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## Introduction

- Understanding the movement patterns of animals is important to making inference on their resource use and may inform conservation efforts to protect vital habitats.
- Green turtles (*Chelonia mydas*) exhibit a circumglobal tropical distribution and are expected to vary their space use with respect to the abundance and distribution of resources.
- The goal of this research is to understand the spatial ecology of juvenile green turtles with respect to environmental gradients over space (latitude) and time (seasons).

## Hypotheses

1. When studying the latitudinal impact on juvenile green turtle space use, those in Bimini will use a smaller space than those in Crystal River.
2. When investigating the seasonal impact on the space use of juvenile green turtles, the warmer seasons will result in a smaller space used by each individual.

## Methods

- Satellite tags were deployed on juvenile green turtles in Crystal River, FL (n = 5) and Bimini, Bahamas (n = 8).
- Raw locations were fitted by a state-space model using the 'foieGras' package (Jonsen *et al.*, 2020) in R to account for location error.
- A dynamic Brownian Bridge Movement Model (dBBMM) was used to estimate space use from the turtle tracks (Kranstauber *et al.*, 2012).
- UD<sub>50</sub> were calculated to determine the core and full areas of use, respectively, for each individual.
- A Welch's t-test was used to determine if there was a significant difference in space-use across sites.

## References

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## Results

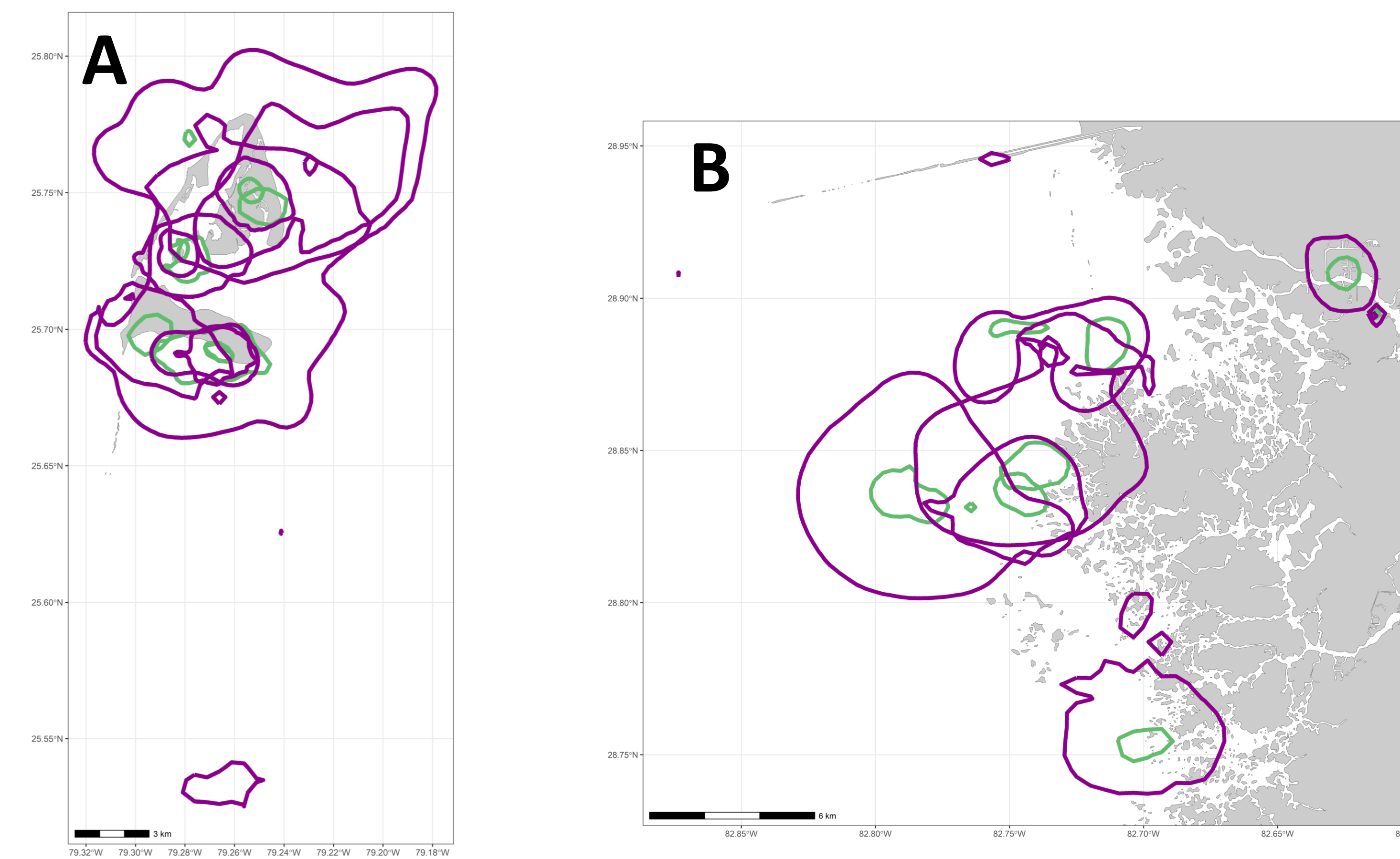


Figure 1. Contours of the 50% (green) and 95% UD<sub>s</sub> for each individual turtle at Bimini, Bahamas (A) and Crystal River, FL (B).

