Alaska Region Marine Mammal Stranding Network

SUMMER 2012 NEWSLETTER

Stranding Photo of the Summer: An adult Eagle takes advantage of a stranded harbor porpoise calf in Glacier Bay National Park during July.

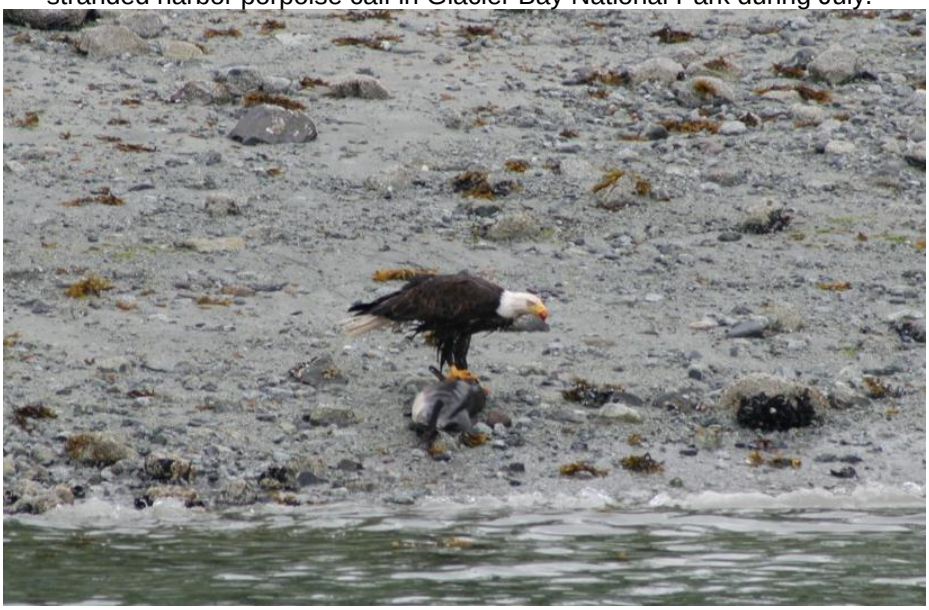

Photo credit: Madeleine Joy, a 14 year old passenger on a passing tour vessel.

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Marine *Brucella* Update for the National Marine Mammal Stranding Network

NMFS Marine Mammal Health and Stranding Response Program.

Dear National Marine Mammal Stranding Network Members,

The Marine Mammal Health and Stranding Response Program (MMHSRP) would like to update you about recent developments regarding marine *Brucella* exposures to National Marine Mammal Stranding Network personnel, to distribute updated information regarding Personal Protective Equipment (PPE), and to alert you to an ongoing marine *Brucella* interagency study.

Since our last call there has been additional testing for marine *Brucella*from cetaceans strandings from the Pacific, Gulf of Mexico, and Atlantic coasts and additional cases have been confirmed in both the Atlantic and Gulf of Mexico. Test results are pending from the Pacific coast. In July an isolate from a stranded dolphin in South Carolina was found to be ST27 *Brucella* positive, increasing the concern about occupational exposures and risk of disease in people. ST27 is the strain of marine *Brucella* that has been associated with disease in humans in the three community acquired cases reported in the literature to date. All three of these exposures occurred outside of the United States. Increasing reports of positive marine *Brucella* found in cetacean tissues and diagnosis of brucellosis in cetaceans have highlighted the need to answer key questions about marine *Brucella*, including questions regarding potential occupational exposure/human disease, public health, impacts on populations, and marine mammal health trends.

Marine Brucella Exposure Investigation –

Based on the increased number of detected cases and the ST27 positive case, the MMHSRP recently began working with the CDC (Bacterial Special Pathogens Branch and NIOSH) and state public health officials to monitor the exposure of stranding network personnel to positive *Brucella* animals in South Carolina. That exposure study is currently expanding out to stranding network personnel exposed to cases of marine *Brucella* in several states that have reported positive cases since November 2011. The CDC investigation consists of exposed personnel completing a questionnaire to establish exposure risk, and those persons that have “high risk” exposures will have follow-up conversations with state public health officials regarding follow-up monitoring and/or treatment. The CDC defines “high risk” exposures as exposure to aerosols generated during necropsy such as from Stryker saw removal of the brain and/or high pressure hose cleaning without the use of complete eye and respiratory protection (face shield/goggles and N95 mask). Additionally, any exposure to blood or body fluids

Continued on next page….

