Species Status Assessment

Class: **Mammalia**
Family: **Phocoenidae**
Scientific Name: ***Phocoena phocoena***
Common Name: **Harbor porpoise**

Species synopsis:

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 (Hammond et al. 2008) and *P. p. relicta* in the Black Sea (Hammond et al. 2008). Four populations of harbor porpoise are generally recognized in the western North Atlantic (Gaskin 1984, 1992; Wang et al. 1996; Westgate et al. 1997; Westgate and Tolley 1999; Johnston 1995; Read and 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 New York and other mid-Atlantic waters are from the Gulf of Maine 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, NMFS 2013).

In the eastern U.S. EEZ, harbor porpoises are found concentrated in the northern Gulf of Maine and Bay of Fundy in the summer. In the spring and fall, harbor porpoises are typically widely dispersed from New Jersey to Maine. In the winter, the greatest concentrations of harbor porpoise can be found from New Jersey to North Carolina, with animals also found from New York to Canada (NMFS 2013). Sadove and Cardinale (1993) found that Harbor porpoises were most commonly in New York waters from December – June in the late 1980s to early 1990s. They found that Harbor porpoise were sighted 12 miles or more offshore during March and April, while they were commonly seen inshore from March – June (Sadove and Cardinale 1993). They also found that sightings in Long Island Sound frequently occurred between January and March; while sightings in Great South Bay and eastern bays typically fell during April and May (Sadove and Cardinale 1993). Current population trends are unknown.

I. Status

a. Current and Legal Protected Status

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

ii. New York Special Concern; SGCN

b. Natural Heritage Program Rank

i. Global G4G5

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

Other Rank:
NY National Heritage Program Watch List
CITES Appendix II
Special Concern, Committee on the Status of Endangered Wildlife in Canada

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 (NMFS 2001). In 1993, NMFS published a proposed rule listing the stock as threatened, based on the fact that bycatch in gillnet gear was a significant threat to the population, and that no regulations were currently in place to attempt to reduce bycatch (NMFS 1993). In 1999, NMFS determined that listing the stock under the ESA was not warranted, and the GOM/BOF stock was maintained as a candidate species (NMFS 2001).

As a result of the settlement of Center for Marine Conservation et al. v. Daley et al (Civ. No. 1:98CV02029 EGS), NMFS initiated a status review of the GOM/BOF harbor porpoise stock, which was published in 2001 (NMFS 2001). As a result of this status review, NMFS determined that listing of the stock under the ESA was not warranted, and the stock was removed from the candidate species list (NMFS 2001). NMFS (2013) considers this stock to be a strategic stock, as the number of human-caused mortalities and serious injuries each year exceeds the Potential Biological Removal (as described by the MMPA Sec. 3 16 U.S.C. 1362 as a product of the minimum population size, one-half the maximum productivity rate, and a recovery factor). The western North Atlantic population of harbor porpoise is currently designated a species of special concern under the Committee on the Status of Endangered Wildlife in Canada, and is being reviewed as a possible addition to the Canadian Species at Risk Act under the same title (DFO 2013). Harbor porpoise is also designated a species of special concern by the state of New York.

II. Abundance and Distribution Trends

a. North America

i. Abundance

____ declining ____increasing _____stable __X__ unknown

ii. Distribution:

____ declining ____increasing _____stable __X__ unknown

Time frame considered: ___Trends for most stocks never analyzed. Evidence for declining population since the 1970s in inland Washington waters (Osmek et al. 1996), and also in southeast Alaska since the 1990s (Dalheim et al. 2012).________

b. Regional

i. Abundance

____ declining ____increasing ____stable __X__ unknown

ii. Distribution:

____ declining ____increasing ____stable __X__ unknown

Regional Unit Considered:________Northeast______________________________________
Time Frame Considered: ___Trends never analyzed._____________________________

c. Adjacent States and Provinces

CONNECTICUT Not Present _______ No data _______

i. Abundance

____ declining ____increasing ____stable __X__ unknown

ii. Distribution:

____ declining ____increasing ____stable __X__ unknown

Time frame considered: __Trends never analyzed for this species.____________
Listing Status: ___Species of special concern_________________ SGCN? __Yes_____

MASSACHUSETTS **Not Present** _______ **No data** _______

i. Abundance

____ declining ____increasing ____stable __X__ unknown

ii. Distribution:

____ declining ____increasing ____stable __X__ unknown

Time frame considered: ___Trends never analyzed.___________________________
Listing Status: ___Not listed.__________________________________SGCN? __Yes___

