Population biology of the brown anole on spoil islands in the GTM reserve

Dan Warner

Auburn University
Department of Biological Sciences

AUBURN UNIVERSITY

Evolution • Ecology • Behavior • Physiology
WARNER LAB

A collaborative effort

Cox Laboratory
Department of Biology
University of Virginia

Department of Biological Sciences
Auburn University

Invasive species

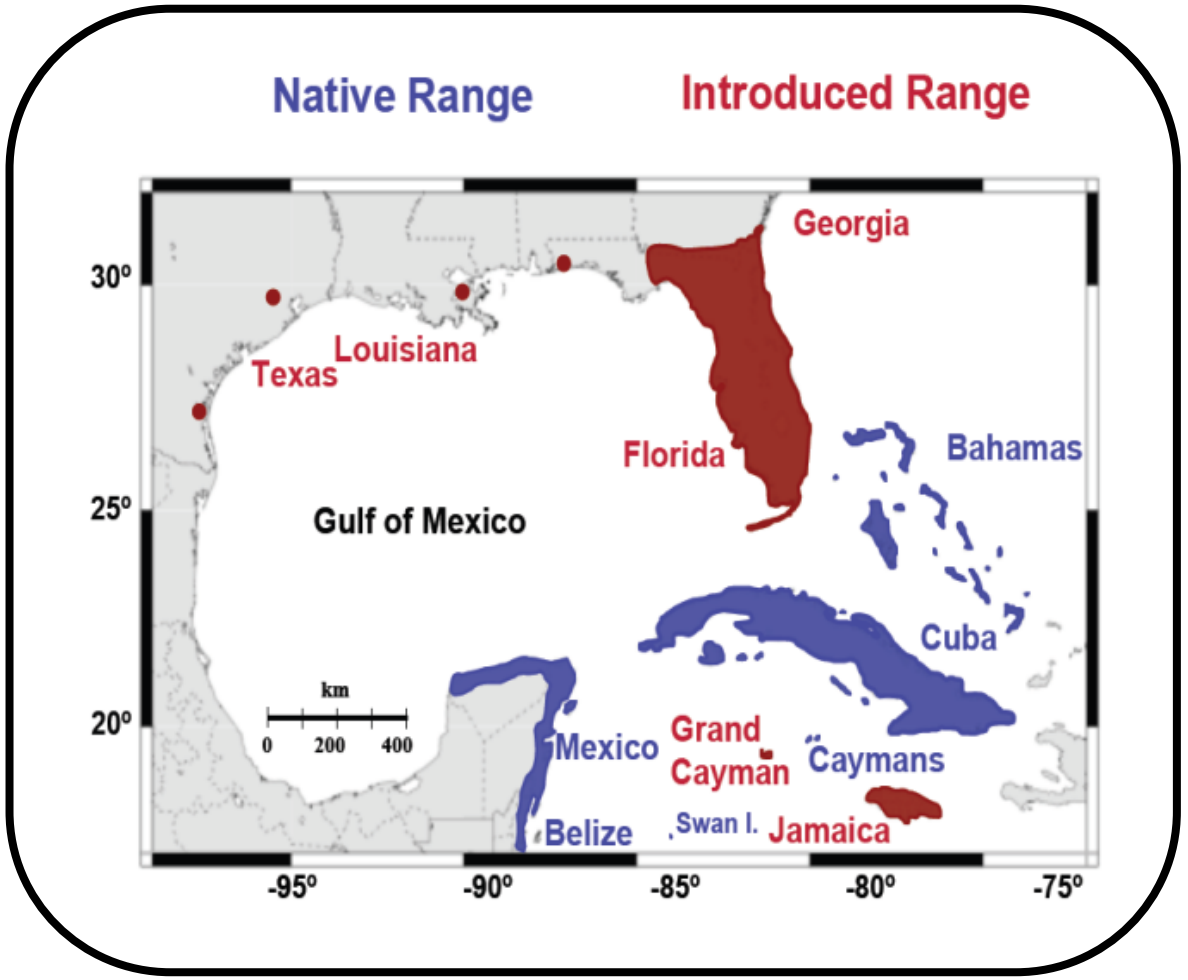
Major component of Global Change Biology

