



MARINE MAMMAL COMMISSION

31 January 2022

Mr. Paul E. Michel, Regional Policy Coordinator
NOAA Sanctuaries – West Coast Regional Office
99 Pacific Street, Building 100F
Monterey, California 93940

Dear Mr. Michel:

On 10 November 2021, the National Oceanic and Atmospheric Administration's (NOAA) Office of National Marine Sanctuaries (ONMS) published a Federal Register Notice (86 Fed. Reg. 62512) of intent to prepare a Draft Environmental Impact Statement (DEIS) for the proposed Chumash Heritage National Marine Sanctuary (NMS) and to initiate the scoping process for its review under the National Environmental Policy Act. ONMS is "initiating a process to consider designating a portion of waters along and offshore of the central coast of California as a national marine sanctuary," an action "based on the area's qualities and boundaries as described in the community-based nomination¹ submitted on July 17, 2015 by the Northern Chumash Tribal Council" (the Nomination).² This sanctuary designation process will be conducted in accordance with sections 303 and 304 of the National Marine Sanctuaries Act.³ As part of the scoping process, ONMS has invited comments on issues and their significance to be addressed in the DEIS. ONMS will use the scoping results to help it formulate the alternatives considered in the DEIS, including boundaries (Fig 1), regulations and a management plan.

Given that this is a new proposal for a National Marine Sanctuary, the Commission is providing extensive background information on the marine mammals found in the proposed area and surrounding waters. The **Appendix** to this letter contains that background information, as well as information on the proposed sanctuary, and, most importantly, on threats likely faced by marine mammals in the area proposed for sanctuary designation in the past, currently, or possibly in the future. The Marine Mammal Commission ("the Commission"), in consultation with its Committee of Scientific Advisors, has reviewed the Nomination and NOAA's guidance in the *Federal Register* notice and based on the threat assessment presented in the **Appendix** offers the comments and recommendations below.

¹ https://nmsnominate.blob.core.windows.net/nominate-prod/media/documents/nomination_chumash_heritage_071715.pdf

² ONMS has modified the boundaries in the nomination to exclude the 'Morro Bay 399 Area', which is being considered for offshore wind-energy development (86 Fed. Reg. 40869).

³ 16 U.S.C. § 1431 et seq.

Recommendations and Rationale

Fishing

Entanglement in buoy lines. In 2015, in response to large numbers of large whale entanglements that year, the State of California established the Dungeness Crab Fishing Gear Working Group⁴ to consider and design mitigation measures (CDFW 2021). Based on recommendations from the group, the California Department of Fish and Wildlife (CDFW) revised certain regulations and recommended other changes to permitted Dungeness crab gear and fishing practices (CDFW 2021). In addition, the group developed the Risk Assessment Mitigation Program (RAMP), which integrates recent information on entanglement events, whale densities (primarily of humpback whales), fishing effort and environmental conditions to assess the risk of entanglements occurring in the near future. The CDFW uses the biweekly RAMP assessments to make decisions on whether short-term measures are required to reduce bycatch risk. While the CDFW can implement a wide range of measures, to date it has chosen to rely primarily on time-area closures, typically meaning delaying opening of the fishing season in November or December in response to high densities of humpback whales, which are migrating toward their breeding grounds.

It is uncertain whether and to what extent the recent decline in whale entanglements was due to measures adopted under the RAMP or, instead, reflects a cessation of the environmental conditions believed to have been largely responsible for the 2015-2018 spike in entanglements. Regardless, bycatch risk will remain high and potentially unsustainable for the Mexico and Central America humpback whale distinct population segments (DPSs)⁵ as long as there are substantial numbers of vertical lines in the water at times when those whales are present in California. Numerous conservationists and researchers, many regulators, and the Commission have concluded that the only way to ultimately eliminate the unsustainable entanglement risk to large whales posed by buoy lines is to eliminate those lines on both the east and west coasts of North America. For the last several years, engineers, scientists and government agencies have been developing, testing and trialing what is referred to as ‘ropeless’ technology or gear, which has the potential to significantly reduce whale entanglements in buoy lines (Lebon and Kelly 2019, Moore 2019). ‘Ropeless’ systems can be complex, and currently are neither ready for widespread use nor an economically viable option for most fishermen. Nonetheless, it is apparent to the Commission that development and trialing of this gear is proceeding at a much faster pace than was expected just two or three years ago. The Commission believes that the technology will be sufficiently advanced and affordable to be implemented for some fisheries as soon as the next 3-5 years, and certainly within the next 5-10 years. Therefore, the Commission recommends that NOAA include as one alternative in the Chumash Heritage NMS DEIS, the phasing in, over a specified number of years, regulations that would at first encourage (with incentives) and ultimately require the use of ‘ropeless’ gear for all fixed-gear fisheries (e.g., pot, trap and set-gillnet fisheries) operating within the sanctuary when large whales at greatest risk of entanglement are present.

⁴ <https://www.opc.ca.gov/whale-entanglement-working-group/>

⁵ ESA definition; “vertebrate population or group of populations that is discrete from other populations of the species and significant in relation to the entire species.”

Efforts to mitigate the risk of entanglement of North Atlantic right whales on the East Coast have focused on reducing the number of vertical lines in the water by establishing time-area closures, through ‘trawling-up’ (increasing the number of pots/traps in a string (trawl)), and by reducing the likelihood that an entanglement will be fatal by capping the strength of buoy lines, thereby increasing the likelihood that an entangled whale will be able to break the line and shed the gear. Similar efforts are being taken in California pot and trap fisheries, with the exception that weak lines have not been used. Because so-called weak-line measures have the potential to significantly reduce the number of serious injuries and deaths due to entanglement, the Commission recommends that their required use in the sanctuary be included in one of the alternatives in the Chumash Heritage DEIS, primarily as a means of mitigating the adverse effects of pot/trap fisheries on the listed DPSs of humpback whales.

