Template for Submission of Scientific Information to Describe Areas Meeting Scientific Criteria for Ecologically or Biologically Significant Marine Areas

Title/Name of the area: Southeast Shoal and Tail of the Grand Banks
Presented by (*names, affiliations, title, contact details)*

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Abstract (150 words max)

The Southeast Shoal and Tail of the Grand Bank is a highly productive ecosystem, and has sustained a dynamic web of marine life for centuries. Five species of baleen whales occur on the Grand Banks with regular frequency and are most commonly observed during summer months when prey species are most abundant. Seabirds also frequent the area in large numbers, with several species travelling over 15000km from breeding sites in the South Atlantic to feed in the area during the non-breeding season. Possible threats to cetaceans in the region are ship traffic, fishing gear entanglement, and seismic surveys. For seabirds accidental bycatch in longline, trawl and gillnet fisheries is a risk for several species. Mortality caused by pollution such as oil spills and collisions with lights on offshore vessels and platforms is also a very real risk.

Introduction
(To include: feature type(s) presented, geographic description, depth range, oceanography, general information data reported, availability of models)

The southern Grand Bank is a highly productive ecosystem, and has sustained a dynamic web of marine life for centuries. The area is defined by several distinct physical and geographical characteristics. The most significant is the Southeast Shoal, a shallow sandy plateau where many species of fish, birds and marine mammals congregate to spawn and feed. Capelin, the focal forage species in this system, is a primary prey for most large predators including cod, seals, whales and seabirds (Lavigne, 1996). Five species of baleen whales occur on the Grand Banks with regular frequency and are most commonly observed during summer months when prey species are most abundant. These include the humpback whale, blue whale, fin whale, sei whale and the minke whale (Templeman & Davis, 2006). Eight species of odontocetes are found on the Grand Banks with relatively regular frequency. Most odontocetes occur seasonally on the Grand Banks (mainly summer), but little is known on their distribution and current population status (Templeman & Davis, 2006).

The Grand Bank also provides critical habitat for an estimated 40 million seabirds annually (Barrett et al., 2006). Globally significant concentrations of thick-billed murres, common murres and dovekies overwinter on the bank, while in summer millions of southern hemisphere shearwaters and storm-petrels enter the area (Brown, 1986; Barrett et al., 2006; McFarlane Tranquilla et al., 2013). Local breeding populations include both the world's largest colony of Leach's storm-petrels and the largest common murre colony in North America (Sklepkovych & Montevecchi, 1989; Chardine et al., 2003). The influx of migratory shearwater species that travel over 15,000 km from breeding sites in the South Atlantic to feed in the area during summer and the winter occupancy of Arctic-breeding auks makes the

site one of the most important in the North Atlantic for seabirds. The site is recognized as an Important Bird Area by BirdLife

International species known to occur at this site in globally significant numbers include:

- Common murres tracked from breeding colonies at Funk Island and Gull Island, Newfoundland and the Gannet Islands, Labrador use this area during winter and spring, and thick-billed murres breeding at Minarets and the Gannet Islands use the area in winter (McFarlane Tranquilla et al., 2013). In addition male common murres departing the colony with fledglings follow the shelf edge to this site in fall (Montevecchi et al., 2012).
- Pelagic surveys indicate high densities of murres (Hedd et al., 2011) and other auks (Brown 1986; Environment Canada, unpublished data) in the area through winter and spring.
- Sooty Shearwater from populations on Kidney Island, Falklands and Gough Island spend their non-breeding season here (Hedd et al., 2012)
- Dovekies from colonies in Northwest Greenland forage over the southern Grand Bank in spring (Fort et al. 2013)
- Black-legged kittiwakes from a number of breeding sites in the Northeast and Northwest Atlantic winter on the Grand Bank (Frederikson et al., 2012)
- Breeding northern gannets from Funk Island, Baccalieu Island and Cape St Mary's move in this area during fall (Montevecchi et al., 2011)
- Great Shearwater from Tristian da Cuhna Group during their nonbreeding period (Ronconi et al., 2010)
- Leach's storm-petrel breeding at Gull Island move through this area while foraging during incubation (Hedd, unpublished data)
- Atlantic puffin from Baccalieu Island hypothesised to feed in the area.

Location
(Indicate the geographic location of the area/feature. This should include a location map. It should state if the area is within or outside national jurisdiction, or straddling both.)

The area is located at the southern portion of the Grand Bank, southeast of Newfoundland. The region proposed currently straddles the EEZ of Canada and the High Seas ABNJ. Please see **Figure 1.** for a map of the area proposed.

