Species Status Assessment

Common Name: Harbor porpoise **Date Updated:** 11/14/2024

Scientific Name: *Phocoena phocoena* **Updated by:** Meghan Rickard

Class: Mammalia

Family: Phocoenidae

Species Synopsis *(a short paragraph which describes species taxonomy, distribution, recent trends, and habitat in New York):*

There are four subspecies of harbor porpoise that are found worldwide: *P. phocoena phocoena* in the North Atlantic, *P. p. vomerina* in the eastern North Pacific, an unnamed subspecies in the western North Pacific and *P. p. relicta* in the Black Sea (Braulik et al. 2023). Four populations of harbor porpoise are generally recognized in the western North Atlantic (Gaskin 1992, Wang et al. 1996, Read & Hohn 1995). These four populations include: the Gulf of Maine/Bay of Fundy, Gulf of St. Lawrence, Newfoundland and Greenland. Genetic studies indicate that ~60% of harbor porpoises found in Mid-Atlantic waters are from the Gulf of Maine/Bay of Fundy (GOM/BOF) stock, ~25% are from the Newfoundland stock, about 12% are from the Gulf of St. Lawrence stock and less than 3% are from the Greenland stock (Rosel et al. 1999; Hiltunen 2006, Hayes et al. 2024). For management purposes, the GOM/BOF harbor porpoises are recognized as a single stock separate from the other western North Atlantic populations. The stock is spread out from North Carolina to New Brunswick, Canada in various concentrations throughout the year (Hayes et al. 2024).

In the late 1980s to early 1990s harbor porpoises were most commonly in New York waters from December to June, typically 12 miles or more offshore during March and April, and inshore from March to June (Sadove & Cardinale 1993). Sightings in Long Island Sound frequently occurred between January and March, while sightings in Great South Bay and eastern Long Island bays typically fell during April and May (Sadove & Cardinale 1993). In the New York- New Jersey Harbor Estuary, harbor porpoises were detected year-round, with peak activity between January and May (Rekdahl et al. 2023). Current population trends are unknown but the overlap of habitat use and significant anthropogenic activity pose concern for the health of the population.

I. Status

a. Current legal protected Status

i. **Federal:** Not listed **Candidate:** No

ii. **New York:** Special Concern

b. Natural Heritage Program

i. **Global:** G4G5

ii. **New York:** S4 **Tracked by NYNHP?:** No

Other Ranks:

-New York 2025 SGCN status: High Priority Species of Greatest Conservation Need

-IUCN Red List: Least Concern

-CITES: Appendix II

-Northeast Regional SGCN: RSGCN

-Canada Species at Risk Act (SARA): Special Concern

-Committee on the Status of Endangered Wildlife in Canada (COSEWIC): Special Concern

-Marine Mammal Protection Act (MMPA): N/A

Status Discussion:

In 1991, the Sierra Club Legal Defense Fund submitted a petition to the National Marine Fisheries Service (NMFS) to list the Gulf of Maine/Bay of Fundy (GOM/BOF) stock of harbor porpoise as threatened under the Endangered Species Act (ESA; NMFS 2001). In 1993, NMFS published a proposed rule listing the stock as threatened due to the significant threat of bycatch in gillnet gear which no regulations were in place for at that time. In 1999, NMFS determined that listing the stock under the ESA was not warranted and the stock was removed from the candidate species list (NMFS 2001).

The stock is not listed as threatened or endangered and the stock in not considered strategic under the MMPA. However, total bycatch mortality and serious injury for the stock is not less than 10% of the calculated Potential Biological Removal (PBR) and therefore cannot be considered insignificant and approaching zero (Hayes et al. 2024).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Unknown	Unknown			Yes
Northeastern US	Yes	Unknown	Unknown			Yes
New York	Yes	Unknown	Unknown		Special concern	Yes
Connecticut	Yes	Unknown	Unknown		Special concern	Yes
Massachusetts	Yes	Unknown	Unknown		Not listed	Yes
Rhode Island	Yes	Unknown	Unknown		Not listed	No
New Jersey	Yes	Unknown	Unknown		Special concern	Yes
Pennsylvania	No	Choose an item.	Choose an item.			Choose an item.
Vermont	No	Choose an item.	Choose an item.			Choose an item.
Ontario	No	Choose an item.	Choose an item.			Choose an item.
Quebec	Yes	Unknown	Unknown			Choose an item.

Column options
Present?: Yes; No; Unknown; No data; (blank) or Choose an Item
Abundance and Distribution: Declining; Increasing; Stable; Unknown; Extirpated; N/A; (blank) or Choose an item
SGCN?: Yes; No; Unknown; (blank) or Choose an item

Monitoring in New York *(specify any monitoring activities or regular surveys that are conducted in New York):*

There are currently no monitoring activities or regular surveys targeting harbor porpoise in New York. Most information on harbor porpoises coastwide comes from bycatch data, stranding data, and seasonal surveys by NOAA's Northeast Fisheries Science Center (NEFSC). In New York, stranding data is collected by New York Marine Rescue Center (NYMRC) and Atlantic Marine Conservation Society (AMSEAS). Sightings of harbor porpoises were recorded opportunistically during New York State Department of Environmental Conservation (DEC)'s large whale aerial surveys from 2017 to 2020 (Tetra Tech and LGL 2020). The 2024-2027 DEC large whale aerial surveys will continue to record harbor porpoise sightings opportunistically. It should be noted that the survey altitude largely prohibits reasonable visual detection of smaller animals such as harbor porpoise.

In 2016, to support the state's commitment to offshore wind energy, the New York State Energy Research and Development Authority (NYSERDA) began a seasonal 3-year ultra-high resolution digital aerial survey of all marine taxa within the New York Bight (e.g., the offshore planning area delineated by NY Dept. of State; NYSERDA 2021). The seasonal NOAA NEFSC surveys are conducted under the Atlantic Marine Assessment Program for Protected Species (AMAPPS). Harbor porpoises are recorded during their core aerial and shipboard surveys (Palka et al. 2021).

In 2010, the Atlantic Marine Assessment for Program for Protected Species (AMAPPS) joint program between the National Oceanic and Atmospheric Administration (NOAA) and the Bureau of Ocean Energy Management (BOEM) began, with the goal of determining the abundance and distribution of protected species along the U.S East Coast. The NOAA Northeast Fisheries Science Center (NEFSC) Protected Species Branch leads the surveys which are conducted primarily by plane and ship. AMAPPS is a broadscale survey and therefore does not match the specific needs of New York Bight monitoring in time or space but has, however, recorded sightings of harbor porpoise in and around New York. AMAPPS II (2015-2019) and AMAPPS III (2019-2024) have both been completed but AMAPPS was not picked up for continued funding by BOEM. Instead, the U.S. Navy plans to work with NOAA on similar surveys beginning in 2025 (US Navy 2024).

Trends Discussion *(insert map of North American/regional distribution and status):*

The IUCN estimates that the global abundance of harbor porpoises is "well over a million individuals" (Braulik et al. 2023). The most recent U.S. minimum population estimate for the Gulf of Maine/Bay of Fundy (GOM/BOF) harbor porpoise is 56,420 (Hayes et al. 2024). In 2016, Canadian aerial surveys estimated the abundance of harbor porpoise to be 256,355 (CV=0.40) (Lawson & Gosselin 2018).

A trend analysis has not been conducted for the GOM/BOF stock. The statistical power to detect a trend in abundance is poor due to imprecise abundance estimates and long survey interval (Hayes et al. 2024). In 2022, the annual bycatch estimate was 130 with a 5-year rolling bycatch average of 142 (NMFS 2024a). This is amongst the lowest bycatch estimates since the 1990s when bycatch in gillnets was at an all-time high. However, current observer coverage in the Mid-Atlantic gillnet fishery is low and therefore not representative of the fishery during all times and places (Hayes et al. 2024). While not considered strategic under the Marine Mammal Protection Act (MMPA), the total U.S. fishery-related mortality and serious injury for the stock is not less than 10% of the potential biological removal and therefore can't be considered insignificant and approaching zero (Hayes et al. 2024).

Table 1. Summary of recent abundance estimates for the Gulf of Maine/Bay of Fundy harbor porpoise by month, year, and area covered during each abundance survey and the resulting abundance estimate (N_{est}) and coefficient of variation (CV). The estimate considered best is in bold font. (Hayes et al. 2024).

