

Nestling Feeding Rates Relating to Weather

Jewel Green¹, Alex Glass², Michael Eichholz, PhD³

¹SI Bridges to the Baccalaureate, School of Biological Sciences, Southern Illinois University Carbondale

²PhD Candidate, Cooperative Wildlife Research Lab, School of Biological Sciences, SIU Carbondale.

³Professor, Cooperative Wildlife Research Lab and Center for Ecology, School of Biological Sciences, SIU Carbondale



Introduction

- The nestling stage is a critical life cycle stage for both nestling and adult birds, and foraging success is very important for nestling survival.
- The nestling stage is critical for the adults because they dedicate a lot of energy to feeding their nestlings, and spending too much time foraging for the nestlings leaves little time to feed themselves and less energy to escape predators.
- Foraging success may, however, be influenced by weather, as it could affect bird food provisioning, implying that climate change may affect bird populations.
- Grassland birds have been declining at a rapid rate over the past few decades making it important to understand aspects of their breeding ecology to improve conservation efforts.

Methodology

- 1 hour of nest footage was observed for every day.
- Successful feedings were recorded along with the time
 - Size of prey (relative to bill) and type were recorded when possible
- Weather data from the Southern Illinois Airport weather station were used to estimate feeding success and prey size
 - Temperature, precipitation, and windspeed for each day of footage were recorded.
- Footage was taken across various sites in the Burning Star Fish and Wildlife Area in DeSoto, IL.

Research Question

Q1: How do different weather conditions affect adult foraging and feeding success?

Preliminary Findings

Table 1; Results from each nest
KEY: RWBL- Red Winged Black Bird. FISP-Field Sparrow

Nest #	Species	Time of Day	Date	Successful Feedings/Hour	Average Prey Size (Relative to Bill)	Temperature (Fahrenheit)	Wind Speed (MPH)	Precipitation (Inches)
5-4	FISP	11:28am-12:28pm	5/17	4	Unknown	82	10	0
5-4	FISP	8:03am-9:03am	5/18	3	Unknown	82	20	0
5-4	FISP	9:56am-10:56am	5/19	7	~2x Beak	84	17	0
5-4	FISP	9:57am-10:57am	5/20	6	Unknown	90	30	0
10S-1	RWBL	7:02am-8:02am	5/24	10	~2x Beak	73	12	0
10-2	RWBL	10:03am-11:03am	5/25	1	½ Beak	79	21	0
10-2	RWBL	11:55am-12:55pm	5/26	2	Same size	72	21	0
10-2	RWBL	11:56am-12:56pm	5/27	1	Unknown	63	14	0
10-2	RWBL	2:56pm-3:56pm	5/28	3	Unknown	75	13	0



Discussion

- Currently, the data does not suggest any significant relationship between weather conditions and feeding rates, but there is still work to do going forward as we plan to observe more nests and begin to include more variables.
- Issues with data collection:
 - Adult or environment (ex. Grass) blocking camera view, making it hard to determine when a feeding was taking place.
 - Footage corruption.
 - Time of day inconsistencies
- We anticipate better results as we observe more nests from multiple sites across Burning Star, as well as including more variables going forward.

Future Directions

- Going forward we plan to look into more nests as well as include time of day as a variable in the study.
- Knowing the time of day that birds are most active will us know when the best observation time would be for food provisioning, as well as helping other scientists better understand their behavior as well.

Acknowledgements

Special thanks to Blake Baum for direction and assistance, as well as Madison Null for footage gathering and assistance.

Thank you to Southern Illinois University Carbondale, SI Bridges to the Baccalaureate, and NIH for undergraduate research opportunity and funding.

References

Weather data was collected from:
<https://www.wunderground.com/history/daily/KMWA/date/2022-6-12>