Entanglement in gill nets. As described above, gill nets pose a significant threat to several species of marine mammals. These nets are known to have killed large numbers of marine mammals, including at rates thought to be unsustainable for several California stocks. Although the halibut and seabass set gill-net fisheries have been closed for nearly 20 years and the drift gill-net fishery is greatly diminished in size and is being phased out, similar gill-net fisheries could be established in the future. Experience shows that any gill-net fishery would seriously injure and kill many marine mammals, potentially at unsustainable levels. Therefore, the Commission recommends that NOAA include in one of the alternatives in the Chumash Heritage DEIS a permanent ban on the use of all forms of gill nets within the sanctuary.

Shipping

Because vessel strikes are a significant source of mortality for threatened or endangered blue, humpback and fin whales, the Commission recommends that NOAA include a range of alternatives in the DEIS that would reduce ship-strike risk for these species, and other large whales, by regulating transit corridors and vessel speeds. The long-term seasonal distribution and abundance of the whales should be considered in the design of transit schemes, and current information on distribution and abundance should be used to modify transit corridors and restrict vessel speeds. At a minimum, the draft management plan should include a ship-speed reduction plan similar to those implemented in the other NMSs in California.

Offshore Energy

The Commission supports the long-standing moratorium on oil and gas leasing off the West Coast, especially for protected areas such as National Marine Sanctuaries, and, therefore, encourages NOAA, in the draft sanctuary designation, to highlight the sensitivity of marine habitat and wildlife to oil and gas development and spills, and to ensure through regulation that the impacts of such activities within or adjacent to the sanctuary are minimized. Ideally the Chumash NMS should follow the other California NMSs (Channel Islands, Gulf of the Farallones, Monterey Bay, and Cordell Bank) in prohibiting oil and gas development. Given the risk to marine mammals from oil spills by tankers, the Commission recommends that NOAA include in the DEIS a range of alternatives that would regulate or prohibit the transport of liquid petroleum products through the sanctuary.

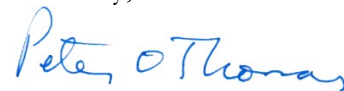
Offshore wind-energy development may represent a risk to marine mammals, but the extent and character of the risk are not yet well understood and the effectiveness of potential mitigation measures has been fully evaluated. Therefore, the Commission recommends that NOAA defer wind-energy development within the sanctuary until that risk is better understood and mitigation strategies are developed to minimize the threat to marine mammals posed by associated activities and structures.

Sea Otter Habitat

The coastal areas that would be included in the proposed sanctuary designation overlap closely with the southern portion of the current range of the threatened southern sea otter. However, the core range extends southward only to about Pismo Beach, with much lower sea otter density further south. Given the importance of range expansion into previously occupied waters as a recovery measure, it would be appropriate to include all of the proposed coastal areas in the sanctuary designation to help accommodate that expansion. To the north, the proposed sanctuary would abut the Monterey Bay NMS, which includes the rest of the current range of southern sea otters. To the south, the proposed Chumash sanctuary touches the northwest corner boundary of the Channel Islands NMS but does not include coastal areas in the eastern part of Santa Barbara County or any waters in Ventura County. Roughly a third of the current population of southern sea otters is found south of the Monterey Bay NMS (Hatfield et al. 2019). These coastal waters of Santa Barbara and Ventura counties are all within the historical range of southern sea otters and the eventual reoccupation of these areas by sea otters might be promoted by including them within the sanctuary. The Commission therefore recommends that, in addition to evaluating the conservation benefits to sea otters from including in the sanctuary designation those coastal waters currently proposed in the nomination, ONMS also consider in the DEIS the potential benefits of including additional coastal waters in the proposed Chumash sanctuary that would connect its southern boundary with the northern and eastern boundaries of the Channel Islands NMS. The Commission further recommends that the DEIS consider management measures for the sanctuary specifically designed to promote the conservation of southern sea otters. In this regard, ONMS should consult with the Fish and Wildlife Service to identify and evaluate alternatives. Ideally, FWS should be invited to be a cooperating agency in helping to draft the portions of the DEIS pertaining to sea otters.

We hope these comments and recommendations are helpful. Please contact me if you have questions.

Sincerely,



Peter O. Thomas, Ph.D.,
Executive Director

Appendix - Background

Area Description

ONMS provided the following description of the area proposed for sanctuary designation, which is located in the marine waters of the central California coast. Figure 1 shows its location and juxtaposition with the Channel Islands and Monterey Bay NMSs:

“The proposed area stretches along 156 miles of coastline, encompassing approximately 7,000-square miles from Santa Rosa Creek near the town of Cambria, San Luis Obispo County, south to Gaviota Creek in Santa Barbara County, and extends offshore to include Santa Lucia Bank, Rodriguez Seamount, and Arguello Canyon.”⁶

