NOTES ON A NEW FEEDING GROUND FOR HUMPBACK WHALES IN THE WESTERN NEW YORK BIGHT

SIESWERDA, PAUL L.[1], SPAGNOLI, CHRISTOPHER A.[1], ROSENTHAL, DAVID S.[1]

[1]Gotham Whale, Staten Island Zoological Society, Bay Street Landing A5G, Staten Island, NY 10301, USA

Contact: paul@gothamwhale.com

Abstract

The historical range of Humpback whales, Megaptera novaeangliae, has been well documented throughout the Gulf of Maine (GOM) and along the US mid-Atlantic coastline (USMA). Until recently migrating whales have often bypassed the Western New York Bight and, in particular, the waters in and around Metropolitan New York City. However, our work shows that since 2011, humpback whale sightings in this area have become regular and continue to increase. We have identified 19 individual whales with re-sightings from known GOM identified whales. We document that at least one individual has returned to these waters for three consecutive years. Furthermore, we present photographic evidence of feeding on the prey species, menhaden, Brevoortia tyrannus. Data were collected through opportunistic observations by Gotham Whale scientists, volunteer observers, and contributing photographers on board the whale watching vessel, the American Princess.

Introduction:

Humpback whales have been the most intensively studied of the mysticete (baleen whales). [1] and in the North Atlantic these studies are particularly intensive in their known feeding grounds off the New England Coast. [2] The migration from these feeding areas to the calving and breeding grounds off the West Indies has been documented [3] and along the mid-Atlantic coastline, humpbacks have been observed in all months of the year.).[4] Photo-identification of humpbacks off the eastern end of Long Island have been recorded by the Coastal Research and Education Society of Long Island since 1979. (A. Kopelman, unpublished data) The Western New York Bight is notably absent from these studies. Prior to 2010 few whales were reported in these waters. Those that were sighted were occasional and anecdotal.

In 2011 Gotham Whale began the documentation of humpback whale sightings aboard the whale watching vessel, the American Princess. Our work is modeled after that of numerous whale watching venues in the Gulf of Maine. [5] Our partnership with the American Princess affords a unique platform to record humpback sightings and to collect fluke photographs for individual identification in the New York Humpback Whale Catalog. Gotham Whale is a research, educational, and conservation project, working under the auspices of the Staten Island Zoological Society, a 501 (c) 3, not-for-profit organization.

Methods:

On each whale watching cruise Gotham Whale provided a naturalist to make observations and record each sighting on a data sheet. The schedule that began in 2011 provided the opportunity for sightings three days per week. Not all trips were successful in sighting humpback whales. Each year the success rate improved dramatically. Our cruises were random, or more accurately, targeted but not standardized. The American Princess was informed by a network of colleagues in the fishing industry (head boats) and friends on the water who reported sightings, of lack thereof, in the course of their daily activities. This narrowed our search and was often helpful in finding whales. Our scheduled cruises took place from noon until 4pm. The seasons began as early as mid-June and extended as late as mid-November. Our observations began when we left the dock and continued until the return. Besides the naturalist from Gotham Whale, at least one boat captain and crew member was "on the lookout". Our observations were made as close to 360 degrees as was possible and we made no exclusions of whales that were seen from any vantage point on the boat or in any other way disallow a sighting. A sighting was determined to be a confirmed observation (by two observers) of the distinct spout or silhouette of a whale or whales at one location, at one time. Each sighting is assigned a unique accession number and is entered into the Gotham Whale database with documenting photographs attached. A sighting, or accession, can record more than one whale. A whale that can be identified as an individual is considered a single sighting.

Sightings were compiled over each year and analyzed for the percentage of seeing a humpback whale vs. number of cruises, that is, the number of successful cruises. Other cetacean sightings were not counted for this analysis. Figure 1.

The percent of cruises where humpbacks were observed peaked during the month of September. Figure 2.