Feature description of the proposed area
(This should include information about the characteristics of the feature to be proposed, e.g. in terms of physical description (water column feature, benthic feature, or both), biological communities, role in ecosystem function, and then refer to the data/information that is available to support the proposal and whether models are available in the absence of data. This needs to be supported where possible with maps, models, reference to analysis, or the level of research in the area)

Fuller and Myers (2004) reported that marine mammal sightings are highest on the shallower waters of the banks, and rare past the edge of the continental shelf (Fuller & Myers, 2004). However, the Placentia Bay – Grand Banks Ecosystem Overview states that on the Grand Banks, whales have often been observed along the shelf break and in deep water basins (Templeman & Davis, 2006).

The southern Grand Banks, the SE Shoal in particular, has been identified as an area of high whale concentration (Whitehead & Glass, 1985b) The presence of whales can be attributed to an abundance of prey. Capelin has been recognized as an important food source. However, given that the capelin stock in the 3NO region has become depleted (Buren et al., 2014), efforts may have shifted toward sand lance and their larvae. Sightings have been recorded throughout the year with abundance being highest during late summer (Templeman & Davis, 2006). Many species of marine mammals appear seasonally on the southern Grand Bank. Blue whales, sperm whales, humpbacks, fin whales, minke whales, orca, harbour porpoises, bottlenose dolphin, white-beaked dolphins and short beaked common dolphins have all been sighted in the area (Coughlan, 2002). See **Figure 2** for a map of reported sightings from the DFO Maritimes Cetaceans Sightings Database.

The humpback whale has been found during June and July on the Southeast Shoal and is known to feed on the spawning capelin stock on the Southeast Shoal (Fuller & Myers, 2004). This humpback population is considered to be a discrete segment of the Newfoundland-Labrador feeding stock due to its summer feeding grounds on the Southeast Shoal and winter feeding/breeding areas in the West Indies showing a particular preference to waters off Puerto Rico (Whitehead & Glass, 1985b). It has been estimated that 900 humpbacks visit the SE Shoal, or roughly 15-30% of the Northwest Atlantic Population then estimated at 3-6000 animals. More recent estimates consider the population total to be closer to 10,500 (Fuller & Myers, 2004). Large numbers in the SE Shoal area indicate that the area is a significantly important habitat area for this population (Fuller & Myers, 2004).

Orcas have been observed attacking feeding humpbacks on the Shoal. In 1982, a group of 10-12 orcas, including three adult males, recognized by the prominent dorsal fin, attacked humpbacks on the SE Shoal (see **Figure 3**). Previous fluke photograph analysis has also revealed that ~ 33% of humpbacks possessed scars from orca attacks (Whitehead & Glass, 1985a). Cetaceans are listed under the ESSs and the blue whale is listed as a Depleted and Rare species within the LOMA (Fisheries and Oceans Canada, 2007).

Sightings of blue whales have been recorded in the area of the Southeast Shoal (Fuller & Myers, 2004). Furthermore, as part of a global analysis of blue whale critical habitats which could act as high seas protected areas for the species, the Southeast Shoal was identified as an area requiring further protection alongside the Costa Rica Dome in the Eastern Tropical Pacific and the Saya de Malha banks in the Indian Ocean (Tetley & Hoyt, 2012).

Whale distribution in general seems to correlate well with other species, usually in areas of particularly high primary productivity. For example, whales and seabirds are often observed in the same areas (Templeman & Davis, 2006), which can be indicative of biological hotspots where predictable concentrations of prey tend to aggregate predators (Davoren, 2013).

Recent tracking and pelagic surveys confirm the southern Grand Bank region as important habitat for wintering auks (including common and thick-billed murres and dovekies; Brown, 1986; Hedd et al., 2011; Fort et al., 2013; McFarlane Tranquilla et al., 2013; **Figures 4** and **5**) and black-legged kittiwakes (Frederikson et al., 2012). Populations of common murres from Funk Island (the species' largest breeding site in North America), Gull Island and the Gannet Islands winter locally in offshore regions of the northern and southern Grand Bank. Some populations of Arctic-breeding thick-billed murres, including colonies from the Minarets and the Gannet Islands, Labrador also utilize the southern Grand Bank in winter (Montevecchi et al., 2012; McFarlane Tranquilla et al., 2013). A recent study tracking black-legged kittiwakes from colonies in both the Northeast and Northwest Atlantic identified the Grand Bank as an important wintering area (Frederikson et al., 2012). Pelagic surveys confirm the importance

of the region for murres (Hedd et al., 2011), dovekies and kittiwakes (Brown 1986; Environment Canada, unpublished data).

