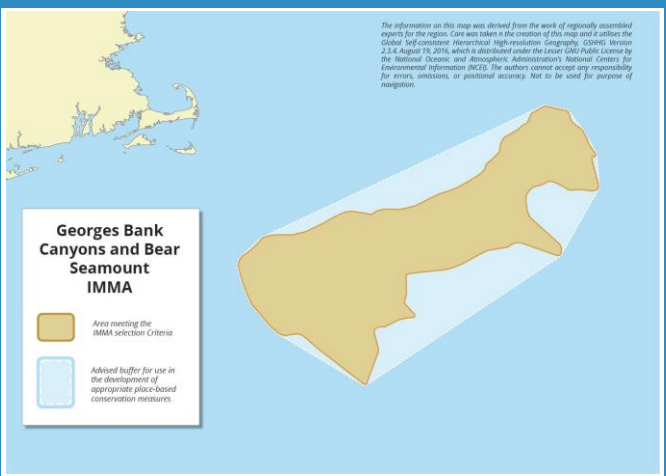

Area Size

47,440 km²

Qualifying Species and Criteria

Sei Whale – *Balaenoptera borealis*

Criterion A

Fin Whale – *Balaenoptera physalus*

Criterion A

North Atlantic Right Whale – *Eubalaena glacialis*

Criterion A

Pygmy/dwarf sperm Whale – *Kogia* spp.

Criterion C (2)

Sowerby's beaked Whale – *Mesoplodon bidens*

Criterion C (2)

True's beaked Whale – *Mesoplodon mirus*

Criterion B (2); C (2)

Sperm Whale – *Physeter macrocphalus*

Criterion A; C (2)

Goose-beaked Whale – *Ziphius cavirostris*

Criterion C (2)

Criterion D (2) – Marine Mammal Diversity

Balaenoptera acutorostrata, Balaenoptera borealis, Balaenoptera physalus, Delphinus delphis, Eubalaena glacialis, Globicephala macrorhynchus, Globicephala melas, Grampus griseus, Hyperoodon ampullatus, Kogia spp., *Leucopleurus acutus, Megaptera novaeangliae, Mesoplodon bidens, Mesoplodon mirus, Physeter macrocephalus, Stenella coeruleoalba, Stenella frontalis, Tursiops truncatus, Ziphius cavirostris*

Georges Bank Canyons and Bear Seamount IMMA

Other Marine Mammal Species Documented

Balaenoptera musculus

Summary

The Georges Bank Canyons and Bear Seamount IMMA is located along the slope and offshore waters of Georges Bank. It extends from Hydrographer Canyon in the west to Corsair Canyon at the northeastern tip of Georges Bank. The area is bounded at the shallow extent by the 100 m contour and extends offshore to the deepwater extent of the canyons. This area comprises the only known aggregation region for True's beaked whales (*Mesoplodon mirus*). Within this area, there are also Vulnerable sperm whales (*Physeter macrocephalus*) and foraging areas for a deep-diving cetaceans, such as Sowerby's beaked whales (*Mesoplodon bidens*), Cuvier's beaked whales (*Ziphius cavirostris*), and pygmy/dwarf sperm whales (*Kogia* spp). Finally, the area sustains a high diversity of 20 marine mammal species of which 19 are regularly present. The area includes part of the US Northeast Canyons and Seamounts Marine National Monument.

Description:

The IMMA spans the slope and canyon waters along Georges Bank, from Hydrographer Canyon to Corsair Canyon. The onslope extent is bounded by the 100m isobath, and the seaward extent is bounded by the 3500- 4000 m isobaths. The Gulf Stream has a strong effect on the physical and biological oceanography of this region, primarily via the formation of warm core rings, which influence water mass and

chlorophyll distributions along the southern flank of Georges Bank. The slope waters and canyons are associated with high primary and secondary productivity, and oceanographic processes along the steep slope topography accumulate cetacean prey and attract a diversity of species. The region includes Bear Seamount, the oldest seamount in the New England seamount chain, which rises approximately 2,500 m from the seafloor to within 1,000 m of the sea surface. This area contains part of the Northeast Canyons and Seamounts Marine National Monument, which is the only Marine Monument on the United States East Coast. It was established in 2016 on the basis of the area's unique ecological resources that are a subject of scientific interest.

