revising the sanctuary management plan. The proposed action is intended to help maintain sanctuary ecosystems that are healthy for wildlife and people and that remain publicly accessible, to inspire and support cutting edge marine science, and to foster public awareness, understanding, and stewardship. This proposed action would guide management decision-making and contribute to the attainment of the goals and objectives of the NMSA and the purposes for which the sanctuary was designated.

2.1 Purpose of the Proposed Action

The purpose of the proposed action is to fulfill the purposes and policies outlined in Section 301(b) of the NMSA (16 U.S.C. § 1431(b)) in order to protect and manage the resources of the sanctuary. As required by Section 304(e) of the NMSA, this management plan review enables NOAA to evaluate the substantive progress toward implementing the current, 2009 management plan and the goals for the sanctuary and to revise the management plan and regulations as necessary to fulfill the purposes and policies of the NMSA. A revised sanctuary management plan would enable sanctuary staff to adjust the allocation of time and resources to focus on new priority issues, partnerships, technologies, and opportunities that have emerged since the current sanctuary management plan was published.[14] A revised management plan would also prioritize use of collaborative and community-based approaches to pursuing sanctuary goals, supported by a variety of partnerships with government agencies, scientific entities, the Chumash community, non-governmental organizations (NGOs), and sanctuary volunteers and advisory council members.

2.2 Need for the Proposed Action

The need for the proposed action is primarily based on fulfilling the requirements of NMSA Section 304(e) and addressing emerging threats to marine and NOAA trust resources, such as endangered and threatened marine species and their habitats. The action plans in the 2009 management plan are no longer sufficient to ensure effective sanctuary management into the future, because a large portion of previously planned activities have been completed, while new issues and resource protection threats have since emerged or increased in severity. Proposed updates to the sanctuary management plan are based on staff evaluation and advisory council input on the current management plan, analysis of comments received during public scoping, and findings from the latest condition report.[15] While the condition report, using quantitative data gathered through 2016, found overall that sanctuary resources were doing well in

[14] https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/management/manplan/cinms_fmp_2009.pdf
[15] https://sanctuaries.noaa.gov/science/condition/cinms/welcome.html

comparison to many other ocean areas, it also highlighted several pressures and activities causing impacts, such as vessel traffic, introduction of non-native species, ocean noise, marine debris, harmful algal blooms, and climate-driven changes to ocean conditions. The condition report's ecosystem services assessment also provided an important reminder about the unique and profound value of the sanctuary environment to Chumash people.

An updated management plan is needed to guide action on new issues, threats, and opportunities that have emerged. The sanctuary management plan needs to be updated with forward-looking strategies targeted at effectively maintaining protection of natural and cultural resources, while incorporating principles of diversity and inclusion to better serve varied communities and stakeholders within the region. Public scoping for the management plan review, followed by input from the Sanctuary Advisory Council, revealed a variety of elevated concerns, including worsening climate-driven effects, increases in plastic marine debris and microplastic pollution, and increased chances for non-native species arrivals. High interest was also expressed for: reducing ship collisions with whales; enforcing existing regulations within the sanctuary and marine reserve zones; promotion of more collaborative research; better understanding of visitor use; monitoring and exploration of deep-sea sanctuary environments; protection or restoration of sensitive species and habitats; and collaboration with Chumash community partners.

In addition to addressing new issues, there is also an ongoing need for core sanctuary programs to be sustained pursuant to the purposes stated in the NMSA (16 U.S.C. § 1431(b)) while being realigned to assure ongoing relevance and effectiveness. This includes strategies and activities to support:

- recurring responsibilities related to the ongoing protection of natural and cultural resources, including permit reviews, agency and tribal consultations, emergency response preparedness, and regulatory enforcement;
- conducting and coordinating scientific research and monitoring activities to assess resource conditions and inform management decision-making;
- developing and disseminating education and outreach products and programming to foster public awareness, understanding, and stewardship;
- safely operating and maintaining sanctuary research vessels and planning for eventual replacement;
- evaluating, testing, and responsibly deploying new remote and automated technologies to assist with efficient collection of scientific data, visitor use information, and resource emergency response; and
- sustaining community-based public involvement programming through continuing volunteer and advisory council opportunities.

Overall, there is a need to update planned CINMS management activities relating to resource protection, research, monitoring, education, outreach, and community engagement to address a range of new and emerging issues, and to sustain ongoing programming in support of sanctuary goals. Additionally, there is a need to align sanctuary plans with evolving regional and national strategic priorities of NOAA's Office of National Marine Sanctuaries. An updated management

plan will also support development of collaborative approaches and partnerships necessary to address the complex range of issues confronting the sanctuary in the years ahead.

Chapter 3:
Description of Alternatives

This chapter describes the alternatives NOAA is considering to update management activities conducted within Channel Islands National Marine Sanctuary that relate to research, monitoring, education, outreach, community engagement, and resource protection:

Proposed Action (Alternative 1): Implementation of a revised sanctuary management plan and field activities, and continued implementation of existing sanctuary regulations.

No Action Alternative: Continued implementation of the current (2009) sanctuary management plan and field activities, and existing sanctuary regulations.

NOAA developed a reasonable range of alternatives as required by CEQ's NEPA regulations (40 C.F.R. 1502.14 and 1505.1(e) [1978]) and the NOAA NEPA Companion Manual. In developing the alternatives and identifying the proposed action for analysis in the EA, NOAA considered possible regulatory changes, changes to the sanctuary management plan, and changes to routine field activities consistent with achieving the purpose and need for the proposed action. Section 3.1 describes in detail the process NOAA undertook to develop the alternatives. The subsequent sections detail the components of each alternative: (1) implementing a sanctuary management plan and routine field activities, and (2) implementing sanctuary regulations.

3.1 Development of Alternatives

NOAA developed the components of the alternatives based upon several stages of analysis, review, and external input. This included: an internal review of the 2009 management plan; findings of the latest sanctuary condition report; public input during the scoping period; input and recommendations from the Sanctuary Advisory Council; and the professional expertise of NOAA staff (Figure 3.1).

As mentioned in Section 1.3, NOAA conducted a review of the 2009 management plan in 2017 in order to gauge implementation progress and assess the ongoing relevance of the plan. Results of this analysis were shared with the Sanctuary Advisory Council in May 2018.[16] During this internal review stage, staff also assessed known and expected threats to sanctuary resources and evaluated the associated need for any possible changes to existing sanctuary regulations. No priority needs for regulatory changes were identified at that time.

[16] A 2018 summary review management plan implementation progress is available online at https://channelislands.noaa.gov/media/docs/20180515-cinms-management-plan-internal-review.pdf

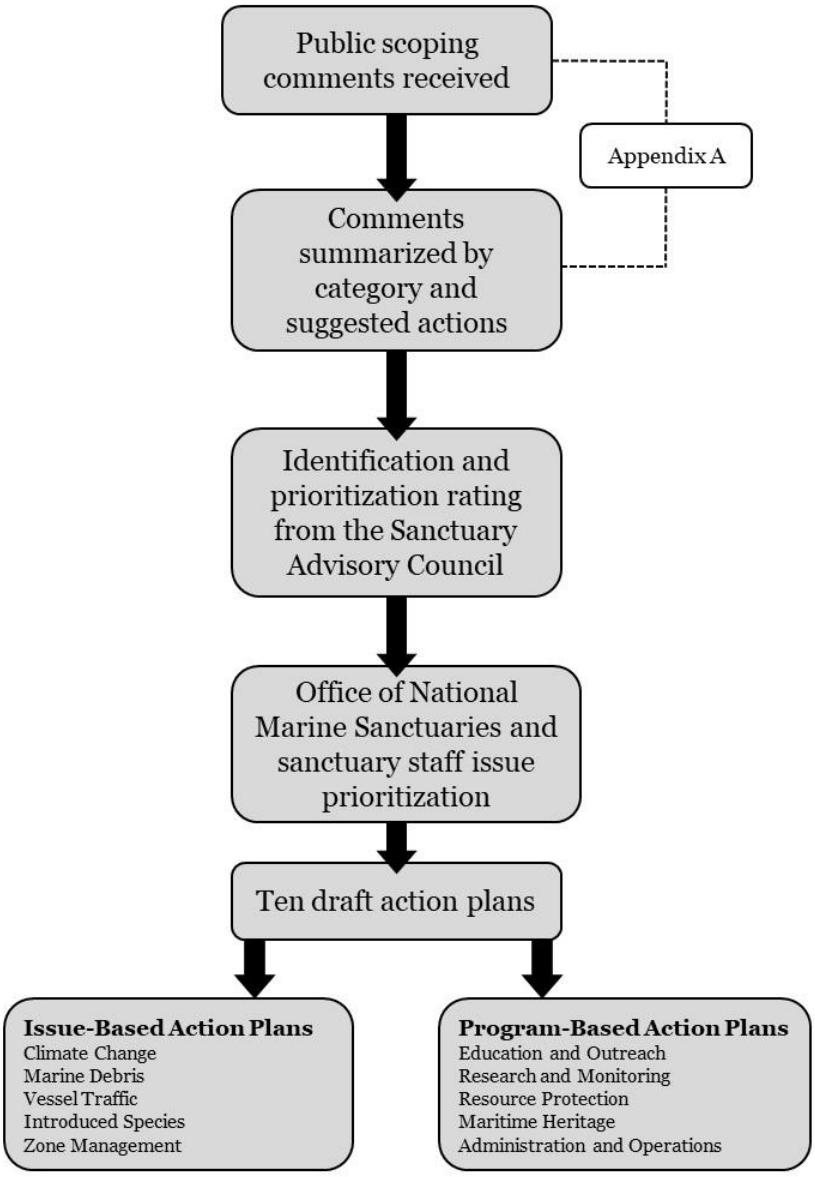

Figure 3.1. Flow of process from public scoping to development of action plans.

In 2019, ONMS published a condition report that provides an extensive source of new information about the status and trends of sanctuary resources and ecosystem services.[17] Findings from the report highlighted several issues of concern, which were also subsequently raised during public scoping meetings, as areas of interest for possible sanctuary management attention. These issues included vessel traffic, non-native species, ocean noise, marine debris, harmful algal blooms, and climate-driven changes to ocean conditions, as well as information about the value of the sanctuary environment to Chumash people.

[17] https://sanctuaries.noaa.gov/science/condition/cinms/welcome.html

Over 230 written and oral public scoping comments were received in October and November of 2019, which were considered by staff and advisory council members, and helped to shape the revised draft management plan and alternatives in this EA. Comments received covered a wide variety of resource protection threats, human use management issues, suggestions for sanctuary program priorities, and recommendations for a limited number of regulatory changes (Appendix A).

Public scoping comments (Figure 3.1 and Appendix A) served as the basis for a worksheet completed by Sanctuary Advisory Council members in March 2020, which helped to highlight issues receiving greater and lesser amounts of support for inclusion within the revised management plan.[18] Bi-monthly public Sanctuary Advisory Council meetings held from March 2020 through March 2021 featured staff presentations, council discussion sessions, and council input on several aspects of the development of the draft management plan (see Section 1.3.1 for additional details). Advice on action plan strategies was also received by the advisory council's Marine Debris Subcommittee (April, 2021) and Climate Change Subcommittee (April, 2021).

Drawing upon all of the input and analysis available, and their own professional experience, sanctuary staff also used the same advisory council worksheet to review and rate the broad range of suggestions. This further contributed to the development of the draft management plan and the alternatives in this EA.

Overall, the content and structure of the proposed alternatives are based upon the need to protect, sustain, and better understand sanctuary ecosystems in the face of shifting and emerging threats while supporting public access, inspiring stewardship, and collaboratively engaging with community members and partners.

NOAA staff were guided by the following questions as criteria to develop a range of reasonable alternatives:

- Does ONMS have the institutional responsibility and/or authority to address the issue pursuant to the NMSA?
- Does addressing the issue have positive site benefits to natural resources, cultural resources, habitat protection, protection of biodiversity, and the resolution of user conflicts within the sanctuary, or otherwise align with sanctuary goals?
- What is the level of public and advisory council interest in the issue being addressed, and has a sound case been made for sanctuary involvement?
- What is the urgency of the issue/problem?
- What is the feasibility of the sanctuary addressing the issue? Now and into the future are sanctuary staff likely to possess or have reasonable access to the necessary tools, resources, and capacities to effectively address the issue?
- What is the best agency or entity to take a leading role in addressing the issue?
- Would the alternative meet the purpose and need of the proposed action?

[18] Sanctuary Advisory Council ratings of summarized scoping comments are found online here: https://channelislands.noaa.gov/media/docs/20200319-cinms-mpr-scoping-comment-worksheet-scores.pdf

- Would the proposed action/alternative be consistent with statutory requirements?

NOAA applied these criteria to determine the appropriate types of new or revised management plan actions, field activities, or regulatory changes to be included in the alternatives, as summarized in **Table 3.1**.

Table 3.1. Summary components of each alternative.

	Proposed Action (Alternative 1)	No Action Alternative
Field Activities	Current field activities	Current field activities
Management Plan	Revised management plan	Current management plan (2009)
Regulations	Current regulations	Current regulations

3.2 Description of the Proposed Action (Alternative 1)

NOAA proposes to implement a revised sanctuary management plan[19] that would serve as an overarching framework for sanctuary management and would outline the non-regulatory activities the sanctuary would undertake in the next five to 10 years. As part of the Proposed Action, NOAA would continue to implement sanctuary regulations and current levels of field activities to support management of the sanctuary.

As a result of the alternatives development process described above in **Section 3.1**, NOAA determined that the revised sanctuary management plan would outline actions and activities aiming to accomplish one or more of the following sanctuary goals:

- Enhance resource protection through comprehensive and coordinated conservation and management tailored to the specific resources that complements existing regulatory authorities;
- Support, promote, and coordinate scientific research on and monitoring of the sanctuary's marine resources to improve management decision-making;
- Enhance public awareness, understanding, and wise use of the marine environment through education, outreach, and community involvement programs;
- Facilitate, to the extent compatible with the primary objective of resource protection, multiple uses of the sanctuary not prohibited pursuant to other authorities;
- Maintain five primary program areas supporting the administration of the sanctuary: research and monitoring, resource protection, education and outreach, maritime heritage, and program operations.

3.2.1 Revised Sanctuary Management Plan Action Plans

NOAA designed each new or revised action plan to address a priority management issue identified during the public input phase, and was also guided by an internal analysis of progress made implementing the current sanctuary management plan. The revised sanctuary management plan would consist of 10 action plans. Each action plan provides specific strategies,

[19] https://channelislands.noaa.gov/manage/plan/revision.html

activities, and performance measures to address key issues and sustain core sanctuary programs.

NOAA identified the following priority environmental concerns, which are not adequately addressed in the current sanctuary management plan, and which would be more fully addressed in new action plans within the revised sanctuary management plan:

- increasing effects of climate change on sanctuary resources;
- plastic marine debris and lost fishing gear;
- increased presence of introduced species within the sanctuary; and
- persistent risk of ship collisions with whales.

Provided below is a brief summary of each proposed action plan in the revised sanctuary management plan. The draft revised sanctuary management plan is available.

Climate Change Action Plan

Address ecosystem resilience, ecosystem services, climate adaptation, and ocean acidification through capacity building, collaborative partnerships, and public education and outreach.

Marine Debris Action Plan

Reduce, remove, and recycle marine debris in the sanctuary using collaborative approaches and supported by effective education and outreach programming.

Vessel Traffic Action Plan

Track and monitor sanctuary vessel traffic, improving compliance with resource protection zones in coordination with other agencies and partners.

Introduced Species Action Plan

Prevent the introduction, spread and establishment of introduced species. Use a partnership-based approach to evaluate and respond to newly introduced species to mitigate or eliminate ecological harm to sanctuary habitats and native species.

Zone Management Action Plan

Ensure effective management of sanctuary's protective zones, including support for monitoring, enforcement, and cooperative administration of the joint state/NOAA Channel Islands network of marine reserves and conservation areas. Work with partners to evaluate the performance of these zones to inform future adaptive management decision-making.

Education and Outreach Action Plan

Build greater public understanding, engagement, and sanctuary stewardship throughout our diverse coastal communities. Enhance outreach and engagement to support sustainable tourism and responsible recreational enjoyment of sanctuary resources.

Research and Monitoring Action Plan

Assess changes in species, habitats, and processes, and participate in regional research and monitoring to better characterize and understand the sanctuary ecosystem and to support ecosystem-based management, resource protection, and education.

Resource Protection Action Plan

Evaluate and address adverse impacts from current or emerging human activities to protect the sanctuary's natural biological, historic, and cultural resources.

Cultural Resources and Maritime Heritage Action Plan

Identify, protect, and raise awareness of the sanctuary's maritime cultural, historical, and archaeological resources. Collaborate with and learn from Chumash community partners engaged in maritime traditions, traditional ecological knowledge, and protection of sanctuary waters.

Administration and Operations Action Plan

Address necessary operations and administrative activities required for the implementation of effective programs, including staffing and infrastructure, facilitation of field operations, and Sanctuary Advisory Council coordination.

3.2.2 Ongoing Field Activities

As part of implementing these action plans and NOAA's ongoing management responsibilities for the sanctuary, NOAA conducts routine field activities in and above sanctuary waters, as well as in waters immediately adjacent to the sanctuary, coastal areas where onshore fieldwork or citizen science activities occur, and along transit routes to and from the sanctuary. Field activities aim to further research and resource protection goals, promote stewardship among visitors and local stakeholders, and educate the public about the sanctuary. Under the Proposed Action, NOAA would continue to undertake the following categories of field activities to support sanctuary management (Table 3.2).

Table 3.2. Summary of field activities to implement sanctuary management plan.

Category of Field Activity	Estimated Activity Level (Proposed Action)
Vessel Operations and Maintenance (number of vessels; days at sea/year)	Up to **one primary research vessel**; up to 62 feet in length, with a 19 knot cruising speed. Vessel's homeport is Santa Barbara, California. Up to **one secondary vessel**; up to 40 feet in length, with a 35 knot maximum speed. Vessel's homeport is Santa Barbara, California. Up to **140 total vessel days at sea/year** for research, emergency response, and education/outreach.
Scuba or Snorkel Operations (dives/year)	Up to **300 dives/year** for documentation of habitat, surveying of shipwrecks, and support for sanctuary research and monitoring activities.
Deployment of Equipment on and above the Seafloor (deployments/year)	Up to **120 deployments/year** to service up to 30 sites containing moored oceanographic and monitoring equipment, including subsurface floats, temperature loggers, acoustic telemetry devices, acoustic recording equipment, ocean acidification monitors, and larval recruitment collection devices.
Sampling (deployments/year)	Up to **60 deployments/year** of equipment for sampling, including mid-water sediment traps at two sites, and a CTD sampling unit at eight sites.
Use of Uncrewed Underwater and Surface Systems (i.e., AUVs, ROVs) (deployments/year)	Up to **60 ROV deployments/year** for measuring oceanographic and water quality conditions, habitat characterization, introduced species surveys, shipwreck investigations, and supporting education trips.
Use of Uncrewed Aerial Systems (UAS)	Up to **30 UAS deployments/year** for testing of new systems and payload sensor packages, conducting shoreline surveys, emergency response drills, oil spill mapping/tracking, and other observational projects.
Aerial Surveys from Aircraft	Up to **20 flights/year** in fixed wing aircraft or helicopters to record whale presence, boater use, and respond to spills or other emergency events.
Tagging fish and Marine Mammals	Up to **30 missions/year** for tagging of fish and sharks, and supporting whale tagging by other principal investigators.
Shoreline Activities	Up to **10 marine debris clean ups/year** along 1-2 mile long segments of island shorelines at five to eight sites.

Operating and Maintaining Sanctuary Vessels

Vessel operations are generally conducted on the sanctuary research vessels *Shearwater* and *Shark Cat*, both owned and operated by NOAA and homeported in Santa Barbara, California. Built in 2002, the R/V *Shearwater* is a 62-foot aluminum Teknicraft hydrofoil-supported catamaran, with a cruising speed of 19 knots, a gross tonnage of 76 gross tons, and a range of 450 nautical miles. R/V *Shearwater* typically operates about 120 days at sea within and adjacent to the sanctuary, primarily conducting scientific research and monitoring activities, scuba dive operations, and occasionally supporting education and outreach missions. Built in 1988, the R/V *Shark Cat* is a 28-foot fiberglass twin-hull catamaran power cruiser, with a cruising speed of 25 knots and a range of 120 nautical miles. The R/V *Shark Cat* typically operates about 20 days at sea conducting research and monitoring activities, supporting scuba dive operations, and occasionally responding to response vessel groundings or other incidents. Both boats use a standard vessel echosounder (not high energy sonar) for depth-finding to assist with safe boating and anchoring. Operation of both vessels generally takes place throughout the sanctuary and along transit routes to and from the vessel's homeport. On occasion (< 5 times per year), the R/V *Shearwater* may also conduct work at coastal locations further north (e.g., Point Arguello) and south (e.g., Long Beach, Catalina Island, and other offshore banks in the Southern California Bight).

Figure 3.2. R/V *Shearwater*. Photo: Robert Schwemmer/NOAA

Figure 3.3. R/V *Shark Cat*. Photo: Lindsey Peavey-Reeves/NOAA

The majority of vessel maintenance and training activities occur in or near the vessels' homeport, with annual dry dock haulout maintenance often handled at nearby Ventura Harbor. Minor maintenance such as oil changes and hull cleanings generally occur up to 10 times per year and may occur both in and out of the water in harbors and associated marine repair facilities outside the sanctuary. Fueling occurs dockside in harbors outside of the sanctuary. Vessel crew training and safety drills occur up to 20 times per year inside and outside of sanctuary waters. Training activities may include fire, man overboard, and scuba diver rescue drills. Occasionally, training activities may involve other outside parties. For example, the U.S. Coast Guard (USCG) assists with towing and helicopter evacuation, and the large marine mammal entanglement team assists with methods for handling marine mammals.

Both the R/V *Shearwater* and R/V *Shark Cat* are aging and will eventually need to be replaced. The sanctuary is actively pursuing a contract for construction of a *Shark Cat* replacement vessel that would have similar capabilities, uses, and environmental impacts. *Shearwater*'s replacement will likely be needed within about 10 years.

Scuba and Snorkel Operations

Science diving operations conducted by NOAA staff include nearshore characterization studies, habitat studies, species studies, oceanographic monitoring, ecosystem monitoring, benthic studies, and natural resource damage assessments. These types of dives typically occur within the sanctuary, and occasional proficiency and training dives take place along the mainland coast

of Santa Barbara or Ventura County. With support from sanctuary vessel operations, NOAA staff may conduct up to 300 dives per year, from shallow waters to a maximum depth of 130 feet.

Deployment of Equipment on and above the Seafloor

Research and monitoring activities that involve deploying equipment on the seafloor inform sanctuary condition reports and ongoing management of sanctuary resources. NOAA staff maintain an array of up to 20 West Coast Observatory project oceanographic mooring stations located throughout the sanctuary that provide long-term tracking of fish movements, soundscape recording, water temperature, pH, and marine debris degradation testing. At these sites, small single point anchors are carefully deployed by divers in soft-bottom locations in approximately 60 feet of depth, and orange floats are placed at 10–20 feet below the surface. NOAA staff conduct scuba operations and use hand tools approximately three times per year to maintain the sites, which includes swapping out data loggers, inspecting and cleaning moorings, and replacing chain and moorings as needed.

NOAA also maintains telemetry arrays directed at researching the movements of mobile sanctuary resources. These movement studies include the deployment of acoustic telemetry receivers on the same single point anchors described above. These receiver arrays can have up to 60 receivers in a given region to track animal movements. Moorings could also carry equipment to monitor viable co-variables, such as temperature, pH, dissolved oxygen, and salinity. Arrays are typically placed out for 3–5 years but can be in place up to 10 years. They typically require diver inspection, instrument replacement, and servicing approximately every six months.

The sanctuary also may deploy a number of larger oceanographic buoys to monitor changing water conditions and quality. These buoys have single point anchors and larger surface buoys that record a number of oceanographic metrics (i.e., temperature, salinity, dissolved oxygen, pH, aragonite saturation) and relay them back via satellite in near real time. These mooring buoys are placed in a range of depths (e.g., 10–400 feet) to monitor oceanographic conditions throughout the sanctuary.

NOAA also deploys additional hydrophones at various locations throughout the sanctuary that measure anthropogenic sounds. These passive acoustic monitoring stations will be deployed on single point anchors up to depths of 800 feet. All of these require deployment of mooring hardware on the seafloor that is weighted or held in place with sand screws. Recovery of the moorings outside of divable depths will be done through acoustic release systems.

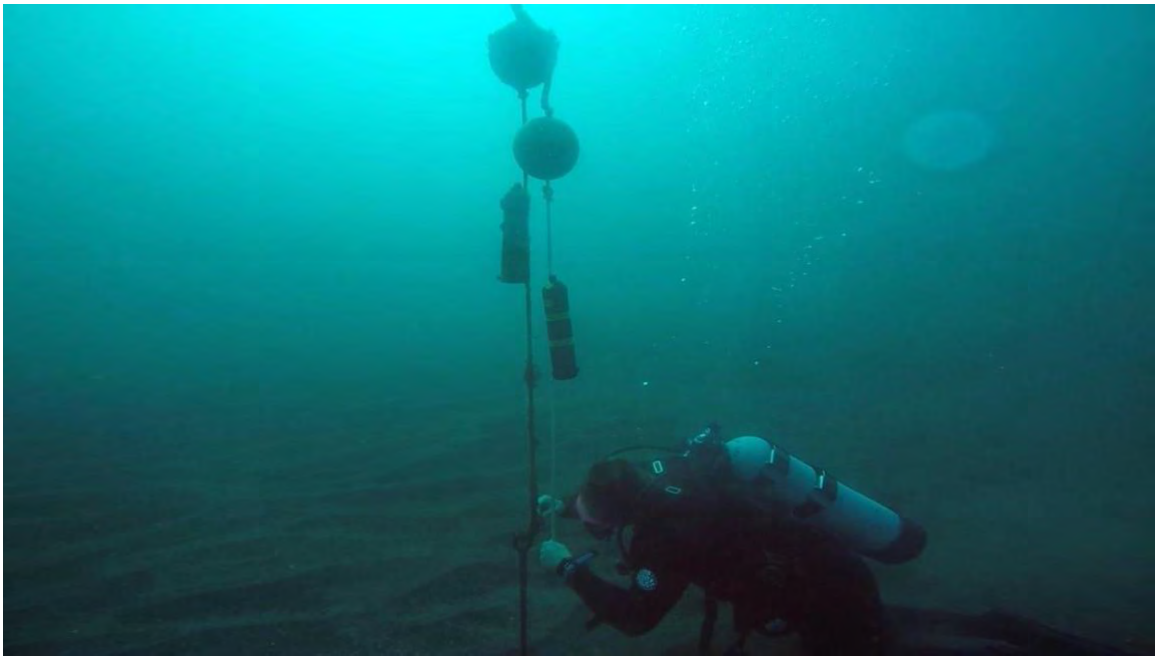

Figure 3.4. CINMS diver Ryan Freedman services a telemetry mooring anchored in soft sediment at Santa Barbara Island. Photo: Pike Spector/NOAA

Sampling

NOAA staff and research partners conduct limited sampling activities within the sanctuary, including mid-water sediment traps at two sites,[20] collections of benthic and mobile living marine resources, and water sampling.[21] Sampling occurs with conductivity, temperature, and depth (CTD) canisters mounted to a remotely operated vehicle (ROV) at eight moored sites. The automated sediment traps are attached to an 800-lb sacrificial anchor which attaches to a mooring chain by hydrostatic releases. The sediment traps are located at two sites in approximately 200 meter and 540 meter depth in the Santa Barbara Channel and provide continuous collection of sinking particles. The top float is located 150 meters below the surface. Water samples can be taken throughout the sanctuary via ROV, CTD casts from vessels, and hand collection by divers or researchers from vessels. All methods of water collection involve the use of canisters (Niskin bottles) to capture ambient water and store them for later analysis of the water chemistry, primary productivity (e.g., chlorophyll concentration), micro plankton composition, and oceanographic conditions around the sanctuary.

The sanctuary also conducts biological sampling of various species of living marine resources. Most notably this includes the sampling of deep-sea corals, species for genetic studies, and characterization of poorly understood species. These samples are taken via ROV and stored in seawater or alcohol for future analysis and description. Some tissue and whole animal samples will also be taken for various ecological studies including contaminant research, description of

[20] More information about the Santa Barbara Channel sediment trap time series project is online at: https://sanctuarysimon.org/dbtools/project-database/index.php?ID=100440

[21] A CTD (conductivity, temperature, and depth) device's primary function is to detect how the conductivity and temperature of the water column changes relative to depth. Conductivity is proportional to seawater salinity, and thus the water's density, a key physical oceanographic parameter, can be calculated from its temperature and conductivity.

new species, ecological monitoring, size structure studies, age and growth, population genetics, and stable isotope analysis. Sampling techniques may include hook and line fishing, ROV capture, hand capture, sediment coring, biopsy cores, and net capture. In total, up to 60 deployments/year of equipment may be used for sampling of water, sediments, and biological specimens.

Deployment of Uncrewed Underwater and Surface Systems

Deployment of uncrewed systems can be part of the routine work of sanctuary resource protection and research teams. ROV deployment is necessary to study deep sea environments, respond to vessel casualties, and assess resource damage. In addition, NOAA research staff, and often partners, use ROVs to conduct underwater video documentation over areas that are deemed ecologically significant and to characterize and establish a baseline of seafloor habitats and associated taxa. These systems are typically deployed from a research vessel, and the duration of the dive can vary from a few hours to 24 hours a day. ROVs are controlled by an operator onboard the vessel and are connected to the vessel using a cable or tether. Autonomous underwater vehicles (AUVs) are not tethered and are programmed to operate independently without operator intervention.

These research activities can involve up to 20 ROV deployments per year. ROVs generally operate up to depths of approximately 1,200 meters. Deployment of AUVs and drifters can also support routine benthic characterization, surveys for living marine resources, and maritime heritage activities in CINMS, such as visual reconnaissance surveys associated with historic documentation on the last reported positions of ship and aircraft wreck sites.

Use of Uncrewed Aerial Systems (UAS)

The sanctuary serves as a laboratory for NOAA's Office of National Marine Sanctuaries (ONMS) and other NOAA offices for testing and evaluating uncrewed systems and new technologies that support the scientific study and management of marine protected areas. The sanctuary is particularly well positioned to support the testing and operation of uncrewed aerial system (UAS) due to the following factors:

- Proximity to the aeronautical and tech engineering hub of Southern California, and the offshore Department of Defense sea and aerial test ranges;
- Representative species of cetaceans, pinnipeds, seabirds, and other natural and cultural resources to serve as analogs for developing tactics, techniques, and procedures for utilizing new technologies as well as validating and calibrating sensors;
- Natural oil seeps that are useful for testing new sensors for imaging and quantifying oil on water and for developing procedures for clean up;
- Access to the sanctuary's R/V *Shearwater*, a research vessel that is equipped to support launch and recovery of UAS;
- Multiple Memorandums of Agreement with federal agencies and a Cooperative Research and Development Agreements with private sector companies; and
- Experienced staff that are well versed in research and monitoring, resource protection, emergency operations, and new technology testing and evaluation.

Within the sanctuary, there may be up to 30 UAS deployments per year for testing of new systems and payload sensor packages, and for conducting shoreline surveys, emergency response drills, oil spill mapping/tracking, and other observational projects.

Most of the NOAA-controlled UAS flights within and adjacent to the sanctuary are conducted with small UAS (<55 pounds), and as such NOAA adheres with Federal Aviation Administration operational rules. This requires flights to be kept under a 400-foot altitude. For larger UAS (>55 pounds), NOAA generally flies at higher altitudes (e.g., at 1,000 feet or higher). The NOAA Uncrewed Aircraft Systems Operations Policy[22] and NOAA Uncrewed Aircraft Systems Handbook[23] provide guidance to NOAA users of UAS and a framework for the safe and efficient operation of UAS operated or sponsored by NOAA.

Aerial Surveys from Aircraft

Motorized aircraft (e.g., planes and helicopters) can pose a threat to marine animals due to their ability to access areas generally free of human presence. Aircraft can appear suddenly and cause wildlife disturbance by sight, sound, and movement. Aircraft operations within and adjacent to the sanctuary would primarily support the following NOAA-led management actions:

- Periodic observation of marine mammals, with a focus on large baleen whales within the Santa Barbara Channel and its shipping lanes;
- Occasional enforcement and emergency response activities; and
- Periodic surveys of vessel use within the sanctuary.

There are regulatory overflight zones within the sanctuary prohibiting unauthorized/unpermitted flights below 1,000 feet within 1 nautical mile of each of the five island shorelines and surrounding Castle Rock and Richardson Rock. NOAA-controlled flights are either conducted outside these regulated overflight zones, or they are individually permitted after project environmental review. Within and adjacent to the sanctuary, up to 20 flights per year may occur in chartered or NOAA-operated fixed-wing aircraft or helicopters.

Tagging Fish and Marine Mammals

Sanctuary staff would conduct up to 30 missions per year to provide either vessel support to external principal investigators authorized by the National Marine Fisheries Service to conduct whale tagging, or to conduct internal research involving the tagging of various living marine resources. Annually, sanctuary staff and partner researchers would deploy up to 100 acoustic tags on various species including, but not limited to, giant seabass (*Stereolepis gigas*), white sharks (*Carcharodon carcharias*), California spiny lobster (*Carcharodon carcharias*), and angel sharks (*Squatina californica*). For acoustic tagging, 5-30 vessel trips per year would occur. Tags will be placed externally using anchor tags or surgically implanted into fish. These

[22] NOAA Policy 220-1-5 Unmanned Aircraft Systems Operations (December 2019), available at: https://www.omao.noaa.gov/find/media/documents/policy-220-1-5-unmanned-aircraft-systems-uas-operations

[23] NOAA Unmanned Aircraft Systems Handbook (June 2017), available at: https://www.omao.noaa.gov/find/media/documents/noaa-unmanned-aircraft-systems-handbook-june-2017

permitted and authorized projects include vessel operations aboard a sanctuary vessel, scuba operations, use of natural chum materials, and deployment of marker buoys.

Shoreline Activities

Sanctuary staff would continue to engage in marine debris cleanup events annually, typically 3-5 in a given year. These cleanup events would involve 5-15 individuals accessing island shoreline areas of the sanctuary. The typical approach to the shore would be via sit-on-top ocean kayaks, which are designed to not sink or break apart in the event of bumping into cobbled shorelines, but also sometimes via operation of a small inflatable boat equipped with a small 4-stroke outboard motor. The area of access and debris removal would be from the water's edge (no submerged work) to the limit of the high tide line (no upland work). Tools used would include wire cutters, heavy duty shears, line for bundling debris, crowbars, and trash-picker devices. Debris typically removed includes lost lobster traps and a variety of small plastic pieces.

