

Stopping the Spread: Predicting Movement Corridors of Invasive Argentine Black and White Tegus

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Introduction

The Argentine black and white tegu (*Salvator merianae*) is a large, invasive lizard established in Hillsborough and Miami-Dade Counties, Florida.

Tegus are native to South America and occupy a wide range of temperatures in savannas, forests, beaches, and rocky coasts. Due to the variety of habitats occupied by tegus in their native range, their habitat preference and movement in South Florida is not intuitive.

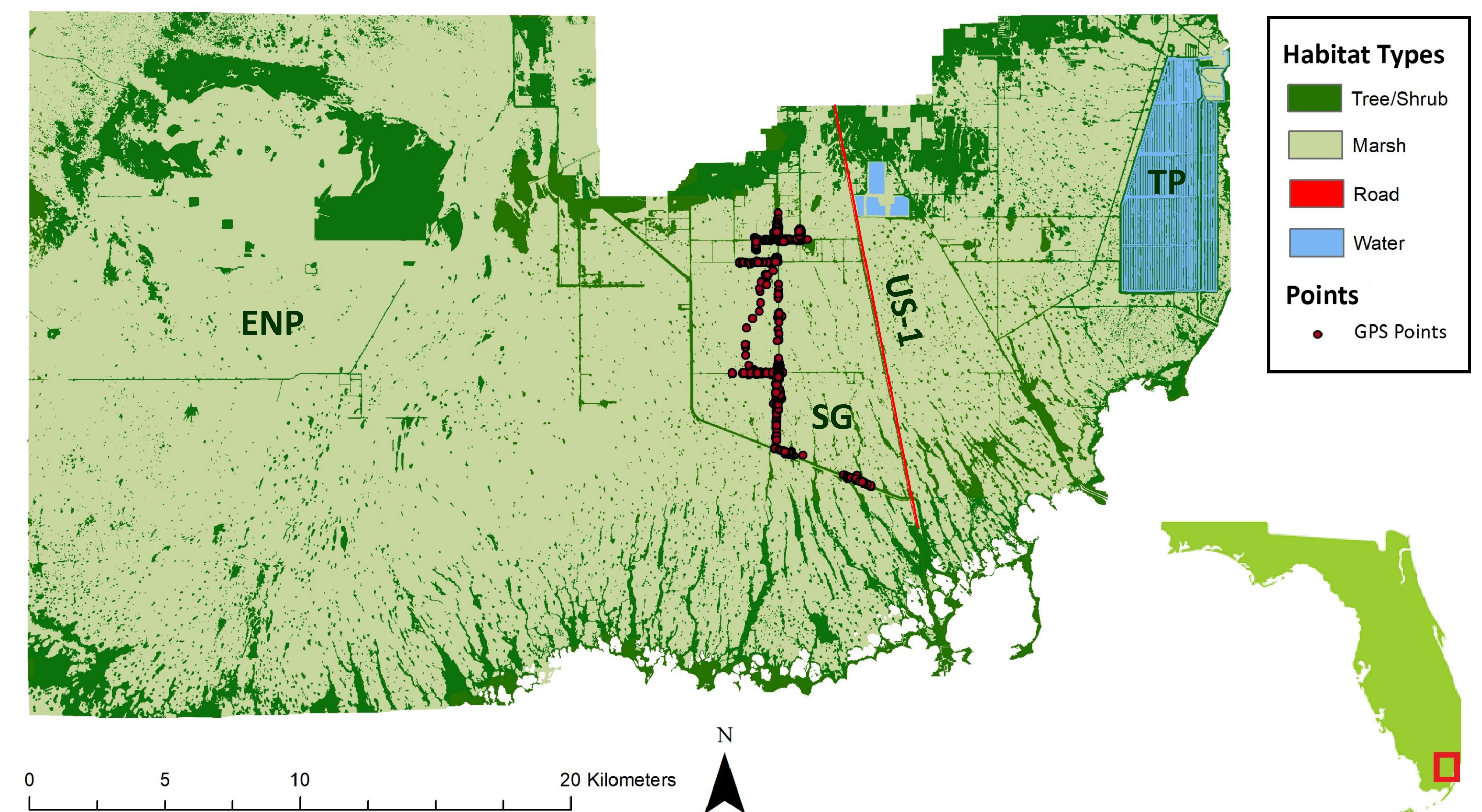


Objectives

- 1.) Determine study tegu habitat selection.
- 2.) Determine potential tegu movement corridors towards Everglades National Park and Turkey Point Power Plant.

Study Site

The Southern Glades (SG) Wildlife and Environmental Area of Miami-Dade County in a disturbed marsh environment with small, natural, and elevated tree islands. Artificially elevated interconnected berms and levees transect the area and support a breeding population of tegus. The entrance to the Everglades National Park (ENP) lies ~10km west and Turkey Point Power Plant (TP) lies ~13km east of our study site.



