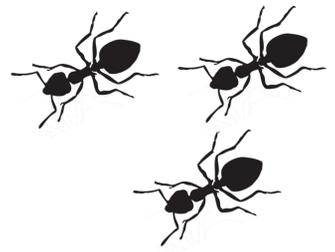




Novel Drivers of Nest-site Selection in Texas Horned Lizards



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BACKGROUND

- Abiotic nest-site conditions influence hatching success, while biotic conditions affect resources available for hatchlings^{1,2}
- Hatchling Texas horned lizards are specialists needing small native ants and termites
- Invasive fire ants may degrade habitat by displacing native ants or preying on hatchlings³
- Females may choose nest sites with low predation risk, abundant hatchling prey, and optimal incubation conditions



Different ant and termite species that are important components of a hatchling diet (small ants and termite) and adult diet (large harvester ant)

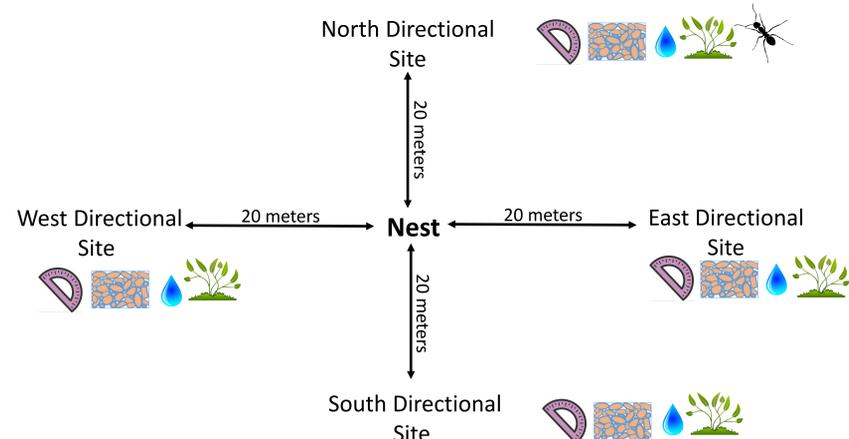
Objective

- Assess whether female horned lizards select nest-sites based on:
 - Slope, 2) Soil compaction, 3) Soil moisture, 4) Microhabitat structure, 5) Native ant abundance, and 6) Fire ant abundance

STUDY DESIGN

- Central Texas Study Sites (42 km apart from one another):
 - Mason Mountain WMA (MMWMA) - state-owned property that has hosted reintroduced Texas horned lizards since 2015
 - White Ranch (WR) – private ranch with natural population of lizards
- Track adult female lizards twice daily via radio telemetry to observe nesting
- Found 21 nests:
 - 10 in 2023 (3 MMWMA, 7 WR)
 - 11 in 2024 (0 MMWMA, 11 WR)
- Measured slope, soil compaction, soil moisture, microhabitat, fire ant abundance (during laying and hatching), and native ant abundance (during laying and hatching) around nest and 4 directional sites

*Ants only measured at North Directional Site due to time limitations



DATA ANALYSIS

- Binomial Generalized Linear Model (GLM): step-wise model selection
- Predictors used in full model: Slope + Soil Moisture (Per) + Soil Moisture (Core) + Soil Compaction + % Grass + % Forbs + % Litter + % Bare ground + Fire ants during laying + Hatchling prey during laying + Hatchling prey during hatching
- % Shrub cover showed extreme separation – all points with >30% shrub cover were nests

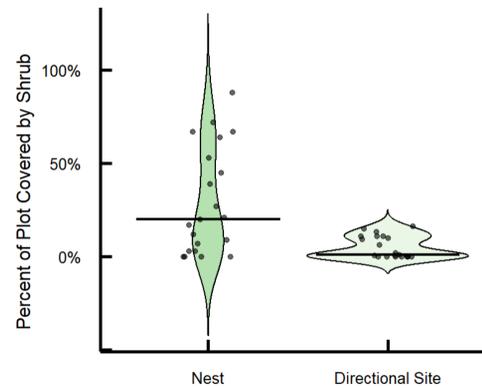
RESULTS

Which factors do horned lizards consider when selecting a nest-site?

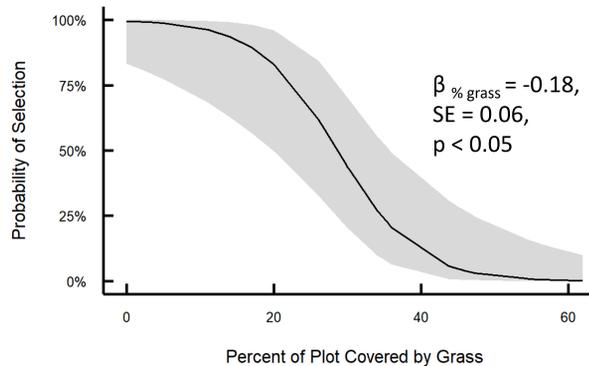
Factor removed for each step	AIC	df
All (no factors included – null model)	60.22	1
None (all factors included)	37.03	12
Fire ants during laying	35.03	11
% Bare ground	33.33	10
Soil Moisture (Per)	31.41	9
Slope	29.67	8
% Forbs	28.32	7
Hatchling prey during hatching	28.30	6
Soil Moisture (Core)	29.94	5
% Litter	28.96	4

Final model: Soil Compaction + % Grass + Hatchling prey abundance (laying)

How does shrub cover affect nesting?

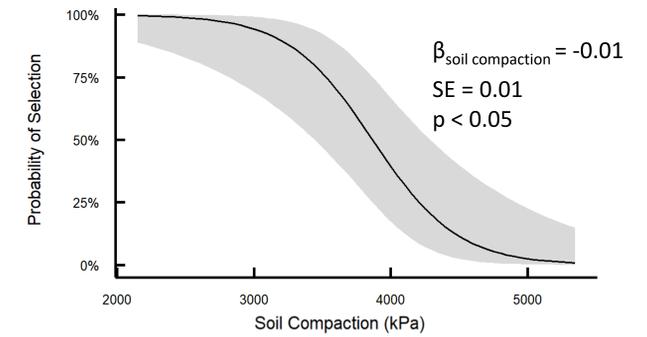


How does grass cover affect nesting?

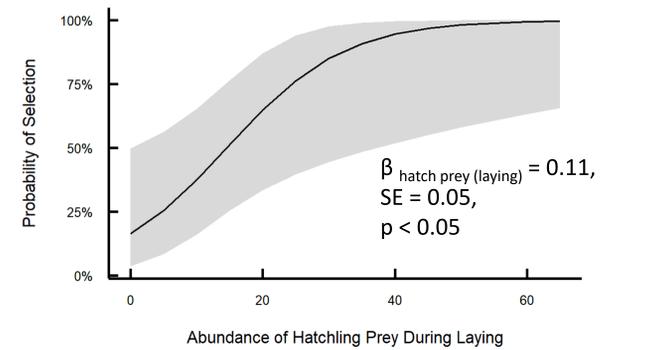


RESULTS

How does soil compaction affect nesting?



How does hatchling prey presence at the time of laying affect nesting?



DISCUSSION

- Texas horned lizards select nest sites that have: 1) High shrub coverage, 2) Less grass coverage, 3) Low soil compaction, 4) Increased abundance of hatchling prey during nesting
- First time reptile has been documented selecting nest site based on food abundance
- Information will be used to determine future release sites for reintroductions



Same lizard digging nest (left) and 15 hrs later exhibiting guarding behavior (right)

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