

**** Missing the Point: Consequences of Behavioral Bias in GPS Telemetry Data (Poster)**

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Telemetry units equipped with a global positioning system (GPS) have transformed our understanding of animal movements and behaviors. However, most analyses that use GPS data assume that acquisition success is independent of animal behavior. This assumption may be violated when body position affects GPS antennae orientation which compromises satellite acquisition, resulting in failed fixes that are behaviorally biased. Accounting for this potential bias may be important to enhance inference of animal movement and resource selection studies. Modern GPS collars often incorporate onboard sensors (e.g., activity) which provide auxiliary data streams that can help infer behavior even when locations are missing. We used telemetry and activity data from GPS collared grizzly bears (*Ursus arctos*) in the Greater Yellowstone Ecosystem to integrate behavioral inferences with fix failures. Failed fixes often occurred during periods of low activity, likely when bears rested in positions that compromised satellite communication. We used a two-stage hidden Markov and state-space modeling framework to interpolate these resting locations and assess how estimating locations of failed GPS fixes propagates through analyses that rely on location data, including movement metrics, behavioral classifications, and resource selection. Characterizing how GPS acquisition failures relate to animal behavior helps reduce the risk of conflating artifacts of data collection with biological patterns, enhancing inference and improving conservation decisions.