

## **Written Testimony of**

**Dr. Jessica Redfern**

**Senior Scientist and Chair**

**Spatial Ecology, Mapping, and Assessment (EcoMap) Program**

**Anderson Cabot Center for Ocean Life**

**New England Aquarium**

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Thank you Chairman Grijalva, Committee Ranking Member Westerman, Subcommittee Chairman Huffman, and Subcommittee Ranking Member Bentz for inviting me to testify at this hearing. I am a Senior Scientist and the Chair of the EcoMap Program in the Anderson Cabot Center for Ocean Life at the New England Aquarium. The New England Aquarium is a catalyst for global change through innovative scientific research, commitment to marine animal conservation, leadership in education, public engagement, and effective advocacy for vital and vibrant oceans. Our mission is to conduct research on topics related to ocean health and conservation and to develop science-based solutions to marine conservation problems. The EcoMap program assesses risks to marine species from human activities and climate change. We conduct our assessments in collaboration with stakeholders to develop solutions to the most pressing marine conservation challenges.

I have been using statistical models to address wildlife conservation challenges for more than 20 years. I studied mathematics as an undergraduate at Colorado College. I learned how to use my mathematics training to address wildlife conservation challenges during my Ph.D. research at the University of California, Berkeley. After graduating with my Ph.D., I was a National Research Council Postdoctoral Research Associate at the National Oceanic and Atmospheric Administration's (NOAA) Southwest Fisheries Science Center. I then worked as a permanent federal employee at the Southwest Fisheries Science Center for over a decade before joining the New England Aquarium. My research focuses primarily on developing cetacean-habitat models and using predictions from these models to assess risk to cetaceans. I have published numerous scientific papers on a broad range of topics, including species habitat modeling, vessel traffic patterns, the risk of vessels striking whales, the risk of fishing gear entangling whales, the risk of chronic vessel noise to baleen whales, and estimating species diversity to guide designation of marine protected areas. I have also served as a guest editor for a research topic in *Frontiers in Marine Science* about the impacts of shipping on marine fauna and as an invited member of numerous committees, including the International Council for the Exploration of the Sea's (ICES) Working Group on Shipping Impacts in the Marine Environment, NOAA Fisheries' Rice's Whale Recovery Planning Workshop, NOAA Fisheries' humpback whale critical habitat team, NOAA Fisheries' second Protected Species Assessment Workshop, and the International Whaling Commission (IWC) Scientific Committee.

## **Effects of human activities on marine mammals**

Although we have reason to celebrate the conservation success and status of some marine mammal populations in United States waters, additional conservation and management efforts are needed to ensure the long-term survival of all our marine mammal populations. I would specifically like to address H.R. 6785, a bill from Representative Seth Moulton (MA) to assist in the conservation of the North Atlantic right whale, and H.R. 6987, a bill from Representative Rick Larsen (WA) to establish programs to reduce the impacts of vessel traffic and underwater noise on marine mammals.

Marine mammal species of particular concern that are relevant to H.R. 6785 and H.R. 6987 include:

- **North Atlantic right whales (*Eubalaena glacialis*):** The North Atlantic right whale is one of the most endangered large whales in the world. The current population size estimate is 336 whales (95% confidence range +/- 14, Pettis et al., 2021). This population has been declining for over a decade and the current population size estimate is one of the lowest in the past 20 years (Pettis et al., 2021).
- **North Pacific right whales (*Eubalaena japonica*):** North Pacific right whales are likely the world's smallest whale population for which an abundance estimate exists (Wade et al., 2011). Mark-recapture analyses of photographic data estimate that there are 31 (95% CL 23–54) whales in this population and that there are more males than females (Wade et al., 2011).
- **Central America and Mexico populations of humpback whales (*Megaptera novaeangliae*):** The Central America and Mexico populations of humpback whales that feed off the United States West Coast are listed as endangered and threatened, respectively, under the Endangered Species Act.
- **Rice's whale (*Balaenoptera ricei*):** Rice's whale was listed as endangered under the Endangered Species Act in 2019. Assessments suggest that the size of this population is less than 100 individuals (Rosel et al., 2016).
- **Southern Resident killer whales (*Orcinus orca*):** The Southern Resident killer whale Distinct Population Segment (DPS) was listed as endangered under the Endangered Species Act in 2005 following an almost 20% decline in the population (NOAA, 2016). The population size estimate in NOAA Fisheries' 2020 stock assessment report is 73 whales and the report states that population has been declining since 1995 (Carretta et al., 2021b). A five-year review conducted by NOAA Fisheries (2021) concluded that the status of the population is not consistent with a healthy, recovered population.

