

MS Thesis
Department of Environmental Science and Policy
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Title: A Spatial and Temporal Analysis of Human-Black Bear Conflict in Virginia

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ABSTRACT

Black bear populations in Virginia have been recovering from near extirpation for the last century. The expansion of both human and bear populations has coincided with an increase in human bear conflicts, which range from bear sightings to property damage. Mitigating human-bear problems is one of six goals outlined in the Virginia Department of Game and Inland Fisheries (VDGIF)'s Black Bear Management Plan. Using the VDGIF's database of reported black bear complaints, this study examines the spatial and temporal trends in human-black bear conflict in Virginia from 2008 to 2015.

The first goal of this study was to assess trends in the distribution of conflicts over time across the state. This goal was achieved through a combination of spatial analyses exploring the magnitude of change in the number of conflicts over time, clusters of conflict increases and decreases, and the direction of change in the number of conflicts over time. The second goal was to assess the role of ecological and anthropogenic variables in explaining the spatial distribution of conflicts in the western half of the state, where conflict density is highest. Multiple logistic regression was used to test 27 a priori candidate models to achieve this goal.

The results of the spatial analysis highlight the widespread distribution and inconsistent nature of conflicts across much of Virginia. The analysis does show, however, that conflicts were somewhat concentrated in the western half of the state, and that four zones in the western region could potentially be considered problem areas that should be targeted for conflict prevention measures. The results of the regression analysis demonstrate that areas of human development located near large forest patches are at the greatest risk of conflict. Together, these results can be used to help target the strategic implementation of management actions aimed at reducing human-black bear conflicts in Virginia.