Numerous impacts on native environments

Environmental and economic impacts are often difficult to predict

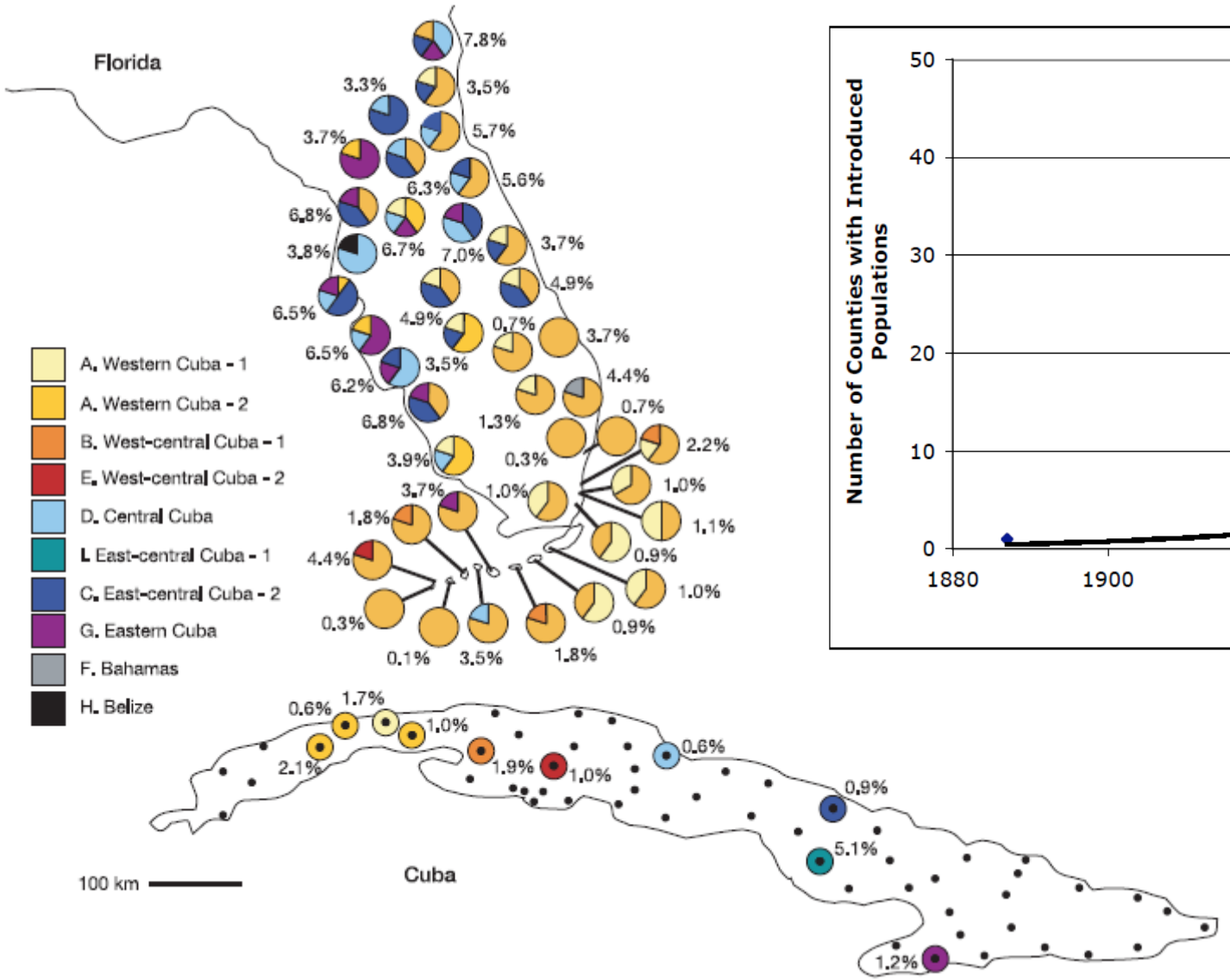
Long-term monitoring will provide insights

