Protecting Whales in a Changing Climate through MPA Collaboration

Identifying Research Needs and Planning for Effective Implementation

January 17-19, 2024, 8am-12pm PST (GMT -8)

GREATER FARALLONES ASSOCIATION

GREATER FARALLONES & CORDELL BANK NATIONAL MARINE SANCTUARIES

Contents

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Executive Summary

Climate-related oceanographic changes such as marine heatwaves and persistent warming impact where whales feed and spend their time, often increasing conflict with human activity. Transiting container ships and fishing activity are the leading human-causes of mortality in vulnerable and reduced whale populations. Marine protected areas (MPAs), Indigenous-led conservation approaches and areas, and other effective conservation measures (OECMs), play a critical role in advancing stewardship, conservation and recovery of whale species through management actions that reduce human impacts to whales. Because whales are highly migratory, effective conservation requires international cooperation and the development of robust networks working from aligned goals and objectives.

Workshop Goal

The workshop goal was to strengthen partnerships across MPAs, Indigenous areas, and OECMS to set the stage for an effective network of protected areas and conservation measures that protect and conserve whales in a changing climate, with particular focus on ship strike impacts. The audience for this workshop included protected area managers, Indigenous conservation leaders, researchers and marine resource managers to learn perspectives and management measures implemented across the globe.

Main Findings

The information presented here represents the viewpoints and perspectives of workshop participants, and not necessarily the positions of the event organizers.

The Role of MPAs

- MPAs can protect and conserve marine ecosystem function, species, and habitats in a particular region. The fundamental role(s) of an MPA is defined during its designation, during which the values and characteristics of the area in need of protection are initially identified.
- MPAs can play an effective role in conservation through developing partnerships with communities and users of the MPA.
- MPA networks can facilitate consistency in monitoring, data collection, ship strike mitigation measures, and communications across protected areas regionally, nationally, and internationally.
- MPAs can bring management measures that are effective for protecting whales to the larger global community through international governing bodies.
- MPAs can work with other regulatory organizations to fill-in management gaps.
- MPAs may have difficulty reacting quickly to changes; to be more effective, MPAs can strive for proactive rather than reactive management. Use of technology and data can improve real-time decision-making within protected areas.
- While dynamic protections and measures increase flexibility and adaptability, static MPAs still provide a critical service by protecting areas that are projected to remain important for whales into the future (e.g., upwelling centers).
- There are examples of existing protected areas contributing to whale protection and conservation, including:
    - Parks Canada's voluntary and mandatory measures to protect whale species
    - U.S. NOAA's Office of National Marine Sanctuaries in partnership with NOAA's Office of Protected Resources have established whale protection measures to reduce ship strikes
- MPAs can provide information and serve as the link between management and communities; MPAs typically have robust education and community engagement programs.

Science and Information Needs

Working with the shipping industry

- Collaboration with the shipping industry is necessary to evolve operations to support healthy communities and environments. This may include reducing transit speeds to slow down near coastal margins at the intersection of whales and coastal communities.
- For the shipping industry, there are many rules to pay attention to, with very specific restrictions and regulations that can get complicated on a global scale to communicate to each vessel. The World Shipping Council is trying to make things simpler but it's still very complicated and difficult to standardize.

- Measures should only be implemented when they will be protective (i.e., remove a slow speed recommendation when whales have left the area); this intention should be communicated with the shipping industry. Management measures will likely be more effective if flexible and sensitive to commerce, with enough lead time to incorporate operational changes into transit schedules.
- Consistency in messaging and terminology would ease communications with the shipping industry. Standardized methods for communication with the shipping industry and individual ships as they enter areas with restrictions (i.e., text message, navigational warnings, etc.) would also be beneficial. It would be more streamlined for all vessel speed information and restrictions to be incorporated into existing ships' navigational systems.