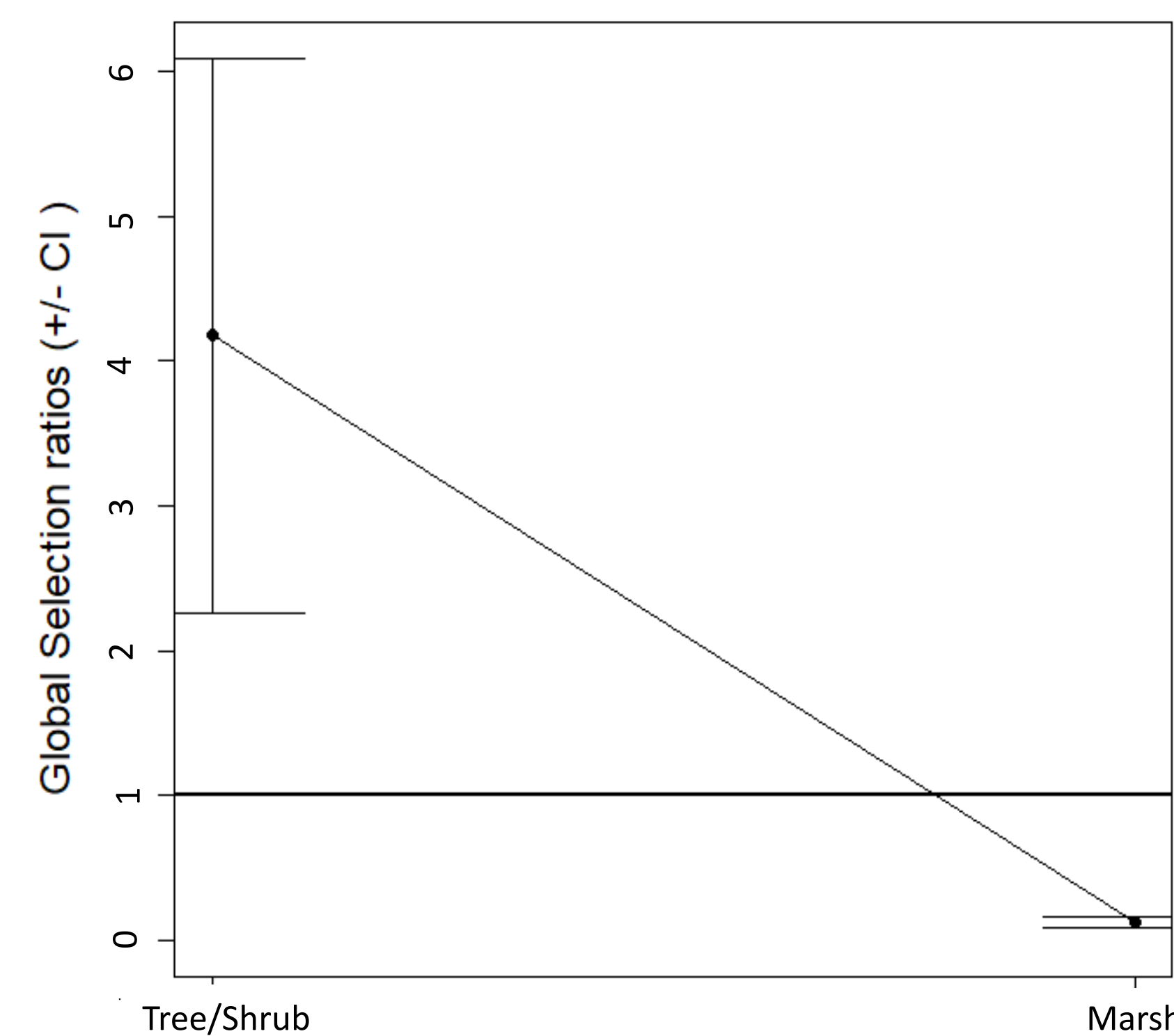
Data Collection

We tracked 15 mature individuals between April 2016 and January 2018 using radio telemetry. Each individual was fitted with a combined Very High Frequency (VHF) and Global Positioning System (GPS). We used GPS points taken every 90 minutes. We assigned habitat categories using the South Florida Water Management District 2008-2009 land cover/land use.

Methods and Results

We quantified tegu habitat selection using Type III Manly selectivity measure within 99% Minimum Convex Polygon home range as an average of all telemetry study tegus to inform habitat resistance classes (Figure 1). Our telemetry tegus did not use road habitat, but we intuitively considered this habitat as very high resistance because of the traffic and tall fencing on US-1. Water was excluded from the resistance map because we could not infer resistance. We conducted 42 least cost corridor analyses and summed them together to determine potential movement corridors out of our system. Start and end points were locations in SG, ENP, and TP (Figure 2).

