Fisheries and Oceans Canada | Pêches et Océans Canada
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Central and Arctic Region

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Science Advisory Report 2020/057

IDENTIFICATION OF ECOLOGICAL SIGNIFICANCE, POTENTIAL CONSERVATION OBJECTIVES, KNOWLEDGE GAPS AND VULNERABILITIES FOR THE SOUTHAMPTON ISLAND ECOLOGICALLY AND BIOLOGICALLY SIGNIFICANT AREA

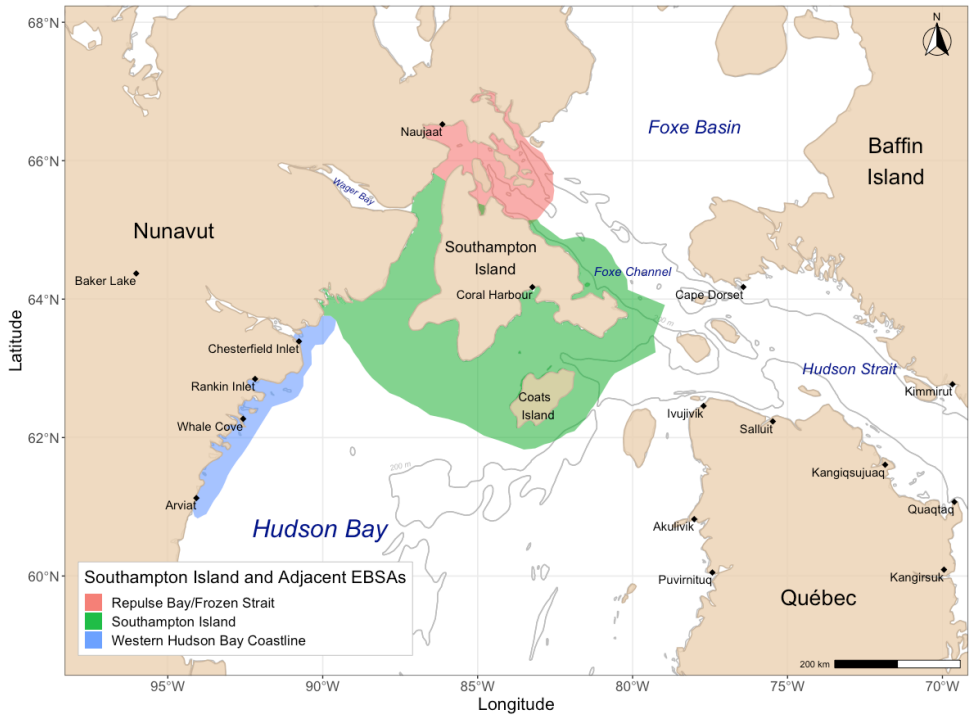

Figure 1. The Southampton Island Ecologically and Biologically Significant Area (EBSA; green shading) within the Hudson Bay Complex (Hudson Bay, Hudson Strait and Foxe Basin) biogeographic region of the Canadian Arctic. Adjacent EBSAs include Repulse Bay/Frozen Strait (red shading) identified for the Northern Hudson Bay Narwhal population and the Western Hudson Bay Coastline (blue shading) for Arctic Char (DFO 2011).

Context:

An Area of Interest (AOI) for the waters surrounding Southampton Island, located in the Kivalliq region of Nunavut in the central Canadian Arctic, is being considered for designation as a Marine Protected Area (MPA) under the Oceans Act. The AOI was nominated based on the presence of complex oceanography, including a recurrent polynya in Roes Welcome Sound, and for large concentrations of marine mammals and seabirds within the Southampton Island Ecologically and Biologically Significant Area (SI EBSA). The AOI is supported by communities for an MPA establishment process. Fisheries and Oceans Canada (DFO) Science is required to provide science advice in support of the identification and prioritization of MPAs following the selection of an AOI. This Science Advisory Report is from the DFO Canadian Science Advisory Secretariat (CSAS) regional advisory meeting of December 5-6, 2018. It contains advice requested by DFO Oceans Program on key ecological features within the Southampton Island EBSA that

warrant marine protection and recommends conservation objectives. At the time of the meeting, an AOI boundary was not yet decided on, and the SI EBSA boundary was used for the purposes of this regional advisory process.

This Science Advisory Report is from the Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, regional advisory meeting of December 5-6, 2018 on the Biophysical and Ecological Overview of the Southampton Island Proposed Area of Interest (AOI). Additional publications from this meeting will be posted on the Fisheries and Oceans Canada (DFO) Science Advisory Schedule as they become available.

