

**Public Comment Submitted for the February 10, 2022 Joint Cordell Bank and Greater Farallones National Marine Sanctuaries Advisory Council Meeting**

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**Jacqueline Moore, Pacific Merchant Shipping Association**

The Pacific Merchant Shipping Association is an independent, not-for-profit association focused on global trade and represents owners and operators of U.S. and foreign vessels at U.S. West Coast ports. I appreciate the opportunity to comment on the Ship Strike Report completed by the working group for consideration by the councils.

Firstly, I applaud the science based approach undertaken by the group, and the real analysis of AIS data of shipping lanes and marine life. Policies backed by science with measurable impacts is the model of excellence.

The great amount of stakeholder outreach was also encouraging to see, and provided invaluable input by the various stakeholders, and not only by the shipping community. We support the industry input included in the report regarding the proposal of shifting or removal of traffic lanes, as it would have varying impacts to our members based on vessel type, and I encourage further collaboration with the USCG and international body IMO if the councils so choose to explore those concepts.

PMSA is pleased to formally offer its support of the first conceptual design, to implement a year-round voluntary VSR program. We appreciate the use of voluntary programs to allow flexibility for operational demands, safety or weather concerns or perishable cargos and other considerations. The one request the industry does make today is as the transit into berth will take a bit longer, greater communication and engagement with all stakeholders, from captains to pilots will be important to ensuring the highest compliance rate possible. We are sure this can be a very effective program. Again, PMSA lends support of the first proposal, and look forward to collaborating with you in the future.

**Catherine Kilduff, Center for Biological Diversity**

Please find attached a petition that the Center for Biological Diversity submitted to the Secretary of Commerce and others asking for a mandatory 10-knot speed limit current voluntary vessel speed reduction zones in the San Francisco region for vessels greater to or equal to 40 feet in length. Given the science in this petition, especially regarding the high level of ship-strike mortality of endangered whales, we urge the Sanctuary Advisory Council to call for mandatory action in the short-term.

April 28, 2021

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RE: Notice of Petition for Rulemaking to Prevent Deaths and Injuries of Endangered Blue, Humpback, and Fin Whales from Vessel Strikes

Dear Secretary Raimondo, Acting Director Marzin, and Mr. Thom,

Endangered blue, humpback, and fin whales off California's coast are too frequently struck and killed by ships. Rich, cold waters attract them from hundreds of miles away to feed. They return year after year to specific ocean areas known for productivity to feed on krill, anchovy, and other ocean animals. In doing so, these great whales sequester carbon, fertilize the sea floor, and create opportunities for the vast diversity of life in California's ocean.

California is also home to millions of people, making its waters subject to pressure from anthropogenic threats. Vessel strikes are the biggest source of human-caused mortality to most large whales on the U.S. West Coast, followed closely by fishing gear entanglements. Large cargo ships, some longer than four city blocks, funnel into shipping lanes to ports, including those near the San Francisco and Santa Barbara regions. If traveling at speeds over 10 knots, these large ships risk hitting whales, causing internal organ damage, propeller wounds, and other injuries.

Scientists estimate that 80 whales die from ship strikes each year on the U.S. West Coast, although records of dead whales injured by ship strikes are less frequent because the carcasses may sink to the bottom of the ocean or wash ashore on remote beaches. Most large whale species are listed as endangered or threatened, with populations still facing extinction brought on by industrial whaling. The largest animal in the world, the endangered blue whale, is especially at risk because it uses the waters of southern California for feeding and breeding behaviors next to the busy Ports of Los Angeles and Long Beach. Estimated annual mortality for blue whales (18)

exceeds the threshold level that allows recovery (1.23 deaths in U.S. waters) by an order of magnitude.

For these reasons, the National Marine Fisheries Service (NMFS) must take action under the Marine Mammal Protection Act and the Endangered Species Act to issue regulations slowing commercial vessels greater than or equal to 40 feet in length, establish offshore shipping routes between southern California and San Francisco, and issue regulations protecting areas of importance for large whales near the coast. Years of voluntary speed limit recommendations have failed to slow enough ships to reduce mortality by the level required by law.

Pursuant to the right to petition the government provided in the First Amendment to the U.S. Constitution and the Administrative Procedure Act (APA), the Center for Biological Diversity hereby petitions the Secretary of Commerce, acting through NMFS, to take the additional steps necessary to protect endangered and threatened blue, humpback, and fin whales. Specifically, we request that NMFS utilize its authorities under the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA) to issue a rule as follows:

- Implement a year-round mandatory 10 knot speed limit in the National Oceanic and Atmospheric Administration's (NOAA's) current voluntary vessel speed reduction zones in the San Francisco Bay Region and the Southern California Region for vessels greater than or equal to 40 feet in length.
- Establish shipping routes or vessel tracks for all commercial shipping vessels transiting between ports in Southern California and San Francisco Bay Area at least 24 nautical miles from shore.
- Identify areas of seasonal importance for blue whales, humpback whales, and fin whales, and set a vessel traffic threshold above which additional management measures will be triggered. The measures considered must include a ban on nighttime traffic.

Recent science comparing the overlap of blue, humpback, and fin whales and vessel traffic by using Automatic Identification System (AIS) data has given NMFS the information it needs to support promulgation of the requested regulation. We urge NMFS to start the rulemaking process immediately to fulfill its statutory obligations under the ESA and MMPA to ensure the whales' survival and recovery.

The APA allows for an interested person to participate in the regulatory process through the submission of a petition for the “issuance, amendment, or repeal of a rule.” 5 U.S.C. § 553(e). Failure to respond to such a petition within a reasonable timeframe constitutes a violation of an agency’s duty under the APA. 5 U.S.C. § 555(e). The Center for Biological Diversity considers 12 months to be such a reasonable timeframe given the severe and ongoing

impact of ship strikes on strategic marine mammal stocks and requests that the agency respond to the petition within that period.<sup>1</sup>

Sincerely,

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The Center for Biological Diversity is a national, nonprofit conservation organization with more than 1.7 million members and online activists dedicated to the protection of endangered species and wild places. The Center and its members are concerned with the conservation of marine mammals, sea turtles, and other organisms, and the effective implementation of the Endangered Species Act, Marine Mammal Protection Act, and other applicable laws.

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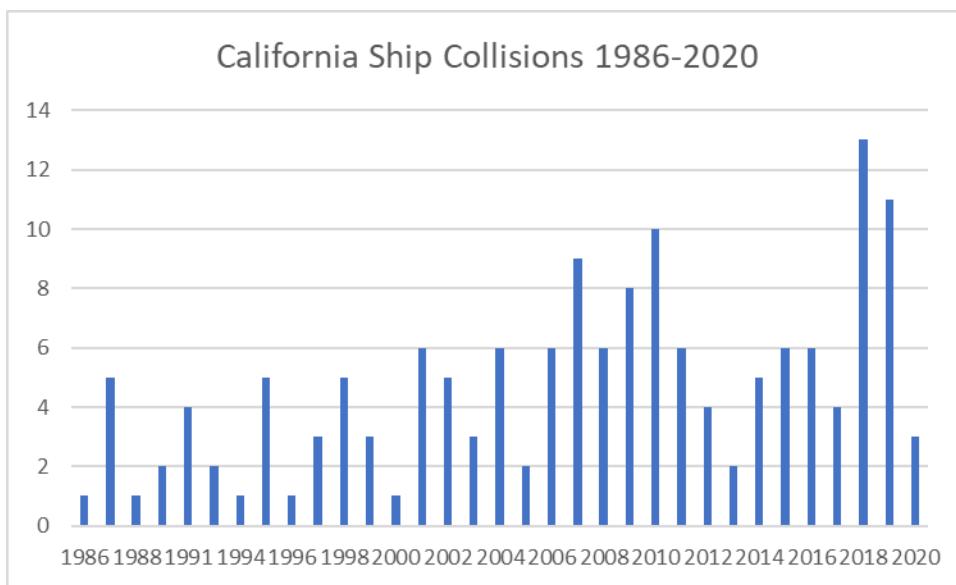
<sup>1</sup> The provisions of this Petition are severable. If any provision of this Petition is found to be invalid or unenforceable, the invalidity or lack of legal obligation shall not affect the other provisions of the Petition.

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## I. Introduction: The need for action

In 2018, ships killed and seriously injured 13 whales in California (Carretta et al. 2020a). This was the highest number on record since NMFS began keeping records in 1982. Ship strikes represent the majority of human-caused large whale deaths on the U.S. West Coast from 2014 to 2018, with a total of at least 26 whale deaths, followed by fishery-related entanglements (21 deaths) (*id.*). For fin whales, eight died from vessel strikes during this time period, representing the leading cause of human-caused injury and death (*id.*). For both blue whales (three deaths) and humpback whales (13 deaths), vessel strikes are the second leading cause of injury and death after fishery interactions (*id.*).



**Figure 1.** Number of recorded whale injuries and deaths from ship collisions in California each year.  
(Data Source: NMFS, pers. comm.)

These observed whale deaths severely undercount actual mortality. Scientists estimate that vessel strikes kill 80 whales each year off the West Coast (Rockwood et al. 2017). Rockwood et al. (2017) estimated that annual vessel strike mortality from July to December was 18 blue, 22 humpback, and 46 or 43 fin whales, under two different models of whale collision avoidance: decreasing avoidance with increasing vessel speed or a constant 55% avoidance, respectively (*id.*). Given the uncertainty in accounting for whale collision avoidance, they also calculated strike mortality in the case of no avoidance, producing estimates of 40 blue, 48 humpback, and 95 fin whale deaths (*id.*). For imperiled populations, “death from vessel collisions may be a significant impediment to population growth and recovery” (*id.*).

Even that study underestimated the annual number of whales killed because it focused on the period of July to December. An update used recent humpback data to calculate mortality in winter/spring (January-April); mortality during these four months was actually more (6.5 whales; 1.63/month) than during the 6 summer/fall months (5 whales; 1.25/month) in Southern California (Rockwood and Jahncke 2019). This study neither included information for January to April for fin or blue whales, nor estimated humpback mortality in central or Northern California. Thus, even it underestimated whale mortality.

## II. Legal Framework

Both the ESA and MMPA mandate that NMFS protect and recover endangered whales. To meet these statutory mandates, NMFS must ensure that blue, fin, and humpback whales are protected from one of the biggest anthropogenic threats to their continued existence – vessel strikes – by requiring speed limits that apply to all vessels over 40 feet in length and adjusting the areas in which shipping traffic is focused away from whale hotspots.

### A. ESA

Enacted in 1973, the ESA is a broad statutory scheme designed to protect endangered and threatened species and conserve the habitats upon which they depend.<sup>2</sup> Considered “the most comprehensive legislation for the preservation of endangered species ever enacted by any nation,” the ESA embodies the “plain intent of Congress . . . to halt and reverse the trend toward species extinction, whatever the cost.”<sup>3</sup>

To that end, section 2(c) of the ESA establishes that it is the “policy of Congress that all Federal departments and agencies shall seek to conserve endangered species and threatened species and shall utilize their authorities in furtherance of the purposes [of the ESA].”<sup>4</sup> Similarly, section 7(a)(1) mandates that all federal agencies, “utilize their authorities in furtherance of the purposes of [the ESA] by carrying out programs for the conservation of endangered species and threatened species.”<sup>5</sup> The ESA defines “conserve” as “the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to this chapter are no longer necessary.”<sup>6</sup> “Section 7 substantially amplifies the obligation of federal agencies to take steps within their power to carry out the purposes of” the ESA.<sup>7</sup>

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<sup>2</sup> 16 U.S.C. § 1531(b).

<sup>3</sup> *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 180, 184 (1978).

<sup>4</sup> 16 U.S.C. § 1531(c)(1).

<sup>5</sup> *Id.* § 1536(a)(1).

<sup>6</sup> *Id.* § 1532(3).

<sup>7</sup> *Tenn. Valley Auth.*, 437 U.S. at 183 (citing 119 Cong. Rec. 42913 (1973)) (alterations removed).

In addition, section 4(f) specifically requires that NMFS “develop and *implement* plans ( . . . referred to as ‘recovery plans’) for the conservation and survival of endangered species.”<sup>8</sup> Consistent with the intent that recovery plans actually be implemented, Congress required that recovery plans “incorporate . . . a description of such site-specific management actions as may be necessary to achieve the plan’s goal for the conservation and survival of the species.”<sup>9</sup> Based on the information below showing that the level of mortality from vessel strikes exceeds biological thresholds (potential biological removal) for blue whales and humpback whales, NMFS must take additional action aimed at reducing the risk of injury and death from vessel strikes to meet the requirements of sections 2, 4, and 7 of the ESA.

Collisions with vessels are not only impeding the recovery of blue, humpback, and fin whales, but the mortalities and injuries that result from such collisions are also themselves unlawful. The ESA prohibits the unauthorized “take” of an endangered species.<sup>10</sup> The ESA defines take to include engaging in or attempting to engage in conduct that will “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect” an individual of a listed species.<sup>11</sup> Vessel strikes resulting in the injury or death of an endangered whale “take” whales in violation of section 9 of the ESA. The ownership, operation, and authorization of vessels that take endangered whales have occurred and continue to occur without any permit from NMFS authorizing such takes. NMFS must therefore regulate vessel operations to eliminate these illegal takes.<sup>12</sup>

## B. MMPA

Similar to the ESA, the MMPA requires NMFS to “prescribe such regulations as are necessary and appropriate to carry out the purposes of th[e] Act.”<sup>13</sup> In enacting the MMPA, Congress declared that marine mammals “have proven themselves to be resources of great international significance, esthetic and recreational as well as economic” and that they “should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management and that the primary objective of their management should be to maintain the health and stability of the marine ecosystem.”<sup>14</sup>

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<sup>8</sup> 16 U.S.C. § 1533(f)(1) (emphasis added).

<sup>9</sup> *Id.* § 1533(f)(1)(B)(i).

<sup>10</sup> *Id.* § 1538(a)(1)(B), (C).

<sup>11</sup> *Id.* § 1532(19). NMFS defines “harm” to include “an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding or sheltering.” 50 C.F.R. § 222.102.

<sup>12</sup> See 16 U.S.C. § 1540(f) (authorizing NMFS to “promulgate such regulations as may be appropriate to enforce” the mandates of the ESA).

<sup>13</sup> *Id.* § 1382(a).

<sup>14</sup> *Id.* § 1361(6).

The MMPA seeks to maintain stable, functioning marine ecosystems, to secure and restore healthy marine mammal populations,<sup>15</sup> and to protect individual animals from harm.<sup>16</sup> Accordingly, the MMPA defines an “optimum sustainable population” (OSP) of each marine mammal stock as “the number of animals which will result in the maximum productivity of the population or the species,” considering both carrying capacity of the habitat and ecosystem health.<sup>17</sup> To facilitate achieving OSP, NMFS annually assesses the potential biological removal (PBR) level for endangered and threatened marine mammal stocks.<sup>18</sup> PBR is defined as the “maximum number of animals . . . that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.”<sup>19</sup>

To achieve these goals, the MMPA establishes a “moratorium on the taking” of marine mammals,<sup>20</sup> and specifically forbids “any person . . . or any vessel or other conveyance subject to the jurisdiction of the United States to take any marine mammal on the high seas”; “any person or vessel or other conveyance to take any marine mammal in waters or on lands under the jurisdiction of the United States”; and any person from “us[ing] any port, harbor, or other place under the jurisdiction of the United States to take or import marine mammals or marine mammal products.”<sup>21</sup> The statute broadly defines take to mean “to harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.”<sup>22</sup>

Vessel strikes resulting in the injury, death, or harassment of a whale are clearly “taking” whales in violation of the MMPA. Moreover, the number of blue and humpback whales killed or seriously injured by vessel collisions exceeds PBR. Therefore, take from vessel strikes impedes the recovery of these endangered species. The MMPA directs NMFS to establish additional regulatory measures designed to reduce the threat of vessel strikes and thereby effectuate the purpose of the statute.<sup>23</sup>

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<sup>15</sup> *Id.* § 1361(2).

<sup>16</sup> See e.g., *id.* § 1362(18)(A) (defining “harassment” to include acts that affect “a marine mammal or marine mammal stock in the wild”) (emphasis added); *id.* § 1372(b) (requiring that authorized take of a marine mammal be humane); *Animal Welfare Institute v. Kreps*, 561 F.2d 1002, 1007 (D.C. Cir. 1977) (“the MMPA is an unusual statute . . . motivated by considerations of humaneness towards animals, who are uniquely incapable of defending their own interests”).

<sup>17</sup> 16 U.S.C. §§ 1361(6), 1362(9).

<sup>18</sup> *Id.* §§ 1362(19), 1386(a)(6).

<sup>19</sup> *Id.* § 1362(20).

<sup>20</sup> 16 U.S.C. § 1371(a).

<sup>21</sup> 16 U.S.C. § 1372(a).

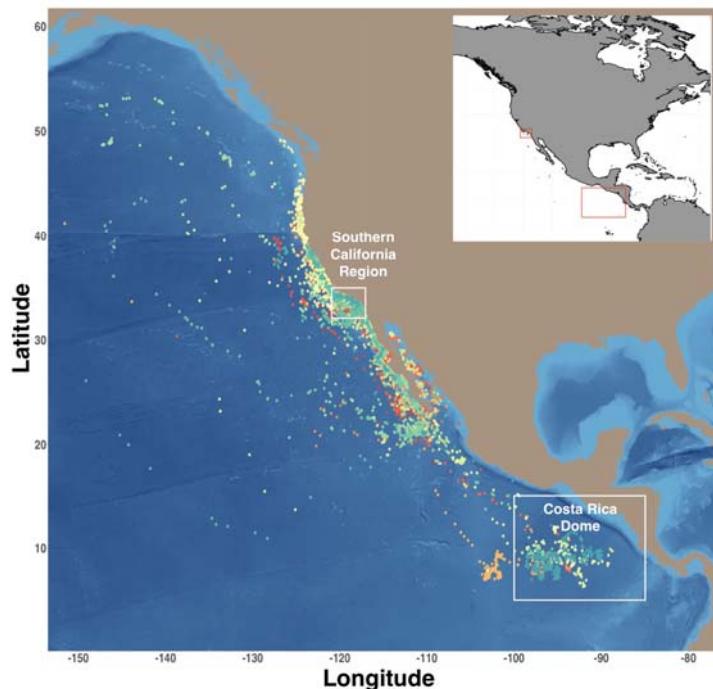
<sup>22</sup> *Id.* § 1362(13) (emphasis added); see also 16 U.S.C. § 1362(18)(A) (definition of “harassment” includes acts that affect “a marine mammal or marine mammal stock in the wild”).

<sup>23</sup> Indeed, in enacting the MMPA, Congress specifically recognized that the statute would provide the much-needed means for regulating vessels that harm marine mammals. See 1972 H.R. Rep. No. 92-707 (1972), reprinted in 1972 U.S.C.C.A.N. 4144, 4147–4150 (stating that “the operation of powerboats in areas where the manatees are found” posed a threat to manatees and, without the MMPA, “the Federal

### III. Background on Blue Whales, Humpback Whales, and Fin Whales

#### A. Blue Whales

The largest animal ever to exist, blue whales have been protected by the ESA and its precursor for over 50 years. Blue whales off California belong to the Eastern North Pacific Stock (Carretta et al. 2020b). Whales photographed off California have matched to whales off northern British Columbia and one individual in the northern Gulf of Alaska (Calambokidis et al. 2009). California satellite-tagged whales have been tracked along the Baja California, Mexico coast and as far as the Costa Rica Dome, an upwelling feature in the eastern tropical Pacific (Mate et al. 1999, Szesciorka et al. 2020). See Figure 2.



