



# MARINE MAMMAL COMMISSION

17 October 2016

Ms. Julie Stewart, Director  
Species at Risk Program  
Ecosystem Management Branch  
Fisheries and Oceans Canada  
200 Kent Street  
Ottawa, ON K1A 0E6  
Canada

Dear Ms Stewart:

The Marine Mammal Commission (the Commission) has reviewed the “Proposed Action Plan for the North Atlantic Right Whale (*Eubalaena glacialis*) in Canada, Fishery Interactions” prepared by the Department of Fisheries and Oceans (DFO) and offers the following comments. The Commission is an independent agency in the U.S. Federal Government and, in cooperation with the National Marine Fisheries Service (NMFS), has a long history of involvement in the development of the right whale recovery program in the United States. The Commission commends DFO for its attention to management needs for this highly endangered species and is glad to share the U.S. experience by providing technical comments on the action plan. Recognizing that North Atlantic right whales now occur primarily in Canadian and U.S. waters, reducing sources of human-related injury and mortality within both jurisdictions is vital for this species’ recovery and will require further actions by government agencies and non-governmental organizations in both of our countries.

As we understand it, the proposed action plan is a step toward addressing Objective 2 of a right whale recovery strategy adopted by DFO in 2009 under the Canadian Species at Risk Act (SARA). Objective 2 of this strategy calls for actions to “reduce mortality and injury as a result of fishing gear interactions.” The Commission believes that reducing right whale entanglement in fishing gear is currently the single highest priority for assuring the recovery of North Atlantic right whales. Although ship strike was the largest documented cause of human-related mortality through the early 2000s, deaths attributed to this cause have declined significantly since the mid-2000s after steps were taken to address this threat in both Canada and the United States. Deaths due to entanglement in fishing gear (principally lines from traps used to catch lobsters and other shellfish and fish, as well as gillnets), however, have increased significantly in recent decades. During the 17 years from 1990 through 2006, when a total of 51 right whale deaths were confirmed in Canadian and U.S. waters, at least 21 (41%) were attributed to ship strikes and 8 (16%) to fishing gear entanglement. Over the past 12 years, however, the number of ship strikes has declined dramatically, while deaths due to entanglement have increased sharply. From 2007 to the present, a total of 33 right whale carcasses has been documented in the two countries, with only 3 (9%) attributed to ship strikes and at least 12 (36%) caused by fishing gear. Thus, it appears that while conservation gains have been achieved by our respective actions to reduce ship strikes, these have been overtaken by an increase in deaths from entanglement.

The proposed action plan identifies various mitigation, research, and public outreach efforts that have been, or are expected to be taken by the Canadian Government in cooperation with industry, academia, non-governmental groups, and members of the public to reduce right whale entanglement risks in Canada. With regard to mitigation, the plan notes that steps have already been taken and may be expanded to disentangle entangled whales and provide fishermen with real-time information on right whale sightings in hopes they might be able to take action to avoid entangling whales. It also notes that voluntary actions have been taken by some fishing associations to avoid setting or removing gear when whales are nearby and to shorten buoy lines when moving gear from deep to shallow areas. The plan also notes that specific voluntary or regulatory measures to reduce entanglement risks (e.g., reducing amounts of line in the water column, establishing time-area fishing closures, and changing gear configurations) are not recommended or prescribed in the plan, but will be considered, and if deemed warranted, may be implemented based on further analyses and in cooperation with the fishing industry and other recovery partners. The proposed plan also notes that various ongoing actions may be expanded. These include research activities (e.g., monitoring right whale movements, monitoring right whale occurrence in critical habitat, conducting necropsies, monitoring entanglement scarring rates, evaluating gear removed from entangled whales, studying the configuration of fishing gear used in Canada) and public outreach efforts (e.g., encouraging reports of dead whales, informing fishermen about right whales and threats to their survival, and generally encouraging proper natural resource stewardship).

Over the past thirty years, NMFS has pursued several strategies to reduce right whale entanglement. These have involved various combinations of voluntary and regulatory measures, as well as research and public outreach. Finding the right combination of measures has proven to be extraordinarily challenging, requiring ongoing research and management attention. Measures adopted to date in the United States have failed to achieve any reduction in the number of fishery-related right whale deaths and injuries seen annually. Indeed, as noted above, such deaths and injuries have actually increased over this period. Thus, mitigation efforts clearly require further research and management attention. Although effective management measures remain elusive, the U.S. program incorporates a combination of measures that include research, public outreach, interagency coordination, and mitigation measures, the last including both disentanglement response as well as regulatory requirements to modify fishing gear and fishing practices.

