

The impacts of COVID-19 on birds and mammals

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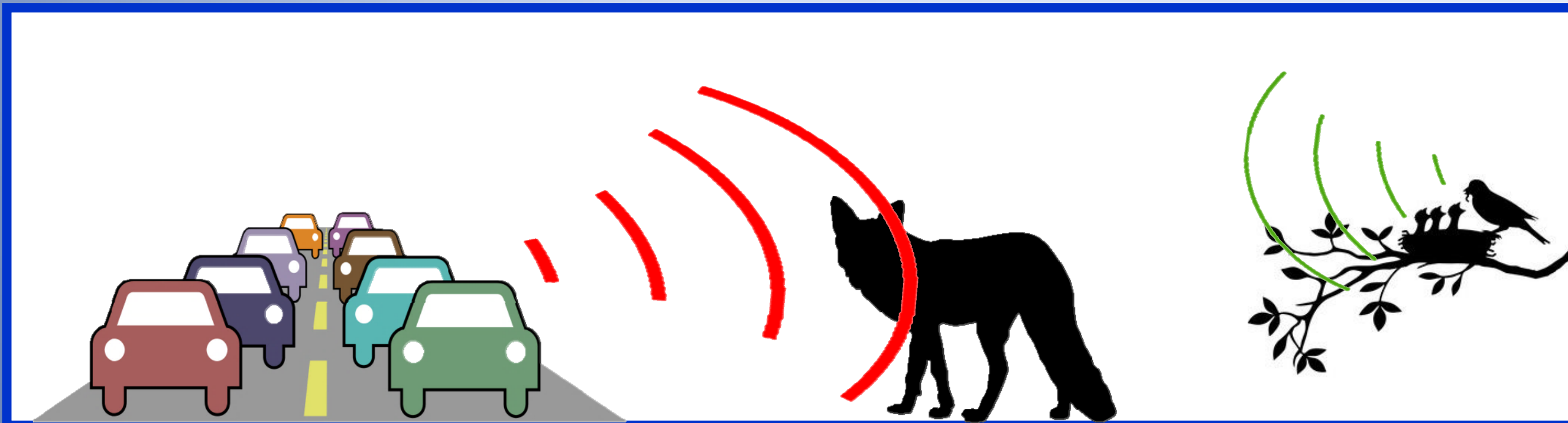
Background and rationale

Anthropogenic noise and COVID-19 travel restrictions

- COVID-19 travel restrictions have reduced anthropogenic noise¹
- Goal of the study is to determine the impact of COVID-19 lockdowns on mammalian activity and avian community structure

Impact of anthropogenic noise on mammals

- Reduces predation ability of mammals due to masking of prey noises²



Impacts of anthropogenic noise on birds

- Decreases species richness in avian communities³
- Shifts bird communities from noise-intolerant species to noise-tolerant species⁴

Hypotheses

1 - If impacts of COVID-19 lockdowns on birds result from decreased anthropogenic noise, then it would be predicted that during the lockdowns there would be a :

- Decrease in noise-tolerant bird species in areas with decreased noise
- Increase in noise-intolerant bird species in areas with decreased noise

2 - If impacts of COVID-19 lockdowns on mammals result from both decreased anthropogenic noise and decreased human activity, it would be predicted that during the lockdown:

- Increase in predatory mammalian activity in areas with a decrease in anthropogenic noise
- Decrease in endemic bird populations in areas with increased mammalian activity, because many of the mammals are predators of birds

Methods

- Classify species detected in trail camera photos from Phoenix, Arizona and surrounding area (see figure 2)
- Compare species detection data from this year to data obtained in previous years at the same locations
- Compare Phoenix data to similar data obtained from Edmonton, Alberta
- Analyze data in relation to the timing and extent of COVID-19 restrictions to investigate a possible relationship between the lockdowns, mammalian behaviour and avian community structure

