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Are Predators Able to Adapt to Rapid Landscape Changes in the Sagebrush Steppe?

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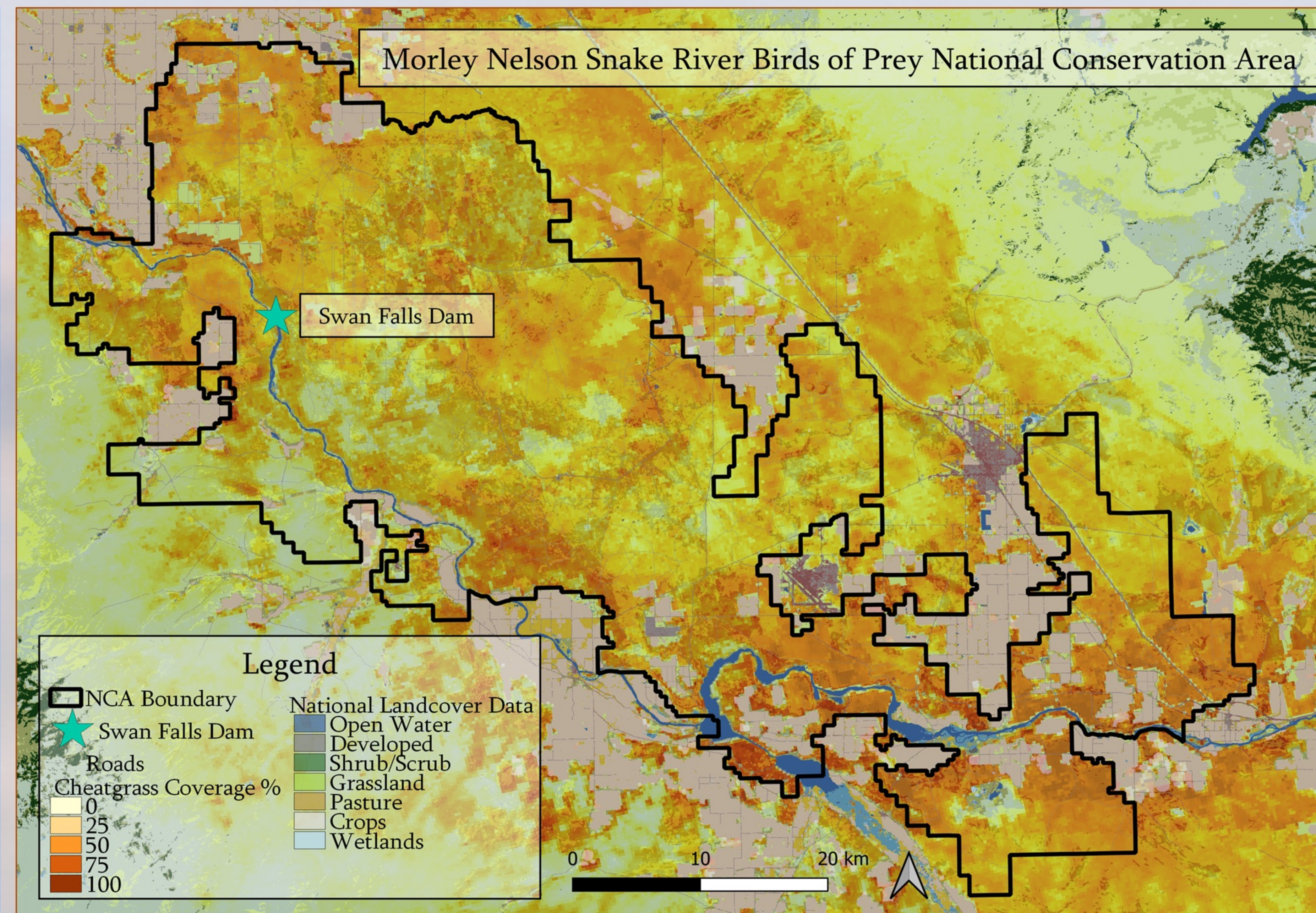
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BACKGROUND

Habitat change remains one of the main drivers of species extinctions and declines¹. Restoration ecology aims to counteract these effects by restoring habitat with the hope that if you restore plant communities, animals will naturally return to previously occupied habitats. However, the benefits of restoration efforts on predators are seldom evaluated.

One habitat that has undergone large changes as a result of grazing, altered fire regimes, and invasion of non-native grasses is the Sagebrush Steppe. Sagebrush habitat has been significantly reduced in the west and remaining sagebrush steppe is ecologically degraded². The Sagebrush Steppe is an important ecosystem for both prey and predator species found in the Morley Nelson Snake River Birds of Prey National Conservation Area (here shortened to NCA). As habitat changes have degraded this landscape, prey distributions have potentially shifted with unquantified impacts on their predators.



