Proceedings for the Identification of Ecologically and Biologically Significant Areas in the Beaufort Sea Large Ocean Management Area

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PREFACE

The information collected during these meetings were used for the identification of ecologically and biologically significant areas and should not be used to replace community consultation or as a scientific reference.

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Paulic, J.E., Papst, M.H., and Cobb, D.G. 2009. Proceedings for the Identification of Ecologically and Biologically Significant Areas in the Beaufort Sea Large Ocean Management Area. Can. Manuscr. Rep. Fish. Aquat. Sci. 2865: ii + 46 p.

Canada's *Oceans Act* (1997) authorizes Fisheries and Oceans Canada (DFO) to provide enhanced protection to areas of the oceans and coasts that are ecologically or biologically significant (DFO 2004). In order to collect ecological data to identify Ecologically and Biologically Significant Areas (EBSAs) in the Beaufort Sea Large Ocean Management Area (LOMA) two workshops were held, one with the scientific community and one that brought together local community representatives, federal and territorial government departments, and co-management partners. The purpose of these workshops was to: 1) discuss the process of selecting EBSAs; 2) to discuss its application in the Beaufort Sea; and 3) to attempt, for the first time in the Canadian Arctic, to apply the EBSA process. Once the candidate lists were compiled from these initial workshops, a community tour was held in February/March 2007 to give all community members the opportunity to comment on candidate area selection. Each candidate area was then put through the National Evaluation Framework for EBSAs (DFO 2004) which both considers and evaluates each area based on a ranking system against the main dimensions (i.e. uniqueness, aggregation, fitness consequences) and the additional dimensions (i.e. resilience and naturalness) outlined in the Framework.

The evaluation process for candidate areas produced 10 EBSAs, 10 EBSA data deficients and one rejected EBSA. These results were published in the Beaufort Sea Ecosystem Overview and Assessment Report (Cobb et al. 2008) that was reviewed by the Beaufort Sea Partnership (BSP). The BSP is comprised of regional level representatives (stakeholders) that are involved in the integrated oceans management planning initiative for the LOMA. The work presented in this manuscript report is a summary of the process used to collect the information for EBSA identification.

Key Words: Beaufort Sea, Ecologically and Biologically Significant Areas, EBSA, Large Ocean Management Area.

RÉSUMÉ

Paulic, J.E., Papst, M.H., and Cobb, D.G. 2009. Proceedings for the Identification of Ecologically and Biologically Significant Areas in the Beaufort Sea Large Ocean Management Area. Can. Manuscr. Rep. Fish. Aquat. Sci. 2865: ii + 46 p.

La *Loi sur les océans* du Canada (1997) autorise Pêches et Océans Canada (MPO) à accroître la protection des zones et des côtes des océans qui sont importantes sur le plan biologique et écologique (MPO, 2004). Afin de recueillir des données écologiques permettant de définir les zones d'importance écologique et biologique (ZIEB) qui font partie de la zone étendue de gestion des océans (ZEGO) de la mer de Beaufort, deux ateliers ont été organisés, l'un avec la communauté scientifique et l'autre, avec des représentants de la collectivité locale, des représentants des ministères fédéral, provinciaux et territoriaux et des partenaires de cogestion. Le but de ces ateliers était de : 1) discuter du processus de sélection des ZIEB; 2) traiter de son application dans la mer de Beaufort et 3) tenter, pour la première fois dans l'Arctique canadien, d'appliquer le processus des ZIEB. Après avoir compilé les listes des zones candidates à partir de ces premiers ateliers, une visite de la collectivité a été organisée en février et mars 2007, afin de permettre à tous les membres de la collectivité de faire part de leurs commentaires sur le choix des zones retenues. Chaque zone retenue a ensuite été examinée en fonction du cadre de l'évaluation nationale pour les ZIEB (MPO, 2004) qui prend en compte et évalue chaque zone selon un système de classement par rapport aux dimensions principales (c'est-à-dire, unicité, concentration et conséquences sur la valeur adaptative) et aux autres dimensions (c'est-à-dire résilience et caractère naturel) mentionnées dans le cadre d'évaluation.

Le processus d'évaluation des zones candidates a permis de définir 10 ZIEB, 10 ZIEB pour lesquelles il manquait des données et de rejeter une ZIEB. Ces résultats ont été publiés dans le *Rapport d'examen et d'évaluation de l'écosystème de la mer de Beaufort* (Cobb *et al*., 2008) qui a été examiné par le Partenariat de la mer de Beaufort. Le partenariat comprend des représentants régionaux (intervenants) qui participent à l'initiative de planification de la gestion intégrée des océans pour la ZEGO. Le présent manuscrit est un résumé du processus utilisé pour recueillir des renseignements sur la définition des ZIEB.

Mots-clés : mer de Beaufort, zones d'importance écologique et biologique, ZIEB, zone étendue de gestion des océans.

BACKGROUND

Canada's *Oceans Act* (1997) authorizes Fisheries and Oceans Canada (DFO) to provide enhanced protection to areas of the oceans and coasts which are ecologically or biologically significant (DFO 2004). The identification of an Ecologically and Biologically Significant Area (EBSA) is not a general strategy for protecting all habitats and marine communities, rather, it is a tool for calling attention to areas that have particular ecological or biological significance to facilitate a greater-than-usual degree of risk aversion (DFO 2004). Concluding that an area is ecologically or biologically significant does not give it any special legal status, rather, the identification provides guidance on the standard of management that is considered to be appropriate.

The identification of EBSAs are one of the four standardized steps of ecosystem-based management (EBM) for each of the five Large Ocean Management Areas (LOMA) in Canada. EBSA identification requires an integrated approach and can also be useful for many other decision-making processes in the management area. The process of area identification requires a review of all government sources, local traditional knowledge, academia and scientists. Operationalising EBSAs would require acknowledgment and special attention within an Integrated Ocean Management Plan (IOMP) to ensure that the most appropriate management tool(s) are used to ensure that management is sufficiently risk-averted in such areas (DFO 2006).

In the Canadian Arctic, EBSA identification in the Beaufort Sea LOMA presents a number of significant challenges and unique opportunities, including:

1) the opportunity to incorporate traditional and local knowledge;
2) a significant lack of scientific data;
3) the existing data has significant seasonal and geographic bias; and
4) there is a bias towards knowledge of species which are important to communities for subsistence fishing and hunting.

In order to collect ecological data, two workshops were held, one with the scientific community and one with local community members. Once the candidate lists were compiled from these initial workshops, a community tour was held in February/March 2007 to give all community members the opportunity to comment on candidate area selection. Each candidate area was then put through the National Evaluation Framework developed by DFO, which provided the necessary criteria (DFO 2004). Each area was considered and evaluated based on a ranking system against the main dimensions (i.e uniqueness, aggregation, fitness consequences) and the additional dimensions (i.e. resilience and naturalness) outlined in the Framework.

Concluding an area is not an EBSA is not intended to suggest the area is not important. To identify an area as significant is to conclude that if the habitat or species use of an area were perturbed severely, the ecological consequences would be greater than an equal perturbation in another area (DFO 2004). In addition, the final list of EBSAs produced in this report is based on current knowledge provided in the selection process and may not

necessarily include all potential EBSAs for the LOMA. As well, new areas and/or revisions of the currently identified EBSAs may be adjusted as new scientific or traditional knowledge becomes available (DFO 2006).

EBSA IDENTIFICATION CRITERIA

The EBSA methodology, criteria and definitions can be found in DFO (2004) Canadian Science Advisory Secretariat Ecosystem Status Report 2004/006. The identification of an EBSA requires an evaluation under three first-order dimensions:

1) Uniqueness: How distinct is the area from other areas in the LOMA?

2) Aggregation: Are there many individuals or one or more species densely populating the area?

3) Fitness Consequences: Does an area play a major role in the health of a particular species or group of species?

In addition, two other second-order dimensions are required in the evaluation:

1) Resilience: How well will the area recover if it is disturbed and/or perturbed?

2) Naturalness: Is the area pristine or highly perturbed by anthropogenic activities?

SCIENTIFIC WORKSHOP PROCEEDINGS

INTRODUCTION

A workshop was held September 27, 2006 in Winnipeg with DFO and other agency staff (i.e. Environment Canada, Fisheries Joint Management Committee, Parks Canada and Indian and Northern Affairs Canada) to identify potential sites that would meet the criteria for Ecologically and Biologically Significant Areas (EBSA) in the Beaufort Sea (Appendix 1). The EBSA selection process is considered a critical step in setting Ecosystem Objectives for future Integrate Ocean Management Planning the Beaufort Sea LOMA.

Workshop participants were asked to identify candidate sites based on their experience and to bring their lists and evaluations to the workshop. The format of the workshop involved an overview of the EBSA Evaluation Framework, a review of potential sites identified by workshop participants and others, and application of the evaluation Framework to produce a potential list of candidate EBSAs in the Beaufort Sea.

The workshop was the first step in identifying EBSAs for the Beaufort Sea LOMA. Community participation is critical to the process and a workshop was held with community representatives in November 2006 to discuss possible candidate EBSA

locations. Prior to the final list of EBSAs for the Beaufort Sea, the evaluation criteria will be applied to all candidate areas identified in each of the workshops.

