



GREATER FARALLONES ASSOCIATION

Greater Farallones Association
February 28, 2022 - **Final Report** to the Marine Mammal Commission

MMC20-128: Best Management Practices for Reducing Ship Strikes in the San Francisco Bay Region

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Project Summary

The San Francisco Bay region is home to feeding grounds and known aggregation areas for many species of endangered whales, including blues, fins, and humpbacks. Also, in the waters in and surrounding the San Francisco Bay are large commercial vessels, thousands of which transit these whale-rich areas every year. Vessel Speed Reductions (VSR) efforts have demonstrated great success as a mitigation measure to reduce the risk of lethal ship strikes, as well as ocean noise and greenhouse gas emissions. Building upon prior work supported by the Marine Mammal Commission, Greater Farallones Association (GFA), and the National Oceanographic and Atmospheric Administration (NOAA)'s Greater Farallones and Cordell Bank National Marine Sanctuaries (NMS) will convene a working group with regional partners to develop Best Management Practices (BMP) for reducing ship strikes in the San Francisco Bay Area region. The ship-strike reduction BMP guidelines, and its collaborative development, will serve as a model for other sanctuaries, ports, and management agencies to reduce ship strikes across the country.

Project Goals

1. Reduce ship strikes of whales in the San Francisco Bay Region
 - a. Engage shipping industry partners to achieve cooperation with Vessel Speed Reduction BMPs that reduce the risk of lethal ship strikes.
 - b. Achieve consensus on Best Management Practices that incorporate ship-strike reduction by working with the United States Coast Guard (USCG), Marine Exchange, and San Francisco Harbor Safety Committee (SFHSC) stakeholders.
 - c. Implement ship strike reduction Best Management Practices for the San Francisco Bay Region.
2. Reduce ship strikes throughout the United States and its territories
 - a. Replicate (or disseminate) the new Best Manage Practices with other sanctuaries
 - b. Publish Best Management Practices in shipping journals
 - c. Work with the USCG and SFHSC to spread the word to cohorts in other regions

Progress To-Date

Goal	Proposed Activities	May 1, 2021 - February 28, 2022 Activities
Reduce ship strikes of whales in the San Francisco Bay Region	Engage shipping industry partners to achieve cooperation with VSR requests that reduce the risk of lethal ship strikes.	GFA staff created 2021 VSR zone maps (Attachment A) and communicated VSR information throughout the 2021 NOAA VSR and incentive-based VSR program season, including through USCG’s weekly Local Notice to Mariners.
		In February 2022, GFA staff completed annual analyses with NOAA’s National Marine Fisheries Service (NMFS) partners to quantify cooperation by large vessels (300 GRT or larger) recorded in 2021 in the NOAA Vessel Speed Reduction (VSR) zones in California. Final analyses for the 2021 season show a voluntary cooperation rate of 59% in the southern California region (up from 54% in 2020) and 63% in the San Francisco Bay region in 2021 (down from 64% in 2020) (see Table 1 below). In March 2022, GFA staff will work with NMFS and USCG partners to draft and email over 125 individualized letters to the maritime industry that outline each company's cooperation level within the VSR zones in 2021, and announce the 2022 VSR season in California.
	GFA staff completed analyses with NMFS and California county air district agency partners to quantify cooperation levels from 18 enrolled container and car carrier lines with the 2021 Protecting Blue Whales and Blue Skies incentive-based VSR program. Final analyses for the 2021 incentive program season show a combined voluntary cooperation rate of 64% for both VSR regions, which is up 4% from 2020. Analyses show a cooperation rate of 60% in the San Francisco Bay region and 65% in southern California, which is down 8% and up 6% from 2020 season levels respectively (see Table 2 below). The data also show that the enrolled participants operate ~90% of the total container and car carriers in these regions. In March 2022, GFA staff will work with partners to draft and send letters outlining their fleet’s 2021 cooperation and award level to each enrolled company.	
	Achieve consensus on BMPs for reducing the risk of ship strikes inside San Francisco Bay that incorporate ship-strike reduction by working with the USCG, San	Throughout 2021, GFA staff continued to engage USCG, the Harbor Safety Committee, and the San Francisco Bar Pilots Association on the NOAA VSR requests, on recorded ship strikes in the area, and on potential ship strike risk reduction strategies for inside San Francisco Bay.

