Public Abstract

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Title:OCCUPANCY MODELING OF FOREST CARNIVORES IN MISSOURI

Carnivores can structure entire ecosystems, effects that are disproportionate to their abundance. I analyzed habitat associations and patterns of co-occurrence for forest carnivores at 53 sites in the Ozarks of Missouri, modeling species occupancy using a multi-modal inference approach. I used cameras, track-plates, and scat transects to collect presence data for all species. Cameras and track-plates both detected eastern spotted skunk (Spilogale putorius), striped skunk (Mephitis mephitis), raccoon (Procyon lotor) and opossum (Didelphis virginiana). Coyote (Canis latrans), bobcat (Lynx rufus) and gray fox (Urocyon cinereoargenteus) were only documented with cameras. Cameras performed poorly at capturing images of coyotes where their presence was known from scat transects. Combining methods yielded a more accurate picture of the carnivore community. Modeling revealed spotted skunks were best predicted by habitat. Striped skunks were best predicted by human related variables. Raccoons and opossum models lacked predictive heterogeneity, because both species were detected at > 85% of all survey sites. Yet, results of their associations to modeled variables did suggest a high degree of habitat overlap. A future modeling approach that uses abundance data for these two species may yield more effective results. Coyotes were best predicted by measures of human disturbance and available prey habitat. Bobcats were predicted by coyote presence and available prey habitat. Gray foxes were predicted by coyote and bobcat presence, and elements related to humans. All species required model averaging due to lack of support for a best single model (i.e. wi > 0.90). All species models were improved by incorporating presence information of other carnivore species.