The following is a summary of the key discussion points from participants who attended the first workshop.

Review of the EBSA National Evaluation Framework – Michael Papst, Science Advisor, Fisheries and Oceans Canada

Mike Papst presented the national EBSA Evaluation Framework to the workshop participants. The Framework has been established to assist with the identification of EBSAs by providing criteria that can be used to assess whether or not areas qualify as an EBSA. Mike noted that if an area does not meet the criteria for an EBSA, this does not mean it is not important. Also, just because an area is data deficient, does not mean it may not be important. There is a tendency to focus on areas that are known and for which there is data. The evaluation Framework is meant to be a guide and not absolute. Geographic and temporal scales are two difficult areas. Scale is also associated with an organism and its motility. Significant areas can shift over time and place and be affected by factors such as global climate change. Applying the Framework requires knowledgeable judgment in the absence of good data and information. Local knowledge and input is critical. A community-based workshop is scheduled to be held in Inuvik in November to identify potential EBSAs as well.

RESULTS

Prior to this workshop, DFO and other agency staff were asked to review the EBSA Ecosystem Status Report (DFO 2004) and, using their knowledge and expertise, contribute to the identification of potential sites for consideration as EBSAs in matrix format.

Pierre Richard, DFO (marine mammals) suggested four candidate sites based on the life stage requirements of beluga whales: Mackenzie Delta, Bathurst Polynya and Beaufort flaw lead, Amundsen Gulf and Viscount-Melville Sound.

Lois Harwood, DFO (marine mammals) identified potential EBSA sites based on feeding areas of bowhead whales and ringed seals: Offshore Beaufort Sea, Tuktoyaktuk Peninsula coastal waters, Mackenzie Canyon and Kugmallit Canyon, and Baillie Islands and Franklin Bay coastal waters.

Bill Williams and Eddy Carmack (DFO, Institute of Ocean Sciences) suggested candidate EBSA areas based on physical oceanographic processes and features within the Beaufort Sea: Cape Bathurst (Polynya), Herschel Island and Mackenzie Trough, Nearshore (<10 m), Husky Lakes, Shelf Break, Mackenzie Plume, Lake Herlinveaux and the Marginal Ice Zone. They also suggested that the Beaufort Gyre be identified as the “Marine Wilderness”.

Jim Reist, DFO, identified a number of potential EBSA areas for marine and anadromous fish. Marine fish: marine upwelling zone at shelf breaks (~50 m depth); polynya/flaw lead recurrent feature (summer and winter); nearshore/coastal mixing zone (0–15–20 m depth depending on season and 10–30 ppt salinity); mixed ice zones and ice edges (e.g. Arctic cod feeding/refuge zones); open deep ocean (data deficient, especially at depth). Anadromous fish: areas under landfast ice coastward of stamukhi zone (overwintering in freshened inflows – Mackenzie, Darnley Bay, Minto Inlet; nearshore areas (migratory routes) during spring and ice break (Yukon North Slope, Mackenzie Delta, Tuktoyaktuk Peninsula); nearshore coastal areas (0–5 m) as migratory corridors during summer and fall and freshened areas to ~30 m as feeding zones; nearshore coastal areas used as migratory corridor during autumn freeze up.

Steven Ferguson, DFO, suggested that the fast ice in spring was critical to polar bears (feeding on ringed seals) and use of pack ice as summer proceeds for birthing/rearing of young.

A map was provided by Lynne Dickson on behalf of the Canadian Wildlife Service (CWS) that identified the important habitats for birds in the LOMA. Also attached at a later date were two maps drawn from personal communication with Christine Michel on primary productivity in the LOMA.

After consideration of each candidate area, participants identified nine broad areas for consideration (Figure 1).

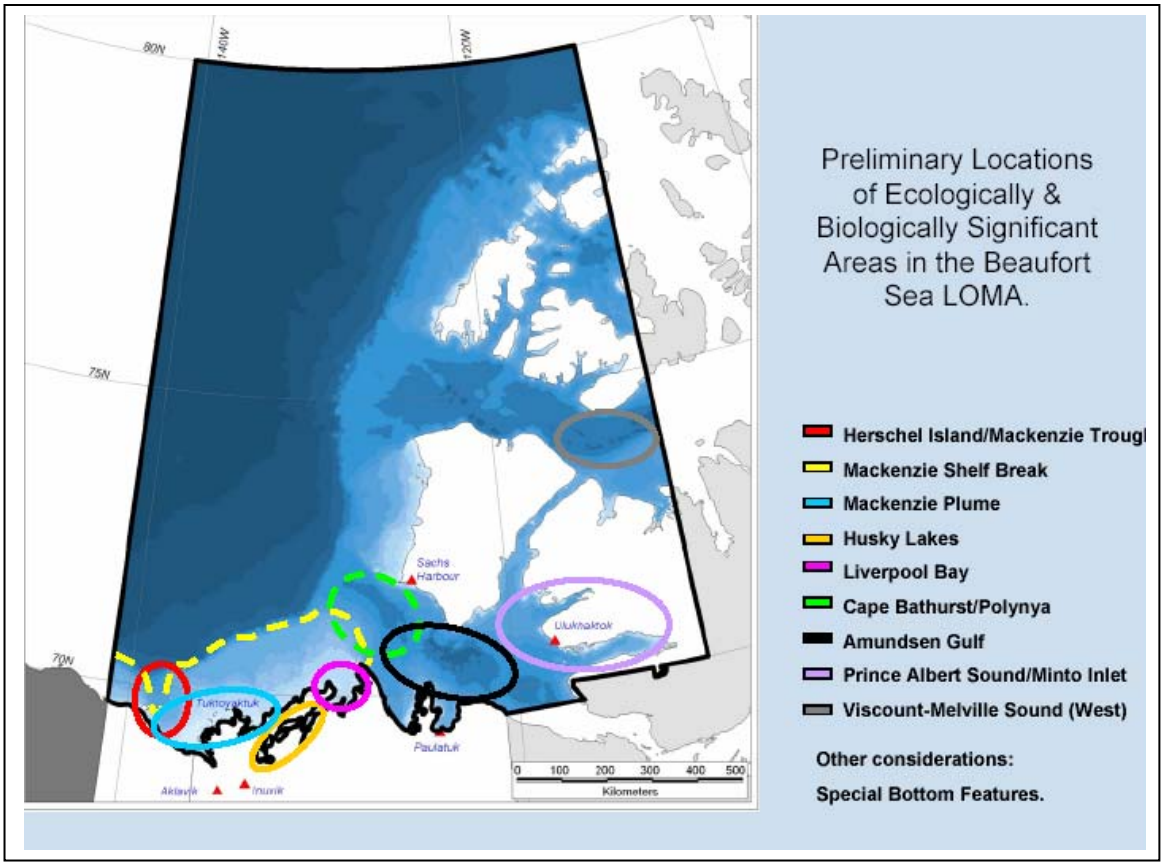

Figure 1. General areas identified as EBSAs from the September 26, 2007 Science Workshop in Winnipeg, MB.

In addition to these areas, features such as pingos, mud volcanoes and garry knolls were also suggested as ecologically and biologically significant features within the region.

COMMUNITY WORKSHOP PROCEEDINGS

INTRODUCTION

A workshop was held November 8–10, 2006 at Ingamo Hall in Inuvik with two representatives from each of the six communities located within the Beaufort Sea LOMA and representatives from other federal and territorial government agency staff (Appendix 2). The purpose of this workshop was to identify potential sites for consideration as Ecologically and Biologically Significant Areas (EBSAs) in the Beaufort Sea. EBSA identification is considered a critical step in setting Ecosystem Objectives for future Ocean Management Planning in the Beaufort Sea LOMA.

The objective of the workshop was to obtain community and local traditional ecological knowledge of ecologically and biologically significant areas and species in the Beaufort Sea LOMA. Each of the six communities was represented at this meeting. In addition to this workshop, a community consultation tour was planned for each of the communities:

Aklavik, Inuvik, Sachs Harbour, Tuktoyaktuk, Paulatuk, and Ulukhaktok to further identify and refine information.

The workshop was organized over three days.

The first day consisted of an overview of the objectives and format of the workshop, participant introductions, an overview of the EBSA national Framework, the role of EBSAs in ocean management, and presentations by two community elders.

The second day of the workshop focused on identifying potential EBSAs by community representatives. This involved working in small groups (based on community) with maps of the region to identify areas known to have concentrations of various aquatic and terrestrial species (fish, mammals, birds). In most instances these included known breeding, feeding, and rearing locations and migration routes. Some of these areas differed seasonally. Two presentations were provided by Bill Williams (Institute of Ocean Sciences) and Steve Blasco (Natural Resources Canada) on the physical oceanography of the Beaufort Sea region.

The third day involved a review of the process and next steps in terms of further community participation, mapping, reporting and timelines.

