Burmese Pythons and Urbanization Shape the Meso-mammal Community in the Everglades

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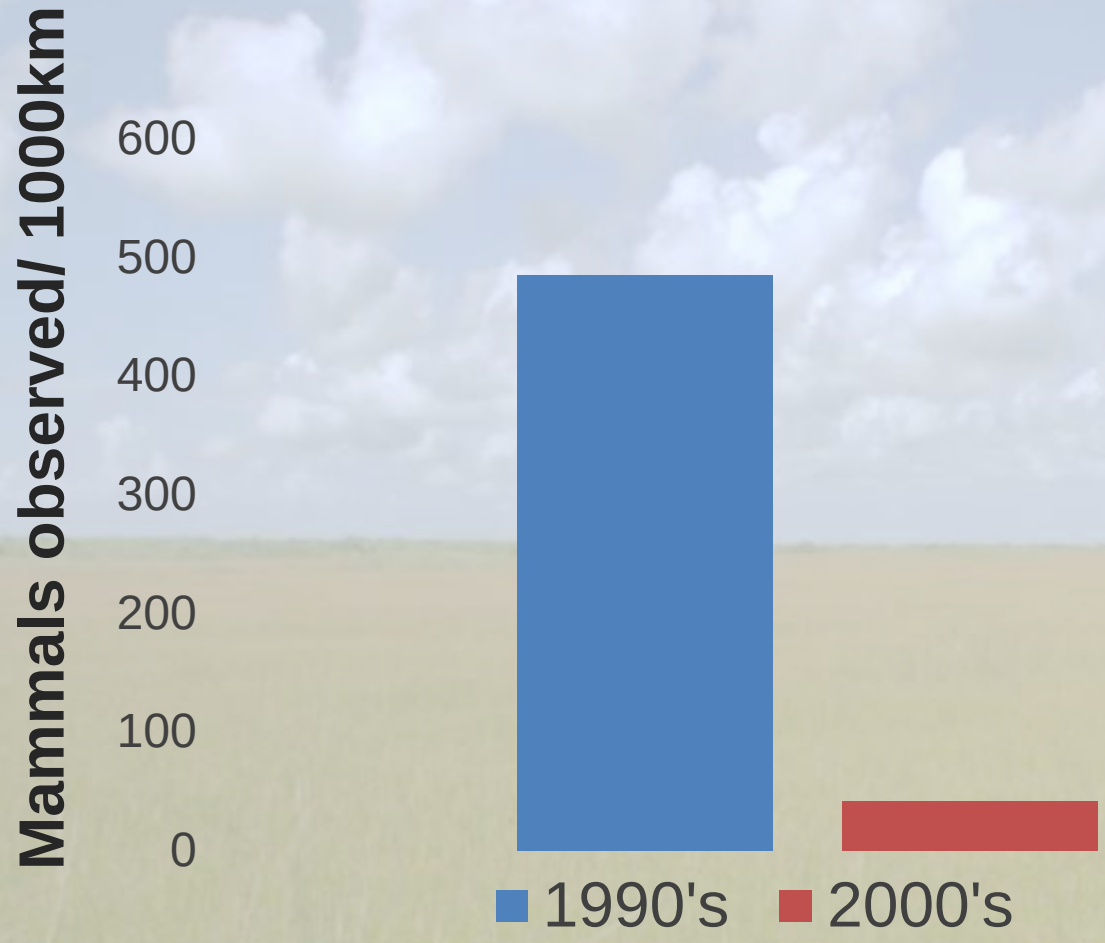
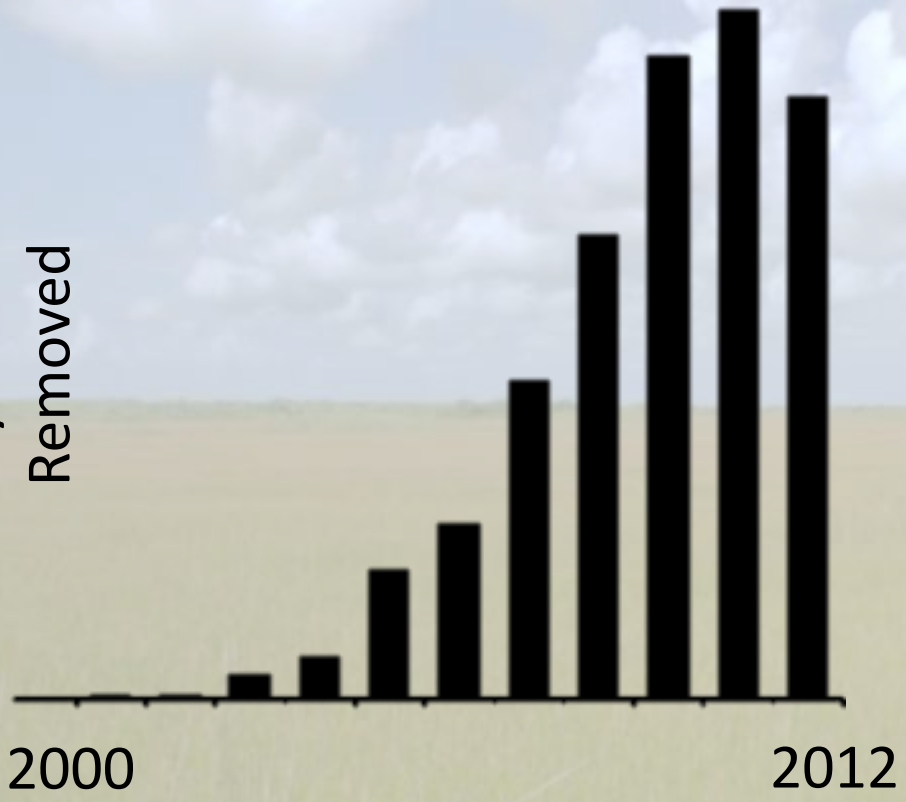
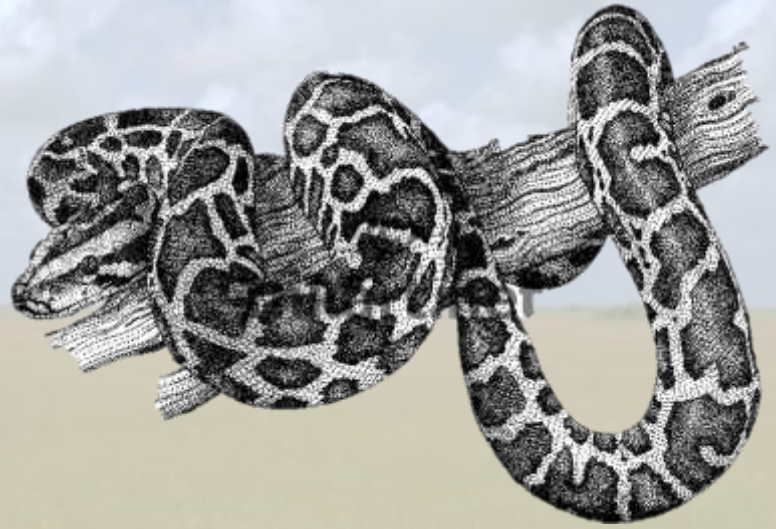
INTRODUCTION: MAMMAL DECLINE



