Mesocarnivore responses to prairie dogs across a longitudinal gradient in Oklahoma

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Introduction

- Black-tailed prairie dogs (*Cynomys ludovicianus*) are a keystone species; this means that they have a disproportionately large effect on their environment relative to their abundance.
- They play a critical role in maintaining the health of the surrounding ecosystem.
- They eat and clip grass to ensure the visibility of predators which improves forage quality by keeping plants in an earlier phenological state, but clipping decreases forage quantity.
- The value of their presence in the ecosystem is debated because of the quality-quantity tradeoff. Ranchers tend to think of them as a nuisance because their diet overlaps with cattle and their burrows appear potentially hazardous to livestock.

Question

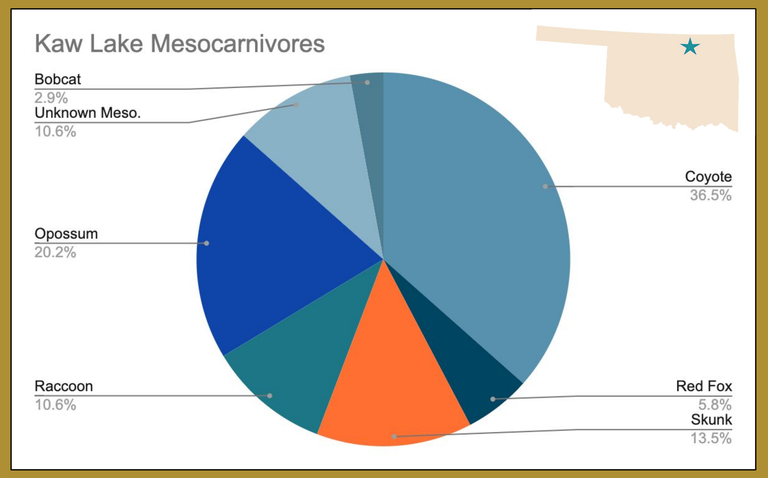
- **Which mesocarnivores occur more often on prairie dog colonies as opposed to uncolonized areas?**
- **How does the colony location in Oklahoma affect which mesocarnivore species occur most often?**

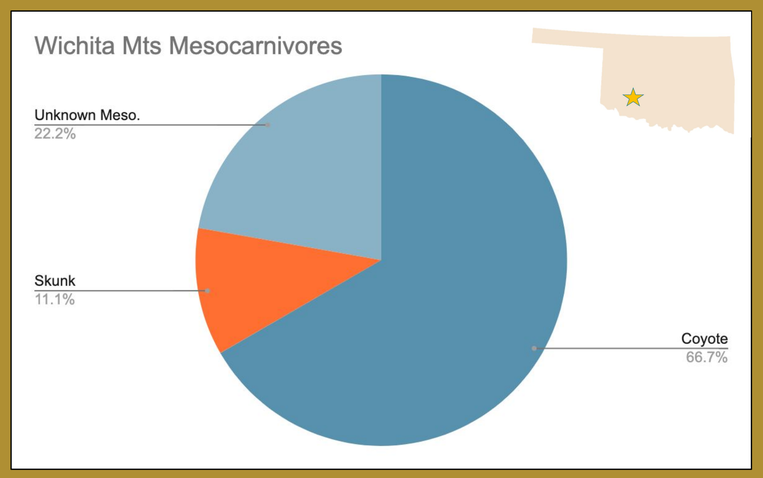
Methods

We are strategically deploying on and off prairie dog colony game cameras on Kaw Lake, the Wichita Mountains National Wildlife Refuge, and Kiowa/Rita Blanca National Grassland in order to observe ecosystem interactions and record associated species data in relation to prairie dogs. The camera model used is the Browning Dark Ops HD Max. Cameras are .75 meters off the ground and are mounted on existing structures or installed t-posts. When triggered by movement, they take 2 photos 0.3 seconds apart with a 10 minute delay between photo sets. They detect movement from up to 80 feet away. The Kaw Lake colony has 2 on colony cameras and 1 off colony camera, the Wichita Mountains National Wildlife Refuge has 8 on colony cameras and 5 off colony cameras, and Kiowa/Rita Blanca National Grassland will have 23 on colony cameras and 7 off colony cameras. The Kiowa/Rita Blanca colony cameras were selected using ArcMap random generation with a 1km distance minimum parameter.

Preliminary Data: Number of mesocarnivore detections at two prairie dog colonies in Oklahoma.

Row Labels	Sum of Coyote	Sum of RedFox	Sum of Badger	Sum of Skunk	Sum of Unknown Mesocarnivore	Sum of Raccoon	Sum of Opossum	Sum of Bobcat
Kaw Lake	38	6	0	14	11	11	21	3
Wichita Mts	12	0	0	2	4	0	0	0
Grand Total	**50**	**6**	**0**	**16**	**15**	**11**	**21**	**3**





Preliminary Results

Preliminary results from the cameras at Kaw lake have shown opossum (*Didelphis virginiana*), skunk (*Mephista mephista*), raccoon (*Procyon lotor*), coyote (*Canis lantran*) bobcat (*Lynx rufus*), and red fox (*Vulpes vulpes*) present on the colony. While observations from this early data indicate that prairie dogs are likely a prey species for mesocarnivores, wildlife could also be attracted to the supplemental human feeding of this roadside colony. Another factor could be that the predators favor this colony over others due to greater tree cover along the edge of the colony as compared with colonies in the Wichita Mountains. Our observations support previous research that has shown that prairie dogs provide a food resource for multiple carnivores and habitat for other wildlife species such as burrowing owls and the endangered black-footed ferret. This work will also provide the only comprehensive dataset to examine how predator communities associated with prairie dogs differ across the state of Oklahoma. By conducting more research and providing evidence of prairie dogs being a keystone species in Oklahoma, we will hopefully be able to better educate the public and ensure prairie dog management does not negatively impact ecosystem function and services.

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