



Using camera trap surveillance networks to model factors affecting Argentine black and white tegu (*Salvator merianae*) occupancy in southern Florida

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- Native range – subtropical regions of South America
- Largest and most temperate species of tegu
- Broad habitat use
- Omnivorous, active foragers



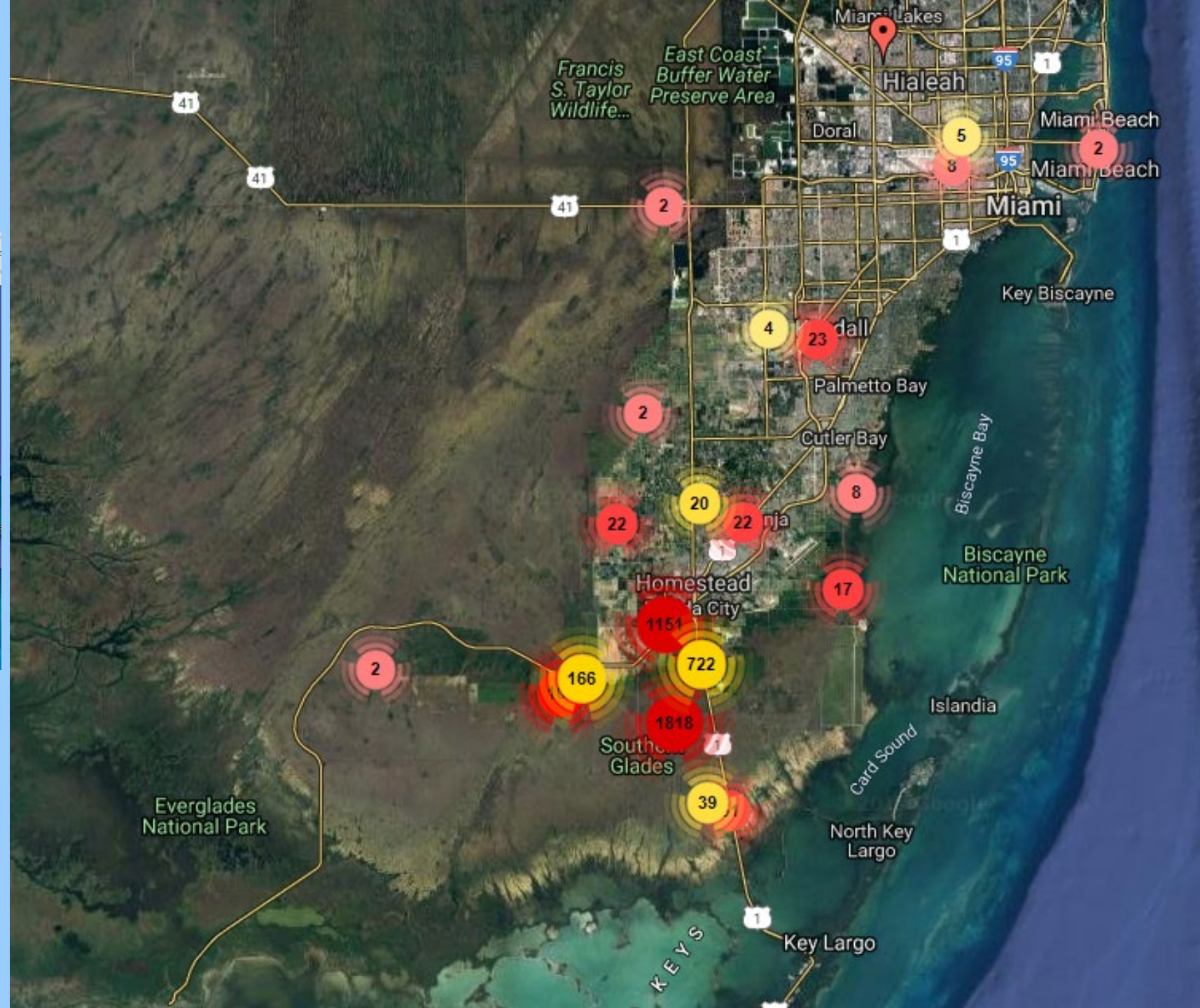
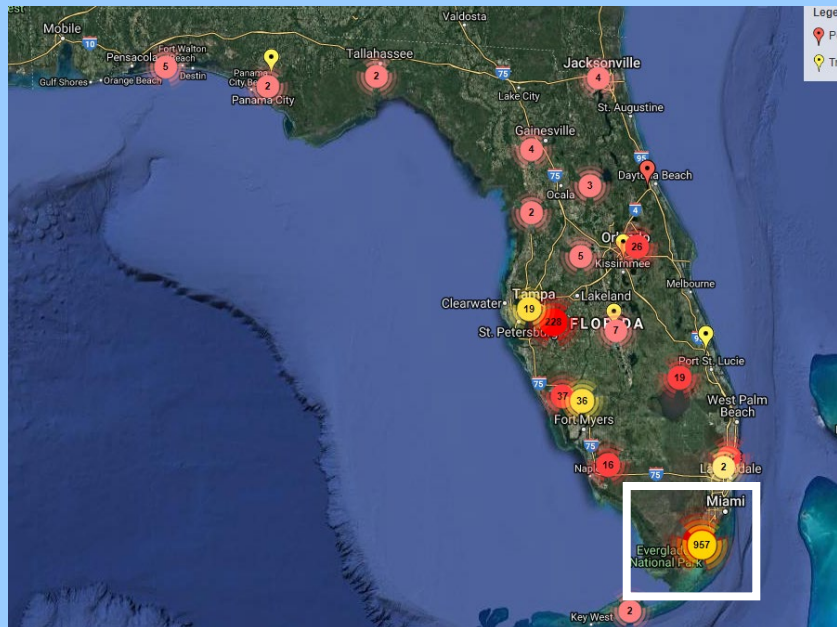
Legend: [More Info](#)

