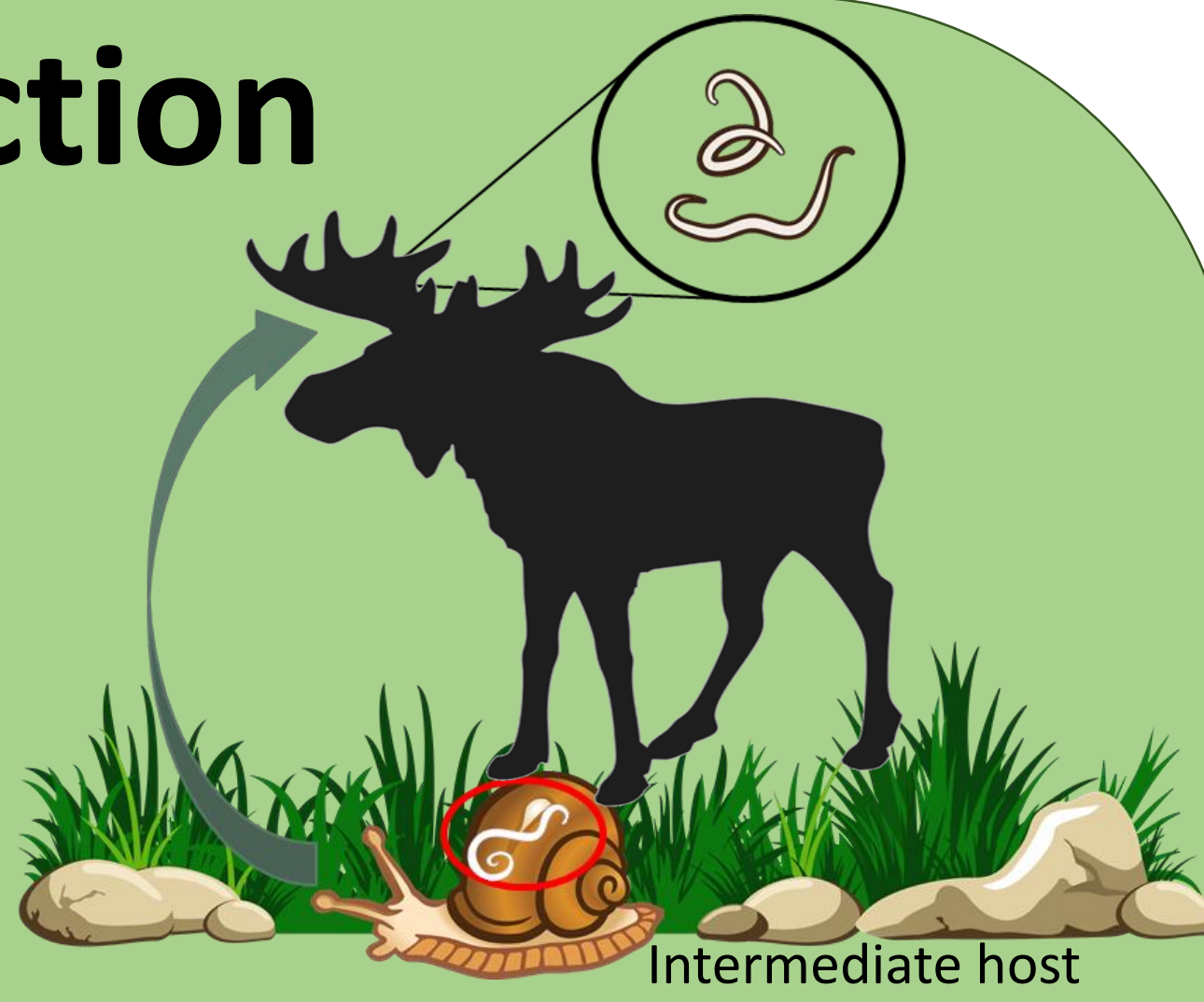


Gastropod collection and identification can improve our understanding of moose disease ecology

