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Ice Seal Unusual Mortality Event

Ice Seal Co-management Committee

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National Marine Fisheries Service

What is an Unusual Mortality Event?

An unusual mortality event, or UME for short, is defined under the Marine Mammal Protection Act as a stranding event that is unexpected, involves a significant die-off of any marine mammal population, and demands immediate response.

There are seven criteria that makes a mortality event 'unusual.

If the national Working Group on Marine Mammal Unusual Mortality Events, a group of marine mammal health experts, determines that an event meets one or more of the criteria, then it forwards a recommendation to NOAA's Assistant Administrator for Fisheries to declare an Unusual Mortality Event.



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What criteria define an UME?

The Working Group on Marine Mammal Unusual Mortality Events developed a set of criteria for determining an unusual mortality event:

- 1) **A marked increase in the magnitude or a marked change in the nature of morbidity, mortality, or strandings when compared with prior records.**
- 2) A temporal change in morbidity, mortality, or strandings is occurring.
- 3) A spatial change in morbidity, mortality, or strandings is occurring.
- 4) The species, age, or sex composition of the affected animals is different than that of animals that are normally affected.
- 5) Affected animals exhibit similar or unusual pathologic findings, behavior patterns, clinical signs, or general physical condition (e.g., blubber thickness).
- 6) Potentially significant morbidity, mortality, or stranding is observed in species, stocks, or populations that are particularly vulnerable (e.g., listed as depleted, threatened, or endangered or declining).
 - 1) For example, stranding of three or four right whales may be cause for great concern whereas stranding of a similar number of fin whales may not.
- 7) Morbidity is observed concurrent with or as part of an unexplained continual decline of a marine mammal population, stock, or species.

Any of these criteria may indicate an unusual mortality event.



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Why designate events as Unusual Mortality Events?

It authorizes a federal investigation led by the expertise of the working group to investigate the event and focus:

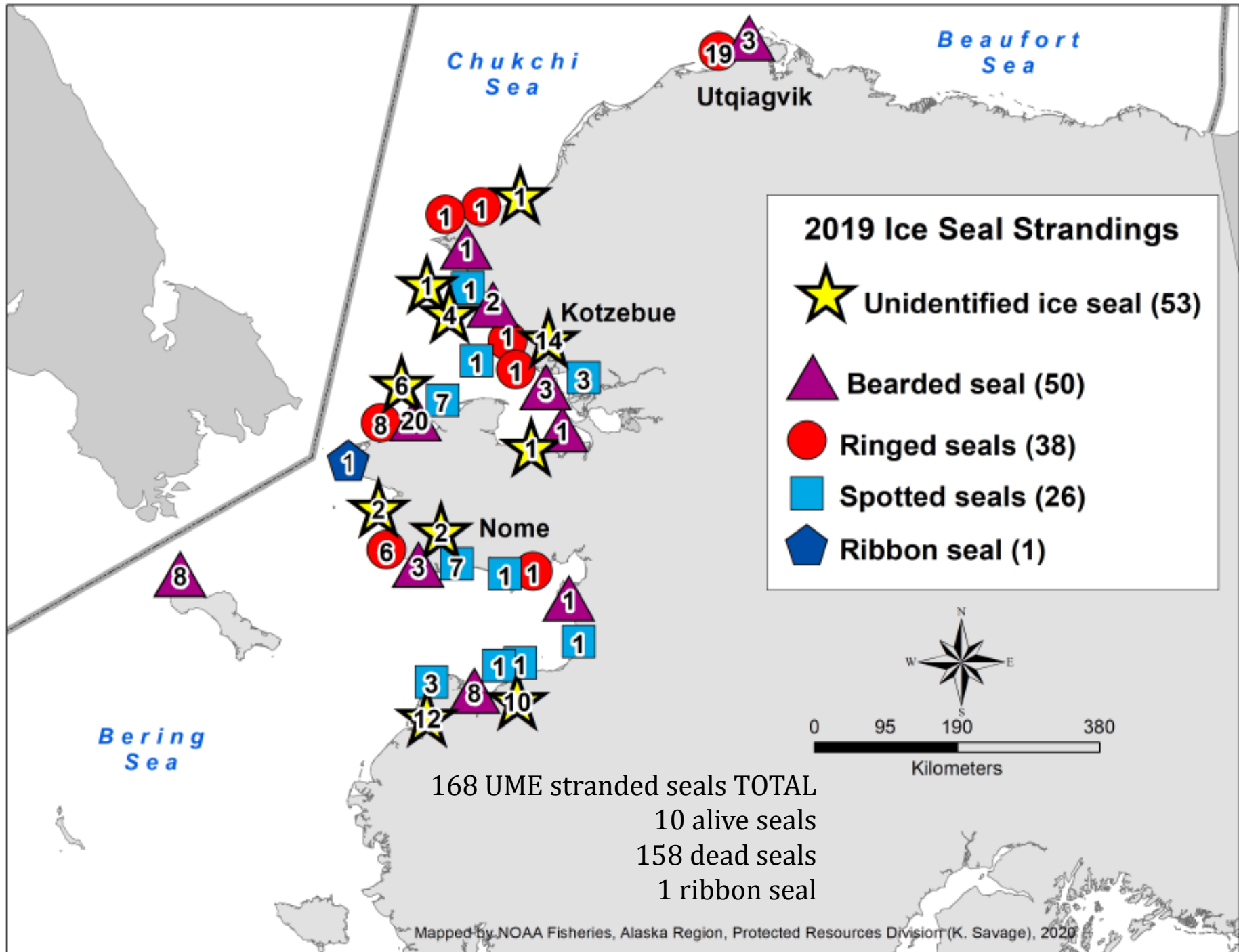
- To minimize deaths.
- To determine the event cause.
- To determine the effect of the event on the population.
- To identify the role of environmental parameters in the event.