NEW JERSEY **Not Present** _______ **No data** _______

i. Abundance

____ declining ____increasing ____stable __X__ unknown

ii. Distribution:

____ declining ____increasing ____stable __X__ unknown

Time frame considered: ___Trends never analyzed.___________________________
Listing Status: ___Special Concern______________________________SGCN? __Yes___

ONTARIO **Not Present** __X__ **No data** _______

i. Abundance

____ declining ____increasing ______stable ____unknown

ii. Distribution:

____ declining ____increasing ______stable ____unknown

Time frame considered: ____
Listing Status: ____

PENNSYLVANIA **Not Present __X__** **No data _______**

i. **Abundance**

____ declining ____increasing ____stable ____unknown

ii. **Distribution:**

____ declining ____increasing ____stable ____unknown

Time frame considered: ____
Listing Status: _________________________________ SGCN? __________

QUEBEC **Not Present _________** **No data _______**

i. **Abundance**

____ declining ____increasing _____stable __X__ unknown

ii. **Distribution:**

____ declining ____increasing ______stable __X__ unknown

Time frame considered: ___Trends not analyzed.______________________________
Listing Status: ___Being reviewed for possible addition as species of special concern.

RHODE ISLAND **Not Present___** **No data ________**

i. **Abundance**

____ declining ____increasing ____stable __X___unknown

ii. **Distribution:**

____ declining ____increasing ____stable __X___unknown

Time frame considered: ____Trends not analyzed.______________________________
Listing Status: _____Not listed.____________________________ SGCN? ___No________

VERMONT **Not Present__X__** **No data ________**

iii. Abundance

____ declining ____increasing ____stable ____unknown

iv. Distribution:

____ declining ____increasing ____stable ____unknown

Time frame considered: ____

Listing Status: ___________ _____________________________________ SGCN? ___________

d. NEW YORK **No data _______**

i. Abundance

____ declining ____increasing ____stable __X__ unknown

ii. Distribution:

____ declining ____increasing ____stable __X__ unknown

Time frame considered: ___Trends never analyzed.________________________________

Listing Status: __Species of Special Concern _________ ________ SGCN? ____Yes_______

Monitoring in New York.

There are no known current monitoring activities or regular surveys in New York. Most information on harbor porpoises coastwide comes from bycatch data from NOAA observers, stranding data and surveys by NOAA's NEFSC which are conducted only during the summer. In New York stranding data is collected by the Riverhead Foundation. No monitoring activities for Harbor Porpoises are being planned at this time.

Trends Discussion:

The worldwide population of harbor porpoise is estimated to be at least 700,000 individuals (Hammond et al. 2008). The most recent minimum population estimate of just under 62,000 individuals from North Carolina to the lower Bay of Fundy is based on surveys conducted in 2011 (NMFS 2013). It is believed that ~60% of these animals are from the Gulf of Maine 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, NMFS 2013).

Trends have not been analyzed for any of the four stocks of harbor porpoise found in the western North Atlantic. Although several abundance estimates for the GOM/BOF stock (which is the stock the majority of harbor porpoise sighted in NY waters are believed to belong to) have been calculated (Table 1), the surveys covered different areas and used different methods, so the estimates are not comparable. Gaskin (1992) mentioned that the GOM/BOF stock of harbor porpoises was in decline during the 1980s and early 1990s due to incidental catches in the gill net fishery, although he noted that this "must be used with the greatest caution." There has not been subsequent information to support this claim, and there is no recent monitoring to determine population trends.

While trend information does not currently exist for the western North Atlantic stocks of harbor porpoises, declines have been reported for several other populations. In the Black Sea, harbor porpoise populations declined as a result of legal and illegal hunting until 1991, and continue to be threatened by bycatch in fishery gear (Reeves and Notarbartolo 2006). It is believed that this threat is large enough to continue the negative population trend (Reeves and Notarbartolo 2006). The Baltic Sea stock of harbor porpoise is currently declining as a result of unsustainable levels of bycatch in gill net gear (IUCN 2008). Osmek et al. (1996) reported declines in harbor porpoise abundance in Puget Sound since the 1940s and anecdotal evidence of potential recent declines throughout inland Washington waters. Harbor porpoise in Southeast Alaska also appear to be undergoing a population decline (Dalheim et al. 2012).

Currently, the human-caused mortality and serious injury for the GOM/BOF stock of harbor porpoise is higher than the Potential Biological Removal but, as mentioned above, it is currently unknown if this is leading to a population decline.

