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## **Saving endangered whales at no cost**

By comparing the productivity of lobster fishing operations in American and Canadian waters of the Gulf of Maine, researchers have identified ways in which cost-saving alterations in fishing strategies can substantially reduce fishing-gear entanglements of the critically endangered North Atlantic right whale. The findings appear in the January 9th issue of the journal *Current Biology*, published by Cell Press, and are reported by Ransom Myers of Dalhousie University in Nova Scotia, along with colleagues there and at the University of Rhode Island, the Woods Hole Oceanographic Institution, and the University of New Hampshire.

Though it has been protected for more than 70 years, the North Atlantic right whale has been slow to recover from past exploitation, and extinction remains a threat. The whale is virtually extinct in Europe, but a small population of about 350 individuals remains on the east coast of North America. A leading threat to the species is lethal entanglement by fishing gear: Photographic evidence indicates that 75% of individuals show signs of entanglement, mostly from lobster fishing gear.

In the new work, the researchers analyzed the costs and benefits of two dramatically different lobster fishing strategies currently employed in the Gulf of Maine, the world's most important lobster-producing area. Compared to lobster fishing on the Gulf's Canadian side (known as Lobster Fishing Area 34), which occurs over a winter fishing season, American-side lobster fishing is year-round, and involves 8–9 times more lobster traps in the water at any given time. Despite these significant differences in fishing "effort" and cost, Maine has only about 30% higher catches than the Canadian Fishing Area. Accordingly, the researchers estimate that the number of traps used in Maine is 13 times greater than in the Canadian Fishing Area to harvest the same lobster catch. On the basis of these findings and estimations of seasonal whale presence determined by patterns of whale sightings, the authors estimate that, in terms of impact on right whales, each lobster caught in Canada has less than 1% of the impact of each lobster caught in Maine.

The authors propose that if Maine restricted its lobster fishing season to 6 months and reduced the number of traps by a factor of ten, the more optimal fishing strategy--including decreased costs and improved total income--would allow greatly reduced risk to the remaining right whales while providing benefit to fishermen.

The authors point out that the basic problem of huge excess effort in lobster fishing is characteristic of other aspects of fishing industries around the world--including shrimp and tuna longline industries that expend much more effort than needed to obtain optimal yields, while threatening turtles and non-targeted fish, including shark species, as bycatch.

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The researchers include Ransom A. Myers, Stephanie A. Boudreau, Scott A. Sherrill-Mix, and Boris Worm of Dalhousie University in Halifax, Nova Scotia; Robert D. Kenney of University of Rhode Island in Narragansett, RI; Michael J. Moore of Woods Hole Oceanographic Institution in Woods Hole, MA; Andrew A. Rosenberg of University of New Hampshire in Durham, NH. This work was supported by the Lenfest Ocean Pro gram and NSERC.

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