

Written Testimony of

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Thank you Subcommittee Chairman Bentz, Subcommittee Vice Chair Kiggans, and Subcommittee Ranking Member Huffman for inviting me to testify at this hearing. I am the Associate Vice President for Ocean Conservation Science 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, public engagement and education, and effective advocacy for a vital and vibrant ocean. We conduct research that advances animal and ocean health, promotes responsible ocean use, and contributes to developing science-based solutions to ocean conservation challenges.

I have been using statistical models to address such conservation challenges for more than 25 years. My research focuses primarily on developing cetacean-habitat models and using predictions from these models to reduce 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 human activities to whales (i.e., vessel strikes, entanglements, and chronic noise), and estimating species diversity to guide designation of marine protected areas. I served as a guest editor for a research topic in *Frontiers in Marine Science* about the impacts of shipping on marine fauna. I also serve as an invited member on the International Council for the Exploration of the Sea's (ICES) Working Group on Shipping Impacts in the Marine Environment. Finally, I have been an invited expert at a workshop on the Identification of Important Marine Mammal Areas in the North West Atlantic Ocean Region hosted by the IUCN Marine Mammal Protected Areas Task Force and my research has been presented at a workshop on The Future of Shipping at the Biodiversity and Climate Nexus hosted by the World Maritime University.

The New England Aquarium has been extensively studying North Atlantic right whales (NARW; *Eubalaena glacialis*) for more than 40 years. We curate the photo-identification catalog for NARW and use the catalog to monitor human impacts to individuals, including entanglements and vessel strikes. We also conduct analyses to assess risk from vessel strikes; facilitate communication across the maritime industry to reduce vessel strikes; collaborate with the fishing community to reduce entanglements; collect the data and conduct analyses needed to understand and mitigate the potential impacts of offshore wind energy development; and work with lawmakers locally, nationally, and internationally to develop science-based protections for NARW.

The New England Aquarium commends the National Oceanic and Atmospheric Administration (NOAA) for reviewing the 2008 North Atlantic Right Whale Vessel Strike Reduction Rule (hereafter, 2008 Rule; NOAA, 2020). This review found that the 2008 Rule required revision to

fulfill NOAA's mandates under the Endangered Species Act and Marine Mammal Protection Act to protect the endangered NARW. On August 1, 2022, NOAA proposed revisions to the 2008 Rule (hereafter, Proposed Rule; NOAA, 2022) that are necessary to further reduce the likelihood of mortalities and serious injuries to NARW from vessel strikes. It has been more than 22 months since NOAA proposed the revisions and the Final Rule has yet to be released.

On June 6, 2023, I testified on behalf of the New England Aquarium before this subcommittee at a hearing titled "*Examining the impacts of the National Oceanic and Atmospheric Administration's proposed changes to the North Atlantic Right Whale Vessel Strike Reduction Rule.*" My testimony highlighted the scientific research that shows that the changes in the Proposed Rule are an essential component of preventing the extinction of the critically endangered NARW. In that hearing, I noted that the changes in the Proposed Rule were needed as immediately as possible because the species cannot afford to lose even one individual to human-caused mortality. The events of the intervening year have increased the urgency of implementing these changes. Specifically, at least three NARW were killed by vessels since the beginning of 2024. This number of deaths is more than four times the number estimated to be sustainable by the Marine Mammal Protection Act—a Potential Biological Removal of only 0.7—for an estimated population of 356 individuals. These deaths show that the 2008 Rule does not adequately protect NARW from vessel strikes. NOAA's proposed improvements to the 2008 Rule would help curb the current trajectory towards NARW species extinction.