Month/Year	Area	N_{best}	CV
Jun – Sep 2016	Central Virginia to Maine	75,079	0.38
Aug – Sep 2016	Gulf of St. Lawrence/Bay of Fundy/Scotian Shelf	20,464	0.39
Jun – Sep 2016	Central Virginia to Gulf of St. Lawrence/Bay of Fundy/Scotian Shelf (COMBINED)	95,543	0.31
Jun – Aug 2021	New Jersey to lower Bay of Fundy	85,765	0.53
Jun – Aug 2021	Central Florida to New Jersey	0	-
Jun – Aug 2021	**Central Florida to lower Bay of Fundy (COMBINED)**	**85,765**	**0.53**

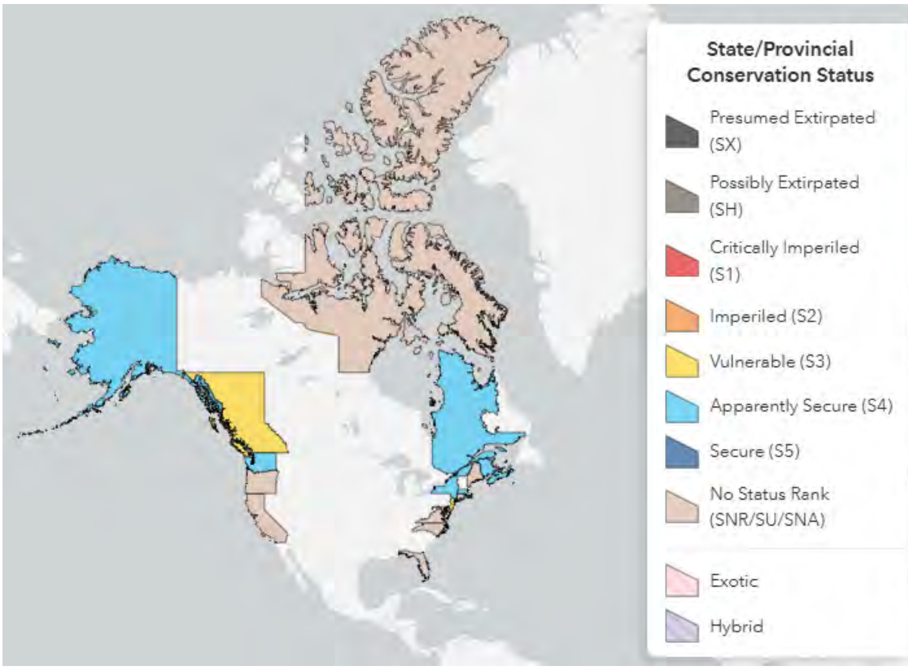

Figure 1. Conservation status of harbor porpoise in North America (NatureServe 2024).

Figure 2. Distribution of harbor porpoise in the Eastern United States and Canada (COSEWIC 2022).

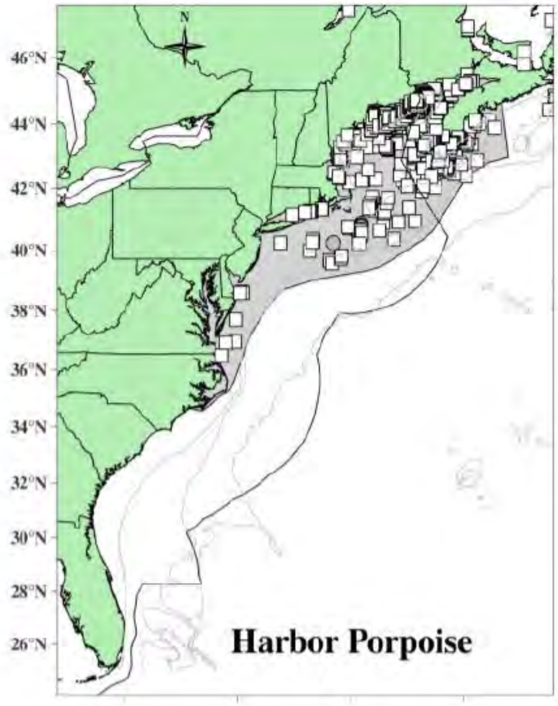

Figure 3. Distribution of harbor porpoises from NEFSC and SEFSC shipboard and aerial surveys during the summers of 1995, 1998, 1999, 2002, 2004, 2006, 2007, 2008, 2010, 2011, 2016, and 2021 and portions of DFO's 2007 TNASS and 2016 NAISS surveys. Circle symbols represent shipboard sightings and squares are aerial sightings. Shaded area represents approximate stock range (Hayes et al. 2024).

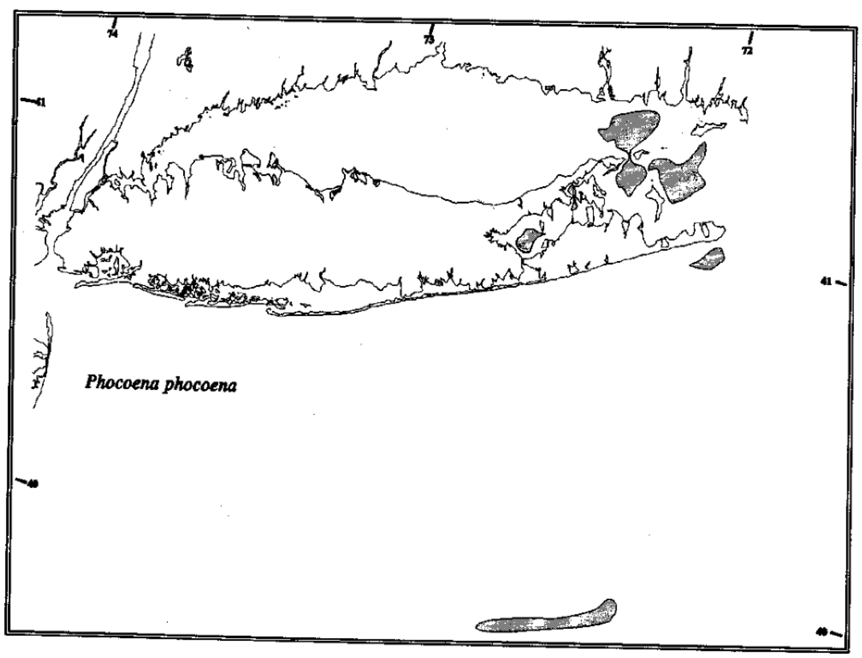

Figure 4. Locations of harbor porpoise sightings from the 1970s to early 1990s (Sadove & Cardinale 1993).