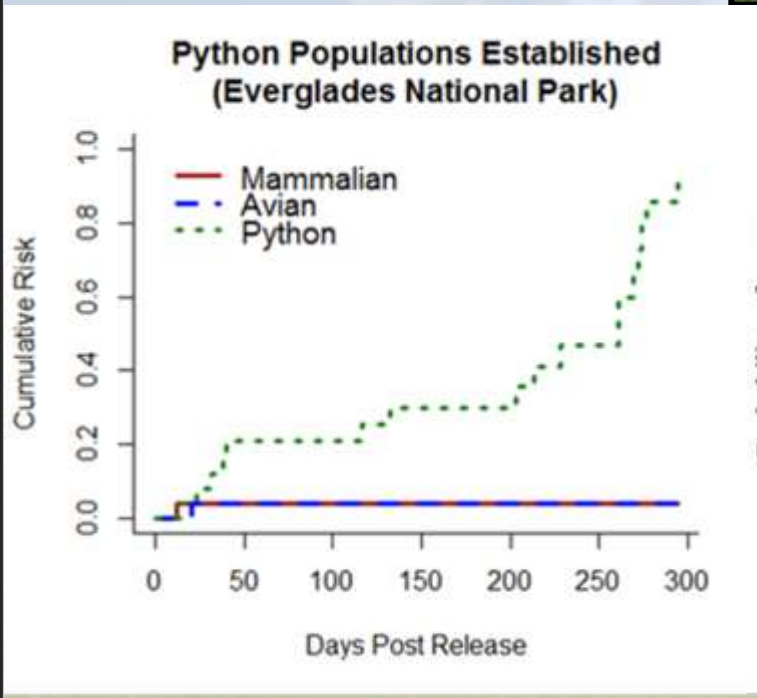
Dorcas et al. 2012, PNAS

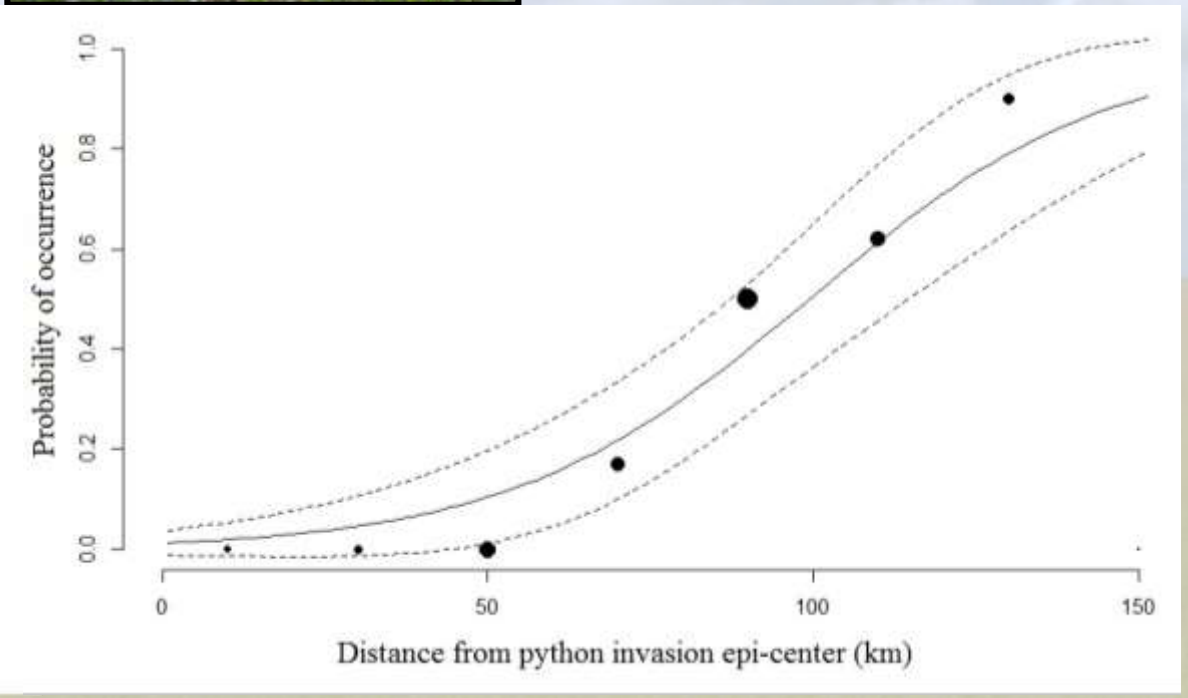
INTRODUCTION: PYTHON INVASION





INTRODUCTION: WHAT WE KNOW





McCleery et al. 2015,Proc B

Sovie et al. 2015,Bio Invasions

DO OTHER MAMMALS RESPOND LIKE MARSH RABBITS?
&
ARE OTHER FACTOR DRIVING MAMMAL COMMUNITIES?

?

