Species Status Assessment

Common Name: Sei whale **Date Updated:** 2/16/2025

Scientific Name: *Balaenoptera borealis* **Updated by:** Meghan Rickard

Class: Mammalia

Family: Balaenopterida

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

The sei whale is the third largest species of baleen whale. It's one of the least studied, and therefore least understood, large whale species. Little is known on the abundance and trends of these elusive whales, which are often confused with fin (*Balaenoptera physalus*) and/or Bryde's (*Balaenoptera brydei*) whales at sea, possibly leading to previous misunderstandings about their distribution. Two subspecies are recognized by the Society for Marine Mammalogy's Committee on Taxonomy: the northern sei whale, *B. b. borealis*, in the Northern Hemisphere and the southern sei whale, *B. b. schlegelii*, in the Southern Hemisphere (Committee on Taxonomy 2024). For western North Atlantic sei whales, two stocks have been suggested: the Nova Scotia stock, which includes waters off the U.S. East Coast, and the Labrador Sea stock. Recent genetic work on sei whales did not reveal definitive stock structure in the North Atlantic but multiple stocks cannot be ruled out (Huijser et al. 2018). The "Nova Scotia" stock is used for the purposes of management in the U.S. under the Marine Mammal Protection Act (Hayes et al. 2024).

Sei whales are found in all oceans but appear to prefer temperate, offshore areas and don't venture as far toward the equator and poles as other baleen whale species (Horwood 1987, Perry et al. 1999, NMFS 2011, Prieto et al. 2012a, IWC 2025). While there is documented seasonal movement to and from high latitude feeding areas and low latitude calving/wintering areas, the movement and areas are not predictable; sei whales can be in an area one year and not the next (Jefferson et al. 2015). In the U.S. Atlantic, they are most frequently observed in spring and early summer (NMFS 2011). In New York, sei whales have been regularly acoustically and visually detected since more robust monitoring effort began in the region in 2016. Most detections are during the spring months but do occur year-round (PACM 2025, WHOI 2025, Zoidis et al. 2021, Estabrook et al. 2025).

Sei whales were targeted by the whaling industry after larger and easier species were too depleted. Commercial hunting in the North Atlantic began off Norway in the late 1800s and ended in 1989 after Icelandic whalers took sei whales under a special research permit (Jonsgård & Darling 1977, Thomas et al. 2016, Cooke et al. 2018). The total estimated global decline of sei whales was more than 70% over three generations, with about 17,000 sei whales caught in the North Atlantic (Cooke et al. 2018). Even with the cessation of directed hunting, sei whales have not recovered their numbers. The current abundance estimate is uncertain but the best available minimum population estimate for the Nova Scotia stock is 3,098 (Hayes et al. 2024). The population estimate for Eastern Canada is likely fewer than 1,000 mature individuals, below its size at the end of whaling (COSEWIC 2019). Trends for the stock cannot be determined due to insufficient data.

I. Status

a. Current legal protected Status

i. **Federal:** Endangered **Candidate:** ________

ii. **New York:** Endangered; SGCN

b. Natural Heritage Program

i. Global: G5?

ii. New York: SNA **Tracked by NYNHP?:** Yes

Other Ranks:

-New York 2025 SGCN status: High Priority Species of Greatest Conservation Need
-IUCN Red List: Endangered

-Northeast Regional SGCN: Highly imperiled, migratory species; very high conservation concern

-CITES: Appendix I

-Canada Species at Risk Act (SARA): Endangered; Schedule 1

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

-Marine Mammal Protection Act (MMPA): Strategic

Status Discussion:

Historically, sei whales were targeted by the whaling industry after fin and blue (*Balaenoptera musculus*) whales were hunted to the point of rarity (Horwood 1987). Although initially overlooked by whalers, many populations of sei whales were significantly reduced by commercial whaling once the preferred species were depleted (Perry et al. 1999, NMFS 2011, Prieto et al. 2012a, NMFS 2021). The direct harvest of sei whales in the North Atlantic began off the coast of Norway in the late 1800s and continued in that region until the 1950s (Jonsgard and Darling 1977). In Iceland, a total of 2,574 sei whales were taken between 1948 and 1985, with peak catch occurring in the 1960s (Sigurjónsson 1988, Thomas et al. 2016, Cooke et al 2018). Between 1986 and 1988, an additional 70 sei whales were killed under an International Whaling Commission (IWC) special research permit (IWC 2025).

Estimates of pre- and post-exploitation sei whale abundance are uncertain. Global population of sei whales declined from approximately 250,000 individuals prior to commercial whaling to perhaps 32,000 individuals by the 1970s to 1980s (Thomas et al. 2016). In total, about 17,000 sei whales were recorded killed in the North Atlantic (Allison 2017). In the western North Atlantic, over 1,100 sei whales were caught in eastern Canadian waters between 1898 and 1972 with over 800 taken in a six-year period (1966 to 1972) off the coast of Nova Scotia (NMFS 2011). With only sparse data available, it’s estimated that the pre-whaling Atlantic Canadian population of sei whales numbered several thousand mature individuals and that the population in Canadian waters today is a few hundred mature individuals or fewer (Prieto et al. 2012a, Perry et al. 1999, COSEWIC 2019). Currently, hunting for fin whales still occurs in Greenland under the aboriginal subsistence hunting program established in 1986. Hunting is practiced in accordance with the program’s quota (Prieto et al. 2012b) but due to the physical similarities, sei whales have been confused with fin whales and a total of three sei whales have been taken as recently as 2006 (IWC 2025).

Sei whales are considered strategic under the Marine Mammal Protection Act because the species is listed as endangered under the Endangered Species Act. The IUCN last assessed the species in 2018 and the last 5-year review conducted by NOAA was done in 2021 (Cooke et al. 2018, NMFS 2021). No estimates of pre-exploitation population size are available and abundance estimates for the entire sei whale population in the North Atlantic remains unknown (Waring et al. 2009; NMFS 2012; Prieto et al. 2012a). Overall, there is insufficient data to assess the sei whale’s status, since most sei whale occurrence data comes from historical whaling records (Prieto et al. 2012a). Due to lack of comprehensive abundance and distribution data, and absence of dedicated systematic surveys, there is no scientifically robust estimate of abundance (NMFS 2021). The wide-ranging, offshore distribution of sei whales further complicate efforts to estimate abundance and assess the status of the species. Consequently, the extent of depletion and degree of recovery of sei whale populations remain unknown (NMFS 2021).

II. Abundance and Distribution Trends

Region	Present?	Abundance	Distribution	Time Frame	Listing status	SGCN?
North America	Yes	Choose an item.	Choose an item.		Endangered	Choose an item.
Northeastern US	Yes	Choose an item.	Choose an item.		Endangered	Yes
New York	Yes	Choose an item.	Choose an item.		Endangered	Yes
Connecticut	Yes	Choose an item.	Choose an item.		Not listed	No
Massachusetts	Yes	Choose an item.	Choose an item.		Endangered	Yes
Rhode Island	Yes	Choose an item.	Choose an item.		Not listed	Yes
New Jersey	Yes	Choose an item.	Choose an item.		Endangered	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	Choose an item.	Choose an item.			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):*

Like other large whale species, sei whales are difficult to study due to their low abundance and tendency to inhabit deeper water. In addition, funding for monitoring, especially visual surveys, is extremely limited. Until 2016, monitoring of large whales in New York was extremely limited. Previous examples of surveys that included the New York area and recorded large whales were done coast-wide, seasonally, and focused on multiple taxa and were therefore not carried out at the most appropriate temporal or spatial scale for large whale species (CETAP 1982).

One of the first NYB-focused large whale surveys was a passive acoustic monitoring effort that took place from 2008 to 2009 (Muirhead et al. 2018). The 258-day project included 10 sites, with a line of moored receivers perpendicular to Long Island and 3 sites around the entrance to NY Harbor. The data was analyzed for blue, fin, humpback, and North Atlantic right whales only.

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 by plane and ship and includes both visual and acoustic monitoring methods. 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 sei whales 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 (Palka et al. 2021). Instead, the U.S. Navy plans to work with NOAA on similar surveys beginning in 2025 (US Navy 2024).

NOAA conducts regular, year-round monitoring focused on North Atlantic right whales (i.e., the North Atlantic Right Sighting Advisory System) that also collects data on other taxa including sei whales (Johnson et al. 2021). These surveys cover areas around Massachusetts, Southern New England, and the New York Bight. In addition, the New England Aquarium also conducts regular aerial surveys, and sometimes shipboard surveys, in the Southern New England area and records sightings of sei whales. Sightings of sei whales off the coast of New England are frequently recorded between May and July. Sightings usually include one to three individuals, but groups of up to 10 are not uncommon.

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). Also in 2016, the Woods Hole Oceanographic Institute (WHOI) deployed the first of an ongoing succession of real-time monitoring buoys, and later gliders, to record the presence of large whales in the New York Bight. This effort had first been introduced off the coast of Massachusetts and proved helpful for both data collection and real-time management of vessel speeds to prevent collision with whales. Currently, the data shared publicly is limited to four large whale species: sei, humpback, fin, and North Atlantic right whales (WHOI 2025).

Beginning in 2017, DEC launched the first three years of a monitoring program for large whales (Tetra Tech and LGL 2020, Estabrook et al. 2021). Using monthly visual aerial surveys and 24/7 passive acoustic monitoring, the NYS Whale Monitoring Program gathered enough data to estimate large whale abundance in the NYB and identified probable discreet periods of space and time that sei whales are likely to be found. The NYS Whale Monitoring Program will conduct another three years of visual aerial surveys for a total of 18 surveys beginning in November 2024.

Marine mammal stranding response is performed by two federally permitted groups in New York: the New York Marine Rescue Center (NYMRC) and the Atlantic Marine Conservation Society (AMSEAS). For all live and dead large whale events, AMSEAS is the lead response team. The DEC has supplied funding for stranding response in New York since the program began in 1980. While sei whale strandings are rather rare, they do occur in New York and provide valuable data, making stranding response an essential component of monitoring.

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

The range of sei whales in the North Atlantic extends from southern Europe to Norway in the east, and from the southeastern U.S. to West Greenland in the west (Gambell 1985, Horwood 1987). Generally, sei whales do not tend to move to as high latitudes as some of the other baleen whale species (NMFS 2011). Both whaling data and satellite tag data indicate that sei whales occur at least as far north as the Labrador Sea (Prieto et al. 2012b, Prieto et al. 2014). However, new evidence from Storrie et al. (2018) and Nieukirk et al. (2020) suggest a possible range expansion could be taking place in North Atlantic waters, since sei whales have been observed at the northern tip of the Svalbard Archipelago and in the Fram Strait. The southernmost confirmed records in the western North Atlantic Ocean are strandings along the northern Gulf of Mexico and in the Greater Antilles (Mead 1977). With satellite tag data, Olsen et al. (2009) found that one sei whale traveled from the Azores to the Labrador Sea. This evidence of east-west movement contrasts with the typical seasonal north/south movements.