Brucella Update, cont.

through cuts or scrapes would be considered “high risk” exposures. To date, none of the “high risk” individuals have tested positive for *Brucella* and no individuals have reported signs of illness.

Currently, MMHSRP staff are in the process of contacting the stranding network facilities with known *Brucella* positive animal exposures and are facilitating discussions among the network facilities, state public health officials and CDC for follow-up questionnaires and monitoring. This CDC investigation is completely voluntary and network personnel are not required to participate. The incubation period for *Brucella* is 5 days to 5 months and the post-exposure monitoring period is 6 months from exposure. For questions regarding the marine *Brucella* exposure investigation, please contact deborah.fauquier@noaa.gov.

Revised Interim Recommendations for PPE for Handling Live and Dead Marine Mammals with Suspected Infectious Disease –

In Fall 2011, *Brucella* prevention guidelines were issued for network members in the Northern Gulf of Mexico. Based upon recent findings from the marine *Brucella* exposure investigation, the MMHSRP and CDC have revised these existing guidelines and have developed revised interim recommendations for PPE for handling live and dead marine mammals suspected of marine *Brucella* infections. These revised interim guidelines are recommended to lower the risk for exposure to most infectious diseases. The MMHSRP is continuing to work with CDC and additional guidelines on ways to minimize zoonotic disease exposure will be distributed in the next six to twelve months to the network as we further evaluate the pathogens and the activities of the stranding networks.

Finally, a two year interagency study is underway to better understand marine *Brucellas*, their impacts on marine mammals, the biovars circulating in marine mammals in North America, and the potential pathways for infection in the marine environment. As we get this investigation underway, study protocols and participation information will be provided to you in the next few months.

For these investigations we are requesting that you report all *Brucella* positive animals to your regional stranding coordinator who will report to us.

As always we at MMHSRP thank you for all of your hard work and dedication to the marine mammal stranding network. Please let us know if you have any additional questions or concerns.

The Problem with Packing Bands

The Alaska Department of Fish and Game, NOAA Fisheries, and the interagency Pinniped Entanglement Group (PEG) teamed up this summer with college student intern Sarah Donohoe to investigate the issue of packing bands and pinniped entanglement in Alaska. Sarah researched the life history of packing bands, how they enter the marine environment, where they are manufactured, and what alternatives exist to the traditional plastic band.

Here are some excerpts from Sarah's final report:

- Standardized Steller sea lion surveys conducted throughout Southeast Alaska have documented hundreds of animals with neck entanglements since 2000.
- Plastic packing bands are the most commonly observed neck-entanglement hazard for Steller sea lions. Sources for plastic packing bands include nearly all industries that have to deal with packaging and shipping. Airline cargo, bait boxes, fish boxes, and packaging materials are some of the areas where packing bands are used.
- Because of the widespread use of packing bands, it is very difficult to pin down a pathway detailing how these plastic loops are entering the marine environment as debris. Much of the issue remains a mystery. Questions we are currently trying to answer include: How are plastic packing bands entering the marine environment uncut? Could banded bait boxes be a major source for these entanglement hazards? How are bait boxes disposed of at sea? How often do bait boxes wash overboard with plastic strapping still intact? What other potential sources for the plastic strapping debris are there? Have people addressed this issue in other regions, and if so, how was it approached?
- Plastic packing bands are such a widely used item that they are supplied to Alaska through many different companies and for many different purposes. To implement or develop alternative options, it is necessary to know what is currently being used. The type of strapping, its anticipated use, and the sealing procedure used with it are key elements for developing good alternatives. Necessary dimensions to take into consideration for plastic strapping and its compatability with a banding machine are its core diameter, core width, strap width, and strap thickness.

Packing Bands cont…

- The circumference range for bait and fish boxes from a variety of different processors can be from 75cm-210cm. The range in circumference for SSL's neck girths is 42cm-180cm. The size of both bait and fish boxes are comparable to the size of packing straps that can entangle a SSL.
- Local & Alaskan plastic strapping suppliers include: Northern Sales, Continental Western Corporation, Frontier Packaging
- The handling and proper disposal of packing straps onboard vessels is potentially the largest source for packing straps that end up as marine debris.
- Large bundles of strapping are taken aboard catcher-processor vessels to package and freeze product onboard. The handling of packaged fish boxes, however, offers little opportunity for them to enter the ocean as debris. Product is generally packaged below decks and immediately stored in the ships' freezer until it is off-loaded in port.

