

**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, Grand Bank**

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**Abstract** (*in less than 150 words*)

The Grand Bank's Southeast Shoal concentrates the highest overall benthic biomass of the Grand Banks. It also presents: a unique offshore capelin spawning and yellowtail nursery grounds, unique shallow, sandy habitat, cetacean and seabird aggregation and feeding grounds, American plaice nursery habitat, a spawning ground for the depleted Atlantic cod, reproduction area for striped wolffish, and unique populations of blue mussels and wedge clams. This area has been previously identified as an EBSA by DFO in Canada, and as a Vulnerable Marine Ecosystem (VME) indicator element by NAFO.

**Introduction**

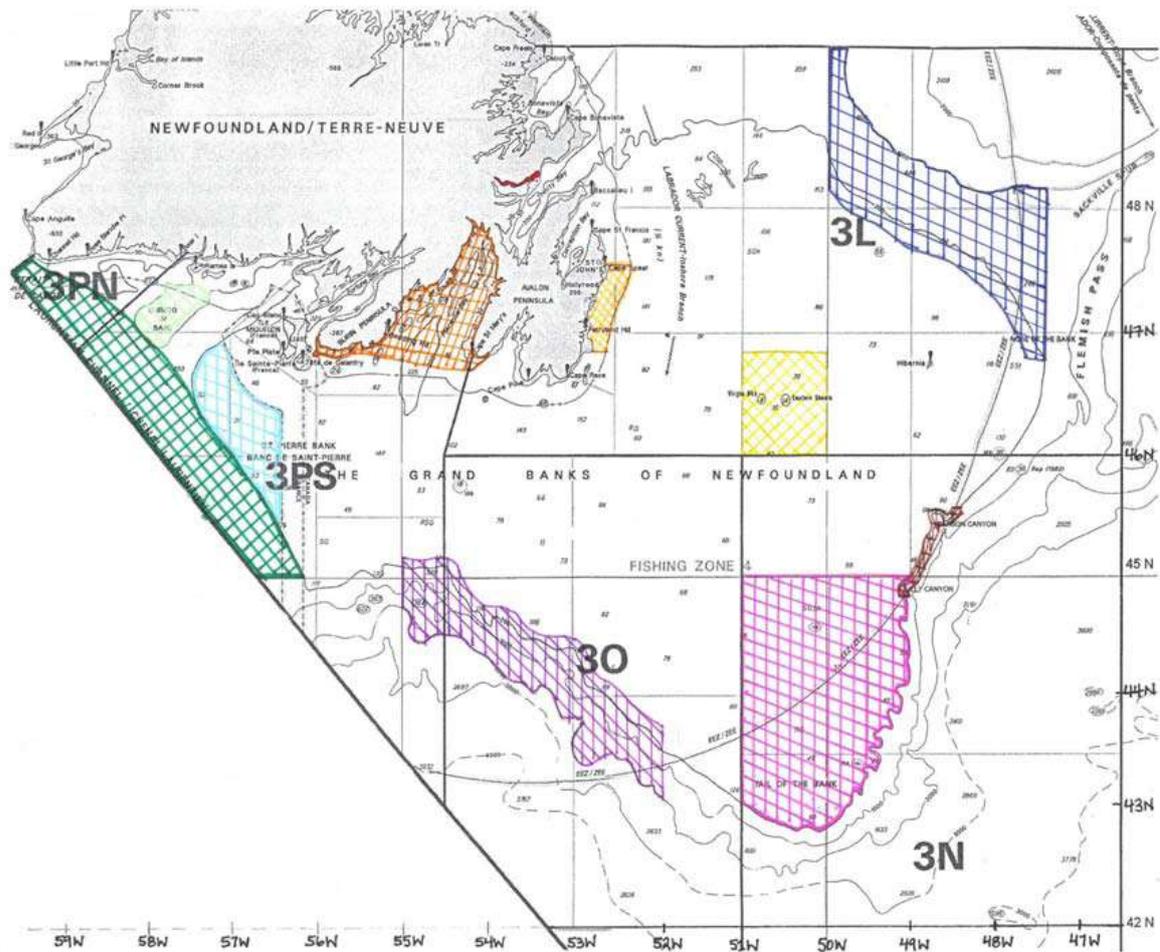
*(To include: feature type(s) presented, geographic description, depth range, oceanography, general information data reported, availability of models)*