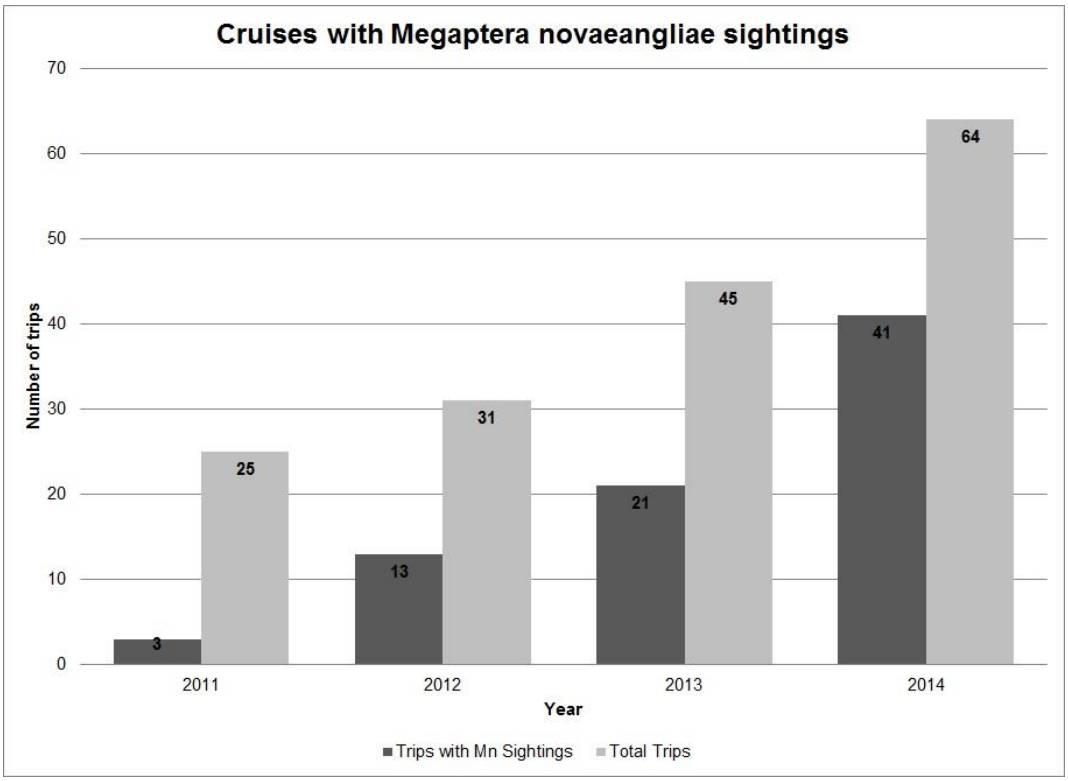

Figure 1.

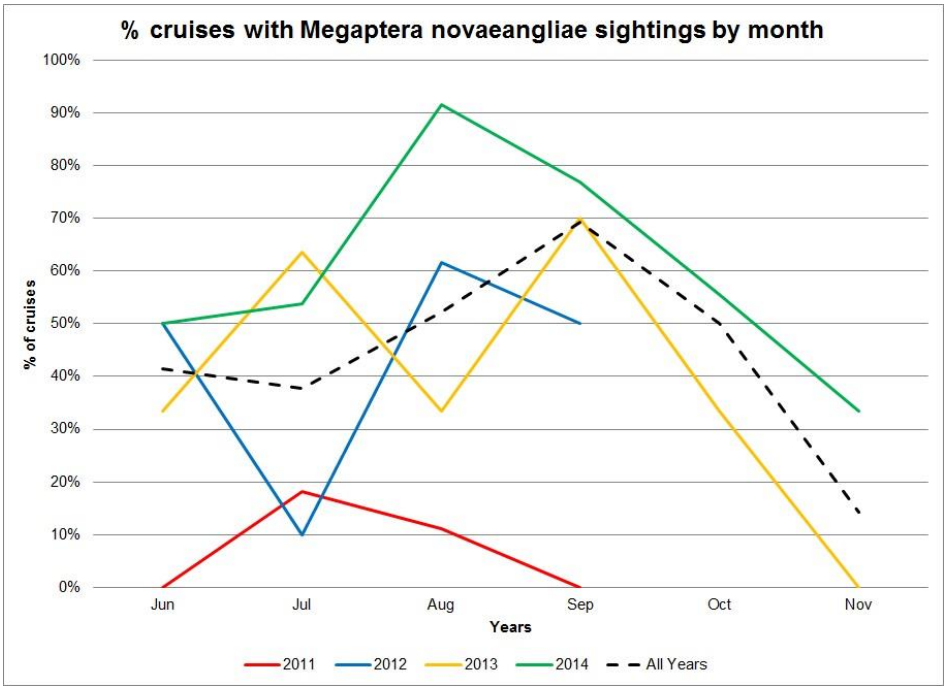

Figure 2.

Results

The number of sightings increased every year of our study. Initially our sightings of humpbacks were few. In 2011 we accessioned 3 sightings, with a total of 5 humpbacks, i.e. on two of those sightings we saw 2 whales. On successive years, our whale sightings increased exponentially. Table 1

Humpback Whales, *Megaptera novaeangliae*			
Year	Sightings	Number	
2011	3	5	
2012	15	25	
2013	33	43	
2014	87	106	

Table 1.