The Commission believes that the research, public outreach, and interagency coordination steps identified in the proposed plan are appropriate and comparable to steps taken in the United States. With respect to mitigation measures, the elements of the proposed plan on disentangling animals also seem well-placed and very similar to those undertaken in the United States. However, the Commission has concerns regarding the adequacy of plans for implementing gear modifications and altering fishing practices. The proposed plan provides little specificity and few assurances as to whether, when, and to what extent these kinds of measures will be used. The Commission believes that, to varying degrees, the evidence and rationales are adequate to indicate that at least some gear modifications and fishing practices are likely to reduce entanglement risks and warrant application through an adaptive management strategy

### **Entanglement response**

Given the species' highly endangered status, and the increase in right whale entanglements, the Commission believes mitigation actions are imperative. The mitigation measure with strongest

evidence of effectiveness is disentanglement response. Severely entangled right whales that have been disentangled have been resighted with new calves, demonstrating that this action not only improves survival prospects of at least some animals, but can also help maintain the population and contribute to population growth. Unfortunately, because relatively few of the whales that become entangled are reported, found, and reached for disentanglement treatment, this strategy alone is insufficient to assure population recovery. Therefore, additional measures are needed to prevent entanglements from occurring in the first place, and to improve the chances of whales that do become entangled are able to shed their burden of gear with minimal risk of injury or death.

### **Entanglement prevention**

One approach to mitigating entanglements involves measures to prevent entanglements by reducing the likelihood of whales encountering lines in the water column. Although direct evidence for their effectiveness is limited, there is a compelling conservation rationale for their adoption. In this regard, at least five strategies exist: (1) replacing floating line with sinking line on groundlines that connect traps to form trap trawls, (2) prohibiting hazardous lines (i.e., buoy lines and gillnets) in habitat heavily used by right whales (e.g., the Bay of Fundy, Roseway Basin, and the southwestern Gulf of St. Lawrence) during the times right whales are known to aggregate there (time-area closures); (3) “trawling up” or bunching more traps on fewer buoy lines; (4) using “pop-up” buoy systems that keep buoys and buoy lines on the bottom during the period from when the fishing gear is set to when it is retrieved, and reducing the overall fishing effort (i.e., the number of traps and gillnets in the water). The first three strategies have been required to varying degrees by regulations in U.S. waters and the Commission believes that time-area closures and sinking groundlines are particularly likely to be useful even though a reduction in entanglement deaths and injuries has not been demonstrated to date. The Commission believes this is because the measures have been applied by too few fishermen and in too few areas.

While “trawling up” seemed promising a few years ago, there is now a need to reconsider its potential effectiveness. In 2015 NMFS implemented a new “trawling up strategy” to reduce the overall number of buoy lines that the whales might encounter in U.S. waters. This strategy applied to areas where perhaps half of all the buoy lines along the U.S. coast occur and was expected to reduce the overall amount of buoy line by perhaps 10 to 20 percent. The Commission supported this strategy when it was adopted in late 2014, but recent analyses (Knowlton et al. 2012, 2015) suggest that it may actually increase the number of right whale deaths and injuries. Research findings indicate that the increased weight when traps are bunched on a single buoy line could increase the cutting force of the line on an entangled whale. The findings also suggest that an increase in severe and lethal right whale injuries is linked to increased breaking strength of the line deployed, which in turn prevents whales from shedding or breaking lines before they have sustained severe injuries. In light of these concerns, and as discussed further below, the Commission believes the use of the trawling-up strategy needs to be revisited with a view toward replacing it with one that includes the use of weak rope.

The Commission believes that pop-up buoys have promise for use in at least deepwater trap fisheries where the number of traps per trawl tends to be greater and the number of trawls fished per fisherman is fewer. The use of pop-up buoys has not been required by regulation in the United States given their high cost and a concern about other fishermen setting on top of gear whose location is not marked on the surface. The latter concern, however, is less of an issue in offshore

waters where there are fewer fishermen and gear is more widely dispersed. The Commission is currently funding a study to test a new pop-up design. If tests of pop-up technology are successful, this will increase the likelihood that steps can be taken to put them into use in at least some areas. Finally, reductions in fishing effort that reduce the amount of gear in the water column (e.g. caps on the number of traps or gillnets) could also reduce the risk of whales encountering gear. In this regard, for the lobster fishery, there is some evidence that in at least some cases significant reductions in trap numbers result in only modest reductions in the numbers of lobster landed (Myers et al 2006; Woodward 2005).

### **Mitigation of injury to entangled animals**

Another approach for mitigating entanglement risks involves measures designed to decrease the chances of whales that do become entangled, from being seriously injured or dying. In this regard, several gear-related approaches have been identified which seem to hold varying levels of promise. Among these are: (1) weak links at the top of buoy lines to release buoys after whales are entangled; (2) weak links between the panels of gillnets; (3) knotless buoy lines; (4) reduction or elimination of floating line on buoy lines; and (5) weak rope.

