



Whale Vulnerability to Ship Strikes Along the California Coast

2024 SCIENCE & POLICY REPORT





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THIS REPORT PROVIDES a science-informed overview of recent and potential actions to reduce whale mortality due to ship strikes off the California coast.

Ship strikes are contributing to endangered whale mortality in California waters.

- **California's coastal waters serve as feeding grounds and migratory routes for several baleen whale species including gray, blue, fin, humpback, and North Pacific right whales,**¹ the latter four of which are protected under the federal Marine Mammal Protection Act, Endangered Species Act (ESA)² and the National Marine Sanctuaries Act³ when in sanctuary waters. It should be noted that humpback whales that frequent California waters are subdivided into three Distinct Population Segments (DPS), not all of which are federally listed. The Mexico DPS is listed as threatened and the Central America DPS is listed as endangered under the ESA, while the Hawaii DPS is not listed.⁴
- **These whale populations feed in California's biologically productive waters during seasonal migrations between Central America and Alaska.**⁵ Gray, humpback, and blue whales are often spotted close to shore while fin whales typically take offshore migration routes through deeper waters. North Pacific right whales are comparatively elusive with an estimated remaining population of less than 500 individuals, but limited sightings indicate that they transit along the California coast to feed in warmer waters during the winter.⁶
- **Vessel traffic to and between ports generates frequent overlap between transiting ships and whales.** California is home to the nation's two most-trafficked seaports, Los Angeles and Long Beach, as well as five heavily-trafficked commercial ports in the San Francisco Bay Area and the Ports of Hueneme and San Diego.⁷

- **Along the U.S. West Coast ship strike mortality is thought to be the number one cause of death for blue, gray and fin whales and the second greatest killer of humpback whales** following fishing gear entanglement.⁸ Between 2006 and 2022 in California, 14 blue whales, 22 humpback whales, 20 fin whales, and 40 gray whales were identified with vessel strikes as the cause of death.⁹ Although stranding data does not exist for North Pacific right whales, experts we spoke with are confident that vessel strikes are a major contributor to this species' mortality as well.
- **Whale mortalities are often underreported** because vessel crews are often unaware when strikes occur, carcasses often sink or are transported away by ocean currents, and carcasses that do drift ashore must land in accessible locations and be in early stages of decomposition for necropsies to occur so that injuries consistent with vessel strikes can be identified. A 2017 study used models to extrapolate whale mortalities from *total* strandings between 2006 and 2016 to estimate *annual* vessel strike-related mortalities. The study indicated that although *total* vessel-related strandings over the 10 years were 10, 14, and 11 for blue, humpback, and fin whales respectively, *annual* vessel strike-related mortalities in California waters from 2006 to 2016 were likely closer to 20 for blues, 28 for humpbacks, and 22 for fin whales.¹⁰

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1. Barlow & Forney, 2007. <http://bit.ly/4elKuJ3>
 2. CNDDDB, 2024. <https://bit.ly/3VGDePN>
 3. Federal Endangered Species Act (16 U.S.C. 1538 et seq.), Marine Mammal Protection Act (16 U.S.C. 1361 et seq.), National Marine Sanctuaries Act (16 U.S.C. 1431 et seq.).
 4. Steiger et al., 2017. <https://bit.ly/3WgCNMh>
 5. Calambokidis et al., 2000. <https://www.int-res.com/abstracts/meps/v192/p295-304/>
 6. NMFS, 2024. <https://bit.ly/45IPjhu>
 7. California Department of Transportation, 2020. <https://bit.ly/45n7SCO>; US Department of Transportation, 2023. www.doi.org/10.21949/1528357.
 8. Caretta et al., 2022. <https://doi.org/10.25923/d79a-kg51>
 9. National Stranding Database. <https://bit.ly/45jDc4B>
 10. Rockwood et al., 2017. <https://doi.org/10.1371/journal.pone.0183052>.

