



2011 Arctic Seal Disease Outbreak Update on Investigation and Findings

November 22, 2011

Summary and Background

In recent months, elevated numbers of sick or dead ringed seals with skin lesions have been discovered in the Arctic. The North Slope Borough Division of Wildlife Management first began to notice sick seals while conducting ice seal satellite telemetry studies during routine research in July and August 2011. Hunters also began to bring attention to unusual symptoms they were observing in seals during harvests. Although abnormal hair loss (known as alopecia) has been under investigation in ringed seals for several years, this summer hunters and researchers started seeing seals with more severe signs of illness, as well as dead seals. Diseased ringed seals have exhibited hair loss, delayed molting, and skin ulcers. Some of these seals have exhibited lethargy and labored breathing. Findings from dead seals have shown significant lesions in the skin, respiratory system, liver, lymphoid system, heart, and brain. Similar cases in ringed seals were also reported from Canada and Russia. In addition, there have been some reports of skin lesions in walrus (*Odobenus rosmarus divergens*) in Alaska, with some associated mortality. Some spotted seals and bearded seals with similar symptoms have also been documented.

Current Situation

This investigation has been a collaborative effort between numerous agencies, scientists, managers, Native hunters, and Arctic and Bering Strait communities. As a dynamic disease investigation, events continue to be reported and responded to in an ongoing fashion by the Alaska Marine Mammal Stranding Network and community members in affected areas. Currently, carcasses and sick animals continue to be reported by communities in the Bering Strait Region, and samples/carcasses continue to be submitted to Anchorage or Fairbanks for initial veterinary evaluation and histopathology.

Ringed seals have been the predominant species observed in the North Slope area, with only two reports indicating potential cases in bearded seals. As of November 4, 2011, a total of 113 carcasses/live animals have been observed on Barrow beaches during July-October (NSB 2011). In the Bering Strait Region, a total of 67 live/dead carcasses have been reported between June-October. These reports include ringed seals, spotted seals and bearded seals, as well as some seal observations that couldn't be identified to species (UAF MAP Program 2011).

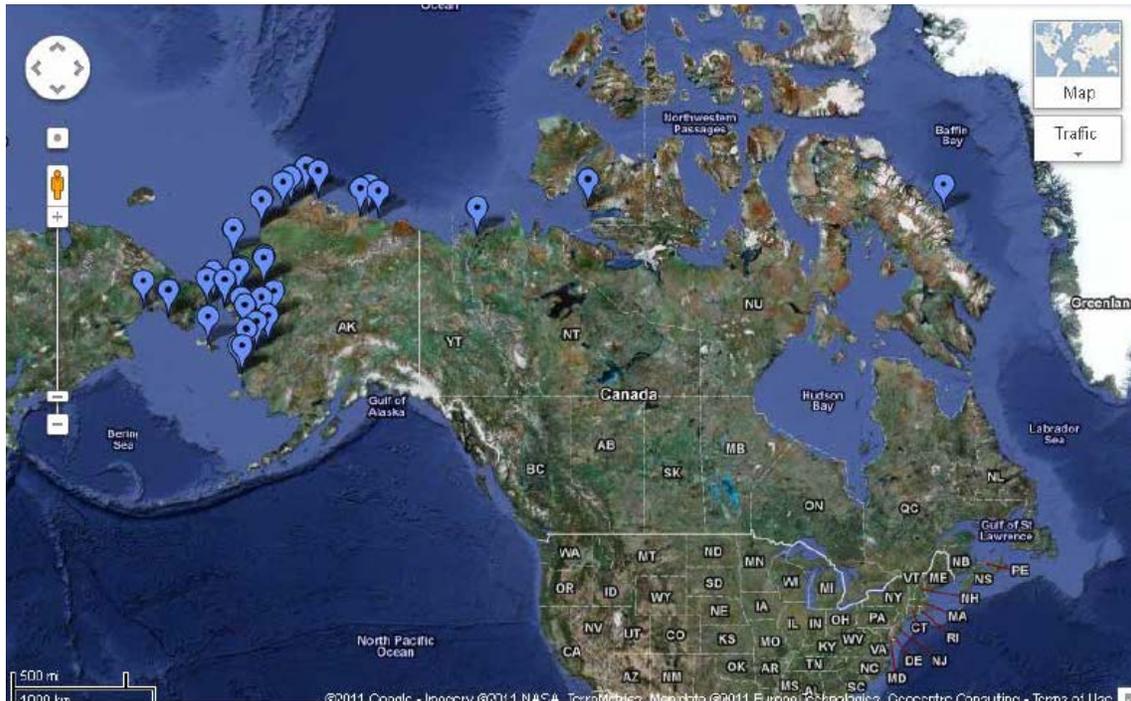
On Monday, November 20, 2011, the North Slope Borough, along with other Alaska Stranding Network partners, submitted a consultation package to NMFS for review by the Working Group on Marine Mammal Unusual Mortality Events to determine whether this event qualifies as an "Unusual Mortality Event" (UME) as defined in Title IV of the MMPA. After the Working Group reviews the data and makes a recommendation to NMFS and USFWS, the agencies are expected to make a decision about formally declaring an UME shortly thereafter. If a UME is declared, an on-site coordinator will be appointed, the current investigative team will be expanded, the Working Group will provide continual advice and scientific assistance through an appointed liaison as the

investigation proceeds. The investigative team will also have access to the specific Marine Mammal Unusual Mortality Event Fund for additional resources to further the investigation. This should provide further expertise and assistance that will enhance getting more complete information in a timely manner. For more information on unusual mortality events, visit <http://www.nmfs.noaa.gov/pr/health/mmume/>.