Migrant *Puffinus* shearwaters from the southern hemisphere are the primary avian consumers of fish within the Grand Bank ecosystem in summer (Hedd et al., 2012). Great shearwater tracked from Tristan da Cuhna in the south Atlantic travel 15000km to spend the non-breeding season feeding in the Bay of Fundy and over the Grand Bank (Ronconi et al 2010). Sooty shearwaters from Kidney Island, Falklands tracked with geolocators also spend the non-breeding season in the northern hemisphere, travelling northwards 15,000km to move into shallow, warm continental shelf waters of the eastern Canadian Grand Bank in mid-June and reside there until moving south again in late August to mid-September (Hedd et al., 2012; Figures 6 and **7**). A separate population of sooty shearwaters tracked from Gough island in the South Atlantic also all travelled to this area.

Feature condition and future outlook of the proposed area
(Description of the current condition of the area – is this static, declining, improving, what are the particular vulnerabilities? Any planned research/programmes/investigations?)

All cetaceans and seabirds are long lived and slow reproducing, making them susceptible to negative impacts from marine threats. Possible threats to cetaceans in the region are ship traffic, fishing gear entanglement, and seismic surveys (Fuller & Myers, 2004; Fisheries and Oceans Canada, 2005). For seabirds accidental bycatch in gillnet, longline andtrawl fisheries is a risk for several species (Piatt et al., 1984; Benjamins et al., 2008; Ellis et al., 2013). Mortality caused by pollution from chronic and episodic oilspills and collisions with lights and flares on offshore vessels and platforms is also a very real risk (Montevecchi, 2007; Ellis et al., 2013).

Assessment of the area against CBD EBSA Criteria
(Discuss the area in relation to each of the CBD criteria and relate the best available science. Note that a proposed area for EBSA description may qualify on the basis of one or more of the criteria, and that the polygons of the EBSA need not be defined with exact precision. And modeling may be used to estimate the presence of EBSA attributes. Please note where there are significant information gaps)

CBD EBSA Criteria (Annex I to decision IX/20)	**Description** (Annex I to decision IX/20)	**Ranking of criterion relevance** (please mark one column with an X)			
		No information	**Low**	**Medium**	**High**
Uniqueness or rarity	Area contains either (i) unique ("the only one of its kind"), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.			**X**	
Explanation for ranking Cetaceans such as humpback, sperm and blue whales aggregate and feed in the proposed area.					

Primary North Atlantic feeding area for non-breeding great and sooty shearwater from Falkland Islands and Tristan da Cuhna groups. Primary wintering area for auks from Arctic and Newfoundland and Labrador regions.					
Special importance for life-history stages of species	Areas that are required for a population to survive and thrive.				**X**
Explanation for ranking The Southeast Shoal contains potential foraging habitat for cetaceans including humpbacks (~15-30% of the Northwest Atlantic Population) which winter in the West Indies in the waters off Puerto Rico Critical feeding grounds for seabirds breeding on Newfoundland colonies. Key stop off point for common murre chicks departing the colony. Primary North Atlantic feeding area for sooty and great shearwater during the nonbreeding season, when birds travel 15,000km from the Falkland and Tristan da Cuhna groups. Primary wintering areas for auks from Arctic and Newfoundland and Labrador regions.					
Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.				**X**
Explanation for ranking Considered to be a habitat for blue and fin whales whose Status is assessed as Endangered on the IUCN Red List. Sooty shearwater is listed as Near Threatened.					
Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.			**X**	
Explanation for ranking A naturally dynamic environment, with open access to larger oceanic areas. Cetaceans, particularly large whales such as blue and humpback whales, and seabirds are long lived and slowly reproducing species.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.			**X**	
Explanation for ranking There is a large spring phytoplankton bloom on the southern Grand Bank, followed by summer blooms in zooplankton, both of which provide food for other species and the basis for a diverse ecosystem.					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats,				**X**

	communities, or species, or has higher genetic diversity.				
Explanation for ranking The has a high diversity of species, from phytoplankton to commercially important fish, to whales and seabirds. Several species and populations warrant special consideration due to their current status in relation to past abundance or as unique populations.					
Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.			**X**	

Sharing experiences and information applying other criteria (Optional)

Other Criteria	**Description**	**Ranking of criterion relevance** (please mark one column with an X)			
		Don't Know	**Low**	**Medium**	**High**
Add relevant criteria	BirdLife International Important bird Areas				**X**
Explanation for ranking The site qualifies as an IBA for a number of the breeding and wintering species					

References

(e.g. relevant documents and publications, including URL where available; relevant data sets, including where these are located; information pertaining to relevant audio/visual material, video, models, etc.)