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Recent Policy Actions To Reduce Risk of Whale Strikes in California

Voluntary Vessel Speed Reduction

National Oceanic and Atmospheric Administration (NOAA), United States Coast Guard (USCG), and Environmental Protection Agency (EPA)

NOAA, USCG, and EPA annually issue voluntary Vessel Speed Reduction (VSR) requests that go into effect May 1 to December 15 off the California coast near San Francisco, Monterey Bay, and the Santa Barbara channel.

The agencies request that all vessels 300 gross tons (GT) or larger reduce speeds to 10 knots when transiting within the designated VSR zones. All transits by vessels 300 GT or larger are analyzed by NOAA via Automatic Identification System data provided by USCG to assess the industry's cooperation.

Protecting Blue Whales and Blue Skies (BWBS) Program

A coalition comprised of the NOAA Office of National Marine Sanctuaries (ONMS), local air pollution control districts, funders, and the California Marine Sanctuary Foundation (CMSF)

A coalition including the NOAA ONMS, local air pollution control districts, funders, CMSF and other supporters established the [BWBS program](#) in 2014 to incentivize shipping companies to voluntarily reduce vessel speeds in NOAA VSR zones. The BWBS program was designed to decrease whale strikes, ocean noise, and vessel emissions. The program monitors overall fleet cooperation for participating shipping companies, who are publicly recognized and given positive press for strong rates of cooperation. Modest monetary awards were offered at the program's inception and discontinued in 2022. The program now successfully relies solely on positive public relations campaigns to incentivize industry participation.

State Priorities

California Ocean Protection Council

In its 2020-2025 Strategic Plan to Protect California's Coast and Ocean, the California Ocean Protection Council established a zero mortality goal for whales. This includes supporting the development of a permanent, statewide voluntary VSR program to reduce whale strikes and coastal air pollution, and minimize marine noise pollution.

Adjustment of Shipping Lanes and Expansion of Areas To Be Avoided By Vessels

International Maritime Organization (IMO)

In 2023, the IMO adopted a proposal from NOAA to expand areas to be avoided by vessels in the Santa Barbara Channel. This modification was originally recommended by the Channel Islands National Marine Sanctuary Advisory Council's Marine Shipping Working Group in 2015. To reduce the overlap of ships and whales, NOAA successfully petitioned the IMO to adjust shipping lanes in 2012 in the Santa Barbara Channel and off the coast of San Francisco. NOAA also petitioned the IMO to extend vessel traffic lanes by 13 nautical miles in the Santa Barbara Channel region so that vessels line up for port entry farther west and away from the continental shelf, in deeper waters where there are lower concentrations of whales.¹¹

Port Access Route Study Recommendation for Offshore Vessel Fairways

United States Coast Guard (USCG)

In 2023, the USCG released results from a Pacific Coast Port Access Route Study, which evaluated safe access routes for the movement of vessel traffic along the western seaboard. Based on findings from the study, the USCG recommended establishment of offshore shipping fairways to promote safe vessel navigation.¹² Although the purpose of establishing fairways is to designate areas where artificial structures are prohibited, an offshore fairway is expected to encourage vessels to transit further offshore and thereby decrease overlap between vessels and blue and humpback whales (see Implementation Option 3, pg. 15).

Attempted State Legislation

California Legislature

California legislators introduced two bills in recent years, Assembly Bill (AB) 2298 (introduced in 2024) and AB 953 (introduced in 2023), to expand the voluntary BWBS program statewide and require the California Ocean Protection Council to participate in the program in an advisory capacity. Both bills passed through policy committees, but ultimately died in Senate appropriations, likely due to budget concerns.

Proposed Federal Legislation

U.S. Congress

In June 2024, California Representatives Salud Carbajal and Jared Huffman introduced the Alan S. Lowenthal Blue Whales, Blue Skies Act, which would create a new federal program modeled off the BWBS program to encourage additional seasonal VSR zones between Mexico and Canada.