- Positive (3643) ☒
- Treated (1019) ☒

4662

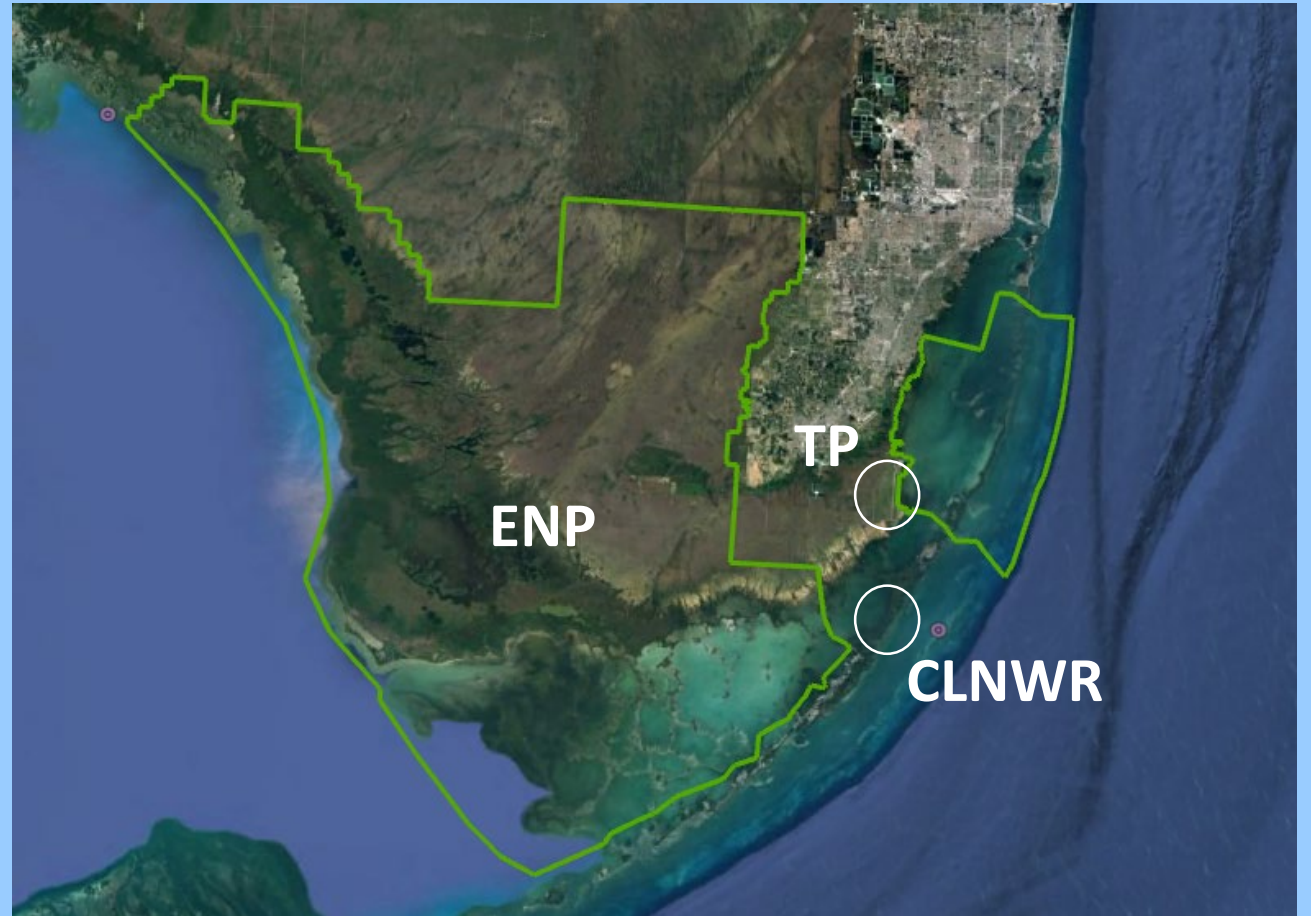


Tegus in Florida



Why should we be concerned?