The Southeast Shoal (area east of 51° W and south of 45°N) extends to the edge of the Grand Bank off Newfoundland. It straddles between areas of national jurisdiction and the high seas. Its unique features provide essential habitat for a number of species, playing an important role in the productivity of the Grand Banks ecosystems, which has sustained exceptionally abundant and commercially valuable marine life for centuries. It comprises a relict beach ecosystem containing unusual offshore populations of blue mussel and wedge clam, and offshore capelin spawning ground. The area is also important for threatened and/or declining species, given the currently severely altered state of the Northwest Atlantic ecosystem and the importance of the area as a nursery habitat for cod, home to an offshore spawning population of capelin (an important forage species for groundfish), a discrete population of humpback whales, and migrating leatherback and loggerhead turtles. Adjacent concentrations of deep sea cold water coral and sponge species that are inherently vulnerable, fragile and slow to recover and provide habitat for a number of fish species. These are also considered ecosystems engineers by helping sustain a healthy ecosystem structure.

**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 Southeast Shoal is located on the Grand Bank – area east of 51° W and south of 45°N, extending to the edge of the Grand Bank. It comprises Canada's extended continental shelf and the water column above (both EEZ and the high seas). See Maps below (and the shape file attached). It is also located in the NAFO Division 3NO.



**Fig. 01: Southeast Shoal in pink, identified as an EBSA by the Canadian Science Advisory Secretariat. PB/GB LOMA EBSAs. From CSAS doc. 2007/052**