**Figure 2.** GPS positions from satellite tagged blue whales ( $n=122$ ) showing movement between summer feeding grounds in and north of the Southern California Region and winter breeding grounds in the Costa Rica Dome. Colors correspond with individual whales. Tagging dates spanned 1993–2008, and tags remained attached from 1 to 504 days with an average of 95 days. Tagging locations included Northern California ( $n=22$ ), Central California ( $n=17$ ), Southern California ( $n=78$ ), Baja California ( $n=3$ ), and the Costa Rica Dome ( $n=2$ ) (Szesciorka et al. 2020).

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government is essentially powerless to force these boats to slow down or curtail their operations.” The MMPA “would provide the Secretary of the Interior with adequate authority to regulate or even forbid the use of powerboats in waters where manatees are found.”).

Generally blue whales arrive in the Southern California region to feed on krill in May and depart in November, staying on average 8.4 months (Szesciorka et al. 2020). Acoustic data collected in the San Francisco Bay Area, at Cordell Bank National Marine Sanctuary, indicated that blue whales were present beginning in July or August and ending in December or January, depending on the year (Haver et al. 2020). The arrival and departure of the whales varies year to year, depending on oceanographic conditions and prey availability.

Scientists have concluded that blue whales' memory of the prior year sea surface temperature anomalies and prior years' spring bloom locations influence when they arrive on the feeding grounds and where they go (Szesciorka et al. 2020; Abrahms et al. 2019a). Because krill biomass is correlated with sea surface temperature the year prior, blue whales could advance their arrival time (cold years, more krill, early arrival) or delay it (warm years, impoverished prey, late arrival) (Szesciorka et al. 2020). Despite the year-to-year variability, the data show a long-term trend of blue whales arriving at their summer feeding grounds more than a month earlier than at the beginning of a 10-year study but departing at the same time every year (*id.*). This presents a possible increase in overlap with commercial ships and other anthropogenic threats off California (*id.*).

One scientific development that could help inform when blue whales are leaving the feeding grounds and migrating south is the discovery that foraging blue whales sing primarily at night, whereas migratory whales sing primarily during the day (Oestreich et al. 2020). This research might allow near real-time information necessary for dynamic management strategies, for example, “notice on the timing of southward migration from key foraging areas (e.g., Monterey Bay) might inform prediction of when migrating blue whales will encounter relatively high vessel-strike risk in areas such as the Santa Barbara Channel” (*id.*).

## Blue Whale Population

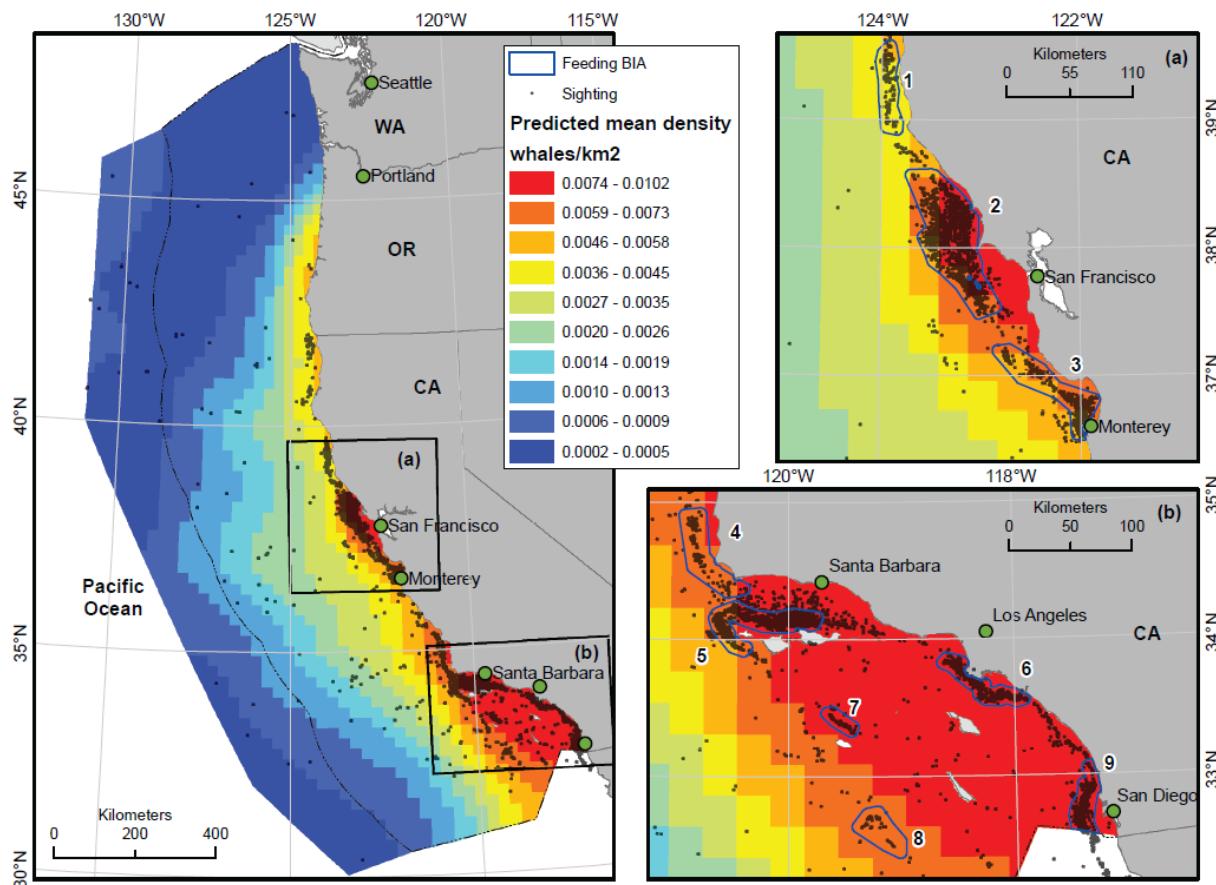
The most-recent abundance estimate for the Eastern North Pacific blue whale is 1,496 (CV=0.44) whales, based on the 2014 line-transect survey within the California Current (Barlow 2016; Carretta et al. 2020b). There is no evidence of a population size increase in the Eastern North Pacific blue whale population since the early 1990s, according to mark-recapture estimates, which are the best estimate of population trends (Carretta et al. 2020b). The minimum estimate of abundance is 1,050 whales, which gives a potential biological removal level (PBR) for U.S. waters of 1.23 whales (*id.*). Given the estimate of ship strike mortality in Rockwood et al. (2017) of 18 whales annually on the U.S. West Coast, in summer and fall months and assuming some avoidance behavior, ship strikes alone exceeds PBR several times over (Rockwood et al. 2017, Redfern et al. 2013).

Blue whales also succumb to fishing gear entanglements. The estimated annual entanglement rate of blue whales is 1.44 whales annually (Carretta et al. 2020b). Reported entanglements have occurred in the California Dungeness crab pot gear fishery and unidentified

pot/trap fishery (*id.*). Gillnet mortality may also occur but go unobserved because whales swim away with a portion of the net (*id.*). The estimate of fishing gear mortality is an underestimate because not all cases are detected and there is no correction factor available to account for undetected entanglements (*id.*).

### Blue Whale Distribution and Importance of West Coast Feeding Grounds

California's coast includes nine “biologically important areas” for blue whales, six of which are in southern California and three in central California (Calambokidis et al. 2015). The Southern California Bight and the Gulf of the Farallones (encompassing the area north including Cordell Bank and waters west of Bodega Bay) are the highest density-predicted areas (*id.*).



**Figure 3.** Nine blue whale Biologically Important Areas overlaid with all sightings and predicted mean densities of blue whales from habitat-based density (HD) models generated from Southwest Fisheries Science Center ship surveys. Panels a and b show more detail for the areas where the BIAs are located. (Source: Calambokidis et al. 2015 fig. 4.1.)

Blue whales migrate to maximize their feeding opportunities throughout the years, thus are highly sensitive to environmental changes (Pirotta et al. 2019). A model of blue whale population showed that the predicted effects of anthropogenic disturbance rapidly worsened

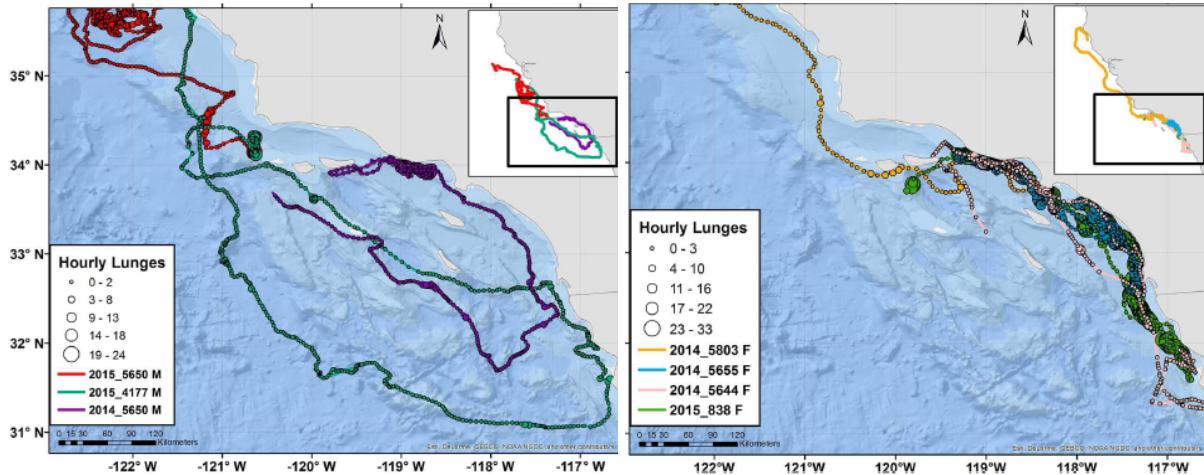
when they occurred in the context of an environment that was also changing (*id.*). The synergistic interactions of environmental change and anthropogenic disturbance caused stronger effects than in isolation (*id.*).

In other words, the model showed that blue whales are generally more resilient to anthropogenic disturbance than to environmental changes (e.g., a good or bad krill year) (*id.*). This changed, however, if the disturbance were localized in areas critical for supporting females' summer feeding, after a winter spent in suboptimal feeding habitats and possibly delivery of large amounts of milk to a calf (*id.*). Therefore, the authors concluded that "for a wide-ranging species like blue whales, reducing repeated or continuous exposure to a stressor is critical to ensure individuals can compensate for foraging opportunities that are missed" (*id.*).

The Santa Barbara Channel hosts the world's largest seasonal aggregation of blue whales. These animals migrate to the California coast to undertake intensive feeding sessions, which means that their movements depend on their search for krill. The median blue whale feeding session, or "bout," lasted 3.3 hours and contained about 23 dives (*id.*). In one case a blue whale was feeding for 34.9 hours straight, or continuously for almost 1.5 days (Irvine et al. 2019). Another tagged blue whale fed continuously during daylight, 12.2 hours, for many days (*id.*).

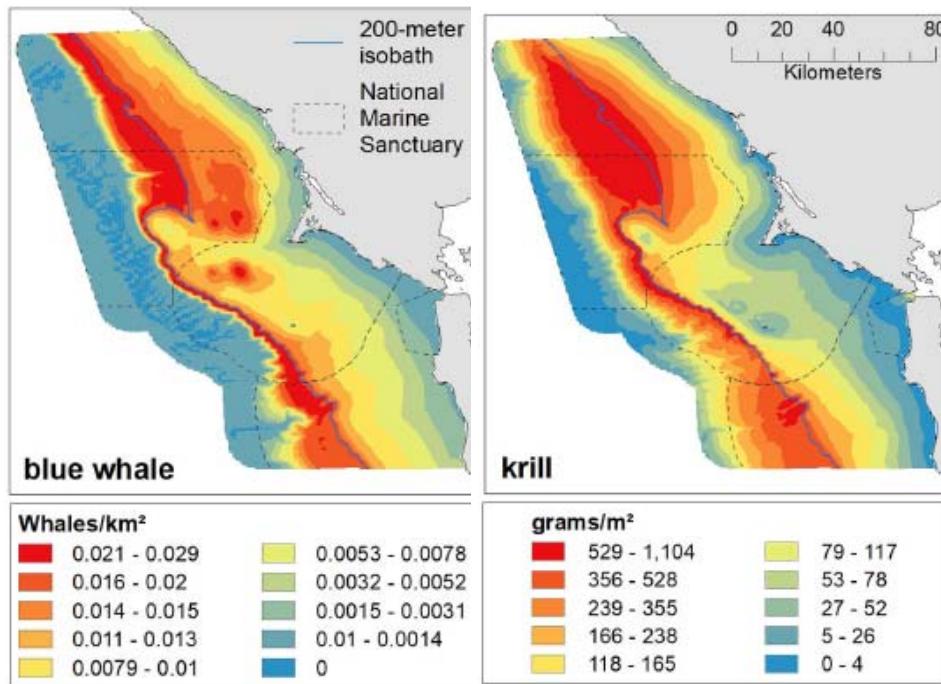
Irvine et al. (2019) observed sex-based differences in movement and the areas occupied by male and female blue whales in Southern California, specifically that males traveled in offshore waters while females remained coastal (*id.*). The males fed little offshore, perhaps because of insufficient prey concentrations, but perhaps the males' movement was to vocalize and undertake courtship behavior (*id.*). This would be consistent with observations in the Southern California Bight by Širović et al. (2015) that detected B calls, which are thought to be related to breeding and associated with males, from June to January with a peak in September. In addition, blue whales have been observed to form male-female pairs during the summer with the pairs increasing in number toward the end of summer (Schall et al. 2019 citing Calambokidis, unpub. data). One theory is that breeding activities in blue whales may be opportunistic rather than restricted to a season or specific habitat (Schall et al. 2019).

A practical implication of the different behavior between males and females is that nearshore ship strikes may disproportionately affect females, thus sex-specific habitat use should be considered when developing mitigation measures (Irvine et al. 2019).



**Figure 4.** Tracks of male (left) and female (right) blue whales in August 2014 and July 2015 (Source: Irvine et al. 2019 fig. 2.)

In the San Francisco Bay Area, blue whales consistently use the northeast region of Cordell Bank, the Farallon Escarpment, and the shelf-break waters to feed on krill (Figure 5, Rockwood et al. 2020a). This area is just at the end of the northern shipping lane to San Francisco, providing compelling evidence that managers should implement management areas to slow vessel traffic and increase caution in these areas.



**Figure 5.** Mean predicted abundance of blue whale and krill averaged over the years 2004-2017, during the months of May, June, July, and September. (Source: Rockwood et al. 2020a fig. 4.)

Recent studies have indicated that blue whales have a limited ability to avoid collisions with vessels (McKenna et al. 2015; Szesciorka et al. 2019), which makes them vulnerable to vessel strikes in areas of high overlap with vessel traffic. McKenna et al. (2015) collected data from nine whales exposed to 20 vessel passages. They documented a dive response in 55% of the cases, but no lateral movement to avoid vessels. The scientists concluded that the ability of blue whales to avoid vessels is limited to relatively slow descent (*id.*).

More recently, a female blue whale narrowly avoided a container ship in Southern California traveling at 11.3 knots (Szesciorka et al. 2019). Slowing ships has been shown to greatly reduce the chances of a lethal ship strike, and that appears to have worked here. The whale interrupted her ascent at the last minute and changed course to avoid the extremely close container ship (*id.*). The scientists concluded that while whales have some cues to avoid ships, this is true only at close range, under certain oceanographic conditions, and if the whale is not otherwise distracted by feeding, breeding, etc. (*id.*). They noted that this whale might not have been so lucky had the ship been going faster (*id.*).

### Blue Whale Mortality From Vessel Strikes

Three blue whales were reported struck by vessels between 2014 and 2018, and all were deaths (Carretta et al. 2020a). These reported collisions vastly underestimate actual strikes because many go unseen and whale carcasses may sink unobserved. Because of the low

probability of detection, Rockwood et al. (2017) created a model that calculated encounter risk, strike risk, and mortality estimates. **The result was an estimated 18 blue whale mortalities due to ship strikes annually**, including only the period July – November when whales are most likely to be present in the U.S. West Coast EEZ (Rockwood et al. 2017). With no avoidance, mortality is 40 deaths annually in these months (*id.*).



**Figure 6.** Blue whale, fin whale, and humpback whale sightings from 2019-2020 overlaid with the traffic separation scheme (red lines) in the Santa Barbara Channel. (Source: Visalli 2020.)

### Blue Whale Recovery Plan

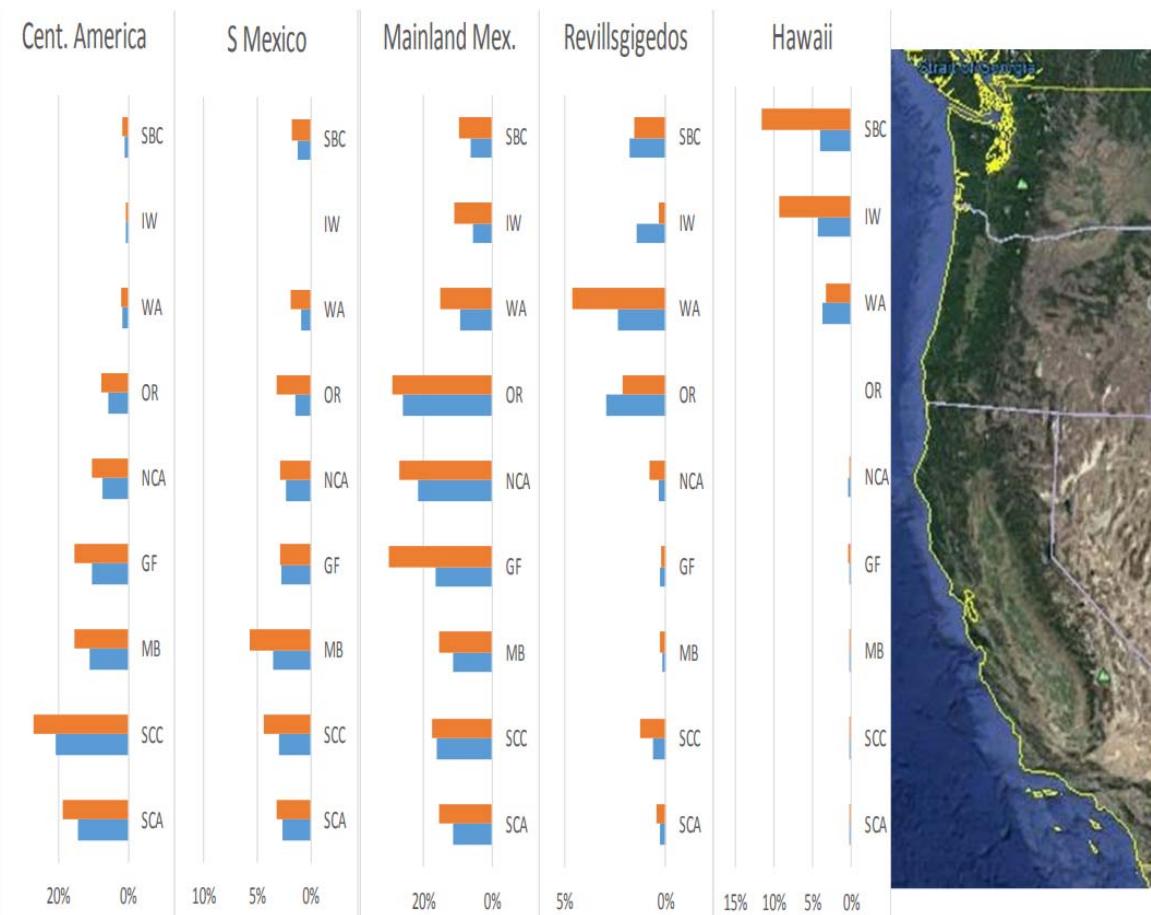
NMFS's Recovery Plan for the Blue Whale designates the Eastern North Pacific blue whales as a management unit. NMFS revised the Recovery Plan in 2020 and acknowledged that “ship strikes are a known issue and represent a threat to the Eastern North Pacific population of blue whales off the U.S. West Coast” (NMFS 2020a). In particular, the recovery plan noted that this “population is vulnerable to ship strikes due in large part to this population seasonally residing in feeding grounds that overlap with shipping routes off southern California” (*id.*). The plan recommends taking measures to reduce the risk of vessel strikes if they become a threat to the species (*id.*). This was ranked as an action of the highest priority (*id.*).

