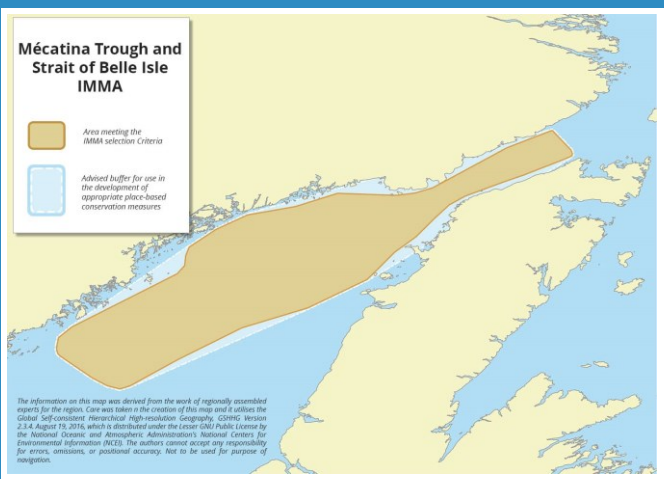

Area Size

13,317 km²

Qualifying Species and Criteria

Fin Whale – *Balaenoptera physalus*

Criterion A; B (2)

Hooded Seal – *Cystophora cristata*

Criterion A; C (3b)

Humpback Whale – *Megaptera novaeangliae*

Criterion B (2); C (2)

Harp Seal – *Pagophilus groenlandicus*

Criterion B (2); C (1, 2, 3b)

Criterion D (2) - Marine Mammal Diversity

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

Summary

The Mécatina Trough and Strait of Belle Isle IMMA is located in the northeastern Gulf of St. Lawrence, Canada. The area is characterized by persistent aggregations of deep-dwelling zooplankton in the mesoscale basin (Mécatina Trough), where they remain largely trapped due to local bathymetry. Within the IMMA there are: two threatened species; hooded seals (*Cystophora cristata*) and fin whales (*Balaenoptera physalus*). The area also serves as a breeding ground for harp seals (*Pagophilus groenlandicus*), where 10-15% of the pups for the global population of harp seals are produced in good ice years. The area's high productivity provides a feeding area for humpback (*Megaptera novaeangliae*) and fin whales (summer/fall), and harp seals (fall/winter). Finally, the area includes a migratory corridor for hooded seals and harp seals. The area appears to sustain a high diversity of marine mammals (15 species), although data remains limited for several species to document their relative abundance or recurrent use of the IMMA.

Mécatina Trough and Strait of Belle Isle IMMA

Description:

The Mécatina Trough and Strait of Belle Isle IMMA is located in the northeastern Gulf of St. Lawrence, Canada. The area is characterized by persistent aggregations of deep-dwelling zooplankton in the mesoscale basin (Mécatina Trough), where they largely remain trapped due to local bathymetry. Prey aggregations do spill into the nearby Strait of Belle Isle (Sourisseau et al., 2006; DFO 2009) where marine mammals are also reported (see Lesage et al., 2007; Lawson & Gosselin, 2009).

The area is a recognized EBSA for marine mammals (Lesage et al., 2007) and for several other groups of marine vertebrates and invertebrates (DFO, 2009), and was proposed for creation of a marine park based on richness of marine mammal fauna (Sears

& Williamson, 1982). It is also formally identified as an historically important foraging habitat for blue whales (Lesage et al., 2018). Recent passive acoustic monitoring suggests that blue whales are now rare in this area (Simard et al., 2016; Delarue et al., 2022).

Criterion A: Species or Population Vulnerability

Several species in this IMMA are considered threatened with extinction according to the IUCN Red List. Blue whales (*Balaenoptera musculus*) are considered Endangered globally (Cooke, 2018a). Hooded seals (*Cystophora cristata*) and fin whales (*Balaenoptera physalus*) are both assessed as Vulnerable (Kovacs, 2016; Cooke, 2018b).

At the national level in Canada, Northwest Atlantic blue whales (*Balaenoptera musculus*) are considered Endangered, fin whales and killer whales (*Orcinus orca*) are of Special Concern, and all three are afforded protection under the Canadian Species at Risk Act. Harbour porpoises (*Phocoena phocoena*) are listed as Least Concern globally (Braulik et al., 2023), however, they have been assessed as Special Concern in Canada (COSEWIC 2022), and are currently considered for listing under the Species at Risk Act.

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

Basque and Breton whalers and others after them exploited marine mammals in the Mécatina Trough and Strait of Belle Isle area, which was referred to as the Grand Bay at the time (Mitchell & Reeves, 1983; Barkham, 1984). Following boat-based and aerial surveys of the area in 1981 and 1982, it was recommended to make the Mécatina Trough and Belle Isle Strait a marine park given the observed diversity and abundance of cetaceans (Sears & Williamson, 1982). While this testifies to the historical and long-standing abundance of marine mammals in this area, recent data on marine mammal aggregations and relative abundance are scarce given the remoteness of the area.

