Cougar Behavioral Responses to Drought: Movement, Habitat Selection, and Predation

Lisa Koetke*, USDA Forest Service, Rocky Mountain Research Station, and W.A. Franke College of Forestry and Conservation, Univeristy of Montana, Missoula, MT
Hugh Robinson, Panthera and W.A. Franke College of Forestry and Conservation, Univeristy of Montana, Missoula, MT
Tavis Forrester, USDA Forest Service, Rocky Mountain Research Station, and W.A. Franke College of Forestry and Conservation, Univeristy of Montana, Missoula, MT

*Indicates Presenter

**Indicates Student Presentation

Understanding how apex predators respond to climatic variability is critical for anticipating consequences of climate change across trophic levels. We used GPS-collar data from cougars (*Puma concolor*) across 14 independent studies to evaluate the influence of drought on summer ranges (measured as utilization distributions [UDs]), movement rates, habitat selection, and kill rates. We found that regional precipitation patterns modulated drought effects on cougar behavior: in desert regions, cougars moved less per day during drought compared to normal conditions, whereas in wetter ecoregions, they moved more. Cougar UDs did not shift spatially or change in size, rather, resident animals altered their habitat selection within UDs. During drought, cougars selected more strongly for areas near perennial water sources and edge habitats. Kill intervals were modestly reduced under drought, indicating slightly elevated kill rates, but the effect size was biologically negligible. These findings suggest that cougars may have adjusted their hunting strategies or tracked prey behavioral changes to maintain relatively stable predation rates despite potential drought-driven shifts in vegetation and ungulate behaviors. If drought simultaneously intensifies bottom-up pressures on ungulate populations while cougar predation rates remain relatively constant, these combined pressures could interact in ways that impact deer populations that were previously resilient to predation.