Lethal and sub-lethal effects of human activities are primary concerns for all of these species. Commercial whaling substantially reduced all of the baleen whale populations on this list. The small size of the North Pacific right whale population is a consequence of uncontrolled and illegal whaling (Wade et al., 2011). Currently, the biggest lethal threats facing these baleen whale species are entanglements in fishing gear and vessel strikes (Thomas et al., 2015). On the United States East Coast, NOAA Fisheries declared an Unusual Mortality Event for North Atlantic right whales because the deaths or serious injuries of 50 whales, including three calves, have been observed from Florida, USA, to the Gulf of St. Lawrence, Canada, since 2017. Four deaths in 2017 and three in 2018 were attributed to entanglement (Sharp et al., 2019). Five

deaths in 2017 were attributed to vessel strikes (Sharp et al., 2019). The observed number of deaths represents the minimum number of deaths; the true number of deaths may be three times higher (Pace et al., 2021). On the West Coast, a dramatic increase in humpback whale entanglements began in 2014 and was associated with changes in humpback whale distributions caused by a marine heatwave (Santora et al., 2020). Vessel strikes are another large source of human-caused mortality for fin (*Balaenoptera physalus*), humpback, and blue (*B. musculus*) whales on the West Coast (Carretta et al., 2021a).

Sub-lethal effects of human activity are also a concern for all species on this list and include indirect effects of entanglements, vessel noise, and climate change. Research by Stewart et al. (2021) shows a clear and concerning sub-lethal effect of entanglements. In particular, the research indicates that right whales that have been entangled in fishing gear are shorter than whales that have not been entangled. The decrease in right whale body lengths has occurred over the past four decades and may result in reduced reproductive success (Stewart et al., 2021). The study by Rolland et al. (2012) demonstrates the sub-lethal effects of vessel noise on right whales. This study showed that baseline levels of stress-related hormones in right whales decreased in association with decreased levels of vessel traffic following the events of September 11, 2001. Their study demonstrates that exposure to low-frequency vessel noise may be associated with stress in whales. Finally, we continue to learn more about how climate change is affecting marine species. Climate change has altered the abundance and distribution of a critical prey species for right whales (Record et al., 2019). These changes have altered right whale distributions and resulted in increased mortality from vessel strikes and entanglements (Meyer-Gutbrod et al., 2018). However, these distribution changes have also had potential sub-lethal effects, including a decline in calving (Pershing and Pendleton, 2021). Low calf production could be a result of a delay between the decline in prey in traditional habitats and an increase in prey in new habitats (Pershing and Pendleton, 2021). It could also be caused by right whales needing to learn to forage successfully in new habitats (Pershing and Pendleton, 2021).

## **H.R. 6785**

### **Reducing the effects of human activities on North Atlantic right whales**

The recovery of North Atlantic right whales has been limited by lethal effects of human activities (Corkeron et al., 2018), including vessel strikes and entanglements. Without immediate and concerted conservation action to address these two major causes of mortality, this iconic species faces a high risk of extinction. The Right Whale Coexistence Act of 2022 (H.R. 6785) provides the financial assistance needed for these immediate conservation actions. In particular, it will provide funding for projects designed to reduce the lethal and sub-lethal effects of human activities on North Atlantic right whales. Projects could include the continued development and implementation of ropeless fishing, which would significantly reduce entanglement risk and keep the fishing community on the water. It could also support projects that identify areas of increased vessel-strike risk and develop solutions for mitigating this risk. Finally, it could support projects that assess and mitigate the effects of wind energy development on right whales.