SUMMARY

- The evaluation of Ecologically and Biologically Significant Areas (EBSA) is based solely on defining the ecological and biological properties of potential areas and does not consider threats and/or risks. The marine water surrounding Southampton Island has been identified as one of the Arctic EBSAs (DFO 2011) and the Fisheries and Oceans Canada (DFO) Oceans Program has identified this EBSA as a potential Area of Interest (AOI) for marine protection.
- An ecological and biological overview report (EOR), a requirement for Marine Protected Area (MPA) designation, was prepared to provide the basis for identifying ecological significance, knowledge gaps, and vulnerabilities in the SI EBSA.
- There were a number of cases where an ecological or biological feature extends outside the Southampton Island EBSA into the broader Hudson Bay Complex biogeographic region or another EBSA. In these cases, information from adjacent areas were described where relevant, however, the Frozen Strait and Repulse Bay, and Western Hudson Bay Coastline EBSAs were not assessed in this review. In addition, the primary focus was aquatic marine species for which DFO has responsibility; still seabirds, sea ducks and Polar Bears were also considered.
- Seven ecologically significant components (i.e., conservation priorities) were identified in the SI EBSA:
    1. Intersection of several water masses;
    2. Winter habitat in Roes Welcome Sound polynya;
    3. Migration corridor for Beluga, Bowhead, and Narwhal;
    4. Marine mammal (Beluga, Narwhal, Bowhead) seasonal residence (feeding) and calving areas;
    5. Year-round resident marine mammals (Walrus, Bearded Seal, Ringed Seal and Polar Bear) and their prey species;
    6. Anadromous Arctic Char and other subsistence food;
    7. Seabirds and their prey species.
- Three areas within the EBSA were identified as key priority areas: East Bay extending into Foxe Channel, Evans and Fisher straits (between Southampton and Coats islands, including to the low-water line along the coasts of Walrus Island, Coats Island and Southampton Island), and Roes Welcome Sound polynya. A number of ecologically significant components exist within one or more of these three priority areas and may benefit from protection.
- To develop baseline knowledge and assess risk in the future, several key data and knowledge gaps were identified as research and monitoring priorities. In addition, a preliminary list of stressors and vulnerabilities were identified for future consideration in risk assessment.

- Six conservation objectives were suggested for the Southampton Island AOI based on the features within the three key priority areas:
    1. To maintain the ecosystem structure (e.g., biodiversity) and function of the Southampton Island EBSA; in particular, these key priority areas: East Bay, Evans and Fisher straits (between Southampton and Coats islands), and Roes Welcome Sound; and the nearshore coastal marine environment;
    2. To mitigate the adverse effects of anthropogenic activities (e.g., vessel traffic and tourism) within the Southampton Island EBSA generally, and particularly in the three key priority areas;
    3. To ensure the sustainability and health of key species (e.g., Atlantic Walrus, Arctic Char, seabirds, Polar Bear, Beluga, Ringed and Bearded Seals) within the Southampton Island EBSA;
    4. To maintain the presence (quantity, quality and productivity) of key prey species and other ecologically significant species (e.g., benthic invertebrates, small pelagic fishes, kelp, Ringed Seal) within the Southampton Island EBSA, and to allow for higher trophic level feeding;
    5. To understand the connectivity between the oceanographic drivers, open-water features (i.e., polynya), and sea ice environments (e.g., landfast ice), and how these influence change in regional productivity; and
    6. To maintain current structure and function of the nearshore coastal marine environment (e.g., sediment loading, species distribution changes).

INTRODUCTION

The identification of Ecologically and Biologically Significant Areas (EBSAs) can reveal areas that have particular ecological or biological significance to facilitate a greater-than-usual degree of risk aversion (DFO 2004). The Southampton Island (SI) EBSA is located within the Hudson Bay Complex (Hudson Bay, Hudson Strait and Foxe Basin) of the central Canadian Arctic, and encompasses a marine portion of the Kivalliq Region in Nunavut (Figure 1). The SI EBSA sits between the Western Hudson Bay Coastline EBSA, to the south along the coastline, and the Repulse Bay/Frozen Strait EBSA, to the immediate north (Figure 1). The two communities most connected to this area are Coral Harbour, located on southern Southampton Island in South Bay, and Chesterfield Inlet, located on the mainland, southwest of the EBSA (Figure 1).

An AOI Working Group comprised of participants from Fisheries and Oceans Canada (DFO), Nunavut Tunngavik Inc., and Nunavut's three Regional Inuit Associations (Kitikmeot, Kivalliq and Qikiqtani) convened in August 2016 and led a process to identify potential AOIs in Nunavut. The working group developed a set of criteria that was used to assess previously identified EBSAs. Other stakeholders provided expertise to the AOI Working Group at a workshop held in December 2016 (federal government departments and agencies, territorial government departments, Regional Wildlife Organizations, Institutions of Public Government, and Environmental Non-Governmental Organizations). In March and April 2017, the working group conducted initial consultations on marine protection opportunities with Nunavut communities within the vicinity of a short list of nine potential AOIs in Nunavut, one of which was the SI EBSA. In September 2018, confirmation engagement meetings were held in Coral Harbour, Chesterfield Inlet and Naujaat with Hunters and Trappers Organizations and community members to confirm support for a proposed AOI for the waters surrounding Southampton Island.