Management

- Managers need greater flexibility in the management tools available to address whales moving to find prey. This is particularly important as conditions change and whales follow prey into unexpected areas.
- Managers need better guidance regarding the amount of information and reliability of that information that is required to inform management measures. This is an area that would benefit from collaboration and information sharing.
- Typically, managers have been protecting whales in the past or current climate, but not the future climate - they need information regarding how conditions are likely to change and how data can support protected area boundaries that are more adaptive.
- Climate change needs to be better incorporated into risk assessment analysis to define priorities for conservation.
- Co-management of whales with Indigenous governments and communities increases capacity, knowledge-sharing, and longevity of management measures.
- Managers need more information regarding when and where different approaches are most relevant; for example, when to transition from voluntary measures to regulatory ones? What data and level of information is needed to trigger that decision?
- Industry can be a catalyst for change (examples of this are voluntary measures in Sri Lanka and Greece), and does not always need to rely on a government authority or regulations to implement protection measures.
- Incentives are an effective way to increase cooperation with voluntary and regulatory measures. Financial incentive of reduced port fees is an example of a successful approach. Positive press incentives (examples: Stellwagen Bank's report card program and California's Protecting Blue Whales and Blue Skies Program) are also effective at motivating greater adherence with whale conservation measures.
- IMMA (Important Marine Mammal Area) designation can help inform governments of the areas they should consider for MPA designation or ship strike mitigation measures. The IMMA process should be implemented for the entire Arctic, but must incorporate Indigenous knowledge.
- Economic studies have been conducted to inform management decisions and to convince the relevant authorities that measures can be taken without significant impacts

or undue harm to the economy - these lessons can be taken to new areas that have not yet implemented measures and are seeking decision-support information.
- In some countries, relying on existing legal frameworks is not sufficient to establish a basis for conservation measures.

Improved science

- It is advantageous to quantify and articulate the multiple benefits of ship strike mitigation measures such as noise and GHG reductions, increased whale protection, and safety of mariners. The Protecting Blue Whales and Blue Skies Program in California (see tools and resources) is a good example of this.
- Scientists need improved detection of whales to document presence and inform management measures, e.g., thermal detection, satellite detection. Military technology (i.e., U.S. Navy) may have more advanced applications that are relevant to these objectives.
- Scientists need consistent modeling of whale prey movement to predict where whales may move, and to use these data to guide flexible management measures that provide the greatest protection of whales.
    - Identifying “climate-smart” areas, or climate refugia, can help managers prioritize those areas that will continue to be most important for whales.
    - The Arctic region is particularly data-poor, especially when it comes to whale migratory routes and when and where they spend their time. Improved monitoring technologies are needed, like satellite detection and tagging that can help to fill in those gaps, while considering the limitations of those technologies. (Example: satellite imagery is difficult to rely on for areas in the Arctic because of patterns of cloud cover).
    - Especially in areas where data and surveys are limited, there is a need to identify opportunities to work with groups already transiting the area, like Indigenous hunters, shipping industry, and fishing industry, to get access to whale detection information from their platforms.
        - We should consider how to improve reporting from the shipping industry and governments on ship strikes and stranding data - the International Whaling Commission collects these data.
- Cumulative impacts are difficult to understand, but an important area where we can leverage Indigenous knowledge, as this knowledge is focused on relationships and big-picture thinking. Indigenous knowledge can fill many data gaps. Indigenous perspective, as well, can be applied to this issue; for example, we should be monitoring the ecosystem as a whole and the relationships that are driving the ecosystem, rather than a single species focus.
- There is a need to better incorporate traditional ecological knowledge into decision-making. Indigenous people have a long history of being in a place and understanding the knowledge and science that they collect is a significant part of how a place is managed.
- There is a need for both historical and real-time information, but for different uses. Industry is interested in real-time whale information but often can’t take action on

real-time movements since they need more time to build in operational changes to their schedules.
- Technology and modeling is important, but sometimes is too expensive and takes time to analyze data and use it for decision-making. There are significant needs for data collation from various sources and data curation in a format that is useful for managers.
- Community-based support and management can help expedite decisions.