### B. Humpback Whales

Humpback whales were originally listed under ESA in June 1970. In 2016 NMFS revised the listing status to designate 14 Distinct Population Segments (DPS) (81 Fed. Reg. 62,259). The

Central America DPS and Mexico DPS, the only humpbacks that enter waters off California, were listed as endangered and threatened, respectively (*id.*).

While humpback whales are present year-round off California, the local abundance increases each year when they migrate from their winter breeding grounds in Mexico/Central America to their summer foraging grounds. Humpbacks are typically sighted off California from March through November, with sightings being most common during summer and fall (Calambokidis et al. 2015). The Mexico DPS breeds along the Pacific coast of mainland Mexico and the Revillagigedo Islands, and feeds along a broad swath of Northeastern Pacific Ocean from Central California to the Aleutian Islands (81 Fed. Reg. 62,260). The Central America DPS breeds along the Pacific coasts of Costa Rica, Panama, Guatemala, El Salvador, Honduras, and Nicaragua and feeds almost exclusively offshore of California and Oregon (*id.*). The proportion of each DPS varies along the West Coast according to latitude (Figure 7).

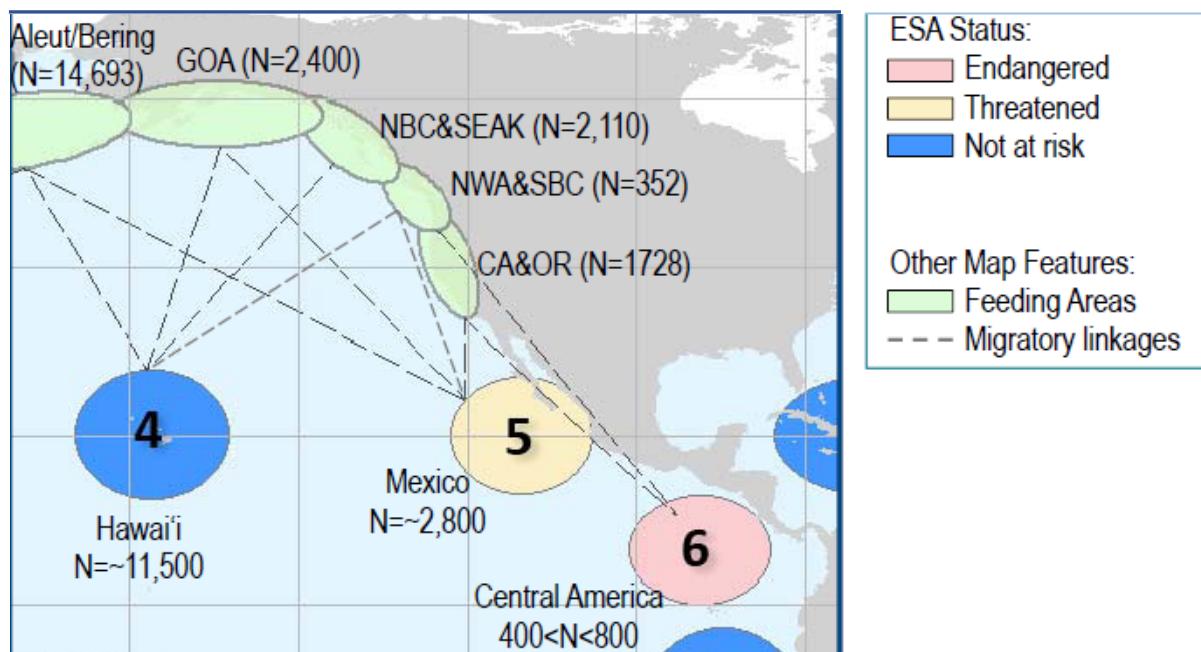


**Figure 7.** The proportions of humpback whale photographs from different feeding areas, which generally correspond to areas shown to the right, that match different wintering areas labelled at the top. Blue bars show the percentage of unique individuals and orange bars show the percentage of encounters in each area known to match each wintering area. (Source: Steiger et al. 2017.)

## Humpback Whale Population

Under the MMPA, NMFS recognizes that its stock assessment report is outdated because it lists a single stock of humpback whales along the U.S. West Coast (the California/Oregon/Washington stock), with a current estimated abundance of 2,900 individuals and a minimum population estimate of 2,784 individuals (NMFS 2019a). The current stock assessment report provides a PBR for U.S. waters of 16.7 whales. Rather, the endangered Central America DPS comprises a single Demographically Independent Population (DIP), which NMFS has determined should represent a “stock” based on the management objectives of the MMPA (Martien et al. 2019).

Central America humpbacks include between 431 and 783 whales, which makes the population significantly more vulnerable to mortality from vessel strikes than larger humpback populations. The threatened Mexico DPS includes about 2,800 whales, depending on choice of mark-recapture model (Wade 2017). Most humpback whales that feed in California waters originate from the endangered Central America DPS (67.2%), while the remainder originate from the threatened Mexico DPS (Wade 2017).

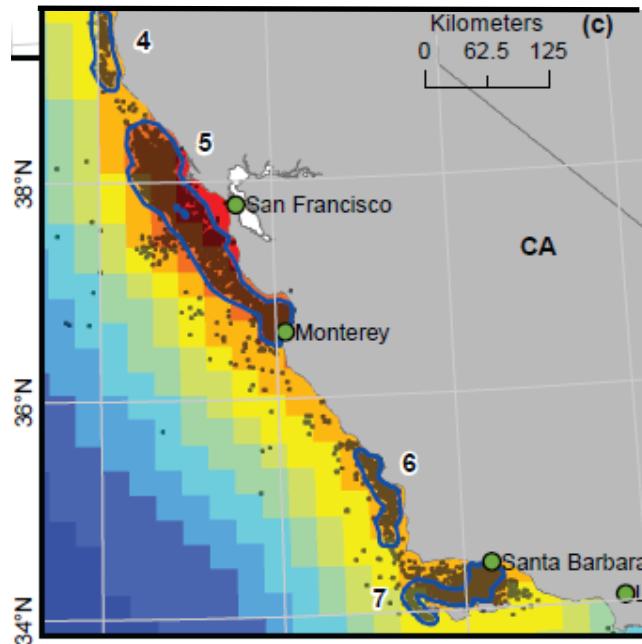


**Figure 8.** Humpback whale breeding and feeding grounds showing three DPSs: (4) Hawaii, (5) Mexico and (6) Central America. (Source: Martien 2018 (using data from Wade 2017).)

## Humpback Distribution and Importance of West Coast Feeding Grounds

Humpback whales are present year-round off California. They also migrate from Mexico and central America to feed in the summer months in both central California and Southern California’s nutrient-rich waters. As a result, humpback whale behavior strongly correlates with

oceanographic conditions and primary productivity. Humpback whales are opportunistic feeders that switch between prey items depending on environmental conditions (Santora et al. 2020; Ryan et al. 2019a). When targeting krill, humpbacks are likely to be farther offshore, and when targeting schooling forage fishes, come nearshore (Calambokidis et al. 2017).



**Figure 9.** Four of the seven total humpback whale feeding Biologically Important Areas overlaid with all sightings and predicted mean densities of blue whales from habitat-based density (HD) models generated from Southwest Fisheries Science Center ship surveys. Depicted BIAs are (4) Fort Bragg to Point Arena, July–November; (5) Gulf of the Farallones–Monterey Bay, July–November; (6) Morro Bay to Point Sal, April–November; and (7) Santa Barbara Channel–San Miguel, March–September. (Source: Calambokidis et al. 2015 fig. 4.5(c).)

NMFS designated critical habitat for humpback whales that is based in part on the biological important areas identified in Calambokidis et al. (2015) (see Figure 9) (86 Fed. Reg. 21,082 (Apr. 21, 2021)). The critical habitat includes generally contiguous areas along the coast, including a San Francisco and Monterey Bay area, a Central California Coast area, and a Channel Islands, which comprise essential feeding and migratory habitat (*id.*). High occurrences of krill are associated with canyons between Monterey Bay and Bodega Bay. Anchovy and sardine are more abundant within the Monterey Bay. In Southern California, krill hotspots have been observed off San Nicolas and Santa Barbara Islands, and additionally in association with submarine canyons (*id.* (citing Santora et al. 2011, 2018)).

### Humpback Whale Mortality From Vessel Strikes

Thirteen humpback whales (7 deaths, 1 serious injury, and 5 non-serious injuries) were reported struck by vessels between 2014 and 2018 (Carretta et al. 2020a). These reported

collisions vastly underestimate actual strikes because many go unseen and whale carcasses may sink unobserved. Because of the low probability of detection, Rockwood et al. (2017) created a model that calculated encounter risk, strike risk, and mortality estimates for the West Coast. The result was an estimated 22 humpback whale mortalities due to ship strikes annually, including only the period July to November when whales are most likely to be present in the U.S. West Coast EEZ (Rockwood et al. 2017).

The large majority of reported and estimated humpback whale collisions with vessels occur off California. Of the humpback whale collisions reported from 2014 to 2018, 10 of the 13 occurred in California (Carretta et al. 2020a). Applying this proportion to the estimated 22 humpback whale deaths from vessel strike mortalities on the U.S. West Coast (Rockwood et al. 2017) means that 16.9 humpback mortalities occur annually off California (22 deaths \*0.77) from July to November.

Updated abundance estimates for Southern California allowed Rockwood and Jahncke (2019) to estimate that mortality from January to April in Southern California alone was 6.5 whales (1.63/month<sup>24</sup>). When added to the estimated mortality from July to November, **this means that the total estimated annual humpback mortality from ship strikes in California alone is 23.4 deaths** (16.9 + 6.5). This exceeds the PBR that is based on the California/Oregon/Washington humpback whale stock (16.7 humpback whales) and is not protective of the Central America DPS, which has a far smaller population.

Most of the humpback whale deaths that occur off California are likely to be from the Central America DPS. Wade (2017) predicted a 67.2% movement probability for a whale in California to move to Central America. That means that an estimated 15.7 Central America DPS humpback whales die from vessel strikes off California annually (23.4 deaths \* 0.672). Conservatively using the smaller estimate of abundance, this represents 3.7% of the population that is killed by vessel strikes annually (15.7 deaths/431 whales). This is a minimum estimate because it does not include humpback whales killed in central California from January to April and assumes avoidance behavior, per Rockwood et al. (2017). With no avoidance, the mortality is likely to be at least double (Rockwood et al. 2017).

### C. Fin Whales

The worldwide population of fin whales has been listed as endangered since the ESA's enactment in 1973. Taxonomically, all North Pacific fin whales, except of those found in the East China Sea, are recognized as a separate subspecies: *Balaenoptera physalus velifera* (Archer

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<sup>24</sup> This per month estimate is higher than what Rockwood et al. (2017) reported for Southern California during July through November, the six summer/fall months: five whales; 1.25/month.

et al. 2019, Archer et al. 2013).<sup>25</sup> The fin whales in the East China Sea may be a subspecies distinct from the rest of the North Pacific but need more genetic studies (Archer et al. 2019). The range of *B. p. velifera* includes the Gulf of California, the U.S. West Coast, and British Columbia, Canada into the Gulf of Alaska, along the Aleutians, and in the Bering Sea and Chukchi Sea up to approximately 70° N. In the Western Pacific they are found off Kamchatka in the Okhotsk Sea, and Japan (*id.*).

### **Fin Whale Population**

Under the MMPA, NMFS recognizes three stocks of fin whales in the North Pacific: (1) the California/Oregon/Washington stock, (2) the Hawaii stock, and (3) the Northeast Pacific stock (Carretta et al. 2020). The best estimate of fin whale abundance in California, Oregon, and Washington waters out to 300 nm is 9,029 (CV=0.12) whales (*id.*). There is evidence of an increasing trend in fin whale abundance in the California/Oregon/Washington stock between 1991 and 2014, though since 2005 numbers off Central and Southern California have been stable (*id.*; Nadeem et al. 2016). The minimum population size is 8,127 fin whales, and PBR is 81 whales.

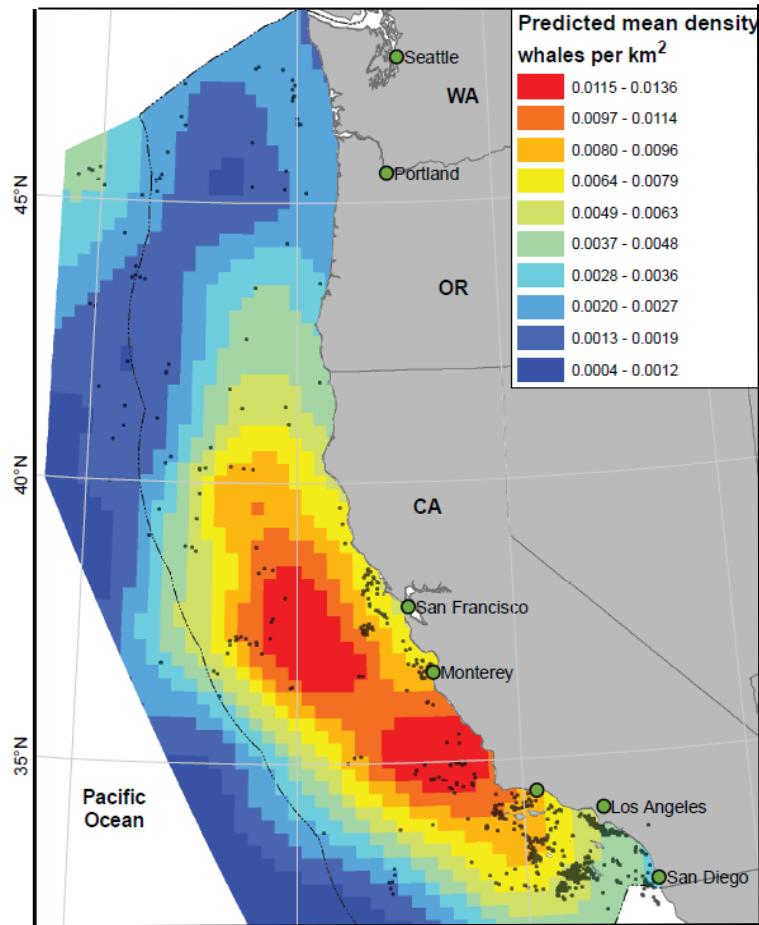
### **Fin Whale Distribution and Importance of West Coast Feeding Grounds**

Fin whales are present off California year-round, with peak numbers in the late summer and early fall (Širović et al. 2013). During the winter, fin whales are sighted inshore and during the spring and summer they appear to move offshore (Falcone and Schorr 2012, 2013). Acoustic data suggest there may be a resident population in southern California (Širović et al. 2015, 2017). The fin whale biologically important areas are shown below, in Figure 10.

Five tagged fin whales in Southern California showed sex-specific behaviors similar to tagged blue whales – a male undertook a circuitous route offshore that did not involve feeding bouts, as were seen when the whales were closer to shore (Irving et al. 2019). This suggested that offshore either the prey was patchier farther or that the male was exhibiting breeding behavior (*id.*).

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<sup>25</sup> Within the subspecies, there are two well-supported North Pacific mitogenomic matrilines: Clade A (Gulf of California and Southern California Bight), and Clade C (California, Oregon, Washington, and Gulf of Alaska) (Archer et al. 2013). The lack of nuclear differentiation indicates that these are not evidence of a lack of gene flow, but reflect different historical migrations to the North Pacific, at 1.8 million years ago and 300,000 years ago, respectively (Archer et al. 2019).



**Figure 10.** Predicted fin whale feeding Biologically Important Areas overlaid with all sightings and predicted mean densities of blue whales from habitat-based density (HD) models generated from Southwest Fisheries Science Center ship surveys. (Source: Calambokidis et al. 2015 fig. 4.5.)

### Fin Whale Mortality From Vessel Strikes

In a literature review of vessel strikes of large whales, fin whales are often the most commonly struck whale in the records (Halliday 2020). For U.S. West Coast fin whales, vessel strikes are the biggest source of human-caused mortality (Carretta et al. 2020a). Eight fin whales were reported struck by vessels between 2014 and 2018, all resulting in death, seven of which occurred in California (Carretta et al. 2020a). These reported collisions vastly underestimate actual strikes because many go unseen and whale carcasses may sink unobserved. Because of the low probability of detection, Rockwood et al. (2017) created a model that calculated encounter risk, strike risk, and mortality estimates. Total fin whale mortality in the U.S. West Coast EEZ is approximately twice that for blue whales, and 2.4 times humpback whale mortality (Rockwood et al. 2017). The result is an estimated 43 fin whale mortalities due to ship strikes annually, during the summer and fall months (Rockwood et al. 2017).



**Figure 11.** Photo Credit: Alisa Schulman-Janiger.  
Source: <https://channelislands.noaa.gov/management/resource/images/strike.jpg>

### **Fin Whale Recovery Plan**

NMFS's Fin Whale Recovery Plan, published in 2010, concluded that the threat to fin whales from vessel strikes was "unknown but potentially high." Citing records of fin whale deaths in which vessel strikes were implicated, plus the fact that many vessel strikes go either undetected or unreported, NMFS said that the threat occurs at a medium severity but with a high level of uncertainty (NMFS 2010). Assessing the effectiveness of vessel strike measures and adjusting, as necessary, was a second-level priority in the recovery plan.