Many of these projects have the ability to benefit other species and ecosystems. For example, the development and implementation of ropeless fishing technology can help reduce

entanglements of endangered leatherback sea turtles on the East Coast (Dodge et al., 2022) and entanglements of humpback whales in Dungeness crab (*Metacarcinus magister*) fishing gear on the West Coast (Samhuri et al., 2021). Projects funded under this bill are meant to be collaborative with a range of stakeholders, including foreign governments and affected local communities. There is also a focus on supporting projects that provide economic benefits to small United States businesses. This focus on collaboration with impacted stakeholders and economic benefits will help ensure that the projects funded can successfully address the unintentional conflicts between humans and North Atlantic right whales.

## **H.R. 6987**

### **Monitoring ocean soundscapes**

NOAA's Ocean Noise Strategy Roadmap (Gedamke et al., 2016) used case studies to understand the potential for spatially explicit risk assessments to serve as a tool to support effective management. Much of my testimony in this section is derived from the case study that assessed the risk of chronic vessel noise to baleen whales off Southern California (Redfern et al., 2017). This study found that the acoustic conditions in which baleen whales evolved have been almost eliminated within important habitats. It also highlighted the many sources of variability that influence noise levels at a particular location, at particular frequencies, and within specific time periods. While the focus of this case study was waters off Southern California, the results are directly relevant to the need to monitor ocean soundscapes in United States waters as proposed in H.R. 6987. Increasing our monitoring of ocean soundscapes throughout United States waters will improve the spatial representations of ocean noise caused by human activities that are needed to effectively manage this important source of sub-lethal effects on marine mammals.

Ocean noise produced by human activities has significantly increased since the beginning of the industrial era (Duarte et al., 2021). These changes in ocean noise have not been evenly distributed in space and time. In particular, analyses of data from two locations that are not near major shipping lanes (one in the equatorial Pacific Ocean and one in the South Atlantic Ocean) showed decreases in the ambient sound floor and other sound level parameters (Miksis-Olds and Nichols, 2016). In contrast, low frequency noise has increased in the Northeast Pacific Ocean since the 1960s (Andrew et al., 2011; Chapman and Price, 2011), in the Indian Ocean over the last decade (Miksis-Olds et al., 2013), and in the Arctic Ocean from 2013 to 2019 (PAME, 2021). The increase in low-frequency noise observed in these locations has been linked to increases in shipping. Frisk (2012) used ambient noise measurements from the Northeast Pacific Ocean that span several decades and ambient noise measurements from areas in the South Pacific Ocean with extremely low vessel traffic to provide a theoretical explanation for the increases. This research shows that the increase can be attributed primarily to commercial shipping. In the Arctic Ocean, vessel noise has doubled in multiple locations since 2013 (PAME, 2021).

These large increases in ocean noise have occurred within the lifetime of baleen and other long-lived whales and at frequencies that form an important part of their acoustic environment. Vessels emit both high and low frequency noise. Baleen whales are believed to rely on low-frequency sounds for feeding, breeding, and navigation. The potential effects of noise on baleen whales have been recognized for over 40 years (Payne and Webb, 1971) and, more recently,

behavioral responses to vessel noise have been documented for humpback, fin, and blue whales (e.g., Sousa-Lima and Clark, 2008; Castellote et al., 2012; Melcón et al., 2012). Low-frequency noise can also result in acoustic masking, which impedes an individual's ability to effectively perceive, recognize, or decode sounds of interest (Clark et al., 2009); consequently, areas with elevated noise may represent degraded acoustic environments.

