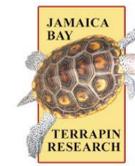


Terrapin Nesting on Jamaica Bay



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Introduction

Many Diamondback Terrapins nest in Jamaica Bay every year. However, due to excessive predation in the area by raccoons, Terrapins in New York City are at risk of local extinction which could then lead to a global extinction if it continues to happen where they live along the Eastern US coast. To understand how predation by raccoons affects terrapins, we've decided to do a study at the Jamaica Bay Wildlife Refuge to discover where the terrapins prefer to nest. With this information researchers can better predict where the terrapins will nest and protect the nest by caging them before they're predated by raccoons.

Methods

To collect our data, we surveyed the refuge looking for any signs of nesting activity by looking for scattered eggshells along the trails. Once we found a nest we would take a GPS point and other data using the Terrapin Nest Recording app. After doing this for seven days we spent some time recording all past terrapin nesting data from 2008 to the present that was recorded by volunteers in those years. We created a spreadsheet to organize this data by year and then analyzed it to see if we could observe any patterns or changes in the terrapins choice of nesting in the last ten years. After that, we loaded the GPS data which we recorded for 2019 into google maps to view our work and see how well this app did the job of recording nesting locations in Jamaica Bay. We also compared this GPS data with how this same data was collected by volunteers using landmarks on the trail ONLY without the use of a GPS point for the last 10 years. In order to keep the data recorded by volunteers consistent, we took the map which they use to identify landmarks on the trail and broke it up into four equal quadrats and then categorized the volunteer data based on where their described location of a nest fell within our quadrat system.

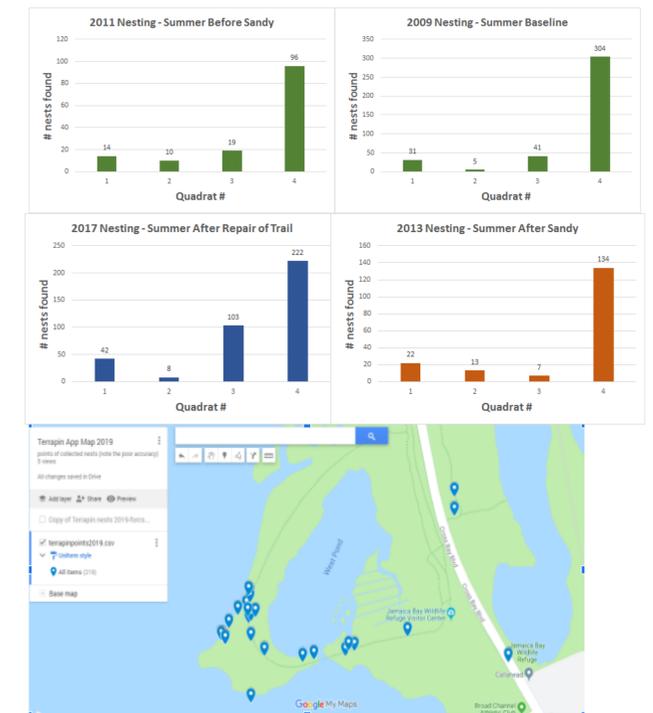
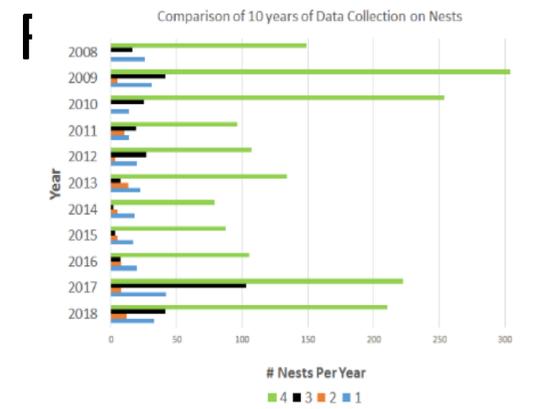
Results

Results(Briana): Of the 200 GPS data points which we collected, only 22 were found to be accurately recorded with the Terrapin Nest app. When the GPS data was uploaded to Google Maps the rest of the 178 points were inaccurately scattered throughout Broadchannel and the Rockaways. If you look at the map of GPS locations and compare that to the landmark map volunteers use, even with the few points that we have, it looks like terrapins really like nesting around Quadrat 4 in 2019.

These graphs look a little more closely at numbers collected in years before/right after Sandy and the season right after the trail was repaired. Overall there doesn't seem to be that much change in their preference. Turtles are stubborn. They still seem to like Quadrat 4 the best. BUT...if you look at the chart for 2017 RIGHT after the damage to the trail was repaired, there was a slight push in nesting in Quadrat 3...which means that as soon as the trail was repaired, the terrapins were interested again in nesting there.



Tables &



Discussion

It was a good thing that for most of the GPS points we collected, we also recorded nest locations based on actual landmarks like a bench number, or a known sign post along the trail on the ground which can be identified on OUR map This is the one which Terrapin project volunteers use when they record data on turtles during the nesting season.

What this project shows is that Terrapin nest App still needs a lot of debugging in order to be of any use for this project and smartphones are not really great at getting accurate GPS locations. The likely reason that locations were so far off the mark is probably due to poor cell signals in the area. Which anyone going to the refuge for the first time will experience. What this also shows us is that the GPS on different brands of smartphones is good for general location ID but they are not very good in situations where you need to get very precise location measurements within a small area. For that, a handheld GPS unit is the best thing to use for this type of work since it usually picks up GPS locations from satellites directly rather than depending on a phone service cell signal.

From the GPS map, terrapins seem to really like Quadrat 4, which makes sense because right now this is where the most sandy open areas can be found for them to come up on to for laying their eggs. Plus this area has always been an easy access from the bay on a high tide all they have to do is come onto the land, walk a little bit and they are at their nesting spots. This area unfortunately is slowly shifting to more eroded dunes, and more trees/shrubs reducing easy access for those spots. The slight push we see in the 2017 chart for quadrat 3 just shows that terrapins saw the repair as a potential opportunity for trying to nest in the repaired area.

Literature Cited

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Acknowledgments

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