	Francisco Marine Exchange, and SFHSC stakeholders.	Language for BMPs for the SFHSC to consider were drafted in October 2021 and presented to the SFHSC Navigation Work Group, which included representatives from the San Francisco Bar Pilots, USCG, San Francisco Marine Exchange, Marathon Petroleum, Pacific Merchants Shipping Association, Port of Oakland, The Marine Mammal Center, Bay Area Air Quality Management District, and others (see Attachment B). The group decided to clarify the geographic limits of the BMPs based on historical whale data and reconvene the Navigation Work Group in March 2022 to adopt language for the 2022 season.
	Implement ship strike reduction BMPs for the San Francisco Bay Region.	GFA staff supported and served as a member of the 2021-2022 Greater Farallones and Cordell Bank National Marine Sanctuaries Joint Advisory Council Working Group - which included members representing the shipping industry, commercial fishing industry, and the research and conservation community - focused on evaluating three potential management options aimed at reducing the risk of ship strikes to endangered whales in the San Francisco region.
		GFA staff supported and helped draft the Working Group Final Report, which includes recommendations to the advisory councils. The joint advisory councils adopted the recommendations included in the Final Report and forwarded them to the NMS superintendent in February 2022. (See Attachment C)
Reduce ship strikes throughout the United States, and its territories	Replicate (or disseminate) BMPs for other sanctuaries.	Throughout the project timeline, GFA supported ship strike reduction efforts in southern California and continues to discuss possible zone expansions in Monterey Bay National Marine Sanctuary.
		GFA staff participated as a member of an ongoing Olympic Coast National Marine Sanctuary Advisory Council Whale Reporting Working Group aimed at reducing impacts to whales in Washington State.
		GFA staff worked with Greater Farallones, Cordell Bank, and Channel Islands NMS staff to share lessons learned from California voluntary VSR efforts with Office of National Marine Sanctuary (ONMS) leadership and other relevant sanctuaries, like Gray's Reef National Marine Sanctuary in Georgia.
	Publish BMP in shipping journals.	GFA staff completed and published a ten-year review of adherence with southern California voluntary VSR efforts in <i>Frontiers in Marine Science</i> . (See Attachment D)

	<p>Work with USCG and SFHSC to spread the word to cohorts in other regions.</p>	<p>GFA staff formalized a partnership with the Port of Oakland on the VSR efforts as a result of SFHSC discussions. The Port of Oakland is now contributing grant funds to the Protecting Blue Whales and Blue Skies Partnership and has committed to promoting VSR practices inside and near the San Francisco Bay.</p>
		<p>GFA and Channel Islands NMS staff created a partnership with the Port of Vancouver, Natural Resources Defense Council, the Benioff Ocean Initiative, Transport Canada, and The Nature Conservancy to combine metrics across regional or global VSR efforts and explore engaging shipping companies and corporate retailers on the creation of a whale-safe certification program.</p>

2021 Results

Over the course of 2021, this project has focused on reducing the risk of ship strikes to whales in California through encouraging greater industry cooperation with VSR requests and initiatives, and by supporting working groups aimed at evaluating management options to protect endangered whales. To evaluate the effectiveness of these efforts, AIS (automated identification system) data from all transits within the established VSR zones were analyzed to understand industry’s level of cooperation with these slow speed requests.

We recorded an increase of 5% in cooperation levels across all transits within the Southern California NOAA voluntary VSR zone in 2021 compared to 2020, and recorded a 1% decrease in cooperation in the San Francisco Bay Region zones.

Table 1: Recorded Cooperation Levels with NOAA/USCG Voluntary VSR Requests

% of cooperation with NOAA Voluntary Vessel Speed Reduction requests across all transits 300 gross registered tons or more, by year				
Region / Year	2018	2019	2020	2021
San Francisco Bay Region	45%	58%	64%	63%
Southern CA Region	23%	50%	54%	59%

The data for the Protecting Blue Whales and Blue Skies VSR Program showed a 4% increase in cooperation across both regions in 2021 compared with 2020. We recorded a 6% increase in cooperation across all enrolled transits within the Southern California NOAA voluntary VSR zone in 2021 compared to 2020, but recorded a 8% decrease in cooperation in the San Francisco Region zones.