Odontocetes, such as Southern Resident killer whales, occupy acoustic niches that overlap with high-frequency noise, which is emitted from both large and small vessels, including recreational vessels and ferries. In particular, noise from vessels overlaps with frequencies used by Southern Resident killer whales for communication and echolocation (Veirs et al., 2016). Disturbance from vessels and noise is one of three primary threats identified to the survival of Southern Resident killer whales (NOAA Fisheries, 2021). Lusseau et al. (2009) showed that Southern Resident killer whales spend less time foraging and more time traveling in the presence of vessels. Holt et al. (2021) found that female Southern Resident killer whales were more likely to stop foraging when vessels were within 400 yards (366 meters). Reducing foraging can have cascading effects on the ability of Southern Resident killer whales to meet energetic requirements and support reproductive (Holt et al., 2021). In contrast, efforts to reduce vessel noise can increase the probability of Southern Resident killer whales foraging (Williams et al., 2021).

The Redfern et al. (2017) case study in NOAA's Ocean Noise Strategy Roadmap (Gedamke et al., 2016) consisted of a spatially explicit risk assessment of noise from commercial vessels to blue, fin, and humpback whale habitats in Southern California waters. The study used vessel data to model noise at two frequencies, 50 and 100 Hz, that are part of the acoustic environment for these species and capture the variable contributions from vessels to noise. Predicted noise levels in Southern California waters suggested high, region-wide exposure to vessel noise. For example, over 94% of the study area contained predicted 50 and 100 Hz noise levels above the approximation of low-frequency, pre-industrial conditions, which were considered to represent little to no vessel traffic. The risk assessment identified several areas where the acoustic environment may be degraded for blue, fin, and humpback whales because their habitat overlaps with areas of elevated noise from vessel traffic and two places where blue and humpback whale feeding areas overlap with lower predicted noise levels. The co-occurrence of whale habitat and the elevated predicted noise levels raises concerns about the quality of the whales' acoustic environment and how this environment supports their communication at extreme low frequencies. These long-lived animals evolved to take advantage of acoustic conditions that this study estimates have been almost eliminated within the habitats most important to sustaining their presence in Southern California waters.

An important component of this case study and other methods to assess the effects of noise on marine mammals, such as estimates of the loss of acoustic communication space (Clark et al., 2009; Hatch et al., 2012), is a direct measurement of the ocean soundscape or an estimate of the soundscape. In our analyses, the soundscape was characterized by predicted noise levels, which provided a spatial representation of underwater noise generated by vessels. We had very limited data available to validate these predicted noise levels. Specifically, predictions from the noise models were compared to empirical underwater acoustic data collected for one month (November 2009) at only two sites in the region (McKenna, 2011). Acoustic data were collected

using High-frequency Acoustic Recording Packages (HARPs) developed at Scripps Institution of Oceanography (Wiggins and Hildebrand, 2007). The agreements and differences between predicted noise levels and the HARP measurements highlight the many sources of variability that influence predicted noise levels at a particular location, at particular frequencies, and within specific time periods. These sources of variability can be addressed by improving our monitoring of ocean soundscapes, as proposed in H.R. 6987. This monitoring will improve the spatial representations of ocean noise caused by human activities that are needed to effectively manage this important source of sub-lethal effects on marine mammals.

### **Reducing impacts to marine mammals from vessel traffic at seaports**

Several seaports have established innovative programs to reduce impacts to marine mammals from vessel traffic. For example, the Protecting Blue Whales and Blue Skies program grew out of a 2014 trial incentive program to slow vessels down in the Santa Barbara Channel to reduce air pollution and protect endangered whales. The trial was launched by the Channel Islands National Marine Sanctuary, the Santa Barbara County Air Pollution Control District, and the Environmental Defense Center and was modeled on existing successful vessel speed reduction programs at the Ports of Los Angeles and Long Beach that were implemented to reduce air pollution in the vicinity of these ports. In 2014, the Vancouver Fraser Port Authority created the Enhancing Cetacean Habitat and Observation (ECHO) Program to reduce the effects of vessels on whales throughout the southern coast of British Columbia. This program takes a collaborative approach and works to address this conservation challenge with a diverse group of stakeholders that includes government agencies, the marine transportation industry, Indigenous communities, environmental groups, and scientists. Among its various initiatives, the ECHO program provides incentives for vessels that invest in vessel quieting technologies or designs. This incentive program, if scaled to other ports along the west coast, could substantially offset the costs to vessel owners of incorporating such technologies and spur broader adoption. Building from the ECHO program, the Port of Seattle and Port of Tacoma are collaborating with a similar stakeholder group on Quiet Sound (formally launched in February 2022), which aims to reduce the impact of large commercial vessels on Southern Resident killer whales.