- Invading Miami-Dade County near important biological resource sites
 - Everglades National Park (ENP)
 - Florida Power and Light Turkey Point Power Plant (TP)
 - Crocodile Lake National Wildlife Refuge (CLNWR)





Threat to native wildlife

- Small mammals
- Turtles
- Ground-nesting birds
 - Endangered Cape Sable seaside sparrow
- Crocodylians
 - Threatened American crocodile



Photo: Tim Chapman

Nest Predators



Research Objective

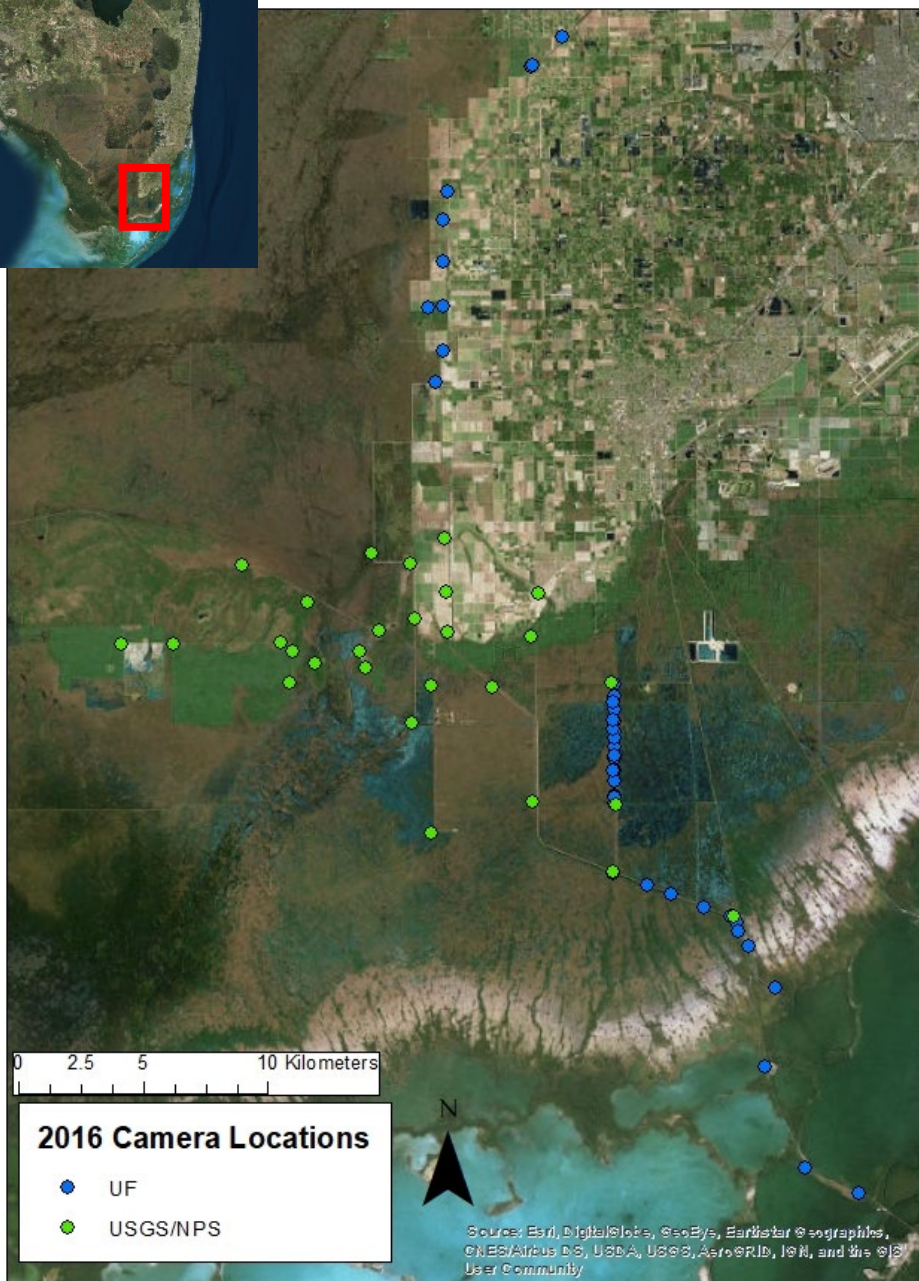
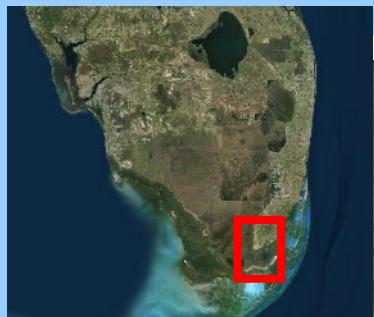
- Predict areas of tegu occurrence in South Florida using a camera trap surveillance network
 - 2016 camera trapping data
 - Multi-agency data collaboration
 - Occupancy modeling