Table 1. Summary of recent abundance estimates for the Gulf of Maine/Bay of Fundy harbor porpoise. Month, year and area covered during each abundance survey and the resulting abundance estimate (N_{best}) and coefficient of variation (CV). Table from NMFS (2013).

Month/Year	Area	N_{best}	CV
Jun-Jul 2004	GOM to lower BOF	51,520	0.65
Aug-06	S. GOM to lower BOF to Gulf of St. Lawrence	89,054	0.47
Jul-Aug 2007[a]	Scotian Shelf and Gulf of St. Lawrence	12,732	0.61
Jul-Aug 2011	North Carolina to lower Bay of Fundy	61,959	0.32

[a] A portion of this survey covered habitat of the Gulf of Maine/Bay of Fundy stock. The estimate also includes animals from the Gulf of St. Lawrence and Newfoundland stocks.

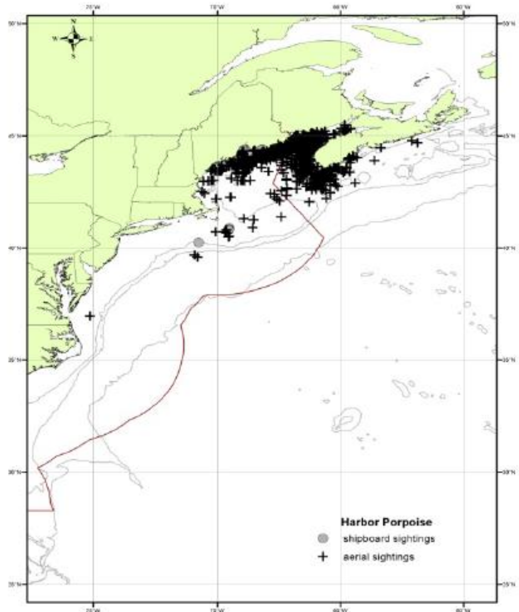


Figure 1. Distribution of harbor porpoises from NEFSC and SEFSC shipboard and aerial surveys during the summers of 1995, 1998, 1999, 2002, 2004, 2006, 2007, 2008, 2010 and 2011. Isobaths are the 100m, 1000m, and 4000m depth contours.

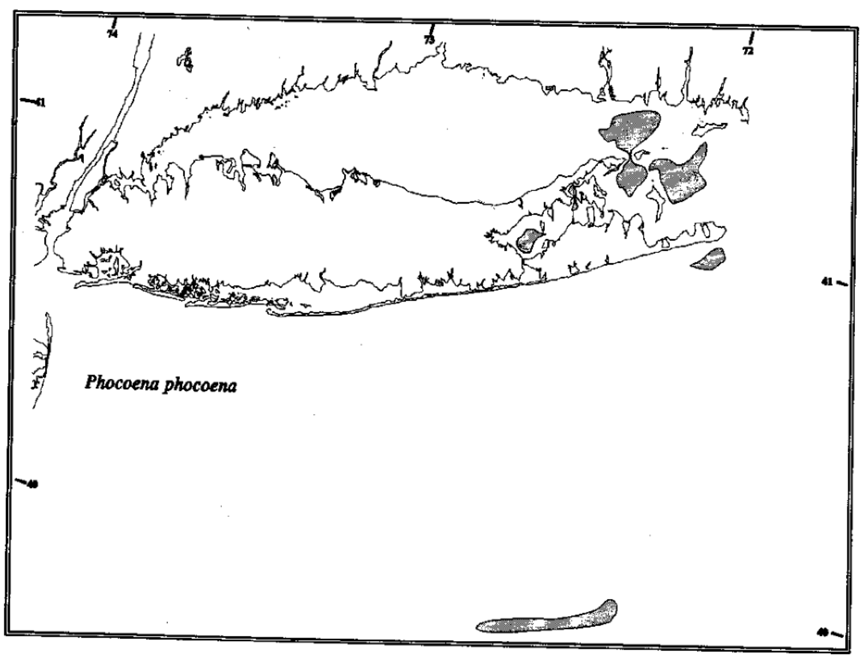


Figure 2. Locations of sightings of harbor porpoises by surveys conducted by the Okeanos Ocean Research Foundation from 15 years of research from the 1970s – early 1990s. From Sadove & Cardinale 1993.