Jacek Maselko shows a packing band with print "PITT MEADOWS MEATS LTD. EST. 362". This is a band from a meat packaging plant in Alberta, Canada. The band was found in 2008 on Middleton Island.

- Bait box bands have been identified as a likely source for entanglement debris. Vessels may dispose of cardboard as long as they are 12 miles out from land. Typically, the plastic bands may still be attached and overlooked as the cardboard is thrown over. Bait boxes are also often taken out of a ship's freezer and brought on deck many at a time. While on deck, they have the potential to get wet and for the cardboard to fall apart, leaving the sealed plastic straps intact, uncut and free from the bait box.
- Western and Southern Australia banned bait box straps in 2011 due to entanglement issues with dusky whaler sharks, New Zealand fur seals, and sea lions.
- Biodegradable strapping alternative Enviro-Strap is still under modification.
- Jacek Maselko from NOAA Fisheries is conducting beach debris surveys in 2012-13 and photo-documenting plastic strapping.

Photos courtesy of Jacek Maselko, NOAA Fisheries

Case Study:

Steller Sea Lion in Sitka

Rachel K. Berngartt, DVM
Stranding Network Member

Adult Male Steller Sea Lion
June 20, 2012

A collaborative Stranding Network effort involving: NMFS PRD, ADF&G, NOAA Enforcement, Sitka Tribe, UAS Sitka Campus (Jan Straley's Lab), UAF, USFS and Sitka Sound Science Center. Dr. Rachel Berngartt with Bridge Veterinary Services, LLC fromJuneau lead the necropsy and all samples were sent to Dr. Kathy Burek at Alaska Veterinary Pathology Service.

Gross Necropsy Findings

This animal had obvious signs of human interaction with a flasher hanging from the left side of his mouth, and a fish hook imbedded in his left neck. The animal also had numerous wounds across his back originally suspected to be shotgun wounds, but were found to be bite wounds typical of wild adult male Steller sea lions. This animal had bilateral pneumonia and pleural effusion. (Both sides of the lungs were affected and both sides of the chest cavity were filled with gallons of pink/creamy fluid indicating severe infection). As the necropsy progressed, we could follow the line attached to the flasher to a snagging hook (or treble hook) lodged in the animal's esophagus. The puncture created by the hook in the esophagus allowed bacteria to travel from the esophagus into the chest cavity, thereby creating the severe pneumonia.

The unusual fate of a killer whale from Kruzof Island

S Atkinson[1] and K Jackson[2]
[1]School of Fisheries and Ocean Sciences, University of Alaska Fairbanks,
[2]National Marine Fisheries Service

In March of 2011, a beach-cast carcass of a juvenile killer whale was reported via Stranding Agreement holder, Jan Straley, to the Stranding Network. Volunteer, Paul Norwood, headed to its location on Kruzof Island via kayak to document and secure the animal while response crews started getting organized. Inclement weather and personnel availability delayed further response for 5 days- which turned into a blessing in disguise. The extra time allowed the opportunity to bring on board additional support, including orca expert, Dr. Stephen Raverty, who agreed to lead the necropsy along with Dr. Rachel Dzuiba. Alaska Pathology Services provided assistance and supplies via network newcomer, Katie Royer. The University of Alaska Fairbanks provided a crew, led by Dr. Shannon Atkinson, to collect the skeleton post-necropsy, made possible by the donation of heavy duty bags by Alaska Airlines for bone transport. The University of Alaska Southeast Sitka Campus and the Sitka Sound Science Center both provided multiple necropsy volunteers. The Forest Service generously provided boat transport for the entire crew and bear protection at the scene. Due to the willingness of the Forest Service to provide multiple trips to and from the site, we were even able to bring Ed Ronco, a local National Public Radio reporter, along to document the event.

Fortunately for us, the bears stayed away and southeast weather proved yet again to be unpredictable, providing sunny t-shirt weather for the entire day. With all hands on deck, we were able to perform a complete necropsy and still have time to flense the bones to haul back to the boat before dark forced us off the site.

