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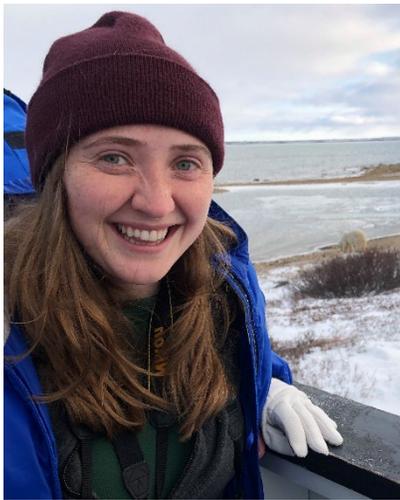
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2024 AFSC Seminar Series

Jenny Stern, University of Washington

Tuesday, March 19th @ 10 am Pacific

Quantifying the timing and rate of hair growth in polar bears



The foraging ecology of wildlife populations has important implications for individual health, population productivity, and distribution patterns. In polar bears, food resources and foraging behavior primarily affect population dynamics via effects on cub production and survival. Much of what is known about the feeding ecology of polar bears is based on analyses of various tissues collected from capture-based research efforts, harvested animals, or non-invasive approaches. However, inference about diet from hair has been limited by a lack of quantitative data on the timing of the molt and hair growth rates. We designed methods to quantify hair growth rates in bears through a collaboration with zoos. Through this process, we identified and implemented an effective visual and biochemical approach proven safe for humans and other animals to quantify the rate and timing of hair growth. The study included a) the application of a small patch of hair dye on the rump or foreleg and, b) feeding

an isotopically-labeled ingestible glycine (amino acid) capsule that 'marks' time at a particular location as it is incorporated within the hair. Both methods quantified hair growth between the time the bleach or dye was applied, or the glycine marker was fed and the time that hair was collected. We collected hair at regular intervals (every 1-2 weeks) from locations on the bear consistent with commonly sampled collection points in wild-caught bears. Hair samples were used to determine the timing of incoming new hairs, preliminary growth rates, and the incorporation times of glycine. This study provides the first step for developing a foundation for incorporating seasonality in the wild-collected polar bear hair samples by assessing growth over an annual cycle.



For more
information contact:
Amanda.Warlick@noaa.gov
Alexandra.Dowlin@noaa.gov