

Skin Health, Molt, and Related Hormones in Alaskan Ice Seals

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Bearded (*Erignathus barbatus*), ringed (*Pusa hispida*), and spotted seals (*Phoca largha*) are Arctic and sub-Arctic pinnipeds that rely on seasonal sea ice for key life history stages, including pupping and molting.⁴ A recent unusual mortality event (UME) involving skin pathology in Alaskan pinnipeds highlighted the potential sensitivity of these species to the complex effects of climate change, as well as the lack of available reference data for healthy individuals. The Alaska Pinniped UME (2011–2016) included seals and walrus that presented with abnormal behavior, disrupted molts, and unusual skin lesions.³ Despite intensive investigation, the etiology remains unknown,^{7,8} and potential cases continue to appear.⁶ Thyroid hormones,^{1,2,5,9-11} vitamin A,¹⁰ and cortisol^{5,11} have been shown to play essential roles in skin health and molt in other pinnipeds. Unfortunately, it was not possible to evaluate these factors in cases associated with the UME since no comparative levels were available from healthy animals. To better understand key health parameters that may inform conservation and management efforts, diagnostic information was gathered between 2000 and 2020 from seals in short-term rehabilitation and seals living in long-term human care to evaluate and compare key health parameters. For individuals in apparent good health, thyroid hormones (TT4, TT3, and FT4), Vitamin A, and cortisol levels are reported for 5 ringed (31 samples), 6 spotted (18 samples), and 3 bearded seals (5 samples) at the Alaska SeaLife Center including repeat samples taken from individuals throughout the year. In general, observed ranges were higher than seen in harbor seals and there were differences between individuals. The information reported in this study, although limited by sample size and sampling intervals, can be used to support veterinary management of Alaskan ice seals under human care and to create an initial baseline for health monitoring in wild populations. As more data become available, we hope to resolve seasonal and physiological patterns in these important health parameters.