In the hearing today, I will address H.R. 8704. The bill would have devastating consequences for NARW because it delays NOAA's ability to implement its proposed protections from vessel strikes through December 31, 2030. Protecting whales through measures known to be effective, such as speed restrictions, and funding the development of other approaches, including technology, to reduce vessel strike risk are not mutually exclusive: it is critical to ensure NARW survive long enough for the approaches in H.R. 8704 to be developed, assessed, and carried out. Scientific evaluation of the changes in the Proposed Rule shows that these changes would contribute to NARW survival by reducing the risk of vessel strikes, especially during particularly vulnerable times, like calving season, which occurs annually from November through April. While the Proposed Rule focuses on NARW, my colleagues and I published a paper in the peer-reviewed journal, *Biological Conservation* (*Estimating reductions in the risk of vessels striking whales achieved by management strategies*, Redfern et al., 2024), that shows that the Seasonal Speed Zones in the Proposed Rule will protect humpback (*Megaptera novaeangliae*), fin (*Balaenoptera physalus*), and sei (*Balaenoptera borealis*) whales, in addition to protecting NARW, from vessel strikes.

New England Aquarium scientists and our other experts are committed to working on the development of technological and other approaches to reduce the risk of vessel strikes. For example, we participate in government-convened technology workshops as invited scientific experts and are starting to use our expertise to design studies that can rigorously evaluate proposed technological solutions (e.g., thermal imaging cameras). Evaluations of technological and other approaches are needed to quantify the risk reduction that they can achieve, particularly in comparison to the risk reduction realized through known methods, such as speed restrictions and vessel routing changes. These evaluations will show whether these approaches can be used to replace, rather than supplement, vessel speed restrictions.

Ongoing delay in releasing the critically important Proposed Rule would put NARW at continued risk of death and serious injury from vessel strikes. NARW must survive long enough to benefit from the approaches for coexistence that would be funded in H.R. 8704, including technology and enhanced awareness. While these approaches are developed, assessed, and carried out, we must implement measures known to reduce the risk of vessel strike, such as those included in the Proposed Rule that was released nearly two years ago.

To support this position, this testimony provides additional details on the following:

- 1) Implications for the survival of the NARW species if we do not take action to reduce vessel strikes;
- 2) NARW deaths caused by vessel strikes so far in 2024; and
- 3) The scientific evidence that supports the Proposed Rule.

Implications of vessel strikes for the survival of the NARW species

The NARW is one of the most endangered large whale species in the world. The NARW has been protected from hunting since 1935 and experienced a slow, but steady, recovery until 2011. In particular, the recent estimates of the number of NARW (i.e., the population size estimate) grew from 261 (+4/-2) in 1990 to a high of 481 individuals (+4/-3) in 2011. Over the last decade, the number of NARW steadily declined from the high in 2011 to 356 individuals (+7/- 10) in 2022 (Linden, 2023; Pettis and Hamilton, 2024). The current population size estimate is one of the lowest in the past 20 years (Linden, 2023; Pettis and Hamilton, 2024). Additionally, the number of reproductive NARW females has declined and Reed et al. (2022) estimated that fewer than 70 were alive in 2018. The species recovery has been limited by lethal and sub-lethal effects of entanglements and vessel strikes (Corkeron et al., 2018; Sharp et al., 2019; Pirotta et al., 2023). However, population viability analysis shows that the current trajectory towards extinction for NARW can be reversed if the risk of entanglement and vessel strikes are reduced (Runge et al., 2023).

The “take” of a NARW is generally prohibited under both the U.S. Endangered Species Act (ESA) and the U.S. Marine Mammal Protection Act (16 U.S.C. 1532(19); 16 U.S.C. 1362(13)). The Marine Mammal Protection Act defines the Potential Biological Removal (PBR) from a marine mammal stock as the maximum number of animals, not including natural mortalities, that may be removed while allowing the stock to reach or maintain its optimum sustainable population. When I testified last year, I was asked about natural mortality in NARW. Sharp et al. (2019) reviewed 70 NARW mortalities documented between 2003 and 2018 from Florida, USA, to the Gulf of St. Lawrence, Canada. The cases included 30 adults, 14 juveniles, 10 calves, and 16 whales of unknown age. A cause of death was determined in 43 cases: 38 (88.4%) of these deaths were caused by humans, including 22 (57.9%) from entanglement and 16 (42.1%) from vessel strike. No natural mortalities were observed in adult or juvenile NARW. Natural mortalities were only found in five calf deaths. The primary sources of natural mortality in calves are perinatal complications and malnutrition due to either presumed maternal abandonment or developmental abnormalities. There was one necropsy report that concluded that a calf death was caused by shark predation. This predation death is one of four shark predation case studies presented by Taylor et al. (2013) using necropsy and aerial survey data collected between 1994

and 2011. The other three cases presented by Taylor et al. (2013) represent documentation of shark bites on a living calf, a calf that died from an interaction between shark predation and entanglement, and a two-year-old whale that experienced shark predation while severely entangled. The research on NARW mortality that spans more than two decades shows that human-caused mortalities are driving NARW toward extinction.