Regional Collaboration

- Formal bilateral and multilateral agreements can be pursued between governments to protect shared whale populations which engage and include input from Indigenous communities.
- Existing examples of multinational, transboundary efforts to protect whales:
    - U.S./Canada collaboration in the Salish Sea to protect southern resident killer whales
    - North Atlantic Right Whale protection between U.S. and Canada
    - New PSSA (Particularly Sensitive Sea Area) in the NW Mediterranean Sea - collaboration across France, Italy, Spain and Monaco to protect whales
- There is no existing network that spans the entire Eastern Pacific region to collaborate on whale protection, and there may be a need to link up multiple existing networks (e.g., CEC, NAMPAN and CMAR) or create a new network to address ship strikes.
- We need to use mechanisms already in place and strengthen existing networks to encourage and support cooperation and collaboration; NAMPAN and CMAR are great examples.
- The purpose of a new network could include: data sharing (ship strike data and trends, stranding data, whale movements across the network); conduct collaborative research with consistent methodology; messaging (with industry); ship strike mitigation measures (can we apply the same measures across boundaries).
- Any functioning network must have clearly defined objectives and activities, standardized definitions, terminology and protocols for coordination.
- Protective measures do not have to be established through government agencies or authorities; there are other ways to influence or motivation shipping behavior changes, e.g., through industry and NGO-led efforts, like the establishment of best practices for Green Shipping Corridors or third-party verification/certification efforts like Green Marine or Clean Cargo Working Group.
- We can learn from multinational collaborative efforts on whale entanglements. NOAA has served as the lead to coordinate collaboration and standardization of methodologies. International support helps other countries such as Mexico implement national initiatives. We need an internationally integrated platform to share data across the entire region of whale habitat.
- Networks should be institutionalized to ensure the work continues after individuals leave.
- Networks should include both the government entities and MPAs, but also non-governmental organizations and researchers to ensure equity and action, and to leverage funding.

Workshop themes and take-aways

- Less than 8% of global ship strike hotspots (areas with the top 1% predicted ship strike risk) are protected by slow speed zones. And less than 0.2% with mandatory speed reduction zones.
- As whales are transboundary, there is great interest in developing networks through bi-national and multinational agreements which include Indigenous communities, to collaborate on data gathering, information sharing, and approaches to reduce impacts.
- Consistency and flexibility are important components of any network approach; consistency in global educational messages and terminology and, where appropriate, in management measures to reduce the complexity of rules and recommendations the shipping industry must track and incorporate, as well as flexibility in management measures to address changing whale behavior.
- There is no one-size-fits-all approach. While consistency across different MPAs and different areas would be easier for the shipping industry, different environmental and sociopolitical factors make that difficult. The measures you need to put in place are unique to the situation and nature of the problem.
- MPAs can be important management tools for protecting whales and serve as a link to the broader ocean management community. Institutionalizing these partnerships within existing networks may ensure collaboration continues beyond individuals.
- Technological surveillance is an emerging field and could assist with monitoring compliance and whale presence.
- The human element is an important consideration, including the impact of ship strikes and climate change on subsistence harvest for Indigenous peoples. Additionally, including the involvement of local leaders, communities and scientists in conducting research and identifying solutions is critical. Local researchers know the nuance and complexities of their particular landscape - the politics, for example.
- Voices from the Global South and Indigenous communities have historically not been heard. Representation in the conservation movement is negligible. Talent is equally distributed but representation is not.
- Traditional, Indigenous management has many lessons that can be applied to this issue. For example, there are many examples of multilateral agreements amongst different indigenous groups that have achieved conservation success and upheld traditional, cultural values.
- Country willingness and social-economic issues are important considerations when approaching governments to introduce IMO actions. IMO is the forum to bring vessel speed reductions and/or modifications to shipping routes in international waters, but these actions must be pursued by governments.
- A barrier to increase whale protections is the lack of political will of governments to institute mandatory measures.
- Opportunities for increased whale protections include increased global awareness and political momentum, increased scientific knowledge, leveraging partnerships, and the development and use of innovative tools.
- Voluntary measures have been a good tool for engaging the shipping industry in the issues and allows flexibility to be more responsive to changes. Voluntary measures also

lay the foundation for legally binding measures which may be necessary to engage all of the shipping industry for long-term benefits and compliance.

