

## **How Tides Affect The Dolphins on Fripp Island**

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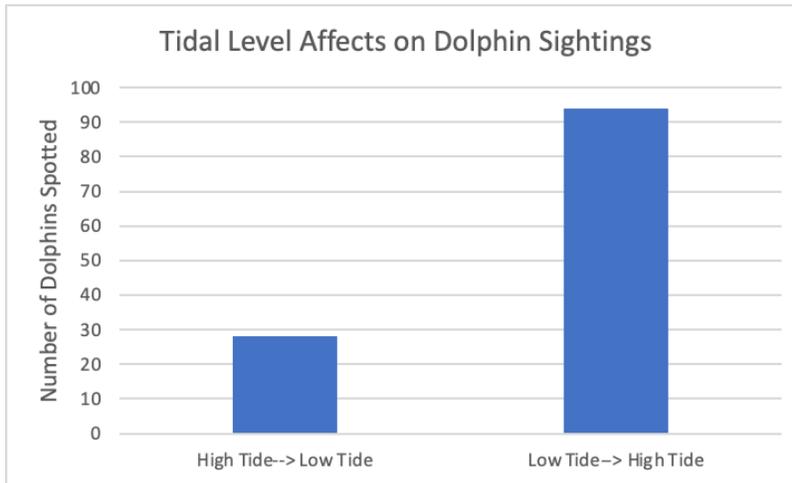
## Introduction

Atlantic Bottlenose Dolphins, also known as *Tursiops truncatus*, are the most common species of dolphins seen in the Southeast region of the United States. Throughout this paper, the behavior of Atlantic Bottlenose Dolphins at different tidal levels and different modes of transportations are observed and recorded. Dolphins are known to communicate underwater via echolocation and vocal sounds (King et al., 2020). This communication under the water is important to note because it affects when dolphins surface and are visible to the human eye (King et al., 2020). Throughout the study, dolphins were monitored and recorded for their behaviors during different tidal levels. The goal of the study was to figure out if dolphins prefer to surface at a desirable tidal level and if they are afraid of humans participating in water recreation. Dolphins tend to feed during high tide and would be likely to surface during that time if they are not scared away by humans. In order to conduct this experiment, kayaking, boating, and observing from a pier were necessary to monitor and record the behavior of the dolphins.

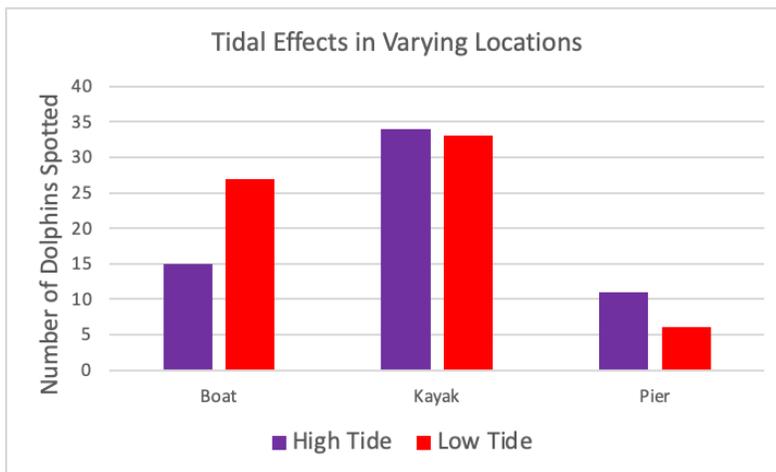
## Methods

This experiment utilized the marsh as the main resource of data collection. The pier that connected the marsh and ocean was another data point collector. Kayaks and boats were used to obtain data while observing dolphin behaviors and patterns. Kayaks were taken out during the kayaking programs and a boat was used during the cruise programs. Data was recorded based on what time the dolphins surfaced, the number of dolphins, the tidal level, and the weather conditions. The data was tracked via google documents and then put into bar graphs and pie charts. The location at which the dolphin(s) were spotted was recorded and marked onto a map of the marina canals. This data was converted into graphs which can be seen below.