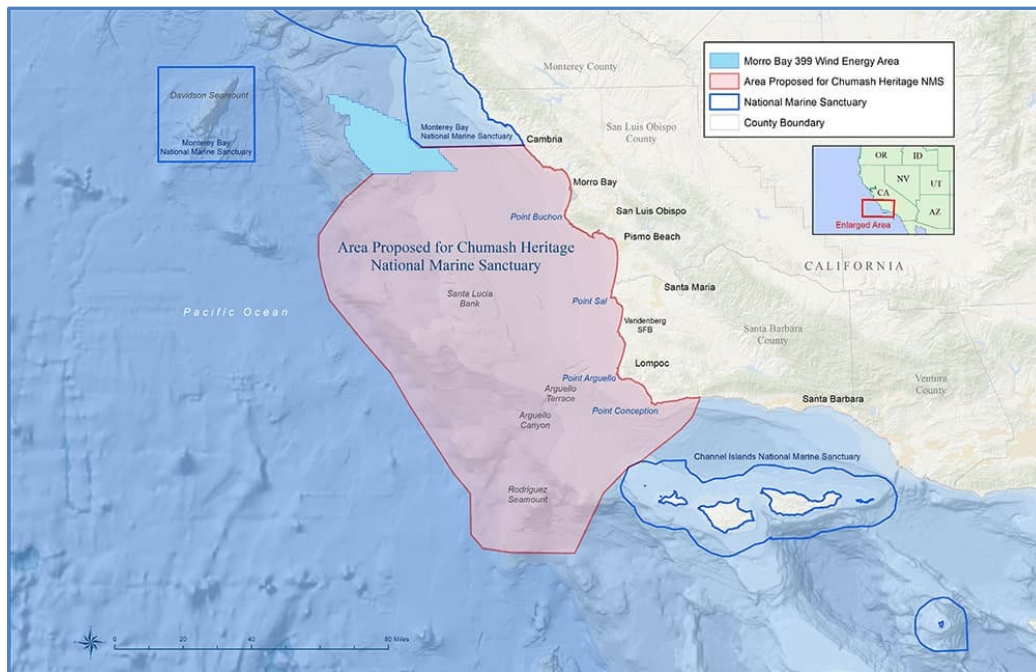


Figure 1. Area proposed for the Chumash Heritage NMS; Credit: NOAA.⁷

The Nomination describes the area as:

- “[A] dynamic setting where two oceanographic regimes transition, these waters are critical to the sustenance of ecologically and commercially important species and support critical habitat that connects biogeographical species assemblages;”

⁶ <https://sanctuaries.noaa.gov/chumash-heritage/>

⁷ Source: <https://sanctuaries.noaa.gov/chumash-heritage/>

- “A key transition zone that includes vital upwelling of great bioproductivity providing sustenance for the proposed area and adjacent marine sanctuaries;”
- “[An area where] ocean fronts of warm and cool water act to increase bioproductivity improving the habitat and increasing fishery production. These fronts create convergent zones that aggregate food and resources in the ocean;”
- “[Containing] offshore geological features such as the Santa Lucia Bank, Arguello Canyon, Concepcion Canyon, Rodriguez Seamount and Santa Barbara Basin provide this area with high physiographic complexity contributing to bioproductivity. Santa Lucia Bank is known as a hotspot for krill density attracting high marine mammal and bird diversity;” and
- “[Containing], in addition to the unique ecosystem, ... extensive cultural and archeological Chumash sites ... including evidence of astronomical observatories, [which] are now submerged off the current coastline.”

Marine Mammal Community

The Commission notes that the proposed sanctuary area is occupied by a large and diverse community of at least 24 species of marine mammals (Henry et al. 2020, Carretta et al. 2021a), including:

- Endangered Central American DPS and threatened Mexico DPS of humpback whales (*Megaptera novaeangliae*) that migrate from winter breeding grounds in Mexico and Central America to northern summer feeding grounds off California, including a biologically important area (BIA) for this species that covers much of the nominated area (Calambokidis et al. 2015);
- Endangered blue whales (*Balaenoptera musculus*) that migrate from southern breeding grounds to summer feeding grounds off California that span the nominated area (Hazen et al. 2016, Abrahms et al. 2019), including a BIA identified for this species in the southern part of the nominated area (Calambokidis et al. 2015);
- Gray whales (*Eschrichtius robustus*), a few of which belong to the endangered western Pacific population, that migrate each year along the coast of California from wintering grounds in Baja California to summer feeding grounds, and back;
- Other species of baleen whales such as the common minke (*Balaenoptera acutorostrata*) and Bryde’s (*B. edeni brydei*) whales, and the endangered sei (*Balaenoptera borealis*) and fin (*B. physalus*) whales;
- Resident coastal populations of harbor porpoises (*Phocoena phocoena*) and common bottlenose dolphins (*Tursiops truncatus*);
- Deep-diving species such as the dwarf sperm whale (*Kogia sima*), pygmy sperm whale (*Kogia breviceps*), short-finned pilot whale (*Globicephala macrorhynchus*), several species of beaked whales (Ziphiidae), and endangered sperm whale (*Physeter macrocephalus*);

- Several species of odontocetes, including the common (*Delphinus delphis*), Risso's (*Grampus griseus*), Pacific white-sided (*Lagenorhynchus obliquidens*), northern right whale (*Lissodelphis borealis*), pantropical spotted (*Stenella attenuata*), and striped dolphins (*Stenella coeruleoalba*), the Dall's porpoise (*Phocoenoides dalli*), and the killer whale (*Orcinus orca*);
- Several species of pinnipeds that breed in or very near to the area, including the California sea lion (*Zalophus californianus*), northern fur seal (*Callorhinus ursinus*), threatened Guadalupe fur seal (*Arctocephalus philippii townsendi*), northern elephant seal (*Mirounga angustirostris*), and harbor seal (*Phoca vitulina*), as well as the Steller sea lion (*Eumetopias jubatus*) that breeds in various parts of the North Pacific; and
- The threatened southern sea otter (*Enhydra lutris nereis*), which is an ecological keystone species in several coastal marine habitats.

Nomination Goals

Key goals specified in the Nomination document, prioritized from the Commission's perspective, are to:⁸

1. "Protect and manage [an] internationally significant ecological transition zone supporting high biological diversity and density of numerous important marine species;"
2. "Establish [a] comprehensive management program to address increasing offshore industrial threats to vital habitats, species and heritage resources;"
3. "Designate a unique indigenous cultural sanctuary that extends and deepens the ONMS natural resource protection message with the philosophy of Thrivability [sic] and heritage of the Chumash and First Peoples;"
4. "Protect, study and interpret the region's maritime heritage and Chumash cultural heritage;" and
5. "Protect [the] economic health of the area including commercial and recreational fisheries whose viability depends on the health of the marine resources. The proposed sanctuary shall have no impact on treaty fishing rights and impose no future regulations upon commercial or recreational fishing."