Sei whale movement from Southern New England north past Cape Cod to Nova Scotia in spring and summer is most common (Mitchell and Chapman 1977). During the spring, sei whales are concentrated along the shelf edge from Georges Bank to the Scotian shelf while summer sightings are fewer and more scattered along the shelf edge. Whaling catch rates peaked in early and late summer, suggesting a northward and southward migration through the Nova Scotia whaling ground (Mitchell 1975). Sei whales occur in the Labrador Sea as early as the first week of June and may move farther northward to waters southwest of Greenland later in the summer (Mitchell and Chapman 1977). Sei whales occur off southern Newfoundland in August and September, and there is a southbound "run" west and south along the Scotian Shelf from mid-September to mid-November (Mitchell and Chapman 1977). Data collected during the CETAP surveys highlighted "the highly seasonal occurrence of the sei whale" which is "strongly suggestive of a movement into the northern sections in spring and a departure from the area in the fall" (CETAP 1982). The study also proposed a seasonal offshore habitat and/or offshore migration route (CETAP 1982, Mitchell & Chapman 1977). Peak presence in the southern New England area, especially the waters of Georges Bank, was recorded in spring and summer (Kraus et al. 2016, Stone et al. 2017, Van Parijs et al. 2023).

Despite the recent increase in state and regional monitoring effort, little is known about the population size of sei whales in the North Atlantic (COSEWIC 2019). Sei whales, like other large whales, are long-lived and slowly reproduce, making it unlikely that their populations naturally fluctuate (COSEWIC 2019). Sei whale population estimates are usually specific to region and/or season, and no abundance or trend data exist for New York specifically (Palka et al. 2017, Stone et al. 2017). It's currently unknown if their population is increasing, decreasing, or stable. Mitchell and Chapman (1977) estimated the Nova Scotia stock was between 1,393 and 2,248 sei whales, with a minimum of 870 sei whales off Nova Scotia and 965 in the Labrador Sea stock. In 1982, a very imprecise estimate of about 250 sei whales was calculated for the spring season in the shelf and shelf-edge waters between North Carolina and Nova Scotia (CETAP 1982). A number of other previous abundance estimates were specific to different areas and sometimes included all U.S. waters north of North Carolina but occasionally only included the southern Gulf of Maine to the Gulf of St. Lawrence (NMFS 2011, NMFS 2013, NMFS 2021). All estimates were below 500 individuals, providing somewhat of a baseline.

The 2023 NOAA Stock Assessment Report (SAR) for the Nova Scotia sei whale stock estimated abundance in the U.S. to be 6,292 between March and May with a minimum population estimate of 3,098 (Hayes et al. 2024). The SAR used sightings data collected between 2010 and 2013. In comparison, Roberts et al. (2023) estimated abundance to be 859 individuals between March and May from Florida to Halifax using sightings data collected between 1999 and 2020. Chavez-Rosales et al. (2019) analyzed the same data with a different methodology which estimated a

March-May abundance of 4,500 individuals. Palka et al. (2021) performed further analysis that included AMAPPS survey data from 2010-2017 and used 74 recorded sightings instead of the 22 sightings used in the original SAR estimate. The updated March-May abundance estimates using additional AMAPPS data were 243 (2010-2013), 43 (2014-2017), and 142 (2010-2017).

The differences in abundance estimates are most likely a result of differing survey methods and effort distribution across space and time, but also could be partially because of differing abundance in sei whales at different times of the year. Sei whales are known to have a highly variable seasonal distribution and strong interannual variations that cause the number of sei whales in certain areas fluctuate over years and/or decades (COSEWIC 2019, Payne et al. 1990; Schilling et al. 1992; Kenney et al. 1996). This makes it difficult to determine if differences in sightings and abundance estimates are reflective of an actual change in population size or a distribution shift (Perry et al. 1999, NMFS 2011, Prieto et al. 2011, NMFS 2012, NMFS 2013, Palka et al. 2021).

The unpredictability, or irregularity, of the sei whale's occurrence, especially in particular feeding areas, has frequently been noted (e.g., Ingebrigtsen 1929; Jonsgård and Darling 1977; Martin 1983; Horwood 1987; Schilling et al. 1992). Feeding areas can vary substantially among years and seasons depending on changing ocean conditions and prey availability (Prieto *et al.* 2012b). Sei whales often appear within the same feeding ground for a number of years and then disappear for extended periods of time, only to reappear years (or even decades) later (Jonsgård and Darling 1977; Schilling *et al.* 1992). (Elwen and Relton 2016). Influxes of sei whales on whaling grounds in the North Atlantic were sometimes referred to as "invasions" (Andrews 1916). One incursion reported by Weinrich *et al.* (1986) included groups of up to 10 sei whales in the inshore waters of the southern Gulf of Maine for about half of the summer of 1986. A more recent example of this nearshore influx are sightings off of Virginia in April 2018 (Cotter et al. 2019). There were three sightings of sei whales on the shelf within the 80-meter isobath, which coincided with sightings of multiple North Atlantic right whales and basking sharks, suggesting presence coincided with high levels of copepods.

New York occurrence trends follow the "two run" theory (Mitchell 1975). Sei whales are primarily detected in New York from March through May and again around October. Some previous studies report infrequent use of shelf waters (Prieto 2012a) but sei whales are now mostly detected on the continental shelf in New York. The strong seasonal peak in spring was confirmed to be between March and June in recent density models (Roberts et al. 2022). The density models estimate average abundance on the U.S. East Coast to be 859 individuals, with a minimum estimate in February of 135 and a maximum estimate of 2,010 in June (Roberts et al. 2022). Importantly, these models show the "secondary" fall increase in October. Davis et al. (2020) highlighted spring detections, and more importantly, persistent year-round detections in the New York Bight. Sei whales are still present in the mid-Atlantic in summer and there is generally greater use of on-shelf areas than previously described, particularly just east of the New York Bight in southern New England, emphasizing the region's importance and the shifts that baleen whales and their prey are now exhibiting (Davis et al. 2020, PACM 2025).

Overall, abundance estimates are uncertain and there is a significant need for long-term monitoring and data collection to understand sei whale presence and population size not only in New York but through their range. Globally, IUCN Red List reports that sei whales are increasing, with 50,000 individuals currently estimated (Cooke et al. 2018). The global population of mature individuals in 2018 was predicted to be around 30% of the 1948 level and increasing. The 1989 North Atlantic estimate of 12,000 sei whales indicates severe depletion from the 1940s to a population minimum in the 1970s, followed by gradual recovery. If separate ecological units do exist, it is possible that in some areas they overlap both spatially and temporally and have been treated as a single unit in abundance estimates (Prieto et al. 2012a). In addition, the species is difficult to discern from fin whales and many sightings are categorized as ambiguous “fin or sei” sightings (Roberts et al. 2022). To complicate matters further, sei whales feed on the same copepod species as the North Atlantic right whale (Kenney et al. 1996; Baumgartner et al. 2011) so it is quite possible that the prey shifts that have significantly affected North Atlantic right whale distribution is similarly resulting in shifts of sei whale distribution (Record et al. 2019, Meyer-Gutbrod et al. 2021, Meyer-Gutbrod et al. 2022). But more research is needed to determine trends and to develop accurate abundance estimates for the New York Bight specifically.

Month/Year	Area	N_{best}	CV
Mar-May 2010-2013	**Halifax, Nova Scotia to Florida**	**6,292**	**1.02**
Jun-Aug 2016	Continental shelf break waters from New Jersey to south of Nova Scotia	28	0.55
Jun-Aug 2021	New Jersey to southern Nova Scotia	34	0.99
Jun-Aug 2021	Central Florida to New Jersey	0	0
Jun-Aug 2021	Central Florida to southern Nova Scotia (COMBINED)	34	0.99

Table 1. Summary of recent abundance estimates for Nova Scotia sei whales with month, year, and area covered during each abundance survey, and resulting abundance estimate (N_{best}) and coefficient of variation (CV). The estimate considered best is in bold font (Hayes et al. 2024).

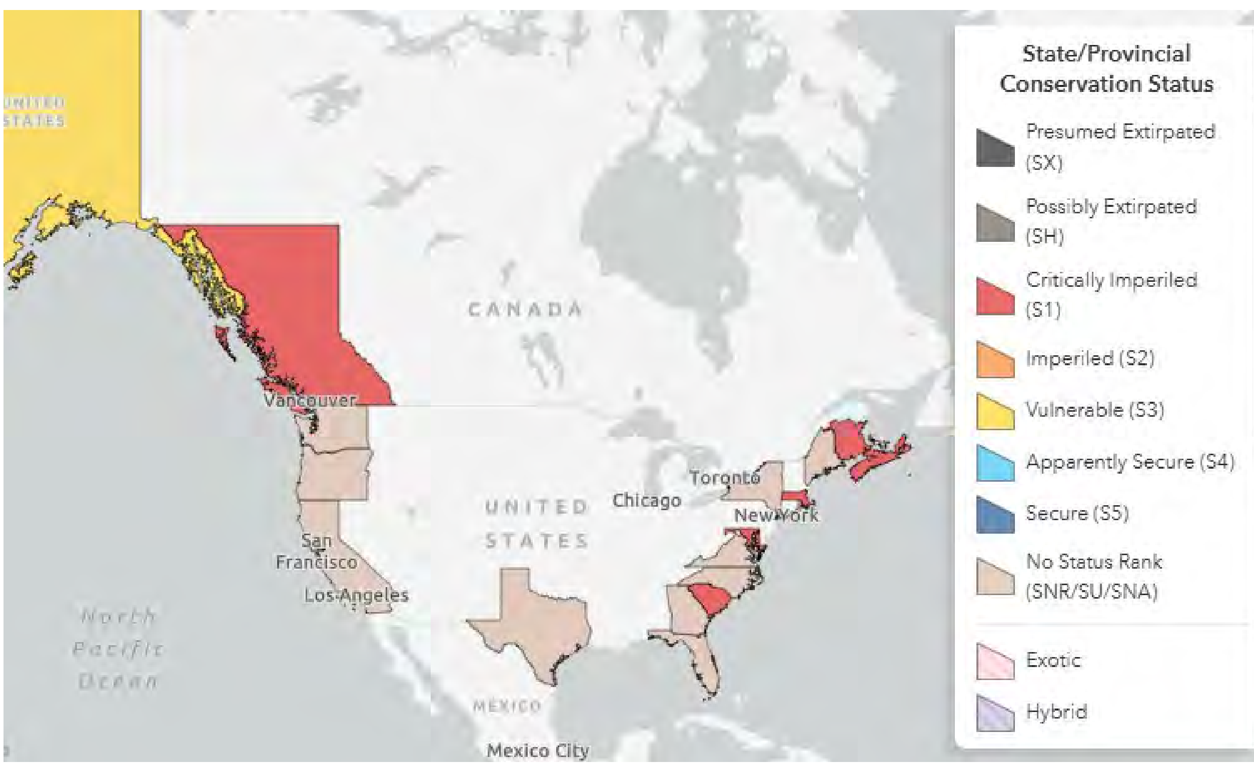

Figure 1. Conservation status of sei whale in North America (NatureServe 2024).