Under the *Marine Conservation Targets Initiative*, DFO Science sector was asked to provide advice in support of the identification and development of Marine Protected Areas (MPAs) following the selection of an AOI. An ecological and biological overview report (EOR) was

drafted for the potential SI AOI. The report is a result of a literature review undertaken to characterize the ecology of the area and provide the basis for determining key biophysical and ecological features within the AOI that may warrant special protection. Included in the request by DFO Oceans was a review of the EOR to identify key priority areas within the EBSA, which meet the criteria for marine protection under the *Oceans Act*, and recommend one or more potential conservation objectives for each area. While scientific information for the EBSA was available in most aspects of the EOR, many data gaps were also identified. In addition to the scientific literature review, where available, published Inuit Qaujimajatuqangit (IQ), and local and traditional ecological knowledge reports were also included in the report. Some areas outside the SI EBSA are ecologically significant and peripherally referred to in the EOR. However, the scope of the exercise was limited to the SI EBSA as much as possible with consideration of external information on a case by case basis (e.g., Arctic Char marine movements, marine fish distributions, marine mammal distributions).

Ecological Significance

The SI EBSA was identified as an EBSA in 2011 based on a high degree of year-round and seasonal marine mammal and seabird use (DFO 2011). In this assessment it was identified that several species and ecosystem features play an important role in the ecosystem, and may benefit from future marine protection within SI EBSA. The Science Advice in this report is based both on expert opinion and scientific knowledge available for the region (DFO 2020, Loewen et al. 2020). More detailed IQ and local knowledge will be collected and considered by DFO Oceans in future development of an MPA in the area. As more information is gathered new ecologically significant areas may be identified in the future.

Oceanographic features in and around the SI EBSA were assessed, as several water masses, including two Arctic water sources, intersect here. One source flows into the system from the north through Fury and Hecla Strait, and another from the east through northern Hudson Strait (via the Baffin Island Current), with outflow to the Atlantic Ocean via southern Hudson Strait. Most rivers on Southampton Island are small and all except the largest (Boas River; Figure 2) flow only four months of the year. Few streams are found along the steep-sided cliffs of northern Southampton Island and freshwater discharge to that coast is minimal.

A recurring coastal polynya occurs in Roes Welcome Sound between the northwestern shore of Southampton Island and the western Hudson Bay coast (Figure 2). This polynya provides approximately 52 km^2 of open water during January and about 107,107 km^2 during July. The polynya is believed to play an important role in deep water formation, i.e., renewal of oxygen and nutrients to bottom waters in Hudson Bay, which may support high benthic productivity (i.e. increased species diversity and/or species richness). Strong currents maintain the polynya throughout the winter, making it a desirable habitat for walrus, migratory birds, and other marine mammals (e.g., seals, Polar Bears).

The SI EBSA is a migration corridor in the spring and fall for Beluga, Bowhead, and Narwhal as they move between overwintering areas in Hudson Strait, Labrador Sea, and Ungava Bay, to coastal waters of Western Hudson Bay and/or regions near Repulse Bay, Lyon Inlet, Foxe Basin, and Frozen Strait (see Figure 29; Loewen et al. 2020). Belugas primarily use Roes Welcome Sound in the fall, and waters north of the EBSA around Repulse Bay and south of Southampton Island during the spring and fall. The waters on the east and north side of Southampton Island provide seasonal refuge for Beluga and Narwhal, and specifically East Bay has been identified as an important calving area for Beluga in the summer. There is general use of the SI EBSA by Polar Bears, specifically in areas with higher concentrations of marine mammals.

The dynamic ecosystem within the SI EBSA (e.g., seasonal sea-ice habitat, open water, prey species) is known to support year-round species such as Polar Bears (denning habitat), Walrus, Bearded Seals, and Ringed Seals. The SI EBSA provides valuable denning habitat for the Foxe Basin Polar Bears, specifically around the southeast of Southampton Island, near East Bay and towards the northern end of the island (e.g., Vansittart Island). The Hudson Bay-Davis Strait stock of Atlantic Walrus are year-round residents of the SI EBSA, and are known to move locally between haul-out sites during the seasons. Walrus prey species (i.e., benthic invertebrates, seals) are of key ecological significance to this region, as are foraging and haul-out areas found between Southampton and Coats islands.

