June 2018
Survey Report for
New York Bight Whale Monitoring
Aerial Surveys

Contract No. C009926

June 2018

Prepared for:

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ACRONYMS AND ABBREVIATIONS

hr	hour
km	kilometer
min	minutes
NEFSC	Northeast Fisheries and Science Center
NOAA	National Oceanographic and Atmospheric Administration
NYDEC	New York State Department of Environmental Conservation
SE	Standard Error

1.0 INTRODUCTION

Tetra Tech, Inc., in coordination with Smultea Environmental Sciences, LLC and Aspen Helicopters, Inc. (collectively, the "survey team"), is contracted by the New York State Department of Environmental Conservation (NYDEC), Division of Marine Resources to conduct 36 monthly line-transect aerial surveys focused on the six large whale species most likely to occur in the New York Bight. This survey report documents the survey effort and sightings from the June 2018 survey, representing the 16th of the 36 surveys scheduled to occur under this contract.

2.0 EFFORT

The June 2018 survey occurred from June 14 - 16, 2018. A total of eight flights were conducted, representing a total of 20.98 hours in the air (i.e., from wheels up on the airport tarmac to wheels down on the tarmac for each flight). A total of 4,266 kilometers (km) were flown and included completion of 100 percent of the 15 transect lines. Figure 1 shows the survey lines completed. Table 1 presents the flight time durations and distances by effort type.

TABLE 1. FLIGHT TIME AND DISTANCE BY EFFORT TYPE DURING THE JUNE 2018 SURVEY

Survey Dates	Hours and Kilometers (km) by Type of Flight Effort										Total	
	Overland		Transit		Transect		Circling		Cross-Leg			
	hr	km	hr	km	hr	km	hr	km	hr	km	hr	km
June 14-16, 2018	1.34	274	3.84	878	12.71	2,515	2.32	447	0.77	152	20.98	4,266