3.2.2.1 Mitigation Measures for Field Activities

NOAA conducts all field activities in accordance with self-imposed best management practices and standing orders to minimize impacts on sanctuary resources, including living marine resources, seafloor habitat, and cultural and historical resources. NOAA operations comply with all National Marine Fisheries Service (NMFS) regulations regarding interactions with protected species and habitats. All research on marine mammals is conducted in accordance with permits issued by NMFS.

This section identifies sanctuary resource protection mitigation measures used by NOAA for vessel operations, anchoring, deployment of instruments, scuba diving, seafloor protection, uncrewed aircraft systems, aircraft operations, tagging fish, and biosecurity.

Vessel Operations

All ONMS vessels must comply with the operational protocols and procedures in the

NOAA Small Boats Policy (NAO 209-125).[24] In addition, to minimize impacts on sanctuary resources during field activities, the sanctuary vessels R/V *Shearwater* and R/V *Sharkcat* adhere to the following standing orders and practices:

Lookouts/Staying at the Helm

- While underway, vessel operators should always stay alert for marine mammals, sea turtles, and other collision hazards.
- While transiting in areas where marine mammals and sea turtles are likely to occur, vessel operators should post a minimum of one dedicated lookout, and operators should remain vigilant at the helm controls (keeping hands on the wheel and throttle at all times) and be ready to take action immediately to avoid an animal in their path.
- When operating in areas where marine mammals and sea turtles are present, a dedicated lookout is required in addition to the operator. A second lookout may be posted in circumstances where visibility is restricted.

[24] https://www.omao.noaa.gov/find/media/documents/small-boat-standards-and-procedures-manual-41-edition

- When marine mammals are riding the bow wake, or porpoising nearby, operators should exercise caution and take actions that avoid possible contact or collisions.
- When operating within visual range of whales, vessel operators should follow NOAA NMFS Whale Watching guidelines[25] unless otherwise covered by a NMFS permit, and only then with extreme caution.

Vessel Speed and Maintaining Distance

- General operating speeds should not exceed 22 knots and not exceed 10 knots when large whales are visible within 1 nautical mile of the vessel.
- Once large whales are sighted, vessel operators should stay at least 100 yards away, 200 yards away from killer whales and 50 yards away from sea turtles.
- If large whales surface within 100 yards, vessel operators should stop immediately and use prudent seamanship to decide to either move away slowly or wait for the animal to move away on its own.
- In the case of northern right whales, a distance of at least 500 yards should be maintained per NMFS regulations.
- Vessel crew should be trained to know the locations of known mammal haul out areas and avoid unnecessary transits within 0.5 nautical miles of these areas.

Operation of Vessels

- Due to the increased risk of collision at night, vessel operations, whenever possible, should be planned for daylight hours (i.e., between one half hour before sunrise and one half hour after sunset when possible).
- Restricted visibility can hinder an operator's ability to see and respond to marine mammals and sea turtles. Prudent seamanship should be applied, including posting an additional lookout when there is the potential for marine animals in the vicinity.
- Standing Order for Nighttime Operations – If night time operations are essential and integral to the mission, the principal investigator must discuss mitigations for avoiding whales and other objects within the vessel operation corridor and incorporate them into the cruise plan. Mitigation measures could include: speed restrictions, additional lookouts, use of navigation lights, and use of sound signals, etc.

Anchoring and Deployment of Instruments

- Anchoring of sanctuary vessels will be limited to sandy-bottom substrates to avoid damage to seagrasses and coral habitat.
- In general, instruments would be deployed and lowered onto sandy substrate whenever possible.
- Deployment of instruments would occur slowly and under constant supervision to minimize risk and mitigate impacts should a collision or entanglement occur. Deployment operations would be postponed if species at risk of entanglement are observed.
- While vehicles or personnel are deployed, spotters would monitor activities at all times.

[25] https://www.fisheries.noaa.gov/topic/marine-life-viewing-guidelines

- Where possible NOAA staff will avoid leaving weights behind through use of an anchor retrieval system for sanctuary research gear.
- For instruments required to be left in the marine environment for long periods of time (i.e., a few months or more), staff would deploy subsurface floats that keep the mooring lines vertically tight at all times in order to significantly reduce any entanglement risk.

Scuba Diving

- NOAA divers are required to be certified by the NOAA Diving Program.[26]
- Annual training requirements assure that NOAA divers are versed in NOAA diving standards, policies, and procedures that minimize impacts to sanctuary resources.

Seafloor Protection

- To avoid potential disturbance of submerged cultural resources and artifacts, and to protect seafloor habitats and benthic species, sanctuary staff would continue to comply with NOAA regulations prohibiting unauthorized disturbance of the seafloor (15 CFR § 922.72(a)(4)) and removal or disturbance of historical resources (15 CFR § 922.72(a)(8)).
- When considering issuance of an ONMS research permit to authorize any coring of the sanctuary seafloor or other use of equipment that could impact seafloor habitats or benthic species, NOAA would exercise caution and, upon permitting any activities, require protective conditions to reduce impacts.
- When securing research and monitoring equipment to the seafloor, NOAA staff will select areas with sandy substrate for vessel anchoring and gear deployment.
- Anchoring of sanctuary vessels will be limited to sandy-bottom substrates to avoid damage to seagrasses and coral habitat.
- Whenever possible, NOAA staff will avoid leaving weights behind through use of an anchor retrieval system with sanctuary research gear.

Uncrewed Aircraft Systems

NOAA recognizes that even though responsibly-operated UAS can be less disturbing to sanctuary wildlife than larger and noisier fixed wing aircraft and helicopters, these craft still hold the potential to create disturbance to wildlife, and in particular seabirds.

- The NOAA UAS Handbook (NOAA 2017)[27] requires that special permitting, authorization, and environmental compliance work must be addressed when flights will occur over sensitive areas or in the vicinity of protected species or marine mammals. Such operations "may require a permit, authorization, or inter-agency consultation to meet environmental compliance requirements. Sensitive areas may include, but are not limited to, national parks, national wildlife refuges, waterfowl production areas, wilderness areas, and national marine sanctuaries. For flights over animals, applicable statutes may include but are not limited to: the Endangered Species Act, 16 U.S.C. § 1531 et seq., Marine Mammal Protection Act, 16 U.S.C. § 1361 et seq., and Migratory Bird

[26] https://www.omao.noaa.gov/learn/diving-program/diving/training
[27] See page 6:
https://www.omao.noaa.gov/sites/default/files/documents/NOAA%20UAS%20Handbook.pdf

Treaty Act, 16 U.S.C. § 703 et. seq. These permits may contain specific mitigation measures, or other terms and conditions that will need to be met. All flights must comply with the National Environmental Policy Act, 42 U.S.C. § 4321 et. seq; NOAA Administrative Order 216-6A. The principal investigator is responsible for all environmental compliance."

- In accordance with this agency policy, NOAA's National Ocean Service (NOS) requires that an Unmanned Aircraft Systems Operations Checklist be followed prior to the initiation of the operational phase of any UAS activity, including within national marine sanctuaries. The checklist includes requirements for assuring environmental compliance. This includes:
    - Completion of all applicable environmental compliance reviews, consultations, and permitting requirements, including, but not limited to the:
        - National Environmental Policy Act (42 U.S.C. § 4321 *et. seq*);
        - NOAA Administrative Order 216-6A;
        - Endangered Species Act (16 U.S.C. § 1531 *et seq.*); and
        - Marine Mammal Protection Act (16 U.S.C. § 1361 *et seq.*)
    - Any required mitigation measures, best management practices, monitoring, terms and conditions, or other environmental compliance requirements.
- More specifically, UAS operations within the sanctuary are planned and executed in a manner that follows best practices designed to minimize or avoid disturbance to seabirds. These practices include:
    - Conduct a pre-flight check for birds in the flight area prior to UAS take-off. If birds are detected in the flight airspace, wait until they depart before initiating takeoff.
    - Provide a 50-100 foot buffer from areas where birds are present. This includes on land, nearshore, or on the water.
    - If one or more migratory birds or non-migratory birds is suspected of being disturbed in the air during airborne operations, wait until the bird(s) clear the flight area. Attempt operations again using more conservative parameters such as a different approach angle, different time of day, etc. If a second incident occurs, conduct no further UAS operations for this day.
    - If one or more threatened or endangered bird(s) is suspected of being disturbed in/around its nest, and/or if disturbance occurs during nesting season, conduct no further UAS operations. Contact the environmental compliance coordinator.
    - Maintain a log of each day's UAS operations to account for any disturbances to migratory or other birds, and review this information with the site coordinator and the environmental compliance coordinator.

Aircraft Operations

- To avoid the potential for disturbance to marine mammals or seabirds, NOAA staff and contractors fly in professionally-chartered aircraft, or occasionally NOAA aircraft, at or greater than 1,000 feet above ground level (AGL) while over marine waters of the sanctuary and Santa Barbara Channel.
- NOAA recognizes and requests pilots of charter and NOAA aircraft to comply with applicable FAA-recommended practices relevant to flights above the sanctuary. Per the

FAA's Los Angeles Sectional Aeronautical Chart[28], "Flight operations below 1,000 feet AGL (Above Ground Level) over the designated areas within the Channel Islands National Marine Sanctuary violate NOAA regulations." In addition, the FAA's Advisory Circular 91-36D[29] "encourages pilots making VFR (visual flight rule) flights near noise-sensitive areas to fly at altitudes higher than the minimum permitted by regulation and on flight paths, which will reduce aircraft noise in such areas."

- Staff minimize the occasions necessary to request charter aircraft pilots, or NOAA pilots, to briefly drop to lower altitudes (between 500-1000 AGL) for short durations in order to confirm marine mammal sightings.

Tagging Fish

- Researchers would follow all local and federal laws, and secure proper permits.
- Where directed take is involved, such as in whale-tagging operations, sanctuary staff would ensure that appropriate permits are obtained from NMFS pursuant to ESA and MMPA.
- To reduce stress on the fish (e.g., sharks, giant sea bass), NOAA researchers would minimize physical handling, keep the fish in the water for tagging, and use proper fishing gear.
- Fishes would not be tagged with tags greater than 2% of their body weight, and prohibited species will be released immediately.
- NOAA staff would follow additional best practices for tagging, as identified by NMFS.[30]

Biosecurity and Resource Protection in Marine, Shoreline and Island Environments

- Sanctuary staff would continue to cooperate with the National Park Service and The Nature Conservancy to help prevent the inadvertent transport of non-native terrestrial plant and animal species ashore onto the Channel Islands, and to reduce the chance of introducing non-native marine species.
- For any shoreline activity or on-island visit, staff would follow biosecurity protocols established by the NPS and California Islands Biosecurity Program.[31] For island access, this means ensuring clothing and footwear are free of any plant propagules and soil prior to departure from the mainland, and not bringing ashore any live or potted plants, soil, cut flowers, firewood, untreated or unfinished wood, corrugated boxes, and tools or equipment with attached soil. Gear coming ashore is to be loaded into plastic bins with tight-fitting lids.

[28] https://sanctuaries.noaa.gov/flight/cinms.html

[29] https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentid/23156

[30] https://www.fisheries.noaa.gov/new-england-mid-atlantic/atlantic-highly-migratory-species/tagging-instructions-and-resources-volunteers

[31] Guiding protocols are found within the California Islands Biosecurity Program, online at: https://static1.squarespace.com/static/54b5b3e8e4b06e38ad4d2e82/t/5a4fc01624a6948ca5cf6524/1515175966001/CALIFORNIA+ISLANDS+BIOSECURITY+PROGRAM.pdf

- To reduce the chance of transporting non-native marine species, sanctuary staff would keep the hulls of NOAA's sanctuary vessels clean, as well as anchors and line, propellers, and keels. The vessel deck would also be kept clean to prevent the chance of mud, live material, or plant debris from becoming transported and released. There would be no dumping of bilge or ballast water within the sanctuary. At the homeport harbor, sanctuary staff will also continue to monitor for growth of non-native algae, such as *Undaria pinnatifida,* on docks and pilings adjacent to sanctuary vessels, and attached to the vessel itself.
- During island shoreline marine debris cleanup activities, in addition to following established biosecurity protocols, sanctuary staff would also refrain from digging into the shoreline environment so as to avoid any possible encounter with cultural or historic materials.
- In cooperation with the National Park Service and seasonal shoreline access restrictions established within Channel Islands National Park, disturbance to ESA-listed western snowy plovers would be avoided by not conducting shoreline activities, such as marine debris cleanups, in sensitive areas and during the plover breeding season (March - September). This includes ESA Critical Habitat areas established on Santa Rosa Island, during the breeding season.
- Island shoreline field activities would also avoid pinniped haul-out, breeding and pupping areas.

3.2.2.2 NMSA Permitting Compliance for Field Activities

NMSA regulations at 15 C.F.R. Part 922 include a permitting system to allow certain types of activities to be conducted within national marine sanctuaries that would otherwise be prohibited by sanctuary regulations. Conducting some of the routine field activities summarized in this section and in Table 3.2 to support management of the sanctuary would involve activities otherwise prohibited by CINMS regulations (see 15 C.F.R. §922.72 and §922.73).

ONMS issued a permit to the sanctuary superintendent (Permit Number: CINMS-2019-001; effective: 01/01/2019 through 12/31/2023) that authorizes sanctuary staff to conduct the below list of otherwise prohibited activities within the sanctuary. All activities must be conducted in accordance with the terms and conditions of the permit. All activities must be those reasonable and necessary to fulfill management responsibilities consistent with the purposes of the sanctuary management plan, the NMSA, and the NMSA regulations.

The permit authorizes the following activities:

1. Overflights of the sanctuary of altitudes less than 1,000 feet (within overflight restriction zones) to conduct resource protection activities such as research surveys, regulatory monitoring, enforcement, and aerial photography.
2. Marine mammal, sea turtle, and sea bird disturbance caused by activities that support research, education, or management purposes, such as a vessel grounding recovery, or surveys.
3. Emergency response, injury assessment, mitigation, restoration, monitoring, and planning as approved by ONMS headquarters, consistent with (where appropriate) NOAA Damage Assessment and Restoration policies and procedures.

4. Alteration of the submerged land for small scale research, educational and management projects, involving movement, handling, or removal of sanctuary resources, placement of scientific equipment or educational materials on the seafloor, coring of sediments, or installation or repair of moorings.
5. Participation in permitted activities of other sanctuary users such as research partners.
6. Movement or recovery of historical or cultural resources or archaeological site disturbance under time-sensitive emergency situations to protect cultural, historical, or archaeological resources from loss, destruction, or injury.
7. Harvesting, removing, taking, injuring, destroying, collecting, moving, or causing the loss of any sanctuary resource, including living or non-living organisms or historical resources, or attempting any of these activities, in a marine reserve or marine conservation area for research, education, or management purposes.
8. Discharging or depositing from within or into the sanctuary any material or other matter for the purpose of research, education, or management. Examples may include buoys, anchors for scientific equipment, and ROV ballast weights.

3.2.3 Current Sanctuary Regulations

Under the Proposed Action, NOAA would continue to implement all existing sanctuary regulations, as described at 15 CFR §§ 922.70–922.74. NOAA most recently amended the sanctuary regulations in 2009, and analyzed the impacts of those regulatory modifications in a final environmental impact statement published on December 5, 2008[32] (73 FR 74170).

Under current sanctuary regulations, all activities (e.g., fishing, boating, diving, research, and education) may be conducted within the sanctuary unless prohibited or otherwise regulated by NOAA or other jurisdictional authorities. All activities are subject to liability for destruction, loss or injury to sanctuary resources under Section 312 of the NMSA, as amended. An abridged categorical list of the types of activities prohibited by CINMS regulations includes:

- Oil and gas development;
- Seafloor mining;
- Discharge (several boating exceptions);
- Seabed disturbance (except anchoring, lawful fishing);
- Large vessels/ships (>300 gross registered tons) or motorized personal watercraft within 1 nautical mile (nm) of islands;
- Motorized aircraft below 1,000 feet within 1 nm of the islands;
- Removing or damaging any historical or cultural resources;
- Unauthorized take or possession of marine mammals, sea turtles, or seabirds;
- Introducing non-native species;
- Damaging or tampering with sanctuary signs or markers; and

[32] Availability of the 2008 Channel Islands National Marine Sanctuary Final Environmental Impact Statement was published in the Federal Register on December 5, 2008 (73 FR 74170), available online at: https://nmssanctuaries.blob.core.windows.net/sanctuaries-prod/media/archive/management/fr/73_fr_74170.pdf. The FEIS document is available online at: https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/management/manplan/pdf/feis11-08.pdf.

- Fishing or extraction in eight federal marine reserves, and limited fishing in one federal marine conservation area.[33]

3.3 Description of the No Action Alternative

Under the No Action Alternative, NOAA would continue to implement the current sanctuary management plan, field activities, and sanctuary regulations to support management of the sanctuary.

3.3.1 Current Sanctuary Management Plan Action Plans

The current sanctuary management plan was published in 2009.[34] It is a detailed plan for resource protection, research, education, and administrative services at the sanctuary. The action plans in the current sanctuary management plan address the following topics:

- Public Awareness and Understanding
- Conservation Science
- Boundary Evaluation
- Water Quality
- Emergency Response & Enforcement
- Cultural Resources and Maritime Heritage
- Resource Protection
- Operation & Administration

A review of the current management plan conducted in 2017-2018 found that significant progress had been made toward completing the 2009 management plan by conducting planned activities. Since 2009, nearly 90% of all activities within the management plan have been completed or are deemed ongoing. Twenty-six percent of all activities within the management plan (36 of 138 activities) have been partially or fully completed since 2009. Additionally, the implementation status of 63% of the plan's activities (87 of 138) were found to be functionally "ongoing." The review also called for the next revision of the management plan to occur following completion of the sanctuary's next condition report.

Consequently, implementation of the current management plan as the No Action Alternative would result in substantive portions continuing to guide many sanctuary activities. However, a growing portion of the plan would continue to fall out of date, and would likely be less relevant for addressing issues that have emerged since 2009.

Under the No Action Alternative, NOAA would continue to implement the activities described in detail in the current sanctuary management plan, focusing on those action plan activities that are still relevant to sanctuary management, but not yet completed. Implementation of the

[33] Within the sanctuary, a zoned network comprising 11 marine reserves and two marine conservation areas is regulated by both the state of California (three reserves and one conservation area in state waters only) and NOAA (eight reserves and one conservation area extending into federal waters portions). Details about state regulations for marine reserves and conservation areas are online at: https://wildlife.ca.gov/Conservation/Marine/MPAs/Network/Southern-California.

[34] 2009 Channel Islands National Marine Sanctuary Management Plan: https://channelislands.noaa.gov/management/manplan/cinms_fmp_2009.pdf

current sanctuary management plan would involve undertaking the same broad types of management and field activities described for the Proposed Action (see **Section 3.2.2**).

3.3.2 Ongoing Field Activities

Under the No Action Alternative, NOAA would continue to implement the categories of field activities identified in Table 3.2 and Section 3.2.2.

3.3.3 Current Sanctuary Regulations

Under the No Action Alternative, NOAA would continue to implement all existing sanctuary regulations, as described at 15 CFR §§ 922.70 - 922.74. NOAA most recently amended the sanctuary regulations in 2009 and analyzed the impacts of those regulatory modifications in a final environmental impact statement published on December 5, 2008[35] (73 FR 74170). (For more information, see Section 3.2.3.

3.4 Alternatives Considered but Not Pursued

A majority of the topics identified through public scoping are addressed in some manner in the action plans contained within the draft revised sanctuary management plan. Staff and the advisory council reviewed and considered all 230 of the comments received (Appendix A), and the action plans were improved for having been informed by this public input. Many scoping comments mentioned very specific ideas pertaining to suggested program details. These detailed ideas, while informative, may not appear to be directly reflected within the action plans given that the strategies and activities have been written to provide guidance over the next five to 10 years.

A few topics raised during public scoping were specifically not incorporated into the alternatives analyzed in this EA. NOAA could consider any of these eliminated topics during future sanctuary management plan reviews or separate rulemaking processes.

NOAA eliminated topics from further consideration for the following reasons:

- lack of feasibility for successful implementation at CINMS;
- failure to fulfill the stated purpose and need of the proposed action;
- other regulatory agencies could provide a more direct response to the environmental concern;
- the topic needs further analysis beyond the scope of this management plan review process; or
- based on input from the Sanctuary Advisory Council.

[35] Availability of the 2008 Final Environmental Impact Statement (FEIS) was published in the Federal Register on December 5, 2008 (73 FR 74170), available online at: https://nmssanctuaries.blob.core.windows.net/sanctuaries-prod/media/archive/management/fr/73_fr_74170.pdf. The FEIS document is available online at: https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/management/manplan/pdf/feis11-08.pdf.

Boundary Expansion

NOAA received and considered several public scoping comments recommending expansion of the sanctuary's outer boundary. Commenters suggested that a larger sanctuary could address a range of issues, including climate-related shifts, marine shipping traffic, species migration corridors, protected area connectivity, increased area of protections for species and habitats, fishing pressure, offshore oil and gas development leasing, and inclusion of areas with offshore oil and gas platforms expected to be decommissioned.

The idea of expanding sanctuary boundaries has previously been studied and substantively considered. During the last management plan review process (completed in 2009), NOAA gave consideration to expansion of the outer sanctuary boundary. A NOAA decision was deferred until a future point, citing the need for additional information and assessment. In the ensuing years, NOAA completed a biogeographical assessment of Channel Islands National Marine Sanctuary[36] and surrounding marine habitats to inform a variety of boundary change concepts. In July 2015, community groups from the San Luis Obispo county area nominated Chumash Heritage National Marine Sanctuary through NOAA's sanctuary nomination process.[37] The area nominated adjoins CINMS and comprises a majority of the waters that had previously been considered for sanctuary boundary expansion. In October 2015, NOAA determined the nomination to have successfully met the national significance criteria and management considerations described in the sanctuary nomination process. A five-year review[38] of the nomination was conducted in 2020. ONMS subsequently determined that the proposal continues to meet sanctuary nomination process criteria and will remain on the inventory of areas NOAA may consider in the future for national marine sanctuary designation, through October 5, 2025. The area is currently under consideration by NOAA for national marine sanctuary designation.

With NOAA's separate process underway to consider the proposed Chumash Heritage National Marine Sanctuary candidate site, NOAA is not seeking to expand the outer Channel Islands National Marine Sanctuary boundaries at this time.

Modification of Channel Islands Federal Marine Reserves and Marine Conservation Areas

NOAA received and considered a variety of public comments suggesting regulatory modifications to the marine reserves and marine conservation areas within the sanctuary. The state of California (in 2003) and NOAA (in 2006/2007) jointly designated the network of eleven state and federal marine reserves (i.e., no-take zones) and two marine conservation areas (i.e., limited fishing areas) (Figure 4.1). Sanctuary staff partner with the California Department of Fish and Wildlife to jointly manage, monitor, educate and enforce this network of protective zones. Public scoping comments received ranged from suggestions to expand the number and size of marine reserves, to requests from recreational fishing organizations to change some

[36] https://coastalscience.noaa.gov/project/biogeographic-assessment-channel-islands-national-marine-sanctuary-boundary/
[37] https://nominate.noaa.gov/
[38] https://nominate.noaa.gov/5-year-review.html#chumash

reserves to conservation areas open to angling for pelagic species.[39] Such ideas and potentially others are deserving of consideration, but at this time, NOAA is not initiating a review of zone performance, needs, and management options; further analysis would be required beyond the scope of this management plan review process.

Instead, NOAA plans to first participate in and learn from the state of California's marine protected area decadal review process that is underway and expected to conclude by the end of 2022. NOAA has jurisdictional authority over the federal portions of the marine reserves and marine conservation areas that extend from the state zones into federal waters of the sanctuary. Following the state's decadal review process, NOAA will seek to consult with CDFW to consider and conduct a future joint evaluation of the state/federal network. Ultimately, NOAA will make an independent agency decision regarding the need to initiate any public scoping, assessment, and rulemaking process to enact any needed adjustments to federal regulations supporting marine reserves and conservation areas. Should future NOAA regulatory changes be pursued, the process will be guided by the NMSA, NEPA, other applicable laws and statutes, tribal consultation, and input from the public, marine stakeholders, the Pacific Fishery Management Council, state of California, and the Sanctuary Advisory Council. For additional information, see the Strategy ZM-1 in the Zone Management Action Plan of the draft management plan.

Relocate Traffic Separation Scheme, Expand Area to Be Avoided

Scoping comments received included a recommendation to relocate the current shipping lanes within the Santa Barbara Channel to the south side of the northern Channel Islands, beyond the boundaries of the sanctuary, suggesting that doing so would lower the risk of ship strikes on whales. The sanctuary does not have sufficient regulatory authority to pursue such an action,[40] and thus the suggestion is beyond the scope of NOAA's proposed action. Scoping comments received also suggested that the current area to be avoided (ATBA) established around the sanctuary be expanded further west, following a recommendation developed by the Sanctuary Advisory Council's Marine Shipping Working Group in 2016.[41] Although this idea cannot be independently pursued at CINMS given insufficient sanctuary regulatory authority, separate from this proposed action, NOAA and the U.S. Delegation to the International Maritime Organization (IMO) initiated an effort in 2020 to approach the IMO with an ATBA modification proposal, expected to be received and considered for possible adoption in 2022. For more information, see the Vessel Traffic Action Plan and Strategy VT-3 within the draft management plan.

Establish Mandatory Speed Limit for Ships

NOAA received and considered public scoping comments suggesting sanctuary regulation of ship speeds as a means of reducing ship strikes on whales.[42] Given the sanctuary's boundary and

[39] See scoping comment summary items 5, 9, 10, 11, and 17 in Appendix A.
[40] See Article 4, section 1(e): https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/docs/2009-cinms-terms-of-designation.pdf
[41] See pp 50-51: https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/sac/pdfs/mswg_final_report_may2016.pdf
[42] See public scoping comment summary items 28 and 33 in Appendix A.

current limits on regulatory authority related to the navigation of vessels,[43] and the broader geographic range of ships and whales relevant to this issue, NOAA is not initiating such changes as part of the sanctuary's current proposed action. Other regulatory agencies could provide a more spatially appropriate response. As stated in the draft management plan (Vessel Traffic Action Plan, Strategy VT-1), sanctuary staff plan to continue to promote and implement vessel speed reduction programs (voluntary, incentive-based, and corporate social responsibility) while also advocating within NOAA for further action to address the ship strike issue, including consideration of regulations to reduce vessel strikes.

Regulate Fisheries

Public scoping comments received suggested that the sanctuary management plan incorporate fisheries management approaches, such as prohibiting certain types of gear (e.g., nylon driftnets), using temporal zoning, and setting quotas based on fish censuses in/out of marine reserves and conservation areas.[44] Pursuant to the NMSA (Section 304(a)(5)) and the sanctuary's terms of designation,[45] ONMS follows state and federal fishery management agency decisions on implementing gear requirements, seasons, and catch quotas. However, sanctuary staff stay engaged in the fisheries management process, review and comment on proposed plans, and bring forth sanctuary issues in need of fisheries management attention. Thus, while the specific suggestions raised will not be included within the sanctuary management plan, the process of consulting with fisheries management agencies will continue.

[43] See Article 4, section 1(e): https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/docs/2009-cinms-terms-of-designation.pdf
[44] See scoping comment summary item 10 in Appendix A.
[45] See Article 5, Section 1 (Fishing): https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/docs/2009-cinms-terms-of-designation.pdf

Chapter 4:
Affected Environment

This chapter describes the environmental, human, and socioeconomic setting for the proposed action. The description of the affected environment focuses on the resources most likely to be affected by implementing the proposed draft management plan and field activities to manage CINMS. A map of the sanctuary and adjacent waters and coasts is shown in Figure 4.1. The geographic scope of the affected environment in Chapter 4 and analysis of environmental consequences in Chapter 5 is:

- the boundaries and along the island shorelines of the sanctuary;
- waters immediately adjacent to the sanctuary, including transit routes to and from the sanctuary;
- airspace up to 2,000 feet above the sanctuary, and adjacent to the sanctuary, within which uncrewed or crewed aircraft operations may occur in support of sanctuary projects; and
- marine areas off the mainland coast within the Santa Barbara Channel where scuba dive training or vessel safety drills/testing could occasionally occur.

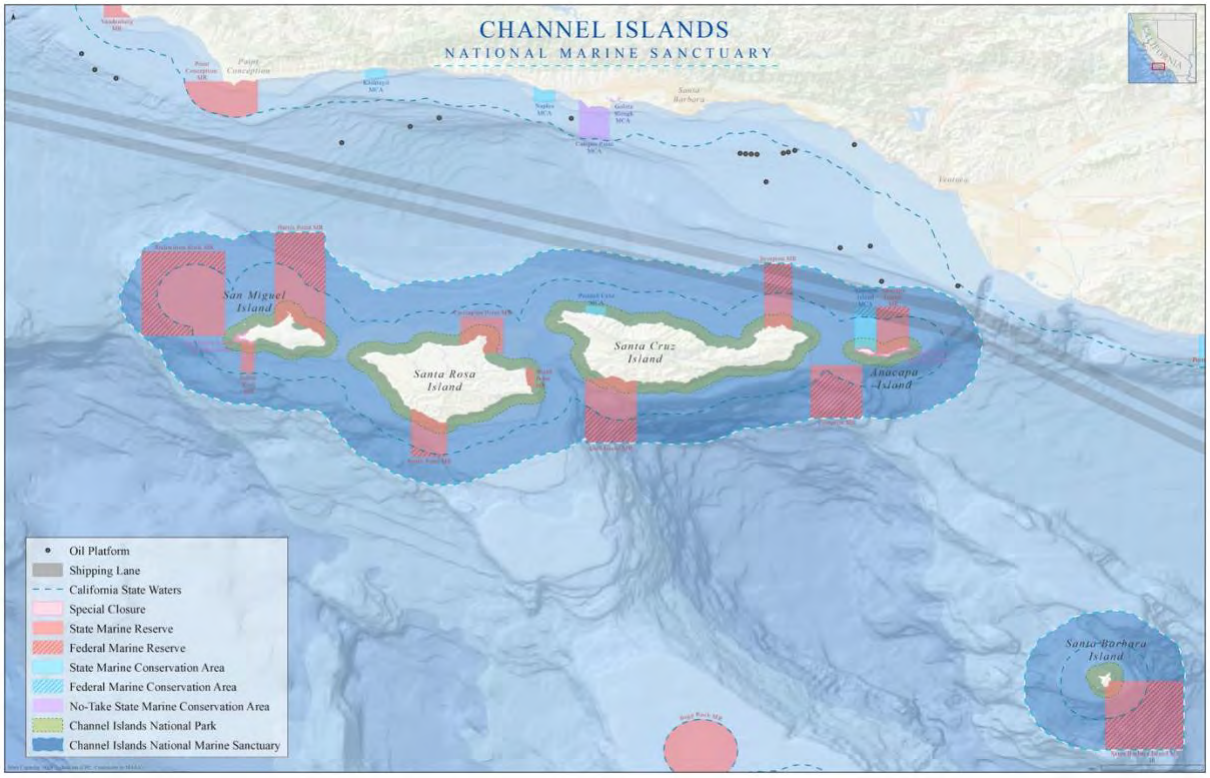

Figure 4.1. Channel Islands National Marine Sanctuary and surrounding waters and coasts. Map source: NOAA

This section follows the general organization of the Channel Islands National Marine Sanctuary Condition Report[46] and incorporates by reference certain sections of that document, as further described below. The condition report describes status and trends in water quality, habitat, living resources, and maritime heritage resources in the sanctuary, and the human activities that affect them.

4.1 Physical Setting

The physical environment of the sanctuary that may be affected by the proposed activities includes habitat, water quality, and climate change.

4.1.1 Habitat

There are a variety of important marine habitats within the sanctuary, including sandy beaches, rocky shores, kelp forests and rocky reefs, shallow sandy seafloor areas, deep seafloor environments, and pelagic habitats. These habitats support diverse algae, plants, invertebrates, fish, marine mammals, and seabirds (Figure 4.2).

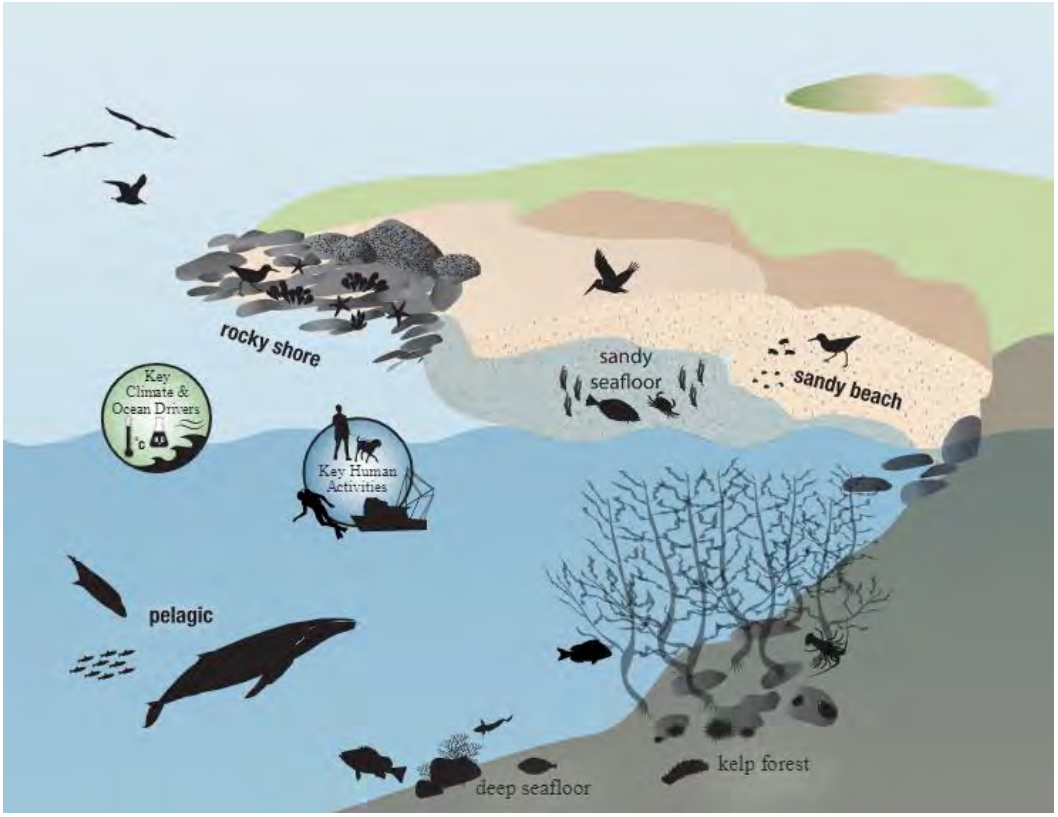

Figure 4.2. Habitats of the sanctuary. Source: Sanctuary Ecosystem Trends Tool (https://marinebon.org/sanctuaries/)

[46] Sanctuary condition reports provide a summary of resources in national marine sanctuaries, drivers and pressures on those resources, and the current conditions and trends for resources and ecosystem services. Condition reports also describe existing management responses to pressures that threaten the integrity of the marine environment. Learn more: https://sanctuaries.noaa.gov/science/condition/

Sandy Beach

Sandy beaches are high-energy coastal habitats that are periodically covered and uncovered by waves and daily tides—the height of the tides within the sanctuary can be more than two meters (6.5 feet). Sandy beaches are a major component (approximately 20%) of the intertidal region of the northern Channel Islands. Sandy beaches are used by a wide variety of species for foraging, nesting, resting, and breeding.

