

# Evaluating the Effects of Climate Change on Indigenous Marine Mammal Hunting in Northern and Western Alaska Using Traditional Knowledge

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## Overview

Indigenous residents of western and northern Alaska rely on marine mammals for subsistence including for food, materials, and culture. Documenting traditional knowledge of Iñupiaq, Yup'ik, and Cup'ik hunters concerning marine mammals, the environment, and hunter success provides information relevant to ecology, conservation, and subsistence communities. This compilation of traditional and local knowledge depicts changes in marine mammals including hunting seasons (dictated by weather and sea ice), distribution, health and body condition, and concerns of human activities.

## Methods

- We used the semi-directive interview method to collect traditional knowledge from subsistence hunters and community members (Huntington 1998).
- We interviewed 110 people from 14 communities between 2007 and 2017 (Table 1, Figure 1).
- After the interviews, we prepared a draft report that was reviewed and approved by all the participants.
- A final report was prepared for each community that included a map detailing specific observations (e.g., maps on left side of Figure 1).
- Community specific observations were compared with other communities and similar observations were grouped together in Figure 1 (represented by colored and numbered boxes).

Table 1. Summary of interviews. Table is modified from Huntington et al. (2017).

Community	Year	Species focus	No. of Participants
Kaktovik	2007	Bowhead whales	6
Barrow	2007	Bowhead whales	6
Wainwright	2008	Bowhead whales	7
Point Lay	2011	Walrus	5
Wainwright	2011	Walrus	13
Point Hope	2013	Walrus	8
Barrow	2015	Walrus and ice seals	10
Elim	2015	Ice seals and walrus	8
St. Michael & Stebbins	2015	Ice seals and walrus	8
Kivalina	2016	Ice seals, walrus, bowhead whales	5
Kotzebue	2016	Ice seals	6
Shishmaref	2016	Ice seals and walrus	5
Hooper Bay	2017	Ice seals, walrus, beluga whales	11
Scammon Bay	2017	Ice seals, walrus, beluga whales	5
Mekoryuk	2017	Ice seals, walrus	7
Total 14 communities, 15 research visits	7 years over 11 year period	Focus on 7 species	110 participants

## Discussion

- All communities reported extensive changes in the physical environment including sea ice, snow, and weather.
- All communities reported changes in marine mammal distribution, migration timing, health, and behavior.
- The largest changes to hunting are reportedly the result of changes to the physical environment (i.e., marine mammal populations appear to remain healthy and stable, but more difficult to access and hunt).
- Hunters acknowledge that traditional knowledge of active hunters must be updated more rapidly now to adapt to a rapidly changing physical environment.

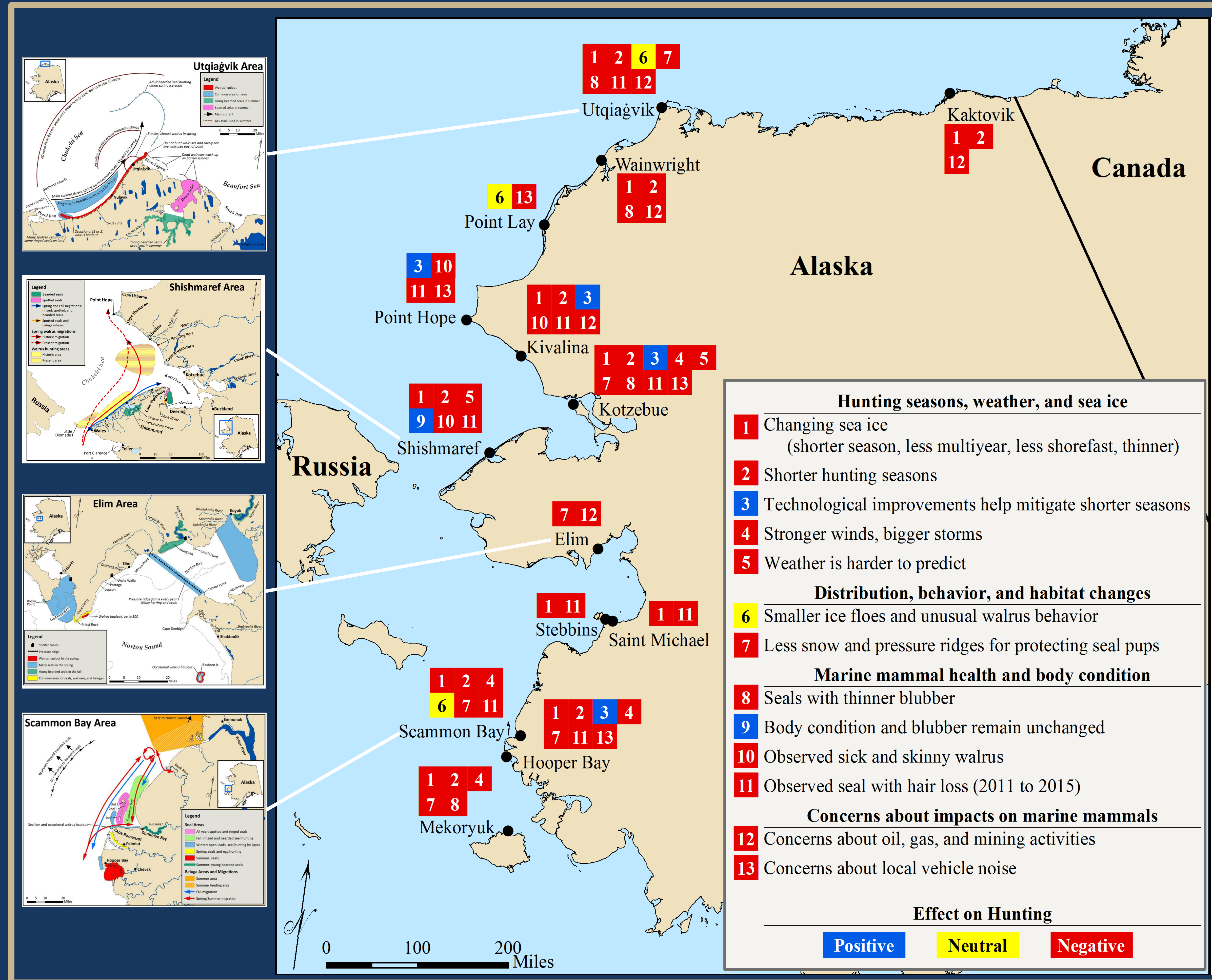


Figure 1. Map of study area and participating communities. Numbered boxes correspond to detailed observations about walruses, ice seals, and beluga and bowhead whales. Community maps at left represent the types of detailed information collected through traditional knowledge interviews. Figure is modified from Huntington et al. (2017).

## Acknowledgements

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### References:

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