While the cause of many Unusual Mortality Events is unknown, the investigation aims to determine the cause for all events, when possible.

Previous Unusual Mortality Events were caused by:

- Biotoxins
- Human interactions
- Infections
- Malnutrition

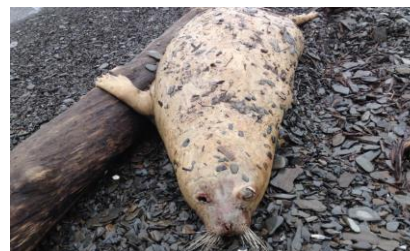




Bearded, ringed, and spotted seals

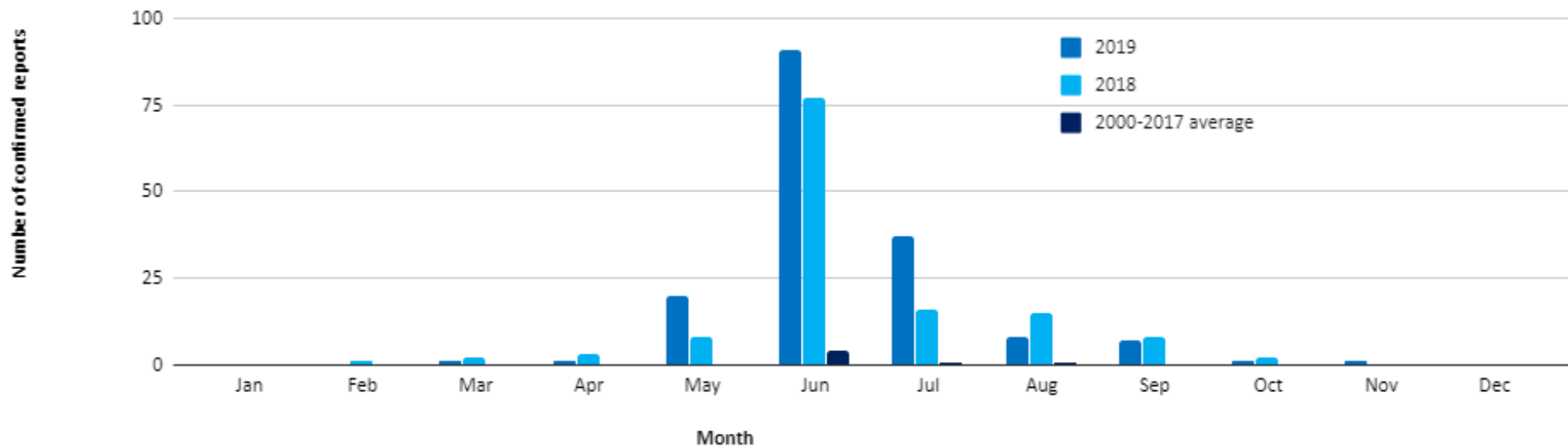
Bering Sea and Chukchi Sea (north of 60°)

