Just Keep Swimming: Bottlenose dolphins (Tursiops truncatus)

Identification of individual dorsal fins by categorizing fin shape, damage, and skin conditions

Britney Grimmond 1, Gioribel Jaquez 1, Zenae Mendez 1, Kristi Ashley Colom 2,4, Eric A. Ramos 2,3, Paul Siewersda 4
1 Rockaway Waterfront Alliance, 2 Hunter College, City University of New York, NY, 3 The Graduate Center, City University of New York, 4 Gotham Whale, Staten Island, NY

Introduction

Bottlenose dolphins (Tursiops truncatus) are one of the most widespread cetacean species with seasonal occurrence across the Northeast Atlantic coastline. One method of monitoring a particular population uses photo-identification to describe individuals and characteristics of their appearance. For example, in looking at damage to the dorsal fin, we can measure the fin shape, describe damage to the fin and note any evidence of skin disease or parasitism. Some skin conditions we observed were tattoo skin disease (TSD), pox virus (POX), Focal Skin Diseases (FSD), Pale Skin Patches (PSP), skin lineal anomalies (SLA), and Ulcerative Dermatitis (UD) (Hart et al. 2012). For this study we characterized features of the dorsal fin and evidence of infectious disease to investigate how dolphins differ in this environment. Some features are natural while others indicate injury, exposure to pathogens or poor health. Since there is no information on dolphins in this area, our historical understanding is limited (Torres et al. 2005, Toth et al. 2012). Future research should include visual and acoustic surveys along the coastline using different platforms (sea, air or land ) and using continuous sampling methods year round. We found 81% of our sample to have fin damage and 46% showed signs of skin lesions or anomalies. This area is especially important because it is the most active marine port in the Eastern U.S. with extreme levels of human activity where pollution and boat activity may be risky.

Method

• Photo ID aboard whale watching trips (2014-2018) (Fig 1)
  ○ Photo ID beach surveys on Beach 60th-89th, Far Rockaway (Fig 2)
  ○ Using the photo-id software “Darwin” fins were traced to define the shape and then coded for damage.
  ○ We obtain a list of triangulated distance measurements that describe the fin shape and categorize features of interest and compare them for matching individuals, features, or conditions.

Analysis

- All fins were given a category for damages (Fig. 5) and skin conditions (Fig. 6)

Damage Categories

- 74 DF randomly selected and traced (28% of identified individuals) 21.6% of described damages were of the "entire" fin, 18.9% had unspecified or no damage.
- 40.5% had Xenobalanus globicipitus present. Multiple individuals were chosen for each date but there were no similarities.
- 34 dolphin images were selected to categorize skin conditions. 47% showed signs of Tattoo Skin Disease (TSD), 12.5% of Focal Skin Disease and 9.4% with Pale Skin Patches. These ID selections were 12.9% of the NVR catalog.

Skin Condition Categories

- Beluga was categorized with a missing tip - named for its resemblance to a beluga whale “melon”.
- Skinny Mike has a middle notch, dark pigmentation and a very narrow fin - named for having a “skinny” fin although it is on a slight angle.
- Batman has dark pigmentation over part of the fin and damage (notches or nicks) across the entire trailing edge.
- Gills has “rake” marks (scars from teeth impressions) along the leading edge that resemble fish “gills”. The damage is across the entire trailing edge with deep notches.

Results

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- 34 dolphin images were selected to categorize skin conditions. 47% showed signs of Tattoo Skin Disease (TSD), 12.5% of Focal Skin Disease and 9.4% with Pale Skin Patches. These ID selections were 12.9% of the NVR catalog.

Discussion

Ultimately, this research focused on what these categories can tell us about the dolphins of New York Bay. As we compared dorsal fins, it helped us observe similar damage features and found that in the skin disease sample, many individuals with lesions were in the same group. While this shows a general sense of the type of damage and skin conditions dolphins have, these methods are qualitative. For example, Darwin does not work well with angular fins and did not match similarities or even individuals sighted twice correctly. On the Rockaways, we have seen small groups of dolphins and think it is important to continue this research to learn more about their patterns here and protect them in this very busy coastline. In the future, we can improve methods and recommend a beach monitoring program. Skin diseases are especially important because they can be infectious, affecting other dolphins and people of the community. It’s also important to observe these individuals next year to see how these features of damage and skin lesions may have changed in this region.

Acknowledgments
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References


Figures

1. T.truncatus observed <5 kilometers from the shoreline along Rockaway Beach toward Breezy Point on June 17th, 2013 (Raslich, A.) Sightings are reported frequently close to shore, interacting with swimmers, surfers, boats and aircraft. Developing a monitoring program on the Rockaways will help to learn more about their routine and collect photo-identification to see what individuals are frequenting the area.


