Occurrence patterns of bottlenose dolphin calves (*Tursiops truncatus*) in Cape May, New Jersey

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Abstract

Bottlenose dolphin (*Tursiops truncatus*) mothers and calves are known to occur in New Jersey seasonally. Photo-identification surveys were conducted from June through August (2013-2015) around the island of Cape May to determine patterns of distribution and occurrence of mother/calf pairs. Young-of-year (YOY) occurred in 36% of groups numbering less than 21 individuals, and less frequently in groups >21 dolphins. While groups with YOY seemed to avoid the Atlantic ocean-side inlet, the average distance from shore for all groups (with or without YOY) was similar. Further research will help determine Cape May's role in providing an essential habitat for mother/calves.

Introduction

Atlantic bottlenose dolphins (*Tursiops truncatus*) are found in most tropical and temperate oceans worldwide. While *T. truncatus* migrate to warmer temperatures during the winter months on the US East Coast, a resident population resides in New Jersey coastal waters during the summer months. As these dolphins begin their northern migration in the Spring from their southern winter grounds, they mate and produce calves during March and April. Once in NJ, mothers with calves can often be seen throughout the summer months. Little is known about habitat use, occurrence, and distribution patterns of these mothers/calf pairs in Cape May. By looking at a 3-year photo-identification survey dataset, the purpose of this study was to provide insight on the habitat use and occurrence patterns of bottlenose dolphin calves in Cape May. This may provide new insights into the details of calving pair bonds, and help answer questions about the role of Cape May as a calving area.

Results

- YOY occurred in all months surveyed in all years
- YOY occurred more frequently with smaller group sizes
- Average monthly water temperatures over three years remained stable: June = 20.13°, July = 22.63°, August = 23.47°. There is no significant difference between monthly water temperature averages (ANOVA).

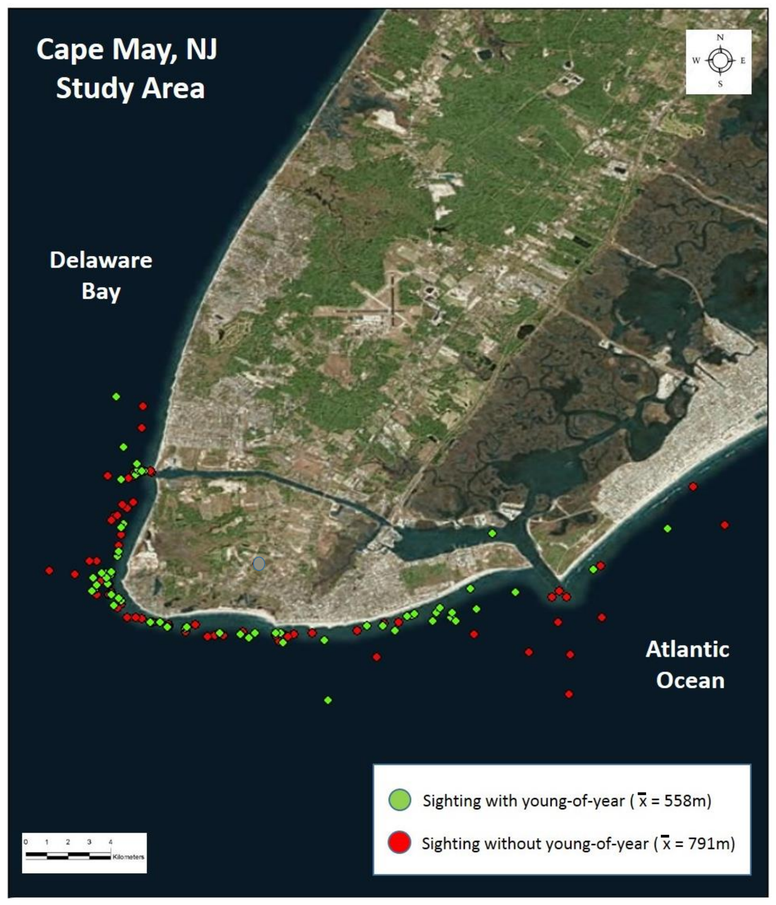

Figure 2. Dolphin sightings with and without young of year

- YOY occurred heterogeneously throughout study area with the exception of eight sightings near the Atlantic ocean-side inlet. Average distance from shore of groups with or without YOY was not significantly different (Kruskal-Wallis) (Fig. 2)