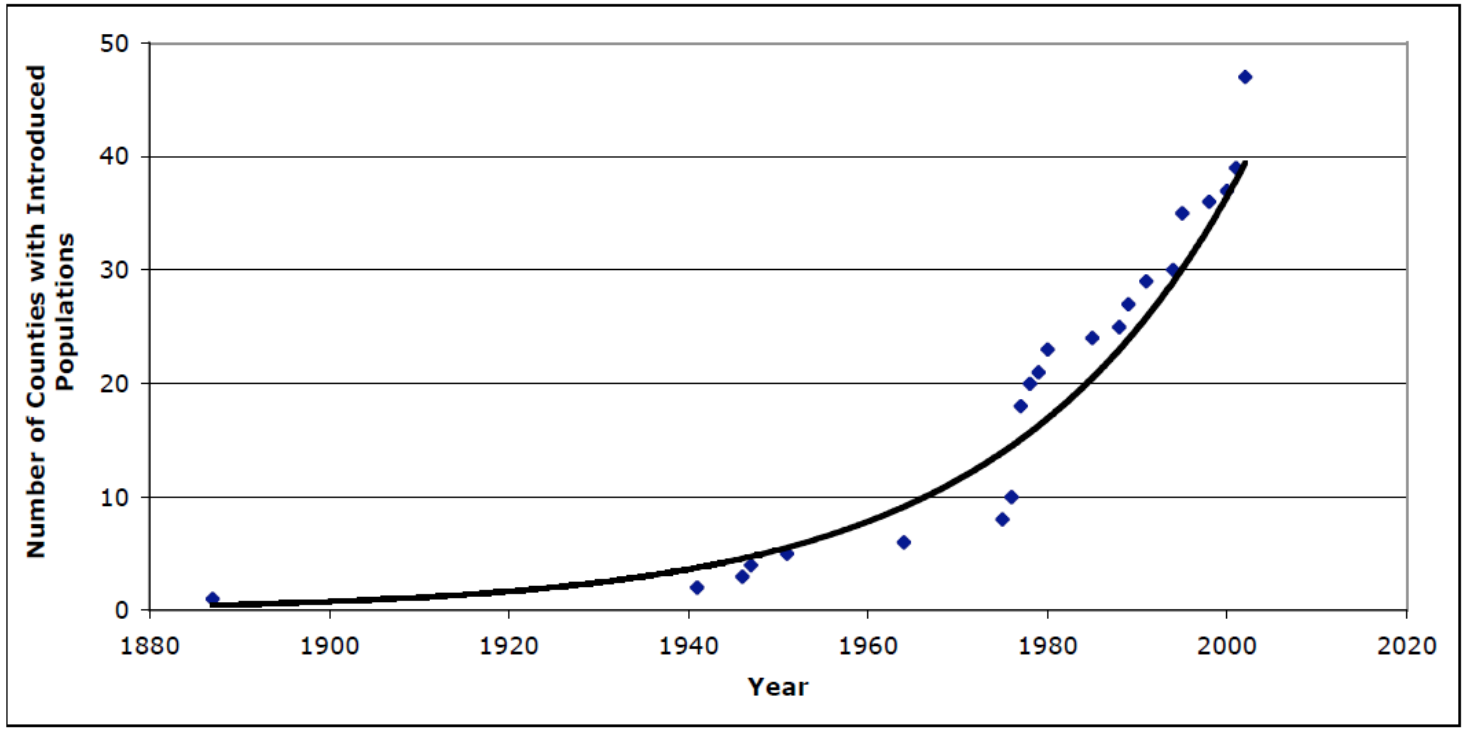
Brown anole



Also in California, Hawaii, Grenada, Taiwan, Singapore (and probably elsewhere)

Invasion history of brown anoles in Florida





Kolbe et al. 2004. *Nature*. 431:177-181

Brown anoles are well studied, but…

Most research focuses on:

- Reproductive and behavioral ecology
- Evolutionary biology
- Community & population biology in native range
- History of the invasion

Less known about:

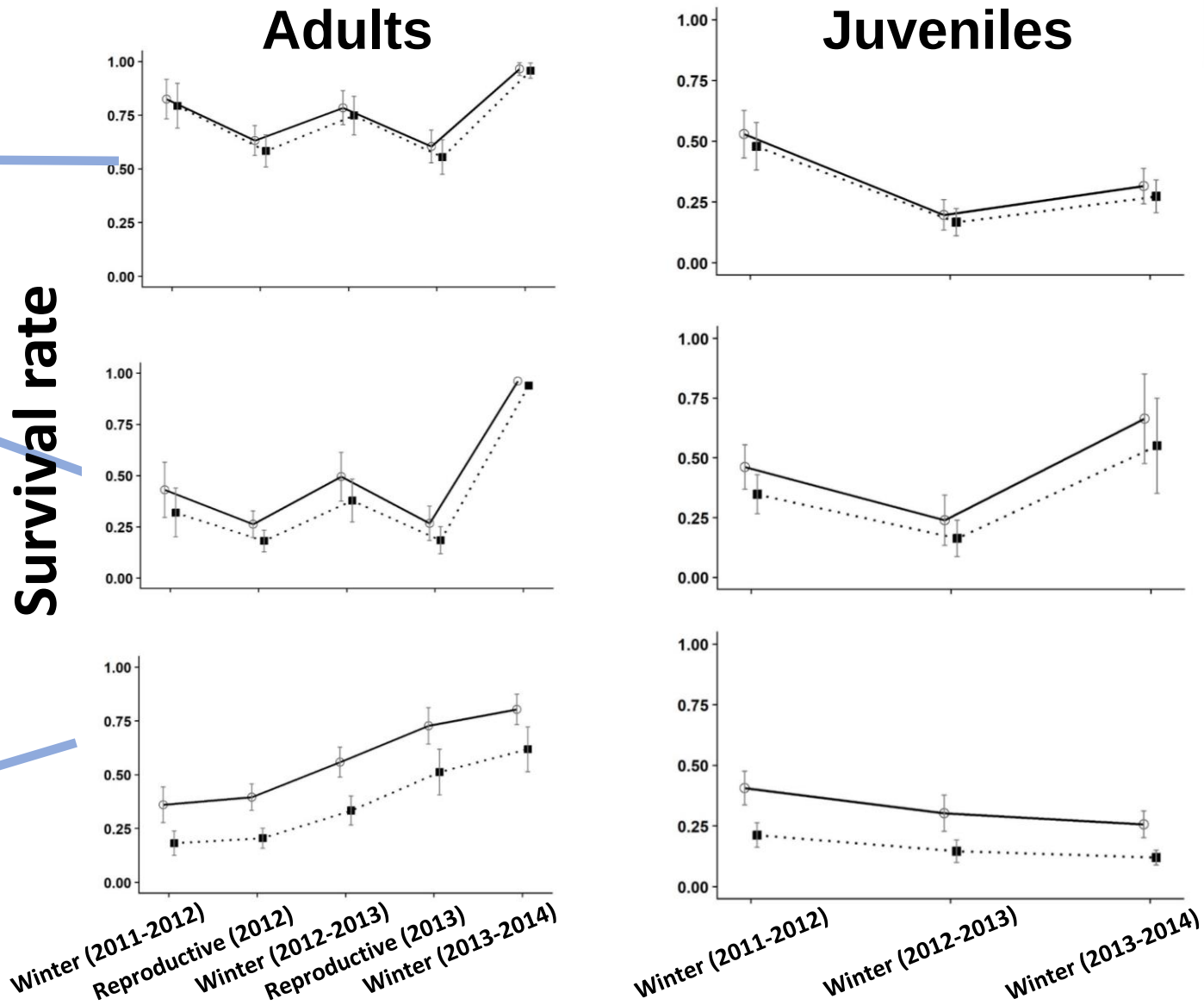
- Population dynamics in invasive ranges
- Reproductive behaviors in the field
- Effects of egg incubation environments
- Embryo and juvenile life stages

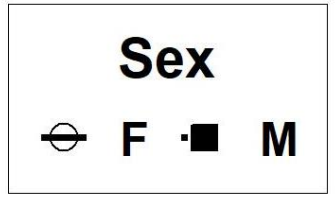
Research objectives

1) Better understand population demographics across populations and time, particularly for young age classes.
2) Understand reproductive behaviors (e.g., nesting) and the consequences on egg survival.