Rocky Shore

Changing tides, steady waves, and competition for food and space are among many physical and biological factors that determine the nature of plant and animal communities along the sanctuary's rocky shores. Similar to the sandy beach habitat, organisms here have adapted to thrive in this harsh and changing environment where they live part of their day under water and part of their day exposed to the air.

Shallow Sandy Seafloor

The nearshore shallow habitat extends from the surf out to waters that are approximately 30 meters deep. Waves and currents interact with the sandy seafloor in this relatively shallow zone, creating sand waves and ripples and organizing sediment particles into different group sizes (e.g., sand, gravel, cobble).

Kelp Forest and Rocky Reef

Rocky seafloor habitats are widespread around the sanctuary. These rocky underwater reefs are often characterized by dense patches of kelp, a marine algae. One third of Southern California's kelp forests are found within sanctuary waters 2-30 meters deep, or more, with giant kelp (*Macrocystis pyrifera*) being the largest and most prominent species.

Deep Seafloor

The deep seafloor habitat extends from about 30 meters to greater than 200 meters deep over the continental shelf and slope; the depth in some canyons may exceed 1,500 meters. More than 90% of the habitat found in the deep waters off Southern California is soft bottom (Thompson et al. 1993). Many organisms live in and above the mud and sand, including clams, worms, sand crabs, sand dollars, sea stars, bottom-dwelling sharks, rays, and flatfishes. The less common rocky seafloor is made up of low-relief reefs less than one meter in height. Higher relief pinnacles and ridges occur in some areas, such as off the northwest end of San Miguel Island. These high relief volcanic reefs can include features such as walls, ledges, caves, pinnacles, boulders, and bedrock outcroppings. These rocky underwater environments provide habitat capable of supporting thousands of algal, invertebrate, and fish species. Because of the difficulty in studying very deep habitats, less is known about these areas in the sanctuary; however, recent submersible work has revealed colonies of deep-sea coral, such as *Lophelia pertusa* north and south of the islands. These coral gardens support diverse fish and invertebrate communities (Etnoyer et al. 2015, Tissot et al. 2006).

Pelagic Habitat

Pelagic habitat, the most extensive habitat in the sanctuary, includes the offshore oceanic water around the islands. It is divided into sub-habitats based on depth, each of which has varying

degrees of light penetration, temperature, oxygen concentration, and density. Light can penetrate the water's surface down to 200 meters, known as the photic zone. This region of the water column is also called the epipelagic, and the base of its food webs are composed almost entirely of phytoplankton—tiny plants that turn sunlight into energy via photosynthesis. Zooplankton (i.e., tiny fish larvae and invertebrates) and small schooling fishes (e.g., anchovy and sardine) that feed on phytoplankton are in turn a major food source for larger fishes, seabirds, and marine mammals. In the midwater environment (200–1,000 meters), fishes and some invertebrates have developed special adaptations that enable them to live under higher water pressure, lower oxygen levels, and darkness. Many small midwater fishes and zooplankton feed on phytoplankton by migrating hundreds of meters to the surface layer after sunset and then returning to their midwater habitat at dawn.

4.1.2 Water Quality

The physical and biological oceanographic characteristics of the CINMS region are unique. Two major currents meet at the east-west oriented northern Channel Islands, making it a transition zone where surface temperatures shift from warmer in the east, to cooler in the west. There is notable seasonal variation of surface temperatures, currents, deep water upwelling, nutrients, pH, and dissolved oxygen levels. These factors combine to support one of the most productive and biologically diverse marine ecosystems in the world.

Given the distance of the islands from the mainland and the geographic features of the Santa Barbara channel, water quality conditions in the sanctuary are relatively good compared to coastal areas (ONMS 2019). The sanctuary's condition report assessed the status and trends for sanctuary water quality, finding a "good" status for eutrophic conditions with a stable trend, a "good/fair" status for human health risks with a stable trend, and a "fair" status for climate-driven water quality impacts with a worsening trend. The condition report also attributed an undetermined status for other stressors to water quality, noting that microplastic pollution appears to be on the rise.

4.1.3 Climate Change

Climate drivers are currently the most concerning threat to water quality. Global climate change has affected water quality (e.g., sea surface temperatures, pH, etc.) and the animals associated with the sanctuary (e.g., urchins, deep-water corals, and other habitat-forming species). For example, a warm water event unprecedented in size and duration occurred from 2013-2016, which led to anomalously warmer waters, reduced mixing of surface waters, reduced nutrient delivery via upwelling, and resulted in low productivity in the Southern California Bight. Research suggests that such marine heat waves and other changing oceanographic conditions are likely related to climate change. Thus, sanctuary staff seek a better understanding of how climate change may impact water quality in the sanctuary over time.

4.2 Biological Setting

4.2.1 Living Resources

The varied oceanographic conditions and the transition between them, the diversity of habitats, and the sanctuary's relatively undisturbed location support a wide variety of invertebrates, fish, sea turtles, seaweed, marine plants, marine mammals, and seabirds.

Plankton

A diverse planktonic community forms the base of the sanctuary's food web. The abundance and species richness of plankton varies greatly in both space and time and is dependent upon environmental factors, such as nutrients and temperature. Short-term blooms of phytoplankton often occur in association with upwelling. These blooms subsequently support zooplankton populations. Zooplankton, in turn, are preyed upon by small schooling fish that then become food for larger fish, seabirds, and marine mammals.

Macroalgae and Plants

Macroalgae (i.e., seaweed) and marine plants (i.e., seagrasses) are habitat-forming primary producers that grow in intertidal and shallow subtidal waters, generally less than 30 meters deep, where enough light penetrates for photosynthesis. The islands support a rich array of benthic algae and seagrasses. In Southern California, there are at least 492 species of algae and four species of seagrasses known to occur from among the 673 total species described for California (Abbott and Hollensberg 1976, Murray and Bray 1993). These algae and marine plants are critical to the life history of many of the invertebrates, fishes, seabirds, and marine mammals found in the sanctuary. For example, giant kelp forms extensive underwater forests on rocky substrates at shallow subtidal depths. The sanctuary's impressive kelp forests are important not only ecologically, but also for recreational and commercial activities including fishing, diving, and tourism. Kelp beds are highly productive habitats and serve as important nursery habitat for juvenile fishes in the upper canopy (Carr 1994). They also provide food, attachment sites, and shelter for a diverse assemblage of invertebrates and other species of algae on the benthos, throughout the water column, and in the root-like structure called the kelp holdfast (Dayton 1985, Graham 2004).

There are two types of marine flowering plants found in the sanctuary. Surfgrass (*Phyllospadix* spp.) is found in rocky intertidal and shallow subtidal areas. Eelgrass (*Zostera pacifica*) is found in soft bottom subtidal areas. These plants form productive and complex habitats that provide food and refuge for a wide variety of marine species, including recreational and commercially important fish and invertebrates (den Hartog 1970, Orth et al. 1984, Hemminga and Duarte 2000). Seagrass beds provide nursery habitat (reviewed in Heck et al. 2003) and are important for nutrient cycling (Costanza et al. 1997) and substrate stabilization (Fonseca and Fisher 1986). Past efforts by J. Altstatt have restored eelgrass beds at Anacapa Island. Eelgrass beds, which can be damaged by vessel anchoring and mooring chains, are also found at Santa Cruz and Santa Rosa islands (Figure 4.3).

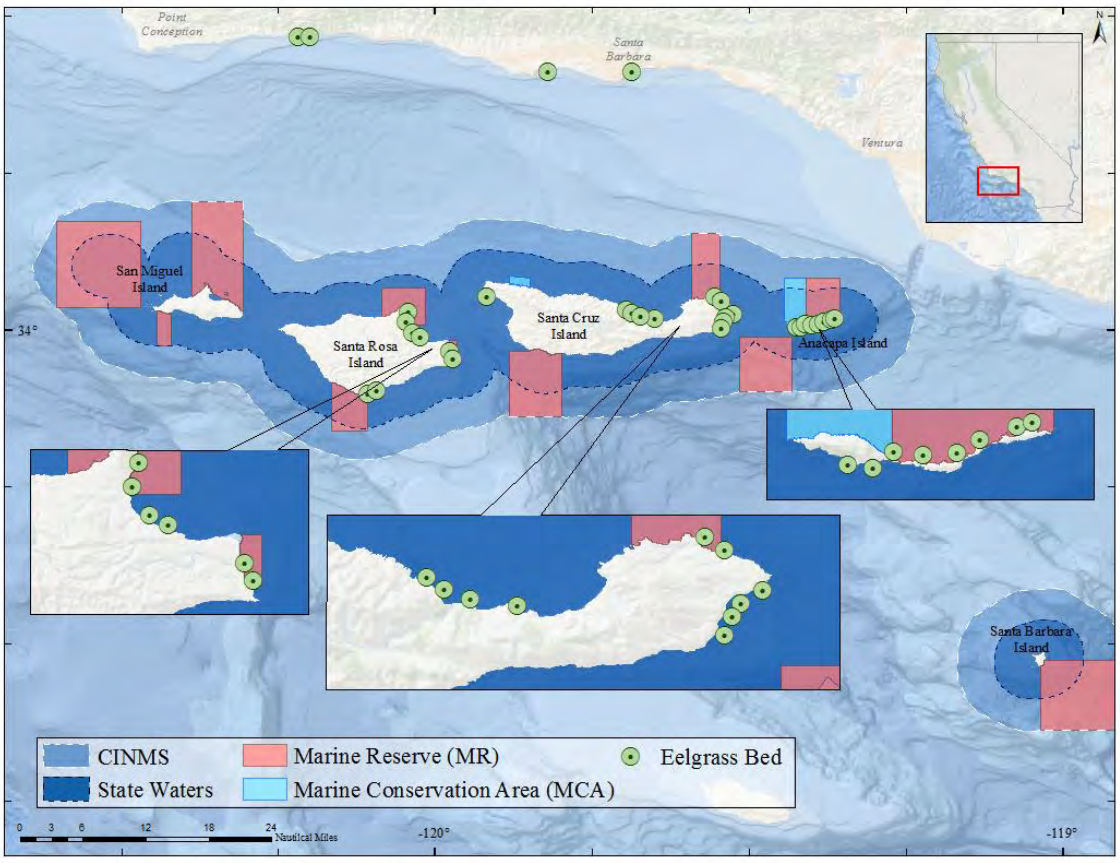

Figure 4.3. Eelgrass beds within the sanctuary. Data by Jessie Altstatt. Map source: NOAA

Invertebrates

The total number of invertebrate species in Southern California may be in excess of 5,000, not including microinvertebrates (Smith and Carlton 1975, Straughan and Klink 1980). Common and ecologically important invertebrates in the sanctuary include: abalone, anemones, barnacles, clams, corals, gorgonians, crabs, jellyfish, mussels, nudibranchs, prawns, salps, scallops, sea cucumbers, sea slugs, sea stars, sea urchins, snails, chitons, limpets, sponges, bryozoans, copepods, euphausiids, prawns, spiny lobster, squid, tunicates, and worms.

Fish

More than 400 species of fish have been documented in the sanctuary, which constitutes a greater species richness than nearby coastal regions along the Southern California mainland. Fish diversity on nearshore reefs is related to the presence or absence of kelp and substrate topography. Some of the common nearshore kelp bed and rocky reef associated fishes in the sanctuary include: giant sea bass,[47] kelp bass, garibaldi, and California sheephead. Common important groundfish found within sanctuary waters include but are not limited to: bank rockfish, bocaccio, cowcod, chilipepper rockfish, Dover sole, English sole, sablefish, and widow rockfish. Coastal pelagic and highly migratory fish species include: California barracuda, Pacific

[47] Giant sea bass is listed by the International Union for the Conservation of Nature (IUCN) as a critically endangered species on the IUCN Red List. See: http://www.iucnredlist.org/details/20795/0

bonito, white sea bass, yellowtail, albacore, blue shark, jack mackerel, northern anchovy, opah, Pacific mackerel, Pacific northern bluefin tuna, Pacific sardine, shortfin mako shark, skipjack tuna, striped marlin, swordfish, thresher shark, white shark, and yellowfin tuna.

Seabirds

CINMS is located along the Pacific Flyway, a major migratory route for birds. The islands act as a stopover during the birds' northerly (i.e., April through May) and southerly (i.e., September through December) migrations. In addition, the diversity of habitats on the Channel Islands provides breeding and nesting sites for many resident species, which then forage in sanctuary waters. These island sites are particularly valuable because they are free of mainland predators while immediately adjacent to very productive sanctuary waters.

Sandy beaches provide foraging and resting habitat for a number of shorebirds including: black-bellied plover, gulls, long-billed curlew, sanderlings, whimbrel, and willet. The upland portions of the beach provide kelp deposits that attract invertebrates, which are eaten by black and ruddy turnstones (*Arenaria melanocephala* and *A. interpres*), dowitchers, and other shorebird species. The islands' rocky caves and crevices provide nest habitat for Scripps's murrelets (*Synthliboramphus scrippsi*) and ashy storm-petrels (*Oceanodroma homochroa*), while Cassin's auklets (*Ptychoramphus aleuticus*) dig burrows in seaside cliffs. Twelve seabird species breed in the Channel Islands.

Sea Turtles

Four sea turtle species have been reported in the offshore Southern California region: green, leatherback, loggerhead, and olive ridley. All sea turtle species are federally endangered, and these four species are rarely sighted at the Channel Islands because of range limits (green, loggerhead, and olive ridley), decreased populations, and their migratory habits.

Whales, Dolphins, and Pinnipeds

The Channel Islands shorelines and the surrounding sanctuary waters support a great diversity of marine mammals, including whales, pinnipeds, and on occasion, sea otters. These species depend on a large volume of seasonal food resources. The abundance and distribution of marine mammals can serve as an indication of the general health and ecological integrity of the sanctuary's marine ecosystem.

At least 33 species of cetaceans have been reported in the Southern California Bight (C.J. Rennie, Santa Barbara Museum of Natural History, pers. comm., Leatherwood et al. 1987), with 18 regularly observed in the Santa Barbara Channel (Santa Barbara Coastal LTER 2006). These species include but are not limited to: blue whale, fin whale, orca, bottlenose dolphin, California gray whale, humpback whale, Pacific white-sided dolphin, Risso's dolphin, beaked whales, and short-beaked and long-beaked common dolphin.

The sanctuary provides vital habitat for pinnipeds, offering important feeding areas, breeding sites, and haul outs. Six species of pinnipeds have historically occurred in the northern Channel Islands: California sea lion, Guadalupe fur seal, northern fur seal, northern elephant seal, Pacific harbor seal, and Steller sea lion. The most common pinniped in the northern Channel Islands is the California sea lion, with San Miguel Island serving as one of the largest rookeries in the

world. The least common pinniped in the sanctuary is the Steller sea lion; the sanctuary is at the southern edge of its range.

Finally, the southern sea otter (*Enhydra lutris*) is occasionally sighted at the Channel Islands, although there is currently no resident breeding population. The southern sea otter is listed as threatened under the federal Endangered Species Act and is considered depleted and protected under the Marine Mammal Protection Act. In general, the California population has been slowly increasing in recent years (Tinker and Hatfield 2016).

Non-Indigenous Species

Non-indigenous, or introduced, species are plants and animals living outside their endemic, or native, geographical range. Some non-indigenous species may be benign; however, many become "invasive" species if they cause ecological or economic harm in their newly inhabited environment. Invasive marine species are capable of causing declines, extirpations, or extinctions of native plants and marine life, reducing biodiversity by competing with native organisms for limited resources, and altering habitats. These changes may result in economic impacts and fundamental disruptions of ecosystems.

Marine introduced (non-native) species may arrive in the sanctuary by traveling on the hulls or within the ballast water of oceangoing ships, and on the hulls, lines, or anchors of private and commercial boats. In addition, they may be released in or near the sanctuary through the release of aquarium specimens or bait, accidental release from aquaculture operations, and other means.

Several non-indigenous algal species are appearing in Southern California and have proliferated at Santa Catalina Island and other areas (Miller et al. 2011). *Sargassum horneri*, commonly called "devil weed," is present along the mainland from Baja California to Santa Barbara and within the sanctuary at three of the five northern Channel Islands (Anacapa, Santa Cruz, and Santa Barbara islands) (Marks et al. 2015b). *Undaria pinnatifida*, common name Wakame, is in Santa Barbara, Channel Islands and Ventura harbors and Port Hueneme, and in 2016 was discovered at Anacapa Island by the National Park Service (Kushner 2016). The invasive bryozoan *Watersipora* spp. has been observed on many oil platforms in the Santa Barbara Channel and at some natural reefs and pier pilings in the sanctuary. The Asian red alga *Caulacanthus ustulatus* has been observed at one site at Anacapa Island.

4.2.2 Protected Species and Habitats

This section provides an overview of the species and habitats that may occur in the action area within and adjacent to the sanctuary that are protected under the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Essential Fish Habitat (EFH) provisions of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Migratory Bird Treaty Act (MBTA).

The geographic scope of the "action area" for the purposes of compliance with the ESA, is:

- the boundaries and along the island shorelines of the sanctuary;
- waters immediately adjacent to the sanctuary, including transit routes to and from the sanctuary;

- airspace up to 2,000 feet above the sanctuary, and adjacent to the sanctuary, within which uncrewed or aircraft operations may occur in support of sanctuary projects; and
- marine areas off the mainland coast within the Santa Barbara Channel where scuba dive training or vessel safety drills/testing could occasionally occur.

Species that are presently found in the action area are included in the tables below. Species that historically were present but have not been observed for more than 30 years are not included. If in the future additional species appear (for example, due to species' range expansions caused by warming waters), then ONMS staff will reassess and consider impacts from proposed activities on those species at that time.

4.2.2.1 Species Protected Under the Endangered Species Act and Designated Critical Habitat

The ESA of 1973 (16 U.S.C. §§ 1531 *et seq.*) requires federal agencies to conserve endangered and threatened species and the habitats upon which these species depend. The habitats in the sanctuary provide ecosystem services supporting threatened and endangered species migrating through or utilizing these areas. Species and habitats are protected under both National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS) jurisdiction and will be addressed separately. In addition to protection under the federal ESA, some of the threatened or endangered species found in CINMS are protected under the California Endangered Species Act.[48]

Species and Habitat Under NMFS Jurisdiction

Table 4.1 provides a list of endangered or threatened species under NMFS jurisdiction, and species using designated critical habitat, that may reside in or migrate through the sanctuary action area.[49] After evaluating the species' habitat requirements and habitat availability within the action area, ONMS determined that certain activities included in the proposed action could affect 17 listed species under NMFS jurisdiction that may occur in the action area, as shown in Table 4.1. Designated critical habitat for two species (black abalone and humpback whale) occurs within the action area.

ONMS defined the likelihood of species occurrence in the action area as follows, based on National Park Service definitions[50] with some modifications.

- **Abundant**: May be seen daily, in suitable habitat and season, and counted in relatively large numbers.
- **Common**: May be seen daily, in suitable habitat and season, but not in large numbers.
- **Uncommon**: Likely to be seen monthly in appropriate habitat and season. May be locally common.

[48] The full list of threatened and endangered species protected under the California Endangered Species Act is available at: https://wildlife.ca.gov/Conservation/CESA.
[49] ONMS used the NMFS Protected Resource Division's Threatened and Endangered Species Directory (Accessed: May 2021) to develop Table 4.1: https://www.fisheries.noaa.gov/species-directory/threatened-endangered
[50] https://irma.nps.gov/NPSpecies/Search/SpeciesList

- **Occasional**: Occurs in the sanctuary at least once every few years, varying in numbers, but not necessarily every year.
- **Rare**: Present, but usually seen only a few times each year.
- **Unknown**: Species distribution and abundance within the sanctuary unknown.

Table 4.1. Species listed under the Endangered Species Act (ESA) under NMFS jurisdiction potentially found in the action area. Evolutionary Significant Units (ESU) and Distinct Population Segments (DPS) of protected species are indicated under Listing Status/Designation Notice.

Common Name	Scientific Name	Listing Status/Designation Notice, Recovery Plan	Designated critical habitat (Listing Notice)	Likelihood of Occurrence in the Action Area
Black abalone	*Haliotis cracherodii*	Endangered (74 FR 1937), February 13, 2009; Recovery plan (85 FR 5396) January 30, 2020; NMFS Recovery Plan November 2020	Yes Final Rule (76 FR 66806) 11/28/2011	Common
Blue whale	*Balaenoptera musculus*	Endangered (35 FR 8491, 1970) Recovery Plan (1998)	None designated.	Uncommon
Chinook salmon	*Oncorhynchus tshawytscha*	Endangered ESUs: California Coastal Chinook ESU ESA Listing 64 FR 50394 (1999)	No critical habitat located within the proposed action area.	Rare
Fin whale	*Balaenoptera physalus*	Endangered, ESA Listing 35 FR 12222 (1970) Recovery Plan (2010)	None designated.	Uncommon
Gray whale	*Eschrichtius robustus*	Endangered, Western North Pacific DPS, ESA Listing 35 FR 8491 (1970)	None designated.	Unknown[51]
Guadalupe fur seal	*Arctocephalus townsendi*	Threatened, ESA Listing 50 FR 51252 (1985). State-listed threatened species.	None designated.	Rare

[51] There are two geographic distributions of gray whales in the North Pacific: the eastern North Pacific Distinct Population Segment (DPS), found along the West Coast of North America, and the western North Pacific DPS, primarily found along the coast of eastern Asia. Although western and eastern stocks of gray whales were thought to be relatively isolated from each other, recent research has found that some western North Pacific gray whales migrate along the U.S. coast (NMFS). Thus, the Likelihood of Occurrence for the endangered western North Pacific DPS is listed as "Unknown" in the action area because it is difficult to distinguish between the western and eastern stocks. The eastern North Pacific DPS, which is no longer listed as endangered, is seasonally common in the action area.

Common Name	Scientific Name	Listing Status/Designation Notice, Recovery Plan	Designated critical habitat (Listing Notice)	Likelihood of Occurrence in the Action Area
Humpback whale	*Megaptera novaeangliae*	Threatened, Original ESA Listing 35 FR 8491 (1970) Revised ESA Listing 81 FR 62259 (2016) Recovery Plan (1991)	Yes Final Rule (86 FR 21082) 05/21/2021 Proposed critical habitat units 11 to 19 overlap with the action area where vessel transit, seafloor mapping, and ROV operations could occur.	Common
Killer whale	*Orcinus orca*	Endangered, Original Listing 70 FR 69903 (2005) Updated ESA Listing 80 FR 7380 (2015)	None designated in the action area.	Uncommon
Leatherback Turtle	*Dermochelys coriacea*	Endangered, ESA Listing 35 FR 8491 (1970) Recovery Plan (1998) Candidate for state listing as endangered.	None designated in the action area.	Rare
Loggerhead turtle	*Caretta caretta*	Endangered, Original ESA Listing 43 FR 32800 (1978) Updated ESA Listing 76 FR 58867 (2011) Recovery Plan (1997)	None designated.	Rare
North Pacific Right whale	*Eubalaena japonica*	Endangered, Original ESA Listing 35 FR 8491 (1970) Updated ESA Listing 73 FR 12024 (2008) Recovery Plan (2013)	No critical habitat located within the proposed action area.	Rare
Olive Ridley turtle	*Lepidochelys olivacea*	Endangered, ESA Listing 43 FR 32800 (1978) Recovery Plan (1998)	None designated.	Rare
Sei whale	*Balaenoptera borealis*	Endangered, ESA Listing 35 FR 12222 (1970) Recovery Plan (2011)	None designated.	Rare
Sperm whale	*Physeter macrocephalus*	Endangered, ESA Listing 35 FR 18319 (1970) Recovery Plan (2010)	None designated.	Rare

Common Name	Scientific Name	Listing Status/Designation Notice, Recovery Plan	Designated critical habitat (Listing Notice)	Likelihood of Occurrence in the Action Area
Steelhead trout	*Oncorhynchus mykiss*	Southern California Coast Steelhead DPS Original ESA Listing 62 FR 43937 (1997) Southern California Coast Steelhead DPS Updated ESA Listing 67 FR 21586 (2002) Southern California Coast Steelhead DPS Updated ESA Listing 71 FR 833 (2006) Southern California Coast Steelhead DPS Updated ESA Listing 79 FR 20802 (2014) Southern California Coast Steelhead DPS Recovery Plan (2012)	No critical habitat located within the proposed action area.	Unknown
Steller sea lion	*Eumetopias jubatus*	Endangered (1990) Recovery Plan (2008)	None designated	Rare
White abalone	*Haliotis sorenseni*	Endangered (2001) Recovery Plan (2008)	None designated	Unknown

Based on this analysis, ONMS determined that the following listed species under NMFS jurisdiction would not occur within the action area because suitable habitat for the species does not occur within the action area or it is outside of the species' or DPS' current range: chum salmon, coho salmon, eulachon, green sturgeon, gulf grouper, oceanic whitetip shark, scalloped hammerhead shark, and sockeye salmon.

Species and Habitat Under USFWS Jurisdiction

Table 4.2 provides a list of threatened or endangered species under USFWS jurisdiction, and species using designated critical habitat, that may reside in or migrate through CINMS.[52]

After evaluating the species' habitat requirements and habitat availability within the action area, NOAA determined that certain activities included in the proposed action could affect four listed species under USFWS jurisdiction that may occur in the action area, shown in Table 4.2. Designated critical habitat for one species occurs within the action area.

[52] NOAA used the USFWS's Environmental Conservation Online System (ECOS) Information for Planning and Conservation (IPaC) tool to identify the ESA-listed species and designated critical habitat under USFWS jurisdiction that may occur within the action area, shown in Table 4.2 (IPAC letter dated October 19, 2021; consultation code 08EVEN00-2021-SLI-0378).

Table 4.2. ESA-listed species under USFWS jurisdiction potentially found in the action area.

Common Name	Scientific Name	ESA Status	Designated Critical Habitat	Likelihood of Occurrence
Marbled murrelet	*Brachyramphus marmoratus*	Threatened (57 FR 45328) Recovery Plan (1997) State-listed endangered species.	None in action area	Rare[53]
Short-tailed albatross	*Phoebastria albatrus*	Endangered (65 FR 46643) Recovery Plan (2008)	None in action area.	Rare
Western snowy plover	*Charadrius nivosus nivosus*	Threatened (58 FR 12864) Recovery Plan (2007)	Yes (77 FR 36727)	Common
Southern sea otter	*Enhydra lutris nereis*	Threatened (42 FR 2965) Recovery Plan (2003)	None in action area.	Rare

Based on this analysis, NOAA determined that the following 20 listed species under USFWS jurisdiction would not occur within the action area because suitable habitat and/or the species' range does not overlap with marine-based sanctuary operation areas: California condor, California least tern,[54] least bell's vireo, light-footed clapper rail, Southwestern willow flycatcher, California red-legged frog, tidewater goby, vernal pool fairy shrimp, Contra Costa goldfields, Gambel's watercress, gaviota tarplant, Hoffmann's slender-flowered gilia, island barberry, island rush-rose, Lompoc yerba santa, marsh sandwort, salt marsh bird's-beak, Santa Cruz Island malacothrix, Santa Rosa Island manzanita, and soft-leaved paintbrush.

4.2.3.2 Species Protected Under the Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens on the high seas, and the importation of marine mammals and marine mammal products into the U.S. (16 U.S.C. § 1372). Table 4.3 provides a list of marine mammals protected under the MMPA that may reside in or migrate through CINMS. As identified above, some marine mammals are also protected under the ESA. If a species or population stock is listed as an endangered species or a threatened species under the ESA, NMFS determines that such species or stock is below its optimum sustainable population and it is designated as a depleted stock under the MMPA. Stock assessments for all species are available at the NOAA NMFS Marine Mammals Species Directory.

[53] Marbled murrelets historically were present but have not been observed in the action area since the 1980s (Carter and Erickson 1992).

[54] California least terns, while not known to be present within the sanctuary, use some mainland coastal areas within the action area, including Santa Clara River, Ormond Beach, and Mugu Lagoon in Ventura County (https://www.fws.gov/carlsbad/SpeciesStatusList/5YR/20060926_5YR_CLT.pdf). However, there are no sanctuary operations at these beach locations, so NOAA is not assessing potential impacts to this species.

Table 4.3. Listing status of marine mammals protected under the MMPA and likelihood of occurrence in the action area. DPS and stocks are indicated in the MMPA Status column.

Common Name	Scientific Name	MMPA Status (date of stock assessment and stock name)	Likelihood of Occurrence in Action Area[55]
Baird's beaked whale	*Berardius bairdii*	Protected (2018, California/Oregon/Washington stock)	Unknown
Blainville's beaked whale	*Mesoplodon densirostris*	Protected	Unknown
Blue whale	*Balaenoptera musculus*	Depleted	Uncommon, typically from May-November
Bryde's whale	*Balaenoptera edeni*	Protected	Unknown
California sea lion	*Zalophus californianus*	Protected	Abundant
Common bottlenose dolphin	*Tursiops truncatus*	Depleted	Common
Cuvier's beaked whale	*Ziphius cavirostris*	Protected	Unknown
Dall's porpoise	*Phocoenoides dalli*	Protected	Uncommon
Dwarf sperm whale	*Kogia sima*	Protected	Unknown
False killer whale	*Pseudorca crassidens*	Protected	Unknown
Fin whale	*Balaenoptera physalus*	Depleted	Uncommon, typically from May-November
Gray whale	*Eschrichtius robustus*	Protected (throughout), Depleted (Western North Pacific DPS)	Unknown
		Protected (throughout), Eastern North Pacific DPS	Common, typically from December-May
Guadalupe fur seal	*Arctocephalus townsendi*	Depleted	Rare
Harbor seal	*Phoca vitulina*	Protected	Common
Humpback whale	*Megaptera novaeangliae*	Protected (throughout), Depleted (California/Oregon/Washington stock)	Common, typically from April-November
Killer whale	*Orcinus orca*	Protected (throughout), Depleted (AT1 Transient stock)	Uncommon, Winter-spring

[55] ONMS defined the likelihood of species occurrence in the action area as follows, based on National Park Service definitions with some modifications: **Abundant**: May be seen daily, in suitable habitat and season, and counted in relatively large numbers; **Common**: May be seen daily, in suitable habitat and season, but not in large numbers; **Uncommon**: Likely to be seen monthly in appropriate habitat and season. May be locally common; **Occasional**: Occurs in the sanctuary at least once every few years, varying in numbers, but not necessarily every year; **Rare**: Present, but usually seen only a few times each year; and **Unknown**: Species distribution and abundance within the sanctuary unknown.

Common Name	Scientific Name	MMPA Status (date of stock assessment and stock name)	Likelihood of Occurrence in Action Area[55]
Long-beaked common dolphin	*Delphinus capensis*	Protected	Abundant
Melon-headed whale	*Peponocephala electra*	Protected	Unknown
Minke whale	*Balaenoptera acutorostrata*	Protected	Uncommon
North Pacific right whale	*Eubalaena japonica*	Depleted	Rare
Northern elephant seal	*Mirounga angustirostris*	Protected	Common
Northern fur seal	*Callorhinus ursinus*	Protected	Uncommon
Northern Right whale dolphin	*Lissodelphis borealis*	Protected	Unknown
Pacific white-sided dolphin	*Lagenorhynchus obliquidens*	Protected	Common
Pygmy sperm whale	*Kogia breviceps*	Protected	Rare
Risso's dolphin	*Grampus griseus*	Protected	Uncommon
Rough-toothed dolphin	*Steno bredanensis*	Protected	Unknown
Sei whale	*Balaenoptera borealis*	Depleted	Rare
Short-beaked Common dolphin	*Delphinus delphis*	Protected	Abundant
Short-finned pilot whale	*Globicephala macrorhynchus*	Protected	Unknown
Sperm whale	*Physeter macrocephalus*	Depleted	Rare
Spinner dolphin	*Stenella longirostris*	Protected (throughout), Depleted (Eastern stock)	Unknown
Stejneger's beaked whale	*Mesoplodon stejnegeri*	Protected	Unknown
Steller sea lion	*Eumetopias jubatus*	Protected (throughout), Depleted (Western DPS), Strategic (Western DPS)	Rare
Striped dolphin	*Stenella coeruleoalba*	Protected	Unknown

In addition to the marine mammals described in the table above, the harbor porpoise is also protected under the MMPA, however, its current range does not overlap with the action area.

4.2.3.3 Essential Fish Habitat Protected by the Magnuson-Stevens Fishery Conservation and Management Act

The sanctuary action area is located within Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPCs) for various federally managed fish species within the Pacific Coast Groundfish, Coastal Pelagic Species, and Highly Migratory Species Fishery Management Plans. This section identifies the EFH and HAPCs that overlap with the action area following procedures established by the Magnuson-Stevens Fishery Conservation and Management Act (MSA). EFH is defined as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (GMFMC 1998, GMFMC 2005, NOAA 2009). The EFH regulations encourage regional Fishery Management Councils to designate HAPCs within areas identified as EFH to focus conservation priorities on specific habitat areas that play a particularly important role in life cycles of federally managed fish species. HAPCs help focus research and conservation efforts on localized areas that are especially important ecologically or are vulnerable to degradation. HAPCs are subsets of the total area necessary to support healthy stocks of fish throughout all of their life stages.