Methods – Camera Trapping







Methods – Camera Trapping

- Passive method, but time consuming
- 69 total cameras in Miami-Dade County in 2016
 - UF – 40 cameras
 - USGS/NPS – 29 cameras
- 32 cameras (46%) observed a tegu at least once

Methods – Occupancy modeling

- What is it?
- Simply:
 - Tegu is present at site and will be detected by the camera
 - Tegu is present and will NOT be detected by the camera
 - Tegu absent from the site



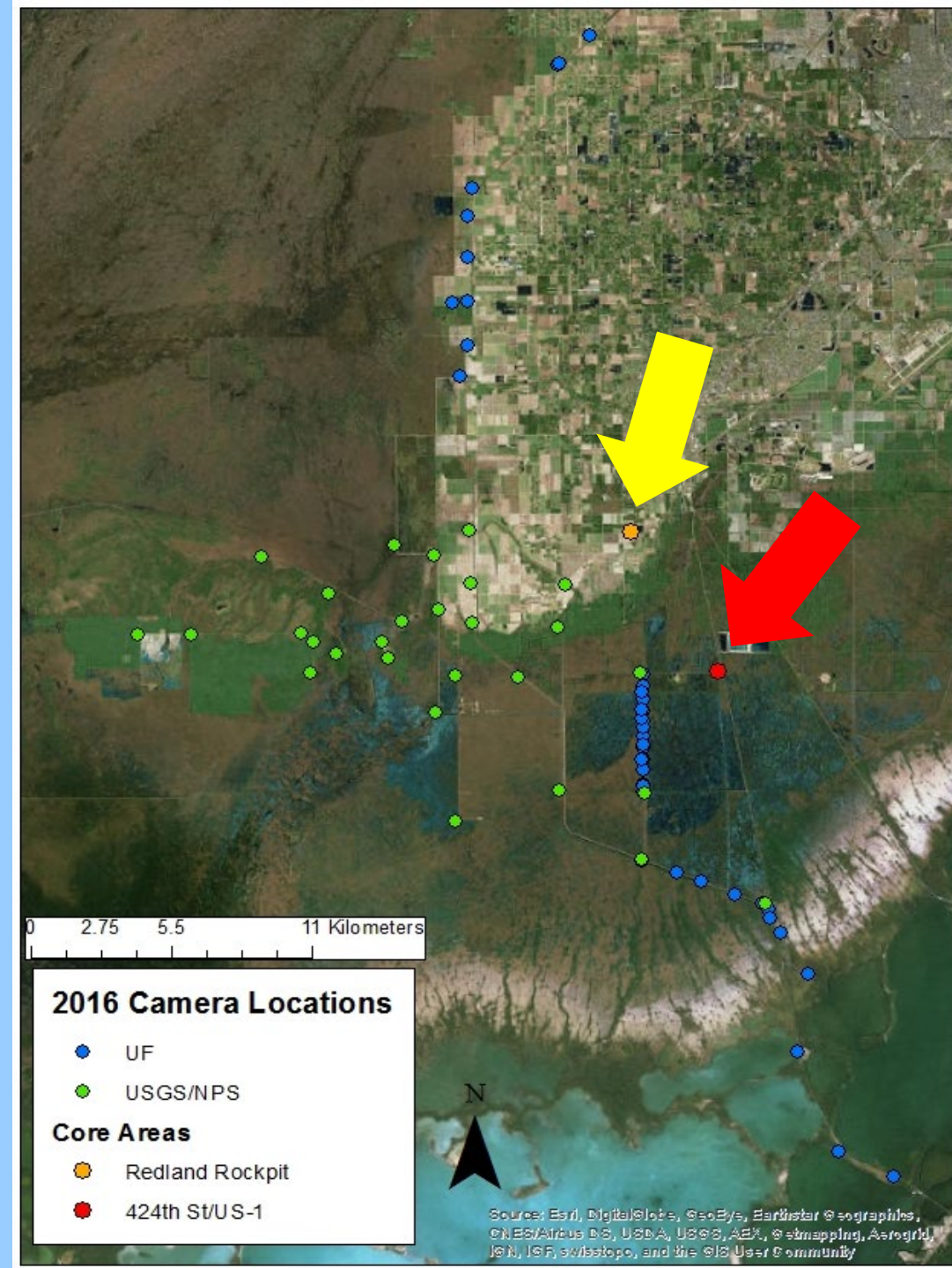