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Maps and Figures

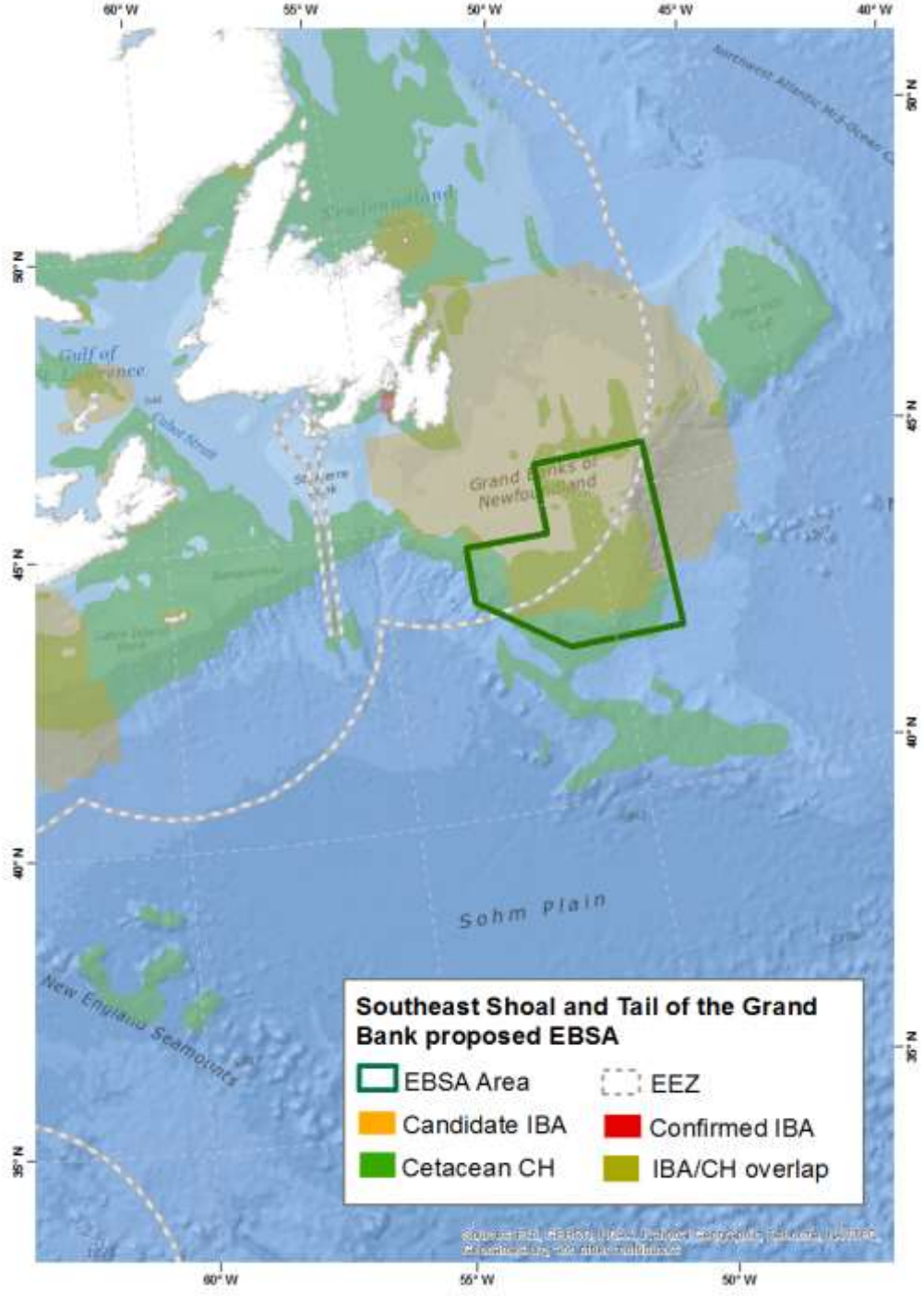


Figure 1. Location of the Southeast Shoal and Tail EBSA proposal. Areas in light green indicate broadscale areas of potential cetacean critical habitat (CH), based on Habitat Suitability Modelling - MaxEnt (redrawn from Tetley & Hoyt, 2012). Areas in red and orange indicate Important Bird Areas (IBA).