Anadromous Arctic Char are one of many important subsistence foods for nearby communities and are harvested both in the coastal and freshwater systems in and around Southampton Island. In addition, Arctic Char are thought to be a major food source for Beluga residing in the SI EBSA during the summer months. Anadromous Arctic Char use nearshore waters in the SI EBSA wherever there are suitable and accessible rivers or lakes for spawning. Downstream migrations out of freshwater lakes typically begin in June. Char remain in marine waters feeding throughout the open-water period, returning to river systems in August to spawn and overwinter.

Two Migratory Bird Sanctuaries (Figure 2) extend into the SI EBSA marine environment and these areas support large numbers of nesting seabirds during spring and summer, and several species use this region along their migratory routes on a seasonal basis. Of significance are the two Thick-Billed Murre breeding colonies found on Coats Island and Arctic Canada's largest single colony of Common Eiders at East Bay. Thick-Billed Murres' preferred prey is Arctic Cod, due to the higher energy content desired for survival and chick rearing, however Capelin, other small fish species, and secondarily invertebrate species are also consumed.

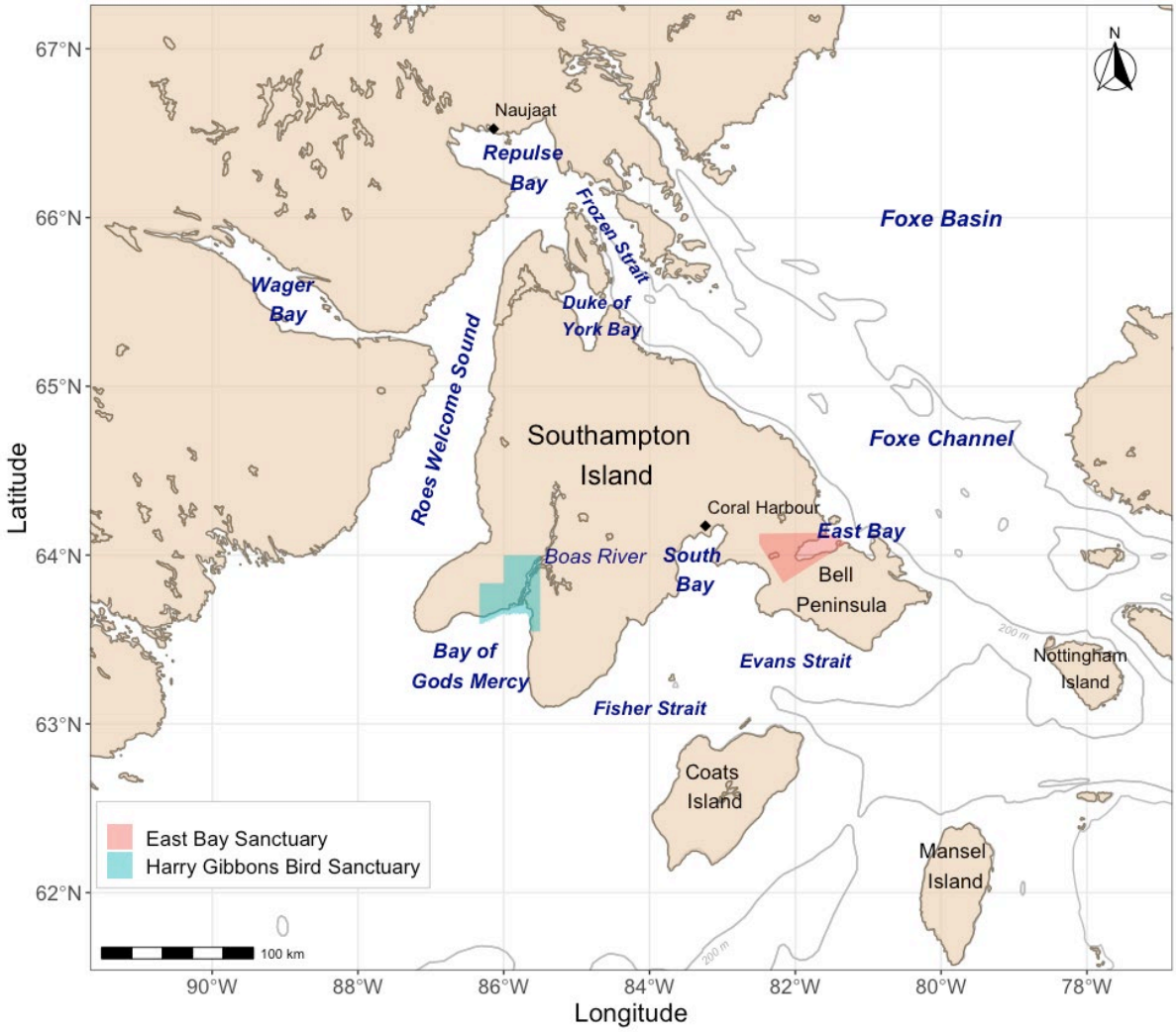

Figure 2. Map of waterbodies and important features within and around the Southampton Island EBSA.