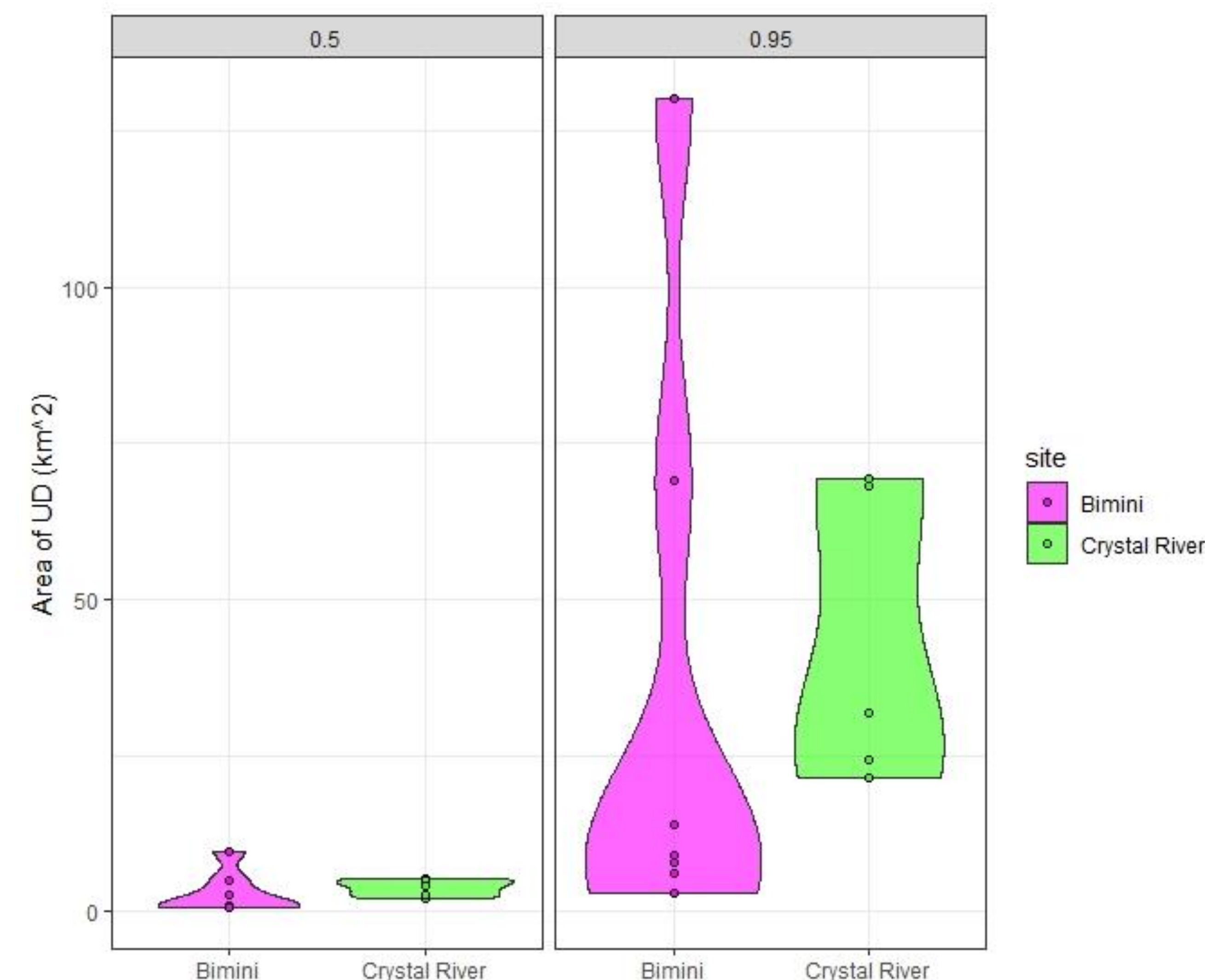


Figure 2. Comparison of space use based on 50 and 95% UD<sub>s</sub> from turtles in Crystal River and Bimini.

## Conclusions

- The t-test showed no significant difference in space use across sites for both the 50% UD<sub>s</sub> ( $t_{8,49} = -0.669$ , p-value = 0.521) and the 95% UD<sub>s</sub> ( $t_{9,19} = -0.423$ , p-value = 0.682).
- Multiple factors could explain why these were the results we found, including:
  - The small sample sizes from each site makes it difficult to draw conclusions that represent the population as a whole.
  - Possible seasonal differences in when the turtles were tracked at each site.
  - Differences in physiochemical properties at each site, which may drive the distribution and abundance of resources.
  - The density of conspecifics that might compete for limited resources.

## Next Steps

- Since we have not determined how seasonal patterns may impact the space use of these juvenile green turtles yet, this research is ongoing.
- To further strengthen our conclusions found regarding latitudinal differences, I will compare our results against those from other studies at different latitudes.

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