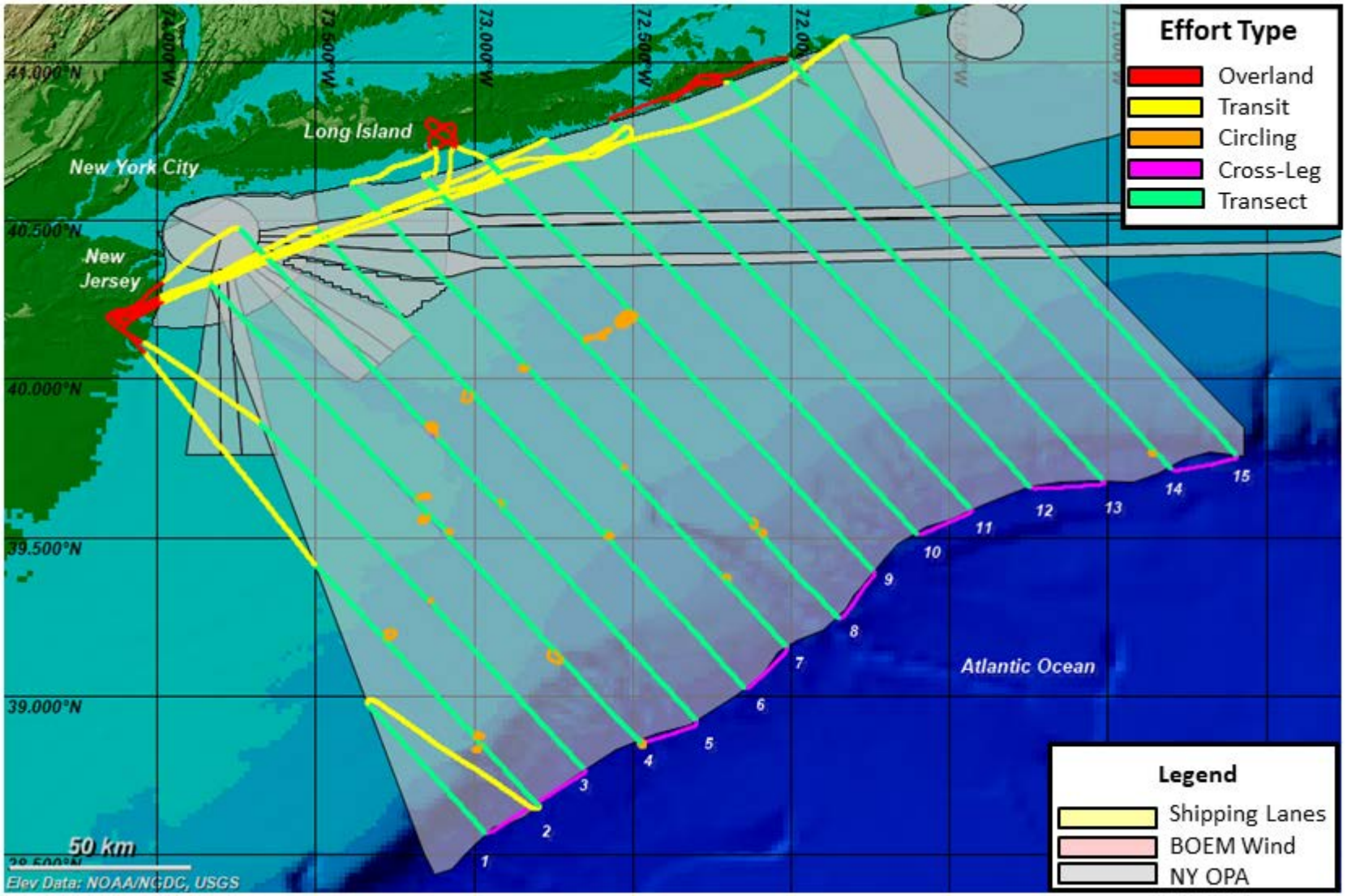

Figure 1. Survey Lines Flown by Effort Type During the June 2018 Survey

3.0 SIGHTINGS

Sightings are presented below based on the following subsections: (1) the six priority large whale species and unidentified whales, (2) other marine mammal sightings, (3) sea turtle sightings, (4) unusual or rare sightings, (5) sightings of dead, injured, stranded, or entangled marine mammals or sea turtles, and (6) other species/object sightings. Figure 2 is a map of all large whale sighting locations, Figure 3 is a map of all marine mammal sighting locations.

3.1 PRIORITY LARGE WHALE SIGHTINGS

A total of 38 sightings (i.e. groups) of an estimated 153 individual large whales were seen (Table 2). Of these sightings, 36 groups were identified to species. Large whale sightings included 17 groups (estimated 50 total individuals) of fin whales (*Balaenoptera physalus*), 17 groups (estimated 98 total individuals) of humpback whales (*Megaptera novaeangliae*), including one mother/calf pair, and two sightings of 3 individual sperm whales (*Physeter macrocephalus*). The remaining two sightings were of a single blue/fin/sei whale and a single unidentified large whale. One of the sperm whales was entangled, detailed information on the entanglement report is provided in Section 3.5.

TABLE 2. NUMBER OF LARGE WHALE SPECIES SIGHTED DURING THE JUNE 2018 SURVEY

Common Name*	Scientific Name	Number of Groups	Total Number of Individuals	Mean Group Size (SE)
Blue/Fin/Sei Whale	*Balaenoptera musculus*	1	1	1.0 (NA)
Fin Whale	*Balaenoptera physalus*	17	50	2.9 (0.89)
Humpback Whale	*Megaptera novaeangliae*	17	98	5.8 (3.06)
Sperm Whale	*Physeter macrocephalus*	2	3	1.5 (0.50)
Unidentified Large Whale		1	1	1.0 (NA)
Total		**38**	**153**	