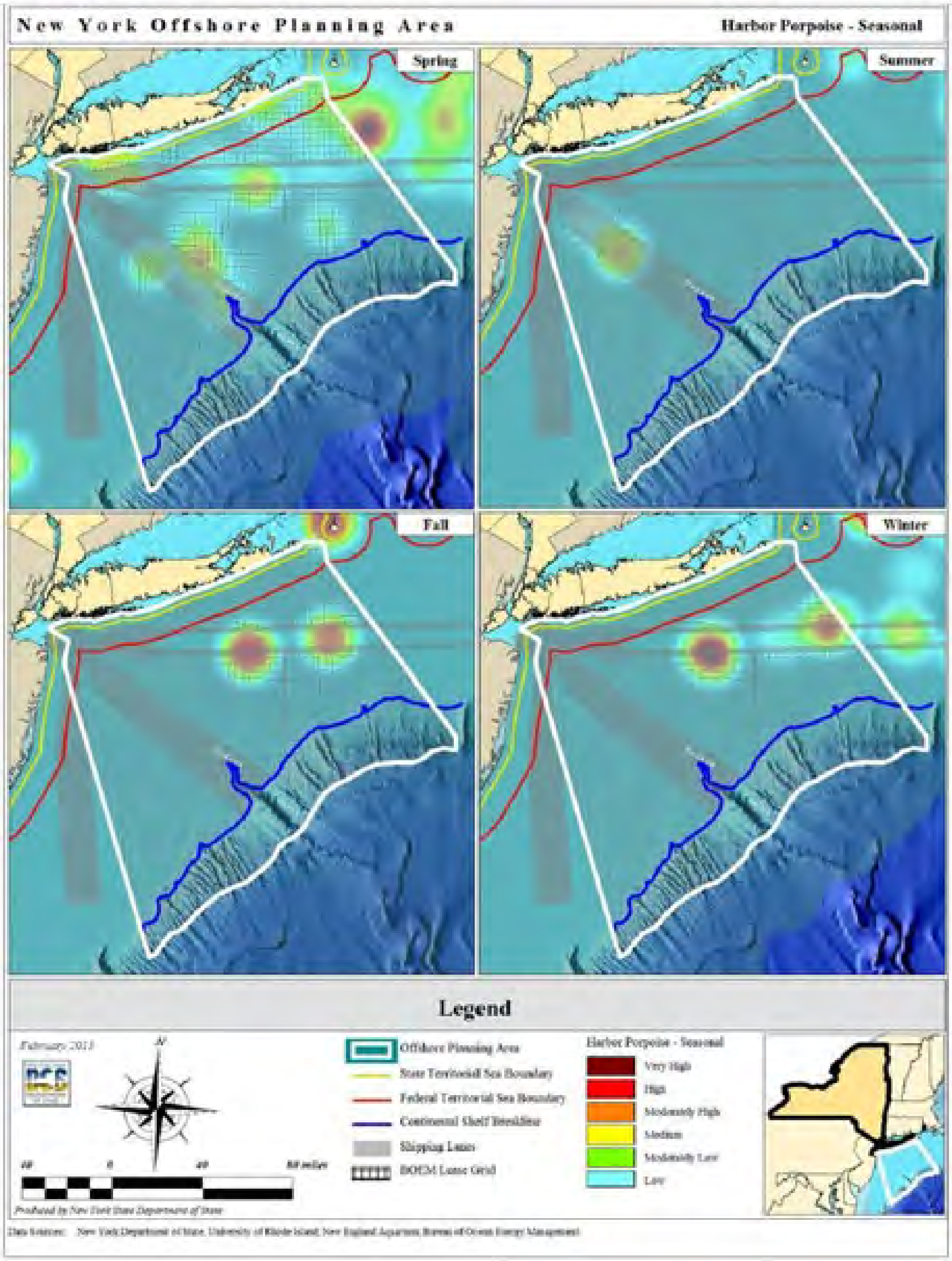

Figure 5. This Harbor Porpoise Seasonal Relative Abundance map series shows estimated seasonal distribution of harbor porpoises as modeled by the NEA using the NARWC Database (NYSDOS 2013).

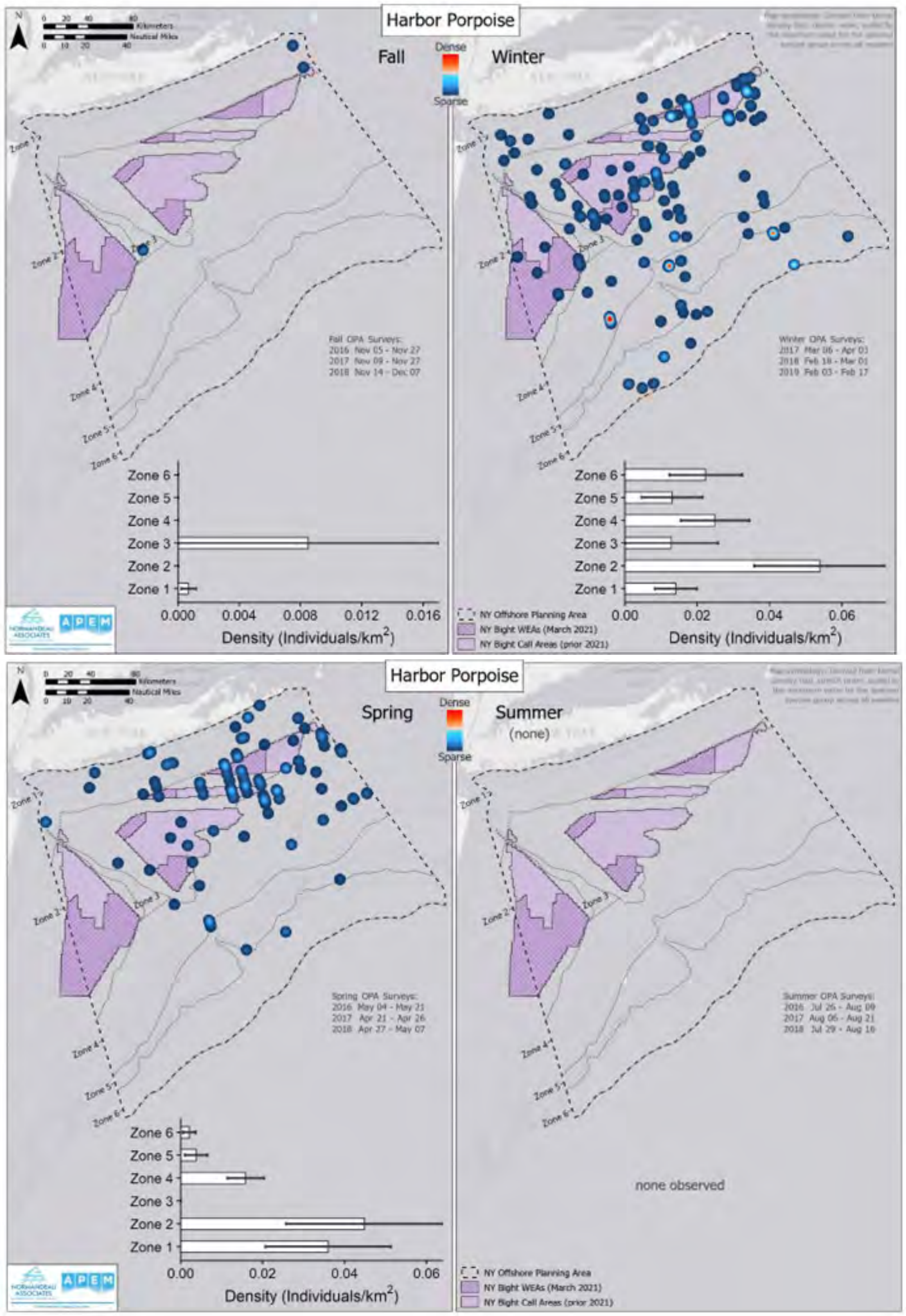

Figure 6. Spatial distribution of harbor porpoise during fall, winter, spring, and summer by zone. Heat map density is scaled to the maximum density for the species across all seasons. Inset figure shows estimated densities within each zone +/- standard error of the mean (NYSERDA 2021).

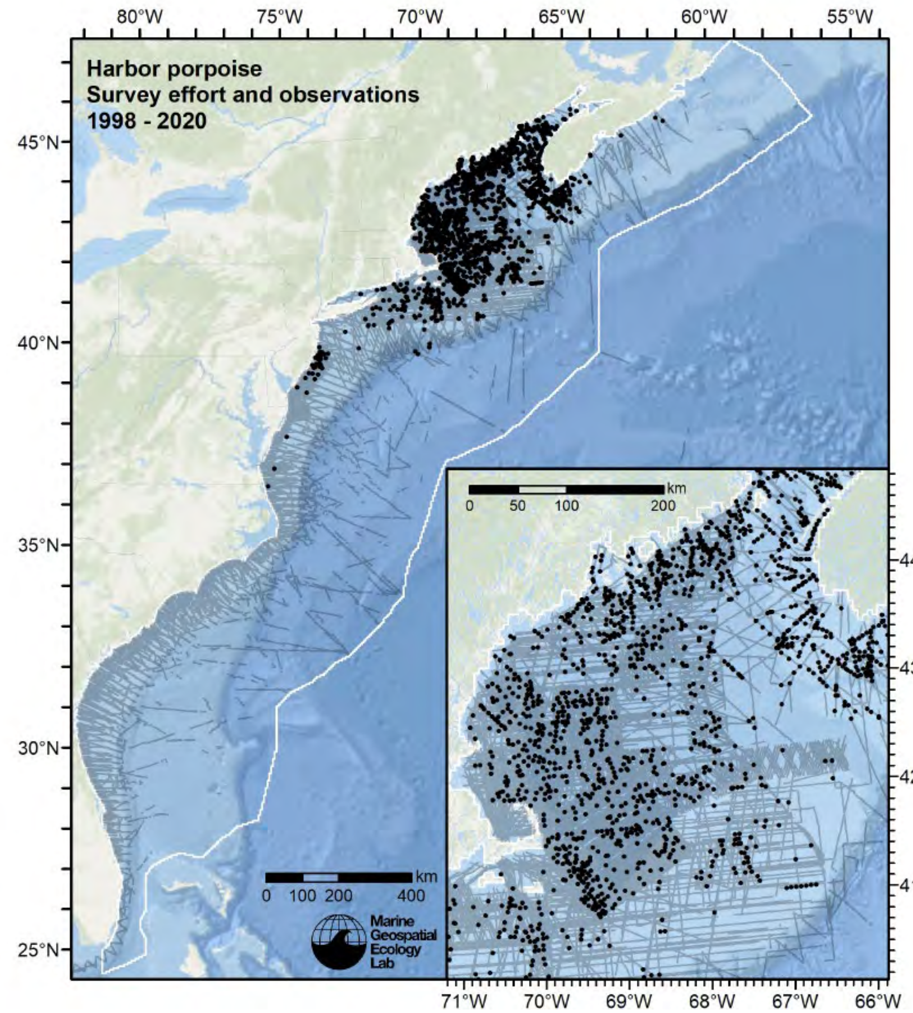

Figure 7. Survey effort and harbor porpoise observations available for density modeling, after detection functions were applied, and excluded segments and truncated observations were removed (Roberts et al. 2022).