## **IV. Mandatory Regulations Are Needed To Reduce Vessel Strike Mortality of Blue, Humpback, and Fin Whales.**

NMFS must impose mandatory measures that will prevent vessels from killing whales. Only this will allow endangered whales to recover. As stated above, vessel collisions are not only impeding the recovery of blue, humpback, and fin whales, but the mortalities and injuries that result from such collisions are also themselves unlawful under the ESA and the MMPA. The science is clear that vessel traffic in whale hotspots increases risks of ship strikes and that

slowing those vessels is an effective mitigation measure. Therefore, NMFS must immediately promulgate regulations to drastically reduce or eliminate the risk of vessel strikes to whales.

#### A. Vessel Strike Mortality Exceeds Blue and Humpback Whale Biological Thresholds.

Mandatory regulations to slow down vessels in areas of high vessel traffic and whale overlap are urgently needed because the estimates of blue and humpback whale mortality exceed PBR, the NMFS-determined human-caused mortality level above which stocks cannot reach optimum sustainable population. The estimates of vessel strike mortality are underestimates because they do not include estimates for vessels transiting between the Santa Barbara and San Francisco regions, and only include year-round estimates for humpback whale in Southern California. Nonetheless, the best estimates are collated from the sections above into the table below.

	PBR, U.S. Waters	Estimated Annual Vessel Strike Mortality, West Coast	Minimum Estimated Annual Vessel Strike Mortality, California
<b>Blue Whale</b>	1.23 whales	18 deaths	12.96 <sup>26</sup>
<b>Humpback Whale</b>	16.7 whales	28.5 deaths	23.4 <sup>27</sup>
<b>Fin Whale</b>	81 whales	46 deaths	29.9

These estimates do not account for or anticipate the likely increase in whale vessel strikes due to increasing shipping. The increase in global shipping has concentrated impacts at the entrance to ports such as Los Angeles, Long Beach, and San Francisco. Global shipping has increased rapidly since about 2000 and is projected to continue to grow at a rapid rate because of both a higher volume of materials being shipped and a greater distance over which material is being transported, particularly as globalization has led to the growth of export industries in Asia (Kaplan and Solomon 2016). There was a brief decline in shipping in the second quarter of 2020 due to the pandemic (Ryan et al. 2020). But shipping traffic rebounded with a surge of imports in the second half of the year such that there was an average wait of eight days to enter Southern California ports and 62 ships anchored in San Pedro Bay in February 2021 (Baertlein 2021).

<sup>26</sup> See Rockwood et al. (2017). For blue and fin whales, mortality levels above the 90th percentile were confined to waters off California. The area above the 90th percentile (covering ~10% of the study region) contained 74% and 65% of mortality for blue and fin whales, respectively.

<sup>27</sup> See the calculations for estimated humpback whale mortality in California at page 15.

## **B. Mandatory Mitigation Measures Have Clear and Quantified Benefits To Whales.**

The impacts on whales of vessels coming to California ports can be mitigated through regulation. Studies of past air regulations showed that ships responded – i.e. ship traffic changed depending on the regulation – and that these changes altered the risk of ship strikes to whales (Moore et al. 2018). The science shows that NMFS can intentionally design regulations to slow vessel speed and protect whale hotspots to save whales from vessel strike injuries and deaths.

Further, scientists have quantified the predicted benefits of different mitigation measures in such a way as to show their necessity. Rockwood et al. (2020b) estimated that compared to the years prior to voluntary speed reductions (2012-2014), the lower speeds in 2016-2017 lowered blue whale deaths within the shipping lanes by 11–13% and humpback whale deaths by 9–10% in 2016–2017. If 95% of ships complied with a 10-knot speed limit, twice as many blue whale deaths and three times as many humpback whale deaths would be avoided compared to current adherence (Rockwood et al. 2020b). These predictions mean that NMFS has an obligation to implement regulations to achieve these benefits to whales.

## **C. NMFS Has Failed to Protect Whales in Response to Past Petitions.**

On September 25, 2007, the Center for Biological Diversity submitted a formal petition pursuant to the Administrative Procedure Act requesting that NMFS initiate rulemaking in order to establish a seasonal speed limit of 10 nautical miles per hour on all vessels 65 feet or larger in the Santa Barbara Channel.<sup>28</sup> In its January 8, 2008 denial of the Center’s petition, NMFS stated that it “has carefully reviewed the information available regarding these blue whale deaths and has determined that rulemaking of any kind is not warranted at this time.”<sup>29</sup> The agency explained that it “does not believe three blue whale deaths in one year rise to the level of emergency rulemaking.” In addition, the agency characterized “the event [as] an aberration,” and stated that “[u]ntil more is known about contributing circumstances, a regulatory response . . . is not appropriate or supported by the best available information.”<sup>30</sup> Finally, NMFS concluded the petition denial with the pledge that “[i]f circumstances similar to those occurring in 2007 recur, or if there are equal or a greater number of blue whale deaths in the future, NMFS will reassess the situation in light of available information and make a decision whether a regulatory response is appropriate.”<sup>31</sup> In the meantime, when large congregations of blue whales were detected,

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<sup>28</sup> Center for Biological Diversity, Blue Whale Ship Strike Mortality Off California: Petition for Emergency Rulemaking to Reduce the Risk of Unlawful Take of Endangered Species, Sept. 25, 2007, [https://www.biologicaldiversity.org/species/mammals/blue\\_whale/pdfs/Blue-Whale-ship-strike-petition-09-2007.pdf](https://www.biologicaldiversity.org/species/mammals/blue_whale/pdfs/Blue-Whale-ship-strike-petition-09-2007.pdf).

<sup>29</sup> Memorandum from James H. Lecky, Director, Office of Protected Resources to John Oliver, Acting Assistant Administrator for Fisheries re: Decision Memorandum—Response to Petition from the Center for Biological Diversity to Implement Emergency Regulations in Southern California to Protect Blue Whales.

<sup>30</sup> *Id.*

<sup>31</sup> *Id.*

NMFS would rely on advisories recommending that vessels voluntarily reduce their speed to 10 knots or less.<sup>32</sup>

By relying solely on observed whale deaths to estimate mortality, the NMFS petition denial ignored the already well-known fact that documented strikes greatly underestimate actual mortality (Laist et al. 2001; Kraus et al. 2005). Since the denial, the best available science has consistently and strongly demonstrated that the 2007 mortality event was, unfortunately, not an aberration, and that vessel speed reductions are necessary to reduce this mortality. Moreover, numerous studies conducted both before and after the petition denial have consistently found that the voluntary ship speed reduction efforts relied upon by NMFS in its petition denial, as well as incentive-based strategies developed subsequent to that denial, are ineffectual (Langpap and Wu 2004; Wiley et al. 2008; Jett and Thapa 2010; Silber et al. 2012; McKenna et al. 2012).

In 2011, the Center for Biological Diversity, in a coalition of environmental groups, formally petitioned NOAA to establish a 10-knot speed limit for large commercial vessels within the national marine sanctuaries off the California coast.<sup>33</sup> In 2012 NOAA denied the petition, and said that NOAA may decide to implement other actions including mandatory speed restrictions if voluntary programs do not reduce whale strike occurrences.<sup>34</sup> It is past time for NOAA to evaluate its management measures and review recent relevant scientific studies, and promulgate regulations with mandatory speed limits and other measures to reduce whale mortality below biologically relevant thresholds.

For these reasons, it is urgent that NMFS implement the following measures:

***Petitioned Action 1: Implement a year-round mandatory 10-knot speed limit in NMFS's current voluntary vessel speed reduction zones in the San Francisco Bay Region and the Southern California Region for vessels greater than or equal to 40 feet in length.***

There is broad agreement in the scientific literature that the overlap of whales and ship traffic increases ship strike risk, and that slowing vessels' speed can reduce the number of whales killed or injured by vessel strikes (Halliday 2020). There is a positive, linear relationship

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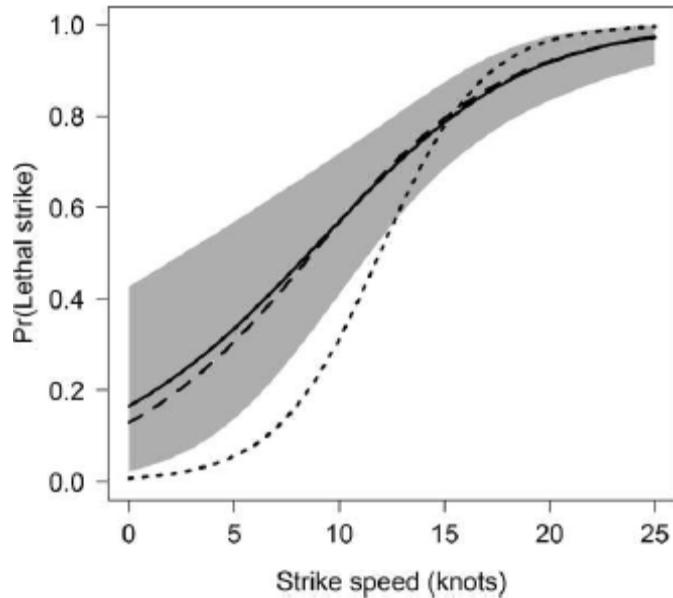
<sup>32</sup> *Id.*

<sup>33</sup> Petition to establish a 10-knot speed limit for vessel traffic within National Marine Sanctuaries off the California Coast. June 6, 2011.

[https://www.biologicaldiversity.org/campaigns/ocean\\_noise/pdfs/Petition\\_NMS\\_Ship\\_Speed\\_Limits\\_2011-06-06.pdf](https://www.biologicaldiversity.org/campaigns/ocean_noise/pdfs/Petition_NMS_Ship_Speed_Limits_2011-06-06.pdf).

<sup>34</sup> Letter from David M. Kennedy, Assistant Administrator for Ocean Services and Coastal Zone Management, dated March 30, 2012. <https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/management/resource/pdf/petitionresponsoaa2012.pdf>

between vessel speed and the probability of a whale being struck and a logistic relationship between vessel speed and the probability of a vessel strike killing a whale (*id.*). For example, a large whale has a 50% probability of lethal strike at 9 knots and 80% at 15.4 knots (Figure 12) (Conn and Silber 2013). Therefore, slowing down vessels in areas that are hotspots for whales holds promise for significantly reducing vessel strike injuries and mortalities.



**Figure 12.** Probability of a lethal whale strike given strike speed. The dashed line gives predictions from a logistic regression, the solid line gives posterior mean estimates from a Bayesian implementation of probit regression, and the dotted line gives logistic regression estimates reported by Vanderlaan and Taggart (2007). The gray area represents a 95% credible interval from the Bayesian analysis. (Source: Conn and Silber fig. 3).

NMFS has implemented seasonal voluntary Vessel Speed Reductions in the designated shipping routes of San Francisco, CA (Figure 13), and in a large area in Southern California (Figure 15). To increase compliance in these zones, NMFS should implement a year-round 10-knot mandatory speed limit for all vessels greater than or equal to 40 feet in length.

It is important to include vessels greater than or equal to 40 feet in length because of examples of whales injured by smaller vessels.<sup>35</sup> This has been shown to be empirically true as well; Kelley et al. (2020) used biophysical models to show that vessels of all sizes can produce forces strong enough to cause lethal injury. Recently a critically endangered right whale mom

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<sup>35</sup> For example, a 12 m vessel killed a humpback. See Jensen and Silber (2003) at p. 26.

and calf were seriously injured and killed, respectively, by about a 54-foot vessel.<sup>36</sup> Including 40-foot vessels and above can also discourage any incentives to build smaller vessels to skirt the speed limit requirement.<sup>37</sup>

Voluntary measures to reduce ship speed have failed to achieve compliance levels that adequately reduce ship strike mortality off the California coast to lawful levels established by MMPA. Voluntary efforts to reduce vessel strikes in the Santa Barbara Channel and San Francisco Bay Area have inadequately reduced the number of ships traveling at speeds above 10 knots. The initiative, known as Protecting Blue Whales and Blue Skies, is a voluntary and incentive-based vessel speed reduction program in which a small fraction of vessels participates. In 2018, compliance by ships with the voluntary speed reductions in both San Francisco Bay Area traffic lanes and Santa Barbara Channel was below 50% (NMS 2019).

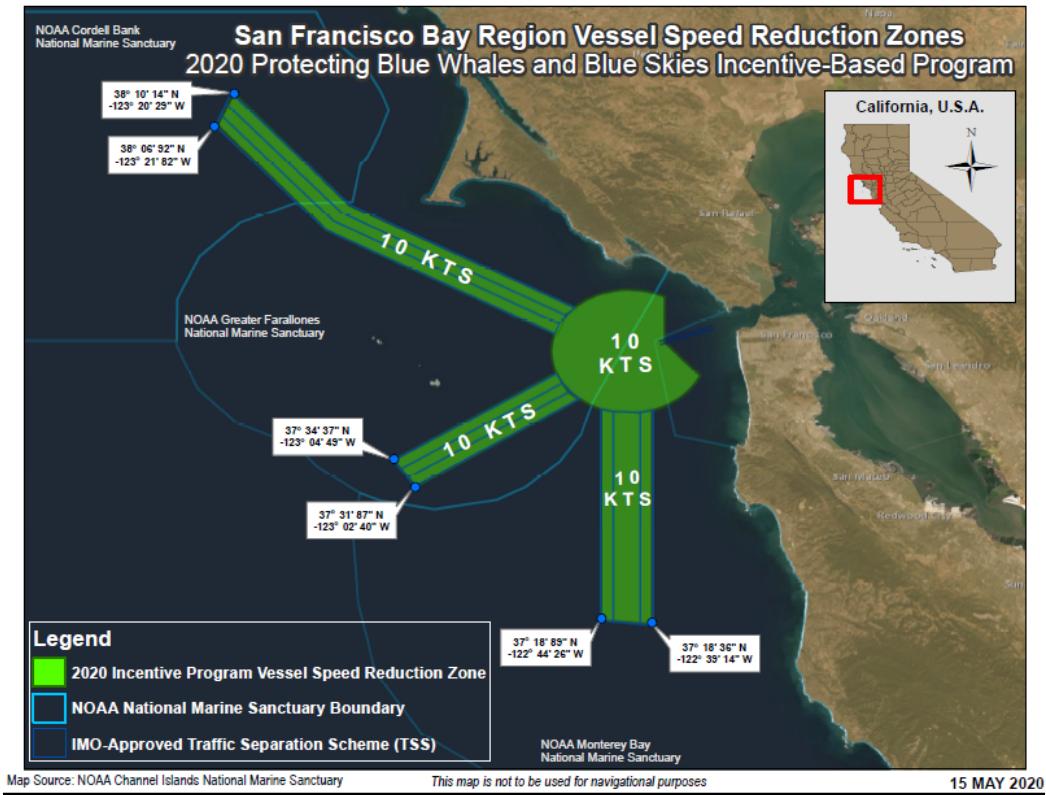
The San Francisco Bay Area traffic lanes in 2018 saw 45% compliance in terms of distance traveled at less than 10 knots (*id.*). As mentioned above, Rockwood et al. (2020b) estimated that compared to the years prior to voluntary speed reductions (2012–2014), the lower speeds in 2016–2017 lowered blue whale deaths within the shipping lanes by 11–13% and humpback whale deaths by 9–10% in 2016–2017. If 95% of vessels complied with a 10-knot speed limit, twice as many blue whale deaths and three times as many humpback whale deaths would be avoided compared to current adherence (Rockwood et al. 2020b).

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<sup>36</sup> Goodhue, D. *Her calf was struck and killed by a boat. Mother right whale also shows signs of a vessel strike*, Miami Herald, Feb. 21, 2021.

<https://www.miamiherald.com/news/local/environment/article249313950.html>.

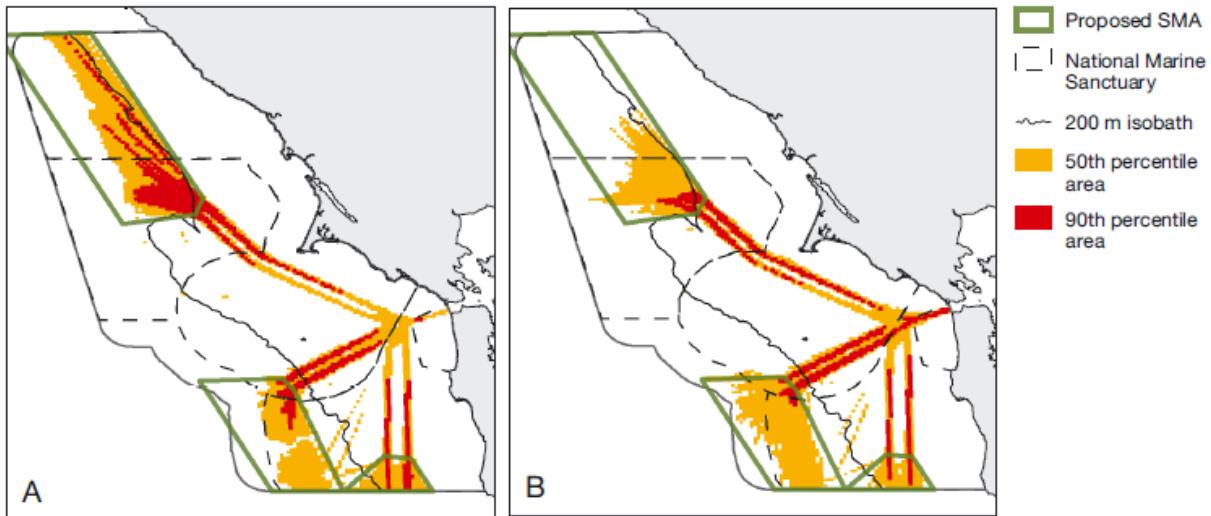
<sup>37</sup> See, e.g., *Amendments Related to Marine Diesel Engine Emission Standards, Final Rule*, 85 Fed. Reg. 62,218, 62,219 (recognizing comments from pilot vessel manufacturers and others regarding their efforts to build vessels smaller than 65 feet to avoid the requirement not to exceed an operating speed of 10 knots from November 1 to April 30 on the East Coast), <https://www.federalregister.gov/d/2020-18621/p-24>.



**Figure 13.** San Francisco Bay Region Vessel Speed Reduction Zone in green. (Source: Protecting Blue Whales and Blue Skies, <https://www.ourair.org/wp-content/uploads/2020-VSR-Attachment-A.pdf>.)