Criterion A: Species or Population Vulnerability

Sperm whales (*Physeter macrocephalus*), which are part of the deep-diver community that is present in this area, are listed as Vulnerable on the IUCN Red List (Taylor et al., 2019). Three other species that contribute to diversity in this area are also threatened with extinction according to the global IUCN Red List. North Atlantic right whales (*Eubalaena glacialis*) are listed as Critically Endangered on the Red List (Cooke, 2020). Sei whales (*Balaenoptera borealis*) are listed as Endangered (Cooke, 2018a) and fin whales (*Balaenoptera physalus*) are listed as Vulnerable (Cooke, 2018b).

Criterion B: Distribution and Abundance Sub-criterion B2: Aggregations

This IMMA includes the only known aggregation area of True's beaked whales in the North Atlantic Ocean. Until recently, most of the limited documentation for this species has come from stranded animals. Strandings have been reported from Florida to Newfoundland (McClellan et al., 2018), and from Ireland, Europe, and the Canary Islands (McLeod, 2000). In reviewing the records of the four mesoplodonts in the North Atlantic, McLeod (2000) commented on the limited distribution of True's beaked whale compared to the other three species. Only a handful of live sightings from other areas have been reported in the literature (de Soto et al., 2017; McClellan et al., 2018; Robbins et al., 2019). In each case, the reported sightings were brief and comprised four or fewer individuals. In contrast, in three years with dedicated survey effort within the IMMA region, True's beaked whales were reliably encountered. Surveys ranged from 10 – 29 days and covered up to 4,470 km. Across all three survey years, there were a total of 176 sightings of True's beaked whale groups, comprising approximately 88 unique groups (Palka et al., 2021). Group sizes ranged from 1-8 animals. Additionally, there were approximately 427 acoustic-detection encounters, including groups that were detected during exploratory daytime survey effort, groups that were detected multiple times during focal data collection, as well as groups that were only acoustically detected during nighttime survey effort. The number of sightings and acoustic detections of this species far exceeds what appears in the published literature from any other site worldwide, and the reliability of their occurrence indicates that this is important habitat for what may be a resident or semi-resident population.

Criterion C: Key Life Cycle Activities Sub-criterion C2: Feeding Areas

Passive acoustic data indicative of foraging activity by deep-diving odontocetes have been collected within this IMMA, both from long-term bottom-mounted recorders and via towed hydrophone arrays during shipboard surveys (e.g. DeAngelis et al., 2025).

Figure 1: True's (left) and Cuvier's (right) beaked whales. Photo credit: New England Aquarium.

Figure 2: Two sperm whales (*Physeter macrocphalus*) swimming together at the surface. Photo credit: NOAA Fisheries, Northeast Fisheries Science Center (permit #27066).

The foraging echolocation clicks of True's beaked whales were first described in the literature from shipboard survey data collected in this IMMA (DeAngelis et al., 2018). Visual sightings data, coupled with towed hydrophone array recordings, made it possible to describe the echolocation clicks of these whales during their foraging dives, which also facilitated the identification of foraging activity of this species in a passive acoustic datasets. In 2018, a dedicated survey was conducted within this IMMA to collect data to better understand the foraging ecology of True's beaked whales. Focal-follow data were collected on 10 groups of True's beaked whales across 7 days. Group sizes ranged from 2-8 animals. A combination of visual tracking and acoustic data collected from a towed hydrophone array were used to assess group behaviour. Groups were tracked across a total of 56 shorter, non-foraging dives (bounce dives) and 10 foraging dives. Foraging dives lasted 40 minutes on average, with a range of 35 to 56 minutes (Palka et al. 2021).