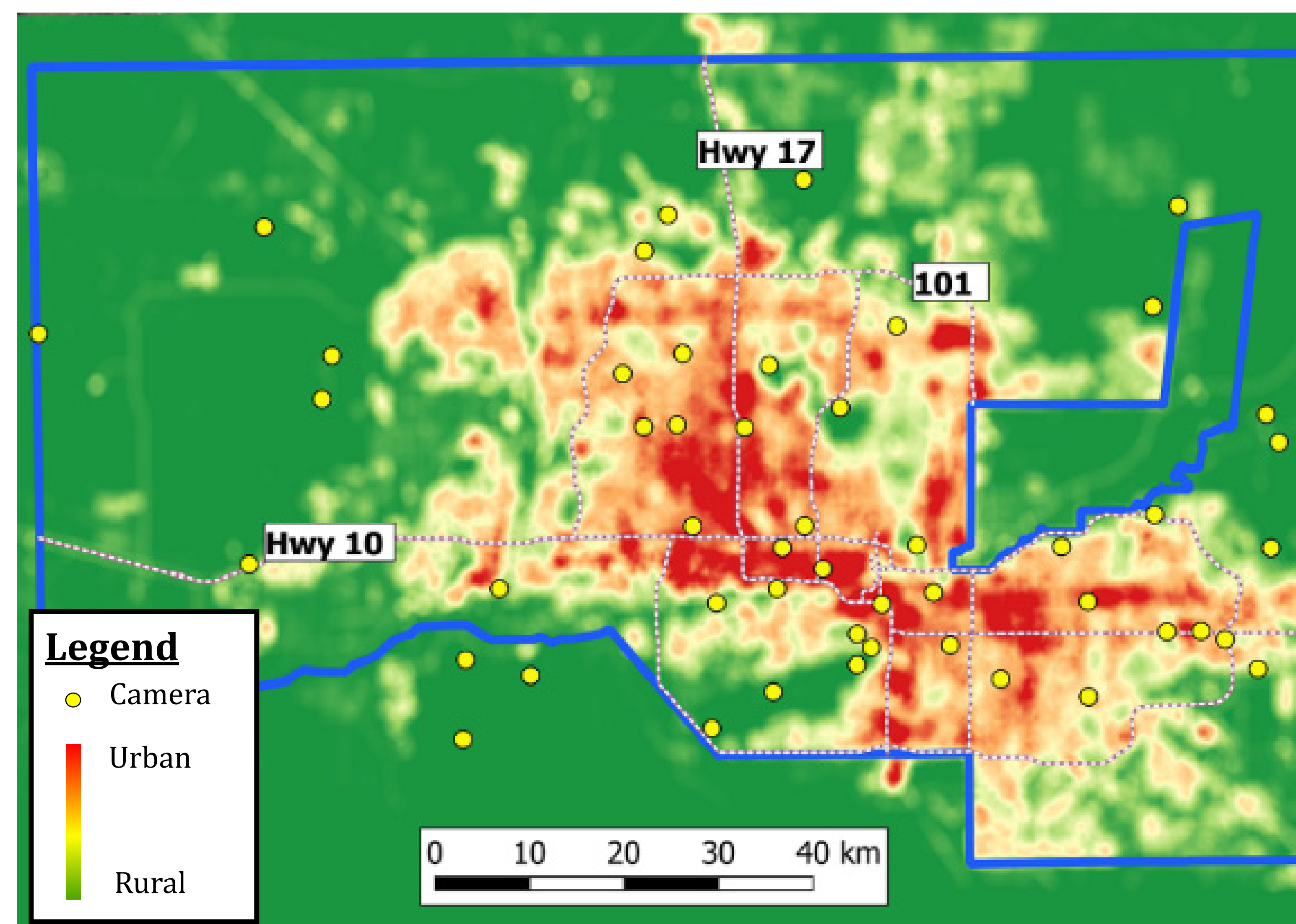


Figure 1. Map of trail cameras in Phoenix, Arizona. Figure provided by Jesse Lewis.

Camera locations and associated avian predictions



- High levels of song/call masking from air and vehicular traffic noise, and physical disturbance from traffic
 - Expect an increase in noise-intolerant bird species near airports during lockdowns



- High levels of song/call masking noise and physical disturbance from traffic
 - Expect an increase in noise-intolerant bird species near roads during lockdowns



- Urban areas have high levels of traffic and human activity, high masking and disturbance
 - Expect an increase in noise-intolerant bird species in urban areas during lockdowns