III. New York Rarity *(provide map, numbers, and percent of state occupied)*

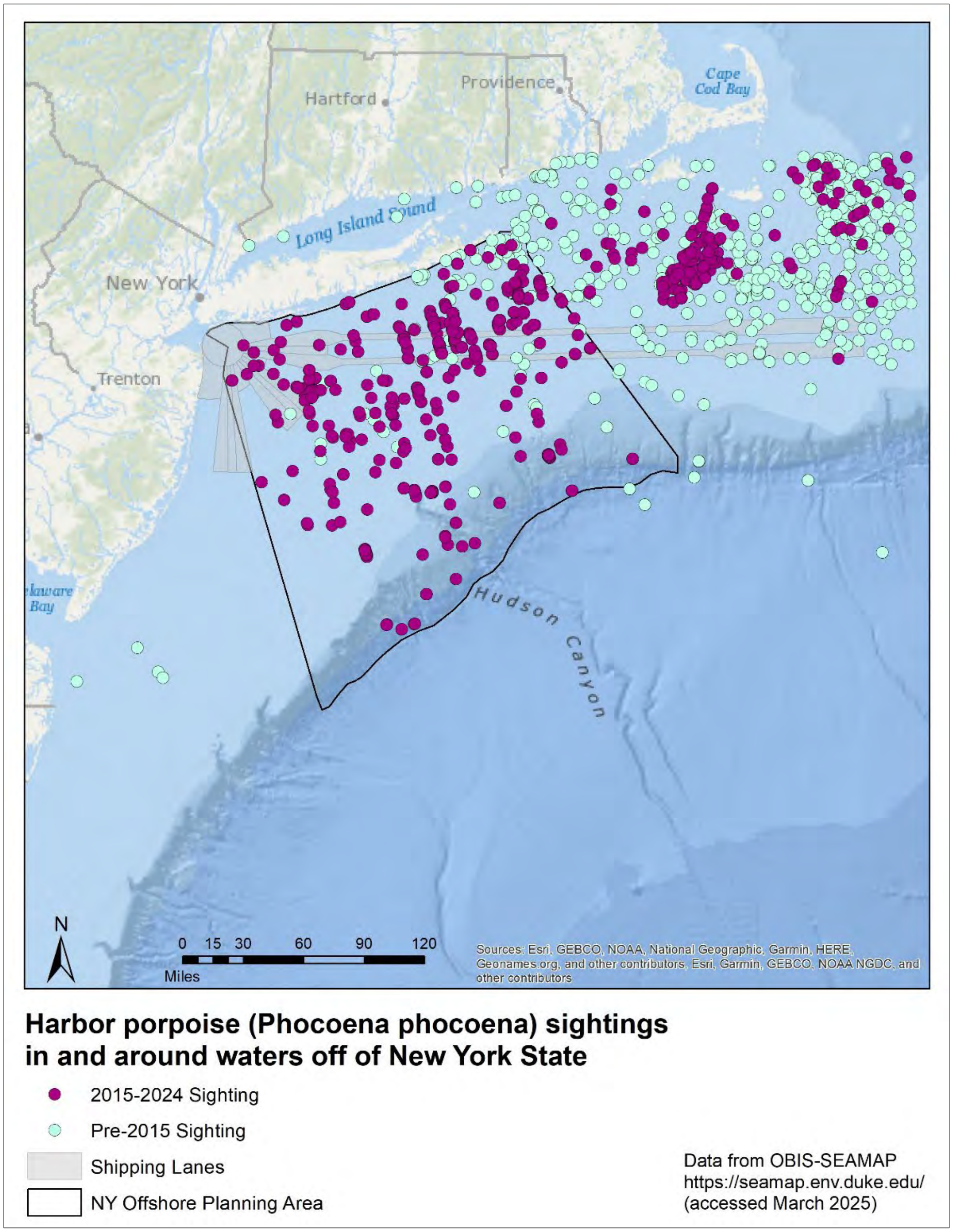

Figure 8. Records of harbor porpoises in and around New York. Data downloaded from OBIS-SEAMAP and mapped with ArcMap 10.2.

Details of historic and current occurrence:

DeKay (1842) claimed that the harbor porpoise "is common in our rivers and bays, chiefly in the spring and summer months…". DeKay also reports that harbor porpoises were "formerly so abundance on the shores of Long Island, as to have induced the inhabitants to form establishments for their capture" (p134) using 500-foot long and twenty to thirty feet deep seine nets, targeted for their blubber (i.e., oil) and skin. Miller (1899) called harbor porpoises "the commonest cetacean in New York tidal waters". Connor (1971) similarly stated that harbor porpoise frequent coastal waters and enters inlets, bays, and even rivers, with New York nearing their southern limit, but are gradually declining (p41). Connor claimed that reports in the late 1800s consisted of large schools of up to 100 or even hundreds of individuals. A number of published reports detail “schools” of harbor porpoise within the Long Island Sound “on almost any clear day”, though Connor notes that big schools were no longer seen after about 1920. The Long Island Sound reports, as well as reports from Great and Little Peconic Bays, all occurred in the summer months. There are also confirmed historical sightings in Lower New York Bay and Raritan Bay, including utilization of rivers like the Hudson. Sadove and Cardinale (1993) report that harbor porpoise became rare and that it wasn’t until the 1990s that local populations appeared to increase (Sadove & Cardinale 1993) though there is no quantitative data presented to support this claim. By that time, sightings within the bays were “usually of single animals or small groups of up to three individuals” with slightly larger groups of up to five individuals seen in the Long Island Sound (Sadove & Cardinale 1993). The largest groups are seen in the open ocean and all sightings are December through June. They reported two instances of calves, both in Long Island Sound, where harbor porpoises are suspected to be feeding. Sadove and Cardinale provided a very rough estimate of at least 50 individuals inshore during the winter months.

Generally, harbor porpoises are seen clustered mostly in the Gulf of Maine during the warmer months (June to October) and are dispersed along the coast in the cooler months (November to May) (Palka et al. 2021). Harbor porpoises inhabit the mid-Atlantic from November through May with a peak in February and March (Palka et al. 1996). However, fewer harbor porpoises are in the mid-Atlantic during the January to May period now than before 2012 (Palka et al. 2021). There seems to be a shift of the stock out of the mid-Atlantic towards the northeast in the winter. Passive acoustic monitoring in the New York-New Jersey Harbor Estuary from 2018-2020 revealed detections at low levels year-round, with seasonal peaks in presence from February through June (Rekdahl et al. 2023). The significant predictors of presence were sea surface temperature and chlorophyll-a concentration. The differences in the historical and current observations of harbor porpoise represent seasonal distribution and/or abundance shifts. AMAPPS modeling results showed that fluctuating abundance correlates with SST changes and shifts in the strength of chlorophyll fronts (Palka et al. 2021).

During the 2017-2020 DEC large whale aerial surveys, two sightings of harbor porpoise were recorded (of 16 total individuals), one in June and one in December (Tetra Tech & LGL 2020). NYSERDA’s seasonal 3-year ultra-high resolution digital aerial survey conducted from 2016-2019 recorded 424 harbor porpoise, with most of the sightings occurring in winter and spring, and a few individuals in the fall (NYSERDA 2021). Unpublished stranding data documented nearly 50 stranded harbor porpoises in New York from 2015 through 2024. From 2017 through 2021, NOAA reported that the total U.S. Atlantic coast strandings was 305 (Hayes et al. 2024). It’s important to note that stranding data underestimates the extent of mortality and serious injury since not all animals wash ashore (Hayes et al. 2024).