The Commission agrees with goals (1) and (2), which recognize the ecological importance of the area as year-round habitat, foraging grounds, and a migratory corridor for a large number of marine mammals, several of which are listed as endangered or threatened under the Endangered Species Act (ESA), in the face of significant and increasing anthropogenic threats. Further, the Commission agrees with the strong case made in the Nomination for goals (3) and (4), which are to honor, protect and preserve the cultural heritage of the Chumash peoples. While the Commission recognizes and supports the importance of protecting the economic well-being of central coast human communities, it does not agree with the qualification in goal (5) that no limitations on

⁸ The ordering of these points reflects the Commission's priorities which differ from that in the Nomination document, which followed a different ordering of priorities. [Unclear what this means. Do you mean they are numbered in descending (or ascending) order of priority? Or, is the numbering just there to facilitate referencing in this letter?]

commercial and recreational fisheries within the proposed sanctuary even be considered. Rather, the Commission believes the DEIS should include and assess a range of alternatives regarding the types of fisheries and extent to which each is allowed within the sanctuary. In particular, the DEIS should consider whether it is necessary or desirable to limit commercial and recreational fisheries to meet the goals of the National Marine Sanctuary Act (NMSA), which include “comprehensive and coordinated conservation and management” of “areas which are of special national significance,” and taking actions “to maintain the natural biological communities ... and to protect, ... restore and enhance natural habitats, populations, and ecological processes” (see Sec. 301(b) of the NMSA).

Past and Ongoing Threats to Marine Mammals in California

The area along the central coast of California proposed in the Nomination as a National Marine Sanctuary and the marine mammals found there are exposed to a wide range of threats, primarily of anthropogenic (human-caused or human-related) origin. Because there is relatively little data on threats specific to the area of the proposed sanctuary, we discuss the threats marine mammals face in California that they are also likely to face or may face in the proposed sanctuary. Some threats exist because of the large population centers to the south (Los Angeles) and north (San Francisco Bay area) (e.g., shipping routes), some are related to the many adjacent small communities (e.g., pollutant run-off), and others exist because of the resources available in the area (e.g., exploitable fish populations, oil and gas reserves, offshore renewable energy opportunities).

Table 1. The numbers and proportions of marine mammals injured or killed due to various anthropogenic causes in California, Oregon, and Washington, 2015-2019 (Carretta et al. 2021b).

Anthropogenic Cause	Number	Proportion (%)
Fisheries Interactions	1,099	55.4
Shooting or Harassment	312	15.7
Authorized Killings	183	9.2
Marine Debris Entanglement	123	6.2
Oiling	120	6.1
Vessel Strikes	78	3.9
Other	70	3.5
Total	1,985	100.0

NOAA has reported that nearly 2,000 injuries⁹ and deaths of marine mammals from anthropogenic causes are known to have occurred in NOAA’s West Coast Region (California, Oregon and Washington) during 2015 through 2019 (Carretta et al. 2021b).¹⁰ Tables 1 and 2 present these injuries and deaths by cause and species. The first six species/stocks in Table 2 account for roughly 91 percent of all anthropogenic injuries and deaths in California, Oregon and Washington.

⁹ All injuries, serious and non-serious

¹⁰ Because most likely go undetected, the actual number of injuries and mortalities is likely much larger.

Of those species/stocks, two humpback whale populations, the Mexico and Central America DPSs, are listed under the ESA as threatened and endangered, respectively (Carretta et al. 2021c).

Table 2. The numbers and proportions of human-caused injuries and deaths, combined, for various marine mammal species in California, Oregon, and Washington, during 2015-2019. (Carretta et al. 2021b).

Marine Mammal Species	Number	Proportion (%)
California sea lion	1,112	56.0
Harbor seal	263	13.2
Humpback whale	173	10.0
Northern elephant seal	81	4.1
Gray whale	70	3.7
Common dolphin	71	3.6
Guadalupe fur seal	50	2.9
Harbor porpoise	41	2.1
Pacific white-sided dolphin	20	1.0
Other	67	3.4

Entanglements in buoy lines. Currently, the most important fishing threat to large whales in the nominated area is entanglement in buoy lines associated with pot or trap gear used to catch crabs, lobsters and fish. Humpback, blue and gray whales, primarily, are at risk of becoming entangled in the vertical lines that link the pots/traps on the seafloor with the surface buoys used by fishermen to mark and retrieve their gear. During 2000 through 2013, confirmed entanglements of large whales in fishing gear in California, Oregon and Washington averaged slightly fewer than 10 whales per year, but during 2014 through 2020 the number exceeded 20 every year and was greater than 50 whales in 2015 and again in 2016 (Figure 2).¹¹

During 2014 through 2020, 183 humpback whales, 56 gray whales, 9 blue whales, 3 fin whales, and 1 sperm whale were confirmed to have been entangled in fishing gear in California, Oregon and Washington.¹² NOAA was able to identify the type of fishing gear involved in roughly one-third of the confirmed entanglements. Of those, roughly 67 percent involved Dungeness crab gear (95 percent of those cases involved commercial gear), 16 percent involved gillnet gear, 11 percent involved spot-prawn gear, and 5 percent involved gear from the sablefish or spiny lobster fisheries. The entanglement statistics described here are from the entire West Coast (California, Oregon and Washington). but entanglements could have occurred anywhere in the region, because where an entanglement was detected is often not where it occurred, as large whales can carry entangling gear for weeks or years (Cassoff et al. 2011, Moore and Van der Hoop 2016). The risk of

¹¹ Data extracted from a bar chart published in NOAA's "2020 West Coast Whale Entanglement Summary," available at: https://media.fisheries.noaa.gov/2021-03/2020_West_Coast_Whale_Entanglement_Summary.pdf.

