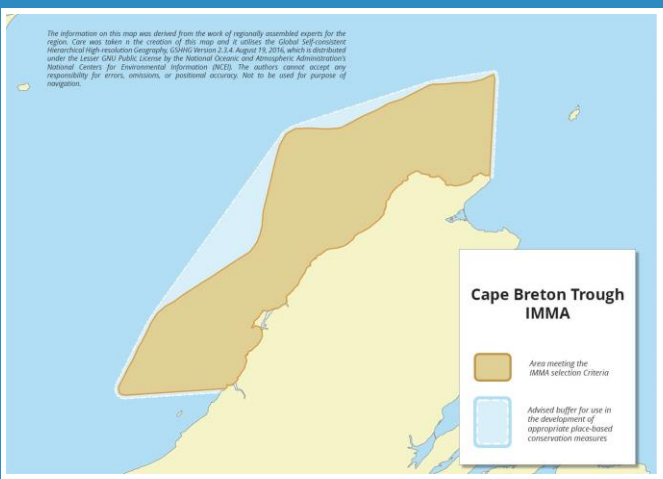

Area Size

2,572 km²

Qualifying Species and Criteria

Long-finned Pilot Whale – *Globicephala melas*

Criterion B (2); C (1; 2)

Blue Whale – *Balaenoptera musculus*

Criterion A

Fin Whale – *Balaenoptera physalus*

Criterion A

North Atlantic Right whale – *Eubalaena glacialis*

Criterion A

Criterion D (2) Marine Mammal Diversity

Balaenoptera acutorostrata, Balaenoptera musculus, Balaenoptera physalus, Cystophora cristata, Delphinus delphis, Eubalaena glacialis, Globicephala melas, Halichoerus grypus, Leucopleurus acutus, Lagenorhynchus albirostris, Megaptera novaeangliae, Pagophilus groenlandicus, Phoca vitulina vitulina, Phocoena phocoena

Cape Breton Trough IMMA

Summary

The Cape Breton Trough IMMA is located along north western Cape Breton, Nova Scotia, Canada. It encompasses a large trough feature extending approximately 80 km from Margeree Harbour to Cape North as well as adjacent coastal waters. The trough itself is defined by waters deeper than 100 m which run parallel to the western coast of Cape Breton, meeting up with the Laurentian Channel at its northeastern end. This is an important feeding, breeding, and calving area for a well-documented population of long-finned pilot whales (*Globicephala melas*), and is the only coastal area off eastern Canada currently known to host large, consistent aggregations of this species throughout summer and autumn.

This area supports a high diversity of marine mammals, with at least 14 species regularly occurring, although detailed data is not available to indicate the relative importance of this area for these other species. In the Northern Hemisphere summer months, Endangered North Atlantic right (*Eubalaena glacialis*), Endangered blue (*Balaenoptera musculus*), and Vulnerable fin whales (*Balaenoptera physalus*) occur within this area, alongside foraging humpback (*Megaptera novaeangliae*) and minke whales (*Balaenoptera acutorostrata*). Atlantic white-sided (*Leucopleurus acutus*), white-beaked (*Lagenorhynchus albirostris*) and common dolphins (*Delphinus delphis*), and harbour porpoise (*Phocoena phocoena*) are present year-round. Grey (*Halichoerus grypus*), harbour (*Phoca vitulina vitulina*), harp (*Pagophilus groenlandicus*) and hooded seals (*Cystophora cristata*) forage and pup in this area.

Figure 1: A neonate long-finned pilot whale (*Globicephala melas*) surfaces next to an adult in the Cape Breton Trough IMMA. This IMMA is known to be an important summering ground and calving area for this species. Photo credit: Elizabeth Zwamborn.