These programs show the power of seaports to reduce impacts to marine mammals from vessel traffic. However, these programs are currently limited to a few geographic locations and the programs may only reach a small percentage of vessels traveling in a region (Freedman et al., 2017). Additionally, these programs require continued financial support to be successful. The funding included in H.R. 6987 provides an opportunity for U.S. seaports to build from these successful programs and expand the impact of current port programs.

### **Developing a near real-time monitoring and mitigation program for large whales**

Near real-time monitoring to detect marine mammals is an important tool for successfully mitigating the impacts of human activities that have the potential to harm marine mammals. If marine mammals can be detected, activities that can harm them can be stopped or conducted in a manner that reduces risk. Near real-time monitoring is important because of climate-driven changes in marine mammal distributions. For example, during this era of rapid climate change in the Gulf of Maine, right whale abundance has increased in waters designated for wind energy

development off Massachusetts and aerial surveys have documented that right whales are spending more time in this area (O'Brien et al., 2021). Blue whale distributions on the West Coast have shifted farther north, potentially in response to changing ocean conditions (Calambokidis et al., 2009). Redfern et al. (2020) found that this shift was associated with increased vessel-strike risk for blue whales off northern California.

Near real-time monitoring systems that can facilitate human activities and species conservation must be capable of providing information about whale locations to ocean users and enforcement agencies in a time period that can be used to take meaningful action, such as the implementation of activity-specific mitigation protocols. Such a system should include visual sightings of animals, acoustic detections of animals, and habitat modeling to predict species locations. Species habitat models have been used to successfully forecast novel conditions at scales of a single day, several months, or a year (e.g., Becker et al., 2012; Becker et al., 2019). Continuing the development of these systems through a pilot monitoring and mitigation project for right whales will help meet the immediate and urgent need to protect this species from vessel strikes and other emerging activities that have the potential to cause harm, such as the development of offshore wind energy. It will benefit multiple marine species and ecosystems by incentivizing the continued innovation of near real-time monitoring technologies and techniques.

### **Reducing underwater noise from vessels**

The case study from NOAA's Ocean Noise Strategy Roadmap (Gedamke et al., 2016) mentioned above also highlights the importance of developing technology to reduce underwater noise from vessels. In particular, previous studies have highlighted the substantial contribution that shipping makes to underwater noise (Frisk, 2012). The case study highlights the almost complete elimination of the acoustic conditions in which baleen and other whales evolved within important habitats (Redfern et al., 2017). Consequently, funding is needed to support the development of technologies to reduce underwater noise from vessels. It is also important to assess what non-classified naval technologies can be used to quiet vessels.

### **Mandatory vessel speed restrictions in marine mammal habitat**

On both the East and West Coasts of the United States, human impacts on populations of baleen whales exceed the Potential Biological Removal (PBR) established by the Marine Mammal Protection Act. On the East Coast, the PBR for the Western Atlantic stock of the North Atlantic right whale is less than one (Hayes et al., 2021). For the period 2013 through 2017, the minimum rate of annual human-caused mortality and serious injury to right whales from vessel strikes was 1.3 per year, which exceeds PBR. There is also evidence that human-caused mortality of humpback whales on the East Coast has exceeded PBR for some time (Hayes et al., 2020). On the West Coast, observed and assigned annual human-caused mortality and injury for humpback and blue whales exceeds PBR (Carretta et al., 2021b). Additionally, the annual level of human-caused mortality and serious injury for Southern Resident killer whales from 2014-2018 exceeds PBR (Carretta et al., 2021b).