Manly selectivity measure



Habitat Type	Resistance Class
Tree/Shrub	1
Marsh	5
Road	25

Figure 1. Habitat selection ratios from the Manly selectivity measure using Type III analysis and 99% minimum convex polygon.

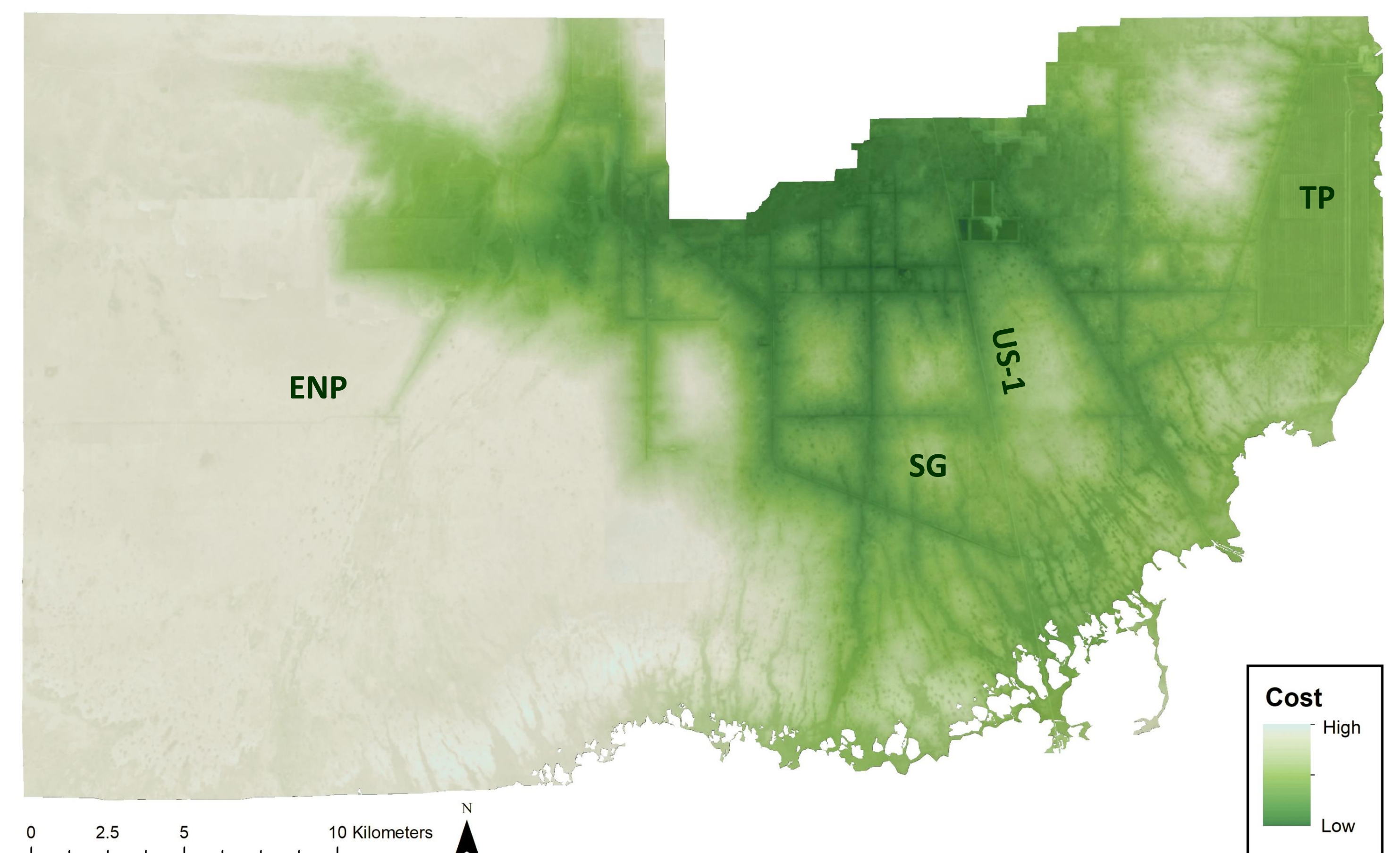


Figure 2. Sum of 42 least cost corridor analyses from tegu telemetry data. White represents very high movement cost and dark green represents very low movement cost.

Discussion

Tegus significantly select for tree/shrub habitat and avoid marsh habitat. In our system, artificially raised land provides and connects tree/shrub habitat, facilitating tegu movement. Our findings are supported by a similar study by Klug *et al.* that found that tegu movement in the Southern Glades is facilitated by artificially raised land.

Management Implications

Our least cost corridor map should inform managers where to focus removal efforts. Particular attention should be paid to the large tegu movement corridor into ENP and TP at the Northern extent of the map. We also believe that removal of artificially created raised and connected habitat would decrease the spread of tegus.

Acknowledgements

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References

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