HAPCs have been designated for various federally-managed fish species within the Pacific Coast Groundfish Fishery Management Plan. Among these, HAPC found within CINMS include seagrass, canopy kelp, rocky reefs, and the Channel Islands network of federal and state marine reserves and marine conservation areas (Figure 4.4). By design, all of the federal and state marine reserves and conservation areas within CINMS are also designated as EFH HAPCs protected from commercial groundfish bottom contact gear (50 CFR 660.306(h)(10)), established by Amendment 19 to the Pacific Groundfish Fishery Management Plan (71 FR 27408). Regarding eelgrass, it is NMFS' policy to recommend no net loss of eelgrass habitat function in California (NMFS 2014). Specifically, these groundfish EFH areas are comprised of: Richardson Rock EFH (46,665 acres); Carrington Point (8,168 acres); Harris Point (32,152 acres); Judith Rock (2,945 acres); South Point (9,583 acres); Skunk Point (884 acres); Gull Island (22,434 acres); Painted Cave (1,142 acres); Scorpion (11,955 acres); Anacapa Island (15,999 acres); Footprint (17,253 acres); and Santa Barbara Island (36,438 acres). In all of these EFH areas, use of bottom contact gear is prohibited.

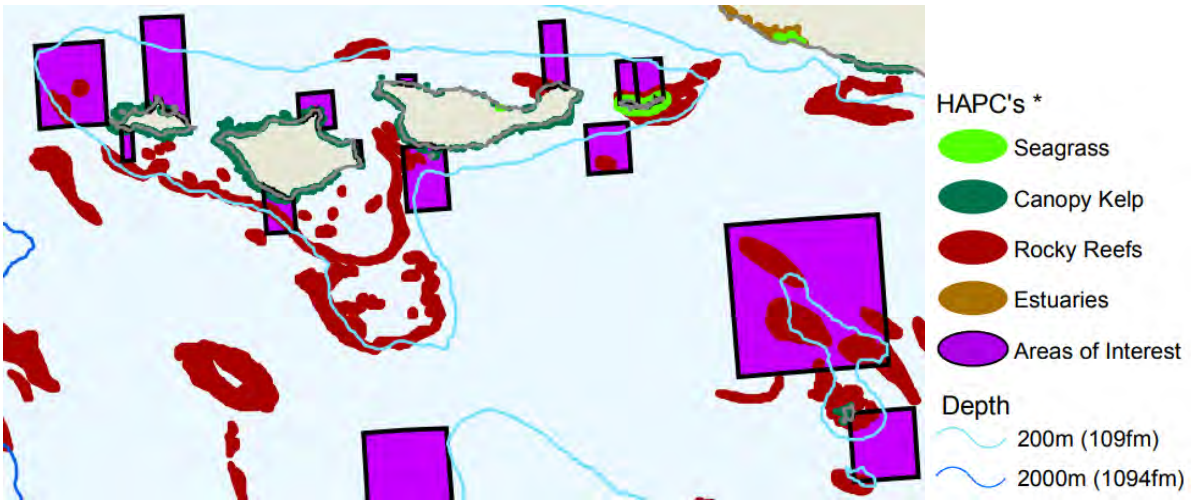

Figure 4.4. Groundfish EFH Habitat Areas of Particular Concern (HAPC) within CINMS. The "Areas of Interest" shown within CINMS boundaries are the Groundfish EFH areas that overlap with federal and state Channel Islands marine reserves and marine conservation areas. Source: NMFS/NOAA (2006)

4.2.3.4 Species Protected under the Migratory Bird Treaty Act

The MBTA authorizes federal protection for migratory birds in the United States. The MBTA makes it unlawful without a permit from USFWS to pursue, hunt, take, capture, kill or sell migratory birds (16 U.S.C. § 703). Of the over 800 listed migratory bird species protected under the MBTA (50 C.F.R. § 10.13), 54 may be found transiting, resting, or foraging within CINMS and the action area[56] (see **Appendix B, Table B.1**).

4.3 Marine Uses and Socioeconomic Setting

As outlined below, commercial shipping, fishing, visitor use, and other ecosystem services are identified as some of the primary uses within the sanctuary. For a more in-depth look at each of these services and the socioeconomic setting of the sanctuary, please see the 2016 Channel Islands National Marine Sanctuary Condition Report.[57]

4.3.1 Commercial Shipping and Vessel Traffic

Some of the busiest shipping lanes in the world pass through a portion of the sanctuary. The two busiest commercial shipping ports in North America—Long Beach and Los Angeles—are located just south of the sanctuary. Nearly 9,200 ships (2017 data) annually transit into and out of the ports of Los Angeles and Long Beach, with approximately 41% of those transits passing through sanctuary waters (MESC 2020). The ships transit through and near the sanctuary via an internationally approved traffic separation scheme within the Santa Barbara Channel. Ships also transit along the south sides of the northern Channel Islands, beyond the sanctuary's boundary.

[56] NOAA used the USFWS's ECOS IPaC tool to search for migratory bird species that may be present in the action area. The IPaC report identified 54 migratory birds of concern that may occur in or near the action area (Consultation code 08EVEN00-2021-SLI-0378).
[57] 2016 Channel Islands National Marine Sanctuary Condition Report: https://nmssanctuaries.blob.core.windows.net/sanctuaries-prod/media/docs/2016-condition-report-channel-islands-nms.pdf

Regulatory and economic changes over time have affected the amount and pattern of shipping traffic passing through or around the sanctuary.

Smaller commercial and recreational vessels are also prevalent in the sanctuary. Harbors near the sanctuary contain thousands of recreational, commercial, and research vessels. In turn, these vessels provide year-round opportunities for diving, fishing, sailing, whale watching, and wildlife viewing.

4.3.2 Commercial Fishing

Sanctuary waters support some of the most valuable commercial fishing grounds in the state of California. Depending on the year, variability in landings, and the value paid to fishermen, Santa Barbara and Ventura County harbors rank at or near the top among port complexes around California year after year (CDFW Marine Region Year in Review Reports, 2014-2019)[58], with much of the landed catch coming from species caught around the Channel Islands (D. Schroeder, 2016, pp 81-82)[59]. NOAA has estimated that approximately 250 commercial vessels regularly fish in the sanctuary, with the majority of catch being market squid, spiny lobsters, red urchins, crabs, prawns, shrimp, and sea cucumbers (Leeworthy et al. 2014a and b).

4.3.3 Recreational Fishing

Recreational fishing via boat and diving are popular uses for the sanctuary. As fishing practices in the vicinity of the sanctuary have generally shifted over time, overall gear interactions with seafloor habitats have been reduced; however, trap loss remains an issue of concern. Fish populations that support recreational fisheries are likely stable.

The sanctuary provides quality recreational fisheries for the public. In 2016, nearly a tenth of angler trips statewide (about 100,000) took place off Santa Barbara and Ventura counties, landing about 585,000 fish (RecFIN 2017a and 2017b). Measured in person-days using 2004–2012 data from the CDFW, 9.2% of fishing in California from commercial passenger fishing vessels and 2.5% of private/rental boat fishing occurred in CINMS (Leeworthy and Schwarzmann 2015).

Most recreational fishing trips in the sanctuary take place in the eastern half, which lies within easy boating distance from the mainland and the harbors of Santa Barbara and Ventura. Recreational fishers can access a range of nearshore and offshore areas within the sanctuary, may fish from private and for-hire boats, and may fish from above or below the water (e.g., spearfishing). Gear and fishing techniques used include hook-and-line, spear guns, hoop nets, and diver-based hand-removal.

[58] CDFW Marine Region Year in Review Reports, 2014-2019: https://wildlife.ca.gov/fishing/ocean/year-in-review
[59] Schroeder, 2016: https://static1.squarespace.com/static/54b5b3e8e4b06e38ad4d2e82/t/57e162d71b631bc009f3d880/1474388697590/CIS+2016+Formatted+Abstracts+9-19-16.pdf

4.3.4 Visitor Use

Channel Islands National Marine Sanctuary exists to promote both public enjoyment and protection of special places. The public visits the sanctuary to fish, boat, dive, surf, kayak, and view wildlife. These types of recreational activities in the sanctuary are encouraged as sustainable or responsible use when visitors follow required laws, policies, and best practices, like maintaining minimum setback distances when viewing marine mammals. Adherence to rules and guidelines allows visitors to have minimal impacts on sanctuary resources while still driving several ecosystem service benefits, such as recreation, education, and outreach.

The sanctuary's natural resources attract local private and charter vessels from the mainland harbors of Santa Barbara, Ventura, and Channel Islands (in Oxnard), and from further distances such as Long Beach and San Pedro harbors.

The sanctuary is also an ecologically significant location for multidisciplinary research, monitoring of long-term ecological change, evaluation of resource management effects, and public education. There are a wide array of opportunities for the public to explore and learn about the sanctuary's diverse and productive marine ecosystems. Various organizations and institutions, working in partnership with ONMS and the sanctuary, engage the public through formal and informal science, technology, engineering, and mathematical (STEM) education, outreach, conservation, and stewardship activities focused on the sanctuary's resources, history, current resource protection issues, and natural beauty.

4.3.5 Ecosystem Services

The condition report contains an assessment of ecosystem services derived from the sanctuary. Seven types of ecosystem services were evaluated: food supply, consumptive recreation, non-consumptive recreation, sense of place, heritage, education, and science.

For four of these services (sense of place, consumptive recreation, non-consumptive recreation, and food supply), a rating of "good/fair" was assessed, indicating acceptable performance, but less than full provision of the service due to prior or existing human activities. Two services (science, education) received a "good" rating, while one service (maritime archaeological resources) received a "fair" rating due to the slowly decaying nature of submerged shipwreck sites. Also within the condition report, Chumash community contributors provided their own assessment of sanctuary ecosystem services, offering a unique perspective based on the special connection Chumash people have with their sacred homeland islands and surrounding ocean waters.

Details about the assessment of ecosystem services within the sanctuary can be found within the CINMS condition report.[60]

[60] https://sanctuaries.noaa.gov/science/condition/cinms/

4.4 Historical and Cultural Setting

4.4.1 Chumash Setting

For Chumash people, there is a deep history of connection with the Channel Islands and surrounding marine waters. Chumash culture and values remain closely tied to these islands and waters. As a sacred homeland and place of origin, the islands and surrounding waters support cultural values and native traditions, and are honored by Chumash people and tribal organizations that work for their protection. One tradition involves an annual gathering of the Chumash community on Limuw (Santa Cruz Island) at the village site of Swaxil (Scorpion Valley) where they receive the paddlers of tomols (traditional plank-built boats) that have journeyed 20 miles across the Santa Barbara Channel.

For a detailed explanation of Chumash history connected to the northern Channel Islands and surrounding sanctuary waters, as well as an introduction to ongoing Chumash community values, traditional knowledge and practices, and historical trauma, see the "Chumash Ecosystem Services Assessment" within the sanctuary's condition report.

4.4.2 Maritime Heritage Resources

Archival research suggests over 150 maritime heritage resources, including ship and aircraft wrecks, may exist in the sanctuary. This significant number of shipwrecks can largely be attributed to prevailing currents and weather conditions, combined with natural hazards. The shipwreck remains reflect the diverse range of activities and nationalities that historically traversed the Santa Barbara Channel, including European sailing and steam vessels, California built ships of Chinese design called "junks," American coastal traders, vessels engaged in island commerce, and a Gold-Rush-era side-wheel steamer.

Of the more than 150 known wrecks, only about 30 sites have been located and surveyed (Table 4.4, Figure 4.5). To date, one nearshore shipwreck site, the *Winfield Scott*, has been added to the National Register of Historic Places.

Wreck sites, as well as cultural artifacts, are strictly protected within the sanctuary under federal and state laws. Data gathered by NOAA and the National Park Service through the Channel Islands Shipwreck Reconnaissance Monitoring Program indicates that since 2009, maritime archaeological resources have shown little or no unexpected disturbance or looting by divers. Anchoring, which is an allowed activity within the sanctuary, does have the potential to inadvertently disturb a wreck site. This has rarely been observed, but a 2011 damage assessment recorded at the *Winfield Scott* shipwreck site was believed to be caused by vessel anchoring.

Maritime heritage resources will continue to go through various stages of degradation caused by natural forces, especially those resources located in shallow water and impacted by surge and swells. The diminished condition of an archaeological resource could reduce its historical, archaeological, scientific, or educational value, and is likely to affect its eligibility for listing to the National Register of Historic Places. There are no known maritime archaeological resources that pose environmental threats, although some threats may come from shipwrecks located beyond sanctuary boundaries.

For the purposes of compliance with the National Historic Preservation Act (NHPA), "historic property" means any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places maintained by the secretary of the interior. This term includes artifacts, records, and material remains that are related to and located within such properties. Properties of traditional religious and cultural importance to an Indigenous tribe or nation, or Native Hawaiian organization, may be determined eligible for inclusion in the National Register (36 C.F.R. 800.16(1)(1)).

Table 4.4. Maritime heritage resources located and surveyed within Channel Islands National Marine Sanctuary. Source: NOAA

Name	Year Lost	Type/Service	Site Location
*Winfield Scott**	1853	Steamship/Passenger - Cargo	Anacapa Island
Goldenhorn	1892	Bark/Cargo	Santa Rosa Island
Crown of England	1894	Steamship/Collier	Santa Rosa Island
J. M. Colman	1905	Schooner/Cargo	San Miguel Island
Dora Bluhm	1910	Schooner/Cargo	Santa Rosa Island
Comet	1911	Schooner/Cargo	San Miguel Island
Aggi	1915	Ship/Cargo	Santa Rosa Island
Cuba	1923	Steamship/Passenger - Cargo	San Miguel Island
Jane L. Stanford	1929	Barkentine/Fishing Barge	Santa Rosa Island
Dante Alighieri II	1938	Motor/Fishing	Santa Barbara Island
George E. Billings	1941	Schooner/Fishing Barge	Santa Barbara Island
Grumman Avenger TBF 1-C	1945	Aircraft/Military	Anacapa Island
Equator	1949	Motor/Fishing	Anacapa Island
Del Rio	1952	Motor/Fishing	Anacapa Island
Grumman AF-2W Guardian	1954	Aircraft/Military	Santa Cruz Island
Santa Cruz	1960	Motor/Island Transport	Santa Cruz Island
Chickasaw	1962	Motor/Cargo	Santa Rosa Island

* Listed on the National Register of Historic Places.

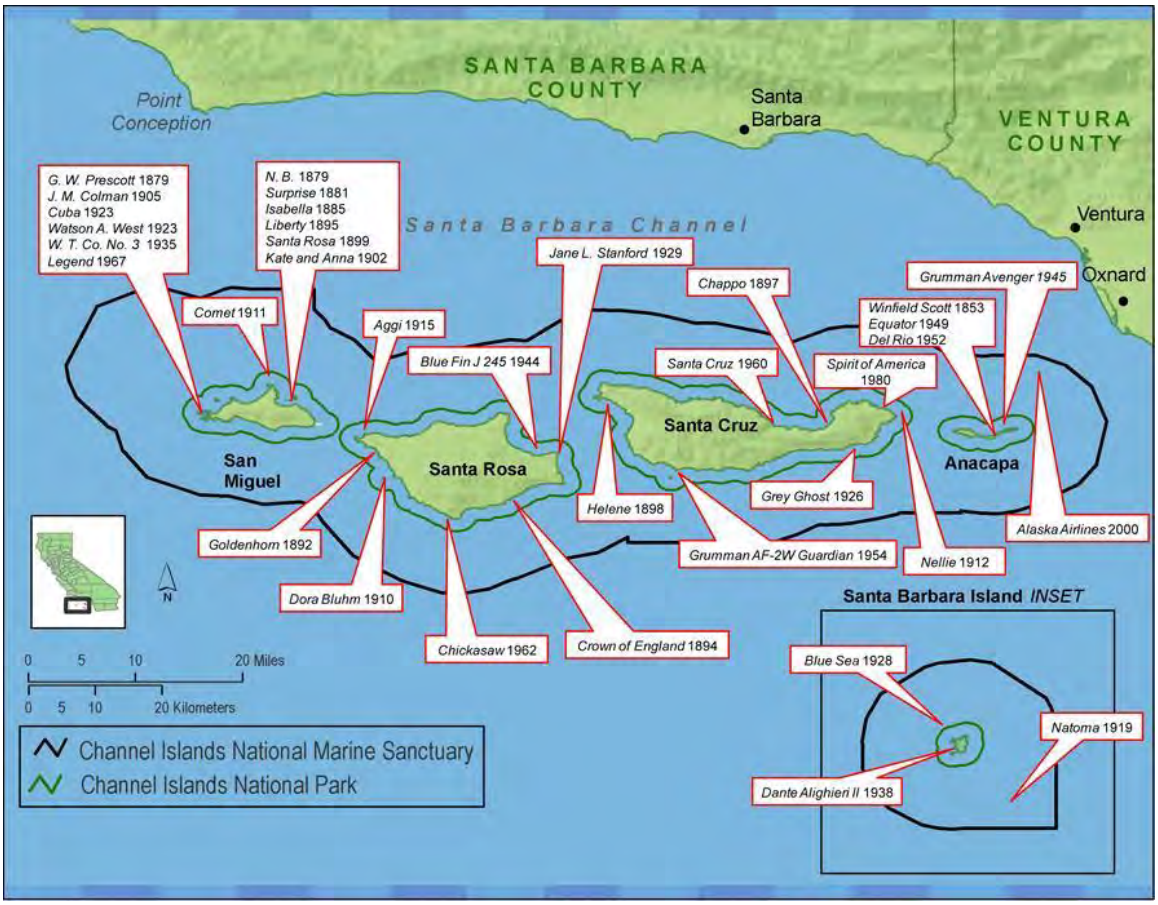

Figure 4.5. Maritime heritage resources located within Channel Islands National Marine Sanctuary. Source: NOAA

4.5 Additional activities and users

4.5.1 Energy Development Activities

Offshore Oil and Gas

There are 39 existing developed or active offshore oil and gas leases along the Southern California coast. Regionally, oil and gas exploration and production occurs at 14 offshore oil platforms, seven of which are located in the Santa Barbara Channel. Although none of the offshore platforms are located within sanctuary boundaries, there are a few lease block units in the northeastern boundary of the sanctuary that were established before sanctuary designation.[61]

Spill response contingency plans and improved platform and pipeline technologies and practices have reduced the risks over time of a spill damaging sanctuary resources; however, threats to sanctuary resources remain from: 1) spills and discharges from oil platforms, pipelines, and ships operating close to sanctuary boundaries; and 2) effects of oil production. On May 19, 2015,

[61] See sanctuary regulations at 15 CFR §922.72(a)(1) for details on how some sanctuary regulations do not apply to these lease block areas: https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=1&SID=c8cb0413061fcba7cb0a7c8c0bd513ea&h=L&mc=true&n=sp15.3.922.g&r=SUBPART&ty=HTML#se15.3.922_172

an oil pipeline ruptured near Refugio State Beach on the mainland. The event released an estimated 21,000 gallons of crude oil into the Pacific Ocean. Based on several reports, some of this oil may have dispersed across the Santa Barbara Channel into the sanctuary. Efforts are ongoing to assess and describe the impact on marine resources.

Renewable Sources of Ocean Energy

California's offshore resources hold renewable energy potential (Musial et al. 2016). In 2016, BOEM and the state of California created an Intergovernmental Renewable Energy Task Force to evaluate opportunities for offshore renewable energy development; in particular, the possibility of offshore wind turbines. To date, permit applications related to the potential development of offshore wind or wave energy have been located well outside of sanctuary boundaries.

4.5.2 Military Activities

The U.S. Air Force and U.S. Navy conduct training exercises, provide logistic support, and conduct military testing and evaluation projects for aircraft, ship, and missile programs within the action area. Vandenberg Air Force Base, and the Naval Base Ventura County at Point Mugu and Port Hueneme coastal areas are the primary locations for these testing and training exercises.

The U.S. Navy has an extensive presence in Southern California through installations, offshore operating areas, and ranges (offshore as well as inland). Installations located at Point Mugu and Port Hueneme in Ventura County comprise the unified base command known as Naval Base Ventura County. The Naval Air Warfare Center Weapons Division at Point Mugu operates and controls the Point Mugu Sea Range, a 36,000 square mile area of military controlled airspace off the Southern California coast. The sea range includes airspace overlying significant portions of the sanctuary (78% of the sanctuary) as well as the airspace above the land areas of several of the Channel Islands. The Sea Range provides the Navy an operationally realistic environment for safely conducting controlled air, surface, and subsurface Navy testing and training.

Outside of the sanctuary, Vandenberg Air Force Base is located along 42 miles of California's central coast, about 55 miles northwest of Santa Barbara. Vandenberg and its tenant organizations support spacelift operations, ballistic tests, aeronautical operations, and military exercises. Over-ocean ballistic and polar space launches can arc well above sanctuary waters.

Within and adjacent to sanctuary waters and the overlying airspace, the United States Coast Guard (USCG) conducts search and rescue, marine safety, environmental protection, law enforcement, spill response, aids to navigation maintenance, homeland security, national defense, training operations, and other activities to support its missions. The USCG is a cooperative law enforcement partner assisting with patrol and enforcement of sanctuary regulations, and is also a lead agency in responding to marine casualty events and hazardous substance spills within and adjacent to the sanctuary.

4.5.3 Aquaculture

In 2020, NMFS began evaluating the feasibility of certain locations in U.S. federal waters to serve as Aquaculture Opportunity Areas. Southern California is one region under consideration

and evaluation, including waters of the Santa Barbara Channel. The evaluation process is expected to support future development of offshore commercial aquaculture operations. In the future it's possible that facilities could potentially be developed outside the sanctuary, while within CINMS existing federal regulations prohibit the activities most commonly required for aquaculture development and available sanctuary permitting options are not compatible with this commercial activity.

Chapter 5:
Environmental Consequences

5.1 Introduction

This chapter evaluates the anticipated environmental effects on physical and biological resources, cultural and historical resources, human uses, and socioeconomic resources associated with implementing the proposed action (Alternative 1) and the No Action Alternative, as described in **Chapter 3.** NOAA's analysis of the environmental consequences of the alternatives is based on review of existing literature and studies, information provided by experts, and the best professional judgment of NOAA staff.

Potential impacts fall under three types: direct, indirect, and cumulative. These types of impacts are defined in regulations issued by CEQ as follows:

- **Direct impact**: A known or potential impact which is caused by the action and occurs at the same time or place (40 CFR § 1508.8(a) [1978]).
- **Indirect impact**: A known or potential impact which is caused by the action and is later in time or farther removed in distance, but is still reasonably foreseeable (40 CFR § 1508.8(b) [1978]).
- **Cumulative impact**: The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions (40 CFR § 1508.7 [1978]).

5.1.1 Significance of Potential Impacts

To determine whether an impact is significant, the CEQ regulations (40 CFR § 1508.27 [1978]) and NOAA guidance (NAO 216-6A) require the consideration of context and intensity of potential impacts.

Context is the setting within which an impact is analyzed, such as the affected region or locality and the affected interests. In this EA, NOAA evaluated the direct and indirect impacts within a local context, primarily examining how each alternative would affect the human environment within a specified portion of the sanctuary, and whether those effects would be short-term or long-term. The geographic area of interest for cumulative impacts is a slightly broader regional context in order to consider overlapping and compound effects with other past, present, or reasonably foreseeable future actions.

Level of **intensity** refers to the severity of the impact and includes consideration of:

- permanence of an impact;
- potential for natural attenuation of an impact;
- uniqueness or irreplaceability of the resource;
- abundance or scarcity of the resource;
- geographic, ecological, or other context of the impact; and
- potential mitigation measures to offset the anticipated impact.

The various levels of impact descriptor used in this analysis are:

- **Negligible:** Impacts to a resource can barely be detected (whether beneficial or adverse) and are therefore discountable.
- **Minor**: Impacts to a resource that might be perceptible, but are typically not measurable. Impacts would generally be localized and temporary and would not alter the overall condition of the resource from the status quo. For organisms, individuals may be affected but population-level impacts would not occur.
- **Moderate:** Impacts to a resource that are more perceptible and, typically, more amenable to quantification or measurement. They can be localized or widespread and could alter the overall, fundamental condition of the resource from status quo. Impacts would not rise to the level of significance as defined below.
- **Significant:** Impacts resulting in an alteration in the state of a resource. Long-term or permanent impacts or impacts with a high intensity or frequency of alteration to a resource, whether beneficial or adverse, would be considered significant. For organisms, population-level impacts may occur. The significance threshold is evaluated on a case-by-case basis, taking into consideration the context and intensity of each action.

5.1.2 Quality of Potential Impacts

Potential impacts are described as either beneficial or adverse as follows:

- **Beneficial impact**: Impacts that promote favorable conditions for the resource.
- **Adverse impact**: Adverse impacts are considered contrary to the goals, objectives, management policies, and practices of NOAA and the public interest or welfare. These impacts are likely to be damaging, harmful, or unfavorable to one or more of the resources.

5.1.3 Guiding Questions and Assumptions for Environmental Consequences Analysis

NOAA considered the following questions when evaluating the impacts on each resource area:

- How do the activities proposed to manage Channel Islands National Marine Sanctuary (CINMS) affect the level of protection of the sanctuary's resources and public stewardship of these resources?
- How do the field activities proposed to manage CINMS affect the resources, natural environment, and human uses in and around the sanctuary?
- How do the type and amount of regulations to protect sanctuary resources affect the natural environment and human uses in and around the sanctuary?

In evaluating the impacts of the Proposed Action (Alternative 1), NOAA applied the assumption that implementing a revised sanctuary management plan and continued field activities has the potential to result in:

- Minor increase in on-water research and monitoring activities as a result of enhanced collaboration with partners on priority management topics;

- Minor potential increases in tourism or recreational use of sanctuary waters due to increased sanctuary visibility; and
- No change in the frequency or intensity of other marine uses in the area as a result of the sanctuary's proposed action.

Generally, NOAA expects that these assumptions also apply for the analysis of impacts of the No Action Alternative because while the priorities for sanctuary management may change over time, the expected intensity of NOAA-led on-water activities would be the same under both alternatives.

5.2 Impacts of the Proposed Action (Alternative 1)

This section describes the beneficial and adverse impacts of implementing the Proposed Action. Under the Proposed Action, NOAA would implement a revised sanctuary management plan, continue current field activities, and continue to implement current sanctuary regulations to support management efforts.

5.2.1 Impacts of the Proposed Action on the Physical Setting

This section evaluates the impacts on the physical setting from implementing the Proposed Action, as described in **Section 3.2**. An overview of the sanctuary's physical setting is provided in **Section 4.1**.

5.2.1.1 Beneficial Impacts of the Proposed Action on the Physical Setting

Implementing the sanctuary management plan and conducting routine field activities would result in the following beneficial impacts on the physical setting.

Direct protection of habitats through implementing sanctuary regulations or non-regulatory components of the management plan

Implementing existing sanctuary-wide regulations would continue to limit discharges into the sanctuary that could compromise water quality, and restrict activities that could result in disturbance of the seafloor environment or damage to habitats within marine reserves and marine conservation zones. Implementing existing sanctuary regulations would also continue to provide direct habitat protection within the NOAA-established network of Channel Islands marine reserves and conservation areas due to a prohibition on use of fishing gear that could potentially impact these areas. Sanctuary permitting and consultation processes can also directly reduce impacts by ensuring activities conducted within the sanctuary are in compliance with sanctuary regulations and include necessary mitigation. Additionally, the sanctuary supports the voluntary vessel speed reduction program, Protecting Blue Whales and Blue Skies, which is a regional coordinated effort to slow ships down to 10 knots among 16 participating companies and helps to protect habitats for endangered species (e.g., blue whales). The voluntary incentive program has reduced smog emissions by 700 tons/year, reduced ocean noise (4 dB/transit), and reduced fatal ship strikes on whales.[62] Implementation of the sanctuary management plan would also result in the removal of marine debris, such as plastics and lost fishing gear, from select sanctuary shoreline areas, and the issuance of permits to

[62] Protecting Blue Whales and Blue Skies: https://www.ourair.org/air-pollution-marine-shipping/

collaborating organizations that will remove lost fishing gear from seafloor environments within scuba-accessible depths. Continuing to implement sanctuary regulations, the vessel speed reduction program, and marine debris removal projects would further protect important habitat and physical resources in CINMS.

Indirect protection of habitat through enhanced management and stewardship

As part of the revised sanctuary management plan, implementing research and monitoring programs would provide sanctuary managers with information to inform decisions related to management of sanctuary resources, resulting in enhanced resource protection. Specifically, supporting, promoting, and coordinating scientific research, characterization, and long-term monitoring of habitat and water quality in the sanctuary would enhance understanding of the physical processes, and improve management decision-making. In addition, implementing resource protection and emergency response activities to remove hazards from the island shorelines and waters of CINMS, would reduce or avoid adverse impacts to habitat in the intertidal zone and seafloor environment that can result from seafloor disturbance, hazardous spills, or marine debris. Implementation of mitigation helps to avoid potential adverse impacts to water quality.

As detailed in the draft action plans, the revised sanctuary management plan would focus on addressing emergent environmental concerns in the sanctuary (e.g., climate change, introduced species, and marine debris) as well as expanding work in ongoing priority areas (e.g., programs in research, education, and outreach). Through these efforts to expand research, outreach, and education activities, NOAA has the potential to expand the knowledge base and promote ocean stewardship principles and practices among partners, local communities, and the general public. This creates an opportunity to influence the behavior and decision-making of individuals, communities, organizations, and agencies in ways that could indirectly benefit physical resources within the sanctuary.

The Climate Change Action Plan includes strategies to focus on better understanding and mitigating the effects of climate change on sanctuary resources through capacity building and collaborative partnerships. Specific activities proposed to achieve this are:

- Monitoring temperature variability and ocean acidification to evaluate the impacts of climate change on sanctuary resources;
- Conducting studies to understand the role of marine reserve zones to potentially mitigate ecological structure shifts driven by climate change effects;
- Monitoring, tracking, and reducing energy use and carbon dioxide emissions resulting from sanctuary operations, as well as promoting best practices for consideration by boaters; and
- Developing and implementing public engagement activities and communication products about ocean-climate impacts and solutions.

Similarly, activities in the Research and Monitoring and Introduced Species action plans would indirectly support habitats and habitat-provisioning organisms in the sanctuary by:

- Increasing understanding of biotically-derived habitat types in the sanctuary, such as corals and certain algal species (e.g., *Macrocystis pyrifera*) which provide a complex biogenic habitat for deep-sea and kelp forest ecosystems; and
- Reducing the threat of invasive species that may not serve as suitable habitat or prey for local organisms.

All of these activities are intended to provide beneficial impacts to sanctuary water quality, physical habitat, or to address ongoing impacts of climate change. The magnitude of potential beneficial impacts of some of these activities would largely depend on actions undertaken by partners or other agencies with direct regulatory authority over water quality or other activities.

Summary of beneficial impacts on the physical setting

The revised sanctuary management plan would improve the understanding, management, and protection of sanctuary resources and therefore provide **moderate beneficial impacts** to the water quality, acoustic environment, and seafloor habitat in CINMS.

5.2.1.2 Adverse Impacts of the Proposed Action on the Physical Setting

As part of implementing the Proposed Action, conducting routine field activities and other management activities may result in minor adverse impacts to the physical setting, as described below.

Minor disturbance of habitat during research, monitoring, and resource protection activities

Direct disturbance of habitat in the sanctuary could result from intentional or accidental contact with the seafloor during research, monitoring, or resource protection activities to implement the revised sanctuary management plan. These activities could include vessel anchoring, removal of marine debris, scuba divers coming in contact with the seafloor, deploying uncrewed underwater systems, and deploying sampling or monitoring equipment on the seafloor (e.g., use of moorings and sand anchors, placement of drop cameras and passive listening devices). Deployed scientific equipment is retrieved whenever possible in order to avoid financial losses, losing data, and unnecessary discharge or gear abandonment within the marine environment. NOAA would avoid or minimize the scale of any possible direct impacts to seafloor habitat by:

- Deploying or lowering instruments onto sandy substrate whenever possible;
- Limiting vessel anchoring to sandy-bottom substrates wherever possible to avoid damage to living resources and sensitive habitat;
- Deploying instruments slowly and under constant supervision; and
- Using an anchor weight retrieval system with sanctuary research gear, where possible, to avoid leaving weights behind upon the seafloor.

Due to these operational protocols, and the relatively low intensity of NOAA's planned activities in comparison with the entire seafloor area of the sanctuary (1,470 square miles), NOAA expects that the areas impacted by seafloor disturbance through conducting sanctuary management activities would be miniscule, and any adverse impacts would be temporary and minor.

Temporary, localized change in water quality

Existing state, federal, and sanctuary regulations prohibit most intentional vessel discharges within the sanctuary, therefore direct impacts to water quality from sanctuary vessel operations are expected to be highly unlikely because they would only occur if accidental discharges took place. Very rarely, vessel operations, vessel maintenance, or vessel incidents could result in an accidental or inadvertent release of waste or discharge in the sanctuary. Possible pollutants that could pose a risk to water quality include marine debris, food waste, sewage, oil, fuel, battery acids, detergents, and hydraulic fluid. The likelihood of accidental spills or vessel grounding incidents involving NOAA-controlled vessels within the sanctuary would be very low, and if a spill did occur, any decrease in water quality would be localized and temporary as the pollutant quickly dissipates. In addition, some of the sanctuary management activities described above that have the potential to disturb the seafloor (e.g., deploying buoys or research equipment, scuba diving) could cause localized and temporary increases in water turbidity during installation, maintenance, or removal activities at a given location.

Vessel maintenance conducted outside the sanctuary while docked in local harbors could result in decreased water quality around the vessel if contaminants used to maintain boats (e.g., oil and cleaning chemicals) inadvertently enter marine waters. When ONMS vessels are used by sanctuary staff, trained NOAA personnel or contractors generally conduct this routine maintenance in port at Santa Barbara, California. Heavy maintenance typically occurs on land in self-contained contractor facilities which are highly regulated for industrial safety and environmental compliance by local, state, and federal entities. Where possible, NOAA uses bio-based lubricants and fluids (and in some cases bio-based fuels,) further reducing the threat to water quality resources in the unlikely event of a spill. Because most vessel maintenance activities are conducted outside the sanctuary by highly-trained staff, the risk of contaminants entering sanctuary waters during maintenance is extremely low.

Generation of air emissions from vessels

Vessels emit air pollutants from engines and generators on board, including carbon dioxide, which can contribute negatively to local air quality. Relative to the scale and frequency of existing vessel traffic in this region, the additional air emissions generated by vessel operations to support sanctuary management is expected to be negligible. To help mitigate any potential future impacts, as part of implementing the revised management plan, sanctuary staff would complete a baseline emissions inventory, and then develop and implement a Green Operations Plan with the ultimate goal of reducing the carbon footprint of sanctuary operations.

Minor disturbance of soundscape during research, monitoring, and resource protection activities from equipment noise and active acoustics

Vessel operations and deploying uncrewed surface or subsurface systems could have minor adverse impacts on the acoustic setting within the sanctuary due to the movement of vessels through water, engine noise, and other underwater sound generated from propulsion machinery, or depth sounders. Relative to the scale of existing activities in this region that contribute to the sanctuary soundscape (e.g., ambient acoustics, background noise, and seafloor anchoring), NOAA expects that the additional noise impacts from sanctuary management activities would be negligible or minor. Piloted flight operations can introduce noise above the

sanctuary environment and adjacent waters. Flights are typically conducted at 1,000 feet above ground level to reduce noise disturbance.