The sources of human-caused mortality for these populations include entanglement in fishing gear and vessel strikes. For example, vessel strikes are one of the largest sources of human-

caused mortality for fin, humpback, and blue whales on the West Coast (Carretta et al., 2021a). The risk of vessels striking whales can be reduced by relocating traffic to minimize the co-occurrence of whales and vessels. For example, the International Maritime Organization (IMO) adopted five measures between 2002 and 2009 that relocated vessel traffic in waters off Eastern North America to minimize the co-occurrence of right whales and vessels (Silber et al., 2012b). On the West Coast, the primary routes traveled by vessels changed between 2008-2015 (Moore et al., 2018). Redfern et al. (2020) showed that some vessel traffic locations were associated with lower levels of vessel-strike risk and Redfern et al. (2019) found that expanding the Area To Be Avoided (ATBA) surrounding the Channel Islands National Marine Sanctuary would reduce vessel-strike risk for blue, humpback, and fin whales.

Vessel speed reductions have also been used to mitigate vessel-strike risk because studies (e.g., Conn and Silber, 2013) have shown that the probability of a fatal vessel strike increases at higher vessel speeds. Vessel speeds became progressively slower off California from 2008 to 2015 (Moore et al., 2018). These reductions were driven by air pollution regulations and economic factors, including increased fuel costs (Moore et al., 2018). Speeds may continue to slow in this region and in other United States waters as the IMO implements new mandatory regulations to further reduce greenhouse gas emissions from vessels and requires owners to set energy efficiency targets. For example, the IMO's Efficiency Existing Ship Index (EEXI) and Carbon Intensity Indicator (CII) regulations will come into force in November 2022 and it has been suggested that the easiest way to meet these requirements in the short-term is through slowing vessel speed (e.g., reducing engine power). Although vessel speeds were slower off California in 2015, vessel speeds in some regions (e.g., vessels travelling on east-west routes to the Ports of Los Angeles and Long Beach) would still result in a >70% probability that a vessel strike would be lethal (Redfern et al., 2019). Even with the slower observed speeds, Redfern et al. (2019) found that a large decrease in vessel-strike risk can be achieved by further speed reductions.

The potential conservation gains from speed reductions are corroborated by the effectiveness of slowing vessels down for right whales on the East Coast of the United States. In 2008, NOAA Fisheries implemented a seasonal, mandatory vessel speed rule requiring all vessels  $\geq 65$  feet to travel 10 knots or less in East Coast seasonal management areas (SMAs) established for right whales. Conn and Silber (2013) modeled mortality risk for North Atlantic right whales when vessel speed restrictions were and were not active and found that vessel speed restrictions reduced vessel-strike mortality risk by 80–90%. Laist et al. (2014) used locations of right whale carcasses attributed to vessel strikes to assess the effectiveness of the 2008 rule. They found that no vessel-struck right whales were observed inside of active SMAs or within 45 nautical miles of an SMA boundary. The length of the time period without an observed vessel-struck carcass was nearly twice as long as the longest period without an observation before the rule was implemented. However, van der Hoop et al. (2015) suggested that the findings of Laist et al. (2014) may be dependent on the buffer around the SMAs used in their analyses and that the spatial and temporal extent of the SMAs should be expanded.

NOAA Fisheries (2020) recently conducted a comprehensive assessment of the 2008 rule and found that the number of documented vessel-strike mortalities and serious injuries decreased from 12 during the 10 years prior to the rule's implementation to eight in the 10 years since implementation. They also found no indication of impacts to navigational safety from



implementation of the rule and no impact from the speed rule on the volume or economic activity at potentially affected ports. In particular, the yearly direct cost estimates to commercial shipping as a percent of trade value at affected East Coast ports was approximately 0.005%. The report concluded that the rule had helped to reduce risks to right whales, but also indicated that further efforts are needed. In particular, the report recommended assessing the timing and locations of the SMAs, addressing the risk associated with vessels < 65ft, and addressing the low compliance with the voluntary vessel speed restrictions.