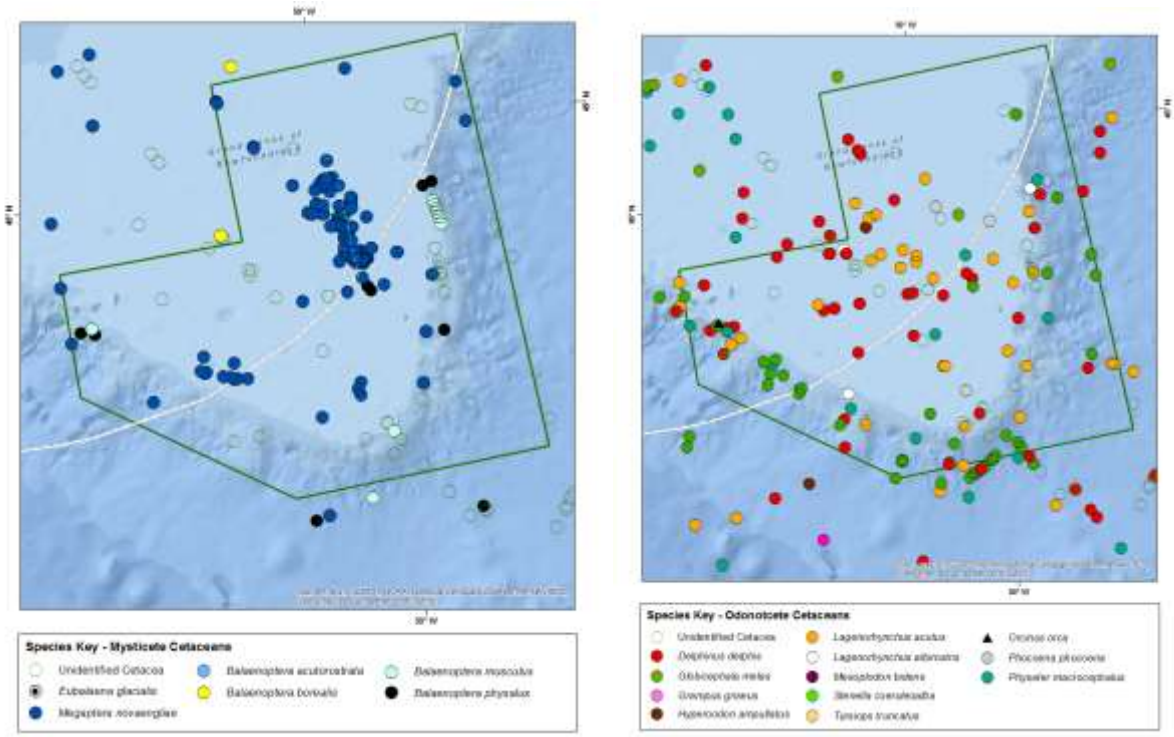


Figure 2. Close up on Odontocete [**Left**] and Mysticete [**Right**] cetacean sightings on the Southeast Shoal of the Grand Bank (redrawn from Fuller & Myers 2004, with later information from the DFO Cetacean Sightings Database).

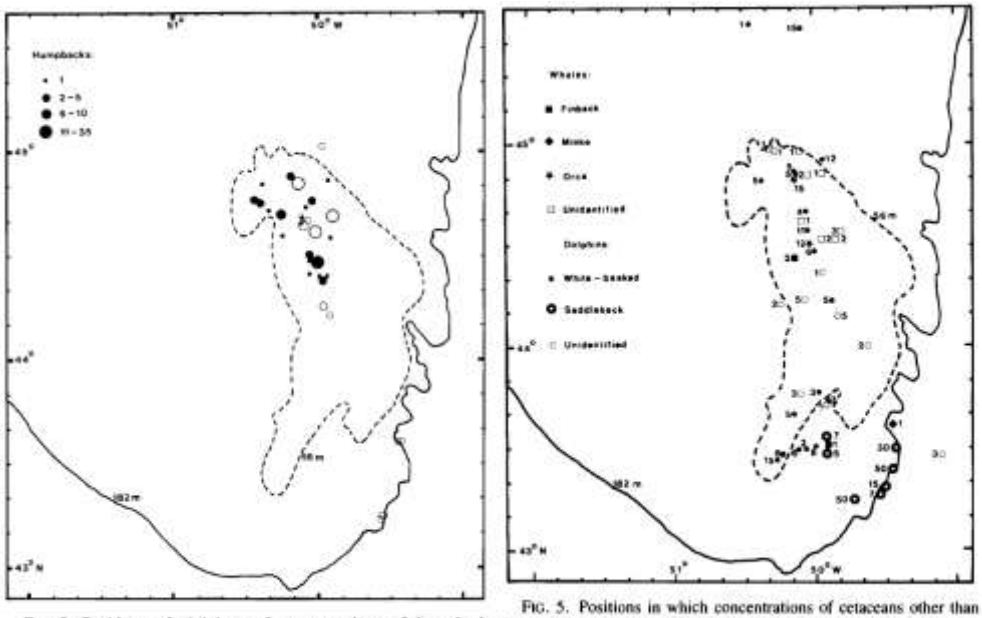


FIG. 3. Positions of sightings of concentrations of humpback whales on the Southeast Shoal while not on transect in 1982 (●) and 1983 (○).