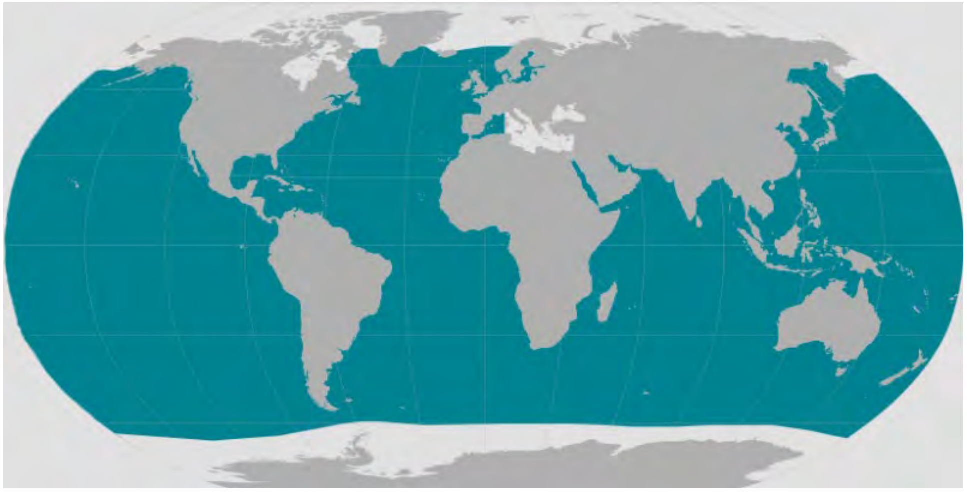

Figure 2. Sei whale global range (NMFS 2024).

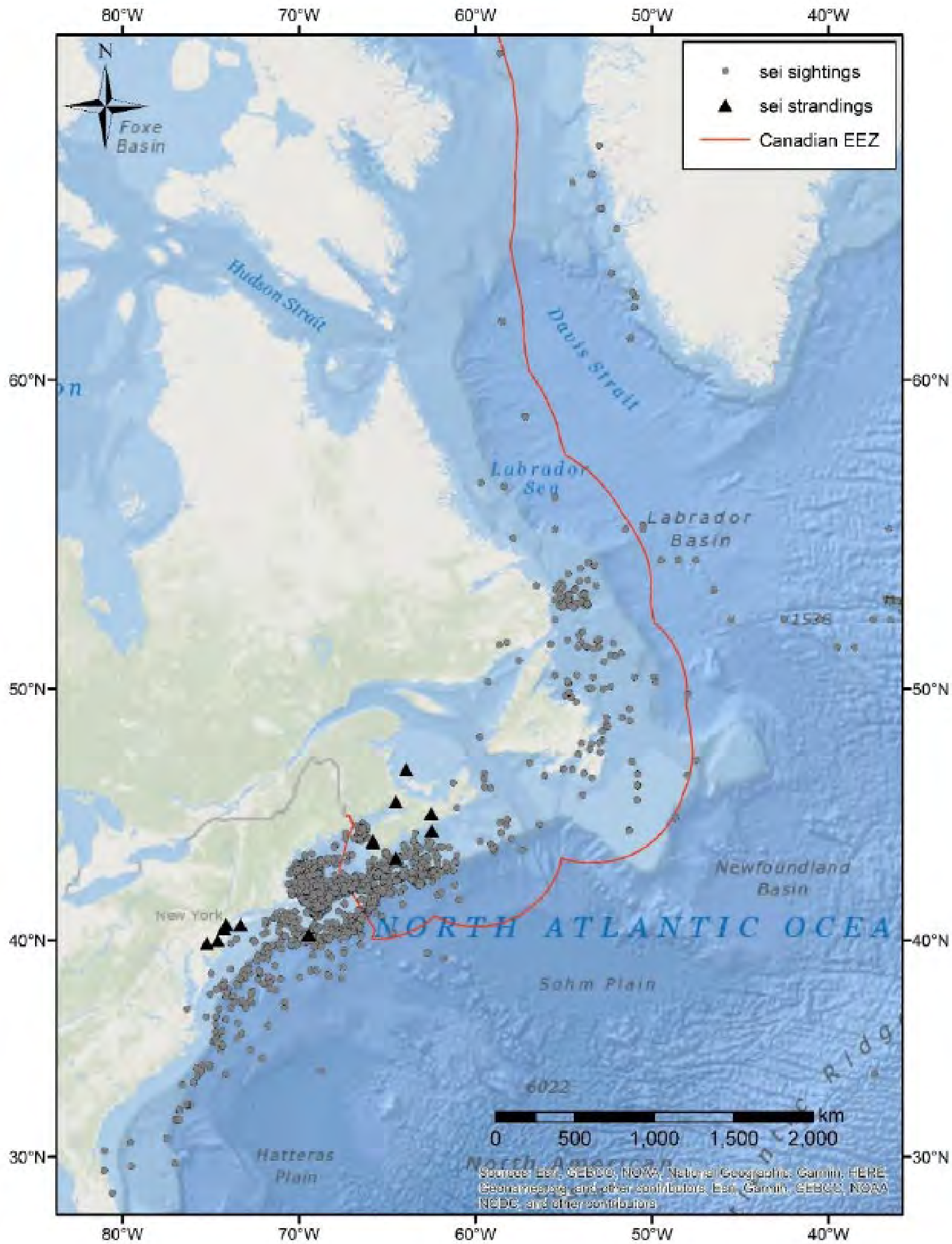

Figure 3. Sightings (circles) and strandings (triangles) of Sei Whales in the western North Atlantic between the years of 1900-2017 (no whaling catch data are included). Each circle denotes a single sighting and may represent multiple individuals (COSEWIC 2019).

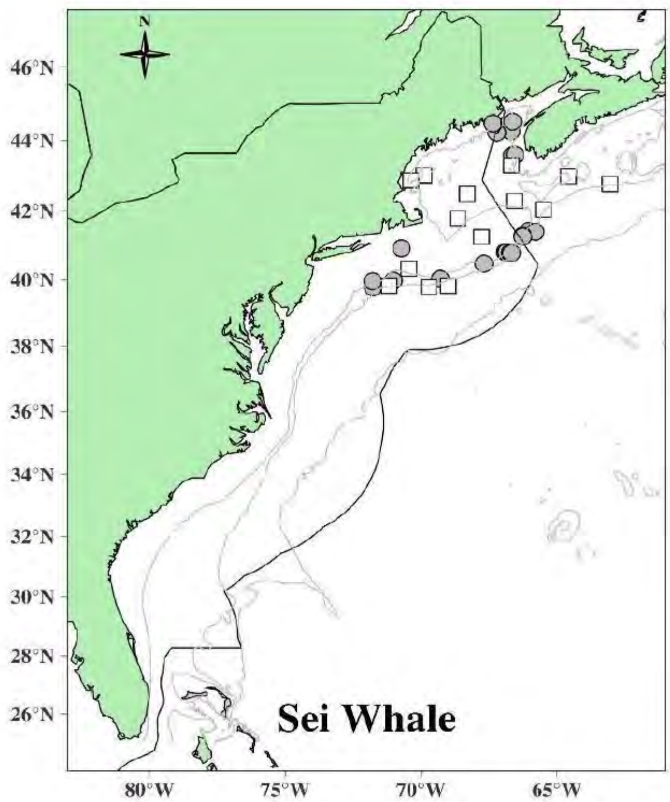

Figure 4. Distribution of sei whale sightings from NEFSC and SEFSC shipboard and aerial surveys during the summers of 1995, 1998, 1999, 2002, 2004, 2006, 2007, 2008, 2010, 2011, 2016, and 2021 and DFO's 2007 TNASS and 2016 NAISS surveys. Isobaths are the 100-m, 200-m, 1000-m, and 4000-m depth contours (Hayes et al. 2024).

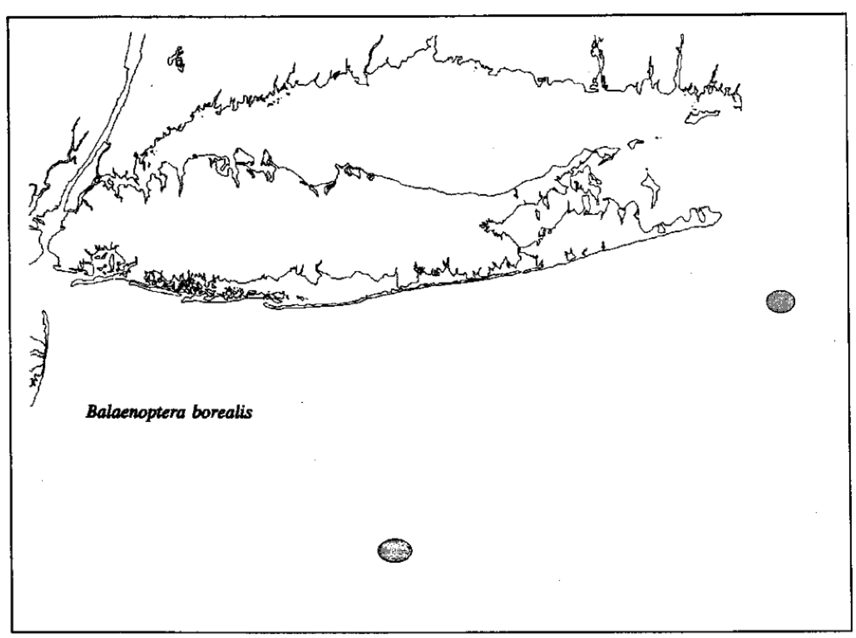

Figure 5. Sei whale sightings areas,1970s-1993 (Sadove and Cardinale 1993).