- Incentive-based programs, whether in the form of financial incentives or positive recognition incentives, have helped increase compliance and cooperation with vessel speed reduction measures, and should be implemented broadly, even in places where regulations already exist.
- While dynamic measures that adapt to the timelines and areas of greatest need to maximize protection and minimize impacts to industry are most ideal, static areas for voluntary or mandatory measures may be of highest value to the shipping industry so that they can plan shipping routes.
- Dynamic measures require more advanced technology, and in many cases, the tools are not available to fully implement this approach worldwide. If not communicated clearly and with enough advanced warning to industry, dynamic measures present complexity and uncertainty for the shipping industry.
- Slowing ships has multiple benefits; in addition to reducing the risk of lethal ship strikes to whales, slow steaming reduces air pollution and GHG emissions and reduces underwater noise. There are many benefits to slowing vessels where coastal communities, whales, and commerce intersect.

Program

Recordings are available: https://farallones.org/whale-climate-workshop-2023/

Day 1: January 17, 8am - 12pm PST *Whale Distribution and Impacts*			
Topic	**Time**	**Title**	**Speaker(s)**
Welcome	8:00 - 8:05		Maria Brown, Greater Farallones and Cordell Bank National Marine Sanctuaries
Opening Remarks	8:05 - 8:25		Asha deVos, OceanSwell
Agenda Overview	8:25 - 8:30		Sara Hutto, Greater Farallones Association
Where are whales in the global ocean?	8:30 - 9:00	Overview of global whale populations and migratory corridors	Ari Friedlander, University of California, Santa Cruz
BREAK	9:00 - 9:05		
What are the observed and predicted impacts of climate change on whale distribution and movement?	9:05 - 9:10	Introduction	Sara Hutto
	9:10 - 9:35	US West Coast case study: Scales of Whales: Using nowcasts, forecasts, and projections to predict climate impacts on blue and humpback whales in the California Current System	Nerea Lezama-Ochoa and Heather Welch, University of California, Santa Cruz and NOAA Southwest Fisheries Science Center
	9:35 - 9:50	Arctic case study: Observed climate impacts on whale distribution and movements	Kate Stafford, Oregon State University
	9:50 - 10:05	Antarctic case study: Current and predicted climate impacts on the distribution and density of endangered whales in the Antarctic region	Ari Friedlander, University of California, Santa Cruz
	10:05 - 10:25	Panel Q/A	
BREAK	10:25 - 10:35		
Where are whales	10:35 - 10:40	Introduction	Jess Morten, California

at greatest threat from ship strikes in the global ocean, and how do these areas overlap with MPAs?			Marine Sanctuary Foundation
	10:40 - 11:00	An eco-informatics approach to map the risk of whale-ship collisions across the world's oceans	Anna Nisi, University of Washington and The Nature Conservancy
	11:00 - 11:25	Do MPAs benefit whales? An overview of the ProtectedSeas Navigator and if / how regulatory marine protections along the U.S. West Coast help protect whale migratory corridors	Jenn Sletten, Protected Seas
	11:25 - 11:50	Facilitated Q/A and group discussion	
Closing	11:50 - 12:00		Maria Brown