Notes:
*Listed in alphabetical order
NA = not applicable; SE = standard error

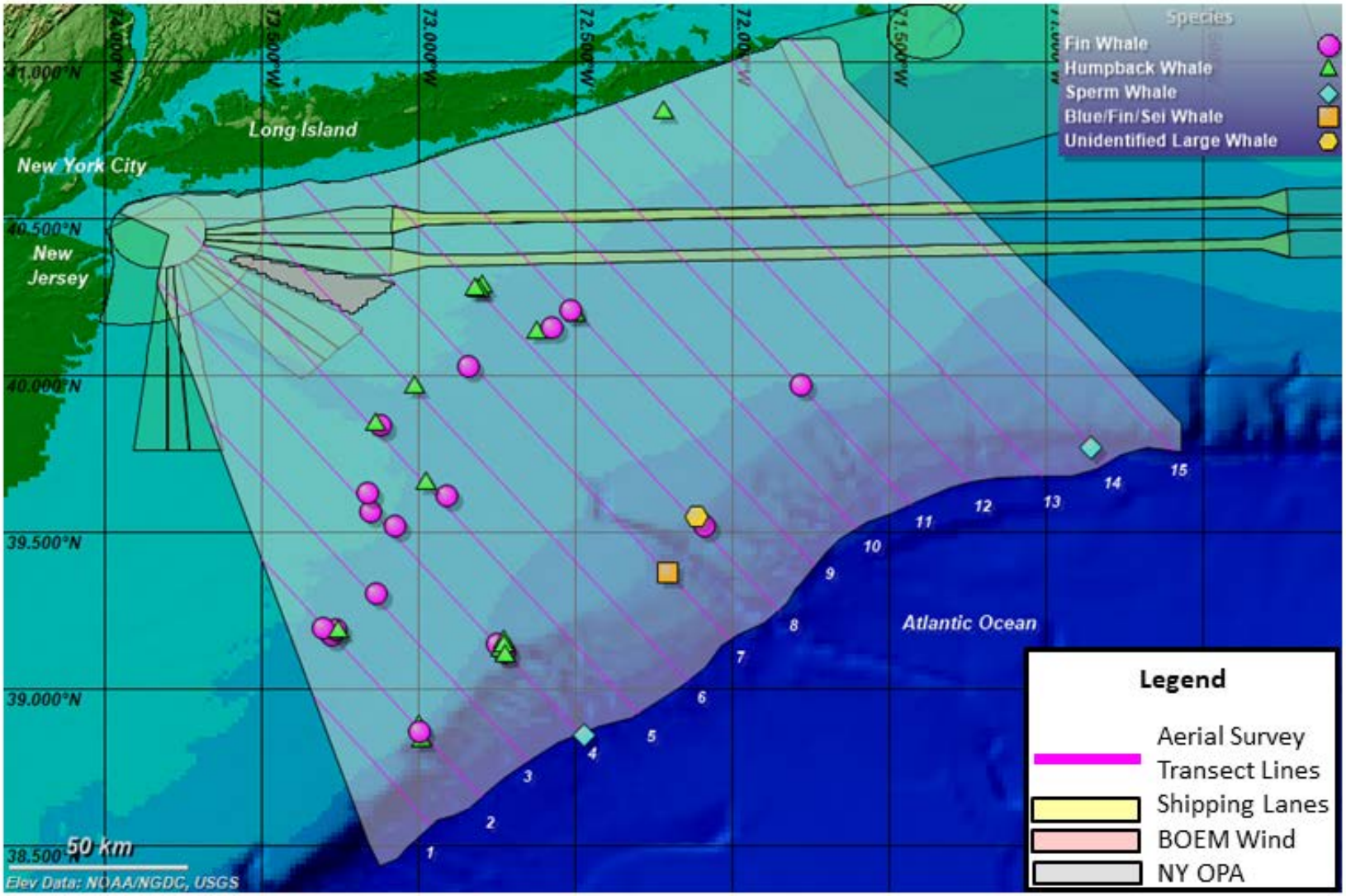

Figure 2. Locations of All Groups of Large Whales Sighted During the June 2018 Survey