DAY ONE PROCEEDINGS

Review of the EBSA National Evaluation Framework – Michael Papst, Science Advisor, Fisheries and Oceans Canada

Mike Papst presented the national EBSA Evaluation Framework in a PowerPoint Presentation (Appendix 3). The Framework has been established to assist with identification of EBSAs providing criteria that can be used to assess whether or not areas would qualify as an EBSA. Key points that were raised included:

1) Don't get hung up on the terms;
2) Many of you may have been involved in the Marine Protected Areas process – MPA is very specific to conserving and protecting an area;
3) EBSAs are about flagging or marking an area as significant or important;
4) Although we are focusing on the Beaufort Sea Large Ocean Management Area, it is fine to address areas outside the boundaries of this region;
5) ALL components of the ecosystem are important but some areas are particularly important – these are the ones we need to identify. No area is considered trivial;
6) Local knowledge and input is critical because some communities have some of their own management areas to deal with, too.

What does Ecologically and Biologically Significant Areas mean?

- Functions that they serve (feeding or spawning areas);
- Structural properties (polynya, open water areas); and
- "Not an EBSA" does not equal not important.

Concept best when applied to a geographic site

- Can include features that vary seasonally or cover large geographic areas (i.e. kelp beds, Tarium Niryutait MPA, etc.).

Requires scientific and traditional knowledge

- Identification should not be limited in early stages by knowledge gaps; and
- Beaufort information is limited and biased because scientists arrive during the summer seasons to conduct their studies typically.

Dimensions – Ecological criteria

- Uniqueness;
- Aggregation;
- Fitness consequences – damaging a shoaling area may take away a spawning site
- Additional dimensions – resilience (bounce back) and naturalness (undisturbed – often areas where communities have rules about use for conservation).

Ecological features and structure

- Features (migration, feeding);
    - Gas vents offshore – do not know what ecological effects are, but the feature itself may be worth protecting;
- Structure (polynya, up-welling, oceanographic events).

Identification process

- Based on biological and ecological properties of the area;
- Does not consider threats or risks;
- These areas are not fishing areas – it is more about the role an area plays in ecological or biological functioning.

At the end of the presentation, Mike put up the EBSA criteria matrix on the screen that will be used to assist each group in the identification of potential EBSAs. This is what each of the groups will try and fill in for each of the areas they identify as potential EBSAs. The entire matrix does not have to be filled in but they should be completed to the best of each individual's ability because these results will be reviewed by the communities as a whole during the community tour. Mike also identified to community members some of the areas that DFO scientists had come up with at their workshop (Figure 1).

Elder Presentations

Two community elders, Emma Dick and Persis Gruben provided information to the workshop about their experiences in the region.

Emma Dick

Went to school for a few years then left to live on the land – to go trapping in the winter. Women stayed home and cooked the food. May and June we trapped muskrats and in July we go whaling. People worked and worked for a living, but did not know what wages were, did not know about money – it was a good life. Stuff was cheap, got goods from Aklavik and picked berries. In 1950 (50 something) we went to Aklavik and started to work for wages. In 1953 moved to Inuvik but still have cabins inland. Went to school for a few years, then went to live in the bush, learned to sew from grandmothers and mothers. We went to school with the dogs; now people go with boats with motors.

Persis Gruben (translated by Emma Dick)

Went to school in Shingle Point. Don't like to talk in English because Inuvialuit are losing their language. Only she knows about living along the coastline with her parents. Some places with no wood. When there is no drift wood, they use shale for burning. They picked up pieces of willow to have a fire going. When the seal is frozen, they cut it up in pieces and put in moss to keep warm. They stuffed it full of ashes, not throw ashes away, but mixed it with oil to stay warm. She lived only on the coastline – brought up there and lived there. When they were growing up, they never had boots to wear; they made them on their own. They were warm to wear. They had to scrape the skins of caribou. They make use of the caribou skins. They didn't even have a cabin. They don't make houses in the cold, they had a tent, and when it got cold, they just blocked it with ice. Even the tent was small – two families would live in the tent. People were so kindly in helping each other, we never lacked anything. They had blocks where they hunted, when someone's area was poor, they could share. They were kind and helped each other. In the longer days, they started searching for food mostly for their dogs. They took very good care of their dogs, or you would have no transportation. Dogs were very important. In 1929, there were hardly any fish but lots of rabbits, foxes, and polar bears. They never played outside – they were so afraid of the bears. We didn't know about money – didn't even have a quarter. We had a hard life. Now easy life, but people cannot live on land. There was no one to teach them. Now they know more because they went to school. We went to school for 3 years and that was enough. Parents – if you don't listen, you don't know nothing.

This concluded the first day of the workshop, facilitator Mike McPhee reviewed the agenda for Day 2, outlining again some of the key messages that were discussed during the first day.

DAY TWO PROCEEDINGS

Mike Papst opened the second day of the workshop with a review of Day One. He also went over the objectives and re-emphasized the definition of an EBSA. The participants broke into two groups; one group focused on areas of interest for the communities of Aklavik, Tuktoyaktuk and Inuvik and the other group focused on areas of interest for the communities of Sachs Harbour, Paulatuk and Ulukhaktok. Each group produced a series

of maps with notes on each map that highlighted important areas. Both groups were encouraged by facilitators to describe the areas according to the National Evaluation Framework.

The general discussions that took place within each of the two groups were very helpful to the EBSA process and they identified areas where there was little scientific research conducted. At the end of the day groups presented their maps and some of the general areas that they viewed as EBSAs (Figures 2–8).

Areas identified from this exercise were Herschel Island, Yukon North Slope, Kendall Island, Husky Lakes, Liverpool Bay, Kugmallit Bay, Horton River, Pearce Point, Western Franklin Bay, Southern Darnley Bay, Cape Kellett, Sachs Harbour, Walker Bay, Albert Islands and the Kagloryuak River. In addition to this, each of the groups concluded that during Day 3 it would be useful to divide the groups up further by community to fill in the matrix criteria sheets.

Figure 2. Map produced by Group 1 identifying general EBSAs in the Mackenzie Delta.

Figure 3. Comments collected by participants for the area near Tuktoyaktuk.

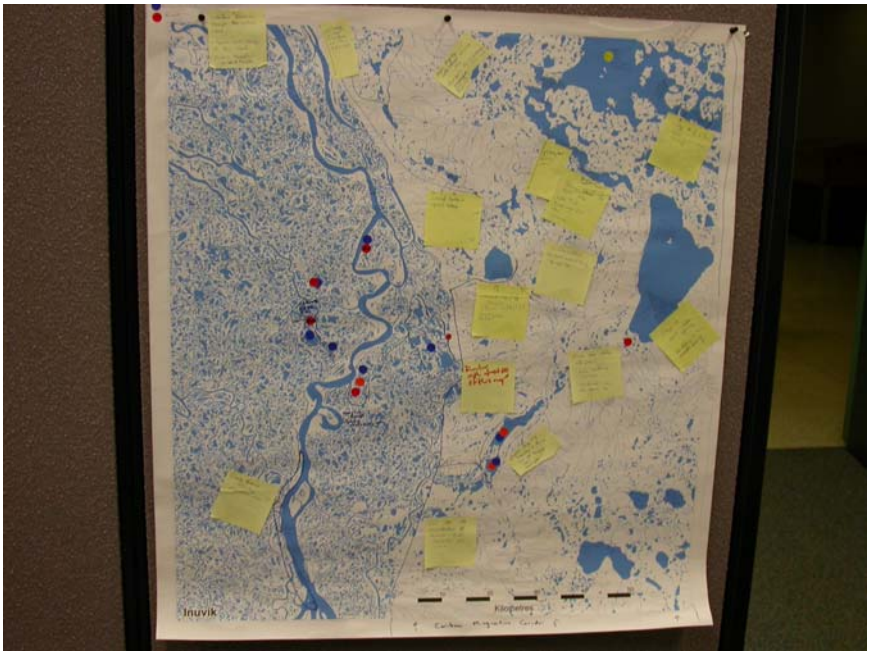

Figure 4. Comments collected by participants for the area near Inuvik.

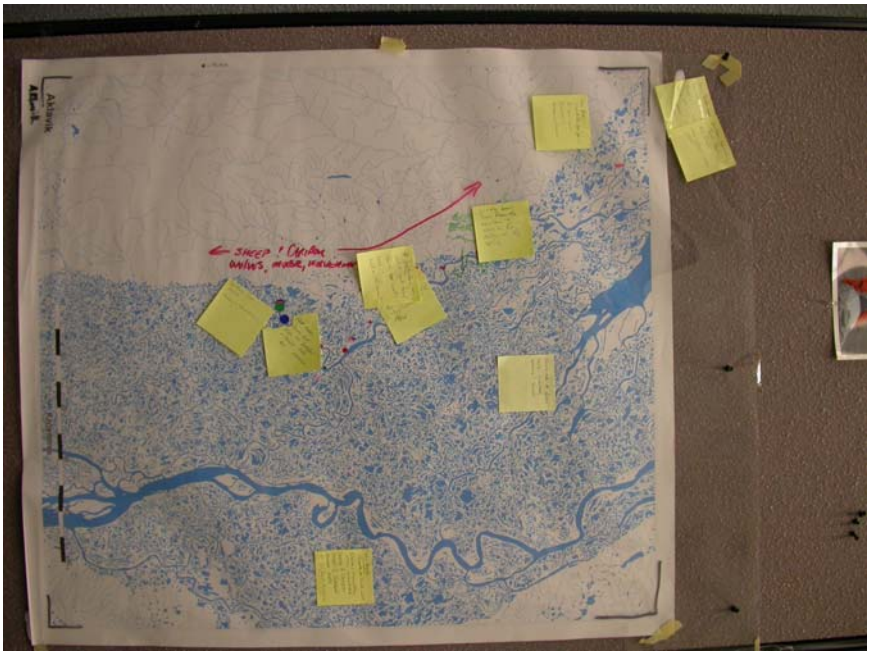

Figure 5. Comments collected by participants for the area near Aklavik.