EXPECTED RESULTS:

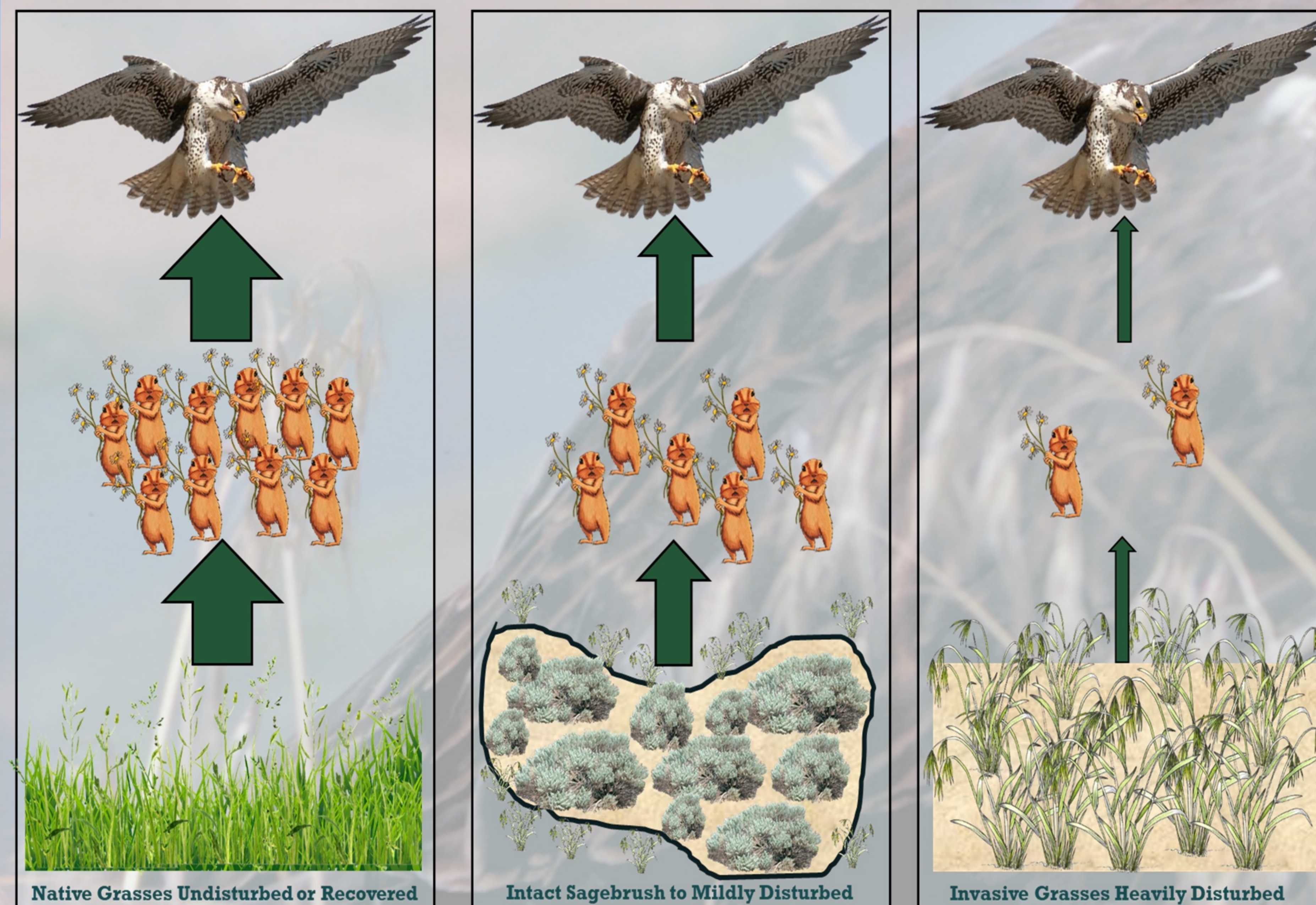


Figure 1: Conceptual diagram of our expected results. Arrow thickness represents effect size. Each panel shows the expected relationship between broad habitat types, squirrel abundance, and foraging use by Prairie Falcons.

QUESTIONS

After several decades of ongoing habitat change within the NCA, it is uncertain how Prairie Falcons (PRFA) have adapted. I aim to evaluate how the legacy of rapid landscape change in Sagebrush Steppe habitat have impacted Prairie Falcon foraging decisions and the distribution of their main prey, Piute Ground Squirrels.

- Are Prairie Falcons selecting relatively undisturbed habitats or are they now foraging in modified habitats?
- Is the choice of foraging areas still driven by areas that contain higher abundances of their prey?
- Are there differences among individuals in where they forage?

METHODS

- Fit 10 male Prairie Falcons with GPS-GSM transmitters
- Determine foraging areas – rapid change in velocity and altitude or movement patterns using GPS points
- Obtain relative abundance of Piute Ground Squirrels within foraging areas
- **Analysis:** Resource selection analysis - assess differences in how Prairie Falcon individuals forage
- **Model** how individual differences relate to changes in dominant vegetation cover and squirrel abundance

ACKNOWLEDGMENTS

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Photo: Ron Dudley

REFERENCES

1. Northrup, et.al (2019). *Global Change Biology*, 25(5), 1561–1575.
2. Entwistle, et. al (2000). Bureau of Land Management Publication No. BLM/ID/PT-001001+1150