¹² The "2019 West Coast Whale Entanglement Summary," available at: https://media.fisheries.noaa.gov/dam-migration/wcr-nmfs_2019_entanglement_report_final-508_5-11-2020_rev.pdf, provides detailed species and fisheries entanglement data from 2014-2019.

entanglement for each species found in the area nominated for NMS designation likely depends of several factors (e.g., its distribution and co-occurrence with different gear types).

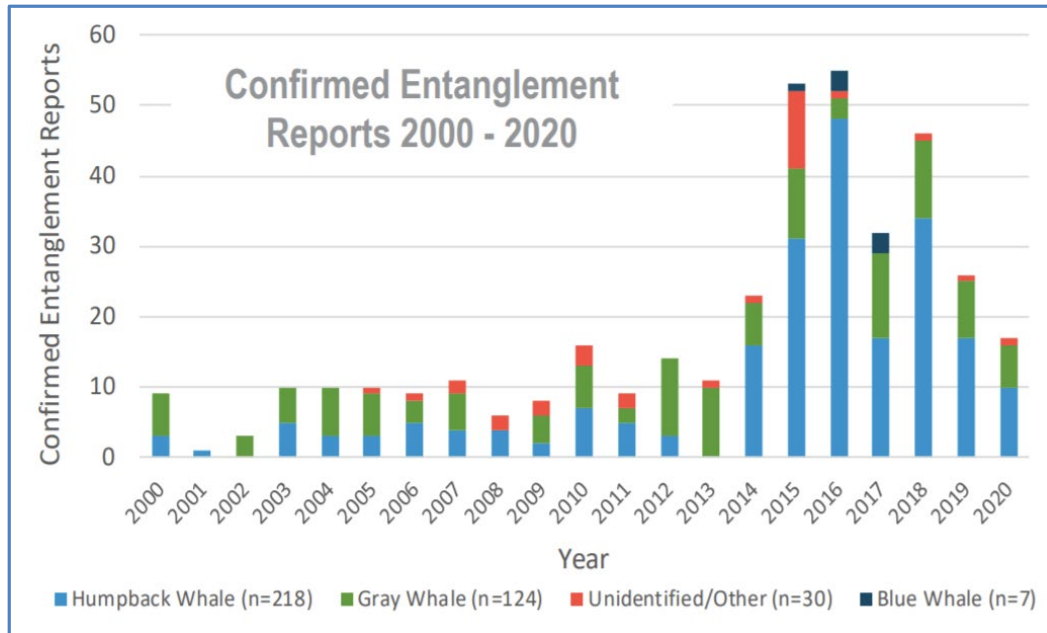


Figure 2. Numbers of confirmed entanglements of humpback, gray, and blue whales, and for other or unidentified large whale species, documented in California, Oregon, and Washington from 2000 to 2020.¹³

While the unprecedented spike in entanglements during 2015-2018 likely was strongly influenced by changes in ocean conditions, and therefore could be seen as an aberration from long-term patterns, those conditions are likely to occur again (Santora et al. 2020, Ingman et al. 2021). The rates of serious injury and mortality resulting from entanglement are, with one exception, strictly unlikely to indicate an unsustainable source of mortality (i.e., greater than NMFS's sustainability reference point, PBR, the potential biological removal level) to any of the species/stock of large whales (Carretta et al. 2021a). Observed serious injury and mortality rates due to fisheries interactions for all of the large whales were less than their PBR (potential biological removal) levels based on available data for the past five years, 2015-2019 (Carretta et al. 2021c).

However, these rates are based on detected/confirmed serious injuries and deaths, and do not take into account the number of undetected serious injuries and deaths ('cryptic mortality'), which have the potential to be several times greater. If the cryptic mortality were taken into account, then it is highly likely serious injuries and deaths would exceed PBR for two or more species. The best data on 'cryptic mortality' in a large whale species, the North Atlantic right whale, indicates that

¹³ Ibid.

roughly 64 percent of all mortality in the population is ‘cryptic’ (Pace et al. 2021). In other words, the true number of deaths is roughly 2.8 times greater than the observed number. Thus, serious injury and mortality rates that appear to be sustainable (i.e., less than PBR) could, in reality, exceed PBR and be unsustainable by the population. For example, in the latest stock assessment report on the eastern North Pacific stock of blue whales, the serious injury and mortality rate due to fisheries interactions is 1.4 whales per year, which is just 34 percent of the population’s PBR (4.1). Recognizing that blue whale carcasses are generally believed to be less buoyant than right whale carcasses and therefore are more likely to sink and go undetected, it is quite possible that the true annual rate of serious injury and mortality for eastern North Pacific blue whales is considerably higher than 1.4.

Although the reported entanglements do not appear to constitute a source of unsustainable mortality for most of these large whale species, they are likely unsustainable for the humpback whales that summer off the central coast of California. All humpback whales found off California and Oregon are part of the threatened Mexico (33 percent) and endangered Central America (67 percent) DPSs (Wade 2017, NMFS 2020, Carretta et al. 2021c). California habitat is especially critical for the endangered Central America DPS, as 93 percent of that DPS summers in California waters (Wade 2017). However, NMFS assesses a West Coast stock of humpback whales that includes individuals from these two populations as well as a third population that breeds in the Hawaiian Islands and summers well north of California, which is not listed under the ESA (Carretta et al. 2021a, c). Therefore, NMFS cannot provide an accurate assessment of the threat to the two listed DPSs. Nonetheless, the known serious injury and mortality rate, 25.2 whales per year, is close to the stock’s PBR of 28.7 whales per year. If ‘cryptic mortality’ were taken into account, then the serious injury and mortality rate for the West Coast stock almost certainly exceed PBR, and the rates for the Mexico and Central America DPSs would almost certainly exceed their respective, lower PBR levels. In other words, the Dungeness crab and other pot/trap fisheries operating along the central coast of California and elsewhere in California, Oregon and Washington may pose a significant and likely unsustainable threat to these two humpback whale DPSs and therefore should be explicitly considered in the designation of the proposed sanctuary and the evaluation of proposed management measures. In other words, the West Coast stock is likely to be experiencing an unsustainable level mortality due to entanglement. Because most of the entanglements of the West Coast occur in California, the greatest impact is on the two ESA listed DPSs.