Figure 6. Comments collected by participants for the area near Sachs Harbour.

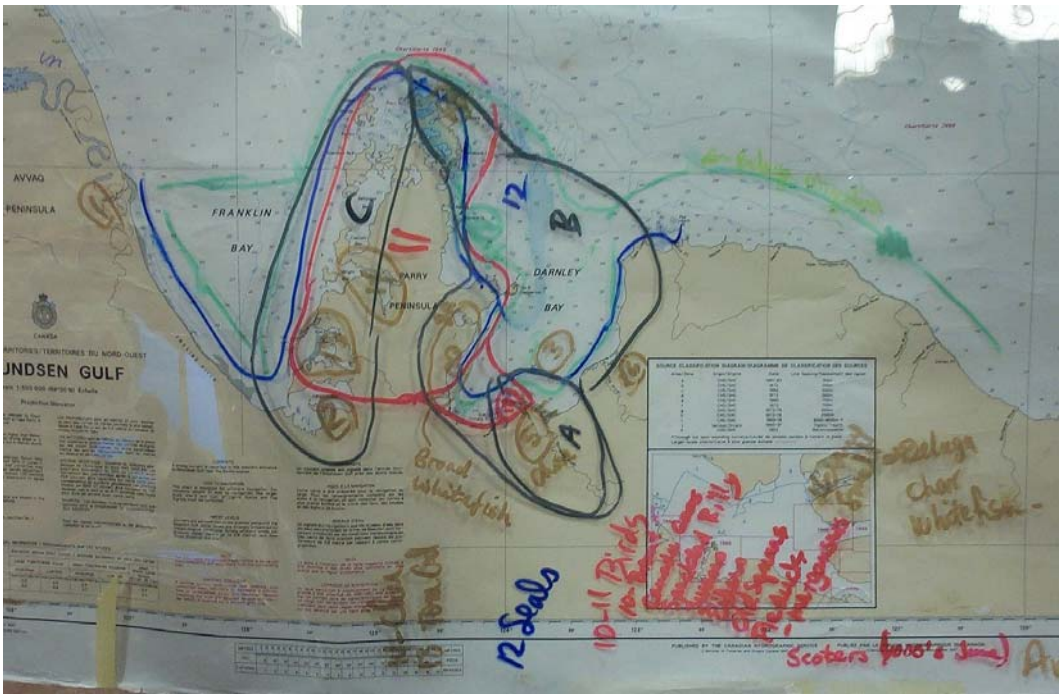

Figure 7. Comments collected by participants for the area near Paulatuk.

Figure 8. Comments collected from participants for the area near Ulukhaktok.

DAY THREE PROCEEDINGS

Groups were divided by community and each went over the EBSA evaluation matrices. The maps produced during Day 2 were posted around the room for reference. Each of the groups worked through the EBSA evaluation matrices.

COMMUNITY TOUR RESULTS

A community tour was held February 27–March 22, 2007 at all six communities that participated in the EBSA process. All information collected at the November 2006 community workshop was summarized into a PowerPoint presentation and presented to each of the communities. One of the objectives during consultation was to present the EBSA workshop results and get feedback and comments from a wider audience of community members (English 2007). In general, the feedback from the communities concerning the ecological information collected was complete (English 2007). The EBSA posters that were distributed to each Hunters and Trappers Committee office is pictured in Appendix 4. Any comments that required changes were made for the 2008 EOAR publication (Cobb et al. 2008). There were no major concerns with the identified areas. Table 1 provides a summary of the list of areas presented to the communities from the results of the two workshops; areas which were identified by both workshops are also identified in Table 1.

Table 1. List of Potential EBSA's in the Beaufort Sea LOMA from community and scientific perspectives. Lines were drawn to show similarities between the two lists.

Community Perspective		Scientific Perspective
Community	Area Selected	Area Selected
Aklavik	Herschel Island	Herschel Island
Aklavik	North Slope	Mackenzie Trough
Inuvik	Kendall Island	Mackenzie Shelf Break
Tuktoyaktuk	Husky Lakes	Mackenzie Plume
Tuktoyaktuk	Liverpool Bay	Husky Lakes
Tuktoyaktuk	Kugmallit Bay	Liverpool Bay
Paulatuk	Horton River	Cape Bathurst Polynya
Paulatuk	Pearce Point	Amundsen Gulf
Paulatuk	Western Franklin Bay	Western Viscount Melville Sound
Paulatuk	Southern Darnley Bay	Minto Inlet
Sachs Harbour	Cape Kellett	Prince Albert Sound
Sachs Harbour	Sachs Harbour	
Ulukhaktok	Walker Bay	
Ulukhaktok	Albert Islands	
Ulukhaktok	Kagloryuak River	

REVIEW AND EVALUATION PROCESS

The results of the September and November 2006 workshops and the February/March 2007 community tour were compiled into two lists and compared (Table 1). There were several instances where both the community and scientific workshops identified the same general areas (Table 1). There were a total of 21 candidate EBSAs and in some cases the EBSA names used in each of the workshops (community and scientific) were changed to better describe the candidate area (Table 2). For example, Herschel Island/Yukon North Slope (community workshop) and Herschel Island (scientific workshop) became Herschel Island/Yukon North Slope for the evaluation process (Tables 1 and 2).

The boundaries of each EBSA were drawn based on the information collected at the workshops and were digitized using ArcGIS 9 software. All of the information collected from scientists, other peer reviewed references, the Ecosystem Overview Report (Cobb et al. 2008), community maps, comments and information from Partnership members were compiled into the evaluation matrices for each candidate EBSA location and ranked against the National Evaluation Criteria (Appendix 5). As part of the assessment report for the Beaufort Sea LOMA (Cobb et al. 2008), a summary of the process and a map of the areas were included in both the draft for review by peers and the final report seen in Figure 9. The draft EOAR was sent to all contributing authors and distributed to the Beaufort Sea Partnership and RCC for review in May and September 2007. A summary of all meetings where EBSAs were discussed under the Beaufort Sea Integrated Management body can be found in Table 3. As noted in the report, EBSA boundaries should be considered preliminary because they will be refined based on future monitoring and research efforts. Some of the EBSAs, such as the flaw lead and the polynya vary in their exact location and so the boundaries are only approximate not finite. The evaluation process produced 20 EBSAs (10 of which were considered data deficient) and one area that did not meet the criteria (Table 2).

The only comments received concerning the location of the EBSAs and the evaluation matrices were from Environment Canada who commented, with some concern that the extent of the EBSA along the Banks Island Flaw Lead did not correspond to sea bird critical habitat. In order to include this critical habitat, the shaded area was redrafted so that it more closely represented these areas. There was also concern that the flaw lead that extended along the Tuktoyaktuk Peninsula and the current Pearce Point EBSA did not include the critical habitat for both sea birds and polar bears (Lynne Dickson, Evan Richardson and Joel Ingram, EC, CWS). This information will be tabled for the next evaluation of the EBSA boundaries based on:

1) the Tuktoyaktuk Peninsula was a new area identified; and
2) the evaluation would require more stakeholder involvement and time to complete. For the time being, a large portion of critical habitat for sea birds was considered to be adequate for 2008 edition of the EOAR and that species specific locations could be found in Volume 1 of the EOAR (Cobb et al. 2008).

Once all EOAR comments were reviewed the document was drafted into a Canadian Technical Report of Fisheries and Aquatic Sciences. The report then went through an intensive internal peer review and was published February 2008. The report was circulated at a cross-sectoral forum held in Winnipeg, MB called "Applying the Ecosystem Approach to Marine Management in the Beaufort Sea" on February 19–20, 2008. The final report is available as an electronic link through the DFO Waves library (http://www.dfo-mpo.gc.ca/Library/331896.pdf) or through the Beaufort Sea Partnership website (http://www.beaufort_seapartnership.ca/documents/EOAR2008March.pdf). The results of these workshops and the final evaluations are part of one step in the application of ecosystem based management in the Beaufort Sea.