The PBR for NARW defined by the Marine Mammal Protection Act is 0.7 (Hayes et al., 2022) and shows that the survival of every individual matters and that even one human-caused mortality puts the species at risk of extinction. There is a long history of NARW vessel strikes (see Figure 1 in the Supplement). The New England Aquarium collates information on NARW mortalities and injuries from vessel strikes as curators of the North Atlantic Right Whale Consortium's photo-identification catalog (<https://rwcatalog.neaq.org/#>). We provide this information in annual reports to NOAA (<https://www.narwc.org/narw-catalog-reports.html>) and in the annual report card of the North Atlantic Right Whale Consortium (<https://darchive.mblwhoilibrary.org/browse/title?scope=3afd3800-5620-59b9-8b77-fc901b0c0fec>). From 1972 through June 2024, a total of 124 cases with blunt trauma or external injuries (i.e., propeller cuts or gashes) from vessel strikes have been documented in U.S. and Canadian waters (Moore et al., 2004; Sharp et al., 2019; NOAA, 2020; NARWC, 2023; NOAA, 2023b). The evidence for these strikes include observed deaths (determined by the presence of deep propeller cuts that occurred pre-mortem and/or examining a carcass and finding evidence of pre-mortem blunt trauma) and sightings of living whales with cuts or gashes that are categorized as deep, shallow, or superficial. Pirota et al. (2023) found that sub-lethal vessel strikes associated with deep and shallow wounds decreased a NARW's chance of survival. These vessel strikes are part of an Unusual Mortality Event (UME) for NARW. NOAA declared an UME because a particularly high number of deaths have been observed from Florida, U.S., to the Gulf of St. Lawrence, Canada, since 2017 (NOAA, 2023b).

The life history of every individual NARW that has been photographed is tracked in the North Atlantic Right Whale Catalog (<https://rwcatalog.neaq.org/#>). These life history data demonstrate the consequences of vessel strikes on the NARW population and show how the loss of each of these whales, particularly females, is compounded by the loss of their reproductive potential. Female NARW can give birth to at least nine calves in their lifetime (Hamilton and Knowlton, 2021). For example, one whale, Wart, has given birth to seven calves since 1982 and is responsible for at least 31 whales being added to the population so far. However, Wart's family has experienced 11 vessel strikes, including the death of the one-year-old calf that occurred this year (see details below). Wart's contribution to the NARW population emphasizes the important effect that a single reproductive female can have on this small population and the negative impacts of vessel strikes. Females and calves are particularly vulnerable to vessel strikes because they spend >70% of their time resting at or just below the surface (Cusano et al., 2019).

NARW deaths caused by vessel strikes so far in 2024

Three NARW deaths caused by vessel strikes have been documented this year, all during calving season. This number of deaths is more than four times the number of deaths estimated to be sustainable by the Marine Mammal Protection Act—a Potential Biological Removal of only 0.7—for this population. The number of actual strikes is likely higher, since documented vessel

strikes represent the minimum number of strikes because not every death or injury is observed. Pace et al. (2021) showed that documented mortalities accounted for only 36% of all estimated NARW deaths between 1990 and 2017.