	2000-2017 (18 years)						2018	2019
	RINGED	BEARDED	SPOTTED	UNIDENTIFIED	Total	Average		
Jan	1	0	0	0	1	0.1	0	0
Feb	2	0	0	0	2	0.1	1	0
Mar	1	1	0	0	2	0.1	2	1
Apr	6	17	5	0	28	2	3	1
May	7	13	5	0	25	1.5	8	20
Jun	24	12	11	31	78	4	77	91
Jul	45	38	7	57	147	8	16	37
Aug	74	12	6	40	132	7	15	8
Sep	47	2	4	20	73	4	8	7
Oct	7	2	1	2	12	1	2	1
Nov	6	0	6	0	12	1	0	1
Dec	0	1	1	0	2	0.1	0	0
TOTAL	220	98	46	150	514	29	132	167



Ice Seal Unusual Mortality Event

Alaska Region ringed, bearded, spotted and unidentified ice seal reports by month, 2000 - 2019 :



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2018 - 2019 Ice Seal Unusual Mortality Event (UME) in Alaska

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The History

- Since June 1, 2018, elevated numbers of ice seals have stranded along the Alaskan coastline of the northern Bering Sea and Chukchi Sea, west of Utqiagvik (-156.475 longitude).
- On September 12, 2019, National Oceanic and Atmospheric Administration declared an Unusual Mortality Event (UME) for bearded seals, ringed seals, and spotted seals and initiated an investigation.

What is a UME?

- The Marine Mammal Protection Act defines a UME as a stranding event that is unexpected, involves a significant die-off, and demands an immediate response.
- There are seven criteria that identifies a mortality event as "unusual"; a UME must meet at least one criteria.
- A Working Group of marine mammal health experts determines if the event meets the UME criteria.

Current Investigation

- Necropsies and/or sampling were completed on 58 of the 276 ice seals reported dead.
- 10 seals were alive and 266 seals were dead (condition ranged from fresh to skeleton).
- 40 females, 32 males, and 204 unknown sex.
- 30 adults, 25 subadults/juveniles, 25 yearlings, 66 pups, and 130 unknown age.
- Preliminary results: poor body condition is common, which may be related to the significant reduction of sea ice quality, extent, and duration.
- The UME Working Group is evaluating the cause of this event. Understanding the cause is crucial because ice seals are essential to the nutritional, cultural, and economic well-being of coastal communities.
- This UME has implications regarding ocean health and food security and public health concerns of western and northern Alaska communities.

Acknowledgements

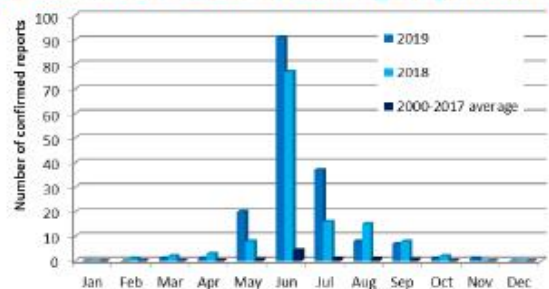
Harold Okitkun, Ice Seal Committee, Melissa Good, Nicole Kanayurak, Raime Frostin, Raphaela Stimmelmayer, Rita Acker, Sonia Kumar, and Travis Shinabarger
 Permit Number MMPA/ESA #18786

UME Strandings from June 1, 2018 – December 31, 2019

	2018 Jun 1 - Dec 31	2019 Jan 1 - Dec 31
Ringed seals	29 (11*)	35
Bearded seals	35 (2*)	50
Spotted seals	20 (1*)	26
Unidentified seals	28 (0*)	53
Total	112 (14*)	164

Note: UME contains ice seals stranded west of longitude -156.475, this accounts for the change in numbers from the abstract.
 * Number of seals reported prior to June 1.

Alaska Ice Seal Strandings by Month



Live bearded seal transferred to Alaska Sea Life Center.



No blubber present near sternum of an emaciated spotted seal.

276
Ice Seals
UME as of Dec 31, 2019



A thin spotted seal stranded in Nome compared to a healthy spotted seal.



An emaciated spotted seal pup harvested near Wales.

- UME 2019**
- ▲ Bearded
 - ▲ Ringed
 - ▲ Spotted
 - ▲ Unidentified
- UME 2018**
- Bearded
 - Ringed
 - Spotted
 - Unidentified



Live ringed seal transferred to Alaska Sea Life Center.