Table 2: Recorded Cooperation Levels with the Protecting Blue Whales and Blue Skies Program

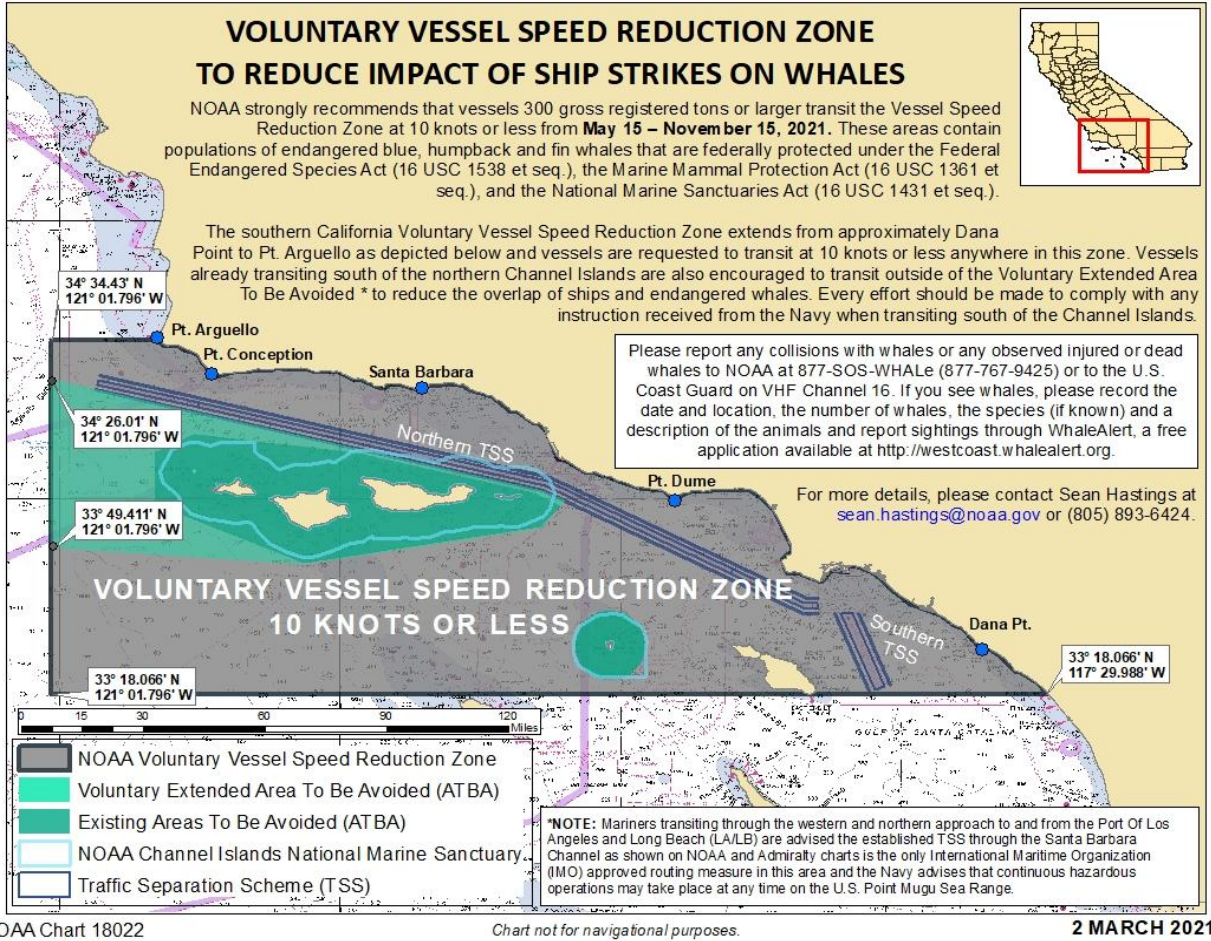
VSR Companies Only	Protecting Blue Whales and Blue Skies Incentive-Based Program VSR % Cooperation		
	Combined (Both CA Regions)	Southern California Region	San Francisco Bay Region
2021 (18 companies enrolled)	64%	65%	60%
2020 (16 companies enrolled)	60%	59%	68%
2019 (15 companies enrolled)	55%	52%	65%
2018 (12 companies enrolled)	36%	32%	50%