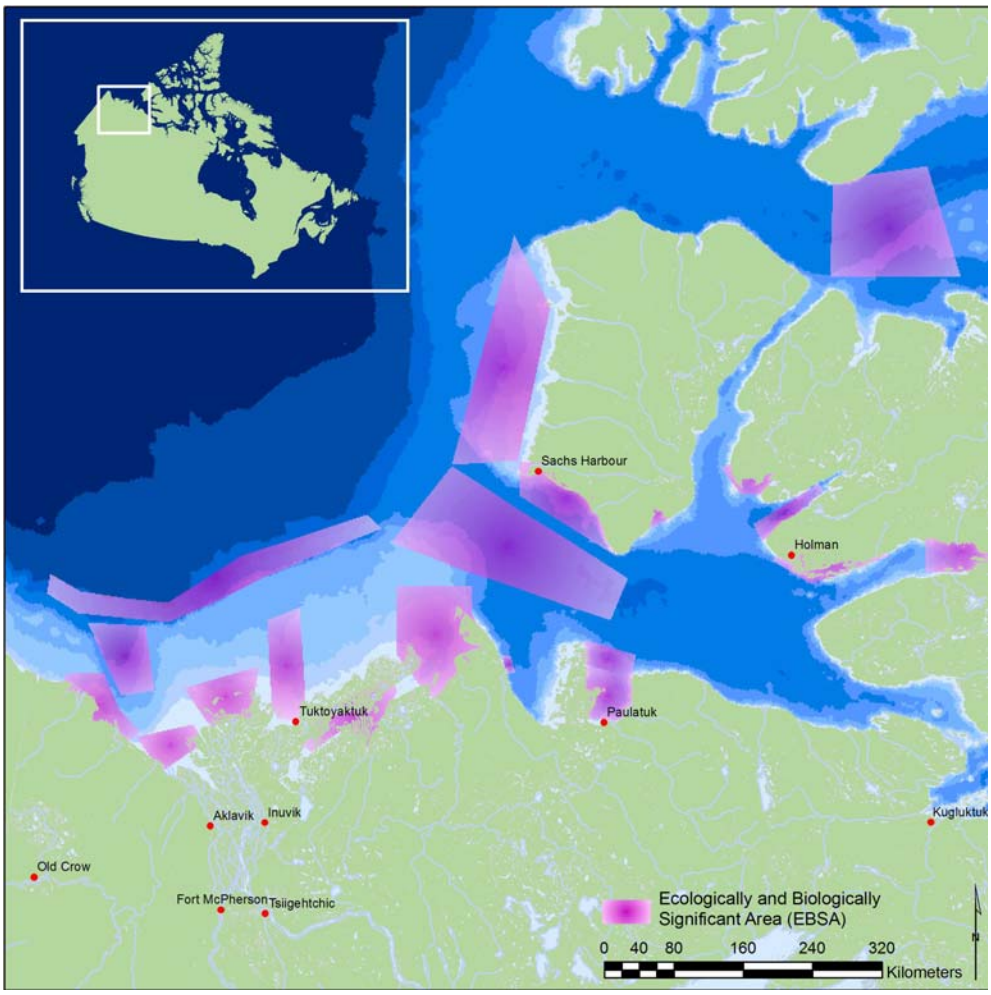

Figure 9. Map of Ecologically and Biologically Significant Areas (EBSAs) in the Beaufort Sea LOMA that meet National Criteria.

Table 2. Results from the community, scientific and EBSA evaluation workshops. Evaluation results were classified by superscript a = EBSAs, b = EBSA data deficient, and c = area did not meet EBSA criteria.

	Community Workshop		Scientific Workshop		EBSA Evaluation Results
1	Herschel Island	1	Herschel Island	1	Herschel Island/Yukon North Slope[a]
2	Yukon North Slope	2	Mackenzie Trough	2	Mackenzie Trough[b]
3	Kendall Island	3	Mackenzie Shelf Break	3	Beluga Bay[a]
4	Kugmallit Bay	4	Mackenzie Plume	4	Kugmallit Corridor[a]
5	Husky Lakes	5	Husky Lakes	5	Beaufort Shelf Break[b]
6	Liverpool Bay	6	Liverpool Bay	6	Husky Lakes[a]
7	Cape Kellett	7	Amundsen Gulf	7	Liverpool Bay[b]
8	Sachs Harbour	8	Cape Bathurst Polynya	8	Horton River[b]
9	Southern Darnley Bay	9	Prince Albert Sound	9	Langton Bay[c]
10	Pearce Point	10	Minto Inlet	10	Hornaday River[a]
11	Horton River	11	Viscount Melville Sound	11	Pearce Point[b]
12	Eastern Franklin Bay			12	De Salis Bay[a]
13	Walker Bay			13	Thesiger Bay[a]
14	Albert Islands			14	Walker Bay[b]
15	Kagloryuak River			15	Minto Inlet[b]
				16	Albert Islands/Safety Channel[a]
				17	Cape Bathurst Polynya[a]
				18	Kagloryuak River[b]
				19	Viscount Melville Sound[b]
				20	Banks Island Flaw Lead[b]
				21	Shallow Bay[a]

Table 3. Summary of Meetings that have taken place under the Beaufort Sea Integrated Management Body that discussed the EBSAs and the process taken for the identification of EBSAs.

Meeting	Date	Presenter	Affiliation	Content
Partnership Meeting - Inuvik	February 8–10, 2006	Mike Papst	DFO –- Science	- Presented the steps towards ecosystem-based management and identified that EBSA identification was one of those steps - Emphasized the need to complete the Ecosystem Overview in order help identify those areas - DND "acknowledged that there needs to be an awareness of ecologically/wildlife sensitive areas and the operations in such areas"
RCC - Inuvik	July 18, 2006	Caroline Bookless	DFO – Headquarters	- Presented an outline of the deliverables for each LOMA which included the steps to ecosystem-based management - A handout was included with the presentation - The identification of EBSAs was one of the steps in the assessment of the environment
RCC - Inuvik	October 5–6, 2006	Don Cobb	DFO –- Science	- Ocean Action Plan deliverables presented at meeting which included the identification of EBSAs - Informed group that there would be a community member workshop in Inuvik scheduled for November - Presentation stated that the Ecosystem Overview and Assessment Report would include the EBSA identification in the assessment portion - There is national technical guidance on the ID of the EBSAs - First area list would be completed by Dec. 20, 2006
Partnership Meeting - Inuvik	April 17–19, 2007	Beth Thomson & Steve Newton	DFO – Oceans Program	- Presented that the purpose of the EOAR was to identify priority for management by identifying EBSAs and that the list was being refined as input from the Partnership and community members was received

Table 3. Continued

Meeting	Date	Presenter	Affiliation	Content
RCC–Inuvik	September 5–6, 2007	Joclyn Paulic	DFO–Oceans Program	- Updated the members on the EBSA process - Identified that the EBSAs were presented in the EOAR - The DRAFT of the EOAR was made available to all members
Bio-physical Working Group–Teleconference	September 25, 2007	Joclyn Paulic (co-chair) Joel Ingram (co-chair)	DFO–Oceans Program Environment Canada (EC)	- Updated the members on the EBSA process - Identified that the EBSAs were presented in the EOAR - The DRAFT of the EOAR was made available to all members - EC was happy with the changes that were made to the boundaries and that other concerns could be addressed in the future
Bio-Physical Working Group - Inuvik	November 21, 2007	Joclyn Paulic (co-chair)	DFO – Oceans Program	- The group discussed some other options that could be available for future refinement and identification of EBSAs as new information becomes available (included GIS expert – Bob Hodgson)

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APPENDICES

Appendix 1. List of Participants who attended the EBSA Science Workshop in September 2006.

Workshop Facilitator
Mike McPhee–Quadra Planning
Larry Wolfe–Quadra Planning

Fisheries Joint Management Committee
Burton Ayles

Fisheries and Oceans Canada–Winnipeg
Don Cobb
Kathleen Martin
Steve Ferguson
Patricia Ramlal
Jim Reist
Pierre Richard
Mike Papst
Joclyn Sareault– DFO/University of Manitoba, Graduate Student
Sally Wong– DFO/University of Manitoba, Graduate Student

Fisheries and Oceans Canada–Inuvik
Marlene Bailey
Tara Schweitzer

Other Government Departments
Lynne Dickson – Environment Canada
Chantal Ouimet – Parks Canada Agency
Mieke VanderValk – Indian and Northern Affairs Canada (INAC)
Wojtek Walkusz – DFO/Institute of Oceanology, Polish Academy of Sciences (IOPAS)

Appendix 2. List of Participants who attended the EBSA Community Workshop in November 2006.

Workshop Facilitators

Larry Wolfe, Facilitator, Nanaimo, BC
Mike McPhee, Facilitator, Coquitlam, BC

Hunters and Trappers Committee Representatives and Elders

Clayton Gordon, Aklavik HTC
Dennis Arey, Aklavik HTC
Douglas Esogak, Inuvik HTC
Noel Green, Paulatuk HTC
Bobby Ruben, Paulatuk HTC
Margaret Kanayok, Holman HTC
John Alikamik, Holman HTC
Lennie Emaghok, Tuktoyaktuk HTC
Eric Cockney, Tuktoyaktuk HTC
Manny Kudlak, Sachs Harbour HTC
Warren Esau, Sachs Harbour HTC
Emma Dick, Community Elder
Persis Gruben, Community Elder – Tuktoyaktuk

Fisheries and Oceans Canada

Joclyn Sareault– Winnipeg, MB, Science, Graduate Student, University of Manitoba
Sally Wong– Winnipeg, Science
Patricia Ramlal– Winnipeg, Science
Beth Thomson– Winnipeg, Oceans
Bill Williams– Sydney, BC, Science
Mark Ouellette– Winnipeg, Oceans
Tara Schweitzer– Inuvik, NT
Aaron Schweitzer– Inuvik
Martine Landry– Ottawa, ON
Marlene Bailey– Inuvik, Oceans
Don Cobb– Winnipeg, Science
Mike Papst– Winnipeg, Science
Erica Wall– Invuik, Oceans
Cal Wenghofer– Invuik, Oceans

Inuvialuit Joint Secretariat – Inuvik, NT

Sheila Nasogaluak
Fred Kuptana
Andrea Hoyt, Fisheries Joint Management Committee (FJMC)
Kevin Bill, FJMC

Appendix 3. Continued.