The area of study was limited to the range of the American Princess from its dockage at Riis Pier in Rockaway Queens. That area is broadly around the entrance to New York Harbor. The entrance to the harbor is constricted by the Verrazano's Narrows and seemed to restrict whales from entering the harbor as no whales were recorded within New York Harbor itself. We sighted humpbacks as far away as Deal, NJ. (South) and off Jones Beach (East). The western boundary is limited by Staten Island and Sandy Hook to the west and the Rockaway peninsular to the north. Our sightings were mainly along the coastlines, with few cruises more than 8 miles offshore from either coast. These searches were directed toward either reported sightings by other boatmen or by the best judgment of the captain. We recorded

138 sightings with a total of 252 whales observed from 2011 through 2014. Figure 3.

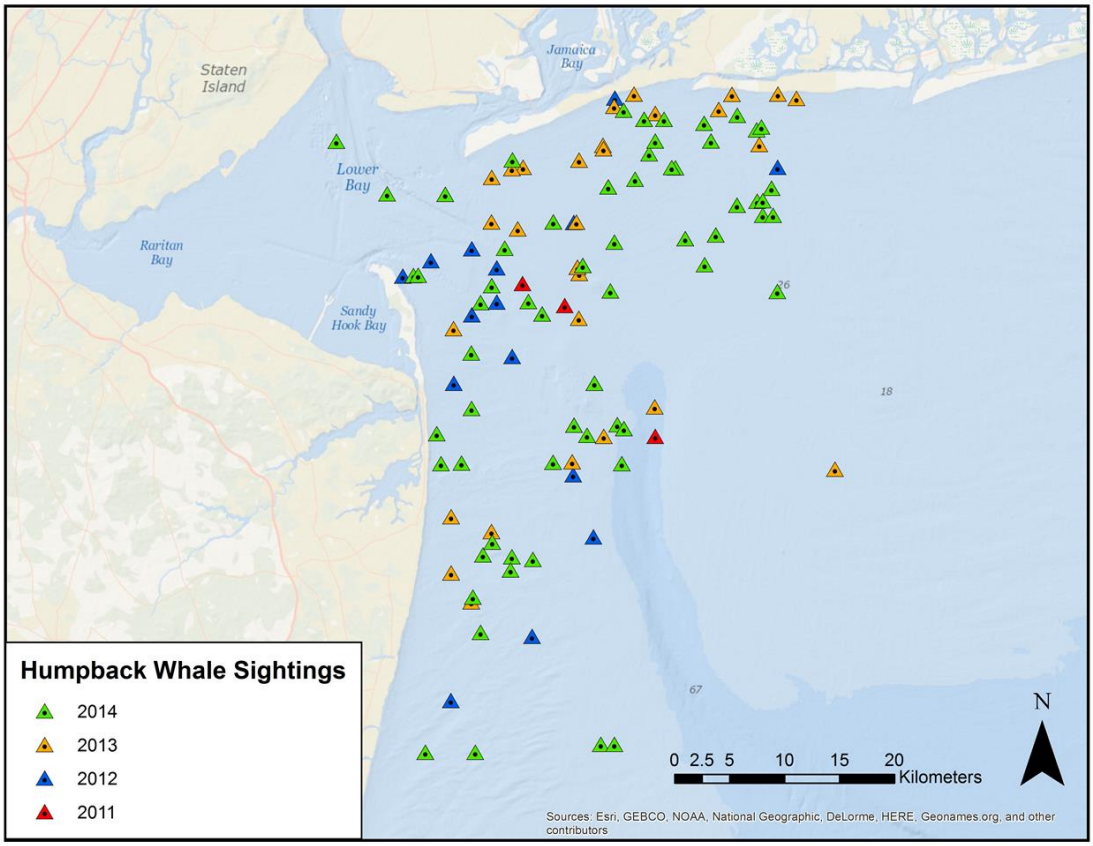

Figure 3.

Our observations clearly indicate that the humpbacks are feeding on menhaden, *Brevoortia tryannus.* These observations are supported by photographic evidence of the whale's lunge feeding on "bait balls" of menhaden. Figure 4. This feeding behavior is predominate from our observations. The number of sightings where feeding behavior was noted, predominately lunge feeding, was 55% of the total whales observed. Lunge feeding was documented in 61 of the 138 sightings. The dramatic activity of lunge feeding no doubt attracted our observations disproportionally. Figure 5.

Figure 4.