DAY 2: January 18, 8am - 12pm PST *Management Measures to Reduce Ship Strikes*			
Topic	**Time**	**Title**	**Speaker(s)**
Welcome Agenda overview	8:00 - 8:10		Maria Brown Sara Hutto
What are the management measures being implemented to address cumulative impacts to whales, how effective are they, and how adaptive/responsive to climate-driven changes are these management measures?	8:10 - 8:25	Opening remarks	Jose Julio Casas, Pro Tempore Director, Eastern Tropical Pacific Marine Corridor (CMAR)
	8:25 - 8:45	Sri Lanka: The importance of local leadership and an industry perspective on whale protection measures	Asha de Vos, OceanSwell; Bryan Wood Thomas, World Shipping Council
	8:45 - 9:00	Brazil and the Southwest Atlantic Ocean: ship strike mitigation initiatives and the IMMA process	Jose Palazzo, Brazilian Humpback Whale Institute - Instituto Baleia Jubarte
	9:00 - 9:15	Mediterranean: Important Marine Mammal Areas and ship strikes: the Western Mediterranean PSSA scenario	Simone Panigada, Tethys Research Institute
	9:15 - 9:30	Mediterranean: Ship strike voluntary measures in the Hellenic Trench,	Amalia Alberini, World

		Greece: a safe alternative or a stepping stone towards mandatory measures?	Wildlife Fund
Panel Discussion	9:30 - 10:00		
BREAK	10:00 - 10:10		
[continued] What are the management measures being implemented to address cumulative impacts to whales, how effective are they, and how adaptive/responsive to climate-driven changes are these management measures?	10:10 - 10:25	Mexico: Cases of impact to cetaceans by vessels associated with the commercial port of Manzanillo, Colima, Mexico	Christian Daniel Ortega Ortiz, Universidad de Colima
	10:25 - 10:40	Canada: Measures to Protect North Atlantic Right Whales from ship strikes in the Gulf of St Lawrence	Pierre Beaufils, Transport Canada
	10:40 - 11:00	US East coast: Seasonal Management Areas and industry engagement to protect North Atlantic Right Whales	Dave Wiley, Stellwagen Bank National Marine Sanctuary; Caroline Good, NOAA Office of Protected Resources
	11:00 - 11:15	US West coast: Shifting ships in time and space to reduce ship strike risk	Sean Hastings, Channel Islands National Marine Sanctuary
Panel Discussion	11:15 - 11:45		
Closing	11:45 -12:00		Maria Brown

DAY 3: January 19, 8:00 - 11:20am PST *Learning Through Dialogue:* Facilitated small group discussions			
Topic	**Time**	**Subject matter**	**Speaker(s)**
Welcome Agenda overview	8:00 - 8:10		Maria Brown Sara Hutto
Opening remarks	8:10 - 8:20		Lisa Qiluqqi Koperqualuk, Inuit Circumpolar Council
Transition to breakout groups	8:20 - 8:25		

Breakout 1: the role of MPAs	8:25 - 9:10	What is the role of MPAs, ICCAs (Indigenous and Community Conserved Areas) and OECMs (Other Effective area-based Conservation Measures) in implementing management measures and advancing whale conservation? How can these tools conserve whales more effectively as whales move across national and international waters? What is the intersection between IMMAs, PSSAs and these tools?	
BREAK; transition to new breakout groups	9:10 - 9:20		
Breakout 2: Knowledge gaps and needs	9:20 - 10:05	What knowledge gaps exist as roadblocks to further protecting whales in a changing climate? How do we incorporate evidence-based information rooted in Indigenous knowledge and science?	
BREAK; transition to new breakout groups	10:05 - 10:15		
Breakout 3: Regional focus	10:15 - 11:00	Regional breakout groups to connect managers across whale regions, share regionally specific information, and begin to discuss regional strategies for whale protection	
Transition to main room	11:00 - 11:05		
Closing	11:05 - 11:20		Maria Brown