Other Government Departments

Steve Blasco, NRCan, Halifax, NS
Lynne Dickson, CWS, Edmonton, AB
Jessica Beaubier, CWS, Inuvik
Francine Mercier, Parks Canada, Ottawa
Nelson Perry, Parks Canada, Inuvik
Mieke VanderValk, INAC
Ruth McKecknie, INAC
Heidi Klein, GartnerLee (INAC consultant)

Appendix 3. MS PowerPoint presentation by Michael Papst during the November 2006 Community Workshop which reviewed the EBSA National Evaluation Framework.

Ecologically and Biologically Significant Areas

Identifying EBSA(s)

Beaufort Sea Large Ocean Management Area

Ecological and Biological Significant Areas (EBSA)

- No part of ecosystem is worthless or trivial
- Nonetheless some areas have structural features & functional roles that are particularly Ecologically or Biologically Significant

EBSA(s)

- "Significant"
  - Functions that they serve (feeding or spawning)
  - Structural properties (polynyas; open water zones in sea-ice)
  - Not an EBSA does not equal not "important"

EBSA(s)

- Identifying EBSA
  - Not a general strategy for protecting all habitats and marine communities
  - Is a tool for calling attention to an area that has particularly high Ecological or Biological Significance
- Provision of a greater-than-usual degree of risk aversion in management of activities.

EBSA(s)

- Concept best when applied to a defined geographic site
  - However not restricted to defined geographic sties; framework can be adapted to features that vary seasonally or cover large geographic areas
- Concept requires knowledge; scientific and traditional
  - Identification should not be limited in early stages by knowledge gaps

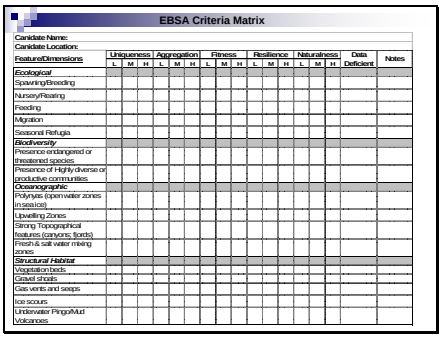
EBSA(s)

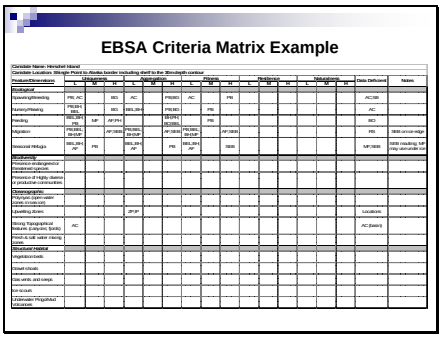
- Identification Process
  - Ecological criteria; "dimensions"
    - Uniqueness
    - Aggregation
    - Fitness Consequences
    - Additional dimensions; Resilience & Naturalness
  - Ecological Features and Structure
    - Features (migration; feeding)
    - Structure (polynya; up-welling)

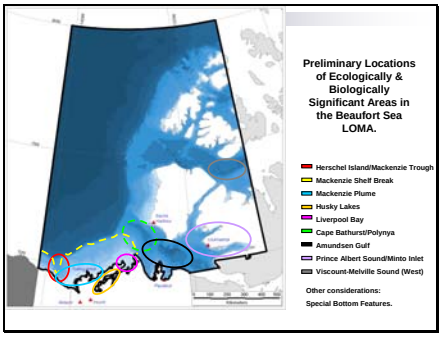
EBSA(s)

- Identification Process
  - Based on the biological and ecological properties of areas
- NOT
  - Threats and Risks
  - Use of area; current or future

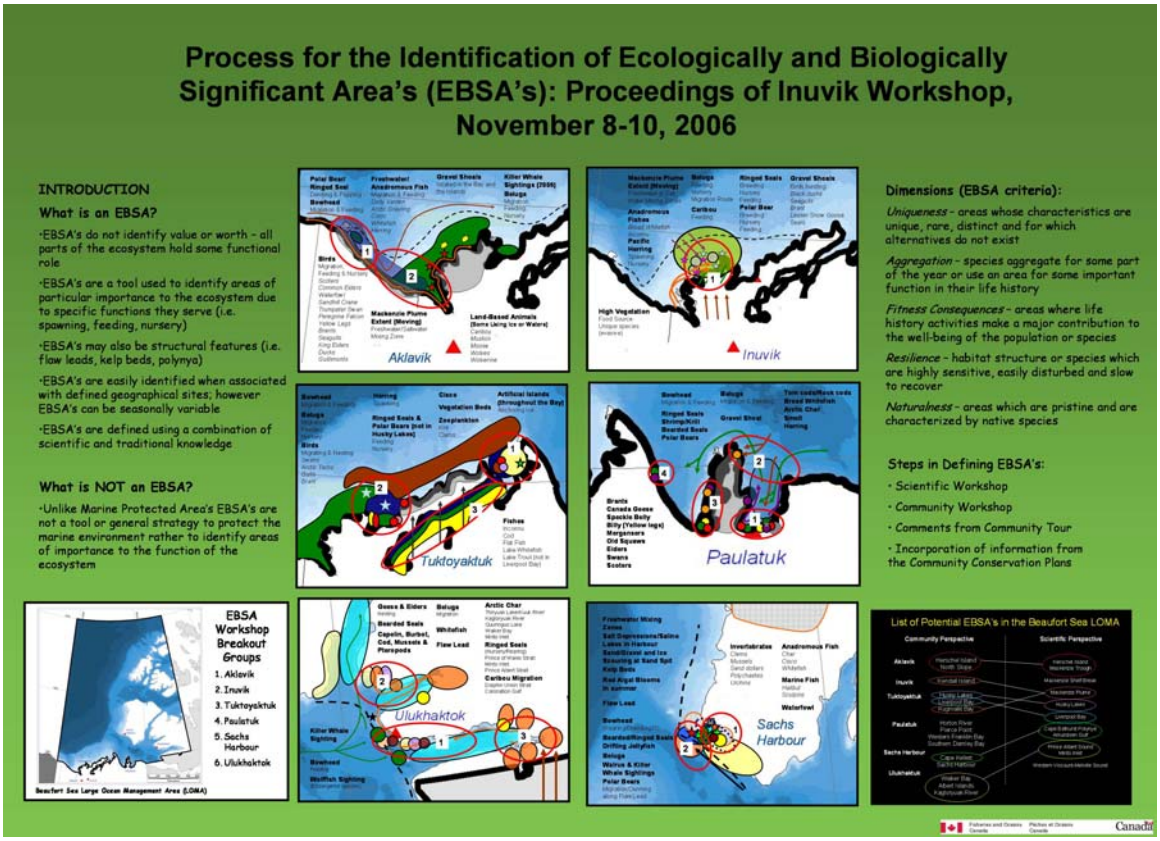
Appendix 3. Continued.







Appendix 4. EBSA poster created for the February/March 2007 Community Tour (Oceans). A poster was printed and left at each Hunters and Trappers Committee office.



Appendix 5. Evaluation Matrices for each of the identified potential EBSAs for the Beaufort Sea LOMA (Cobb et al. 2008).

Abréviations

Abbreviations used in the EBSA evaluation matrices.