General field protocols

Survival rates on three islands

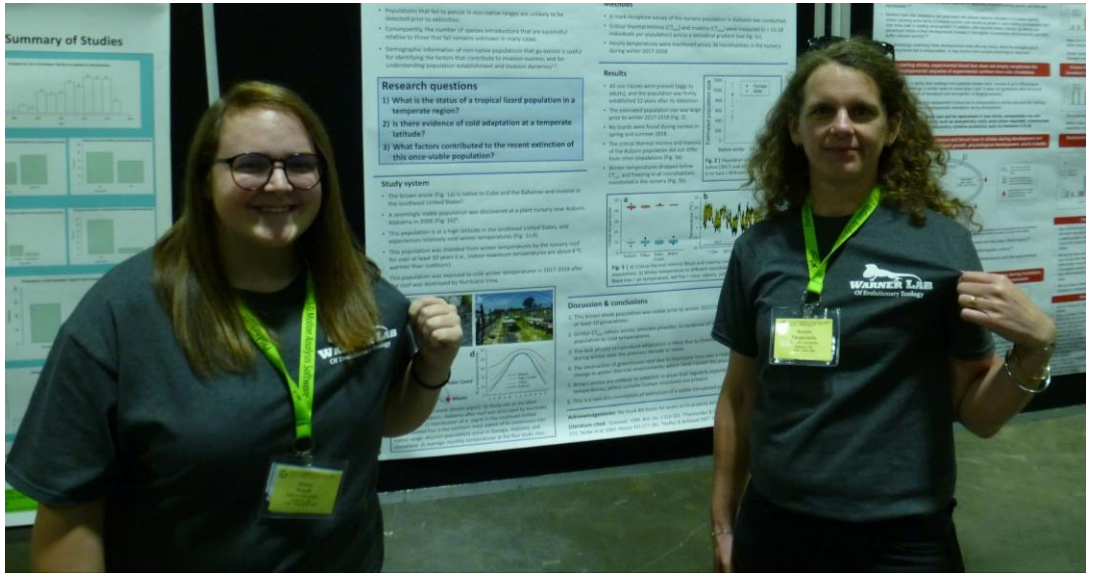


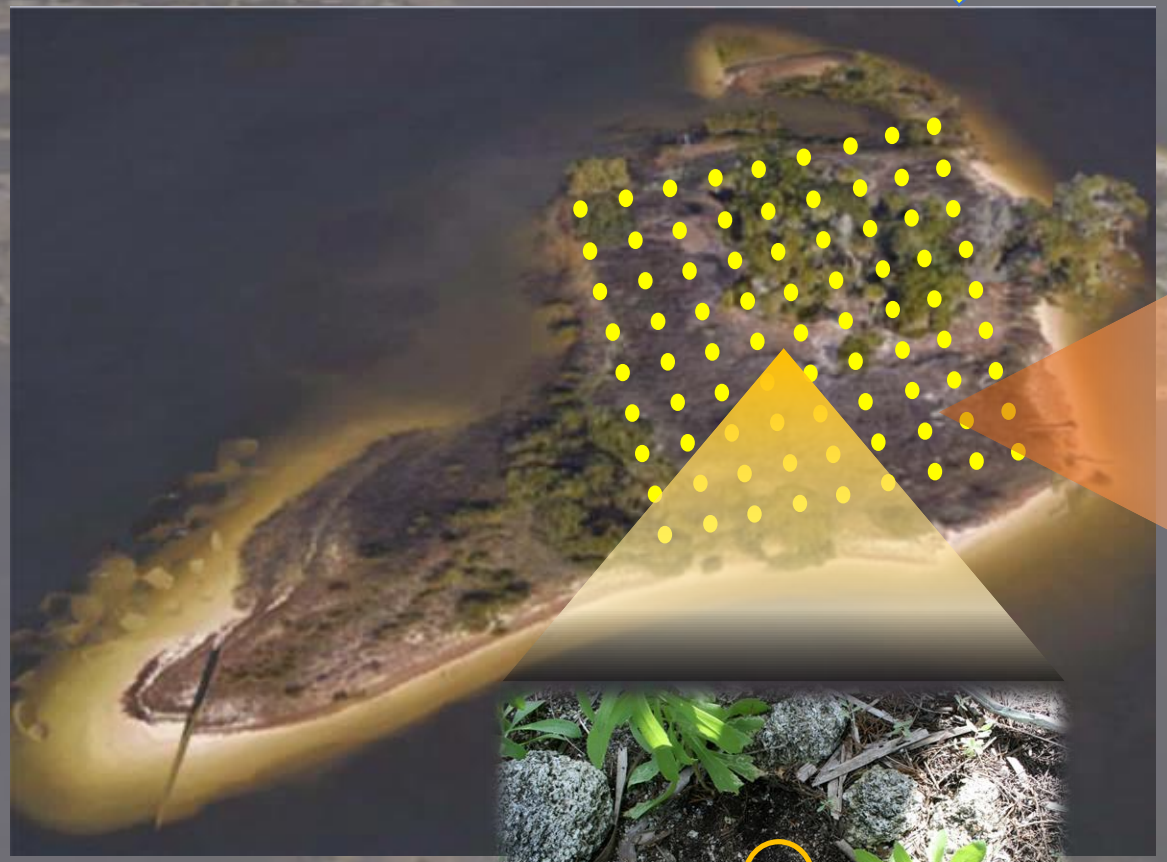