Methods – Occupancy Modeling

- Single season occupancy model

Detection Covariates	Site covariates
Quadratic effect of temperature	Habitat type
Average precipitation	Distance to water source
Presence of baited trap	Distances from two core areas in Miami-Dade County

Core Areas

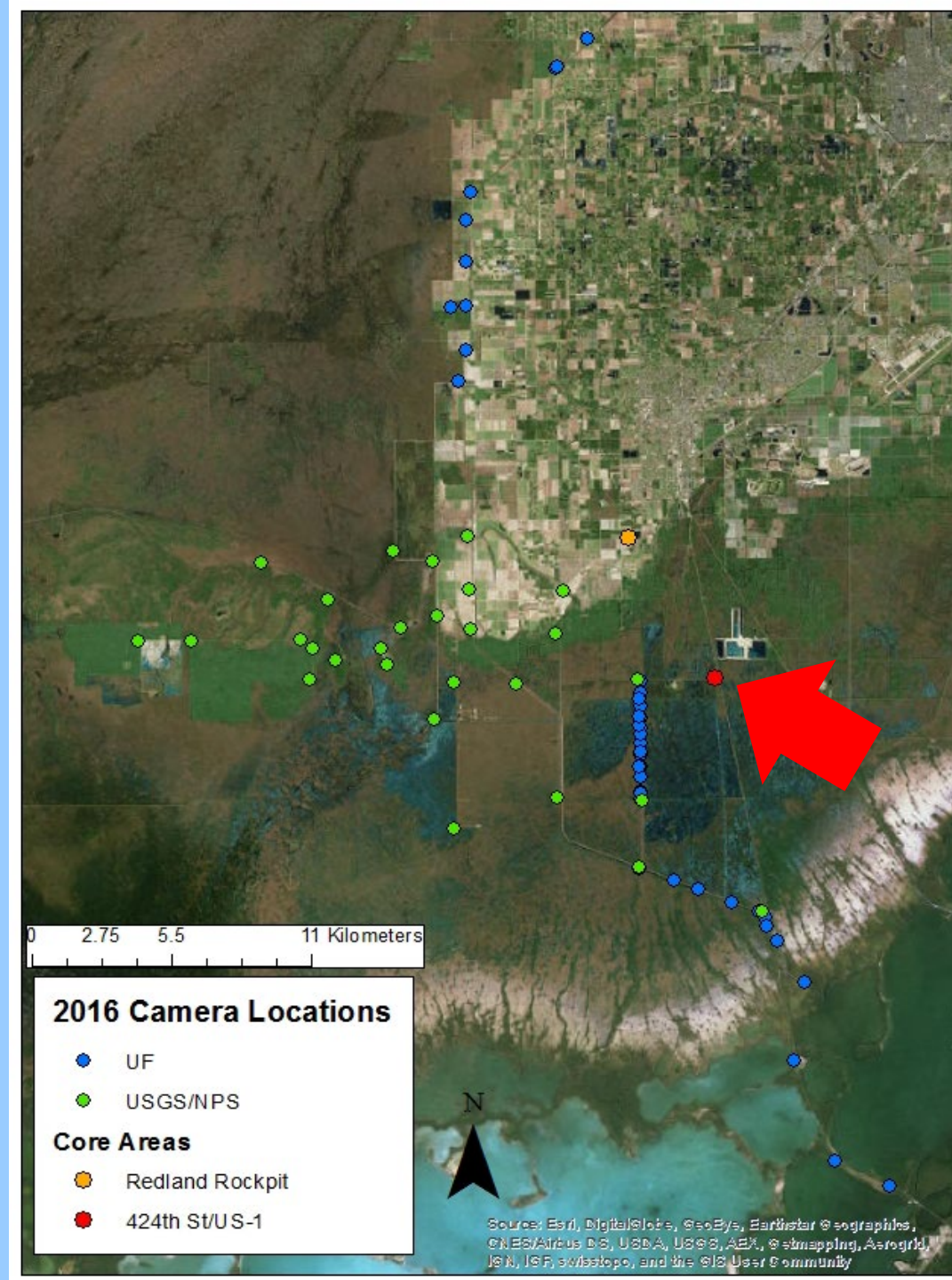
- Redland Rock Pit
 - Point of discovery
- 424th St/US-1 Intersection
 - Management effort focus
 - Major path of dispersal