The use of species-specific echolocation signals for foraging activity is well documented for deep-diving cetaceans, including beaked whales and sperm whales (Johnson et al., 2004; Watwood et al., 2006). Long-term passive acoustic datasets have demonstrated prolonged presence and corresponding foraging activity of multiple marine mammal species within this IMMA. Weiss et al. (2021) examined data from 3 archival passive acoustic recorders that had been deployed within the IMMA, from Nantucket Canyon to Heezen Canyon from 2015-2016. Echolocation clicks indicative of foraging activity were detected for multiple species. Sowerby's beaked whales were detected on 80.2% of recording days (n=273) at the Heezen Canyon site. True's and Cuvier's beaked whales, combined, were present up to 40.3% of days at the same site, while at least one species of *Kogia* were present on 38.5% of days. Additionally, sperm whales were present on 81.3% of days. This community of deep-diver species was present across all seasons during the recording period. Additionally, Cohen et al. (2023) examined 3 years of archival passive acoustic data from this same region, and found detections of True's beaked whale echolocation clicks at Nantucket Canyon on 40% of all days (416/1041 days), demonstrating extensive temporal presence. Analysis of acoustic datasets collected by Fisheries and Oceans Canada from Corsair Canyon and the George's Bank slope region just to the east of this canyon are underway and preliminary results further support that Sowerby's beaked, Cuvier's and True's/Gervais's beaked whales regularly occur in this area (Moors-Murphy, pers comm).

In addition, data collected from Sowerby's beaked whales bycaught in the pelagic drift gillnet fishery that historically operated in this IMMA provided additional evidence of foraging activity. Eight of the ten stomachs examined from bycaught individuals were intact and contained multiple prey items, primarily comprised of meso- and benthopelagic fishes (Wenzel et al., 2013).

Criterion D: Special Attributes
Sub-criterion D2: Diversity

The slope waters and canyons along Georges Bank are associated with high primary and secondary productivity, and oceanographic processes along the steep slope topography accumulate cetacean prey and attract a diversity of species. The region is strongly influenced by two important currents: the Labrador Current and the Gulf Stream, which interact along the slope of Georges Bank. The canyons and seamounts create localized eddies and upwelling, which contribute to the high productivity in the region.

Figure 3: An endangered fin whale and calf (*Balaenoptera physalus*) spotted by the New England Aquarium's aerial survey team around the Northeast Canyons and Seamounts Marine National Monument on July 24, 2025. Photo credit: New England Aquarium.

Species density modelling shows that at least 19 cetacean species have been recorded as present or seasonally present in the Georges Bank Canyons and Bear Seamount IMMA. This includes five baleen whale species which are regularly detected: the common minke whale (*Balaenoptera acutorostrata*), fin whale, humpback whale (*Megaptera novaeangliae*), North Atlantic right whale, and sei whale. Odontocete species that occur within the IMMA include: Atlantic spotted dolphin (*Stenella frontalis*), Atlantic white-sided dolphin (*Lagenorhynchus acutus*), bottlenose dolphin (*Tursiops truncatus*), common dolphin (*Delphinus delphis*), Cuvier's beaked whale, Northern bottlenose whale (*Hyperoodon ampullatus*), Risso's dolphin (*Grampus griseus*), Sowerby's beaked whale, sperm whale, short and long-finned pilot whales (*Globicephala macrorhynchus, G. melas*), striped dolphin (*S. coeruleoalba*), True's beaked whale, as well as pygmy and/or dwarf sperm whales (*Kogia* spp., which are not routinely identified to the species level due to difficulty in distinguishing them in the field) (Roberts et al., 2023). In addition, blue whales (*B. musculus*) are known to occasionally utilize these waters. Two studies (Hodge et al., 2022; Roberts et al., 2023) have evaluated marine mammal species diversity along the entire United States East Coast. There is substantial overlap in the data sets used by both studies, but the studies used different methods to derive estimates of species diversity. Both studies found high species diversity in the Northwest Atlantic canyon and slope system, which includes the range of this IMMA.

Figure 4: A sei whale (*Balaenoptera borealis*) exhibiting foraging behavior. Photo credit: NOAA Fisheries, Northeast Fisheries Science Center (permit #775-1875).

Supporting Information

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Acknowledgements

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PDF made available for download at
https://www.marinemammalhabitat.org/factsheets/georges-bank-canyons-and-bear-seamount-imma/