METHODS : STUDY DESIGN

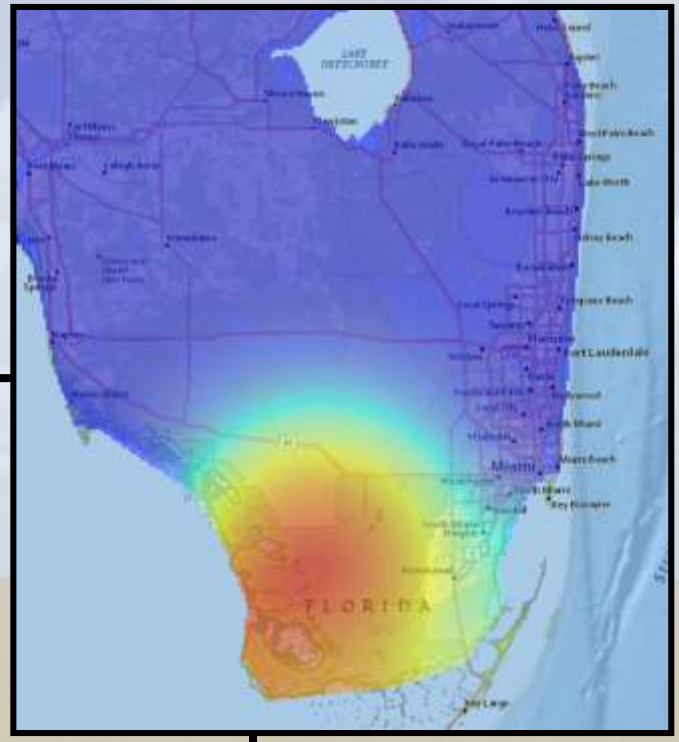
Mammal presence/absence surveys

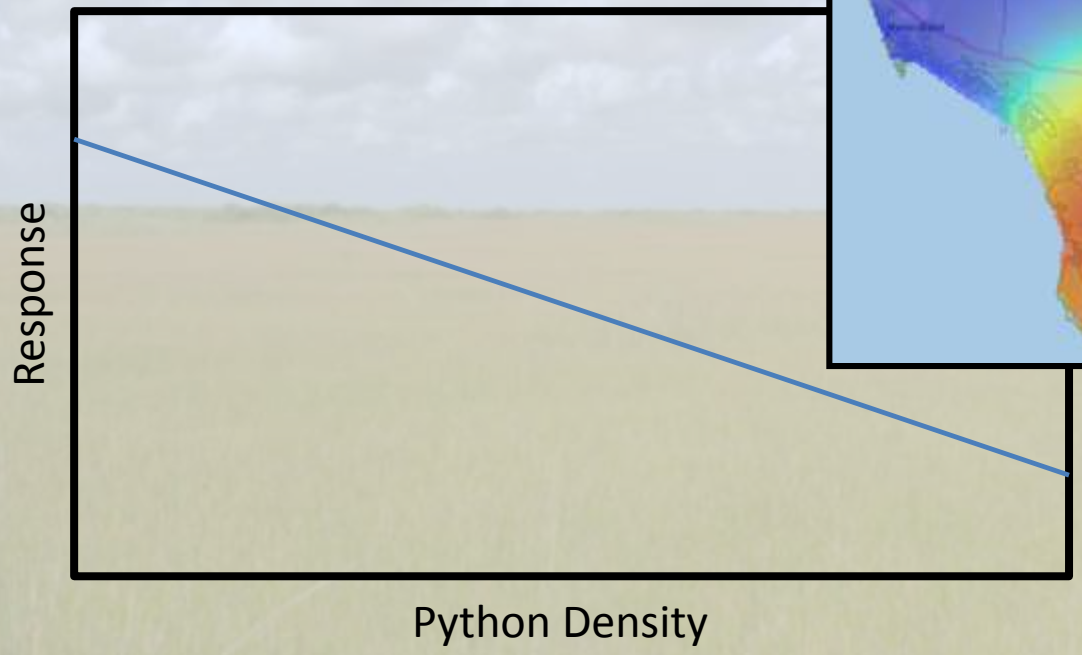
1. Camera traps (14 days)
2. Scat

POTENTIAL DRIVERS: PYTHONS

Driver

Python density (Bonneau *et al.* 2016)