New York’s Contribution to Species North American Range:

Percent of North American Range in NY	Classification of NY Range	Distance to core population, if not in NY
1-25%	Core	

Column options
Percent of North American Range in NY: 100% (endemic); 76-99%; 51-75%; 26-50%; 1-25%; 0%; Choose an item
Classification of NY Range: Core; Peripheral; Disjunct; (blank) or Choose an item

IV. Primary Habitat or Community Type *(from NY crosswalk of NE Aquatic, Marine, or Terrestrial Habitat Classification Systems):*

a. Pelagic

b. Marine, Deep Subtidal

c. Estuarine, Deep Subtidal

Habitat or Community Type Trend in New York

Habitat Specialist?	Indicator Species?	Habitat/ Community Trend	Time frame of Decline/Increase
No	Yes	Unknown	

Column options
Habitat Specialist and Indicator Species: Yes; No; Unknown; (blank) or Choose an item
Habitat/Community Trend: Declining; Stable; Increasing; Unknown; (blank) or Choose an item

Habitat Discussion:

Harbor porpoises are highly mobile and can be found in temperate waters throughout the Northern Hemisphere (Braulik et al. 2023). They are found most frequently in continental shelf waters (Read 1999); only 0.6% of harbor porpoise documented by the Cetacean and Turtle Assessment Program (CETAP) surveys were found deeper than 2000 m (CETAP 1982). Harbor porpoise are often found in coastal bays and waters less than 200 m deep (Braulik et al. 2023), although they are capable of diving to depths of at least 400 m (Nielsen et al. 2018).

Harbor porpoises are well-adapted with thick blubber to cold water and do not typically inhabit water warmer than 16°C (Gaskin 1984, Koopman 1998, Koopman et al. 2002, McLellan et al. 2002). Like all cetaceans, harbor porpoise rely on sound in all aspects of their lives. They are highly acoustic animals that produce short ultrasonic (e.g., high-frequency; 130 kHz peak frequency) clicks nearly nonstop to navigate and echolocate prey (Akamatsu et al. 2007, Linnenschmidt et al. 2013). Modeling suggests that important foraging ground areas include low salinity levels, high chlorophyll a concentration, low current velocity, and steep bottom slopes (Stalder et al. 2020).

The harbor porpoise is small, and thus is not capable of storing large amounts of energy (Koopman 1998). Therefore, it is believed that their distribution is probably strongly driven by the distribution of their prey. Preferred prey includes herring, capelin, and cephalopods (NMFS 2025). Atlantic herring in particular are known to be an important prey species for the GOM/BOF harbor porpoise stock (Smith & Gaskin 1974, Braulik et al 2020). Harbor porpoise can often be found in areas where oceanic processes, such as tidal currents, concentrate prey items (Johnston et al. 2005). An increase in upwelling events in the New York Bight has been documented (Murphy et al. 2021) which can lead to increased foraging opportunities, though there is inter-annual variability over time (Heim et al. 2021). There is also documented variation in distribution over time in the NY-NJ Harbor Estuary (Rekdahl et al. 2023) that may correlate to changing levels of anthropogenic noise.

Migration of harbor porpoise populations varies. In the Western North Atlantic, during fall (October-December) and spring (April-June), they are widely dispersed along the continental shelf from New Jersey to Nova Scotia (Palka 2019). During winter (January-March), there are “intermediate densities” between North Carolina and New Jersey and “lower densities” between New York and New Brunswick. Overall, there “does not appear to be a temporally coordinated migration or a specific migratory route to and from the Bay of Fundy region” (Palka 2019). Most harbor porpoise that stranded in Atlantic Canada from 1988 to 2011 were found between May and September (Fenton et al. 2017).

In New York, 15 years of surveys by Okeanos Foundation from the 1970s to 1990s found harbor porpoises in a variety of locations. Harbor porpoise can occasionally be seen in the open ocean (12 or more miles from shore), where group size typically ranges from single animals to groups of over twelve (Sadove & Cardinale 1993). These groups are most frequently seen during the months of April and May (Sadove & Cardinale 1993). In Long Island Sound, groups of up to five animals can be seen most often from January through March (Sadove & Cardinale 1993). Harbor porpoise have also been sighted in Peconic Bay, Block Island Sound, Gardiners Bay and Great South Bay (Sadove & Cardinale 1993).

V. Species Demographics and Life History

Breeder in NY?	Non-breeder in NY?	Migratory Only?	Summer Resident?	Winter Resident?	Anadromous/ Catadromous?
Unknown	Choose an item.	Choose an item.	Choose an item.	Yes	Choose an item.

Column options
First 5 fields: Yes; No; Unknown; (blank) or Choose an item
Anadromous/Catadromous: Anadromous; Catadromous; (blank) or Choose an item

Species Demographics and Life History Discussion *(include information about species life span, reproductive longevity, reproductive capacity, age to maturity, and ability to disperse and colonize):*

Harbor porpoises have an estimated lifespan of 24 years (NMFS 2025). In a sample of 239 gillnet-killed harbor porpoise, the oldest individual was 17 years old and the majority were less than 12 years old (Read & Hohn 1995). Generations were calculated as 8.3 years for a growing population and 11.0 years for a stable population, with mature individuals making up more than half of the population (COSEWIC 2022). Harbor porpoises have been characterized as living a “fast life” because they mature earlier, have shorter gestation and lactation periods, reproduce annually, and have shorter life spans than most other cetaceans (Read & Hohn 1995). Reproduction, via a promiscuous mating system, is seasonal, with ovulation and conception occurring in late spring or early summer (Borjesson & Read 2003). Females reach sexual maturity between three and four years of age, and most mature females have a calf each year (Read and Hohn 1995). This means most of a female’s adult life is spent being both pregnant and lactating (Read 1999). Gestation is 10 to11 months, with calves born between May and August and nursed for 6 to 10 months (Hammond et al. 2008). By three months of age calves have tripled their body size and started taking solid food (Read 2001; Smith & Read 1992).

Harbor porpoises are unable to fast and need to feed frequently to maintain good body condition (Yasui & Gaskin 1986, Read & Westgate 1997, Lockyer 2007). At the same time, Read (2001) found that there were no effects of variation in prey (e.g., herring) biomass on the body condition of fecundity of mature females over a three-decade period when prey biomass was at its lowest. A recent study suggests that due to the harbor porpoise’ generalist diet, high foraging rate, and ability to efficiently capture prey, they are resilient to lost foraging opportunities (Booth 2019). Resource competition could be a factor in harbor porpoise distribution, but their ability to switch prey may provide some adaptability to shifts in prey. However, original (i.e., preferred) prey species do not necessarily reappear in harbor porpoise diets. By not reverting to their ideal prey species, and considering their high metabolic rate, harbor porpoise may also be vulnerable to prey depletion (NAMMCO 2019).

In New York, there is much uncertainty about harbor porpoise life history. Most harbor porpoise sightings and strandings in the state occur between the months of December and June (Sadove & Cardinale 1993, Polachek et al 1995). It is unknown if harbor porpoise take up short-term residence when in state waters or if they are just moving through (Sadove & Cardinale 1993). There have been calves sighted on at least two instances in Long Island Sound, but it is currently unknown if calves are born in state waters or not (Sadove & Cardinale 1993). Satellite tracking of individual harbor porpoise has shown that immature animals have larger home ranges than mature porpoises (Sveegaard et al. 2011). Harbor porpoise caught in herring weirs in Canada were outfitted with satellite tags to analyze movements (Read & Westgate 1997). Of the nine tracked individuals, five moved out of the Bay of Fundy (where they were initially captured) and into the Gulf of Maine; at least one individual who entered the Gulf of Maine moved extensively throughout it (Read & Westgate 1997).

Disease appears to play a major role in harbor porpoise natural mortality. Stranded individuals in the United Kingdom were most frequently killed by fisheries interactions and parasitic and bacterial pneumonia (Baker & Martin 1992). Baker and Martin (1992) found that parasitoses of various organs was very common and documented 295 diseases and other lesions in the 41 harbor porpoises examined. Jauniaux et al. (2002) reported that harbor porpoise that stranded in Belgium and France died most often from emaciation, severe parasitosis, and pneumonia. They observed lung oedema, enteritis, hepatitis, gastritis, and encephalitis in the carcasses examined (Jauniaux et al. 2002). Fenton (2017) investigated harbor porpoise necropsy records from 1988 to 2011 on both Canadian coasts. Cause of death was determined in half of the cases and the leading cause was infectious disease. In the Atlantic, infectious disease was followed by emaciation/starvation, mortality of dependent calves, and anthropogenic causes. Dzido (2021) documented 42 parasite taxa in North Atlantic harbor porpoise. Predation also apparently plays a role in natural mortality. Bottlenose dolphins, grey seals, and white sharks have all been shown to prey upon harbor porpoises (Ross & Wilson 1996; Cotter et al. 2012; Haelters et al. 2012; Arnold 1972). By far the greatest threat to harbor porpoises is mortality and serious injury from interaction with commercial fishing gear (Hayes et al. 2024).