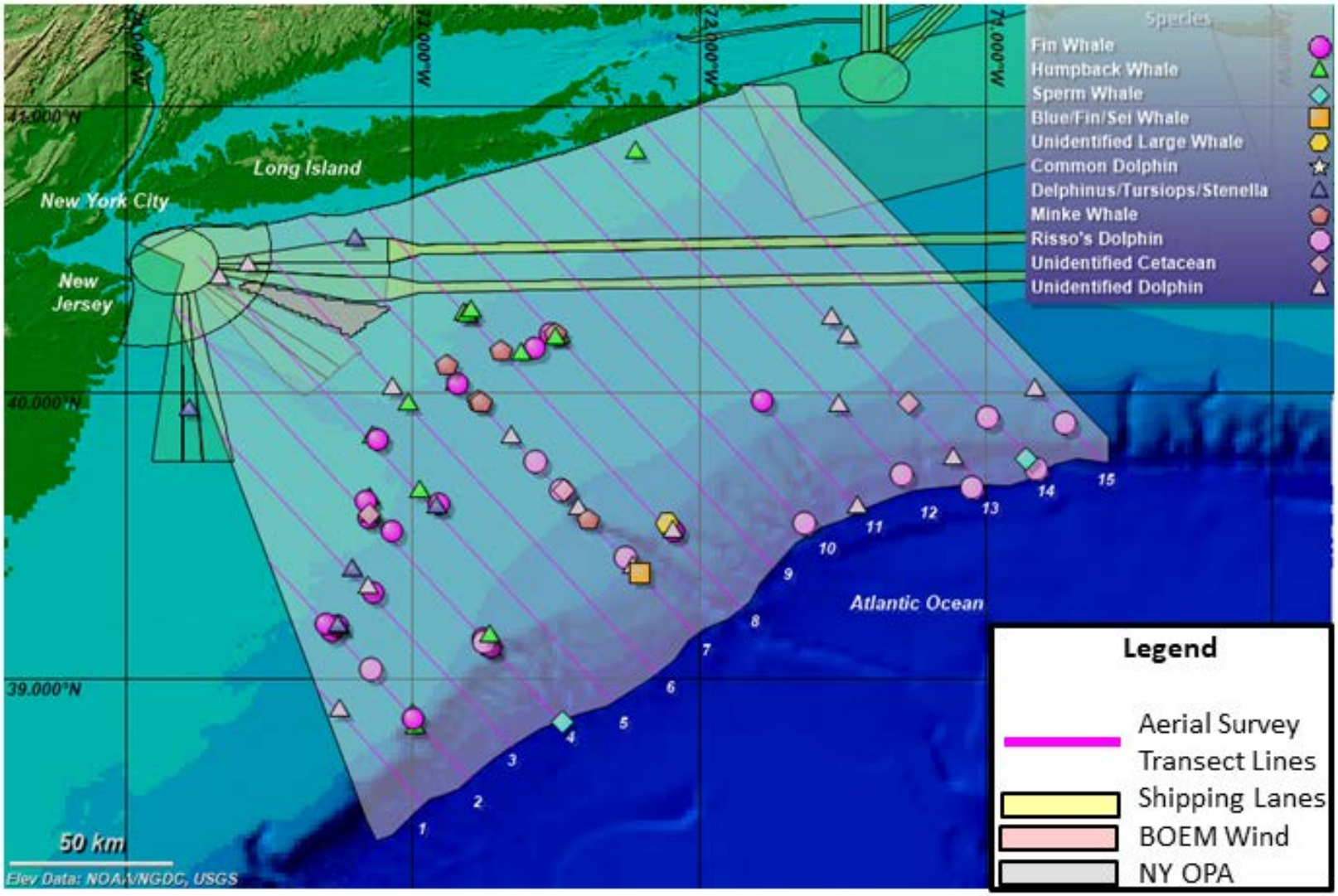

Figure 3. Locations of All Groups of Marine Mammals Sighted During the June 2018 Survey

3.2 OTHER MARINE MAMMAL SIGHTINGS

A minimum total of 45 sightings of an estimated 2,379 individual marine mammals other than the six priority whale species were observed (Table 3). This included 8 groups (estimated total 1,072 individuals) of Delphinus/Tursiops/Stenella spp., 1 group (estimated 600 individuals) of common dolphins (*Delphinus delphis*), 6 groups (estimated 8 individual) minke whales (*Balaenoptera acutorostrata*), 11 groups (estimated 137 individuals) of Risso's dolphins (*Grampus griseus*), 3 groups (estimated total 5 individuals) of unidentified cetaceans, 16 groups (estimated total 557 individuals) of unidentified dolphins (note, in accordance with the project scope of work, the aircraft is required to circle only to photo-identify North Atlantic right whales and to identify species and/or confirm group size/composition of large whales, as possible).