FIG. 5. Positions in which concentrations of cetaceans other than humpback whales were sighted on the Southeast Shoal while not on transect in 1982 and 1983. The numbers of animals sighted in each concentration is given beside each symbol.

Figure 3. Sighting positions of humpback [**FIG.3.**] and other cetaceans [**FIG.5.**] on the Southeast Shoal of the Grand Bank (reproduced from Whitehead & Glass, 1985a).

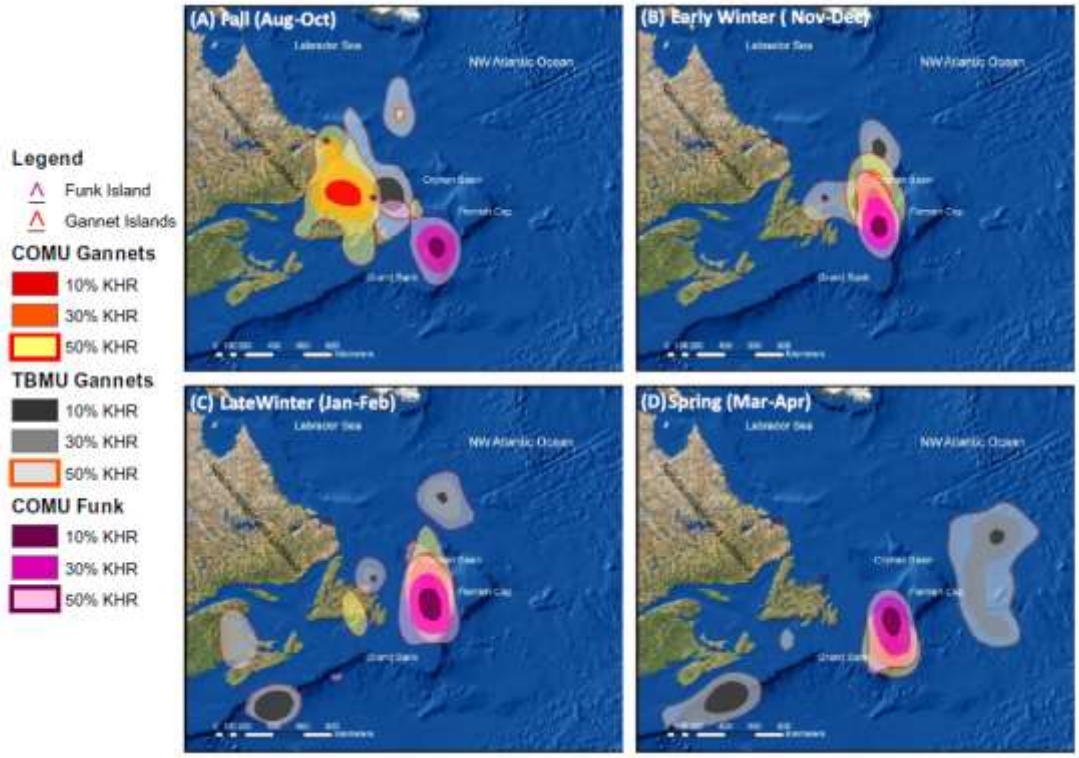


Figure 4. Seasonal distribution of common murres (COMU) and thick-billed (TBMU) murres obtained from tracking birds from the Gannet Islands (both species), Labrador and Funk Island, Newfoundland (Montevecchi et al., 2012).