Figure 1. Young of year swimming alongside its mother

Note the fetal folds (A) (typical of a newly born dolphin), the substantial size difference between the adjacent dolphin (presumably the calf's mother), and the synchronous surfacing behavior

Photo Credit: Lauren O'Neil 2015

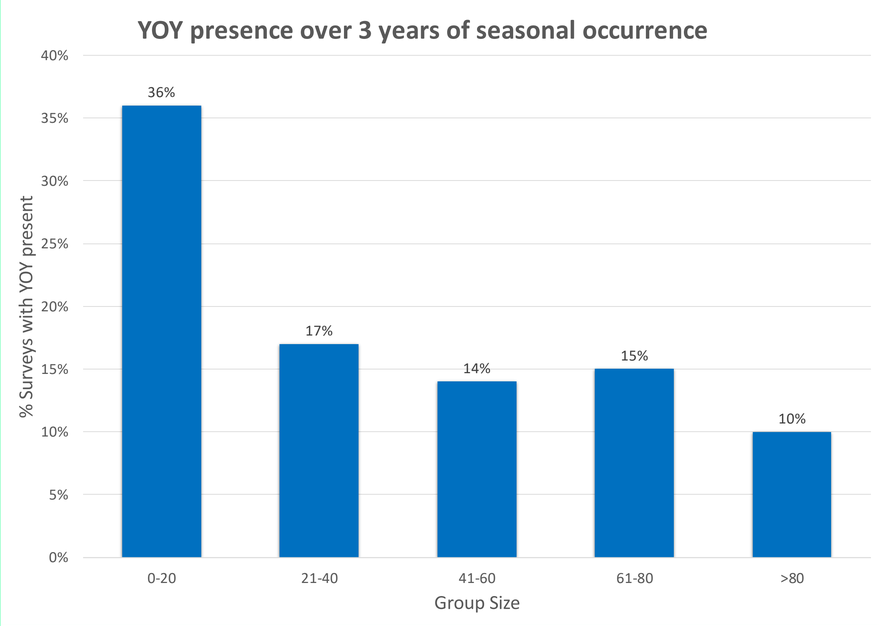

Figure 3. Young of year presence per group size

- When group size was above 21 individuals, YOY occurrence decreased considerably (Fig. 3)

Methods

- Boat-based photographic surveys were conducted around the island of Cape May, NJ twice a week during June, July, and August in 2013-2015 aboard the Cape May Whale Watcher.
- Photographs and corresponding data were taken for every dolphin group encountered. These data included group size (the number of individuals in the group encountered), presence of young-of-year animals (hereafter YOY), and latitude/longitude.
- A YOY was considered to be 1/3 the length of an adult dolphin, with synchronized surfacing patterns with one or more adults. (Fig. 1)
- A Garmin GPS marked survey and dolphin locations, and ArcMAP v10 was used for spatial analysis .

Conclusion

- Cape May, NJ is an important habitat for bottlenose dolphin mothers and calves throughout their seasonal occurrence, as indicated by their consistent presence throughout all months of the study.
- Given the heterogeneous distribution of calves throughout the study area, nearshore waters around the entire island of Cape May seem important for mothers and calves. One exception, however, is that groups with calves seem to avoid the area around Atlantic ocean-side inlet. This may be due to heavy boat traffic in that particular area (both recreational and commercial).
- The lack of YOY in larger group sizes, which has not been documented in other studies, may be due to the inability to fully observe fine-scale features of larger group sizes from a whale-watching platform.
- Cape May's rich fishing grounds and gentle bathymetry may provide an optimal environment for bottlenose dolphin mother/calf pairs.

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