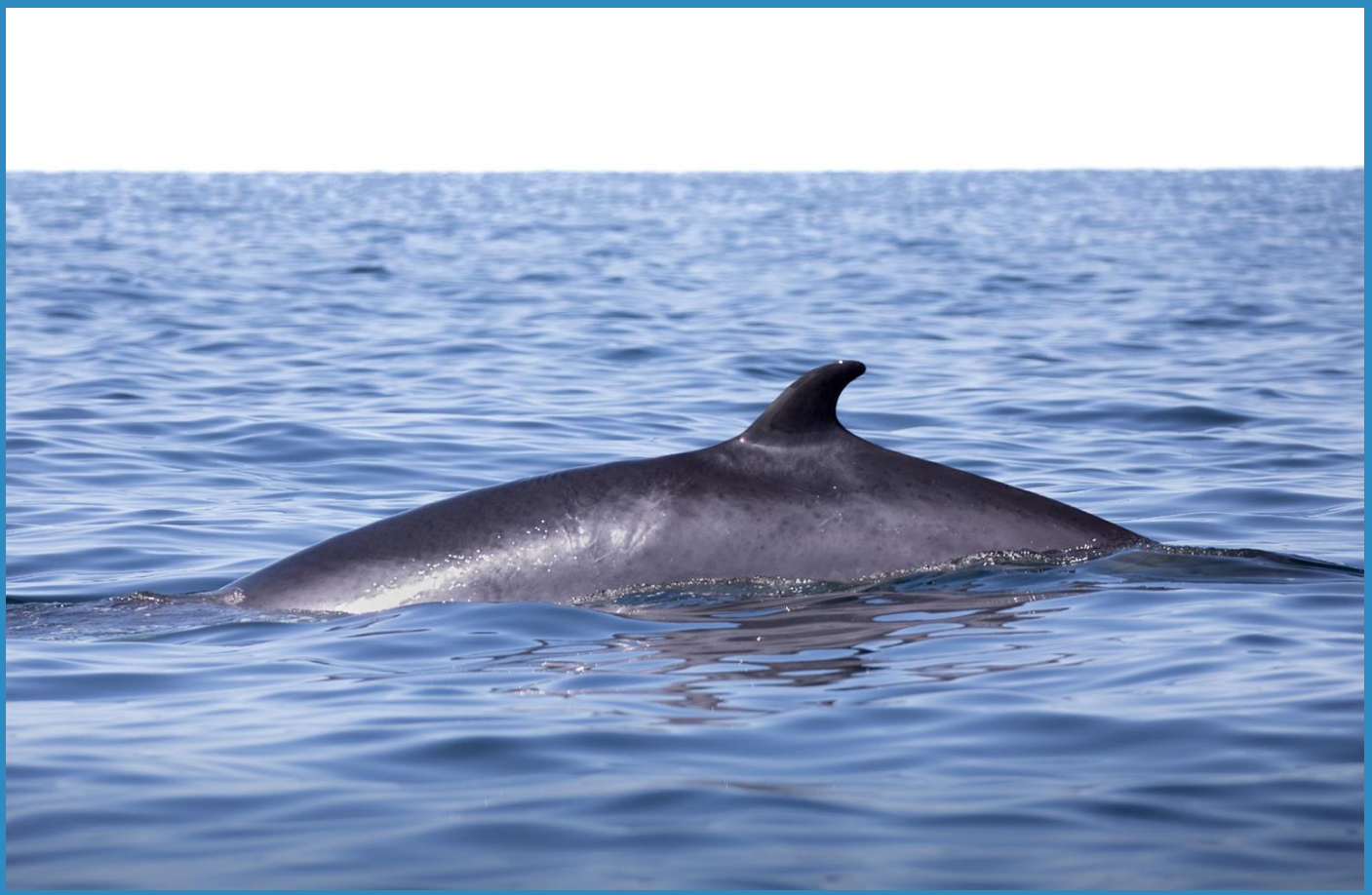

Figure 2: A minke whale (*Balaenoptera acutorostrata*) sighted in the Cape Breton Trough IMMA. There is a documented aggregation of minke whales that feed in this area during the summer. Photo credit: Elizabeth Zwamborn.

Description:

The Cape Breton Trough contains some of the deepest waters found in the southern portion of the Gulf of St. Lawrence (Therrien et al., 2001). The IMMA has been defined as the area of 100 m or greater depth, with it reaching approximately 200 m in depth before it joins onto the Laurentian Channel to the north. The strong Cape Breton Current (5-7 nautical miles per day in speed) that flows north easterly along the coast of Cape Breton Island drives upwellings that bring nutrient rich cold waters to the surface (Chassé, 2001). During the winter months, the Cape Breton Trough traditionally had heavy ice-coverage from mid-February to mid-April, though this coverage has been declining (Galbraith et al., 2016).

Criterion A: Species or Population Vulnerability

While the main qualifying species that occurs in this area, the population of long-finned pilot whales (*Globicephala melas*) that aggregates here, is not considered vulnerable, it is worth mentioning that four IUCN red-listed species are found regularly in the area. The blue whale (*Balaenoptera musculus*) is IUCN red-listed as Endangered (EN; Cooke, 2018a, b), the North Atlantic right whale (*Eubalaena glacialis*) is Critically Endangered (CR; Cooke, 2020), the fin whale (*Balaenoptera physalus*) is Vulnerable (VU; Cooke, 2018c), and hooded seals (*Cystophora cristata*) are also Vunerable (VU; Kovacs, 2016).