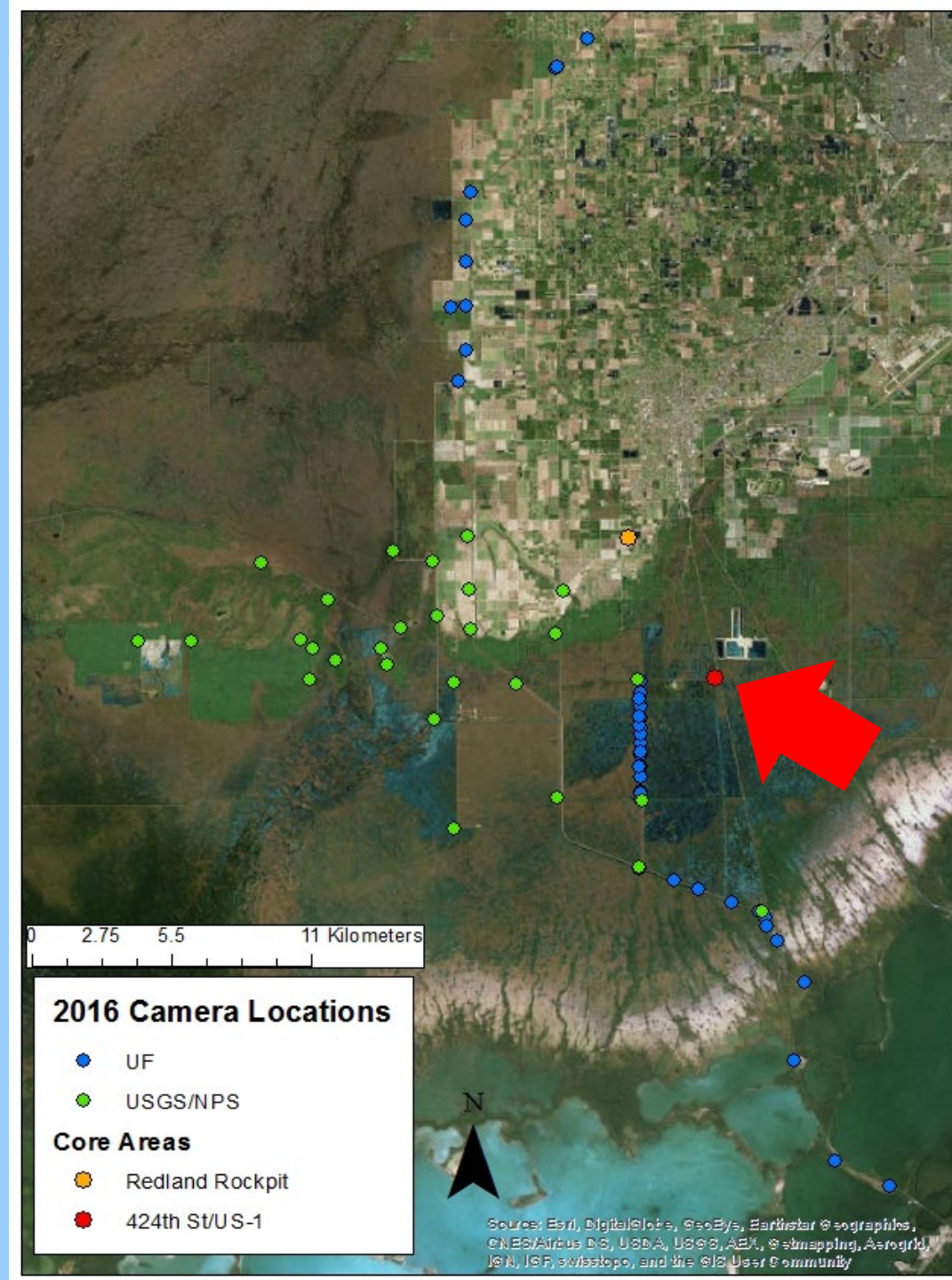
