# Common Bottlenose Dolphins (*Tursiops truncatus*) Stay Close to Home in the Mississippi Sound: Assessing Site Fidelity Patterns

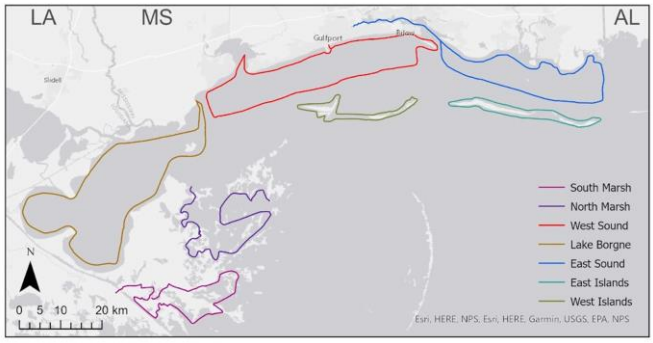
Kailey Pamperin

Drew Suffoletta, Jessica Lewis, Rachel Giordano, Heidi Lyn, Lindsey Johnson, Moby Solangi

INSTITUTE FOR MARINE MAMMAL STUDIES

## Introduction

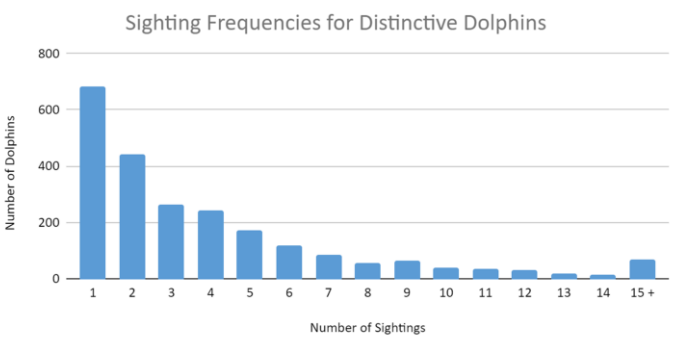
- Dolphins are both sentinel and indicator species due to their long life spans and status as top predators
  - This makes them important for monitoring ecosystem health
- A dolphin population is composed of both residents (core individuals) and transients (ones that may visit the area but do not stay)
- The Institute for Marine Mammal Studies investigated site fidelity within the population that resides in the MS Sound and surrounding waters
  - Site Fidelity is the likelihood of an individual to remain in or return to a given area throughout its life
  - Measured using mark-recapture methodology through photo-Identification




Map of 7 survey routes within study area

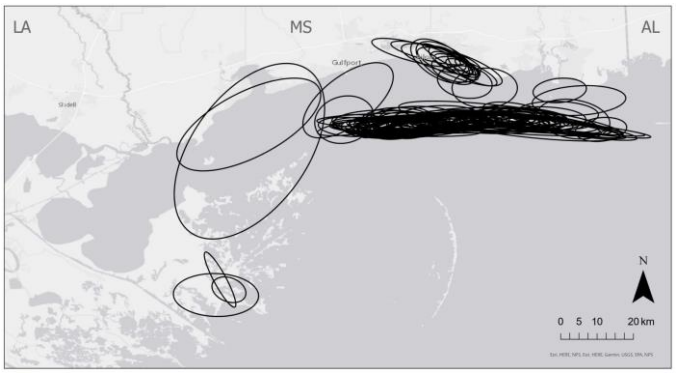
## Methods

- Site Fidelity was measured in a variety of ways:
  - **Occurrence patterns**: recorded number of times each distinctive individual was seen during the study period, if the individual was seen 5 time or more they were considered to have site fidelity
  - **Temporally**: by observing over how many years and seasons an individual was present in
  - **Spatially**: through which region and survey route within the study area a distinctive dolphin was seen
  - **Variability of sighting locations**: a standard deviation ellipse was found from the GPS points of dolphins seen three or more times using ArcGIS Pro to calculate the maximum standard distance from each individual's central point




## Results

- **Occurrence patterns:**
  - Of the 2,339 distinctive dolphins cataloged, 649 displayed site fidelity
  - The number of sightings for all dolphins ranged from 1 to 30 sightings
- **Temporal:**
  - Dolphins that displayed sight fidelity were sighted over a large temporal range with the maximum time seen being over 13 years
  - The average number from the first to the most recent sighting was 8.4 years
- **Spatially:**
  - Dolphins displayed site fidelity to not only the study area as a whole, but to specific regions and routes
  - 259 of the dolphins with site fidelity were only ever seen on one route, and all individuals seen on multiple routes were only seen in routes directly adjacent to each other
- **Variability of sighting locations**:
  - The average maximum standard distance for all dolphins was 12 km
  - Out of the roughly 1200 dolphins used in this analysis, 80% fell withing one standard deviation from the average maximum standard distance




Map of standard deviation ellipses for all individuals seen more than 10 times (maximum 30 sightings).

| | Total Number of Dolphins | Percentage of Dolphins with Site Fidelity |
|---|---|---|
| **Region 1** | **1206** | **36 %** |
| East Islands | 721 | 47 % |
| East Sound | 741 | 35 % |
| **Region 2** | **1026** | **35 %** |
| West Islands | 520 | 49 % |
| West Sound | 631 | 22 % |
| **Region 3** | **527** | **17 %** |
| Lake Borgne | 246 | 22 % |
| North Marsh | 189 | 21 % |
| South Marsh | 154 | 14 % |

**This data is currently in review. Data and results are not for public distribution and is only intended for informational purposes.