Summary of adverse impacts on the physical setting

Implementing the proposed action would result in **negligible adverse impacts** on water quality, air quality, the acoustic environment, and seafloor habitat in CINMS for the following reasons: (1) Sanctuary-led field activities and operations would occur infrequently (annually up to 140 vessel days at sea, 20 piloted flights, and 30 UAS deployments), would be periodic, and spread out in space and time; (2) All ONMS vessels must comply with the operational protocols and procedures in the NOAA Small Boats Policy (NAO 209-125) and ONMS best management practices as detailed in Section 3.2.2.1, which reduces the risk of adverse impacts; and (3) NOAA divers are highly trained and avoid harming or disturbing physical resources.

5.2.2 Impacts of the Proposed Action on the Biological Setting

This section evaluates the impacts on the biological setting from implementing the Proposed Action, as described in **Section 3.2**. An overview of the sanctuary's biological setting is provided in **Section 4.2**.

5.2.2.1 Beneficial Impacts of the Proposed Action on the Biological Setting

The following beneficial impacts on the biological setting would result from implementing the sanctuary management plan and conducting routine field activities:

Direct protection of living resources through implementing sanctuary regulations or non-regulatory components of the management plan focused on reducing wildlife disturbance

Under the Proposed Action, implementing CINMS regulations would continue to protect marine habitats and species by prohibiting certain activities that might otherwise degrade habitats used by marine species or directly harm or take marine species, such as: (1) alteration of or construction on the seabed; (2) certain vessel operations that could strike or injure coral, seagrass, or other immobile organisms attached to the seabed; 3) vessel operations that could collide with marine mammals or other biota; (4) fishing within marine reserves or conservation areas. Implementing these existing prohibitions through enforcement, appropriate permitting, and interagency consultation processes would continue to provide direct resource protection benefits by protecting important biological habitat for living resources in the sanctuary and reducing direct disturbance to or take of living marine resources.

Marine species that make their home or forage within benthic habitats and sediment will likely benefit from compliance with these prohibitions because of the avoided adverse impacts associated with injury, habitat disturbance, or destruction. Some historical resources, such as shipwreck sites, function in the marine environment as structures that provide three-dimensional habitat for marine life. Therefore, efforts to minimize or avoid disturbance of historical resources within the sanctuary not only protects these important resources, but also reduces the likelihood of adverse impacts on marine biota using these sites as habitat.

Similarly, activities proposed in the Vessel Traffic and Resource Protection action plans would contribute to direct resource protection for marine mammals in the sanctuary. For example: implementing the voluntary vessel speed reduction (VSR) program and supporting regional whale entanglement response efforts.

Indirect protection of living resources through enhanced management and stewardship

As part of the revised sanctuary management plan, implementing research and monitoring programs would aid sanctuary managers in making informed decisions related to protection of marine species and their habitat. Specifically, the revised management plan goals and associated activities are designed to increase understanding of the structure, function, resilience, and status of the resources ONMS manages within the sanctuary, through:

- developing management action plans on topics of emerging concern (e.g., climate change) and ongoing management efforts (e.g., research and monitoring);
- facilitating the recovery of ESA-listed species;
- evaluating the impacts of lost fishing gear to sanctuary resources;
- developing best management practices to mitigate impacts; and
- working with partners to further ecosystem-based management approaches.

In addition, implementing resource protection and emergency response activities would indirectly protect living resources and habitat by:

- removing marine debris to prevent the disturbance of important habitats and animals;
- monitoring vessel traffic in the sanctuary to reduce the risk of lethal ship strikes to whales;
- preventing the introduction, spread, and establishment of newly introduced species, and supporting region-wide efforts to control or eradicate existing introduced species;
- effectively managing the sanctuary's protective zones (e.g., marine reserves, overflight closure zones, marine conservation areas, etc.) with state partners;
- monitoring shipwrecks that present a potential pollution risk to provide early notification of potential hazardous leaks; and
- implementing mitigation efforts to reduce adverse impacts on water quality that may subsequently harm living marine organisms that could not find alternative suitable habitat.

Through efforts to expand public outreach and education activities and regional partnerships, NOAA has the opportunity to communicate the importance of ocean stewardship and protection of the sanctuary's living resources. Specific activities in the revised management plan that could indirectly protect sanctuary living resources include:

- interpretive programming, like the Long Term Monitoring Program and Experiential Training for Students (LiMPETS) that teaches students to be better stewards of ocean and coastal ecosystems;
- collaborative partnerships with local businesses and the tourism industry to encourage awareness about sustainable tourism and recreation opportunities within the sanctuary;

- educating the public about, and promoting the responsible use of, sanctuary resources (see Section 3.5) to minimize habitat or wildlife disturbances from recreational use; and
- strengthened partnerships with the Chumash community, who are engaged in maritime traditions and traditional ecological knowledge practices.

All of these activities are intended to provide beneficial impacts to the sanctuary's living marine resources, biological habitat, or to address ongoing impacts of climate change. The magnitude of the potential beneficial impacts of some of these specific activities would largely depend on actions undertaken by partners or other agencies with direct regulatory authority over protection of certain species or habitat types, as well as behavioral changes adopted by the public after learning about sustainable, responsible practices.

Summary of beneficial impacts on the biological setting

Implementing the proposed action would provide NOAA with increased information to inform resource protection decisions, promote ocean literacy and stewardship, and therefore would provide **moderate beneficial** impacts to the living marine resources and habitats in CINMS.

5.2.2.2 Adverse Impacts of the Proposed Action on the Biological Setting

As part of implementing the Proposed Action, some minor adverse impacts to the biological setting would result from conducting routine field activities and other management activities, as described below.

Minor disturbance of living resources during research, monitoring, education and outreach, and resource protection activities

Minor physical or acoustic disturbance, including temporary displacement, of marine species could result from conducting research, monitoring, or resource protection activities to implement the revised sanctuary management plan. These activities could include vessel operations, scuba diving, deploying research equipment and uncrewed systems, and sampling or removal activities in the sanctuary. NOAA would avoid or minimize potential disturbance of living marine resources by implementing the best management practices described in Section 3.2.2.1, such as:

- using trained lookouts during vessel operations to avoid collisions with marine mammals;
- maintaining safe distances from large whales;
- limiting anchoring and instrument deployments to sandy substrates; and
- designing and supervising instrument deployments to minimize risk of collision or entanglement with marine species.

If living marine resources were present in close proximity to mobile sanctuary operations, including moving vessels, aircraft, or uncrewed operations such as ROVs and drones, NOAA anticipates that any disturbance would be brief due to the short period of time these NOAA-led activities would occur at a single location. Any avoidance by wildlife would be localized and temporary, animals are expected to return to the area quickly after NOAA operations move on, and abandonment of habitat is not expected. NOAA would take all possible precautions to minimize the risk of vessel strike or entanglement, or other direct disturbance, of living marine

species during any mobile operations used to support sanctuary research, monitoring, and resource protection activities.

NOAA-deployed field instruments that remain on site for longer periods of time, such as sediment traps, acoustic tag receiver arrays, and acoustic receiver arrays, could be maintained in place for months to years at a specific location. There is initial minor disturbance of the soft-bottom seafloor environment associated with installation, as well as when gear is serviced or retrieved. Encrusting marine life such as barnacles and limpets typically grow on the equipment, and staff carefully remove these species and return them to the same environment before leaving the site. These activities create minor adverse impacts to living resources, but the spatial extent, number of organisms affected, and frequency of disturbance would be minimal.

Wildlife research, monitoring, and resource protection actions (e.g., sampling, collection of organisms, or tagging) can have minor adverse impacts on biological resources, particularly biota in the water column, and benthic, intertidal, or subtidal habitats. In some cases, actions taken to study biota or habitat, or to respond to emergencies occurring in the sanctuary, can disturb species in the water and can very rarely result in injury or death. Any tagging of marine mammals would be conducted under an MMPA permit issued by NMFS.

Any disturbance of habitats and biota during scuba dives or sample collection, or while using small boats to ferry research teams to study sites would be short-term and temporary due to the short period of time NOAA-led activities would occur within a single location. Additionally, ONMS personnel are highly-trained to avoid disturbing or otherwise damaging habitat or living marine resources when conducting research, monitoring, and resource protection activities.

As described above, NOAA determined that the likelihood of changes in water quality occurring due to sanctuary management activities would be extremely low. Therefore, NOAA does not expect any indirect adverse impacts on living marine resources resulting from changes in water quality caused by sanctuary management activities. Similarly, NOAA determined that the contribution of noise to the sanctuary soundscape from conducting sanctuary management activities would be minor related to the scope of existing activities in the region. Therefore, NOAA expects that any acoustic effects on living marine resources from engine noise, movement of equipment through the water, and other underwater sound generated from propulsion machinery or depth sounders would be minor and temporary. Potential impacts from use of multibeam sonar during sanctuary management actions are anticipated to be limited to temporary behavioral disturbances of marine mammals within the mid- and higher frequency hearing range with all sound exposures anticipated to be less than one minute. ONMS's multibeam and other active acoustic activities are also being assessed programmatically pursuant to NEPA[63] with those of other National Ocean Service programs, including the Office of Coast Survey who conducts the majority of multibeam surveys for the National Ocean Service. As part of that programmatic review, the National Ocean Service intends to initiate consultation under ESA Section 7 and seek an authorization for incidental take of marine mammals under the Marine Mammal Protection Act.

[63] https://www.federalregister.gov/d/2021-13361 86 FR 33663 (June 25, 2021)

Due to these operational protocols, and the low intensity of NOAA's planned activities within the sanctuary, NOAA expects that likelihood of disturbance of living marine resources through conducting sanctuary management activities would be very low and any adverse impacts would be temporary. Implementing the proposed action would result in negligible adverse impacts on living marine and biological resources in CINMS for the following reasons: (1) Sanctuary-led field activities would occur infrequently (up to 140 days at sea per year), would be periodic, and spread out in space and time; and, (2) All ONMS vessels must comply with the operational protocols and procedures in the NOAA Small Boats Policy (NAO 209-125) and ONMS best management practices as described in Section 3.2.2.1, which reduces the risk of adverse impacts.

5.2.2.3 Impacts of the Proposed Action on Protected Species and Habitats

This section summarizes the anticipated impacts of the proposed action on the species and habitats that may occur in the sanctuary that are protected under the ESA, MMPA, MBTA, and the EFH provisions of the MSA, as detailed in **Section 4.2.2.1**.

NOAA analyzed the potential impacts on ESA-listed species and designated critical habitat within the context of the ESA regulatory framework, including ESA-specific determinations regarding the potential impacts to listed species and designated critical habitat.

Effect determinations include the following:[64]

- No effect: When the proposed action will not affect a listed species or designated critical habitat.
- May affect, but not likely to adversely affect: When effects are expected to be discountable, insignificant, or wholly beneficial.
    - Beneficial effects: Contemporaneous positive effects without any adverse effects to the species or critical habitat.
    - Insignificant effects: Relate to the size or severity of the impact and includes those effects that are undetectable, not measurable, or so minor that they cannot be meaningfully evaluated. Insignificant effects should never reach the scale where take occurs.
    - Discountable effects: Those effects that are extremely unlikely to occur. For an effect to be discountable, there must be a plausible adverse effect (i.e., a credible effect that could result from the action and that would be an adverse effect if it did impact a listed species,) but it is very unlikely to occur.
- May affect, and is likely to adversely affect: If any adverse effect may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial.

[64] Endangered Species Consultation Handbook, U.S. Fish and Wildlife Service and National Marine Fisheries Service (March 1998). https://media.fisheries.noaa.gov/dam-migration/esa_section7_handbook_1998_opr5.pdf

Impacts on ESA-listed species and designated critical habitat under NMFS jurisdiction

As noted in Table 4.1 in Section 4.2.2.1, ONMS determined that 17 endangered or threatened species under NMFS jurisdiction could occur in the action area:

- Blue whale, fin whale, humpback whale, killer whale, North Pacific Right whale, sei whale, sperm whale, gray whale (Western North Pacific DPS);
- Guadalupe fur seal, Steller sea lion;
- Black abalone, white abalone;
- Leatherback, loggerhead, olive ridley, and green sea turtle (East Pacific DPS); and
- Chinook salmon (California Coastal ESU), steelhead trout (Southern California DPS).

Of these species, those most likely to be found in CINMS are blue whale, fin whale, humpback whale, and black abalone, which are not uncommon to be sighted within the sanctuary. The remaining 13 species or DPS are only occasionally, infrequently, or rarely observed within CINMS.

Impacts on marine mammals, marine invertebrates, sea turtles, and fish

Generally, the potential beneficial impacts of the proposed action on these threatened or endangered species would be the same as those described for all biological resources, see section 5.2.2.1. For example, continuing to implement CINMS regulatory prohibitions through enforcement, permitting, and interagency consultation processes would provide resource protection benefits for these listed species by protecting biological habitat in CINMS and reducing potential for direct disturbance or take. In addition, implementing resource protection, research, monitoring, outreach, and citizen science programs under the revised sanctuary management plan would improve the understanding, management, and protection of sanctuary resources and therefore provide beneficial impacts to the living marine resources and habitats in CINMS, including supporting recovery efforts for these ESA-listed species. For example, ESA-listed whale species would continue to experience beneficial impacts from implementation of vessel speed reduction programs designed to reduce the risk of fatal ship strikes (see Vessel Traffic Action Plan, Strategy VT.1). Similarly, ONMS' response to sanctuary resource emergencies, including oil spills and whale entanglements, would also provide beneficial impacts to ESA-listed species within the sanctuary and adjacent region (see Resource Protection Action Plan, Strategy RP.1). Additionally, sanctuary efforts, in partnership with NMFS, to engage recreational divers in searching for and reporting sightings of the extremely rare (in CINMS) endangered white abalone would assist in the identification of potentially suitable habitat and efforts to recover the species.

The potential negative impacts of the proposed action on these listed species would also be the same as those described for all biological resources, see section 5.2.2.2. However, ONMS would implement additional protective measures and standing orders designed to reduce the risk of interactions with listed species during sanctuary management actions, as described in section 3.2.2.1 and listed below.

The research, monitoring, or resource protection activities involved in implementing the sanctuary management plan that have potential to affect listed species are:

- sanctuary vessel use;
- deploying mooring buoys and research or monitoring equipment;
- deploying uncrewed underwater systems (specifically, ROVs); and
- deploying uncrewed aerial systems and operating piloted aircraft.

The proposed action includes additional field activities to implement the sanctuary management plan (detailed in Table 3.2), however, ONMS determined that only those activities listed above have the potential to affect listed species. For example, impacts of whale tagging activities are not evaluated in detail here because no new whale tagging efforts are proposed as part of this action. Continued research would only be conducted in accordance with existing NMFS permits issued to principal investigators working with CINMS and receiving sanctuary vessel support.

These activities involve work in or near the marine environment and could affect a listed species if they were present at the project location during the activity. The possible routes of effect from these activities to the 17 listed species under NMFS jurisdiction that are likely to occur in the action area are: temporary disturbance, risk of vessel strike, and risk of entanglement with equipment.

ONMS would implement the protective measures or standing orders detailed in section 3.2.2.1 during sanctuary vessel operations in order to avoid or minimize the risk of interactions with listed species, particularly whales. Examples include:

- Following standing orders for vessel speed, operations around marine mammals, and nighttime operations;
- Posting at least one dedicated lookout for marine mammals and sea turtles during all vessel operations;
- Vessel operators remaining vigilant at helm controls (keeping hands on the wheel and throttle at all times) and ready to take action immediately to avoid an animal in the vessel's path;
- Deployment of instruments, including ROVs, to occur slowly and under constant supervision to minimize risks and avoid interaction with protected species, and to be postponed if protected species at risk of entanglement or disturbance are observed;
- Using soft substrate areas for vessel anchoring and securing scientific equipment, avoiding hard substrate areas (potential abalone habitat);
- Instructing pilots supporting sanctuary aerial monitoring flights to operate at 1,000 feet AGL (above ground level) or higher while over marine waters of the sanctuary and Santa Barbara Channel, and minimizing requests for pilots to briefly drop to lower altitudes (between 500-1000 AGL) for short durations in order to confirm marine mammal sightings;
- Securing NOAA authorization for any uncrewed aerial systems that are operation-based upon an agency required project-specific assessment of sensitive resources (including listed species) and mitigation measures; and
- Where direct take is involved, such as in whale-tagging operations, ensure that sanctuary staff or its research partners have obtained appropriate permits from NMFS pursuant to ESA and MMPA.

If any sanctuary management activities were to occur in close proximity to ESA-listed species, the activity could result in temporary disturbance. For example, a vessel or ROV transiting through the water could cause a whale or sea turtle to change swimming speed or direction, change vocalization rate or intensity, or have no reaction. Sea turtles and whales usually avoid human activity, but some large cetaceans have been observed to occasionally be attracted to vessel activity (Watkins, 1986), including humpback whales in the Santa Barbara Channel.[65] If it were to occur in relation to sanctuary vessel operations, this type of behavior modification would be temporary. This is the case because of the limited frequency of ONMS planned activities, and the short period of time that such activities would occur at a single location. ONMS expects that if an individual ESA-listed species were temporarily displaced, the displacement would be temporary, animals would be expected to return to the area quickly after the vessel leaves the area, and abandonment of habitat would not occur. As such, ONMS finds that the likelihood of ONMS vessels or other sanctuary management activities to cause disturbance of a listed species is very low, and if an interaction were to occur, the effects on a listed species would be **insignificant**.

Sanctuary vessel operations have the potential to result in a collision with ESA-listed species that occur in close proximity to a vessel. The severity of potential injuries to an individual from a vessel strike would depend on the speed of the vessel, the part of the vessel that strikes the animal, and the body part impacted. The incidence of collision is expected to increase for all marine species as traffic and animal density increases, or as vessel size and speed increase. For sea turtles, Hazel et al. (2007) demonstrated that greater vessel speed increased the probability that sea turtles would fail to flee from an approaching vessel. Similarly, Vanderlaan and Taggart (2007) determined that the severity of injury to large whales is directly related to speed. For example, the study found that the probability of lethal injury from large ships increased from 21% for vessels traveling at 8.6 knots, to over 79% for vessels moving at 15 knots or more. Additionally, vessel strikes can be a threat to species that surface more often, have slower swim speeds, or that lack adaptations that can help an individual avoid vessels. For example, NMFS identifies boat collisions as a threat to green, Kemp's ridley, and leatherback sea turtles because they are species that need to surface in order to breathe. Whales must also surface to breathe, and are known to rest or bask at the ocean surface, which increases their risk of being struck by a vessel or its propellers. To minimize the risk of vessel collisions with whales or sea turtles, ONMS implements specific standing orders and protective measures for reducing vessel speed and spotting marine species from a distance. In addition, ONMS staff avoid running sanctuary vessels at night. On rare occasions when sanctuary vessels must be operated at night, staff do so at much lower speeds and with additional crew lookouts. As such, given the low level of vessel trips that would occur annually as part of sanctuary management activities and compliance with the standing orders and protective measures listed in section 3.2.2.1, ONMS finds that the risk of a collision with a listed marine species would be **discountable**.

Entanglements can cause physical damage to an animal through constriction, which can partially sever limbs or flippers, create penetrating injuries, and potentially immobilize an animal (Andersen et al. 2008). If an entanglement is severe enough, it may also result in drowning. As part of the Proposed Action, ONMS staff would deploy research or monitoring

[65] https://condorexpress.com/2-humpback-whales-both-mug-the-boat/

equipment and some tethered ROVs or other uncrewed underwater systems. A listed species could become entangled if an individual encounters buoy lines, ROV tethers, or other filamentous attachments associated with research and sampling activities (e.g., deploying a conductivity, temperature, and depth monitor). In general, the risk of entanglement is greater for whales and sea turtles than fish due to their slower movements and size. To minimize the risk of entanglement, ONMS staff would postpone deployment of short term devices when marine species that could be potentially entangled are present, and individuals participating in the activity would closely monitor the instrument cables at all times while they are deployed. Many research activities only require lines to be temporarily suspended within the water column for 20 minutes or less. Some subsurface gear deployed by staff in the sanctuary can be left in the marine environment for a few months before being retrieved and replaced. However, for gear that requires a mooring system, staff deploy subsurface floats rather than surface floats. The subsurface floats are typically at 20 feet below the surface or deeper, causing the buoy line to be fully, vertically stretched out at all times, resulting in an extremely low risk of entanglement. Because of these measures, ONMS believes that it would be extremely unlikely that any listed species would come into contact with instrument cables or buoys during sanctuary management activities. Therefore, ONMS finds that the risk of entanglement for listed whales, sea turtles, and fish would be **discountable**.

Impacts on Designated Critical Habitat for Black Abalone

Designated critical habitat for black abalone along the California coast includes approximately 360 square km of rocky intertidal and subtidal habitat within five segments of the California coast between the Del Mar Landing Ecological Reserve to the Palos Verdes Peninsula, as well as on the Farallon Islands, Año Nuevo Island, San Miguel Island, Santa Rosa Island, Santa Cruz Island, Anacapa Island, Santa Barbara Island, and Santa Catalina Island. This designation includes rocky intertidal and subtidal habitats from the mean higher high water (MHHW) line to a depth of -6 meters (m) (relative to the mean lower low water (MLLW) line), as well as the coastal marine waters encompassed by these areas (76 FR 66805). This critical habitat is present within the action area as it encompasses the rocky intertidal shoreline habitat and immediately adjacent shallow subtidal areas surrounding the five islands within the sanctuary.

The Primary Constituent Elements essential for the conservation of black abalone are: suitable rocky substrate occurring from MHHW to a depth of -6m relative to MLLW; abundant food resources, including bacterial and diatom films, crustose coralline algae, and a source of detrital macroalgae, for growth and survival of all stages of black abalone; juvenile settlement habitat in rocky intertidal and subtidal habitat containing crustose coralline algae and crevices or cryptic biogenic structures (e.g., urchins, mussels, chiton holes, conspecifics, and anemones); suitable water quality; and suitable nearshore circulation patterns. These essential features are present in the action area.

These Primary Constituent Elements may be minimally affected by some sanctuary management activities, such as onshore field activities in the intertidal zone to respond to vessel groundings, conduct research and monitoring, and other activities that may temporarily disturb rocky substrate in the coastal environment or adversely affect water quality. Grounded vessel removal may have a temporary adverse impact on water quality because the potential exists for chemical seepage and habitat disturbance during the removal and, if needed, remediation

processes, and there could be a slight, temporary localized increase in turbidity. NOAA staff are trained to implement best management practices and avoid protected species and sensitive habitats during emergency response and salvage operations in coordination with the National Park Service and other responding agencies and entities.

ONMS expects that management activities, including marine debris collection and response to vessel groundings in the intertidal zone, as well as research and emergency response operations contributing to seafloor disturbance or temporary changes in water quality, would be short in duration, occur infrequently, and cause only minor impacts to the essential features of rocky substrate and water quality for the black abalone. Therefore, the potential impacts on designated critical habitat for black abalone would be **insignificant**.

Impacts on Designated Critical Habitat for the Humpback Whale

The Central America DPS of humpback whales feed off the West Coast of the United States from California to Alaska. Critical habitat for this DPS includes the waters of CINMS and the action area (86 FR 21082, 04/21/2021).[66] NMFS identified essential habitat features for these DPSs including migratory corridors and ambient soundscape conditions that do not hinder access to prey. Prey availability is specifically defined as primarily euphausiids and small pelagic schooling fishes of sufficient quality, abundance, and accessibility within humpback whale feeding areas to support feeding and population growth. In addition, NMFS identified ocean noise, climate change, direct harvest of prey by fisheries, and marine pollution as having the potential to negatively impact the essential prey feature and the ability of feeding areas to support the conservation of listed humpback whales in the North Pacific. These essential features are present in the action area. However, the activities that ONMS proposes to conduct (routine field operations and revisions to management plan activities) are low in intensity and frequency and would not result in any change in these essential features. Proposed vessel speed reduction strategies in the management plan (see Strategy VT.1) are expected to seasonally reduce ship speeds and associated ship engine noise levels within the Santa Barbara Channel, improving soundscape conditions and thus providing an indirect **beneficial** effect on humpback whale prey access and critical habitat.

Effect Determination for ESA Listed Species and Designated Critical Habitat under NMFS Jurisdiction

In summary, ONMS finds that the impacts of implementing the revised sanctuary management plan would be **beneficial**, **discountable**, or **insignificant**. Therefore, ONMS concludes that implementing the proposed action **may affect, but would not adversely affect** the 17 ESA-listed species and designated critical habitat under NMFS jurisdiction identified in Table 4.1 given that:

- ONMS staff would implement a relatively low level of field activities throughout the year, minimizing the likelihood that ONMS staff or vessels would interact with, strike, or entangle listed species;
- All NOAA-authorized vessels and staff would adhere to the NOAA Small Boat Program Guidelines and implement standing orders and best management practices described in

[66] https://www.federalregister.gov/d/2021-08175

section 3.2.2.1, which are intended to minimize and avoid the risk of interactions with listed species;
- Research and education programs in the field, and other on-water activities, would be led by highly-trained ONMS staff that consider the potential impact on ESA-listed species and that adhere to the best management practices described in section 3.2.2.1;
- ONMS staff would implement public outreach to help ensure that the public is aware of the need to avoid or minimize impacts to listed species;
- ONMS staff and partners would continue to implement vessel speed reduction programs that contribute to reducing the risk of fatal ship strikes to listed whale species, and implement a citizen science program to promote public reporting of any potential endangered white abalone sightings;
- ONMS staff would continue to protect foraging habitats and minimize disturbance for ESA-listed species in CINMS by implementing sanctuary regulations and management activities aimed at research, resource protection, and stewardship; and
- Where directed take is involved during ONMS or partner research operations, such as in whale-tagging operations, sanctuary staff would ensure that appropriate permits are obtained from NMFS pursuant to ESA and MMPA.

ONMS determined that the proposed action would have **no effect** on the following listed species under NMFS jurisdiction, because the species would not occur within the action area; because suitable habitat for the species does not occur within the action area; or the action area is outside of the species' current range: bocaccio, chum salmon, coho salmon, eulachon, green sturgeon, gulf grouper, oceanic whitetip shark, scalloped hammerhead shark, and sockeye salmon.

Impacts on ESA-Listed Species and Designated Critical Habitat Under USFWS Jurisdiction

As noted in Table 4.2 in Section 4.2.2.1, NOAA determined that four endangered or threatened species under USFWS jurisdiction could occur in the action area:

- Short-tailed albatross
- Marbled murrelet
- Western snowy plover
- Southern sea otter

ONMS staff analyzed the potential beneficial and adverse impacts to these four species from human disturbance and habitat loss or degradation as a result of the proposed action.

Impacts on ESA-Listed Seabirds and Shorebirds

The action area provides foraging and nesting habitat for western snowy plovers that forage in the receding surf on sand-dwelling crustaceans and breed in critical habitat areas, such as on several Santa Rosa Island beaches. The marbled murrelet is not common with the action area, which is not within its breeding range, but could use sanctuary waters for offshore foraging given that they have been known in the past to occur in small numbers off Southern California.[67]

[67] https://www.fws.gov/arcata/es/birds/mm/m_murrelet.html

Short-tailed albatross, which breed in the Western Pacific but travel broadly throughout the North Pacific as juveniles,[68] are rarely observed within the action area.

Beneficial impacts to these listed bird species from sanctuary management activities would include resource protection and stewardship activities aimed at protecting foraging habitats, and making improvements to sanctuary water quality.

Intense human disturbance may disrupt nesting or foraging activities of birds and reduce their ability to maintain adequate weights or provide sufficient care to eggs or chicks. Within the sanctuary, human disturbance from sanctuary management activities that could potentially affect listed birds is limited to noise disturbance from vessel operations, noise or disturbance from aircraft operations, removal of marine debris or grounded vessels, or operation of uncrewed aerial systems. Noise from these activities could disturb or displace listed birds, or cause minor trampling of habitat or invertebrate and fish species that provide food for bird species. However, this noise from sanctuary operations would be of short duration and limited to small portions of the shoreline within the action area. ONMS does not expect that implementing the proposed action would result in an increase in NOAA vessel operations in the sanctuary.

As part of the proposed action, uncrewed aerial systems are expected to be operated within the action area for resource monitoring and to assist in emergency response (e.g., oil spills). These activities are generally permitted individually by the sanctuary superintendent and authorized by NOAA and other entities, and would be conducted following guidelines designed to avoid interactions with listed bird species and to avoid known bird rookeries. As described in section 3.2.2.1, ONMS will not conduct uncrewed aerial systems operations if one or more threatened or endangered birds is suspected of being disturbed in/around its nest, and/or if disturbance could occur during nesting season. With regard to the operation of piloted aircraft, ONMS would avoid disturbance of seabirds and shorebirds by conducting flights at an altitude of 1,000 feet above ground level.

In addition to potential disturbance from noise and the approach of uncrewed or piloted aircraft, the western snowy plover could potentially be subjected to disturbance from sanctuary management activities such as marine debris removal from beaches and other onshore fieldwork, as this shorebird species may be found on coastal beaches within the action area, such as at 11 beaches on Santa Rosa Island. However, as explained in section 3.2.2.1, when planning and conducting shoreline activities within the sanctuary (e.g., marine debris cleanups,) ONMS will cooperate with the seasonally closed beach areas established by the NPS to protect breeding western snowy plovers.

During the next five to 10 years, noise production and other sanctuary field operation activity levels are expected to remain similar to current levels. Deployment of uncrewed aerial systems and piloted aircraft, vessel transits, and onshore fieldwork in areas where birds are breeding, resting, or feeding could cause these species to leave or avoid the area causing minor behavioral disturbance. However, this potential disturbance is not expected to harm or harass listed bird species in the action area. Therefore, because these activities are infrequent and of low intensity,

[68] https://ecos.fws.gov/docs/five_year_review/doc4445.pdf

ONMS expects the impacts of human disturbance on listed bird species present in CINMS to be **insignificant**.

Impacts on Southern Sea Otters

The southern sea otter is a top carnivore in its coastal range and a keystone species of the nearshore coastal zone, often found foraging and resting in kelp forests along the Central California coast and at San Nicolas Island. Within the action area, sea otters are occasionally observed along the Gaviota Coast of the Santa Barbara Channel (Hatfield et al. 2019), but only very rarely sighted within the sanctuary. The southern sea otter is listed as threatened under the ESA and is also protected under the MMPA.

Within the sanctuary, potential disturbance to southern sea otters is limited to field activities in support of sanctuary management, which may pose a risk of entanglement, vessel strike, or disturbance. These specific activities are: vessel operations, deployment of AUVs or ROVs, scuba and snorkel operations, and other resource protection or sampling activities occurring in the water or onshore. If any sea otters were to be in close proximity of sanctuary vessels underway, there is the possibility that the interaction could result in a range of reactions ranging from no reaction to a startled reaction, such as a rapid fleeing from the area. This reaction could also occur in response to divers operating in the vicinity of sea otters, and deployment of ROVs or other underwater or surface vehicles or instrumentation. When conducting these types of routine field activities, staff are trained to implement NOAA policies and ONMS best management practices, and minimize risks to listed species by maintaining a safe distance from any marine mammals present. In addition, CINMS activities are expected to be of low intensity and frequency and ONMS does not expect that implementing the proposed action would result in an increase in field activities conducted by staff within the action area.

Vessel anchoring and tethers used by ROVs or other instrumentation can pose an entanglement risk for listed marine mammals and sea turtles. Similarly, operation of ONMS vessels within the sanctuary could result in injury to an individual if the sanctuary vessel collided with a sea otter. However, ONMS expects that the chance of sea otter entanglement or vessel strike resulting from sanctuary field operations is highly unlikely because of the very limited presence of sea otters within the action area and because ONMS staff follow best management practices for working in the vicinity of marine animals during fieldwork, including maintaining a watch for listed species around the vessel and terminating some operations if animals are spotted. Therefore, ONMS determined the potential impacts on southern sea otters resulting from vessel operations or other routine field activities to implement the proposed action would be **discountable**.

Impacts on Designated Critical Habitat for Western Snowy Plover

Critical habitat for western snowy plovers is established with the sanctuary and Channel Islands National Park at 11 beaches on Santa Rosa Island, comprising 586 acres along 31 shoreline miles. This critical habitat is an important breeding area and also an important wintering area. The following physical or biological features essential to the conservation of western snowy plovers are present within this critical habitat: areas of sandy beach above and below the high-tide line with surf-cast wrack supporting small invertebrates, and generally barren to sparsely vegetated terrain.

In cooperation with the National Park Service and seasonal shoreline access restrictions established within Channel Islands National Park, disturbance to ESA-listed western snowy plovers would be avoided by not conducting CINMS shoreline activities, such as marine debris cleanups, in critical habitat areas established on Santa Rosa Island during the plover breeding season (March - September).

Also within the action area, along the Santa Barbara Channel coast, critical habitat for ESA-threatened western snowy plovers has been designated at five segments of mainland coastal beach areas. This includes 7 miles (52 acres) along Devereaux Beach near Island Vista, 1.8 miles of beach area (65 acres) in Santa Barbara, 2 miles (70 acres) of beach area in the City of Ventura, 6 miles of beach (672 acres) near the City of Oxnard, and 3 miles of beach (320 acres) near the cities of Port Hueneme and Oxnard. (77 FR 36728). Onshore fieldwork activities conducted by sanctuary staff do not occur along these particular mainland coastal beaches.

Given that sanctuary management activities would not be conducted on Santa Rosa Island during the breeding season for western snowy plovers, and do not take place along mainland coast beaches where critical habitat is designated, the proposed action would have **no effect** on western snowy plover designated critical habitat.

Effect Determination for ESA Listed Species and Designated Critical Habitat under USFWS Jurisdiction

In summary, ONMS finds that the impacts of implementing the revised sanctuary management plan would be **beneficial**, **discountable**, or **insignificant**. Therefore, ONMS concludes that implementing the proposed action **may affect, but would not adversely affect** the four ESA-listed species and would have **no effect** on designated critical habitat under USFWS jurisdiction identified given that:

- ONMS staff would implement a relatively low level of field activities throughout the year, minimizing the likelihood that ONMS staff or vessels would interact with, strike, or entangle listed species;
- All NOAA-authorized vessels and staff would adhere to the NOAA Small Boat Program Guidelines and implement standing orders and best management practices described in section 3.2.2.1, which are intended to minimize and avoid the risk of interactions with listed species;
- Research and education programs in the field, and other on-water activities, would be led by highly-trained ONMS staff that consider the potential impact on ESA-listed species and that adhere to the best management practices described in section 3.2.2.1;
- ONMS staff would implement public outreach to help ensure that the public is aware of the need to avoid or minimize impacts to listed species;
- ONMS staff would continue to protect foraging habitats and minimize disturbance for ESA-listed species in CINMS by implementing sanctuary regulations and management activities aimed at research, resource protection, and stewardship;
- ONMS will not conduct uncrewed aerial systems operations if one or more threatened or endangered birds is suspected of being disturbed in/around its nest, and/or if disturbance could occur during nesting season; and

- Sanctuary management activities would not be conducted on Santa Rosa Island during the breeding season for western snowy plovers, and do not take place along mainland coast beaches where critical habitat is designated.