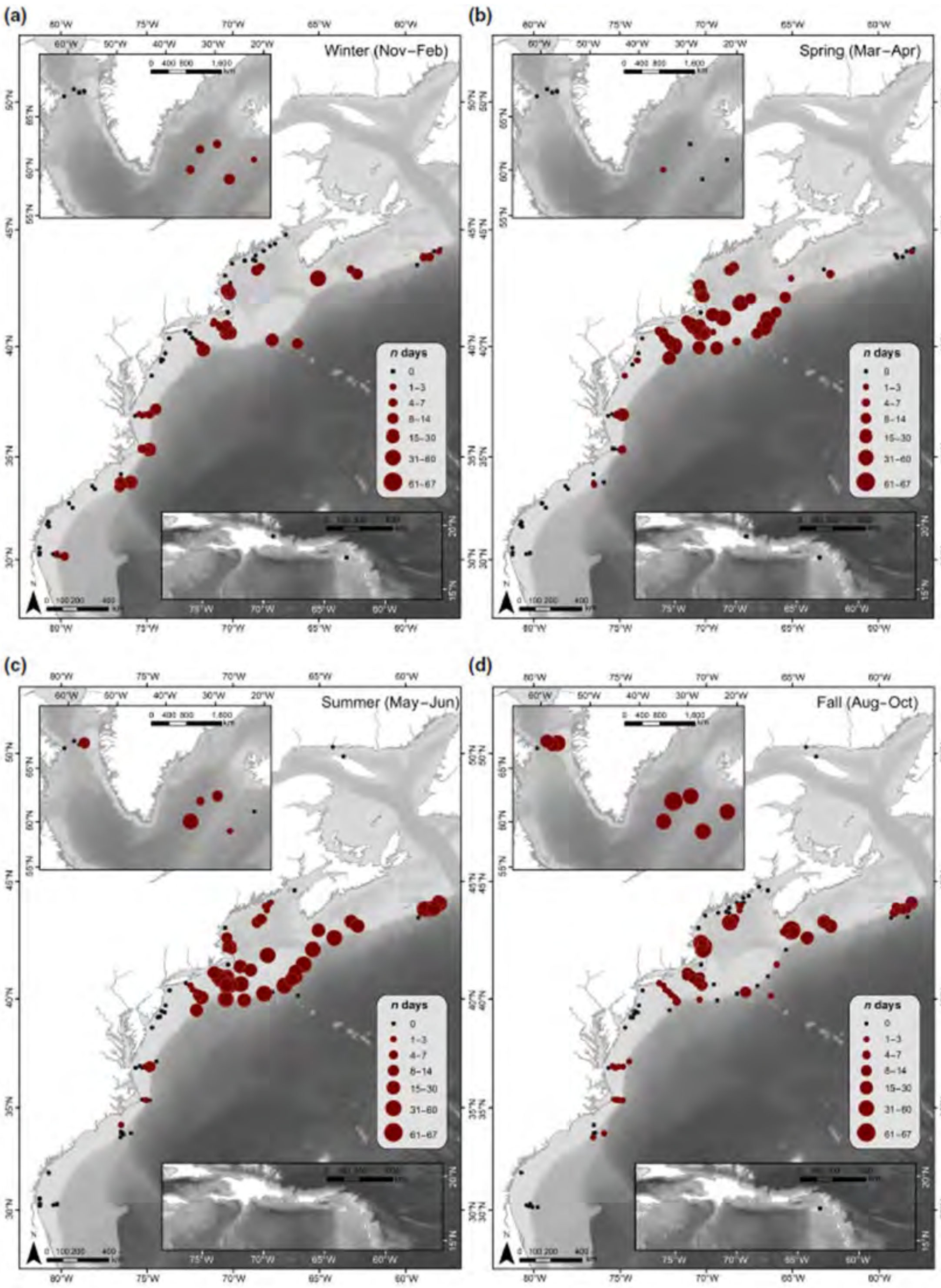

Figure 6. Sei whale seasonal occurrence maps: The number of days per season with confirmed North Atlantic sei whale acoustic detections, summarized for all available recording locations (2004–2014). Filled red circles indicate sei whale acoustic presence, and circle size indicates the number of days with sei whale acoustic detections during a season. Black dots indicate recorder locations with no sei whale acoustic presence for any year during that season (defined as: (a) Winter [November–February]; (b) Spring [March–April]; (c) Summer [May–July]; and (d) Fall [August–October]) (Davis et al. 2020).

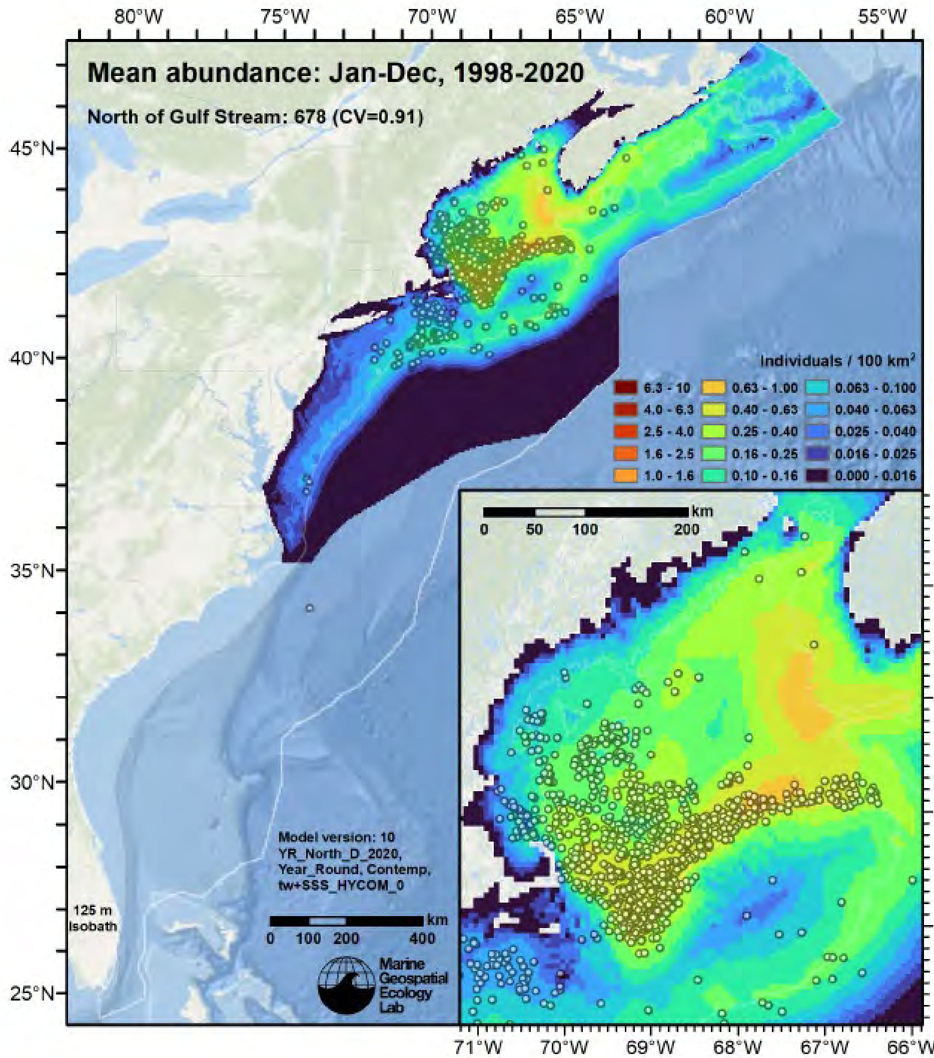

Figure 7. Sei whale mean density for the indicated period, as predicted by the model for the region North of Gulf Stream. Open circles indicate segments with observations. Mean total abundance and its coefficient of variation (CV) are given in the subtitle (Roberts et al. 2022)

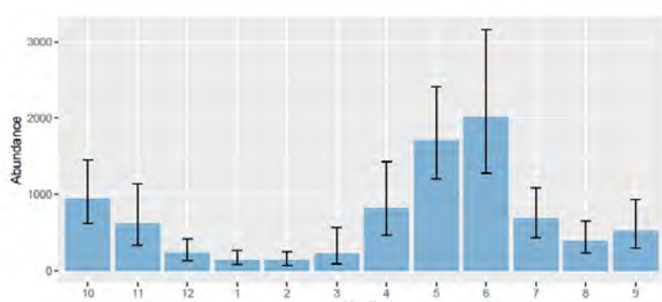

Figure 8. Sei whale Mean monthly abundance for the prediction area for October 1998 - September 2020. Note that the prediction area was not the same for all months (see Table 26 below and maps following). Error bars are a 95% interval, made with a log-normal approximation using the prediction's CV (Roberts et al. 2022).

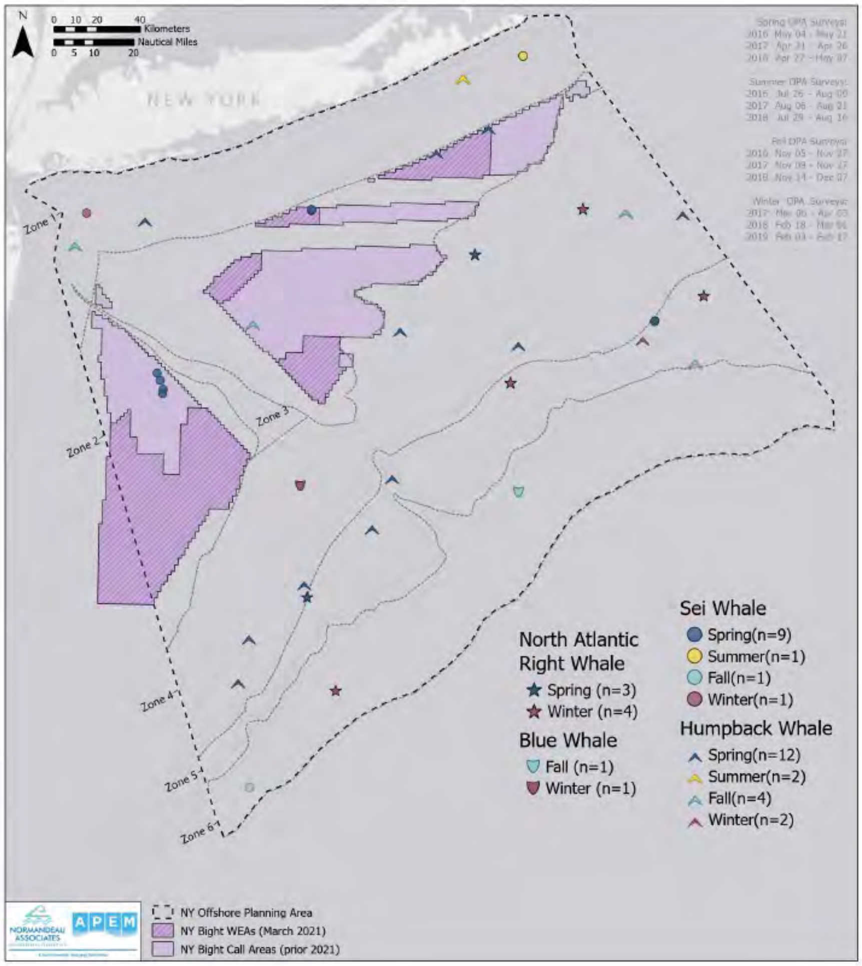

Figure 9. Spatial distribution of low-frequency cetacean species with fewer than 30 occurrences across all surveys (NYSERDA 2021).