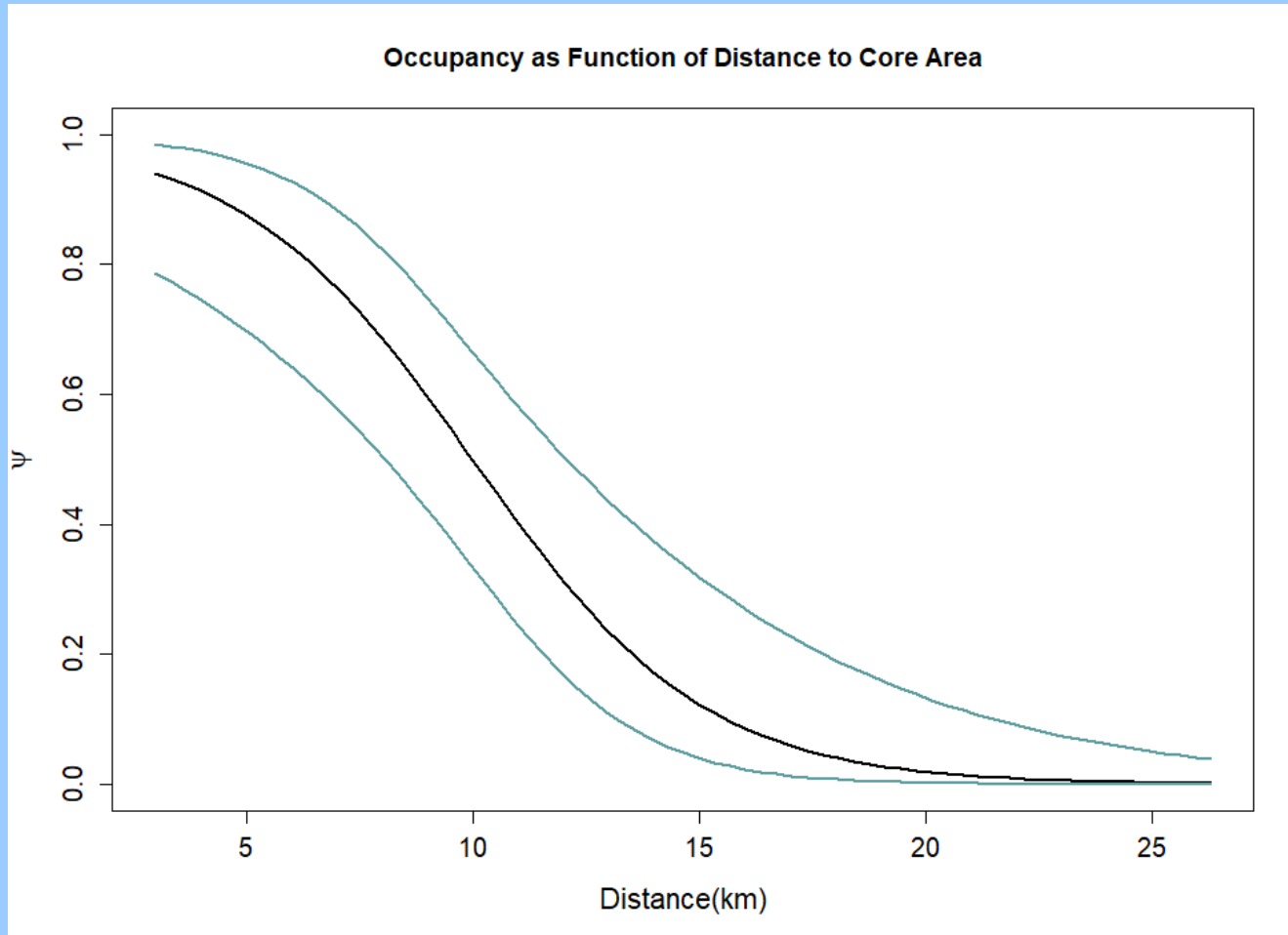
Results

