

Assessing Spider Predation on Frogs

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Background

- Hunting tactics of spiders depend on their morphological and behavioral characteristics.
- Most research on spider predation on frogs has been conducted on tropical species.
- My research will be on the North American species of wolf spiders.
- Wolf spiders prey upon cricket frogs.

Questions

In this study we will be examining the following questions:

1. How do the limitations of spider body size (different sized wolf spiders) influence hunting success (is there a body size threshold that limits the ability to capture)?
2. What is the relationship between the size of the spider and the size of a successfully captured frog (is it linear)?

Predictions

1. Size will serve as a limitation as smaller spiders cannot capture the same size prey as larger spiders.
2. The relationship between spider size and prey size will be linear as observed from other studies.

Methodology

- This study will include larval and adult cricket frogs (*Acris blanchardi*) and wolf spiders (*Rabidosa punctulata*).
- All experiments will be conducted in a system of glass aquaria with appropriate substrate (soil, water, etc. as needed).
- Spiders will be fasted for 7 days before housing with a frog in trials that will last 48 hours.
- By the end of the trial period, frog condition will be recorded as: alive, dead and untouched, or dead and fully consumed.

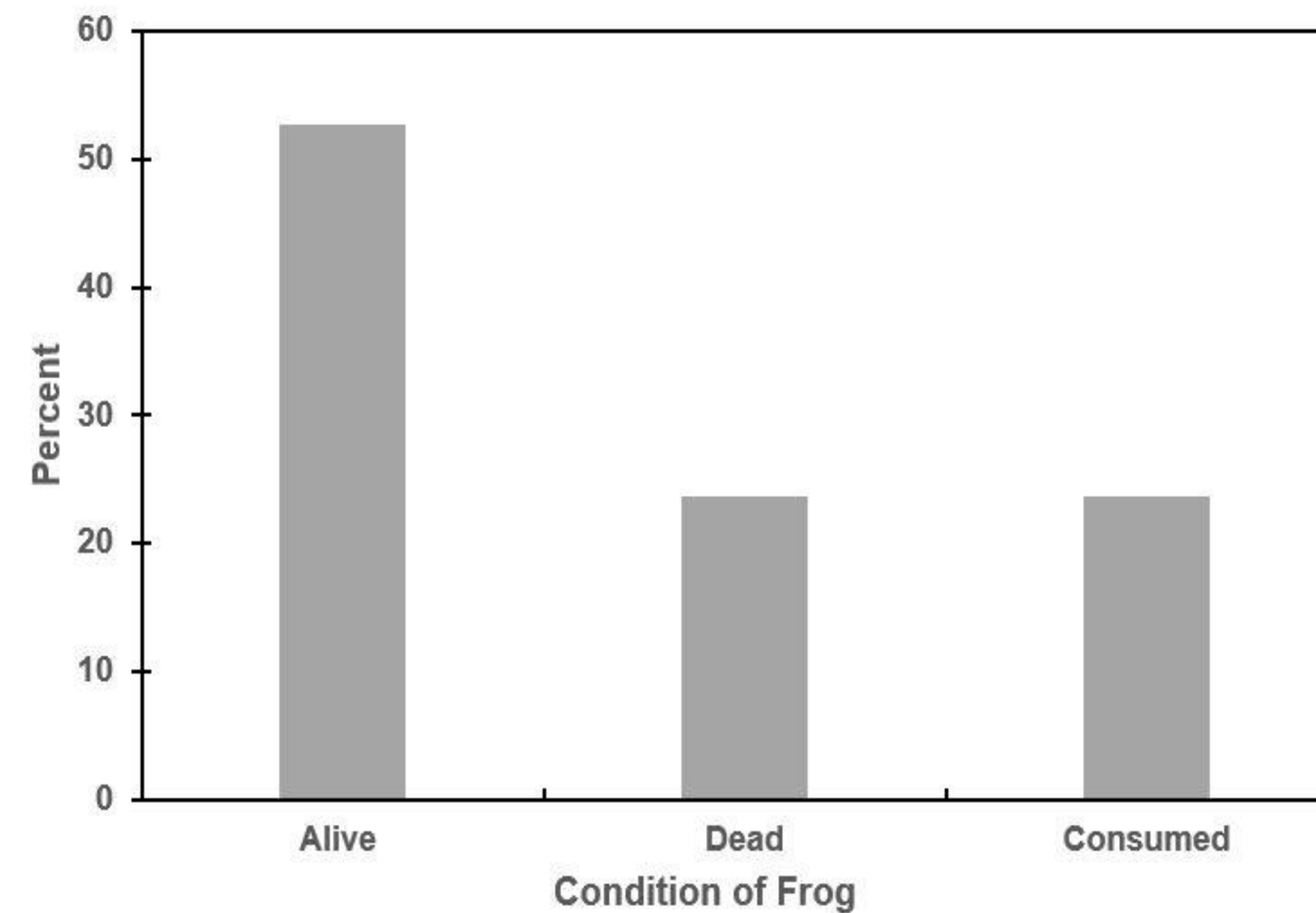


Figure 1. Proportion of frogs alive, dead only, or dead and consumed across a total of 37 trials that consisted of spider and frog pairs housed together for 48 hours. Dead frogs are assumed to be the result of spider predation.