11. Marinelink, 2023. <https://bit.ly/3KEpyi0>

12. US Coast Guard, 2023. <https://bit.ly/3Ru7Rq7>

Interventions to Reduce Whale Strikes Along the California Coast

ABOUT THIS SECTION: Three broad intervention options are summarized below and, when possible, policy pathways are identified for reducing whale strikes along the California coast. These options emerged as potentially viable through conversations with scientists and policy experts, but should not be considered mutually exclusive or exhaustive. Each option includes a summary of relevant research, an overview, additional background, and insights from conversations with experts. The intervention Option 1 Reduce Vessel Speed has been more rigorously studied and associated policy options more thoroughly explored, while less information is available on Option 2 Real-Time Whale Detection and Vessel Avoidance, and Option 3 Separating Ship Traffic from Whales.

Option 1. Reduce Vessel Speeds

RESEARCH SHOWS:

- A 2013 study on the East Coast found that VSR decreases the mortality risk of vessel strikes by 80-90% for North Atlantic right whales by both reducing the number of strikes that occur and reducing the mortality risk of strikes that still occur (i.e. strikes from slower-moving vessels are less lethal than strikes from faster-moving vessels).¹³
- California's BWBS program, which implements seasonal voluntary VSR zones requesting vessels larger than 300 GT to slow speeds to below 10 knots, has had steadily increasing cooperation rates. The 2023 season from May 1-December 15 achieved an 81% cooperation rate for vessels enrolled in the program, up from 78% in the 2022 season.¹⁴
- Whale Safe, a whale identification and VSR program described in more detail below, tracks overall vessel cooperation with voluntary VSR zones off the California coast. For the 2023 season, average cooperation rates for all vessels over 300 GT (not just those enrolled in the BWBS program) were 63.5% for Southern California's VSR zone, 69.9% for San Francisco's VSR zone, and 63.3% for Monterey Bay's VSR zone.¹⁵
- The East Coast's seasonal, mandatory speed reduction rule to protect North Atlantic right whales from vessel strikes reached an 81% overall compliance rate for vessels subject to the rule during the 2018-2019 season.

13. Conn & Silber, 2013. <https://doi.org/10.1890/ES13-00004.1>

14. Protecting Blue Whales and Blue Skies, 2024. <https://bit.ly/3xXeevA>

15. Whale Safe, 2023. <https://bit.ly/3LkUCED>

Option 1A for Reducing Vessel Speeds

Legislative Action | Expansion of Voluntary Vessel Speed Reduction Program

OVERVIEW:

State and federal legislation could expand the existing voluntary BWBS program from limited to statewide or West Coast-wide operation, respectively.

BACKGROUND:

- California legislators recently made two attempts at legislation that would have encouraged statewide expansion of the incentive-based BWBS program, which currently is limited to existing areas off the coast of Santa Barbara, San Francisco Bay, and Monterey Bay. The state legislation called for the California Ocean Protection Council to join the coalition of federal agencies, local governments, funders, and nonprofit organizations, which may have led to additional state participation. The legislation progressed but failed to pass in either 2023 or 2024.
- The Alan S. Lowenthal Protecting Blue Whales and Blue Skies Act that was introduced in the U.S. Congress in June 2024 would recognize the BWBS program as the model for potentially expanding across the US West Coast.

INSIGHTS FROM DISCUSSIONS WITH EXPERTS:

- The voluntary aspect of this proposal appears to be associated with broader political support than the mandatory VSR pathways considered below. Nearly all policy experts we interviewed, representing state, federal, and legislative perspectives, expressed support for expanding the voluntary program statewide on a theoretical level, although the questions remain about a successful pathway for expansion.
- Although voluntary VSR programs emerged as more politically viable than mandatory VSR programs, some discussions indicated that shipping companies may favor mandatory programs because mandatory programs hold all companies to the same speed restrictions, thereby preventing companies that comply with VSR zones from losing their competitive edge.
- Existing research shows that ship participation rates are higher where mandatory VSR is in effect on the East Coast than voluntary VSR on the West Coast (see the “Research Shows” section above).