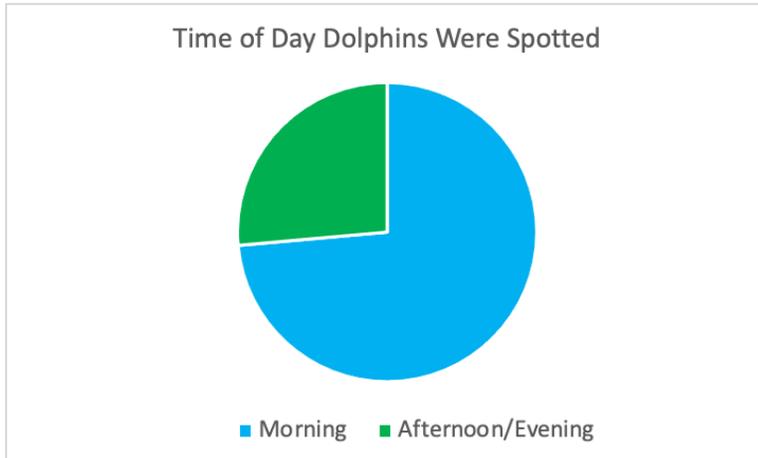
## Results



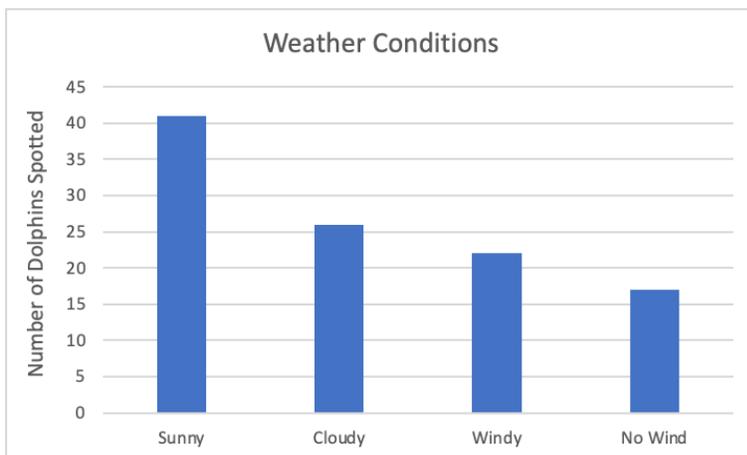
*Figure 1.* Represents how the tide affects the number of dolphin sightings.



*Figure 2.* Represents the tidal effects in varying locations via boat, kayak, or pier.



*Figure 3.* Represents the time of day dolphins were spotted.



*Figure 4.* Represents the weather conditions and the amount of dolphins spotted.



*Figure 5.* Represents where dolphins were spotted on Fripp Island.

The figures shown above represent the data collected throughout the time span of approximately eight weeks. *Figure 1* represents the tidal effects on dolphin sightings. The number of dolphins seen from high tide going into low tide was 28. The number of dolphins seen from low tide going into high tide was 93. *Figure 2* represents the tidal effects of dolphin sightings in varying locations such as by boat, kayak, or off of the pier. By boat, there were 15 dolphins seen during high tide and 27 dolphins seen during low tide. By kayak, there were 34 dolphins seen during high tide and 33 dolphins seen during low tide. *Figure 3* represents a pie chart of the time of day dolphins were seen which shows that just under  $\frac{3}{4}$  of dolphins were seen during the morning

rather than the afternoon/evening. *Figure 4* represents the weather conditions with the number of dolphins seen. Based on the graph, there were 41 dolphins spotted when it was sunny, 26 dolphins spotted when it was cloudy, 23 dolphins spotted when it was windy, and 17 dolphins spotted when there was no wind. *Figure 5* represents a google maps image of where dolphins were spotted in the marina canal on Fripp Island.

### **Discussion**

The data suggests that dolphins are seen more when it is low tide rather than high tide. However, this may be due to more observation times being in the morning rather than in the evening when the tidal levels were higher. Most of the time, data was collected during the morning which was during low tide due to weather during the evenings. This suggests that the data could be skewed which would result in a confounding factor which could have been better resolved if there was an even amount of outings during low tide and high tide. Another element was that the amount of times going out on a kayak, boat, or on the pier varied. This results in different amounts of water coverage depending on which mode of transportation was used. A controlled amount of distance for water coverage for each mode of transportation would have been better for this study, however, this was not possible due to the programs already set in place to go that distance. Another component was the weather which was a variable that needed to be factored into the data but unfortunately cannot be controlled other than only using data from the same amount of sunny days, windy days, etc. A graph of the weather was included from every day that data was collected but if this were to be a much longer project, it could be further controlled on which days to use for the data and graphs.

According to Laska, there has been an overwhelming amount of community overlap in dolphins in Charleston, South Carolina (Laska et al., 2011). This means that dolphins get extremely comfortable with their environment. The dolphins on Fripp may have adapted to the water recreation and tidal levels which leads to the results showing that dolphins aren't overly intimidated by humans. Another interesting article to note was a study done on dolphins responses to boat activity by Hilton Head, South Carolina. The data in this particular study showed that the majority of dolphins that were exposed to ships and dolphin-watching boats had no response and continued with the same behavior as before the boats arrived (Matson et al., 2005). This shows that dolphins are comfortable and unbothered by humans. Unfortunately, this can be an issue for dolphins as boating accidents can injure dolphins.

### **Conclusion**

In conclusion, dolphins can be seen at varying times of the day and varying tidal levels. There is no concrete evidence showing that dolphins only come out during high or low tide but the data collected shows that dolphins prefer to surface during low tide when the tide is coming in. There are many reasons dolphins may not surface which could be due to people or food scarcity among other variables. The data also shows no strong evidence that dolphins are bothered by water recreation. This is an ongoing research project that will continue to improve with the help of previous findings.

## References

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