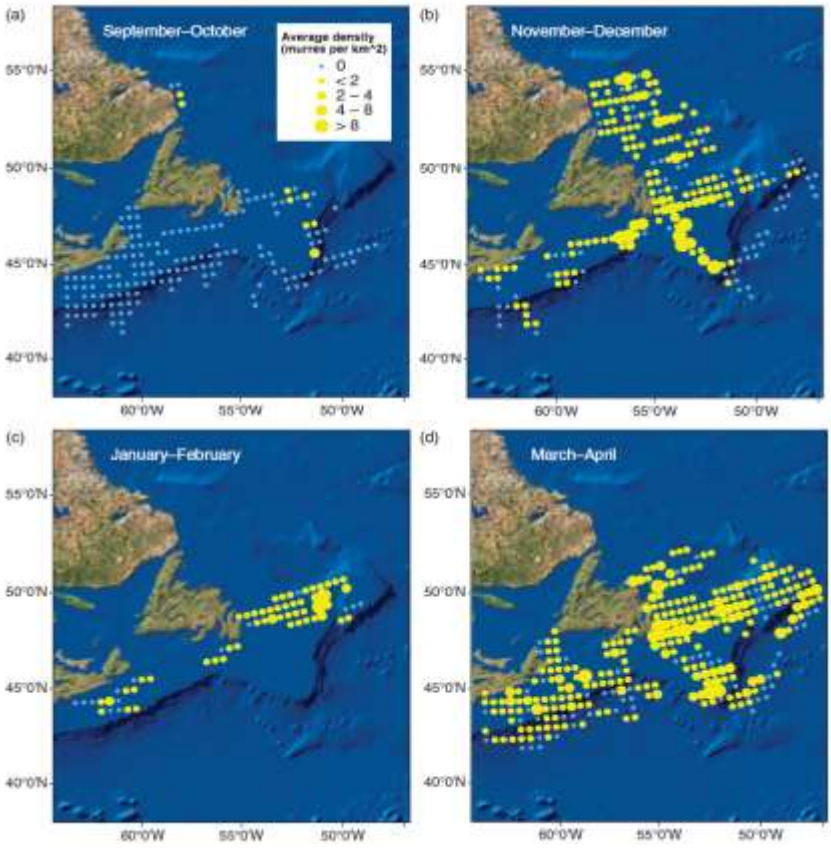
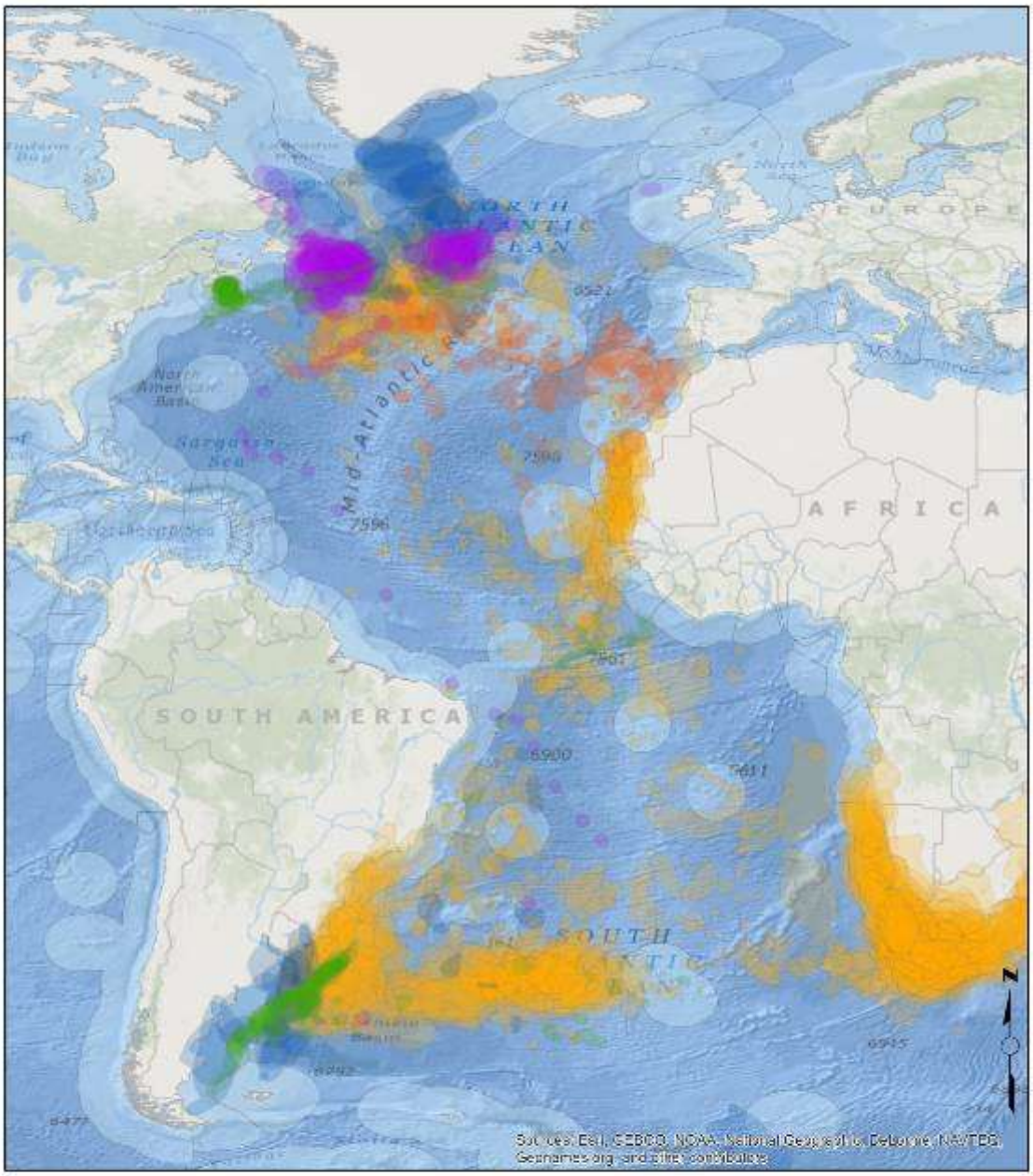


