included antibiotics, antiinflamatories, antihistaminic, analgesic, hydration fluids, and critical ethological support. Pinniped survival rate is 76%, meanwhile cetacean rate has been 24% survived. Large whales were affected by fishery entanglement conducing to the death of the animal in 50% of the cases. No marine otters survived the rehabilitation process. During the years 2008, 2010 and 2013, live emergencies were associated to major outbreaks potentially associated to environmental factors. Further epidemiology research will be conducted, as it is critical to understand the role of these species as sentinels of the cumulative effects on their health and that of the ocean we are equally linked to.

Fatty sound reception in minke whales: the lipid composition and potential function of fats associated with mysticete ears

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Cetaceans possess highly derived auditory systems because a conventional pinna and air-filled ear canal are ineffective at collecting and guiding sound towards the middle ears in an aquatic environment. Odontocetes, or toothed whales, receive sound through specialized “acoustic fats” associated with the mandibles and ears. Although sound reception mechanisms of mysticetes (baleen whales) are unknown, we found that some mysticete species also have large, discrete fat bodies associated with their auditory bullae. In this study, we investigated the biochemical composition of this fat in the minke whale (*Balaenoptera acutorostrata*) and used Finite Element Modeling to determine sound propagation through the whale head. Our results indicate that the mysticete fats are composed of lipids common in mammalian tissues, lacking the short, branched chain fatty acids and wax esters characteristic of odontocete acoustic fats. However, the mysticete and odontocete fats share some characteristics, including having fewer dietary signatures than blubber and being conserved under starvation. FE models were created using morphological data from CT scans of whole minke whale heads and material property data from measurements on minke whale tissues as well as published data for typical mammalian fatty tissues. The model indicates that the presence of the fat body causes a slight increase in peribullar sound pressures, which is attributed to the low sound speeds and densities of the fat body. Fatty tissues are known to have lower densities and sound speeds than other types of soft tissues, which may explain why they are found in the auditory systems of cetaceans.

Spatial and temporal variation in feeding ecology of Hudson Bay ringed seals in a changing environment

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Current trends toward increased temperatures, reduced sea ice extent, and longer open water seasons have resulted in changing Arctic ecosystem dynamics, which may have important implications for Hudson Bay ringed seals (*Phoca hispida*). The purpose of this study was to investigate spatial and temporal variation in ringed seal feeding ecology in Hudson Bay in relation to environmental change. Intra-annual variation was assessed using $\delta^{15}N$ and $\delta^{13}C$ stable isotope analysis (muscle), fatty acid analysis (blubber), and an estimation of percent blubber on 192 ringed seals sampled from November 2009 to May 2011 in eastern Hudson Bay. Spatial and inter-annual variation was investigated using $\delta^{15}N$ and $\delta^{13}C$ stable isotope analysis on ringed seal muscle and hair collected from both eastern (N=255, 2003-2010) and western Hudson Bay (N=122, 2007-2010). Fatty acid composition, $\delta^{15}N$, and $\delta^{13}C$ indicated pelagic feeding during the open water season when fat and energy stores are replenished, increased benthic foraging during the period of ice cover, and a period of fasting during the spring molt. Seals from western Hudson Bay had higher $\delta^{15}N$ and lower $\delta^{13}C$ than seals from eastern Hudson Bay and stable isotope ratios varied inter-annually within each region. Peak $\delta^{15}N$ values occurred in years with spring temperatures between approximately -5°C and -2°C. We hypothesize that the high $\delta^{15}N$ observed in ringed seals, within the identified spring temperature range, is indicative of relatively greater importance of capelin (*Mallotus villosus*) in the ringed seal diet. This study provides the first year-round collection of ringed seal tissue samples and a comprehensive baseline dataset of the seasonal pattern of biomarker composition. The baseline data and the evidence for spatial and temporal variation in ringed seal feeding ecology related to environmental conditions have important applications for short-term management and ecology studies as well as long-term conservation and monitoring programs.

Modelling distribution and abundance of humpback whales (*Megaptera novaeangliae*) in the Western Antarctic Peninsula during the late autumn

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Humpback whales (*Megaptera novaeangliae*) feed in the continental shelf of the Western Antarctic Peninsula during the austral summer, but little is known about their inshore activities in autumn. As a result, the relationships between humpback whales, their environment, and their prey have yet to be examined at finer spatial extents in the Antarctic ecosystem. The Western Antarctic Peninsula is a region characterised by complex coastlines that complicates the use of traditional distance sampling techniques in these areas. Using data collected from non-randomised surveys, we investigated trends in the spatial relationships between humpback whales and their environment sighted during the autumn 2009 and 2010 surveys in the Gerlache Strait and in adjacent bays using spatial density modelling techniques based on a suite of environmental predictors, including sea ice cover and krill density. These models were used to map predicted densities and estimate the abundance of humpback whales within the area. Altogether, humpback whale abundance in the surveyed regions of the study area was estimated to be 1579 individuals (95% CI = 967 – 2191) in 2010. The predicted density map for the survey data also produced a peak estimate of 2.4 whales per km^2 in 2010, where the highest densities were found at the mouth of Wilhemina Bay. As the climate of the Southern Ocean is changing profoundly, notably with reductions in sea ice extent and krill biomass, focused research studies such as this are of paramount importance to understand the degree to which the altering ocean and local prey abundance and distribution may affect these cetacean populations.