- Most predictive model –
 - Occupancy as a function of distance to 424th St/US-1 Core Area
 - Detection as a function of quadratic effect of temperature


What does this mean?



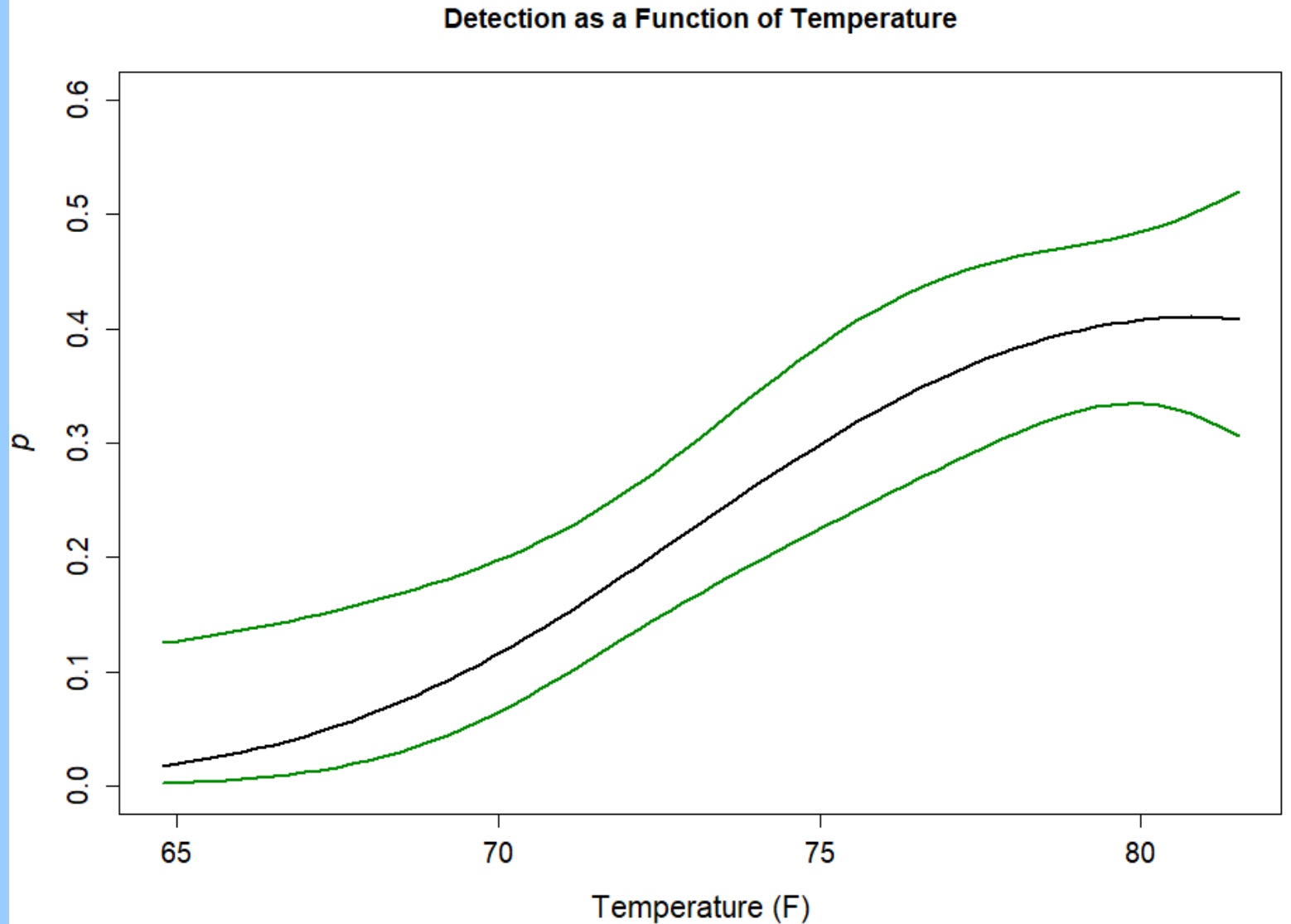
Results



Results

Temperature 

Probability of detection 



Summary

- Sites closer to the 424th St/US-1 core area display a higher probability of tegu occurrence
 - Higher probability of detecting a tegu at a site increases in warmer months, as tegu activity increases
- Trends supported by other methods



Where do we go from here?

- Refine covariates and build on analyses
 - By scale - local site characteristics
 - Distance to major intersections
 - Spatial distribution model
- Use these results to improve removal and detection methods of black and white tegus in South Florida
 - Can apply models to multiple years



Photo: Karine Aigner



Acknowledgements

And thank you to all of the hard-working Croc Docs staff, past and present!



MOULTRIE 30°C UF36 15 OCT 2018



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Thank you!

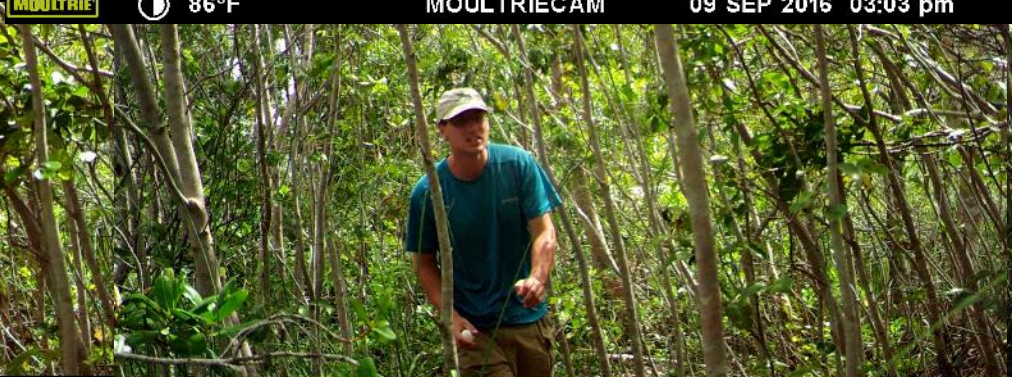
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