AC = Arctic charr
AF = anadromous fish
AR = Arctic cod
AT = arctic tern
BF = broad whitefish
BG = black guillemot
BL = beluga whale
BN = benthos
BR = brant
BS = bearded seal
BW = bowhead whale
CG = cackling goose
CP = capelin
DV = Dolly Varden charr
FF = freshwater fish
FI = fish (unspecified type)
GU = gull
HR = herring
IP = ichthyoplankton
KW = killer whale
LT = lake trout
MB = migratory birds
ME = merganser sp
MF = marine fish
MM = marine mammal
MY = mysid
NP = northern pintail
PB = polar bear
PF = peregrine falcon
PH = phalarope
PP = phytoplankton
PR = pigheaded prickleback
RS = ringed seal
SB = sea bird
SD = sea duck
SF = shellfish
SG = snow goose
SH = shorebird
SL = seal (unspecified type)
TS = tundra swan
WF = wolfish
WG = white-fronted goose
WI = whitefish (unspecified type)
WR = walrus
ZP = zooplankton

Appendix 5 – Herschel Island/Yukon North Slope

Candidate Location: Includes the Firth River mouth, Herschel Island south along the coastline to the opening of Shallow Bay
Identified by: Science and Aklavik community

Oceanographic Feature: Freshwater corridor, steep bathymetry into the trough along the coast of Herschel Island – potential upwelling
EBSA Ranking: EBSA

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	PB, AR		BG	BL, BW, SH	AR	BG, PB	AR		PB				L[1]	Y	BG breeding site
Nursery/ rearing	BL, BW	PB	BG	BL, BW	BG	PB		BG	PB				H	Y	
Feeding	BL, BW, PB	BN[2]	AF		PB, BN	AF, BL, BN, BW,		PB	PH				H	Y	
Migration	PB, BL, BW,BR MF	SD	AF, PH	PB, BL, BW, MF	SD, GU	AF, PH, BR	PB, BL, BW, MF	SD, GU, BR	AF				H	Y	Data deficient: RS
Seasonal refugia	BL, BW, FI	PB, SD		BL, BW, AF	PB, SD		BL, AF, BW	SD, GU	PB				H	Y	SD moulting area
Biodiversity															
Endangered, threatened or rare species	Depleted populations of DV in the Rat and Big Fish rivers														
Highly diverse or productive communities	ZP			ZP										Y	Kelp beds also data deficient
Structural habitat															
Structural habitats	Kelp beds reported, gravel shoals														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient
[1] Artificial nests for BG [2] Data deficient

Appendix 5 – Mackenzie Trough

Candidate Location: Includes the Trough from 50–300 m
Identified by: Science
Oceanographic Feature: Upwelling
EBSA Ranking: Data deficient

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	SL, PB			SL	PB		PB						H	Y	
Nursery/ rearing	SL	PB		SL, PB				PB					H	Y	
Feeding	SL, PB	BW		SL	BW, PB			BW					H	Y	
Migration		BW			BW			BW					H	Y	
Seasonal refugia													H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	BN					BN		BN		Data deficient: AF, FF,MF, ZP/IP					
Structural habitat															
Structural habitats	Data deficient														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Beluga Bay

Candidate Location: East of the Mackenzie trough within 10-m depth contour

Oceanographic Feature: Freshwater and saltwater mixing zone

EBSA Ranking: EBSA

Identified by: Science and Tuktoyaktuk, Aklavik and Inuvik communities

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding					HR			HR					H	Y	
Nursery/ rearing	GU, TS, BR, SH	WG, SG	BL, PB	GU, TS, WG, SG, BR, SH	RS	BL, HR, PB	GU, SG, TS, WG, BR, SH	RS	BL, HR, PB				H	Y	
Feeding	BL, GU	PB			HR		BL, GU	PB					H	Y	
Migration		BR, WG	BL, TS		WG	TS, BL, BR		WG	BR, TS				H	Y	
Seasonal refugia		TS, WG	BL		TS, WG	BL			TS, WG				H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	None identified														
Structural habitat															
Structural habitats	Gravel shoals, landfast ice, Mackenzie Lake (under ice freshwater in winter)														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Kugmallit Corridor

Candidate Location: Kittigazuit Bay North to the Kugmallit Valley at 50 m; within Toker Point and Summer Island as a corridor

Oceanographic Feature: Mackenzie Plume

EBSA Ranking: EBSA

Identified by: Science and Tuktoyaktuk community

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	HR, PB				PB	HR	PB		HR				H	Y	
Nursery/ rearing	RS, GU, PB		BL		RS, GU, PB	BL	GU		BL				H	Y	
Feeding	BL, PB			BL	PB		PB		RS				H	Y	
Migration	BL, PB	WG	AF, BW	BW	PB, WS	AF, BL	PB	WG	AF				H	Y	
Seasonal refugia			AF, BW		AF	BL							H	Y	Overwinter of AF under-ice
Biodiversity															
Endangered, threatened or rare species	PR population in Tuktoyaktuk harbour is considered a Special Concern (data deficient) under COSEWIC														
Highly diverse or productive communities		IP				IP			IP	Data defi-cient	Data defi-cient		H	Y	IP studies show increased diversity within the corridor
Structural habitat															
Structural habitats	Artificial islands, underwater pingos, gas vents, ice scouring, James Shoal and Kugmallit Trough														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Beaufort Sea Shelf Break

Candidate Location: Runs the length of the continental shelf in the Beaufort Sea
Identified by: Science

Oceanographic Feature: Upwelling of nutrient rich Pacific waters
EBSA Ranking: Data deficient

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding		PB			PB			PB					H	Y	PB are known to move offshore to pack ice
Nursery/ rearing													H	Y	PB are known to move offshore to pack ice
Feeding	MF		PB	MF	BN, BW	PB		MF	BW, PB				H	Y	
Migration	SD	PB			PB, SD		SD	PB					H	Y	
Seasonal refugia		BN				BN							H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	PP				PP				PP	Data deficient: MF, ZP/IP, BN, SL, MM usage					
Structural habitat															
Steep shelf break	The edge of the continental shelf; a steep drop from approximately 100 m to 1000 m. limited ice scouring and/or disturbance														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Husky Lakes

Candidate Location: Encompasses the entire Husky Lakes area
Identified by: Science and Tuktoyaktuk community
Oceanographic Feature: Unique estuary, Strong tidal flows
EBSA Ranking: EBSA

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	RS	HR	LT, BR		LT, RS	HR, BR	RS	LT	HR, BR				H	Y	BR-10% of Cdn Population
Nursery/ rearing	RS, GU	LT	BR	GU	LT, RS	BR	RS, GU	LT	BR				H	Y	
Feeding	BL	LT, GU	ME		BL, LT, RS, GU	ME	BL, RS	GU, ME	LT				H	Y	
Migration		MB		MB				MB					H	Y	
Seasonal refugia	CG, WG, SD	TS	BR	WG, SD, CG	TS	BR	WG, TS, SD, CG		BR				H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: The unique oceanographic features of this area implies that is likely a unique environment														
Structural habitat															
Structural habitats	Gravel shoals														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Liverpool Bay

Candidate Location: Includes Liverpool Bay, Baillie Island to the depth of 50-m contour

Oceanographic Feature: Upwelling, tides

EBSA Ranking: Data deficient

Identified by: Science and Tuktoyaktuk community

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natural-ness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	SL, PB	BR		SL, PB	BR		BR	BR					H	Y	MB use area *en route* to nesting areas and to moult *en route* south
Nursery/ rearing	SL, PB, GU, TS	BR, AT		SL, PB, BR, AT, GU, TS			BR, TS, AT, GU						H	Y	BW aggregations identified by aerial surveys
Feeding	SL, PB, SH, GU	BW	SD	SL, PB, SH, GU	BW	SD	SH, GU		SD				H	Y	MY ecology unknown
Migration		BW	SD		BW	SD			SD				H	Y	
Seasonal refugia	WG	MY, TS, SD, BR		BR	MY TS WG	SD	WG, BR	TS, SD					H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: AF, FF, MF, ZP/IP, BN, MM usage														
Structural habitat															
Structural habitats	Kelp beds identified by traditional knowledge on the north-eastern coastal area														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Horton River

Candidate Location: Western Coast of Franklin Bay
Identified by: Paulatuk community
Oceanographic Feature: Upwelling; freshwater influence from the river
EBSA Ranking: Data deficient

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding													H	Y	
Nursery/ rearing	PB			PB			PB						H	Y	Communities indicate that
Feeding	BL, BW, PB, AC	PP		BL, PB, BW	AC	PP	BL, BW, PB	AC					H	Y	BL and BW use the area; BL do not stay long; just pass through
Migration	BL, BW, AC			BL, BW	AC		BL, BW	AC					H	Y	
Seasonal refugia													H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities		Meiof auna				Meiof auna				Data deficient: lack of information for ZP, BN and MF and MM; CASES publications will likely fill some of the gaps					
Structural habitat															
Structural habitats	Bathymetry – steep slope														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Langton Bay

Candidate Location: Southern portion of Franklin Bay
Identified by: Paulatuk community
Oceanographic Feature: Shallow Islands
EBSA Ranking: Rejected EBSA

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding													H		
Nursery/ rearing													H		
Feeding	BL, MF			BL, MF			BL						H		
Migration	BL			BL			BL						H		
Seasonal refugia													H		
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient														
Structural habitat															
Structural habitats	Bathymetry – shallow (gravel)														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Hornaday River

Candidate Location: Southern region on Darnley Bay near Paulatuk, including the Hornaday and the Brock River systems
Identified by: Paulatuk community

Oceanographic Feature: Freshwater and saltwater mixing zone; coastal estuary
EBSA Ranking: EBSA

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding		HR			HR								H	MF	
Nursery/ rearing		RS			RS			RS					H	Y	
Feeding				BF	BW, RS	AC		RS	AC				H	BW	Community reports increased BW and BL activity
Migration	AC, BL	AC, SL, BL, BF, BW		BL		AC		BF					H	BL	Community reports increased BW and BL activity
Seasonal refugia													H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities		ZP					Data deficient: all aspects of the ecosystem								
Structural habitat															
Structural habitats	Kelp beds identified														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Pearce Point