Participants

Adriana Ng	CMAR (Corredor Marino del Pacifico Este Tropical)
Alex Driedger	
Amalia Alberini	WWF (World Wildlife Fund)
Amie Kusch	NRDC (Natural Resources Defense Council)
Anastasia Kunz	California Marine Sanctuary Foundation
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Andres Jimenez	CMAR (Corredor Marino del Pacifico Este Tropical)
Andrew Willson	Future Seas
Anna Nisi	University of Washington
Ari Friedlaender	University of California, Santa Cruz
Asha de Vos	Ocean Swell
Briana Abrahms	University of Washington
Bronwyn Harvey	Parks Canada
Bryan Wood-Thomas	World Shipping Council
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Catherine Boyd Michaud	Commission for Environmental Cooperation
Catherine Marzin	NOAA Office of Protected Resources
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Greg Reilly	IFAW (International Fund for Animal Welfare)
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Karina Dracott	
Kate Stafford	Oregon State University
Kathi George	The Marine Mammal Center
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Lucie Robidoux	Commission for Environmental Cooperation

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Márcia Engel	
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Pablo Zamorano	Reserva de la Biosfera Islas Marías
Paula Montenegro	
Peter Thomas	Marine Mammal Commission
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Pierre Beaufils	Transport Canada
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Scott Gende	Glacier Bay National Park
Sean Hastings	Channel Islands National Marine Sanctuary
Sergio Cipolotti	Brazilian Humpback Whale Institute (Projeto Baleia Jubarte)
Sergio Palma	Environmental Defense Fund
Shannon Bettridge	NOAA Office of Protected Resources
Simone Panigada	Tethys Research Institute
Sonia Jind	Fisheries and Oceans Canada

Sophie Cormier	Fisheries and Oceans Canada
Susannah Buchan	University of Concepcion; Humboldt Archipelago MPA
Timothe Vincent	ProtectedSeas
Veronica Reza	Bahia de Loreto Parque Nacional
Victoria Bell	Lenfest Ocean Program
Victoria Winslow	Fisheries and Oceans Canada
Weijun Mun	World Shipping Council

Tools

Tools included here are not an exhaustive list, but a compilation of those that aim, or could be used, to reduce the risk of ship strike to large whales. This compilation is also available on the project website, and will be updated as workshop organizers become aware of additional tools.

Title	Lead Organization	Description	Web url
Arctic Watch	Marine Exchange of Alaska	Arctic Watch is an initiative that utilizes technology, communications, and local knowledge to influence safe and environmentally responsible maritime activity in Alaska's Arctic region. Through 24/7 monitoring and proactive sea traffic management, the Arctic Watch Operations Center, operated by the Marine Exchange of Alaska (MXAK) serves as an information hub to collect and broadcast critical data including real-time weather reports and vessel locations using MXAK's strategically placed Marine Safety Sites. Through partnerships and communications with Arctic communities, Alaska Native tribal governments, and state and federal agencies, MXAK receives and shares information on local maritime and cultural activities including areas that should be avoided due to the presence of marine mammals. This information is transmitted to vessel operators to minimize the potential for adverse environmental impacts and marine casualties.	arcticwatch.org
Cetacean Desk	United States Coast Guard Sector Puget Sound	U.S. Coast Guard Sector Puget Sound introduced a cetacean desk pilot program, hosted in the Puget Sound Vessel Traffic Service (VTS), to mitigate adverse impacts of maritime vessel traffic on endangered and threatened large cetaceans (whales) in the Salish Sea. The pilot program will receive reports of whale sightings from mariners in the vessel traffic system managed by the VTS and provide near real-time data about the location of whales to these mariners through the Whale Report Alert System (WRAS). In providing situational awareness, the program aims to reduce instances of ship strikes and whale disturbances in the Puget Sound region. It also aligns operations with the Canadian Coast Guard Marine Mammal Desk, providing a consistent whale reporting and notification regime for operators of large ships throughout the Salish Sea.	https://www.pacificarea.uscg.mil/Our-Organization/District-13/Units/Sector-Puget-Sound/VTS-Puget-Sound/USCG-Cetacean-Desk/