Geography of the Event

Seals with sores have been reported from the North Slope Borough, Bering Strait, and Chukotka region of Russia. The extent of the outbreak and exact number of sick animals are unknown. Hunters continue to see many healthy seals as well as sick seals. We hope to continue to receive further information from hunters to be able to judge how widespread the problem is among ice seals.

It is unclear at this time whether the sores observed in seals are related to what has been seen in Pacific Walrus at the Point Lay haul out. The geographic overlap and temporal coincidence suggest that they could be related, but this is purely speculative. NOAA Fisheries has not received any reports from hunters that sores have been observed in subsistence-harvested walrus. When walrus hunting commences on St. Lawrence Island, more information may become available.



Reported location of illness in Arctic marine mammals (ringed seals, spotted seals, bearded seals and walruses). Map represents reports of illness cases from July to November 10, 2011. Created by M. Brubaker, Center for Climate and Health, Alaska Native Tribal Health Consortium.

Preliminary Findings

Despite testing in numerous US and Canadian laboratories, preliminary findings have not yet revealed a definitive cause in this Arctic disease outbreak. Given the lesions observed and the numbers of animals, infectious disease testing is underway with an initial emphasis on viral testing.

- Tests for common known viral pathogens (poxvirus, herpesvirus, papillomavirus, morbillivirus, calicivirus) have been negative thus far.
- There is ongoing effort to do more exploratory evaluation utilizing viral discovery methods at research labs as well as evaluation at the US Foreign Animal Disease Laboratory at Plum Island in New York.
- In addition to viral diagnostics, much work is underway on bacterial and fungal testing. Many different bacteria have been isolated but further work is needed to evaluate whether these bacteria are secondary invaders or have a primary causative role in the lesions and deaths.
- Additional testing for other causes are planned. This includes evaluation of harmful algal bloom-associated biotoxins, chemical contaminants and radionuclides, as well as evaluation of the overall health status of individuals including nutrition and endocrine assessments.
- Results will be shared and disseminated when scientifically appropriate through electronic media, press releases, and direct communications with tribal health consortiums, councils and marine mammal commissions. Updates will be posted at <http://www.fakr.noaa.gov/protectedresources/seals/ice/diseased/>
- Contacts have been established with colleagues in Canada and Russia to track potential cases in all three countries and further collaborations should assist the overall efforts.

Public Health Precautions

We continue to recommend the following general **public health** precautions (which also apply when interacting with *any* animal in the wild):

- As a general rule, do not eat any animals that appear sick or diseased. If you find a seal acting abnormally or showing signs of illness, contact your local wildlife authority;
- Do not allow dogs to interact with or eat diseased animals;
- Safe handling guidelines for marine mammals should always be followed. These include:
 1. Wearing rubber gloves when you are butchering or handling the animals;
 2. Thoroughly washing your hands and all your equipment after working with the animals; and
 3. Cooking meat before eating it because there are several different parasites and bacteria that can be present in raw meat;
- As always, if you feel sick, contact your local community health care provider (and please remember to report any unusual findings in the animals to your local wildlife authority).

Reporting

Hunters from across the Arctic and Bering Strait regions have called in many of the carcasses that have been noted in this disease event. NOAA Fisheries recognizes that there is widespread concern over impacted food sources by marine mammal hunters and consumers. The agency is committed to continuing to put resources toward testing samples and to provide real-time information back to communities across Alaska as information becomes available.

Hunters or community members who observe dead seals or those in distress are encouraged to contact the NOAA Fisheries Alaska Marine Mammal Stranding Hotline, local Marine Mammal Stranding Network members, or other wildlife authorities at the following numbers:

- *Statewide*: NOAA Fisheries Alaska Marine Mammal Stranding hotline: 1-877-925-7773
- *North Slope*: North Slope Borough Department of Wildlife Management: 907-852-0350

- *Bering Strait*: Alaska Sea Grant Marine Advisory Program: 1-800-478-2202
- *Bering Strait*: Eskimo Walrus Commission: 1-877-277-4392
- *Statewide*: Alaska Department of Fish and Game: 1-800-478-7346

Cooperating agencies and organizations

United States

Alaska Department of Fish and Game

Alaska Native Tribal Health Consortium, Center for Climate and Health

Alaska Veterinary Pathology Service

Alaska Department of Health and Social Services

Alaska Department of Environmental Conservation

Athens Veterinary Diagnostic Laboratory, University of Georgia

Eskimo Walrus Commission

Ice Seal Committee

Marine Advisory Program/UAF-Northwest Campus

National Marine Fisheries Service

North Slope Borough, Department of Wildlife Management

United States Fish and Wildlife Service

University of Florida-Gainesville, College of Veterinary Medicine

United States Department of Agriculture-Foreign Animal Disease Lab

The Working Group on Marine Mammal Unusual Mortality Events

Washington Animal Disease Diagnostic Laboratory

Canada

British Columbia Animal Health Center

Fisheries and Oceans Canada