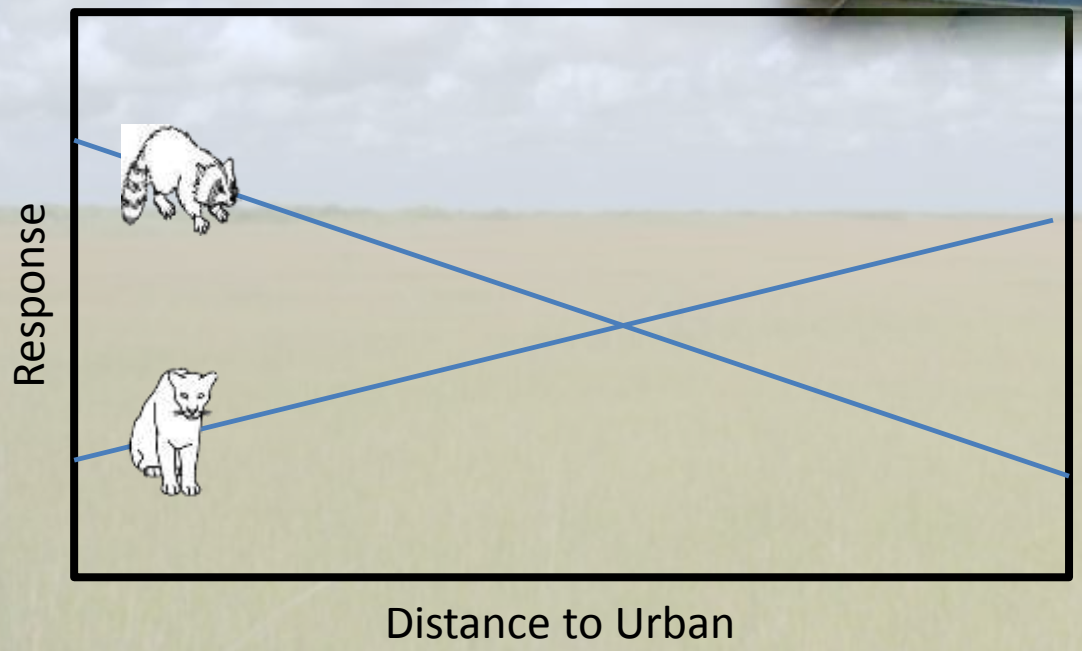




POTENTIAL DRIVERS: URBANIZATION

Driver

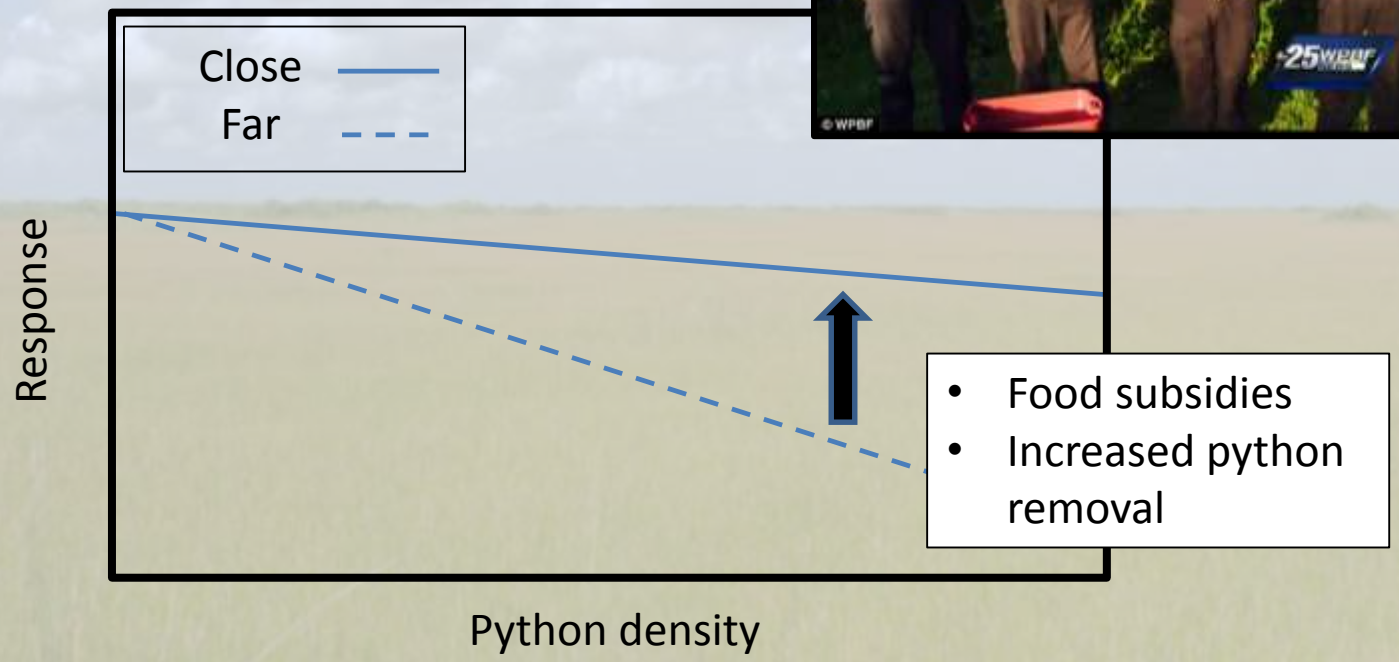
Urbanization



POTENTIAL DRIVERS: INTERACTIONS

Driver

Python-Urbanization Interaction

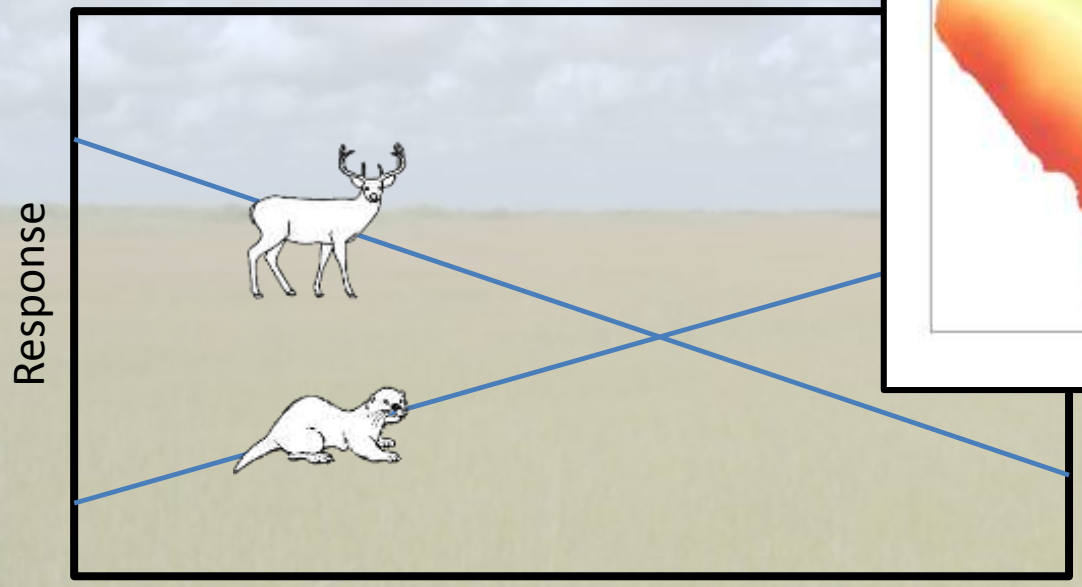


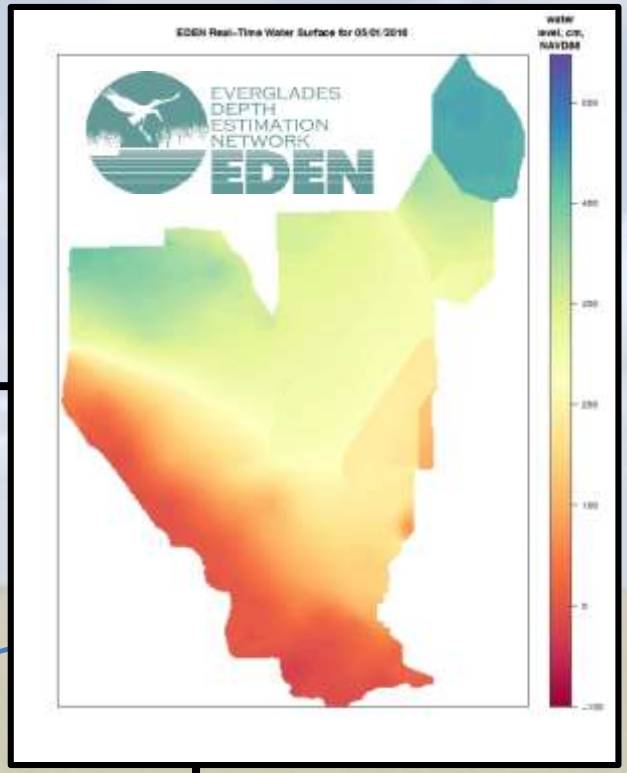
POTENTIAL DRIVERS: HYDROLOGY

Driver

Hydro-period

Depth





POTENTIAL DRIVERS: VEGETATION

Driver

Vegetation

Coastal

Freshwater

Hammock Forest