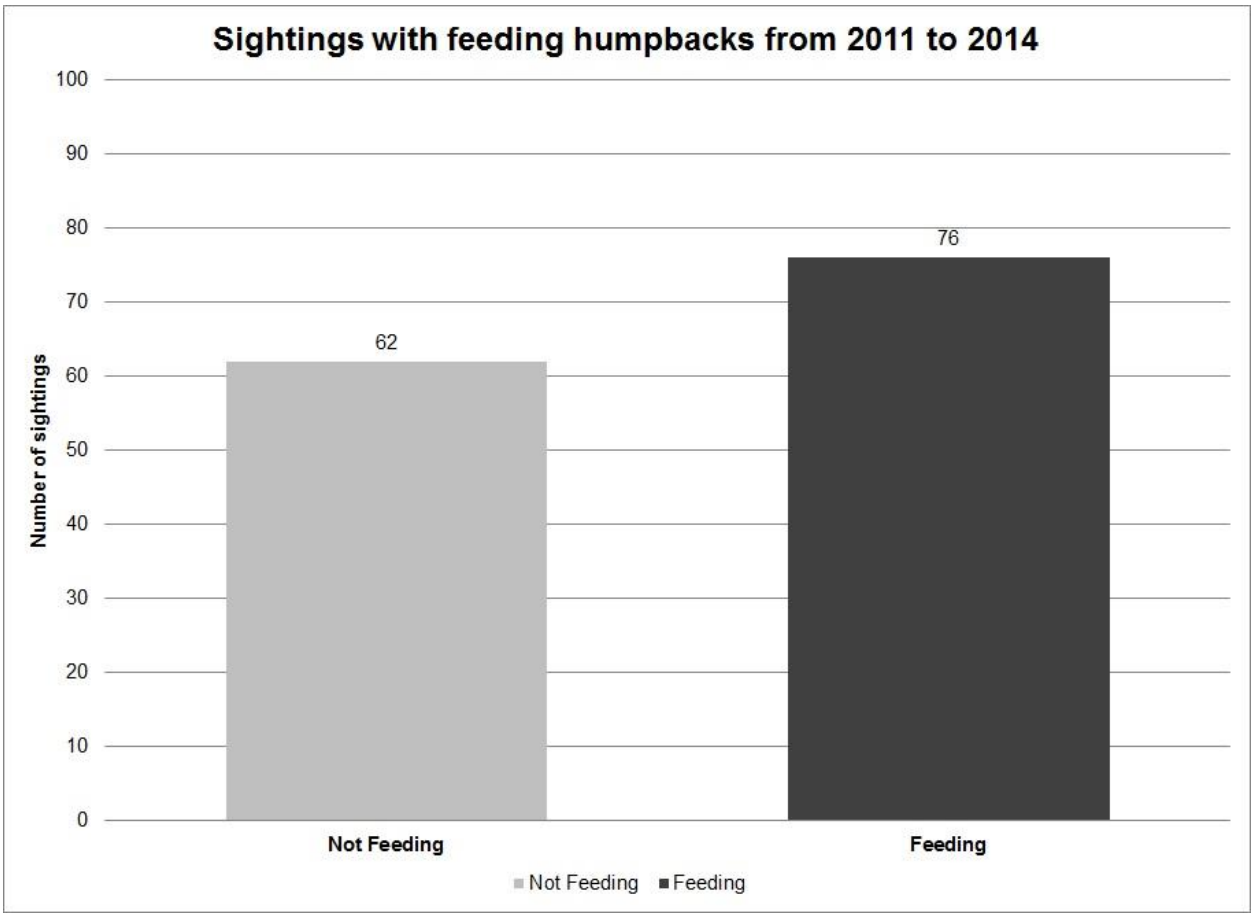

Figure 5

The New York City Humpback Whale catalog currently contains 19 individual whales that have been identified by unique fluke markings. Our catalog is shared with other researchers for comparison of known whales from the Gulf of Maine and other areas where identification catalogs are kept. Our whale, NYC0011 is known from the GOM as "calf of smog" first seen in 2011. This whale has been sighted multiple times in our area in 2013 and 2014. NYC0004 was re-sighted three consecutive years from 2012 to 2014. Fig.6, 7. Within each season, we have numerous re-sightings of identified whales in the same general area.

Figure 6.

Figure 7.

Discussion

Gotham Whale has recorded observations of humpback whales in the Western New York Bight since 2011. Prior to that time few whales were observed in this area, particularly so near to the entrance of New York Harbor. While our observations are relatively few and from a non-standardized, opportunistic study, they do indicate the presence of humpback whales in this area. The photographic evidence of feeding on menhaden gives credence for the western NY Bight being a new feeding ground for this species. Unfortunately there is no quantitative method to describe the corresponding increase of the prey species, menhaden, *Brevoortia tyrannus,* that have also returned to this area in the recent years. However, this correlation cannot be overlooked. The humpbacks are clearly feeding on menhaden.

Acknowledgements

We would like to thank the captains, Tom Paladino and Frank DeSantis, and the crew of the American Princess for their support and sharp eyes in finding whales in and around the waters of New York City. Our photographer, Artie Raslich, was invaluable in capturing images of considerable beauty and scientific contribution. Our naturalists, Merryl Kafka and Catherine Granton, provided support in the collection of data and educational presentations. Our project also had the contribution of numerous "Citizen Scientists" who funded the cruises on the American Princess, shared their images for use in the NY City Humpback Whale Catalog, and gave support to our overall efforts.

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