Entanglements in gill nets. Gill nets are widely acknowledged as one of the greatest fishery-related threats to marine mammals (Reeves et al. 2013). Previously, California had two gill-net fisheries that were responsible for large numbers of marine mammal deaths. Bycatch of harbor porpoises along the central coast, from the Morro Bay and other harbor porpoise stocks off California, occurred from the 1930s through the 1980s in the white seabass and halibut set gill-net fisheries (Barlow and Hanan 1995, Forney et al. 2020). Bycatch due to these fisheries decreased and then largely ceased following a prohibition of the use of set gill nets in waters shallower than 56 m in 1991 and then in 2002 when a permanent ban of their use in waters shallower than 110 m was implemented. Effort in these fisheries was consistently high from 1980-1986, dropped significantly in 1987, and then again 1991, with bycatch generally following the same pattern (Figure 3).

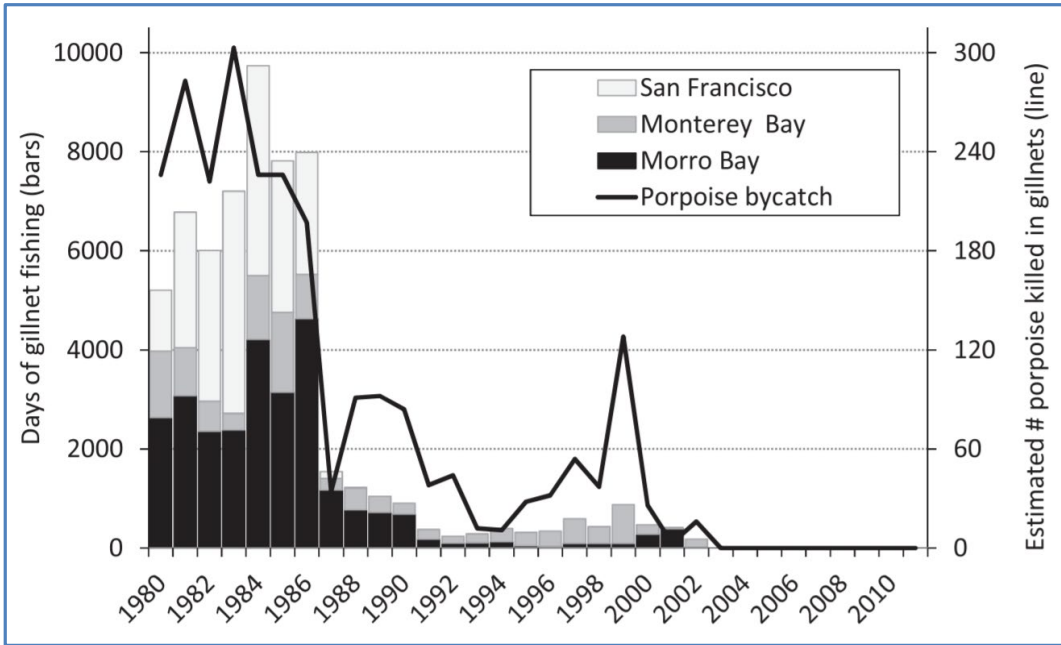


Figure 3. Estimated bycatch of three California stocks of harbor porpoises and set gill-net fishing effort from 1980 to 2012 (Figure 1 in Forney et al. 2020).

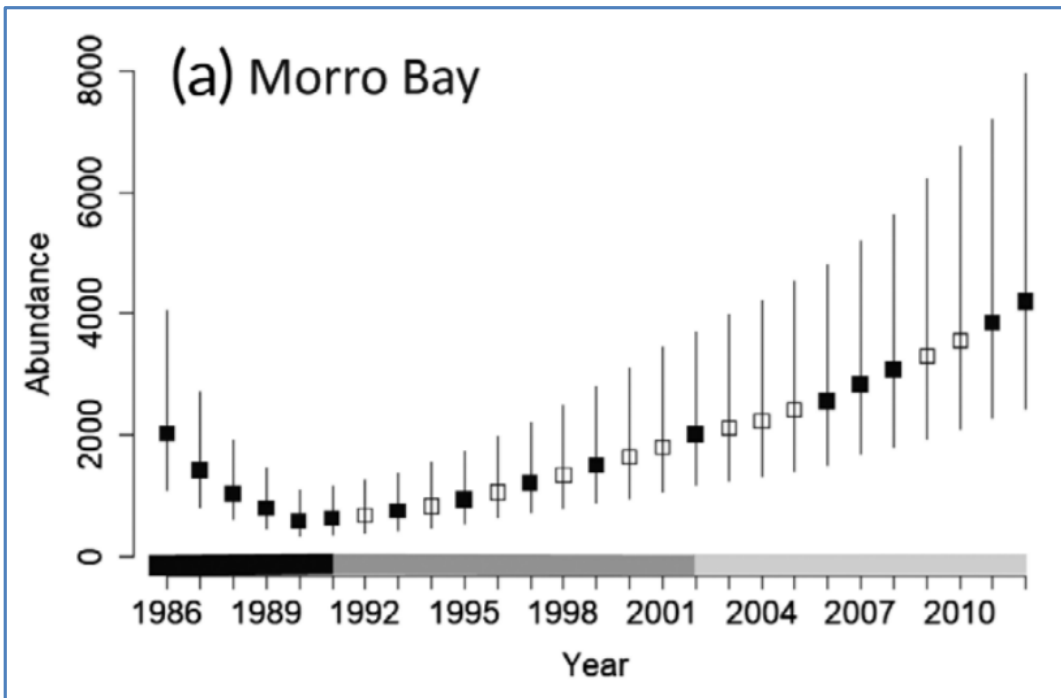


Figure 4. Estimated population size of the Morro Bay stock of harbor porpoises from 1986 to 2012 (from Figure 3 in Forney et al. 2020).

