



## Northern Pinnipeds Unusual Mortality Event: Update 2014



Courtesy: North Slope Borough Department of Wildlife Management

**Ringed seal with sores on skin (left); seal with sores on eyes (middle); seal flipper lesions (right).**

### Summary and Background

Beginning mid-July 2011, elevated numbers of sick or dead seals with skin lesions were discovered in the Arctic and Bering Strait regions of Alaska. 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 reported observing unusual symptoms in subsistence harvested seals. Although abnormal hair growth (known as alopecia) had been under investigation in ringed seals for several years, hunters and researchers were seeing seals with more severe signs of a novel illness, as well as dead seals. Diseased seals—primarily ringed seals—exhibited the inability to properly regrow their annual new coat, a delay in the molting process, and skin ulcers. Some of these seals also exhibited lethargy, labored breathing, and internal issues such as a reduced thymus, hepatitis, etc. Similar cases were also reported in seals from western Canada, eastern Russia, and Japan. Spotted seals and bearded seals were also affected. In addition, reports of skin lesions in Pacific walrus were observed in Alaska, with some associated mortality.

By December 2011, there were more than 100 cases of affected pinnipeds in northern and western Alaska. Due to the unusual number of marine mammals discovered with similar symptoms across a wide geographic area, and after consultation with the Working Group on Marine Mammal Unusual Mortality Events, NOAA and USFWS announced the declaration of an Unusual Mortality Event on December 20, 2011. The declaration established an investigative team involving national and international specialists from numerous agencies, laboratories, and institutions, and included Tribal leaders, hunters, scientists, veterinarians, wildlife biologists, and disease diagnosticians.

This was the first UME involving subsistence species essential to coastal Alaskan communities. The investigative team worked with the State of Alaska Division of Public Health and others to assess potential risk and distribute general precautionary guidelines around handling and consumption in the absence of a known pathogen. Throughout the event, Alaska Native subsistence hunters continued to use their traditional and customary



practices when dealing with healthy and/or sick seals. At present, there is no evidence that consuming animals involved in this disease event has caused any human illness.

## Current Situation

Disease surveillance efforts in 2012 and 2013 indicate no new cases similar to those observed in 2011 have been discovered. Instead, the seals reported with abnormal hair growth and healing skin ulcers are likely survivors of the initial disease. Hunters may continue to see hairless seals during spring 2014, particularly in the subadult age group.

### 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  
University of Alaska Fairbanks, Marine Advisory Program  
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

## Test Results

Currently, no specific cause for this disease has been identified. To date, numerous tests for viral, bacterial pathogens, as well as biotoxins have been performed. Despite extensive laboratory analysis, no specific infectious disease agent or process has been identified. This may suggest that the underlying cause of this disease is most likely complex, involving a variety of factors.

The following disease agents, some of which cause ulcerative skin disease in marine animals, have been screened for and ruled out as possible causes: *Calicivirus*, *Morbillivirus*, *Pan-Picornavirus*, *Herpesvirus*, *Papillomavirus*, *Poxvirus*, *Parapoxvirus*, *Vesicular Stomatitis Virus*, *Foot and Mouth Disease*, *Circovirus*, *Influenza A/B*, *Arterivirus*, *Adenovirus*, *Coronavirus*, *Enterovirus*, *Flavivirus*, *Orbivirus*, *Orthohepadnavirus*, *Paramyxovirus*, *Rhabdovirus*, and *Papovavirus*.

## Future work

Testing continues for a wide range of possible factors in this disease, including immune system-related diseases, fungi, man-made and bio-toxins, radiation exposure, contaminants, and other stressors related to sea ice change. Scientists are investigating the possibility that radiation could have been one of many factors that contributed to the illness in these animals. Preliminary radionuclide testing conducted by the University of Alaska Fairbanks found radiation levels within the typical background range.