



MARINE MAMMAL COMMISSION

4 May 2022

Ms. Jennifer Anderson
Assistant Regional Administrator for Protected Resources
Greater Atlantic Regional Fisheries Office, National Marine Fisheries Service
Gloucester, Massachusetts

Dear Ms. Anderson:

The Marine Mammal Commission (the Commission) has reviewed the National Marine Fisheries Service's (NMFS) request for information (87 Fed. Reg. 6146) on the North Atlantic right whale (*Eubalaena glacialis*) for use in a 5-year review of the species' status under the Endangered Species Act (ESA) of 1973, as amended. The announcement requests information that has become available since the last North Atlantic right whale status review, conducted in 2017. The Commission herein responds by addressing how the listing criteria relate to the status of the North Atlantic right whale. In addition, the Commission, in the publications cited herein, points NMFS to a large number of relevant studies that have been published since the last 5-year review in 2017. Finally, in the appendix to this letter we list a number of recent and ongoing North Atlantic right whale studies that have been funded by the Commission.

As discussed below, and in the estimation of the Commission, the status review of the North Atlantic right whale should be straightforward—the species is in imminent danger of extinction and clearly warrants continued listing as 'endangered' under the ESA. Several factors spelled out in Section 4(a)(1) of the ESA are particularly germane to making an 'endangered species' determination for the North Atlantic right whale. Two anthropogenic factors, ship strikes and entanglement in fishing gear, are primarily responsible for the immediate extinction risk to this species (Corkeron et al. 2018, Kenney 2018, Sharp et al. 2019). Also, existing regulatory mechanisms are inadequate as they have been insufficient to prevent right whale mortality and serious injury from entanglement and ship strike. In addition, ocean warming has altered the prey field of North Atlantic right whales, which appears to have caused the population to shift its distribution northward and further into Canadian waters, causing greater spatio-temporal overlap with high densities of high-risk ship traffic and fishing gear, which in turn has led to an increase in the number of mortalities and serious injuries (Davis et al. 2017, Plourde et al. 2019, Record et al. 2019, Brennan et al. 2021, Sorochan et al. 2021). Finally, the Commission notes the potential threat posed by biotoxins (Fire et al 2021).

Extinction Risk and Factors Impeding Recovery

The status of the North Atlantic right whale has worsened since NMFS's last 5-year review in 2017. Based on an updated version of the multi-state, mark-recapture right whale population model developed by Richard Pace and colleagues (Pace et al. 2017), estimated population size plummeted from 425 at the start of 2017 to 338 individuals at the start of 2020, a decline of 21 percent in just three years (NEFSC 2021). Projecting this decline, roughly 7.5 percent per year, to the start of 2022, suggests that the number of North Atlantic right whales is now less than 290 individuals, and that we have lost nearly one-third of the population since the last 5-year review.

This rate of decline would be a matter of grave concern for any marine mammal species, but it is especially so for this long-lived, slowly reproducing species with an already severely depleted population. Due to the continued high rate of human-caused mortality and the effects of ocean warming, the North Atlantic right whale has a high risk of extinction (Meyer-Gutbrod et al. 2021). Therefore, the Commission anticipates that NMFS's review will confirm its 'endangered' status under the ESA.

NMFS and independent scientists have convincingly demonstrated that the species' dire status is due almost entirely to the impacts of entanglements in fishing gear and ship strikes on the population's mortality and reproductive rates (van der Hoop et al. 2013, Corkeron et al. 2018, Pace et al. 2017). North Atlantic right whales are being killed and seriously injured due to these human causes at an unquestionably unsustainable rate. An updated version of the Pace et al. (2017) population model, which includes data through 2019, estimates that an average of 33 whales died or were seriously injured every year during 2017-2019 (NEFSC 2021). The per-capita mortality rate increased by over three-fold from a mean rate of 0.025 during 1990-2013 to 0.082 from 2017-2019. The per-capita birth rate declined by over 80 percent from a mean of 0.063 during 2001-2009 to just 0.010 during 2017-2019. The increase in the mortality rate was attributed by the model primarily to an increase in the estimated number of entanglement deaths, although ship-strike deaths still contributed significantly to the total number of human-caused deaths. The decrease in the birth rate likely was due to a variety of factors, including the sub-lethal effects of entanglement on reproductive females and changes in prey availability (van der Hoop et al. 2017, Meyer-Gutbrod and Greene 2018, Plourde et al. 2019, Sharp et al. 2019, Christiansen et al. 2020, Brennan et al. 2021, Gutbrod et al. 2021, Moore et al. 2021, Sorochan et al. 2021, Stewart et al. 2021). Furthermore, the updated version of the Pace et al. (2017) model (NEFSC 2021) indicates that the rate of population decline has accelerated since 2010-2011. Based on this model, if this trend continues, the population size likely will be less than 200 whales by the time of the next 5-year review in 2027. Significantly contributing to the declining trend is the low number and continued loss of reproductive females, the age-sex class most critical to recovery. The model estimates that the reproductive female cohort numbered only 68 animals at the start of 2020. At the current rate of loss, there could be fewer than 40 reproductive females in the population five years from now.