While the necropsy has so far provided information about the killer whale, affectionately named Kruzof, analysis of the skeleton has added more information enhancing our quest to understand why this young killer whale failed to thrive.

Continued on next page.

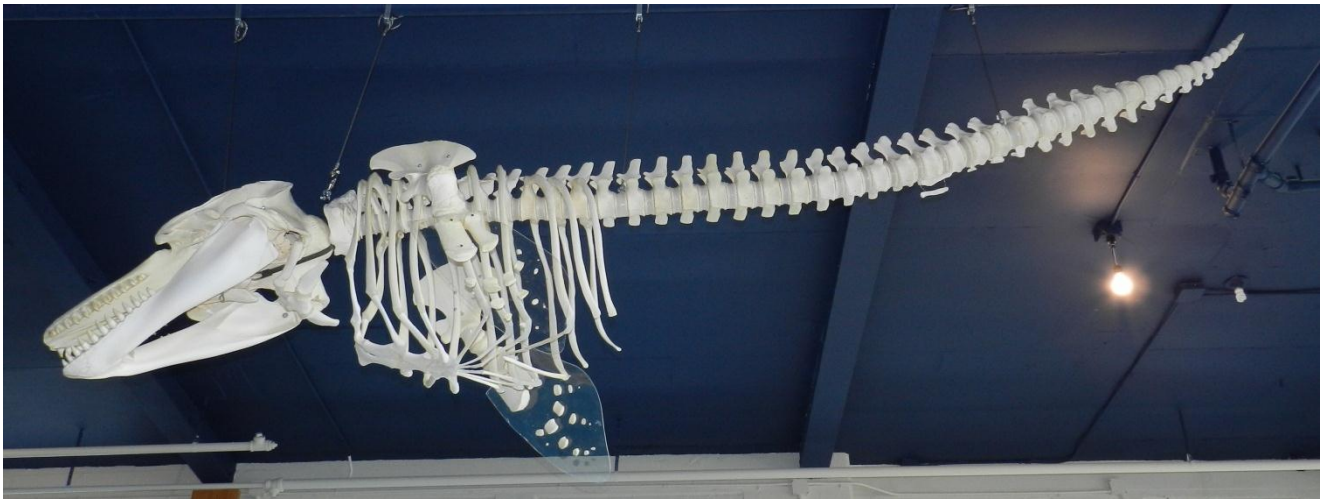
Top: Initial sighting of whale. Middle: Necropsy crew flensing the animal. Bottom: Ellen Chenoweth helps clean the skull for transport.

The unusual fate of a killer whale from Kruzof Island

Cont….

The most obvious morphological changes were twofold: 1) a severely malformed clavicle, commonly called a collar bone, which was asymmetrical, with a bony growth about 3 cm in length, and 2) a broken sternum, with one of the 5 sternal bones fractured into 2 pieces. This bone was clearly healing and obviously happened long before the death of this animal. The other less obvious findings included substantial dental malocclusion of a few teeth, remarkable asymmetry of the sternal ribs, and lack of carpal bones. The biological significance of these less obvious findings is unknown. The final results of this analysis will be published in peer-reviewed scientific literature. This skeleton has been used as a teaching tool for a middle school summer camp and a community-based class at Sitka Sound Science Center. Both University of Alaska Southeast (UAS) and University of Alaska Fairbanks (UAF) have contributed to the unique opportunity of having access to a killer whale and being able to use it for educational outreach. UAS offered the community based class for college credit and employs Mrs. Jan Straley who is part of the National Marine Mammal Stranding Network. UAF provided salary for Dr. Shannon Atkinson, who has led the effort to rearticulate the skeleton and taught the classes at Sitka Sound Science Center through the NSF funded Science in Residence Program. Other contributors to the project include, National Marine Fisheries Service, National Park Service, US Forest Service, Karsh Family Foundation, Skaggs Foundation, and several individuals who contributed time and finances to take advantage of this unique opportunity. Kruzof now hangs at Sitka Sound Science Center and serves as an ambassador of his species.

Above: Kruzof's malformed clavicle next to his regular one on the right. (photo: K. Jackson). Left and below: The re-articulated skeleton now hangs in the SSSC. (Photos: A. Avery).