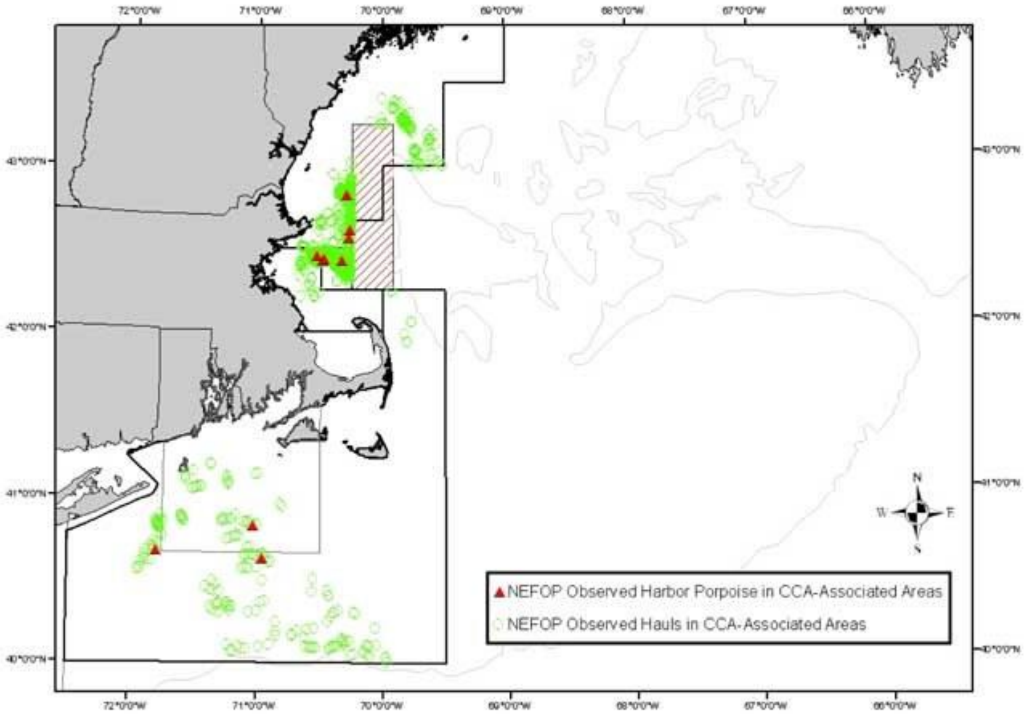


Figure 3. Northeast Fishery Observer Program (NEFOP) observed gillnet hauls and harbor porpoise bycatch locations for the 2011-2012 Harbor Porpoise Take Reduction Plan (HPTRTP) management season. Hatched area represents the year-round Western Gulf of Maine Closure Area. Figure from Orphanides 2012.