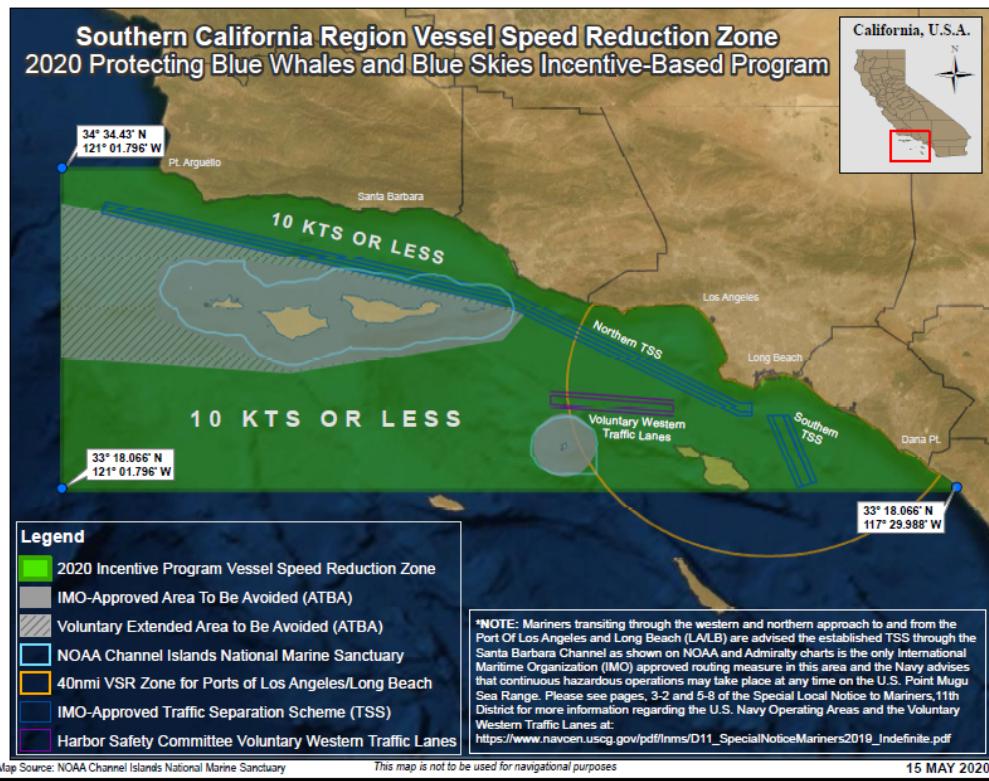
Further, adding a management area with a 10-knot speed limit at the end of the traffic lanes would result in about 5- and 4-fold reductions in blue whale and humpback whale mortality, respectively, relative to current practices (Figure 14) (*id.*). This recommendation addresses the problem that while risk is highest in the shipping lanes off San Francisco, only a fraction of total estimated mortality occurs in these proportionally small areas (Rockwood et al. 2017). That means conservation efforts exclusively within shipping lanes are insufficient (*id.*)

While Rockwood et al. (2020b) recommend this as a seasonal management area, the management area should be in place year-round. This is because humpback whales are present off California year-round and the timing of whales' migration changes according to oceanographic conditions. Moreover, a year-round requirement will generate more awareness of the speed limit and thus likely increase compliance.



**Figure 14.** Gray boundaries depict proposed seasonal management areas drawn to contain areas classified as greater than the study area 50th and 90th percentile. Panels depict predicted whale mortality for (A) blue and (B) humpback whales. (Source: Rockwood et al. 2020b fig. 7.)

The Santa Barbara Channel in 2018 had 24% compliance (percent distance travel less than 10 knots) (*id.*). Framed another way, in 2017 in the Santa Barbara Channel 125 transits participated out of the approximately 2,500 container ships that travel through the Channel annually (Ryan 2019b). Areas with financial incentives to reduce speed in this region had higher compliance than voluntary speed reductions with no financial incentives (Freedman et al. 2017). Nevertheless, Blondin et al. (2020) determined that in the Southern California region that the median average speed and interquartile range (i.e. the middle 50%) of both cargo and tanker vessels exceeded 10 knots for each of the four study years (2011, 2013, 2015, and 2017), and cargo vessels averaged higher speeds than tanker vessels.



**Figure 15.** Southern California Region Vessel Speed Reduction Zone in green. (Source: Protecting Blue Whales and Blue Skies, <https://www.ourair.org/wp-content/uploads/2020-VSR-Attachment-A.pdf>.)

It is important that the implementation of mandatory speed reduction in Southern California apply to the entire Vessel Speed Reduction zone, not just the shipping lanes. Blondin et al. (2020) looked at daily risk levels based on blue whale habitat suitability as predicted by Abrahms et al. (2019b) and vessel traffic data from AIS. In general, the study concluded that areas outside the shipping lanes are important to consider when vessels alter their spatial behavior. This was echoed by Freedman et al. (2017) because ships were traveling south of the Channel Islands and not using shipping lanes with the implementation of air quality restrictions.

Voluntary measures in dynamic management areas on the East Coast designed to protect North Atlantic right whales have similarly had insufficient cooperation. A NMFS assessment in 2020 found that “cooperative vessel traffic remains modest” in voluntary dynamic management areas and “fails to approach levels achieved in mandatory” seasonal management areas (NMFS 2020c). The assessment noted that these findings echoed findings of a 2012 report on “modest cooperation that fell short of program goals” for voluntary measures in dynamic management areas (*id.*).

To encourage compliance at high levels that will significantly reduce whale mortality, NMFS must implement and enforce mandatory 10-knot speed limits for all vessels greater than

or equal to 40 feet in length in the San Francisco and Southern California Vessel Speed Restriction zones.

The current incentives for compliance should remain in place and perhaps expand because mandatory limits alone do not ensure effectiveness. As one example, mandatory ship speed limits to protect North Atlantic right whales still had low compliance in parts of the U.S. southeast (NMFS 2020c). Compliance has increased in the presence of law enforcement (Schoeman et al. 2020).

***Petitioned Action 2: Establish shipping routes or vessel tracks for all commercial shipping vessels transiting between ports in Southern California and San Francisco region at least 24 nautical miles from shore.***

To protect whales from the vessel traffic that transits north to south from the San Francisco region to Southern California or vice-versa, NMFS should establish, in collaboration with other federal agencies and the International Maritime Organization, ship routes or vessel tracks at least 24 nautical miles from shore. NMFS should explore methods to encourage compliance with these vessel tracks, including through agreements with the ports or private companies, to move vessel traffic at least 24 nautical miles from shore.<sup>38</sup>

Redfern et al. (2020) found that vessel strike risk was highest for blue, humpback, and fin whales in the central region of California when vessel traffic occurred nearshore. If traffic followed an offshore route similar to those used by ships from 2009-2011 (when avoiding California Air Resources Board regulations that applied within 24 nm of shore), mean risk for all three species can be reduced up to 35% (*id.*).

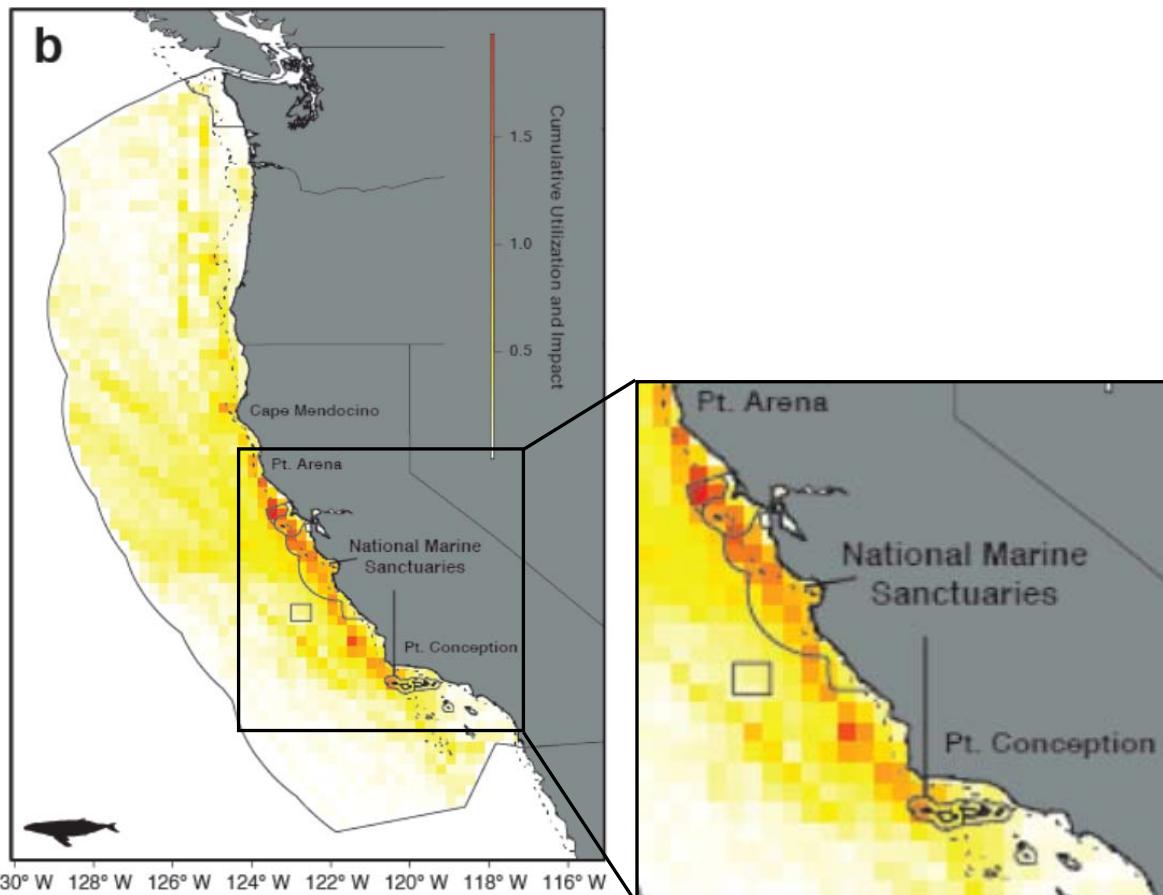
This result is consistent with Maxwell et al.’s (2013) study that showed that the highest “cumulative utilization and impact” metric to whales from shipping occurred from Southern California to just past the San Francisco Bay region. The scientists determined the distribution and key habitats of whales, then measured the overlap with shipping activity (Maxwell et al. 2013.). The map shows that despite the proximity of national marine sanctuaries and other protections, the impact of shipping on whales from southern California to the San Francisco Bay Area is high.

Moving the ship traffic offshore not only will protect whales that are off central California, but also provide an incidental benefit of directing ship traffic to the western shipping lane approach to San Francisco. Rockwood et al. (2020) recommend only using the western lane in the San Francisco Bay Region, which was the preferred lane when vessel traffic routes were

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<sup>38</sup> See 16 U.S.C. §1382(e), allowing agreements with federal government, state government, and private individuals to protect areas of importance for marine mammals.

offshore through central California. This will protect blue and humpback whale hotspots at the ends of the northern and southern shipping lanes.



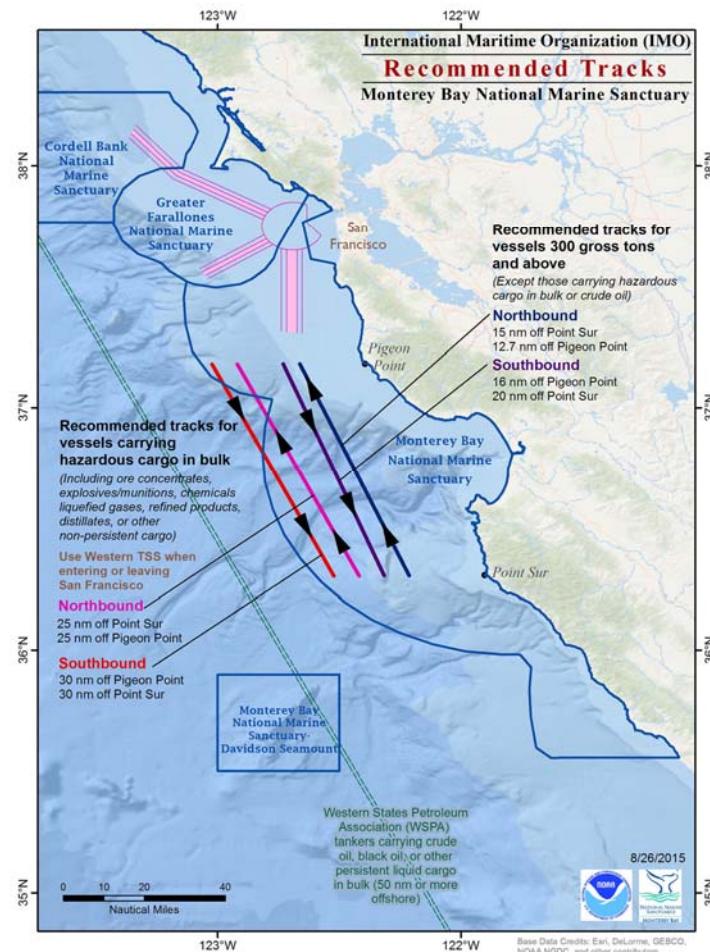
**Figure 16.** Shipping's cumulative utilization and impact for marine mammals. Solid outer line represents U.S. EEZ, solid inner lines represent National Marine Sanctuaries and dashed lines represent the 200 m depth contour. (Source: Maxwell et al. 2013 Supp. fig. S4.)

Voluntary lanes in the Monterey Bay National Marine Sanctuary exist already. In December of 2000, the International Maritime Organization adopted voluntary routes for vessels 300 gross tons or more to help guide traffic through the Monterey Bay National Marine Sanctuary, a sensitive marine environment, and align traffic with the San Francisco approaches.<sup>39</sup> NMFS should extend these vessel tracks farther along the coast and establish that all vessels, not

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<sup>39</sup> Coast Guard, Notice of Study Results, Port Access Route Study: The Approaches to San Francisco, June 21, 2011, at 9-10, [https://www.navcen.uscg.gov/pdf/PARS/Port\\_Access\\_Route\\_Study\\_The\\_Approaches\\_San\\_Francisco.pdf](https://www.navcen.uscg.gov/pdf/PARS/Port_Access_Route_Study_The_Approaches_San_Francisco.pdf).

just those carrying hazardous cargo, should use the vessel tracks 25 nautical miles off the coast to protect whales from ship strikes (see Figure 17).



**Figure 17.** Vessel tracks to protect resources at Monterey Bay National Marine Sanctuary.

Source: <https://montereybay.noaa.gov/resourcepro/resmanissues/vessels.html>.

**Petitioned Action 3: Identify areas of seasonal importance for blue whales, humpback whales, and fin whales, and set a vessel traffic threshold above which additional management measures will be triggered. The measures considered must include a ban on nighttime traffic through the area.**

We request that NMFS promulgate a regulation that requires monitoring of vessel traffic volume in areas of seasonal importance for whales with a threshold for automatic management measures. Changes in shipping traffic can cause unanticipated impacts on whales (see Jensen et al. 2015; Moore et al. 2018) that NMFS must monitor and mitigate. In addition, new science may highlight disproportionate impacts to whales based on sex-specific behavior or disproportionate

risk at night, for example. For this reason, NMFS should implement management measures on a seasonal basis when and where thresholds of vessel traffic have been exceeded.

Vessel traffic should be monitored because Blondin et al. (2020) found that vessel strike risk can change year-to-year based on changes in vessel activity's spatial pattern. For example, in 2017, when vessel activity was most concentrated, risk was also concentrated, and in 2013, both vessel activity and risk were diffuse (*id.*). Vessel activity became more concentrated north of the Channel Islands over the study period from 2011 to 2017 (*id.*).

That said, Blondin et al. also found that patterns of seasonal risk mimicked the temporal probability of whale presence (*id.*). (Vessel activity was temporally consistent throughout the year.) In 2011 and 2013, the highest risk was during July to October (a “normal” climatic year), while in 2015 and 2017, periods of high risk occurred as early as March and as late as November (*id.*). In 2015, an El Niño year, a March spike in risk was due to both an increase in whale probability and an increase in vessel activity (*id.*). This supports the idea that the management measures triggered by vessel traffic can be effective as seasonal management measures rather than year-round measures, and should be tailored to account for year-to-year variation.

New technology makes monitoring the overlap of whales and ships possible and even easy. Technology, specifically “eco-informatics,” can meet the continuing need for evaluation of human risk and animal space (Blondin et al. 2020). Hazen et al. (2017) developed a model to predict blue whale presence based on oceanographic conditions called “WhaleWatch” that can advise resource managers and mariners of blue whale suitable habitat, i.e. areas with ship strike risk. Ultimately it might be possible to use high-resolution maps integrated directly into shipboard navigation systems to avoid whales (Madon et al. 2017). Observers on board commercial cargo ships (Flynn and Calambokidis 2019) and infrared technology (Smith et al. 2020) can help monitor whale presence.

A daily analysis of risk could trigger a risk threshold for additional management (*id.*). One management measure considered should be a ban on nighttime vessel traffic in the relevant area. Blondin et al. (2020), in a case study of blue whale ship strike risk in the U.S. Southern California Bight, found that AIS data showed that vessel traffic increased from midnight each day through 10 to 11 a.m. each day, followed by a slight decrease through midnight the following day. Because blue whale dive depth studies show a period of surface behavior at night, from about 10 p.m. to 7 a.m. each day, the authors concluded that strike risk is likely highest at that time (*id.*).

Calambokidis et al. (2019) found distinct diurnal differences in dive and movement behavior for blue, humpback and fin whales along the West Coast. All three species spent a high proportion of their time closer to the surface where they would be more vulnerable to ship strikes at night than in the day (Calambokidis et al. 2019). This was most pronounced for blue whales;

vulnerability to ship strikes was twice as high at night compared to the day (*id.*). Similar observations have been made regarding other blue whale populations (Caruso et al. 2020). Keen et al. (2019) studied fin whale ship strike risk during day and night and found that both increased use of the upper water column and increased ship traffic contribute to elevated ship-strike risk at night.

In addition, visual cues that could help a vessel avoid a whale are not available at night, which means that vessel strikes may be more likely. In San Francisco Bay, Cope et al. (2020) observed no significant differences in cargo or tanker ship presence between day and night but noted that cargo ships traveled significantly faster at night with a median speed greater than 10 knots. This raised the question of whether humpbacks, if present at night, might be more likely to suffer a collision.

## V. Suggested Regulatory Language

While the Center for Biological Diversity is not required to submit proposed regulatory language, it does here for the agency's convenience. The following language is a suggestion of what such language could look like; the Center is not petitioning for this particular language. Rather, as described above in the Notice of Petition on page i, the Center is petitioning NMFS to issue regulations that: (1) implement a year-round mandatory 10-knot speed limit in the current voluntary vessel speed reduction zones in the San Francisco Bay Region and the Southern California Region for vessels greater than or equal to 40 feet in length; and (2) identify areas of seasonal importance for blue whales, humpback whales, and fin whales, and set a vessel traffic threshold above which additional management measures will be triggered.

### **50 C.F.R. § 224.106 Speed restrictions and dynamic management measures to protect California blue whales, humpback whales, and fin whales.**

- (a) The following restrictions apply to: All vessels greater than or equal to 40 ft (14.9 m) in overall length and subject to the jurisdiction of the United States, and all other vessels greater than or equal to 40 ft (14.9 m) in overall length entering or departing a port or place subject to the jurisdiction of the United States.
  - 1) Santa Barbara Region: Vessels shall travel at a speed of 10 knots or less over ground when transiting the area between Point Arguello and Dana Point, including the Traffic Separation Schemes in the Santa Barbara Channel and San Pedro Channel. This region is bounded by the following:
    - At the Northwest corner: 34° 34.43' N, -121° 01.796' W
    - At the Northeast corner: Point Arguello
    - At the Southwest corner: 33° 18.066' N, -121° 01.796' W
    - At the Southeast corner: 33° 18.066' N, -117° 29.988' W

- 2) San Francisco Bay Region: Vessels shall travel at a speed of 10 knots or less over ground in the Traffic Separation Schemes and the polygon areas depicted in Figure 14.
- (b) The Assistant Administrator will identify areas of seasonal importance for blue whales, humpback whales, and fin whales, monitor shipping AIS data, and set a vessel traffic threshold of marine traffic above which additional management measures will be triggered to reduce the risk of vessel strikes. The Assistant Administrator will consider a ban on nighttime vessel traffic to protect whales.