Three of these species are also listed under Schedule 1 of the Canadian Species at Risk Act (SARA – the Canadian legislation for conservation of at-risk species): Atlantic blue whale (Endangered), North Atlantic right whale (Endangered) and Atlantic fin whale (Special Concern).

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

A well-documented aggregation of long-finned pilot whales (*Globicephala melas*) summers in the Cape Breton Trough and surrounding areas (Kingsley & Reeves, 1998). High site fidelity within this area has been documented for pilot whales. Individuals are known to regularly return to this area, with 61.2% of individuals being documented more than once, and 36.2% being documented more than three times despite relatively minimal monitoring coverage from a single whale-watching vessel during the months of July and August (Augusto et al., 2017). Social structure studies on this population have delineated 21 long-term stable social units, with units being encountered approximately 3-21 days per year from 1998-2011 (Augusto et al., 2017). This regular summer aggregation has also been documented by the Cape Breton Pilot Whale Project through various additional research projects (e.g., McComb-Turbitt et al., 2021; Ottensmeyer & Whitehead, 2003). There are no other regions along the eastern Canadian coastline currently documented to be occupied consistently by a large aggregation of long-finned pilot whales over the summer and autumn months.

Criterion C: Key Life Cycle Activities Sub-criterion C1: Reproductive Areas

The majority of long-finned pilot whale calves in the Northwestern Atlantic are born during the summer and early autumn (Sergeant, 1962). The Cape Breton Trough area is known to be an important summering ground and calving area for this species, with approximately 85% of encountered groups containing calves (Augusto et al., 2017). Neonate calves are commonly sighted in the July thru September period in this area (Cape Breton Pilot Whale Project, unpublished data). Data collected by Sergeant (1962) from nearby historical inshore summering pilot

whales off Newfoundland – a drive hunted population that has not been observed occupying inshore waters since they were exploited in large numbers in the mid 20th century – showed a defined calving season with a maximum frequency of births occurring mid-August and cessation of calving by the end of October. This is consistent with observations of calves in this IMMA. Given that the gestation period of long-finned pilot whales is approximately a year in duration (Sergeant, 1962; Betty et al., 2023), this also implies that these waters in the Cape Breton Trough where calves are observed are likely an important breeding ground for this species as well.

Sub-criterion C2: Feeding Areas

While the target forage species for many of the marine mammal species that feed in the Cape Breton Trough are unknown, it is an important area for zooplankton and many species of fish driven by strong phytoplankton productivity in the northern portion of the Cape Breton Trough (DFO, 2007; Lavoie et al., 2007). Additionally, the Cape Breton Trough is along a known migration route for baitfish species such as the alewife (*Alosa pseudoharengus*), blueback herring (*Alosa aestivalis*), American shad (*Alosa sapidissima*), Atlantic saury (*Scomberesox saurus*), and Atlantic mackerel (*Scomber scombrus*) (Dufour & Ouellet, 2007).

It is thought that the large numbers of long-finned pilot whales that come inshore within the Cape Breton Trough area in the summer are following shortfin squid (*Illex illecebrosus*) (Abend & Smith, 1999), though they likely also forage on other species of fish, such as mackerel and herring when available. Pilot whale feeding and foraging hotspots have been well documented within this area (McComb -Turbitt et al., 2021), providing evidence of the importance of the Cape Breton Trough as a foraging area for this species.

It is also worth noting that there is a documented aggregation of minke whales (*Balaenoptera acutorostrata*) that use this area during the summer for feeding (Coomber et al., 2021; Cape Breton Pilot Whale Project, unpublished data). Some individual minke whales have been observed returning to the same feeding area annually over the past decade (Cape Breton Pilot Whale Project, unpublished data). Other species such as fin whales, Atlantic white-sided dolphins (*Lagenorhynchus acutus*), harbour porpoises (*Phocoena phocoena*), and humpback whales (*Megaptera novaeangliae*) forage in this area during the ice-free months (Lesage et al., 2007; Coomber et al., 2021), while grey seals (*Halichoerus grypus*) and harbour seals (*Phoca vitulina vitulina*) are more generalist predators that forage in the area throughout the year (Coomber et al., 2021; Vacquie-Garcia et al., 2024). While these other species are known to feed in the area, there is less evidence available to demonstrate that the Cape Breton Trough is a particularly important foraging area for these other species.

