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TITLE: The recovery of North Atlantic right whales,Eubalaena glacialis, has been constrained by human-caused mortality

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ABSTRACT:

North Atlantic right whales (NARW), Eubalaena glacialis, were nearly exterminated by historical whaling. Their abundance slowly increased up until 2010, to a maximum of fewer than 500 whales, and since then they have been in decline. We assessed the extent to which the relatively slow increase demonstrated by NARW was intrinsic, and how much could be due to anthropogenic impacts. In order to do so, we first compared calf counts of three populations of Southern right whales (SRW), E. australis, with that of NARW, over the period 1992-2016. By this index, the annual rate of increase of NARW was approximately one-third of that of SRW. Next we constructed a population projection model for female NARW, using the highest annual survival estimates available from recent mark-resight analysis, and assuming a four-year calving interval. The model results indicated an intrinsic rate of increase of 4% per year, approximately twice that observed, and that adult female mortality is the main factor influencing this rate. Necropsy records demonstrate that anthropogenic mortality is the primary cause of known mortality of NARW. Anthropogenic mortality and morbidity has limited the recovery of NARW, and baseline conditions prior to their recent decline were already jeopardizing NARW recovery.

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