ONMS determined that the proposed action would have **no effect** on the following listed species under USFWS jurisdiction because they would not occur within the action area because suitable habitat for the species does not occur within the action area and/or the species' range does not overlap with marine-based sanctuary operation areas: California condor, California least tern, least bell's vireo, light-footed clapper rail, southwestern willow flycatcher, California red-legged frog, tidewater goby, vernal pool fairy shrimp, Contra Costa goldfields, Gambel's watercress, Gaviota tarplant, Hoffmann's slender-flowered gilia, island barberry, island rush-rose, Lompoc yerba santa, marsh sandwort, salt marsh bird's-beak, Santa Cruz Island malacothrix, Santa Rosa Island manzanita, and soft-leaved paintbrush.

Effect Determination for Marine Mammals

Under the MMPA, take is defined as "to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal" (16 U.S.C. §1362(13)) and is further defined by regulation (50 C.F.R. § 216.3) as "to harass, hunt, capture, collect, or kill, or attempt to harass, hunt, capture, collect, or kill any marine mammal." Vessel operations do create the possibility for collision with a marine mammal, such as a California sea lion or common dolphin, which are frequently encountered in the action area. NOAA will operate sanctuary vessels using the precautional practices described in Section 3.2.2.1, including posting lookouts, managing vessel speed, and avoiding night operations. Overall, given the practices to be used for vessel operations and other sanctuary management activities, and the relatively low extent of overall field operations, NOAA ONMS determined that the proposed action would not likely result in the take of any marine mammal species protected under the MMPA (those listed in Table 4.3, Section 4.2.2.1). Should ONMS conduct, permit, or authorize any future activities that would cause the take of any marine mammal species protected under the MMPA, NOAA ONMS would evaluate the environmental impacts from such activities on a case-by-case basis and receive all necessary authorization from NMFS.

Effect Determination for Essential Fish Habitat (EFH)

EFH for various life stages of fish species managed by NMFS under the Pacific Coast Groundfish, Coastal Pelagic Species, and Highly Migratory Species Fishery management plans is located throughout the West Coast and within CINMS. EFH could be affected by ONMS field activities in CINMS. EFH regulations encourage regional Fishery Management Councils to designate Habitat Areas of Particular Concern (HAPC) within areas identified as EFH to focus conservation priorities on specific habitat areas that play a particularly important role in life cycles of federally managed fish species. HAPC found within CINMS include seagrass, canopy kelp, rocky reefs, and the Channel Islands network of federal and state marine reserves and marine conservation areas. HAPC could be affected by ONMS field activities in CINMS. An adverse effect on EFH or HAPC is any direct or indirect effect that reduces the quality and/or quantity of habitat. More details on EFH and HAPC present within the sanctuary is found at Section 4.2.3.3.

In 2015 NOAA prepared a Programmatic EA for national marine sanctuary field operations within the ONMS West Coast region, including CINMS,[69] that included an analysis of potential adverse impacts to EFH. As part of its coordination and consultation with NMFS for the Programmatic EA, ONMS determined that two categories of field operations could potentially adversely affect designated EFH: response to vessel groundings, and deployment of equipment on the seafloor. ONMS requested NMFS General Concurrence that these adverse impacts to EFH would be minor given the relatively small number of vessel days at sea, equipment deployments conducted annually, and best management practices in place for staff and contractors (see Section 3.2.2.1). By letter dated July 26, 2016, NMFS concurred with ONMS's determination that field operations would have minimal adverse impacts on designated EFH and provided General Concurrence for all field operations, except for removal or relocation of grounded vessels and removal of large marine debris. NMFS agreed that deployment of equipment on the seafloor would meet the criteria for General Concurrence under 50 CFR § 600.920(g)(2) provided that a minimization measure of limiting deployment to sandy substrate was followed for all deployments. Additionally, NMFS stated that the activity of removal or relocation of grounded vessels and removal of large marine debris does not meet the criteria stated in 50 CFR § 600.920(g)(2) and should be consulted on an individual basis as necessary. No other proposed changes to the management plan or regulatory updates would result with regard to activities that could adversely impact EFH.

Grounded vessel removal could result in temporary adverse impacts to small areas of EFH within the action area because the potential exists for chemical seepage and habitat disturbance during the wreck removal and by emergency response vessels. Deserted vessels or boats in distress, if sinking, on fire, or breaking up on island shores, can release toxic paint, chemicals, and petroleum products among other contaminants. If deteriorating, they can disturb the surrounding benthic habitats, potentially creating plumes of sediment. Large emergency response vessels may need to set heavy anchors, potentially within eelgrass beds.

During emergency response, vessel removal, and salvage activities, disturbance to EFH would be minimized in a variety of ways. The use of mechanical operations (e.g., boom and skimmer systems) would help contain pollutant plumes and small debris fields from spreading, minimizing the extent of EFH potentially affected by adverse impacts. If species associated with EFH were intolerant to the temporary decline in water quality, mobile organisms such as fish could swim to nearby unaffected waters. Within the high energy oceanic environment of the sanctuary, any areas with temporarily diminished water quality would likely recover quickly so that nearby habitat and any associated EFH species would not be adversely affected. Additionally, in preparation for emergency response and salvage operations, NOAA would work with towing and salvage companies, responsible parties, and responding agencies to raise awareness of EFH areas within the sanctuary, and promote best practices for avoiding impacts during response operations. Where incidents require handling through a Unified Command structure, NOAA would provide EFH-related information and request that operations plans for

[69] https://nmssanctuaries.blob.core.windows.net/sanctuaries-prod/media/docs/20180807-pea-of-field-ops-wc-nms.pdf

response, salvage and cleanup phases describe and request practices that prevent or minimize EFH disturbance.

Therefore, the proposed action would result in **minimal adverse effects** on designated EFH based on: the temporary increase in turbidity that could occur during vessel removal activities, best management practices developed for certain towing and salvage operations, and the limited number of removal activities expected to occur annually.

The proposed action does not include recommending any changes at this time to sanctuary regulations that overlay the federal portion of the Channel Islands network of marine reserves and marine conservation areas, which are also designated as HAPC. Therefore, the proposed action would not alter the amount of regulated fishing activity allowed within these zones, and thus would have **no adverse effect** on these HAPC.

Effect Determination for Migratory Birds

Appendix B lists describes the 54 migratory bird species protected under the MBTA that may be found transiting, resting, or foraging within the action area (see Table B.1). The MBTA authorized federal protection for migratory birds in the United States, and made it unlawful without a permit from USFWS to pursue, hunt, take, capture, kill or sell birds listed therein ("migratory birds") (16 U.S.C. § 703). Over 800 listed migratory bird species are protected under the MBTA (50 C.F.R. 10.13). Any impacts to migratory birds associated with implementing the proposed action would be negligible, such as temporary disturbance from vessel traffic, or from other research and resource protection activities in support of sanctuary management. ONMS finds that any disturbances that did occur would be negligible and would not rise to the level of take under the MBTA.

5.2.3 Impacts of the Proposed Action on Marine Uses and the Socioeconomic Setting

This section evaluates the impacts on the socioeconomic setting and human uses from implementing the Proposed Action, as described in **Section 3.2**. An overview of the sanctuary's human and socioeconomic setting is provided in **Section 4.4**.

5.2.3.1 Benefits to the socioeconomic environment or other marine users

The following beneficial impacts on marine uses and the socioeconomic setting could result from implementing the sanctuary management plan and conducting routine field activities:

Provision of ecosystem services for compatible use of the sanctuary for recreation, tourism, and other activities

As detailed in sections 5.2.1 and 5.2.2, implementing existing sanctuary regulations would provide direct resource protection benefits for water quality, habitats, and living marine resources in the sanctuary. Protecting these important resources also provides benefits to recreational, tourism, and commercial users of the sanctuary and the local region. Implementing activities proposed in the revised sanctuary management plan would provide important benefits to people who use the sanctuary and depend on a functioning, healthy, and resilient ecosystem for cultural practices, recreation, and livelihoods. Some of these benefits would include visitors

and tourists experiencing enhanced enjoyment from outreach and interpretive services provided by sanctuary volunteers, and continued sanctuary habitat protection and high water quality that enhances recreational diving, kayaking, fishing, and commercial fishing.

The action plans propose various strategies and activities to help further provision of ecosystem services for compatible use of the sanctuary, for example:

- Improving interpretive signage in the field at strategic shoreline locations would help to increase awareness and build knowledge of CINMS to thousands of shoreline visitors each year. This increases the exposure of sanctuary messages to wide-ranging public audiences on resource protection issues, (e.g., reducing wildlife disturbance), research and monitoring activities, as well as maritime heritage in the sanctuary.
- Providing outreach to whale watching businesses and collaboration on the development of best practices related to marine mammal and seabird viewing under a revised sanctuary management plan would also lead to better protection and interaction for the wildlife these businesses depend upon.
- Enhanced coordination and collaboration among fishery managers, fishermen, and ONMS staff is expected to increase efficiencies in research, communication, and resource management which are beneficial for the sanctuary ecosystem and habitats that healthy fisheries depend upon.

The revised sanctuary management plan would improve the understanding, management, and protection of sanctuary resources and therefore could provide minor or moderate beneficial impacts to the marine uses and socioeconomic setting within or adjacent to CINMS.

5.2.3.2 Adverse Impacts of the Proposed Action on Marine Uses and the Socioeconomic Setting

Potential User Conflicts from On-Water Sanctuary Management Activities

Conducting routine sanctuary management activities could potentially result in temporary operational interference with commercial, research, or recreational activities in the sanctuary. For example, when supporting occasional shark tagging operations, sanctuary staff might temporarily displace other dive charter or urchin fishing vessels from the immediate area. Additionally, in coordination with the USCG, there are occasions when a safety buffer area is established to support safe emergency response operations focused on a grounded vessel, thus temporarily displacing other sanctuary users seeking to visit the same area. However, any interference between NOAA and other users of the sanctuary would be temporary in nature and would not result in any significant effect on the operations of recreational, research, or commercial users. Therefore, any adverse impact from the proposed action on human uses in the sanctuary would be **negligible**.

Implementation of sanctuary regulations that protect resources may also continue to have minor adverse impacts on human uses in the sanctuary by restricting activities of certain user groups such as commercial and recreational fishing in NOAA-designated marine reserves and conservation areas. Potential adverse impacts on human uses resulting from sanctuary regulatory changes were analyzed previously. Specifically, the 2007 Channel Islands National Marine Sanctuary Final Environmental Impact Statement for the Establishment of Marine

Reserves and Marine Conservation Areas[70] assessed potential impacts from the establishment of these protective zones, and the 2008 Channel Islands National Marine Sanctuary Final Management Plan/Final Environmental Impact Statement[71] assessed potential impacts from a variety of updates to other outdated sanctuary regulations. Since then, ongoing monitoring and scientific studies of the marine reserves and conservation areas have documented increases in species biomass and densities that reflect the originally anticipated performance of the network[72] (Hamilton et. al 2010; Kay et. al. 2012; Caselle et. al. 2015; ONMS 2019). Implementing this Proposed Action would not change any of the previously analyzed possible adverse impacts or findings. However, as described in section 3.4 and at Strategy ZM-1 of the draft management plan, a more thorough review and consideration of the network's performance and stakeholder views is forthcoming.

5.2.4 Impacts of the Proposed Action on the Maritime Heritage Resources

This section evaluates impacts to maritime heritage resources within the action area that could result from implementing the Proposed Action, as described in **Section 3.2**. Maritime heritage resources include historical, cultural, and archaeological resources that represent human connections to our ocean areas. An overview of potentially affected historical and cultural resources is provided in **Section 4.5**.

5.2.4.1 Beneficial Impacts of the Proposed Action on Maritime Heritage Resources

The following beneficial impacts on historical and cultural resources would result from implementing the sanctuary management plan and conducting routine field activities.

Direct protection of cultural and historical resources through implementing sanctuary regulations or non-regulatory components of the management plan focused on protecting resources from disturbance and physical damage

Implementing existing sanctuary regulations would continue to limit discharges that could compromise water quality, and restrict prohibited activities that could result in adverse impacts to maritime heritage resources. Submerged archaeological sites and other cultural resources, such as shipwrecks and Chumash Native American artifacts, are protected under sanctuary regulations (15 CFR §922.72(a)(8)). Continuing to implement these regulations, including enforcement, permitting, and consultations with other agencies, would further the protection of the important historical and cultural resources present within the sanctuary by reducing

[70] https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/marineres/pdfs/feis.pdf
[71] https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/management/manplan/pdf/feis11-08.pdf
[72] See CINMS condition report, pp. 75-80: https://nmssanctuaries.blob.core.windows.net/sanctuaries-prod/media/docs/2016-condition-report-channel-islands-nms.pdf

instances of seafloor disturbance, preventing disturbance or damage to historical or cultural resources, and reducing discharges occurring in the sanctuary.

Similarly, certain strategies proposed in the Cultural Resources and Maritime Heritage Action Plan would contribute to increased resource protection for maritime heritage resources in the sanctuary by mitigating impacts from human activities, or increasing understanding of how shipwrecks contribute to the overall maritime landscape. For example:

- Continuing annual site monitoring of known heritage resources to document environmental change or human impacts; and
- Analyzing sanctuary seafloor mapping data, remotely operated vehicle (ROV) footage, and autonomous underwater vehicle (AUV) surveys in an effort to identify new maritime heritage resources.

Indirect protection of cultural and historical resources through enhanced management and stewardship

As part of the revised sanctuary management plan, implementing research and monitoring programs provides sanctuary managers with information to inform decisions related to management of maritime heritage resources, resulting in enhanced protection of these important resources. Continued research and monitoring of historical and cultural resources in CINMS provides opportunities for improved management of these resources and increased stewardship among users of sanctuary waters. In addition, resource protection activities mitigate potential direct adverse impacts to cultural and historical resources by avoiding damage from hazardous waste leaks, vessel strandings, and other accidental disturbance of cultural or historical resources.

Specifically, the Cultural Resources and Maritime Heritage Action Plan proposes various strategies and activities designed to support the long-term protection, preservation, and appreciation of historical and cultural resources, for example:

- Identify, protect, and raise awareness of maritime heritage resources in the sanctuary, including cultural, historical, and archeological resources;
- Inventorying maritime heritage resources within the sanctuary and expanding the CINMS Shipwreck Database;
- Coordinating stewardship initiatives with key partners to protect maritime heritage resources including: 1) the sport diving community, 2) learning centers and museums, and 3) appropriate local law enforcement agencies;
- Developing protocols to monitor climate-related effects on maritime heritage resources; and
- Developing a maritime cultural landscape study focused on the deeper knowledge of the sanctuary and its surrounding region's maritime heritage resources and related activities, by engaging the public, Chumash partners, local and academic communities, and stakeholders.

Expanding research, education, and outreach activities as part of the Cultural Resources and Maritime Heritage Action Plan would further the public's understanding of the importance of stewardship and protection of the region's history and culture. This could result in changes in

behavior and decision-making of individuals, communities, organizations, and agencies in ways that could indirectly benefit maritime heritage resources within the sanctuary. Specifically, conducting research on maritime cultural landscape themes and partnering with learning centers to exhibit maritime heritage resources, Chumash culture, and host public lectures would increase opportunities for research and monitoring to better understand, manage, and protect maritime heritage resources in CINMS. Management plan activities directed at interpreting maritime heritage resources for the public provide an avenue to disseminate the results of permitted research and NOAA's inventory efforts. Additionally, continuing to support Chumash community involvement with the Sanctuary Advisory Council helps bring greater awareness to the sensitive cultural resources and Chumash values that are present within sanctuary waters, informing a variety of participating agencies and stakeholder groups.

All of these activities are intended to provide beneficial impacts to the maritime heritage resources in CINMS by supporting the long-term protection, preservation, appreciation of cultural sensitivity, and public appreciation of these resources. The magnitude of the potential beneficial impacts of some of these specific activities would depend on actions undertaken by partner agencies with direct regulatory authority over certain activities or protection of certain resources.

Summary of beneficial impacts on maritime heritage resources

The activities proposed in the revised sanctuary management plan would provide NOAA with increased information to inform resource protection decisions, as well as promote ocean literacy and stewardship related to the cultural and historical setting of CINMS. In combination with continued implementation of sanctuary regulations which afford these resources protection from direct injury, these actions would provide **moderate beneficial** impacts to the historical and cultural setting in CINMS.

5.2.4.2 Adverse Impacts of the Proposed Action on Maritime Heritage Resources

Potential minor disturbance of cultural and historical resources during research, monitoring, and resource protection activities

Minor, unintentional disturbance of maritime heritage resources could result from intentional or accidental contact with the seafloor during research, monitoring, or resource protection activities supporting implementation of the revised sanctuary management plan. These activities could include: vessel operations and maintenance; scuba operations; routine vessel anchoring; deployment of uncrewed systems; seafloor site investigation; and deployment of equipment on the seafloor. All of these activities carry a slight risk of accidental contact with or entanglement of equipment with maritime heritage resources on the seafloor.

The operations of such equipment within CINMS would be periodic and low intensity (i.e., up to 60 ROV deployments per year). Any activities targeted at maritime heritage resources or other cultural resources on the seafloor would primarily be visual reconnaissance surveys associated with historic documentation on last reported positions of ship and aircraft wreck sites. Shipwreck reconnaissance surveys focus on individual sites that are considered "potentially eligible" to determine if they are in fact "eligible" for inclusion on the National Register of

Historic Places. Surveys frequently employed at this level of investigation include visual surveys with no excavation or physical contact with historical artifacts.

If NOAA were to conduct or authorize activities involving systematic, planned physical disturbance to the marine substrate, these activities would require a sanctuary permit and would be evaluated in advance for proximity to locations of properties listed on the National Register of Historic Places, and would not be conducted in the immediate vicinity of documented historical or cultural resources. If such a seafloor project were planned to take place on California bottomlands, a permit would also be needed from the California State Lands Commission. In addition to project permitting, NOAA would implement additional best management practices, as described in Section 3.2.2.1, to avoid accidental contact with unknown resources on the seafloor.

Additionally, per the NHPA as well as Executive Order 13175[73] and NOAA's policies and guidance,[74] ONMS will provide timely notification to local tribal entities (Chumash bands) prior to taking a management action that could potentially adversely affect cultural resources within the sanctuary. Should tribal contacts express interest, questions, or concerns, ONMS will seek to understand and address issues raised. Should the federally-recognized Santa Ynez Band of Chumash Indians wish to engage more fully, ONMS may enter into formal consultation procedures on a government-to-government basis.

The NHPA, amended in 1992, requires that responsible agencies taking action that potentially affects any property with historical, architectural, archaeological, or cultural value that is listed on, or eligible for listing on, the National Register of Historic Places comply with the procedures for consultation and comment issued by the Advisory Council on Historic Preservation (ACHP). The responsible agency also must identify properties affected by the action that are listed on or potentially eligible for listing on the National Register of Historic Places (as described in Chapter 4). ONMS will comply with NHPA Section 106 requirements when federal undertakings, including issuing permits. Any federal undertaking must account for its effect on historic properties (as defined in 54 USC § 306108). Section 106 of the NHPA requires federal agencies to consider the impact of their actions on historic properties.

For the purpose of compliance with the NHPA, an adverse effect is defined as follows: an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register of Historic Places in a manner that would diminish the property's integrity; adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance, or be cumulative (36 C.F.R. 800.5(a)(1)).

Overall, implementing the proposed action would result in **negligible** impacts on the cultural and historical setting in CINMS for the following reasons: (1) Sanctuary-led field activities would occur infrequently, would be periodic, and spread out in space and time; (2) All ONMS

[73] https://www.federalregister.gov/documents/2000/11/09/00-29003/consultation-and-coordination-with-indian-tribal-governments

[74] https://www.legislative.noaa.gov/policybriefs/NOAA%20Tribal%20consultation%20handbook%20111213.pdf

vessels must comply with the operational protocols and procedures in the NOAA Small Boats Policy (NAO 209-125) and ONMS best management practices as described in Section 3.2.2.1, which reduces the risk of adverse impacts.

5.3 Impacts of the No Action Alternative

Under the No Action Alternative, NOAA would continue to implement the current sanctuary management plan, field activities, and existing sanctuary regulations to support management of the sanctuary. In general, the anticipated beneficial and adverse impacts of the No Action Alternative on all resource areas would be of the same type and intensity as the Proposed Action (see Section 5.2), except as described below.

If NOAA decided to proceed with the No Action Alternative, the existing beneficial impacts from managing the sanctuary would continue. For example, sanctuary resources would continue to be managed under guidance from the 2009 management plan and implementation of existing sanctuary regulations; research efforts would provide managers with information to inform decisions related to many resource protection issues; the public would become more educated about sanctuary resources; and important habitat and wildlife would continue to be protected and managed.

If NOAA did not adopt a new sanctuary management plan, NOAA would forgo an opportunity to provide further management clarity and direction for staff, management and research partners, and those seeking to do research and education/outreach work in the sanctuary, among others.

In addition, proceeding with the No Action Alternative would limit NOAA's ability to implement additional resource protections and advance understanding of pressing priority issues that the 2009 management plan did not prioritize. For example:

- Absence of coordinated and focused attention on understanding and responding to climate change pressures and impacts, including a vulnerability assessment, adaptive planning, and research on the role of protected sanctuary habitats in the face of changing ocean conditions;
- Lack of priority efforts to study, assess, and take steps to reduce the introduction of marine debris within the sanctuary;
- Lack of priority efforts to study, assess, and take steps to reduce the introduction and spread of introduced species within the sanctuary;
- Less coordinated focus on reducing vessel ship strikes on whales; and
- Less emphasis on community collaborations and providing support for sustainable recreational fishing activities within the sanctuary.

5.4 Cumulative Effects Analysis

This section presents the methods used to evaluate cumulative impacts, lists projects and management activities that may have cumulative effects when combined with the impacts from the proposed action or alternatives discussed in this EA, and describes the potential cumulative impacts of the proposed action.

The CEQ regulations implementing NEPA define cumulative impacts as "the impact on the environment which results from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 C.F.R. § 1508.7). The CEQ regulations further define cumulative impacts as those that can result from individually minor but collectively significant actions that take place over a period of time. The CEQ guidance for considering cumulative effects states that NEPA documents "should compare the cumulative effects of multiple actions with appropriate national, regional, state, or community goals to determine whether the total effect is significant" (CEQ 1997).

5.4.1 Cumulative Impact Assessment Methods

In general, past, present, and future foreseeable projects and management actions are assessed by topic area. Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects. Interactive effects may be countervailing, where the adverse cumulative effect is less than the sum of the individual effects, or synergistic, where the net adverse effect is greater than the sum of the individual effects (CEQ 1997).

The projects and management activities in Table 5.1 have occurred, are currently occurring, or are anticipated to occur in the reasonably foreseeable future within the study area. NOAA compiled Table 5.1 based on review of active and pending permits issued by the sanctuary, and NOAA staff's knowledge of other existing activities occurring in and around the sanctuary. NOAA determined these activities could contribute to cumulative impacts on the resource areas assessed in Chapter 4.

NOAA considered the effects of these actions in combination with the impacts of the proposed action to determine the overall cumulative impact on the resources in the action area. In conducting this analysis, NOAA used findings from the sanctuary condition report as a baseline for past and present uses of the sanctuary (ONMS 2019). NOAA selected these past, present, and reasonably foreseeable future actions because they are likely to have similar types of impacts within the study area, affect similar resources, or are large enough to have far-reaching effects on a resource.

For the purposes of this analysis, NOAA assumed any future actions in Table 5.1 would be approved and implemented within the next five to 10 years. NOAA considered cumulative effects to be significant if they exceed the capacity of a resource (physical, biological, socioeconomic, historic, and/or cultural) to sustain itself and remain productive. The geographic and temporal scope for the cumulative effects analysis is the same as for the management plan review.

As the proposed action for the sanctuary is related to management of the sanctuary rather than a specific coastal or offshore development action, the cumulative effects described are related primarily to local and regional management of the environment and resources in and adjacent to the sanctuary.

As described in more detail in the subsections below, NOAA found that the combination of implementation of the alternatives with the actions in **Table 5.1** would result in cumulative beneficial impacts to the physical, biological, maritime heritage, and socioeconomic settings, as

well as to existing human uses of the sanctuary. The proposed action's contribution to any adverse cumulative impacts would be **negligible** for all resource areas because of the low intensity and frequency of ONMS-led field activities in comparison to existing uses of the area, and also due to sanctuary operational protocols that would reduce or avoid adverse impacts as much as possible. Therefore, the proposed action **would not result in significant adverse cumulative effects** on any resource area.

Table 5.1. Other federal and non-federal actions with potential to contribute to cumulative impacts.

Project Name	Project Location	Project Sponsor or Management Entity	Project Description	Estimated Completion Date
2018 California Ocean Litter Prevention Strategy	California state waters	California Ocean Protection Council (OPC) and NOAA Marine Debris Program	This action plan provides a holistic, collaborative strategy for addressing ocean litter in California, with a focus on reducing land-based litter at its source. The plan is expected to guide statewide management activities and influence grant funding. For more information: https://opc.ca.gov/programs-summary/marine-pollution/oceanlitterstrategyproject/	2024 (end of 6-year strategic planning period)
California MPA Decadal Review	California state waters, including within CINMS	California Department of Fish and Wildlife	From 2020 through 2022, CDFW is leading a statewide performance review of California's MPAs, to culminate in a report to the California Fish and Game Commission. ONMS is cooperating with the review and will use findings to help evaluate the state/NOAA network of Channel Islands marine reserves and conservation areas in consideration of possible future adaptive management actions. For more information about state MPAs: https://wildlife.ca.gov/Conservation/Marine/MPAs	December 2022
Nomination of Chumash Heritage National Marine Sanctuary	Offshore from San Luis Obispo and Santa Barbara County coasts, adjoining CINMS	NOAA ONMS	This proposed sanctuary was accepted by NOAA as a nominated site in 2015. NOAA has not yet made a decision on whether to start a designation process. Nomination package authors envision a sanctuary that would conduct management activities similar to those found at CINMS. For more information: https://nominate.noaa.gov/nominations/	Undetermined

Project Name	Project Location	Project Sponsor or Management Entity	Project Description	Estimated Completion Date
Endangered Species Conservation under the Endangered Species Act	U.S. Federal waters, could affect sanctuary and action area depending upon the range of listed species.	NOAA NMFS and USFWS	Ongoing activity. NMFS and USFWS developing and implementing recovery plans and conducting five-year status reviews for ESA-listed species. Consulting on federal actions that may affect a listed species or its designated critical habitat. Issuing permits that authorize scientific research on listed species.	Ongoing
WhaleSafe	Santa Barbara Channel, including within CINMS	Benioff Ocean Initiative	WhaleSafe is an online whale protection reporting tool that tracks whale and shipping activity in the Santa Barbara Channel to assist with influencing shipping behavior and reducing the risk of whale-ship collisions. The tool features acoustic detection of whales, blue whale habitat modeling, display of visual whale sightings, and ship speed data in relation to CINMS vessel speed reduction requests. For more information: https://whalesafe.com/whale-safe-tool/	Ongoing
Channel Islands National Park Management	Five Channel Islands and adjacent 1 NM of surrounding waters, partially overlapping CINMS	National Park Service	The NPS protects and interprets the natural ecosystems and cultural values of the Channel Islands and adjacent marine waters, providing present and future generations appropriate opportunities to experience and understand park resources and values. Works in partnership with CINMS to assure resource protection, enforcement, volunteer program implementation, emergency response, and more. For more information: https://www.nps.gov/chis/index.htm	Ongoing

Project Name	Project Location	Project Sponsor or Management Entity	Project Description	Estimated Completion Date
Future Potential Commercial Leasing of Aquaculture Opportunity Areas	Southern California, potentially adjacent to CINMS	NOAA National Marine Fisheries Service	NMFS is leading a process to evaluate the suitability of areas for commercial aquaculture development, including consideration of Southern California waters and potential locations adjacent to CINMS. For more information: https://www.fisheries.noaa.gov/national/aquaculture/aquaculture-opportunity-areas	2022
Proposed Shipping Lane and Area To Be Avoided Modifications	Santa Barbara Channel and areas northwest of CINMS boundary	U.S. Delegation to the International Maritime Organization	To help reduce the risk of fatal ship collisions with whales, a proposal is under consideration (as of June 2021) to request that the International Maritime Organization expand the boundaries of the current Area To Be Avoided (ATBA) that surrounds CINMS, slightly extending to northwest of CINMS. The proposal also includes a slight extension of the west end of the traffic separation scheme within the Santa Barbara Channel. These proposed changes were first developed by the Sanctuary Advisory Council's Marine Shipping Working Group.[75] See also Strategy VT-2 in the draft management plan. IMO consideration and action/adoption is expected in 2022.	2022 (IMO action expected)
Renewable offshore energy development and decommission-ing of oil and gas infrastructure	Northwest of CINMS (for wind energy zone as of mid-2021), and the Santa Barbara Channel (for rig decommissi oning)	Bureau of Ocean Energy Management (BOEM)	BOEM is evaluating the suitability and potential impacts of offshore renewable wind energy projects off the West Coast, including a zone north of CINMS. BOEM and the State of California are also involved in the assessment and processing of offshore oil and gas infrastructure decommissioning, to include potential future rig removal of platforms adjacent to CINMS.	Ongoing evaluation processes, in-water activities not expected for many years.

[75] https://channelislands.noaa.gov/sac/pdfs/mswg_final_report_may2016.pdf

Project Name	Project Location	Project Sponsor or Management Entity	Project Description	Estimated Completion Date
Research activities from local and regional institutions	Throughout CINMS	Various organizations, including federal and state agencies, universities, and research institutions.	Research and monitoring activities would generally include the following types of projects occurring throughout the sanctuary: vessel operations; deployment of research equipment (ROVs, AUVs, UAS, hydrophones, gliders, subsurface moorings, weather buoys); active acoustic equipment; collection of seafloor substrate and other specimens; bottom trawl surveys by NMFS fisheries science centers; aerial photographic surveys; marine debris removal. These types of activities are generally permitted under the sanctuary's permit authorities with specific terms and conditions applied to minimize any impact on animal and plant life and other sanctuary resources.	Ongoing
Fisheries Management actions	State and federal waters within and adjacent to CINMS	NMFS, Pacific Fishery Management Council, California Department of Fish and Wildlife, and California Fish and Game Commission.	Ongoing activity. Implementing and amending fishery management plans and associated fishing regulations, issuing fishing permits, designation of essential fish habitat and habitat areas of particular concern, enforcing fisheries regulations. For more information: https://www.fisheries.noaa.gov/region/west-coast#fisheries https://www.pcouncil.org/ https://wildlife.ca.gov/Regions/Marine https://fgc.ca.gov/	Ongoing
Point Mugu Sea Range Environmental Review	36,000 square miles of offshore waters off the southern and central coast, overlapping more than 70% of CINMS	U.S. Navy	Preparation of an Environmental Impact Statement (EIS)/Overseas EIS (OEIS) to assess potential environmental consequences associated with continuing activities addressed in the Point Mugu Sea Range. Proposed increase in frequency of military testing, but no activity changes within CINMS. As of mid-2021, draft documents had been released. For more information: https://pmsr-eis.com/	Fall 2021: Record of Decision expected

5.4.2 Cumulative Impacts of the Proposed Action

As described in Section 5.2, implementing the proposed action would have both beneficial and some adverse impacts on the resource areas described in Chapter 4, including habitats, wildlife, maritime heritage resources, and other marine uses. Overall, NOAA found that none of these benefits or adverse impacts would rise to the level of significant.

Table 5.1 summarizes other federal and non-federal activities in the action area that could contribute to cumulative impacts, when combined with the Proposed Action. Among these projects are several expected to further research and monitoring in the sanctuary, help protect whales from ship strikes, promote public stewardship of marine resources, enforce regulations related to marine resource protection, implement and evaluate state MPAs, reduce sources of marine debris, and support sustainable management of offshore resources, including fisheries. These projects, in conjunction with the proposed action, would have overlapping beneficial impacts on the tourism industry, commercial fishing, and the research community in the coastal communities near the sanctuary.

Several other organizations, including federal and state agencies, are involved in the protection of marine resources in the region. These organizations, including NMFS, NPS, CDFW and the USCG, conduct research and monitoring activities applied to resource protection within and adjacent to sanctuary waters. These agencies also assist with emergency response situations (e.g., oil spills, grounded vessels), regulate activities to help protect marine resources, and cooperatively enforce regulations. In combination with these efforts, implementation of existing sanctuary regulations and future sanctuary management efforts would continue to benefit and protect biological resources in the sanctuary. Similarly, these regulatory entities and other research organizations conduct similar fieldwork activities to those included in the Proposed Action, and would likely have similar types and intensities of impact on habitat, ecosystems, marine life, and maritime heritage resources to those described in Section 5.2.

Sanctuary waters are experiencing the effects of climate-related stressors, including increasing ocean acidification, water temperatures, deoxygenation, and changing oceanographic processes. These stressors are expected to worsen over the coming decades, which in turn is expected to adversely affect ecosystem services provided by the sanctuary.[76] As part of implementing the Proposed Action, NOAA would evaluate climate change resource vulnerabilities, develop adaptation plans, and incorporate changing conditions into management decisions in order to reduce adverse cumulative effects from NOAA's resource protection, education, and operations activities.

Some ongoing or future industrial, commercial and Department of Defense activities could impact sanctuary resources, and are therefore also included in Table 5.1. These activities include potential renewable offshore energy development, oil and gas platform decommissioning, military training exercises, and potential leasing of ocean areas for commercial aquaculture operations. For example, future development of wind energy projects, outside of CINMS but

[76] See CINMS Climate Change Impacts Profile: https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/docs/20200511-cinms-climate-change-impacts-report.pdf

potentially in close proximity, could affect migratory bird or marine mammal species that feed within the sanctuary. Possible commercial aquaculture operations outside of CINMS could introduce non-native species or water pollution into the sanctuary. Future decommissioning of offshore oil and gas platforms adjacent to CINMS would alter or eliminate rig habitats and increase noise levels, affecting local marine species. Although all of these projects will not occur within the sanctuary, their implementation could cause additional vessel traffic, increased ocean noise, and potential disruption to species habitats and migratory corridors.