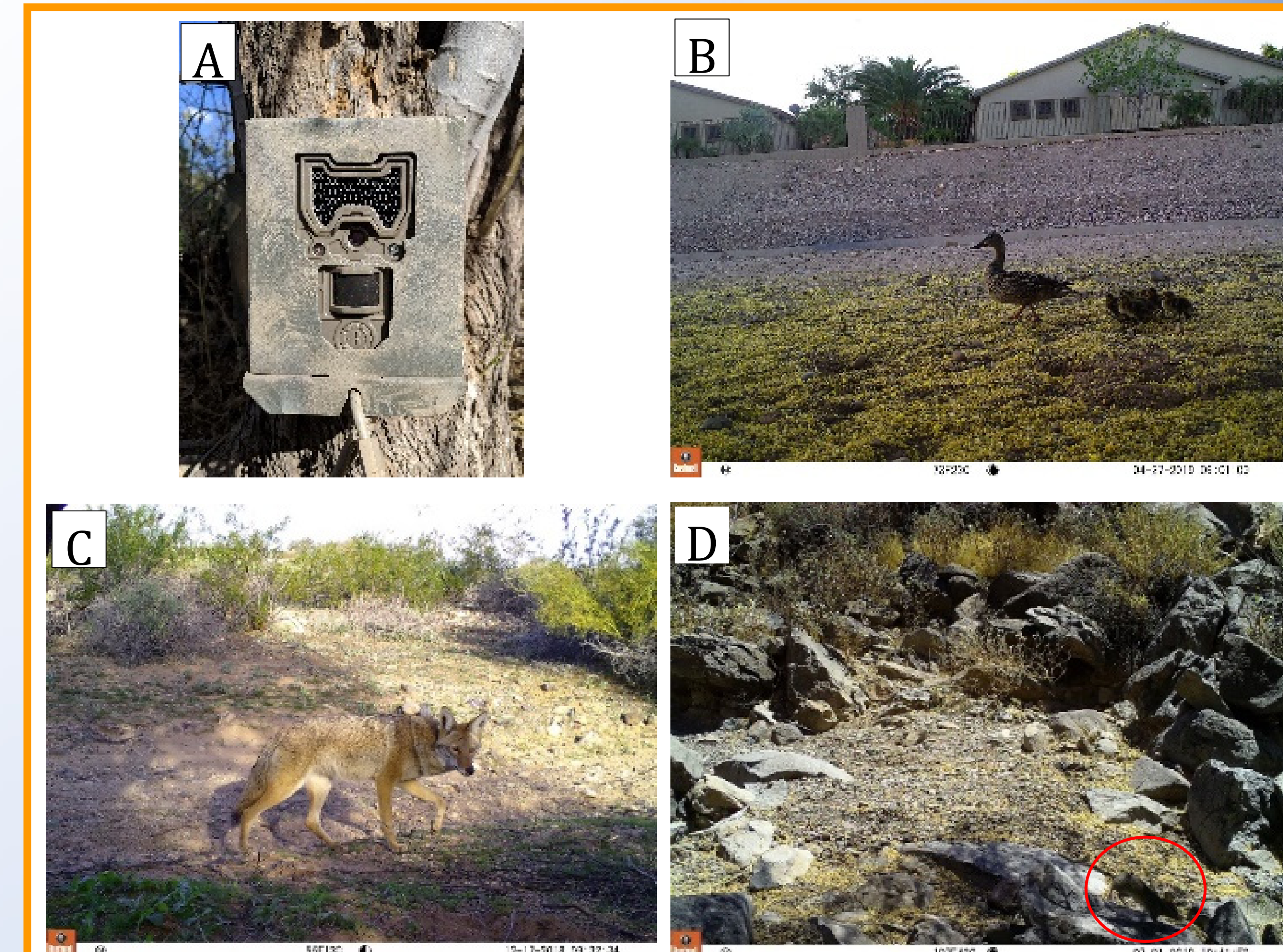


Figure 2. Pictures from trail cameras around Phoenix, Arizona. A: trail camera; B: Mallard ducks (*Anas platyrhynchos*); C: Coyote (*Canis latrans*); D: Woodrat (*Neotoma spp.*). Photos provided by Jeff Haight.

- The classification of photos like these was my main contribution to the project.

Current status

- Data collected from this summer is currently being analyzed and interpreted
- Next steps involve evaluating if COVID-19 lockdown impacts on birds, may be caused by the impacts of the lockdowns on mammals
- The lab hopes to have results in the next few months

Acknowledgements

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Literature cited

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