Introduction

- Terrestrial gastropods play an integral role in parasite life cycles.
- Estimating abundance and diversity of terrestrial gastropods may help determine where the next host in the parasite life cycle is most at risk.¹
- Snail biodiversity is often assessed by counts from dampened cardboard left in the field for 1 or 5 days, but there has yet to be a comparison to determine if duration in the field affects the biodiversity estimates.^{2,3}
- Estimates of biodiversity often rely on shell-based identification. DNA barcoding may be used to confirm these identifications when uncertainty arises.⁴



Hypothesis

- Duration impacts the abundance and diversity of gastropods on the cardboard.

1 Day

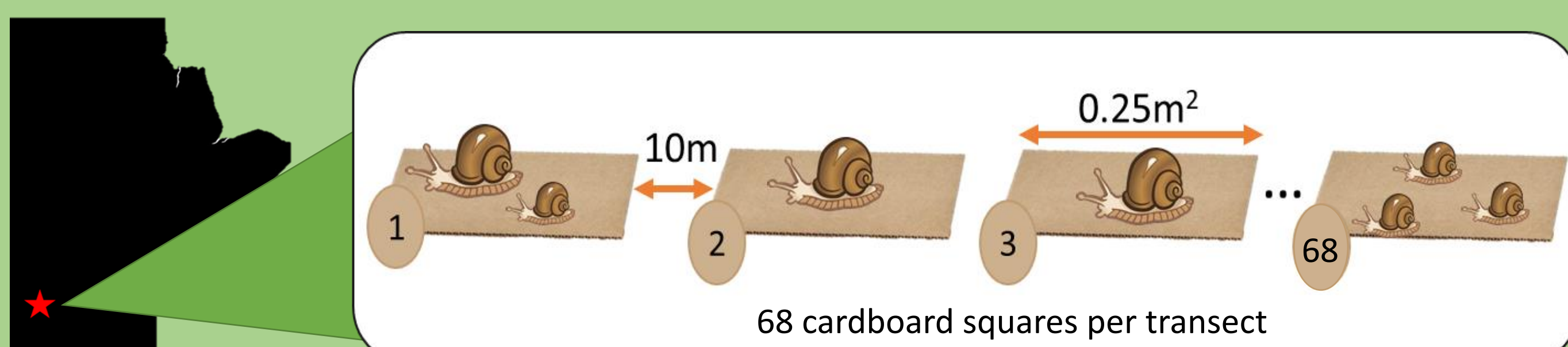
5 Days



- DNA barcoding will corroborate the shell-based identifications.