Candidate Location: Pearce Point
Identified by: Paulatuk Community
Oceanographic Feature: Unknown
EBSA Ranking: Data Deficient

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	RS, PB		SB	RS, PB		SB			SB				H	Y[1]	SB-only colony of this subspecies in Canada
Nursery/ rearing	RS, PB		SB	RS, PB		SB			SB				H	Y[2]	
Feeding	BL, PB, MF, AC	BW		BL, MF	BW, PB, AC								H	Y[1]	
Migration	BL, BW, AC			BL	BW, AC		BL, BW					BW, BL	H		
Seasonal refugia													H	Y[3]	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: All aspects of the ecosystem														
Structural habitat															
Structural habitats	Data Deficient - Bathymetry														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient
[1] MF [2] BW [3] BL, BW

Appendix 5 – De Salis Bay

Candidate Location: South-eastern bay on Banks Island
Identified by: Sachs Harbour Community Conservation Plan
Oceanographic Feature: Upwelling
EBSA Ranking: EBSA

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	SD	BR		SB	BR		BR, SD						H	Y	
Nursery/ rearing	PB	BR, SD		PB	BR, SD		BR, SD						H	Y	
Feeding	AC	BW, SL, BL			BW, SL, BL, AC			BW, SL, BL, AC					H	Y	
Migration	AC	BW, SL, BL			BW, SL, BL, AC			BW, SL, BL, AC					H	Y	
Seasonal refugia		SD			SD			SD					H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: all aspects of ecosystem														
Structural habitat															
Structural habitats	None identified – Data deficient														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Thesiger Bay

Candidate Location: Extends offshore from Cape Kellett to Cape Lambton including Sachs Harbour

Oceanographic Feature: Flaw polynya and freshwater and saltwater mixing in the harbour

Identified by: Science and Sachs Harbour community

EBSA Ranking: EBSA

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding		CP			CP								H	Y	MF, CP runs known - data deficient
Nursery/ rearing	SL, PB	CP			SL, PB, CP								H	Y	SL includes RS and BS
Feeding	SL, PB, BL	CP			SL, CP, BL, PB,			SL, PB, BL					H	Y	
Migration	AC, BL, PB		AC, SD	PB	BL	SD		AC, BL	SD				H	Y	CP runs known - data deficient
Seasonal refugia													H	Y	
Biodiversity															
Endangered, threatened or rare species	WR, PF														
Highly diverse or productive communities		BN			BN		Data deficient: AF, FF, MF, ZP/IP, BN, MM. Few studies have been completed in the area, based on this information the area is deemed significant								
Structural habitat															
Flaw leads	The flaw lead is variable and forms in spring during breakup, thought to be a productive area														
Structural habitats	Kelp beds, gravel shoals and saline lakes/salt depressions in the harbour														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Walker Bay

Candidate Location: Includes Ramsay Island and extends from Berkeley Point to Cape Peter

Oceanographic Feature: Freshwater and saltwater mixing zone; coastal estuary

Identified by: Science and Ulukhaktok community

EBSA Ranking: Data deficient

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	MB			MB			MB						H	Y	
Nursery/ rearing	SL, PB, MB			MB	SL, PB		MB	SL, PB					H	Y	RS, BS
Feeding	AC, SL, PB	SF			AC, SL, PB	SF		SL, PB	AC				H	Y	SF are identified as data deficient by CCP
Migration	AC, SL, PB			MB	AC		MB		AC				H	Y	
Seasonal refugia	SD			SD		SD							H	Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: AF, FF,MF, ZP, BN														
Structural habitat															
Structural habitats	Data deficient: bathymetry														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Minto Inlet/Kuujjua River

Candidate Location: Coastline south of the Kuujjua River to Cape Ptarmigan
Identified by: Science

Oceanographic Feature: Freshwater and saltwater mixing zone; coastal estuary
EBSA Ranking: Data deficient

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	MB			MB			MB						H[1]	Y	
Nursery/ rearing	SL, GU, PB				SL, GU, PB		GU	SL, PB					H[2]	Y	RS, BS
Feeding	AC				AC				AC				H[3]	Y	
Migration	MB	AC		MB		AC	MB		AC				H[4]	Y	
Seasonal refugia														Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: MF, ZP, BN														
Structural habitat															
Structural habitats	Nearshore corridor used by migratory fish; confined by bathymetry														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient
[1] MB [2] SL, PB [3] AC [4] MB, AC

Appendix 5 – Albert Islands/Safety Channel

Candidate Location: Includes Queen, Jack Bay and the Albert Islands
Identified by: Science and Ulukhaktok community
Oceanographic Feature: Freshwater and saltwater mixing zone; flaw lead
EBSA Ranking: EBSA

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding		CP							CP				H	Y	
Nursery/ rearing	SL, PB, MB	CP, SD, GU			PB, CP, SD	SL, MB, GU		SD, GU	SL, MB, CP				H	Y	
Feeding	SL, PB, AC	CP			MF, PB	SL, MB, CP, AC		SL, PB, MF	AC, CP				H	Y	
Migration	MB, AC		SD		MB	AC, SD	SD						H	Y	
Seasonal refugia	MF	SD			SD			SD					H	Y	
Biodiversity															
Endangered, threatened or rare species	WF and KW Sighting														
Highly diverse or productive communities			X			X			X	Data deficient: AF, FF, MF, ZP/IP, BN, CP runs, BL and BW uses.					
Structural habitat															
Albert Islands	Several islands along the southern part of Banks Island creating a small channel close to the coast														
Structural habitats	Data deficient: bathymetry														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Cape Bathurst Polynya

Candidate Location: Amundsen Gulf Entrance – diffuse boundary
Identified by: Science
Oceanographic Feature: Polynya, upwelling
EBSA Ranking: EBSA

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	PB				PB			PB					H	Y[1]	
Nursery/ rearing													H	Y[1]	
Feeding	BL	BN, PB	PP, SB		RS, PB	BL,PP BN, SB		PB	PP, SB				H	Y[2]	
Migration	PB				PB		PB						H		
Seasonal refugia													H		
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: dramatic increase in productivity therefore likely presence of highly diverse communities														
Structural habitat															
Structural habitats	Ice melting and increase in sunlight penetrating the water column and ice-edge habitat; deep water basin														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient
[1] MF [2] MF, BL

Appendix 5 – Kagloryuak River

Candidate Location: Eastern Portion of Prince Albert Sound, includes the Kuuk and Kagloryuak Rivers

Oceanographic Feature: Freshwater and saltwater mixing zone; coastal estuary

Identified by: Science and Ulukhaktok community

EBSA Ranking: Data deficient

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding	MB, SD			MB, SD			MB, SD						H	Y	
Nursery/ rearing	SL, PB, MB	SD		MB, SD	SL, PB		MB, SD	SL, PB					H	Y	RS, BS
Feeding	AC, SL, WI, PB				AC, SL, WI, PB			SL, PB	AC, SL, WI				H	Y	WI info from TK
Migration	AC, MB	SD		MB	AC, SD		MB, SD		AC				H	Y	
Seasonal refugia														Y	
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: anadromous/freshwater and marine fish, zooplankton, benthos, bathymetry														
Structural habitat															
Structural habitats	Data deficient: bathymetry														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Viscount Melville Sound

Candidate Location: Eastern extent of M'Clure Strait to the most easterly LOMA boundary

Oceanographic Feature: Unknown

EBSA Ranking: Data deficient

Identified by: Science

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding															Tagged BL and RS known to migrate here for unknown reasons. BL perform deep dives.
Nursery/ rearing															
Feeding															
Migration															
Seasonal refugia															
Biodiversity															
Endangered, threatened or rare species	None identified														
Highly diverse or productive communities	Data deficient: MF, ZP/IP, BN Majority of the region is data deficient														
Structural habitat															
Structural habitats	Data deficient: bathymetry and oceanographic features														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient

Appendix 5 – Banks Island Flaw Lead

Candidate Location: Banks Island Flaw Lead
Oceanographic Feature: Open water polynya
Identified by: Science
EBSA Ranking: Data Deficient

Feature	Uniqueness			Aggregation			Fitness consequences			Resilience			Natu-ralness	Data defi-cient	Notes
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High			
Ecological															
Spawning/ breeding													H	Y	AC, MF - unknown
Nursery/ rearing													H	Y	AC, MF - unknown
Feeding		PP	BL, SD, SB		RS, PB	BL, PP, SD, SB			BL, PP, SD, SB				H	Y	AC, BW, BN, MF - unknown
Migration			BL, SD, SB			BL, SD, SB			SD				H	Y	
Seasonal refugia			BL			BL							H	Y	AC - unknown
Biodiversity															
Endangered, threatened or rare species	None identified.														
Highly diverse or productive communities	Data deficient: Productivity more variable than the Cape Bathurst Polynya														
Structural habitat															
Structural habitats	Open water; ice melt and increase in sunlight penetrating the water column and ice-edge habitat														

Naturalness is evaluated as H (high), M (medium) or L (low). Data deficient