Large-scale systematic surveys and passive acoustic monitoring indicate that the Mécatina Trough is associated with the highest densities of humpback whales (*Megaptera novaeangliae*) in the Gulf of St. Lawrence (Lesage et al., 2007) and highest recurrence of presence of humpback whales in eastern Canada (Delarue et al., 2022). An ocean-basin wide mark-recapture study of humpback whales from the 1990's also supports their high relative abundance in both the Mécatina Trough and Belle Isle Strait, a sampling site chosen specifically for the predicted high abundance of the species (see Smith et al., 1999). Humpback whale calls are heard on, or nearly on, a daily basis in the Mécatina Trough from early summer through early winter (no acoustic data available during winter or from the Belle Isle Strait; Delarue et al., 2022). There is no estimate of abundance specific to the IMMA. However, even though this area was under-sampled compared to others in the Gulf of St. Lawrence, the number of unique individuals identified in the IMMA (500 IDs) was at least 2.5 fold those of any other sampled sites in the Gulf (Ramp, 2008).

Harp seals (*Pagophilus groenlandicus*) enter the Gulf of St. Lawrence in late fall / early winter to feed and reproduce. The pack ice in the Mécatina Trough represents one of the three main whelping areas for this species (Sergeant, 1991; Stenson et al., 1995, 2000, 2022). In good ice years for instance, 10 – 15% of the global pup production is associated with this area (assuming western North Atlantic harp seals represent 80% of the Global population; Kovacs, 2015). This means also that at least a similar proportion of reproducing females and of

accompanying adult males waiting to mate with females also occur in this area. Late autumn / winter feeding aggregations also form there prior to and after whelping (Sergeant, 1991).

Fin whale absolute densities and abundance in the IMMA is unknown. However, a recent study reports daily acoustic detections in the Mécatina Trough from late summer and throughout the fall (no data for other periods; Delarue et al., 2022). Fin whales may be using the Strait of Belle Isle mainly in the fall, as suggested by a one-year mooring in this specific area (summer/fall only; Roy et al., 2018). Whether fin whales use the Strait for feeding, migration, or both is unknown.

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

Harp seals whelp in the IMMA when ice conditions are favourable. In 2017 for instance, 100,000 out of 700,000 harp seal pups from the Northwest Atlantic population were counted in this area (Stenson et al., 2022). Given that approximately 200,000 additional pups are produced by the other two populations, this represents more than 10% of the global pup production (Kovacs, 2015).

Sub-criterion C2: Feeding Areas

The Mécatina Trough/Strait of Belle Isle area is characterized by persistent aggregations of deep-dwelling zooplankton in the mesoscale basin (Mécatina Trough), where they largely get trapped due to local bathymetry (Sourisseau et al., 2006; DFO, 2009). Prey aggregations, however, likely spill out of the Trough into the nearby Strait of Belle Isle given densities of marine mammals observed there during summer (see Lesage et al., 2007; Lawson & Gosselin, 2009; Lawson & Stevens, 2014). The IMMA is a feeding area for humpback whales and harp seals, and for several other species, including killer whales, minke whales, harbour porpoises, white-beaked dolphins, to name a few (Sears & Williamson, 1982). Direct evidence of foraging for these species is however limited, arising from anecdotal reports of surface feeding and coincidence between high prey abundance and use of the area by marine mammals during their feeding period (Sergeant & Fisher, 1957; Sears & Williamson, 1982).

Sub-criterion C3: Migration Routes
C3b – Migration / Movement Area

Hooded seals migrate between the Gulf of St. Lawrence where a portion of the population reproduces during winter, and northern latitudes where they feed and moult during the rest of the year. Satellite telemetry data confirms the importance of the Belle Isle Strait as a migratory exit route for animals breeding in the Gulf of St. Lawrence (Bajzak et al., 2009; Vacquié-Garcia et al., 2024).

Satellite telemetry indicates that harp seals also use the Strait of Belle Isle as a migratory route between their whelping area in the Gulf of St. Lawrence and their feeding area in Greenland (Grecian et al., 2022; see also Sergeant, 1991).

Criterion D: Special Attributes
Sub-criterion D2: Diversity

Fifteen species of marine mammals occur on a regular basis in the IMMA, some with more rigorously documented occurrences than others. Such a high diversity of species is among the highest described in eastern Canadian waters (e.g., Lesage et al., 2007; Sears & Williamson, 1982; Convention on Biological Diversity, 2014). While a wider diversity of marine mammal species likely occurs in warmer ecosystems off the eastern U.S. (e.g., Schick et al., 2011), it appears that the IMMA still stands among the subarctic areas with the highest diversity of marine mammals

Figure 1: Two humpback whales (*Megaptera novaeangliae*) within the Mécatina Trough and Strait of Belle Isle IMMA. Photo credit: DFO.

Figure 2: Harp seal (*Pagophilus groenlandicus*) and pup (left) and male hooded seal (*Cystophora cristata*) (right) on the pack-ice in the Gulf of St. Lawrence, Canada. Photo credit: Mike Hammill, DFO.

reported in the literature. Species with well-documented presence in the IMMA include harp and hooded seals, and fin and humpback whales. Other species known to occur on a regular basis in the IMMA, but which are not as well documented, include blue, killer (*Orcinus orca*) and minke whales (*Balaenoptera acutorostrata*), harbour porpoises (*Phocoena phocoena*), and long-finned pilot whales (*Globicephala melas*), multiple dolphin species, particularly white-beaked dolphins (*Lagenorhynchus albirostris*), as well as harbour seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*) (Sergeant & Fisher, 1957; Boulva & McLaren, 1979; Sears & Williamson, 1982; Lesage et al., 2007; Lawson & Stevens, 2014).

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