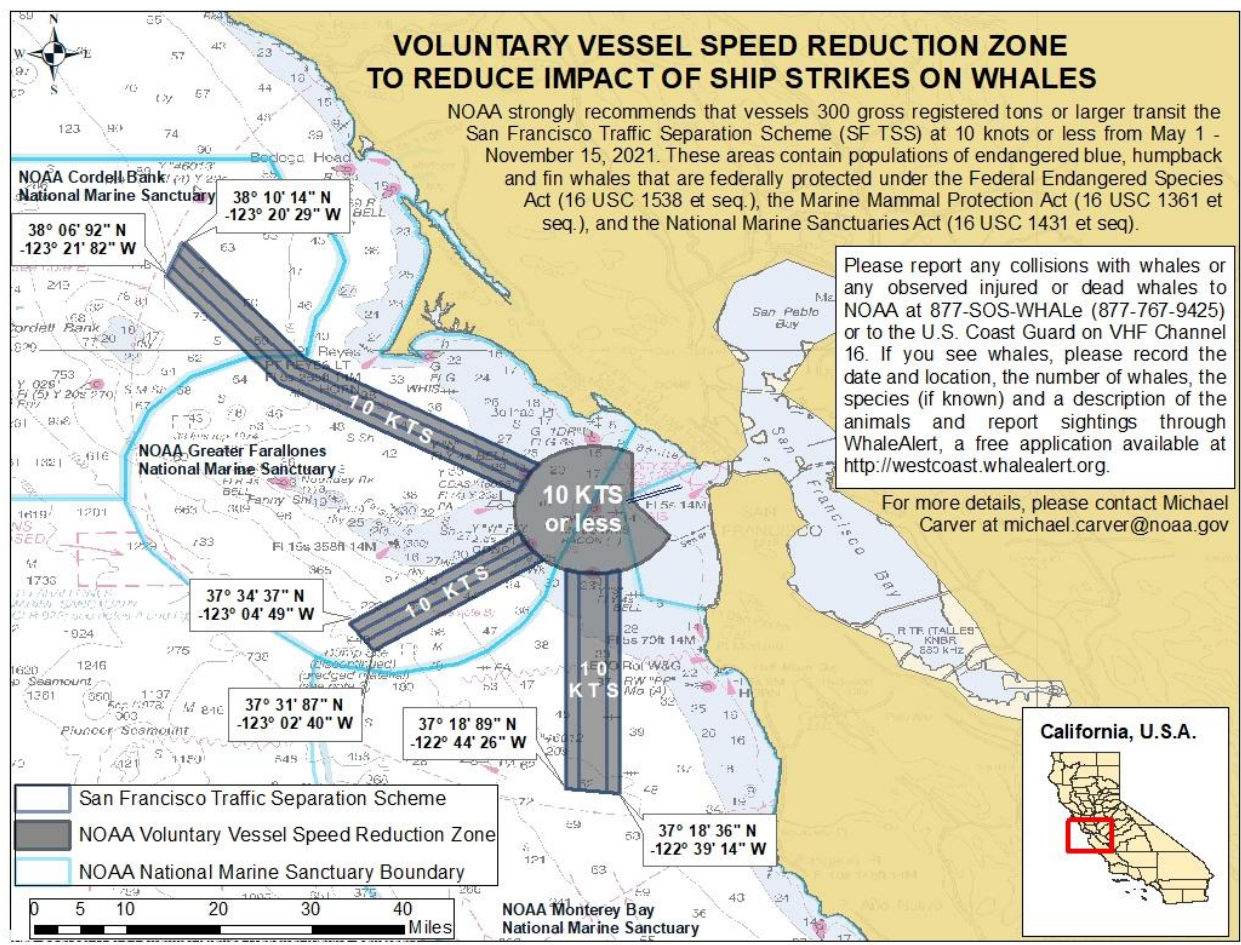
Lessons Learned

- 1) Cooperation levels with voluntary VSR efforts in both regions in California have increased since 2017, but are still not achieving levels estimated to be needed to optimally protect endangered whale populations. Modeling work by researchers at Point Blue Conservation Science has estimated that current large vessel cooperation levels with the California VSR requests are not achieving a goal set by Greater Farallones and Cordell Bank National Marine Sanctuaries of reducing risk within sanctuary boundaries by 50%.
- 2) The Greater Farallones and Cordell Bank National Marine Sanctuaries Joint Advisory Council Ship Strike Working Group documented broad stakeholder support for expanded voluntary VSR efforts in the San Francisco Bay region, including expanded VSR zones that extend throughout sanctuaries as well as an extended timeline for the VSR requests, from seasonal to year round.
- 3) The timing is ideal for Greater Farallones and Cordell Bank National Marine Sanctuaries to work with USCG on evaluating amendments to the San Francisco Bay Region Traffic Separation Schemes to reduce the overlap of ships and whales. USCG is conducting a Port Access Route Study (PARS) to evaluate safe access routes for the movement of vessel traffic proceeding to or from ports or places along the western seaboard of the United States and to determine whether a Shipping Safety Fairway (“Fairway”) and/or routing measures should be established, adjusted, or modified.
- 4) The timing is ideal to engage shipping companies on conservation initiatives like VSR. Due to increased attention on carbon emissions as a result of ambitious targets set by the International Maritime Organization to reduce carbon emissions by 50% from 2008 levels by 2050, shipping companies are more focused than ever on defining and highlighting their company’s sustainability efforts and considering the value of branding themselves as a whale safe supplier (see Attachment E). Vessel speed reduction has also been identified by the International Maritime Organization as a measure to consider to reduce emissions in the near term.
- 5) Building upon the momentum towards sustainability in the marine transportation sector, there are opportunities to partner with other groups monitoring or managing VSR efforts elsewhere in the world (like the Port of Vancouver and Transport Canada) to combine regional and global industry statistics and explore engaging consumers and corporations on whale safe shipping practices through a whale safe shipping certification scheme.
- 6) High levels of cooperation with VSR efforts comes from the leadership level. The shipping companies that have demonstrated the highest levels of cooperation with VSR requests (like MSC and Hapag-Lloyd) have leadership that have prioritized compliance and set a standard for the company.