## VI. Conclusion

Both the ESA and the MMPA prohibit the take of endangered blue, humpback, and fin whales, yet NMFS has failed to take regulatory action to reduce or eliminate vessel strike mortality at California ports. Mortality estimates for blue and humpback whales far exceed the PBR level, indicating that vessel strikes alone prevent these stocks from reaching their optimum sustainable populations. For these reasons, NMFS must implement a year-round 10-knot speed limit in NOAA's current vessel speed reduction zones in the San Francisco Bay Region and the Southern California Region for vessels greater than or equal to 40 feet in length.

- Establish shipping routes or vessel tracks for all commercial shipping vessels transiting between ports in Southern California and San Francisco Bay Area at least 24 nautical miles from shore.
- Identify areas of seasonal importance for blue whales, humpback whales, and fin whales, and set a vessel traffic threshold above which additional management measures will be triggered. The measures considered must include a ban on nighttime traffic.

NMFS must promptly respond to this petition and initiate the petitioned-for rulemaking within 12 months, which is a reasonable timeframe given the severe and ongoing impact of ship strikes on strategic marine mammal stocks. The failure to respond would constitute a dereliction of the agency's legal obligations and leave endangered whales at risk of suffering yet more injury and death from vessels.

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**Jack Gescheidt, In Defense of Animals**

There are many unknown variables with the drop, despite assurances from the agencies involved. Monitoring should be improved.

**Susan Kirks, Madrone Audubon Society, Sonoma County**

As an organization in a coalition of 50 organizations, Madrone Audubon opposes the proposed use of a 2nd generation anticoagulant, Brodifacoum, on the Southeast Farallon Island to attempt to eradicate mice. Proponents continue to state success in "over 700 projects." They fail to complete information that this is 700 of 1200. 500 of the projects were deemed failures with significant negative impacts. A 50/50 chance to eradicate mice is not an indicator of success. The bykill of non-target species is in the thousands. The project would likely not succeed. The population #'s of Ashy-Storm Petrels fluctuates and increases, then decreases. The Burrowing Owls of 6-8 would need not what the USFWS proposes, but actual experts in Burrowing Owls to help capture and relocate the owls - feasible and do-able with the Santa Clara Valley Habitat Agency and their programs. The risks of 2nd generation anticoagulant poison use at the SE Farallon Island are too high. The proponents have not provided complete or consistent information. And all of us are responsible for ensuring the least risk, the most innovative and multifaceted approach if mice are to be addressed, and the importance of integrity in the process.

**Kraemer Winslow, Concerned citizen/resident of Marin County and former IPM Commission Chair for Marin County**

Please do not approve this plan to air-drop a dangerous second-generation rodenticide on the Farallon Islands. There are too many other species in the land and water ecosystem that will likely be harmed as "by kill" as has happened in other locations where such "solutions" have been implemented.

**Mary Jane Schramm, Marin Audubon Society, Conservation Committee**

The need for full eradication of mice from FINWR is immediate, with the IUCN-"Endangered" seabird, the Ashy Storm-Petrel, having declined at FI by 32% in just 12 years and on a downward trend. Several other rare, endemic, and endangered species have also been impacted. The US FWS plan has already been conditionally approved by the CA Coastal Commission.

The only permanent solution available is a professionally applied rodenticide, EPA-approved for ecosystem restoration and legal in California. This can be done safely under controlled conditions, and has proven successful in nearly 700 island restorations worldwide.

Any accidental bykill of non-target species will be at the individual level, and not affect whole populations, but extraordinary measures are being taken to prevent bykill or entry of poison bait into adjacent marine sanctuary waters.

With the mice removed, the Farallon Islands ecosystem will begin healing from their impacts and regain balance, gaining in resiliency to better adjust to changing ocean conditions.

Thank you!

Mary Jane (MJ) Schramm

# FARALLON ISLANDS RESTORATION: ADDRESSING MISINFORMATION about FWS PLAN

Mary Jane Schramm, formerly  
20 yrs Greater Farallones  
National Marine Sanctuary -  
-PRO FWS Plan



# A 100% SOLUTION IS NEEDED & NONE OTHER EXISTS

- 48 methods - traps, terriers, other predators - were considered and rejected since *none* fully eradicates mice.
- Only rodenticides succeed, as proven on nearly 700 islands worldwide.
- Since 2007, 100% of mouse eradications succeeded, most with these same methods.

# CONTRACEPTIVES WILL NOT WORK

- They do not eradicate and are *years away* from use here.
- Each mouse requires repeat doses, and bait needs replacement year-round and *forever*.
- This will create deadly disturbances of nesting seabird and seals.

# THIS BRODIFACOUM IS NOT BANNED

- State of California has EXEMPTED “Brodifacoum 25-D Conservation” and EPA officially labels it for island ecosystem restoration.
- There is no comparing mainland abuse of rodenticides and this one time conservation application, which is *endorsed by many conservation groups*.

# WE CAN'T AFFORD TO WAIT

- **Time is running out** for Farallones Ashy storm-petrels.
- They decreased 32% in the past 12 years! Only 10,000 exist *worldwide* — *and half* the population breeds at the Farallones.
- **COP-26** taught us “**Delay is deadly.**” Climate change can stress at-risk species past their tipping point.

# LONG-TERM BENEFITS FAR OUTWEIGH SHORT-TERM RISKS

- Injury to native species will be minimized.
- By-kill would be of individuals, not threaten whole populations.
- Future generations of mice *and native wildlife* will be spared needless suffering.
- Benefits will last forever as the ecosystem rebounds.

***Thank you!***

Farallones Mouse Eradication Plan for GFNMS SAC Feb. 2022  
*For Marin Audubon Society*

## SUPPORT RESTORATION OF THE FARALLON ISLANDS NATIONAL WILDLIFE REFUGE

The Farallon Islands National Wildlife Refuge has successfully navigated an important step in the restoration of its impaired ecosystem, in December, 2021, the California Coastal Commission made a conditional **Consistency Determination** for the plan, and the amendments are in progress. The US Fish & Wildlife Service plan is to permanently restore balance and resilience to the ecosystem by fully eradicating invasive house mice that are having major impacts throughout the island's ecosystem.

Achieving this full eradication goal is virtually certain because the Plan's methods have been used to successfully remove rodents (mice and/or rats) on almost 700 islands throughout the world. Immediately below are points to know. And since 2007, 100% of island *mouse* eradication have succeeded.

- The US Fish and Wildlife Service' Mouse Eradication Plan is critically needed to restore the ecosystem of the Farallon Islands by fully eradicating introduced and highly destructive house mice whose presence has already caused the decline of native seabirds. Of utmost concern is **the endangered Ashy Storm-Petrel \* whose local numbers have plummeted by 32% in just 12 years.** In addition, impacts on Leach's Storm-Petrels, endemic salamanders, camel crickets, and endemic Farallon daisies will also be removed.

- The Service's plan is to drop and hand-place Brodifacoum 25D-Conservation, a rodenticide developed and EPA-labeled **specifically for use in restoring island habitats**. Past eradications have had zero to low mortality of non-target species, and the overwhelming result has been complete removal of rodents and rebounding of at-risk native species.
- **Brodifacoum-25D Conservation was specifically exempted** from restrictions of State Assembly Bill AB-1788 due to its importance in restoring habitats. It was used to successfully eradicate rats from Anacapa Island in California's Channel Islands, where habitats are similar to the Farallon Islands.
- **Use on the Farallones by licensed professionals** is completely different from the unregulated and indiscriminate use on the mainland.
- Marine mammals such as sea lions and seals feed at sea, and their diet is squid and fish, not grain pellets.
- This timing of the Plan's implementation (fall/early winter) would be when **most seabirds have left the islands** to feed at sea, not returning until spring to nest.
- Hazing methods that have been tested and found effective would be used to frighten gulls off the islands, such as lasers, spotlights, pyrotechnics, biosonics, predator calls, air cannons, effigies, and kites.
- Most mice will retreat to their burrows to die. Any accessible mice remaining above ground will be collected.

- If another less toxic, effective, permanent removal method were in existence, it would have been implemented already.
- Contraceptive methods will not work because they are not designed for full eradication, only control, and are not yet available. Their use would require repeated replenishment, *also by helicopter*, to reach steep and inaccessible areas. This would result in *year-round, multi-year* disturbance of sensitive species within the wildlife refuge.
- Grain pellets that may enter surrounding waters are highly soluble and will dissolve quickly, but Brodifacoum has very low solubility, and would drop to the ocean floor. Studies on other islands show that Brodifacoum binds to the sea bottom and becomes biologically unavailable to most species.
- The Service has made every effort to address all concerns, including the 500-plus comments received on the Environmental Impact Statement.

\*International Union Conservation of Nature (IUCN 3.1 “Endangered”), State of California “Species of Special Concern.”

*From Nov. 2021 ACTION ALERT updated Feb 7, 2022*

**From, MARIN AUDUBON SOCIETY NEWSLETTER, “The Rail” - February 2022**

## **MOUSE ERADICATION PLAN**

We’re thrilled and grateful that the majority of the [California Coastal] Commission recognized the validity of testimony of scientists and the long-term benefits to the ecosystem, and found the United States Fish and Wildlife Service’s (USFWS) plan to restore the ecosystem of the Farallones to be conditionally consistent with the Coastal Zone Management Program. We appreciate staff’s thorough analysis, the Commission’s thoughtful deliberations, and the Commission majority for seeing the long-term benefits to the species and the ecosystem of the Farallones over unsubstantiated fears of environmental calamity. The hearing went on for seven hours and included presentations by scientists who worked on other island eradication projects and similar projects, representatives of many scientific, regional, national, and international, conservation organizations, as well as testimony from opponents of the project and their supporters. ***The amount of misinformation expressed by the project opponents is truly astonishing. Below is a list of examples.***

*Thank you to former Farallones biologist, Peter Pyle, for providing information for this list. The misinformation is followed by the accurate information in italics:*

- **California law bans the use of brodifacoum 25-D Conservation.** *The state law that now bans the use of rodenticides (SB 1788) specifically exempts Brodifacoum 25-D Conservation for Conservation use on islands.*
- **Ashy Storm-petrel population is increasing.** *Some evidence indicates that the Ashy Storm Petrel has actually declined up to 32% in the last 12 years. Only about 10,000 adults breed worldwide and half of that number breed on the Farallones.*

- **The project will kill 3,000 gulls.** *This projection is based on the peak breeding population. In fact, only up to 100 gulls are typically on the island during the months the project will be implemented.*
- **Killing mice is inhumane.** *Currently mice die inhumane deaths – from starvation, cannibalism, disease and starvation when rains cause the seeds they feed on to sprout.*
- **Killing non-target wildlife is unacceptable.** *Some non-target species (Western gulls) is unfortunate but may be unavoidable. The gull loss is expected to be low, at worst – nowhere near a level that would affect the population.*
- **Sound science on the Farallones is not available.** There are 200-plus published scientific papers and several books on natural resources of the Farallones.
- **Raptors occur regularly at the Farallones and will eat the dead mice.** 95% of migrating raptors pass through <2% remain for <1 day. Migration is just about over in October – December when the project will occur.
- **Pt. Blue Conservation Science representing the USFWS was collusion.** Sole-source contracting is a common, acceptable and perfectly legal practice.
- **Contraceptives will work.** *Contraceptives control populations; eradication of the entire mouse population is needed otherwise they would continue to reproduce. Contraceptive bait traps would have to be maintained regularly which would cause unacceptable disturbance to nesting birds that cover the island. \**
- **Trap the owls and the problem goes away.** *Trapping is also not a long-term solution. The USFWS tested 48 methods including traps, terriers, predators, and trapping and removing owls. Removal would need to occur in perpetuity because it would not eradicate the mice. Trapped owls*

*become highly stressed which, considering their protected status, would be creating additional significant impacts.*

- **There is no need to rush.** *The project has been studied and planned for more than 20 years. It's is hardly rushed. Pelagic birds and the island ecosystem will continue to decline the longer the mice remain.*

~ ~ ~ ~ ~

A [California Coastal] Commission majority (Aminzadeh, Brownsey, Luce, Rice and Wilson) voted to approve the conditions recommended by staff: Develop and implement a more robust Bait Spill Contingency Plan and a Hazing Plan, prepare a Plan for an independent monitor to be present during implementation, and submit the plans to the Executive Director for review. The Commission added: prepare a Water Quality Control Plan and submit the final plans to the Commission to review compliance with conditions and hold a hearing if the commission so votes.

The opponents will not go away just because the Commission found the project conditionally consistent with the Coastal Program. Letters are appearing in newspapers objecting to the Commission's vote. Four weeks after the hearing a letter in the Marin IJ claimed, with no substantiation, that a video of mice on the Farallones that was shown at the hearing, was staged or taken somewhere else; input designed to cast doubt on the validity of the problem. Commissioners even reported seeing lots of mice on the island during an arranged visit. Supporters of the ecosystem must remain vigilant to ensure the project moves forward to restore the island ecosystem.

## **CONSERVATION**

*Marin Audubon Conservation Committee reviews critical issues related to wildlife habitats and comments to cities, agencies, and other jurisdictions. Barbara Salzman, Co-Chair, Marin Audubon Society Conservation Committee.*

\* Contraceptive bait stations would require year-round replenishment on all island surfaces, including at pinniped rookeries during pupping season.

**Roger Harris, Oceanic Society**

The Oceanic Society, the oldest marine conservation organization in the US, supports the US Fish and Wildlife Service's plan to restore the islands by removing introduced house mice.

**Barbara Salzman, Marin Audubon Society**

Marin Audubon Society urges the Councils to endorse the US Fish and Wildlife Service's Plan to eradicate the exotic mice because it is the only way to restore the ecosystem of the Farallones. The Plan has successfully removed non-native rodents from almost 700 islands around the world. The Farallon Island ecosystem should benefit from this history.

**Tom Lambert, Cordell Marine Sanctuary Foundation Board**

The Cordell Marine Sanctuary Foundation (CMSF) announces the following changes to our Board of Directors. President Sarah Hameed and Secretary John Shordike stepped down from the Board. Keith C. Flood was elected President and Gavin Chilcott, Ph.D. was elected Secretary. Other Board members who were re-elected are Drew McCalley – CFO, Treasurer, Rob Lee, Dan Howard, former Superintendent of CBNMS, Robert Rubin, Ph.D., Kate Hewett, Robert Van Syoc, Ph.D., Tom Lambert and Michael Carver, Ex Officio member and Operations Coordinator for CBNMS. The link to the current Board members and their Bios. is “Board” page of the CMSF website <https://cordellfoundation.org/>.

On November 2nd, CMSF representatives met with representatives from Greater Farallones Association. The meeting's purpose: was to 1. Have representatives from both groups meet, 2. establish open dialog between the groups, 3. discuss the merger of CBNMS & GFNMS management and impacts to both supporting non-profit organizations.

CBNMS staff members are developing funding proposals for our review at our next Board meeting on April 14, 2022.

**Mary McAllister**

*Dear Greater Farallones Marine Sanctuary Advisory Council,*

*Thank you for this opportunity to make a written comment to the Greater Farallones Marine Sanctuary Advisory Council regarding the project on the Farallon Islands to eradicate mice. I am submitting as my public comment the following letter to the editor of the Point Reyes Light that was published today. I wrote that letter in response to letters in support of the project that were published earlier by the Light. I have added links to the documents on which my comment is based that were also made available to the Light in response to their due diligence questions.*

*Thank you for your consideration.*

*Mary McAllister*

**Letter to the Editor of Point Reyes Light, published 2/9/22**

Here are a few observations about recent letters from promoters of the poison drop on the Farallon Islands.

One writer erroneously claims that 100% of mouse eradication on 700 islands were successful. Mice were the target of very few island eradication projects. Those projects can only be considered successful if you ignore the fact that mice quickly returned in most cases and hundreds of non-target birds were killed in the attempt.

Anacapa Island is the usual success story cited by supporters of the Farallons project. In that case, rats were the target of the eradication. Native mice were captured and released when the poison was no longer effective. The operative word here is “native.” The native mice on Anacapa are not considered a threat to birds, but the non-native mice on the Farallones are, although there is no evidence that the mice actually harm birds on the Farallones either.

If mice are not harmful to birds, there is no legitimate reason to poison them, along with untold numbers of non-target animals. The mice on the Farallones are targets only because they aren’t native. The mice on Anacapa undoubtedly eat vegetation too, but that’s not considered a problem so long as they are native. The mice on Anacapa are probably an important source of food for birds, just as they on the Farallones.

Likewise, claims that ashy storm petrels are threatened with extinction are exaggerated. The same agency responsible for the poison drop on the Farallones explained why it denied endangered status to the petrels in their press release: “The U.S. Fish and Wildlife Service...concluded [the species] does not warrant protection under the Endangered Species Act ...The Service has determined that population trend data for ashy storm-petrel indicates that the species is currently undergoing natural population fluctuations and that the species is not in a long-term decline. The species report revealed that the primary stressors for the ashy storm-petrel are burrowing owl predation and western gull predation on Southeast Farallon Island,

which were found to have a slight to moderate impact on the ashystorm petrels located there.” Note that the agency makes no mention of mice as a threat to petrels.

A study of ashystorm petrel populations on the coast of California published in 2021, does not substantiate the claim that the petrel population is declining. Using direct observation methods, that study reports that the petrel population is declining south of Monterey Bay and increasing north of Monterey Bay. It also stated that population estimates based on nesting success underestimate the total petrel population. Nesting success is the measure of the petrel population used by Point Blue on the Farallones, according to their published reports.

Thanks to the promoters of the Farallones project for creating new opportunities to correct the record. Since they seem to be getting what they want, they might be wise to quit while they are ahead.

Mary McAllister  
Oakland, CA

Documentation:

1. Study regarding target species of island eradications and varying efficacy by target species.  
<https://onlinelibrary.wiley.com/doi/abs/10.1111/mam.12190>
2. Press Release of USFWS declining to designate endangered status to ashystorm petrels.  
file:///C:/Users/Owner/AppData/Local/Temp/Temp1\_Please%20consider%20my%20LTE.%20Thanks.%20Documentation%20attached.zip/ashystorm\_petral\_%20news\_release\_finding\_no\_t\_warranted\_.10-3013.pdf
3. Study of distribution of ashystorm petrel in Coastal California.  
file:///C:/Users/Owner/Desktop/Ashy%20storm%20petrel%20population%20distribution.pdf

**Lou-Anne Fauteck Makes-Marks, M.F.A., M.A., Ph.D., Sacred America**

Dear Mr. Gorostiza,

My research papers on the Native American mortuary complexes of which the Farallon Islands are an integral part are linked below. The papers include documentation of the importance and sacredness of the Farallon Islands, to inform the Council's decision on the proposed rodenticide drop there. There is more information beyond these papers, if you have interest in pursuing it. Please advise if you do.