Figure 3: A long-finned pilot whale (*Globicephala melas*) spy-hopping in the Cape Breton Trough IMMA. Photo credit: Elizabeth Zwamborn.

Criterion D: Special Attributes
Sub-criterion D2: Diversity

There is a large diversity of marine mammal species observed to regularly use the Cape Breton Trough area (Coomber et al., 2021; Cape Breton Pilot Whale Project, unpublished data), thought to mainly be driven by strong phytoplankton productivity found in northern areas of the Cape Breton Trough (DFO, 2007; Lavoie et al., 2007). Some species use the trough all year, like grey and harbour seals (Coomber et al., 2021; Vacquie-Garcia et al., 2024). Others marine mammals occur here seasonally during the ice-free months (approximately May to December), such as pilot, minke, fin, and humpback whales, as well as white-sided dolphins and harbour porpoises (Coomber et al., 2021; Lesage et al., 2007; Cape Breton Pilot Whale Project, unpublished data). There are also additional cetacean species more occasionally reported in the area such as blue and right whales, as well as white-beaked (*Lagenorhynchus albirostris*) and common dolphins (*Delphinus delphis*) (Coomber et al., 2021; Lesage et al., 2007; Cape Breton Pilot Whale Project, unpublished data). Other pinnipeds, such as hooded and harp seals (*Pagophilus groenlandicus*), come to this area during the middle of winter when pack ice forms to give birth to their pups on the ice (Coomber et al., 2021; Lesage et al., 2007). It is clear from available data that the Cape Breton Trough is important to marine mammals throughout the year, with strong seasonal significance for a number of species.

The Cape Breton Pilot whale Project, led by the Whitehead Lab at Dalhousie University, has been conducting cetacean research surveys from whale-watching vessels in this area annually since its establishment in 1998. Though these surveys have been mainly focused on long-finned pilot whales, any other cetacean species observed are also documented. Sightings from these efforts over the past two and a half decades demonstrate regular occurrence of long-finned pilot, minke, fin, humpback, right, and blue whales, Atlantic white-sided, common, and white-beaked dolphins, as well as harbour porpoises in the Cape Breton Trough (Cape Breton Pilot Whale Project, unpublished data).

Supporting Information

Abend, A.G. and Smith, T.D. 1999. 'Review of distribution of the long-finned pilot whale (*Globicephala melas*) in the North Atlantic and Mediterranean'. NOAA Technical Memorandum NMFS-NE-117: 1-18 [online]. Available at: https://repository.library.noaa.gov/view/noaa/3074.

Augusto, J.F., Frasier, T.R. and Whitehead, H. 2016. 'Characterizing alloparental care in the pilot whale (*Globicephala melas*) population that summers off Cape Breton, Nova Scotia, Canada'. Marine Mammal Science, 33: 440-456.

Augusto, J.F., Frasier, T.R. and Whitehead, H. 2017. 'Social structure of long-finned pilot whales (*Globicephala melas*) off northern Cape Breton Island, Nova Scotia'. Behaviour, 154: 509-540.

Chassé, J. 2001. 'Physical Oceanography of the Southern Gulf of St. Lawrence and Sydney Bight Areas of Coastal Cape Breton'. DFO Canadian Science Advisory Secretariat, Research Document, 2001/113: 1-20 [online]. Available at: https://publications.gc.ca/collections/collection_2015/mpo-dfo/Fs70-5-2001-113-eng.pdf.

Cooke, J.G. 2018a. '*Balaenoptera musculus* (errata version published in 2019)'. The IUCN Red List of Threatened Species 2018, e.T2477A156923585 [online]. Available at: https://dx.doi.org/10.2305/IUCN.UK.2018-

2.RLTS.T2477A156923585.en.

Cooke, J.G. 2018b. '*Balaenoptera borealis*'. The IUCN Red List of Threatened Species 2018, e.T2475A130482064 [online].Available at: https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T2475A130482064.en.

Cooke, J.G. 2018c. '*Balaenoptera physalus*'. The IUCN Red List of Threatened Species 2018, e.T2478A50349982 [online].Available at: https://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T2478A50349982.en.

Cooke, J.G. 2020. '*Eubalaena glacialis* (errata version published in 2020)'. The IUCN Red List of Threatened Species 2020, e.T41712A178589687 [online].Available at: https://dx.doi.org/10.2305/IUCN.UK.2020-2.RLTS.T41712A178589687.en.