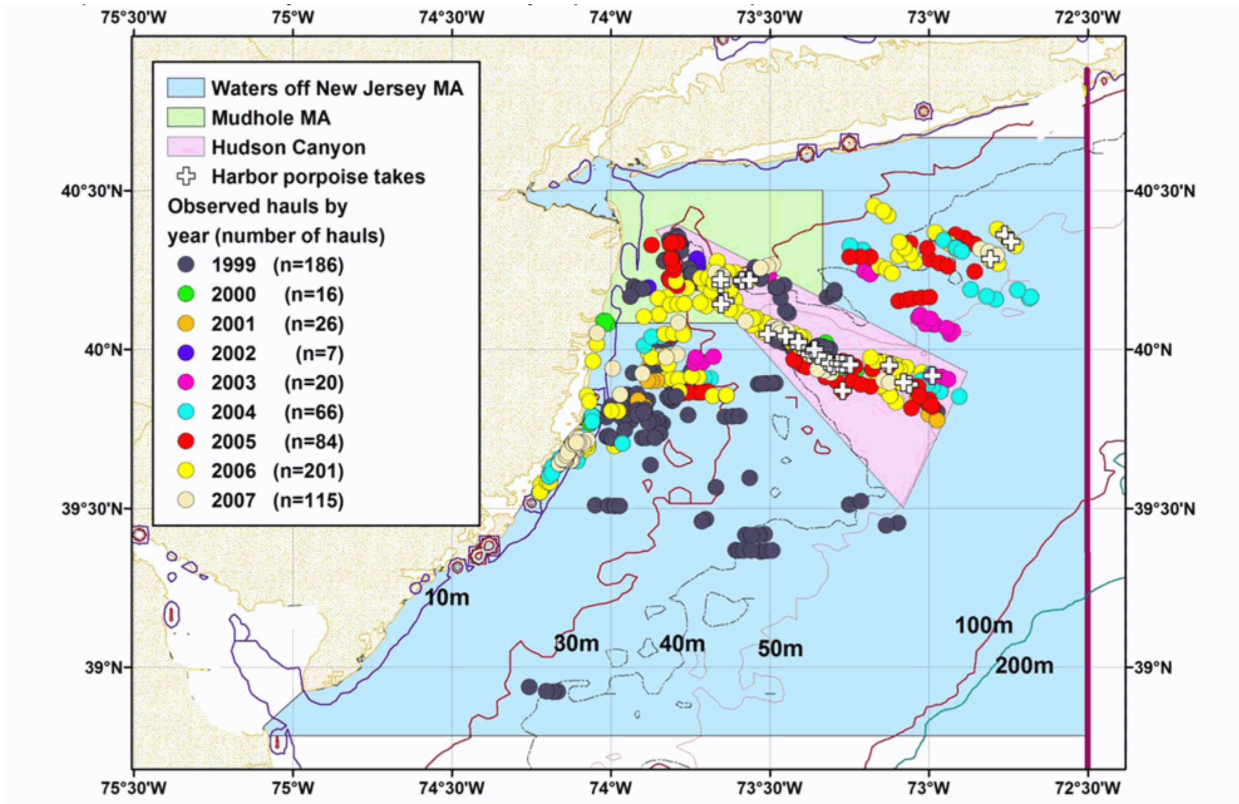


Figure 4. Locations of observed hauls by year (colored circles) and observed hails with harbor porpoise (Phocoena phoceona) takes (white crosses) in the New Jersey region, which includes the Mudhole management area (MA), waters off New Jersey (excluding the Mudhole) and Hudson Canyon. Data are from January-April, 1999-2007. Depth contours are 10, 30, 40, 50, 100 and 200 m. Figure from Palka et al 2009.

III. New York Rarity, if known:

Historic	# of Animals	# of Locations	% of State
prior to 1970	_________	_________	_________
prior to 1980	_________	_________	_________
prior to 1990	_________	_________	_________

Details of historic occurrence:

Unknown for New York. Sadove and Cardinale (1993) report that there is anecdotal evidence from before the 1970s of "large schools of dolphin" that were most likely harbor porpoise based on descriptions, in Long Island Sound and Peconic Bay. They then report that harbor porpoise were not often seen in New York waters until the 1980s and 1990s, when populations appeared to increase (Sadove and Cardinale 1993). There is no quantitative data presented to support this claim.

Current	# of Animals	# of Locations	% of State

79,833 individuals in the Gulf of Maine/Bay of Fundy stock, # is unknown for New York__________

Details of current occurrence:

Unknown for New York. Info from observer data and stranding records. Monitoring activities do not currently exist in state waters.

New York's Contribution to Species North American Range:

% of NA Range in New York	Classification of New York Range
____ 100 (endemic)	____ Core
____ 76-99	__X__ Peripheral
____ 51-75	____ Disjunct
____ 26-50	Distance to core population:
__X__ 1-25	___________

III. Primary Habitat or Community Type:

1. Pelagic

2. Marine, Deep Subtidal

3. Estuarine, Deep Subtidal

Habitat or Community Type Trend in New York:

____ Declining ____Stable ____ Increasing __X__ Unknown

Time frame of decline/increase: ____

Habitat Specialist? _____ Yes __X__ No

Indicator Species? __X__ Yes ______ No

Habitat Discussion:

Harbor porpoises can be found in temperate waters throughout the Northern Hemisphere (Gaskin 1984). They are found most frequently in continental shelf waters (Read 1999); only 0.6% of harbor porpoise documented by the CETAP (1982) surveys were found deeper than 2000 m. Harbor porpoise are often found in coastal bays and waters less than 200 m deep (Hammond et al. 2008), although they are capable of diving to depths of at least 220 m (Bjørge and Tolley 2002, Otani et al*.* 1998).

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 website). Harbor porpoise can often be found in areas where oceanic processes, such as tidal currents, concentrate prey items (Johnston et al. 2005).

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 and Cardinale 1993). These groups are most frequently seen during the months of April and May (Sadove and Cardinale 1993). In Long Island Sound, groups of up to five animals can be seen most often from January through March (Sadove and Cardinale 1993). Harbor porpoise have also been sighted in Peconic Bay, Block Island Sound, Gardiners Bay and Great South Bay (Sadove and Cardinale 1993).