The use of weak links to release buoys was proposed based on the theory that if buoys break away after a whale becomes entangled, then remaining lines would be easier to shed and the animal would experience less of the drag that causes deep line cuts. After 20 years of requiring varying levels of use, there is no documented evidence of even a single whale shedding its burden of gear as the result of a buoy line's weak link. However, both broken and unbroken weak links have been found on dead or severely injured entangled whales. With experience, disentanglement teams have also found that by attaching buoys to trailing lines, gear is sometimes pulled free. Thus, in some cases releasing buoys from entangled whales could actually decrease a whale's chance of shedding gear. Given this experience and the increase in entanglements since weak links have been used, the Commission believes that weak links on buoy lines provide no or negligible benefit and that their use is no longer justified. Their use imposes what appears to be needless expense on fishermen, and provides a false sense of assurance that useful protective action is being taken. The Commission also questions the rationale for eliminating or reducing the use of floating line on buoy lines. These approaches seem to be based on the theory that replacing floating lines that are sometimes used at the top and bottom of buoy lines with sinking line that would eliminate loops or shorten the overall length of buoy lines, and thereby reduce entanglement risks. Again, however, there is no evidence that the use of sinking line has resulted in any whale avoiding entanglement or shedding gear with this modification, and only small reductions in the overall buoy line lengths are achieved with this measure. Therefore, the Commission does not believe that efforts to minimize or eliminate the use of floating line on parts of buoy lines will offer useful protection.

Evidence of the effectiveness of weak links between gillnet panels and knotless buoy lines in reducing entanglement risk is also lacking, but the Commission believes these measures still have potential conservation benefit. Weak links on gillnets (typically made up of ten net panels or more per string) have the potential to limit the number of gillnet panels that might remain on an entangled whale to one or two. This could significantly reduce the burden of attached gear, and thereby the severity of an entanglement. The use of knotless buoy lines also seems potentially useful given that many lines become caught between baleen plates. Because these plates are separated from each

other by less than an inch, it seems reasonable to believe that any knots or bulges along buoy lines could prevent lines from slipping between adjacent plates and being shed by entangled whales.

The use of weak ropes is a mitigation option that has been considered for many years, but has only recently received significant attention. Gear analyses reveals that the increase in severe and lethal right whale entanglements appears to have been linked to increases in the breaking strength of line used for buoy lines beginning in the early 1990s (Knowlton et al. 2015). These analyses provide a compelling case that reducing the breaking strength of buoy lines (now often exceeding 5,000 pounds or more) to 1,600 pounds will increase the ability of whales to break free of entangling lines and has the potential to substantially reduce right whale deaths and serious injuries. For the most part, the adoption of lines of greater breaking strength with relatively short strings (fewer than 10 traps) in waters less than 50m deep is not to meet operational requirements but rather meant to reduce the frequency with which lines need to be replaced. Thus, at least for relatively shallow areas over the inner portions of the continental shelf where right whales often occur, it may be possible to use trap buoy lines with a breaking strength of 1,600 pounds. This could reduce the risk of severe right whale entanglement injuries without sacrificing the performance of fishing gear or the ability to retrieve it. The Commission believes this approach may well be a better option than the current trawling-up measures currently being implemented by NMFS.

### **Gear marking**

Finally, better information on where and in what fisheries whales become entangled is urgently needed. To address this need, NMFS regulations now require that almost all buoy lines for gillnets and traps set along the U.S. East Coast be marked with 12-inch-wide bands of distinctive colors at prescribed locations to distinguish gear types (i.e. traps and gillnets) and fishing regions. By inspecting lines found on entangled whales, these marks should make it possible to better identify where and in what fisheries whales became entangled. The Commission believes such gear marking is essential for assessing and monitoring entanglement trends. We were therefore particularly pleased to see that the proposed action plan recognizes this need and that DFO is considering such a marking system for Canadian fisheries. The Commission urges the DFO to consult with NMFS on steps to develop and implement a complementary gear marking system for Canadian trap and gillnet fisheries along the East Coast as soon as possible.

The Commission believes that some combination of the above measures will almost certainly be necessary to achieve the objectives of the Canadian action plan and that specific gear modifications should be implemented through regulations to ensure they are adopted by sufficient numbers of Canadian fishermen to reduce injury and mortality of North Atlantic right whales. The Commission has a special interest in assuring the recovery of the North Atlantic right whale population and would be glad to help in any way that we can to assist DFO with steps to develop and implement this proposed action plan. We wish to inform you that the Commission's Annual Meeting will be held April 5-7, 2017 in Woods Hole, Massachusetts. At that meeting, we will be addressing the many challenges facing right whales, and would welcome participation by DFO.

Ms. Julie Stewart  
17 October 2016  
Page 6

I hope these comments are helpful and if you have questions please do not hesitate to contact me.

Sincerely,



Rebecca J. Lent, Ph.D.  
Executive Director

#### References

Knowlton, AR, PK Hamilton, MK Marx, H Pettis, and SD Kraus. 2012. Monitoring North Atlantic right whale (*Eubalaena glacialis*) entanglement rates: a 30-yr retrospective. *Marine Ecology Progress Series* 466:293-302.

Knowlton, AR, J Robbins, S Landry, HA McKenna, SD Kraus, T Werner. 2015. Effects of fishing rope strength on the severity of large whale entanglements. *Conservation Biology* 30(2): 318-328.

Myers, RA, SA Boudreau, RD Kenney, MJ Moore, AA Rosenberg, SA Sherrill-Mix, and B Worm. 2006. Saving endangered whales at no cost. *Current Biology* 17(1):R10–R11, <http://dx.doi.org/10.1016/j.cub.2006.11.045>.

Woodward, C. 2005. *The Lobster Coast: Rebels, Rusticators, and the Struggle for a Forgotten Frontier*. Viking Penguin. New York, NY.