

# Black Bear Fitness and Interactions with Humans in an Anthropogenic Context



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Multiple studies confirm that anthropogenic pressure has reshaped at least 75% of the global terrestrial biosphere, converting these areas to more anthropogenic biomes. These ‘anthromes’ have played a key role in altering life history strategies (e.g., shifts in breeding phenology, reduced home range, increased competition for anthropogenic resources, increased mortality from anthropogenic causes). Large carnivores are particularly at risk in anthromes because of their large home ranges, high dietary needs, and long generation times, which increases their likelihood of conflict with humans. In the northeastern U.S., populations of American black bears (*Ursus americanus*) have increased rapidly, more than any other black bear populations in the nation, with human-bear interactions (HBI) on the rise since the middle of the century. One state in particular, New Jersey (NJ), currently sustains the highest coupled density of black bears and humans in the country. Previous research in NJ found anthropogenic environments supported higher cub production of female black bears than wildland conspecifics, but these females suffered higher mortality costs. Knowledge gaps remain of the specific ecological components contributing to changes in female black bear (sow) fitness and how these shifts may shape the dynamics of HBI. To bridge these knowledge gaps, I first used statewide, long-term HBI reported incidents (2001 – 2017) in NJ, and quantified relative risks and shifts in HBI over space (e.g., land cover types) and time (e.g., life cycle stages). I then used 35 years of sow den surveys (1984 – 2019) to examine the relative effects of anthropogenic change (e.g., garbage production, urban development), landscape composition and configuration, natural resource availability, harvest, and individual characteristics (e.g., prior conflict behavior) on sow reproductive components. I found HBI varied by bear life cycle stage and landcover type, and individual characteristics and the environmental context experienced by sows both played important roles in shaping sow fitness. Between 2001 and 2015, >\$12 million has been allocated to bear management in NJ, which at current conflict levels is not economically, environmentally, or socially sustainable long term. My results provide valuable insight in directing management focus towards specific life cycle events and land cover types, where anthropogenic change may simultaneously improve reproductive success and HBI, which often results in negative outcomes for black bears in NJ.

Join us at  
3:00-4:00 pm

May 6, 2022  
Wagar Building 133

Host:  
Lise Aubry

