Update on 2008 collection activities related to "stinky" gray whales in Chukotka, Russia

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ABSTRACT

During the last several years, Chukotkan marine mammal hunters have observed and taken eastern North Pacific gray whales (*Eschrictius robustus*) that have had a strong "medicinal" or "chemical" odor during the aboriginal subsistence hunt in the area around the Bering Strait in the North Pacific Ocean. Subsistence consumers that have tried to eat these whales have reported becoming ill or have experienced what has been described as a "numbing sensation" in their mouth. The whales exhibiting these characteristics are considered inedible. The cause of the foul smell has yet to be determined, but a bilateral, cooperative research effort involving an American (North Slope Borough Department of Wildlife Management) and Russian (ChukotTINRO) research partnership has been developed to collect field samples. In 2008, samples were collected from both affected and non-affected whales and additional field collections are supported for 2009-2011. We present information on research efforts that took place in 2008 and details of the cooperative arrangement that makes this research possible.

KEYWORDS: ARCTIC; BIOTOXIN; *ESCHRICTIUS ROBUSTUS*; GRAY WHALE; WHALING-ABORIGINAL

Over the last forty years, Chukotkan Native subsistence hunters have occasionally noticed a peculiar smell associated with exhalations and tissues from eastern North Pacific gray whales. Over the last ten years, the number of "stinky" whales (as they have been termed) appears to be rising, though the increase is somewhat difficult to assess and the number of affected whales varies from year to year. Affected whales have been reported between the months of May and October and are often malodorous enough to allow hunters to avoid them via the detection of the exhaled odor from their blow. The smell has been described as "medicinal" or "phenolic". People who have eaten tissues from these whales have described numbness/tingling in their oral cavity and physiological reactions such as skin rashes or stomach aches. Tissues from these stinky whales are considered inedible and public health concerns have been raised related to their consumption. Hunters have also noticed a similar odor in walruses, ringed seals, bearded seals, seabird eggs and some species of fish. When encountered, these subsistence foods are considered abnormal and are not eaten.

At the 58th session of the IWC, an investigation team of scientists from Russia, USA, Norway and Japan was established to research the "stinky" whale phenomena. Multiple gray whales taken in the Chukotkan subsistence hunt were investigated. Some of these samples were analyzed for contaminants in the U.S., while others, taken from subsequent years, were analyzed in Russia. These samples and analyses are summarized in the 2007 IWC gray whale summary paper to the ASW group. In short, the cause of the stinky whale odor has not been determined but the results of these analyses did not indicate an anthropogenic chemical. Sample quality and preservation was noted as having a negative effect on analyses, as the samples had undergone several freeze-thaw cycles, an extended shipment period in a non-frozen state and a significant period of time had elapsed between sample collection and analysis. Several

recommendations were made for improving future collections which we have tried to incorporate into our current efforts.

The weather presented the most formidable challenge to research efforts in 2008. Researchers from both the US and Russia were unable to reach the field sites (Lorino and Lauvrentia) for almost two weeks due to inclement conditions in both Anadry and Lauvrentia. Representatives from ChukotTINRO were eventually able to reach the field site and collected samples from four subadult whales (Table 1): two of these were considered normal and two were considered inedible (stinky). These samples are currently held in freezers that were shipped from Alaska to both Anadyr and Lauvrentia, as an effort to improve sample storage conditions and, thus, sample quality when shipping and analyses are finally undertaken. No formalinized samples were collected in 2008, though formalin was shipped to the field site and will be available for future sample preservation.

In addition to the four whales sampled in 2008, we have learned of samples that have been collected from seven additional affected (stinky) whales, presumably during the 2008 field season. We are awaiting additional details on these samples, but initial information provided leads us to believe that these samples are likely to be included in analyses related to this research effort. All samples from 2008 are held in Russia, awaiting permits to ship to the U.S. for analyses.

The NSB-DWM will support field research efforts in 2009 and funding has been granted for additional Chukotkan marine mammal work in 2010 and 2011. This research will be a collaborative effort between NSB-DWM, ChukotTINRO, ATMMHC, Chukotkan Science Support Group, VNIRO and several local Chukotkan Native groups. As with 2008, samples from eastern North Pacific gray whales will be collected for histopathology, chemical analyses, biotoxin analyses, nutritional analyses, and prey identification. Morphometric measurements will be taken, including information on body condition (i.e., girths, blubber thickness) and skin lesions. Additionally, samples from other local subsistence foods exhibiting a similar smell (i.e., seal, walrus, fish, seabird eggs) will be collected on an opportunistic basis. Samples will be collected in pairs, stored in Russia until permits are obtained and will then be split between Russian and US laboratories. Local field assistants will receive training in proper sample collection and processing techniques, in hopes of encouraging additional sample collections. Analyses and publications will be a cooperative effort between Russia and the United States.

It is our hope that the necessary permits will be obtained during the summer of 2009 in order to ship both the 2008 and 2009 samples back to the U.S. in summer, 2009. This would be via a 2 hour non-stop flight across Bering Strait, which would hopefully result in minimal thawing of tissues. It is likely that paired analyses will be conducted in the U.S. and Russia. The Russian researchers have indicated interest in having toxicology and other chemical analyses performed at Moscow State University and genetic analyses done by the researchers at VNIRO. The U.S. laboratories have yet to be determined, as we have yet to secure funding for analytical work. It is our hope that the National Marine Fisheries Service will continue its interest and involvement in these efforts and assist with recommendations for appropriate laboratories for analyses when funding becomes available for these analyses.

Table 1. Samples collected in Lorino, Russia during the summer of 2008.

#	Date	Sex	Length, ft	Blubber, cm	Flipper, cm		Specimen collected 2009												Note
					Len	Width	Blubber/ skin	Stomach cont	muscle	liver	kidney	Eye	Skin/spleen	Blood	Feces	Urine	Baleen	Brain	
1	20-7	M	30.8	9.3			●	●	●	●	●	● R	●	●	●			●	
2	23-7	F	29.5	9.0	144	53	●	●		●	●	● L	●	●	●		●	●	
3	06-8	M	26.4	10.5		50	●	●	●	●	●	● L	●	●	●			●	stinky
4	07-8	M	29.2	8.0	176	62	?	?	?	?	?	?	?	?	?	?	?	?	stinky