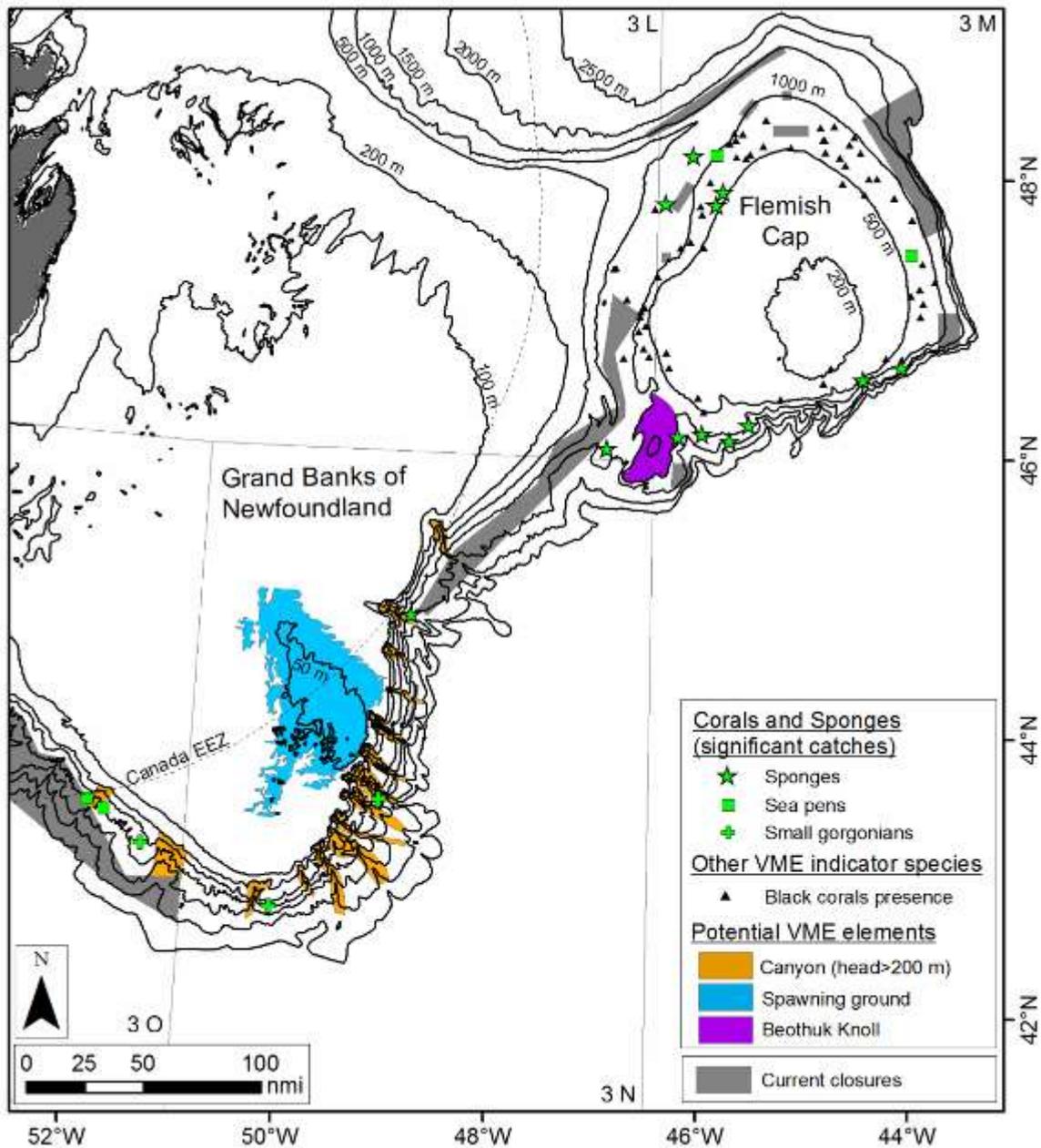


Fig. 2: NAFO, Scientific Council Working Group on Ecosystem Approach to Fisheries Management report (2011). VME indicator elements on the Grand Banks: Corals, sponges, canyon heads, Beothuk knoll and the **Southeast Shoal in blue**.

**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)*

The Southeast Shoal concentrates the highest overall benthic biomass of the Grand Banks, and presents: a unique offshore capelin spawning and yellowtail nursery grounds, unique shallow, sandy habitat, cetacean and seabird aggregation and feeding grounds, American plaice nursery habitat, a spawning ground for the depleted Atlantic cod, reproduction area for striped wolfish, and unique populations of blue mussels and wedge clams.

### **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?)*

The Grand Banks have been one of the most important and productive ecosystems in the world, which once sustained one of the biggest fisheries worldwide. However due to overfishing and climate variations, the productive capacity of the area has been significantly depleted. As an example, the Southern Grand Banks cod stock (NAFO division 3NO) has collapsed, resulting in a moratorium that has been in place since 1994. Despite the moratorium, bycatch remains a problem, slowing down recovery. Trophic level interactions and habitat protection also play an important role in the rebuilding of this ecosystem. For example, capelin is an important prey for cod and its current levels are still very low since early 1990s. Given the unique biological and oceanographic characteristics of the area, the ecosystem and its enormous productivity can very likely be rebuilt.

### **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)*

The Southeast Shoal meets the UN Convention on Biological Diversity (CBD) criteria for selection of ecologically or biologically significant areas (EBSAs), as described below:

- High productivity of the ecosystem, which has sustained exceptionally abundant and commercially valuable marine life for centuries.
- Special importance of the area for the life history stages of several species: the region is known as a spawning and feeding ground for many fish, birds and marine mammals.
- Uniqueness/rarity of the area as a relict beach ecosystem containing unusual offshore populations of blue mussel and wedge clam.
- The area is also important for threatened and/or declining species, given the currently severely altered state of the Northwest Atlantic ecosystem and the importance of the area as a nursery habitat for cod, home to an offshore spawning population of capelin (an important forage species for groundfish), a discrete population of humpback whales, and migrating leatherback and loggerhead turtles.
- Adjacent concentrations of deep sea cold water coral and sponge species that are inherently vulnerable, fragile and slow to recover and provide habitat for a number of fish species. These are also considered ecosystems engineers by helping sustain a healthy ecosystem structure.
- Relative naturalness of this area in a region where intensive industrial fishing has led to large-scale ecosystem collapse.