VI. Threats *(from NY 2015 SWAP or newly described)*

Harbor porpoises were historically hunted through most of their range (NAMMCO 2019). In the 18th and 19th centuries, harbor porpoises were caught in the Gulf of Maine and Bay of Fundy in small, localized hunts, while in Europe (e.g., Denmark and Poland) harbor porpoises were hunted until World War II (Braulik et al. 2023). Some harbor porpoises were also taken in the Faroe Islands in the late 1980s, and most recently in 1996, but total catches barely exceeded 10 (NAMMCO 2019). Currently, only Greenland still actively hunts harbor porpoise for their meat and skin (NAMMCO 2019). Catch totals are reported to the North Atlantic Marine Mammal Commission (NAMMCO 2021). From 2020 through 2023 the average was 3,000 harbor porpoises taken annually (NAMMCO 2021).

The largest threat to harbor porpoise throughout their range in the U.S. is incidental bycatch in commercial fisheries. The estimated human-caused morality and serious injury for the GOM/BOF stock in U.S. waters in U.S. commercial fisheries from 2017 through 2021 is 145 (Hayes et al. 2024). In New York, harbor porpoise are primarily threatened by the gillnet fishery, though harbor porpoise are also taken in trawl fisheries (Hayes et al. 2024). Annual estimated bycatch mortality for harbor porpoise in the Mid-Atlantic gillnet fishery, Northeast sink gillnet fishery, and Northeast Bottom Trawl fishery from 2017 – 2021 can be found in Table 2. Harbor porpoise bycatch in the Mid-Atlantic occurs primarily from December to May in waters off New Jersey and far less frequently south of New Jersey (Byrd et al. 2014, Hayes et al. 2024).

Table 2. Summary of the incidental mortality of Gulf of Maine/Bay of Fundy harbor porpoise by U.S. commercial fishery. Hayes et al. 2024.

Fishery	Years	Est. Combined Mortality	Est. CVs	Mean Combined Annual Mortality
Northeast Sink Gillnet	2017	136	0.28	131 (0.19)
	2018	92	0.52	
	2019	195	0.22	
	2020	121	0.22	
	2021	111	0.19	
Mid-Atlantic Gillnet	2017	9.1	0.95	10 (0.56)
	2018	0	0	
	2019	13	0.51	
	2020	16	0.63	
	2021	10	0.65	
Northeast Bottom Trawl	2017	0	0	3.9 (0.44)
	2018	0	0	
	2019	11	0.63	
	2020	3.6	0.63	
	2021	5.0	0.92	
Total				145 (0.18)

The Potential Biological Removal (PBR) calculated by NMFS (2024) is 649. PBR is defined by the Marine Mammal Protection Act as "the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population." As previously noted, total mortality and serious injury for the stock is not less than 10% of PBR and therefore cannot be considered insignificant and approaching zero (Hayes et al. 2024).

Habitat suitability is one of the primary threats to harbor porpoise, especially for a species that is found in nearshore areas and inland waters. Climate change has led to temperature and current shifts throughout the North Atlantic Ocean, affecting both harbor porpoises and their prey. Changes in prey density may alter an area's suitability for harbor porpoise, and suitable prey resources are a limiting factor in harbor porpoise distribution (Johnston et al. 2005, Sveegard et al. 2012). Harbor porpoises are known to exploit prey-rich patches over the short-term before engaging in larger scale movements over longer periods (Nielsen et al., 2018; Read & Westgate, 1997) so they may have some ability to recover following lost foraging opportunities (Booth 2019). However, prey species down to copepods have already shifted their distribution over time due to climate change (Head & Pepin 2010, Nye et al. 2009). Porpoise in West Greenland have switched feeding habits and increased residence time since the

1990s, presumably because of climate change (Heide-Jorgensen et al. 2011). The effects of climate change on both harbor porpoise and their prey can be expected to vary greatly by location, and further research is needed to determine effects in New York.

Thorne et al. (2022) examined the climate response of odontocetes (e.g., toothed cetaceans) in changes to distribution and relative abundance based on stranding data. They found a decrease in the proportion and a significant poleward shift in the distribution of harbor porpoise strandings. These changes are linked with rapidly warming waters in the Northeast United States which has shifted the distribution of cold-water species like harbor porpoise north and out of the US. The center of distribution was at or approaching the northern edge of the Northeast US in 2020 and the average observed poleward distance moved for harbor porpoise was 428 kilometers, which exceeded climate velocity estimates and indicates that shifts are occurring faster than expected. Another study that used sightings data from line transect surveys from 2010 through 2017 found that the weighted centroid of harbor porpoise core habitat moved 397 km towards the northeast during winter and less than 20 km in the other seasons (Chavez-Rosales et al. 2022).

Harbor porpoise, like other cetaceans, rely on sound, especially for for communication and also for echolocation, which they use to find prey. Ross (1987,1993) estimated that the ambient noise level in the oceans rose 10 dB from 1950 – 1975 because of shipping and background noise has been estimated to be increasing by 1.5 dB per decade at the 100 Hz level since propeller-driven ships were invented (NRC 2003). The oceans are getting progressively louder, and the waters off of New York are no exception (BRP 2010). Acoustic monitoring in the New York Bight region in 2008 and 2009 found elevated levels of background noise, due in large part to shipping traffic (BRP 2010). There is evidence that ships disturb porpoises from several kilometers away (Barlow et al. 1988; Frankish et al. 2023; Wisniewska et al., 2018; Benhemma-Le Gall et al., 2021). There is also evidence that harbor porpoises leave an area completely, decrease vocalizations, or only reappear up to 20 minutes after a ship has passed (Frankish et al. 2023; Oakley et al. 2017; Roberts et al. 2019).

Various construction activities with both impulsive and broad band noise have been found to have a negative effect on foraging (Todd et al. 2015, Todd 2022). Benhemma-Le Gall et al. (2021) documented an 8-17% decline in occurrence during pile driving and other construction activities, with displacement up to 12 kilometers from pile driving and up to 4 kilometers from construction vessels. Pigeault (2024) found that harbor porpoises avoided areas with heavy or frequent vessel traffic up to distances of 9 kilometers. The area avoided was sometimes due to a number of stationary vessels, such as anchorage areas. Interestingly, the predicted vessel sound levels did not correlate strongest with number of porpoises; the number of ships and average approach distance over time were the best predictors of presence. The authors concluded that we can expect that “frequent close ship passages acts as an accumulation of disturbances over time and have a more pronounced effect on the distribution of porpoises”. Disturbances such as vessels may trigger negative behavioral and physiological responses, possibly leading to health effects on a population level (Frankish et al. 2023; Wisniewska et al. 2018; Dyndo et al. 2015, Pigeault 2024). There is also the potential that certain levels of anthropogenic noise could mask harbor porpoise calls and echolocation clicks, potentially decreasing foraging success (Richardson et al. 1995). There are, however, differences in hearing threshold and tolerance of individual harbor porpoises (Dyndo et al., 2015; Kastelein et al., 2017). Studies have found that harbor porpoises quickly went back to their natural behavior once a ship passed (Hao et al. 2024).

High levels of noise could have several effects on marine mammals. Exceptionally loud noises, like active military sonar and seismic surveys, have led to temporary and permanent threshold shifts and even death by acoustic trauma in certain species of cetaceans (Richardson et al. 1995). More commonly, anthropogenic noise can cause avoidance of an area and alterations in behavior (Richardson et al. 1995, Lucke et al. 2009). Olesiuk et al. (2002) found that harbor porpoise abundance dropped significantly up to three kilometers from areas where Acoustic Harassment Devices, a marine mammal deterrent often used by the aquaculture industry that emits a loud noise, were used.

The threats from alternative energy development, such as offshore wind, are largely due to anthropogenic noise. Studies have shown that harbor porpoise abundance has decreased during the construction of wind farms (Carstensen et al. 2006, Dahne et al. 2013, Teilmann and Carstensen 2012, Tougaard et al. 2006, Tougaard et al. 2009). Operational wind turbines produce more constant, low levels of noise (Madsen et al. 2006). While these levels are generally not considered loud enough to severely impact marine mammals, Tougaard et al. (2005) found that only a partial recovery of harbor porpoise occurred over two years after construction of a wind farm. In contrast to this, Scheidat et al. (2011) documented an increase in harbor porpoise acoustic activity in the wind farm, perhaps because of increased food availability and/or decreased vessel activity in the wind farm. Further research to determine the effects of wind farms on harbor porpoise from the GOM/BOF stock is needed, as fine-scale shifts to adapt may impact the species (Benjamins et al. 2017).