The details of these three deaths demonstrate the need for the changes in the Proposed Rule and what the loss of these individuals, particularly females, means to the population as a whole:

- 1. February 2024, offshore of Georgia, one-year-old female calf of Catalog #4340 (Pilgrim):** On February 13, 2024, the carcass of this one-year-old female calf was seen floating offshore of Savannah, Georgia. The carcass was towed ashore for a necropsy. The multi-organization necropsy led by the University of North Carolina, Wilmington, showed evidence of blunt force trauma consistent with a vessel strike prior to death. Full necropsy details are pending and this strike is considered an active NOAA Office of Law Enforcement investigation. This whale's family has experienced at least 10 other vessel strikes, including one that was killed and one that was seriously injured due to a strike by a 54-foot sport-fishing vessel. The seriously injured whale has not been sighted again as of submission of this testimony.
- 2. January to March 2024, offshore of South Carolina and Georgia, calf of Catalog #1612 (Juno):** This calf was the first documented calf of the 2024 season and was seen off Edisto, South Carolina, with propeller cuts across its head (see Figure 2 in the Supplement) in early January 2024. NOAA Fisheries biologists reviewed the case and determined that it met the criteria of a serious injury, meaning the calf was likely to die as a result of the injuries. NOAA also noted that the injuries could impact this calf's ability to nurse successfully. The calf was closely monitored through January and February. On March 3, the calf was found dead on the shore of Cumberland Island, Georgia. The expert (Paul Kamen, a forensic naval architect) that reviewed the images of the calf's propeller wounds estimated that the vessel that struck and ultimately killed this calf was likely between 35-57 feet in length (see Figure 3 in the Supplement).
- 3. March 2024, offshore of Virginia, adult female Catalog #1950:** This NARW was at least 35 years old and her carcass was found floating 50 miles offshore east of Back Bay National Wildlife Refuge, Virginia, on March 30, 2024 (see Figure 4 in the Supplement). Months before this strike, this whale had given birth to her sixth calf. Although several aerial survey teams searched the area, her calf was not spotted. A nursing calf this young is not expected to survive without its mother. Preliminary necropsy results of #1950, provided by the Virginia Aquarium and Marine Science Center and others, found catastrophic injuries consistent with blunt force trauma from a vessel strike, including dislocation of the spine and fractures to all vertebrae in her lower back. Before the strike, she had been seen healthy and with her calf on February 16, off the coast of Florida.

These three incidents underscore the need to make speed restrictions mandatory for vessels smaller than 65 feet in length; the particular vulnerabilities during calving season; and the ripple effects of losing female whales from the population. In addition, the lethal and sub-lethal effects of vessel strikes may be delayed, as in the case of Juno's calf (#2 above) and as has been previously documented in strikes to other whales (e.g., Glass et al., 2010). Vessel strikes can also directly harm calves that are dependent on their mother, as in the case of calf of Catalog #1950 (#3 above).

Scientific support for NOAA's Proposed Rule

In 2022, NOAA proposed changes to the 2008 Rule (NOAA, 2022) to further reduce the likelihood of mortalities and serious injuries to NARW from vessel strikes. The proposed changes for reducing the risk of vessel strikes to the statutorily protected NARW are necessary and based on the best available science. Specifically, Garrison et al. (2022) used the most up-to-date data available about NARW distributions and vessel traffic patterns to develop an encounter risk model for the U.S. East Coast. The methodology used by Garrison et al. (2022) has been used on the U.S. East and West Coasts (e.g., Martin et al., 2016; Rockwood et al., 2017; Crum et al., 2019; Rockwood et al., 2020). Mortality estimates from encounter risk models developed for fin, humpback, and blue whales have been included in NOAA's marine mammal stock assessment reports (Carretta et al., 2022). Garrison et al. (2022) used the encounter risk model to estimate the reduction in NARW mortalities that could be achieved by implementing speed restrictions in broad areas along the U.S. East Coast. Their broad areas were defined as the areas of highest risk to NARW. They found an approximately 28% reduction in NARW vessel strike risk when 10 knot speed restrictions were implemented in their broad areas.