The estimated population size of the Morro Bay stock of harbor porpoises declined rapidly from 1986-1990 and then increased from 1991, when fishing effort was significantly curtailed, suggesting that the bycatch rate during 1986 through 1990, and likely before that period considering the similarly high fishing effort rate, was unsustainable for the population (Figure 4).

The California large-mesh drift gill-net fishery has had a similar history. During 1990 through 1994, effort in this fishery, also known as the California thresher shark and swordfish fishery, averaged more than 4,000 sets per year (Figure 5, Carretta 2021). Following that period, effort declined gradually due to a variety of factors, but has been relatively stable at approximately 500 sets per year since 2009. During this early period, bycatch rates were much higher than during 2009 through 2019, for the species shown in Table 3. The decline in bycatch was due to several factors, including declining effort and the adoption of pingers and gear modifications in 1996 (Barlow and Cameron 2003, Carretta et al. 2008, Carretta and Barlow 2011). The bycatch rates during 1990 through 1994 likely were unsustainable for several species, including Baird’s beaked whale (*Berardius bairdii*), Cuvier’s beaked whale (*Ziphius cavirostris*), *Mesoplodon* beaked whales, short-finned pilot whale, and sperm whale (Barlow et al. 1995).

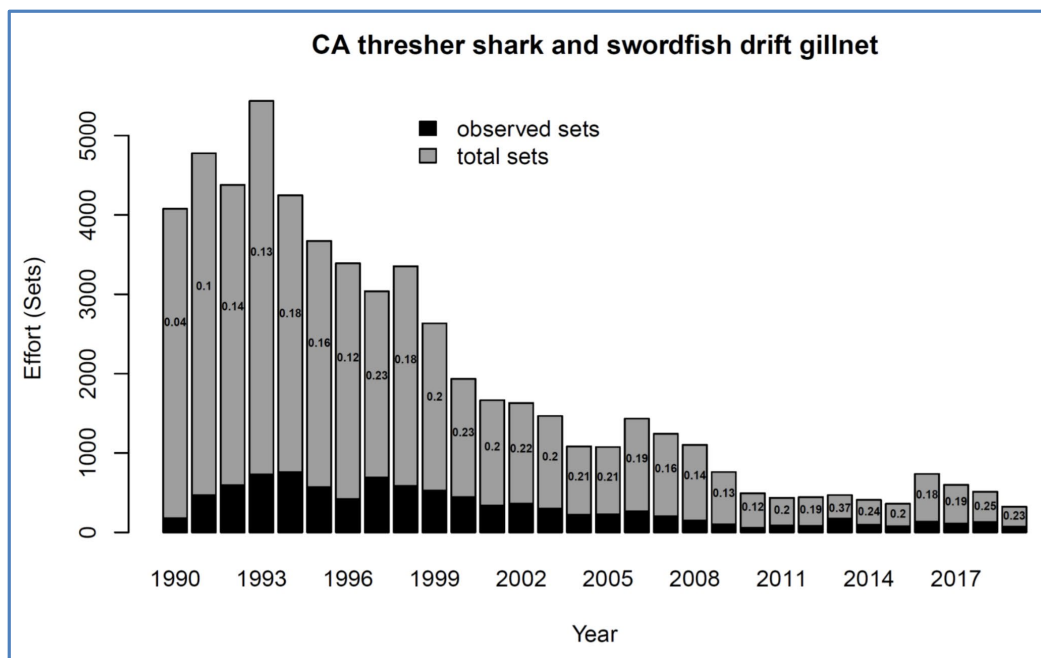


Figure 5. Fishing effort (number of sets) in the California thresher shark and swordfish drift gill-net fishery from 1990 to 2019 (Figure 2 in Carretta 2021).

Shipping. Large whales are also at risk of being struck by vessels of all sizes, but especially medium to large ships (e.g., freighters, tankers, cargo carriers). They are particularly at risk within the shipping corridor that runs north and south through the proposed sanctuary area between major ports on the West Coast (e.g., Los Angeles/Long Beach and San Francisco/Oakland) and the traffic separation channel used by large numbers of vessels when entering or leaving the ports of Los Angeles and Long Beach through the Santa Barbara Channel at the southern edge of the nominated area. Vessel strikes are a significant source of mortality for blue, humpback and fin whales in

California, Oregon and Washington (Carretta 2021b). In just the last five years for which data are available (2015-2019), 78 large whales are known to have been struck and seriously? injured or killed by vessels in California, Oregon and Washington (Carretta 2021b). The true number is likely much larger because most large whale carcasses sink and are unlikely to be detected (Moore et al. 2020). An estimated 18 endangered blue whales are struck and killed by vessels in the West Coast EEZ per year (Becker et al. 2016, Rockwood et al. 2017), which exceeds PBR for the population (4.1) by a factor of 4.4.

Table 3. For selected cetacean species, estimated mean annual bycatch in the California large-mesh drift gill-net fishery during 2009-2019 versus estimated means during 1990-1994 (data from Carretta 2021).