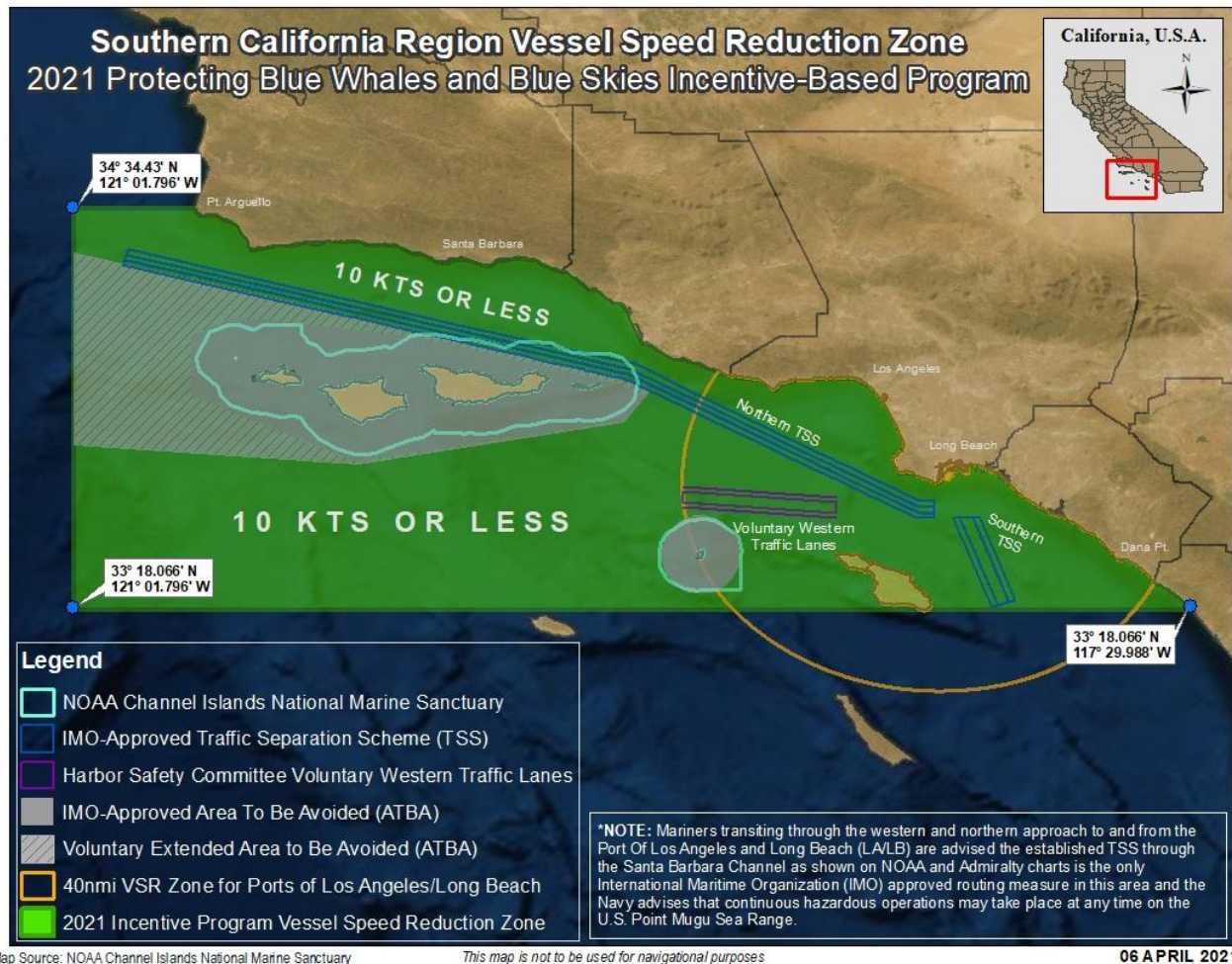
Attachment A - 2021 Vessel Speed Reduction Zones in California