ASSESSMENT

Southampton Island EBSA Priority Areas

The following three key priority areas, and corresponding ecosystem components, were identified, but not ranked for their relative importance, based on current knowledge of the Southampton Island area (Figure 3):

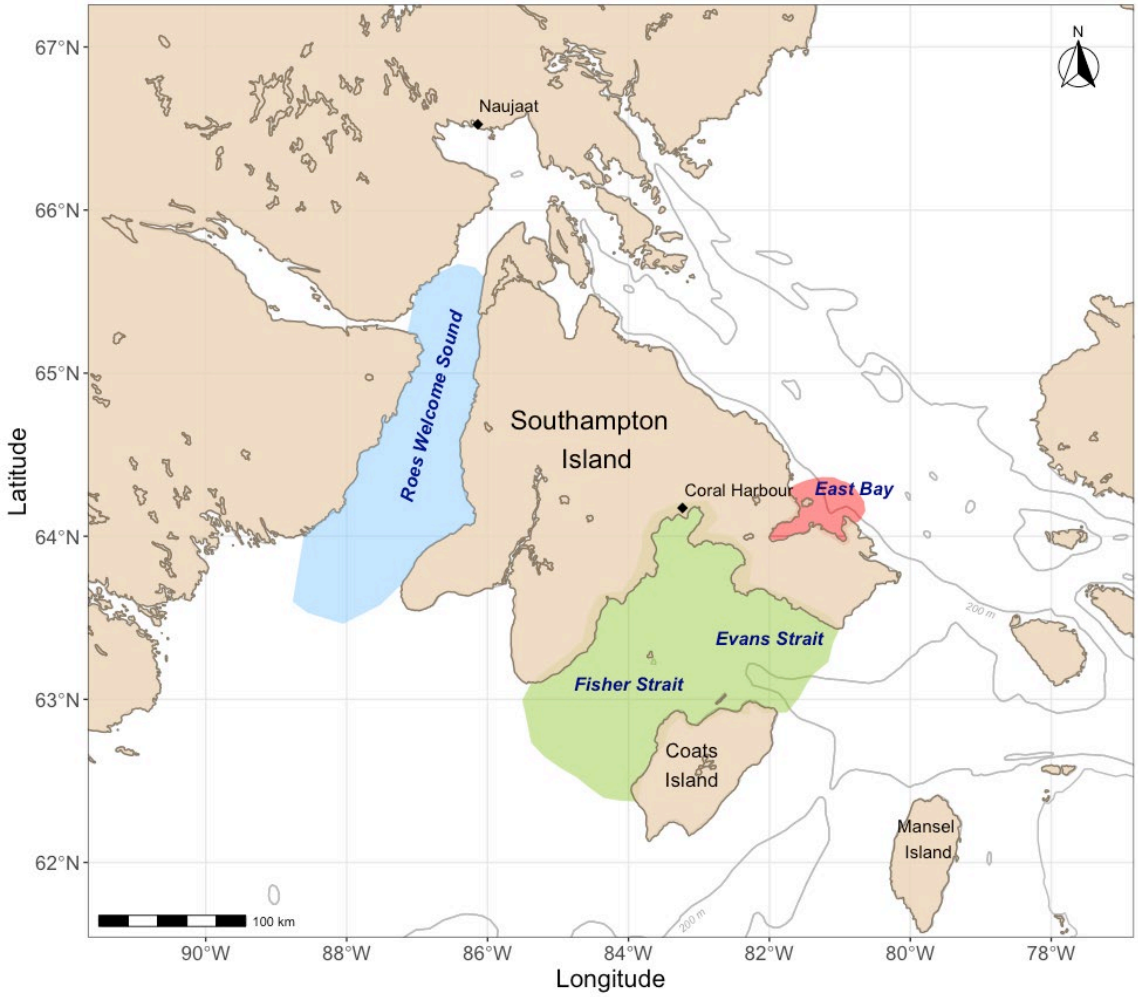

Figure 3. The three identified key priority areas within the Southampton Island Ecologically and Biologically Significant Area (EBSA): East Bay (red), Evans and Fisher straits (green), and Roes Welcome Sound polynya (blue).