METHODS:HIERARCHAL OCCUPANCY MODEL

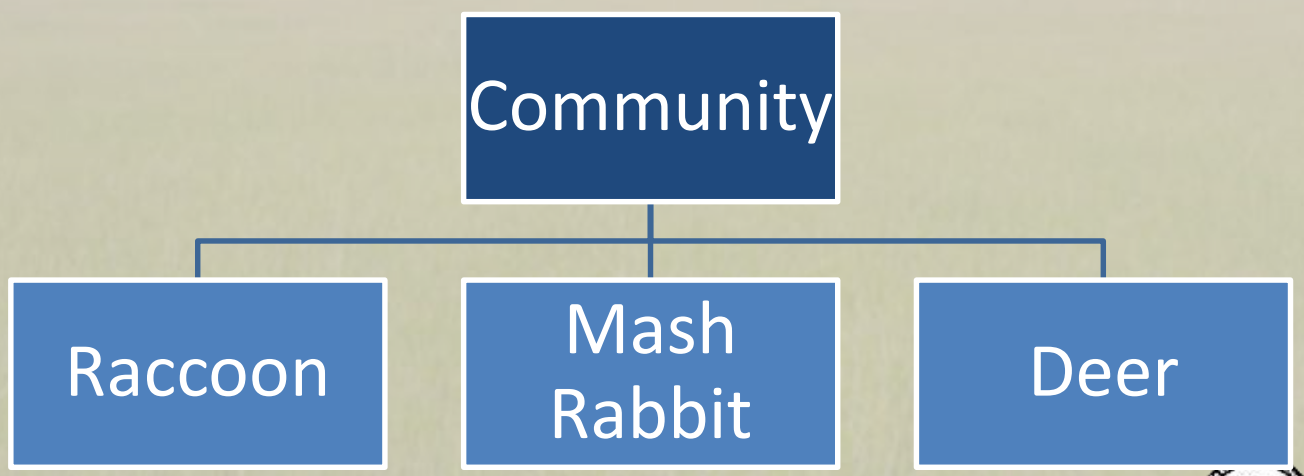
Species response to drivers

- Vegetation
- Urbanization
- Hydrology
- Pythons
- Python – Urban interactions

Raccoon | Mash Rabbit | Deer

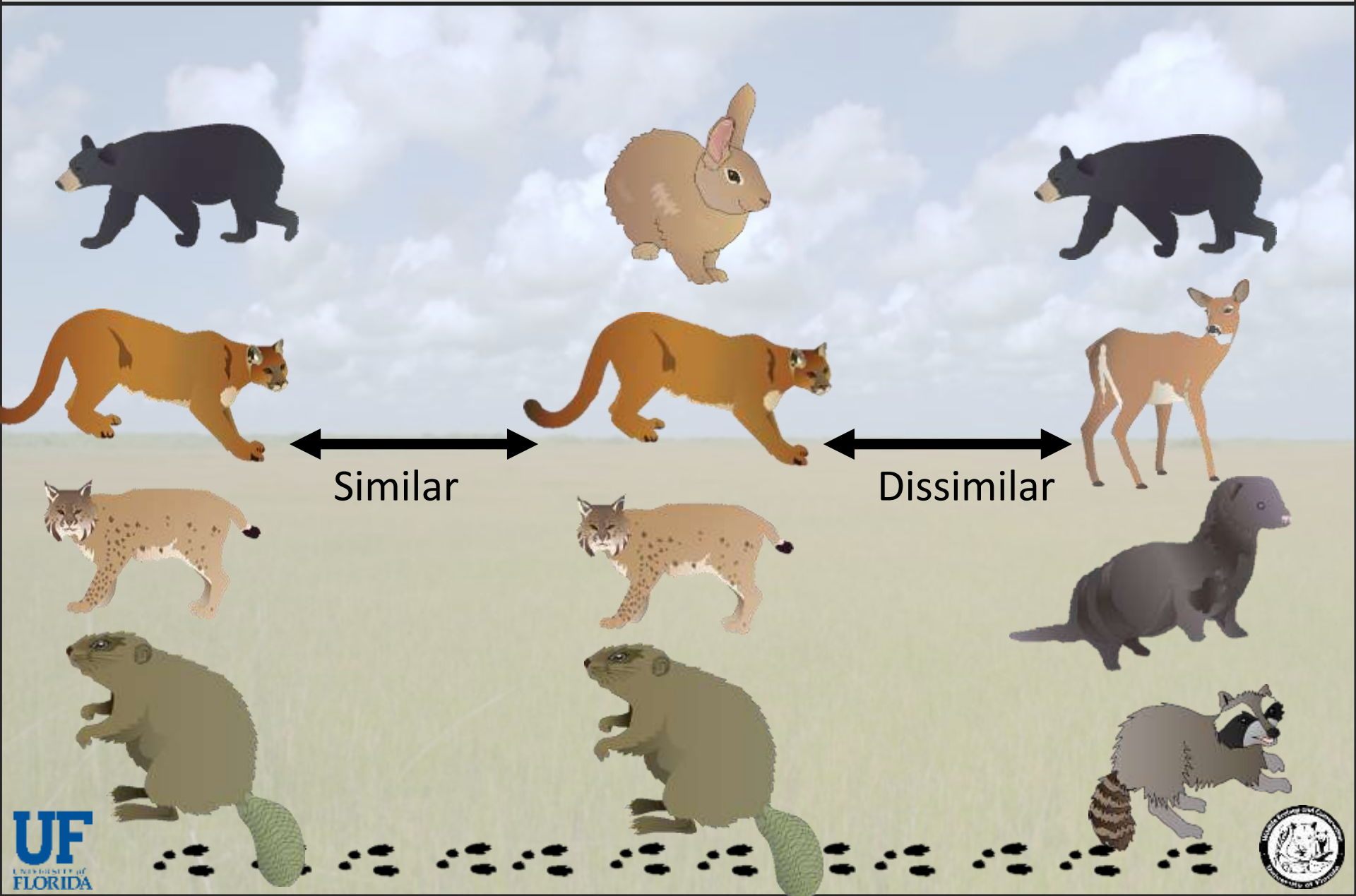
Community metrics

- Urbanization
- Hydrology
- Pythons
- Interactions



COMMUNITY METRICS: RICHNESS

COMMUNITY METRICS: SIMILARITY



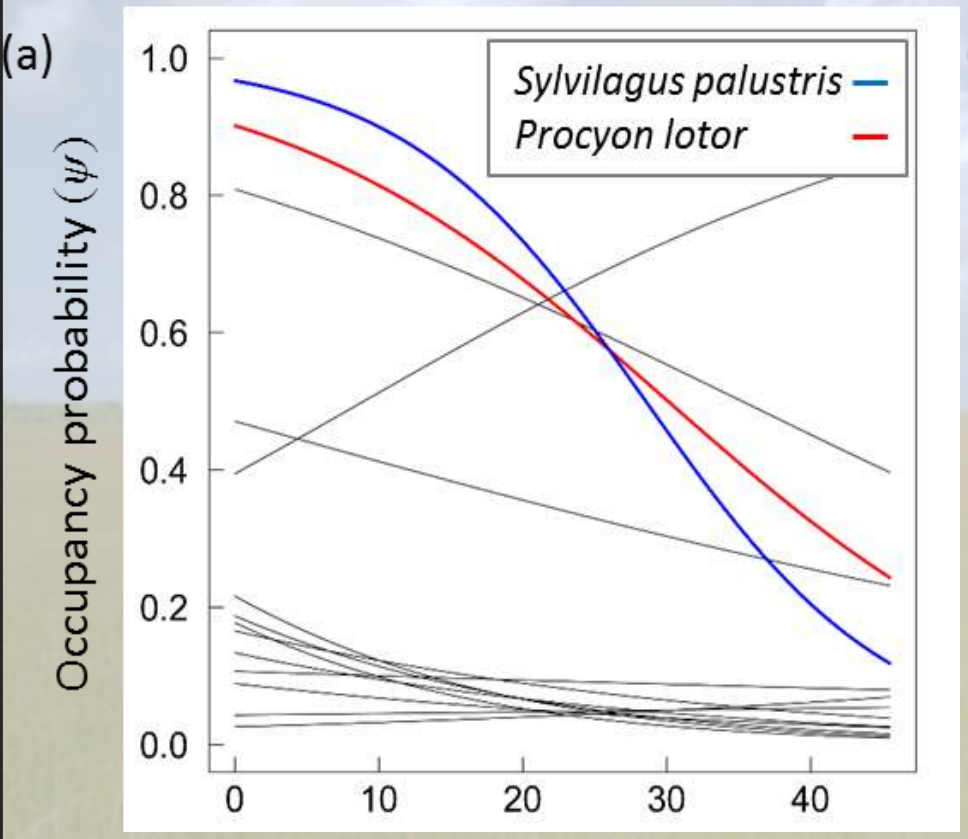
RESULTS: VEGETATION