TABLE 3. OTHER MARINE MAMMAL SIGHTINGS DURING THE JUNE 2018 SURVEY*

Common Name**	Scientific Name	Number of Groups	Total Number of Individuals	Mean Group Size (SE)
Common Dolphin	*Delphinus delphis*	1	600	600 (NA)
Delphinus/Tursiops/Stenella		8	1,072	134 (96.00)
Minke Whale	*Balaenoptera acutorostrata*	6	8	1.3 (0.33)
Risso's Dolphin	*Grampus griseus*	11	137	12.5 (2.67)
Unidentified Cetacean		3	5	1.7 (0.67)
Unidentified Dolphin		16	557	34.8 (11.05)
Total		**45**	**2,379**	

Notes:
*Some species identifications are preliminary and not certain due to not routinely circling/photographing
**Listed in alphabetical order
NA = not applicable; SE = standard error

3.3 SEA TURTLE SIGHTINGS

A minimum total of 25 sightings of an estimated 41 individual sea turtles were observed (Table 4). This included 3 single leatherback sea turtles (*Dermochelys coriacea*) and 22 groups (estimated total 38 individuals) of unidentified sea turtles. Figure 4 is a map of sea turtle sightings.

TABLE 4. SEA TURTLE SIGHTINGS DURING THE JUNE 2018 SURVEY*

Common Name**	Scientific Name	Number of Groups	Total Number of Individuals	Mean Group Size (SE)
Leatherback Sea Turtle	*Dermochelys coriacea*	3	3	1 (NA)
Unidentified Sea Turtle		22	38	1.7 (0.30)
Total		**25**	**41**	

Notes:
*Some species identifications are preliminary and not certain due to not routinely circling/photographing
**Listed in alphabetical order
NA = not applicable; SE = standard error