Option 1B for Reducing Vessel Speeds

Federal Action | NOAA Fisheries Seasonal Management Areas

OVERVIEW:

NOAA Fisheries has the legal authority to establish Seasonal Management Areas (SMAs) that require vessels to slow down in specific areas during specific times and has established precedence for applying this authority on the East Coast.

BACKGROUND:

- In 2008, NOAA Fisheries established SMAs along the East Coast that implement mandatory VSR regulations requiring most vessels 65 feet and longer to travel at 10 knot speed or less to protect North Atlantic right whales.¹⁶
- In 2022, NOAA Fisheries proposed an update that would, among other provisions, include vessels between 35-65 ft in its mandatory speed reduction rule in SMAs.¹⁷ NOAA Fisheries points to continued harm to North Atlantic right whales under current protective measures as its reason for changing the vessel speed rule.¹⁸ The proposed update was met with significant, vocal criticism from many constituencies at the federal level, including recreational boating stakeholders.

INSIGHTS FROM DISCUSSIONS WITH EXPERTS:

Discussions with federal West Coast policymakers revealed two perspectives:

- We heard significant concern that attempting a mandatory VSR regulation on the West Coast would risk similar opposition from recreational boating stakeholders if the regulation applied to smaller vessels, in part stemming from the significant challenges that the proposed 2022 update to the East Coast rule has faced.
- There is an alternative perspective that the same issues may not arise in a West Coast context because there is already substantial engagement with West Coast shipping companies as a result of collaboration through the BWBS program. Additionally, smaller vessels (less than 300 GT) that threaten North Atlantic right whales do not appear to be as significant a concern for West Coast whale species – perhaps because they spend less time at the surface and spend more time farther offshore. Speed regulations may not need to apply to smaller vessels as proposed on the East Coast, thereby leaving the recreational boating community largely unaffected.

16. NOAA Fisheries, 2008. <https://bit.ly/3XkFdeH>

17. US Department of Commerce, 2022. <https://bit.ly/3VDOmOf>

18. NOAA Fisheries, 2022. <https://bit.ly/3VDOmOf>

Option 1C for Reducing Vessel Speeds

Federal Action | Exceedance of Potential Biological Removal (PBR) level

OVERVIEW:

NOAA Fisheries may have an obligation to further intervene and prevent whale mortality due to ship strikes based on authorities under the Marine Mammal Protection Act.

BACKGROUND:

- NOAA Fisheries is required under the Marine Mammal Protection Act to develop “take” reduction plans to help recover and prevent the depletion of certain marine mammal species if species are listed as endangered or threatened under the ESA, declining, and likely to be listed as threatened under the ESA, listed as depleted under the Marine Mammal Protection Act, and/or experiencing direct human-caused mortality that exceeds the stock’s Potential Biological Removal (PBR) level.¹⁹ PBR level is the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population.²⁰ PBR level is identified and regularly updated by scientists at NOAA Fisheries.
- While models indicate that PBR is likely being exceeded for blue whales and is close to being exceeded for humpback whales from ship strike mortalities alone,²¹ population-level data suggests that blue whale populations are stable and that fin and dominant humpback whale populations are steadily increasing.²²

INSIGHTS FROM DISCUSSIONS WITH EXPERTS:

- Although this was mentioned by several federal policy experts as a potential avenue for implementing a mandatory VSR rule, NOAA Fisheries’ responsibility to act when PBR is exceeded has only been applied in cases relating to fishery take, so mortality due to vessel strikes may be a new application for this action pathway. Furthermore, exceedance of PBR requires NOAA Fisheries to further investigate causes of exceedance and establish a take reduction team, but does not obligate agency action.