Figure 5. Seasonal distribution of murres (*Uria* spp.) from the Eastern Canadian Seabirds at Sea (ECSAS) program 2006-2011 (Hedd et al., 2011).



Legend:

- Sooty Shearwater - NB (Kidney Isl)
- Sooty Shearwater - NB (Gough Isl)
- Great Shearwater - NB
- Cory's Shearwater - NB
- Cory's Shearwater - Pre-laying
- EEZ

Data-contributors: April Hedd, Bill Montevecchi, Robert Alfredo Ronconi, Jacob Gonzalez-Solis, Maria Dias, Paulo Catry, Jose Pedro Granadeiro

Figure 6. Showing hotspots for four species of Atlantic shearwater, as defined by kernel analysis of tracking data.

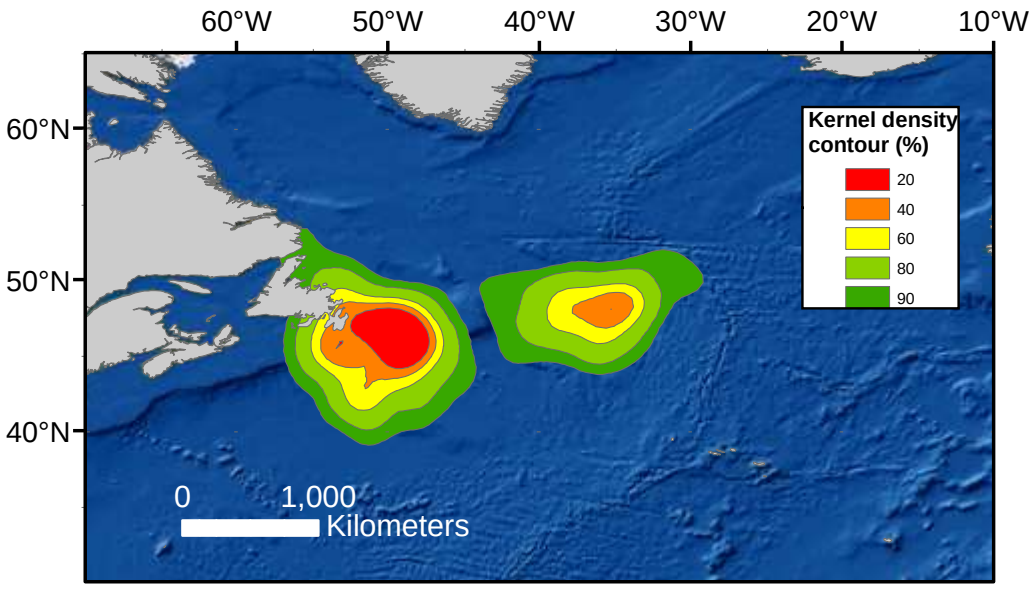


Figure 7. Nonbreeding distribution of sooty shearwaters from Kidney Island, Falkland Islands during their non-breeding period (Hedd et al., 2012).

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(Indicate if there are any known issues with giving permission to share or publish these data and what any conditions of publication might be; provide contact details for a contact person for this issue)

Hal Whitehead and Richard Sears thanked for information Shared on blue and humpback whales. Additional information on Marine Mammals and earlier boundary of EBSA based on the 2004 Southern Grand Bank MPA proposed by WWF (Fuller & Myers, 2004). DFO Cetacean Sightings available via OBIS-SEAMAP (Halpin *et al.*, 2009)

Seabird tracking data has been generously provided by Laura McFarlane Tranquilla, Bill Montevecchi, Tony Gaston, April Hedd, Robert Ronconi, Jacob Gonzales-Solis, Maria Dias, Paulo Catry, and Jose Granadeiro . Underlying procellariiforme data are housed at www.seabirdtracking.org and has been analysed by Birdlife International. Future requests to use these data should be directed to seabirds@birdlife.org in the first instance.