Overall, the incremental impact of the proposed action in combination with ongoing resource protection, research, and stewardship programs, and ongoing or future commercial and industrial activities in the region, would be **negligible** for all resources areas because of the relatively low intensity and frequency of ONMS-led field activities, and because of ONMS' use of operational protocols to reduce or avoid adverse impacts as much as possible. The proposed action **would not result in significant adverse cumulative effects** on any resource areas.

Appendices

Common dolphins swim through Channel Islands National Marine Sanctuary. Photo: Robert Schwemmer/NOAA

A. Public Scoping Comment Summary

B. Additional Compliance Requirements

C. Acronyms

D. References

Appendix A: Public Scoping Comment Summary

CINMS Management Plan Revision Process

Summary of Public Scoping Comments Received

(October 1 through November 15, 2019)[77]

Issues Raised and Actions Suggested

1. Budgeting

Issue Summary: Commenters supported funding for major CINMS program areas: resource protection, research and monitoring, and education and outreach.

Actions Suggested by Commenters:

- 1.1 A few comments suggested increasing budgeted appropriations for staffing and other program expenses.
- 1.2 A number of comments suggested securing funding for activities through partnerships with external organizations (such as the Benioff Ocean Initiative) and government agencies. Potential partnerships, including those that may yield additional resources for program activities, are included in the discussion of comments that address other issues.

2. Carbon Mitigation/Sequestration

Issue Summary: Some comments raised the role of ONMS in mitigating emissions of greenhouse gases and suggested actions to promote the sequestration of atmospheric carbon within the sanctuary.

Actions Suggested by Commenters:

- 2.1 Examine the contributions of sanctuary program activity to climate change and implement best management practices to reduce the carbon footprint of sanctuary operations.
- 2.2 Adopt long-term goals for carbon sequestration, rather than just monitoring and reducing emissions.
- 2.3 Permit, actively promote, or directly implement projects that would create carbon sinks or otherwise contribute to carbon sequestration. Such projects could include eelgrass restoration and/or artificial reefs designed to promote kelp forest growth.

3. Climate/Ocean Acidification Effects

Issue Summary: Climate change and ocean acidification underpins some of the most significant changes, shocks, and threats to sanctuary resources. The previous management plan did not sufficiently anticipate climate related effects over the last 10 years. Climate-related perturbations exacerbate other stressors that are more directly human-caused.

[77] This document provides a consolidated summary. For full records of public scoping comments submitted for NOAA's Channel Islands National Marine Sanctuary, visit the regulations.gov website and enter docket number "NOAA-NOS-2019-0110."

Actions Suggested by Commenters:

- 3.1 Develop a flexible climate action plan to guide mitigation, adaptation, and response to acute events (such as marine heatwaves).
- 3.2 Consider impacts of harmful algal blooms.
- 3.3 Consider impacts of sea level rise.
- 3.4 Partner with local foundations, student volunteers, and universities on monitoring, mitigation of climate effects, and education.
- 3.5 Conduct a public education campaign on climate change effects and how the public can help to mitigate such effects.
- 3.6 Keep the condition report "fresh" by issuing small feature stories on impacts of acute events on the sanctuary.
- 3.7 Clearly identify climate-linked pressures in the management plan.
- 3.8 Reduce the carbon footprint of CINMS operations and activities.
- 3.9 Implement rapid assessment, monitoring and response to climate-related threats to resources, including mitigation.
- 3.10 Monitor climate-related changes to species distribution and habitat. Assess the resulting need for sanctuary boundary changes.
- 3.11 Establish a legal framework for rapid changes to sanctuary boundaries to respond to climate-related shifts.
- 3.12 Support research, such as by the UCSB Caselle Lab, to determine whether MPAs can mitigate climate change effects.
- 3.13 Research how other environmental factors, such as salinity, wind, currents, and particulates, may interact with ocean acidification.
- 3.14 Consider climate adaptation experiences of other California sanctuaries and marine parks.
- 3.15 Expand sanctuary boundaries and MPAs to boost the climate change resilience of species and conserve habitat.
- 3.16 Maintain regulations in MPAs.

4. Commercial Fishing

Issue Summary: A comment raised concerns that the area within the sanctuary that is open to commercial groundfishing is already too small.

Actions Suggested by Commenters:

- 4.1 Do not close additional areas to commercial harvest of rockfish.
- 4.2 Make more areas available to harvest of groundfish, as the availability of descending devices decreases fishing pressure on deepwater rockfish.

5. Consumptive Recreation

Issue Summary: A number of comments proposed actions that ONMS should take to promote and enhance recreational fishing in the sanctuary:

- A series of form letters associated with local recreational fishing users and businesses state that recreational anglers are the number one users of the sanctuary in terms of visitation hours and dollars spent.
- Comments from a recreational fishing organization state that sanctuary MPA regulations are excessive because MPAs primarily protect the benthic community and the federal portions of sanctuary MPAs are generally in deeper waters than recreational anglers are allowed to fish for bottom-dwelling species. The comments also state that boat-based anglers who fish for pelagic species are subject to restrictions from both MPAs and temporary closures associated with military exercises.
- Access to sanctuary resources is important for both consumptive and non-consumptive recreational use.

Actions Suggested by Commenters:

- 5.1 Tailor visitor facilities on the islands and the mainland, potentially in partnership with the Channel Islands National Park, to promote both boat and shore-based recreational angling.
- 5.2 Develop a framework by which artificial reefs can be permitted within the sanctuary, and potentially construct artificial reefs. Proposed areas for artificial reefs are Anacapa Island (two 10-acre reefs), Santa Cruz Island (six 10-acre reefs), Santa Rosa Island (six 10-acre reefs), San Miguel Island (two 10-acre reefs). Within each reefing area, create custom restoration reefs designed with a variety of opening sizes, to protect and provide protected spaces for reproduction of certain depleted marine species (e.g., abalone) while preventing predator entry.
- 5.3 Alter the Gull Island, Footprint, and Santa Barbara Island Marine Reserves to allow for take of pelagic fish species, comparable to the Anacapa State Marine Conservation Area.
- 5.4 Expand no-take areas of marine reserves and marine conservation areas to enhance the beneficial "spillover" effects of these areas for recreational fishing.
- 5.5 Change marine reserve regulations to allow visitors to fish at Scorpion Anchorage.

6. Department of Defense activity

Issue Summary: The Department of Defense conducts a range of testing and training activity nearby the sanctuary, some of which involves infrastructure within the sanctuary.

Actions Suggested by Commenters:

- 6.1 Maintain existing exemptions to sanctuary regulations.
- 6.2 Clarify or define sanctuary processes that support infrastructure on the range, e.g., fiber optic cable to Santa Cruz Island.

7. Ecological Threats: Invasive Species

Issue Summary: Several comments raised the likelihood that ecological pressure from invasive species would likely increase in the future with increasing factors such as changing water temperatures and increased vessel activity (and associated ballast water discharge). Algal species mentioned included *Sargassum horneri* and *Undaria Pinnatifida*.

Actions Suggested by Commenters:

- 7.1 Conduct long-term monitoring of invasive species. Incorporate monitoring data from the NPS kelp forest surveys and Partnership for Interdisciplinary Studies of Coastal Oceans ("PISCO") long-term sampling. Continue to support monitoring efforts by sharing vessel use, data, etc.
- 7.2 Develop and implement response plans to research, monitor, and mitigate (such as through control, management, and culling interventions) invasive species.
- 7.3 Develop capabilities to predict what species may be introduced in the sanctuary in the future.
- 7.4 Suggested partners include Channel Islands National Park, California Department of Fish and Wildlife, and University of California Santa Barbara.

8. Ecosystem Connectivity

Issue Summary: Ecosystem connectivity and migration corridors are important to ecosystem function of the sanctuary.

Actions Suggested by Commenters:

- 8.1 In determining future boundaries for the sanctuary and for MPAs within the sanctuary, consider migration corridors and connectivity among MPAs (including those along the mainland coast).

9. Existence/Economic Value

Issue Summary: A number of comments cited the sanctuary's existence value or economic value as a site for outdoor recreation, habitat for wildlife, example of good governance for conservation, and as an heirloom resource for future generations.

Actions Suggested by Commenters:

- 9.1 Maintain the sanctuary designation and existing regulations, including the prohibition on new oil and gas activity.
- 9.2 Expand marine reserves to increase species density and recreational value.
- 9.3 Explore ways to expand boundaries and increase protections.
- 9.4 Continue to use socioeconomic reports to highlight the benefits of protecting sanctuary resources over consumptive and extractive activities.

10. Fishing Pressure

Issue Summary: Multiple commenters raised the need for better information on location and level of fishing activity. Species abundance and diversity have declined as resource users have "fished our way down the food chain" around the northern Channel Islands. The condition report and other studies have linked MPAs and increased biomass, both inside and outside MPAs, for species under high commercial and recreational fishing pressure.

Actions Suggested by Commenters:

- 10.1 Increase MPA enforcement effort.
- 10.2 Expand sanctuary boundaries.

- 10.3 Expand no-take areas with no exceptions for pelagic species. The comment cited the Galapagos Islands as a model for marine reserve protections that benefits the tourism economy.
- 10.4 Prohibit certain types of fishing gear, such as nylon driftnets, because of the biomass that they remove from the water.
- 10.5 Consider temporal zoning and closures to give living resources time to recover and increase species diversity and resiliency.
- 10.6 Collect higher resolution data/observations to monitor impacts of fishing and management actions. Explore enhancing data acquisition from radar stations, drones, satellites, electronic monitoring, AIS recorders on small vessels, and volunteers (using a combination of the Whale Alert app and the Sanctuary Aerial Monitoring and Spatial Analysis Program, or similar program).
- 10.7 Conduct data deficient (fisheries) analyses in conjunction with attribution science.
- 10.8 Census approach to fishery management: manage fisheries by conducting fish censuses inside and outside the protected areas, and setting quotas based on the difference (see additional detail in comment letter NOAA-NOS-2019-0110-0028[78]).

11. Habitat & Living Resources/Nonconsumptive Recreation

Issue Summary: Several comments expressed concern about the impacts on habitats, wildlife, and ecosystems within the sanctuary from various pressures. Such pressures include climate change, ocean acidification, ship traffic, recreational use, invasive species, commercial fishing, and nearby mineral extraction. Comments also addressed species with declining or endangered populations. A few comments brought up recent studies that show the effectiveness of marine protected areas.

Several comments also addressed the importance of the sanctuary for non-consumptive recreation, both through established operators/outfitters and by nearby residents. One comment noted that the Santa Barbara Channel is a growing destination for seabird viewing.

Actions Suggested by Commenters:

- 11.1 Continue and build new partnerships to protect species and habitats, and to enforce sanctuary regulations.
- 11.2 Expand boundaries to include the remainder of the Santa Barbara Channel, and northward to the boundary of the proposed Chumash Heritage national marine sanctuary site.
- 11.3 Based on evidence of their effectiveness, expand marine reserves to increase species diversity and abundance, as well as to protect whale habitat and migration areas. One comment proposed expanding marine reserves to encompass the north side of all four Northern Channel Islands and the entirety of waters surrounding Anacapa Island.
- 11.4 Expand ROV exploration of deep sea corals.
- 11.5 Engage in active restoration of abalone, otters, and eelgrass.
- 11.6 Develop a list of indicator species and use them to evaluate the effectiveness of MPAs and other resource protection. Communicate monitoring findings to the public.

[78] https://www.regulations.gov/document?D=NOAA-NOS-2019-0110-0028

- 11.7 Engage in collaborative research and monitoring, including with CDFW, on abalone and evaluation of the MPA network.
- 11.8 Expand partnership with the U.S. Fish and Wildlife Service to monitor migratory birds and improve outcomes for endangered species.
- 11.9 Consider habitat restoration in and around MPAs.
- 11.10 Continue current regulations within marine protected areas.
- 11.11 Focus research efforts on impacts of human activity and how to mitigate them.
- 11.12 Increase visitor education on potential impacts of recreational use.
- 11.13 Address guidelines for permitting and construction of artificial reefs in the management plan.

12. Hazardous Waste

Issue Summary: A comment raised concerns about a disused dumping area for radioactive waste near Santa Cruz Island (outside the CINMS boundary). According to the commenter, the site also contains military waste from the Navy.

Actions Suggested by Commenters:

- 12.1 Partner with the Navy to assess the deterioration of radioactive waste containers and monitor any potential impacts to marine life.

13. Inspire Momentum

Issue Summary: Commenters suggested various program activities to inspire both wonder in and protection of sanctuary resources, as well as momentum for broader ocean health.

Actions Suggested by Commenters:

- 13.1 Provide more science training or funding to K-12 schools and other education providers such as museums and nonprofits. Expand educational programs beyond one-time field trips to include ongoing experiences such as beach cleanups, letter writing to elected officials, citizen science, and broader integration with curricula. One comment supported including messaging on everyday choices that affect conservation of sanctuary resources, such as reducing water use and using renewable energy.
- 13.2 Restart formal education projects that inspire children's stewardship ethic, such as Los Marineros.
- 13.3 Use more visual aids, such as parade floats or flying balloon drones of charismatic megafauna, to inspire students.
- 13.4 Continue use of the NMS "whale tail" logo.
- 13.5 Engage in opportunistic outreach opportunities, such as tables at Patagonia retail locations.
- 13.6 Strengthen the partnership with Channel Islands Boating Center to offer more hands-on learning opportunities to community colleges and high schools.
- 13.7 Engage with local advocacy organizations to help develop their environmental positions and agendas. Examples include Chumash groups, Surfrider Foundation, and local Republican Party organizations.

- 13.8 Conduct public outreach campaigns to highlight profiles of sanctuary users who depend on the sanctuary for their livelihoods, such as port workers or scientists.
- 13.9 Empower youth to engage in community organizing through paid internships, volunteer programs, and job skills workshops.
- 13.10 Use youth activism on climate change as a conduit for delivering conservation messages more broadly.
- 13.11 Look to potential partnerships and model programs: Fund for Santa Barbara, Quasars to SeaStars (high school citizen science program), Santa Barbara Natural History Museum, Wilderness Youth Project, Santa Barbara Channel Keeper, Explore Ecology, Heal the Ocean.
- 13.12 Continue to support the work of the Channel Islands Naturalist Corps.

14. Interagency Collaboration

Issue Summary: A few commenters suggested opportunities for maintaining and expanding interagency collaboration, especially with respect to regulation and enforcement.

Actions Suggested by Commenters:

- 14.1 Expand cooperation and coordination with the CDFW, USCG, and NOAA Office of Law Enforcement to improve enforcement of regulations (such as prohibitions on fishing in MPAs, illegal discharges, and seafloor disturbance).
- 14.2 Share lessons learned regarding resource management and program successes with domestic partners, with other sanctuaries, and internationally.
- 14.3 CDFW commented that changes to the sanctuary's regulations and the MPA network are not needed at this time, and that CDFW would need to be included in developing any MPA regulatory change proposals in the future.

15. Mainland Air Quality

Issue Summary: A comment expressed concern about air quality in Ojai and Simi Valley.

Actions Suggested by Commenters:

- 15.1 NOAA should study the impact of pollutants [from ship traffic] on air quality in Ojai and Simi Valley.

16. Marine Debris

Issue Summary: Marine debris adversely affects sanctuary resources in the water column and the seafloor. Comments addressed the role of ONMS in preventing, removing, and assessing marine debris.

Actions Suggested by Commenters:

- 16.1 Work with the marine debris community to address marine debris sources.
- 16.2 Address sources of marine debris. Pursue partnerships with entities that produce, distribute, or discharge marine debris material, such as Starbucks and commercial lobster harvesters.
- 16.3 Prohibit plastic pollution.

- 16.4 Improve understanding of marine debris sources, types (such as microplastics or fishing gear) locations, and impacts (such as entanglement and ingestion). Track changes in marine debris quantity and distribution.
- 16.5 Continue microplastics research with specific relevance to the Santa Barbara Channel and the Channel Islands. Apply existing nanoplastics work by the UCSB Bren School and NCEAS.
- 16.6 Conduct or fund more marine debris removal, including through partnerships such as training programs for fishers. Continue removal projects that involve NGOs, tour operators, and the public (including high school students with community service requirements).
- 16.7 Rapidly assess marine debris threats and focus efforts on response actions.
- 16.8 Use volunteers and citizen science efforts, such as with visitors to the islands, to remove and record debris. Consider the Adventure Scientists Program, which trains recreational users, as a program model.
- 16.9 Provide better information to the public on marine debris impacts in the sanctuary to help message the need for broader action to reduce marine debris and its impacts.

17. Maritime and Cultural Heritage/Indigenous Knowledge

Issue Summary: Commenters raised issues relating to the *Conception* tragedy, Chumash heritage and collaboration, and traditional ecological knowledge.

Actions Suggested by Commenters:

- 17.1 Designate a "marine preserve" at the site of the M/V *Conception* tragedy.
- 17.2 Work with interagency and other appropriate partners to incorporate Chumash input into interpretive signage on the islands.
- 17.3 Collaborate and/or consult with all Chumash bands, regardless of federal recognition status, on sanctuary management.
- 17.4 ONMS should understand and remove barriers to the continuation of Indigenous traditional knowledge. ONMS should consider incorporating best practices from the NOAA Sea Grant Report, "Traditional and Local Knowledge: A Vision for the Sea Grant Network" in science-based management, including prioritization of research topics.

18. Noise & Light Pollution

Issue Summary: Human activities that generate noise and light pollution in the sanctuary are intense and increasing. Noise adversely affects the ability of wildlife to feed, navigate, communicate, and reproduce. In addition, CINMS can act as a noise sanctuary. Artificial light can attract, disturb, confuse, and disorient marine wildlife. In addition, the Channel Islands are significant as a dark sky area for amateur astronomers.

Actions Suggested by Commenters:

- 18.1 Continue to monitor and assess ocean noise in order to better implement strategies to mitigate such noise impacts.

- 18.2 Expand the existing Area to be Avoided (ATBA) or the sanctuary's outer boundary to increase the area of noise protection. Expand sanctuary boundaries to include more of the Santa Barbara Channel TSS (shipping lane), and to regulate ship speed.
- 18.3 Analyze artificial light emissions and implement strategies to mitigate light pollution.
- 18.4 Exclude drilling and boating from marine protected areas.

19. Oil & Gas Risks

Issue Summary: Commenters expressed concern about the continued presence of offshore oil and gas extraction activity near the sanctuary, and its effects on sanctuary resources. These effects may include related vessel traffic, noise, seismic surveys, infrastructure construction, and spills. Multiple comments cited the Refugio Beach oil spill. Some comments were also concerned that recent Presidential Executive Orders would lead to more oil and gas exploration, development and extraction near the sanctuary. One commenter cited BOEM's proposed 2017-2022 and 2019-2024 Leasing Programs, released in 2014 and 2016 respectively, as causes for concern.

Actions Suggested by Commenters:

- 19.1 Advocate for increased fuel economy requirements to decrease demand for oil extraction near the sanctuary.
- 19.2 Increase public awareness of oil and gas activity near the sanctuary and its impacts.
- 19.3 Use deep-sea coral monitoring to track the impacts of hydrocarbon extraction, including methane hydrate harvesting.
- 19.4 Assess potential impacts, and monitor and mitigate actual impacts, of new proposed oil and gas development near the sanctuary.
- 19.5 Conduct monitoring to track impacts of oil and gas activity on sanctuary resources.
- 19.6 Use FEMA planning as a model for rapid response planning.
- 19.7 Add a no-leasing buffer around the sanctuary, possibly by expanding sanctuary boundaries.
- 19.8 Continue prohibition on oil and gas development in the sanctuary and continue to enforce this prohibition.

20. Oil Platform Decommissioning

Issue Summary: A few comments addressed the impending decommissioning of offshore oil platforms near the sanctuary. One raised concerns about the impacts of decommissioning activities on sanctuary resources. Other comments addressed the potential habitat value of residual infrastructure.

Actions Suggested by Commenters:

- 20.1 Develop oil spill contingency plans.
- 20.2 Actively monitor sanctuary resources to assess impacts of decommissioning activities.
- 20.3 Address decommissioning impacts to the sanctuary in the EIS.
- 20.4 Identify infrastructure that should be left in place as habitat.

- 20.5 Remove oil platforms near the sanctuary.
- 20.6 As oil platforms are decommissioned, ensure removal of spent jackets and other platform components.
- 20.7 Expand sanctuary boundaries to encompass areas previously precluded from designation by the presence of oil platforms.

21. Operational Risks

Actions Suggested by Commenters:

- 21.1 Develop a vessel management plan.

22. Other Developments - Aquaculture

Issue Summary: Interest in commercial marine aquaculture is increasing.

Actions Suggested by Commenters:

- 22.1 Consider the potential ecosystem benefits, especially for shellfish and kelp, of allowing aquaculture in and around the sanctuary with strict permitting standards.
- 22.2 Be cautious of allowing any aquaculture near the sanctuary that may have adverse environmental impacts such as the introduction of pathogens, pollutants, and exotic species.

23. Other Developments - Renewable Energy

Issue Summary: Waters near the CINMS boundaries are presently under consideration for major floating offshore wind electrical generating projects and related subsea electrical transmission lines. Such projects may have regional scale impacts and affect living marine resources, such as birds.

Actions Suggested by Commenters:

- 23.1 Take a proactive and precautionary role, as a sister agency to the Bureau of Ocean Energy Management (BOEM), in responding to floating offshore wind energy proposals.

24. Other Activities - Unmanned Systems

Actions Suggested by Commenters:

- 24.1 Address the use of unmanned aircraft systems in the sanctuary.

25. Political Priorities

Issue Summary: A number of comments addressed perceived risk that the Administration would seek to reduce the area of the sanctuary. One comment mentioned advocacy by conservation groups to protect 30% of the world's ocean by 2030.

Actions Suggested by Commenters:

- 25.1 Maintain boundaries.
- 25.2 Expand boundaries north to Cambria.
- 25.3 Work with national advocacy groups in Washington, D.C. to build support for maintaining sanctuary regulations.

26. Program Evaluation

Issue Summary: Two comments addressed opportunities and approaches to conduct program evaluation.

Actions Suggested by Commenters:

- 26.1 Apply socioeconomic research beyond understanding recreational activity; use attributional science on human activity to evaluate effectiveness of management actions, including the MPA network.
- 26.2 Seek out models of policy flexibility from other agencies.
- 26.3 Develop indicators to measure consequences of management actions in the MPA network, working with BOEM and other partners.

27. Researcher Access

Issue Summary: Two comments addressed access to the sanctuary by researchers and permitting for research.

Actions Suggested by Commenters:

- 27.1 Remove barriers to access and specimen collection, such as permitting.
- 27.2 Work with the Channel Islands National Park, The Nature Conservancy, and universities to continue to allow research activity in and around the sanctuary.

28. Shipping

Issue Summary: Several comments addressed the increased risk to wildlife and air quality from increased marine shipping. Commenters raised concerns that the impending Port Hueneme expansion and increases in cruise ship transits will combine with overall global trends in maritime commerce to increase ship traffic through the sanctuary. In addition, another comment raised concern that the IMO's extension of low sulfur fuel standards to international waters may cause additional ship traffic to reroute to the Santa Barbara Channel and through the sanctuary.

The speed and frequency of vessel transits pose a risk to whales in the sanctuary. One comment cited research from the International Monetary Fund calculating that each great whale sequesters around 33 tons of carbon dioxide, equivalent to thousands of trees, and provides an average value of over $2 million dollars per whale, easily over U.S. $1 trillion for the current stock of great whales. One comment argues that NOAA is required under the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) to take stronger regulatory action to protect whales. Reducing vessel speed also reduces fuel consumption and improves air quality in and around the Santa Barbara Channel.

Actions Suggested by Commenters:

- 28.1 Increase public outreach for the vessel speed reduction (VSR) program.
- 28.2 Research how increased ship traffic will affect management of sanctuary resources.
- 28.3 Expand the VSR program to include more participants, including cruise ships.

- 28.4 Incorporate elements of U.S. Representative Alan Lowenthal's proposed Blue Whales and Blue Skies Act into the management plan.
- 28.5 In the NEPA review for the management plan, discuss the VSR program's environmental benefits, including its benefits to air quality.
- 28.6 Expand the sanctuary boundary and reroute shipping traffic outside the sanctuary.
- 28.7 Continue to engage with Air Pollution Control Districts and the California Air Resources Board on diesel emissions and vessel impacts to whales.
- 28.8 Engage with Port Hueneme to expand participation in the VSR program through a public-private partnership and monetary incentive program.
- 28.9 Seek third-party funding, such as through corporate sponsorships, for VSR incentive payments.
- 28.10 Continue to work with the National Marine Fisheries Service on the Draft Revised Recovery Plan for the Blue Whale.
- 28.11 Consider the recommendations of the Sanctuary Advisory Council's Marine Shipping Working Group, including expanding the Area to be Avoided (ATBA) and moving the shipping channel (Traffic Separation Scheme) further offshore. Other comments suggested moving the shipping channel to the south side of the islands.
- 28.12 Establish speed limits for vessels within the sanctuary, similar to speed limits on the East Coast for northern right whales.

29. Socioeconomic & Environmental Justice

Issue Summary: Several comments raised socioeconomic and environmental justice concerns about the demographics of visitors to the sanctuary and the reach of education programs.

Actions Suggested by Commenters:

- 29.1 Ensure that all aspects of education and outreach include strong consideration and inclusion of diverse audiences.
- 29.2 Conduct a demographic study of visitation to the sanctuary.
- 29.3 Work with other government agencies to be more inclusive of minorities and language minorities.
- 29.4 Explore new partnerships to expand on-site educational, non-consumptive recreation, and other visitation opportunities for underserved populations. Such populations may include lower income students and households, and members of the Chumash community. The Santa Barbara Channelkeeper dive program is an example of such a program. Funding may be available from the Fund for Santa Barbara and the Sara Miller McCune Foundation.
- 29.5 Explore partnerships to promote water safety skills for underserved populations.
- 29.6 Expand the number of transportation providers for recreational access beyond Island Packers.
- 29.7 Officially define Chumash rights, claims, and privileges with respect to sanctuary resources.

30. Technical/Procedural Comments

Issue Summary: Two comments provided technical and procedural recommendations with respect to the preparation of an environmental review document.

Actions Suggested by Commenters:

- 30.1 Technical recommendations were provided by the Environmental Protection Agency regarding preparation of an environmental assessment or environmental impact statement (see comment letter NOAA-NOS-2019-0110-0053 for details).
- 30.2 Include public health considerations in the NEPA review.
- 30.3 Incorporate new research and scientific advances into consideration of new management actions.

31. Visitor/Community Engagement

Issue Summary: Several comments suggested opportunities for augmenting engagement with visitors and the community to raise awareness about the sanctuary, build public support for its conservation, and increase compliance with regulations.

Actions Suggested by Commenters:

- 31.1 Continue to partner with CDFW on creating outreach materials on sanctuary and state resources.
- 31.2 Continue to collaborate with the community on planning and management of the sanctuary, and seek public input more often than once every 10 years.
- 31.3 Continue to promote the sanctuary through outreach, social media, and stakeholder interaction. These efforts should include information on how to access sanctuary resources, and should extend beyond regular recreational and commercial users, including targeting lower income constituencies.
- 31.4 Increase outreach to resource users to increase regulatory compliance.
- 31.5 More actively promote fishing and other consumptive recreation through advertising, education (to sportfishing organizations), and website content.
- 31.6 Consider resurrecting the Alol'koy (printed sanctuary newsletter) or similar outreach materials.
- 31.7 Conduct an assessment of how to most effectively raise public awareness about the sanctuary.
- 31.8 Create a lecture series for local audiences.
- 31.9 Build a visitor center or increase CINMS presence at existing visitor centers.
- 31.10 Designate a contact person in the community to build educational partnerships.
- 31.11 Continue to partner with the UCSB Bren School on projects to inform sanctuary management.
- 31.12 Consider partnerships with private owners of aircraft to assist with citizen science efforts.
- 31.13 Continue and increase support to partners, including Channel Islands Naturalist Corps Volunteers, Native American Chumash, University of California-Santa Barbara

ocean sciences, other sites within the National Marine Sanctuary System, the Sierra Club, Surfrider Foundation, and other organizations.

32. Water Quality

Issue Summary: Commenters referenced various water quality concerns: pollutants from mainland sources, pollutants seeping from sediments, brine from potential desalination projects, microfibers and perfluoroalkyl substances (PFAS) from wastewater treatment plants, and graywater and other pollution from cruise ships.

Actions Suggested by Commenters:

- 32.1 Test graywater and other discharges from cruise ships.
- 32.2 Build on partnerships with watershed management groups, including UCSB and Santa Barbara Channelkeeper.
- 32.3 Engage citizen scientists in developing solutions to water quality challenges.
- 32.4 Work with the Integrated Ocean Observing System (IOOS) and Southern California Ocean Observing System (SCOOS) to add buoys near port areas to observe ocean chemistry. Engage port communities, fishing communities, and the Pilots' Association on potential funding partnerships for such observations.
- 32.5 Study the potential impacts of desalination projects proposed in Santa Barbara and other areas near the sanctuary.
- 32.6 Monitor the water quality impacts of dredging near Port Hueneme.

33. Whale Mortality

Issue Summary: One comment argues that NOAA is required under the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) to take stronger regulatory action to protect whales.

Actions Suggested by Commenters:

- 33.1 Limit vessel speed in the sanctuary to 10 knots.
- 33.2 Ban fishing in the sanctuary.

Appendix B: Additional Compliance Requirements

This appendix provides additional information on NOAA's coordination and consultations as part of the review of this action under NEPA to comply with other applicable laws and policies.

Endangered Species Act

The Endangered Species Act (ESA; 16 U.S.C. §§ 1531 *et seq.*) protects animals and plants threatened with extinction. Under the ESA, a species is considered endangered if it is in danger of extinction throughout all or a significant portion of its range. A species is considered threatened if it is likely to become an endangered species within the foreseeable future. NMFS works with USFWS to manage ESA listed species. Generally, NMFS manages marine species, while USFWS manages land and freshwater species. Once a species is listed, the ESA prohibits the 'take' of that species by direct or indirect actions. Pursuant to Section 3 of the ESA, "the term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." "Harm" is further defined as any act which actually kills or injures fish or wildlife, and emphasizes that such acts may include significant habitat modification or degradation that significantly impairs essential behavioral patterns of fish or wildlife.

Section 7 of the ESA requires all federal agencies, in consultation with USFWS or NMFS, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species, or result in the destruction or adverse modification of the critical habitat of such species. In fulfilling these requirements, each agency must use the best scientific and commercial data available. The regulations promulgated at 50 C.F.R. Part 402 govern the consultation process. If a federal agency determines that its action may affect, but is "not likely to adversely affect listed species or critical habitat," the agency must engage in informal consultation with NMFS or USFWS. This determination can be made only if all of the reasonably expected effects of the proposed action will be beneficial, insignificant, or discountable. For any action with a potential for impacts to federally protected species, NOAA evaluates the potential impacts and, if needed, prepares a biological evaluation to inform consultation for any impacts on federally listed species and designated critical habitat.

In this environmental assessment, ONMS identified ESA-listed species or designated critical habitat under NMFS and USFWS jurisdiction potentially present in the action area (see Section 4.2.2.1). ONMS then evaluated which of these species and habitat would likely be present in the action area and could be affected by the proposed action and described any potential impacts in Section 5.2.2.3.

Based on this evaluation, ONMS determined that implementing the Proposed Action **may affect but is not likely to adversely affect** any listed species or designated critical habitat under NMFS jurisdiction. ONMS determined that implementing the Proposed Action **may affect but is not likely to adversely affect** any listed species and would have **no effect on** any designated critical habitat under USFWS jurisdiction. See Section 5.2.2.3 for further details.

Magnuson-Stevens Fishery Conservation and Management Act

The Magnuson-Stevens Fishery Conservation and Management Act (MSA; 16 U.S.C. §§ 1801 *et seq.*) was enacted by Congress in 1976 and was updated in 1996 and 2006. Section 302 of the

Act created eight regional fishery management councils, to develop Fishery Management Plans to regulate fisheries in an effort to prevent overfishing. Each council prepares Fishery Management Plans for each fishery under its jurisdiction and submits these plans to the Secretary of Commerce for final approval. The MSA provides councils and NMFS with authority to identify and designate in the Fishery Management Plan essential fish habitat (EFH) and Habitat Areas of Particular Concern (HAPCs). The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (MSA § 3(10)). The regulations implementing the EFH provisions of the MSA are codified at 50 C.F.R. part 600, subpart J. Section 600.815(a)(1)(iii)(4) further establishes that "'essential habitats' are those [habitats] necessary to maintain fish production consistent with a sustainable fishery and the managed species' contributions to a healthy ecosystem." HAPCs are subsets of EFHs that exhibit one or more of the following traits: (i) provide important ecological function; (ii) is sensitive to human induced environmental degradation; (iii) is stressed by development; or (iv) is rare (50 C.F.R. § 600.815(a)(8)).

Section 305(b) of the MSA requires each federal agency to consult with the Secretary of Commerce on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect any EFH. The regulations implementing the EFH coordination and consultation provisions are codified at 50 C.F.R. part 600, subpart K. The regulations define "adverse effect" as "any impact that reduces quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components, if such modifications reduce the quality and/or quantity of EFH. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions" (50 C.F.R. § 600.910). See Section 5.2.2.3 for ONMS' determination of potential impacts to EFH from the proposed action. Should ONMS consider a future action within CINMS that raises the potential for impacts to EFH and HAPC within the sanctuary, ONMS will provide early notification to NMFS and the PFMC and take appropriate steps to coordinate and consult.

Migratory Bird Treaty Act

The MBTA authorized federal protection for migratory birds in the United States, and made it unlawful without a permit from USFWS to pursue, hunt, take, capture, kill or sell birds listed therein ("migratory birds") (16 U.S.C. § 703). Over 800 listed migratory bird species are protected under the MBTA (50 C.F.R. 10.13). Any impacts to migratory birds associated with implementing the proposed action would be negligible, such as temporary disturbance from vessel traffic, or from other research and resource protection activities in support of sanctuary management. ONMS finds that any disturbances that did occur would be negligible and would not rise to the level of take under the MBTA.

Table B.1. Migratory bird species protected under the Migratory Bird Treaty Act (MBTA) that may forage, rest, or migrate through the action area. NOAA used the USFWS's ECOS IPaC tool to search for migratory bird species that may be present in the action area. The IPaC report identified 54 migratory birds of concern that may occur in or near the action area, summarized below (Consultation code 08EVEN00-2021-SLI-0378).