There are three management options for reducing vessel speeds: voluntary, incentivized, and mandatory. Over a decade of research on the East and West Coasts of the United States shows low compliance with voluntary speed reductions (e.g., McKenna et al., 2012; Silber et al., 2012a; Freedman et al., 2017; Morten et al., 2022). Consequently, alternative strategies must be used to reduce vessel speeds. Programs at seaports to reduce impacts to marine mammals from vessel traffic, including incentivized vessel speed reductions, have been successful at reducing vessel speeds. However, these programs are currently limited to a few geographic locations and the programs may only reach a small percentage of vessels traveling in a region (Freedman et al., 2017). Additionally, these programs require continued financial support to be successful.

Mandatory speed reductions were found to achieve high compliance when they were implemented and enforced on the East Coast (Silber et al., 2014). This research suggests that implementing mandatory speed restrictions in areas of high risk identified using the best available science will reduce the risk of lethal vessel strikes for baleen whales. Slower vessel speeds also have the added benefit of reducing vessel air pollution. For example, Khan et al. (2012) found that ships traveling at slower speeds reduced their emission of air pollutants by approximately 70%. Slower vessel speeds can also reduce vessel noise. For example, noise was reduced during a vessel speed reduction program in the Santa Barbara Channel (ZoBell et al., 2021) and a vessel slowdown trial in the Salish Sea (Joy et al., 2019). The noise reduction in the Salish Sea was predicted to reduce lost foraging time for Southern Resident killer whales (Joy et al., 2019) and suggests that management efforts to reduce vessel noise will increase the probability of Southern Resident killer whale foraging (Williams et al., 2021).

## **Conclusions**

We have reason to celebrate conservation successes for some marine mammal species in United States waters. An excellent example of a conservation success is the removal of the Eastern Pacific stock of gray whales (*Eschrichtius robustus*) from the Endangered Species List in 1994. Certain populations of humpback whales provide a more recent example of a conservation success. In 2016, NOAA Fisheries found that many populations of humpback whales (*Megaptera novaeangliae*) that feed in United States waters no longer warrant listing under the Endangered Species Act (although it is important to note that some populations, including the Central American and Mexico populations that feed on the United States West Coast, remain Endangered and Threatened). These baleen whale conservation successes can be attributed to the international ban of commercial whaling and strong protections by the United State Endangered Species Act and Marine Mammal Protection Act. Technological innovations have also contributed to conservation successes. For example, acoustic pingers have been successfully used to reduce bycatch of harbor porpoises (*Phocoena phocoena*) (Kraus et al.,

1997; Gearin et al., 2000), common dolphins (*Delphinus delphis*) (Barlow and Cameron, 2003; Carretta and Barlow, 2011), and beaked whales (Carretta et al., 2008).

These examples show that having the right commitment and policies in place can effectively recover struggling populations. Several species of marine mammals (e.g., North Atlantic right whales, North Pacific right whales, Central American and Mexico populations of humpback whales, Rice's whale, and Southern Resident killer whales) require dedicated conservation efforts to ensure their long-term survival. The bills H.R. 6785 and H.R. 6987 will help to address the lethal and sub-lethal effects of human activities on these species.

The Right Whale Coexistence Act of 2022 (H.R. 6785) provides the financial resources needed to support projects that develop innovative solutions within and across industries (e.g., commercial and recreational fishing, shipping) to reduce the lethal and sub-lethal effects of human activities on North Atlantic right whales. This bill enables the conservation of North Atlantic right whales and the success of ocean industries by promoting projects that support cooperation with multiple stakeholders from foreign governments to affected local communities and industries.

The bill, H.R. 6987, will help to reduce lethal and sub-lethal effects of human activities on marine mammals by increasing our understanding of ocean noise, exploring possibilities for reducing noise from vessels, and providing financial assistance to programs that have the potential to reduce vessel impacts on marine mammals. This bill develops five important initiatives: 1) monitoring ocean soundscapes; 2) providing grants to seaports to reduce impacts to marine mammals from vessel traffic; 3) developing a near real-time monitoring and mitigation program for large whales; 4) providing grants to support technology that reduces underwater noise from vessels; and 5) conducting a technology assessment for quieting United States government vessels. A previous draft of this bill contained an important provision for mandatory vessel speed restrictions in marine mammal habitat. The science supports the need for this provision in the bill.

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