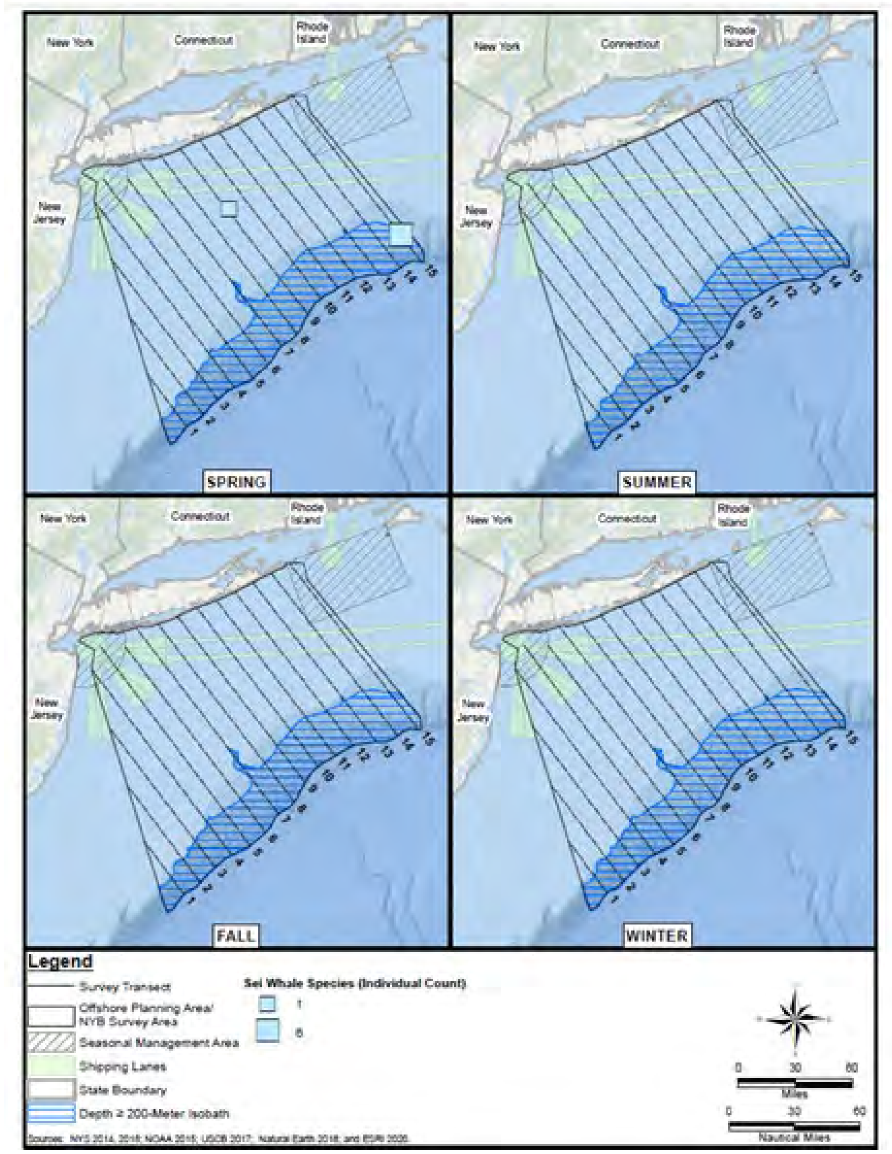

Figure 10. Locations of all sei whale sightings by count and season – Years 1, 2, and 3 (Tetra Tech and LGL 2020).

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

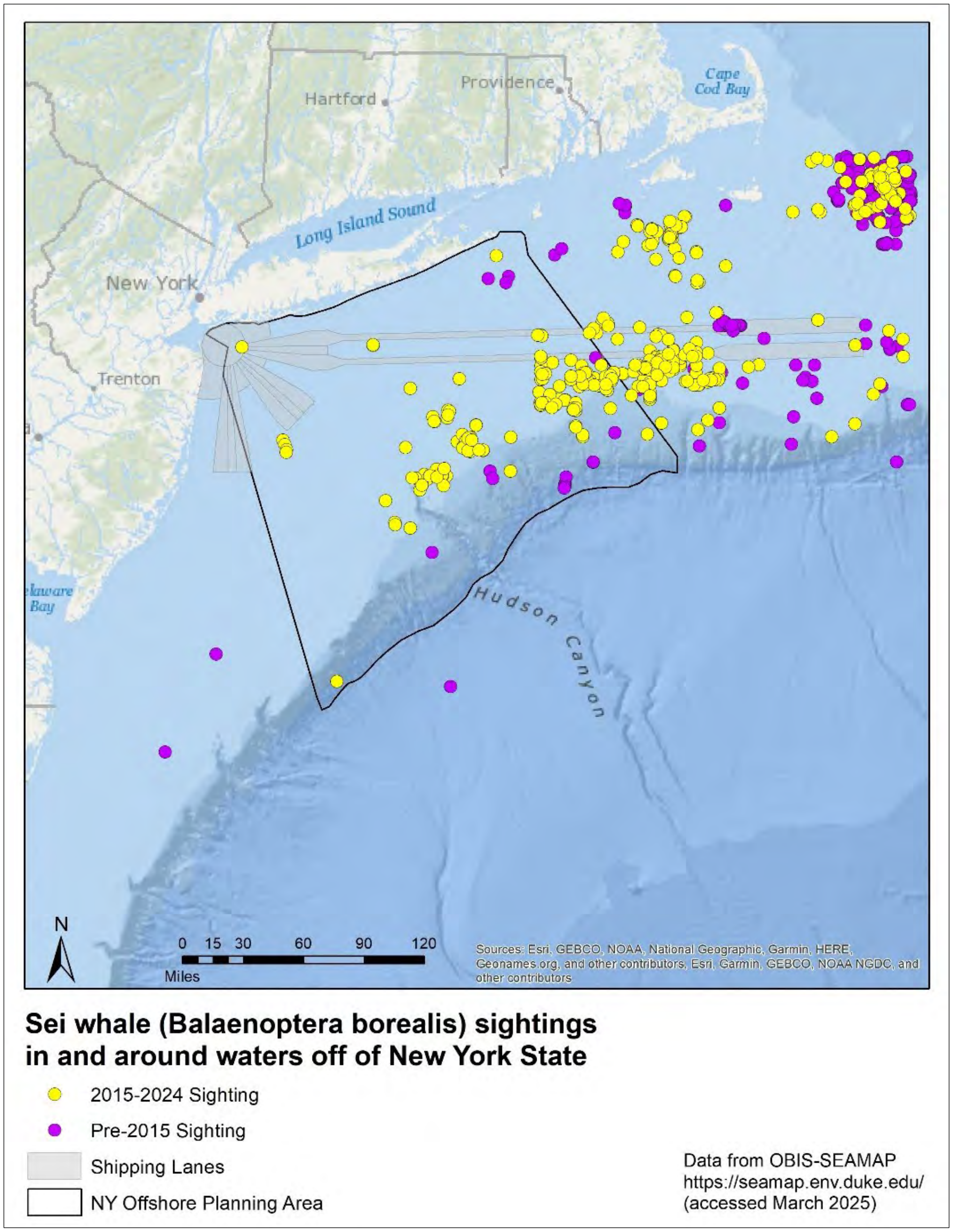

Figure 11. Records of sei whales in and around New York. Data downloaded from OBIS-SEAMAP and mapped with ArcMap 10.2.

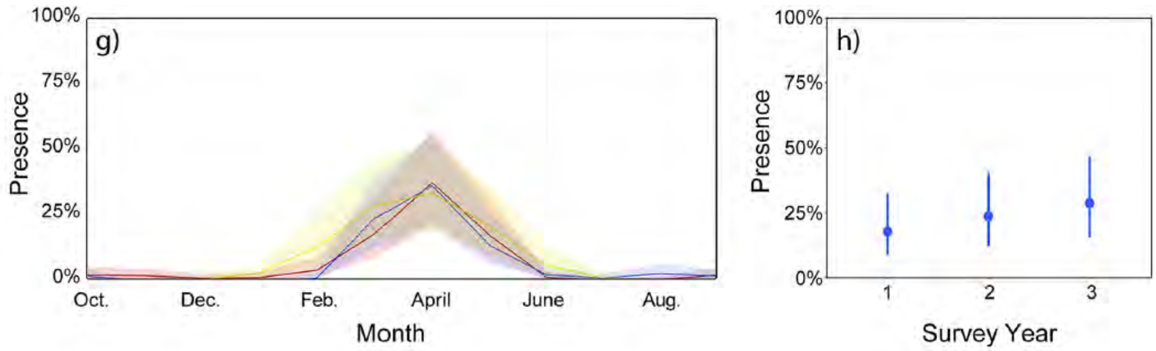

Figure 12. Generalized additive model (GAM) plots of sei whale daily acoustic presence, with estimated marginal means of the presence probability, and survey year presence (Estabrook et al. 2025).

Details of historic and current occurrence:

Historical occurrence records for sei whales in and around New York are rare. Allen (1916) reported the stranding of a sei whale in Chatham, Massachusetts in August 1910, which he believed was the first record in U.S. waters. Another stranding was reported in Kingston, Massachusetts in October 1948 when an emaciated male stranded (Waters & Rivard 1962). Multiple sources claimed zero reported occurrences of sei whales, either in New York or in Southern New England (Connor 1971, Cronan & Brooks 1968). Connor (1971) stated that sei whales are "considered to be rare in the western North Atlantic" and noted the irregular occurrence of sei whales in comparison to other rorquals.

Sightings of sei whales in July 1981 just south of Montauk Point extended the recorded range of the species almost 100 nautical miles west of what was previously described (CETAP 1982). The study was the first to report that sei whales "are a common and regular component of the cetacean fauna in the more northerly sections" of the east coast. Overall, the CETAP surveys recorded 67 sightings of 204 individuals. The average number of individuals per sighting was 3 sei whales, the largest group size of all baleen species, and sightings could range from one to 40 individuals. Calves were seen in May, June, and July, found in groups of adults from 2 to 8 individuals.

Sadove and Cardinale (1993) reported sei whales being seen "frequently in association with aggregations of fin whales" in the early 1980s, although the species was encountered infrequently between 1985 and 1993. This pattern of occurrence suggested that sei whales might occur cyclically in the New York Bight. When sighted, the whales were adult animals in small groups of up to 10 individuals actively feeding with fin whales during July and August. Given the few sightings, it was estimated that there were probably less than 150 individual sei whales that used the New York Bight area during their study period (Sadove and Cardinale 1993).

Kenney and Vigness-Raposa (2010) reported a collection of sightings that are mostly offshore, from the middle of the continental shelf out to the shelf break and slope, confirming the previously recorded distribution and irregular pattern of occurrences. Sightings in New York tended to occur in either April or October, which remain the most likely months that sei whales are present.