These islands are significant traditional cultural sites for both the Ohlone and Coast Miwok tribes. They were their Islands of the Dead. Evidence of habitation may still exist and be found there and on the Continental Shelf. As the Greater Farallones National Marine Sanctuary website indicates, "Any cultural material would be of extreme significance." We hope to continue our research there in the future. A rodenticide drop could significantly disrupt that possibility. I understand that underwater research access is controlled by Point Blue; please correct me if that is not the case.

<http://www.sacredamerica.org/2021/11/spirit-paths-and-sacred-places-point.html>

<http://www.sacredamerica.org/2018/04/dancing-on-edge-of-pacific.html>

The Farallons were the home of Coyote, where the spirits of the dead migrated. His house there could be seen from the hills above Bodega. The Coast Miwok considered birds, especially there, to be the reincarnations of humans who someday might return to human form.

I am not aware that consultation with tribes has taken place over the proposed rodenticide drop. In my opinion, as a Coast Miwok and Pomo lineal descendant, the drop should not take place at all. I descend from a couple who were forced to the Farallones to kill and butcher seals for the Russian fur trade. The poison drop will kill more animals there. It has to stop.

I am also attaching a paper by my research partner, Stephen D. Janes, Ph.D., a geologist also studying the sites, including the Farallones. He has found megalithic structures at Point Reyes as part of the mortuary complex, including a roundhouse quarried into the bedrock there, described in his paper as a "buried circular bedrock cut." We strongly suspect that megalithic structures also exist on the Farallon Islands and underwater.

We both oppose the proposed poison drop on the Farallones. Our continued research has supported our positions.

These mortuary complexes are ancient, traditional cultural places, sacred to the Pacific Coast's Indigenous peoples. I have located comparable mortuary complexes and similar details among the Wappo, Chumash, Pomo, Esselen, Lushootseet, Klamath, and in Hawaii, plus elsewhere in North America, including at Cahokia and other cultures in the Midwest. They are a culturally important phenomenon, as they are on the California coast.

There is a strong likelihood from linguistic and DNA evidence that the first habitation sites established in North America were on the Pacific Coast. There is well-established evidence of the presence of human habitation in North and South America before 11,200 years ago. Paulette Steeves listed 111 archaeological sites in North America that are older than 11,200 years and 58 in South America.

The 4th and 5th oldest sites on Dr. Steeves' North American list are the Cerutti site and Calico sites in Southern California, with evidence of human activity, that date back to minimally 130,700 years and 200,000 +/- 20,000 years respectively (200). There was extensive research to establish those dates. It is likely that more northern locations along the coast were also suitable for habitation during this extended time period. The complex at Point Reyes and the Farallones may be a part of those early habitation patterns in California.

The Pacific Ocean level rose and flooded the Continental Shelf, where the Farallones are situated, between 18,000 to 6,000 years ago. Even a conservative research estimate admits that Indigenous humans could have been in North America, along the Pacific Coast, at least 20,000 years ago, well before the ocean level rose. That means that during that period of time, large areas of the Continental Shelf were above water, the Farallones were more accessible, and coastal habitation was probable there, as coastal peoples stay close to ocean food sources.

It is plausible that the Point Reyes/Farallon Islands complex stands among the most ancient traditional cultural places in North America that have been identified to date, and that megalithic remains could continue to be found at the Farallones and on the Continental Shelf.

As Dr. Janes has indicated, "Protection and preservation of these structures are essential, as well as non-invasive testing to further describe them." We are both deeply concerned about the Farallones poison drop and ask that the Sanctuary Advisory Council not condone it.

In the current political climate honoring Native American traditional cultural heritages, this is also a special opportunity to endorse a positive outcome, not just for the Farallones as a sacred place, but for all that occupy it. Native American beliefs include that all of nature is sacred and alive, has inherent right to exist, and is perpetuated in a sensitive, dynamic balance. If we intervene harshly and disrupt that balance, we risk its peril and ours.

If the Sanctuary Advisory Council believes the mouse population at the Farallon Islands needs to be addressed, an alternative utilizing low-to-no-risk methods would be more relevant to consider, including trapping. The proposed poison will not remain confined to the islands—there is nothing to stop it entering the water if you approve it. Please don't.

Thank you for your consideration.

Regards,

Lou-Anne Fauteck Makes-Marks, M.F.A., M.A., Ph.D.  
Director, Sacred America

European, Asian, Coast Miwok, Kashia Pomo, Kamchadal/Aleut, Creek, Shawnee, Virginia/Maryland  
Algonquin, and Southeastern Sioux

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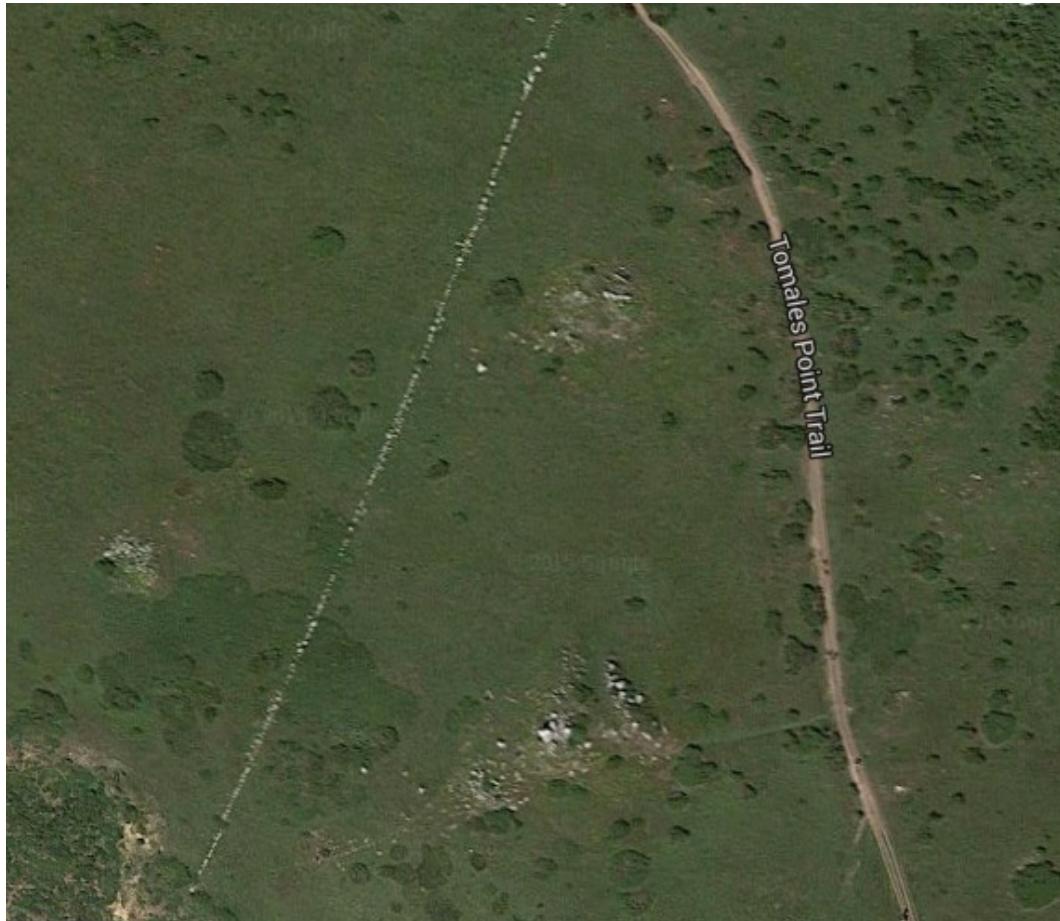
[sacredamerica@gmail.com](mailto:sacredamerica@gmail.com)

Attachment:

Megalithic Artifacts.pdf

# MEGALITHIC ARTIFACTS OF TOMALES POINT, MARIN COUNTY, CALIFORNIA

**Stephen D. Janes** M.A. Ph.D., California State Professional Geologist 4411  
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Stone line and adjacent soil and rock mounds

## INTRODUCTION

Tomales Point juts out like the bow of an immense, granite ship on the edge of the North American continent, riding the San Andreas fault northwestward over the Pacific Ocean for thousands of years.

This area has been observed to contain a complex set of megalithic artifacts, perhaps also thousands of years old.

The most apparent of these are two linear arrays of stones known to the Coast Miwok as “Spirit Jumping-Off Rocks,” which stretch out across Tomales Point, over 800 feet in length.

Crossing Tomales Point, these two linear arrays of stones have been inferred by historians to be a wall or property line built sometime in the nineteenth-century. However, historical evidence is anecdotal, and no written documentation is available to support this inference. An alternative model is that the lines are part of a collection of megalithic structures of prehistoric origin, but until recently no formal field descriptions have been available. In 2014 two students began describing the lines and the stones that form them as part of an investigation into the origin of the lines.

The results described herein are part of an ongoing study a continuing that work and include geologic and geomorphic description of the surrounding area and survey data of the stone lines and associated megaliths. The data to date support the inference that the lines are part of a complex set of megalithic structures. The age and function of these features remain unknown.

## LOCATION AND GEOMORPHOLOGY

Tomales Point is part of the larger Point Reyes National Seashore which is located along the Pacific coast 30 kilometers north of San Francisco and is defined by the elongate landmass directly west of Tomales Bay (see attached maps). Geologically the area is of particular significance because much of it is composed of granitic rocks that have been displaced by the San Andreas Fault hundreds of kilometers northward. These granitic rocks are derived from Sierra Nevadan granitic basement. They are juxtaposed against metasedimentary rocks of the Franciscan

Formation along the fault which occurs directly beneath Tomales Bay. The geomorphology of the region is particularly influenced by proximity to the San Andreas Fault resulting in northwest trending narrow features including Tomales Bay and Tomales Point.

Across most of Tomales Point there are very few bedrock outcrops. A thin soil layer and grass and brush vegetation cover the peninsula. However, there is a small area on the ridge where several rock piles do occur. The area covers approximately 50 acres along the ridge crest, and the stone lines pass through its center. This area of outcrops constitutes the primary study area on the peninsula. Outcrops are composed of the granitic rock tonolite which is characterized by a coarse crystalline texture of mainly quartz and feldspar with minor amounts of mafic minerals. Fresh surfaces of the rocks appear tan and pink. Where exposed to weathering, the rocks appear white to light gray and are generally partially covered by lichens. The soil profile across the study area is relatively thin ranging from 10 to 20 centimeters. It is composed of sandy loam and supports a grassy vegetation except where surface water is found or along ephemeral stream courses where heavy brush occurs.

The erosion of granitic rocks can produce a wide range of geomorphologies and exotic shapes (Twindale and Vidal Romani, 2005). Some of these erosional features can be misidentified as artificial constructions, carvings, or megaliths. While the stone lines are clearly man-made features, the numerous bedrock exposures surrounding the lines may be explained in several ways. It is possible that some of the rock piles are natural erosional remnants of exposed bedrock.

However, a variety of geologic features suggests that some or all are artificial. Bedrock outcrops are identified primarily by exposures typically stripped of soil cover and smooth surfaces. These surfaces often are broken by fractures. In contrast the rocks exposed at the site occur as small mounds capped by smooth surface exposures with several subrounded to rounded cobble to boulder size stones scattered over and around the perimeter of each mound. Numerous cobble and boulder “piles” occur across the study area composed of as few as one large boulder to several boulders clustered on grass covered soil. These boulder piles may be the remnants of eroded bedrock exposures now buried by soil or they may be displaced fragments of bedrock exposures located upslope. Alternatively, some of these stone piles may have been purposely relocated and like the stone lines represent man-made megaliths.

A specific example is the largest stone boulder in the outcrop area. Referred to herein as the “Goliath Stone,” this boulder is three meters high and approximately two meters in diameter. It appears to be perched upon a semicircular ring of smaller stones. Because of its size, Goliath can be seen from great distances away from the ridge crest.

## THE STONE LINE(S)

The “Spirit Jumping-Off Rocks” is a poorly known megalithic artifact crossing the Tomales Point peninsula. It is composed of two linear arrays of rectangular stones trending north 20 degrees east and north 30 degrees east respectively. The term “Spirit Jumping-Off Rocks” is derived from Coast Miwok oral history (Gardner, 2007; Collier and Thalman, 1991).

Known from the sixteenth-century, the Coast Miwok occupied Bodega Bay, the Point Reyes peninsula along Tomales Bay and areas to the east (Kroeber, 1976). Along the eastern shore of the Tomales Point peninsula six former Miwok sites have been identified located below the area where the stone lines occur (Edwards, 1970). However, the Miwok are not known to construct rock features (Dougan, 1998) and have made no known claim that they were the builders of the stone lines.

Because the stone lines appear so regular and cross the peninsula, historians have assumed that they were constructed to define a property boundary and may have at one time been part of a wall (DeRooy and Livingston, 2008; Livingstone, 1993). However, no written documents such as journals, diaries, newspaper articles, or property plot plans are available to support this idea, and historians have acknowledged the possibility that the stone lines are older and may have been constructed by “paleo-indians” (Gardner, 2007).



Large (approximately 1 meter long) step like stones of the Stone Line

There are two lines, designated herein as “Stone Line I” and “Stone Line II.” Stone Line I, is group of 233 stones 160 meters long and follows a compass trend of north 28 degrees east across Tomales Point. Stone Line II begins ten meters north of the northeastern end of Stone Line I. It is composed of 75 stones, 88 meters long and follows a compass trend of north 35 degrees east. The idea that the stones are assembled into a single line requires the assumption that the two lines present today were once connected by a now absent line of stones approximately ten meters in length. There is no evidence of these “connecting” stones (e.g., partial line, scattered rocks) present at the site, so for this study descriptions refer to two lines.

A description of the characteristics of the stones provides evidence that the stone lines were constructed with several embellishments. This author is indebted to two students of Sir Francis Drake High School, Kate Iida and Emily Wearing, for their work in measuring the size and shape of each stone in the two lines (Wing, Iida, and Wearing, 2015). There are 233 stones in Stone Line I. With rare exception

these stones lie at the ground surface surrounded by soil. Most of these stones are flat and, in some cases, partially covered by vegetation. The stones appear imbedded in the soil and may be sitting on the natural bedrock below, suggesting they are of consistent thickness unless some or all are keyed into the bedrock which cannot be determined without excavation. In some places the stones occur higher above the ground surface. These stones with some exceptions show signs of displacement due to differential compaction of soils, animal burrows, frost wedging and other ground disturbing processes.

Many of the stones in the line are angular and appear to have been quarried and/or shaped before placement. This is particularly striking for the stones that are shaped like elongate rectangles. These elongate stones are typically 0.5 meters in width, but may be up to 1.5 meters in length. In most cases the long stones are placed with the long axis parallel to the trend of the line. However, several long stones have been identified that are placed with the long axis transverse to the trend of the line. These transverse stones vary in size and do not appear in any order or standard spacing distance along the line.

Of the 233 stones, most occur less than 10 centimeters above the ground surface, and only eleven appear well above the ground surface between 0.4 and 0.9 meters. As noted above, most of these taller stones show signs of displacement due to natural ground-disturbing processes and may have been taller in the past. There are however four stones that are clearly placed to stand taller than the rest of the stones making up the line and were deliberately placed in an upright position. They are designated herein by name, and their specifications are provided in the table below. Among these taller stones, the “Tower Stone” is the most prominent and is bounded on either side along the line by very large flat slabs.



Tower Stone and adjacent massive flat stones

Based on the density and average weight of a cubic meter of tonolite, these large stones are estimated to weight 2 to 3 tons. It is unclear why someone would use these stones for a wall.

Table 1 Tall Stones in Stone Line I

Name	Length (meters)	Width (meters)	Height (meters)	Orientation
Equinox Stone	0.4	0.9	0.4	Transverse
Spring Stone	1.0	0.4	0.7	Parallel
Tower Stone	1.3	0.4	0.9	Parallel
Platform Stone	1.5	0.7	0.5	Parallel

There are 88 stones in Stone Line II. With rare exception these stones lie at the ground surface indicating they are like the stones in Stone Line I consistently 10 to 20 centimeters in thickness. There are only two tall stones on Line II. They are 1.0 and 0.6 meters high. There are eight transverse stones, and like those in Stone Line I, the transverse stones vary in size and do not appear in any order or standard spacing distance along the line.

## GOLIATH

Located only a few meters southwest of the line is the Goliath Mound. Composed of soil and several large boulders the mound is capped by a semicircle of boulders. Resting on this group of boulders is the largest stone in the area referred to herein as “Goliath Stone.” Goliath is three meters high and two meters in diameter. It has a very flat bottom that allows it to rest firmly on top of the semicircle of smaller boulders. The configuration of these stones creates a small alcove open toward the stone line. The assemblage does not rest on bedrock, but on a thin layer of soil.



Goliath and the alcove beneath it



Large star petroglyph on the east side of Goliath

Preliminary surveys of select stones in the line indicate that there are clear connections between Goliath and the line. As an example, two of the four upright stones are at cardinal directions to Goliath. The Tower Stone is located directly north of Goliath and the Equinox Stone is located due east from Goliath. An additional directional relationship occurs between Goliath and a large flat slab located 83 meters along the line from the south end. This slab is one of the largest stones in Line I being a full meter square, but it stands only 0.3 meters above the ground. The directional line between it and Goliath has a compass bearing of north 26 degrees west, and a survey of this directional line encountered the circular excavation in the bedrock described below.



Cardinal direction stones and the Goliath Stone

## OTHER MEGALITHIC STRUCTURES

Other large geomorphic features stand out among the bedrock mounds and boulder piles. There are two benched mounds which occur north of Stone Line I and near a spring. These mounds are surrounded by boulders, but the tops appear planed off as platforms with a cover of soil. They bear a similarity to constructed platforms found in New Mexico. In particular the geomorphology matches that of a known Anasazi archaeological site called the “Standing Rock Great House” (Janes, 2005). Careful examination of these mounds indicate that they are sloped parallel to the natural slope but formed as steps. They have soil cores, and the relatively steep west facing slopes are covered with a meter-thick layer of stones to prevent slumping and erosion. Additionally, erosional remnants typically are marked by a debris field downslope from the main outcrop. Directly downslope from the platforms, there is little debris and a rock circle occurs between them and the western cliff edge of the peninsula.

Directly north of the platforms is a very tall pile of stones with very steep slopes. Referred to herein as the “Sol Mound,” the mound or pile is capped by a small flat area and one very large boulder rests on this surface. Strikingly different from the angular stones that make up the mound, the capping boulder is rounded as if it has been transported and weathered before arriving on top of this mound. There is no debris field around the base of the mound, and much of the perimeter of the base appears to have been cleared of even small stones or rock fragments. At present there is no known geologic process that could have placed the rounded boulder on top of the mound, and it appears to have been placed there after construction of the mound.