While the amount of pelagic ecosystem in New York is not changing at any substantial rate, its suitability may be. Changes in prey density may alter an area's suitability for occupancy by harbor porpoises. In addition, pollution (including noise pollution) may make a previously occupied area unsuitable for this species. Passive acoustic monitoring in the New York Harbor region and offshore of Long Island to the continental shelf edge found that there was the potential for acoustic masking of cetacean calls due to high levels of anthropogenic noise (BRP 2010). It is possible that harbor porpoise may avoid these areas when noise levels are elevated. Further research needs to be done to identify whether these factors are altering habitat availability in New York waters.

IV. New York Species Demographics and Life History

_____ Breeder in New York

- **____ Summer Resident**
- **____ Winter Resident**
- **____ Anadromous**

____ Non-breeder in New York

- **____ Summer Resident**
- **____ Winter Resident**
- **____ Catadromous**

____ Migratory only

__X__ Unknown

Species Demographics and Life History Discussion:

Most knowledge of the life history of harbor porpoise comes from bycatch data. In a sample of 239 gillnet-killed harbor porpoise, the oldest individual was 17 years old (Read and Hohn 1995). The majority of animals were less than 12 years old (Read and Hohn 1995). Females reach sexual maturity between three and four years of age, and appear to have a calf each year (Read and Hohn 1995). Gestation is between 10 – 11 months, with calves being born between May and August (Hammond et al. 2008). Calves are nursed for 6 – 10 months (Hammond et al. 2008).

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 and 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 and Westgate 1997). Tracking data indicates that harbor porpoise may not follow a temporally coordinated migration (Read and Westgate 1997, NMFS 2013).

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 and 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 and 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 and Cardinale 1993).

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 and 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). 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 and Wilson 1996; Cotter et al. 2012; Haelters et al. 2012; Arnold 1972). By far the greatest threat to Harbor Porpoises is mortality or serious injury from interaction with commercial fishing gear (NMFS 2013).

V. Threats:

The largest threat to harbor porpoise throughout their range is accidental entrapment in fishing gear. In New York, harbor porpoise are primarily threatened by the gillnet fishery, although harbor porpoise are also reported taken from trawl fisheries (NMFS 2013). Bycatch annual mortality for the harbor porpoise in the Mid-Atlantic gillnet fishery (and Northeast sink gillnet fishery) from 2005 – 2010 are as follows: 470 (630) in 2005, 511 (514) in 2006, 58 (395) in 2007, 350 (666) in 2008, 201 (591) in 2009, and 257 (387) in 2010. The total annual human-caused mortality estimate for the GOM/BOF stock of harbor porpoise, derived from fishery observer programs from the U.S. and Canada, is 835 harbor porpoise per year (NMFS 2013). The Potential Biological Removal (PBR) calculated by NMFS (2013) is 706. The 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.” For the GOM/BOF stock, the estimated human-caused mortality exceeds the PBR, which suggests that the current levels of harbor porpoise bycatch may be unsustainable.

Climate change has led to temperature and current shifts throughout the North Atlantic Ocean. These changes could lead to shifts in distribution of harbor porpoise as occupied habitats may become unsuitable and previously unsuitable habitats may become occupied. Certain studies have shown that the productivity of ocean basins may be altered by shifts in the climate (Quinn and Neibauer 1995, Mackas et al. 1989). Prey species may be affected; harbor porpoise in New York are believed to feed primarily on fish such as Atlantic herring and silver hake (Palka et al. 1996). Adult silver hake prey mainly upon small schooling fish, including herring and sand lance, which depend upon copepods and other forms of zooplankton as prey (PCCS 2012). Copepods have already exhibited signs of a shift in distribution as a result of climate change (Hays et al. 2005). Porpoise in West Greenland have already been shown to have switched feeding habits and increase 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.

Harbor porpoise, like other cetaceans, rely on sound 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; 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 (National Research Council 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).

High levels of noise could have several effects on marine mammals. Exceptionally loud noises, usually active military sonar, 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). Olesiuk et al. (2002) found that harbor porpoise abundance dropped significantly up to three km from areas where Acoustic Harassment Devices, a marine mammal deterrent often used by the aquaculture industry that emits a loud noise, were used. Harbor porpoises are found most commonly in coastal waters, where there are often high levels of recreational and other vessel activity. Whether increased levels of vessel noise are enough to drive harbor porpoises from an area is currently unknown. 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).

The threats from alternative energy development, such as offshore wind, are largely due to anthropogenic noise. There is a proposal to install a wind farm off of Long Island, potentially the largest wind project in the county (Long Island- New York City Offshore Wind Project 2013). Construction of an offshore wind farm requires pile-driving to install the foundations. Pile-driving produces large levels of high intensity noise, and there is concern that such activities could have significant effects on marine mammals (Richardson et al. 1995). Studies have shown that harbor porpoise abundance has decreased during the construction of wind farms (Carstensen et al. 2006, 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.