The first near-real time moored buoy deployment by WHOI was in 2016, and in 2021 an additional buoy was added in the opposite end of the Empire Wind area (WHOI 2025). In 2023 glider deployments from the DEC Offshore Indicators project began working in coordination with WHOI, adding to the scope of acoustic detections in the New York Bight. Sei whale detections over the years, all of which have multiple active deployments, have occurred primarily in the months of March and April (but also February and May) and random single days throughout fall monhs (October through December; WHOI 2025).

During the NYSERDA digital aerial survey there were 12 sei whale sightings, across the shelf and in all corners of the NYB. Sighting months were February (2019), April (2018), May (2019), August (2017), and November (2018). The DEC large whale aerial surveys from 2017-2020 recorded 2 sightings of 7 total individual sei whales (Zoidis et al. 2021). Both sightings were in the month of April: one individual on the continental shelf in Year 2 and a group of six individuals on the slope in Year 3. The group of six individuals exhibited socio-sexual behavior, a newly described observation for the New York Bight and one in which mating could not be ruled out (Rickard et al. 2022). The DEC's PAM effort from 2017-2020 detected sei whales during all months of the year and on 36% (393 days) of recorded days (Estabrook et al. 2025). There was strong seasonality in the detections with a significant peak in spring, from March through May, in all three years. Most detections were at offshore recording sites and generally showed little interannual variability. Davis et al. (2020) determined that the New York Bight is an important area for sei whales, as it was the only region along the east coast of North America where detections were persistent year-round.

Marine mammal stranding records are submitted to and managed by the National Oceanic and Atmospheric Administration (NOAA) in the NOAA National Stranding Database, which dates back to at least 1991 in New York (NMFS 2025). The only sei whale stranding record since 2015 was in May 2024 when, nearly 10 years to the day of the same type of event, a sei whale was brought into the Port of New York/New Jersey on the bow of a cruise ship. There are 3 pre-2015 stranding records, 2001, 2002, and 2014. All records but the 2002 event, which involved a male calf stranding alive in September, took place in May. With the exception of the calf stranding alive, all 3 of the other stranding events involved a dead sei whale being brought into the harbor on the bow of a ship.

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

Habitat or Community Type Trend in New York

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

Sei whales are a pelagic species associated with the continental shelf edge and slope, and chiefly found at at least a 40-meter depth (Prieto 2012a, COSEWIC 2019). In general, they prefer deeper waters and are frequently found over the continental slope, shelf breaks, and deep ocean basins between banks (CETAP 1982, Martin 1983, Olsen et al 2009, Perry et al. 1999, NMFS 2011, Prieto 2012a, Sutcliffe and Brodie 1977, Prieto 2012a). Along the east coast of North America, sei whales range from the southeastern United States to West Greenland. It is believed that they travel to lower latitudes to breed during winter months and spend the summer feeding at higher latitudes (Perry et al. 1999, NMFS 2011, Prieto 2011). The highest sei whale concentrations are bounded by water temperatures of 8 to 18 degrees Celsius in mid-latitude regions (Reilly et al. 2008, Cooke et al 2018). Habitat suitability studies indicate sei whale distribution in the U.S. is most likely related to cool waters (less than 10 degrees Celsius), high levels of chlorophyll and inorganic carbon, and a shallow mixed layer depth (Palka et al. 2017, Chavez-Rosales et al. 2019).

Sei whales are notorious for having a highly variable and unpredictable distribution. They often appear erratically in certain feeding grounds, in large numbers some years and absent in others, sometimes for years or even decades (Reilly et al. 2008, Prieto et al. 2012a). Despite the unpredictability of these “incursion” years, sei whales display specific seasonal and geographic patterns (Davis et al. 2020). The Gulf of Maine and Georges Bank receive the greatest abundance of sei whales in the U.S. during spring, including sightings along the eastern margin of Georges Bank, into the Northeast Channel area, south of Nantucket, and along the southwestern edge of Georges Bank, for example in the area of Hydrographer Canyon (CETAP 1982, Kraus et al. 2016, Roberts et al. 2016, Palka et al. 2017, Cholewiak et al. 2018).

Sei whales are often associated with ocean fronts and eddies, which are believed to concentrate prey (Prieto 2014, Skov et al. 2008, Olsen et al. 2009, NMFS 2011). They may use currents and gyres as guidance for large scale movements such as the individual sei whale that traveled 1,500 km in less than two weeks from the Azores to the Labrador Sea (Olsen et al. 2009). Recent satellite tracking data indicate a clear migration route between the Azores and the Labrador Sea, but no individuals moving between the Azores and the Scotian Shelf (Olsen et al. 2009; Prieto et al. 2014). Perez-Jorge et al. (2020) tracked sei whales in mid-North Atlantic waters and found that all individuals traveled north-west towards the Labrador Sea, defining a clear migratory route for this species which supported sei whale preference for deeper waters. Occasionally, they are found in more inshore waters, presumably in response to changes in prey density, which is a characteristic of primary habitat (Prieto 2011).

Uniquely capable with a generalist diet and multiple feeding strategies (COSEWIC 2019). Sei whales can have a more variable diet than other large whales due to baleen morphology providing them the ability to both skim or ram filter feed on zooplankton and lunge feed on fish but tend to eat one prey type at a time (Prieto 2012a, Baumgartner and Frantoni 2008, Baumgartner et al. 2011, Cooke et al. 2018, COSEWIC 2019). Sei whales are opportunistic feeders and their diet is diverse. They feed primarily on copepods, though small schooling fish and other small prey have been found in sei whale stomachs, and eat 2,000 pounds per day (NMFS 2024). Prey preference depends on location and season. For example, in the North Atlantic, sei whales target high concentrations of zooplankton, especially copepods (Jonsgard and Darling 1977, COSEWIC 2019). Overlapping prey preferences often create multispecies aggregations that include sei whales, North Atlantic right whales, and fin whales (CETAP 1982, Sadove and Cardinale 1993). In the North Atlantic, Prieto et al. (2012a) described sei whale feeding behavior as stenophagous, or almost exclusively on calanoid copepods and euphausiids. Because sei whales rely heavily on copepods for their diet, Baumgartner et al. (2011) found that they forage mostly at night when copepods are closer to the surface.

Sei whales are typically found alone or in small groups of 2 to 5, though larger aggregations may occur at feeding grounds (Sadove and Cardinale, CETAP 1982, Johnson et al. 2021). For example, over 40 sei whales were observed in a multi-species assemblage near Hydrographer Canyon off Cape Cod, Massachusetts in April 1980 (Kenney and Winn 1987). A sei whale Biologically Important Area (BIA) for feeding was identified just east of New England, along the Maine coast south past Cape Cod to

Georges Bank and the Great South Channel, from May through November (LaBrecque et al. 2015). Though wintering and breeding grounds remain unknown, sei whale calves have been sighted around the Georges Bank area, one in each of the months may, June, and July (CETAP 1982, COSEWIC 2019).

Specific habitat use in the New York Bight is not well understood and more research is needed.

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.	Yes	Choose an item.	Choose an item.	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):*

What little life history information is known for sei whales comes from whaling data from different ocean basins and, while it's likely that all sei whales are similar, it has not been definitively determined that all populations of sei whales exhibit the same life history traits (NMFS 2011, Prieto et al. 2012a). The average adult sei whale is about 15 meters long, weighs 19 tons, and lives to about 60 years of age (COSEWIC 2019). Taylor et al. (2007) estimated the generation time to be 23.3 years. Sei whales are difficult to identify among similar baleen whale species such as fin, Bryde's, and Omura's whales. They are gray in color and usually have white oval scars, most likely from ectoparasitic copepods, lampreys, and cookie cutter sharks (NMFS 2011, Weir 2017). As is typical for baleen whale species, female sei whales are larger than males (i.e., sexual dimorphism). In addition, Northern Hemisphere sei whales are slightly smaller than Southern Ocean sei whales. Sei whales rarely raise their flukes out of the water or breach but their shape, speed, and size make them efficient swimmers capable of effectively exploiting large spatial ranges. Because of this, it's unlikely that changes in habitat reduces the amount of habitat availability. Similarly, sei whales are likely capable of adapting to fluctuations in prey but it remains uncertain to what extent (Hayes et al. 2024).

Sei whales migrate seasonally to lower latitude mating and calving grounds, but the exact location remains unknown (NMFS 2011, Prieto 2012a, Prieto et al. 2012b). Evidence from catch records indicates that migration in all ocean basins is likely structured by age, sex, and reproductive status. Pregnant females appear to be the first to migrate to and from feeding grounds while the youngest animals arrive last and leave first, and do not go as far poleward (Lockyer 1977b, Horwood 1987, Gregr et al. 2000, Prieto et al. 2011). However, in the Azores, there appears to be more males in the early spring season with females following later (Prieto et al. 2012a).

The average age of sexual maturity in both sexes is believed to be 8-10 years though a range of 5-15 years old has also been reported (Lockyer and Martin 1983, Lockyer 1984, Horwood 1987, NMFS 2011, COSEWIC 2019). In the North Atlantic, conception is believed to peak in December and January (Lockyer and Martin 1983, Horwood 1987, Prieto 2012a) and parturition is believed to occur between January and March, with most births taking place in November and December in warmer waters after a 10-to-12-month gestation (Katona et al. 1978, Kjeld 2003). Average length at birth is approximately 4.5

meters and calves are likely nursed for six to nine months so weaning likely occurs on the feeding grounds in summer or fall (Kitayama et al. 2015, Lockyer and Martin 1983, NMFS 2011). The estimated pregnancy rate in the North Atlantic in the 1980s was 0.41 (Kjeld 2003). The sei whale calving interval is estimated to be 2-3 years (Jonsgård and Darling 1977, Lockyer and Martin 1983, Prieto et al. 2012a, Kitayama et al. 2015).

The acoustic behavior of sei whales is poorly understood (Prieto et al. 2012a). Sei whale calls are low frequency, generally 38 to 100 Hz (Baumgartner and Fratantoni 2008). Some variation in calls has been recorded but it's unknown if different geographic areas and/or populations are the cause (Prieto et al. 2012a). Multiple studies have shown that sei whale vocalizations increase as feeding activity decreases (Baumgartner and Fratantoni 2008, Romagosa et al. 2015).

Little is known on natural mortality in sei whales. Natural mortality rates are difficult to estimate but for sei whales appears to be about 7.5 percent per year in adults, perhaps somewhat greater in immature animals (Allen 1980). Killer whales and sharks may prey upon young or sick individuals, although the extent of this predation is unknown and has not been reported in the North Atlantic (NMFS 2011, Prieto et al. 2011, Jefferson et al. 1991, Ford and Reeves 2008, Schuttler et al. 2024). The distribution of killer whales overlaps with the distribution of sei whales in eastern Canada and killer whales in the Northwest Atlantic are known to feed on cetaceans so killer whale predation on sei whales is possible (Lawson and Gosselin 2018). However, the scale and ecological significance that predation has on the sei whale population is still a debate within the scientific community (Prieto et al. 2012a). Further research is needed to assess whether predation from these species is a true threat to sei whales in the northwest Atlantic.