Inadequacy of Existing Regulatory Mechanisms

Fishing regulations requiring the use of weak links were implemented in 1997; the establishment of seasonal and dynamic area management, in 2002; and seasonal closures of gillnet fisheries in the Southeast U.S., expanded use of weak links, and the use of sinking groundline, in 2007. Although the North Atlantic right whale population increased from 1990 to 2010 (Pace et al. 2017), it did so at a rate (2.8 percent per year on average) far below those achieved by populations of southern right whales (*E. australis*) that had also been severely depleted by whaling (Corkeron et al. 2018, Harcourt et al. 2019). In addition, an analysis of entanglement data from 1999 to 2009 found no evidence that mitigation measures had decreased the rates of entanglement or associated mortality and serious injury (MSI); in fact entanglement rates increased slightly (Pace et al. 2013). Moreover, in every year from 1995 to 2020, the average rate of observed MSI, based on data in five-year increments, was greater, typically several times greater, than the population's potential biological removal (PBR) level. This outcome fails to meet the Marine Mammal Protection Act's directive that NMFS develop and implement a take reduction plan to reduce, within six months of its

implementation, the mortality and serious injury of North Atlantic right whales (a strategic stock) to below PBR. That NMFS's efforts to meet this MMPA-mandated goal have fallen short each year for more than 25 years underscores that past and ongoing regulatory mechanisms have been and remain inadequate to address the risk to North Atlantic right whales posed by entanglement in fishing gear. The precipitous decline in right whale numbers over the last year shows without a doubt that the current measures are inadequate.

In 2008, to mitigate the risk of vessel strikes to North Atlantic right whales along the U.S. East Coast, NMFS implemented a vessel-speed rule. This rule requires vessels 65 feet and longer to travel at 10 knots or slower when in any of ten seasonal management areas (SMAs) designated between Florida and Massachusetts. NMFS also implemented a voluntary dynamic management area (DMA) program that triggers slow-down periods of 15 days during which vessels equal to or greater than 65 feet in length must slow to 10 knots or less whenever a right-whale aggregation is detected. In June 2020, NMFS released an analysis of the efficacy of the vessel speed rule (NMFS 2020). The Commission provided comments and recommendations on that analysis in a 26 March 2021 letter ([linked here](#) and enclosed). The report documented a decline in right whale vessel-strike deaths from ten whales in the 10 years immediately before implementation to four whales in the ten years immediately following implementation. While the rate of known vessel-strike deaths decreased following implementation of the rule, this may not represent a truly declining mortality rate; the large majority (64 percent) of right whale deaths are undetected or unreported, and the number of known deaths is a very poor predictor of total deaths (Pace et al. 2021). Moreover, the report found that serious and non-serious injuries from vessel strikes have increased from 15 to 28 over the same period. The sub-lethal effects of vessel strikes and entanglements are still largely unknown, but are likely to have significant impacts on the health of individuals and potentially on the population's ability to recover (Pettis et al. 2017, Rolland et al. 2017, Christiansen et al. 2020, Moore et al. 2021). It is also clear that compliance with the voluntary slow-down guidelines in DMAs is far from adequate, particularly by ocean-going vessels in the Southeast U.S. (NMFS 2020). Vessels pose a considerable risk to right whales in this area, especially pregnant females migrating south and mothers with their newborn calves on the calving grounds. Thus, the vessel-strike mitigation measures appear to be only marginally effective, and are clearly inadequate to reduce vessel-strike mortality to sustainable levels.