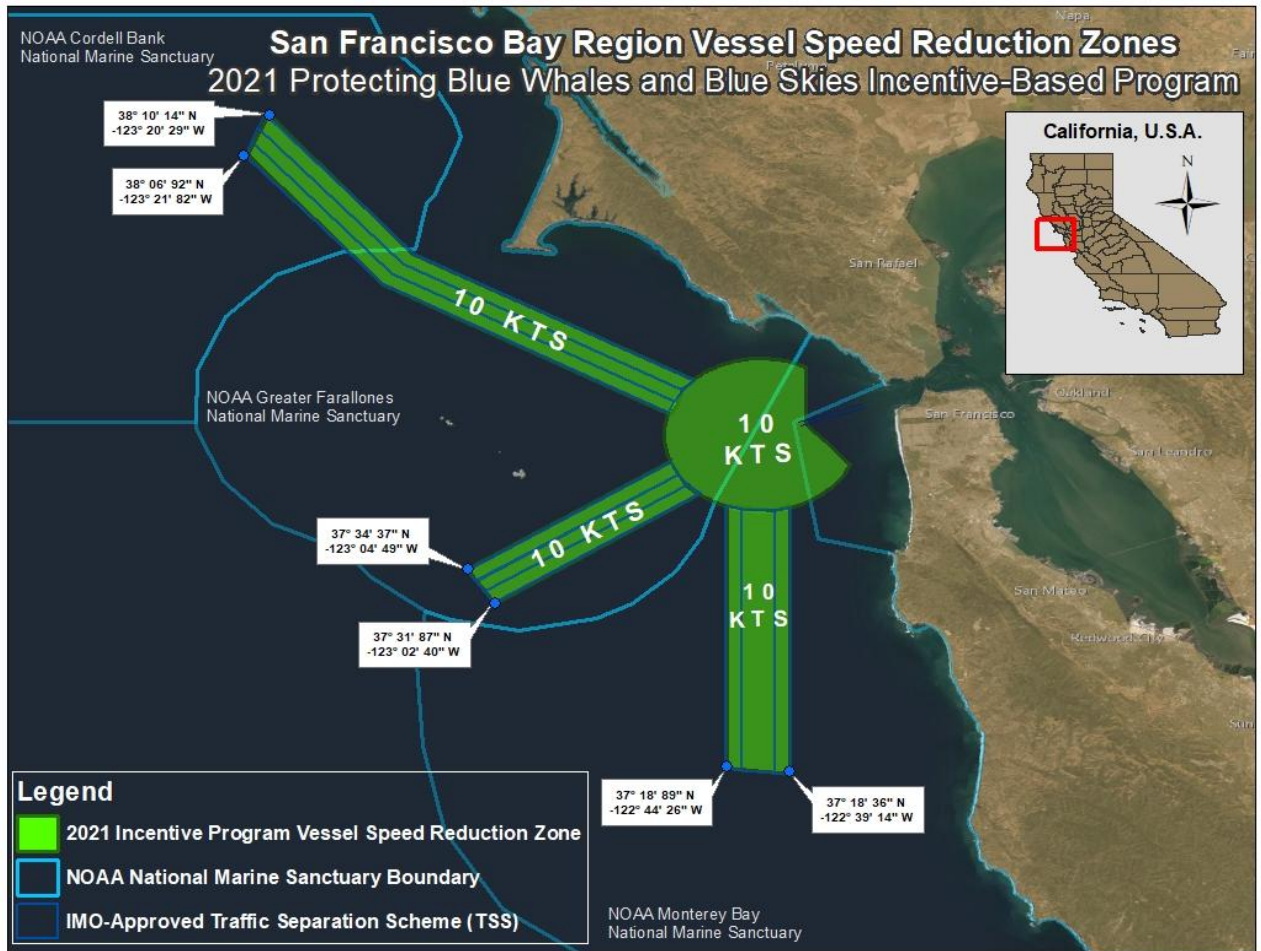
2021 NOAA/USCG VSR Zones





2021 Protecting Blue Whales and Blue Skies VSR Zones





Attachment B - DRAFT Language for Best Management Practices for the Harbor Safety Committee of San Francisco

Note: This language is still being reviewed and adjusted before the March or April 2022 HSC meeting

Large Vessels ≥ 300 gross tons: Best Practices for Reducing the Risk of Ship Strikes in and near San Francisco Bay

When safe and practical to do, large vessels ≥ 300 gross tons should travel at speeds of 10 knots or less approaching and within San Francisco Bay from May 1 - November 15 or whenever large whales are sighted. The speed reduction area is bounded to the west by the San Francisco Offshore Precautionary Area, the navigable waters shoreward of the San Francisco Offshore Precautionary Area east of 122°42.00' W. and north of 37°40.00' N. extending eastward through the Golden Gate and San Francisco Bay.

The SF HSC additionally recommends that large vessels ≥ 300 gross tons cooperate with seasonal NOAA and USCG voluntary Vessel Speed Reduction (VSR) requests to reduce speeds to 10 knots or less when transiting within the San Francisco Traffic Separation Scheme from May 1 - November 15. These areas contain populations of endangered blue, humpback, and fin whales that are federally protected under the Federal Endangered Species Act, the Marine Mammal Protection Act, and the National Marine Sanctuaries Act. For more information:

https://www.navcen.uscg.gov/pdf/Inms/LNM_Special_Notice_NOAA_USCG_VOLUNTARY_SPEED_REDUCTION_INDEFINITE.pdf

Attachment C - Greater Farallones and Cordell Bank National Marine Sanctuaries Advisory Councils Joint Ship Strike Working Group Final Report

Full version accessible here:

<https://nmscordellbank.blob.core.windows.net/cordellbank-prod/media/docs/2021-22-joint-ship-strike-working-group-report.pdf>

Excerpt from page 19:

“Short-term management actions

We recommend that GFNMS and CBNMS implement year-round voluntary VSR for all vessels greater than 300 GT transiting within the sanctuary boundaries of GFNMS, CBNMS, and the MBNMS northern management area. Since discrepancies in transit time from the various approaches to each of the three shipping lanes may have an impact on usage of each of the lanes, sanctuary staff should continue to monitor and evaluate vessel traffic behavior and should assess the effectiveness of these management measures.