East Bay extending into Foxe Channel

East Bay extending into Foxe Channel was identified as one of three priority areas. The presence of seabirds in the East Bay area was identified as the primary rationale for the importance of this particular area within the EBSA. East Bay is important to seabirds for staging, resting, and foraging in open water areas. East Bay (Mitvik Island area and southern coast) supports Arctic Canada's largest single colony of Common Eiders (formerly up to 8000 pairs; now ~3,500 pairs). Here Common Eiders breed, rear young, and forage between May and September.

The region is predicted to be a site of nutrient-rich upwelling due to the confluence of currents from Foxe Basin and the inflow from Hudson Strait. Ice transport in the region is thought to be high and likely increases sediment transport to East Bay. The melting of ice releases sediments to benthos in the region. Modelled epibenthic species richness identifies East Bay as a predicted hot spot (DFO 2020, Loewen et al. 2020).

Atlantic Walrus have also been observed by local resource users to use this region for terrestrial haul-out locations and foraging habitat. Beluga calving and nursing has been observed by local resource users in the area. Some Beluga stay in the area to forage and rear young in the summer months (May/June to September). Polar Bears have been observed crossing Coats Island and they frequently cross Southampton Island between Native Bay and East Bay and it is thought that they remain on the shore-fast ice in the southern Southampton Island region hunting seals and cross to East Bay when the southern shore-fast ice breaks up. Polar Bears are known to have associated impacts on seaducks, such as by foraging on eider eggs in the summer months.

Evans and Fisher straits

Evans and Fisher straits were identified as the second priority area within the SI EBSA, located between Southampton and Coats islands, including to the low water line along the coasts of Walrus, Coats, and Southampton islands. A defining feature for this area is the presence of kelp beds. Kelp forests are known to fulfill many diverse habitat functions in other coastal oceans, providing three-dimensional space, protection and food for potentially unique and/or diverse communities. They may also serve as important spawning habitat or nursery areas for juvenile life stages for some marine fish species. Kelp is potentially important to the overall ecosystem structure and function of a region, and as key refugia from ocean acidification. Marine invertebrates and fish assemblages associated with kelp habitats may be different from those in surrounding locations. Kelp forests are thought to occur in nearshore habitats with hard-bottom substrates, with depths ranging from 3–30 m. The Evans and Fisher straits nearshore coastal environment is important for anadromous fish species (e.g., Arctic Char), nearshore coastal marine fishes, and benthic species. This region supports the presence of a large colony of Thick-billed Murres that forage on small pelagic marine fish prey. Other seabirds use this area for staging, resting, and foraging in open water areas including shallow subtidal nearshore habitats that experience earlier ice retreat.

Atlantic Walrus are found on terrestrial haul-outs in this area and may also use these sites for foraging. During open-water periods, Walruses tend to remain near terrestrial haul-outs if ice is not available. Within the Evans and Fisher strait area, important haul-out sites are found on Bencas, Coats and Walrus islands, with large concentrations found in the fall. During winter, Walruses occur off the floe edge along the south and east coasts of Southampton Island, and along the west and southwest coasts of Foxe Peninsula. In late spring and summer, Walruses favour the floating pack ice of Evans Strait and Hudson Strait, and then move ashore to terrestrial haul-out sites as the pack ice dissipates.

During the winter and spring months, open water and sea-ice flaw leads within Fisher and Evans straits give rise to mixing and light penetration. These areas are surrounded by deeper nutrient rich waters that are delivered to the surface during upwelling or mixing events.

Roes Welcome Sound polynya

The Roes Welcome Sound polynya was identified as the third priority area. In 2011, Roes Welcome Sound was designated as a separate EBSA, based on its high benthic productivity and richness (Kenchington et al. 2011). It is an important oceanographic feature of the SI EBSA due to year-round access to open-water areas. Wind forcing is thought to be the most dominant mechanism responsible for the opening and maintenance of the polynya and strong currents

maintain the polynya throughout the winter. Approximately every 5-10 years the northern end of the polynya forms an ice bridge between the mainland and Southampton Island, allowing for the movement of land animals across the strait during the winter months. The polynya is thought to have increased nutrients due to upwelling of deeper waters to the surface. In addition, modelled benthic species richness identifies the southern end of Roes Welcome Sound as a predicted hot spot. Ice scouring in the region is thought to reduce the presence of kelp forests in waters less than 3 m (ice scour depth); however below that depth, kelp forests can occur as deep 40 m (depending on depth of light penetration).

This region provides open water access to migrating seabirds and marine mammals during break-up and freeze-up periods. Atlantic Walrus use the access to open water to haul-out on the ice; Bearded and Ringed Seals (sub-adult and adult) use this area to molt. During early ice break-up (spring), seabirds use this region to stage and forage as they move into their breeding colonies. In the summer, the area is used by seals, Bowhead, Narwhal, and nearshore and coastal anadromous and marine fish species (e.g., Arctic Char originating from rivers near the West coast of the mainland).