Other Factors

Numerous studies conducted in the last decade have demonstrated the effects of ocean warming on marine mammals, including habitat and range shifts (Meyer-Gutbrod et al. 2021, Gulland et al. 2022). Since roughly 2010, the Gulf of Maine has experienced a globally significant level of warming (Seidov et al. 2021), which has resulted in changes in the abundance and distribution of North Atlantic right whales' primary prey, *Calanus finmarchicus* (Record et al. 2019, Brennan et al. 2021, Sorochan et al. 2021). Apparently in response, North Atlantic right whales have shifted their feeding-season distribution northward, and a substantial portion of the population now forages each summer where it had not historically, in the Gulf of St. Lawrence (Davis et al. 2017, Plourde et al. 2019, Record et al. 2019). That shift apparently put the whales at considerable risk from shipping and fishing gear in the Gulf of St. Lawrence (Brillant et al. 2017), and likely resulted in

27 confirmed deaths of right whales during 2017 and 2019 (Davies and Brillant 2019).¹ As well, the shift was associated with a decline in the condition of individual right whales (Rolland et al. 2016), the stalling of the pre-2010 population's upward population trajectory, the downturn and rapid decline in abundance after 2010 (Kraus et al. 2016, Pace et al. 2017), and a decline in the calving rate (Christiansen et al. 2020, Pettis et al. 2020). While Canada responded rapidly with multiple mitigation measures in the Gulf of St. Lawrence, which appear to have been successful, ongoing ocean warming could continue to drive North Atlantic right whales to seek new and better foraging grounds, where they could again encounter serious, unmitigated threats.

Although no North Atlantic right whale necropsy has identified toxins or infectious diseases as the cause of death, the sample sizes are small and there is no reason to believe that these whales would not be affected by these factors. A survey by Fire et al. (2021) found that 19 percent of marine mammals tested in New England coastal waters had been exposed to one or more toxins associated with harmful algal blooms. At least two studies found that North Atlantic right whales had been exposed to such toxins accumulated in their preferred prey, *Calanus finmarchicus* (Durbin et al. 2002, Doucette et al. 2006). No data have been published on the exposure of North Atlantic right whales to infectious diseases, yet these whales live in a habitat in which morbillivirus epidemics that kill other cetaceans occur regularly (Morris et al, 2015; Balmer et al 2018).

Newly Promulgated Regulatory Mechanisms for Fisheries Remain Inadequate

In August 2021, NMFS issued an amended Atlantic Large Whale Take Reduction Plan, referred to as the risk-reduction rule, intended to address the shortcomings of previous mitigation efforts and stop the accelerating decline of the population. The rule included the following mitigation measures for the Northeast lobster and Jonah crab fisheries:

- new and expanded time-area closures;
- increases in the minimum number of traps per trawl; and
- requirements for the use of weak line or line inserts.

In the Commission's view, however, these new mitigation measures are also likely to be inadequate to reduce adverse impacts on North Atlantic right whales from fisheries and therefore are unlikely to reduce the species' risk of extinction appreciably. The Commission's concerns with the risk-reduction rule are detailed in its letter of 1 March 2021 ([linked here](#) and enclosed) commenting on the draft rule. These included:

1. That the necessary risk-reduction target, which the mitigation measures were designed to achieve, was set much too low, indicating that those measures, even if fully effective, will not come close to reducing human-caused deaths and serious injuries to below PBR, and therefore will not provide reasonable assurance that the downward trend of the population will be reversed;

¹ The actual number may have been much higher due to the occurrence of cryptic mortalities.

2. Increasing the number of traps per trawl is intended to reduce the number of persistent buoy lines, but “trawling-up”, as it is called, is not a proven mechanism for reducing the number of buoy lines;
3. The number and placement of weak links are inadequate to ensure that all entangled right whales have a reasonable chance of breaking and shedding gear; and
4. The rule did not include direct, verifiable line-reduction measures, seasonal closures of all areas with high entanglement risk to right whales, the use of dynamic time-area closures such as those that have been used recently with great success in Canada, or a requirement to phase in “ropeless” or “buoyless” gear. The elimination of buoy lines in the water column is the one measure that could rapidly solve the problem of entanglement which, by itself and without any other threats, is serious enough to drive the species to extinction.

In summary, for the reasons described herein, the Commission urges NMFS to reaffirm the endangered status of the North Atlantic right whale under the ESA because, at a minimum, 1) the species is declining and considerably closer to extinction than in 2017, and 2) measures designed to mitigate the human-caused threats that jeopardize the species are inadequate.

Current Research

The references cited in this letter contain some of the most important findings to have emerged since the last 5-year review. In addition, the details of several Commission-funded projects relevant to North Atlantic right whales are provided in an Appendix to this letter. While many of these projects are in progress and findings have yet to be finalized, the Commission encourages NMFS to contact the principal investigators to learn more about the projects and any preliminary findings that may assist the agency in its 5-year review.

I hope this information will be helpful. Please contact me if you have questions.

