

# Gray Fox Occupancy In Southern Illinois

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## Introduction

- ❖ The gray fox (*Urocyon cinereoargenteus*) is a small mid-sized canid known for their unique ability to climb trees due to their semi retractable claws and rotatable forearms. They are slightly smaller than the more common red fox and as the name suggests, their fur coat is gray on top with reddish brown sides as well as a white underbelly.
- ❖ Due to multiple factors such as habitat degradation, interspecific competition, human interference, poaching, etc. the gray fox population has declined in recent years across the Midwestern United States. In Southern Illinois, it is unclear at this moment whether gray foxes need protection or not.
- ❖ This project works to understand gray fox occupancy and space use in Southern Illinois. The goal is to validate a pre-existing gray fox occupancy module that was created in 2012 with a new, independent dataset collected during the winter/spring of 2022. The data collected will show us where gray foxes are, where they move, how many there are, and what has an impact on them.

## Methodology

- ❖ Bait (sardines) was used to attract any gray foxes in the area around each camera. The trail cameras take photographs of any animal passing by.
- ❖ The cameras were checked every week. At the end of a three-week period, the cameras were collected and moved to a new camera site.
- ❖ The season of using camera traps lasted from January 3 to April 22.
- ❖ Once the photos were collected, they were uploaded to a citizen science web portal known as Zooniverse, where we tagged every photo to identify each species in the photos.
- ❖ Single season occupancy models are used to analyze the data from the photos to create a current model of gray fox occupancy in Southern Illinois. The new model is then compared to the old model so that we can see whether gray fox populations have changed or remained the same. This will help determine if further resources need to be added for gray fox management in Illinois.

## Acknowledgements

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## Research Questions

- 1) Does a fifteen-year-old model of gray fox populations in Southern Illinois still show an accurate depiction of gray fox occupancy in Southern Illinois today?
- 2) What fraction of the observations will be gray fox?

## Results



Fig. 1: Image of gray fox eating the bait.



Fig. 2: Image of red fox.



Fig. 3: Image of two coyotes.



Fig. 4: Image of bobcat and opossum.



Fig. 5: Image of striped skunk.

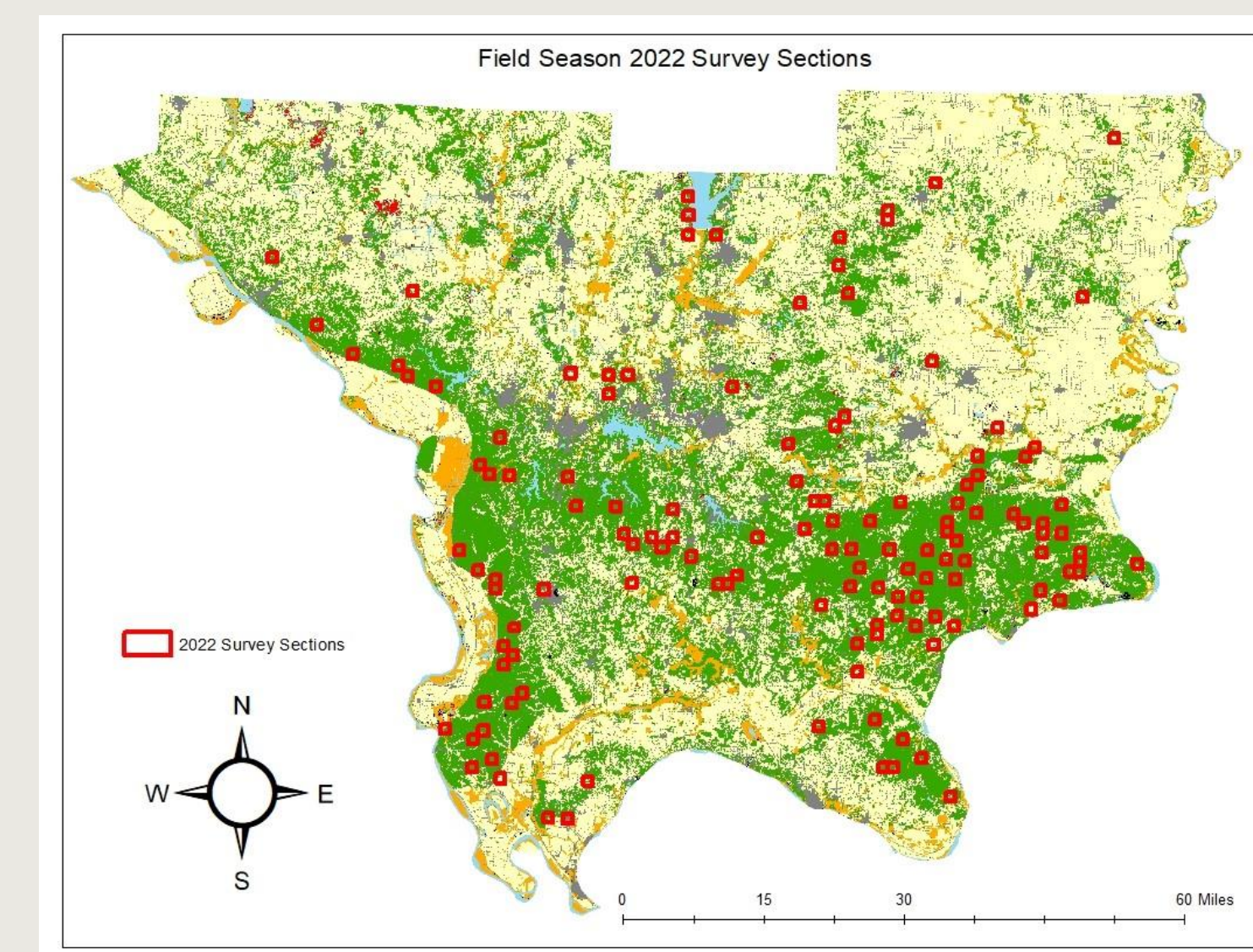


Fig. 6: Image of opossum and coyote.



Fig. 7: Image of deer (buck) and raccoon.

## Study Site



## Results

animals	number of observations	% of observations
Gray Fox	104	0.07%
Red Fox	24	0.02%
Raccoons	33821	22.63%
Opossums	16832	11.26%
Coyotes	880	0.59%
Skunks	214	0.14%
Bobcats	207	0.14%
Cats/Dogs	953	0.64%
Others/None	96440	64.52%
Total	149475	100

## Conclusions/Future Directions

- ❖ The amount of gray fox photos taken this season was slightly lower this season than the average amount of gray fox photos taken each season during the research that was done fifteen years ago. There could also be several factors affecting gray fox detections from anthropogenic features, land use, or competition with carnivores.
- ❖ Further research for this project will be done to analyze the data from this season. We will also be trapping gray foxes this winter and continuing to do this project all the way through to next year where we will repeat the same process. Further study into influences on carnivore space use and community dynamics.

## References

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