Methods

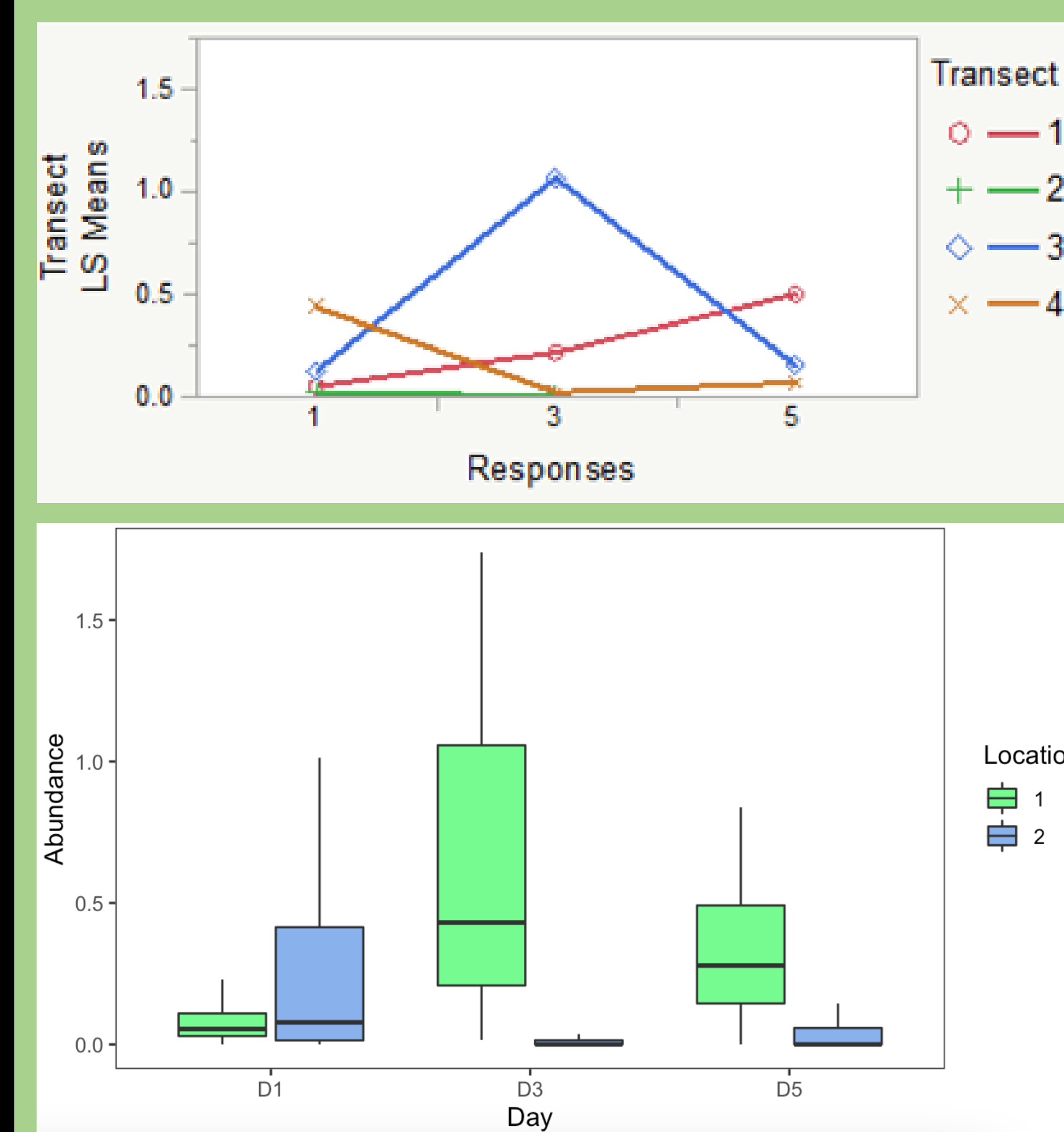
- Gastropods assessed with transect sampling at three time intervals (1 day, 3 days, 5 days).