There is some recent concern about contaminant levels in odontocetes (toothed whales) such as the harbor porpoise. Odontocetes generally feed at a higher trophic level than most baleen whales, so they are more at risk of bioaccumulation of various contaminants (Pierce et al. 2008). Blubber samples were taken from harbor porpoise from 1989 to 1991, and analysis by Westgate et al. (1997) showed the porpoise from the GOM/BOF stock had the highest contaminant levels of the animals examined (which included individuals from the Gulf of St. Lawrence and Newfoundland). The levels of PCBs were the highest, followed by chlorinated bornanes, DDT, and chlordanes (Westgate et al. 1997, Westgate et al. 1999). Males had higher levels than females, who offloaded contaminants to offspring through the placenta and lactation (Westgate et al. 1997). The porpoise in this study had lower levels of PCBs and DDT than documented in porpoise from the 1970s, and it is currently unknown if a decreasing trend has continued. Other studies have found consistent vulnerability of harbor porpoise to contaminants, including that an increase in PCBs in the blubber of harbor porpoise increased the risk of infectious disease mortality (Hall et al. 2006, Aguilar et al. 1999, Aguilar et al. 2002, O’Shea 1999, Reijnders et al. 1999). Many of these contaminants have been linked to deleterious health effects and decreased reproductive success in mammal species (Westgate et al. 1997).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent*	Severity*	Immediacy*	Trend	Certainty
2. Agriculture & Aquaculture	2.4 Marine & Freshwater Aquaculture	2.4.1 Marine finfish aquaculture	Small	Slight	Immediate	Intensifying	Moderate
2. Agriculture & Aquaculture	2.4 Marine & Freshwater Aquaculture	2.4.4 Algae cultivation	Small	Slight	Immediate	Intensifying	Moderate
2. Agriculture & Aquaculture	2.4 Marine & Freshwater Aquaculture	2.4.5 Marine shellfish cultivation	Small	Slight	Immediate	Intensifying	Moderate
3. Energy Production & Mining	3.1 Oil & Gas Drilling	3.1.2 Offshore oil development	Large	Slight	Immediate	Unknown	High
3. Energy Production & Mining	3.1 Oil & Gas Drilling	3.1.5 Offshore natural gas development	Large	Slight	Immediate	Unknown	High
3. Energy Production & Mining	3.3 Renewable Energy	3.3.2 Wind farms	Large	Moderate	Immediate	Intensifying	High
4. Transportation & Service Corridors	4.3 Shipping Lanes	4.3.1 Shipping	Large	Serious	Immediate	Intensifying	High
4. Transportation & Service Corridors	4.3 Shipping Lanes	4.3.2 Dredging of shipping lanes	Small	Slight	Immediate	Stable and ongoing	High
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	5.4.1 Recreational or subsistence fishing	Large	Moderate	Immediate	Stable and ongoing	High
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	5.4.2 Commercial fishing	Pervasive	Moderate	Immediate	Stable and ongoing	High
6. Human Intrusions & Disturbance	6.1 Recreational Activities	6.1.4 Recreational boating	Large	Moderate	Immediate	Stable and ongoing	High
6. Human Intrusions & Disturbance	6.2 War, Civil Unrest & Military Exercises	6.2.3 Military exercises	Restricted	Slight	Immediate	Stable and ongoing	High
8. Invasive & Other Problematic Species	8.1 Invasive Non-Native Plants & Animals	8.1.3 Aquatic animals	Small	Slight	Near-term	Stable and ongoing	Low

8. Invasive & Other Problematic Species	8.2 Problematic Native Plants & Animals	8.2.7 Ectoparasites	Pervasive	Moderate	Near-term	Intensifying	Moderate
8. Invasive & Other Problematic Species	8.4 Pathogens	Choose an item.	Pervasive	Moderate	Near-term	Intensifying	Moderate
9. Pollution	9.1 Domestic & Urban Wastewater	Choose an item.	Large	Moderate	Near-term	Stable and ongoing	Moderate
9. Pollution	9.2 Industrial & Military Effluents	Choose an item.	Large	Moderate	Near-term	Stable and ongoing	Moderate
9. Pollution	9.3 Agricultural & Forestry Effluents	Choose an item.	Restricted	Slight	Near-term	Stable and ongoing	Moderate
9. Pollution	9.4 Garbage & Solid Waste	9.4.4 Drifting plastic and entanglement rubbis	Pervasive	Slight	Immediate	Stable and ongoing	High
9. Pollution	9.6 Excess Energy	9.6.3 Noise pollution	Pervasive	Serious	Immediate	Intensifying	High
11. Climate Change	11.1 Habitat Shifting & Alteration	Choose an item.	Pervasive	Serious	Immediate	Intensifying	High
11. Climate Change	11.2 Changes in Geological Regimes	Choose an item.	Pervasive	Slight	Near-term	Intensifying	Moderate
11. Climate Change	11.3 Changes in Temperature Regimes	Choose an item.	Pervasive	Serious	Immediate	Intensifying	High

Table 2. Threats to harbor porpoise.

Are there regulatory mechanisms that protect the species or its habitat in New York?

Yes: _X__ **No:** _____ **Unknown:** _____

If yes, describe mechanism and whether adequate to protect species/habitat:

The harbor porpoise, like all other marine mammals, is protected in the United States by the Marine Mammal Protection Act (MMPA; 1972). Harbor porpoise habitat is also protected under the Environmental Conservation Law (ECL) of New York. Article 17 of the ECL works to limit water pollution and Article 14 presents the New York Ocean and Great Lakes Ecosystem Conservation Act. This act is responsible for the conservation and restoration of coastal ecosystems “so that they are healthy, productive and resilient and able to deliver the resources people want and need.” Whether these are adequate to protect the habitat of harbor porpoise is currently unknown.

Harbor porpoise in the western North Atlantic are also protected by the Harbor Porpoise Take Reduction Plan (HPTRP), which seeks to decrease harbor porpoise mortality in gillnet gear (NMFS 2015a, NMFS 2015b. Prior to the Plan’s December 1998 implementation, bycatch morality for the Gulf of Maine was estimated to be 1,200 to 2,900 individuals per year (Barlow & Hanan 1995) and NMFS estimated the average annual bycatch morality to be 358 in the Mid-Atlantic gillnet fishery. The HPTRP includes both New England and Mid-Atlantic specific time-area closures and gear modifications; New York waters fall under both the New England and Mid-Atlantic plans (see figures below). Fishermen must complete a NOAA Fisheries training program to use the required pingers (NMFS 2015b). Pingers are an acoustic deterrent and must be attached at each end of the gillnet panel string and between nets in a string (NMFS 2015b). Palka et al. (2008) documented a decrease in bycatch of harbor porpoises of 50 – 70% where pingers were used correctly. However, this research also found that bycatch of porpoises was greater in nets where too few pingers were used than in nets with no pingers. The estimated pinger compliance from 1999 to 2007 found that only 20 – 40% of observed hauls used the correct amount of pingers (Palka et al. 2008).

In general, total bycatch of harbor porpoise in the US Atlantic has fallen significantly to below PBR. From 2006 – 2010, the average annual mortality and serious injury was estimated to be 275 in the Mid-Atlantic gillnet fishery (NMFS 2013). However, adherence to different parts of the HPTRP has varied since their implementation. The average full pinger compliance rate between 2017 and 2022 was just under 70% (NMFS 2024b). Specifically, in 2022, Southern New England pinger compliance was around 49%. The bycatch estimate during the same time period was about 21%. No bycatch was observed in 2023 but trip monitoring compliance is still relatively low. Adherence to gear modifications in the Mid-Atlantic increased in 2022. Also in 2022, winter and summer had nearly equal bycatch and no bycatch of any species was observed in the Mid-Atlantic during monitored trips.