19. NOAA Fisheries, 2022. <https://bit.ly/4ei9TDD>

20. Marine Mammal Protection Act. <https://bit.ly/4eolRvB>

21. Rockwood et al., 2021. <https://doi.org/10.3389/fmars.2021.649890>; Rockwood et al., 2017. <https://doi.org/10.1371/journal.pone.0183052>

22. Calambokidis and Barlow, 2020. <https://bit.ly/45li038>; Becker et al., 2020. <https://bit.ly/3VikNjh>.

Option 1D for Reducing Vessel Speeds

Federal Action | Speed Regulations by the NOAA ONMS

OVERVIEW:

Under the National Marine Sanctuaries Act, the NOAA ONMS has the authority to propose new regulations for each Sanctuary, including establishment of mandatory VSR regulations within sanctuary boundaries.

BACKGROUND:

- Although NOAA's ONMS can technically make substantive regulatory changes, which can include VSR regulations, at any time under prescribed processes, regulations are typically made or updated when a new sanctuary is designated or during the review process of a sanctuary management plan, which takes place approximately every five years.

INSIGHTS FROM DISCUSSIONS WITH EXPERTS:

- Given that mandatory VSR shows higher ship compliance, this may be an effective long-term strategy to reduce vessel strikes within National Marine Sanctuaries. However, a mandatory rule by the NOAA ONMS would only apply to vessels within Sanctuary waters, many of which are already participating in the voluntary VSR program.





Option 2. Real-Time Whale Detection and Vessel Avoidance

OVERVIEW:

Another potential method to reduce vessel strikes is to detect individual whales in real-time and take vessel-specific avoidant action such as VSR, allowing whales to pass by safely, and/or altering vessel course to avoid whales. There are several methods and associated technologies to support real-time whale detection as outlined below, as well as research and technology considerations on the effectiveness and feasibility of implementing these practices at a meaningful scale.

RESEARCH SHOWS:

- Increasing surface-based detection of whale presence and taking appropriate vessel measures (reduce speed, alter course) may increase whale protection,²³ but most published studies on this topic have been focused on North Atlantic right whales. Since North Atlantic right whales and West Coast whale species have unique behaviors (e.g. North Atlantic right whales spend more time at the ocean's surface than other whale species, leading to more opportunities for detection), and ocean conditions vary between the two coasts, these conclusions may have limited, but still relevant, applicability in a West Coast context.
- Whale detection systems for strike prevention are most effective when vessels are traveling offshore at slow speeds because vessels are more able to react to whale presence by altering their course or speed to avoid whales. A vessel's ability to avoid whale collisions depends on its maneuverability, ability to change its speed quickly, time between detection and action, the captain's ability, desire, and comfort with safety to do so, ocean conditions, and whale behavior.²⁴

23. & 24. Baille & Zitterbart, 2022. <https://doi.org/10.3354/esr01202>

Option 2A for Increasing Real-Time Whale Detection and Vessel Avoidance Employ a Dedicated Whale Observer Onboard Vessels

OVERVIEW:

Visual whale detection is a method of identifying when individual whales are in the area that does not require advanced technology, but does require financial resources to support dedicated staff. This option includes having dedicated bridge staff to spot whales in real-time while vessels are in transit, and having communication systems in place so that staff can efficiently alert vessel captains of whale locations and trajectories so that vessels can maneuver to avoid whales.²⁵

RESEARCH SHOWS:

- A study that ran from 2002 to 2008 placed trained observers aboard a vessel that operated as a ferry and whale watching boat off the East Coast. Data gathered through this study indicated that dedicating an observer was effective in aiding detections of marine mammals when a collision avoidance response was necessary. Observers made initial sightings significantly more often than vessel captains, especially of large whales closer than 450 meters from the vessel.²⁶
- According to a literature review published in 2013, having dedicated marine mammal observers on board can help both the vessel with on-board observers avoid striking whales, and help other nearby vessels avoid whales by alerting them to whale presence.²⁷
- A trial study conducted in 2013 and 2014 on vessels transiting between ports in Seattle, Oakland, Long Beach, and Los Angeles demonstrated that having a whale observer on board transiting vessels enabled ships to avoid individual whales when they were spotted early.²⁸