Potential Conservation Objectives

Due to a changing Arctic climate, the Hudson Bay Complex Biogeographic Region (DFO 2009) is under significant transformation. Although several data deficiencies and uncertainties still remain in the region, based on existing scientific and local knowledge of the SI EBSA, several key areas, species and ecosystem features were identified to be suitable for marine protection. Potential Conservation Objectives (COs) were drafted for the SI EBSA and can be further refined to successively more specific levels to meet the needs of each key priority area and/or target species. They are evolving in nature and may undergo modification as new future data collections and/or assessments of the area become available.

The suggested six conservation objectives are as follows:

1. To maintain the ecosystem structure (e.g., biodiversity) and function of the Southampton Island EBSA; in particular, these key priority areas: East Bay, Evans and Fisher straits (between Southampton and Coats islands), and Roes Welcome Sound; and the nearshore coastal marine environment;
2. To mitigate the adverse effects of anthropogenic activities (e.g., vessel traffic and tourism) within the Southampton Island EBSA generally, and particularly in the three key priority areas;
3. To ensure the sustainability and health of key species (e.g., Atlantic Walrus, Arctic Char, seabirds, Polar Bear, Beluga, Ringed and Bearded Seals) within the Southampton Island EBSA;
4. To maintain the presence (quantity, quality and productivity) of key prey species and other ecologically significant species (e.g., benthic invertebrates, small pelagic fishes, kelp, Ringed Seal) within the Southampton Island EBSA, and to allow for higher trophic level feeding;
5. To understand the connectivity between the oceanographic drivers, open-water features (i.e., polynya), and sea ice environments (e.g., landfast ice), and how these influence change in regional productivity; and
6. To maintain current structure and function of nearshore coastal marine environment (e.g., sediment loading, species distribution changes).

Stressors and Vulnerabilities

The habitats, ecological processes, and species within the SI EBSA are vulnerable to regional and global stressors, which can be categorized as either pervasive (e.g., climate change, transboundary movement of contaminants, ocean acidification), or area-specific (e.g., shipping, local source pollution, invasive species, predation). Pervasive stressors initially affect the physical attributes of the aquatic environment (e.g., changes to sea-ice coverage, unpredictable sea-ice conditions and weather patterns, increased storm frequency and severity). It is the physical environment that supports the occurrence, survival, and productivity of biological life within the SI EBSA. For example, lower-level ecosystem processes, including pelagic-benthic coupling and primary production, maintain vital habitat for high trophic (subsistence) species, such as Walrus, and their associated prey. Area-specific stressors, such as shipping and marine tourism, can directly impact ecosystems and their function. Pervasive and area-specific stressors in combination can cause cumulative and synergistic impacts.

Examples of pervasive stressor impacts (i.e., vulnerabilities) for the SI EBSA include:

- Shifts in species distributions (endemic and/or non-endemic), leading to the possible establishment of reproducing populations and increased local occurrence (e.g., Killer Whales);
- Changes in relative local abundance (including prey species) and the potential shift in predator diets, for example, a shift from Arctic Cod to Capelin in seabird and Beluga diets;
- Changes in the productivity pathways and the relationships within the ecosystems and changes in the habitat and habitat-use patterns;
- Reduction in the extent and duration of sea ice is expected to negatively affect habitat and foraging potential of ice-associated populations (e.g., Walrus, Bearded Seal, Ringed Seal, Polar Bear);
- Increased Polar Bear use of terrestrial habitats potentially resulting in increased human bear conflicts, and greater foraging by bears at seabird colonies and community garbage dumps;
- Impacts to the snow, snow cover, changing weather and possibly current patterns may lead to changes in polynyas and flaw-lead formation;
- Sensitivity to ocean acidification and the risk to calcium forming carbonate species (e.g., pteropods) may be high;
- Climate-change impacts that occur on the land but impact the freshwater and marine environments (e.g., permafrost thawing and slumping associated with Arctic Char rivers), may result in a loss of key habitat (spawning) and fish access between spawning areas and the sea; shifting permafrost will also have downstream effects on the nearshore marine environment (e.g., nutrient loading, water quality);
- Bio-accumulation of globally sourced contaminants could impact marine mammal physiology, with fitness consequences.