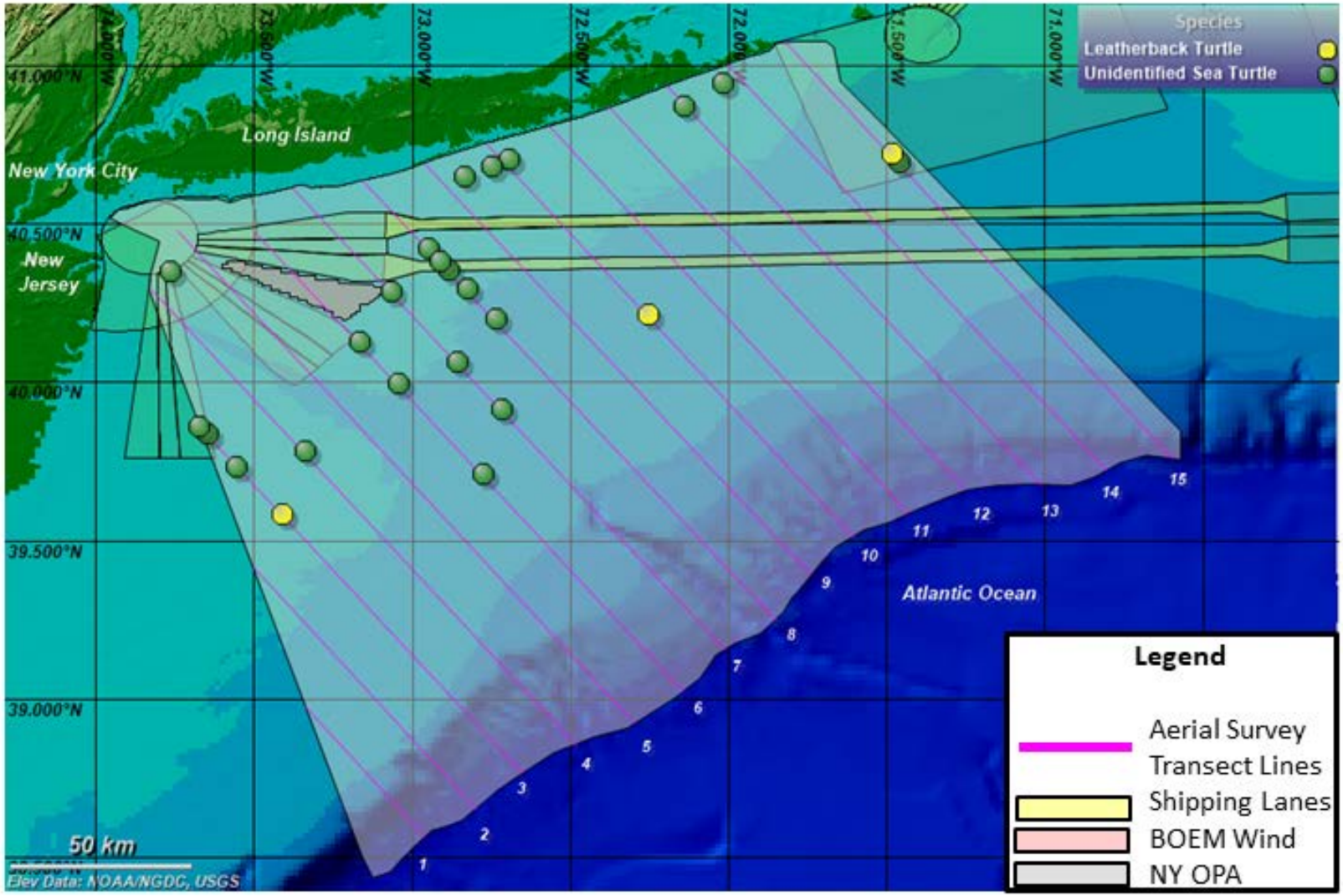

Figure 4. Locations of All Sea Turtles Sighted During the June 2018 Survey

3.4 UNUSUAL OR RARE SIGHTINGS

There were no unusual or rare sightings during the June 2018.

3.5 STRANDING AND ENTANGLEMENT REPORTS

There was one sighting of an entangled sperm whale during the June 2018 survey (Figures 5 and 6). On June 17, 2018 at 11:03 am EDT an entangled sperm whale was sighted on Line 14 on the offshore (southern) end of the line. The location of the animal was approximately 90 nm from shore. The position of the sighting was 39.770 N, 70.995 W. Upon first sighting the animal the survey team thought it was a carcass because there were no visible respirations (blows), after circling the animal approximately 2 to 3 times. The head was positioned up with the tail down in the water. There was what appeared to be a large dark black mass (possibly ghost net) next to the head near the jaw and photographs showed a large plastic tote near the mouth of the animal. The survey team circled for approximately 20 minutes for photographs and relayed information about the entanglement to Ann Zoidis of Tetra Tech via satellite phone. The event was classified as an entanglement based on behavior observed during the sighting, and the consistent presence of the black mass and tote by the animal's head. The event was reported to the National Oceanic and Atmospheric Administration (NOAA) Northeast Fisheries Science Center (NEFCS) Stranding Hotline by Ann Zoidis on June 17, 2018 at 11:54 am EDT. Tetra Tech uploaded eighty photographs of the sighting to the NOAA representative, David Morin, within a few hours for review by NOAA's team of experts.

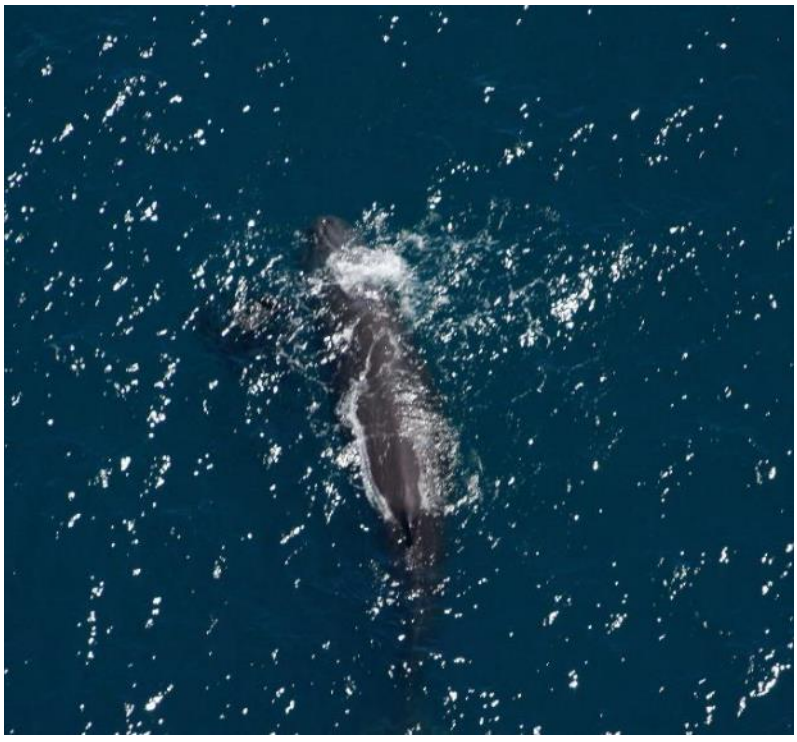

Figure 5. Entangled sperm whale (*Physeter macrocephalus*)
photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)