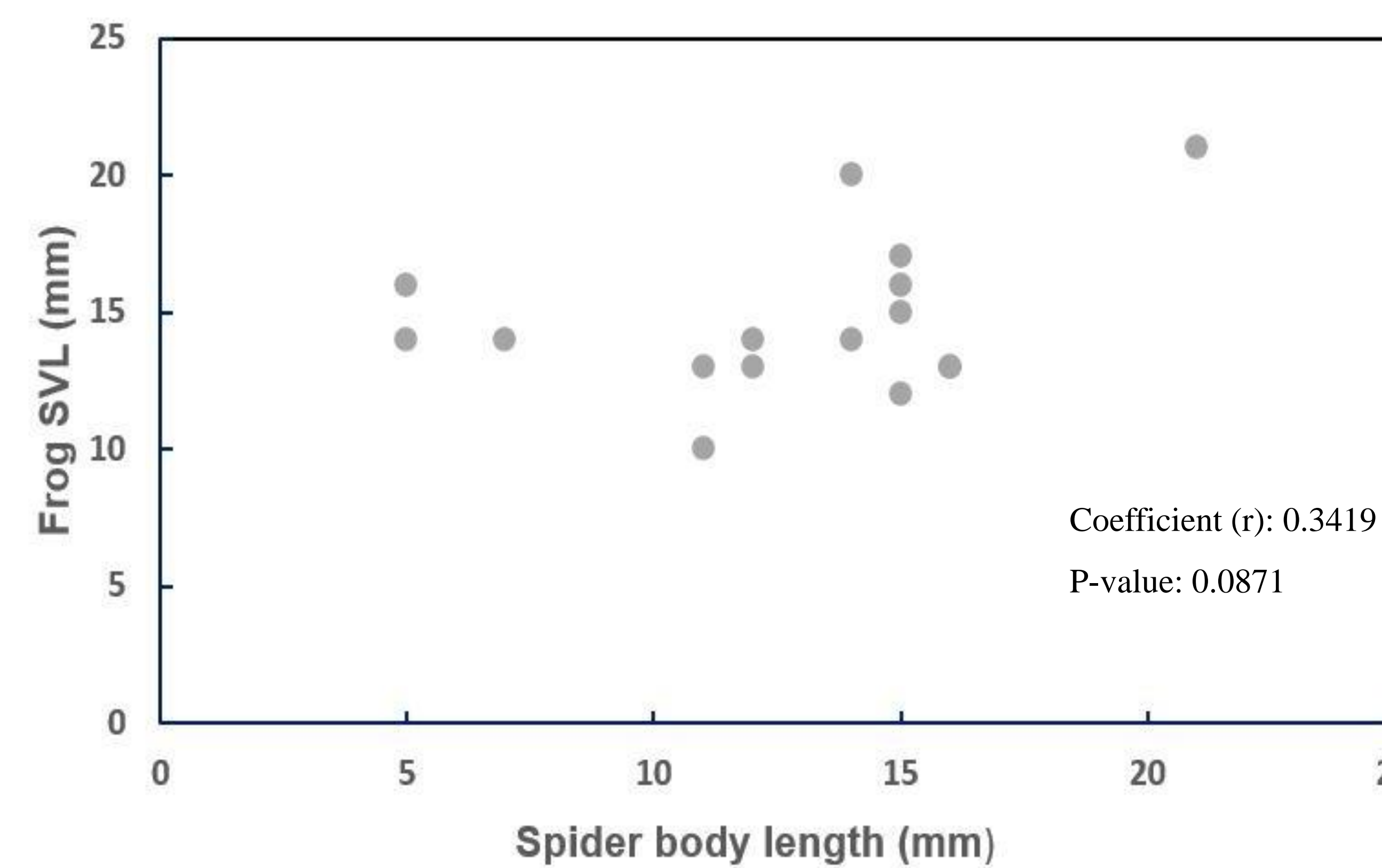
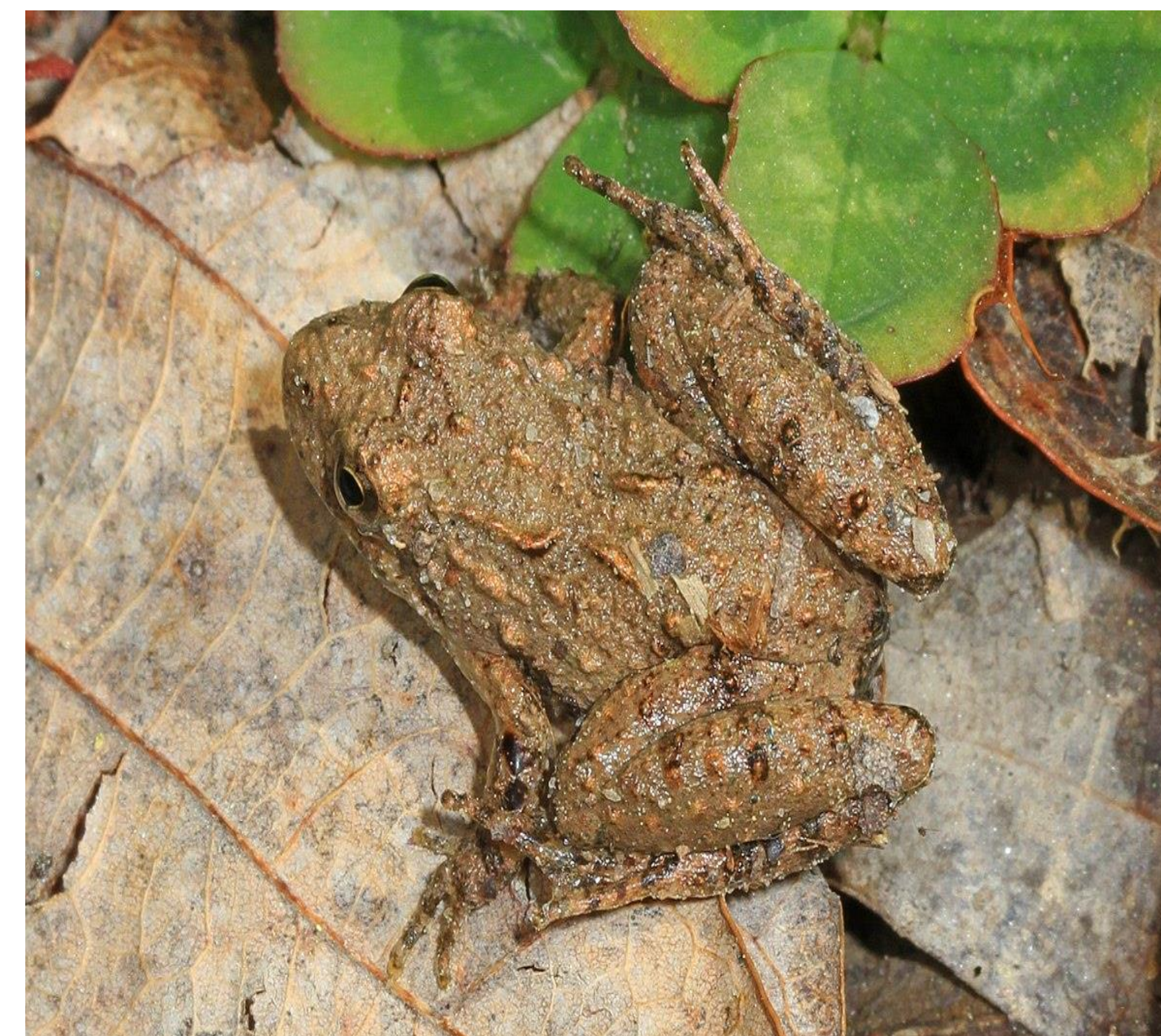


Figure 2. Correlation of spider size to the size of frogs depredated in a total 16 trials.

Table 1: Summary statistics of body size for spiders and frogs used in predation trials. Data only presented for trials in which frogs were killed.

	n	Body Length				
		Mean	S.E.	Median	Min	Max
Spider	16	12.8	4.3	14	5	21
Frog	16	14.7	2.8	14	10	21

Results and Discussion

- Half of the frogs were killed during predation trials. Out of those killed, half were consumed (Fig.1)
- There was little correlation between spider size and frog size (Fig. 2).
 - Confounded by frog size variability.
- Spiders of various sizes were able to successfully capture frogs (Fig 2).
- Three observed spider behaviors between hunting and seeking refuge when introduced to the frog.
- Will advance this study through running a nutritional analysis over the frog remains collected.
 - This will determine if spiders prefer more lipid-rich or protein-rich parts of the frog.

Implications

- Further our understanding of spider predation methods.
- Examine the relationship between physical traits and survival success rates.
- Gain more knowledge of North American spider species.
- Discover what prompts a spider's behavior.

Works Cited

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