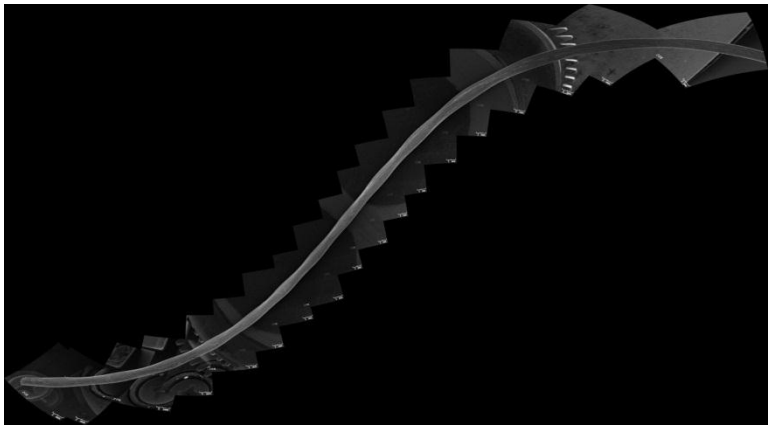


Annual Diet Trends in Harbor Seals: Sample Request

Justin Smith
ADF&G

I recently began a master's program in the Dept. of Conservation and Wildlife at UAF studying diet in harbor seals (*Phoca vitulina*) using stable isotopes. The ADF&G Harbor Seal Program has collected single whiskers from live captured harbor seals from Tracy and Endicott Arm glacial fjords (TAFT), Glacier Bay glacial fjords and islands (GB), islands in Prince William Sound, and off the coast of Kodiak from 2003-2010 (NMFS Research Permit #358-1787). Seals were captured before and during the annual molting period. Molting differs between cohorts, staggering between July and September. Similarly, harbor seals are thought to shed their whiskers annually during the same time period. The goal of this graduate study is to analyze the whiskers for stable isotopes in an attempt to develop a tool that estimates an annual diet profile. By measuring the beading structure along the length of the whisker, we believe we have found a way to distinguish between whiskers that have grown throughout the year and whiskers that have recently grown. Once we have removed the recently grown whiskers we will compare serial sections of the whiskers with isotope signatures from other body tissues, adjust signatures for diet to tissue fractionation (change in signatures within the body), and develop mixing models to identify the proportion of each diet item consumed. If the development of the annual profile diet estimation tool in whiskers is successful, we may be able to apply this technique to other seal species of concern (ringed, spotted, and ribbon seals). With a large enough sample size from either stranded or subsistence harvest seals, we may be able to identify changes in diet across many years for both the time of year and at the trophic level. A way we can test the validity of this comparison is to compare multiple whiskers from the same individual seal to see if the isotope signature occurs at the same calculated location.

Single plucked whisker from an adult male harbor seal.



Portion of harbor seal whisker demonstrating beading structure. Photo taken by the Scanning Electron Microscope at UAF.

Harbor seal captured in Tracy Arm Fords Terror Wilderness Area under NMFS Research Permit #358-1787. Photo by Jonathan Fiely.

We are requesting cheeks from harbor seals found dead, along with approximate age (pup, sub-adult, adult), sex, condition, and morphometric measurements. Currently, our cohort of specific interest is sub-adult and adults from TAFT and GB, but seals at all age classes from any area are welcome for future inquisitions. Seals found before molt (August) are preferred. We are open to accepting samples this year and next.

Announcements

Northern Pinniped Unusual Mortality Event Update:
Alaska UME Unrelated to Bird Flu.

Bird flu, or avian influenza, is not a factor in the Alaska unusual mortality event (UME) that has been affecting Alaskan marine mammals for the past year. Recent reports that the UME in New England harbor seals was caused by the bird flu mutating and affecting harbor seals has caused increased concerns in Alaska's northern coastal communities. The NOAA-led team of marine mammal scientists and pathologists report that when sick seals first appeared last year, pathologists immediately tested for bird flu, since Alaska is a major flyway for birds, and therefore a possible location for introduction of bird flu. Alaskan UME ice seals and Pacific walrus tested negative for bird flu. Additionally, microscopic findings in the lungs and skin of ringed seals and walruses from the Alaska UME are different from those of the New England harbor seal UME. The Alaska UME investigative team is collaborating with scientists across the country and world on such matters to ensure appropriate surveillance and early detection of sickness in marine mammals.