Parasites are known to cause major health problems for cetaceans and are considered a significant natural threat to sei whales (Horwood 1987, Prieto et al. 2012a). Helminth parasites can cause severe complications to respiratory and urinary systems, the brain, and the liver (Prieto et al. 2012a, Lambertsen 1986, Lambertsen et al. 1986, Dailey 2001). In Iceland there is evidence of a viral disease that caused inflammation in the lungs of 14% of sei whales examined, though no causative agent was found (Lambertson 1990). Additionally, *Entamoeba* sp. and *Giardia* sp. were detected in fecal samples of sei whales in the Azores (Hermosilla et al. 2016). Occurrence of these human endo-parasites could be caused by contaminated runoff or sewage from populated areas. In the Pacific, Brucella has been found in sei whales (Ohishi et al., 2016). Also, an unknown disease in California waters was found in sei whales in the early 1980s that caused the shedding of baleen plates which impaired the feeding ability of infected whales (Mizroch et al. 1984). No evidence of such a disease has been found in the North Atlantic, and overall impacts of these viral and bacterial infections are unknown.

The largest baleen whale mass morality event ever recorded was of sei whale in Chilean Patagonia, which has been linked to biotoxins from harmful algal blooms (HABs; Häussermann et al. 2017). HABs are potentially fatal in baleen whales and therefore potentially catastrophic for small populations, as hundreds of individuals may die in a single event (Hausserman et al 2017). Sub-lethal effects may include lower reproductive success and increased susceptibility to other causes of death (Leandro et al. 2010). Intensity and frequency of algal blooms are expected to increase with ocean warming (Gobler et al. 2017). More intense and/or frequent toxic blooms in winter and spring feeding areas may affect the recovery of species.

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

Two of the best-known anthropogenic threats to large whale populations include vessel strikes and fishery interactions, specifically entanglement in fishing gear. Both of these threats are believed to be more of a problem than observational studies suggest, as many events are most likely not reported and affected whales may die at sea and not be recovered (Heyning and Lewis 1990). Unfortunately, it is extremely difficult to track a specific event to a geographic location, so it is nearly impossible to know whether an event occurred in a particular area. The pelagic nature of this species likely also reduces the chances of these interactions, but also increases the likelihood of undetected interactions.

Vessel Strikes

Increased demand for global trade coupled with increased military activities is driving ship traffic growth in the world's oceans, with a global fourfold increase between 1992 and 2012 (Tournadre 2014). As the world's ship traffic increases, so does the potential for increased ship collisions with large whales, especially as whale populations recover from exploitation and grow in size (NMFS 2021 – 5yr). Though it's likely that most vessel strikes of sei whales go undetected because of their general offshore distribution and constant movement, vessel strikes still pose a threat to sei whales (Jensen and Silber 2004. The 2019 COSEWIC sei whale assessment identified ship strikes as one of two major threats, the other being underwater noise. Stranding records confirm that sei whales do get struck by vessels causing serious injury and death. New York has three records of sei whale strandings whose cause of death was vessel strike: 2001, 2014, and 2024. All events involved the carcass being brought into New York harbor draped over the bow of the vessel. Similar events have happened in Boston, Massachusetts (November 1994) and Norfolk, Virginia (February 2003) (K&VR 2010). Other records of sei whales struck and usually killed by vessels exist for other parts of the North Atlantic, such as off Maritime Canada (COSEWIC 2019, NMFS 2021).

Some studies suggest that the foraging behavior of sei whales, specifically the frequency with which they forage at the surface at night, may lead to an increased vulnerability to vessel strike (Baumgartner and Frantoni 2008). As the largest port on the U.S. East Coast with vessel traffic traveling within three separate shipping lanes, the area surrounding the Port of New York/New Jersey remains a high-risk area for vessel strikes (Thorne and Wiley 2024). A priority for future research is to better understand the risk of vessel strikes for the northwest Atlantic sei whale population. Recreational vessel activity, such as whale-watching has been known to affect some species of cetaceans. Unlike some other species, sei whales are not the target of heavy whale-watching pressure, so it is assumed that these effects are minimal.

Entanglement

Documented cases of sei whale entanglements are extremely rare, more so than records of vessel strikes (Prieto et al. 2012a). Between 1990 and 2015, there were only three reported sei whale entanglement events in the U.S. Atlantic; only one resulted in a known mortality; however, the other two events were reported as "severe injuries," and the final status of the individuals were unknown (NMFS 2011, NMFS 2012, NMFS 2013). In Atlantic Canadian waters, Themelis et al. (2016) reported two cases of sei whale mortality due to fishing gear from 2008-2014.

Since 2015, there was one record of entanglement reported in 2017 off the coast of North Carolina of an emaciated sei whale carrying a large mass of heavily fouled gear over its back (Henry et al. 2017; NMFS 2020; Henry et al. 2020). It is believed that sei whales are not at as high of a risk of entanglement as other rorquals because of their offshore distribution, but warming trends in the Gulf of Maine and around Cape Cod is resulting in movement of trap pot fisheries further offshore, potentially increasing the risk of entanglement for sei whales (Hayes et al. 2018, NMFS 2011). Because of this, it may be that entanglements are only just now developing as significant risk to sei whales that frequent New York. However, it's important to note that sei whales frequently forage on the same prey and in the same areas as North Atlantic right whales, which are very frequently entangled in fishing gear and suffer population-level effects due to entanglements (Knowlton et al. 2012). While the frequency and severity of fishing gear entanglements in sei whales continue to be investigated, whether actions are necessary to address potential effects remains unknown (NMFS 2021).

Stranding and entanglement response in New York is done by the New York Marine Rescue Center (NYMRC) and the Atlantic Marine Conservation Society (AMSEAS). Each group is federally permitted and responsible for a different subset of cases. All large whale events – live and dead – fall under the purview of AMSEAS, however they are not authorized to disentangle large whales. The nearest group authorized to perform disentanglements is located in Provincetown, Massachusetts.

Climate Change

Sei whale distribution and foraging have been linked to currents and ocean fronts in numerous studies (Skov et al. 2008, Olsen et al. 2009, NMFS 2011). Sei whales in the North Atlantic feed primarily on copepods, which have already exhibited signs of a shift in distribution as a result of climate change (Hays et al. 2005). Change in the location of prey and also reduced prey abundance due to climate change impacts may develop into insufficient access to prey and ultimately limit the productivity of sei whale populations. Sub-arctic ecosystems are experiencing the most significant impacts by the rise in global temperature due to climate change, which is affecting sei whale prey species. Ocean acidification can impact copepod development and sea ice extent effects the timing and abundance of phytoplankton blooms (NMFS 2011). Regions of the North Atlantic, like the Newfoundland-Labrador ice shelves, include a large part of the known sei whale summer habitat and may already be experiencing marine copepod diversity reorganization due to sea surface temperature increase. The copepod *Calanus finmarchicus* has exhibited a documented shift north at 8.1 km per year (Grieve et al. 2017). These changes in prey abundance and distribution may have significant impacts for sei whales since copepods are their main source of prey in this ocean basin (Prieto et al. 2012a). However, it remains unclear whether reduced prey abundance due to climate change is a threat to sei whales. Further research is needed to identify if and how climate change impacts sei whale prey.

Long term changes in climate and oceanographic processes as a result of climate change could have numerous effects on sei whales. Temperature and current shifts could lead to occupied habitats becoming unsuitable, and the use of previously unoccupied habitat as a response of a shift in distribution. Chavez-Rosales et al. (2022) documented an overall 178 km northeastward spatial distribution shift of the seasonal core habitat of Northwest Atlantic cetaceans that was related to changing habitat/climatic factors This study used sighting data collected during seasonal aerial and shipboard line transect abundance surveys during 2010 to 2017. During this time frame, the weighted centroid of the sei whale core habitat moved farthest during winter (179 km towards the southwest) and least during spring (70 km). There is uncertainty in how, if at all, the changes in distribution and population size of cetacean species may interact with changes in distribution of prey species and how the ecological shifts will affect human impacts to the species.

Harmful Algal Blooms

In cetaceans in all the world's oceans, there has been an increase in cases of poisoning due to harmful algal blooms (Harvell et al. 1999). Trophic transfer of biotoxins from harmful algal blooms (HABs) has been shown to be potentially fatal in baleen whales and has been linked to the largest baleen whale mass mortality ever recorded, which killed hundreds of sei whales in Chilean Patagonia in 2015 (Häussermann et al. 2017). Intensity and frequency of algal blooms are expected to increase with ocean warming, which may affect the recovery of sei whales if the blooms occur in major feeding areas (Gobler et al. 2017). Based on the findings from Häussermann et al. (2017), the effects can be potentially catastrophic for small populations, as hundreds of animals may die in a single episode. Sub-lethal effects of HABs may include lower reproductive success and increased susceptibility to other mortality causes (Leandro et al. 2010).

Noise Pollution

Another major anthropogenic threat is noise pollution. The primary sources of anthropogenic noise in the ocean are shipping, oil and gas exploration (e.g., seismic surveys and air guns), military activities, and marine construction (e.g., pile-driving, dredging, etc.) (Nowacek et al. 2007). Cetaceans, including sei whales, rely primarily on sound in the marine environment. Increasing levels of anthropogenic noise in the ocean could hamper their auditory and vocalization effectiveness through masking (e.g., not hearing conspecifics), displacement, temporary or permanent hearing loss, stress, and other behavioral changes (Gordon et al. 2004, Nowacek et al. 2007, Tyack 2008, Southall 2019).

Behavioral changes can include more calls, longer calls, or different frequency of calls (Di Iorio & Clark 2009). Several species of large whales have been found to increase the amplitude of their calls in response to large levels of noise, which could lead to increased energy consumption (Holt et al. 2009, Parks et al. 2010). In contrast, above a certain level of noise, some whale species are known to stop vocalizing, and there is also the potential for masking of calls if background noise occurs within the frequencies used by calling whales (Melcón 2012).

The acoustic monitoring that took place in the New York Bight region in 2008 and 2009 did find elevated levels of background noise, due in large part to shipping traffic, and the potential for masking of whale calls (BRP 2010). In a large, solitary species like the sei whale, this could lead to difficulty finding other whales, including potential mates.