Though it was not included as a potential management strategy for the group to consider, depending on the efficacy of the proposed voluntary VSR actions, we think GFNMS and CBNMS should also explore and consider mandatory speed limits, similar to what is implemented by NOAA on the east coast, if deemed necessary to achieve the stated goal of 50% reduction in fatal ship strike risk.

Long-term management actions

We recommend that any changes to the shipping lanes be dependent on scientific studies evaluating the potential decrease in whale mortality by either removing the northern lane, altering the northern lane, or extending the western lane. We recommend that CBNMS and GFNMS work with research experts to model the risk reduction associated with these spatial changes, share research findings with appropriate stakeholders, and work with the USCG and the U.S. West Coast Port Access Route Study (PARS) to change the lanes that would have the most desired impact.”

Attachment D - Evaluation of Adherence with Voluntary VSR Efforts in Southern California, 2010-2019

Full version accessible here: <https://doi.org/10.3389/fmars.2022.833206>

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Abstract: Vessel strikes are one of the main threats to large whales globally and to endangered blue, fin, and humpback whales in California waters. For over 10 years, NOAA has established seasonal voluntary Vessel Speed Reduction (VSR) zones off of California and requested that all vessels 300 gross tons (GT) or larger decrease speeds to 10 knots or less to reduce the risk of vessel strikes on endangered whales. We offer a comprehensive analysis quantifying cooperation levels of all vessels ≥ 300 GT from 2010 to 2019 within designated VSR zones using Automatic Identification Systems (AIS) data. While average speeds of large vessels have decreased across the years studied, cooperation with voluntary 10-knot speed reduction requests has been lower than estimated to be needed to reduce vessel-strike related mortality to levels that do not inhibit reaching and maintaining optimal sustainable populations. A comparison of vessel speeds across inactive and active voluntary VSR time periods show a modest (+ 15%) increase in cooperation from 2017 to 2019. A complementary, incentive-based VSR program that was started in 2014 and scaled up in 2018 within the region likely improved voluntary VSR cooperation levels, as participating container and car carrier vessels traveled at lower speeds during the VSR season than vessels not enrolled in the incentive-based effort. Comparisons of vessel speeds in the incentive-based VSR program across inactive and active time periods showed a significant (+ 41%) increase in cooperation. With cooperation levels for the voluntary VSR hovering around 50%, and the challenge of funding and sustaining an incentive-based VSR program, voluntary VSR approaches may be insufficient to achieve cooperation levels needed to significantly reduce the risk of vessel strike-related mortality for these federally protected whales, suggesting that VSR regulations warrant consideration.

Attachment E - Examples of Recent Industry Commitments to Whale Safe Measures

Euronav makes whale protection measures mandatory for its fleet

<https://www.euronav.com/investors/company-news-reports/news/2022/euronav-makes-whale-protection-measures-mandatory-for-its-fleet/>

To protect endangered whales, Euronav has teamed up with the Great Whale Conservancy (GWC), an environmental NGO dedicated to the protection of great whales and their habitat, to investigate how ship strikes can be avoided. A first result is the inclusion of the voluntary measures of the Canadian East Coast, the waters around California (USA) and the Hellenic Trench in the 2022 Instruction to Masters, making the measures de facto mandatory for its vessels.

MSC Takes Action to Save Endangered Whales in the Mediterranean

<https://www.msc.com/che/news/2022-january/msc-takes-action-to-save-endangered-whales>

MSC is the first major shipping line to re-route their ships on the west coast of Greece to reduce the risk of collision with endangered sperm whales in the Mediterranean. After discussions with four major environmental NGOs, the company decided to take swift action and re-route all of their container vessels in this area to safeguard the critical habitat for the subpopulation of whales. Critical action like this is urgently needed in order to protect the remaining 200 to 300 individuals that remain.