Sincerely,



Peter O. Thomas, Ph.D.,
Executive Director

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MARINE MAMMAL COMMISSION

Appendix – Commission-funded projects with relevance to North Atlantic right whales. This list includes projects directly or indirectly focused on all *Enbalaena* spp., as technologies, research design, and findings may be relevant across species. A list and brief summary of projects funded by fiscal year is available on the Commission’s [website](#).

Principal Investigator	Affiliation	Project Title	Status	Output
Berchok, Catherine	Alaska Fisheries Science Center	Analysis of Existing Acoustic Data to Assess the Occurrence and Distribution of North Pacific Right Whales	Closed	Associated publications: 1) Wright et al. 2018 . Acoustic detection of North Pacific right whales in a high-traffic Aleutian Pass, 2009-2015. 2) Wright et al. 2019. Acoustic detection of the critically endangered North Pacific right whale in the northern Bering Sea - Wright - 2019 - Marine Mammal Science - Wiley Online Library
Glickson, Deb	National Academies of Science	Assessment of the Cumulative Effects of Anthropogenic Stressors on Marine Mammals	Closed	Report available at: Assessment of the Cumulative Effects of Anthropogenic Stressors on Marine Mammals National Academies
Rone, Brenda	Alaska Fisheries Science Center	North Pacific Right Whale Visual and Acoustic Survey in the Northwestern Gulf of Alaska	Closed	Associated publication: Abundance and distribution of cetaceans in the Gulf of Alaska SpringerLink

Crance, Jessica	Alaska Fisheries Science Center	Acoustic detection of North Pacific right whales combined with biophysical sampling using a Sairdrone	Closed	Report available at: Sairdrone-2017-MMC-Final-Report.pdf Associated publication: Song production by the North Pacific right whale, Eubalaena japonica: The Journal of the Acoustical Society of America: Vol 145, No 6 (scitation.org)
Werner, Tim	New England Aquarium	Rope-less fishing: Testing an innovative prototype for preventing whale entanglements	Closed	Final report available upon request to the Marine Mammal Commission.
Parks, Susan	Syracuse University	Southern right whales as a model system to investigate the vocal behavior of North Atlantic right whale mother-calf pairs	Closed	Associated publication: Animal-borne tags provide insights into the acoustic communication of southern right whales (Eubalaena australis) on the calving grounds: The Journal of the Acoustical Society of America: Vol 147, No 6 (scitation.org)
Siemann, Liese	Coonamesett Farm Foundation, Inc.	Development and testing of an inexpensive GPS radio buoy system for early notification of marine mammal entanglements	Closed	Final report available upon request to the Marine Mammal Commission.
Wilson, Robert	Greater Farallones Association	Reducing Whale Strikes through Industry Engagement	Closed	Final report available upon request to the Marine Mammal Commission.
Werner, Tim	New England Aquarium	New and Immediate research priorities to inform gear modification proposals for the 2019 North Atlantic Right Whale Take Reduction Team Meeting	In-progress	Final report pending completion of project.

Carver, Michael	Greater Farallones Association	Best Management Practices for Reducing Ship Strikes in the San Francisco Bay Region	Closed	Final report available upon request to the Marine Mammal Commission.
Knowlton, Amy	New England Aquarium Corporation	New England Aquarium: Evaluating the efficacy of using broad-scale ship speed restrictions in the U.S. East Coast Exclusive Economic Zone for reducing large whale mortalities	In-progress	Final report pending completion of project.
Redfern, Jessica	New England Aquarium Corporation	Evaluating the utility of Protected Species Observer data to address cetacean management and conservation	In-progress	Final report pending completion of project.
Cubaynes, Hannah	British Antarctic Survey	Whales from space: Designing a standardized workflow to annotate whales and confounding features in very high resolution satellite images to assist the development of automated whale detection systems	In-progress	Final report pending completion of project.
Johnson, Hansen	New England Aquarium	Advancing whale conservation and outreach with sustainable infrastructure for WhaleMap	In-progress	Final report pending completion of project.
Newsome, Seth	University of New Mexico	Migratory patterns and overwintering areas of the world's rarest whale, the North Pacific right whale (<i>Eubalaena japonica</i>)	In-progress	Final report pending completion of project.

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Sawicki, Kim	Sustainable Seas Technology, Inc.	Design for an International Virtual Fishing Gear Marking System to Reduce Whale Entanglements	In-progress	Final report pending completion of project.
Wells, Greg	National Marine Sanctuary Foundation	Preventing Whale Entanglements through Gear Innovations in the California Commercial Dungeness Crab Fishery	In-progress	Final report pending completion of project.