- DNA sequenced at partial CO1 gene (549bp-655bp).⁵

Results

Abundance

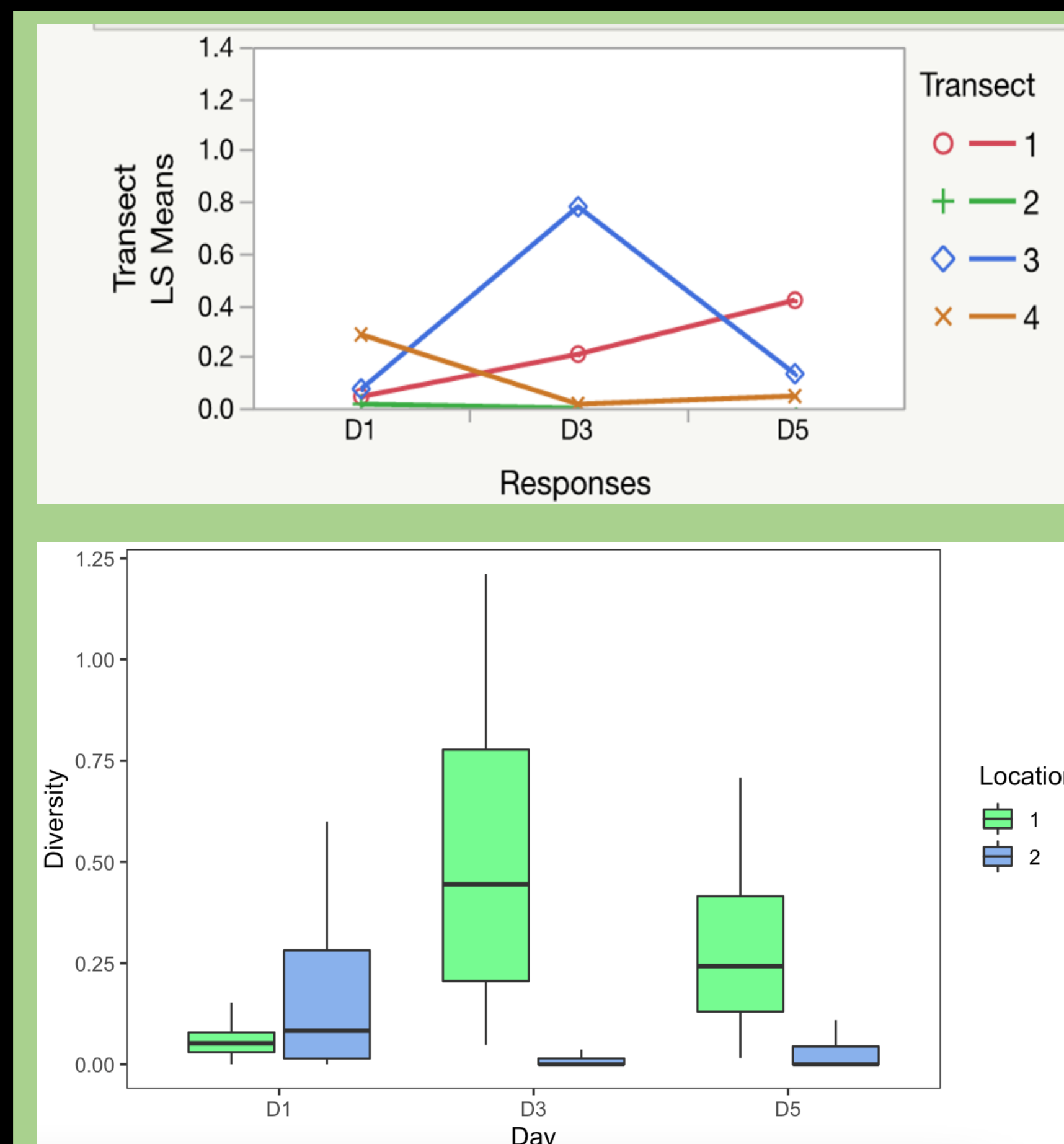


Mean abundance differed between days and transects.

$$F_{(6,79992)} = 174934.30$$

$$(P < 0.001)$$

Diversity



Mean diversity differed between days and transects.

$$F_{(6,79990)} = 212202.11$$

$$(P < 0.001)$$

Identification

- Morphological shell identification matched DNA barcodes for 6 species (8/19 sequences, 42.1%).



- 2 species (shell based identification) were not in GenBank (2/19, 10.5%).
- 6 species (shell based identification) mismatched with GenBank (9/19, 47.4%).

Discussion

- Biodiversity results suggest that if snails are sampled at different durations, 66% of the time (2 of 3 days), estimates of diversity and abundance would be similar.
- Identification results suggest that combining DNA and shell-based identification will lead to more accurate identification of species for estimates of biodiversity for terrestrial snails.

Significance

- Incorporating temporal variation into gastropod sampling may help broaden our knowledge on the biodiversity of gastropods in a specific location.
- It is important to combine shell identification with genetic barcoding to accurately estimate abundance and diversity.
- This preliminary sampling can further help us understand where the next host in a parasite life cycle is most at risk.



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