25. Gende et al., 2019. <https://doi.org/10.3389/fmars.2019.00592>

26. Weinrich et al., 2010. <https://doi.org/10.1111/j.1748-7692.2009.00343.x>

27. Couvat & Gambaiani, 2013. <https://bit.ly/3KHUyP8>

28. Flynn & Calambokidis, 2019. <https://doi.org/10.3389/fmars.2019.00501>

Option 2B for Increasing Real-Time Whale Detection and Vessel Avoidance

Improve On-vessel Thermal Infrared Camera Technology

BACKGROUND:

Thermal infrared imaging systems leverage the temperature difference between above-surface body parts of whales or their exhalations, and the ocean surrounding them, to identify whale presence.

RESEARCH SHOWS:

- Infrared imaging systems have the advantage of being able to be used in the dark, but their efficacy can be impacted by poor weather conditions including wind and fog, which are prevalent along the California coast.²⁹

INSIGHTS FROM DISCUSSIONS WITH EXPERTS:

- Conversations with scientists indicated that vessel-based infrared detection systems may not be sufficient as the sole or primary mechanism for detecting whales since their ability to detect is significantly reduced during poor weather conditions and detections are fewer than for trained observers. However, infrared imaging systems may be useful when used in conjunction with trained observers or other detection methods.
- Infrared systems that have high detection effectiveness are usually expensive, to the point that this detection mechanism may be cost-prohibitive to many shipping companies.
- As technology improves, infrared detection systems may become more accurate and cost effective. In the meantime, experts we spoke with indicated that employing this method of detection is likely more effective and financially feasible as a local, infrastructure-based component of broader detection systems rather than a technology that should or could be widely adopted and relied upon by individual vessels.

29. Zitterbart et al., 2020. <https://doi.org/10.1175/JTECH-D-19-0054.1>

Option 2C for Increasing Real-Time Whale Detection and Vessel Avoidance

Improve Local Monitoring Systems for Detecting Whales

BACKGROUND:

Instead of, or in addition to, relying on vessel-based whale detection methods, placing stationary whale detection technologies on infrastructure like buoys, bridges, oil rigs, or in open water in high-risk areas may enable vessels to take avoidant action without having to invest in their own on-board detection systems.

RESEARCH SHOWS:

- Acoustic monitoring for whale presence can be an effective way to identify when whales are within an acoustic system's monitoring range. However, acoustic detection depends on local transmission conditions, call frequency, ocean soundscape, bathymetry, and range of each whale's calls.³⁰
- Although acoustic monitoring for whale presence is effective to determine general presence, it can be challenging to process acoustic data from buoys or otherwise, then disseminate information on whale presence to transiting vessels on a timescale that would allow for ships to adjust their trajectories and/or speeds accordingly.³¹
- Thermal infrared imaging systems (see Option 2A) can also be deployed on stationary infrastructure like bridges and offshore oil platforms.

INSIGHTS FROM DISCUSSIONS WITH EXPERTS:

- Conversations with whale experts have indicated that increasing efforts to detect whales and subsequently alter course and speed to avoid collision can help protect whales. However, vessel-based detection systems like employing dedicated observers or investing in detection equipment can be costly.
- The effect that increased whale detection and evasive maneuvering may have on vessel strike reduction has not been as thoroughly studied as vessel speed reduction, so this intervention warrants further consideration and research.
- Discussions did not reveal policy pathways for institutionalizing or scaling this intervention, perhaps because pilot efforts are relatively recent in California.
- One concern that emerged through conversations with experts was that employment of whale detection systems may cause mariners to rely solely on detection systems as opposed to complying with voluntary VSR zones. Ultimately, experts thought that whale detection systems have the potential to complement, but not replace, seasonal VSR zones.