In January 2024, I published a study (Redfern et al., 2024) with scientists from the Anderson Cabot Center for Ocean Life at the New England Aquarium, NOAA, academia, and other organizations in the peer-reviewed journal, *Biological Conservation*, that supports the findings of Garrison et al. (2022). We developed a metric for estimating the reduction in risk achieved by management strategies that is easy to use and understand. The metric estimates risk reduction using the relationship between vessel speed and the probability that a strike is lethal, the distance a vessel travels, and whale habitat use. This metric does not include estimates of the time species spend in the strike zone; consequently, no assumptions are made about the size of a vessel's draft. In our study, we used the metric to assess potential vessel strike risk reductions for several species of large whales on the U.S. East Coast, including North Atlantic right, humpback, fin, and sei whales. We found that a 10-knot speed restriction, rather than a 12- or 14-knot speed restriction, was necessary for reducing risk. We also found that a 10-knot speed restriction applied in broad areas defined by core whale habitat reduces the risk of a lethal vessel strike for these species. The core whale habitat defined in our study was similar to the Seasonal Speed Zones in the Proposed Rule and supports the study by Garrison et al. (2022) that shows that a 10-knot speed restriction in the Seasonal Speed Zones reduces vessel strike risk for NARW. While the core whale habitat used in our study was primarily defined to protect NARW, our results suggest that these areas also protect humpback, fin, and sei whales.

Below we address three of the four specific changes in the Proposed Rule based on the New England Aquarium's longstanding expertise and study of the species:

- 1) Expanding the spatial and temporal extent of Seasonal Speed Zones;
- 2) Expanding the vessels subject to the speed restrictions to most vessels greater than or equal to 35 feet (10.7 m) and less than 65 feet (19.8 m); and
- 3) Implementing mandatory speed restrictions in Dynamic Speed Zones, which are established when whales are detected outside of Seasonal Speed Zones.

The fourth proposed change updates the safety deviation provisions in the 2008 Rule. We do not have expertise in this area; consequently, we do not address this change.

Expanding the Seasonal Speed Zones

The New England Aquarium reviewed the proposed Seasonal Speed Zones (SSZ) and associated best available science, which supports the expansion of the size of the SSZ and the length of time the SSZ are active. We support NOAA's approach to determining whether, where, and for how long speed restrictions should be in place, which recognizes responsible use of the ocean by establishing the smallest spatial and temporal footprint needed to protect the species, while allowing for vessel activity. Vessel speed restrictions have been used to mitigate vessel-strike risk because studies (Vanderlaan and Taggart, 2007; Conn and Silber, 2013) have shown that the probability of a lethal vessel strike increases at higher vessel speeds. The SSZ, which are larger and active longer than the Seasonal Management Areas established in the 2008 Rule, address the shortcomings identified in the 2008 Rule's Seasonal Management Areas.

Analyses of the proximity of NARW vessel strikes to Seasonal Management Areas (Laist et al., 2014) and analyses comparing the number of NARW struck before and after management measures were implemented (NOAA, 2020) suggest that the Seasonal Management Areas have helped to reduce vessel strikes of NARW. However, multiple studies and continued vessel strikes of NARW since 2008 demonstrate that these areas fall short of achieving the risk reduction necessary to prevent extinction of NARW. In particular, multiple studies have shown that these Seasonal Management Areas are insufficient in both space and time (Schick et al., 2009; Laist et al., 2014; van der Hoop et al., 2015). The size of the Seasonal Management Areas was likely insufficient when the 2008 Rule was implemented because nearly one-third of detected NARW vessel strike mortalities occurred outside of the managed space but within managed timeframes (van der Hoop et al., 2015).

U.S. East Coast waters represent year-round NARW habitat (Davis et al., 2017). The spatial and temporal expansion of the SSZ ensure that they are better aligned with NARW habitat, cover areas where previous vessel strike mortalities have been detected, and buffer against climate-driven changes in NARW habitat. Climate change has caused NARW distributions to shift to new areas and has changed the time periods over which NARW use different areas (Record et al., 2019; Pendleton et al., 2022). For example, NARW have returned to historically important areas, such as southern New England shelf waters. Southern New England shelf waters were formerly a whaling ground and these waters have reemerged as an important NARW habitat (O'Brien et al., 2022). Additionally, studies have shown that climate change has resulted in the peak usage of Cape Cod Bay by NARW occurring later in the season (Pendleton et al., 2022) and in a higher abundance of NARW in Cape Cod Bay (Ganley et al., 2022). The expanded SSZ help ensure that vessel strike risk is addressed in these areas with documented, climate-driven changes in NARW habitat use.