Marine Mammal Species	2009-2019	1990-1994	Difference
Baird's beaked whale	0.0	5.6	n/a
<i>Mesoplodon</i> beaked whales	0.01	9.8	1,082x
Cuvier's beaked whale	0.09	24	262x
Northern elephant seal	2.1	116	55x
Short-finned pilot whale	0.67	14	21x
Pacific white-sided dolphin	1.6	30	19x
Common dolphin	24	285	12x
Sperm whale	0.69	7.5	11x
Humpback whale	0.15	1.2	8x

Measures that have been taken in California to reduce vessel-strike risk to large whales include the following:

- To reduce the risk of vessel strikes to endangered blue whales, the Santa Barbara traffic separation channel was repositioned in 2013, and voluntary and incentivized speed reductions were implemented (Freedman et al. 2007);
- Other California NMSs (Channel Islands, Greater Farallones, Cordell Bank, and Monterey Bay) have vessel speed reduction programs; and
- State and Federal regulations enacted in 2008 and 2010 required the use of cleaner fuels within 24 nm and 200 nm of the coast, respectively, and apparently induced vessels to stay further offshore and/or to slow down, actions that reduced vessel-strike risk to marine mammals, by minimizing time spent in regulated waters (Friedman et al. 2017).

Oil spills and offshore energy development. The first drilling for oil in ocean waters took place in 1896 off Santa Barbara County. Offshore drilling expanded rapidly in the years to follow. However, concerns about the environmental impact of oil and gas development were heightened after more than 3 million gallons of crude oil were spilled after the blowout of the Union Oil drilling platform off Santa Barbara in 1969. The Santa Barbara oil spill led to a moratorium on oil and gas leasing in California state waters in 1969 and a Congressional moratorium on oil and gas leasing in federal waters off the U.S. West Coast in 1982. However, drilling and production continued on existing oil and gas leases after the state and federal moratoriums. There are currently 23 active oil- and gas-producing platforms in southern California Outer Continental Shelf (OCS) waters, from Huntington

Beach to Point Conception¹⁴, south of the proposed sanctuary. Despite the passage of the Oil Pollution Act in 1990 and regulations designed to reduce the risk of oil spills from drilling, production, and transport of oil, oil spills – both large and small – occur on a regular basis. As noted by the NOAA Office of Response and Restoration¹⁵, even small spills can cause major harm to the marine environment. Marine mammals off California at greatest risk from offshore oil spills include sea otters, seals, fur seals, and small cetaceans (dolphins and porpoises). Oil and gas platforms can also be a source of pollution from drilling muds and other by-products, and marine debris. In addition, oil and gas development and production can result in disturbance to marine mammals from sound associated with drilling activities and oil and gas shipping, and in increased risk of vessel strikes by support vessels and tankers.

The state of California is actively engaged in the development of offshore wind energy, with lease areas in Central California currently undergoing environmental review prior to a potential lease sale. In 2018, the Bureau of Ocean Energy Management (BOEM) published a Call for Information for two potential Wind Energy Areas (WEA) in Central California - the Morro Bay WEA and the Diablo Canyon WEA ([83 Fed. Reg. 53096](#)). The proposed Morro Bay WEA was located just north of the proposed sanctuary (Figure 1), and the proposed Diablo Canyon WEA was located within the boundaries of the proposed sanctuary¹⁶. The proposed Diablo Canyon WEA was subsequently determined by the Department of Defense to be incompatible with wind energy development and BOEM is no longer considering it for a wind energy lease sale. However, BOEM has recently proposed to extend the Morro Bay Call Area along its original eastern and western boundaries, as represented in Figure 1 ([86 Fed. Reg. 40869](#)). The Commission is supportive of efforts to develop offshore renewable energy, including wind energy. However, as with any new industrial activity proposed in marine mammal habitat, the Commission believes that development should proceed in a thoughtful and deliberate manner. Primary concerns with regard to wind energy development off California include potential impacts on marine mammals from the construction, operation, and decommissioning of wind energy platforms in coastal and offshore waters. It is likely that any new wind energy platforms off California would be floating turbines (as opposed to the fixed-bottom platforms being constructed on the U.S. east coast), with additional research needed to determine the extent of entanglement risk to whales and other marine mammals from the underwater mooring/cabling system. Other potential impacts on marine mammals include an increased risk of vessel strikes from turbine support vessels and sound generated during turbine operation.

Sea Otter Habitat. Southern sea otters are dependent on several of the proposed NMS's complex, rich and diverse coastal habitats, including kelp forests, rocky shores and estuaries, that support numerous populations of marine birds and mammals, fishes and invertebrates, some of which are commercially important. Sea otters are keystone species critical to maintaining the integrity of these habitats by preventing the overgrazing of kelp and sea grass by urchins and gastropods (e.g., Nichols et al. 2015, Raymond et al. 2021, Smith et al. 2021). As such, it is important to protect, conserve and recover the population of southern sea otters is critical to promote the integrity and productivity of the habitats they currently occupy. The Fish and Wildlife Service (FWS)

¹⁴ <https://www.bsee.gov/stats-facts/ocs-regions/pacific/pacific-ocs-platforms>

¹⁵ <https://response.restoration.noaa.gov/oil-and-chemical-spills/oil-spills/largest-oil-spills-affecting-us-waters-1969.html>

¹⁶ See BOEM Central California Call Area map at <https://www.boem.gov/sites/default/files/renewable-energy-program/State-Activities/CA/Central-California-Call-Areas-Map.pdf> (November 2018).

considers further range expansion to be a key aspect of the recovery strategy for this subspecies, including reoccupation of areas within the proposed Chumash sanctuary.¹⁷ In addition to southern sea otters face a variety of anthropogenic threats throughout their range, including:

- Oil spills, such as the major spill that occurred in the Santa Barbara Channel in 1969;
- The discharge of urban and agricultural waste water, the latter of which can contain dangerous levels of fertilizers, herbicides, heavy metals, and disease-causing organisms;
- Warm water discharges, such as those from the Diablo Canyon nuclear power plant; and
- Shoreline and estuarine developments, such as breakwaters and marinas.

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¹⁷ <https://www.fws.gov/ventura/endangered/species/info/sso.html>

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