

# Impacts of Traffic Collisions on Avian Abundance

## Purpose and Objectives

- Observed trends of increase in avian abundances at roadways during COVID-19 lockdowns.
- Does species vulnerability to mortality via traffic collisions explain these patterns?



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## Preliminary Results

- There is no significant relationship between species vulnerability to traffic collisions and the observed changes in abundance at roadways
- This suggest that other mechanisms are driving these patterns, such as road avoidance due to noise or light pollution

## Methods

- Life history traits were assigned to each of the 82 focal species (see Table 1.)
- Traits were included based off of those already observed to impact vulnerability to traffic collisions in birds (Cook & Blumstein, 2013)

Trait	Group	Description
Foraging Guild	Aquatic	Forages in water (eg: Mallard Duck, Canada Goose)
	Arial	Forages while airborne (eg: Red-Tailed Hawk, Eastern Bluebird)
	Foliage/Bark-Gleaning	Forages by picking or "gleaning" prey from foliage or bark material on trees and other shrubs (eg: Blue Jay, Downy Woodpecker)
	Ground	Forages while on ground level (eg: Dark-Eyed Junco, American Crow)
Habitat	Forested	Coniferous/ Deciduous/ Mixed forests and other wooded areas
	Open	Grasslands/ Fields/ Other urban areas
	Riparian	Habitat adjacent to a body of water such as a lake or river
	Generalist	Falls under two or more of the above listed habitats
Diet	Carnivorous	Strictly carnivorous diet (eg: Coopers Hawk, Bald Eagle)
	Omnivorous	Strictly omnivorous diet (eg: Brown Thrasher, European Starling)
Within 4m of Ground	Yes, within 4m	Species can be found regularly within 4m of the ground
	No, not within 4m	Species cannot be found regularly within 4m of the ground

**Table 1:** summarizing the four different life history traits and subsequent groups assigned to each of the 82 focal species

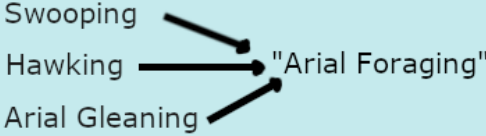
- Using R statistical software (v 3.0.1), multiple generalized linear models (GLMs) were run to determine any relationship between life history traits and observed changes in abundance

Response Variable	Variable Type	GLM Family
positive change in abundance vs negative/ no change in abundance	binary	binomial
positive/ negative change in abundance vs no change in abundance	binary	binomial
relative change in median abundance	continuous	gaussian

**Table 2:** response variables for avian abundances at roadways in generalized linear models

## Challenges/Problems

- Due to the nature of the GLM analysis, we had to limit the amount of life history variables.



- Many avian species employ multiple foraging techniques, which also makes analysis difficult

## Outlook for Successful Project Completion

- Further exploration of GLMs
- Explore other mechanisms impacting species abundance at roadways



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