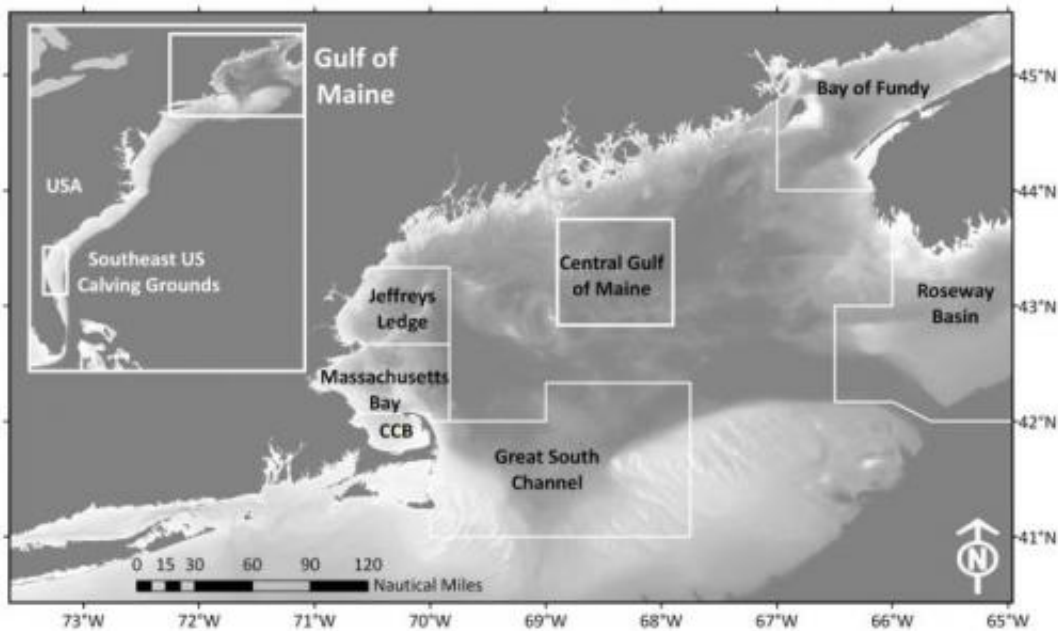


Are North Atlantic right whales mating in the Gulf of Maine?

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Map shows regions seasonally occupied by North Atlantic right whales. Sightings in Cape Cod Bay (CCB) were included within the Massachusetts Bay region in the study analysis. Credit: Tim Cole, NEFSC/NOAA

Using data obtained during six years of regular aerial surveys and genetics data collected by a consortium of research groups, scientists have strengthened evidence pointing to the central Gulf of Maine as a mating ground for North Atlantic right whales, according to a study recently published online in the journal *Endangered Species Research*.

The North Atlantic right whale (*Eubalaena glacialis*) is one of the most endangered [marine mammal](#) species in the world and has been intensively studied for decades. Much has been learned about its habitat, behavior, and population demographics. But until now, there was little to indicate where these [whales](#) mated, a big missing piece in the puzzle of their life history.

"A high proportion of potential mates aggregated in the central Gulf of Maine between November and January, and these same individuals produced a calf a year later. We concluded that this is a pretty strong indication of a mating ground if the gestation period is 12 months," said Tim Cole, lead author and a biologist at the Woods Hole Laboratory of NOAA's Northeast Fisheries Science Center (NEFSC).

Through aerial surveys, the researchers documented not only how many but also which right whales were present in the study area during 2002-2008. Individual animals were identified using a photo identification catalog maintained at the New England Aquarium that includes most of the adults in the population. Using genetic data gathered in other field work, known fathers seen in the surveys were identified, as were known mothers, who were identified by association with a calf.



Four North Atlantic right whales. Credit: Peter Duley, NEFSC/NOAA.

The resulting analyses showed that the animals seen included a higher proportion of reproductively successful animals than were present in other areas that these whales used seasonally. The researchers further assumed a 12-month gestation period for North Atlantic right whales, similar to that estimated for the closely-related southern right whale (*Eubalaena australis*) by the South African whale biologist Dr. Peter Best.

How definitive is the study? Cole says that while it's a strong indicator, there could well be other mating areas, and it's not clear how fixed the areas might be. In fact, since the study ended, fewer right whales have been observed in the area during what would be the mating period. The study also found a similar, if less dramatic, indication that Roseway

Basin - an area south of Nova Scotia - may also serve as a mating ground.

"We are still seeing right whales in the central Gulf of Maine, just not in the same numbers. They are still out there, but where they all are in the big question. The decline is significant, so something appears to have changed," Cole said. "The good news is that calf production has been fairly good, with 22 calves born in 2011, 7 in 2012, and 20 this past winter. It will be interesting to see how many calves are born next year."



Surface Active Groups, or SAGs, are considered a reproductive behavior, but may also be a social activity among right whales. Credit: Cynthia Christman, NOAA.

Most of the North Atlantic right whale population spends the spring and summer on feeding grounds off the northeastern U.S. and the Canadian Maritimes. In late fall and early winter, pregnant females migrate to waters off the southeastern U.S. to give birth. Mothers and calves are detected during intensive aerial surveys conducted from December through March off the coasts of Florida, Georgia, South Carolina, and North Carolina. Mothers and calves return to the northeast feeding grounds in the early spring, and the calves stay with their mothers for a year following birth.

Recovery of this endangered species depends on successful reproduction, but current reproductive rates for North Atlantic right whales are much lower than those for the recovering populations of southern right whales. The reasons for this are unknown, but may include a low level of genetic variability and /or inbreeding, disease, biotoxins, pollutants, food supply limitations, and habitat loss. Increased ocean noise from coastal development could also impact the species by triggering behavioral changes that negatively impact reproduction. Determining the right whale's conception period and mating grounds are important steps in learning about the factors that may be impairing reproduction.

More information: www.int-res.com/abstracts/esr/v21/n1/p55-64/

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