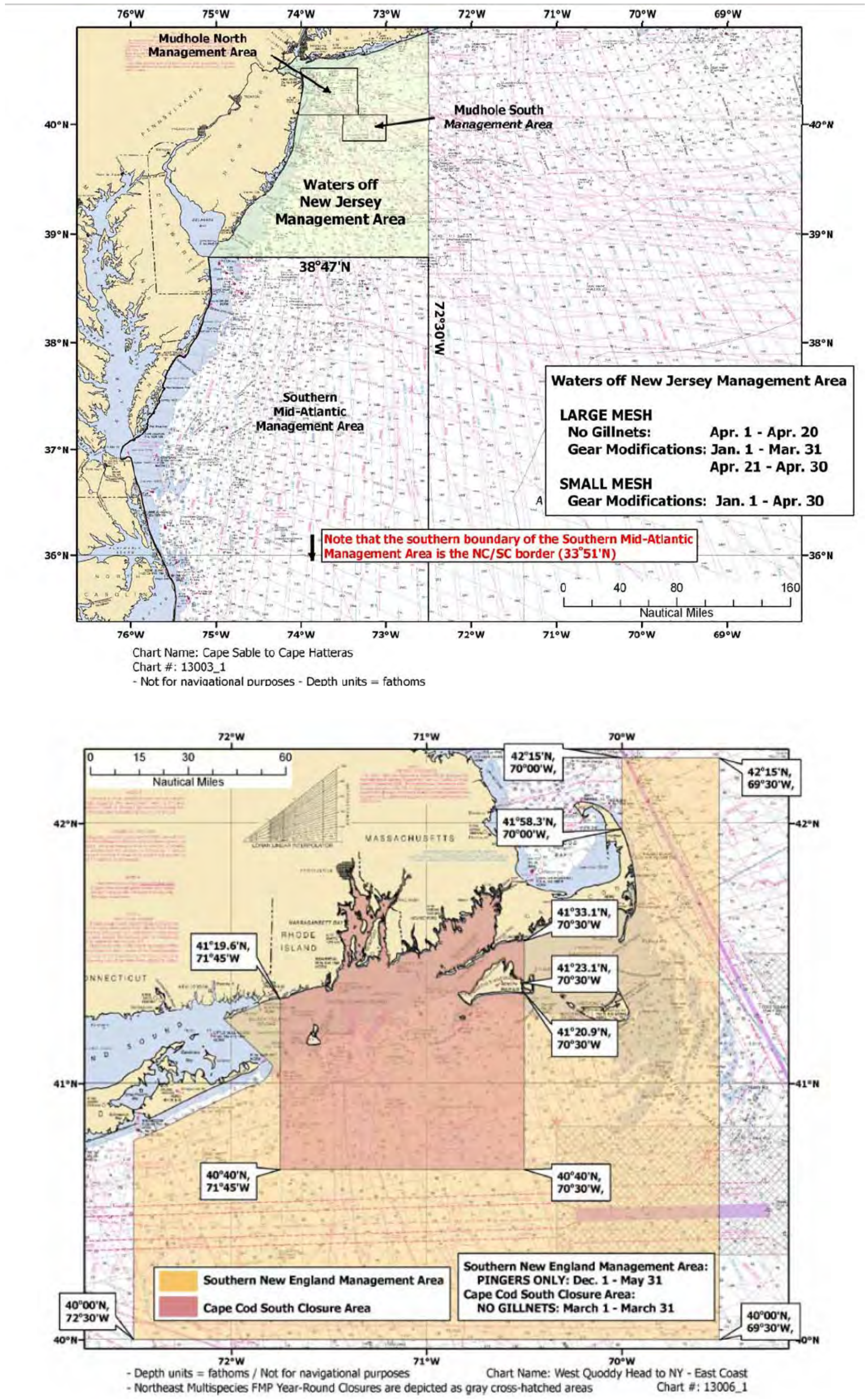

Figure 8. Management areas including New York waters as defined by the Harbor Porpoise Take Reduction Plan (HPTRP; NMFS 2015a, NMFS 2015b).

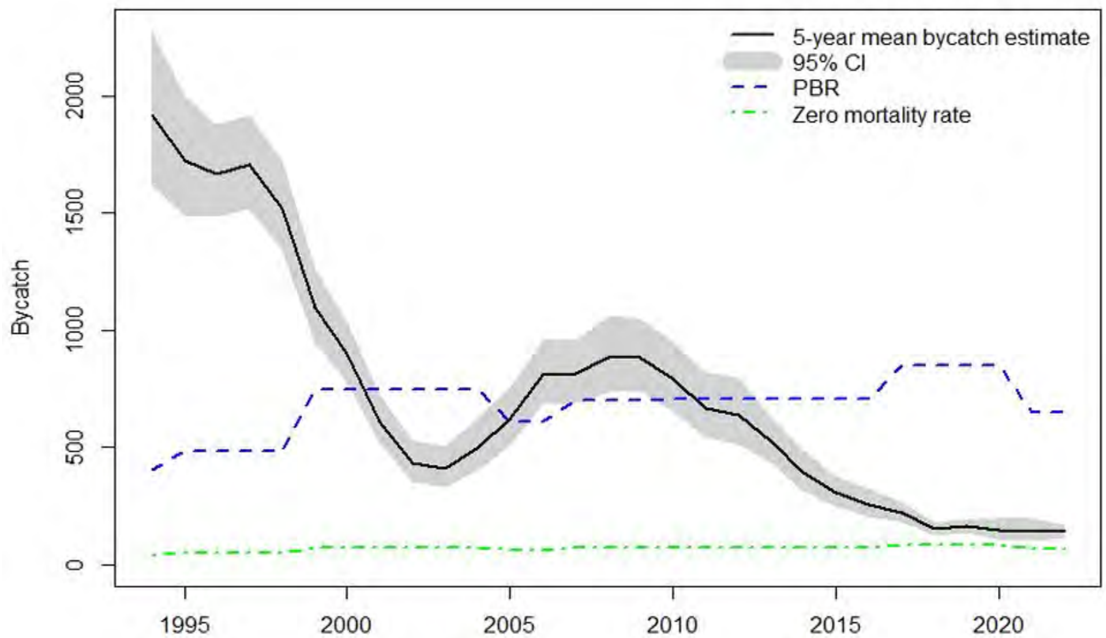

Figure 9. Total 5-year mean estimated bycatch of Gulf of Maine/Bay of Fundy harbor porpoise since 1994 (NMFS 2024).

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

Continued monitoring of bycatch rates is needed to determine if the HPTRPs are having a prolonged, significant effect on harbor porpoise mortality and bringing the annual human-caused mortality and serious injury to a level below 10% of PBR. Additionally, research on improved gear technology and potential deterrent devices is warranted to further reduce harbor porpoise bycatch. The Harbor Porpoise Take Reduction Team (HPTRT) meets annually, at minimum, to discuss the status of the stock, the effectiveness of the TRP, the levels of compliance and monitoring, and other related topics, including any necessary changes to the TRP based on the best available science.

Harbor porpoise use of New York waters is poorly understood. Long-term surveys should be developed and implemented to get a better idea of where and when harbor porpoise can be found in state waters. Monitoring might best be done using a combination of techniques such as shipboard and aerial (i.e., visual) surveys and passive acoustic monitoring. There are pluses and minuses to all of these methods and they may be used best in combination (Kraus 1983; Schlesinger & Bonacci 2014).

If it is known where and when harbor porpoise are occurring in New York waters, more effective management and conservation strategies can be implemented. For example, areas of minimal occupancy can be proposed for projects such as offshore wind farms and construction activities that may drive animals away could be performed during seasons when harbor porpoise are present in small numbers.

New York Marine Rescue Center (NYMRC) and the Atlantic Marine Conservation Society (AMSEAS) provide stranding response for marine mammals, including the harbor porpoise. These groups respond to all strandings and conduct necropsies on dead animals. Stranding response data provide essential information to understanding the species' presence in New York and the health of the individuals that strand here. Continued funding of New York stranding response organizations is a vital component of successful marine mammal conservation. Currently, rehabilitation of harbor porpoises is not done in New York.

The harbor porpoise would benefit greatly from further research. Little is known about general life history and demography of this species in New York, and the effects of the threats in state waters are largely unknown. Further research on which stocks the mid-Atlantic harbor porpoises are from would be beneficial to enhance understanding of the individuals utilizing New York waters, as would long-term studies on the movements of this population to further document habitat use. If harbor porpoise movements are better understood, states could collaborate to provide more effective management and conservation across spatial boundaries. Further research into the current and predicted impacts of climate change is particularly important.

Complete Conservation Actions table using IUCN conservation actions taxonomy at link below. Use headings 1-6 for Action Category (e.g., Land/Water Protection) and associated subcategories for Action (e.g., Site/Area Protection): ***https://www.iucnredlist.org/resources/conservation-actions-classification-scheme***

Action Category	Action	Description
C.8 Research and Monitoring	C.8.1.1.0 Field Research	Conduct research on general life history/demography of harbor porpoise in NY
C.7 Legislative and Regulatory Framework or Tools	C.7.1.3.0 Create, amend, or influence regulation	Conduct seasonal fishery closures
A.1 Direct Habitat Management	A.1.3.0.0 Mitigate human environmental impact	
A.2 Direct Species Management	A.2.1.0.0 Stewarding wild individuals	
A.2 Direct Species Management	A.2.1.5.0 Prevent mortality or injury from humans	

Table 3. Recommended conservation actions for harbor porpoise.

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