



# Large Whale Transboundary Unusual Mortality Events: Best Practice and Investigation Through Coordination and Collaboration

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## Introduction

Transboundary Unusual Mortality Events (UMEs) have been declared by the United States National Marine Fisheries Service under the Marine Mammal Protection Act for North Atlantic right whales (*Eubalaena glacialis*, 2017-present) in the Atlantic Ocean and gray whales (*Eschrichtius robustus*, 2019-present) in the eastern North Pacific Ocean. Transboundary coordination and collaboration has been essential to document the number of animals affected throughout their range, facilitate consistent sample and data collection protocols, and ensure analysis methods can be used in an integrated way. Members of the UME investigation teams include federal, state, and provincial agencies, tribes, academic, and non-governmental partners. These teams meet monthly and communicate in real-time as needed. Additionally, case reviews have been held annually to discuss findings, refine protocols, and provide information for management. This work would not have been accomplished without the response, collaboration, and dedication of the marine mammal stranding networks in Canada, Mexico, and the U.S. as well as our federal, state, provincial, tribal, First Nations, and local partners.

## Gray Whales

**PROBLEM:** 590 dead gray whales across three countries (Canada, Mexico, and U.S.) have been documented as of June 30, 2022. Eastern North Pacific gray whales are not endangered, however recent abundance estimates found a ~24% decrease in the population between 2016 and 2020, which is thought to be an outcome of the UME (Stewart and Weller, 2021).

**CAUSE:** Preliminary results have not identified a primary cause of the gray whale UME. It is likely that the event may be multifactorial, including some mortality linked to killer whale predation, entanglements and vessel strikes, and to poor body condition possibly associated with ecosystem changes in sub-Arctic and Arctic feeding areas (Moore *et al.* 2022).

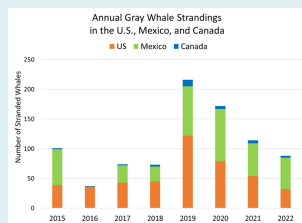
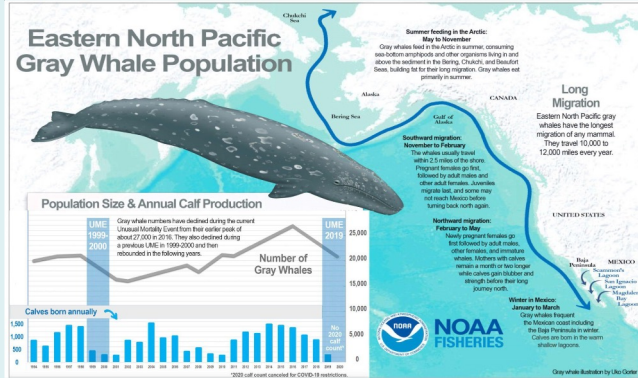


Figure 1. Annual Gray Whale Strandings in the U.S., Mexico, and Canada



## North Atlantic Right Whales

**PROBLEM:** Mortality and injury events have been documented for 51 right whales across two countries (Canada and U.S.). The UME for critically endangered North Atlantic right whales has species-level consequences given that population abundance is estimated to be fewer than 370 individuals.

**CAUSE:** Preliminary causes of the right whale UME have been attributed to entanglements and vessel strikes.

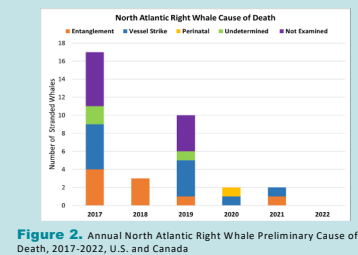
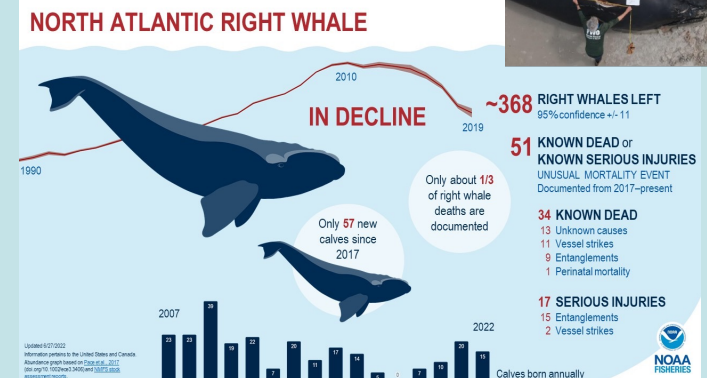


Figure 2. Annual North Atlantic Right Whale Preliminary Cause of Death, 2017-2022, U.S. and Canada

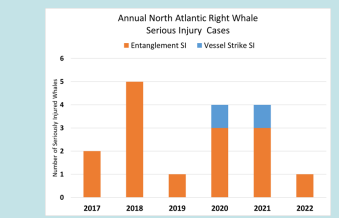


Figure 3. Annual North Atlantic Right Whale Serious Injury (SI) Cases of whales last seen alive, 2017-2022, U.S. and Canada.

## Transboundary Coordination Highlights

- 1) UME investigations and communication have used the Incident Command System, when appropriate
- 2) Coordinated sharing of findings and data from new cases in a systematic fashion through monthly calls and annual case reviews for both UME investigations.
- 3) Development of nutritional condition, killer whale predation,

- and other shared protocols for the Gray Whale UME.
- 4) Inclusion of seriously injured whales in the North Atlantic Right Whale UME and the development of a protocol to add sublethally ill and injured animals (Morbidity Cases) in future.
- 5) Improved necropsy response and data collection, and identification of gaps and future training needs.