There has been 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. Blubber samples were taken from harbor porpoise from 1989 – 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). 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 this trend has continued. Many of these contaminants have been linked to deleterious health effects and decreased reproductive success in mammal species, but it is currently largely unknown how elevated levels of contaminants affect harbor porpoise (Westgate et al. 1997).

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

_______ **No** _____ **Unknown**

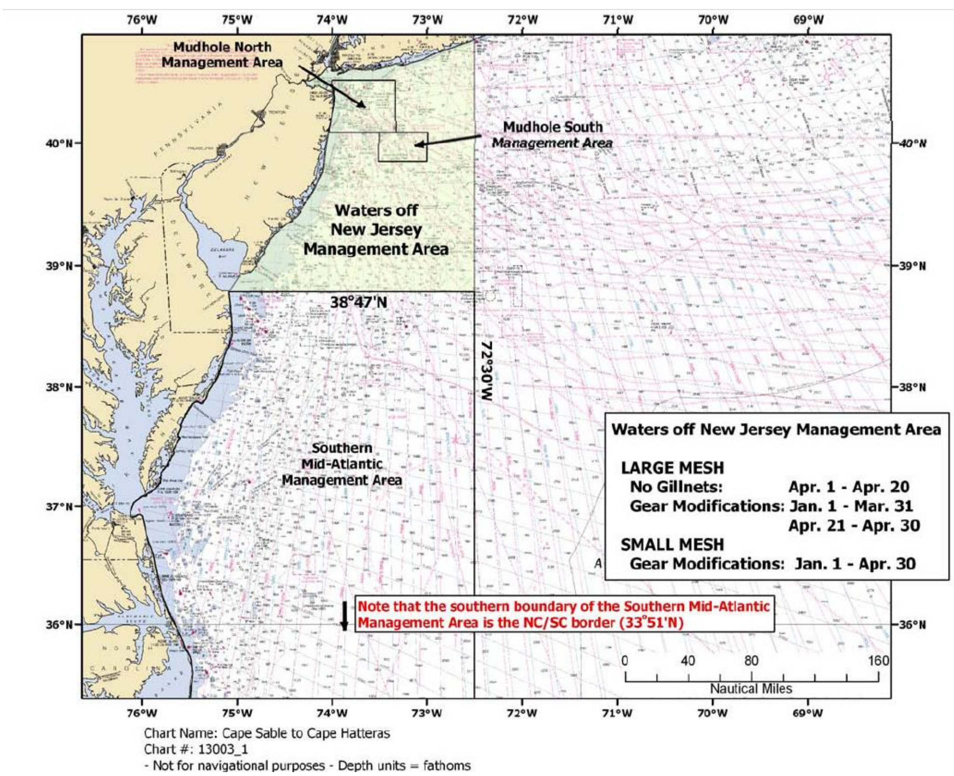
__X__ **Yes**

The harbor porpoise, like all other marine mammals, is protected in the United States by the Marine Mammal Protection Act of 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 protected by the Harbor Porpoise Take Reduction Plan (HPTRP), which was put into place in an attempt to decrease harbor porpoise mortality in gillnet gear. New York waters are covered by both the New England and Mid-Atlantic HPTRP (see figures below). A small portion of New York waters falls under the ‘Southern New England Management Area’ in the New England HPTRP. When using gillnet gear in the Southern New England Management Area from December 1 through May 31, pingers must be placed on gillnets. Pingers are an acoustical deterrent, and must be placed at each end of the gillnet string and also between nets in a string (HPTRP: New England 2010). Additionally, operators must complete a NOAA Fisheries training program before using pingers (HPTRP: New England 2010). Palka et al. (2008) documented a decrease in bycatch of harbor porpoises of 50 – 70% in nets 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 (Palka et al. 2008). This study also estimated compliance to pinger requirements, and found that, from 1999 – 2007, only 20 – 40% of observed hauls used the correct amount of pingers (Palka et al. 2008).

In the Mid-Atlantic HPTRP, New York waters fall under the 'Waters off New Jersey Management Area.' In this area, large gillnet gear (7 – 18 inches) is prohibited from April 1 – March 20. From January 1 – March 31 and from April 21 – April 30, specific modifications to the gear must be made. Additionally, small gillnet gear must adhere to specific modifications from January 1 – April 30. See the Mid-Atlantic HPTRP document for specific modification requirements. Moriches Bay Inlet, Fire Island Inlet, and Jones Inlet are all exempt from these requirements.