Additionally, the Proposed Rule will benefit other baleen whale species (Redfern et al., 2024). For example, NOAA declared an Unusual Mortality Event for humpback whales because of an elevated number of humpback whale mortalities along the U.S. East Coast from Maine through Florida since 2016 (NOAA, 2023a). This Unusual Mortality Event remains active as of June 2024. A total of 224 humpback whale mortality cases through June 13, 2024 are included in the

UME with 85% of these cases (205 cases) detected between Massachusetts and North Carolina. Determination of cause of death for recent cases is ongoing. However, of the 90 carcasses examined, 40% were attributed to vessel strikes or entanglements (NOAA, 2023a). The Proposed Rule establishes a SSZ in waters off these states, which would reduce the risk of a lethal vessel strike for humpback whales.

Expanding the vessels subject to the speed restriction

The New England Aquarium supports the Proposed Rule's expansion of the vessels subject to the speed restriction to most vessels greater than or equal to 35 feet (10.7 m) and less than 65 feet (19.8 m). The 2008 Rule focused on reducing risk in U.S. waters from vessels over 65 feet, which were the vessel sizes thought to be the main threat to NARW at that time. However, at least five vessel strikes in U.S. waters since 2008 (including three after 2020) that resulted in death or serious injury involved vessels smaller than 65 feet, which are not subject to the mandatory speed restrictions in the 2008 Rule. Specifically, a 46-foot vessel struck a NARW off Georgia in 2012, resulting in a serious injury (NOAA, 2020). Additionally, a 39-foot vessel struck a NARW off Massachusetts in 2014, resulting in propeller cuts and serious injury (NOAA, 2020). These individual NARW could not be identified because they were not photographed; consequently, the ultimate outcome of these strikes are not known. In 2021, a reproductive female NARW, Infinity, was seriously injured and her calf was killed when they were struck by a 54-foot vessel. Infinity was last sighted four days after the strike with deep propeller wounds to her side and has not been sighted again as of submission of this testimony (NOAA, 2023b). Finally, a months-old calf suffered significant propeller wounds to its head in January 2024 and died from those injuries in March. Forensic analyses indicate that the vessel responsible for the strike was between 35 and 57 feet in length. Additional details about this calf's death are provided above.

Mandatory speed restrictions in Dynamic Speed Zones

Static speed management is not sufficient as a sole strategy to reduce vessel strike risk because of variability in species distributions. Consequently, it is necessary to include Dynamic Speed Zones in the Proposed Rule and for speed restrictions in these Dynamic Speed Zones to be mandatory. Over a decade of research on the U.S. East and West Coasts shows low compliance with voluntary speed restrictions (e.g., McKenna et al., 2012; Silber et al., 2012; Freedman et al., 2017; Morten et al., 2022). Mandatory speed restrictions were found to achieve high compliance when they were implemented and enforced on the U.S. East Coast (Silber et al., 2014). This research suggests that implementing and enforcing mandatory speed restrictions in areas of high risk identified using the best available science will reduce the risk of lethal vessel strikes for NARW. To ensure that the Dynamic Speed Zones provide the protection needed to reduce vessel strike risk requires the continued use of both visual sightings and acoustic detections. Both monitoring methods require sufficient effort (e.g., surveillance flights and acoustic monitoring stations) to ensure that NARW are detected and Dynamic Speed Zones are established.

Conclusion

On behalf of the New England Aquarium, this testimony is grounded in the best available science, consistent with the U.S. statutory laws that protect North Atlantic right whales (NARW), and necessary given the extinction trajectory of the NARW species. H.R. 8704 would

have devastating consequences for NARW because it delays NOAA's ability to implement its proposed protections from vessel strikes through December 31, 2030. NOAA's Proposed Rule (NOAA, 2022) is necessary to further reduce the likelihood of mortalities and serious injuries to NARW from vessel strikes. It has been more than 22 months since NOAA released the Proposed Rule on August 1, 2022, and the Final Rule has yet to be released. Further delay in releasing the important protections would put the critically endangered NARW at continued risk of death and serious injury from vessel strikes.