Known and potential area-specific stressors for the SI EBSA are:

- Vessel traffic (varying degree of intensity and frequency) could affect, for example, habitat and species through anchoring in sensitive benthic habitats, accidental spills, noise, wakes and waves, propeller wash, black carbon deposition, waste/garbage, and ship strikes;
- Scientific research activities can have an impact on local environment (e.g., vessel activity, drones, deployment of instruments, sampling of biota, noise);
- Commercial, recreational, and subsistence fishing and/or harvesting can have varying effects on fish, polar bear, sea bird, and marine mammal populations, including the

sustainable yield of targeted and by-catch species. Other impacts of fishing include, alteration of habitat through gear loss and bottom-contact gear (i.e., trawling);

- Recreation and tourism could result in disturbance of wildlife during key life history stages, or result in permanent displacement of species (e.g., Walrus haul-outs, DFO 2019);
- During the 1970s, oil and gas exploration companies were active in Evans Strait; future interest in hydrocarbon extraction could result in new seismic surveys (e.g., noise disturbance) and associated potential impacts on biota;
- Mining and associated infrastructure development (e.g., port construction and operation) to support increased shipping can contribute a variety of local stressors (e.g., dredging for ship access, ship and port noise, artificial 24-hour lighting).

Sources of Uncertainty

Substantial gaps in relevant knowledge and data compilations exist for the SI EBSA. Further study and analysis to develop baseline knowledge is needed, including, but not limited to, the following:

- Detailed bathymetry and associated substrate information (e.g., benthic habitat mapping);
- Baseline information and monitoring of key oceanographic drivers in the system. For example, freshening, water mass movement and flows, productivity and nutrient dynamics, and pelagic-benthic coupling;
- The impact of permafrost degradation on freshwater and nearshore marine habitats;
- Ice bridge formation, extent, and duration of open water within the Roes Welcome Sound polynya;
- Changes to the sea ice regime, including ice-scouring and ice-ridging, and the potential effects on year-round ice-associated species (e.g., seals, Walrus);
- The role of ice transport in the Hudson Bay Complex and its effect on regional productivity;
- Biodiversity and distribution of lower trophic organisms, including ice algae and benthic invertebrates;
- Community structure, location/distribution, and ecological significance of kelp beds and/or sea grass/eel grass beds;
- Lack of population assessment for anadromous Arctic Char and overall understanding of marine habitat use;
- Relative abundance, distributions, and habitat use of marine fishes;
- Beluga distribution patterns, including use of the region by different populations/stocks;
- Walrus movements (i.e., seasonal), and location and habitat use of key foraging sites for Walrus;
- Seabird diet, and changes in abundance and distribution of key seabird colonies.

CONCLUSIONS

The scope of this review included the SI EBSA, and considered information from adjacent EBSAs where relevant. Three priority areas of particular ecological significance within the SI EBSA were identified:

1. East Bay extending into Foxe Channel;
2. Evans and Fisher straits (between Southampton and Coats islands, including to the low-water line along the coasts of Walrus Island, Coats Island and Southampton Island); and

3. Roes Welcome Sound polynya.

A number of ecologically important species were identified for the SI EBSA that exist within one or more of the three key priority areas and may benefit from protection, including kelp beds (and their associated communities), small pelagic forage fishes, anadromous Arctic Char, Ringed Seals, Atlantic Walrus, Beluga, Polar Bears, Thick-billed Murres, and Common Eiders.

The review of the EOR for the SI EBSA, and subsequent development of potential COs based on this information, is an important step leading to the development of a MPA. The potential COs and their applicability to each priority area within the Southampton Island EBSA were developed based on current scientific knowledge, and accessible/available IQ and local use knowledge. A future IQ workshop will provide more detailed knowledge that will be considered by DFO Oceans Program in developing an MPA in the area. Based on current available information, it should be possible to select an initial suite of monitoring indicators and reference points from the potential COs described here. Further development and verification of the utility of relevant indicators from both IQ and scientific perspectives is warranted. It is important to note that the EOR and COs should be re-evaluated periodically to ensure that new knowledge can be appropriately considered and included in the protection of the area.

LIST OF MEETING PARTICIPANTS

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Charlotte Sharkey	DFO Ocean Management, Central and Arctic Region
Karen Dunmall	DFO Science, Central and Arctic Region (Rapporteur)
Tracey Loewen	DFO Science, Central and Arctic Region
Kyle Elliott	McGill University
Evan Richardson (Day 2)	Environment and Climate Change Canada (ECCC)
Teresa Tufts	Government du Nunavut

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Erinn Ipsen (Day 1)	DFO Science, Central and Arctic Region

SOURCES OF INFORMATION

This Science Advisory Report is from the Fisheries and Oceans Canada, Canadian Science Advisory Secretariat, regional advisory meeting of December 5-6, 2018 on the Biophysical and Ecological Overview of the Southampton Island Proposed Area of Interest (AOI). Additional publications from this meeting will be posted on the Fisheries and Oceans Canada (DFO) Science Advisory Schedule as they become available.

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