Rounded capping boulder on top of Sol Mound (approximately 2 meters tall)

A third feature is unique within the study area. In this instance a ring of soil, gravel, and cobbles form two semi-circular berms around a depressed area rather than a mound. The circle is located directly north of the Sol Mound. The circular depression is 10 meters in diameter and partially filled with soil. Using a thin steel rod to probe the soil filled area confirmed that the filled area is a circular depression in the bedrock approximately one meter deep with steep sides and a flat bottom. Similar circular soil-filled depressions are found in New Mexico and Arizona and typically represent buried subterranean structures.



Satellite image from Google Earth showing buried circular bedrock cut and surrounding berms



View looking due south across the buried circle to the Sol Mound with the capping rounded boulder

## DISCUSSION

There is little doubt that the stones lines are not natural features. They show no sign of being associated with bedrock outcrops and the rectangular shapes of many stones suggests that they were quarried and shaped before being installed along the lines.

Directly adjacent to the line is the Goliath Mound named for the large boulder that rests there. The striking nature of the Goliath Stone and its proximity to Stone Line I suggests there may be a relationship between the line and this megalith. As noted above, the most prominent stone on Line I is the Tower Stone. It is located 106 meters directly north of Goliath. The Tower Stone not only stands out as the tallest stone in the line but also is unique because on either side of the Tower Stone are very large, though not tall, stone slabs. The discovery that the Tower Stone and Goliath form a north “directional line” suggests that some stones on Stone Line I might serve as navigational markers across the study area.

The two lines are surrounded by numerous rock mounds and piles which at first inspection appear to be randomly distributed within the study area. However, the distinct construction of the Tower Stone and its relationship along a cardinal direction with the Goliath Stone suggests that many of the stones in the study area may have been relocated much as the stones in the lines were relocated from outcrops or quarries to their present positions.

There is strong evidence to support the inference that the stone piles and mounds are artificial. Unlike natural outcrops, there are no talus fans or scattered gravels down slope from these features. In fact, the edges of some mounds appear to be dressed, and all loose material removed. Stratigraphic examination of mounds indicates an interlayering of soil and rocks suggesting some rocks were moved into place directly over the soil. This is the case for the stone lines as well. The location of a rounded boulder located on the top of a conical mound of angular blocks is impossible to explain with known erosional and sediment transport processes. Further evidence of human construction is indicated by the buried circle cut into the bedrock. The petroglyph on a side of Goliath also needs further study and suggests more examination of various large stones may reveal more petroglyphs.



February 9, 2022

Anny Mohan, Chair  
Greater Farallones National Marine Sanctuary Advisory Council

Kai Martin, Chair  
Cordell Bank National Marine Sanctuary Advisory Council

**RE: 2021-22 Greater Farallones & Cordell Bank National Marine Sanctuaries Advisory Councils Joint Ship Strike Working Group Final Report**

Dear Ms. Mohan and Mr. Martin,

On behalf of the Environmental Defense Center (“EDC”), I write to comment on the 2021-22 Greater Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils’ Joint Ship Strike Working Group Final Report. EDC is a non-profit, public interest law firm that has worked to protect and restore California’s environmental and natural resources for more than 40 years. Our mission is to protect and enhance the local environment through education, advocacy, and legal action. EDC’s work focuses primarily within San Luis Obispo, Santa Barbara, and Ventura Counties, including the northern Channel Islands and the ocean waters seaward of this region’s shores. EDC supports the recommendations of the Working Group Report, including the acknowledgement of the need to consider stronger requirements for slow ship speeds in order to protect whales from the risks and impacts of ship strikes.

For over 15 years, EDC has been working closely with the Channel Islands National Marine Sanctuary and other local, state, and federal partners to reduce the risk of ship strikes on whales in the Santa Barbara Channel and along the California Coast between the San Francisco Bay Area and the Ports of Los Angeles/Long Beach. This effort has included the following:

1. 2011 Port Access Route Study to shift the Santa Barbara Channel Traffic Separation Scheme north by one mile to reduce the risk of ship strikes on whales in areas with high whale abundance near the Northern Channel Islands.<sup>1</sup>
2. Protecting Blue Whales and Blue Skies—Vessel Speed Reduction (“VSR”) Incentive Program, piloted by EDC, Channel Islands National Marine Sanctuary, and Santa

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<sup>1</sup> 33 C.F.R. § 167; <https://www.federalregister.gov/documents/2011/11/01/2011-28270/port-access-route-study-in-the-approaches-to-los-angeles-long-beach-and-in-the-santa-barbara-channel>

February 9, 2022

RE: 2021-22 Greater Farallones & Cordell Bank National Marine Sanctuaries Advisory Councils Joint Ship Strike Working Group Final Report

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Barbara/Ventura Counties' Air Pollution Control Districts in 2014, which became an annual program in 2016 and expanded in partnership with Greater Farallones and Cordell Bank National Marine Sanctuaries and the Bay Area Air Quality Management District in 2017.<sup>2</sup>

3. 2015-2016 Channel Islands National Marine Sanctuary Marine Shipping Working Group, which outlined several strategies to reduce the threat of ship strikes on whales.<sup>3</sup>
4. Support for legislation to require slow speed regulations in areas with high concentration of whales, including H.R. 3764, the Ocean-Based Climate Solutions Act.<sup>4</sup>

While these efforts have made progress towards reducing the threat of ship strikes along the California Coast, we have much to do to optimally protect whales from ship strikes and ensure sustainable populations into the future. Incentive-based, voluntary efforts implemented over the past decade have slowly improved cooperation by large vessels with slow speed requests, but we believe it is time to take a firmer approach to mandate slow speeds in areas with high concentrations of whales.

We support the expansion of the voluntary VSR zones in the San Francisco Bay region as well as exploring the spatial management recommendations laid out in the Working Group Report. We also want to emphasize our concern that continuation of a voluntary approach may not adequately reach the goals set out in the Report. As the Working Group Report explains,

Despite measurable increases in voluntary cooperation across the VSR requests, a cooperation level of 70% across large vessel traffic within the SF TSS is only estimated to achieve a ~17% reduction in fatal ship strike risk in the region, a number that falls short of the 50% reduction in risk management goal, which has been set by GFNMS and CBNMS within sanctuary jurisdictions.

Acknowledging that current voluntary VSR efforts are falling short of levels to adequately protect whales, we urge the Greater Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils to recommend that the Office of National Marine Sanctuaries take steps to establish regulations to limit large vessel speeds in National Marine Sanctuaries. Thank you for your consideration of these comments.

Sincerely,

Kristen Hislop  
Senior Director, Marine Program  
Environmental Defense Center

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<sup>2</sup> <https://www.bluewhalesblueskies.org/>; <https://www.ourair.org/air-pollution-marine-shipping/>; [https://channelislands.noaa.gov/management/resource/ship\\_strikes.html](https://channelislands.noaa.gov/management/resource/ship_strikes.html)

<sup>3</sup> CINMS Advisory Council. 2016. CINMS Advisory Council Marine Shipping Working Group Final Report. [https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/sac/pdfs/mswg\\_final\\_report\\_may2016.pdf](https://nmschannelislands.blob.core.windows.net/channelislands-prod/media/archive/sac/pdfs/mswg_final_report_may2016.pdf)

<sup>4</sup> <https://www.congress.gov/bill/117th-congress/house-bill/3764>

February 9, 2022

RE: 2021-22 Greater Farallones & Cordell Bank National Marine Sanctuaries Advisory Councils Joint Ship Strike Working Group Final Report

Page 3 of 3

Cc:

Maria Brown, Superintendent, Greater Farallones and Cordell Bank National Marine Sanctuaries  
Chris Mobley, Superintendent, Channel Islands National Marine Sanctuaries



The Marine  
Mammal Center®

The Marine Mammal Center advances global ocean conservation through marine mammal rescue and rehabilitation, scientific research, and education.

January 11, 2022

Abby Mohan,  
Chair, Greater Farallones National Marine Sanctuary Advisory Council

Kai Martin,  
Chair, Cordell Bank National Marine Sanctuary Advisory Council

**RE: 2021-22 Greater Farallones & Cordell Bank National Marine Sanctuaries Advisory Councils Joint Ship Strike Working Group Final Report**

Dear Ms. Mohan and Mr. Martin,

On behalf of The Marine Mammal Center, I wish to offer comment on the 2021-22 Greater Farallones (GFNMS) and Cordell Bank National Marine Sanctuaries (CBNMS) Advisory Councils' Joint Ship Strike Working Group Final Report. Specifically, The Marine Mammal Center reviewed the Working Group report and strongly encourages support of both the short-term and long-term management recommendations outlined. Further, given the 90% compliance rate achieved in Massachusetts when an incentive program has been tied to regulations, we also strongly encourage the Sanctuary to explore and consider mandatory speed limits.

Founded in 1975, The Marine Mammal Center is a global leader in marine mammal health, science and conservation and is the largest marine mammal hospital in the world. The Center operates out of facilities in Sausalito, Morro Bay and Moss Landing in California, and in Kona, Hawai'i, and has a team of 110 staff and 1,300 actively engaged volunteers. A cetacean field research team of the Center actively studies whales and dolphins in the San Francisco Bay, GFNMS, CBNMS, and the Monterey Bay National Marine Sanctuaries.

We understand that the intent of the Working Group is to support a GFNMS and CBNMS goal of reducing ship strike risk by 50% within sanctuary jurisdictions, and that the Working Group has provided input on three conceptual designs to reduce the risk of ship strikes in the seaward approach to the San Francisco Bay region and within GFNMS, CBNMS, and the northern portion of MBNMS. We concur with their findings and support research to quantify the changes and impacts resulting from the implementation of their recommendations. We would also encourage the Sanctuaries to consider an even higher goal of reducing ship strike risk by far greater than 50% of 2014 levels.



Knowing the Vessel Speed Reduction has also been shown to offer additional environmental benefits, including significant reductions in air emissions and underwater noise, both negatively impacting the health of marine mammals and their ocean environment, adds to our conviction that the Working Group report offers a blueprint which ought to be followed.

I am happy to address any questions that you might have, and I applaud your efforts to create safer waters for marine mammals and other ocean wildlife while sustaining those industries upon which we rely.

Sincerely,



Dr. Jeffrey R. Boehm  
Chief External Relations Officer

Cc: Maria Brown, Superintendent, Greater Farallones and Cordell Bank National Marine Sanctuaries  
Chris Mobley, Superintendent, Channel Islands National Marine Sanctuaries



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Cordell Bank and Greater Farallones National Marine Sanctuaries

Joint Sanctuary Advisory Council

E-mail: [jordan.gorostiza@noaa.gov](mailto:jordan.gorostiza@noaa.gov)

Cc: Maria Brown, Superintendent, GFNMS, CBNMS

Brian Johnson, Deputy Superintendent, GFNMS, CBNMS

February 11, 2022

Re: Support for Southeast Farallon Island Nonnative Mouse Eradication Project

Dear Joint Sanctuary Advisory Council:

Fifty-five years ago, biologists from Point Blue Conservation Science (known then as Point Reyes Bird Observatory) landed on the Farallon Islands for the first time. Ever since then, scientists from Point Blue, a Bay Area non-profit organization focused on applied conservation science, have maintained a continuous presence on the islands: 24 hours a day, 365 days a year. Our mission is to advance the conservation of birds, other wildlife, and ecosystems through science, partnerships, and outreach. Our role on the islands is simple: we use our expertise in biology, ecology, and conservation to provide rigorous science to the US Fish and Wildlife Service (USFWS), helping them make decisions that will ensure a healthy ecosystem on the islands for generations to come.

We would like to voice our strong support for the eradication of invasive house mice from the Farallon Islands per the USFWS proposal. This eradication project presents a critical opportunity for ecological restoration. We would also like to commend the California Coastal Commission on their recent decision to grant this project a Federal Consistency Determination at its December 2021 meeting.

Today, after numerous successful eradications of non-native species on the islands, the invasive house mouse is the last invasive vertebrate remaining on the Farallones. Introduced by sailing vessels, likely in the 19th century, these mice exist on the islands in plague-like levels--at times reaching as many 1,270 mice per hectare, one of the highest observed densities in the world. The presence of invasive house mice has been demonstrated to have severe and ecosystem-altering effects on island ecosystems throughout the world. These



threats include direct and indirect predation on native species, competition with native species for food resources, facilitating the spread of non-native vegetation, and damage to habitat character. On the Farallones, Ashy Storm-petrels, other seabirds, burrowing owls, Farallon arboreal salamanders, Farallon camel crickets, and the islands' vegetation are all negatively impacted by the presence of mice. Threats to the rare and threatened Ashy Storm-petrel's declining population are of particular concern. The petrel is listed as: "Endangered" by the International Union for the Conservation of Nature's [Red List of Threatened Species](#); a "Species of Management Concern" by the USFWS; and "Species of Special Concern" by the CA Department of Fish and Wildlife.

Invasive rodent removals have been successfully completed on nearly 700 islands worldwide, including on California's Anacapa Island in the Channel Islands National Park, three National Wildlife Refuges in the Pacific, two islands off the coast of Mexico, many islands off the main islands of New Zealand, and recently, multiple islands in the Galápagos Archipelago. House mice specifically have been successfully eradicated from more than 60 islands worldwide. Nearly all of these successful projects utilized techniques like those proposed for the South Farallon Islands house mouse eradication. According to the EIS produced by the FWS: "since 2007, 28 of the 30 mouse eradication undertakings undertaken have been confirmed as successful (Samaniego 2016)." Previous eradication efforts using these methods have had no lasting negative impacts on the surrounding marine ecosystem and environmental testing has "failed to detect more than trace amounts of brodifacoum in any water samples taken after bait application" (FEIS section 4.4.1.3).

The Farallon Islands are a world-famous local treasure. The Service has a unique opportunity at this moment to take a giant step forward in restoring the island's fragile ecosystem and protecting the many species that rely on it. We applaud the Service for their careful, transparent process and their commitment to science-based decision making and encourage the Joint Sanctuary Advisory Council to support this proposed restoration however it can.

Signed,  
Dr. Jaime Jahncke  
California Current Group Director, Point Blue Conservation Science

Pete Warzybok  
Farallon Islands Program Leader, Point Blue Conservation Science



California Coastal Commission

Attn: Jack Ainsworth c/o All Commissioners  
 Energy Ocean Resources and Federal Consistency Division  
 455 Market St Suite 300,  
 San Francisco, CA 94105

(By mail and via email to [FORFC@coastal.ca.gov](mailto:FORFC@coastal.ca.gov); [larry.simon@coastal.ca.gov](mailto:larry.simon@coastal.ca.gov);  
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Re: DENY Federal Consistency Determination of U.S. Fish and Wildlife Service for South Farallon Islands Invasive House Mouse Eradication Project, Greater Farallones National Marine Sanctuary

Dear Commissioners:

The undersigned organizations, collectively representing the grassroots and intergovernmental movement that led to the multiple layers of state, federal, and international recognition for the wildlife and environmental resources surrounding the Farallon Islands, are writing to hereby respectfully request that the Coastal Commission **deny** a finding of consistency to the proposed helicopter dispersal of a highly-toxic and systemic poison, known to have dangerous ecosystem impacts to non-target species, onto the Farallones. The adverse impacts of the “bykill” from this project can be anticipated to extend to the random distribution of hazardous contaminated carcasses

of gulls along the mainland coast, according to the EPA. The health of the food chain of so many species of wildlife along our coast is not worth the risks posed by this poorly-planned proposal.

The Farallones are the epicenter of one of the most hard-won and comprehensively-protected places on Earth. The strong conservation movement in our region led to the 1908 designation of Muir Woods National Monument, the first such protected area in Marin County. The 1962 creation of Point Reyes National Seashore, followed by the 1972 designation of the Golden Gate National Recreation Area, were precursors to the groundswell of effort leading to the 1981 designation of the original Farallon Islands National Marine Sanctuary, now the Greater Farallones National Marine Sanctuary, to surround the Farallones National Wildlife Refuge. The additional 2010 protection of the Farallones within a California Marine Reserve, created under the state's Marine Life Protection Act, further enhanced the protection of these waters. Each of these layers of protection was supported in bipartisan fashion by our Members of Congress, by our Governors, by our local officials, and by millions of citizen activists who worked tirelessly for decades. An International Biosphere Reserve, created by UNESCO, further recognized the unique ecological values here in the global context. Against this historic backdrop, the California Coastal Act also had much of its genesis in our region, and we rely on the diligent administration of the Coastal Act to provide yet one more layer of necessary protection for this unparalleled national treasure.

Quite simply, the above described constellation of protected areas is not the appropriate place for the U.S. Fish and Wildlife Service to conduct an experiment of a type that has failed, with devastating results to wildlife and the environment, in so many places throughout the world. The cost-benefit ratio associated with the random distribution of the second-generation rat poison Brodifacoum, which has proven so harmful to all animals and so damaging to the food chain that a moratorium on its use has been implemented throughout California, carried by avian predators away from the islands as toxic body burden to the mainland coast and beyond, clearly does not justify the known risks involved.

We are aware that the proposed Farallones "drop" is but the first of many planned elsewhere, with others to follow off the California coast if this dangerous precedent is mistakenly allowed here. The precedent of misapplication of our own Coastal Act to condone this kind of damage to our coast would sadly fail those who came before us and would not be remembered well by future generations.

Commissioners, in their task to protect California's coastal resources, asked many poignant questions about the proposed project at the July 2019 hearing. USFWS failed to provide adequate response at that time or since that hearing. Without a clear plan to address what unanticipated level of non-target mortality would stop the project, and with what tools first-responders might attempt to utilize to try to clean up any accidental poison spill into the ocean or on land at the Southeast Farallon Island, this project should not go forward. In addition, less dangerous and more targeted and species-specific ways to get rid of the mice on the Farallones, such as using non-toxic contraceptive baits already being licensed by the EPA with **none** of the threats of bio-magnification while avoiding the wholesale killing of non-target species, do exist and merit a supplemental EIS before determination of Federal Consistency.

Commissioners are also asked to recognize the Indigenous history of the Farallon Islands and only support a project that would honor the Islands' complete history, proceed with Tribal consultation and also protect multiple, exceptionally sensitive species without unnecessary deaths or further impacts during an existing local and global Climate Crisis.

The USFWS proposal is not appropriate for the Farallon Islands. Please DENY consistency of the USFWS experimental Mouse Eradication Project utilizing the aerial dispersal of 1.5 tons of toxic Brodifacoum pellets at the Farallones and instead require that a supplemental EIS to evaluate less harmful alternatives be conducted by an independent body without present or future financial interests.

Thank you for your continued service and dedication to the protection of the marine environment and California Coast.

Sincerely,

Richard Charter  
Coastal Coordination Program  
**The Ocean Foundation**

Brandon Dawson  
Executive Director  
**Sierra Club California**

Nancy B McKenney, MNPL, CAWA  
CEO/President  
**Marin Humane**

Richard Ogg  
Board of Directors  
**Bodega Bay Community Fisherman's Association**

Susan Kirks  
President  
**Madrone Audubon Society**

Sara Wan  
Co-Founder  
**Western Alliance for Nature**

Michael Allen  
Board of Directors  
**Sonoma County Conservation Action**

Pamela Flick  
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**Defenders of Wildlife**

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**2019 Marin County IPM Achievement Award**

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