Species (common name)	Species (scientific name)	Status	Breeding Season
Allen's Hummingbird	*Selasphorus sasin*	BCC Rangewide (CON)	Breeds Feb 1 to Jul 15
Ashy Storm-petrel	*Oceanodroma homochroa*	BCC Rangewide (CON)	Breeds May 1 to Jan 15
Bald Eagle	*Haliaeetus leucocephalus*	Non-BCC Vulnerable	Breeds Jan 1 to Aug 31
Black Oystercatcher	*Haematopus bachmani*	BCC Rangewide (CON)	Breeds Apr 15 to Oct 31
Black Scoter	*Melanitta nigra*	Non-BCC Vulnerable	Breeds elsewhere
Black Skimmer	*Rynchops niger*	BCC Rangewide (CON)	Breeds May 20 to Sep 15
Black Storm-petrel	*Oceanodroma melania*	BCC Rangewide (CON)	Breeds May 15 to Nov 15
Black Swift	*Cypseloides niger*	BCC Rangewide (CON)	Breeds Jun 15 to Sep 10
Black Tern	*Chlidonias niger*	BCC Rangewide (CON)	Breeds May 15 to Aug 20
Black Turnstone	*Arenaria melanocephala*	BCC Rangewide (CON)	Breeds elsewhere
Black-chinned Sparrow	*Spizella atrogularis*	BCC Rangewide (CON)	Breeds Apr 15 to Jul 31
Black-footed Albatross	*Phoebastria nigripes*	BCC Rangewide (CON)	Breeds elsewhere
Black-legged Kittiwake	*Rissa tridactyla*	Non-BCC Vulnerable	Breeds elsewhere
Black-vented Shearwater	*Puffinus opisthomelas*	BCC Rangewide (CON)	Breeds elsewhere
Brown Pelican	*Pelecanus occidentalis*	Non-BCC Vulnerable	Breeds Jan 15 to Sep 30
California Thrasher	*Toxostoma redivivum*	BCC Rangewide (CON)	Breeds Jan 1 to Jul 31
Cassin's Finch	*Carpodacus cassinii*	BCC Rangewide (CON)	Breeds May 15 to Jul 15
Clark's Grebe	*Aechmophorus clarkii*	BCC Rangewide (CON)	Breeds Jun 1 to Aug 31
Common Loon	*Gavia immer*	Non-BCC Vulnerable	Breeds Apr 15 to Oct 31
Common Murre	*Uria aalge*	Non-BCC Vulnerable	Breeds Apr 15 to Aug 15
Common Yellowthroat	*Geothlypis trichas sinuosa*	BCC - BCR	Breeds May 20 to Jul 31
Craveri's Murrelet	*Synthliboramphus craveri*	BCC Rangewide (CON)	Breeds elsewhere

Species (common name)	Species (scientific name)	Status	Breeding Season
Double-crested Cormorant	*phalacrocorax auritus*	Non-BCC Vulnerable	Breeds Apr 20 to Aug 31
Golden Eagle	*Aquila chrysaetos*	Non-BCC Vulnerable	Breeds Jan 1 to Aug 31
Gull-billed Tern	*Gelochelidon nilotica*	BCC Rangewide (CON)	Breeds May 1 to Jul 31
Island Scrub-jay	*Aphelocoma insularis*	BCC Rangewide (CON)	Breeds Mar 10 to Jun 15
Lawrence's Goldfinch	*Carduelis lawrencei*	BCC Rangewide (CON)	Breeds Mar 20 to Sep 20
Laysan Albatross	*Phoebastria immutabilis*	BCC Rangewide (CON)	Breeds elsewhere
Long-eared Owl	*asio otus*	BCC Rangewide (CON)	Breeds Mar 1 to Jul 15
Long-tailed Duck	*Clangula hyemalis*	Non-BCC Vulnerable	Breeds elsewhere
Manx Shearwater	*Puffinus puffinus*	Non-BCC Vulnerable	Breeds Apr 15 to Oct 31
Marbled Godwit	*Limosa fedoa*	BCC Rangewide (CON)	Breeds elsewhere
Mountain Plover	*Charadrius montanus*	BCC Rangewide (CON)	Breeds elsewhere
Nuttall's Woodpecker	*Picoides nuttallii*	BCC - BCR	Breeds Apr 1 to Jul 20
Oak Titmouse	*Baeolophus inornatus*	BCC Rangewide (CON)	Breeds Mar 15 to Jul 15
Olive-sided Flycatcher	*Contopus cooperi*	BCC Rangewide (CON)	Breeds May 20 to Aug 31
Pink-footed Shearwater	*Puffinus creatopus*	BCC Rangewide (CON)	Breeds elsewhere
Pomarine Jaeger	*Stercorarius pomarinus*	Non-BCC Vulnerable	Breeds elsewhere
Red Phalarope	*Phalaropus fulicarius*	Non-BCC Vulnerable	Breeds elsewhere
Red-breasted Merganser	*Mergus serrator*	Non-BCC Vulnerable	Breeds elsewhere
Red-necked Phalarope	*Phalaropus lobatus*	Non-BCC Vulnerable	Breeds elsewhere
Red-throated Loon	*Gavia stellata*	Non-BCC Vulnerable	Breeds elsewhere
Ring-billed Gull	*Larus delawarensis*	Non-BCC Vulnerable	Breeds elsewhere
Royal Tern	*Thalasseus maximus*	Non-BCC Vulnerable	Breeds Apr 15 to Aug 31
Scripps's Murrelet	*Synthliboramphus scrippsi*	BCC Rangewide (CON)	Breeds Feb 20 to Jul 31
Short-billed Dowitcher	*Limnodromus griseus*	BCC Rangewide (CON)	Breeds elsewhere

Species (common name)	Species (scientific name)	Status	Breeding Season
South Polar Skua	*Stercorarius maccormicki*	Non-BCC Vulnerable	Breeds elsewhere
Surf Scoter	*Melanitta perspicillata*	Non-BCC Vulnerable	Breeds elsewhere
Tricolored Blackbird	*Agelaius tricolor*	BCC Rangewide (CON)	Breeds Mar 15 to Aug 10
White-winged Scoter	*Melanitta fusca*	Non-BCC Vulnerable	Breeds elsewhere
Willet	*Tringa semipalmata*	BCC Rangewide (CON)	Breeds elsewhere
Wilson's Storm-petrel	*Oceanites oceanicus*	Non-BCC Vulnerable	Breeds elsewhere
Wrentit	*Chamaea fasciata*	BCC Rangewide (CON)	Breeds Mar 15 to Aug 10
Yellow-billed Magpie	*Pica nuttalli*	BCC Rangewide (CON)	Breeds Apr 1 to Jul 31

Coastal Zone Management Act

The goal of the Coastal Zone Management Act (CZMA; 16 U.S.C. §§ 1451 *et seq.*) is to encourage and assist states to preserve, protect, develop and, where possible, restore and enhance valuable natural coastal resources. Participation by states is voluntary. Section 307 of the CZMA requires that any federal action inside or outside of the coastal zone that affects any land or water use or natural resource of a participating state's coastal zone shall be consistent to the maximum extent practicable with the enforceable policies of the state's coastal management program. The CZMA provides that no federal license or permit may be granted without giving the state the opportunity to concur that the project is consistent with the state's coastal policies. The regulations implementing the CZMA, 15 C.F.R. part 930, outline the consistency procedures.

National Historic Preservation Act

Section 106 of the NHPA (54 U.S.C. § 306108) and its implementing regulations (36 CFR 800) require federal agencies to consider the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation, State Historic Preservation Officer, and other consulting parties an opportunity to comment. NOAA has determined that this proposed action is not an undertaking that has the potential to cause effects on historic properties. In the future, should ONMS consider taking a management action that has the potential to adversely affect historic properties within the sanctuary or adjacent waters, ONMS will provide early notification and initiate Section 106 consultation with the California State Historic Preservation Officer (SHPO).

Executive Order 12898

Executive Order 12898 *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* directs federal agencies to:

- identify and address the disproportionately high and adverse human health or environmental effects of their actions on minority and low-income populations, to the greatest extent practicable and permitted by law.

- develop a strategy for implementing environmental justice.
- promote nondiscrimination in federal programs that affect human health and the environment, as well as provide minority and low-income communities access to public information and public participation.

The California Environmental Protection Agency, through the Office of Environmental Health Hazard Assessment, has developed a screening and mapping tool that can be used to help identify California communities that are disproportionately burdened by multiple sources of pollution. Within the coastal region adjacent to the sanctuary, there are some areas within Ventura County that are rated with with relatively high scores, indicating elevated risk to terrestrial-based sources of pollution and associated health conditions[79].

ONMS values the remarkable diversity of knowledge, perspectives, and experience found throughout sanctuary communities. Across a range of strategies described in the draft management plan, sanctuary staff will invite and include a broader diversity of individuals to participate in activities or gain access to the benefits provided by sanctuary programming. Examples of relevant planned activities are summarized below.

The Education and Outreach Action Plan recognizes that understanding and learning from cultural diversity is central to environmental stewardship, and calls on staff to reach more ethnic and cultural groups than in the past, elevating cultural awareness and understanding and creating meaningful connections with a more diverse audience. This includes planned activities to promote quality sanctuary visitor experiences and enhanced access, and development of signage and outreach materials to reach non-English speaking members of the local community.

The Research and Monitoring Action Plan calls on sanctuary staff to help diversify the science community by creating opportunities to mentor those that are underrepresented in marine science fields. The Administration and Operations Action Plan calls for increased efforts to attract a more diverse set of applicants seeking membership on the Sanctuary Advisory Council, and to diversify the council over time.

The management plan also contains activities intended to give voice and meaningful sanctuary management influence to the Chumash community, who have historically known multi-generational losses and trauma, and who have much to teach and share with regard to traditional ecological knowledge.

None of the alternatives described in this environmental assessment, or the analyzed cumulative effects, would result in any disproportionate negative impacts on any minority or low-income population. Rather, the proposed action is expected to result in long-term or permanent beneficial impacts by:

- continuing to protect natural and maritime cultural heritage resources, which may provide related employment opportunities and result in improved ecosystem services to nearby coastal residents,
- implementing education and outreach programs that seek to integrate and reach minority and low-income populations into sanctuary programming, and

[79] https://calepa.ca.gov/envjustice/

- developing outreach products and programming that is inclusive of minority or low-income populations.

Executive Order 13175 and Tribal Engagement

Under Executive Order 13175 of November 6, 2000, federal departments and agencies are charged with engaging in regular and meaningful consultation and collaboration with officials of federally-recognized nations and tribes during the development of federal policies that have implications for Indigenous tribes and nations. NOAA identified one federally recognized tribe pursuant to the Federally Recognized Indian Tribe List Act of 1994, 25 USC 5131: the Santa Ynez Band of Chumash Indians. ONMS provided early notification of the management plan revision process to the Elder's Council of the Santa Ynez Band of Chumash Indians, prior to the process beginning. This led to ONMS staff meeting with the Elder's Council in November 2019 to share information about the management plan process, gauge tribal interest, and invite early input. In April 2021, ONMS provided the Elder's Council with a preliminary outline of action plans being developed for the draft management plan, inviting feedback and indicating NOAA's readiness to engage in government-to-government consultations should the tribe indicate an interest in doing so. When the draft management plan and draft environmental assessment are ready for public release, ONMS will distribute copies to the Santa Ynez Band, again inviting participation. Should the tribe express interest, NOAA is prepared to engage in government-to-government formal consultation.

In addition, several non-federally recognized Chumash tribal bands are located within the mainland coastal region adjacent to the sanctuary. NOAA values input from all interested Chumash bands, and frequently receives input from Chumash Community seat representatives on the Sanctuary Advisory Council, as well from the advisory council's Chumash Community Working Group. NOAA has received participation and helpful input on the revised management plan from Chumash Community advisory council members[80]. In April 2021, ONMS provided the Sanctuary Advisory Council's Chumash Community seat members with a preliminary outline of action plans being developed for the draft management plan, inviting their feedback or input from other tribal contacts associated with the Chumash Community Working Group. When the draft management plan and draft environmental assessment are ready for public release, NOAA will distribute copies of the draft management plan and draft environmental assessment to local Chumash bands, inviting review and input.

[80] For example, see item 17 in Appendix A (Scoping Comment Summary).

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
Phone: (805) 644-1766 Fax: (805) 644-3958

In Reply Refer To: October 19, 2021
Consultation Code: 08EVEN00-2021-SLI-0378
Event Code: 08EVEN00-2022-E-00062
Project Name: Channel Islands National Marine Sanctuary Management Plan Review

Subject: Updated list of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed list identifies species listed as threatened and endangered, species proposed for listing as threatened or endangered, designated and proposed critical habitat, and species that are candidates for listing that may occur within the boundary of the area you have indicated using the U.S. Fish and Wildlife Service's (Service) Information Planning and Conservation System (IPaC). The species list fulfills the requirements under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 et seq.). Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the species list should be verified after 90 days. We recommend that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists following the same process you used to receive the enclosed list. Please include the Consultation Tracking Number in the header of this letter with any correspondence about the species list.

Due to staff shortages and excessive workload, we are unable to provide an official list more specific to your area. Numerous other sources of information are available for you to narrow the list to the habitats and conditions of the site in which you are interested. For example, we recommend conducting a biological site assessment or surveys for plants and animals that could help refine the list.

If a Federal agency is involved in the project, that agency has the responsibility to review its proposed activities and determine whether any listed species may be affected. If the project is a major construction project*, the Federal agency has the responsibility to prepare a biological assessment to make a determination of the effects of the action on the listed species or critical habitat. If the Federal agency determines that a listed species or critical habitat is likely to be adversely affected, it should request, in writing through our office, formal consultation pursuant to section 7 of the Act. Informal consultation may be used to exchange information and resolve conflicts with respect to threatened or endangered species or their critical habitat prior to a

written request for formal consultation. During this review process, the Federal agency may engage in planning efforts but may not make any irreversible commitment of resources. Such a commitment could constitute a violation of section 7(d) of the Act.

Federal agencies are required to confer with the Service, pursuant to section 7(a)(4) of the Act, when an agency action is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat (50 CFR 402.10(a)). A request for formal conference must be in writing and should include the same information that would be provided for a request for formal consultation. Conferences can also include discussions between the Service and the Federal agency to identify and resolve potential conflicts between an action and proposed species or proposed critical habitat early in the decision-making process. The Service recommends ways to minimize or avoid adverse effects of the action. These recommendations are advisory because the jeopardy prohibition of section 7(a)(2) of the Act does not apply until the species is listed or the proposed critical habitat is designated. The conference process fulfills the need to inform Federal agencies of possible steps that an agency might take at an early stage to adjust its actions to avoid jeopardizing a proposed species.

When a proposed species or proposed critical habitat may be affected by an action, the lead Federal agency may elect to enter into formal conference with the Service even if the action is not likely to jeopardize or result in the destruction or adverse modification of proposed critical habitat. If the proposed species is listed or the proposed critical habitat is designated after completion of the conference, the Federal agency may ask the Service, in writing, to confirm the conference as a formal consultation. If the Service reviews the proposed action and finds that no significant changes in the action as planned or in the information used during the conference have occurred, the Service will confirm the conference as a formal consultation on the project and no further section 7 consultation will be necessary. Use of the formal conference process in this manner can prevent delays in the event the proposed species is listed or the proposed critical habitat is designated during project development or implementation.

Candidate species are those species presently under review by the Service for consideration for Federal listing. Candidate species should be considered in the planning process because they may become listed or proposed for listing prior to project completion. Preparation of a biological assessment, as described in section 7(c) of the Act, is not required for candidate species. If early evaluation of your project indicates that it is likely to affect a candidate species, you may wish to request technical assistance from this office.

Only listed species receive protection under the Act. However, sensitive species should be considered in the planning process in the event they become listed or proposed for listing prior to project completion. We recommend that you review information in the California Department of Fish and Wildlife's Natural Diversity Data Base. You can contact the California Department of Fish and Wildlife at (916) 324-3812 for information on other sensitive species that may occur in this area.

[*A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)

(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.]

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Ventura Fish And Wildlife Office
2493 Portola Road, Suite B
Ventura, CA 93003-7726
(805) 644-1766

This project's location is within the jurisdiction of multiple offices. Expect additional species list documents from the following office, and expect that the species and critical habitats in each document reflect only those that fall in the office's jurisdiction:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

Project Summary

Consultation Code: 08EVEN00-2021-SLI-0378
Event Code: Some(08EVEN00-2022-E-00062)
Project Name: Channel Islands National Marine Sanctuary Management Plan Review
Project Type: ** OTHER **
Project Description: NOAA Office of National Marine Sanctuaries is updating the management plan for Channel Islands National Marine Sanctuary. No regulations will be changing, and this action only relates to field activities and day-to-day sanctuary operations. All field activities occur in the marine environment, so terrestrial species will not be impacted.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@33.7541157,-119.98543395196452,14z

Counties: Los Angeles, Santa Barbara, and Ventura counties, California

Endangered Species Act Species

There is a total of 24 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
California Condor *Gymnogyps californianus* Population: U.S.A. only, except where listed as an experimental population There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
California Least Tern *Sterna antillarum browni* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/8104	Endangered
Least Bell's Vireo *Vireo bellii pusillus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5945	Endangered
Light-footed Clapper Rail *Rallus longirostris levipes* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6035	Endangered
Marbled Murrelet *Brachyramphus marmoratus* Population: U.S.A. (CA, OR, WA) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4467	Threatened
Short-tailed Albatross *Phoebastria (=Diomedea) albatrus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/433	Endangered
Southwestern Willow Flycatcher *Empidonax traillii extimus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/6749	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2891	Threatened

Fishes

NAME	STATUS
Tidewater Goby *Eucyclogobius newberryi* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/57	Endangered

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened

Flowering Plants

NAME	STATUS
Contra Costa Goldfields *Lasthenia conjugens* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7058	Endangered
Gambel's Watercress *Rorippa gambellii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4201	Endangered
Gaviota Tarplant *Deinandra increscens ssp. villosa* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/4218	Endangered
Hoffmann's Slender-flowered Gilia *Gilia tenuiflora ssp. hoffmannii* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/968	Endangered
Island Barberry *Berberis pinnata ssp. insularis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5197	Endangered
Island Rush-rose *Helianthemum greenei* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6338	Threatened
Lompoc Yerba Santa *Eriodictyon capitatum* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/364	Endangered
Marsh Sandwort *Arenaria paludicola* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2229	Endangered
Salt Marsh Bird's-beak *Cordylanthus maritimus ssp. maritimus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/6447	Endangered
Santa Cruz Island Malacothrix *Malacothrix indecora* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/3210	Endangered
Santa Rosa Island Manzanita *Arctostaphylos confertiflora* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/563	Endangered
Soft-leaved Paintbrush *Castilleja mollis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/5312	Endangered

Critical habitats

There are 2 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Tidewater Goby *Eucyclogobius newberryi* https://ecos.fws.gov/ecp/species/57#crithab	Final
Western Snowy Plover *Charadrius nivosus nivosus* https://ecos.fws.gov/ecp/species/8035#crithab	Final

Appendix C: Acronyms

AGL	Above ground level
ATBA	Area to be Avoided
AUV	Autonomous Underwater Vehicle
BOEM	Bureau of Ocean Energy Management
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CINMS	Channel Islands National Marine Sanctuary
CTD	Conductivity, temperature, and depth
CZMA	Coastal Zone Management Act
DOC	Department of Commerce
EA	Environmental Assessment
EFH	Essential Fish Habitat
ESA	Endangered Species Act
FR	Federal Register
HAPC	Habitat Area of Particular Concern
IMO	International Maritime Organization
MBTA	Migratory Bird Treaty Act
MPA	Marine Protected Area
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NGO	Non-Governmental Organization
NHPA	National Historic Preservation Act
NPS	National Park Service
NM	Nautical mile
NMFS	National Marine Fisheries Service
NMSA	National Marine Sanctuaries Act
NOAA	National Oceanic and Atmospheric Administration
ONMS	Office of National Marine Sanctuaries
ROV	Remotely Operated Vehicle
UAS	Uncrewed Aerial System
USC	United States Code
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
VSR	Vessel speed reduction

Appendix D: List of Agencies and Organizations Notified

NOAA will send copies of the draft environmental assessment and draft management plan to the following agencies and organizations to invite comments:

Federal:
National Marine Fisheries Service West Coast Region
National Marine Fisheries Service Office of Protected Resources
National Marine Fisheries Service, Southwest Fisheries Science Center
NOAA Ocean Acidification Program
NOAA Integrated Ecosystem Assessment Program
NOAA National Centers for Coastal Ocean Sciences
Pacific Fishery Management Council
United States Coast Guard, Sector Los Angeles-Long Beach
United States Coast Guard, District Eleven
Environmental Protection Agency, Region 9
United States Fish and Wildlife Service, Region Eight
United States Fish and Wildlife Service, Ventura Office
National Park Service, Channel Islands National Park
United States Navy, Sustainability Office, NAVAIR, Point Mugu Sea Range
United States Air Force, Vandenberg Air Force Base
Bureau of Ocean Energy Management, Pacific Region
Bureau of Safety and Environmental Enforcement, Pacific Region
United States Geological Survey

Tribal:
Santa Ynez Band of Chumash Indians
Chumash Community seat representatives, Sanctuary Advisory Council
Barbareño/Ventureño Band of Mission Indians
Coastal Band of the Chumash Nation
Barbareño Band of Chumash Indians
Northern Chumash Tribal Council
San Luis Obispo County Chumash Council
Wishtoyo Foundation

State:
California Coastal Commission
California Natural Resources Agency, Ocean Protection Council
California Department of Fish and Wildlife
California Fish and Game Commission
California State Lands Commission
California State Parks, Division of Boating and Waterways
California Environmental Protection Agency
California State Parks, Office of Historic Preservation

County:
County of Santa Barbara, Planning & Development Department

County of Ventura, Harbor Department

Other:
Sanctuary Advisory Council for Channel Islands National Marine Sanctuary
Santa Barbara Channelkeeper
Wave Walker Charters
Coastal Conservation Association of California
The Ocean Conservancy
Island Packers
Santa Barbara Zoo
TowBoat US, Ventura Vessel Assist
Environmental Defense Center

Appendix E: References

Abbott, I.A. and G.J. Hollenberg. 1976. Marine algae of California. Stanford University Press: Stanford, California.

Andersen, M. S., K. A. Forney, T. V. N. Cole, T. Eagle, R. Angliss, K. Long, L. Barre, L. Van Atta, D. Borggaard, T. Rowles, B. Norberg, J. Whaley, and L. Engleby. Differentiating Serious and Non-Serious Injury of Marine Mammals: Report of the Serious Injury Technical Workshop, 10-13 September 2007, Seattle, Washington. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-OPR-39. 94 p.

California Ocean Protection Council (OPC) and National Oceanic and Atmospheric Administration (NOAA) Marine Debris Program. 2018. California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea.

Carr, M.H. 1994. Effects of macroalgal dynamics on recruitment of a temperate reef fish. Ecology. 75(5):1320-1333.

Caselle, J. E., A. Rassweiler, S. L. Hamilton, and R. R. Warner. 2015. Recovery trajectories of kelp forest animals are rapid yet spatially variable across a network of temperate marine protected areas. Sci. Rep. 5, 14102.

CDFW (California Department of Fish and Wildlife). 2016. Marine region year in review. 21. Retrieved from: https://www.wildlife.ca.gov/Fishing/Ocean/Year-In-Review

Costanza, R., R. d'Arge, R. de Groot, S. Farber, M. Grasso, B. Hannon, K. Limburg, S. Naeem, R.V. O'Neill, J. Paruelo, R.G. Raskin, P. Sutton, M. van den Belt. 1997. The value of the world's ecosystem services and natural capital. Nature. 387(6630):253-260.

Council on Environmental Quality (CEQ). 1997. Considering Cumulative Effects under the National Environmental Policy Act. Council on Environmental Quality, Executive Office of the President, Washington, DC. January. Available at: https://ceq.doe.gov/publications/cumulative_effects.html. Accessed on June 1, 2021.

Dayton, P.K. 1985. Ecology of kelp communities. Annual Review of Ecological Systems. 16:215-45.

Den Hartog, C. 1970. The sea-grasses of the world. North Holland Pub. Co.: Amsterdam, The Netherlands.

Engle, D. 2006. Assessment of coastal water resources and watershed conditions at Channel Islands National Park, California. Technical Report NPS/NRWRD/NRTR-2006/354.

Etnoyer, P., R. Salgado, L. Wickes, S. Nehasil, L. Kracker, A. Lauermann, D. Rosen, C. Caldow. 2015. NOAA's efforts to map extent, health, and condition of deep-sea corals and sponges and their habitat on the banks and island slopes of southern California. Paper presented at the American Geophysical Union Fall meeting. Dec. 14–18. San Francisco, California.

Fonseca M.S. and J.S. Fisher. 1986. A comparison of canopy friction and sediment movement between four species of seagrass with reference to their ecology and restoration. Marine Ecology Progress Series. 29:15-22.

Gulf of Mexico Fishery Management Council. 1998. Generic Amendment for Addressing Essential Fish Habitat Requirements in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, United States Waters; Red Drum Fishery of the Gulf of Mexico; Reef Fish Fishery of the Gulf of Mexico; Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico and South Atlantic; Stone Crab Fishery of the Gulf of Mexico; Spiny Lobster in the Gulf of Mexico and South Atlantic; Coral and Coral Reefs of the Gulf of Mexico. GMFMC. Tampa, FL

Gulf of Mexico Fishery Management Council. 2005. Final Generic Amendment Number 3 for Addressing Essential Fish Habitat Requirements, Habitat Areas of Particular Concern, and Adverse Effects of Fishing in the following Fishery Management Plans of the Gulf of Mexico: Shrimp Fishery of the Gulf of Mexico, United States Waters; Red Drum Fishery of the Gulf of Mexico; Reef Fish Fishery of the Gulf of Mexico; Coastal Migratory Pelagic Resources (Mackerels) in the Gulf of Mexico and South Atlantic; Stone Crab Fishery of the Gulf of Mexico; Spiny Lobster in the Gulf of Mexico and South Atlantic; Coral and Coral Reefs of the Gulf of Mexico. GMFMC. Tampa, FL

Hamilton, S. L., J. E. Caselle, D.P. Malone, and M. H. Carr. 2010. Incorporating biogeography into evaluations of the Channel Islands marine reserve network. Proc. Natl. Acad. Sci. 107, 18272–18277.

Hatfield, B.B., J.L. Yee, M.C. Kenner, and J.A. Tomoleoni. 2019. California sea otter (*Enhydra lutris nereis*) census results, spring 2019: U.S. Geological Survey Data Series 1118, 12 p., https://doi.org/10.3133/ds1118.

Hazel, J., I.R. Lawler, H. Marsh, and S. Robson, 2007. Vessel speed increases collision risk for the green turtle Chelonia mydas. Endangered Species Research 3 (2), 105-113.

Heck, K.L., G. Hays, R.J. Orth. 2003. Critical evaluation of the nursery role hypothesis for seagrass beds. Marine Ecology Progress Series. 253:123-136.

Hemminga, M. and C.M. Duarte. 2000. Seagrass ecology. Cambridge (United Kingdom): Cambridge University Press.

Kay, M. C., Lenihan, H. S., Kotchen, M. J. & Miller, C. J. 2012. Effects of marine reserves on California spiny lobster are robust and modified by fine-scale habitat features and distance from reserve borders. Mar. Ecol. Prog. Ser. 451, 137–150.

Kushner, D.M. 2016. First report and assessment of the invasive algal *Undaria pinnatifida* at the northern Channel Islands, Abstract. Presentation at the 9th California Islands Symposium, Ventura, California. 121p. Retrieved from: https://static1.squarespace.com/static/54b5b3e8e4b06e38ad4d2e82/t/57e162d71b631bc009f3d880/1474388697590/CIS+2016 +Formatted+Abstracts+9-19-16.pdf.

Leatherwood, S., B.S. Stewart, P.A. Folkens. 1987. Cetaceans of t Channel Islands National Marine Sanctuary: a status report. NOAA National Marine Sanctuary Program, Channel Islands National Marine Sanctuary. 66.

Leeworthy, V.R., D. Jerome, K. Schueler. 2014a. Economic impact of the commercial fisheries on local county economies from catch in the Channel Islands National Marine Sanctuary 2010, 2011, and 2012. Marine Sanctuaries Conservation Series ONMS-14-04. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries. Silver Spring, Maryland. 33. Retrieved from: https://sanctuaries.noaa.gov/science/conservation/cinms_fishing_report.html.

Leeworthy, V.R., D. Jerome, K. Schueler. 2014b. Economic impact of the commercial fisheries on local county economies from catch in all California national marine sanctuaries 2010, 2011, and 2012. Marine Sanctuaries Conservation Series ONMS-14- 05. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries. Silver Spring, Maryland. 44. Retrieved from: https://sanctuaries.noaa.gov/science/conservation/ca_fullreport.html.

Leeworthy, V. and D. Schwarzmann. 2015. Economic impact of the recreational fisheries on local county economies in Channel Islands National Marine Sanctuary 2010, 2011, and 2012. Marine Sanctuaries Conservation Series ONMS-2015-03. U.S. Department of Commerce, National Oceanic and

Atmospheric Administration, Office of National Marine Sanctuaries. Silver Spring, Maryland. 25. Retrieved from: https://sanctuaries.noaa.gov/science/socioeconomic/channelislands/rec_fishing.html.

Marks, L., P. Salinas-Ruiz, D. Reed, S. Holbrook, C. Culver, J. Engle, N. Kaplanis. 2015. Range expansion of a non-native, invasive macroalga *Sargassum horneri* (Turner) C. Agardh, 1820 in the eastern Pacific. BioInvasions Records. 4(4)243-248. Retrieved from: http://dx.doi.org/10.3391/bir.2015.4.4.02.

Marine Exchange of Southern California (MESC). [Unpublished data]. 2020. Arrivals to and Departures from the Ports of Los Angeles and Long Beach. Prepared for the Los Angeles/Long Beach Harbor Safety Committee and shared with NOAA Channel Islands National Marine Sanctuary, September 15, 2020.

Miller, K. A., L. E. Aguilar-Rosas, and F. F. Pedroche. 2011. A review of non-native seaweeds from California, USA and Baja California, Mexico. Hidrobiológica. 21:365-379. Retrieved from: http://www.scielo.org.mx/pdf/hbio/v21n3/v21n3a12.pdf.

Murray, S.N. and R.N. Bray. 1993. Benthic macrophytes: 304-368. In: Ecology of the Southern California Bight: A Synthesis and Interpretation, M. D. Dailey, D. J. Reish, J. W. Anderson, Eds. University of California Press: Berkeley, California.

Musial, W., P. Beiter, S. Tegen, and A. Smith. 2016. Potential offshore wind energy areas in California: An assessment of locations, technology, and costs (No. NREL/TP-5000-67414). National Renewable Energy Lab.(NREL), Golden, CO (United States).

National Marine Fisheries Service (NMFS). 2006. Map of Groundfish Habitat Areas of Particular Concern on the West Coast. Online: https://archive.fisheries.noaa.gov/wcr/publications/gis_maps/maps/groundfish/map-gfish-hapc.pdf

National Marine Fisheries Service. 2014. California Eelgrass Mitigation Policy and Implementing Guidelines. 45 pp. Online: https://media.fisheries.noaa.gov/dam-migration/cemp_oct_2014_final.pdf.

National Oceanic and Atmospheric Administration. 2009. Final Amendment 1 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan, Essential Fish Habitat. National Marine Fisheries Service, Office of Sustainable Fisheries, Highly Migratory Species Management Division, Silver Spring, MD

Office of National Marine Sanctuaries. 2019. Channel Islands National Marine

Sanctuary 2016 Condition Report. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of National Marine Sanctuaries, Silver Spring, MD. 482 pp. Online: https://sanctuaries.noaa.gov/science/condition/cinms/welcome.html

Orth, R.J., K.L. Heck Jr., J. Van Montfrans. 1984. Faunal communities in seagrass beds: a review of the influence of plant structure and prey characteristics on predator-prey relationships. Estuaries. 7(4A):339-350.

RecFIN (Recreational Fisheries Information Network). 2017a. Number of fish caught (sampler observed and angler reported kept fish, excludes released fish) in ocean waters (excludes inland marine waters) by PR and PC in District 2 (Santa Barbara and Ventura counties). Extracted from RecFIN 07-31-2017 CTE001 Catch Estimate Report. Retrieved from: http://www.recfin.org.

RecFIN (Recreational Fisheries Information Network). 2017b. PC and PR Angler Trips in Ocean Waters (excludes inland marine waters) in District 2 (Santa Barbara and Ventura counties). Extracted from RecFIN 07-31-2017 CEE051 Effort Estimate Report. Retrieved from: http://www.recfin.org.

Santa Barbara Coastal LTER (Long Term Ecological Research). 2006. Geographic Setting. Retrieved from: http://sbc.lternet.edu/sites/location.html.

Schroeder, D.M. 2016. Productivity of commercial fisheries in the Santa Barbara Channel. Presentation at the 9th California Islands Symposium. Ventura, California. Abstract, 81-82.

Smith, R.I. and J.T. Carlton. 1975. Light's manual: intertidal invertebrates of the central California coast, 3rd Ed. University of California Press, Berkeley, California.

Straughan, D. R.W. Klink. 1980. A taxonomic listing of common marine invertebrate species from southern California. Technical Report No. 3 Prepared by Allan Hancock Foundation, University of Southern California, Los Angeles, California.

Thompson, B., J. Dixon, S. Schoeter, D.J. Reish. 1993. Benthic invertebrates. In: Ecology of the Southern California Bight: A Synthesis and Interpretation. M. D. Dailey, D. J. Reish, J. W. Anderson, Eds. University of California Press: Berkeley, California 369–458.

Tinker, M.T. B.B. and Hatfield. 2016, California sea otter (Enhydra lutris nereis) census results, spring 2016: U.S. Geological Survey Data Series 1018. 10., Retrieved from: http://dx.doi.org/10.3133/ds1018.

Tissot, B.N., M.M. Yoklavich, M.S. Love, K. York, M. Amend. 2006. Benthic invertebrates that form habitat on deep banks off southern California, with special reference to deep-sea coral. Fishery Bulletin. 102(2)167-181.

Christopher T. Taggart. 2007. Vessel Collisions with whales: the probability of lethal injury based on vessel speed. Marine Mammal Science, Volume23, Issue1 January 2007 Pages 144-156.

Watkins, William, A. 1986. Whale reactions to human activities in Cape Cod waters. Marine Mammal Science. 2: 251-262. https://doi.org/10.1111/j.1748-7692.1986.tb00134.x

NATIONAL MARINE
SANCTUARIES

AMERICA'S UNDERWATER TREASURES