Scientific evaluation of the changes in the Proposed Rule show that these changes contribute to NARW survival by reducing the risk of vessel strikes. Specifically, expanding the Seasonal Speed Zones in space and time is necessary to ensure that these zones are better aligned with NARW habitat (e.g., Davis et al., 2017), cover areas where previous vessel strike mortalities have been detected (e.g., van der Hoop et al., 2015), and buffer against climate-driven changes in NARW habitat (e.g., O'Brien et al., 2022). Expanding the speed restriction to most vessels greater than or equal to 35 feet (10.7 m) and less than 65 feet (19.8 m) is necessary because at least five documented vessel strikes in U.S. waters since 2008 (including three after 2020) that resulted in death or serious injury involved vessels smaller than 65 feet (NOAA, 2020; 2023b). Implementing mandatory Dynamic Speed Zones is necessary because of variability in species distributions and over a decade of research on the U.S. East and West Coasts shows low cooperation with voluntary speed restrictions (e.g., McKenna et al., 2012; Silber et al., 2012; Freedman et al., 2017; Morten et al., 2022).

Protecting whales through measures known to be effective, such as speed restrictions, and funding the development of other approaches, including technology, to reduce vessel strike risk are not mutually exclusive. However, NARW must survive long enough to benefit from the approaches for coexistence that would be funded in H.R. 8704, including technology and enhanced awareness. While these approaches are developed, assessed, and carried out, we must implement measures known to reduce the risk of vessel strike to NARW, such as those included in the Proposed Rule that was released nearly two years ago. Recent research shows that the Seasonal Speed Zones in the Proposed Rule will also protect humpback, fin, and sei whales from vessel strikes. A long history of research shows that the 2008 Rule is not sufficient to protect NARW. Research also shows that the changes in the Proposed Rule reduce the risk of vessel strikes for NARW, especially during particularly vulnerable times, like calving season, which occurs from November through April. The deaths of three NARW that were caused by vessel strikes so far this year have increased the urgency of implementing the changes in the Proposed Rule to help curb the current trajectory towards the NARW species extinction. The implications for the survival of the NARW species are clear: action is needed now to reduce vessel strike risk through measures known to be effective, such as speed restrictions.

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Supplement to Written Testimony of

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Subcommittee on Water, Wildlife, and Fisheries
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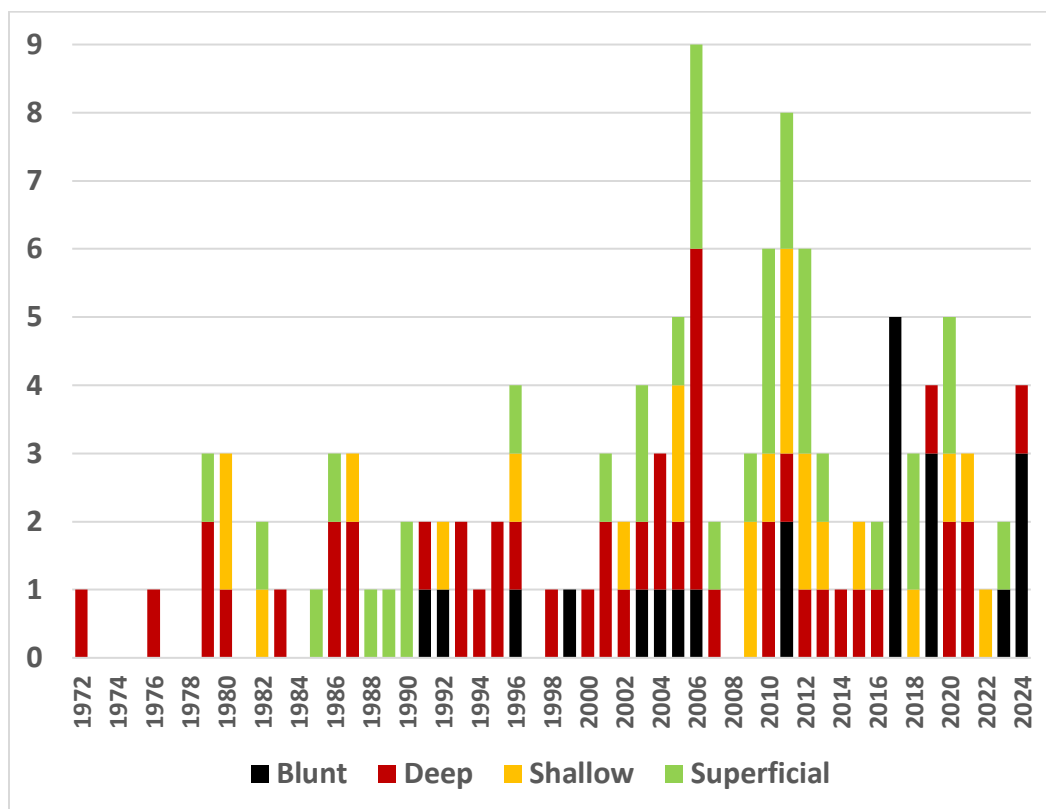