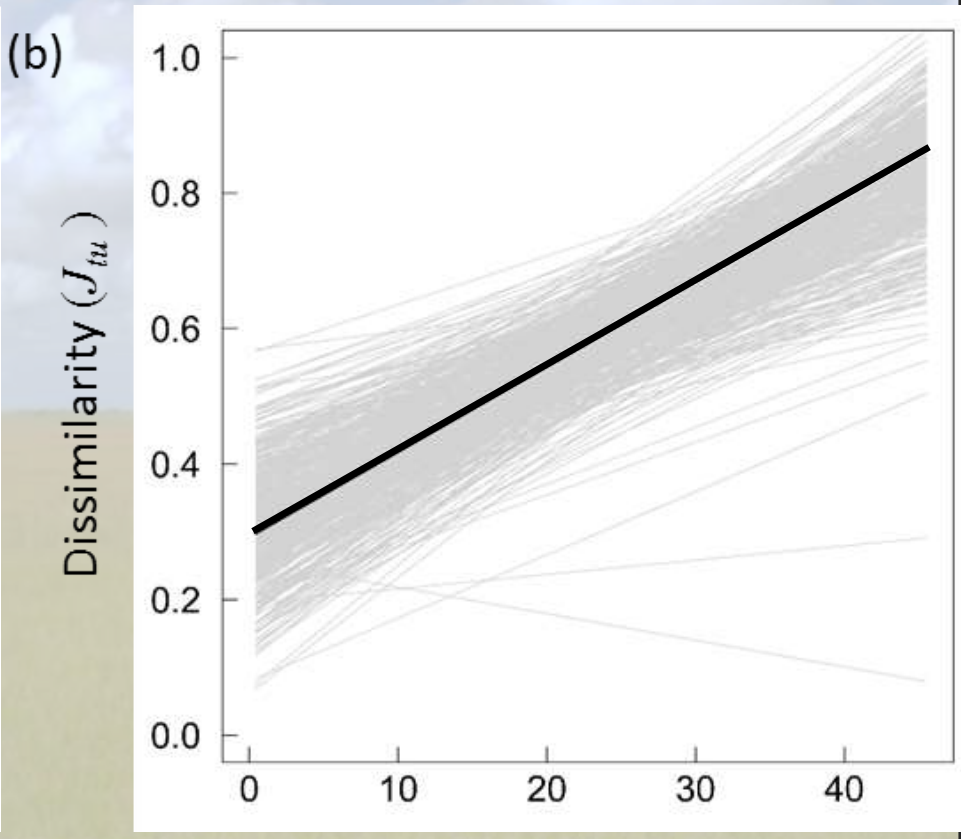
Driver

Vegetation

Common Name	Hammocks/ woodlands	Coastal	Freshwater marsh	Forested swamp
Nine-banded armadillo	-	-	(-)	(-)
Black bear	-	-	(-)	(-)
Bobcat	-	-	(-)	-
White-tailed deer	-	-	(-)	+
Fox squirrel	-	-	(-)	-
Virginia opossum	+	-	(-)	-
Marsh rabbit	-	(-)	-	-
Raccoon	-	-	(-)	-
Gray squirrel	-	-	(-)	(-)
Striped Skunk	-	-	(-)	(-)
Coyote	-	-	(-)	(-)
River otter	-	-	-	(-)
Florida Panther	-	-	(-)	-
Round-tailed Muskrat	-	-	(-)	-