Nesting ecology of brown anoles

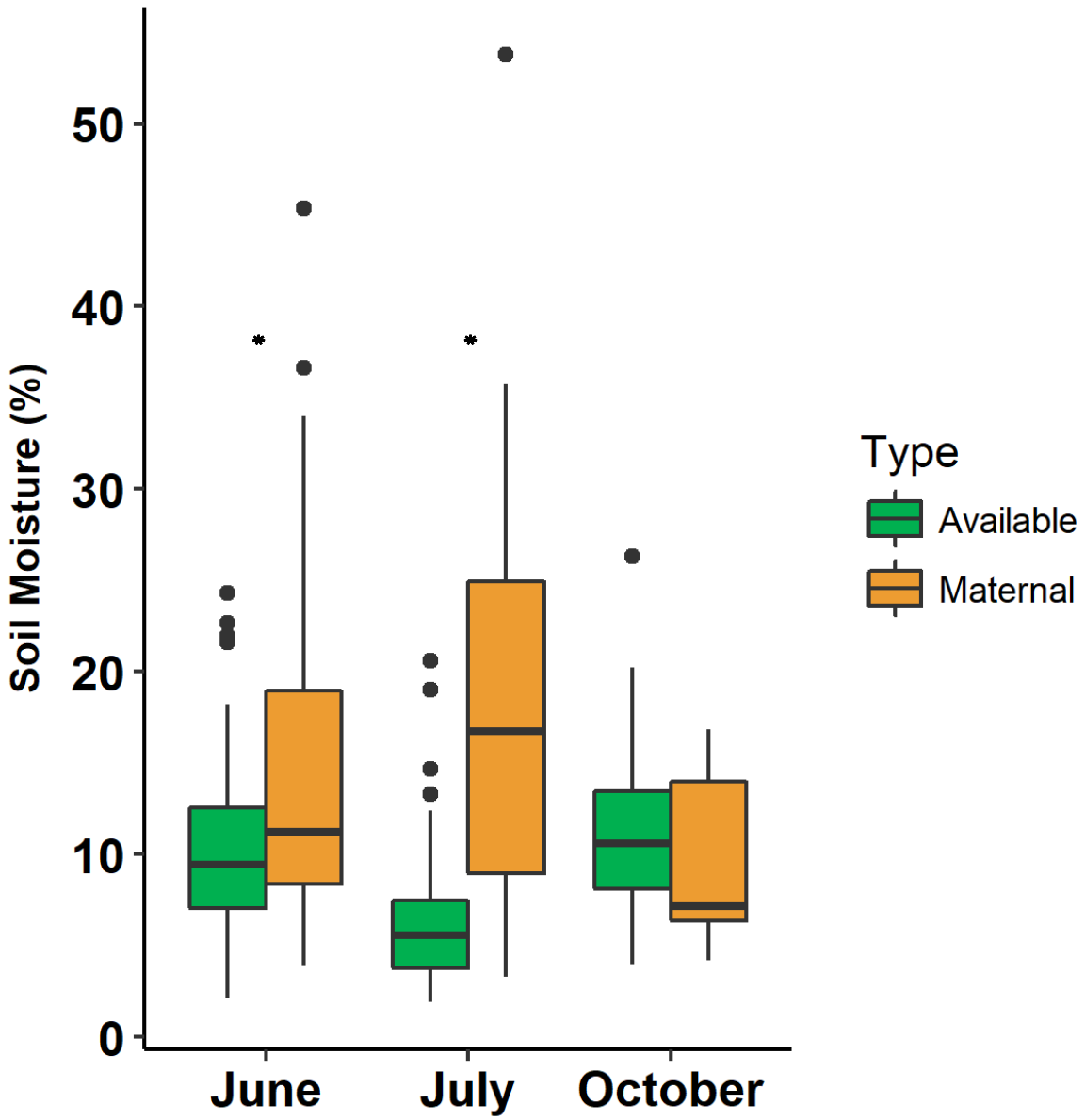
What microhabitats do anoles use for nesting?

What are the consequences of nest environments?