Coomber, C., Joseph, V, Sabean, C., and Ricard, D. et al. 2021. 'The Cape Breton Trough : a distinctive features of the Western Cape Breton Ecologically and Biologically Significant Area (EBSA) of the Southern Gulf of the St. Lawrence, Canada'. Canadian Manuscript Report of Fisheries and Aquatic Sciences 3213: vi + 1-75 [online]. Available at: https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/40938323.pdf.

DFO. 2007. 'Ecologically and biologically significant areas (EBSA) in the Estuary and Gulf of St. Lawrence: Identification and characterization'. DFO Canadian Science Advisory Secretariat, Science Advisory Report, 2007/016: 1-14 [online]. Available at: https://waves-vagues.dfo-mpo.gc.ca/Library/328383.pdf.

Galbraith, P.S., Chassé, J., Caverhill, C., Nicot, P., Gilbert, D., Pettigrew, B., Lefaivre, D., Brickman, D., Devine, L., and Lafleur, C. 2016. 'Physical Oceanographic Conditions in the Gulf of St. Lawrence in 2015'. DFO Canadian Science Advisory Secretariat, Research Document, 2016/056: v + 1-90 [online]. Available at: https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/359694.pdf.

Hammill, M.O., Lesage, V., Dubé, Y., and Measures, L.N. 2001. 'Oil and Gas Exploration in the Southeastern Gulf of St. Lawrence: A review of information on pinnipeds and cetaceans in the area'. DFO Canadian Science Advisory Secretariat, Research Document, 2001/115: 1-39 [online]. Available at: https://publications.gc.ca/collections/collection_2015/mpo-dfo/Fs70-5-2001-115-eng.pdf.

Johnson, H., Morrison, D. and Taggart, C. 2021. 'WhaleMap: a tool to collate and display whale survey results in near real-time'. Journal of Open Source Software, 6: 3094: 1-4.

Kingsley, M. and Reeves, R. 1998. 'Aerial surveys of cetaceans in the Gulf of St. Lawrence in 1995 and 1996'. Canadian Journal of Zoology, 76: 1529-1550.

Kovacs, K.M. 2016. '*Cystophora cristata*'. The IUCN Red List of Threatened Species 2016: e.T6204A45225150 [online]. Available at: https://dx.doi.org/10.2305/IUCN.UK.2016-1.RLTS.T6204A45225150.en.

Lavoie, D., Starr, M., Zakardjian, B., and Larouche, P. 2007. 'Identification of ecologically and biologically significant areas (EBSA) in the Estuary and Gulf of St. Lawrence: Primary production'. DFO Canadian Science Advisory Secretariat, Research Document 2007/079: iii + 1-34 [online]. Available at: https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/334644.pdf.

Lesage, V., Gosselin, J.F., Hammill, M., Kingsley, M., and Lawson, J. 2007. 'Ecologically and Biologically

Significant Areas (EBSA) in the Gulf of St. Lawrence-A marine mammal perspective'. DFO Canadian Science Advisory Secretariat, Research Document, 2007/46: iii + 1-92 [online]. Available at: https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/331137.pdf.

Lesage, V., Gavrilchuk, K., Andrews, R.D., and Sears, R. 2016. 'Wintering areas, fall movements and foraging sites of blue whales satellite-tracked in the Western North Atlantic'. DFO Canadian Science Advisory Secretariat, Research Document, 2016/078. v + 1-38 [online]. Available at: https://waves-vagues.dfo-mpo.gc.ca/Library/40574015.pdf.

Vacquie-Garcia, J., Spitz, J., Hammill, M., Stenson, G.B., Kovacs, K.M., Lydersen, C. et al. 2024. 'Foraging habits of Northwest Atlantic hooded seals over the last 30 years: Future habitat suitability under global warming'. Global Change Biology, 2024:30:e17186: 1-21.

Acknowledgements

We would like to thank the participants of the 2024 IMMA Regional Expert Workshop for the identification of IMMAs in the North West Atlantic Ocean and wider Caribbean region. Funding for the identification of this IMMA was provided by the Water Revolution Foundation, with additional funding and collaboration from the Sargasso Sea Commission, OceanCare and Animal Welfare Institute. Essential administrative support was given by Tethys Research Institute and Whale and Dolphin Conservation.

Suggested Citation: IUCN-MMPATF (2025) Cape Breton Trough IMMA Factsheet. IUCN Joint SSC/WCPA Marine Mammal Protected Areas Task Force, 2025.

PDF made available for download at ***https://www.marinemammalhabitat.org/factsheets/cape-breton-trough-imma/***