RESULTS: URBANIZATION





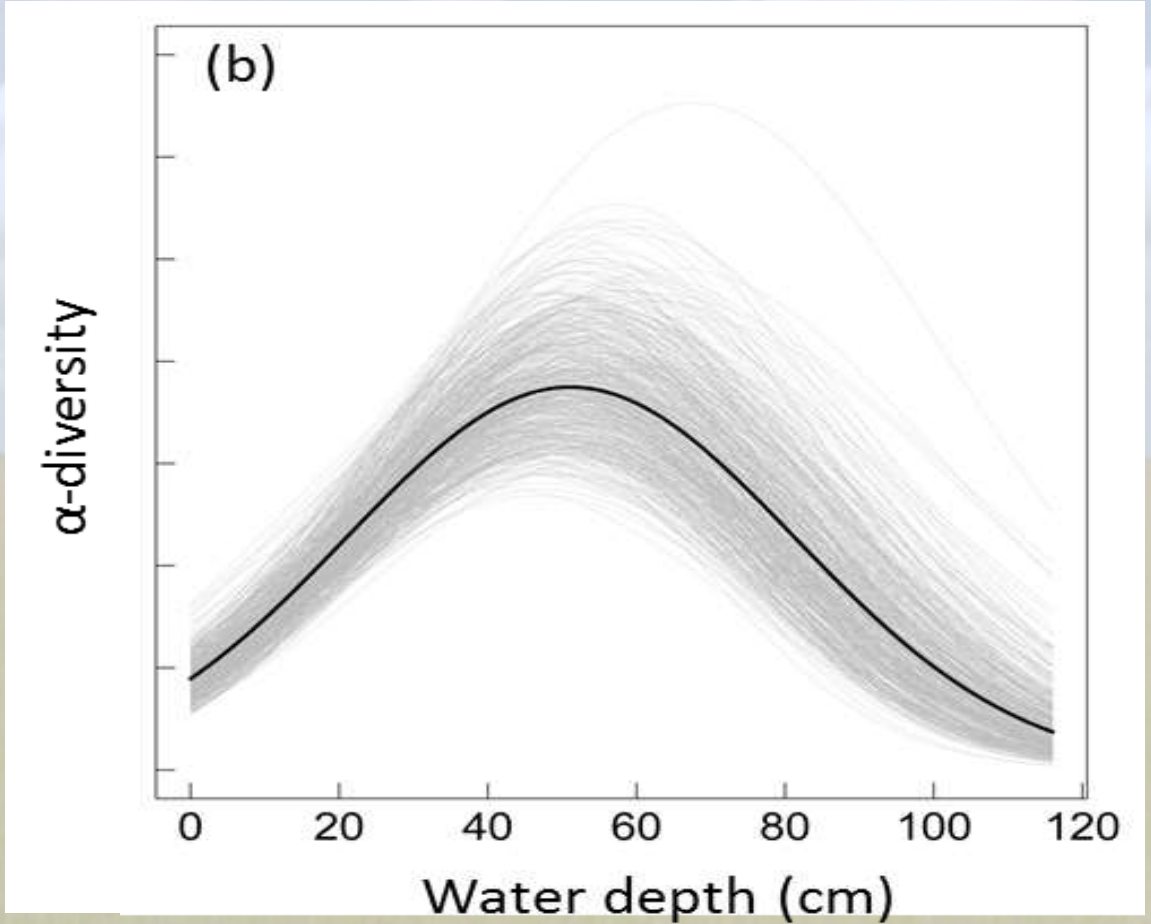
RICHNESS

Drivers

Hydro-period (0.002)*

Depth (0.002)*

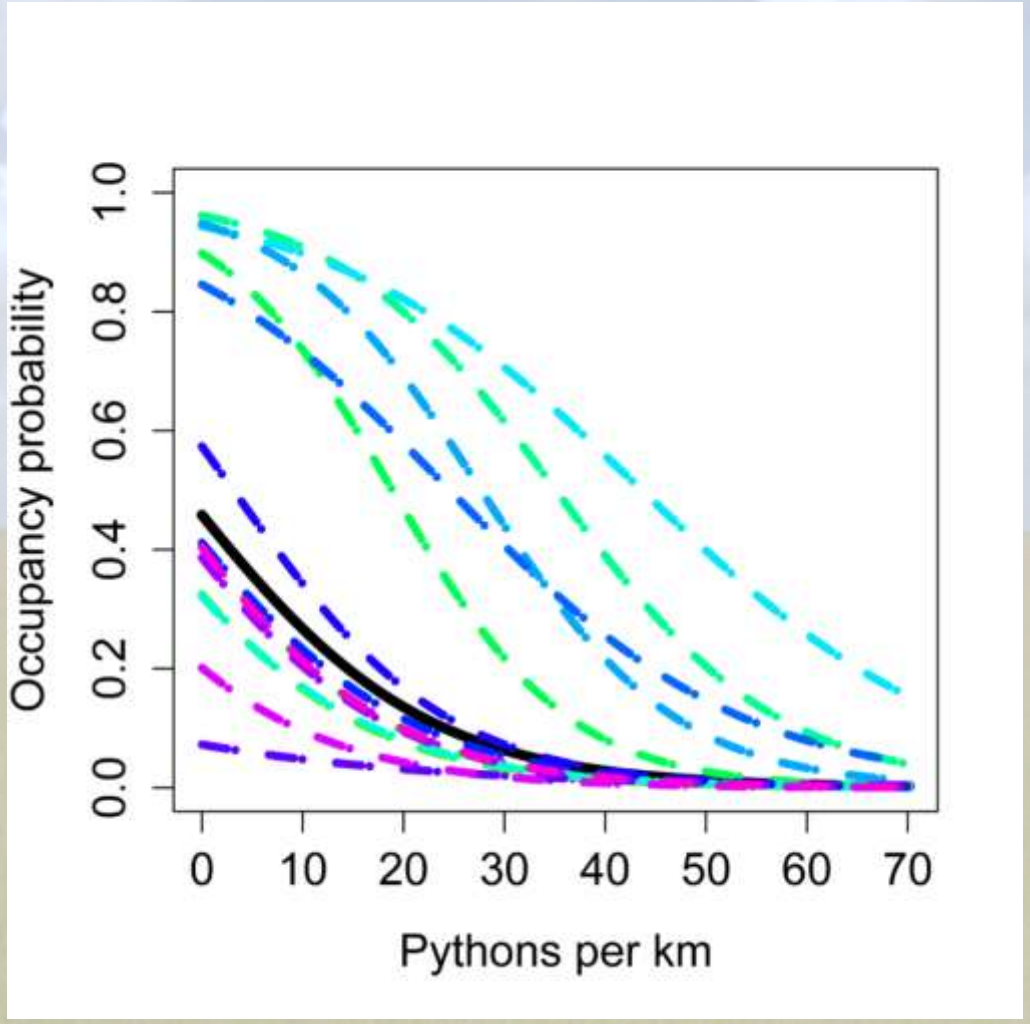
***relative strength**



RESULTS: PYTHONS

Drivers

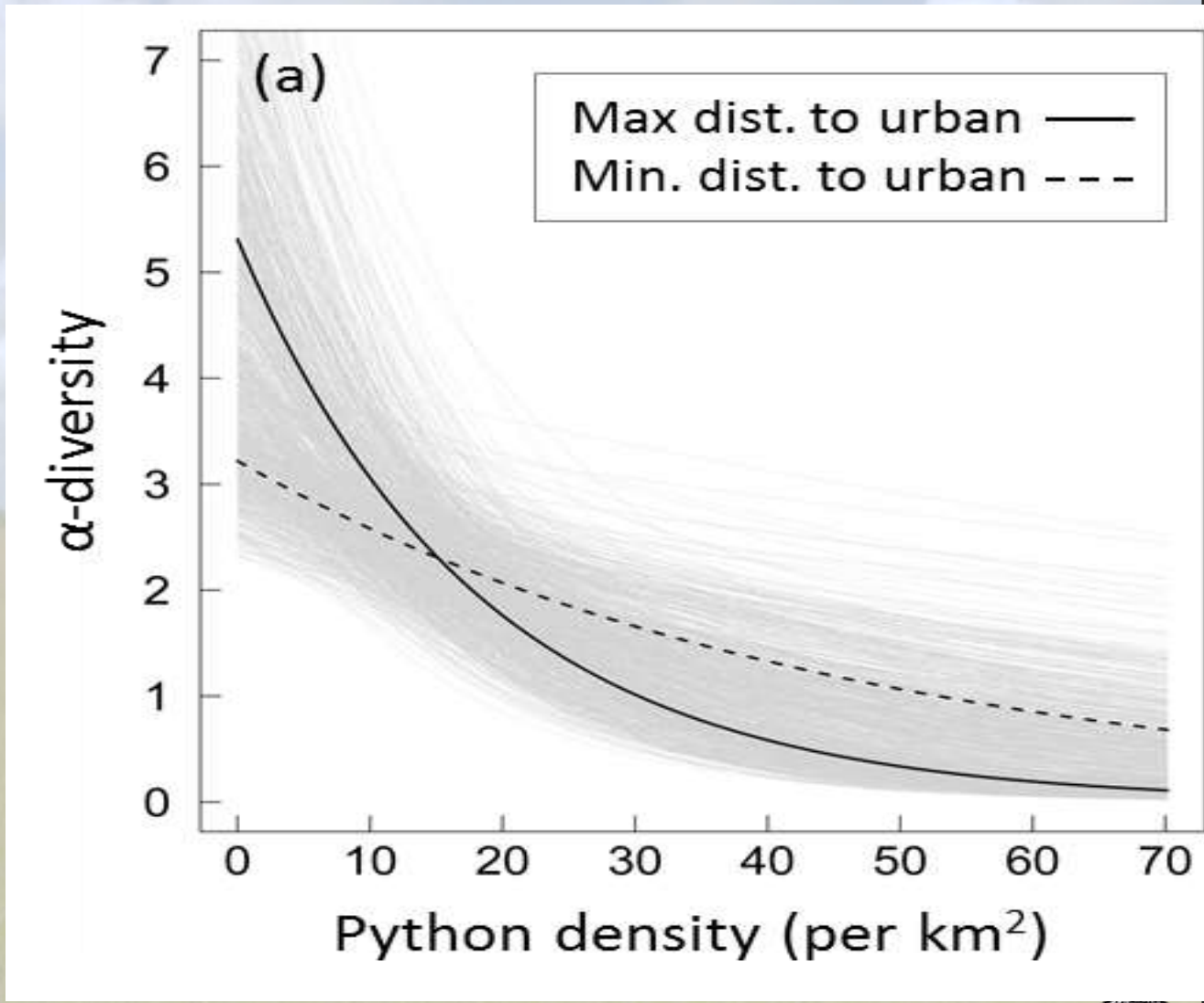
Python (1.0)*

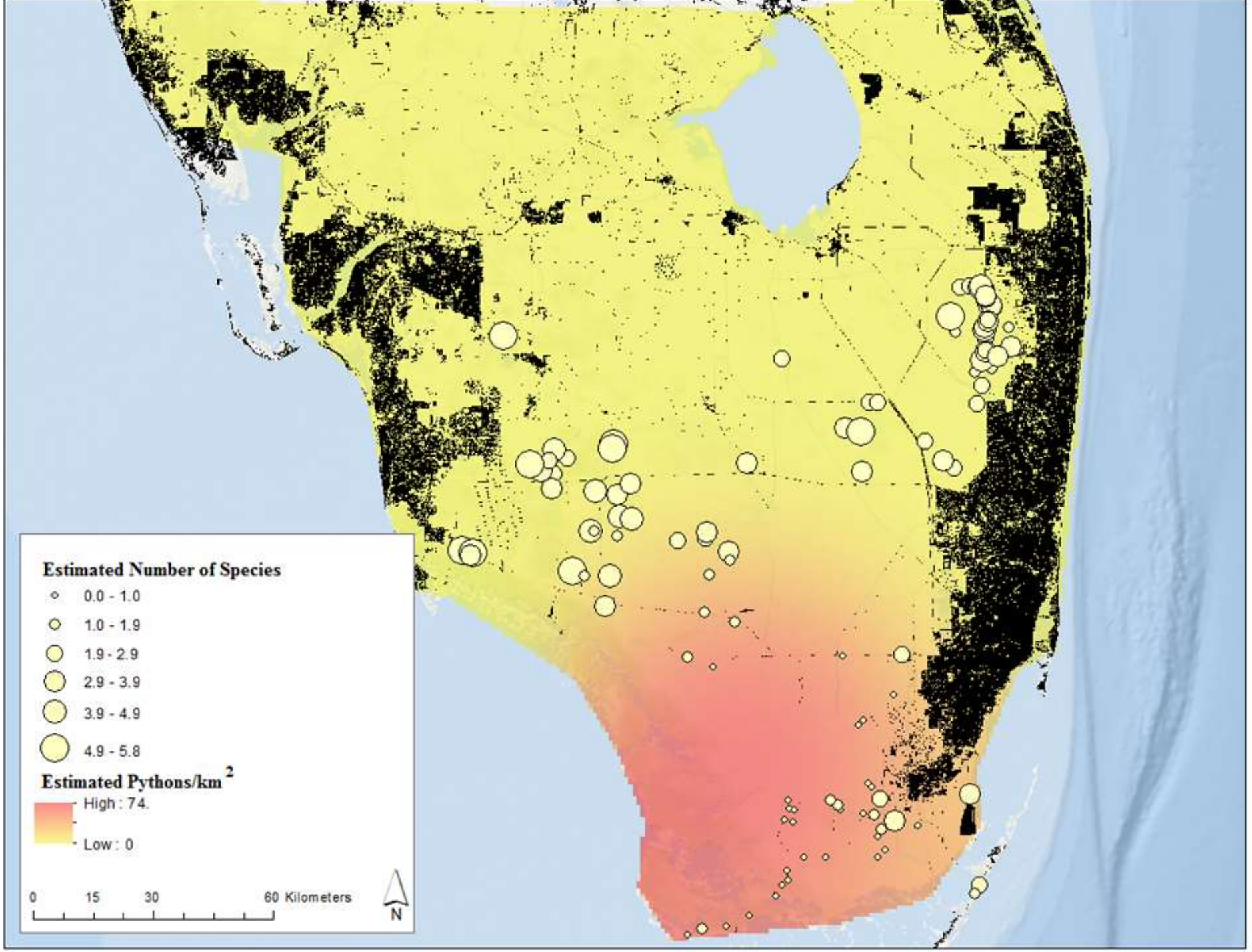


RESULTS: PYTHONS-URBAN INTERACTION

Drivers

Python-Urban (0.25)*




Estimated Number of Species
0.0 - 1.0
1.0 - 1.9
1.9 - 2.9
2.9 - 3.9
3.9 - 4.9
4.9 - 5.8
Estimated Pythons/km 2
High : 74.
Low : 0
0
15
30
60 Kilometers
N

FINDINGS

?

FINDINGS







Findings

Findings:

- All species distribution negatively related to python density
- Reduced community-level python effects near urbanization