Update on the Pinniped UME in the Northeast

S.J. Anthony, J.A. St. Leger, K. Pugliares, et al. (2012) Emergence of Fatal Avian Influenza in New England. Harbor Seal. mBio 3(4).

The NE Pinniped UME is still under investigation and more information regarding the event can be found at:
http://www.nmfs.noaa.gov/pr/health/mmume/pinniped_northeast2011.htm

Stranding Agreement Renewals

The majority of Alaska's stranding agreements are coming up for renewal before the end of 2012. If your agreement is set to expire, we will be contacting you this fall regarding your intention to renew. If you do intend to continue as an active member of the network, please be aware that our goal is to have new agreements in place before the end of December.

Congratulations!

Two members of the Alaska Marine Mammal Stranding Network were awarded Prescott Grants in 2012. Please help me in congratulating UAA/Kathy Burek and the Alaska SeaLife Center.

Stranding Articles

Hot off the press:

A scientific article in the Journal of Marine Biology summarizes 108 reported whale-vessel collisions in Alaska from 1978–2011, of which 25 are known to have resulted in the whale's death. The article describes factors in collisions such as whale species, geographic location, vessel size and speed. Here are highlights of a few key findings: Seven different species were involved in vessel collisions; humpback whales were the most common. For the 25 whale mortalities, vessel length was known in seven cases (190–294 meters) and vessel speed was known in three cases (12–19 knots). In 36 cases, human injury or property damage resulted from the collision, and at least 15 people were thrown into the water but there have been no known human fatalities so far. Interestingly, there were 15 cases in which humpback whales struck anchored or drifting vessels, suggesting that the whales did not detect the vessel. This study is the outcome of a collaboration between Glacier Bay National Park, NOAA Fisheries and the University of Alaska Southeast.

The study also revealed that very few of the reported collisions were accompanied by all the pertinent facts. If you are responding to a reported collision, it is important to find out all the basics (vessel name, size, speed, # persons onboard, whether there were any human injuries or vessel damage) as well as any available information and photos that document the presumed outcome for the whale (blood in the water, propeller wounds, whale's behavior) resulting from the collision.

You can find the article at the web link:
http://www.hindawi.com/journals/jmb/contents/

Citta, John J., Lori T. Quakenbush, John C. George, Robert J. Small, Mads Peter Heide-Jorgensen, Harry Brower, Billy Adams and Lewis Brower. (2012) Winter movements of bowhead whales (Balaena mysticetus) in the Bering Sea. Arctic 65(1):13-34.

Harwood, Lois A., Thomas G. Smith and James C. Auld. (2012). Fall migration of ringed seals (Phoca hispida) through the Beaufort and Chukchi Seas, 2001-02. Arctic 65(1):35-44.

Nielsen TP, Wahlberg M, Heikkilä S, Jensen M, Sabinsky P and Dabelsteen T (2012) Swimming patterns of wild harbour porpoises *Phocoena phocoena* show detection and avoidance of gillnets at very long ranges. Marine ecology progress series Vol. 453: 241–248

Neilson, Janet L., Christine M. Gabriele, Aleria S. Jensen, Kaili Jackson, and Janice M. Straley (2012) Summary of Reported Whale-Vessel Collisions in Alaskan Waters. Journal of Marine Biology. Volume 2012, Article ID 106282

Pyenson, Nicholas D., Jeremy A. Goldbogen, A. Wayne Vogl, Gabor Szathmary, Richard L. Drake and Robert E Shadwick. (2012) Discovery of a sensory organ that coordinates lunge feeding in rorqual whales. Nature (London) 485(7399):498-501.

Quirós, Yara Bernaldo de, Óscar González-Díaz, Manuel Arbelo, Eva Sierra, Simona Sacchini, and Antonio Fernández. (2012) Decompression versus decomposition: distribution, quantity and gas composition of bubbles in stranded marine mammals. Frontiers in Aquatic Physiology.

Ritter, F. (2012). Collisions of sailing vessels with cetaceans worldwide: First insights into a seemingly growing problem. Journal of Cetacean Research and Management, 12(1): 119-127.