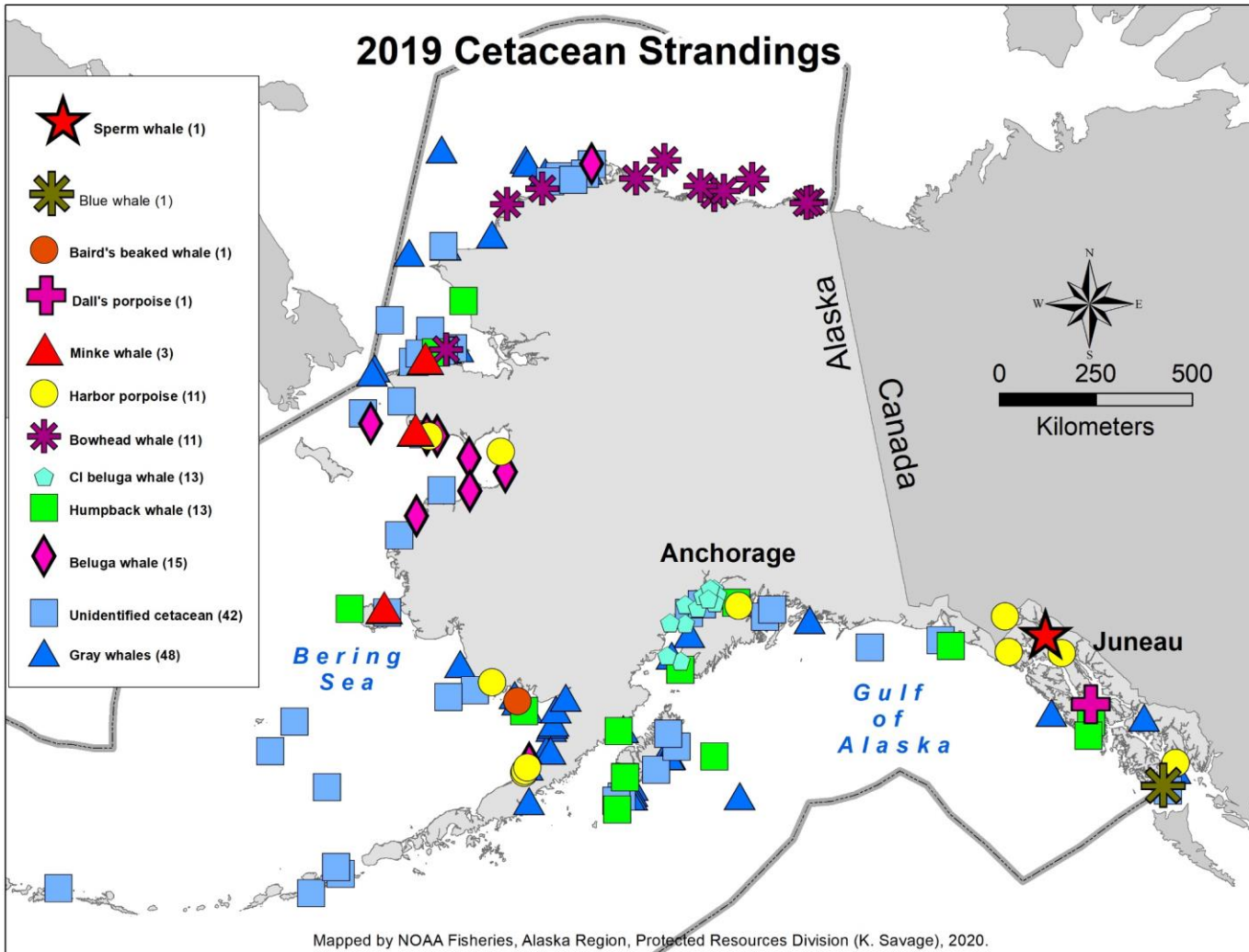


Previous marine mammal UME's have been caused by infections, biotoxins, human interactions, and malnutrition.

Report Your Sightings!