Military Activity

Acute, intermittent noise from military activity, especially from mid-frequency sonar and explosions, is likely to result in significant behavioral disruption and responses, and, at sufficiently high levels, may result in mortality from acoustic trauma for some baleen whale species (Harris et al. 2018, Weilgart 2007). Controlled experiments have shown clear behavioral responses to simulated military sonar and sounds by baleen whale species, including cessation of feeding, increased swimming speed, and travel away from the sound source (Goldbogen et al. 2013, Southall et al. 2014). Military training exercises and active sonar could adversely affect sei whales, since the low frequency transmittions overlap with sei whale range, thereby masking comms between individuals and negatively affecting social ecology and interactions of sei whale groups (NMFS 2011). While the effects are uncertain and have not been documented in sei whales, due to the large scale and diverse military activities throughout the North Atlantic, there is potential for disturbing, injuring, or killing cetaceans, including sei whales (NMFS 2011). Even if baleen whales are physiologically more resilient to military detonations and sonar than their toothed relatives, the effect of active sonar and military detonations on sei whales has not been well studied and remains uncertain.

Oil and Gas Exploration

Baleen whales are known to detect the low-frequency sound pulses emitted from air guns used during seismic surveys and have been observed changing their behavior due to the presence of seismic survey vessels (McCauley et al. 2000; Stone 2006). Seismic operations have also been linked to extended area avoidance by fin whales (Castellote *et al.* 2012). The east coast of Canada has been subject to much oil and gas exploration and studies have highlighted concerns about the long-term effects of prolonged exposure to air guns, though activity is slightly less off of Nova Scotia (Delarue et al. 2018).

Shipping Noise

Shipping is the main source of low-frequency noise in the oceans (Parks et al., 2007). Over the past few decades the contribution of shipping activities to ambient noise has increased by 12 dB (Hildebrand

2009). Large vessels generate loud noise at low frequencies which degrades the acoustic environment and can negatively affect behavior and habitat use of baleen whales (Schick and Urban 2000, Blair et al. 2016). Masking (i.e. acoustic interference) can have serious effects on cetaceans by hampering individual and conspecific communication, finding mating partners, locating prey, and navigating, thereby negtiavely impacting reproductive success and ultimately survival (Clark *et al.* 2009, Ahonen *et al.* 2017).

A study on sei whale migratory habitat off the Azores found that sei whale vocalization frequencies can be affected by ship noise in the area (Romagosa et al. 2017, 2020a). As highly migratory species, sei whales, like all baleen whales, depends on long-range communication to maintain individual and population health (Payne and Webb 1971). Cholewiak et al. (2018) determined that vessel noise near shipping lanes, which includes most of the New York Bight, significantly decreases the communication space of multiple baleen whale species. Additionally, Clark et al. (2009) found that mysticetes showed diminished call rates in the presence of passing vessels. If sei whale density in a given area is low, any diminished calling activity or communication area might make it more difficult to locate potential mating partners and reduce ability for social interaction (NMFS 2011).

<u>Offshore Energy</u> (oil drilling and offshore wind)

The effects of other anthropogenic activities, such as offshore energy development and oil spills, are also largely unknown. Pre-construction, construction, operation, and decommissioning encompass a wide range of underwater sound in addition to pile driving noise (Ruppel et al. 2022). In addition, offshore energy development could potentially degrade sei whale habitat or displace them from common foraging or breeding areas. Studies have found evidence of this in passive acoustic data that showed the Southern New England area is an important area for sei whales and other endangered cetacean specie (Stone et al. 2017, Van Parijs et al. 2023). Additionally, sei whales had previously been considered infrequent visitors to this area, which is an important reminder of climate change and cumulative impacts on cetaceans (Kenney and Vigness-Raposa 2010).

Oil spills that occur while sei whales are present could result in skin irritation, baleen fouling, ingestion of oil, respiratory distress from fumes, ingestion of contaminated prey, and displacement from habitat (Geraci 1990). Actual impacts would depend on the extent and duration of contact and the characteristics of the oil. Most likely, the effects would be irritation to the respiratory system and absorption of hydrocarbons into the bloodstream (Geraci 1990).

<u>Contaminants/Toxins</u>

It is currently believed that contaminants such as organochlorines, organotins, and heavy metals do not negatively impact sei whales and other baleen as much as other marine mammals (O'Shea and Brownell 1994, Prieto et al. 2012a). Sei whales feed at a low trophic level, and so there is little chance for the bioaccumulation of toxins that occurs in many of the odontocetes (toothed whales). While no significant effects of contaminants has yet been documented, it is possible that exposure has long-term effects such as reduced reproductive success and/or long-term survival (Harwood 2001, Ross 2002).

<u>Marine Debris</u>

According to the United Nations Global Compact, more than 8 million tons of plastic ends up in the ocean every year, and the amount of plastic in the ocean is expected to quadruple by 2040 (United Nations Global Impact). Plastic ingestion has been well documented in cetaceans including several species of baleen whales. Ingestion of marine debris by cetaceans may include internal injuries or cause complete blockage to the digestive tract leading to malnutrition, starvation, and mortality (Simmonds 2012, Baulch and Perry 2014). Most cetacean ingestion of marine debris is discovered through necropsies of stranded animals and has been documented in more than half of extant cetacean species, including nine mysticete species, with ingestion rates as high as 31% in certain populations (Baulch and Perry 2014, Weir 2017). Multiple cases of marine debris ingestion for sei whales exist (Baulch and Perry 2014). One event involved a young female sei whale stranding in Virginia in August of 2014, which was found with a broken DVD case in its stomach that had lacerated the organ and prevented the whale from feeding and digesting (National Geographic 2015). Microplastic pollution and ingestion is also being researched (Besseling et al. 2015).

Interspecific Competition

There has been considerable discussion of interspecific competition among baleen whales, particularly as a function of whaling impacts and successive recovery (Aguilar and Lockyer 1987). The substantial dietary overlap among these species establishes the potential for interference competition but no conclusive evidence exists that interspecific competition among baleen whales is affecting population recovery rates (Clapham and Brownell 1996). However, more research is needed to determine if competition exists, if it might exist in the near-future, and how species may or may not adapt. One recent study of baleen whales off of Iceland found a relatively small niche for sei whales and that all species rely heavily on krill, but there are many variables to how, when, and where feeding plays out and what that means for overall risk (Garcia-Vernet et al. 2021).

Threat Level 1	Threat Level 2	Threat Level 3	Spatial Extent*	Severity*	Immediacy*	Trend	Certainty
3. Energy Production & Mining	3.1 Oil & Gas Drilling	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
3. Energy Production & Mining	3.3 Renewable Energy	3.3.2 Wind farms	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
4. Transportation & Service Corridors	4.3 Shipping Lanes	4.3.1 Shipping	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
5. Biological Resource Use	5.4 Fishing & Harvesting Aquatic Resources	5.4.2 Commercial fishing	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
6. Human Intrusions & Disturbance	6.1 Recreational Activities	6.1.4 Recreational boating	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
6. Human Intrusions & Disturbance	6.2 War, Civil Unrest & Military Exercises	6.2.3 Military exercises	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.2 Problematic Native Plants & Animals	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.4 Pathogens	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
8. Invasive & Other Problematic Species	8.5 Intrinsic Biological Limitations	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.2 Industrial & Military Effluents	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.4 Garbage & Solid Waste	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
9. Pollution	9.6 Excess Energy	9.6.3 Noise pollution	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.1 Habitat Shifting & Alteration	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

11. Climate Change	11.2 Changes in Geological Regimes	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.
11. Climate Change	11.3 Changes in Temperature Regimes	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.	Choose an item.

Table 1. Threats to sei whale

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 sei whale is protected in the United States by its status as a federally Endangered species. In addition, the sei whale (along with all other marine mammals) receives federal protection under the Marine Mammal Protection Act of 1972 (MMPA). The sei whale is protected internationally from commercial hunting under the International Whaling Commission's (IWC) global moratorium on whaling. The moratorium was introduced in 1986, and is voted on by member countries (including the United States) at the IWC's annual meeting.

Sei whales are also protected under the Environmental Conservation Law (ECL) of New York. The sei whale is listed as a state endangered species in New York. Section 11 – 0535 protects all state-listed endangered and threatened species and makes it illegal to take, import, transport, possess or sell any listed species or part of a listed species. In addition, 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." Both of these help to protect the habitat of the sei whale. Whether they are adequate to protect the habitat is currently unknown.

The North Atlantic Large Whale Take Reduction Plan identified floating groundline used in the trap and pot fisheries as an entanglement threat for large whales. The National Marine Fisheries Service subsequently passed a new law making it mandatory for all pot and trap fisheries to switch over to sinking groundline by 2008. To encourage compliance by fishermen, DEC's Marine Endangered Species and Crustacean Unit partnered with the Cornell Cooperative Extension of Suffolk County and initiated gear buyback programs, which removed 16.9 tons of floating rope from New York's commercial lobster fishery. Further analysis is required before it is known if any real reduction in large whale entanglement has occurred as a result of the switch from floating to sinking groundline.

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

It is still largely unknown how frequently sei whales utilize the waters of the New York Bight. Long-term surveys and monitoring strategies should be developed. Historically, vessel and aerial survey techniques have been used. These visual techniques provide valuable information, but also are limited by weather and sea conditions and are rather expensive and time-consuming. In addition, these surveys are often focused in more coastal waters, not over the continental shelf area frequented by sei whales (NMFS 2011). The use of passive acoustics as a way to monitor large whales is promising. Cornell University partnered with NYS DEC and placed marine autonomous recording units in the New York Bight region for periods of time in 2008 – 2009. These recorders detected several species of cetaceans using these waters, including sei whales (BRP 2010).

If it is known where and when sei whales are occurring in New York waters, more effective management and conservation strategies can be deployed. Seasonal speed restrictions on vessels in high use areas could be put into effect. In addition, seasonal and/or area closures on certain fisheries where the gear poses the largest threat to large whales may help minimize entanglement in gear.

Near real-time acoustic monitoring of large whales, specifically right whales, is currently being used off of the coast of Massachusetts in an effort to reduce vessel collisions with large whales. When a right whale is detected, an alert goes out to all large shipping vessels in the area, and a speed restriction goes into place. Similar monitoring in New York could help reduce the threat of vessel collisions with large whales in coastal waters. Even if a speed restriction only goes into place for the critically endangered right whale, knowledge that there are large whales in the area could lead to increased awareness and alertness and possibly reduce the potential of a collision.

The sei whale would benefit greatly from further research. Little is known about general life history and demography of this species, and the real effects of the threats in New York waters are unknown. Further research into the actual effects that threats such as climate change are having on sei whales is warranted. In addition, education on this species and the importance of reporting ship strikes and entanglements is encouraged.

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 sei whale in NY.
C.8 Research and Monitoring	C.8.1.5.7 Designing and developing inventory or monitoring protocols	Develop near real-time acoustic monitoring system to alert shipping vessels

Table 2. (need recommended conservation actions for sei whale).

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