Seabird species:

- Sixteen different species of seabirds have been observed in the area including those with regional breeding populations and migrants who breed in the arctic/sub-arctic or other distant regions. Seabirds are present in all months but the dominant species vary at different times of the year (Coughlan, 2002).
- Concentrations are highest in late summer when numbers range from 1 to 1400 bird/km and levels in the SE Shoal were highest for the entire bank. The largest seabird colonies in eastern North America south of Hudson Strait are found in Newfoundland and a total of 20 seabird species breed in eastern and southern parts of the island

(Coughlan, 2002).

- The Banks are the chief wintering area for Dovekies from the Arctic whose breeding grounds in Greenland holds at least 14 million birds (Lock et al., 1994).
- The migrant species also include most of the world’s population of Greater Shearwaters (about 5 million birds), smaller number of Sooty Shearwaters, and large numbers of Wilson Storm Petrels (Lock et al., 1994).
- Leach’s and Wilson’s Storm Petrels arrive in significant numbers to the Grand Banks in May during the onset of the breeding season and are absent by October. Skuas remain on the Grand Banks in small numbers throughout the year. Skuas feed by chasing and stealing prey caught by other bird species, while the Long-tailed Jaeger is similar, it is also known to feed on small invertebrates at the water surface (Lock et al., 1994).

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
<b>Uniqueness or rarity</b>	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
<p><i>Explanation for ranking</i></p> <p>The Southeast Shoal is the only known offshore spawning site for Capelin (Fuller and Myers 2004; CSAS 2007/052). The Southeast shoal is the single nursery area of the entire stock of Yellowtail flounder (Walsh et al. 2001; CSAS 2007/52). The Southeast Shoal has the warmest bottom water temperatures on the Grand Banks (Fuller and Myers 2004). Oceanographic processes: A well-defined gyre exists on the Southeast Shoal Structural Habitat: The Southeast Shoal is unique in that it is the only shallow sandy offshore shoal in the LOMA (Fuller and Myers 2004). High- Biodiversity: The Southeast Shoal was the last part of the Grand Banks to be deglaciated. As a result, relict populations of blue mussel, wedge clam and capelin associated with beach habitats from the last glacial advance remain in the area. The two bivalve species are typically found in inshore areas and capelin normally spawn on beaches so all of these populations are unique (Fuller and Myers 2004; CSAS 2007/052). High- Biodiversity: The Southeast Shoal contains the highest benthic biomass on the Grand Bank (Walsh et al. 2001, CSAS 20007/052)</p>					
<b>Special importance for life-history stages of species</b>	Areas that are required for a population to survive and thrive.				X
<p><i>Explanation for ranking</i></p> <p><b>Spawning/Breeding-</b>Offshore spawning capelin may be a genetically separate population and therefore the Southeast Shoal could be considered an exclusive spawning area and vital to the fitness of the population (CSAS 2007/052.) <b>Feeding-</b> Important seasonal foraging area for cetaceans (especially humpbacks) and seabirds <b>Biodiversity-</b> The Tail of the Banks is important to the survival of the Striped wolffish since it is listed by COSEWIC as being of “special concern” (ie...”<i>particularly sensitive to human activities or natural events...</i>”) Also important to the survival and reproduction of several “degraded” species. The area is also important to supporting and maintaining the diversity of the benthos</p>					
<b>Importance for threatened, endangered or declining species and/or habitats</b>	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.				X

