



NOAA FISHERIES

Northern Pinniped Unusual Mortality Event (UME) Update February 2013

How many ice seals appeared to be affected by UME symptoms in 2012 as compared to 2011?

In 2011 over ~200 ice seals were reported with UME symptoms. Most of the affected seals were ringed seals, but the unusual hair loss, delayed molt, skin lesions, and lethargy were also noted in spotted and bearded seals as well as one ribbon seal. Reports were received from northern Alaska, Canada (NWT), Russia (Chukotka), and Japan, with most ringed seal cases observed on the North Slope and bearded and spotted seal cases primarily observed from around the Bering Strait region.

In 2012, fewer cases were reported, with numbers declining as the year progressed. No new Canadian cases were observed in 2012. In Russia, fewer than 3 cases were identified in the spring with no new summer or fall cases. Similarly, less than 5 spring cases were received from northern Japan and no new reports received in the fall. In Alaska, there were fewer stranded seals on the North Slope with no live seals hauling out on local beaches (as observed during the summer of 2011); among the stranded seal carcasses no new cases were observed around Wainwright, Point Hope and Barrow. For subsistence harvested seals in Barrow, only 6 seals were found that had moderate patchy hair loss. The majority of reported cases (53) were from the Nome/Bering Strait region. Many of the cases reported in 2012, primarily adult bearded seals, did not appear to fit the 2011 case definitions as closely and it was also uncertain how many of these cases were ongoing (aka survivors) vs. new.

How many walrus appeared to be affected by UME symptoms in 2012 as compared to 2011?

In 2011, coastal community members, active hunters and research teams reported walrus with unusual skin lesions at the Pt. Lay coastal haulout. Because the lesions were similar in appearance to those observed in stranded seals, walrus were included in the ongoing UME investigation. Although Russian researchers and hunters have previously observed walrus with similar skin lesions at coastal haulouts in Chukotka, the condition had not been previously reported in Alaska.

In 2012, persistent sea ice in the Chukchi Sea prevented significant attendance at coastal haulouts, with no walrus observed at the Pt. Lay coastal haulout in Alaska and fewer

animals observed at the Chukotka haulout in Russia. Of those animals observed in Chukotka, no new UME cases were noted. Similarly, no UME cases were noted in walrus carcasses along the Chukchi Sea coast as part of North Slope Borough surveys. Within the Alaska hunting community, 6 out of more than 1300 landed animals were reported with unusual skin lesions in 2012, however none of the reported animals clearly fit the UME case definition for walruses.

Diagnostic testing of walrus tissue samples for known viral and bacterial agents have consistently returned negative results. The cause and significance of the unusual skin lesions observed in walruses remains unknown.

Have polar bears been added as an affected species?

Since the spring of 2012, a total of 23 polar bears from Barrow, Deadhorse and Kaktovik have been identified with variable degrees of hair loss/ thinning, inflamed and crusting skin, and oral lesions. The prevalence of these symptoms appears to be in about 28% of observed animals.

Thus far, testing for endocrine abnormalities (thyroid function) and vitamin A and trace mineral imbalances in affected bears has been inconclusive, as have toxicity studies. Proposed testing includes genetic sequencing of tissue samples for new viruses.

The concurrent presence of hair loss in seals, walrus and polar bears has suggested a possible connection between the events. However, unlike the seals and walrus, the bears do not appear to exhibit behavioral changes or systemic involvement nor has mortality been observed in affected animals. A similar hair loss condition has also been observed in polar bears in the past. Consequently, evidence is insufficient to include polar bears as a UME species at this time, but monitoring for new or unusual cases will continue into the 2013 field season.

What are most recent events in the investigation?

- On January 21, 2013, a full day UME workshop was held at the Alaska Marine Science Symposium in Anchorage, Alaska. The workshop was designed for those who had been involved in the response and investigation to date, and included members of agencies, diagnostic laboratories, academia and the subsistence communities from many areas throughout the US and Canada. The goal of the workshop was to facilitate the exchange of information, update participants on current findings; discuss the next steps including a list of possible causes of the event; concluding with an after action review of the investigation outlining what worked, what didn't work and gaps that needed to be addressed in the future. Proceedings of the workshop are being prepared and will be made available.

- Currently under discussion is how to most prudently use remaining tissues as well as the submission and testing of control samples. Some specific questions under consideration include:

Is the UME due to a poorly described infectious agent?

A pathological progression that appears to be central to the UME includes a skin vasculitis (blood vessel inflammation) and immunosuppression followed by a variety of secondary bacterial and fungal infections. Substantial testing has been completed on an array of both viral and bacterial agents associated with vasculitis and other pathologies in marine mammals, with consistently negative results. Recently, more specialized testing has indicated the possible presence of less well characterized viral agents, including circovirus, lentivirus, retrovirus, and gammaherpesvirus. Follow-up of preliminary findings, as well as testing for these viral agents in control animals, is essential in determining their potential as agents of disease.

Bacteria associated with the cases are likely secondary pathogens; however, *S. phocae* and hemotropic mycoplasma are two bacterial agents currently being considered for assessment as important co-factors.

Is the Ume due to toxic agents?

Public concern about the Fukushima nuclear plant accident in Japan has prompted tissue testing for radionuclides. Preliminary qualitative screening showed radiation levels within typical background levels for Alaska. As a follow up muscle tissue from control (n=11) and a few diseased seals (n=7) have been provided to the University of Alaska Fairbanks for gamma analysis. Gamma analysis of control and four diseased seal samples have been finalized in January ; preliminary results confirm cesium 137 levels in control and four diseased seals are similar to historical levels observed in seals sampled in the mid – 1990's in Alaska. Testing for the remaining seal samples has not been completed and gamma analysis is ongoing. An interim report is being prepared on these preliminary findings, which will be made available.

Testing has been negative for the most common harmful algal blooms (HABs), including domoic acid, PSP and okadaic acid. Testing for cyanotoxins, such as microcystin and nodularin, has also been suggested relative to a cyanobacterial bloom that has occurred in recent years in the Kotzebue Sound/Chukchi Sea and liver samples from 4 seals with possible cyanobacterial changes have been submitted to a HABs discovery laboratory. Results were expected in December, but difficulties with the test have delayed these results. Results are expected imminently.

Is the UME a result of multifactorial causes leading to abnormal molt?

Testing is being considered for endocrine/metabolic/nutritional abnormalities associated with abnormal skin and hair growth. Environmental factors that made the spring of 2011 unique will continue to be reviewed.



A sickened ringed seal found near Barrow, Alaska, in 2011. Photo courtesy of North Slope Borough Department of Wildlife Management.

If you find a seal or walrus acting abnormally or showing signs of illness, note its location and contact *your local wildlife authority as soon as possible.*

For more background on this event, updates, regional contacts, and how to help, see:

<http://alaskafisheries.noaa.gov/protectedresources/seals/ice/diseased/default.htm>
http://alaska.fws.gov/fisheries/mmm/walrus/disease_investigation.htm