FINDINGS

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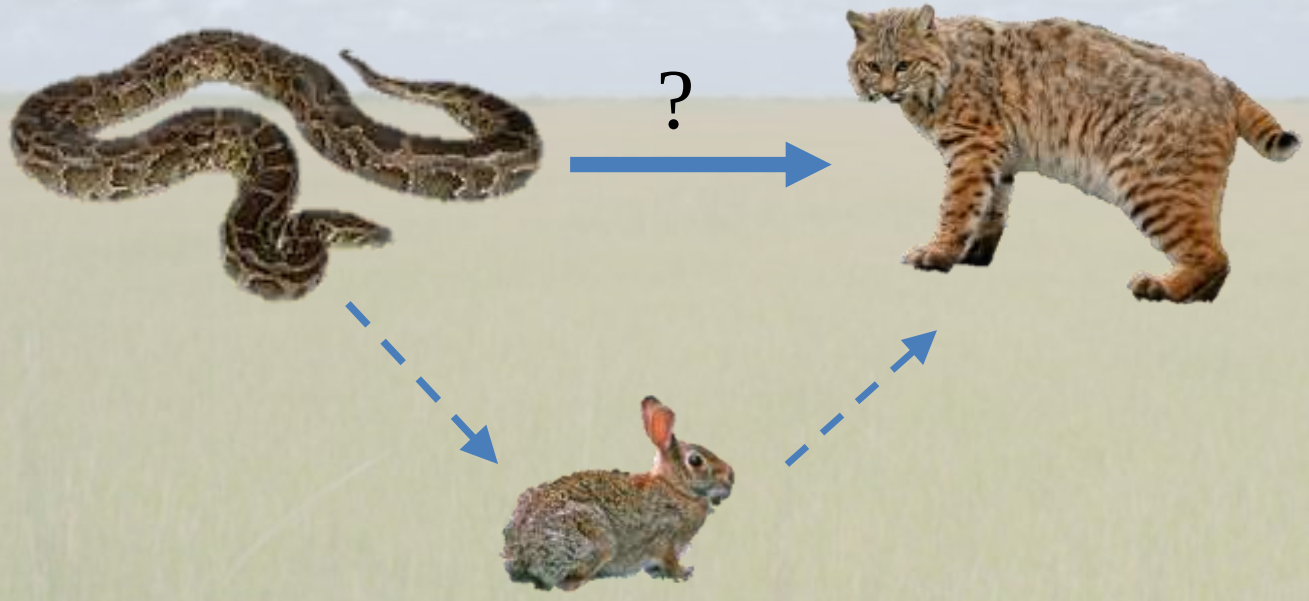
- All species distribution negatively related to python density ✓
- Reduced community-level python effects near urbanization



FINDINGS

Findings:

- All species respond negatively to python density ✓
- Reduced community-level python effects near urbanization ✓

FINDINGS

Findings:

- All species respond negatively to python density
- Reduced community-level python effects near urbanization
  - Python removal
  - Robust populations

CONCLUSIONS

QUESTIONS

Special Thanks To:
Andrew Marx
Dan Wright
Haley Crowell
LeRoy Rodgers
Wes Boone
Brian Smith

Species richness varied by vegetation community