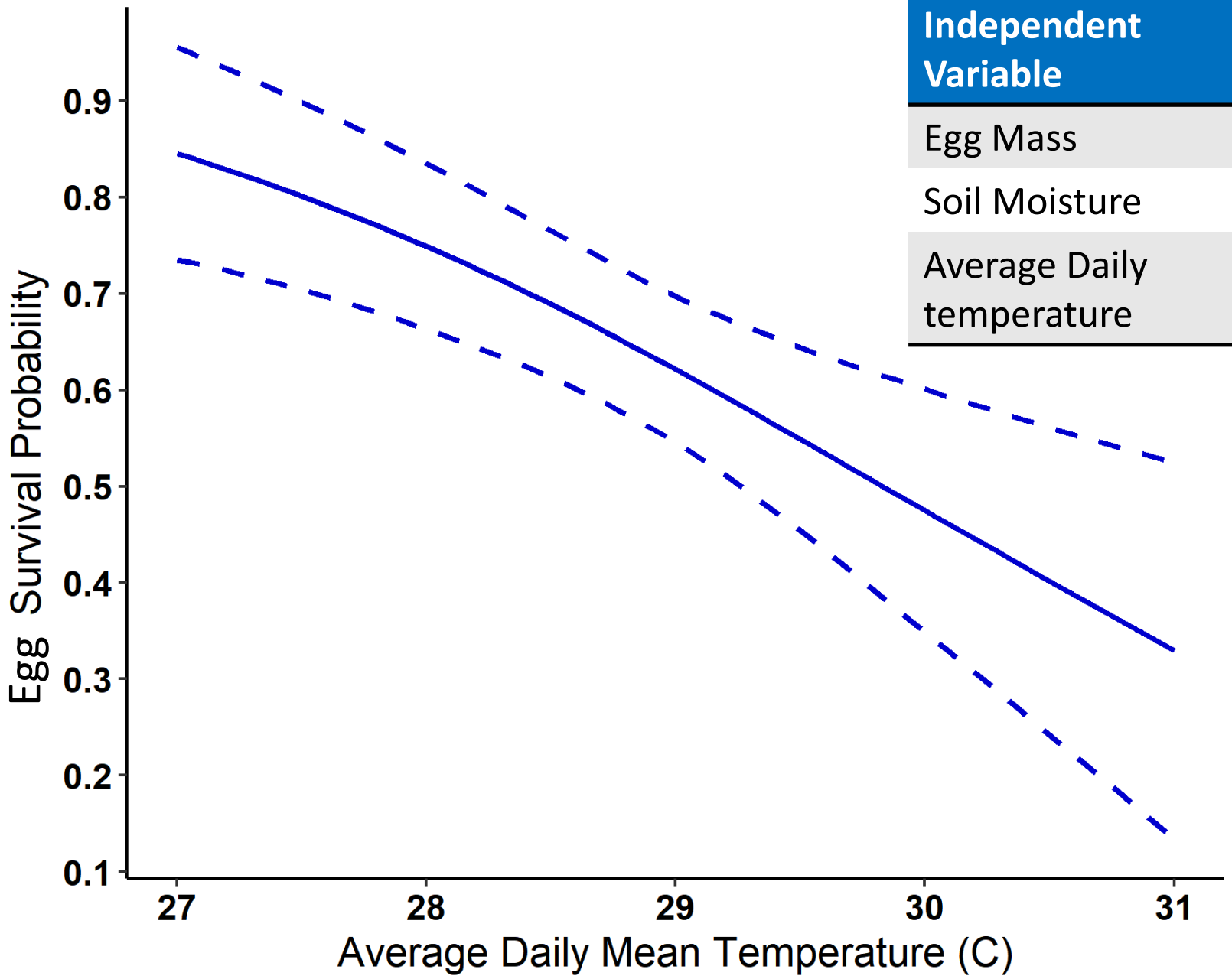




June
July → 80 eggs
October


Soil Moisture (%)
0
10
20
30
40
50
June
July
October
Type
Available
Maternal

4 eggs x 50 stakes= 200 eggs



Independent Variable	Estimate	P-Value
Egg Mass	-5.88	0.524
Soil Moisture	-0.14	0.208
Average Daily temperature	-1.38	**0.016***

Summary & conclusions

Demographic parameters (survival rates) vary across islands and through time

Females choose relatively cool & moist microhabitats for nesting

Eggs exposed to cooler temperature have relatively high hatchings success

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