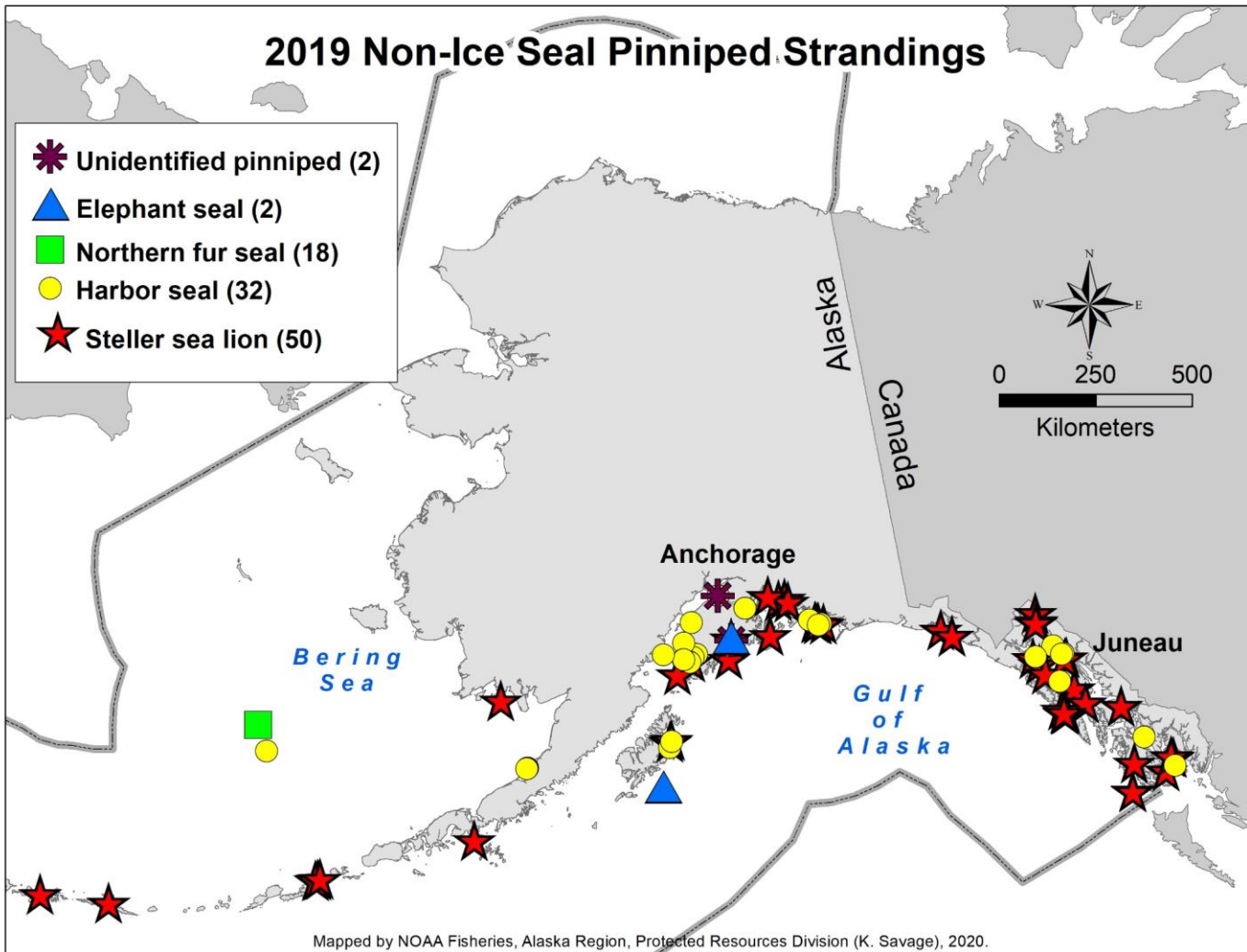
Call the NOAA Fisheries statewide 24-hour Stranding Hotline: (877) 925-7773





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2019 Non-Ice Seal Pinniped Strandings



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2011-2016 Ice Seal Unusual Mortality Event

The UME primarily occurred from May 2011 to December 2012, but closed on 31 December 2016.

- Primarily ice seals including bearded (*Erignathus barbatus*), ribbon (*Histiophoca fasciata*), ringed (*Pusa hispida*), and spotted seals (*Phoca largha*)
- Primarily in northern and western Alaska
- The minimum estimate on the total number of impacted seals was 657 seals
 - 233 dead stranded seals
 - 179 subsistence hunted seals
 - 245 live seals that stranded or were sampled during permitted health assessments studies
- The investigation identified that clinical signs were likely due to an abnormality of the molt
 - A definitive cause for the abnormal molt and the UME was not determine