Figure 1. Vessel strikes of North Atlantic right whales since 1972, including both photographed and unphotographed cases as reported in Knowlton et al (2001), Moore et al. (2004), Sharp et al. (2019), NOAA (2020), recent North Atlantic Right Whale Consortium report cards, and the ongoing Unusual Mortality Event. The 124 cases represented in this graph include 46 dead whales and 5 whales that are presumed dead from their injuries. These cases also include two females who were pregnant at the time of the strike, one female that was struck as a calf and died when her injuries reopened during her first pregnancy 14 years later (Glass et al., 2010), and two females that had dependent calves when struck. The dependent calves were too young to survive without their mother and are included in this graph as blunt trauma mortalities. Studies have shown that whales that survive a strike, but experience deep or shallow injuries, suffer negative effects on health, reproduction, and survival (Pirodda et al. 2023). These effects are not captured in the graph, but provide further evidence of the necessity of protecting North Atlantic right whales from vessel strikes.



Figure 2. The 2024 calf of Juno seen with vessel strike injuries on January 3, 2024 off Edisto, SC. *Credit: Forever Hooked Charters of South Carolina.* See NOAA Updates page for details: [https://www.fisheries.noaa.gov/national/endangered-species-conservation/north-atlantic-right-whale-updates#2024-calf-of-juno-\(right-whale-1612\)](https://www.fisheries.noaa.gov/national/endangered-species-conservation/north-atlantic-right-whale-updates#2024-calf-of-juno-(right-whale-1612)).



Figure 3. Illustration of the estimated propeller diameter that produced the cuts observed on the 2024 calf of Juno (Catalog #1612). An estimate of the propeller diameter was obtained using estimated measurements of calf's head length and the lengths and spacing of the cuts. The estimated propeller diameter suggests that the vessel size was between 35 and 57 feet. *Credit: NOAA Fisheries, taken under NOAA permit #21371. Illustration created by forensic naval architect Paul Kamen.* See NOAA Updates page for details: [https://www.fisheries.noaa.gov/national/endangered-species-conservation/north-atlantic-right-whale-updates#2024-calf-of-juno-\(right-whale-1612\)](https://www.fisheries.noaa.gov/national/endangered-species-conservation/north-atlantic-right-whale-updates#2024-calf-of-juno-(right-whale-1612)).



Figure 4. The carcass of Catalog #1950, a female North Atlantic right whale that was at least 35 years old, was found floating 50 miles offshore east of Back Bay National Wildlife Refuge, Virginia, on March 30, 2024. *Credit: Clearwater Marine Aquarium Research Institute, taken under NOAA permit #24359. Aerial survey funded by United States Army Corps of Engineers.* See NOAA Updates page for details: [https://www.fisheries.noaa.gov/national/endangered-species-conservation/north-atlantic-right-whale-updates#2024-calf-of-juno-\(right-whale-1612](https://www.fisheries.noaa.gov/national/endangered-species-conservation/north-atlantic-right-whale-updates#2024-calf-of-juno-(right-whale-1612).