IWC Ship Strikes webpage	IWC (International Whaling Commission)	This webpage contains the International Whaling Commission's content on ship strikes, including the IWC Strategic Plan to Mitigate the Impacts of Ship Strikes on Cetacean Populations, 2022-32, a summary table of ship strike mitigation measures implemented around the world, and a link to contribute to the Global Ship Strikes Database to report a collision (log-in required).	https://iwc.int/management-and-conservation/ship-strikes
Marine Mammal Desk	Canadian Coast Guard	The new Marine Mammal Desk will report whale sightings in real time and advise vessel traffic by providing enhanced situational awareness of the activities of Southern Resident Killer Whales and other cetaceans, such as humpback and grey whales. Staffed 24 hours a day, seven days a week, the new Marine Mammal Desk leverages modern technologies including radar and Automatic Identification Systems (AIS) and real-time vessel movement information. It will support partners like Transport Canada by safe keeping Southern Resident Killer Whale Interim Sanctuary Zones for compliance by commercial vessels and pleasure craft. The Marine Mammal Desk will also take reports of Southern Resident Killer Whales and other cetacean sightings from sources such as CCG vessels, light stations, and aircraft operated by Fisheries and Oceans Canada, the CCG and Transport Canada. This information will be forwarded to on-water enforcement agencies to ensure the protection of the mammals as well as reported to the B.C. Cetacean Sightings Network. The data collected will help inform Canada's decisions for future protection initiatives.	https://www.canada.ca/en/canadian-coast-guard/news/2021/01/canadian-coast-guard-opens-the-first-marine-mammal-desk-to-better-protect-southern-resident-killer-whales-and-other-cetaceans.html
Marine Mammals Management Toolkit	European Union-funded Ocean Governance; implemented by: GOPA International Consultants, B&S Europe and WWF Indonesia.	The Marine Mammal Twinning has designed and created a toolkit for the inclusion of marine mammals into MPAs, with a focus on threats including ship strikes. The aim of the Marine Mammal Twinning tool is to help build the technical capacities of MPA managers by sharing knowledge, expertise and good practises. In order to guide effective management of marine mammals, and support MPA managers, the Marine Mammals Management Toolkit contains four key components: factsheets; Self-Assessment Tool (SAT); good practices and a Community of Practice.	https://marine-mammals.info/
North Atlantic Right Whale Active Seasonal Speed Zone	NOAA Fisheries	This dashboard contains aggregated vessel traffic statistics for active North Atlantic right whale seasonal management areas (SMA), as identified in NOAA's right whale vessel speed rule at 50 CFR § 224.105. The statistics were generated from a combination of	https://experience.arcgis.com/experience/315a0a2c4e084cf6ae8babd8c81b07b3/

Vessel Traffic Dashboard		terrestrial and satellite automatic identification system (AIS) data.	
ProtectedSeas Navigator	ProtectedSeas	Navigator is a free, interactive map of regulatory information for over 21,000 managed saltwater and coastal areas worldwide, including the high seas. As the most comprehensive database of official marine protections and their boundaries, Navigator provides key information necessary to maintain long-term ocean health and ensure that special places and life forms are available for future generations, and can assist in analyses of the interplay between place-based marine protections and whale migratory corridors and ship strike risk.	navigatormap.org
Protecting Blue Corridors report	WWF (World Wildlife Fund)	Protecting Blue Corridors visualises the satellite tracks of over 1000 migratory whales worldwide. The report outlines how whales are encountering multiple and growing threats in their critical ocean habitats – areas where they feed, mate, give birth, and nurse their young – and along their migration superhighways, or 'blue corridors'.	https://wwfwhales.org/resources/protecting-blue-corridors-report
Protecting Blue Whales and Blue Skies	California Marine Sanctuary Foundation	Protecting Blue Whales and Blue Skies is a whale conservation verification program along the coast of California which incentivizes companies to incorporate sustainable shipping practices across their global supply chain. By supporting existing seasonal and predictable slow speed zones, this program helps companies protect endangered whales, reduce fuel use and regional greenhouse gas emissions, and improve air quality and human health outcomes. The Protecting Blue Whales and Blue Skies team independently verifies cooperation rates, quantifies the benefits of participation, and provides recognition of program participants to encourage the adoption of sustainable shipping practices across the globe.	www.bluewhalesblueskies.org
Real-time Plotting of Cetaceans (REPCET)	Association MIRACETI	The REPCET® tool is a software designed for navigation which aims primarily to limit the risk of collisions between large cetaceans and large vessels. It is easy-to-use and based on the following elements: each cetacean encounter made by watchkeeping personnel from a REPCET user vessel, is transmitted in real time by satellite to a shore server. The server centralizes the data and alarms any vessels equipped with REPCET likely to encounter the cetacean on their route. Then, the alerts are mapped on a dedicated screen located on board and are available for 24 hours on the screen.	https://www.repcet.com/en/