<i>Explanation for ranking</i> - Nursery ground for 3NO cod (under moratorium since 1994) - habitat for striped wolffish					
<b>Vulnerability, fragility, sensitivity, or slow recovery</b>	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
<i>Explanation for ranking</i> As a shallow shoal, the sandy bottom habitat that dominates the area is subject to regular physical disturbance by wave action from storms. So, the habitat itself is naturally dynamic and less sensitive to disturbance. However, the ecosystem and many of its components have been severely altered by fishing, which has altered community and ecosystem structure. For example, haddock and Atlantic cod were once abundant in this area but both species have been severely depleted by fishing and therefore are not fulfilling the same role in the ecosystem as they did in the past. (CSAS 2007/052)					
<b>Biological productivity</b>	Area containing species, populations or communities with comparatively higher natural biological productivity.				x
<i>Explanation for ranking</i> <b>Spawning/Breeding</b> -Capelin and northern sand lance aggregate on the Southeast Shoal to spawn (Fuller and Myers 2004; F. Mowbray pers. comm.). <b>Spawning/Breeding</b> -The shoal is a spawning area for several groundfish species (American Plaice, Yellowtail Flounder, and Atlantic Cod) (Fuller and Myers 2004; Ollerhead et al. 2004). <b>Nursery/Rearing</b> - The Southeast shoal is an important nursery area for Yellowtail flounder, 3NO Cod, and American plaice (Walsh et al. 2001). <b>Feeding; Biodiversity</b> - The presence of important forage species in the area draws large aggregations marine mammals (especially humpbacks and northern bottlenose) and seabirds. <b>High- Feeding</b> - The greatest concentration of Yellowtail flounder, the shallowest groundfish, is found on the Tail of the Banks, extending northwards over the Southeast Shoal and central Grand Bank (Kulka et al. 2003) <b>High- Oceanographic processes</b> - The Southeast Shoal is an area of high primary productivity (CSAS 2007/052). <b>High- Biodiversity</b> - The densest concentration of Striped wolffish (listed as ‘special concern’ by COSEWIC) occurs on the Tail of the Banks <b>Moderate- Feeding</b> - Although American Plaice is distributed across all of the Grand Banks, an area of highest density is returning to the Tail of the Banks since the mid 1990’s (Kulka et al. 2003)					
<b>Biological diversity</b>	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				x
<i>Explanation for ranking</i> High- Biodiversity: The Southeast Shoal was the last part of the Grand Banks to be deglaciated. As a result, relict populations of blue mussel, wedge clam and capelin associated with beach habitats from the last glacial advance remain in the area. The two bivalve species are typically found in inshore areas and capelin normally spawn on beaches so all of these populations are unique (Fuller and Myers 2004; CSAS 2007/052). High- Biodiversity: The Southeast Shoal contains the highest benthic biomass on the Grand Bank (Walsh et al. 2001, CSAS 20007/052) High bird diversity.					
<b>Naturalness</b>	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
<i>Explanation for ranking</i> <b>Moderate to Low-</b> While regular physical disturbance from storms of the sandy bottom habitat is common in this area, the hydraulic dredging that takes place on the shoal likely disturbs sediment to a greater depth and with a different impact than any natural disturbance. Many of the resources themselves have been depleted, with significantly lower-than-natural populations of Atlantic cod, American plaice and capelin, for example. (CSAS 2007/052)					

### 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
<i>Add relevant criteria</i> Vulnerable Marine Ecosystem (VME)	Apart from being identified as an EBSA (CSAS 2007/052) by Canadian authorities, the Southeast Shoal has also been identified as a VME indicator element by NAFO (see figure 2 above; NAFO Conservation and Enforcement Measures, NAFO FC Doc 14/1, Annex VII).				X
<i>Explanation for ranking</i>					
NAFO has identified the Southeast Shoal (Div. 3N) as a VME indicator element since 2008 (and reaffirmed in 2012), due to its importance as a spawning ground (for capelin, cod, cetaceans, etc).					

## 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.)

- CSAS 2007/052, Placentia Bay-Grand Banks Large Ocean Management Area Ecologically and Biologically Significant Areas.

- NAFO Conservation and Enforcement Measures (2014): <http://nafo.int/>

- Fuller, S.D., and Myers, R.A. 2004. The Southern Grand Bank: A marine protected area for the world. World Wildlife Fund Canada. Halifax, Nova Scotia. 99p.

- DFO, Risk Assessment, Seabird Aggregation and Feeding in the Southeast Shoal and Tail of the Banks (online: <http://www.dfo-mpo.gc.ca/Library/342998rank66.pdf>)

## Maps and Figures

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See WWF shape files attached