30. & 31. Baumgartner et al., 2019. <https://doi.org/10.1111/2041-210X.13244>

BOX 1:**Whale Safe Detection System**

A program called Whale Safe, which began in the Santa Barbara Channel and recently expanded to the San Francisco region, combines Implementation Options 2A and 2C to bring live whale monitoring to transiting vessels. Whale Safe is a technology-based mapping and analysis system that uses acoustic monitoring, visual whale sightings, and blue whale habitat models to identify whale presence (categorized as low, medium,

high, or very high). Near real-time data is shared via API and on the Whale Safe website³² so that anyone, including shipping companies, can see whale concentrations and therefore why it is important to reduce vessel speeds. Whale Safe also shares vessel analytics through cooperation rates with the voluntary vessel speed reduction programs in the Santa Barbara Channel and the San Francisco region.

**Option 3. Separating Ship Traffic From Whales****OVERVIEW:**

Separating whales and ships is an obvious way to reduce ship strikes. Although this option is conceptually straightforward, it can be challenging in practice, as described below.

RESEARCH SHOWS:

- West Coast whales that are most at-risk of whale strikes have varying behavioral patterns that make a one-size-fits-all approach to rerouting vessel traffic challenging. While Biologically Important Areas for blue and humpback whales have been identified near the coast of California, Biologically Important Areas for fin whales span further offshore,³³ so the relocation of shipping routes to protect one species may further jeopardize another.

32. <https://whalesafe.com/about-us/>

33. Calambokidis et al., 2024. <https://doi.org/10.3389/fmars.2024.1283231>

Option 3A for Separating Vessel Traffic from Whales Relocate Transit Routes

BACKGROUND:

- Identifying potential transit routes that would minimize overlap between whales and ships requires substantial certainty about whale behavior and movement patterns, which can change from season to season and over the long term, particularly as climate change plays a greater role in affecting movement patterns and feeding grounds.
- NOAA is able to request and propose relocated shipping lanes, which requires a lengthy proposal and review process involving the IMO, the USCG, the EPA, the Department of Defense, and the State Department. As described in the recent policy actions section, this process was completed recently to reroute shipping lanes off the coast of Santa Barbara and in the San Francisco Bay Area in 2013.
- The Coast Guard is able to designate fairways where artificial structures are prohibited. Although use of fairways is voluntary for vessels (i.e. they are not required to transit exclusively in these zones), their establishment is likely to encourage most traffic to transit along the designated fairway. As described above, the USCG recently recommended establishment of an offshore fairway approximately 50 miles off the coast, which is expected to reduce spatial overlap of humpback and blue whales with vessel traffic if implemented.³⁴

INSIGHTS FROM DISCUSSIONS WITH EXPERTS:

- Scientific and policy experts agreed that minimizing overlap between whales and vessels is one of the most effective ways of reducing ship strike risk. Conversations with policy experts also revealed that relocating shipping lanes away from areas that are historically and currently heavily trafficked by whales, which requires a lengthy policy process, does not guarantee decreased whale-ship interactions into the future.

³⁴. US Coast Guard, 2023. <https://bit.ly/3VkJRqA>



Conclusions

The governing context for addressing ship strikes to endangered whales is a complex web of state and federal jurisdictions. While both state and federal policy experts we spoke to agreed on the value of reducing whale deaths, disagreements frequently arose over which interventions offered feasible policy pathways. Research strongly suggests that voluntary VSR is associated with lower ship compliance rates than mandatory VSR. In California, success of the Whale Safe and BWBS programs appear to have built both policy and political momentum for voluntary VSR, while also potentially hindering the perceived value of using mandatory VSR authorities. Interventions involving ship avoidance via real-time whale detection are promising enough to warrant further scientific research and policy exploration. Interventions that separate ship traffic from whales can be effective, but not in all contexts.