Robots4 Whales	Woods Hole Oceanographic Institution	Robots4Whales monitors the presence of marine mammals from ocean-going robots (via acoustic detection buoys and gliders) using the sounds the animals make. The robots automatically detect those sounds, identify the species based on characteristics of the sounds, and report which species have been heard to scientists on shore via satellite in near real time.	http://robots4whales.whoi.edu/
SPACE WHALE	BioConsult SH	SPACEWHALE is a novel method for detecting whales in very high-resolution (VHR) satellite imagery which can monitor regions in the high seas where traditional boat or aerial-based surveys are difficult to execute. We merge the latest in space-based and Deep Learning assets with a team of expert biologists to offer clients a range of products including abundance and distribution estimates.	https://www.spacewhales.de/
Top Predator Watch	NOAA (US National Oceanic and Atmospheric Adminstration)	Top Predator Watch is a dynamic ocean management tool that produces daily predictions of the distributions of 14 top predator species, including blue whales.	https://oceanview.pfeg.noaa.gov/top-predator-watch/
Whale Alert	Conserve.IO	The Whale Alert app was launched in 2012 as a citizen science tool aimed at reducing the risk of vessel strikes. The app uses whale presence data including verified sightings, acoustic detections from buoys and gliders, and aerial surveys to display a user-friendly map based on nautical charts from country-specific government agencies.	whalealert.org
Whale Chart	World Shipping Council	The WSC Whale Chart is a navigational aid and the first global mapping of all mandatory and voluntary governmental measures to reduce harm to whales from ships. The WSC Whale Chart is available for free to all interested parties and will be regularly updated.	https://www.worldshipping.org/whales
Whale Guardians	Great Whale Conservancy	Whale Guardians™ is an international program for whale ship strike prevention dedicated to establishing Whale Guardians™ Certified Shipping in order to help the world's great whales recover toward pre-whaling populations. The Whale Guardians™ program produces co-occurrence maps, develops best practices, and builds partnerships with all industry stakeholders.	https://www.whaleguardians.org/whale-guardians-our-mission
Whale Insight	Fisheries and Oceans Canada	Whale Insight displays North Atlantic right whale detections in eastern Canadian waters and contains detections dating back to May of 2017. Visual and acoustic detections are typically reported to the map within the same day. All detections shown on this map	https://gisp.dfo-mpo.gc.ca/apps/WhaleInsight/eng/?locale=en

		have been validated by a marine mammal expert. The map is updated every 15 minutes.	
Whale Safe	Benioff Ocean Initiative	Whale Safe is a tool that displays both visual and acoustic whale detections in the Santa Barbara Channel and the San Francisco Region. It also includes a blue whale habitat model that predicts the likelihood of blue whale presence.	whalesafe.com
WhaleReport Alert System (WRAS)	OceanWise	This ship strike mitigation tool transforms detections of cetceans into real-time alerts for commercial mariners.	https://ocean.org/whales/wras/