From 1994 – 1998, before the HPTRP was established, NMFS (2013) estimated that the average annual harbor porpoise mortality and serious injury was 1,163 in the Northeast sink gillnet fishery and 358 in the mid-Atlantic gillnet fishery. From 2006 – 2010, after the plan was established, the average annual mortality and serious injury was estimated to be 511 in the Northeast sink gillnet fishery and 275 in the mid-Atlantic gillnet fishery (NMFS 2013).



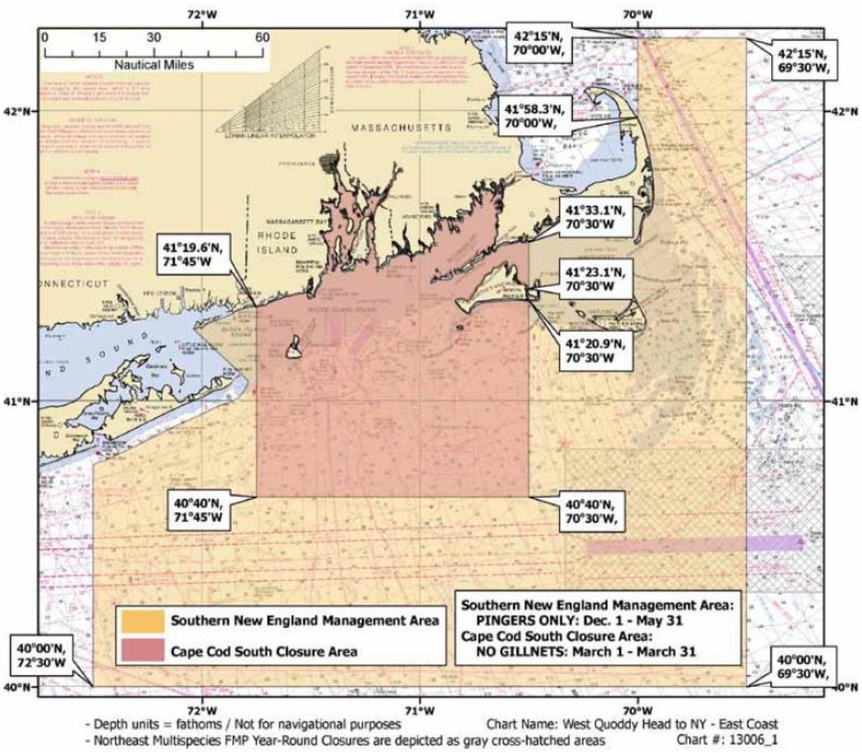


Figure 3. Management areas including New York waters as defined by the HPTRP. Figures taken from the HPTRP: Mid-Atlantic and HPTRP: New England, respectively.

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 current take reduction measures are now being examined by the Harbor Porpoise Take Reduction Team and changes will be made to the Take Reduction Plan within the next year. It has been found that many of the takes in the Mid-Atlantic are found in trips by fishermen coming from New England who leave gillnets soaking for a period of days to weeks. The take reduction team is trying to address this issue as well as the difficulty of monitoring trips and enforcing any take reduction measures (L. Bonacci, pers. comm.,).

Harbor porpoise use of New York waters is poorly understood. What data do exist are from sighting surveys from the 1970s – 1990s, and it is possible that harbor porpoise distribution has shifted since then. 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 surveys and passive acoustic monitoring. There are pluses and minuses to all of these methods and they may be used best in combination(Kraus et al 1983, Verfuß et al. 2007, NMFS 2013).

If it is known where and when harbor porpoise are occurring in New York waters, more effective management and conservation strategies can be deployed. Seasonal fishery closures and regulations could be improved upon if we know which areas harbor porpoise frequent. Additionally, it would be possible to pick areas of minimal importance to harbor porpoise for projects such as wind farms. Construction activities that may drive animals away could be performed during seasons when harbor porpoise are encountered the least.

Currently, the Riverhead Foundation supplies stranding response for marine mammals, including the harbor porpoise. This group responds to all strandings, provides rehabilitation for live animals, and necropsies on dead animals. The continuation of this work will help to further our understanding of harbor porpoise.

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 real 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 species, as would long-term studies on 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. Further research into the actual effects that threats such as climate change are having on harbor porpoises is warranted. In addition, education on this species and the impor

VI. References

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