Figure 6. Entangled sperm whale (*Physeter macrocephalus*)
photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)

3.6 OTHER SIGHTINGS

In addition to those described above, there were other types of non-marine mammal sightings. To focus observation efforts on searching for large priority whale species, only the sighting type, time, and general location of these other sightings were recorded. This data was recorded opportunistically as feasible, with additional details entered into the voice recordings (e.g., estimated body length and coloration, behavior, and group size). Hot keys on the laptop running the software *Mysticetus* were used to mark the locations of these sightings when doing so would not interfere significantly with priority observation efforts (e.g., in areas where all sightings were relatively low). The sightings below consist of those for which general locations and times were noted using the computer in the field; thus, they should be considered *minimum numbers* of sightings. Review of the voice recorder data would be required to more fully describe these sightings.

- Minimum 32 groups (70 estimated individuals) of possible basking sharks (*Cetorhinus maximus*)
- Minimum 150 fish schools
- Minimum 42 groups (43 estimated individuals) of ocean sunfish (*Mola mola*)
- Minimum 6 groups (7 estimated individuals) of unidentified sharks

4.0 PROBLEMS ENCOUNTERED

There were no problems encountered during the June 2018 survey.

5.0 PHOTOGRAPHS

Figure 7. Humpback whales (*Megaptera novaeangliae*), including a mom/calf pair photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)

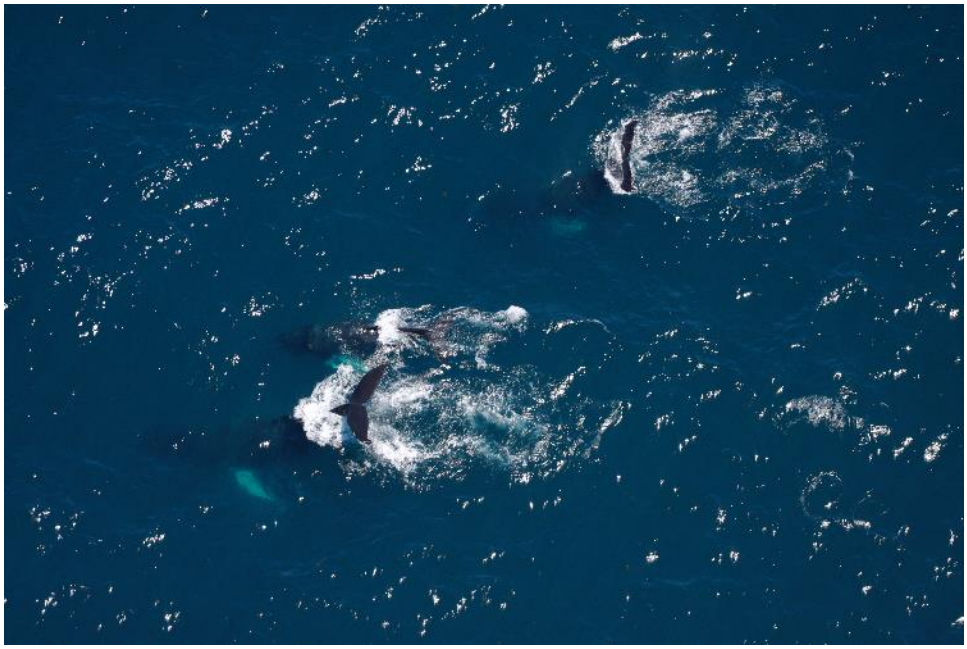

Figure 8. Humpback whales (*Megaptera novaeangliae*), including a mom/calf pair photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)

Figure 9. A group of humpback whales (*Megaptera novaeangliae*) photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)

Figure 10. Group of humpback whales (*Megaptera novaeangliae*) feeding photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)

Figure 11. A group of humpback whales (*Megaptera novaeangliae*) feeding photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)

Figure 12. A group of humpback whales (*Megaptera novaeangliae*) bubble net feeding photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)

Figure 13. Fin whale (*Balaenoptera physalus*) lunge feeding
photo credit: Kate Lomac-MacNair (Smultea Environmental Sciences)